Velox Safety Barrier System

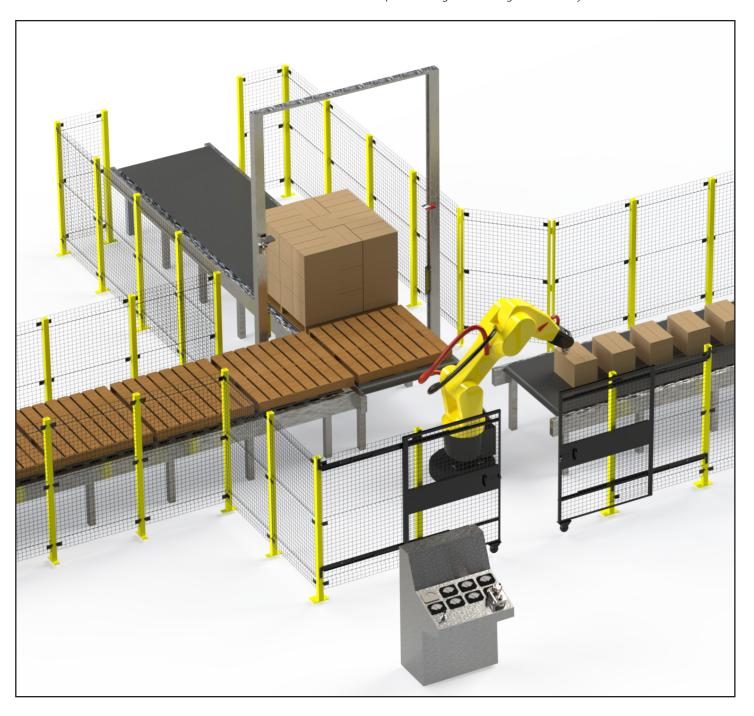


Velox Machine Safety Guarding is the industry's fastest-installing machine guarding system. It offers exceptional design flexibility to create a safe work environment, protecting workers and your equipment. Versatile and affordable, Velox is designed to exceed regulatory safety standards as outlined by OSHA, ANSI, Robotic Industry Association (RIA), Canadian Standards Association (CSA), ISO, and others. The Velox Safety Barrier System installs four times faster than other guarding systems.

Features

- Reinforced ridges in panels add extra stability without the need for a heavy, clunky frame
- · Easy to cut to fit panels in the field
- Lightweight yet strong 8-gauge wire panels
- Pre-welded clips with retained fasteners allow for quickly locking panels in place and no loose hardware to replace
- Posts provide the greatest strength and stability in the market





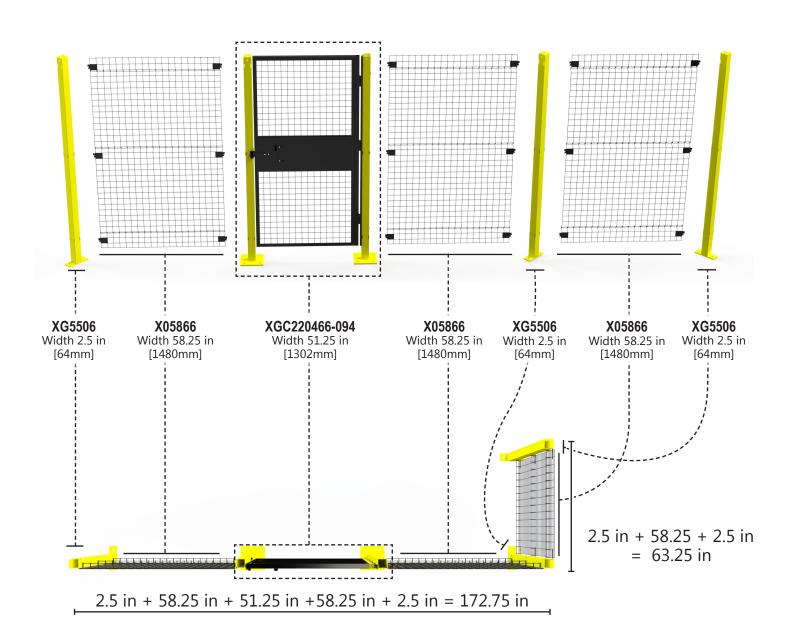
Velox Safety Barrier System



Sample Layout

Use overall width of each component to determine what size panels you need.



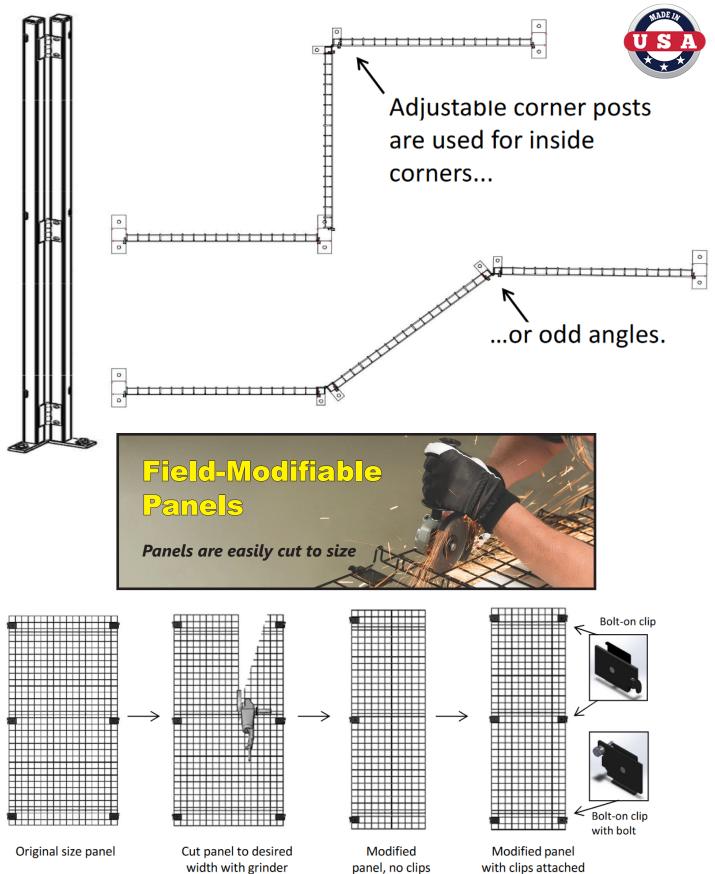


NOTE: The panels can be used as-is, or they can be field-cut to fit your particular installation needs. For example, a 58.25-inch-wide panel could be cut to a width of 54 in if that is what your installation requires. Please note that field-cut panels require additional mounting clips (sold separately).

Velox Safety Barrier System



Customizing Your Layout



Velox Safety Barrier System Posts and Panels





Velox Posts

Velox posts are made of sturdy 16-gauge carbon steel and are powder coated yellow. All have slots for Velox Panel clips to slide in.



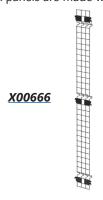
XG5106

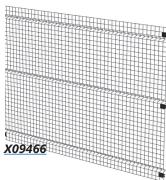
Velox Safety Barrier System Post Selection Guide							
Part Number	Price	Post Type	Height	Overall Width	Weight	Drawing	
XG5506	\$;65,_:	Line or corner post	6ft [1.829 m]	2.5 in [64mm]	13.9 lb [6.3 kg]	PDF	
XG5106	\$;065,#:	Hinged adjustable corner post	6ft [1.829 m]	2.5 in [64mm]	13.2 lb [5.98 kg]	<u>PDF</u>	
XG5508	\$0660k:	Line or corner post	8ft [2.438 m]	2.5 in [64mm]	17.9 lb [8.14 kg]	<u>PDF</u>	
XG5108	\$-0660I:	Hinged adjustable corner post	8ft [2.438 m]	2.5 in [64mm]	17.1 lb [7.77 kg]	<u>PDF</u>	

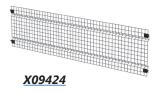
Velox Safety Barrier System Replacement Post Selection Guide							
Part Number	Price	Post Type	Height	Overall Width	Weight	Drawing	
XG5506D	\$0660c:	Replacement swing door post	6ft [1.829 m]	2.5 in [64mm]	18 lb [8.14 kg]	<u>PDF</u>	
XG5506T	\$660d:	Replacement slide door post	6ft [1.829 m]	2.5 in [64mm]	16.2 lb [7.35 kg]	<u>PDF</u>	
XG5508D	\$0660z:	Replacement swing door post	8ft [2.438 m]	2.5 in [64mm]	22lb [9.97 kg]	PDF	
XG5508T	\$;0660]:	Replacement slide door post	8ft [2.438 m]	2.5 in [64mm]	20.3 lb [9.19 kg]	<u>PDF</u>	

Panels

Velox panels are made with 8-gauge carbon steel wire in a 2in x 2in square grid pattern. All panels have a black powder coat finish.







Velox Safety Barrier System Panel Selection Guide						
Part Number	Price	Height	Overall Width	Weight	Drawing	
X00666	\$;65,z:	66in [1676.4 mm]	6.25 in [158.8 mm]	3.9 lb [1.79 kg]	PDF	
X01066	\$;;65,]:	66in [1676.4 mm]	10.25 in [260.4 mm]	5.6 lb [2.54 kg]	PDF	
X01666	\$;;65,[:	66in [1676.4 mm]	16.25 in [412.8 mm]	8.1 lb [3.67 kg]	PDF	
X02266	\$;;65,t:	66in [1676.4 mm]	22.25 in [565.2 mm]	10.6 lb [4.8 kg]	<u>PDF</u>	
X02866	\$;065,u:	66in [1676.4 mm]	28.25 in [717.6 mm]	13.1 lb [5.93 kg]	<u>PDF</u>	
X03466	\$;065,v:	66in [1676.4 mm]	34.25 in [870.0 mm]	15.6 lb [7.06 kg]	<u>PDF</u>	
<u>X04066</u>	\$;065,x:	66in [1676.4 mm]	40.25 in [1022 mm]	18.1 lb [8.19 kg]	<u>PDF</u>	
<u>X04666</u>	\$;065,y:	66in [1676.4 mm]	46.25 in [1175 mm]	20.6 lb [9.32 kg]	<u>PDF</u>	
<u>X05866</u>	\$;;065,!:	66in [1676.4 mm]	58.25 in [1480 mm]	25.5 lb [11.58 kg]	<u>PDF</u>	
<u>X07066</u>	\$;065,?:	66in [1676.4 mm]	70.25 in [1784 mm]	30.5 lb [13.84 kg]	<u>PDF</u>	
X08266	\$;;065,,:	66in [1676.4 mm]	82.25 in [2089 mm]	35.5 lb [16.1 kg]	<u>PDF</u>	
X09466	\$06600:	66in [1676.4 mm]	94.25 in [2394 mm]	40.5 lb [18.37 kg]	<u>PDF</u>	
X00624	\$660h:	24in [609.6 mm]	6.25 in [158.8 mm]	1.9 lb [0.84 kg]	<u>PDF</u>	
<u>X01024</u>	\$-660i:	24in [609.6 mm]	10.25 in [260.4 mm]	2.5 lb [1.14 kg]	<u>PDF</u>	
<u>X01624</u>	\$-660j:	24in [609.6 mm]	16.25 in [412.8 mm]	3.5 lb [1.59 kg]	<u>PDF</u>	
X02224	\$660n:	24in [609.6 mm]	22.25 in [565.2 mm]	4.5 lb [2.04 kg]	<u>PDF</u>	
X02824	\$660o:	24in [609.6 mm]	28.25 in [717.6 mm]	5.5 lb [2.49 kg]	<u>PDF</u>	
X03424	\$660p:	24in [609.6 mm]	34.25 in [870.0 mm]	6.5 lb [2.94 kg]	<u>PDF</u>	
<u>X04024</u>	\$660q:	24in [609.6 mm]	40.25 in [1022 mm]	7.5 lb [3.38 kg]	<u>PDF</u>	
X04624	\$660s:	24in [609.6 mm]	46.25 in [1175 mm]	8.5 lb [3.83 kg]	<u>PDF</u>	
X05824	\$;660t:	24in [609.6 mm]	58.25 in [1480 mm]	10.4 lb [4.73 kg]	<u>PDF</u>	
<u>X07024</u>	\$660u:	24in [609.6 mm]	70.25 in [1784 mm]	12.4 lb [5.63 kg]	<u>PDF</u>	
X08224	\$0660v:	24in [609.6 mm]	82.25 in [2089 mm]	14.4 lb [6.53 kg]	<u>PDF</u>	
X09424	\$0660x:	24in [609.6 mm]	94.25 in [2394 mm]	16.4 lb [7.42 kg]	<u>PDF</u>	

Notes:

For 8ft [96in] posts you will stack a 24in panel on top of a 66in panel. All guarding will have a 6in sweep space at the bottom of the guarding.

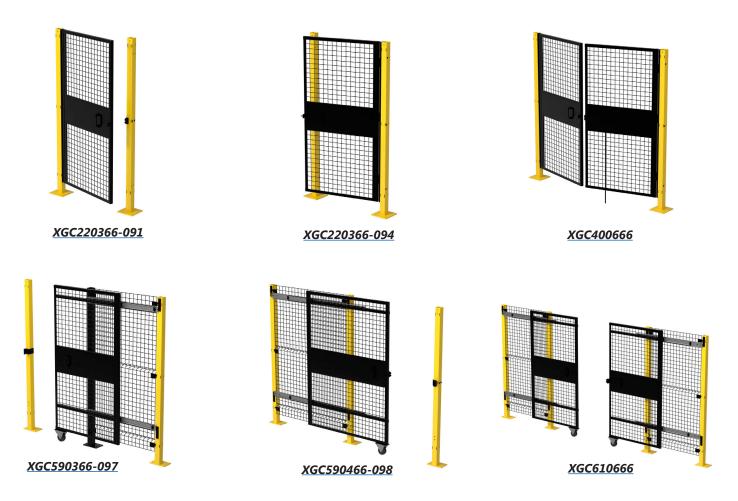
Doors





Velox Safety Barrier System Doors Selection Guide								
Part Number	Price	Door Type	Door Hanging	Door Width	Opening Clearance	Overall Height	Overall Width	Drawing
XGC220366-091	\$06601:	Swing door	Hinge left, swing out	36in [914.4 mm]	34.25in [870mm]	72in [1828.8 mm]	39.25 in [996.95 mm]	<u>PDF</u>
XGC220366-094	\$06602:	Swing door	Hinge right, swing out	36in [914.4 mm]	34.25in [870mm]	72in [1828.8 mm]	39.25 in [996.95 mm]	<u>PDF</u>
XGC220466-091	\$06603:	Swing door	Hinge left, swing out	48in [1219.2 mm]	46.25in [1175mm]	72in [1828.8 mm]	51.25 in [1301.75 mm]	<u>PDF</u>
XGC220466-094	\$06604:	Swing door	Hinge right, swing out	48in [1219.2 mm]	46.25in [1175mm]	72in [1828.8 mm]	51.25 in [1301.75 mm]	PDF
XGC400666	\$06605:	Swing door	Double swing out	72in [1828.8 mm]	70.25in [1784mm]	72in [1828.8 mm]	75.25 in [1911.4 mm]	PDF
XGC400866	\$;006606:	Swing door	Double swing out	96in [2438.4 mm]	94.25in [2394mm]	72in [1828.8 mm]	99.25 in [2521.0 mm]	<u>PDF</u>
XGC220390-091	\$0660y:	Swing door	Hinge left, swing out	36in [914.4 mm]	34.25in [870mm]	96in [2438.4 mm]	39.25 in [996.95 mm]	<u>PDF</u>
XGC220390-094	\$;0660[:	Swing door	Hinge right, swing out	36in [914.4 mm]	34.25in [870mm]	96in [2438.4 mm]	39.25 in [996.95 mm]	PDF
XGC220490-091	\$0660_:	Swing door	Hinge left, swing out	48in [1219.2 mm]	46.25in [1175mm]	96in [2438.4 mm]	51.25 in [1301.75 mm]	PDF
XGC220490-094	\$0660#:	Swing door	Hinge right, swing out	48in [1219.2 mm]	46.25in [1175mm]	96in [2438.4 mm]	51.25 in [1301.75 mm]	PDF
XGC590366-098	\$;006607:	Slide door	Slide left open	36in [914.4 mm]	34.25in [870mm]	72in [1828.8 mm]	76in [1930.4 mm]	<u>PDF</u>
XGC590366-097	\$;006608:	Slide door	Slide right open	36in [914.4 mm]	34.25in [870mm]	72in [1828.8 mm]	76in [1930.4 mm]	<u>PDF</u>
XGC590466-098	\$;006609:	Slide door	Slide left open	48in [1219.2 mm]	46.25in [1175mm]	72in [1828.8 mm]	100in [2540mm]	<u>PDF</u>
XGC590466-097	\$;00660a:	Slide door	Slide right open	48in [1219.2 mm]	46.25in [1175mm]	72in [1828.8 mm]	100in [2540mm]	PDF
XGC590566-098	\$;00660b:	Slide door	Slide left open	60in [1524 mm]	58.25in [1480mm]	72in [1828.8 mm]	124in [3149.6 mm]	PDF
XGC590566-097	\$;00660e:	Slide door	Slide right open	60in [1524 mm]	58.25in [1480mm]	72in [1828.8 mm]	124in [3149.6 mm]	<u>PDF</u>
XGC610666	\$;;00660f:	Slide door	Double slide	72in [1828.8 mm]	70.25in [1784mm]	72in [1828.8 mm]	148.75 in [3778.3 mm]	<u>PDF</u>
XGC610866	\$;00660g:	Slide door	Double slide	96in [2438.4 mm]	94.25in [2394mm]	72in [1828.8 mm]	196.75 in [4997.5 mm]	PDF

NOTE: Doors include all necessary posts and hardware



Velox Safety Barrier System Accessories

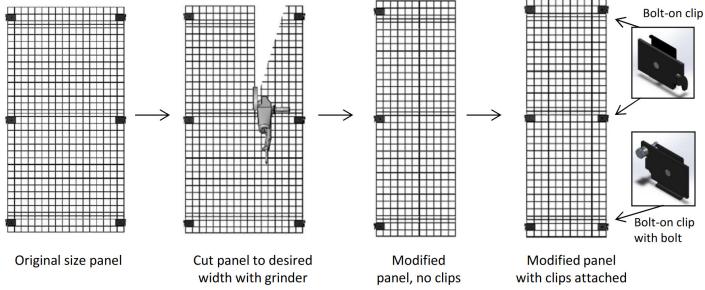


Velox Safety Barrier System Accessories Selection Guide					
Part Number	Price	Description	Weight	Drawing	
XGBC	\$;660!:	Custom cut mounting clips, vertical	1.6 lb [0.74 kg]	<u>PDF</u>	
XGBC-NF	\$660?:	Custom cut mounting clips, horizontal	0.6 lb [0.25 kg]	PDF	



For Width Modification, Use XGBC

Modify in the field to create the exact panel width you need. XGBC includes 3 left-hand and 3 right-hand clips. A 6ft high system requires a total of 3 bolt-on clips, while an 8ft high system requires a total of 5 bolt-on clips.



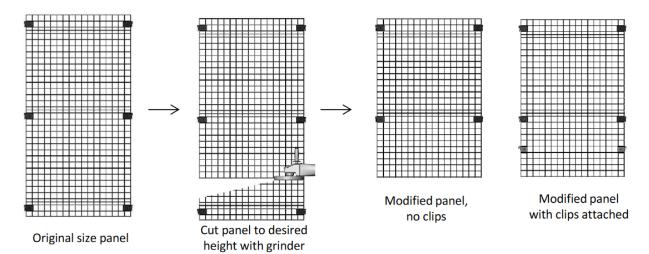
NOTE: When working on an 8ft high system, cut one side of the 66in high panel and the opposite side on the 24in.

For Height Modification, Use XGBC-NF If Needed

Modify in the field to create the exact height you need. If the bolt-on clips do not line up with the pre-punched holes in the post, use XGBC-NF to secure panel to post with the included self-tapping screws.







Datasensing Safety Light Curtains Basic Models, Finger Protection





Safety light curtain with 14mm resolution

Features

- Includes both sender and receiver
- Integrated light curtain for finger protection
- No dead zone
- Operating distance up to 10m [32.8 ft]
- Protected heights ranging from 300 to 1200 mm [11.8 to 47.2 in]
- Compact 35 x 40 mm [1.4 x 1.6 in] profile
- · Automatic restart
- IP65/IP67 rated
- Type 4, PLe, SIL3
- UL, CE, and TUV Certification



Da	Datasensing Safety Light Curtains SH4 Basic Models Selection Chart							
Part Number	Price	Protected Height	Overall Height	Number of Beams	Response Time (ms)	Drawing		
SH4-14-0300-B-5	\$06g6d:	300 mm [11.8 in]	309 mm [12.2 in]	30	9	PDF		
SH4-14-0450-B-5	\$06g6e:	450 mm [17.7 in]	459 mm [18.1 in]	45	10	PDF		
SH4-14-0600-B-5	\$;;006g6f:	600 mm [23.6 in]	609 mm [24 in]	60	12	PDF		
SH4-14-0750-B-5	\$;006g6g:	750 mm [29.5 in]	759 mm [29.9 in]	75	13	PDF		
SH4-14-0900-B-5	\$;006g6h:	900 mm [35.4 in]	909 mm [35.8 in]	90	15	PDF		
SH4-14-1050-B-5	\$;006g68:	1050 mm [41.3 in]	1059 mm [41.7 in]	105	16	PDF		
<u>SH4-14-1200-B-5</u>	\$;006g69:	1200 mm [47.2 in]	1209 mm [47.6 in]	120	18	PDF		

Connections

Receiver





Pin	Description	Cable Color
1	+24VDC	Brown
2	OSSD 1 (Output Signal Switching Device)	White
3	0VDC	Blue
4	OSSD 1 (Output Signal Switching Device)	Black
5	Communications (not used with these models)	Grey

Transmitter (Sender)





1	BROWN		2/. V/dc	POWER
2	WHITE	_		FOWER
-	BLUE	•	N/A	DOWED
3	BLACK	•	0 Vdc	POWER
4	GREY	•	N/A	
5	OKLI	•	N/A	

Pin	Description	Cable Color
1	+24VDC	Brown
2	Not used	White
3	0VDC	Blue
4	Not used	Black
5	Not used	Grey

Datasensing Safety Light Curtains Basic Models, Hand Protection





Safety light curtain with 30mm resolution

Features

- · Includes both sender and receiver
- · Integrated light curtain for hand protection
- · No dead zone
- Operating distance up to 20m [65.6 ft]
- Protected heights ranging from 300 to 1800 mm [11.8 to 70.9 in]
- Compact 35 x 40 mm [1.4 x 1.6 in] profile
- · Automatic restart
- · IP65/IP67 rated
- Type 4, PLe, SIL3
- UL, CE and TUV Certification



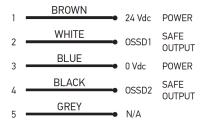
Da	Datasensing Safety Light Curtains SH4 Basic Models Selection Chart						
Part Number	Price	Protected Height	Overall Height	Number of Beams	Response Time [ms)	Drawing	
SH4-30-0300-B-5	\$06g6a:	300 mm [11.8 in]	309 mm [12.2 in]	12	7	PDF	
SH4-30-0450-B-5	\$06g6b:	450 mm [17.7 in]	459 mm [18.1 in]	18	8	PDF	
SH4-30-0600-B-5	\$06g6c:	600 mm [23.6 in]	609 mm [24 in]	24	9	PDF	
SH4-30-0750-B-5	\$-06g6i:	750 mm [29.5 in]	759 mm [29.9 in]	30	9	PDF	
SH4-30-0900-B-5	\$;-006g6j:	900 mm [35.4 in]	909 mm [35.8 in]	36	10	PDF	
SH4-30-1050-B-5	\$;006g6k:	1050 mm [41.3 in]	1059 mm [41.7 in]	42	11	PDF	
SH4-30-1200-B-5	\$;-006g6l:	1200 mm [47.2 in]	1209 mm [47.6 in]	48	12	PDF	
SH4-30-1350-B-5	\$;006g6n:	1350 mm [53.1 in]	1359 mm [53.5 in]	54	12	PDF	
SH4-30-1500-B-5	\$;006g6o:	1500 mm [59.1 in]	1509 mm [59.4 in]	60	13	PDF	
SH4-30-1650-B-5	\$;006g6p:	1650 mm [65 in]	1659 mm [65.3 in]	66	14	PDF	
SH4-30-1800-B-5	\$;006g6q:	1800 mm [70.9 in]	1809 mm [71.2 in]	72	14	PDF	

Connections

Receiver





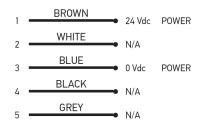


Pin	Description	Cable Color
1	+24VDC	Brown
2	OSSD 1 (Output Signal Switching Device)	White
3	0VDC	Blue
4	OSSD 1 (Output Signal Switching Device)	Black
5	Communications (not used with these models)	Grey

Transmitter (Sender)



5-pin M12 Connector



Pin	Description	Cable Color
1	+24VDC	Brown
2	Not used	White
3	0VDC	Blue
4	Not used	Black
5	Not used	Grey

Datasensing Safety Light Curtains Basic Models



SH4-14 and SH4-30 Basic Models				
Model	SH4-14 Basic Models (Finger Protection)	SH4-30 Basic Models (Hand Protection)		
	Electrical Data			
Supply Voltage	24VD0	C ± 20%		
Current Consumption (Sender)	3.5 W maximum			
Current Consumption (Receiver)	5.5 W maximu	m (without load)		
OSSD Outputs	2, with short-o	ircuit protection		
Short Circuit Protection	Self-re	esetting		
Output Current		x on each output total outputs		
Output Voltage – ON status:	1V m	inimum		
Output Voltage – OFF status:	0.2 V n	naximum		
Leakage Current	<	1mA		
Capacitive Load	1 uF @	24VDC		
Safety Category	Type 4 (IEC 61496-1) / PLe (EN	ISO13849-1) / SIL 3 (IEC 61508)		
Auxiliary Functions	Automatic restart			
Electrical Protection	Class III			
Electrical Connections	M12 5-pole for transmitter			
Electrical Connections	M12 5-pole for receiver			
Cable Length (for supply power)	30m [98ft] maximum			
	Optical Data			
Light Emission	Infrared LED (85	50nm wavelength)		
Resolution	Finger 14mm [0.55 in]	Hand 30mm [1.18 in]		
Operating Distance	0.2 - 10 m [0.7 - 32.8 ft]	0.2 - 20 m [0.7 - 65.6 ft]		
Aperture Angle (EAA)	< ± 2.5° maxim	um @ 3m [3.8 ft]		
	Mechanical and Environmental Data			
Operating Temperature	-30 to 55°C	[-22 to 131°F]		
Storage Temperature	-30 to 70°C	[-22 to 158°F]		
Temperature Class		Г6		
Humidity	15 - 95% (no	n-condensing)		
Mechanical Protection	IP65/IP67 (EN 60529)			
Vibration Resistance	10mm/3g with a frequency of 5 to 150 Hz			
Housing Material	Painted aluminum (yellow RAL 1003)			
Window Material	MAKROLON AR 7099 clear PC			
Cap Material	PBT (polybutyle	ne terephthalate)		
Weight	1.4 Kg/m [0.94 lb/f	t] (single bar weight)		
Agency Approvals	UL, C	E, TUV		

Datasensing Safety Light Curtains Standard Models, Finger Protection





Safety light curtain with 14mm resolution

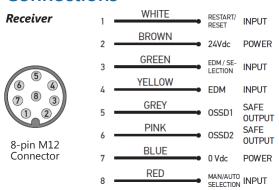
Features

- · Includes both sender and receiver
- Integrated light curtain for finger protection
- · No dead zone
- Operating distance up to 10m [32.8 ft]
- Protected heights ranging from 300 to 1200 mm [11.8 to 47.2 in]
- Compact 35 x 40 mm [1.4 x 1.6 in] profile
- · Manual/automatic restart
- Reset input
- External device monitoring (EDM)
- · Alignment mode
- IP65/IP67 rated
- Type 4, PLe, SIL3
- · UL, CE and TUV certification

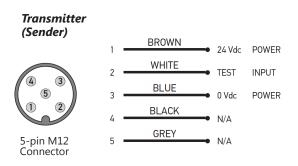


Dat	Datasensing Safety Light Curtains SH4 Standard Models Selection Chart						
Part Number	Price	Protected Height	Overall Height	Number of Beams	Response Time (ms)	Drawing	
SH4-14-0300-S-8	\$06g6s:	300mm [11.8 in]	309mm [12.2 in]	30	9	PDF	
SH4-14-0450-S-8	\$;06g6t:	450mm [17.7 in]	459mm [18.1 in]	45	10	PDF	
SH4-14-0600-S-8	\$;006g6u:	600mm [23.6 in]	609mm [24 in]	60	12	PDF	
SH4-14-0750-S-8	\$;006g6v:	750mm [29.5 in]	759mm [29.9 in]	75	13	PDF	
SH4-14-0900-S-8	\$;006g6x:	900mm [35.4 in]	909mm [35.8 in]	90	15	<u>PDF</u>	
SH4-14-1050-S-8	\$;006g6y:	1050mm [41.3 in]	1059mm [41.7 in]	105	16	PDF	
SH4-14-1200-S-8	\$;006g6z:	1200mm [47.2 in]	1209mm [47.6 in]	120	18	PDF	

Connections



Pin	Description	292 Cable	295 Cable	Pin on Receiver
1	Restart/Reset	White	Brown	1
2	+24VDC	Brown	White	2
3	EDM selection	Green	Blue	3
4	EDM signal	Yellow	Black	4
5	OSSD 1 (Output Signal Switching Device)	Grey	Grey	5
6	OSSD 2 (Output Signal Switching Device)	Pink	Pink	6
7	0VDC	Blue	Violet	7
8	Manual/Auto reset function	Red	Orange	8



Pin	Description	Wire Color	Pin on Receiver
1	+24VDC	Brown	1
2	TEST signal	White	2
3	0VDC	Blue	3
4	Not used	Black	4
5	Not used	Grey	5

Datasensing Safety Light Curtains Standard Models, Hand Protection





Safety light curtain with 30mm resolution

Features

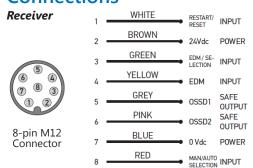
- · Includes both sender and receiver
- Integrated light curtain for hand protection
- · No dead zone
- Operating distance up to 20m [65.6 ft]
- Protected heights ranging from 300 to 1800 mm [11.8 to 70.9 in]
- Compact 35 x 40 mm [1.4 x 1.6 in] profile
- · Manual/automatic restart

- · Reset input
- External device monitoring (EDM)
- Alignment mode
- · IP65/IP67 rated
- Type 4, PLe, SIL3
- UL, CE and TUV certification



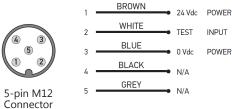
Data	Datasensing Safety Light Curtains SH4 Standard Models Selection Chart					
Part Number	Price	Protected Height	Overall Height	Number of Beams	Response Time (ms)	Drawing
SH4-30-0300-S-8	\$;06g6]:	300mm [11.8 in]	309mm [12.2 in]	12	7	<u>PDF</u>
SH4-30-0450-S-8	\$;06g6[:	450mm [17.7 in]	459mm [18.1 in]	18	8	<u>PDF</u>
SH4-30-0600-S-8	\$;006g6_:	600mm [23.6 in]	609mm [24 in]	24	9	PDF
SH4-30-0750-S-8	\$;006g6#:	750mm [29.5 in]	759mm [29.9 in]	30	9	PDF
SH4-30-0900-S-8	\$;;006g6!:	900mm [35.4 in]	909mm [35.8 in]	36	10	<u>PDF</u>
SH4-30-1050-S-8	\$;006g6?:	1050mm [41.3 in]	1059mm [41.7 in]	42	11	<u>PDF</u>
SH4-30-1200-S-8	\$;;006g6,:	1200mm [47.2 in]	1209mm [47.6 in]	48	12	PDF
SH4-30-1350-S-8	\$;006g70:	1350mm [53.1 in]	1359mm [53.5 in]	54	12	PDF
SH4-30-1500-S-8	\$;006g71:	1500mm [59.1 in]	1509mm [59.4 in]	60	13	<u>PDF</u>
SH4-30-1650-S-8	\$;006g72:	1650mm [65 in]	1659mm [65.3 in]	66	14	PDF
SH4-30-1800-S-8	\$;006g73:	1800mm [70.9 in]	1809mm [71.2 in]	72	14	<u>PDF</u>

Connections



Pin	Description	292 Cable	295 Cable	Pin on Receiver
1	Restart/Reset	White	Brown	1
2	+24VDC	Brown	White	2
3	EDM selection	Green	Blue	3
4	EDM signal	Yellow	Black	4
5	OSSD 1 (Output Signal Switching Device)	Grey	Grey	5
6	OSSD 2 (Output Signal Switching Device)	Pink	Pink	6
7	0VDC	Blue	Violet	7
8	Manual/Auto reset function	Red	Orange	8

Transmitter (Sender)



Pin	Description	Wire Color	Pin on Receiver
1	+24VDC	Brown	1
2	TEST signal	White	2
3	0VDC	Blue	3
4	Not used	Black	4
5	Not used	Grey	5

Datasensing Safety Light Curtains Standard Models, Body Protection





Features

- Includes both sender and receiver
- Integrated light curtain for body protection (300mm or 400mm resolution, depending on model)
- Operating distance up to 70m [229.6 ft]
- Compact 35 x 40 mm [1.4 x 1.6 in] profile
- · Manual/automatic restart
- Reset input
- External device monitoring (EDM)

- · Alignment mode
- IP65/IP67 rated
- Type 4, PLe, SIL3
- UL, CE and TUV certification



POWER

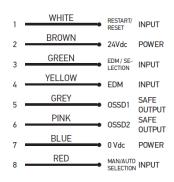
24 Vdc

Dataser	Datasensing Safety Light Curtains SH4 Body Protection Standard Models Selection Chart						
Part Number	Price	Protected Height	Overall Height	Number of Beams	Resolution (mm [in])	Response Time (ms)	Drawing
SH4-3-0800-S-8	\$06g74:	800mm [31.5 in]	974mm [38.3 in]	3	400 [15.75]	15	<u>PDF</u>
SH4-4-0900-S-8	\$06g75:	900mm [35.4 in]	1074mm [42.3 in]	4	300 [11.81]	15	<u>PDF</u>
SH4-4-1200-S-8	\$06g76:	1200mm [47.2 in]	1374mm [54.1 in]	4	400 [15.75]	15	PDF

Connections



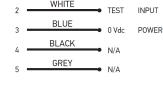
Receiver



Pin	Description	292 Cable	295 Cable	Pin on Receiver
1	Restart/Reset	White	Brown	1
2	+24VDC	Brown	White	2
3	EDM selection	Green	Blue	3
4	EDM signal	Yellow	Black	4
5	OSSD 1 (Output Signal Switching Device)	Grey	Grey	5
6	OSSD 2 (Output Signal Switching Device)	Pink	Pink	6
7	0VDC	Blue	Violet	7
8	Manual/Auto reset function	Red	Orange	8

Transmitter (Sender)





BROWN

Pin	Description	Wire Color	Pin on Receiver
1	+24VDC	Brown	1
2	TEST signal	White	2
3	0VDC	Blue	3
4	Not used	Black	4
5	Not used	Grey	5

Datasensing Safety Light Curtains Standard Models



	SH4-14, SH4-30, and S	SH4 Body Standard Model	S	
Model	SH4-14 Standard Models (Finger Protection)	SH4-30 Standard Models (Hand Protection)	SH4-3-0800 or SH4-4-xxxx (Body Protection)	
	Elec	trical Data		
Supply Voltage		24VDC ± 20%		
Current Consumption (Sender)		3.5 W maximum		
Current Consumption (Receiver)		5.5 W maximum (without load)		
OSSD Outputs		2, with short-circuit protection		
Short Circuit Protection		Self-resetting		
Output Current		0.25 amps max on each output 0.5 A max total outputs		
Output Voltage – ON status:		1V minimum		
Output Voltage – OFF status:		0.2 V maximum		
Leakage Current		< 1mA		
Capacitive Load		1 uF @ 24VDC		
Safety Category	Type 4	(IEC 61496-1) / PLe (EN ISO13849-1) / SIL	3 (IEC 61508)	
Auxiliary Functions (configured by wiring)	Reset/test Selectable manual/automatic restart Selectable EDM Alignment mode			
Electrical Protection		Class III		
Flooring Commonting		M12 5-pole for sender		
Electrical Connections		M12 8-pole for receiver		
Cable Length	30m [98ft	t] maximum	30m [98ft] maximum for receiver 50m [164ft] maximum for transmitter	
	Op	tical Data		
Light Emission		Infrared LED (850nm wavelength)		
Resolution	Finger 14mm [0.55 in]	Hand 30mm [1.18 in]	Body SH4-4-1200-xx-x-x = 400mm [15.75 in] SH4-4-0900-xx-x-x = 300mm [11.81 in] SH4-3-0800-xx-x-x = 400mm [15.75 in]	
Operating Distance	0.2 - 10 m [0.7 - 32.8 ft]	0.2 - 20 m [0.7 - 65.6 ft]	Short range (default) = 0.5 to 15 m [2 to 49 ft] Long range (selectable) = 5 to 70 m [15 to 229 ft]	
Aperture Angle (EAA)		< ±2.5° maximum @ 3m [3.8 ft]		
	Mechanical and	d Environmental Data		
Operating Temperature		-30 to 55°C [-22 to 131°F]		
Storage Temperature		-30 to 70°C [-22 to 158°F)		
Temperature Class	T6			
Humidity	15 - 95% (non-condensing)			
Mechanical Protection		IP65/IP67 (EN 60529)		
Vibration Resistance	10mm/3g with a frequency of 5 to 150 Hz			
Housing Material	Painted aluminum (yellow RAL 1003)			
Window Material	MAKROLON AR 7099 clear PC			
Cap Material		PBT (polybutylene terephthalate)		
Weight		1.4 Kg/m [0.94 lb/ft] (single bar weight)		
Agency Approvals		UL, CE, TUV		

Datasensing Safety Light Curtains Accessories









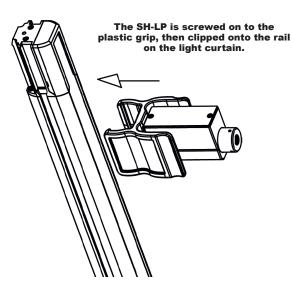
SH-LP

SH-PLUG-5

SH-PLUG-8

Datasensing Safety Light Curtains Accessories						
Part Number	Price	Description	Use With			
SH-LP	\$06g77:	Laser alignment tool for class 2 laser, range up to 50 meters, 1 AAA battery included	SH4 series light curtain models			
SH-PLUG-5	\$6g78:	Replacement cable, 5-pin M12 quick disconnect	SH4 Basic Models transmitter SH4 Basic Models receiver SH4 Standard Models transmitter			
SH-PLUG-8	\$6g79:	Replacement cable, 8-pin M12 quick disconnect	SH4 Standard Models receiver			

Installing the SH-LP



Datalogic Safety Light Curtains �DATALOGIC

Specification	SG4-14 Base Series	SG4-30 Base Series	SG4-14 Advanced Series	SG4-30 Advanced Series
Description	Finger Protection, 14mm resolution	Hand Protection, 30mm resolution	Finger Protection, 14mm resolution	Hand Protection, 30mm resolution
Protected Height	150 to 900mm (5.91 to 35.43 in)	300 to 1800mm (11.81 to 70.81 in)	300 to 750mm (11.81 to 29.52 in) (No Dead Zone)	300 to 1800mm (11.81 to 70.87 in) (No Dead Zone)
Safety Level	Cat.4, PLe (EN/ISO 13849-1) Type 4 (IEC 61496-1/2)	Cat.4, PLe (EN/ISO 13849-1) Type 4 (IEC 61496-1/2)	Cat.4, PLe (EN/ISO 13849-1) Type 4 (IEC 61496-1/2)	Cat.4, PLe (EN/ISO 13849-1) Type 4 (IEC 61496-1/2)
Operating Range	0.2 to 6m (0.66 to 19.68 ft)	0.2 to 19m (0.66 to 63.34 ft)	0.2 to 4m (0.66 to 13.12 ft) 0.2 to 7m (0.66 to 22.97 ft) (Selectable)	0.2 to 12m (0.66 to 39.32 ft) 0.2 to 20m (0.66 to 65.62 ft) (Selectable)
Output State	N.C.	N.C.	N.C.	N.C.
Logic Output	Dual PNP outputs, short-circuit protected	Dual PNP outputs, short-circuit protected	Dual PNP / NPN configurable outputs short-circuit protected	Dual PNP / NPN configurable outputs short-circuit protected
Connection Type	Sender: 4-pole, M12 connector Receiver: 8-pole, M12 connector	Sender: 4-pole, M12 connector Receiver: 8-pole, M12 connector	Sender: M12 5-pole connector Receiver: M12 12 poles + M12 5 poles for muting applications M12 12 poles for blanking applications	Sender: M12 5-pole connector Receiver: M12 12 poles + M12 5 poles for muting applications M12 12 poles for blanking applications
Supply Voltage	24VDC ± 20%	24VDC ± 20%	24VDC ± 20%	24VDC ± 20%
Rating	IEC IP65	IEC IP65	IEC IP65	IEC IP65



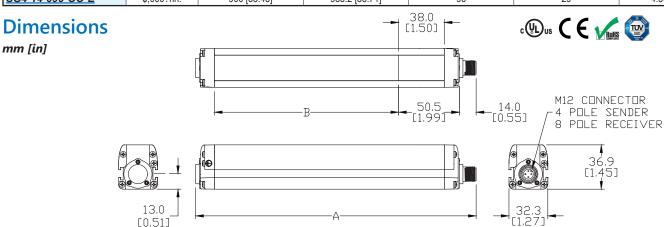
Datalogic Safety Light Curtains DATALOGIC Base Series, Finger-safe



Safety light curtain with 14mm resolution

- Selectable EDM (external device monitoring)
- Selectable manual / automatic restart
- IP65 rated
- Type 4, PLe, SIL3
- UL, CE, TUV and RoHS compliant
- Includes both sender and receiver
- Integrated light curtain for finger protection
- Operating distance up to 6m
- Protected heights ranging from 150 to 900 mm (5.91 to 35.43 in)
- Compact 32 x 37 mm (1.25 x 1.46 in) profile

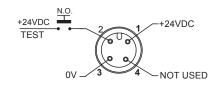
SG4-14 Base Series with EDM Selection Table							
Part Number	Price	Protected Height B mm[in]	Total Height A mm[in]	Number of Beams	Response Time [ms]	Approximate Product Weight per Unit - kg [lb]	
SG4-14-015-00-E	\$00?98:	150 [5.91]	233.3 [9.81]	16	11	1.40 [3.09]	
SG4-14-030-00-E	\$-00?hi:	300 [11.81]	383.2 [15.09]	32	15	2.10 [4.63]	
SG4-14-045-00-E	\$;-000?hj:	450 [17.72]	533.2 [20.99]	48	18	2.60 [5.73]	
SG4-14-060-OO-E	\$;000?hk:	600 [23.62]	683.2 [26.90]	64	22	3.00 [6.61]	
SG4-14-075-00-E	\$;-000?hl:	750 [29.53]	833.2 [32.80]	80	25	4.00 [8.82]	
SG4-14-090-OO-E	\$;000?hn:	900 [35.43]	983.2 [38.71]	96	29	4.30 [9.48]	



Connections

Receiver
M12 8-pole male connector

Sender M12 4-pole male connector





Assignment Function		Pins on Sender
		M12
Reset / Restart	Reset / Restart Automatic / Manual reset / Restart	
Supply Voltage	+24VDC	2
EDM	EDM Activation	
EDM EDM		4
Output	Output OSSD1 (Output Single Switching Device)	
Output OSSD2 (Output Single Switching Device)		6
<i>ov</i> 0V		7
Reset Selection	Select Automatic / Manual reset	8

Assignment	Function	Pins on Sender
		M12
Supply Voltage	+24VDC	1
Test Test		2
<i>ov</i> 0V		3
N/A	Not Used	4

Note: Confirm the specific color to each pinout based on the cable used during installation.

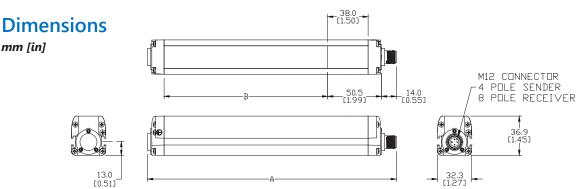
Datalogic Safety Light Curtains DATALOGIC Base Series, Hand-safe



Safety light curtain with 30mm resolution

- · Includes both sender and receiver
- Integrated light curtain for hand protection
- Operating distance up to 19m
- •Protected heights ranging from 300 to 1800 mm (11.81 to 70.87 in)
- Selectable EDM (external device monitoring)
- Selectable manual / automatic restart
- IP65 rated
- Type 4, PLe, SIL3
- UL, CE, TUV and RoHS compliant

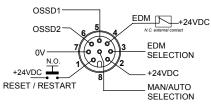
SG4-30 Base Series with EDM Selection Table								
Part Number	Price	Protected Height B mm[in]	Total Height A mm[in]	Number of Beams	Response Time [ms]	Approximate Product Weight per Unit - kg [lb]		
SG4-30-030-00-E	\$00?ho:	300 [11.81]	383.2 [15.09]	16	11	2.10 [4.63]		
SG4-30-045-00-E	\$00?hp:	450 [17.72]	533.2 [20.99]	24	13	2.60 [5.73]		
SG4-30-060-OO-E	\$00?hq:	600 [23.62]	683.2 [26.90]	32	14	3.00 [6.61]		
SG4-30-075-00-E	\$;000?hs:	750 [29.53]	833.2 [32.80]	40	16	4.00 [8.82]		
SG4-30-090-00-E	\$;;000?ht:	900 [35.43]	983.2 [38.71]	48	18	4.30 [9.48]		
SG4-30-105-00-E	\$;000?hu:	1050 [41.34]	1133.2 [44.61]	56	19	5.00 [11.02]		
SG4-30-120-00-E	\$;000?hv:	1200 [47.24]	1283.3 [50.52]	64	21	5.40 [11.91]		
SG4-30-135-00-E	\$;000?hx:	1350 [53.15]	1433.2 [56.43]	72	23	6.20 [13.67]		
SG4-30-150-00-E	\$;000?hy:	1500 [59.05]	1583.3 [62.33]	80	25	7.00 [15.43]		
SG4-30-165-00-E	\$;000?hz:	1650 [64.96]	1733.3 [68.24]	88	26	7.50 [16.54]		
SG4-30-180-OO-E	\$;;000?h]:	1800 [70.87]	1883.3 [74.15]	96	28	8.00 [17.64]		



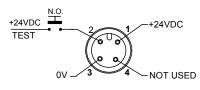




Receiver M12 8-pole male connector









Assignment	Function	Pins on Sender
		M12
Reset / Restart Automatic / Manual reset / Restart		1
Supply Voltage	+24VDC	2
EDM	EDM EDM Activation	
EDM	EDM	4
Output	Utput OSSD1 (Output Single Switching Device)	
Output	Output OSSD2 (Output Single Switching Device)	
0V	0 V	
Reset Selection	Select Automatic / Manual reset	8

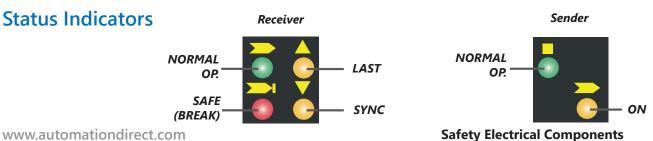
Assignment	Function	Pins on Sender
		M12
Supply Voltage	+24VDC	1
Test	Test	2
0V	0V	3
N/A	Not Used	4

Note: Confirm the specific color to each pinout based on the cable used during installation.

Datalogic Safety Light Curtains **Base Series**

SG4-14 and SG4-30 Base Series with EDM Specifications							
Model	SG4-14 Base Series (finger protection)	SG4-30 Base Series (hand protection)					
Electrical Data							
Supply Voltage		24VDC ± 20%					
Current Consumption (Sender)	2.5 W maximum						
Current Consumption (Receiver)	3	3.5 W maximum (without load)					
OSSD Outputs		2 PNP					
Short Circuit Protection		1.4 A maximum					
Output Current	0.5	amps maximum on each output					
Output Voltage – ON status:		Vdd-1V minimum					
Output Voltage – OFF status:		0.2 V maximum					
Leakage Current		<1mA					
Compacitive Load	(if a longer cable must be used	2.2 uF @ 24VDC I, verify that the capacitive load specifications are respected)					
Protected Height	150 - 900 mm (5.91 - 35.43 in)	300 - 1800 mm (11.81 - 70.87 in)					
Safety Category		Type 4, IEC 61496-1					
	Reset / Test						
Auxiliary Functions	Sele	ectable Manual / Automatic Reset					
	Selectable EDM						
Electrical Protection	Class I / Class III						
Electrical Connections	M12 4-pole for sender						
	M12 8-pole for receiver						
Cable Length (for supply power)	50m (164ft) maximum (if a longer cable must be used, verify that the capacitive load specifications are respected)						
Optical Data							
Light Emission		Infared LED (950nm)					
Resolution	14mm	30mm					
Operating Distance	0.2 - 6 m	0.2 - 19 m					
Aperature Angle (EAA)		±2.5° maximum					
Ambient Light Rejection		IEC 61496-2					
Mechanical and Environmental Data							
Operating Temperature		0 to 55°C (32 to 131°F)					
Storage Temperature		-25 to 70°C (-13 to 158°F)					
Temperature Class		T6					
Humidity		15 - 95% (non-condensing)					
Mechanical Protection		IP65 (EN 60529)					
	_	Width 0.35 mm					
Vibrations	Frequency 10 - 55 Hz 20 sweep per axis						
Harris in Markanial	1 octave / min (EN 60068-2-6)						
Housing Material		uminum (yellow RAL 1003) front screen					
Protective Shield Material	PMMA	A (Polymethylmethacrylate [acrylic])					
Cap Material		PC MAKROLON					
Weight		1.3 Kg / m					
Agency Approvals		UL E226479, CE, TUV, RoHS					

To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific part number's web page at www.AutomationDirect.com



Datalogic Safety Light Curtains Advanced Series, Finger-safe





Programmable safety light curtain with 14mm resolution

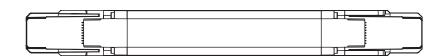
- Includes both sender and receiver
- Type 4, PLe, SIL3
- 14mm resolution integrated light curtain for finger protection
- Operating distance up to 7m (selectable)
- 300-900 mm protected height
- · Zero dead zone
- Basic Configuration Mode (BCM) through pushbuttons
- Advanced Configuration Mode (ACM) through GUI (SG EXTENDED GUI software included)
- CASCADE (No differentiation between master and slave models)

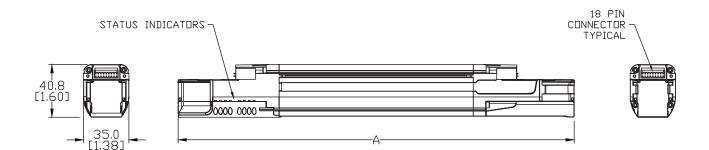
- Integrated MUTING and BLANKING functions
- Compact housing
- Proprietary 18-pin to standard M12 connectors
- 8 signalling LEDs
- Alignment level bar graph on both TX and RX units
- IP65 rated
- UL, CE, TUV and RoHS compliant
- • Accessory Dongle for:
 - Configuration cloning
 - Ethernet (TCP/IP connection)
 - Remote monitoring
 - Remote programming

	SG4-14 Programmable Series Selection Table								
Part Number	Price Protected Height A Number of Beams Response Response Time with Code per kg								
SG4-14-030-00-P	\$;;000?h[:	300 [11.81]	306.3 [12.06]	32	15	20	2.10 [4.63]		
SG4-14-045-00-P	\$;000?h_:	450 [17.72]	456.3 [17.96]	48	17	25	2.10 [4.63]		
SG4-14-060-OO-P	\$;000?h#:	600 [23.62]	606.3 [23.87]	64	19	29	3.00 [6.61]		
SG4-14-075-00-P	\$;;000?h!:	750 [29.53]	756.3 [29.78]	80	20	34	4.30 [9.48]		
SG4-14-090-OO-P	\$;000?h?:	900 [35.43]	906.3 [35.68]	96	22	38	4.30 [9.48]		

Dimensions

mm [in]





Datalogic Safety Light Curtains Advanced Series, Hand-safe

ODATALOGIC







Programmable safety light curtain with 30mm resolution

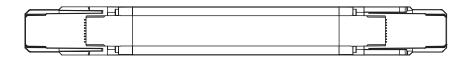
- Includes both sender and receiver
- Type 4, PLe, SIL3
- 30mm resolution integrated light curtain for hand protection
- Operating distance up to 20m (selectable)
- 300-1800 mm protected height
- · Zero dead zone
- Basic Configuration Mode (BCM) through pushbuttons
- Advanced Configuration Mode (ACM) through GUI (SG EXTENDED GUI software included)
- CASCADE (No differentiation between master and slave models)

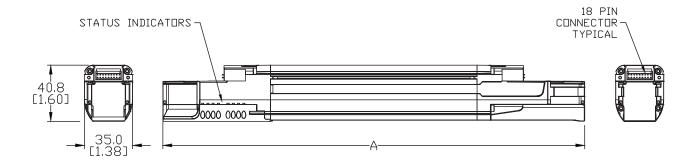
- Integrated MUTING and BLANKING functions
- · Compact housing
- Proprietary 18-pin to standard M12 connectors
- 8 signalling LEDs
- Alignment level bar graph on both TX and RX units
- IP65 rated
- UL, CE, TUV and RoHS compliant
- · Accessory Dongle for:
 - Configuration cloning
 - Ethernet (TCP/IP connection)
 - Remote monitoring
 - Remote programming

	SG4-30 Programmable Series Selection Table								
Part Number	Price	Protected Height mm[in]	Total Height A mm[in]	Number of Beams	Response Time [ms]	Response Time with Code [ms]	Approximate Product Weight per Unit kg [lb]		
SG4-30-030-OO-P	\$;00?h,:	300 [11.81]	306.3 [12.06]	16	13	16	2.10 [4.63]		
SG4-30-045-OO-P	\$;-000?i0:	450 [17.72]	456.3 [17.96]	24	14	18	2.50 [5.51]		
SG4-30-060-OO-P	\$;-000?i1:	600 [23.62]	606.3 [23.87]	32	15	20	3.00 [6.61]		
SG4-30-075-00-P	\$;-000?i2:	750 [29.53]	756.3 [29.78]	40	16	23	4.00 [8.82]		
SG4-30-090-OO-P	\$;-000?i3:	900 [35.43]	906.3 [35.68]	48	17	25	4.30 [9.48]		
SG4-30-105-OO-P	\$;-000?i4:	1050 [41.34]	1056.3 [41.59]	56	18	27	4.80 [10.58]		
SG4-30-120-00-P	\$;-000?i5:	1200 [47.24]	1206.3 [47.49]	64	19	29	5.40 [11.91]		
SG4-30-135-00-P	\$;-000?i6:	1350 [53.15]	1356.3 [53.40]	72	19	32	6.20 [13.67]		
SG4-30-150-00-P	\$;-000?i7:	1500 [59.06]	1506.3 [59.30]	80	20	24	7.00 [15.43]		
SG4-30-165-00-P	\$;-000?i8:	1650 [64.96]	1656.3 [65.21]	88	21	36	7.50 [16.54]		
SG4-30-180-00-P	\$;-000?i9:	1800 [70.87]	1806.3 [71.11]	96	22	38	8.00 [17.64]		

Dimensions

mm [in]



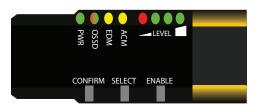


SG4-14 and SG4-30 Programmable Series Specifications						
Electrical Data						
Supply Voltage	24VDC ± 20%					
Current Consumption (Transmitter)	3W maximum					
Current Consumption (Receiver)	5W maximum (without load)					
Outputs	2 PNP OSSD outputs with short circuit protection (1.4 A @ 55°C)					
Output Current	0.5 A maximum on each output					
Output Voltage – ON status:	Vdd-1V					
Output Voltage – OFF status:	0.2 V					
Leakage Current	< 1mA					
Output Compacitive Load	2.2 uF @ 24VDC					
Recovery Time	100ms typical					
Protected Height	300 - 1800 mm					
Safety Category	Type 4 (ref. EN 61496-1)					
Auxiliary Functions	Reset, Restart selection, Alignment, EDM, Test, Muting, Partial Muting, Override, Coding, Range reduction, Fixed Blanking, Floating Blanking, Cascade, PNP / NPN output, GUI programming					
Electrical Protection	Class I / Class III					
	M12 5-pole for sender					
Electrical Connections	M12 12-pole + M12 5-pole for receiver muting applications					
	M12 12-pole for receiver blanking applications					
Cable Length (for supply power)	50m (164ft) maximum					
Pollution Degree	2					
Optical Data						
Light Emission	Infared LED (950nm)					
Resolution	14mm 30mm					
Operating Distance	0.2 - 7 m / 0.2 - 4 m (0.7 - 23 ft / 0.7 - 13 ft) for 14mm resolution 0.2 - 20 m / 0.2 - 12 m (0.7 - 66 ft / 0.7 - 39 ft) for 30mm resolution					
Ambient Light Rejection	IEC 61496-2					
Mechanical and Environmental Data						
Operating Temperature	0 to 55°C (32 to 131°F)					
Storage Temperature	-25 to 70°C (-13 to 158°F)					
Temperature Class	T6					
Humidity	15 - 95% (non-condensing)					
Mechanical Protection	IP65 (EN 60529)					
	Width 0.35 mm					
Vibrations	Frequency 10 - 55 Hz 20 sweep per axis					
	1 octave / min (EN 60068-2-6)					
Shock Resistance	16ms (10g) 1000 shock for each axis (EN60068-2-29)					
Housing Material	Painted aluminum (yellow RAL 1003) front screen					
Cap Material	PBT Valox 508 (pantone 072-CVC)					
Front Glass Material	PMMA (Polymethylmethacrylate [acrylic])					
Connectors	Proprietary 18-pin to standard M12					
Agency Approvals	UL E226479, CE, TUV, RoHS					

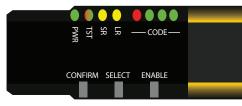
To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific part number's web page at www.AutomationDirect.com

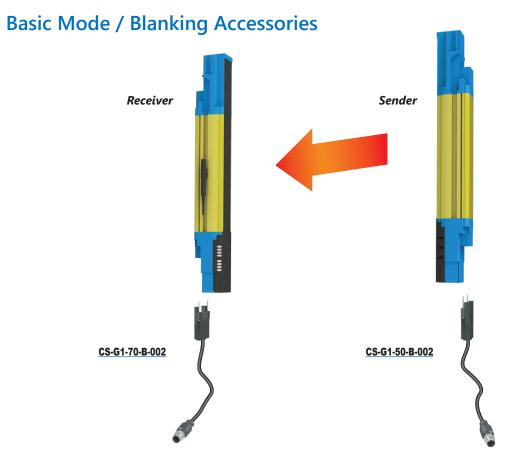
Status Indicators

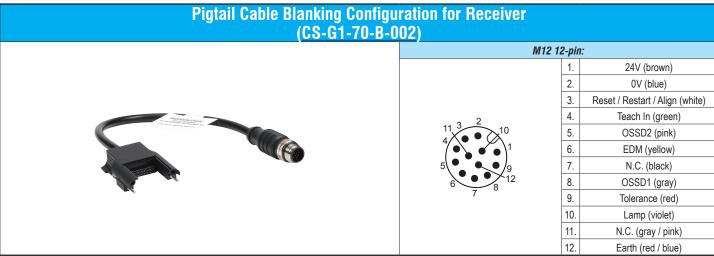
Receiver

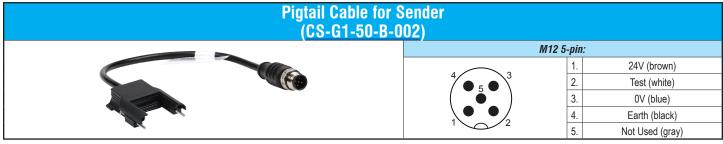






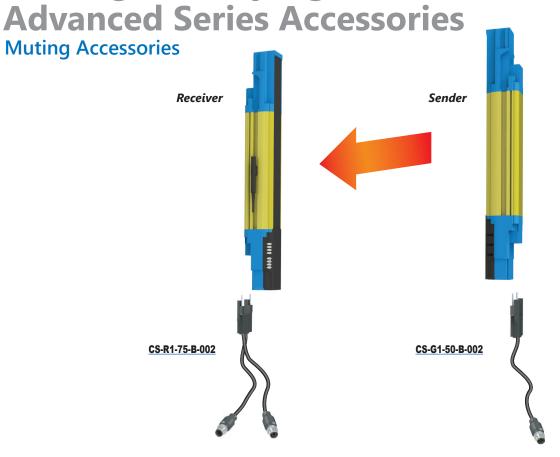






Note: Confirm the specific color to each pinout based on the cable used during installation.

Datalogic Safety Light Curtains ��ATALOGIC

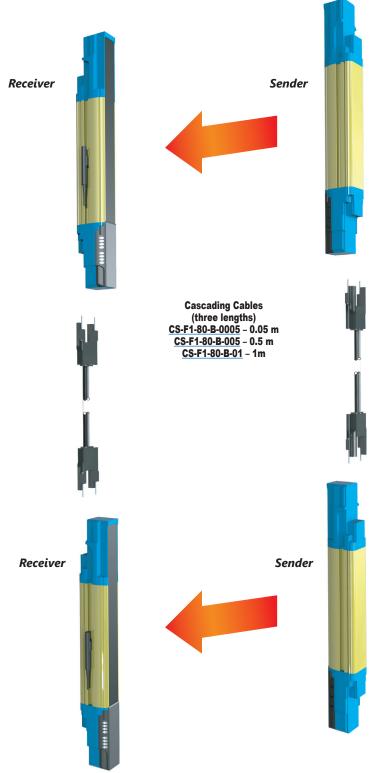




Pigtail Cable for Sender (CS-G1-50-B-002)						
	M1	12 5-pin:				
		1.	24V (brown)			
	4 5 3	2.	Test (white)			
		3.	0V (blue)			
		4.	Earth (black)			
40		5.	Not Used (gray)			

Note: Confirm the specific color to each pinout based on the cable used during installation.

Cascading Cables



Note: A maximum number of three units, one master and two slaves, may be cascaded. The maximum length of the master unit is 1800mm and the maximum length of each slave is 1200mm.

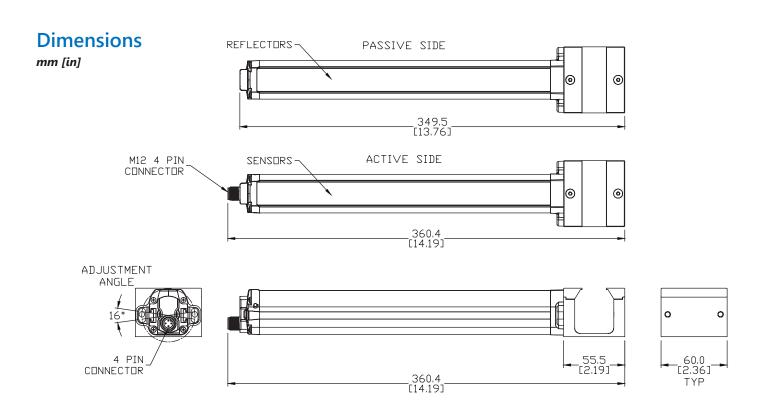
Safety Light Curtains Cables				
Part Number	Price Description			
CS-R1-75-B-002	\$;10a[:	Datalogic cable, muting, PVC jacket, 0.2 m cable length, 18-pin proprietary to 5-pin M12 male quick-disconnect to 12-pin M12 male quick-disconnect		
CS-G1-70-B-002	\$;10a]:	Datalogic cable, blanking, PVC jacket, 0.2 m cable length, 18-pin proprietary to 12-pin M12 male quick-disconnect		
CS-G1-50-B-002	\$10az:	Datalogic cable, emitter, PVC jacket, 0.2 m cable length, 18-pin proprietary to 5-pin M12 male quick-disconnect		
CS-F1-80-B-0005	\$10av:	Datalogic cable, cascading, PVC jacket, 0.05 m cable length, 18-pin proprietary to 18-pin proprietary		
CS-F1-80-B-005	\$10ax:	Datalogic cable, cascading, PVC jacket, 0.5 m cable length, 18-pin proprietary to 18-pin proprietary		
CS-F1-80-B-01	\$10ay:	Datalogic cable, cascading, PVC jacket, 1m cable length, 18-pin proprietary to 18-pin proprietary		



L-Muting Arms

SG-L-ARMS L muting arms provide an optional method of achieving unidirectional muting.





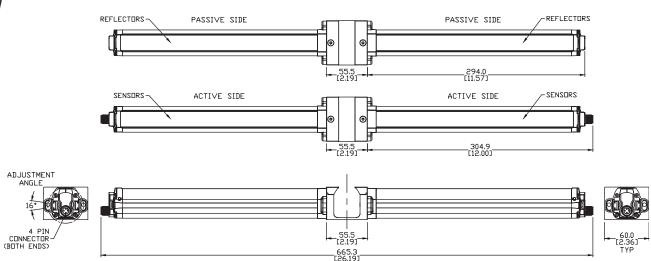
T-Muting Arms

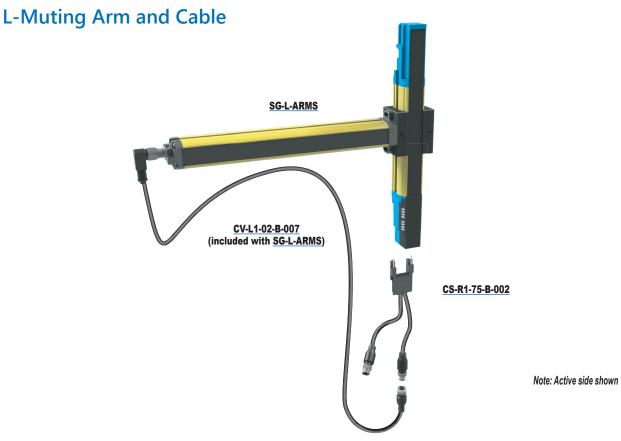
SG-T-ARMS T muting arms provide an optional method of achieving bidirectional muting.

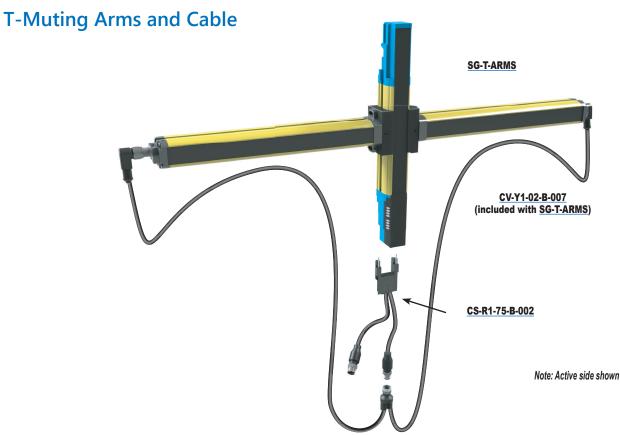
• Operating distance up to 3m
• Detectable objects down to 34.5 cm (13.6 in). (See manual for exact formulas.)

Dimensions

mm [in]







Safety Light Curtains Muting Arms and Cables					
Part Number	Part Number Price Description				
SG-L-ARMS	\$010bc:	Muting arm pair, L-type, 4-pin M12 female quick-disconnect. For use with SG4 series (-P) light curtains.			
SG-T-ARMS	\$010bd:	Muting arm pair, T-type, 4-pin M12 female quick-disconnect. For use with SG4 series (-P) light curtains.			
CV-L1-02-B-007	\$10ap:	Datalogic cable, L-muting, PVC jacket, 0.5 m cable length, 5-pin M12 female quick-disconnect to 5-pin M12 female quick-disconnect			
CV-Y1-02-B-007	\$10aq:	Datalogic cable, T-muting, PVC jacket, 0.5 m cable length, 5-pin M12 female quick-disconnect to 5-pin M12 female quick-disconnect to 5-pin M12 female quick-disconnect			



Communication Interface



SG4-DONGLE communication interface attaches to programmable Datalogic Safety Light Curtains and a PC through an Ethernet TCP/IP connection allowing remote monitoring and remote programming. Configuring, cloning, error logging and remote monitoring and programming are simplified through the free downloadable software.*

*Note: To connect <u>SG4-DONGLE</u> directly to a PC, order Ethernet cable <u>CAB-ETH-M01</u>.

- Configuration cloning
- Ethernet TCP/IP connection
- Remote monitoring
- Remote programming using SG-EXTENDED-GUI software
- CE compliant

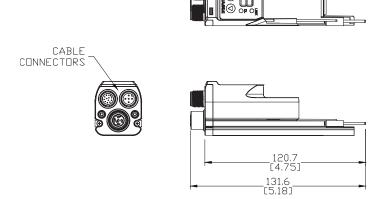
SG4-DONGLE



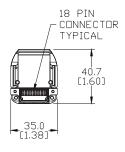
Safety Light Curtains Communication Interface and Software			
Part Number Description		Description	
SG4-DONGLE	\$010be:	Programming dongle. Requires programming software included with SG4 (-P) light curtains.	
SG-EXTENDED-GUI	\$-10ig:	Programming software for SG4 series (-P) on CD; software also available for free download from Automationdirect.com	

Dimensions

mm [in]



STATUS INDICATORS



Datalogic Safety Light Curtains

Communication Software

<u>SG-EXTENDED-GUI</u> communication software is available for download free of charge at <u>www.automationdirect.com</u>.

Remote monitoring and programming are simplified through the software.*

*Note: To connect directly to a PC, order Ethernet cable CAB-ETH-M01.

Remote monitoringRemote configuration

Part No. SG-EXTENDED-GUI

\$-10ig:

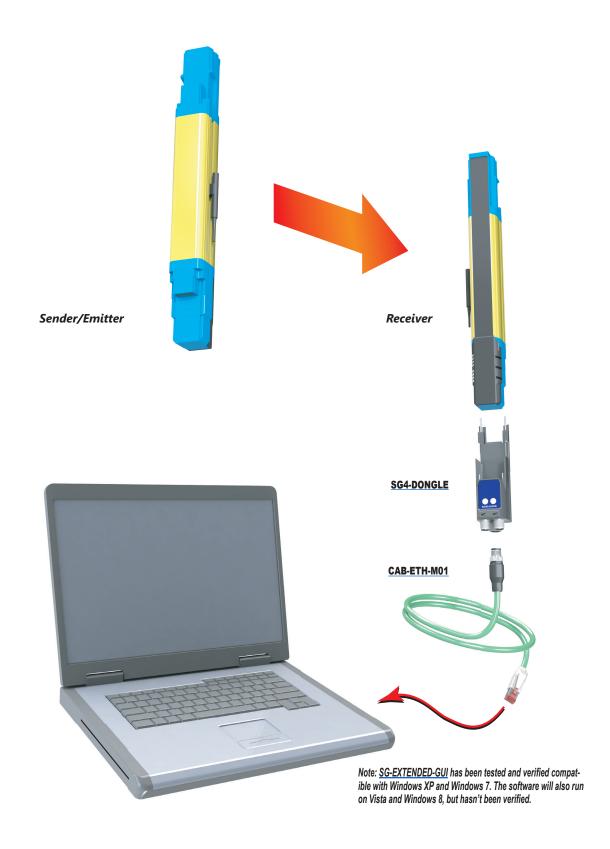
Software CD

Datalogic Parameters				
Function	Parameters with BCM (Basic Configuration Mode): Without GUI	Parameters with ACM (Advanced Configuration Mode): With GUI		
Coding	None / Code 1 / Code 2	None / Code 1 / Code 2		
Restart Mode	Auto / Manual Restart	Auto / Manual Restart		
Override Restart	Manual	Manual / Auto		
EDM	Enable / Disable	Enable / Disable		
Range Reduction	Long / Short	Long / Short		
Muting Type	T-muting / L-muting	T-muting / L-muting For L-muting: T12 time interval selection, T12 multiplier selection		
Muting Timeout	10 minute / infinite	Selectable length in steps of 1 minute from 10min to 1080 minutes		
Muting Filter	None	ON (100ms) or OFF		
Muting Delay	None	Selectable in steps of 100ms up to 1000ms		
Partial Muting	None	Possible to define up to 5 zones each defined in position and dimension		
Override Mode	Level / Edge	Level / Edge		
Override Timeout	120 seconds	Selectable in steps of 1 minute from 1 to 256 minutes		
Fixed Blanking	Two zones can be configured	5 zones can be configured, also with increased tolerance (top or bottom)		
Floating Blanking	1 or 2 beams floating blanking with partial surveillance selectable	**5 zones can be configured, total or partial surveillance without limit of numb of beams		
Reduced Resolution	4 beams	1 / 2 / 3 / 4 beams selectable		

^{**}Note - Blocking the two beams on both ends at the same time is not permitted.

Datalogic Safety Light Curtains OATALOGIC Accessories

Communication Interface



Datalogic – Ethernet Cables



Datalogic Communication Cables				
Part Number	Part Number Price Description			
CAB-ETH-M01	\$10as:	Datalogic cable, Ethernet, PVC jacket, shielded, 1m [3.28 ft] cable length, M12 4-pin male D-coded to RJ45		
CAB-ETH-M03	CAB-ETH-M03 \$;10at: Datalogic cable, Ethernet, PVC jacket, shielded, 3m [9.84 ft] cable length, M12 4-pin male D-coded to RJ45			
CAB-ETH-M05	\$10au:	Datalogic cable, Ethernet, PVC jacket, shielded, 5m [16.40 ft] cable length, M12 4-pin male D-coded to RJ45		



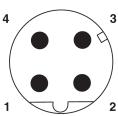


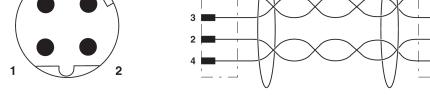
CAB-ETH-M03

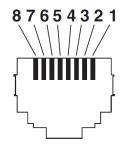
RJ45



Diagrams







Pin assignment M12 male connector, 4-pos., D-coded, male side

Connector pin assignment plug RJ45

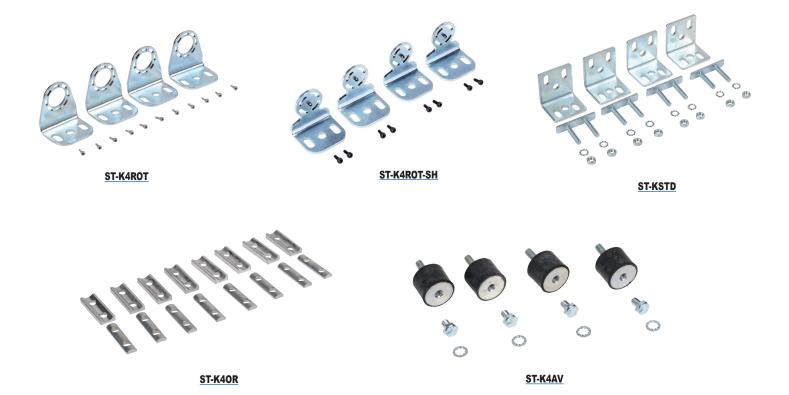


Cable cross section

Datalogic Safety Light Curtains ◆DATALOGIC Accessories

Mounting Brackets

Datalogic Safety Light Curtains Mounting Brackets Selection Guide						
Part Number	Price	Mounting Bracket Type	For Use With	Qty Per Package	Drawing	
ST-K4ROT	\$10ba:	Rotational	SG4 Base Series (-E) light curtains	4	<u>PDF</u>	
ST-K4ROT-SH	\$6g7a:	Rotational	All SH4 Series light curtains	4	<u>PDF</u>	
ST-KSTD	\$10bb:	Standard	All SG4 and SH4 Series light curtains	4	<u>PDF</u>	
ST-K4OR	\$10b9:	Lateral orientable	All SG4 and SH4 Series light curtains	4	<u>PDF</u>	
ST-K4AV	\$10b8:	Anti-vibration	All SG4 and SH4 Series light curtains	4	<u>PDF</u>	



Datalogic Safety Light Curtains DATALOGIC Accessories

Test Pieces

 $\overline{\text{TP-}14}$ and $\overline{\text{TP-}30}$ test pieces are used to verify if the resolution of safety light curtains is maintained inside the entire detection field. $\overline{\text{TP-}14}$ has a diameter of 14mm [0.55 in] and $\overline{\text{TP-}30}$ has a diameter of 30mm [1.18 in]. Both models have an overall length of 300mm [11.81 in].

Safety Light Curtains Test Pieces				
Part Number	lumber Price Description			
<u>TP-14</u>	\$;10bf:	Test rod for 14mm resolution finger detection light curtains, plastic, 14mm diameter		
<u>TP-30</u>	\$10bg:	Test rod for 30mm resolution hand detection light curtains, plastic, 30mm diameter		



Contrinex Safety Light Curtains Selection Guide







Specification YBB-14x4 Series		YBB-30x4 Series	YCA-50x4 Series	
Description	Finger Protection, 14mm resolution	Hand Protection, 30mm resolution	Access Control, 300, 400mm beam gap	
Protective Height	142 to 1045mm (5.59 to 41.14 in)	279 to 1827mm (10.98 to 71.65 in)	832 to 1232mm (32.76 to 48.50 in)	
Safety Level	Cat.4, PLe (EN/ISO 13849-1) Type 4 (IEC 61496-1/2)	Cat.4, PLe (EN/ISO 13849-1) Type 4 (IEC 61496-1/2)	Cat.4, PLe (EN/ISO 13849-1) Type 4 (IEC 61496-1/2)	
Operating Range	0.25 to 3.5m (0.82 to 11.48 ft)	0.25 to 12m. (0.82 to 39.37 ft)	1.0 to 15m (3.3 to 39.37 ft) / 10 to 50m (32.8 to 164 ft)*	
Output State	N.C.	N.C.	N.C.	
Logic Output	Dual PNP outputs, short-circuit protected	Dual PNP outputs, short-circuit protected	Dual PNP outputs, short-circuit protected	
Connection Type	M12 5-pole connector	M12 connector	M12 connector	
Supply Voltage	24VDC ± 20%	24VDC ± 20%	24VDC ± 15%	
Rating	IEC IP65, IP67 (EN60529)	IEC IP65, IP67 (EN60529)	IEC IP65, IP67 (EN60529)	

*Configurable



Contrinex Safety Light Curtains Finger-safe





Safety light curtain with 14mm resolution

- Protective height from 142mm to 1045mm
- Operating distance up to 3.5 m
- M12 quick-disconnect (order cable separately)
- Dual PNP outputs
- Sold as sender/receiver kits

- Mounting brackets included with all units
- Instruction manual and testing rod included with sender unit
- IP65, IP67 rated
- Type 4 and Category 4 PLe

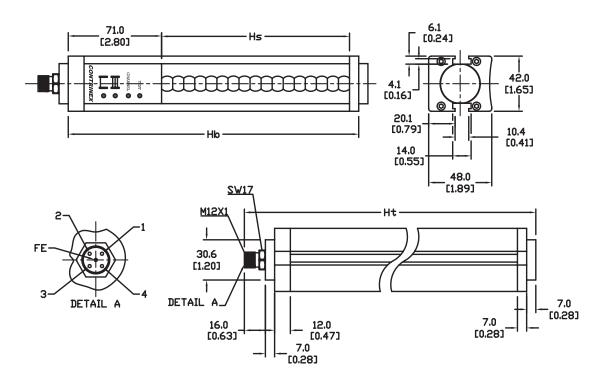
	YBB-14 Series Safety Light Curtain Selection Table									
Part Number	Price	Protective Height Hs mm[in]	Housing Height Hb mm[in]	Total Height Ht mm[in]	Number of Beams	Current Consumption [mA]	Response Time [ms]	MTTF _d (years)	DC _{avg}	Product Weight per Unit
YBB-14K4-0150-G012	\$;010d!:	137 [5.39]	221 [8.70]	251 [9.81]	17	50 (sender) 90 (receiver)	5.2	142	96%	940g 2.08 lbs
YBB-14K4-0250-G012	\$010d?:	266 [10.47]	350 [13.78]	380 [14.96]	33	50 (sender) 95 (receiver)	8.4	114	96%	1480g 3.26 lbs
YBB-14K4-0400-G012	\$;010d,:	395 [15.55]	479 [18.86]	509 [20.04]	49	50 (sender) 100 (receiver)	11.6	96	95%	2000g 4.40 lbs
YBB-14K4-0500-G012	\$;0010e0:	524 [20.63]	608 [23.94]	638 [25.12]	65	50 (sender) 110 (receiver)	14.8	83	95%	2540g 5.6 lbs
YBB-14K4-0700-G012	\$;0010e1:	653 [25.71]	737 [29.02]	767 [30.20]	81	50 (sender) 115 (receiver)	18	73	95%	3080g 6.80 lbs
YBB-14K4-0800-G012	\$;0010e2:	782 [30.79]	866 [34.09]	896 [35.28]	97	50 (sender) 120 (receiver)	21.2	65	94%	3600g 7.94 lbs
YBB-14K4-0900-G012	\$;0010e3:	911 [35.87]	995 [39.17]	1025 [40.35]	113	50 (sender) 125 (receiver)	24.4	59	94%	4140g 9.12 lbs
YBB-14K4-1000-G012	\$;0010e4:	1040[40.94]	1124[44.25]	1154 [45.43]	129	50 (sender) 130 (receiver)	27.6	53	94%	4680g 10.32 lbs

Note: AutomationDirect does not recommend using these light curtains with any device other than our Safety Relay Light Curtain Controllers.

Contrinex Safety Light Curtains Finger-safe

Dimensions

mm [in]



Pin outs

Assignment	Function		Wires ender	Pins/Wires on Receiver		
		M12	Cable	M12	Cable	
Supply Voltage	24VDC for channel 1; 0V for channel 2	1	Brown	1	Brown	
Supply Voltage	0V for channel 1; 24VDC for channel 2	3	Blue	3	Blue	
Test Mode	0V test active; 24 V test inactive	4	Black	-	_	
Output	OSSD1 (Output Single Switching Device)	-	-	2	White	
Output	OSSD2 (Output Single Switching Device)	-	-	4	Black	
Functional Earth	Shield (Ground)	FE	Gray	FE	Gray	

Note: Cable color represents standard industrial pinout.

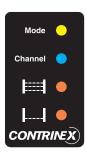
Confirm the specific color and pinout during installation.

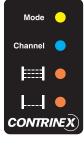
Contrinex Safety Light Curtains – Finger-safe

YBB-14 Series Safety Light Curtain Specifications							
Resolution	14mm						
Safety Level	Category 4, PLe (EN/ISO 13849-1). Type 4 (IEC 61496-1/2)						
Beam Axis Interval	8mm						
Supply Voltage	24VDC ± 20%						
Current Consumption	See Selection Table						
Outputs	2 PNP outputs, short-circuit protected						
Output Current	Maximum 0.2 amps per output (@ 50°C/122°F)						
Output Voltage ON minimum	1.0 V less than the supplied operating voltage at 25°C (77°F)						
Output Voltage OFF	<1.0 V						
Leakage Current	< 1mA						
Maximum Load Inductance	100mH						
Response Time	See Selection Table						
Sender Wavelength	IR 950nm						
Operating Range	0.25 to 3.5 m						
Protection Class	Class III (IEC 61140)						
Startup Delay	< 0.5 seconds						
Vibration Resistance	10 to 55Hz, 0.35 mm amplitude, 1 octave/min., 20 sweeps for each axis						
Shock Resistance	10g during 16ms, 1000 times for each axis						
Light Immunity	Incandescent lamp: 3000lx max. (light intensity on receiver surface) Xenon flash tube: flash duration 1.2 ms max. with a frequency of 2Hz max. (TS 61496-2)						
Operating Temperature	0 to 50°C (32 to 122°F)						
Storage Temperature	-25 to 70°C (-13 to 158°F)						
Humidity	15 to 95% (non-condensing)						
Degree of Protection (EN 60529)	IP65						
Ambient Brightness	TS 61496-2						
Reference Standards	IEC 61496-1: 2004, IEC 61496-2						
Housing Material	Aluminum, PMMA (Polymethylmethacrylate [acrylic]) front screen						
Material of Upper and Lower Cover	PA (Polyamide [nylon]) + 30% fiberglass						
Material of Optics	PMMA (Polymethylmethacrylate [acrylic])						
Cable Runs	10m maximum (at 10nF capacitive load)						
Approvals	CE, UL file #E321951, RoHS, TUV						

To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific part number's web page at www.AutomationDirect.com

LED Status Indicators







Sender						
LED	Finger & hand protection (YBB)					
Mode	Yellow when test mode is active					
Channel	Blue when channel 1 is selected					
Cnannei	Purple when channel 2 is selected					
	Steady orange when the screen is not fully aligned					
Alignment	Flashing orange when the first third of the screen is aligned					
	Off when screen is fully aligned					
	Steady orange when the lowest beam is not aligned					
Alignment	Flashing orange when the lowest beam is aligned					
	Off when screen is fully aligned					

Receiver					
LED	Finger & hand protection (YBB)				
Power	Green when power is ON				
Channel	Blue when channel 1 is selected				
Channel	Purple when channel 2 is selected				
Status	Green when OSSD outputs are ON				
Status	Red when OSSD outputs are OFF				

Contrinex Safety Light Curtains Hand-safe





Safety light curtain with 30 mm resolution

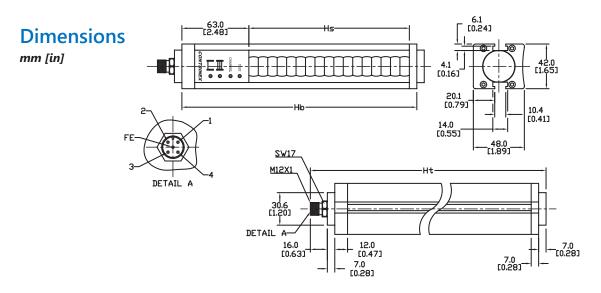
- Protective height from 279mm to 1827mm
- Operating distance up to 12m
- M12 quick-disconnect (order cable separately)
- Dual PNP outputs
- Sold as sender/receiver kits

- Mounting brackets included with all units
- Instruction manual and testing rod included with sender unit
- IP65, IP67 rated
- Type 4 and Category 4 PLe

	YBB-30 Series Safety Light Curtain Selection Table										
Part Number	Price	Protective Height Hs mm [in]	Housing Height Hb mm [in]	Total Height Ht mm [in]	Number of Beams	Current Consumption [mA]	Response Time [ms]	MTTFd (years)	DCavg	Product Weight per Unit	
YBB-30K4-0250-G012	\$010e5:	274 [10.79]	350 [13.78]	380 [14.96]	17	45 (sender) 85 (receiver)	5.2	142	96%	1500g 3.3 lb	
YBB-30K4-0400-G012	\$010e6:	403 [15.87]	479 [18.86]	509 [20.04]	25	45 (sender) 85 (receiver)	6.8	126	96%	2040g 4.50 lb	
YBB-30K4-0500-G012	\$010e7:	532 [20.94]	608 [23.94]	638 [25.12]	33	45 (sender) 90 (receiver)	8.4	114	96%	2600g 5.74 lb	
YBB-30K4-0700-G012	\$010e8:	661 [26.02]	737 [29.02]	767 [30.20]	41	45 (sender) 95 (receiver)	10	104	95%	3160g 6.96 lb	
YBB-30K4-0800-G012	\$;0010e9:	790 [31.10]	866 [34.09]	896 [35.28]	49	45 (sender) 100 (receiver)	11.6	96	95%	3700g 8.16 lb	
YBB-30K4-0900-G012	\$;0010ea:	919 [36.18]	995 [39.17]	1025 [40.35]	57	45 (sender) 100 (receiver)	13.2	89	95%	4260g 9.4 lb	
YBB-30K4-1000-G012	\$;0010eb:	1048 [41.26]	1124 [44.25]	1154 [45.43]	65	45 (sender) 105 (receiver)	14.8	83	95%	4800g 10.58 lb	
YBB-30K4-1200-G012	\$;-004144:	1177 [46.34]	1253 [49.33]	1283 [50.51]	73	45 (sender) 110 (receiver)	16.4	77	95%	5360 [11.82]	
YBB-30K4-1300-G012	\$;-004l45:	1306 [51.42]	1382 [54.41]	1412 [55.59]	81	45 (sender) 110 (receiver)	18	73	95%	5920 [13.05]	
YBB-30K4-1400-G012	\$;-004146:	1435 [56.49]	1511 [59.49]	1541 [60.67]	89	45 (sender) 115 (receiver)	19.6	69	95%	6460 [14.24]	
YBB-30K4-1600-G012	\$;-004147:	1564 [61.58]	1640 [64.57]	1670 [65.75]	97	45 (sender) 120 (receiver)	21.2	65	94%	7020 [15.48]	
YBB-30K4-1700-G012	\$;-004148:	1693 [66.65]	1769 [69.65]	1799 [70.83]	105	45 (sender) 125 (receiver)	22.8	62	94%	7560 [16.67]	
YBB-30K4-1800-G012	\$;-004149:	1822 [71.73]	1898 [74.72]	1928 [75.91]	113	45 (sender) 130 (receiver)	24.4	59	94%	8120 [17.90]	

Note: AutomationDirect does not recommend using these light curtains with any device other than our Safety Relay Light Curtain Controllers.

Contrinex Safety Light Curtains – Hand-safe



Pin outs

Assignment	Function		ires on Ider	Pins/Wires on Receiver		
		M12	Cable	M12	Cable	
Supply Voltage	24VDC for channel 1; 0V for channel 2	1	Brown	1	Brown	
Supply Voltage	0V for channel 1; 24VDC for channel 2	3	Blue	3	Blue	
Test Mode	0V test active; 24 V test inactive	4	Black	_	-	
Output	OSSD1 (Output Single Switching Device)	_	_	2	White	
Output	OSSD2 (Output Single Switching Device)	_	_	4	Black	
Functional Earth	Shield (Ground)	FE	Gray	FE	Gray	

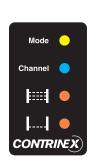
Note: Cable color represents standard industrial pinout. Confirm the specific color and pinout during installation.

Contrinex Safety Light Curtains – Hand-safe

YBB-30 Series Safety Light Curtain Specifications							
Resolution	30mm						
Safety Level	Category 4, PLe (EN/ISO 13849-1). Type 4 (IEC 61496-1/2)						
Beam Axis Interval	16mm						
Supply Voltage	24VDC ± 20%						
Current Consumption	See Selection Table						
Outputs	2 PNP outputs, short-circuit protected						
Output Current	Maximum 0.2 amps per output (@ 50°C/122°F)						
Output Voltage ON minimum	1.0 V less than the supplied operating voltage at 25°C (77°F)						
Output Voltage OFF	<1.0 V						
Leakage Current	< 1mA						
Maximum Load Inductance	100mH						
Response Time	See Selection Table						
Sender Wavelength	IR 880nm						
Operating Range	0.25 to 12m						
Protection Class	Class III (IEC 61140)						
Startup Delay	< 0.5 seconds						
Vibration Resistance	10 to 55Hz, 0.35 mm amplitude, 1 octave/min., 20 sweeps for each axis						
Shock Resistance	10g during 16ms, 1000 times for each axis						
Light Immunity	Incandescent lamp: 3000lx max. (light intensity on receiver surface) Xenon flash tube: flash duration 1.2 ms max. with a frequency of 2Hz max. (TS 61496-2)						
Operating Temperature	0 to 50°C (32 to 122°F)						
Storage Temperature	-25 to 70°C (-13 to 158°F)						
Humidity	15 to 95% (non-condensing)						
Degree of Protection (EN 60529)	IP65						
Ambient Brightness	TS 61496-2: 2006						
Reference Standards	IEC 61496-1, IEC 61496-2						
Housing Material	Aluminum, PMMA (Polymethylmethacrylate [acrylic]) front screen						
Material of Upper and Lower Cover	PA (Polyamide [nylon])+ 30% fiberglass						
Material of Optics	PMMA (Polymethylmethacrylate [acrylic])						
Cable Runs	100m [328.1 ft] maximum (at 10nF capacitive load)						
Approvals	CE, UL file #E321951, RoHS, TUV						

To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific part number's web page at www.AutomationDirect.com

LED Status Indicators





Sender						
LED	Finger & hand protection (YBB)					
Mode	Yellow when test mode is active					
Channel	Blue when channel 1 is selected					
Channel	Purple when channel 2 is selected					
	Steady orange when the screen is not fully aligned					
Alignment	Flashing orange when the first third of the screen is aligned					
	Off when screen is fully aligned					
	Steady orange when the lowest beam is not aligned					
Alignment	Flashing orange when the lowest beam is aligned					
	Off when screen is fully aligned					

Receiver					
LED	Finger & hand protection (YBB)				
Power	Green when power is ON				
Champel	Blue when channel 1 is selected				
Channel	Purple when channel 2 is selected				
Status	Green when OSSD outputs are ON				
Status	Red when OSSD outputs are OFF				

Contrinex Safety Light Curtains Access Control



Safety light curtain with 300mm or 400mm beam gap

- Protective height from 832 to 1232 mm [32.76 to 48.5 in]
- Operating distance from 1 to 15 m [3.28 to 49.21 ft], 10 to 50 m [32.81 to 164.04 ft] – configurable
- M12 quick-disconnect (order cable separately)
- Dual PNP outputs
- Sold as sender/receiver kits

- · Mounting brackets included with all units.
- Instruction manual and testing rod included with sender unit.
- IP65, IP67 rated
- Type 4 and Category 4 PLe

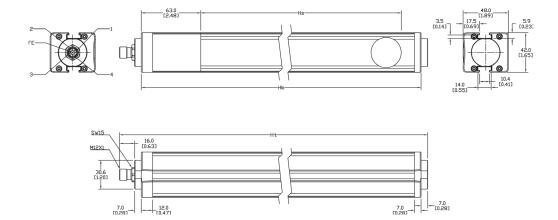


	YCA-50 Series Safety Light Curtain Selection Table										
Part Number	Price	Protective Height (Hs) mm [in]	HousingHeight (Hb) mm [in]	Total Height Ht mm [in]	No. of Beams	Current Consumption [mA]	Response Time [ms]	MTTFd (years)	DC _{avg}	Weight g [lb]	Resolution mm [in]
YCA-50K4-3400-G012	\$-04l4a:	832 [32.76]	995 [39.17]	1025 [40.35]	3	35 (sender) 75 (receiver)	4.2	108	96.9%	4280 [9.44]	400 [15.75]
YCA-50K4-4300-G012	\$-04I4b:	932 [36.69]	1124 [44.25]	1154 [45.43]	4	35 (sender) 75 (receiver)	5.0	100	96.9%	4840 [10.67]	300 [11.81]
YCA-50K4-4400-G012	\$-04I4c:	1232 [48.50]	1382 [54.41]	1412 [55.59]	4	35 (sender) 75 (receiver)	5.0	100	96.9%	5940 [13.10]	400 [15.75]

Note: AutomationDirect does not recommend using these light curtains with any device other than our Safety Relay Light Curtain Controllers.

Dimensions

mm [in]



Pin outs

Assignment	Function	Pins/W	ires on Sender	Pins/Wires on Receiver		
		M12	Cable	M12	Cable	
Supply Voltage	24VDC for channel 1; 0V for channel 2	1	Brown	1	Brown	
Supply Voltage	0V for channel 1; 24VDC for channel 2	3	Blue	3	Blue	
Sensing Range Selection	24V: 1-15m 0V: 10-50m	2	White	-	-	
Sensing Range Selection	24V: 10-50m 0V: 1-15m	4	Black	-	_	
Output	OSSD1 (Output Single Switching Device)	_	-	2	White	
Output	OSSD2 (Output Single Switching Device)	_	_	4	Black	
Functional Earth	Shield (Ground)	FE	Gray	FE	Gray	

Note: Cable color represents standard industrial pinout. Confirm the specific color and pinout during installation.

Contrinex Safety Light Curtains Access Control

YCA-50 Series Safety Light Curtain Specifications							
Beam Gap	300 or 400mm						
Safety Level	Category 4, PL e (EN/ISO 13849-1). Type 4 (IEC 61496-1/2)						
Supply Voltage	24VDC ± 15%						
Current Consumption	See Selection Table						
Outputs	2 PNP outputs, short-circuit protected						
Output Current	Maximum 0.2 amps per output (@ 50°C/122°F)						
Output Voltage ON minimum	1.0 V less than the supplied operating voltage at 25°C (77°F)						
Output Voltage OFF	<1.0 V						
Leakage Current	< 1mA						
Maximum Load Inductance	100mH						
Response Time	See Selection Table						
Sender Wavelength	IR 880nm						
Operating Range	1 to 15m / 10 to 50m (configurable)						
Protection Class	Class III (IEC 61140)						
Startup Delay	< 0.5 seconds						
Vibration Resistance	10 to 55Hz, 0.35 mm amplitude, 1 octave/min., 20 sweeps for each axis						
Shock Resistance	10g during 16ms, 1000 times for each axis						
Light Immunity	Incandescent lamp: 3000lx max. (light intensity on receiver surface) Xenon flash tube: flash duration 1.2 ms max. with a frequency of 2Hz max. (TS 61496)						
Operating Temperature	0 to 50°C (32 to 122°F)						
Storage Temperature	-25 to 70°C (-13 to 158°F)						
Humidity	15 to 95% (non-condensing)						
Degree of Protection (EN 60529)	IP65, IP67						
Ambient Brightness	TS 61496-2						
Reference Standards	IEC 61496-1, IEC 61496-2						
Housing Material	Aluminum, PMMA (Polymethylmethacrylate [acrylic]) front screen						
Material of Upper and Lower Cover	PA (Polyamide [nylon])+ 30% fiberglass						
Material of Optics	PMMA (Polymethylmethacrylate [acrylic])						
Cable Runs	10m maximum (at 10 nF capacitive load)						
Approvals	CE, UL file #E321951, RoHS, TUV						

To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific part number's web page at <u>www.AutomationDirect.com</u>

LED Status Indicators





Sender							
LED	Access protection (YCA)						
	Off when maximum operating range 15m						
Mode	Blue when maximum operating range 50m						
	Red or Purple in case of wiring error						
Channel	Blue when channel 1 is selected						
Channel	Purple when channel 2 is selected						
	Steady orange when the screen is not fully aligned						
Alignment	Flashing orange when the first third of the screen is aligned						
	Off when screen is fully aligned						
	Steady orange when the lowest beam is not aligned						
Alignment	Flashing orange when the lowest beam is aligned						
	Off when screen is fully aligned						

	Receiver					
LED	Access protection (YCA)					
Power	Green when power is ON					
Channal	Blue when channel 1 is selected					
Channel	Purple when channel 2 is selected					
Status	Green when OSSD outputs are ON					
Status	Red when OSSD outputs are OFF					

Contrinex Safety Columns

Contrinex Safety Columns Selection Chart								
Part Number	Price	Description	Use With					
Mirror Columns								
YXC-1280-M11	\$04h1d:	Contrinex mirror column, 1281mm [50.43 in] housing, 1082mm [42.60 in] mirror(s). For use with safety light curtains. Mounting hardware included.	YBB-xxxx-0150-xxxx to YBB-xxxx-0900-xxxx YCA-xxxx-3400-xxxx					
<u>YXC-1715-M11</u>	\$04h1e:	Contrinex mirror column, 1716mm [67.56 in] housing, 1532mm [60.31 in] mirror(s). For use with safety light curtains. Mounting hardware included.	YBB-xxxx-0150-xxxx to YBB-xxxx-1400-xxxx YCA-xxxx-3400-xxxx to YCA-xxxx-4400-xxxx					
YXC-2015-M11	\$;;004h1f:	Contrinex mirror column, 2016mm [79.37 in] housing, 1682mm [66.22 in] mirror(s). For use with safety light curtains. Mounting hardware included.	YBB-xxxx-0150-xxxx to YBB-xxxx-1600-xxxx YCA-xxxx-3400-xxxx to YCA-xxxx-4400-xxxx					
YXC-2215-M11	\$;004h1g:	Contrinex mirror column, 2216mm [87.24 in] housing, 1832mm [72.13 in] mirror(s). For use with safety light curtains. Mounting hardware included.	YBB-xxxx-0150-xxxx to YBB-xxxx-1700-xxxx YCA-xxxx-3400-xxxx to YCA-xxxx-4400-xxxx					
YXC-1185-M23	\$04h1h:	Contrinex mirror column, 1185mm [46.65 in] housing, (3) 90mm [3.54 in] mirror(s). For use with safety light curtains. Mounting hardware included.	YCA-xxxx-3400-xxxx					
YXC-1285-M24	\$-04h1i:	Contrinex mirror column, 1285mm [50.59 in] housing, (4) 90mm [3.54 in] mirror(s). For use with safety light curtains. Mounting hardware included.	YCA-xxxx-4300-xxxx					
Protective Colu	mns							
YXC-0985-F00	\$-04h1j:	Contrinex protective column, 965mm [37.99 in] housing. For use with safety light curtains. Mounting hardware included.	YBB-xxxx-0150-xxxx to YBB-xxxx-0800-xxxx					
YXC-1285-F00	\$04h1k:	Contrinex protective column, 1265mm [49.80 in] housing. For use with safety light curtains. Mounting hardware included.	YBB-xxxx-0150-xxxx to YBB-xxxx-1000-xxxx YCA-xxxx-3400-xxxx.					
YXC-1740-F00	\$-04h1l:	Contrinex protective column, 1720mm [67.72 in] housing. For use with safety light curtains. Mounting hardware included.	YBB-xxxx-0150-xxxx to YBB-xxxx-1400-xxxx YCA-xxxx-3400-xxxx to YCA-xxxx-4400-xxxx					
YXC-2040-F00	\$04h1n:	Contrinex protective column, 2020mm [79.53 in] housing. For use with safety light curtains. Mounting hardware included.	YBB-xxxx-0150-xxxx to YBB-xxxx-1700-xxxx YCA-xxxx-3400-xxxx to YCA-xxxx-4400-xxxx					
Other								
YXL-0001-000	\$;00?tu:	Laser alignment tool for safety light curtains, class 2 laser, range up to 50m [164.04 ft], useable and clippable to YBB and YCA light curtains models, 2 AA batteries included.	V/DD 0					
YXW-0001-000	\$490:	Safety light curtain mounting brackets for top and bottom mounting. Plastic. 2/pk.	YBB Series YCA Series					
<u>YXW-0003-000</u>	\$491:	Safety light curtain sliding T-nuts for side mounting. Metal. 2/pk. Ideal torque from M5x0.8 thread is 6 N•m (4.42 lb•ft, 53.1 lb•in).	10/100/100					



Light Curtain Mirror Columns

- Multi-sided safeguarding of danger zones
- Robust protective profile
- 10% reduction of operating distance for mirror



Light Curtain Protective Columns

- Automatically bounces back after physical shock or vibration.
- Robust baseplate allows radial and vertical alignment.
- Solid aluminum profile



YXW-0001-000



YXW-0003-000

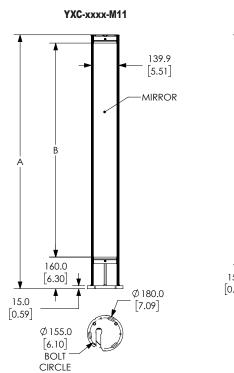


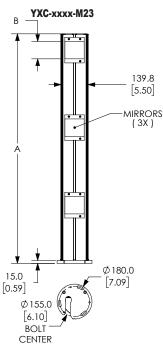
YXL-0001-000

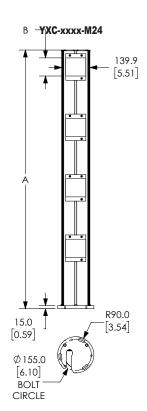
Contrinex Safety Columns

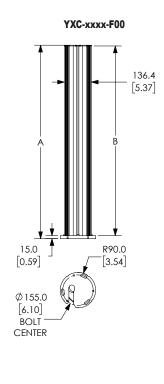
Dimensions

mm [in]









Safety Light Curtains Mirror Columns Dimensions								
Part Number	Total Height A mm [in]	Mirror Height B mm [in]	Height to Lowest Beam mm [in]	Beam Gap mm [in]				
YXC-1280-M11	1281 [50.43]	1082 [42.60]	_	-				
YXC-1715-M11	1716 [67.56]	1532 [60.31]	_	-				
YXC-2015-M11	2016 [79.37]	1682 [66.22]	_	-				
YXC-2215-M11	2216 [87.24]	1832 [72.13]	-	-				
YXC-1185-M23	1185 [46.65]	90 [3.54]	300 [11.81]	400 [15.75]				
YXC-1285-M24	1285 [50.59]	90 [3.54]	300 [11.81]	300 [11.81]				

Safety Light Curtains Protective Columns Dimensions								
Part Number	Total Height A mm [in]	Housing Height B mm [in]						
YXC-0985-F00	985 [38.78]	965 [37.99]						
YXC-1285-F00	1285 [50.59]	1265 [49.80]						
YXC-1740-F00	1740 [68.50]	1720 [67.72]						
YXC-2040-F00	2040 [80.31]	2020 [79.53]						

Note: Full and open top caps are provided to accommodate taller units.

Contrinex Safety Light Curtains Accessories

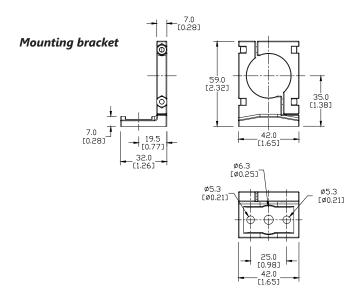
Safety Light Curtains Accessories Overview							
Part Number	Price	Description	Use With				
YXL-0001-000	\$;00?tu:	Laser alignment tool for safety light curtains, class 2 laser, range up to 50 meters, useable and clippable to YBB and YCA light curtains models, 2 AAA batteries included.					
<u>YXW-0001-000</u>	\$490:	Safety light curtain mounting brackets for top and bottom mounting. Plastic. 2/pk.	YBB Series YCA Series				
YXW-0003-000	\$491:	Safety light curtain sliding T-nuts for side mounting. Metal. 2/pk. Ideal torque from M5x0.8 thread is 6 Nm (4.42 lb-ft, 53.1 lb-in.).	TOMOGRA				



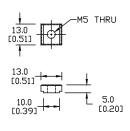




Dimensions mm [in]



T-Nuts for side mounting

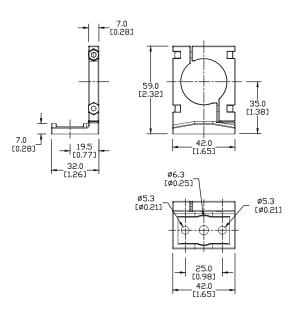


Contrinex Safety Light Curtains Accessories

Mounting bracket



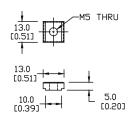
YXW-0001-000



T-Nuts for side mounting



YXW-0003-000



Laser Alignment Tool

- Clips on YBB and YCA Curtains/ Barriers
- High quality lens for narrow output beam
- Up to 50m [164ft] range
- <1mW output power
- Standard AA batteries included

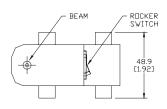


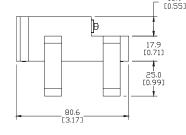
YXL-0001-000

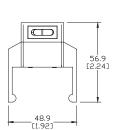
Laser Alignment Tool YXL-0001-000 Specifications						
Supply Voltage Range	2.5 – 3.3 VDC					
Laser Module Optical Output Power	<1mW (Class 2)					
Range	50m (164ft)					
Ambient Temperature Range	0-40°C (32-104°F)					
Storage Temperature Range	0-60°C (32-140°F)					
Wavelength	655nm ± 1%					
Laser Beam Spot Size at 10m	< 10mm					
Divergence Angle	1.1 mrad					
Housing Material	PA with 30% fiberglass					
Mounting	Clippable onto YBB / YCA devices					
Weight	95g (0.21 lb)					

Dimensions

mm [in]







See our website www.AutomationDirect.com for complete engineering drawings.



Warning: Safety products sold by AutomationDirect are Safety components only.

The purchaser/installer is solely responsible for the application of these components and ensuring all necessary steps have been taken to assure each application and use meets all performance and applicable safety requirements and/or local, national and/or international safety codes as required by the application. AutomationDirect cannot certify that our products used solely or in conjunction with other AutomationDirect or other vendors' products will assure safety for any application.

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Contrinex Extended Slim Safety Light Curtains (14mm Beam Resolution)



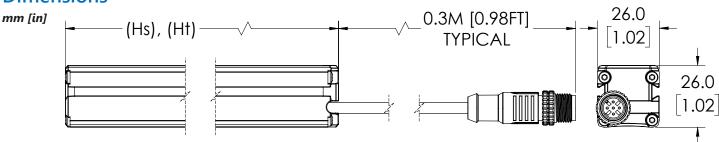
Features

- · No blind zone
- Beam coding, EDM, start and restart interlock configurable functions
- Protected height: 170mm to 1290mm [6.69 to 50.79 in]
- Operating range: 0.4 to 5.0 m [1.31 to 16.4 ft]
- Type 4 according to IEC 61496-1/2
- SIL 3 according to IEC 61508
- Category 4, PLe according to EN/ISO 13849-1
- Permanent autocontrol and optical sync
- Wireless configuration through Bluetooth®



Contrinex 14mm [0.55 in] Resolution Extended Slim Safety Light Curtains Selection Chart (Sender/Receiver Pair)										
Part Number	Price	Description	Protecteive Height (Hs) mm [in]	Total Height (Ht) mm [in]	Number of Beams	Current Consumption (mA max)	Response Time (ms)	MTTFd (years)	DCavg (%)	Weight g [lb]
YBES-14K4-0170-P012	\$-04I3y:	Sender/Receiver Pair	170 [6.69]	170 [6.69]	16	30 (S), 35 (R)	9.6	2780	96.99	300 [0.66]
YBES-14K4-0330-P012	\$-04l3z:	Sender/Receiver Pair	330 [12.99]	330 [12.99]	32	30 (S), 35 (R)	13.2	2364	97.29	520 [1.14]
YBES-14K4-0490-P012	\$;-0413]:	Sender/Receiver Pair	490 [19.29]	490 [19.29]	48	30 (S), 35 (R)	16.8	2055	97.52	740 [1.63]
YBES-14K4-0650-P012	\$;;-004l3[:	Sender/Receiver Pair	650 [25.59]	650 [25.59]	64	30 (S), 35 (R)	20.4	1818	97.69	980 [2.16]
YBES-14K4-0810-P012	\$;-004I3_:	Sender/Receiver Pair	810 [31.89]	810 [31.89]	80	30 (S), 35 (R)	24	1630	97.82	1200 [2.65]
YBES-14K4-0970-P012	\$;-004l3s:	Sender/Receiver Pair	970 [38.19]	970 [38.19]	96	30 (S), 35 (R)	27.6	1477	97.93	1420 [3.13]
YBES-14K4-1130-P012	\$;;-004l3t:	Sender/Receiver Pair	1130 [44.49]	1130 [44.49]	112	30 (S), 35 (R)	31.2	1351	98.02	1640 [3.62]
YBES-14K4-1290-P012	\$;-004l3u:	Sender/Receiver Pair	1290 [50.79]	1290 [50.79]	128	30 (S), 35 (R)	34.8	1244	98.10	1860 [4.10]

Dimensions



Assignment	Function		Wires ender	Pins/Wires On Receiver			
		M12	Cable	M12	292 Cable	295 Cable	
Supply Voltage	24VDC	1	Brown	2	Brown	White	
Supply Voltage	0V	3	Blue	7	Blue	Violet	
Test Mode	24V: Test Inactive; 0V: Test Active	4	Black	_	_	-	
Output	OSSD1 (Output Single Switching Device)	_	_	5	Gray	Gray	
Output	OSSD2 (Output Single Switching Device)	-	_	6	Pink	Pink	
Earth Ground	Shield (Ground)	FE	Gray	FE	Red	Orange	
EDM	EDM Input	_	_	4	Yellow	Black	
Restart Interlock	Input For Researt Button	-	_	1	White	Brown	
Not Used	-	2	White	3	Green	Blue	



M12 pigtail, 0.3 m, 5 pins



M12 pigtail, 0.3 m, 8 pins

Contrinex Extended Slim Safety Light Curtains (14mm Beam Resolution)

C	Contrinex Extend	ded Slim Safety Light Curtains YBES-14K4-xxxx-P012 Specifications			
Resolution		14mm [0.55 in]			
Beam Axis Inte	erval	10mm [0.39 in]			
Effective Apert	ure Angle	< ± 2.5° (when operating distance ≥ 3m [9.84 ft])			
Operating Ran	ge	0.4-5 m [1.31-16.4 ft]			
Supply Voltage)	24VDC ± 20%			
Polarity		2 PNP outputs			
Output Protect	rion	Short-circuit, overload protected			
Output Monitor	ring	Cross-circuit monitored			
Output Current	t	Maximum 400mA per output (at 55°C [131°F])			
Output Voltage	ON Minimum	-2V @ 400mA of the operating voltage			
Output Voltage	OFF Maximum	1.0 V			
Output Monitor	ring Frequency	5Hz			
Leakage Curre	nt In OFF State	< 2mA			
Maximum Load	d Inductance	100mH			
Sender Wavele	ength	IR 850nm			
Safety Level		Cat. 4, PLe (EN/ISO 13849-1), Type 4 (IEC 61496-1/-2), SIL 3 (IEC 61508-1/-2/-3), SILCL3 (IEC 62061:A2)			
Electrical Prote	ection Class	III (IEC 61140)			
Startup Delay		<3\$			
Vibration Resis	stance	10 to 55 Hz, 0.35 mm amplitude, 1 octave/min, 20 sweeps for each axis			
Shock Resista	nce	10g during 16ms, 1000 times for each axis			
Light Immunity	′	Incandescent lamp: 3000 lx max. (light intensity on receiver surface); xenon flash tube: flash duration 1.2 ms max. with a frequency 2Hz max. (IEC 61496-2)			
Ambient Temp	erature Range	0 to +55°C (32 to 131°F)			
Storage Tempe	erature Range	-25 to +70°C (-13 to +158°F)			
Air Humidity		15-95% (non-condensing)			
Enclosure Rati	ing	IP65 (EN 60529/A1)			
Housing Mater	ial	Aluminum profile, PC front screen, upper and lower cover PA + 30% fiberglass			
Cable Runs		100m [328 ft] max. (at 10nF capacitive load)			
	Safety	IEC 61496 -1/-2, IEC 61508-1/-2/-3, IEC 62061:A2, ISO 13849-1, EN 60204-1, EN 50178			
	Environment	EN 60068-2-1, 2, 3, 6, 27			
Reference Standards	EMC	EN 61000-4-2, 3, 5, 6			
Stariuarus	Radio Disturbance	EN 55011/A2			
	Bluetooth®	Low energy (LE), V5.0 (compatible 4.1 or later)			
EDM (External	Device Monitoring)	Enabled or disabled			
Start and Resta	art Interlock	Automatic or manual			
Beam Coding		3 selectable codes			
Configuration		Through Bluetooth® with ContriApp, range <20m			
Connection		Receiver: 8-pole M12 pigtail (0.3 m [0.98 ft]). Sender: 5-pole M12 pigtail (0.3 m [0.98 ft]).			

Contrinex Extended Slim Safety Light Curtains (30mm Beam Resolution)



Features

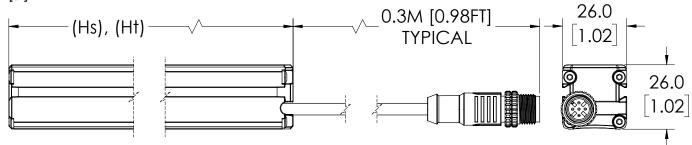
- No blind zone
- Beam coding, EDM, start and restart interlock configurable functions
- Protective height: 170 to 1610 mm [6.69 to 63.39 in]
- Operating range: 0.25 to 5 m [0.82 to 16.4 ft]
- Type 4 according to IEC 61496-1/2
- SIL 3 according to IEC 61508
- Category 4, PLe according to EN/ISO 13849-1
- Permanent autocontrol and optical sync
- Wireless configuration through Bluetooth®



Contrinex 30mm [1.18 in] l	Resolution Extend	ded Slim S	afety Ligh	t Curtai	ins Selectio	n Chart (Sender,	/Receiv	er Pair)
Part Number	Price	Description	Protective Height (Hs) mm [in]	Total Height Ht mm [in]	Number of Beams	Current Consumption (mA max)	Response Time (ms)	MTTFd (years)	DCavg (%)	Weight g [lb]
YBES-30K4-0170-P012	\$-04I3v:	Sender/Receiver Pair	170 [6.69]	170 [6.69]	8	30 (S), 35 (R)	7.8	3049	96.80	300 [0.66]
YBES-30K4-0330-P012	\$-04I3x:	Sender/Receiver Pair	330 [12.99]	330 [12.99]	16	30 (S), 35 (R)	9.6	2780	96.99	520 [1.14]
YBES-30K4-0490-P012	\$-0413#:	Sender/Receiver Pair	490 [19.29]	490 [19.29]	24	30 (S), 35 (R)	11.4	2555	97.16	740 [1.63]
YBES-30K4-0650-P012	\$;-04 3!:	Sender/Receiver Pair	650 [25.59]	650 [25.59]	32	30 (S), 35 (R)	13.2	2364	97.29	980 [2.16]
YBES-30K4-0810-P012	\$;-004l3?:	Sender/Receiver Pair	810 [31.89]	810 [31.89]	40	30 (S), 35 (R)	15	2199	97.41	1200 [2.65]
YBES-30K4-0970-P012	\$;;-004l3,:	Sender/Receiver Pair	970 [38.19]	970 [38.19]	48	30 (S), 35 (R)	16.8	2055	97.52	1420 [3.13]
YBES-30K4-1130-P012	\$;-004140:	Sender/Receiver Pair	1130 [44.49]	1130 [44.49]	56	30 (S), 35 (R)	18.6	1930	97.61	1640 [3.62]
YBES-30K4-1290-P012	\$;-004I41:	Sender/Receiver Pair	1290 [50.79]	1290 [50.79]	64	30 (S), 35 (R)	20.4	1818	97.69	1860 [4.10]
YBES-30K4-1450-P012	\$;-004I42:	Sender/Receiver Pair	1450 [57.09]	1450 [57.09]	72	30 (S), 35 (R)	22.2	1719	97.76	2080 [4.59]
YBES-30K4-1610-P012	\$;-004143:	Sender/Receiver Pair	1610 [63.39]	1610 [63.39]	80	30 (S), 35 (R)	24	1630	97.82	2300 [5.07]

Dimensions

mm [in]



Assignment	Function		Wires ender		Pins/Wire n Receiv	
		M12	Cable	M12	292 Cable	295 Cable
Supply Voltage	24VDC	1	Brown	2	Brown	White
Supply Voltage	0V	3	Blue	7	Blue	Violet
Test Mode	24V: Test Inactive; 0V: Test Active	4	Black	-	_	-
Output	OSSD1 (Output Single Switching Device)	-	-	5	Gray	Gray
Output	OSSD2 (Output Single Switching Device)	-	-	6	Pink	Pink
Earth Ground	Shield (Ground)	FE	Gray	FE	Red	Orange
EDM	EDM Input	_	_	4	Yellow	Black
Restart Interlock	Input For Researt Button	_	_	1	White	Brown
Not Used	-	2	White	3	Green	Blue



M12 pigtail, 0.3 m, 5 pins



M12 pigtail, 0.3 m, 8 pins

Contrinex Extended Slim Safety Light Curtains (30mm Beam Resolution)

	Contrinex Exten	ded Slim Safety Light Curtains YBES-30x4-xxxx-P012 Specifications	
Resolution		30mm [1.18 in]	
Beam Axis Interval		20mm [0.79 in]	
Effective Aperture Angle		< ± 2.5° (when operating distance ≥ 3 m [9.84 ft])	
Operating Range		0.25-5 m [0.82-16.4 ft]	
Supply Voltage	9	24VDC ± 20%	
Polarity		2 PNP outputs	
Output Protect	tion	Short-circuit, overload protected	
Output Monito	ring	Cross-circuit monitored	
Output Current	t	Maximum 400mA per output (at 55°C [131°F])	
Output Voltage	ON Minimum	-2V @ 400mA of the operating voltage	
Output Voltage	OFF Maximum	1.0 V	
Output Monito	ring Frequency	5Hz	
Leakage Curre	nt In OFF State	<2mA	
Maximum Load	d Inductance	100mH	
Sender Wavele	ength	IR 850nm	
Safety Level		Cat. 4, PLe (EN/ISO 13849-1), Type 4 (IEC 61496-1/-2), SIL 3 (IEC 61508-1/-2/-3), SILCL3 (IEC 62061:A2)	
Electrical Prote	ection Class	III (IEC 61140)	
Startup Delay		< 3s	
Vibration Resis	stance	10 to 55 Hz, 0.35 mm amplitude, 1 octave/min, 20 sweeps for each axis	
Shock Resista	nce	10g during 16ms, 1000 times for each axis	
Light Immunity	′	Incandescent lamp: 3000 lx max. (light intensity on receiver surface); xenon flash tube: flash duration 1.2 ms max. with a frequency of 2Hz max. (IEC 61496-2)	
Ambient Temp	erature Range	0 to +55°C (32 to 131°F)	
Storage Tempe	erature Range	-25 to +70°C (-13 to +158°F)	
Air Humidity		15-95% (non-condensing)	
Enclosure Rati	ing	IP65 (EN 60529/A1)	
Housing Mater	rial	Aluminum profile, PC front screen, upper and lower cover PA + 30% fiberglass	
Cable Runs		100m [328 ft]max. (at 10nF capacitive load)	
	Safety	IEC 61496 -1/-2, IEC 61508-1/-2/-3, IEC 62061:A2, ISO 13849-1, EN 60204-1, EN 50178	
	Environment	EN 60068-2-1, 2, 3, 6, 27	
Reference Standards	EMC	EN 61000-4-2, 3, 5, 6	
Ctarraaras	Radio Disturbance	EN 55011/A2	
Bluetooth®		Low energy (LE), V5.0 (compatible 4.1 or later)	
EDM (External	Device Monitoring)	Enabled or disabled	
Start and Resta	art Interlock	Automatic or manual	
Beam Coding		3 selectable codes	
Configuration		Through Bluetooth® with ContriApp, range <20m	
Connection		Receiver: 8-pole M12 pigtail (0.3 m [0.98 ft]). Sender: 5-pole M12 pigtail (0.3 m [0.98 ft]).	

Contrinex Safety Light Curtains YBxS Accessories

Contrinex Safety Light Curtains YBxS Accessories							
Part Number Price Description Material Mounting Use With							
<u>YXW-0005-000</u>	\$-4l4d:	Contrinex mounting bracket. Package of 2.	Glass fiber reinforced polyamide	Top and bottom mount	YBxS series light curtains		
YXW-0006-000	\$-4I4e:	Contrinex mounting bracket. Package of 2.	Stainless steel	Side mount	YBxS series light curtains		
YXW-0007-000	\$;-4I4f:	Contrinex mounting bracket. Package of 2.	Stainless steel	Side or end mount	YBxS series light curtains		







YXW-0005-000 YXW-0006-000 YXW-0007-000



Warning: Safety products sold by AutomationDirect are Safety components only.

The purchaser/installer is solely responsible for the application of these components and ensuring all necessary steps have been taken to assure each application and use meets all performance and applicable safety requirements and/or local, national and/or international safety codes as required by the application. AutomationDirect cannot certify that our products used solely or in conjunction with other AutomationDirect or other vendors' products will assure safety for any application.

Any person using or applying any products sold by AutomationDirect is responsible for learning the safety requirements for their individual application and applying them, and therefore assumes all risks, and accepts full and complete responsibility for the selection and suitability of the product for their respective application. AutomationDirect does not provide design or consulting services, and cannot advise whether any specific application or use of our products would ensure compliance with the safety requirements for any application.

Datalogic Safety Laser Scanners





Datalogic Safety Laser Scanners provide a cost-effective way to safeguard static applications such as robot cells and moving applications such as automatic guided vehicles (AGVs). They are also ideal for providing safe access to potentially dangerous locations or areas.

The Safety Laser Scanners are configurable to meet a wide range of area protection needs. They features a 275-degree viewing window and allow for several user-definable zones of protection.

These scanners can also be configured to filter out dust in order to eliminate false trips.

Features

- 275° viewing window
- Easy programming with intuitive Graphic User Interface (GUI)
- Three levels of advanced dust filtering configurable via GUI
- Can be installed to monitor either horizontally or vertically
- Configurable warning areas extending up to 40m [131.23 ft] out
- Two distinct and assignable warning signals
- Muting capability for vertical installations
- Three I/O points, each configured either as input or output via



Datalogic Safety Laser Scanner Selection Guide								
Part Number	Part Number Price Safe Operating Range Resolution Safe Operating Angle Angular Resolution Dimensional Drawing							
SLS-SA3-08	\$;;004]en:	Up to 3m [9.84 ft]	See Detection/Operating Range Chart	275°	0.1°	<u>PDF</u>		
<u>SLS-SA5-08</u>	SLS-SA5-08 \$;;004]eo: Up to 5.5 m [18.04 ft] See Detection/Operating Range Chart 275° 0.1° PDF							

Detection / Operating Range*				
	<u>SLS-SA3-08</u>	<u>SLS-SA5-08</u>		
30mm [1.18 in]	2.5 m [8.20 ft]	2.5 m [8.20 ft]		
40mm [1.57 in]	3m [9.84 ft]	3m [9.84 ft]		
50mm [1.97 in]	3m [9.84 ft]	4m [13.12 ft]		
70mm [2.76 in]	3m [9.84 ft]	5.5 m [18.04 ft]		
150mm [5.91 in]	3m [9.84 ft]	5.5 m [18.04 ft]		

^{*} Minimum operating range is 50mm [2.0 in]

General S	General Specifications				
Supply Voltage	24Vdc ± 20%				
Safety Outputs (OSSD)	0.25 A max / each OSSD				
Operating Temperature	-10 to 50 °C [14 to 122 °F]				
Humidity	Up to 95% (no condensation)				
Safety Category	Type 3, SIL 2, Pld				
PFHd	6.38 x 10-8				
Response Time	Varies based on configuration(min: 62ms)				
MTTFd	61 years				
DCavg	96.6%				
Degree of Protection	IP65				
Power Consumption	8W				
Weight	2.92 lb [1.32 kg]				
Connections	M12 8-pin QD (Power and I/O) M12 4-pin QD (Ethernet - configuration only)				
Maximum Connection Length 25m [82.02 ft]					
Warning Zone Operating Range	40m [131.2 ft]				
Certifications	TUV, CE, cULus				



Datalogic Safety Laser Scanners can manage two simultaneous warning zones and one safe zone. Safe zones can extend up to 5.5 m [18.04 ft], depending on the model, over an angle of 275 degrees. Warning zones can extend 40m [131.2 ft].

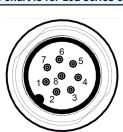
Datalogic Safety Laser Scanners



	I/O Point Options (only three may be selected)						
Type I/O	Description	Notes					
	Reset						
	Restart						
	Reset/Restart						
	EDM						
	Area Switch 1	Two area zones can be specified using	Up to six area zones can be specified using				
Inputs	Area Switch 2	Area Switch 1 and 2	Area Switch 1, 2, and 3 (When using four or more area zones, consult hardware				
	Area Switch 3		manual for info on zone set switching)				
	Warning 1						
	Warning 2						
	Muting 1	In real section of the section of					
	Muting 2	In order to activate muting both muting inputs must be used					
	Muting Enable	Can be used in combir	nation with muting function				
	Override	Can be used in combin	nation with muting function				
	Muting Lamp	Can be used in combir	nation with muting function				
Outputs	Override Status	Can be used in combination with muting function					
Outputs	Alarm 1	Clean W	indow Alarm				
	Alarm 2	General	General Fault Alarm				

Connection Diagrams

Connection (M12 8-pin)					
Pin	Pin Color* Description				
1	White	Selectable I/O (by GUI)			
2	Brown	24VDC			
3	Green Selectable I/O (by GUI)				
4	Yellow Selectable I/O (by GUI)				
5	Gray	Safety Output (OSSD)			
6	Pink	Safety Output (OSSD)			
7	Blue	0V			
8	8 Red Ground				
* This connec	tion chart is for	292 series 8-pin cables			

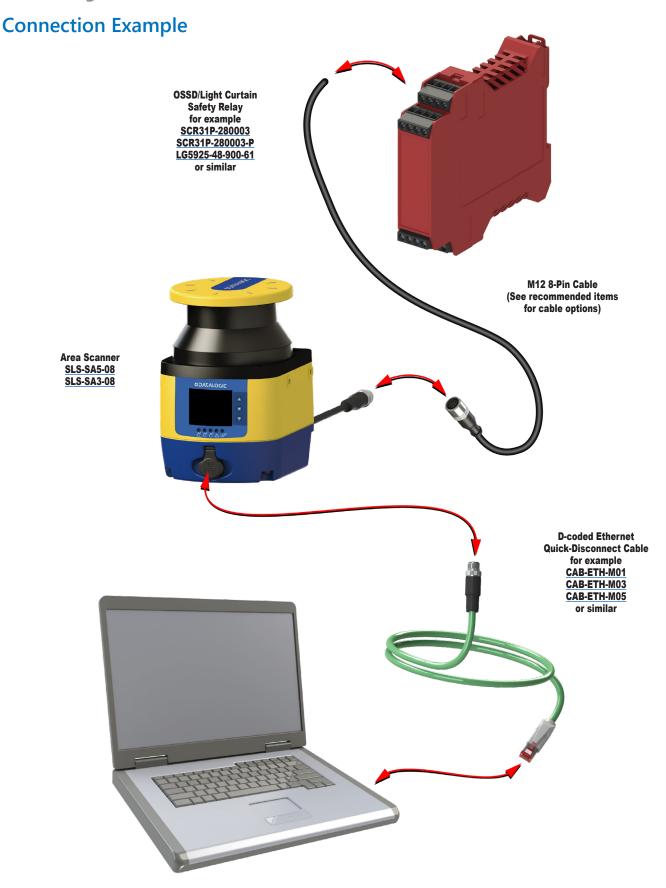


Connection (M12 D-coded Ethernet)			
Pin Signal			
1	TxD+, transmit data +		
2 RxD+, receive data +			
3	TxD-, transmit data -		
4	RxD-, receive data +		



Datalogic Safety Laser Scanners





Datalogic Safety Laser Scanners Accessories



Datalogic Laser Sentinel Area Scanner Accessories Selection Chart							
Part Number Price Description Weight (kg [lb]) Dimensional Drawing							
SLS-BRACKET-A	\$;04,5#:	Bracket, Mounting, Pitch and Roll Regulation Bracket System	0.53 [1.17]	<u>PDF</u>			
SLS-BRACKET-B	\$;;4,5!:	Bracket, Mounting, Pitch Regulation Bracket System	0.24 [0.53]	<u>PDF</u>			
SLS-BRACKET-C	\$;4,5?:	Bracket, Mounting, Head Protective Bracket	0.47 [1.04]	<u>PDF</u>			
SLS-WINDOW	\$;-04]el:	Lens, SLS, Replacement Window	0.22 [0.49]	PDF			

BRACKET WITH PITCH AND ROLL ADJUSTMENT



SLS-BRACKET-A



SLS-BRACKET-A assembled with SLS-SA5-08





SLS-BRACKET-B



SLS-BRACKET-B assembled with SLS-SA5-08

REPLACEMENT WINDOW **SLS-WINDOW**

HEAD PROTECTIVE BRACKET



SLS-BRACKET-C

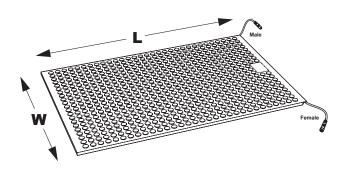


SLS-BRACKET-C assembled with **SLS-SA5-08**

ASO Safety Solutions SENTIR Straight Edge Safety Contact Mats







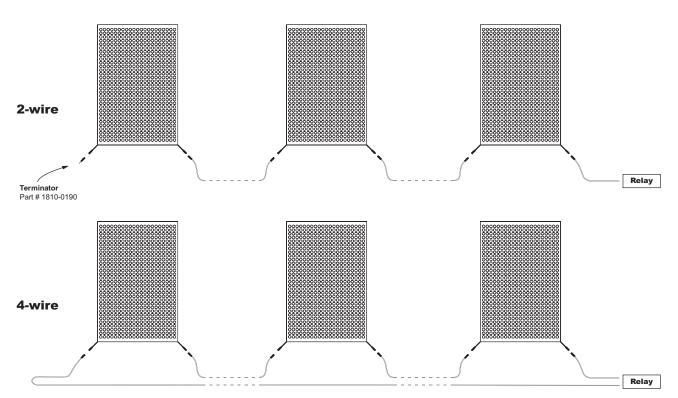
SENTIR safety contact mats are rectangular sections which are used to safeguard dangerous areas in industrial and production automation settings. Stepping on the mat triggers an immediate "stop" signal in order to prevent endangering movements.

SENTIR Straight Edge mats are designed with flexibility in mind. Two quick disconnect ends allow for easy single or multi-mat wiring in either 4-wire or 2-wire circuits with optional terminating resistor. The straight edge allows butting of additional mats and use of optional metal trim kits for securing to floor.

Features

- Straight edge ideal for trim kits and multi-mat configurations
- Ideal for 2-wire circuits with optional terminating resistor
- Can wire in 2 or 4-wire circuits
- · Male and Female quick disconnect
- Anti-slip surface
- Standard sizes available
- · Available in black and yellow
- Resistant against most contaminants and moisture up to IP65





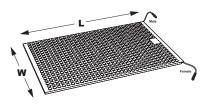
ASO Safety Solutions SENTIR Straight Edge Safety Contact Mats



1602-410x



ASO Safety Solutions Contact Mats - Straight Edge Style						
Part Number	Price	Width (W)	Length (L)	Mat Color	Drawing	
<u>1602-4107</u>	\$05dk#:	12in [304.8 mm]	24in [609.6 mm]		<u>PDF</u>	
<u>1602-4108</u>	\$05dkh:	12in [304.8 mm]	36in [914.4 mm]		<u>PDF</u>	
<u>1602-4106</u>	\$-05dl4:	24in [609.6 mm]	24in [609.6 mm]	Black	PDF	
1602-4100	\$;01ob,:	24in [609.6 mm]	36in [914.4 mm]		PDF	
<u>1602-4101</u>	\$01oc0:	24in [609.6 mm]	48in [1219.2 mm]		PDF	
<u>1602-4102</u>	\$01oc1:	24in [609.6 mm]	60in [1524.0 mm]		<u>PDF</u>	
<u>1602-4103</u>	\$01oc2:	36in [914.4 mm]	36in [914.4 mm]		PDF	
1602-4104	\$01oc3:	36in [914.4 mm]	48in [1219.2 mm]		PDF	
1602-4105	\$01oc4:	36in [914.4 mm]	60in [1524.0 mm]		PDF	
1602-5390	\$-05dl6:	24in [609.6 mm]	36in [914.4 mm]	Yellow	PDF	
<u>1602-5391</u>	\$-05dl7:	24in [609.6 mm]	48in [1219.2 mm]	TellOW	PDF	







1810-0190







ASO Safety Solutions Terminating Resistors							
Part Number	Part Number Price Description Use With Contents Drawing						
<u>1810-0190</u>	\$1ohx:	Terminating resistor, 8.2 k ohm, 3-pin male M8 connector	Safety contact mats and bumpers	1 resistor	<u>PDF</u>		

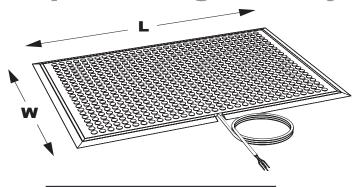
	ASO Safety Contact Mat Trim Kits and Corners							
Part Number	Price	Description	Material	Use With	Contents	Drawing		
<u>2010-0121</u>	\$-5dl1:	Trim kit	Aluminum	12 x 24 in safety mats	4 trim corners and 4 mat trim pieces	<u>PDF</u>		
2010-0122	\$-5dl2:	Trim kit	Aluminum	12 x 36 in safety mats	4 trim corners and 4 mat trim pieces	PDF		
2010-0120	\$-5dl3:	Trim kit	Aluminum	24 x 24 in safety mats	4 trim corners and 4 mat trim pieces	PDF		
<u>2010-0080</u>	\$;1obf:	Trim kit	Aluminum	24 x 36 in safety mats	4 trim corners and 4 mat trim pieces	<u>PDF</u>		
<u>2010-0081</u>	\$01obg:	Trim kit	Aluminum	24 x 48 in safety mats	4 trim corners and 4 mat trim pieces	<u>PDF</u>		
2010-0082	\$01obh:	Trim kit	Aluminum	24 x 60 in safety mats	4 trim corners and 4 mat trim pieces	<u>PDF</u>		
2010-0083	\$-01obi:	Trim kit	Aluminum	36 x 36 in safety mats	4 trim corners and 4 mat trim pieces	<u>PDF</u>		
2010-0084	\$-01obj:	Trim kit	Aluminum	36 x 48 in safety mats	4 trim corners and 4 mat trim pieces	<u>PDF</u>		
2010-0085	\$01obk:	Trim kit	Aluminum	36 x 60 in safety mats	4 trim corners and 4 mat trim pieces	<u>PDF</u>		
2010-0086	\$-1obl:	Mat trim	Aluminum	Safety contact mats	1 mat trim, 5ft [1.52 m] length	<u>PDF</u>		
2010-0087	\$1ohn:	Trim corner	Polyamide	Safety contact mats	1 corner	PDF		

Straight Edge Safety Contact Mats					
	General Specifications				
Height	14mm [0.55 in] with covering				
Material	Polyurethane				
Weight	24.9 kg/m ² [5.1 lb/ft ²]				
Switching Pressure	Test piece Ø 80mm [3.15 in] = approximately 150N				
Inactive Edge	16mm [0.63 in]				
Static Load	Max. 2,000N on Ø 80mm [3.15 in], tested according to DIN EN ISO 13856-1				
Response Time	< 25ms, tested according to DIN EN ISO 13856-1				
Electrical Capacity	24VDC, 100mA				
Connection Cables	One cable has a 3-pin male M8 connector, and the other cable has a 3-pin female M8 connector. Cables are 4.7 in [120mm] in length				
Mechanical Life	>1,000,000 cycles				
Protection Class	IP65				
Temperature Range	-10° to +55°C [+14° to +131°F]				
Agency Approvals	CE. cULus file E329422				

ASO Safety Solutions SENTIR Tapered Edge Safety Contact Mats









Use wire leads brown and white (1 & 2) for channel 1.

Use wire leads blue and black (3 & 4) for channel 2.

The channels should have continuity when pressure is applied to the mat.

Note: Wire leads brown and blue (1 & 3) will always have continuity, as will white and black (2&4).

SENTIR safety contact mats are rectangular sections which are used to safeguard dangerous areas in industrial and production automation settings. Stepping on the mat triggers an immediate "stop" signal in order to prevent endangering movements.

SENTIR tapered mats have an integrated taper profile ideal for placement without requiring additional edging. A single 6m cable is included to allow direct connection in a 4-wire circuit.

Features

- Low height of just 14mm [0.55 in]
- · Built-in ramp for flexible mounting and mat configurations
- 6m cable ideal for 4-wire circuits
- Anti-slip surface
- · Tested to more than 6 million activations
- Standard sizes available
- Available in black and yellow
- Resistant to most contaminants and moisture up to IP65



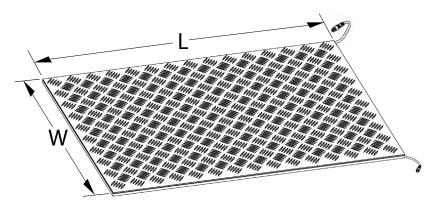
ASO Safety Solutions Contact Mats - Tapered Edge Style						
Part Number	Price	Width (W]	Length (L)	Mat Color	Cable Length	Drawing
1602-4096	\$-05dl5:	12in [304.8 mm]	24in [609.6 mm]			<u>PDF</u>
1602-4097	\$05dkg:	12in [304.8 mm]	36in [914.4 mm]			<u>PDF</u>
<u>1602-4560</u>	\$04508:	24in [609.6 mm]	24in [609.6 mm]	Black	<u>PDF</u>	
<u>1602-4090</u>	\$;01ob]:	24in [609.6 mm]	36in [914.4 mm]		PDF	
1602-4091	\$;01ob[:	24in [609.6 mm]	48in [1219.2 mm]			PDF
1602-4092	\$01ob_:	24in [609.6 mm]	60in [1524.0 mm]		19.6 ft [6m]	<u>PDF</u>
1602-4093	\$01ob#:	36in [914.4 mm]	36in [914.4 mm]			<u>PDF</u>
<u>1602-4094</u>	\$;01ob!:	36in [914.4 mm]	48in [1219.2 mm]			<u>PDF</u>
<u>1602-4095</u>	\$01ob?:	36in [914.4 mm]	60in [1524.0 mm]			<u>PDF</u>
1602-5380	\$;05dk,:	24in [609.6 mm]	36in [914.4 mm]			PDF
<u>1602-5381</u>	\$-05dl0:	24in [609.6 mm]	48in [1219.2 mm]	Yellow		<u>PDF</u>

	Tapered Edge Safety Contact Mats					
	General Specifications					
Height	14mm [0.55 in] with covering					
Material	Polyurethane					
Weight	26 kg/m ² [5.3 lb/ft ²]					
Switching Pressure	Test piece Ø 80mm [3.15 in] = approximately 150N					
Inactive Edge	16mm [0.63 in] (not including the tapered edge)					
Static Load	Max. 2,000N on Ø 80mm [3.15 in], tested according to DIN EN ISO 13856-1					
Response Time	< 25ms, tested according to DIN EN ISO 13856-1					
Electrical Capacity	24VDC, 100mA					
Connection Cables	19.6 ft [6m] pigtail cable					
Mechanical Life	>1,000,000 cycles					
Protection Class	IP65					
Temperature Range	-10° to +55° C [+14° to +131°F]					
Agency Approvals	CE, cULus file E329422					

ASO Safety Solutions SENTIR Diamond Plate Straight Edge Safety Contact Mats







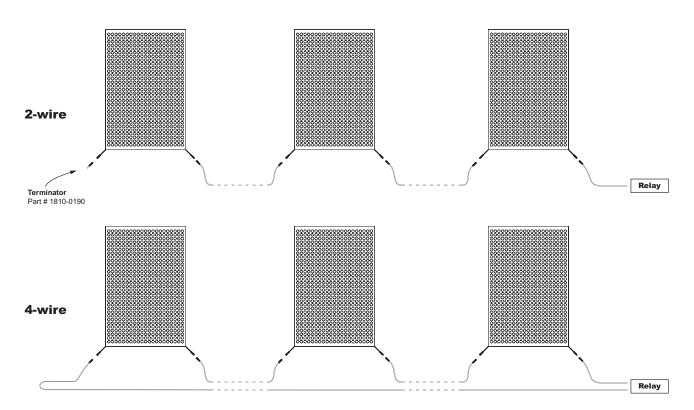
SENTIR safety contact mats are rectangular sections which are used to safeguard dangerous areas in industrial and production automation settings. Stepping on the mat triggers an immediate "stop" signal in order to prevent endangering movements.

SENTIR Straight Edge mats are designed with flexibility in mind. Two quick-disconnect ends allow for easy single or multi-mat wiring in either 2-wire or 4-wire circuits with optional terminating resistor. The straight edge allows butting of additional mats and use of optional metal trim kits for securing to the floor.

Features

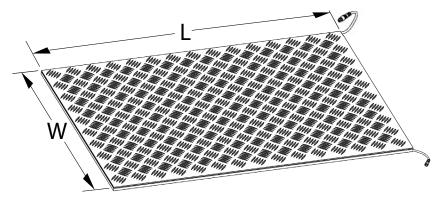
- Diamond plate sheet included to protect in harsh conditions
- Straight edge ideal for trim kits and multi-mat configurations
- Ideal for 2-wire circuits with optional terminating resistor
- Can wire in 2-wire or 4-wire circuits
- Male and female quick disconnect
- Two sizes available
- Resistant to most contaminants and moisture up to IP65





ASO Safety Solutions SENTIR Diamond Plate Straight Edge Safety Contact Mats









Use pins 1 and 3 for continuity. (See safety relay for wiring)



1602-4540

ASO Safety Solutions Contact Mats - Straight Edge Style								
Part Number	Price	Width (W)	Length (L)	Operating Voltage	Cable Length	Connection Cables	Drawing	
<u>1602-4540</u>	\$04506:	24in [609.6 mm]	36in [914.4 mm]	24VDC, 100mA		There are two	One cable has a 3-pin	<u>PDF</u>
<u>1602-4550</u>	\$04507:	24in [609.6 mm]	48in [1219.2 mm]		cables; each is 4.7 inches [120mm] in length	male M8 connector, and the other cable has a 3-pin female M8 connector	<u>PDF</u>	



1810-0190



2010-0086



2010-0087

ASO Safety Solutions Terminating Resistors					
Part Number	Price	Description	Use With	Contents	Drawing
<u>1810-0190</u>	\$1ohx:	Terminating resistor, 8.2 k ohm, 3-pin male M8 connector	Safety contact mats and bumpers	1 resistor	<u>PDF</u>

ASO Safety Contact Mat Trim Kits and Corners						
Part Number	Price	Description	Material	Use With	Contents	Drawing
2010-0080	\$;1obf:	Trim kit	Aluminum	24 x 36 in safety mats	4 trim corners and 4 mat trim pieces	<u>PDF</u>
<u>2010-0081</u>	\$01obg:	Trim kit	Aluminum	24 x 48 in safety mats	4 trim corners and 4 mat trim pieces	<u>PDF</u>
<u>2010-0086</u>	\$-1obl:	Mat trim	Aluminum	Safety contact mats	1 mat trim, 5ft [1524mm] length	<u>PDF</u>
2010-0087	\$1ohn:	Trim corner	Polyamide	Safety contact mats	1 corner	PDF

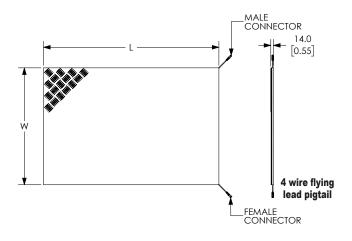
Straight Edge Safety Contact Mats					
	General Specifications				
Height	14mm [0.55 in] with covering				
Material Polyurethane and aluminum diamond plate surface					
Weight 31.5 kg/m ² [6.45 lb/ft ²]					
Switching Pressure Test piece Ø 80mm [3.15 in] = approximately 150N					
Inactive Edge	30mm [1.18 in] without optional trim installed 40mm [1.57 in] with optional trim installed				
Static Load	Max. 2,000N on Ø 80mm [3.15 in], tested according to DIN EN ISO 13856-1				
Response Time	< 25ms, tested according to DIN EN ISO 13856-1				
Electrical Capacity	24VDC, 100mA				
Mechanical Life	>1,000,000 cycles				
Protection Class	IP65				
Temperature Range	-20° to +55°C [-4° to +131°F]				
Agency Approvals	CE, cULus file E329422				

ASO Safety Solutions SENTIR Diamond Plate Straight Edge Safety Contact Mats

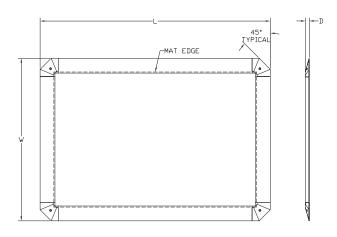
Dimensions

mm [in]

Contact Mats - Straight Edge (1602-41XX)

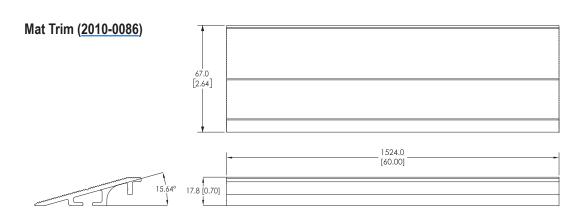


ITIIII KILS (ZUTU-UUOA)	Trim	Kits	(2010-008X)
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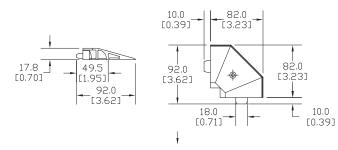


Part Information – Contact Mats (Straight Edge)						
Part number	W mm (in)	L mm (in)	D mm (in)			
1602-4540	COO C (O4)	914.4 (36)	14 (0.55)			
<u>1602-4550</u>	609.6 (24)	1219.2 (48)	14 (0.55)			

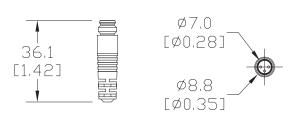
Part Information – Trim Kits						
Part number	W mm (in)	L mm (in)	D mm (in)			
2010-0080	722 5 (20.00)	1038.3 (40.88)	47.0 (0.70)			
2010-0081	733.5 (28.88)	1343.1 (52.88)	17.8 (0.70)			



Trim Corner (2010-0087)



Terminating Resistor (1810-0190)



See our website: www.AutomationDirect.com for complete Engineering Drawings.

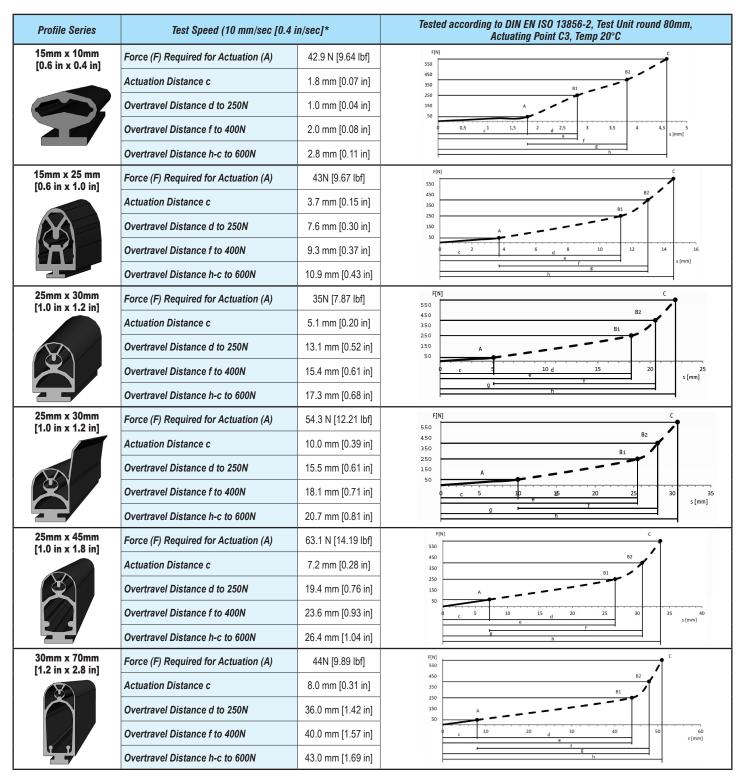
ASO Safety Solutions SENTIR Edges



Selecting the Edge Profile

ASO Safety Solutions offers several sizes of safety edges to fit most applications, including automatic gate, door, and machine applications. The size (profile) of the edge should be selected based on the application and overtravel permitted by the profile. If the edge experiences overtravel beyond the allowed amount, damage may occur. An additional important deciding factor to consider when determining which profile to use is sensitivity. Sensitivity is the amount of force required to activate the unit.

Where greater actuating forces or overtravel requirements are needed, a safety bumper may be the preferred approach.



^{*} For other speed data, please refer to product data sheets.



Use pins 1 and 3 for continuity. (See safety relay for wiring)

The SENTIR edge safety contact edges of ASO Safety Solutions are pressure-sensitive sensors applied to ensure the safety of closing edges at possible crushing or shearing points which are prone to accidents. They may be installed near automatic gates, machines and other facilities for handling equipment or moving stage elements in order to protect individuals from bodily harm or machinery from damage.

Features

- Optimized material properties guarantee fast switching results
- 2 edge lengths available that can be easily cut to fit any application
- Can wire in 2-wire or 4-wire circuits
- · Mounting rails included



1804-3731

ASO Safety Contact Edges - 15mm x 25mm							
Part Number	Price	Profile	Length	End Caps	Aluminum Mounting Rail	Drawing	
<u>1502-4730</u>	\$;44,#:	15mm x 25mm [0.59 x 0.98 in]	2.0 ft	End caps not	Included	PDF	
<u>1502-4731</u>	\$;;44,!:		5.0 ft	included; choose from table below		<u>PDF</u>	



1804-3741

ASO Safety Contact Edge End Caps - 15mm x 25mm						
Part Number	Price	Description	Connection	Drawing		
<u>1804-3730</u> *	Retired	Safety contact edge end cap	3-pin female M8 connector 1.65 ft [0.5 m] cable length	<u>PDF</u>		
<u>1804-3740</u> *	Retired	Safety contact edge end cap	3-pin male M8 connector 1.65 ft [0.5 m] cable length	<u>PDF</u>		
<u>1804-3720</u> *	Retired	Terminating resistor end cap: 8.2KΩ for 15mm x 25mm safety contact edge	NA	PDF		
<u>1804-3731</u>	\$-5dkl:	Safety contact edge end cap	3-pin female M8 connector 1.65 ft [0.5 m] cable length	<u>PDF</u>		
<u>1804-3741</u>	\$-5dki:	Safety contact edge end cap	3-pin male M8 connector 1.65 ft [0.5 m] cable length	<u>PDF</u>		
<u>1804-3721</u>	\$-5dl9:	Terminating resistor end cap: 8.2KΩ for 15mm x 25mm safety contact edge	NA	PDF		

^{*} Products will be discontinued once out of stock.



1804-3721

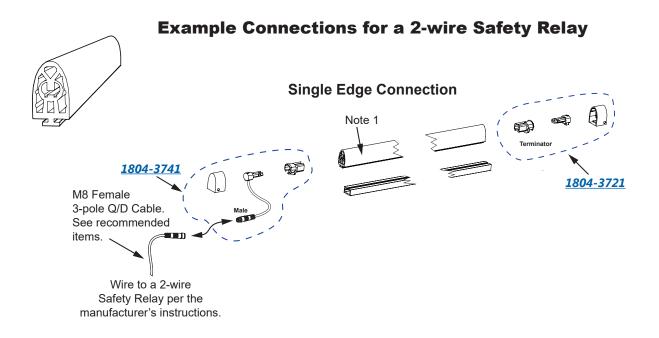
ASO Safety Solutions Industrial Shears						
Part Number Price Description Use With Co						
<u>9501-0160</u>	\$-1ohl:	Stainless steel industrial shears	Safety contact edges	1 shear		

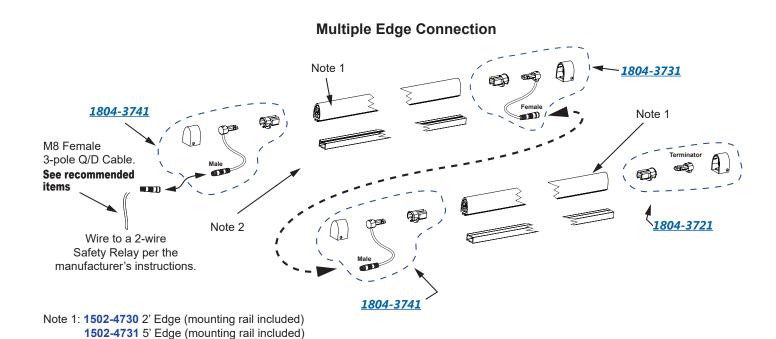


Selection

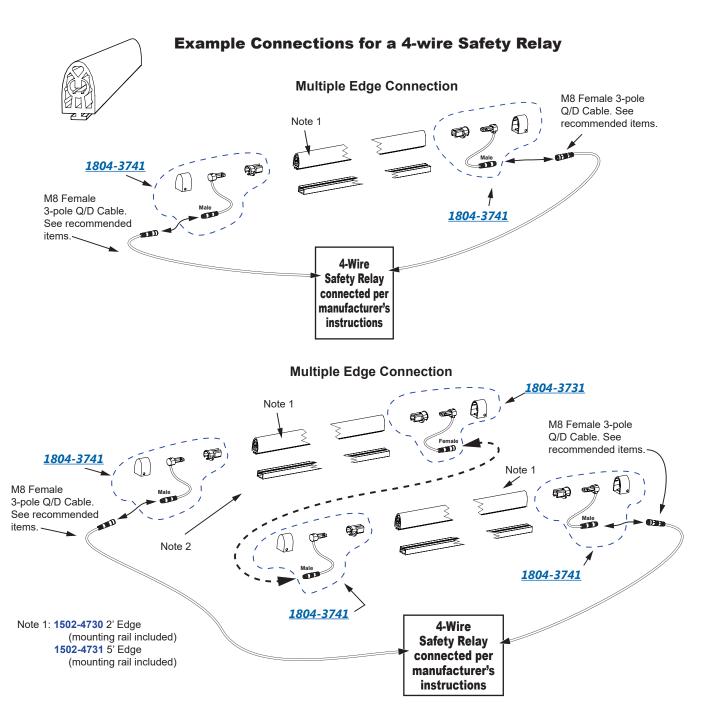
Use the following Example Connections drawings to help you select the correct components for your system.

Example Connections - 15mm x 25mm edges and end caps





Example Connections - 15mm x 25mm edges and end caps



SENTIR 15mm x 25mm Edges					
	General Specifications				
Material	TPE				
Material Hardness	68 Shore A				
Weight (per meter)	0.2 kg/m [0.14 lb/ft]				
Protection Class (Enclosure)	IP65				
Switching Cycles	>30,000 (UL 325)				
Switching Angle	±45°				
Actuation Resistance	≤ 500Ω				
Actuation Force	43N @ 10mm/s [0.4 in/s] approach speed				
Mechanical Life	10,000 cycles				
Electrical Capacity	24VDC, 10mA				
Max. Temperature Range	-25° to 75°C [-13° to 167°F]				
Operating Temperature	-10° to 50°C [+14° to 122°F]				
Max. Series Connection	5 contact edges or 100m [328.08 ft] based on the ASO safety relay 1114-0210				
Inactive End Region with Higher Forces	30mm [1.18 in]				
Connection Cables	LIY11Y 2 x 0.34mm ² (22AWG)				
Cable Material	PUR matte black				
Agency Approvals	UL Recognized file E341185, CE				

ASO Safety Solutions 15mm x 10mm SENTIR Edges (factory assembled)



The SENTIR edge safety contact edges of ASO Safety Solutions are pressure-sensitive sensors applied to ensure the safety of closing edges at possible crushing or shearing points which are prone to accidents. They may be installed near automatic gates, machines and other facilities for handling equipment or moving stage elements in order to protect individuals from bodily harm or machinery from damage.

Features

- Optimized material properties guarantee fast switching results
- 12 edge lengths available
- Can wire in 2-wire circuits
- · Mounting rails included
- Factory assembled (cannot be modified)

	ASO Safety Contact Edges - 15mm x 10mm								
Part Number	Price	Profile	Length	End Caps	Aluminum Mounting Rail	Drawing			
<u>1501-1460</u>	\$;44,y:		4in [0.102 m]			PDF			
<u>1501-1461</u>	\$;44,z:		6in [0.152 m]			PDF			
<u>1501-1462</u>	\$;;44,]:		8in [0.203 m]	8.2K ohm terminating resistor and 2.5 m [8.2 ft] cable with flying pigtail leads included. These are factory installed.	Included	PDF			
<u>1501-1463</u>	\$;;44,[:		1ft [0.305 m]			PDF			
<u>1501-1464</u>	\$;44,_:	15mm x 10mm [0.59 in x 0.39 in]	1.2 ft [0.366 m]			<u>PDF</u>			
<u>1501-1465</u>	\$4501:		1.5 ft [0.457 m]			PDF			
<u>1501-1466</u>	\$04502:		1.8 ft [0.549 m]			PDF			
<u>1501-1467</u>	\$04503:		2ft [0.61 m]			PDF			
<u>1501-1468</u>	\$04504:		2.5 ft [0.762 m]			PDF			
<u>1501-1469</u>	\$04505:		3 ft [0.914 m]			<u>PDF</u>			
<u>1501-1470</u>	\$04509:		3.5 ft [1.067 m]			<u>PDF</u>			
<u>1501-1471</u>	\$0450a:		4ft [1.219 m]			<u>PDF</u>			

ASO Safety Solutions 15mm x 10mm SENTIR Edges (factory assembled)

ASO Safety Contact Ed	lges - 15mm x 10mm Specifications
Material	TPE
Material Hardness	68 Shore A
Weight (per meter)	100g (3.53 oz) per meter
Protection Class (Enclosure)	IP65
Switching Cycles	10,000
Switching Angle	2 x 20°
Actuation Resistance	≤ 500 Ohms
Actuation Force	42N
Electrical Capacity	24VDC, 10mA
Max. Temperature Range	-25° to +75°C (-13° to +167°F)
Operating Temperature	-10° to +55°C (+14° to +131°F)
Max. Series Connection	5 contact edges or 100m [328.08 ft] based on the ASO safety relay 1114-0210
Inactive End Region with Higher Forces	30mm (1.18 in)
Connection Cables	LIY11Y 2 x 0.34 mm ² (22AWG)
Cable Material	PUR matte black
Agency Approvals	UL Recognized file E341185, CE







1502-6220



M8 Connector



Use pins 1 and 3 for continuity.

Price

\$1obs:

\$;01obt:

Part Number

1502-2110

1502-2111

1804-0565*

1804-2206

1804-2196

1804-0566

The SENTIR edge safety contact edges of ASO Safety Solutions are pressure-sensitive sensors applied to ensure the safety of closing edges at possible crushing or shearing points which are prone to accidents. They may be installed near automatic gates, machines and other facilities for handling equipment or moving stage elements in order to protect individuals from bodily harm or machinery from damage.

Features

Profile

25mm x 30mm

[0.984 in x 1.18 in] 25mm x 30mm

[0.984 in x 1.18 in]

- Optimized material properties guarantee fast switching results
- 4 edge lengths available that can be easily cut to fit any application
- Can wire in 2 or 4-wire circuits

Length

2.0 ft [0.61 m]

5.0 ft [1.52 m]

Terminating resistor end cap for 25mm x 30mm

safety contact edges, 8.2 k Ω

End cap for 25mm x 30mm safety contact edges

End cap for 25mm x 30mm safety contact edges

Terminating resistor end cap for 25mm x 30mm

safety contact edges, 8.2 kΩ

 Requires aluminum mounting rail (included with 2ft and 5ft edges) and offered in varying lengths

Aluminum

Mounting Rail

Included

Included

Sealing Lip

None

None

NA

3-pin female M8 connector

1.65 ft [0.5 m] cable length

3-pin male M8 connector

1.65 ft [0.5 m] cable length

Drawing

PDF

PDF

PDF

PDF

PDF

PDF

- · Available with a sealing lip
- Reference example connection drawings for easy product selection

End Caps





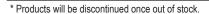
1804-2196



1804-0566

<u>1502-6220</u>	\$5dky:	25mm x 30mm [0.984 in x 1.18 in]	2.0 ft [0.61 m]	End caps not included;	Included	Single-sided	<u>PDF</u>	
<u>1502-6221</u>	\$5dkz:	25mm x 30mm [0.984 in x 1.18 in]	5.0 ft [1.52 m]	choose from table below	Included	Single-sided	<u>PDF</u>	
<u>1502-2112</u>	\$01obu:	25mm x 30mm [0.984 in x 1.18 in]	20.0 ft [6.10 m]		Not included	None	<u>PDF</u>	
<u>1502-2600</u>	\$;01oht:	25mm x 30mm [0.984 in x 1.18 in]	82.0 ft [25.0 m]		Not included	None	<u>PDF</u>	
	ASO Safety Contact Edge End Caps - 25mm x 30mm							
Part Number	Price	L	Description		Conn	ection	Drawing	
<u>1804-2205</u> *	Retired	End cap for 25mm x 30mm safety contact edges		ontact edges	3-pin female M8 connector 1.65 ft [0.5 m] cable length		<u>PDF</u>	
<u>1804-2195</u> *	\$1oho:	End cap for 25mm x 30mm safety contact edges		3-pin male M8 connector 1.65 ft [0.5 m] cable length		PDF		
					1.00 10 [0.0 11]	1 oabic iongin		

ASO Safety Contact Edges - 25mm x 30mm



Retired

\$5dkq:

\$5dkp:

\$5dkk:



9501-0160

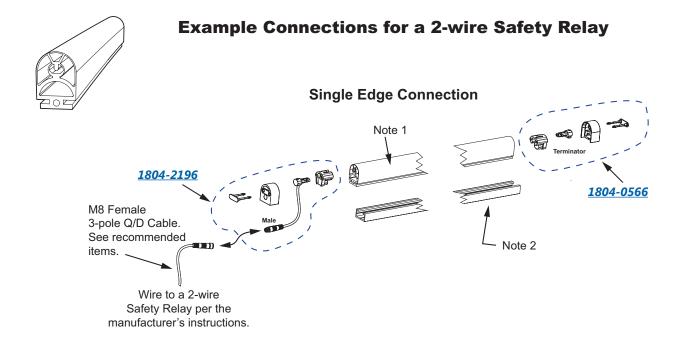
ASO Safety Contact Edge Mounting Rails							
Part Number Price Description Material Contents Draw							
2002-0230	\$01obo:	Contact edge mounting rail	Aluminum	Package of 4 rails, each 5ft [1.52 m] length	PDF		
2002-0231	\$1obp:	Contact edge mounting rail	Aluminum	1 rail, 2ft [609.6 mm] length	PDF		

ASO Safety Solutions Industrial Shears							
Part Number Price Description Use With Contents							
9501-0160 \$-10hl: Stainless steel industrial shears Safety contact edges 1 shear							

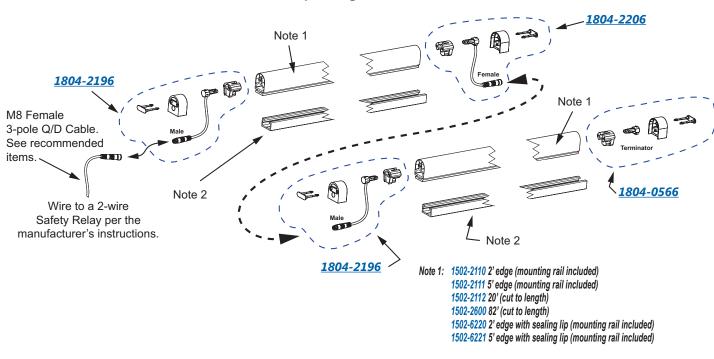
Selection

Use the following Example Connections drawings to help you select the correct components for your system.

Example Connections - 25mm x 30mm edges and end caps

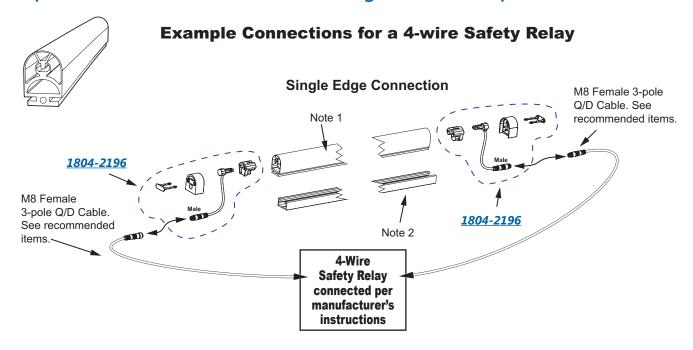


Multiple Edge Connection

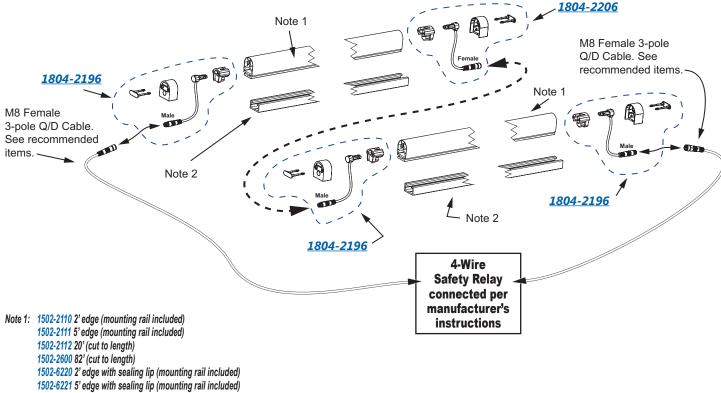


Note 2: 2002-0231 2' mounting rail 2002-0230 5' mounting rails (4 pack)

ASO Safety Solutions 25mm x 30mm SENTIR Edges and End Caps Example Connections - 25mm x 30mm edges and end caps







Note 2: 2002-0231 2' mounting rail 2002-0230 5' mounting rails (4 pack)

SENTIR 2	25mm x 30mm Edges		
	General Specifications		
Material	TPE		
Material Hardness	68 Shore A		
Weight (per meter)	0.34 kg/m [0.23 lb/ft] without sealing lip 0.37 kg/m [0.25 lb/ft] with sealing lip		
Protection Class (Enclosure)	IP65		
Switching Cycles	>30,000 (UL 325)		
Switching Angle	±45°		
Actuation Resistance	≤ 500Ω		
Actuation Force	35N @ 10mm/s [0.4 in/s] approach speed without sealing lip 54.1 N @ 10mm/s [0.4 in/s] approach speed with sealing lip		
Mechanical Life	10,000 cycles		
Electrical Capacity	24VDC, 10mA		
Max. Temperature Range	-25° to +75°C [-13° to +167°F]		
Operating Temperature	-10° to +50°C [+14° to +122°F]		
Max. Series Connection	5 contact edges or 100m [328.08 ft] based on the ASO safety relay 1114-0210		
Inactive End Region with Higher Forces	30mm [1.18 in]		
Connection Cables	LIY11Y 2 x 0.34 mm ² (22AWG)		
Cable Material	PUR matte black		
Agency Approvals	UL Recognized file E341185, CE		







SENTIR safety contact edges are pressure-sensitive sensors used to ensure the safety of closing edges at possible crushing or shearing points which are prone to accidents. They may be installed near automatic gates, machines and other facilities for handling equipment to detect conditions that could cause bodily harm or damage machinery.





Use pins 1 and 3 for continuity.

Features

- Optimized material properties guarantee fast switching results.
- 4 edge lengths available that can be easily cut to fit any application
- Can wire in 2 or 4-wire circuits
- Requires aluminum mounting rail (included with 2ft and 5ft edges) and offered in varying lengths
- Reference example connection drawings for easy product selection









1804-0576

ASO Safety Contact Edges - 25mm x 45mm									
Part Number	Price	Profile	Length	End Caps	Aluminum Mounting Rail	Drawing			
<u>1502-2113</u>	\$1obx:	25mm x 45mm [0.787 in x 1.77 in]	2ft [0.610 m]		Included	<u>PDF</u>			
<u>1502-2114</u>	\$01oby:	25mm x 45mm [0.787 in x 1.77 in]	5ft [1.52 m]	End caps not	Included	<u>PDF</u>			
<u>1502-2115</u>	\$01obz:	25mm x 45mm [0.787 in x 1.77 in]	20ft [6.10 m]	included; choose from table below	Not included	<u>PDF</u>			
<u>1502-2610</u>	\$01ohu:	25mm x 45mm [0.787 in x 1.77 in]	82ft [25.00 m]		Not included	<u>PDF</u>			

	ASO Safety Contact Edge End Caps - 25mm x 45mm							
Part Number	Price	Description	Connection	Drawing				
<u>1804-1385</u> *	Retired	End cap for 25mm x 45mm safety contact edges	3-pin female M8 connector 1.65 ft [0.5 m] cable length	<u>PDF</u>				
<u>1804-1375</u> *	Retired	End cap for 25mm x 45mm safety contact edges	3-pin male M8 connector 1.65 ft [0.5 m] cable length	PDF				
<u>1804-0575</u>	Retired	Terminating resistor end cap for 25mm x 45mm safety contact edges, 8.2 $k\Omega$	NA	PDF				
<u>1804-1386</u>	\$5dko:	End cap for 25mm x 45mm safety contact edges	3-pin female M8 connector 1.65 ft [0.5 m] cable length	PDF				
<u>1804-1376</u>	\$5dkn:	End cap for 25mm x 45mm safety contact edges	3-pin male M8 connector 1.65 ft [0.5 m] cable length	PDF				
<u>1804-0576</u>	\$-5dkj:	Terminating resistor end cap for 25mm x 45mm safety contact edges, 8.2 k Ω	NA	<u>PDF</u>				







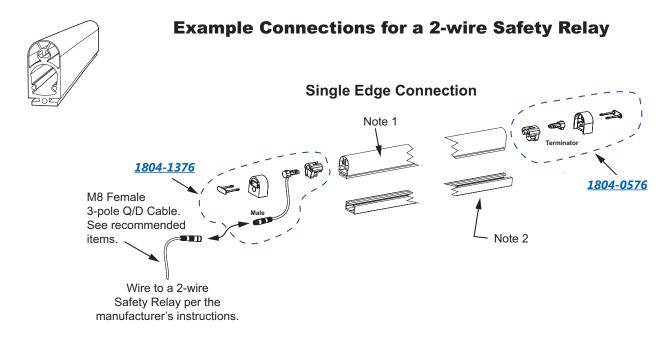
ASO Safety Contact Edge Mounting Rails							
Part Number Price Description Material Contents Drawn							
2002-0230	\$01obo:	Contact edge mounting rail	Aluminum	Package of 4 rails, each 5ft [1.52 m] length	PDF		
2002-0231 \$1obp: Contact edge mounting rail Aluminum 1 rail, 2ft [609.6 mm] length P							

ASO Safety Solutions Industrial Shears								
Part Number	Part Number Price Description Use With Contents							
<u>9501-0160</u>	9501-0160 \$-10hl: Stainless steel industrial shears Safety contact edges 1 shear							

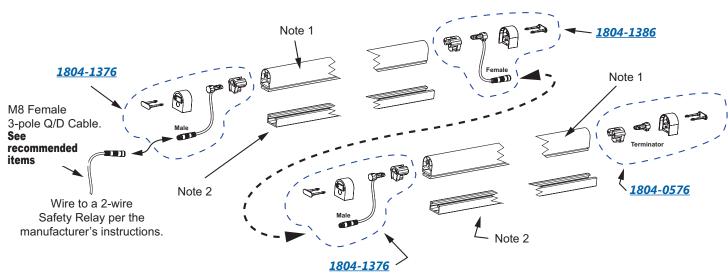
Selection

Use the following Example Connections drawings to help you select the correct components for your system.

Example Connections - 25mm x 45mm edges and end caps



Multiple Edge Connection



Note 1: 1502-2113 2' Edge (mounting rail included)

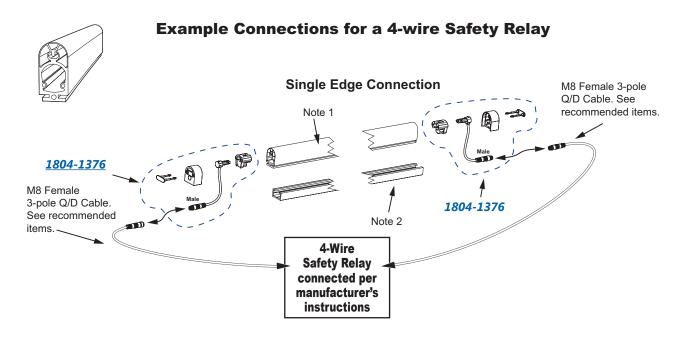
1502-2114 5' Edge (mounting rail included)

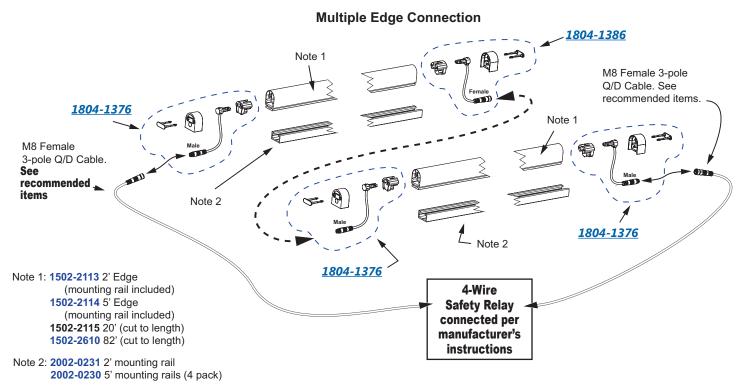
1502-2115 20' (cut to length) **1502-2610** 82' (cut to length)

Note 2: 2002-0231 2' mounting rail

2002-0230 5' mounting rails (4 pack)

Example Connections - 25mm x 45mm edges and end caps





SENT	IR 25mm x 45mm Edges			
	General Specifications			
Material	TPE			
Material Hardness	68 Shore A			
Weight (per meter)	0.44 kg/m [0.31 lb/ft]			
Protection Class (Enclosure)	IP65			
Switching Cycles	>30,000 (UL 325)			
Switching Angle	±45°			
Actuation Resistance	≤ 500Ω			
Actuation Force	53.9N @ 100mm/s [3.9 in/s] approach speed			
Mechanical Life	10,000 cycles			
Electrical Capacity	24VDC, 10mA			
Max. Temperature Range	-25° to +75°C [-13° to +167°F]			
Operating Temperature	-10° to +50°C [+14° to +122°F]			
Max. Series Connection	5 contact edges or 100m [328.08 ft] based on the ASO safety relay 1114-0210			
Inactive End Region with Higher Forces	30mm [1.18 in]			
Connection Cables	LIY11Y 2 x 0.34 mm ² (22AWG)			
Cable Material	PUR matte black			
Agency Approvals	UL Recognized file E341185, CE			



1502-6230



SENTIR safety contact edges are pressure-sensitive sensors used to ensure the safety of closing edges at possible crushing or shearing points which are prone to accidents. They may be installed near automatic gates, machines and other facilities for handling equipment to detect conditions that could cause bodily harm or damage machinery.



M8 Connector

Use pins 1 and 3 for continuity.

Features

- Optimized material properties guarantee fast switching results.
- 4 edge lengths available that can be easily cut to fit any application.
- Can wire in 2-wire or 4-wire circuits.
- · Includes aluminum mounting rail.
- Reference example connection drawings for easy product selection.



ASO Safety Contact Edges - 30mm x 70mm								
Part Number	Price	Profile	Length	End Caps	Aluminum Mounting Rail	Drawing		
<u>1502-6230</u>	\$;5dk]:	30mm x 70mm 2ft [0.610	2ft [0.610 m]	End caps not included;	Included	PDF		
<u>1502-6231</u>	\$;05dk[:	[1.18 in x 2.76 in]	5ft [1.52 m]	choose from table below	Included	PDF		



1804-2666

	ASO Safety Contact Edge End Caps - 30mm x 70mm							
Part Number	Price	Description	Connection	Drawing				
<u>1804-4000</u>	\$-5dlb:	End cap for 30mm x 70mm safety contact edges	3-pin female M8 connector 1.65 ft [0.5 m] cable length	<u>PDF</u>				
<u>1804-3990</u>	\$-5dla:	End cap for 30mm x 70mm safety contact edges	3-pin male M8 connector 1.65 ft [0.5 m] cable length	<u>PDF</u>				
<u>1804-2666</u>	\$-5dl8:	Terminating resistor end cap for 30mm x 70mm safety contact edges, 8.2 k Ω	NA	<u>PDF</u>				

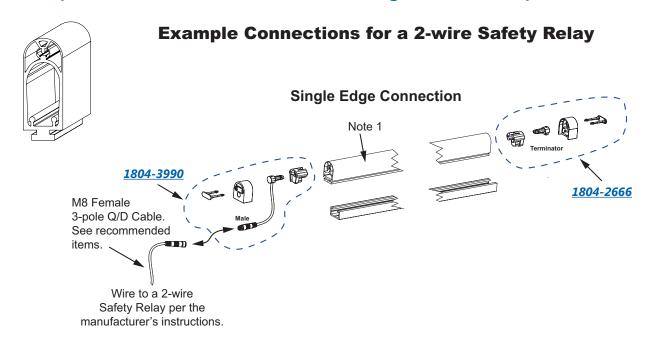


ASO Safety Solutions Industrial Shears						
Part Number Price Description Use With Contents						
<u>9501-0160</u>	\$-1ohl:	Stainless steel industrial shears	Safety contact edges	1 shear		

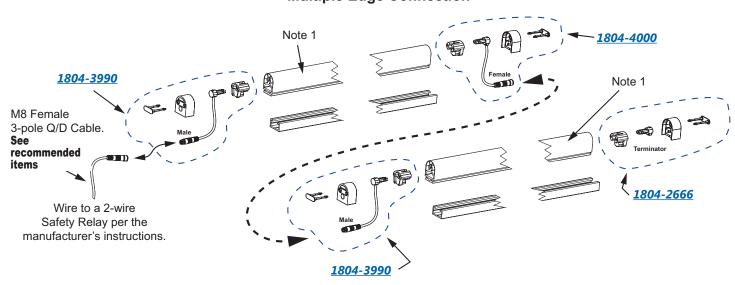
Selection

Use the following Example Connections drawings to help you select the correct components for your system.

Example Connections - 30mm x 70mm edges and end caps

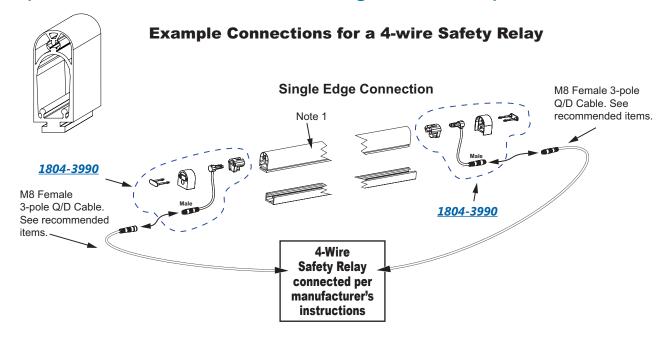


Multiple Edge Connection



Note 1: 1502-6230 2' edge (mounting rail included) 1502-6231 5' edge (mounting rail included)

Example Connections - 30mm x 70mm edges and end caps



Multiple Edge Connection 1804-4000 Note 1 M8 Female 3-pole Q/D Cable. See recommended items. 1804-3990 Note 1 M8 Female 3-pole Q/D Cable. See recommended items 1804-3990 <u> 1804-3990</u> 4-Wire **Safety Relay** Note 1: 1502-6230 2' edge (mounting rail included) connected per 1502-6231 5' edge (mounting rail included) manufacturer's instructions

SENT	IR 30mm x 70mm Edges				
	General Specifications				
Material	TPE				
Material Hardness	68 Shore A				
Weight (per meter)	0.44 kg/m [0.31 lb/ft]				
Protection Class (Enclosure)	IP65				
Switching Cycles	>30,000 [UL 325]				
Switching Angle	±45°				
Actuation Resistance	≤ 500Ω				
Actuation Force	44N @ 10mm/s [0.4in/s] approach speed				
Mechanical Life	10,000 cycles				
Electrical Capacity	24VDC, 10mA				
Max. Temperature Range	-25° to +75°C [-13° to +167°F]				
Operating Temperature	-10° to +50°C [+14° to +122°F]				
Max. Series Connection	5 contact edges or 100m [328.08 ft] based on the ASO safety relay 1114-0210				
Inactive End Region with Higher Forces	30mm [1.18 in]				
Connection Cables	LIY11Y 2 x 0.34 mm ² (22AWG)				
Cable Material	PUR matte black				
Agency Approvals	UL Recognized file E341185, CE				

ASO Safety Solutions SENTIR Bumpers

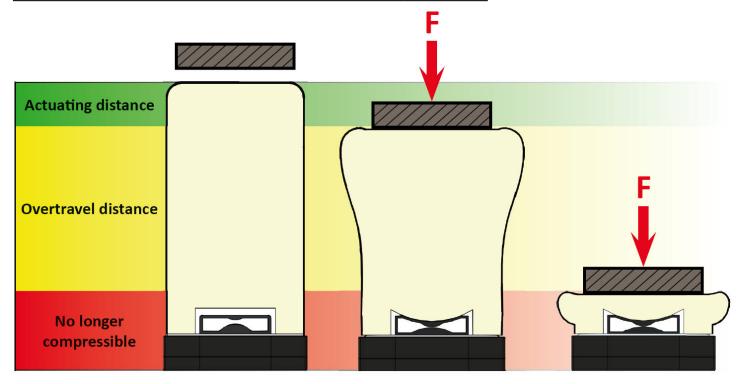


Selecting the Bumper Profile

ASO Safety Solutions offers several sizes of safety bumpers to fit most applications, including automatic gate, door, and machine applications. The size (profile) of the bumper should be selected based on the application and overtravel permitted by the profile. If the bumper experiences overtravel beyond the allowed amount, damage may occur. An additional important deciding factor to consider when determining which profile to use is sensitivity. Sensitivity is the amount of force required to activate the unit.

Where lesser actuating forces are used, a safety edge may be the preferred approach.

Profile Series	Actuation Force and Dista	псе
60mm x 100mm [2.4 in x 3.9 in]	Force (F) Required for Actuation	150N [33.72 lbf]
	Actuation Distance	15mm [0.59 in]
	Maximum Overtravel Distance	60mm [2.36 in]
100mm x 200mm [3.9 in x 7.9 in]	Force (F) Required for Actuation	150N [33.72 lbf]
	Actuation Distance	30mm [1.18 in]
	Maximum Overtravel Distance	120mm [4.72 in]



ASO Safety Solutions 60mm x 100mm SENTIR Bumpers





Adaptable, extremely versatile and totally reliable – these qualities are the hallmarks of our SENTIR safety bumpers. These safety bumpers are highly valued in a wide range of applications from those involving transport vehicles and industrial trucks to high-shelf warehouses, production lines, or mobile systems – in fact, anywhere that a flexible safety bumper solution is required.

Features

- · Mounting rail included
- Insensitive to vibration
- Reliable switching operation in rugged applications
- Can wire in 2-wire or 4-wire circuits

	ASO Safety Solutions SENTIR Bumpers - 60mm x 100mm									
Part Number	Price	Profile	Length	Aluminum Mounting Rail	Cable Length	Connection Cables	Drawing			
<u>1701-3690</u>	\$0450b:		1ft [0.30 m]			ach 4.7 in M8 connector. The other	<u>PDF</u>			
<u>1701-3700</u>	\$0450c:		1.5 ft [0.46 m]		Two cables, each 4.7 in [120mm] in length		<u>PDF</u>			
<u>1701-3710</u>	\$0450d:		2ft [0.61 m]				<u>PDF</u>			
1701-3720	\$0450e:	60mm x 100mm	2.5 ft [0.76 m]	la alcoda d			<u>PDF</u>			
1701-3730	\$;0450f:	[2.36 in x 3.94 in]	3ft [0.91 m]	Included			PDF			
<u>1701-4750</u>	\$05dk_:		4ft [1.22 m]				PDF			
<u>1701-4760</u>	\$05dks:		5ft [1.52 m]				PDF			
<u>1701-4770</u>	\$;05dkt:		6 ft [1.83 m]				<u>PDF</u>			





Use pins 1 and 3 for continuity. (See safety relay for wiring)



ASO Safety Solutions Terminating Resistors								
Part Number	Part Number Price Description Use With Contents Drawing							
<u>1810-0190</u>	\$1ohx:	Terminating resistor, 8.2 kΩ, 3-pin male M8 connector	Safety contact mats and bumpers	1 resistor	PDF			

ASO Safety Solutions SENTIR B	umpers General Specifications – 60mm x 100mm				
Material	Artificial leather (PVC)				
Weight (per meter)	2.1 kg per m [1.39 lb per ft]				
Protection Class (Enclosure)	IP54				
Switching Cycles	>10,000 (UL 325)				
Switching Angle	±45°				
Actuation Resistance	≤ 500 Ohms				
Actuation Force	Test piece Ø 80mm [3.15 in] = approximately 150N				
Mechanical Life	10,000 cycles				
Electrical Capacity	24VDC, 10mA				
Operating Temperature	0° to 55°C [32° to 131°F]				
Max. Series Connection	5 bumpers or 100m [328.08 ft] based on the ASO safety relay 1114-0210				
Inactive End Region with Higher Forces	None – bumper is active all the way to each edge				
Cable Material	Polyurethane matte black				
Agency Approvals	UL Recognized file E341185, CE				

ASO Safety Solutions 100mm x 200mm SENTIR Bumpers





Adaptable, extremely versatile and totally reliable – these qualities are the hallmarks of our SENTIR safety bumpers. These safety bumpers are highly valued in a wide range of applications from those involving transport vehicles and industrial trucks to high-shelf warehouses, production lines, or mobile systems – in fact, anywhere that a flexible safety bumper solution is required.

Features

- · Mounting rail included
- Insensitive to vibration
- Reliable switching operation in rugged applications
- Can wire in 2-wire or 4-wire circuits

	ASO Safety Solutions SENTIR Bumpers - 100mm x 200mm						
Part Number	Price	Profile	Length	Aluminum Mounting Rail	Cable Length	Connection Cables	Drawing
<u>1701-4780</u>	\$05dku:		1ft [0.30 m]		Tue ashles	One cable has a 3-pin male M8 connector. The other	<u>PDF</u>
<u>1701-4790</u>	\$05dkv:		2ft [0.61 m]				PDF
<u>1701-4800</u>	\$05dkx:	100mm x 200mm	3ft [0.91 m]		Two cables, each 4.7 in		PDF
<u>1701-4810</u>	\$;05dk!:	[3.94 in x 7.87 in]	4ft [1.22 m]	Included	[120mm] in	cable has a 3-pin female M8	PDF
<u>1701-4820</u>	\$;05dkf:		5ft [1.52 m]		length	connector.	PDF
<u>1701-4830</u>	\$05dk?:		6ft [1.83 m]				<u>PDF</u>





Use pins 1 and 3 for continuity. (See safety relay for wiring)



1810-0190

ASO Safety Solutions Terminating Resistors							
Part Number Price Description Use With Contents Drawing							
<u>1810-0190</u>	\$1ohx:	Terminating resistor, $8.2~k\Omega$, 3 -pin male M8 connector	Safety contact mats and bumpers	1 resistor	PDF		

ASO Safety Solutions SENTIR B	umpers General Specifications – 100mm x 200mm
Material	Artificial leather (PVC)
Weight (per meter)	3.4 kg per m [2.26 lb per ft]
Protection Class (Enclosure)	IP54
Switching Cycles	>10,000 (UL 325)
Switching Angle	±45°
Actuation Resistance	≤ 500 Ohms
Actuation Force	Test piece Ø 80mm (3.15 in) = approximately 150N
Mechanical Life	10,000 cycles
Electrical Capacity	24VDC, 10mA
Operating Temperature	0° to 55°C [32° to 131°F]
Max. Series Connection	5 bumpers or 100m [328.08 ft] based on the ASO safety relay 1114-0210
Inactive End Region with Higher Forces	None – bumper is active all the way to each edge
Cable Material	Polyurethane matte black
Agency Approvals	UL Recognized file E341185, CE

MGL Series – Stainless Steel Housing

- Heavy duty or medium duty holding force models available
- Master coded or uniquely coded actuation
- RFID provides a high degree of anti-tamper, virtually impossible to override
- Flexible actuator for a high degree of misalignment tolerance.
- Able to connect to most popular safety relays to achieve up to PLe and Cat.4 for ISO3849-1
- Ability to connect up to 20 switches and E-stops in series

- IP69K rating for food processing applications
- Choice of 8-wire cable or M12 quick connect (purchase cables separately for the M12 QC)
- Remanence magnetization acts as a light magnetic latch after unlocking.
- (2) N.C. (door closed lock energized) Safety outputs, overload protected
- (1) N.O. Auxiliary output for indication of door open
- · Includes both switch and actuator





	IDEM Non-Contact RFID Locking Switch Sets - Stainless Steel								
Part Number	Price	Body Material	Weight (lbs)	Holding Force	Operating Voltage	Operating Current	Coding	Connection Type	Dimensions
				Heavy Duty	/ Holding Fo	rce			
MGL-1SS-U-462001	\$00?7q:		5.73			Nominal	Uniquely	5-meter (16.48 ft.) cable	
MGL-1SS-U-462003	\$;00?7t:	316 stainless	5.20	1200N	1200N 24VDC ≈ 50mA Coded	Coded	8-pin M12 quick-disconnect	Figure 1	
MGL-1SS-M-462004	\$00?7u:	stainless	5.73	(269.8 lbf)	± 10%	Locked	Master Coded	5-meter (16.48 ft.) cable	Figure 1
MGL-1SS-M-462006	\$00?7x:		5.20			≈ 500mA		8-pin M12 quick-disconnect	
				Medium Du	ty Holding F	orce			
MGL-2SS-U-460001	\$00?7b:		3.84			Nominal	Uniquely	5-meter (16.48 ft.) cable	
MGL-2SS-U-460003	\$00?7e:	316	3.31	600N	24VDC	≈ 50mA	Coded	8-pin M12 quick-disconnect	Figure 2
MGL-2SS-M-460004	\$;00?7f:	stainless	stainless steel 3.84	(134.9 lbf)	± 10%	Locked	Master	5-meter (16.48 ft.) cable	Figure 2
MGL-2SS-M-460006	\$00?7h:		3.31			≈ 500mA	Coded	8-pin M12 quick-disconnect	

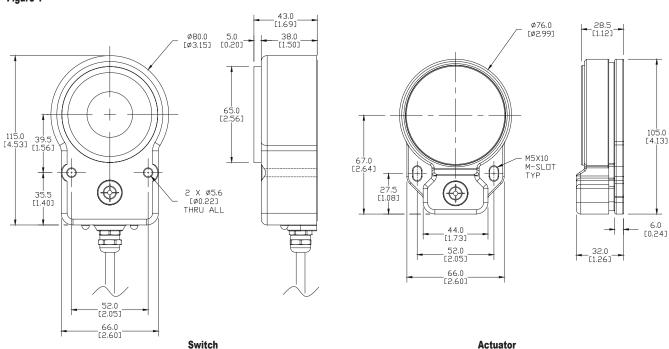
IDEM Non-Contact RFID Locking Switches Replacement Actuators - Stainless Steel								
Part Number	Part Number Price Body Material Weight (lb) Holding Force Coding Dimensions							
MGL-1SS-M-462102*	\$00?7y:	316	1.87	1200N (269.8 lbf) - Heavy Duty	Master Coded	Figure 1		
MGL-2SS-M-460102*	\$00?7c:	stainless steel	1.21	600N (134.9 lbf) - Medium Duty	Master Coded	Figure 2		

^{*} For use with Stainless Steel Master Coded models only

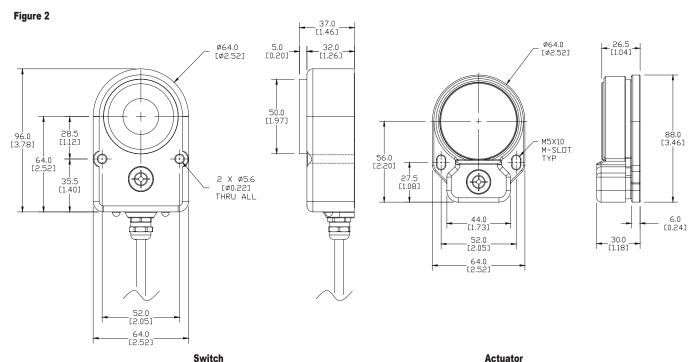
Dimensions

mm [in]

Figure 1



MGL-1SS



MGL-2SS

MGL Series - Die Cast Metal Housing

- Heavy duty or medium duty holding force models available
- Master coded or uniquely coded actuation
- •RFID provides a high degree of anti-tamper, virtually impossible to override
- Flexible actuator for a high degree of misalignment tolerance.
- Able to connect to most popular safety relays to achieve up to PLe and Cat.4 for ISO3849-1
- Ability to connect up to 20 switches and E-stops

in serie

- Choice of 8-wire cable or M12 quick connect (purchase cables separately for the M12 QC)
- Remanence magnetization acts as a light magnetic latch after unlocking.
- (2) N.C. (door closed lock energized) Safety outputs, overload protected
- (1) N.O. Auxiliary output for indication of door open
- · Includes both switch and actuator





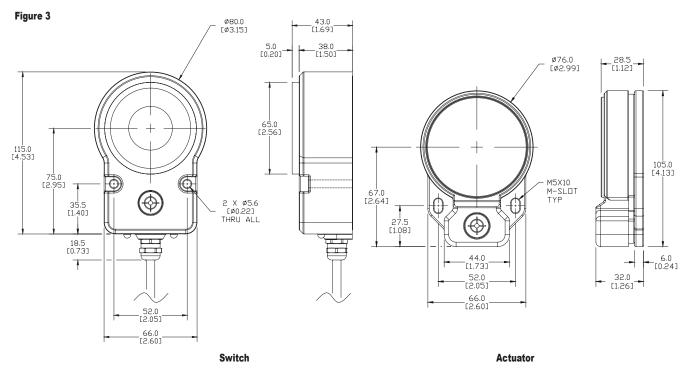
	IDEM Non-Contact RFID Locking Switch Sets - Die Cast Metal								
Part Number	Price	Body Material	Weight (lb)	Holding Force	Operating Voltage	Operating Current	Coding	Connection Type	Dimensions
			Hea	vy Duty Hold	ling Force				
MGL-1M-U-464001	\$;00?7,:	Die cast metal	4.68				Haiamaha	5-meter (16.48 ft.) cable	Figure 3
MGL-1M-U-464003	\$00?81:	Die cast metal	4.17	1500N	24VDC	Nominal ≈ 50mA	Uniquely Coded	8-pin M12 quick- disconnect	Figure 3
MGL-1M-M-464004	\$00?82:		4.68	(337.2 lbf)	± 10%	Locked ≈ 500mA	Master Coded	5-meter (16.48 ft.) cable	
MGL-1M-M-464006	\$00?84:		4.17					8-pin M12 quick- disconnect	Figure 3
			Medi	um Duty Hol	ding Force				
MGL-2M-U-465001	\$00?86:		3.06				Haisushi	5-meter (16.48 ft.) cable	
MGL-2M-U-465003	\$00?88:	Die eest metal	2.54	1000N	24VDC	Nominal ≈ 50mA	Cadad	8-pin M12 quick- disconnect	Figure 4
MGL-2M-M-465004	\$00?89:	Die cast metal	3.06	(224.8 lbf)	± 10%	Locked ≈ 500mA	iviaster	5-meter (16.48 ft.) cable	
MGL-2M-M-465006	\$00?8b:		2.54					8-pin M12 quick- disconnect	

IDEM Non-Contact RFID Locking Switches Replacement Actuators - Die Cast Metal						
Part Number	Price	Body Material	Weight (lbs)	Holding Force	Coding	Dimensions
MGL-1M-M-464102*	\$00?85:	Die cast metal	1.54	1500N (337.2 lbf) - Heavy Duty	Master Coded	Figure 3
MGL-2M-M-465102*	\$0?8c:	Die Cast Metai	0.99	1000N (224.8 lbf) - Medium Duty	Master Coded	Figure 4

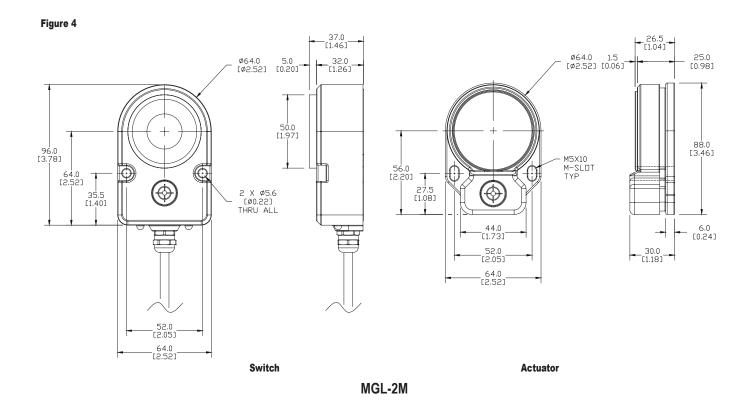
^{*} For use with Die Cast Metal Master Coded models only

Dimensions

mm [in]



MGL-1M



MGL Series – Plastic Housing

- Heavy duty or medium duty holding force models available
- Master coded or uniquely coded actuation
- RFID provides a high degree of anti-tamper, virtually impossible to override
- Flexible actuator for a high degree of misalignment tolerance.
- Able to connect to most popular safety relays to achieve up to PLe and Cat.4 for ISO3849-1
- Ability to connect up to 20 switches and E-stops in series
- Choice of 8-wire cable or M12 quick connect (purchase cables separately for the M12 QC)
- Remanence magnetization acts as a light magnetic latch after unlocking.
- (2) N.C. (door closed lock energized) Safety outputs, overload protected
- (1) N.O. Auxiliary output for indication of door open
- Includes both switch and actuator





	IDEM Non-Contact RFID Locking Switch Sets - Plastic								
Part Number	Price	Body Material**	Weight (lbs)	Holding Force	Operating Voltage	Operating Current	Coding	Connection Type	Dimensions
Heavy Duty Holding	Force								
MGL-1P-U-463001	\$00?7z:	High Specification	4.35				Uniquely	5-meter (16.48 ft.) cable	
MGL-1P-U-463003	\$;00?7[:		3.84	1500N	24VDC	Nominal ≈ 50mA	Coded	8-pin M12 quick- disconnect	Figure 5
MGL-1P-M-463004	\$00?7_:	Polyester Plastic	4.35	(337.2 lbf)	± 10%	Locked ≈ 500mA	Master Coded	5-meter (16.48 ft.) cable	
MGL-1P-M-463006	\$;00?7!:		3.84					8-pin M12 quick- disconnect	
Medium Duty Holding	g Force								
MGL-2P-U-461001	\$-00?7i:		2.78				Uniquely	5-meter (16.48 ft.) cable	- Figure 6
MGL-2P-U-461003	\$00?7k:	High Specification	2.25	1000N	24VDC	Nominal ≈ 50mA	Coded	8-pin M12 quick- disconnect	
MGL-2P-M-461004	\$-00?71:	Polyester Plastic	2.78	(224.8 lbf)	24.8 lbf) ± 10%	Locked ≈ 500mA	Master Coded	5-meter (16.48 ft.) cable	
MGL-2P-M-461006	\$00?7o:		2.25					8-pin M12 quick- disconnect	

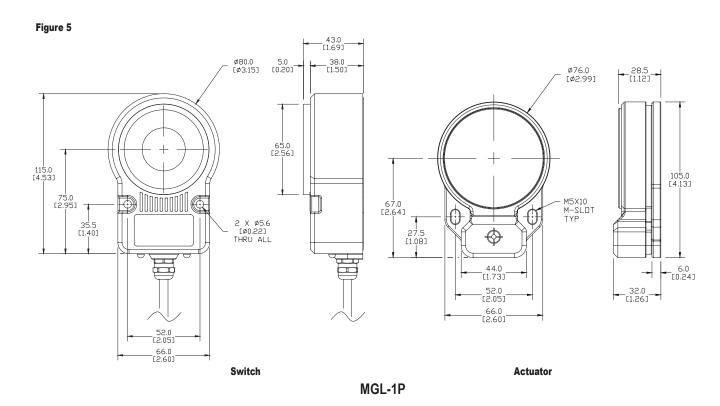
IDEM Non-Contact RFID Locking Switches Replacement Actuators - Plastic							
Part Number	Part Number Price Body Material** Weight (lbs) Holding Force Coding Dimensions						
MGL-1P-M-463102*	\$0?7?:	High Specification	1.54	1500N (337.2 lbf) - Heavy Duty	Master Coded	Figure 5	
MGL-2P-M-461102*	\$0?7p:	Polyester Plastic	0.66	1000N (224.8 lbf) - Medium Duty	IVIASIEI CODED	Figure 6	

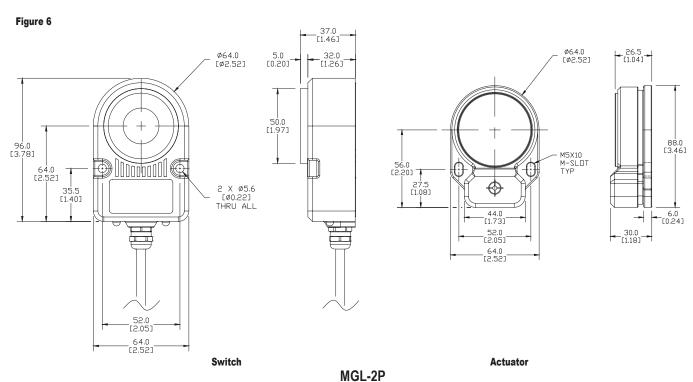
^{*} For use with Plastic Master Coded models only

^{**}Body Material: A polyester base material considered High Specification in terms of ambient temperature and resistant to many modern chemicals and cleaning solutions used in industrial applications.

Dimensions

mm [in]





IDEM Non-Contact RFID Locking Safety Switches Specifications

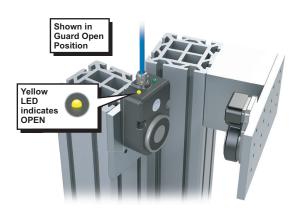
IDEM Non-Cont	act RFID Locking Swit	ches Specifications						
	MGL-1SS / MGL-2SS	MGL-1M / MGL-2M	MGL-1P / MGL-2P					
Body Material	316 Stainless Steel	Die Cast Metal	High Specification Polyester Plastic					
Safety Classification and Reliability Data								
Minimum Switched Current		1mA @ 10VDC						
Dielectric Withstand		250VAC						
Insulation Resistance		100 Mohms						
Switching Distance		(Sensing Assured Operating) – 1mm (Sensing Assured Release) – 10mm						
Tolerance to Misalignment	5n	nm in any direction from 5mm setting g	рар					
Switching Frequency		1.0 Hz maximum						
Approach speed		200 mm/s to 1000 mm/s						
Temperature Range	-25°C to 40°C (-13°F to 104°F)							
Enclosure Protection	IP69K	lF	P67					
Cable Type		PVC, 8-wire, 6mm OD						
Mounting Screws	2	x M5 – Tightening torque 1Nm (0.74 lb	-ft)					
Mounting Position		Any						
Characteristic L	Pata According to IEC62061 (u	ised as a sub system)						
Safety Integrity Level		SIL3						
PFH (1/h)		4.77E-10 Corresponds to 4.8% of SIL3	3					
PFD		4.18E-05 Corresponds to 4.2% of SIL3	3					
Proof Test Interval T1		20 years						
Charac	cteristic Data according to EN	ISO13849-1*						
Performance Level	e If both channel	s are used in combination with a SIL3/	PLe control device					
Category		Cat4						
MTTFd		1100 years						
Diagnostic Coverage DC	99% (high)							
Number of operating days per year		dop = 365d						
Number of operating hours per day		hop = 24h						
B10d		Not mechanical parts implemented						

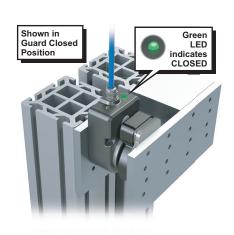
^{*}Note: When the product is used differently from these assumptions (different load, operating frequency, etc.) the values must be adjusted accordingly.

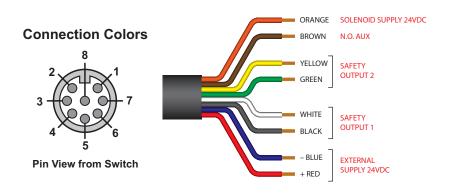
The MGL series RFID locking switches use two LEDs to indicate all the possible switch states.

The LEDs are in a clearly visible location on either side of the cable exit point.

IDEM Non-Contact RFID Locking Switches LED Operation and Switch Status Indication							
Switch Status Guard Green LED Yellow LED							
Locked	Closed	Steady	Off				
Solenoid Power OFF (Unlocked)	Closed	Flashing	Off				
Guard Open	Open	Off	Steady				
Door Forced Open	Open	Off	Flashing				
Wrong Actuator Code	Closed	Flashing	Flashing				







IDEM Non-Contact RFID Locking Switches Wiring Diagram								
Quick Connect (QC) M12 8-way male plug	Conductor Colors	Function	Power Rating					
8	Orange	Lock Applied (24VDC ± 10%)	500mA Max.					
5	Brown	Auxiliary Signal	+24VDC					
4	Yellow	Safety Output 2	200mA Max.					
6	Green	Safety Output 2	ZUUITIA Wax.					
1	White	Safety Output 1	200mA Max.					
7	Black	Safety Output 1	ZUUITIA Wax.					
3	Blue	0VDC	50mA Max.					
2	Red	+ 24VDC ± 10%	SUMA Wax.					

Note: For M12 Quick Connect switches, color code may vary depending on the cable used. Please verify before installation.

SSP HOLDX Magnetic Locking Safety Switches With RFID



HOLDX Series

The SSP HOLDX line of smart magnetic locking safety switches with RFID can protect systems, machinery, and personnel from unintentional openings. The integrated RFID safety sensor ensures the safety of the system, while the electromagnet keeps the door closed and thus protects automated processes.

The integrated RFID safety sensor meets the highest performance level PLe according to EN ISO 13849-1:2015.

If desired, users can take advantage of the integrated Bluetooth interface by utilizing the HOLDX Manager software available for Android, Apple or Windows. This software is downloadable from AutomationDirect.com.

HOLDX safety switches also come with extended LED diagnosis for smart operation and fast evaluation.

Features

- PLe according to EN 13849-1
- High Coded option according to EN 14119
- From little windows up to big safety doors
- Shortest commissioning time
- Pigtail connection reduces cabling effort
- Less downtime and setup time, due to maintenance monitoring
- High tolerance for door offsets
- IP67
- Pulsed status output sends diagnostic information to PLC

HOLDX Manager





Download software for Windows on Automationdirect.com

HOLDX Magnetic Locking Safety Switch With RFID Selection Guide									
Part Number	Price	RFID Coded Type	Holding Force	Safety Output	Status Output	Drawing			
RL1-P8-S-B	\$;;05,sf:	Master coded RFID	4000N			PDF			
RL1-P8-W-B	\$;05,sg:	Reteachable coded RFID	1200N	2.0000	Single pulsed diagnosis output	PDF			
RS1-P8-S-B	\$;05,sd:	Master coded RFID	COON	2 OSSD outputs		PDF			
RS1-P8-W-B	\$;05,se:	Reteachable coded RFID	600N			<u>PDF</u>			





Master Coded vs. Reteachable Coded

The master coded switch will work with any HOLDX actuator of the same size profile out of the box.



RS1-P8-S-B with RS-A1 or RS-A2

However, if a higher level of safety is required then the reteachable switch should be used. The HOLDX manual provides easy step-by-step instructions to reteach the switch if the actuator needs to be changed. After a new actuator has been taught, then the reteachable HOLDX switch will "forget" the old actuator. This is useful when trying to deter personnel from bypassing the safety system.



Actuators

The actuator is typically fixed to a hinged or sliding door. All SSP HOLDX actuators work with all SSP HOLDX safety switches of the same size profile. SSP offers a version of each actuator with 50N of permanent latching force. This is useful for keeping doors shut even when they are unlocked. However, the switch can be configured using the HOLDX Manager software to apply up to 50N of supplemental electromagnetic force to hold the door closed if desired, regardless of whether the actuator includes a built-in permanent magnet.





HOLDX	HOLDX Magnetic Locking Safety Switch With RFID Selection Guide							
Part Number	Price	Fits	Permanent Magnet Holding Force	Drawing				
RL-A1	\$;-5,sj:	LIOLDY DL cofety aviitabae	50N	PDF				
RL-A2	\$;5,sk:	HOLDX RL safety switches	None	PDF				
RS-A1	\$;5,sh:	LIOLDY DC cofety quitabas	50N	PDF				
RS-A2	\$;-5,si:	HOLDX RS safety switches	None	PDF				

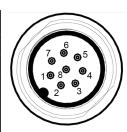
<u>RL-A1</u> or <u>RL-A2</u> <u>RS-A1</u> or <u>RS-A2</u>

SSP HOLDX Magnetic Locking Safety Switches With RFID



Connection Diagram

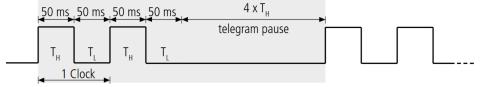
	Connection (M12 8-pin)								
Pin	Color*	Description							
1	White	+24VDC							
2	Brown Safety Input (OSSD1 IN) or +24VE								
3	Green	GND							
4	Yellow	Safety Output (OSSD)							
5	Gray	Diagnostic Output							
6	Pink	Safety Input (OSSD2 IN) or +24VDC							
7	Blue	Safety Output (OSSD)							
8	Red	Magnet Engage (Power to Lock)							



NOTE: If no Safety device will be wired to the Safety Inputs, then +24VDC must be wired to both Safety Inputs.

Diagnostic Output

The Diagnostic Output sends a pulsed output that can be read by a standard PLC input. This can allow operators and maintenance personnel to quickly troubleshoot a problem, reducing wasteful downtime.



1 diagnosis signal cycle

OSSD Input Pin 2 + Pin 6	Magnet ON Pin 8	Door Position	Magnetic Flux Undercut	OSSD Output Pin 4 + Pin 7	Diagnosis Output Pin 5
On	On	Closed		On	24V
On/Off	Off	Open		Off	Clock 1x
Off	Off	Closed		Off	Clock 2x
On	On/Off	Closed		On	Clock 3x
On	On	Open		Off	Clock 4x
Off	On	Closed		Off	Clock 5x
Off	On	Closed	✓	Off	Clock 6x
On	On	Closed	✓	On	Clock 7x

NOTE: The Diagnostic Pin can pulse up to 24 times. These additional error codes are detailed in the vendor manual.

^{*} This connection chart is for 292 series 8-pin cables

SSP HOLDX Magnetic Locking Safety Switches With RFID



SSP Magnetic Loc	cking Switches With RFID Speci	fications			
	RL Series	RS Series			
	Safety Data				
Performance Level (EN ISO 13849-1: 2015)	Pl	Le			
Category (EN ISO 13849-1: 2015)	Cat. 4				
SIL (EN IEC 62061: + A2:2015)	SIL	CL3			
SIL (EN IEC 61508: 2010)	SI	IL3			
Hardware Fault Tolerance	HF	T 1			
PFH _D	2.24	x 10 ⁻⁹			
Service Life (EN IEC 62061)	20 y	vears			
	Switching Distances				
Secured Switching Distance ON Sao	6r	nm			
Secured Switching Distance OFF Sar	18	mm			
Typical Switching Distance S _n	11:	mm			
	Safety Functions Times				
Switch-off Reaction Time Inputs \rightarrow Outputs $t_{ extstyle extsty$	Max	3ms			
Switch-off Reaction Time Anchor Plate $ ightarrow$ Outputs $t_{ extsf{off}}$	Max	75ms			
	Ambient Conditions				
Operating Temperature	-25° to +55°C	[-13° to +131°F]			
Storage Temperature	-25° to +70°C	[-13° to +158°F]			
Protection Class	IP	67			
	Electrical Data				
Supply Voltage Range	20.4 to 2	26.4 VDC			
Power Consumption (including OSSD Outputs)	7W	16W			
Nominal Current at 24VDC	645mA	600mA			
Number of Safety Inputs	1 x 2-c	channel			
Current Consumption Per Input Max	2.75	5 mA			
Current Consumption Input Magnet ON	1.2	mA			
Series Connection For Safe Inputs and Outputs	Max 30 pro	cess guards			
	Mechanical Data				
Electromagnet Locking Force	1200 N•m [270 lb•ft]	600 N•m [135 lb•ft]			
Process Guard Locking Weight	725g [1.59 lb]	375g [0.83 lb]			
Anchor Plate Weight	475g [1.05 lb]	125g [0.28 lb]			
Torque (Mounting Screw) Process Guard Locking	6 N•m, [-	4.43 lb•ft]			
Torque (Mounting Screw) Anchor Plate	6 N•m, [-	4.43 lb•ft]			
Guard Locking Housing Materials	PBT GF30, aluminum anod	ized black, AlMgSi, TPE, PC			
Anchor Plate Housing Materials	PBT GF30, aluminum anodized bl	ack, S235 nickel-plated, EPDM/CR			
	Agency Approvals				
Agency Approvals	CE, c	cULus			

SSP HOLDX Magnetic Locking Safety Switches With RFID



SSP HOLDX Mounting Brackets

	SSP HOLDX Mounting Bracket Selection Guide								
Part Number	Price	Fits	Drawing						
RL-Z-MF1	\$;-5,sl:	Hinged door with handle		<u>PDF</u>					
RL-Z-MF2	\$;5,so:	Hinged door without handle	HOLDX RL safety switches	<u>PDF</u>					
RL-Z-MS1	\$;5,sn:	Sliding door		<u>PDF</u>					
RS-Z-MF1	\$;5,sp:	Hinged door with handle		PDF					
RS-Z-MF2	\$;5,ss:	Hinged door without handle	HOLDX RS safety switches	<u>PDF</u>					
RS-Z-MS1	\$;5,sq:	Sliding door	-	PDF					













RL-Z-MF1

RL-Z-MF2

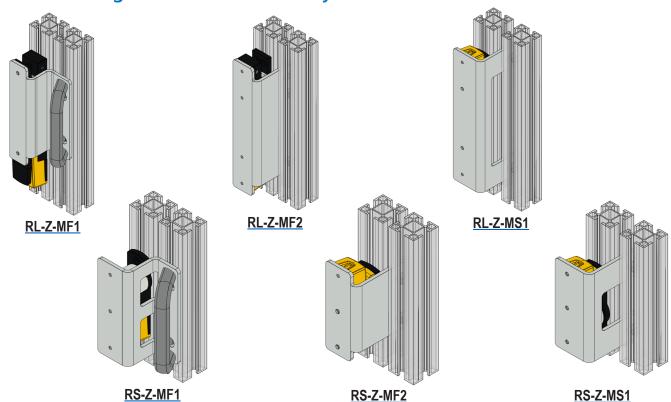
RL-Z-MS1

RS-Z-MF1

RS-Z-MF2

RS-Z-MS1

Illustration showing bracket and HOLDX system attached to T-Slot rail



IDEM Solenoid Interlock Safety Switch Selection Guide

KLP-201002



KLM-202002



KL3-SS-205002



KL1-P-221302

Series	KLP	KLM	KL3-SS	KL1-P
Prices start at	\$;;004f,:	\$;004f#:	\$;;004f]:	\$;004fp:
Description	Solenoid locking, tongue (key) interlock operated, 1800N holding force, power to unlock, 90° adjustable head	NON holding ock, 90° adjustable head interlock operated, 2000N holding force, power to unlock, 90° adjustable head interlock operated, 2000N holding force, power to unlock, 90° adjustable head		Solenoid locking, tongue (key) interlock operated, 1400N holding force, power to unlock, 180° adjustable head
Construction Material	46mm wide polyester plastic body, 40mm wide 316 stainless steel head	46mm wide die-cast aluminum body, 40mm wide die-cast aluminum head	48mm wide 316 stainless steel body, 40mm wide 316 stainless steel head	63mm wide polyester plastic body, 52mm wide 316 stainless steel head
Degree of Protection (IEC529)	IEC	IP67	IEC IP67, IEC IP69K	IEC IP67
Mechanical Service Life		2.5M operations	s at 100mA load	
Conduit Opening	1 conduit opening, 1/2 in female NPT	3 conduit openings	1 conduit opening, 1/2 in female NPT	
Agency Approvals		cULus E2	58676, CE	

KL1-SS-220002



KLTM-450002



KLT-SS-451002



Series	KL1-SS	KLTM	KLT-SS			
Prices start at	\$;;004ft:	\$004g2:	\$004g5:			
Description	Solenoid locking, tongue (key) interlock operated, 1600N holding force, power to unlock, u 180° adjustable head Solenoid locking, operated, 2000N to unlock, and unlock, and unlock to unl		Solenoid locking, tongue (key) interlock operated, 2000N holding force, power to unlock, 180° adjustable head			
Construction Material	63mm wide 316 stainless steel body, 52mm wide 316 stainless steel head	105mm wide die-cast aluminum body, 95mm wide 316 stainless steel head	105mm wide 316 stainless steel body, 95mm wide 316 stainless steel head			
Degree of Protection (IEC529)	IEC IP67, IEC IP69K	IEC IP67	IEC IP69K			
Mechanical Service Life		2.5M operations at 100mA load				
Conduit Opening	1 conduit opening, 1/2 in female NPT 3 conduit openings, 1/2 in female NPT					
Agency Approvals		cULus E258676, CE				

KLP/KLM/KL3-SS Series Housing

- · Solenoid locking, tongue (key) interlock operated
- · Power to unlock
- 90 degree adjustable head
- One (KLP) or three (KLM, KL3-SS) 1/2 in. female NPT conduit opening
- 30mm mounting profile

- Slotted manual release on lid and side (KLP/ KLM) or anti-tamper keyed manual release on lid and side (KL3-SS)
- Includes one tamper-proof T20 Torx bit
- Purchase actuating key and anti-tamper manual release key separately (See Accessories)

See electrical specifications later in this section.

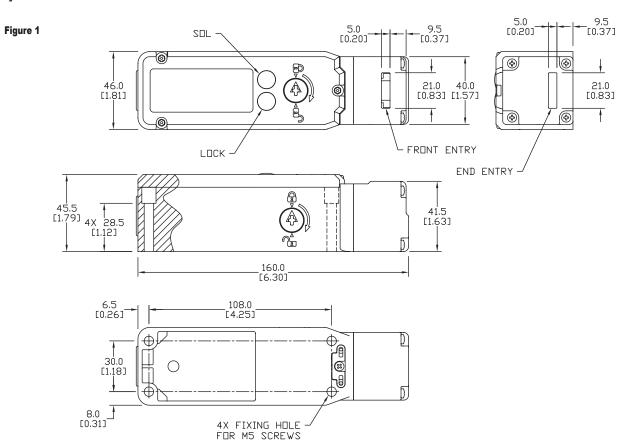
KLP-201002 KLM-202002 KL3-SS-205002



	IDEM KLP/KLM/KL3-SS Series Solenoid Interlock Safety Switches														
Part Number	Price	Body Material	Head Material	Weight (lbs)	Actuator Travel / Force for Positive Opening	Holding Force	Solenoid Voltage (±10%)	LED	Contact Configuration	Dimensions					
KLP-201002	\$;;004f,:						24 VAC/DC		2 NC safety contacts						
KLP-201005	\$004g0:	Polyester plastic	316 stainless steel	1.4	10mm 1800N 110VAC Solenoid Solenoid 1 NO auxiliary contact statu	10mm 1800N 110VAC	(1) selectable output (1 NO auxiliary contact or LED for lock status) 1 NO auxiliary contact for actuator tongue (key) status	Figure 1							
KLM-202002	\$;004f#:	Die-cast	Die-cast	1.9	10mm	2000N	24 VAC/DC	1	4 NC safety contacts	Figure 2					
KLM-202005	\$;;004f!:	aluminum	aluminum	1.9	TOTTITI	200011	110VAC	Optional	(1) selectable output (1 NO	Figure 2					
KL3-SS-205002	\$;;004f]:	316	316									24 VAC/DC	Lock Status	auxiliary contact or LED for lock status)	
KL3-SS-205005	\$;;004f[:	stainless steel	stainless steel			9 10mm 2000N 110VAC					1 NO auxiliary contact for actuator tongue (key) status	Figure 3			

Dimensions

mm [in]

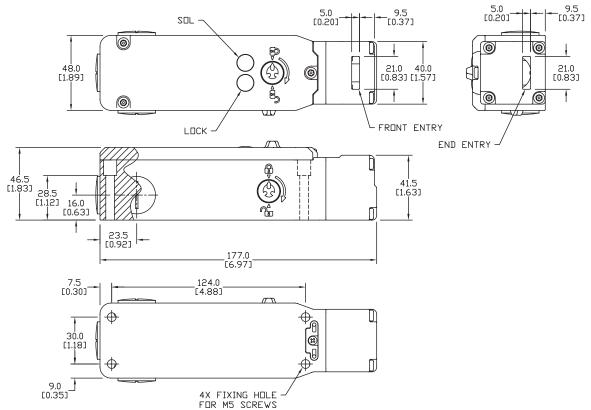


Dimensions

mm [in]

Figure 2 _ 9.5 [0.37] SOL 5.0 [0.20] _ 9.5 [0.37] **(19)** 21.0 40.0 [0.83][1.57] 21.0 [0.83] 46.0 [1.81] LOCK END ENTRY 46.5 [1.83] 4X 28.5 [1.12] 41.5 [1.63] 16.0 [0.63] 176.0 [6.93] 124.0 [4.88] 6.5 [0.26] 30.0 [1.18] Φ 8.0 [0.31] 4X FIXING HOLE FOR M5 SCREWS

Figure 3



KL1-P/KL1-SS Series Housing

- Solenoid locking, tongue (key) interlock operated
- Power to unlock
- 180 degree adjustable head
- One 1/2 in. NPT female conduit opening
- Slotted manual release on lid and side
- 40mm mounting profile
- Purchase actuating key separately (See Accessories)

See electrical specifications later in this section.

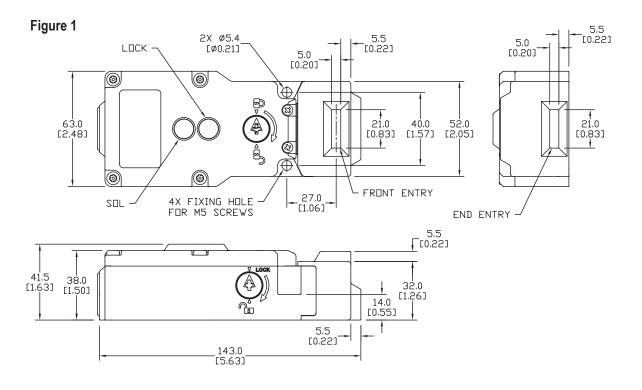


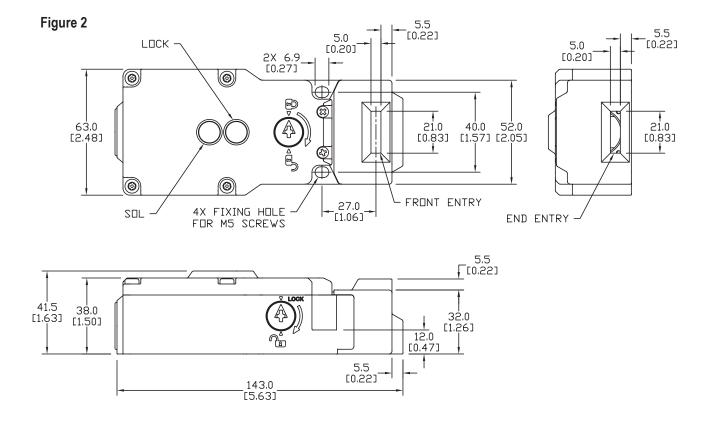
KL1-P-221302 KL1-SS-220002

		IDEM KL1-P	/KL1-S	S Series	Solenoid	Interio	ck Safety S	Switches			
Part Number	Price	Body Material	Head Material	Weight (lbs)	Actuator Travel / Force for Positive Opening	Holding Force	Solenoid Voltage	LED	Contact Configuration	Dimensions	
KL1-P-221002	\$;-004fl:	Polyester plastic	316 stainless	1.4	10mm	1400N	24 VAC/DC	1 solenoid	2 NC safety contacts	Figure 1	
KL1-P-221005	\$;004fn:	Folyestel plastic	steel	1.3	10111111	140011	110VAC	status	2 NO auxiliary contacts	, ,	
KL1-P-221302	\$;004fp:	Polyester plastic	316	1.4	40	4400N	24 VAC/DC	1 solenoid	1 NO auxiliany	Fig. 11.4	
KL1-P-221305	\$;004fq:		olyester plastic stainless steel 1.3	Tumm	nm 1400N	110VAC	1 optional lock status		contact for Figure 1		
KL1-SS-220002	\$;;004ft:	316 stainless steel		316	0.5	40	40001	24 VAC/DC	1 solenoid	2 NC safety contacts	F: 0
KL1-SS-220005	\$;004fu:		stainless steel	2.5	10mm	1600N	110VAC	status	2 NO auxiliary contacts	Figure 2	
KL1-SS-220302	\$;004fx:	316 stainless steel	316 stainless steel	2.5	10mm	1600N	24 VAC/DC	1 solenoid status 1 optional lock status	2 NC safety contacts 1 NO auxiliary contact for actuator tongue (key) status	Figure 2	

Dimensions

mm [in]





KLTM/KLT-SS Series Housing

- Solenoid locking, tongue (key) interlock operated
- · Power to unlock
- 180 degree adjustable head
- One (KLTM) or three (KLT-SS) 1/2 in. NPT female conduit opening
- 73mm mounting profile

- Slotted manual release on lid and side (KLTM) or antitamper keyed manual release on lid and side (KLT-SS)
- Includes one tamper-proof T20 Torx bit
- Purchase actuating key and anti-tamper manual release key separately (See accessories)

See electrical specifications later in this section.



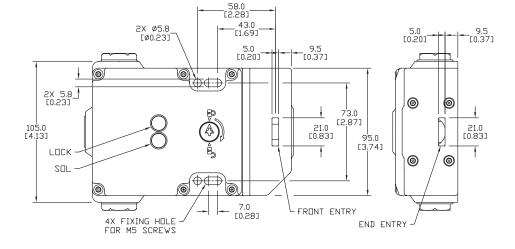


IDEM KLTM/KLT-SS Series Solenoid Interlock Safety Switches										
Part Number	Price	Body Material	Head Material	Weight (lb)	Actuator Travel for Positive Opening	Holding Force	Solenoid Voltage	LED	Contact Configuration	Dimensions
KLTM-450002	\$004g2:	Die-cast aluminum	316 stainless steel	2.7	10mm	2000N	24 VAC/DC	1 solenoid status 1 optional lock status	4 NC safety contacts 1 NO auxiliary contact for actuator	Figure 1
KLTM-450005	\$004g3:			2.6			110VAC			
KLT-SS-451002	\$004g5:	316 stainless steel	316 stainless steel	4.7			24 VAC/DC	5.5100	tongue (key) status	Figure 2

Dimensions

mm [in]

Figure 1



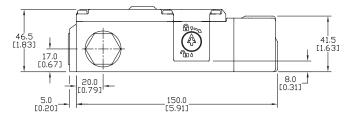
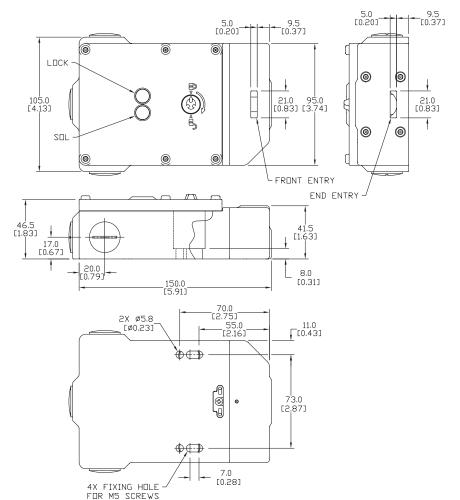


Figure 2

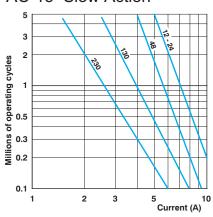


IDEM Solenoid Interlock Safety Switches Specifications

Solenoid Interlock Safety Switches Specifications									
	KLP/KLM/KL3-SS	KL1-P/KL1-SS	KLTM/KLT-SS						
Safety Classification and Reliability Data									
Switching Reliability (B10d)	2.5M operations at 100mA load								
EN 954-1	Up to Category 4 with Safety Relay								
ISO 13849-1	Up to	PLe depending upon system arc	chitecture						
EN 62061	Up to 9	SIL3 depending upon system are	chitecture						
Safety Data - Annual Usage	8 cycle	es per hour / 24 hours per day /	365 days						
MTTFd		356 years							
Agency Approvals		cULus E258676, CE							
Electrical and General Specifications									
Utilization Category		AC15, A300,3A max							
Thermal Current	5A	3A							
Short Circuit Overload Protection	Ex	ternal 10A Fast Acting recomme	ended						
Rated Insulation Voltage	500VAC								
Contact Terminals	Contact Terminals Plated Brass, Max conductor 1mm2, 16AWG; 0.7 Nm torque								
LED2 Voltage	24VDC								
Solenoid Wattage		12W							
Solenoid Voltage	24 VAC/VDC or 110VAC or 230VAC								
Max. Switching Current	Safety contacts 2.5A @24VDC, 6A @ 120VAC, 3A @ 240VDC (720VA Break); Auxiliary contacts max 230V@0.5A								
Maximum Approach/Withdrawal Speed	1000 mm/s	600 mm/s							
Enclosure Protection	IP67 (IP69K on all models with both stainless steel head and body)								
Operating Temperature	-25°C – 55°C [-1:	-25°C - 55°C [-13°F - 131°F] -25°C to 40°C [-13°F to 10							
Vibration	IEC 68-2-6, 10-55 Hz + 1Hz								
Lid Screws/Torque	Stainless Steel; T20 Torx; 1.5 Nm (1.11 lb-ft)	Stainless Steel; T20 Torx; 1Nm (0.74 lb-ft)	Stainless Steel; T20 Torx; 1.5 Nm (1.11 lb-ft)						
Recommended Mounting Screws/Torque	M5; 4Nm (2.95 lb-ft)								
Head Screws/Torque	Stainless Steel, T20 Torx (KL3-SS only); 1.5 Nm (1.11 lb-ft)	Stainless Steel; T20 Torx; 1.5 Nm (1.11 lb-ft)	Stainless Steel; T20 Torx; 1Nm (0.74 lb-ft)						

Electrical Durability (according to IEC 947-5-1)

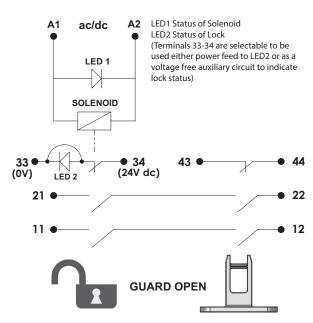




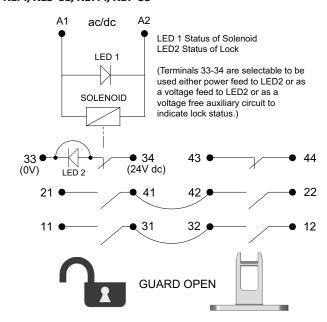
IDEM Solenoid Interlock Travel Charts

Contacts Configuration

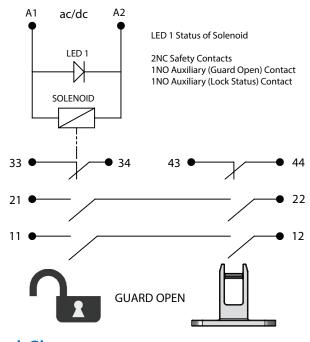




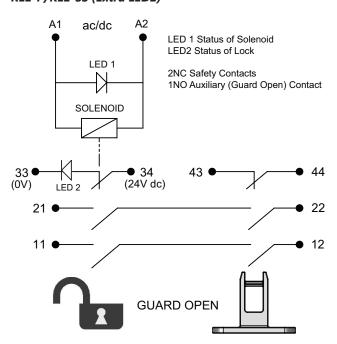
KLM/KL3-SS/KLTM/KLT-SS



KL1-P/KL1-SS (Standard)



KL1-P/KL1-SS (Extra LED2)



Travel Charts

Actuator Insertion 6.0 5.0 0 mm

11/12	Open			
21/22	Open			
33/34			Open	
43/44		Open		



For all IDEM switches, the normally closed (NC) circuits are closed when the guard is closed with actuator inserted.

IDEM Solenoid Interlock Accessories

Actuators

- · 4 available keys
- All keys are 316 stainless steel
- Flexible key options available
- Lockout actuator available



IDEM Interlock Safety Switch Actuator Tongue (Keys)								
Part Number	Price	Description	Use wit	Weight	Minimum			
			KLP/KLM/KL1/KLTM	KL3-SS/KLT-SS	(lbs)	Entry Radius	Dimensions	
<u>140107</u>	\$;04g!:	40mm mounting hole spacing, 90 degree stainless steel key/ mounting tab	√	✓	0.07	175mm	Figure 1	
<u>140108</u>	\$04g?:	20mm mounting hole spacing, straight stainless steel key with plastic stop	√	✓	0.07	175mm	Figure 2	
<u>140110</u>	\$04h0:	40mm mounting hole spacing, stainless steel key with black- painted aluminum flexible mounting tab	√	√	0.16	100mm	Figure 3	
<u>140111</u>	\$04h1:	40mm mounting hole spacing, stainless steel key with mirror polished stainless steel flexible mounting tab	√	√	0.22	100mm	Figure 3	
<u>140130</u>	\$06up:	IDEM lockout actuator, stainless steel, for use with all IDEM tongue (key) switches	√	✓	0.10	NA	Figure 4	
140123	\$04h2:	IDEM anti-tamper manual release key, for use with KL3 and KLT series safety switches		√	0.05	NA	Figure 5	

Accessories

- Gate bolt kits provide a sliding latch and lockout for swinging or sliding doors
- Comes with handle and flat actuator
- Sliding action prevents accidental closure

- Requires four M5 x 35mm mounting screws (not included)
- Gate bolt kit materials: ABS plastic handle; mild steel yellow plate; aluminum black base; mild steel plated bar (inserts into guide); stainless steel guide and key

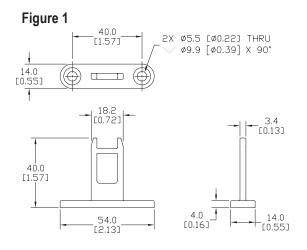


IDEM Interlock Safety Switch Accessories							
Part Number	Price	Description	Use with:		Mainht (lh)	Dimensions	
			KLP/KLM	GBL-1	Weight (lb)	Dillielisiolis	
GBL-1-210001	\$;006ut:	IDEM gate bolt, left hand version, for use with KLP and KLM series safety switches. Includes actuating tongue (key).	√		4.12	Figure 6	
GBL-1-210002	\$004h9:	IDEM gate bolt, right hand version, for use with KLP and KLM series safety switches. Includes actuating tongue (key).	✓		4.12	Figure 7	
GB-210005	\$06uq:	IDEM rear escape handle, for use with GBA-1 and GBL-1 series gate bolts		✓	0.1	Figure 8	
GB-210006	\$06us:	IDEM spring loaded catch, for use with GBA-1 and GBL-1 series gate bolts		√	0.08	Figure 9	

IDEM Solenoid Interlock Safety Accessories

Dimensions

mm [in]



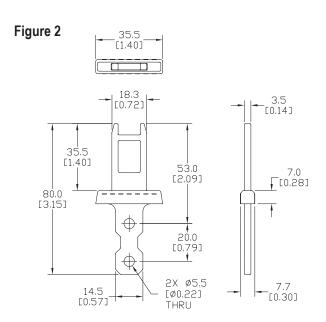
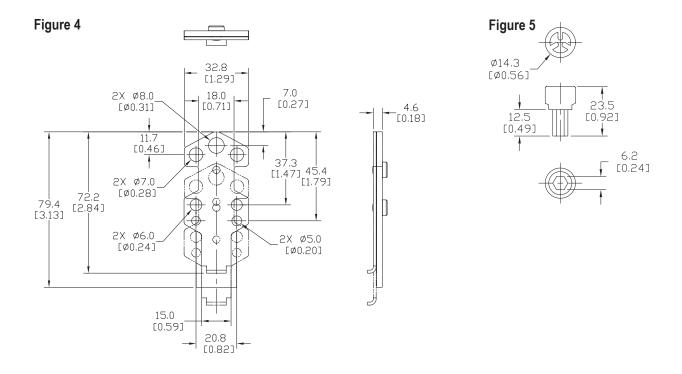
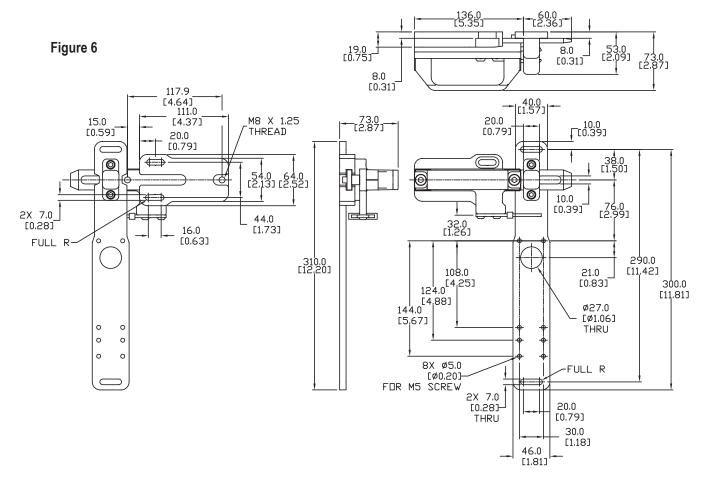


Figure 3 40.0 [1.57] 5.2 2X 5.6 [0.20] [0.22] [0.31] 3.5 [0.14] 6.5 [0.26] SLOT THRU 18.2 [0.72] 3.5 [0.14] 2X Ø5.5 [ø0.22] 56.0 [2.20] THRU 11.0 19.5 [0.77] -[0.43] 6.0 [0.24] 40.0 20.0 [0.79] [1.57] _ 51.5 [2.03]

IDEM Solenoid Interlock Safety Accessories

Dimensions

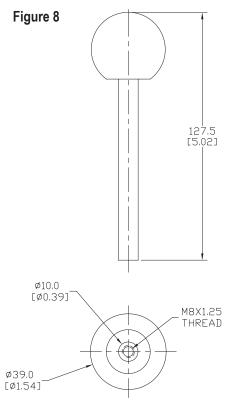


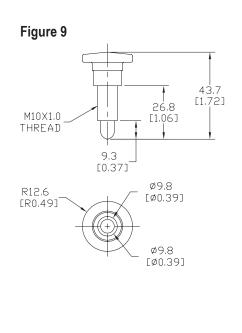


IDEM Solenoid Interlock Safety Accessories

Dimensions

Figure 7 8.0 [0.31] 136.0 [5.35] _60.0 [2.36] 19.0 [0.75] [4.64] 111.0 ___ 20.0 [0.79] __73.0 _[2.87] [4.37] 15.0 38.0 [1.50] 10.0 M8 X 1,25 THREAD [0.59] 20.0 [0.39] [0.79] 2X 7.0 [0.28] 0 0 ☻ <u>o</u> 10.0 76.0 [2.99] [0.39] 44.0 32.0 [1.26] [1.73] [0.63] FULL R M10 X 1.0 THREAD 290.0 108.0 [4₂53] 124.0 [4₈₈₃] [11,42] 310.0 [12,20] [0.83] 300'0 [11.81] ø27.0 144.0 [5_i67] [ø1.06] **THRU** 0 0 0 FULL R [Ø0.20] FOR M5 SCREW 20.0 [0.79] [0.28] THRU 30.0 [1.18] 46.0





IDEM Interlock Safety Switch Selection Guide

Inch-1/Inch-3 Series



MK1-SS Series



HC-1 Series



Series	Inch-1 Inch-3	MK1-SS	HC-1					
Prices start at	\$109s:	\$0109y:	<i>\$1095:</i>					
Description	Safety switch, tongue (Key) Interlock	Safety switch, Compact Hinge Interlock						
Construction Material	25mm wide plastic body with metal head	30mm wide stainless steel 316	25mm wide plastic body with 316 stainless steel head					
Degree of Protection (IEC529)	IP67	IP69K	IP67					
Mechanical Service Life		2.5 x 106 operations at 100mA load						
Conduit Opening	M16 & M12 QD	1/2 in NPT M20 & M12 QD	M16 & M12 QD					
Agency Approvals	cULus E258676, CE							

IDIS-190051



IDIS-192002

KM-203002 KM-203002-SS



KM-SS-204002



Series	IDIS-1	IDIS-2	KM	KM-SS				
Prices start at	\$04o_ <i>:</i>	\$04oh:	\$04p2:	\$004p8:				
Description	Safety switch, tongue (key) interlock operated, 90 degree adjustable head	Safety switch, lever hinge interlock operated, 90 degree adjustable head	Safety switch, tongue (key) interlock operated, 90 degree adjustable head					
Construction Material	31.5 mm wide, pla	stic body and head	40 mm wide, die-cast aluminum body and head or die-cast aluminum body and 316 stainless steel head	41.6 mm wide, 316 stainless body and head				
Degree of Protection (IEC529)		IEC IP67		IEC IP67, IEC IP69K				
Mechanical Service Life		2.5 x 106 operations at 100 mA load						
Conduit Opening		One conduit opening, 1/2 in. female NPT						
Agency Approvals		cULus E2	58676, CE					

IDEM Interlock Safety Switch Selection Guide

KP-200002 KP-200002-SS







K-15-207002



K-15-207002-SS



Series	KP	K-SS	K-15	K-15-SS					
Prices start at	\$-04pj:	\$004pq:	\$;04pf:	\$04pg:					
Description		key) interlock operated, djustable head	Safety switch, tongue (key) interlock operated, 180 degree adjustable head						
Construction Material	58 mm wide, plastic body and head or plastic body and 316 stainless head	58 mm wide, 316 stainless body and head	54 mm wide, plastic body and head	54 mm wide, plastic body and 316 stainless head					
Degree of Protection (IEC529)	IEC IP67	IEC IP67, IEC IP69K	IEC	IP67					
Mechanical Service Life		2.5 x 106 operation	ons at 100 mA load						
Conduit Opening		Three conduit openings, 1/2 in. female NPT							
Agency Approvals		cULus E2	58676, CE						

GLM-143067-AS



GLS-142053



GLS-SS-144020-AS



Series	GLM	GLS	GLS-SS				
Prices start at	\$-004ie:	\$004ii:	\$004h?:				
Description	Safety switch, cable-pull interlock operated, with reset. Protection up to 50 meters (164 ft)	Safety switch, cable-pull interlock operated, with reset. Protection up to 80 meters (262 ft)	Safety switch, cable-pull interlock operated, with reset. Protection up to 100 meters (328 ft)				
Construction Material	57 mm wide, die-cast aluminum body	63 mm wide, die-cast aluminum body	65 mm wide, 316 stainless steel body				
Degree of Protection (IEC529)	IEC	IP67	IEC IP67, IP69K				
Mechanical Service Life		1.5 x 106 operations at 100 mA load					
Conduit Opening	Three conduit openings, 1/2 in. female NPT						
Agency Approvals		cULus E258676, CE					

IDEM Inch Safety Switches

Inch Series Housing

- Tongue interlocking switch
- Designed to fit leading edge, hinged or lift off machine guards
- 16.5 mm- 18mm mounting profile (Inch-X); 16.5 mm- 22mm mounting profile (MK-1)
- M16, 1/2" NPT threaded opening or M12 quick disconnect connection
- 90 degree adjustable head

- Standard and compact housings
- Force guided NC contacts
- · Rotating heads with dual actuator entry
- Purchase actuating key separately (See accessories)

See electrical specifications later in this section.



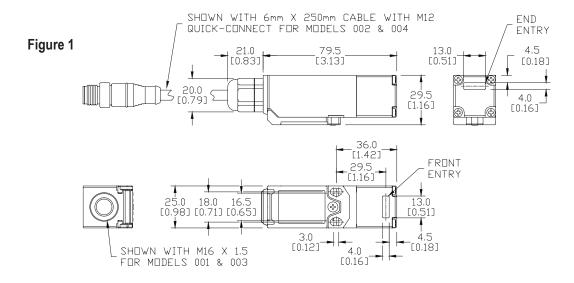
IDEM Inch Series

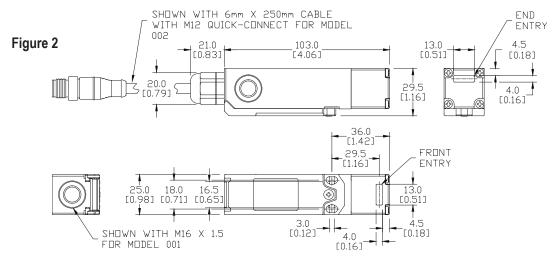
			IDE	M Inch Saf	ety Switches						
Part Number	Price	Body Material	Head Material	Weight (lb)	Actuator Travel / Force for Positive Opening	Contact Configuration	Connection	Dimensions			
INCH-1 Miniature Tongue Interlock Safety Switch											
<u>INCH-1-222001</u>	\$109s:			0.29		2 N.C. Slow action	1 x M16				
INCH-1-222002	\$;109]:	Diagric	316 stainless	0.32	6mm/12N		M12 Quick disconnect	Figure 1			
INCH-1-222003	\$109_:	Plastic	stamess	0.29		1 N.O., 1 N.C. Slow	1 x M16				
INCH-1-222004	\$109u:			0.32		action, break before make	M12 Quick disconnect				
		ı	NCH-3 Min	iature Tongue	Interlock Safety Switch						
INCH-3-223001	\$109v:		316	0.29		1 N.O., 2 N.C. Slow action, break before make	3 x M16	Figure 2			
INCH-3-223002	\$109x:	Plastic	stainless steel	0.32	6mm/12N		M12 Quick disconnect				
		Λ	/K1-SS Mir	niature Tongue	Interlock Safety Switch						
MK1-SS-224001	\$0109y:			0.70		1 N.O., 2 N.C. Slow	1 x M20	- Figure 3			
MK1-SS-224002	\$0109z:	316 stair	less steel	0.70	6mm/12N	action, break before	1 x 1/2" NPT				
MK1-SS-224003	\$;0109[:	2.0 0(4)1		0.75	J	make	M12 Quick disconnect				

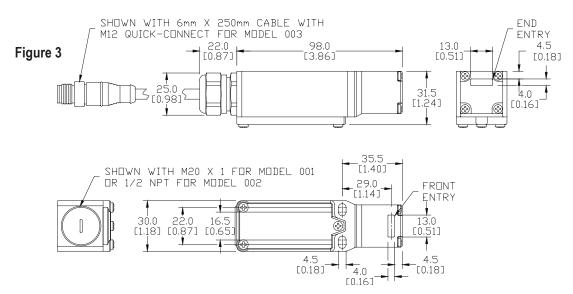
IDEM Inch Safety Switches

Dimensions

mm [in]







See our website, www.AutomationDirect.com, for complete Engineering drawings.

IDEM Inch Hinge Safety Switches

Inch Hinge Series Housing

- Shaft hinge (Idem Inch Hinge) interlock operated
- M16, M20, 1/2" NPT threaded opening or M12 connection
- 16.5 mm- 18mm mounting profile (Inch-X); 16.5 mm- 22mm mounting profile (MK-1)
- 25mm plastic, 30mm stainless steel housings
- · Compact body
- · Plastic and stainless steel housings
- 90 degree adjustable head
- Force guided NC contacts

See electrical specifications later in this section.

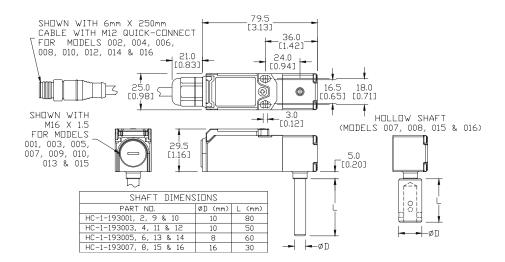
IDEM Inch Hinge Series



			IDI	EM Inch	Hinge Safety St	witches			
Part Number	Price	Body Material	Head Material	Weight (lb)	Actuator Travel / Force for Positive Opening	Contact Configuration	Shaft Size	Connection	Dimensions
HC-1-193001	\$1095:	Plastic	316 stainless steel	0.29 7 degrees/0.5N		2 N.C. Slow action	Solid diameter 10mm x 80mm	1 x M16	Figure 1
HC-1-193002	\$1096:	Plastic	316 stainless steel	0.32	7 degrees/0.5N	2 N.C. Slow action	Solid diameter 10mm x 80mm	M12 Quick disconnect	Figure 1
HC-1-193007	\$109k:	Plastic	316 stainless steel	0.29	7 degrees/0.5N	2 N.C. Slow action	Hollow diameter 16mm x 30mm	1 x M16	Figure 1
HC-1-193008	\$109p:	Plastic	316 stainless steel	0.32	7 degrees/0.5N	2 N.C. Slow action	Hollow diameter 16mm x 30mm	M12 Quick disconnect	Figure 1

Dimensions

Figure 1 HC-1



IDEM IDIS Interlock Safety Switches

IDIS Series Housing

- Tongue (key) (IDIS-1) or lever hinge (IDIS-2) interlock operated
- 90 degree adjustable head
- One 1/2 in. NPT female conduit opening

- 22 mm mounting profile
- Standard and compact housings
- Force guided NC contacts
- Purchase actuating key separately (See accessories)

See electrical specifications later in this section.

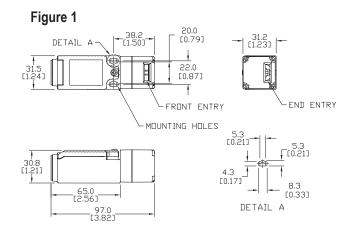
	IDEM IDIS-1 Tongue (Key) Interlock Safety Switches												
Part Number	Price	Body Material	Head Material	Weight (lbs)	Actuator Travel / Force for Positive Opening	Contact Configuration	Dimensions						
IDIS-190051	\$04o_:	Plastic				1 N.O., 2 N.C. Slow action	Figure 1						
IDIS-190055	\$04o#:		Plastic	0.35	6mm/12N	3 N.C. Slow action	Figure 1						
IDIS-190059	\$;040!:					1 N.O., 1 N.C. Snap action	Figure 1						

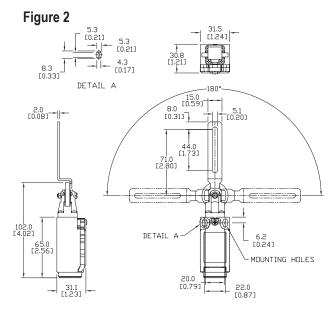


	ID	EM IDI	S-2 Hin	ge Inte	rlock Safety Sv	vitches		
		Body Material	Head Material	Weight (lbs)	Actuator Rotation / Force for Positive Opening	Contact Configuration	Dimensions	
IDIS-192002	\$04oh:					1 N.O., 2 N.C. Slow action	Figure 2	
IDIS-192005	\$-04oi:	Plastic	Plastic	Plastic 0.35	7 degrees / 0.5N	3 N.C. Slow action	Figure 2	
IDIS-192008	\$-04oj:					1 N.O., 1 N.C. Snap action	Figure 2	



Dimensions





IDEM KM/KM-SS Interlock Safety Switches

KM/KM-SS Series Housing

- Tongue (key) interlock operated
- 90 degree adjustable head
- 8 actuator entry positions
- One 1/2 in. NPT female conduit opening
- Force guided NC contacts

- 30 mm mounting profile
- Aluminum and 316 stainless steel options available
- Includes one tamper-proof T20 Torx bit
- Purchase actuating key separately. (See accessories)

See electrical specifications later in this section.









KM-SS-204002



		IDEI	N KM/KM-SS	Interlock	Safety Switches		
Part Number	Price	Body Material	Head Material	Weight (lbs)	Actuator Travel / Force for Positive Opening	Contact Configuration	Dimensions
KM-203002	\$04p2:	Die-cast aluminum	Die-cast aluminum	0.92	6mm/12N	1 N.O., 2 N.C. Slow action	Figure 1
KM-203008	\$004p4:	Die-cast aluminum	Die-cast aluminum	0.92	6mm/12N	1 N.O., 3 N.C. Slow action	Figure 1
KM-203011	\$004p6:	Die-cast aluminum	Die-cast aluminum	0.92	6mm/12N	2 N.O., 2 N.C. Slow action	Figure 1
KM-203002-SS	\$004p3:	Die-cast aluminum	316 stainless steel	1.1	6mm/12N	1 N.O., 2 N.C. Slow action	Figure 2
KM-203011-SS	\$004p7:	Die-cast aluminum	316 stainless steel	1.1	6mm/12N	2 N.O., 2 N.C. Slow action	Figure 2
KM-SS-204002	\$004p8:	316 stainless steel	316 stainless steel	1.4	6mm/12N	1 N.O., 2 N.C. Slow action	Figure 2
KM-SS-204011	\$004pa:	316 stainless steel	316 stainless steel	1.4	6mm/12N	2 N.O., 2 N.C. Slow action	Figure 2

Dimensions

Figure 1

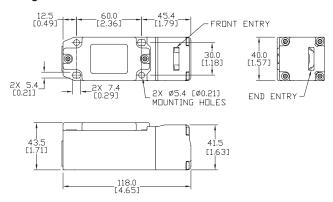
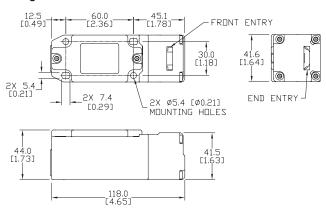


Figure 2



IDEM KP/K-SS and K-15 Interlock Safety Switches

KP/K-SS and K-15 Series Housing

- Tongue (key) interlock operated
- 180 degree adjustable head
- 4 actuator entry positions
- Three 1/2 in. NPT female conduit openings
- Force guided NC contacts
- 40 mm mounting profile
- Purchase actuating key separately. (See accessories.)

See electrical specifications later in this section.









K-SS-208002



	IDEM KP/K-SS Interlock Safety Switches												
Part Number	Price	Body Material	Head Material	Weight (lbs)	Actuator Travel/Force for Positive Opening	Contact Configuration	Dimensions						
KP-200002	\$-04pj:		Plastic		6mm/12N	1 N.O., 2 N.C. Slow action	Figure 1						
KP-200008	\$-04pl:	Dlastia		0.7		1 N.O., 3 N.C. Slow action	Figure 1						
KP-200011	\$04po:	Plastic				2 N.O., 2 N.C. Slow action	Figure 1						
KP-200002-SS	\$04pk:		316 stainless steel	0.85		1 N.O., 2 N.C. Slow action	Figure 2						
KP-200011-SS	\$04pp:	Plastic	240 -4-1-141	0.85	C (40N)	2 N.O., 2 N.C. Slow action	Figure 2						
K-SS-208002	\$004pq:	316 stainless steel	316 stainless steel	1.63	6mm/12N	1 N.O., 2 N.C. Slow action	Figure 3						
K-SS-208011	\$;004pt:	316 stainless steel	316 stainless steel	1.63	6mm/12N	2 N.O., 2 N.C. Slow action	Figure 3						

K-15-207002



K-15-207002-SS



	IDEM K-15 Interlock Safety Switches											
Part Number Price Body Material			Head Material	Weight (lbs)	Actuator Travel / Force for Positive Opening	Contact Configuration	Dimensions					
K-15-207002	\$;04pf:		Dlastia	0.66		1 N.O., 2 N.C. Slow action	Figure 4					
K-15-207005	\$04ph:	Plastic	Plastic		6mm/12N	3 N.C. Slow action	Figure 4					
K-15-207002-SS	\$04pg:		316 Stainless Steel	0.8		1 N.O., 2 N.C. Slow action	Figure 5					

IDEM KP/K-SS and K-15 Interlock Safety Switches

Dimensions

mm [in]



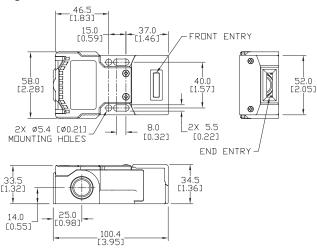
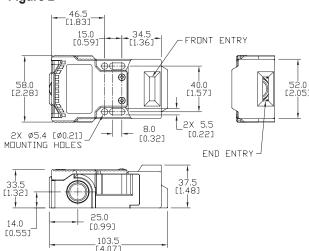
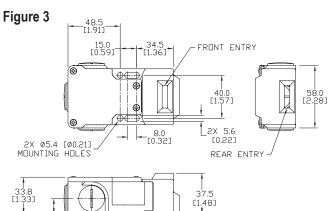


Figure 2





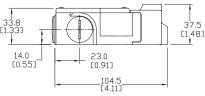


Figure 4

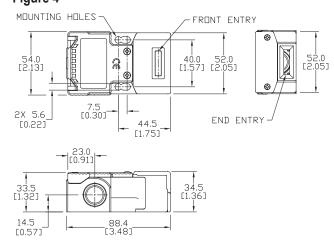
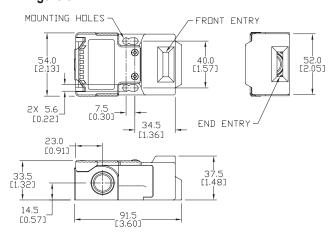


Figure 5



KM-EX-203026

IDEM Explosion-Proof Interlock Safety Switches







KM-SS-EX-204026

IDEM's range of explosion-proof, tongue interlock switches has been developed to satisfy the latest IECEx and ATEX Standards and to provide explosion-proof switching for use in hazardous locations created within the oil, chemical, pharmaceutical, food processing, packaging and other hazardous industries.

Designed to fit to the leading edge of sliding, hinged or lift-off machine guards, these switches provide positively operated switching contacts plus a tamper resistant key mechanism that is not easily defeated. They combine explosion-proof protection and satisfy high functional safety requirements all in one device.

They are available in a variety of housings to satisfy virtually all applications where the potential for explosion exists.

These switches are manufactured with ATEX Exd IIC T6 certified explosion proof contact blocks. All electrical switching elements are fully encapsulated.

Features

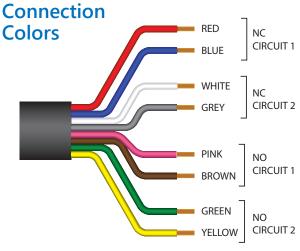
- 3m [9.84 ft] prewired pigtail cable
- Force guided NC contacts
- Two NO and two NC contacts
- Plastic, aluminum and stainless steel 316 options available
- Includes one tamper-proof T20 Torx bit (KM models only)
- Purchase actuating key separately. (See accessories)







	IDEM Explosion Proof Interlock Safety Switches													
Part Number	Price	Body Material	Head Adjustability	Entry Positions	Actuator Travel	Force for Positive Opening	Contacts	Weight lb [kg]	Drawings					
KP-EX-200026	\$;054a!:	Plastic	180°	4	6mm [0.24 in]	12N	2 NO, 2 NC	0.88 [0.40]	<u>PDF</u>					
K-SS-EX-208026	\$054a?:	Stainless steel 316	180°	4	6mm [0.24 in]	12N	2 NO, 2 NC	1.98 [0.90]	PDF					
KM-EX-203026	\$054b2:	Die-cast aluminum	90°	8	6mm [0.24 in]	12N	2 NO, 2 NC	1.18 [0.54]	PDF					
KM-SS-EX-204026	\$054b3:	Stainless steel 316	90°	8	6mm [0.24 in]	12N	2 NO, 2 NC	2.18 [0.99]	PDF					



Actuator Keys For Use With IDIS-1

- All keys are 316 stainless steel
- Flexible key option available





	IDEM Interlock Safety Switch Actuator Tongue (Keys)										
Part Number	Price	Weight (lb [g])	Drawings								
<u>140103</u>	\$;04g]:	14.4 mm mounting hole spacing, 90° bent stainless steel key/mounting tab	175mm	0.03 [13.6]	PDF						
<u>140104</u>	\$;04g[:	14.4 mm mounting hole spacing, straight stainless steel key/mounting tab	175mm	0.03 [13.6]	<u>PDF</u>						
<u>140105</u>	\$04g_:	40mm mounting hole spacing, stainless steel key with polyester flexible mounting tab	100mm	0.06 [27.2]	<u>PDF</u>						

Actuator Keys For Use With KP/K15 and K-SS/KM/KM-SS

- All keys are 316 stainless steel
- Flexible key options available



	IDEM Interlock Safety Switch Actuator Tongue (Keys)										
			Use	With	Minimum Entry	Weight	Drawings				
Part Number	Price	Description	KP/K-15	K-SS/KM/ KM-SS	Radius (mm [in])	(lb [g])					
<u>140106</u>	\$04g#:	40mm mounting hole spacing, 90° stainless steel key/mounting tab	√ *		175mm [6.89]	0.07 [31.8]	<u>PDF</u>				
<u>140107</u>	\$;04g!:	40mm mounting hole spacing, 90° stainless steel key/mounting tab	√ **	✓	175mm [6.89]	0.07 [31.8]	<u>PDF</u>				
<u>140108</u>	\$04g?:	20mm mounting hole spacing, straight stainless steel key with plastic stop	√	√	175mm [6.89]	0.07 [31.8]	<u>PDF</u>				
<u>140109</u>	\$;04g,:	40mm mounting hole spacing, stainless steel key with polyester flexible mounting tab	√	√	100mm [3.94]	0.10 [45.4]	<u>PDF</u>				
<u>140110</u>	\$04h0:	40mm mounting hole spacing, stainless steel key with black painted aluminum flexible mounting tab	√	√	100mm [3.94]	0.16 [72.6]	PDF				
<u>140111</u>	\$04h1:	40mm mounting hole spacing, stainless steel key with mirror polished stainless steel flexible mounting tab	√	✓	100mm [3.94]	0.22 [99.8]	<u>PDF</u>				
<u>140130</u>	\$06up:	IDEM lockout actuator, stainless steel, for use with IDEM tongue (key) switches	√	√	NA	0.10 [45.4]	<u>PDF</u>				

140111

140110

140130

^{*} For KP and K-15 series with plastic heads

^{**} For KP and K-15 series with stainless steel heads

Actuator Keys For Use With INCH and MK1

- All keys are 316 stainless steel
- Flexible key option available









	IDEM Interlock Safety Switch Actuator Tongue (Keys)											
			Use	With	Minimum Entry	Weight						
Part Number	Price	Description	INCH	MK1	Radius (mm [in])	(lb [g])	Drawings					
<u>140179</u>	\$109?:	IDEM key guide, 316 stainless steel. Mounting hardware included. For use with IDEM INCH series safety switches	√		NA	0.10 [45.4]	<u>PDF</u>					
<u>140179-SS</u>	\$;109,:	IDEM key guide, 316 stainless steel. For use with IDEM MK1 series safety switches		√	NA	0.10 [45.4]	<u>PDF</u>					
<u>140180</u>	\$10a0:	IDEM actuator tongue (key), 8mm mounting hole spacing, 316 stainless steel, 90 degree mounting tab. For use with IDEM MK1 and INCH series safety switches		√	150 [5.91]	0.10 [45.4]	PDF					
<u>140181</u>	\$10a1:	IDEM actuator tongue (key), 15mm mounting hole spacing, 316 stainless steel, straight mounting tab, shock absorbing. For use with IDEM MK1 and INCH series safety switches	✓	✓	150 [5.91]	0.10 [45.4]	<u>PDF</u>					
<u>140182</u>	\$;109!:	IDEM actuator tongue (key), 40mm mounting hole spacing, 316 stainless steel, flexible mounting tab. For use with IDEM MK1 and INCH series safety switches	√	√	100 [3.94]	0.10 [45.4]	<u>PDF</u>					



Accessories

- Gate bolt kits provide a sliding latch and lockout for swinging or sliding doors
- · Comes with handle and flat actuator
- Sliding action prevents accidental closure

- Requires four M5 x 45mm mounting hardware (not included)
- Gate bolt kit materials: ABS plastic handle; mild steel yellow plate; aluminum black base; mild steel plated bar (inserts into guide); stainless steel guide and key



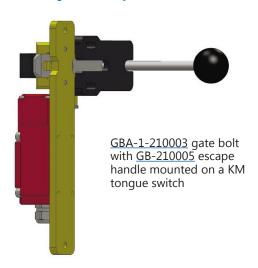






	IDEM Interlock Safety Switch Accessories										
Part Number	Price Description	Description	Use	with:	Weight	D					
		KIM	GBA-1	(lb [g])	Drawings						
GBA-1-210003	\$004h7:	IDEM gate bolt, left hand version, for use with KM series safety switches. Includes actuating tongue (key).	✓		3.7 [1678]	PDF					
GBA-1-210004	\$004h8:	IDEM gate bolt, right hand version, for use with KM series safety switches. Includes actuating tongue (key).	✓		3.7 [1678]	PDF					
GB-210005	\$06uq:	IDEM rear escape handle, for use with GBA-1 and GBL-1 series gate bolts		✓	0.1 [45]	PDF					
GB-210006	\$06us:	IDEM spring loaded catch, for use with GBA-1 and GBL-1 series gate bolts		✓	0.08 [36]	<u>PDF</u>					

Assembly Example



IDEM Universal Gate Box

The IDEM Universal Gate Box features a type 4, high-coded RFID sensor, a robust mechanical locking function, and machine control functions in one heavy-duty housing.

These gate boxes can easily be fitted to access doors and offer optional rear release to reduce the risk of operators being trapped inside a hazardous area.

Users will benefit from the high flexibility of the safety gate system with 2- and 4-station models available, offering a wide variety of 22mm pilot device options.



UGB2-525001





UGB4-526001

Benefits

- Offers a high level of safety for both personnel and plant protection
- Highest protection against manipulation and defeat
- Suitable for left- or right-hinged gates
- Maximum flexibility thanks to the 2and 4-station models
- Reduced installation and maintenance costs

Features

- 90-degree fixed head
- 3000N holding force
- 24VDC to unlock
- Two NC safety outputs
- Two status outputs
- Two status LEDs
- IP65
- Optional sliding and rotary handles

	IDEM Universal Gate Box Selection Guide										
Part Number	Price	Body Material	Lock Type	Actuator Type	Rear Release	Switch Configuration	Drawing				
<u>UGB2-525001</u>	\$;-068!I:		Solenoid 24VDC to unlock	Tongue (key) interlock Uniquely coded RFID	No	2 station	PDF				
UGB2-525002	\$;068!n:	Die eest elemeinen			Yes	2 station	PDF				
<u>UGB4-526001</u>	\$;068!o:	Die-cast aluminum			No	4 station	PDF				
UGB4-526002	\$;068!p:				Yes	4 station	PDF				

- The pilot devices are sold separately and must be fitted by the end user.
- There is a terminal block inside the UGB-KLTM for connecting the safety circuit and lock functionality.
- Please note that the UGB boxes are shallow. Therefore, only IDEM 22mm pushbuttons are recommended.

The gate boxes come with uncovered holes. Holes need to be filled with indicators, push buttons, or blanking plugs, which are accessories purchased separately.

Examples of Universal Gate Box Complete Assemblies



UGB-527005-R



GB-210005

IDEM Universal Gate Box Pushbuttons and Indicators



IDEM Universal Gate Box Specifications							
	Safety Classification and Reliability Data						
Switching Reliability (B10d)	2.5M operations at 100mA load						
Category According to EN ISO 13849-1	Up to Category 4 with Safety Relay						
Performance Level According to EN ISO 13849-1	Up to PLe depending upon system architecture						
IEC 632061	Up to SIL3 depending upon system architecture						
Safety Data - Annual Usage	8 cycles per hour / 24 hours per day / 365 days						
MTTFd	1100 years						
Agency Approvals	cULus, E258676, CE						
Electrical and General Specifications							
Rated Insulation Voltage	500VAC						
Contact Terminals	Plated brass; conductor 16 AWG to 28 AWG; 0.7 N•m [6 lb in] torque						
Supply Voltage	21.6 to 26.4 VDC						
Solenoid Wattage (Terminal S+)	12W (max 500mA)						
Switch Wattage (Terminal R+)	1.2 W (max 50mA)						
Locking Holding Force	3,000N						
Maximum Switching Current	Safety contacts 2.5A @24VDC, 6A @ 120VAC, 3A @ 240VDC (720VA break) Auxiliary contacts max 230V@0.5A						
Maximum Approach/Withdrawal Speed	600 mm/s [23.62 in/sec]						
Enclosure Protection	IP67						
Operating Temperature	-25°C to +40°C [-13°F to +104°F]						
Vibration	IEC 68-2-6, 10-55 Hz + 1Hz						
Lid Screws/Torque	Stainless steel; T20 Torx; 1.5 Nm [1.11 lb•ft]						
Recommended Mounting Screws/Torque	Gate box without handles: M5; 4 N•m [2.95 lb•ft] Gate box with handles: M6, 4 N•m [2.95 lb•ft]						
Head Screws/Torque	Stainless steel; T20 Torx; 1N•m [0.74 lb•ft]						

IDEM Universal Gate Box Pushbuttons and Indicators

















341	<u>522331</u>	522334	<u>522335</u>	522352

	Pushbutton Selection Guide												
Part Number	Price	Description	Barrel Size	Contacts	Action	Operator Type	Operator Color	LED Voltage	Voltage Regulation	IP Rating	Drawing		
<u>522341</u>	\$;68!s:			2 NC	Momentary	Flush	Green	-	_	IP65	<u>PDF</u>		
<u>522332</u>	\$;;68!t:			1 NO, 1 NC	Momentary	Flush	Green	-	_	IP65	PDF		
<u>522331</u>	\$;68!u:	Compact pushbutton		1 NO, 1 NC	Momentary	Flush	Red	-	_	IP65	PDF		
<u>522334</u>	\$;68!v:			1 NO, 1 NC	Momentary	Flush	Blue	-	_	IP65	PDF		
<u>522335</u>	\$;68!y:		22mm	1 NO, 1 NC	Momentary	Flush	Black	-	-	IP65	PDF		
522352	\$;68!z:	Compact		1 NC	Momentary	Flush	Green	24 VAC/VDC	Full voltage	IP65	PDF		
<u>522351</u>	\$;;68!]:	illuminated pushbutton		1 NC	Momentary	Flush	Red	24 VAC/VDC	Full voltage	IP65	PDF		
<u>522235</u>	\$;68!#:	Compact		2 NC	Twist to release	Mushroom	Red	-	_	IP54	PDF		
<u>522236</u>	\$;;68!!:	emergency stop pushbutton		1 NO, 1 NC	Twist to release	Mushroom	Red	_	-	IP54	PDF		

	Illuminator Selection Guide											
Part Number	Price	Description	Barrel Size	Operator Color	Light Function	LED Voltage Rating	Voltage Regulation	IP Rating	Drawing			
<u>522433</u>	\$;;68![:			Green	Permanent	24 VAC/VDC	Full voltage	IP65	PDF			
522432	\$;68!_:			Red	Permanent	24 VAC/VDC	Full voltage	IP65	PDF			
<u>522431</u>	\$;68!?:	Compact indicating	22mm	Yellow	Permanent	24 VAC/VDC	Full voltage	IP65	PDF			
<u>522434</u>	\$;;68!,:	3		Blue	Permanent	24 VAC/VDC	Full voltage	IP65	PDF			
<u>522435</u>	\$68?0:			White	Permanent	24 VAC/VDC	Full voltage	IP65	<u>PDF</u>			









522431

522434





Pushbutton Accessories Selection Guide									
Part Number Price		Description	Barrel Size	Drawing					
<u>522451</u>	\$;68!k:	Legend holder	22mm	PDF					
<u>522452</u>	\$;68!x:	Blanking plug	22mm	PDF					



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IDEM Universal Gate Box Pushbuttons and Indicators



IDEM (JGB Push Button an	d Indicator Genera	I Specifications			
	Emergency Stop Push Button	Flush Push Button	Illuminated Push Button	Pilot Light		
Device Mounting		Fixing Hole 0.89 in [22	2.5 mm] IEC 60947-1			
Fixing Mode		Fixing nut beneath head tightend	to 17.7 - 21.24 lbf•in [2 - 2.4 N•m]			
Contact Operation	Snap action	Slow	oreak	N/A		
Contact Tightening Torque		7.08 - 10.62 lbf•i	n [0.8 - 1.2 N•m]			
Maximum Connection Wire Size		2 x 1.5mm ² [16 AV 2 x 2.5 mm ² [14 AW0	/G] with cable end G] without cable end			
Minimum Connection Wire Size		1 x 0.34 mm ² [21 AWG]		0.22 mm ² [23 AWG]		
Mechanical Durability	100,000 cycles	1,000,000 cycles	300,000 cycles	N/A		
Ui Rated Insulation Voltage		250V (IEC	60947-1)			
Ui Rated Impulse Withstand Voltage	4kV	4kV	4kV	6kV		
I _e Rated Operational Current (IEC 60947-5-1)	0.1 A @ 250 V (DC-13, R300) 0.22 A @ 125 V (DC-13, R300) 0.75 A @ 240 V (AC-15, C300) 1.5 A @ 120 V (AC-15, C300)	0.1 A @ 250 V 0.22 A @ 125 V 0.3 A @ 240 V 0.6 A @ 120 V	N/A			
Electrical Durability	1,000,000 Cycles (AC-15, 0.0	1,000,000 Cycles (DC-13, 0.30 A, 24V, 216,000 cycles/min, 0.5 IEC 60947-5-1 appendix C) 1,000,000 Cycles (AC-15, 0.03 A, 230V, 216,000 cycles/min, 0.5 IEC 60947-5-1 appendix C) 1,000,000 Cycles (AC-15, 0.09 A, 240V, 108,000 cycles/min, 0.5 IEC 60947-5-1 appendix C)				
Electrical Reliability	λ < 5 x 10 ⁻⁷) 17 V 5 mA (IEC 60947-5-4)	λ <= 10 ⁻⁶ 17 V 5 mA (IEC 60947-5-4)	λ <= 10 ⁻⁶ 17 V 5 mA (IEC 60947-5-4)	N/A		
LED Signal type	N/A	N/A	Steady	Steady		
LED Supply Voltage	N/A	N/A	19.2 - 30 VDC 21.6 - 26.4 VAC	19.2 - 30 VDC 21.6 - 26.4 VAC		
LED Current Consumption	N/A	N/A	18 - 27 mA	20 - 27 mA		
LED Service Life	N/A	N/A	70,000h at rated volt	age and 77°F [25°C]		
Storage Temperature		-40 to 158°F	[-40 to 70°C]			
Operating Temperature		-13 to 158°F	[-25 to 70°C]			
Electrical Shock Protection Class		Class II (IEC 61140)		N/A		
Over Voltage Category	N/A	N/A	N/A	Class II (IEC 60536)		
NEMA Degree of Protection	NEMA 12 (UL 50 E) NEMA 3 (UL 50 E)	NEMA 12 (UL 50 E) NEMA 3 (UL 50 E)	NEMA 12 (UL 50 E)	NEMA 4 (UL 50 E) NEMA 12 (UL 50 E)		
Vibration		5G / 2-500 Hz (EC 60068-2-6)			
Shock	15G, 11ms	50G, 11ms 30G, 18ms	50G, 11ms 30G, 18ms	50G, 11ms		

IDEM Universal Gate Box Accessories



IDEM's gate bolts are engineered with rugged die-cast metal and steel construction and are capable of handling shearing forces of up to 10,000N (F1Max) for securing large, hinged doors.

These gate bolts are designed for ease of installation on hinged or sliding guards using four M6 mounting bolts, without requiring additional brackets or door handles.

They are also designed to be impervious to misalignment damage, ensuring long-lasting performance.

Operators must manually close the guard, eliminating the possibility of accidental closure.

	IDEM Universal Gate Box Specifications										
Part Number	Price	Description	Handle Type	Door Type	Fits	Drawing					
<u>UGB2-527003-R</u>	\$;068!q:	Handle and mounting plate	Rotary	Right hand	UGB series 2-station universal gate boxes	PDF					
<u>UGB2-527003-L</u>	\$06a4y:	Handle and mounting plate	Rotary	Left hand	UGB series 2-station universal gate boxes	PDF					
<u>UGB4-527004-R</u>	\$;068!g:	Handle and mounting plate	Rotary	Right hand	UGB series 4-station universal gate boxes	PDF					
<u>UGB4-527004-L</u>	\$06a4v:	Handle and mounting plate	Rotary	Left hand	UGB series 4-station universal gate boxes	PDF					
<u>UGB-527005-R</u>	\$;068!h:	Rear escape handle	Rotary	Right hand	UGB series universal gate boxes	PDF					
<u>UGB-527005-L</u>	\$06a4x:	Rear escape handle	Rotary	Left hand	UGB series universal gate boxes	PDF					
<u>UGB2-527001</u>	\$;-068!i:	Handle and mounting plate	Slide	-	UGB series 2-station universal gate boxes	PDF					
<u>UGB4-527002</u>	\$;-068!j:	Handle and mounting plate	Slide	_	UGB series 4-station universal gate boxes	PDF					
<u>GB-210005</u>	\$06uq:	Rear escape handle	Slide	-	Sliding handle and mounting plate	PDF					
<u>GB-210006</u>	\$06us:	Spring-loaded catch	Slide	-	Sliding handle and mounting plate	PDF					



IDEM Explosion-Proof Safety Cable-Pull Switches



IDEM's range of explosion-proof cable-pull switches has been developed to satisfy the latest IECEx and ATEX Standards and provide explosion-proof switching for use in hazardous locations created within the oil, chemical, pharmaceutical, food processing, packaging and other hazardous industries.

These switches provide positively operated switching contacts. They combine explosion-proof protection and satisfy high functional safety requirements all in one device.

These switches are manufactured with ATEX Exd IIC T6 certified explosion proof contact blocks. All electrical switching elements are fully encapsulated.

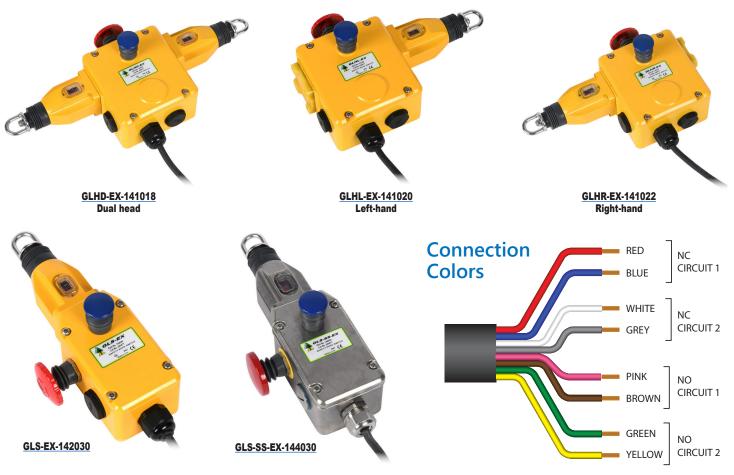
Features

- 3m [9.84 ft] prewired pigtail cable
- Includes one tamper-proof T20 Torx bit
- Rope Pull kits sold separately and recommended for increased reliability
- 80m [262ft], 100m [328ft], 125m [410ft] and 250m [820ft] maximum length systems



	IDEM Explosion-Proof Safety Cable-Pull Switches								
Part Number	Price	Maximum Rope Length	Construction Material	Mounting Profile	E-Stop	LED	Contact Configuration	Weight (lb [kg])	Drawings
GLS-EX-142030	\$054b4:	80m [262ft]	Die-cast aluminum	100mm [3.94 in]	Yes	No	2 NO, 2 NC	2.34 [1.06]	<u>PDF</u>
GLS-SS-EX-144030	\$;0054b5:	100m [328ft]	316 stainless steel	100mm [3.94 in]	Yes	No	2 NO, 2 NC	4.59 [2.08]	<u>PDF</u>
GLHL-EX-141020	\$054b0:	125m [410ft]	Die-cast aluminum	100mm [3.94 in] Left-hand head	Yes	No	2 NO, 2 NC	2.89 [1.31]	PDF
GLHR-EX-141022	\$054b1:	125m [410ft]	Die-cast aluminum	100mm [3.94 in] Right-hand head	Yes	No	2 NO, 2 NC	2.89 [1.31]	PDF
GLHD-EX-141018	\$;;0054a,:	250m [820ft]	Die-cast aluminum	100mm [3.94 in] Dual head	Yes	No	2 NO, 2 NC	3.39 [1.54]	<u>PDF</u>

^{*}See Recommended Rope Span Options and Fittings for number of switches recommended with specific maximum rope lengths.



IDEM GLx Safety Cable-Pull Switches

Features

- Three 1/2 in. NPT female fittings
- Includes one tamper-proof T20 Torx bit
 Rope Pull kits sold separately and recommended for increased reliability



		IDEM Sa	fety Cabl	e-Pull Safe	tv Sw	itches			
Part Number	Price	Maximum Rope Length	Construction Material	Mounting Profile	E-Stop	LED	Contact Configuration	Weight (lb [kg])	Drawings
GLM-143002	\$-004ia:				No	No	1 NO, 2 NC	1.5 [0.68]	PDF
<u>GLM-143051</u>	\$-004ib:				No	No	1 NO, 3 NC	1.5 [0.68]	PDF
GLM-143053	\$-004ic:	E0m [164#]*	Die-cast	57mm	No	No	2 NO, 2 NC	1.5 [0.68]	PDF
GLM-143057	\$-004id:	50m [164ft]*	aluminum	[2.24 in]	Yes	No	1 NO, 3 NC	1.6 [0.73]	PDF
GLM-143067-AS	\$-004ie:				Yes	24VDC	1 NO, 3 NC	1.7 [0.77]	PDF
GLM-143067-BS	\$;-004if:				Yes	110VAC	1 NO, 3 NC	1.7 [0.77]	PDF
GLS-142002	\$-004ig:				No	No	1 NO, 2 NC	1.8 [0.79]	PDF
GLS-142051	\$-004ih:				No	No	1 NO, 3 NC	1.8 [0.79]	PDF
GLS-142053	\$004ii:	00 1000 114	Die-cast	63mm	No	No	2 NO, 2 NC	1.8 [0.79]	PDF
GLS-142063	\$004ij:	80m [262 ft]*	aluminum	[2.48 in]	Yes	No	1 NO, 3 NC	1.9 [0.84]	PDF
GLS-142075-AS	\$-004ik:				Yes	24VDC	1 NO, 3 NC	1.9 [0.86]	PDF
GLS-142075-BS	\$004il:				Yes	110VAC	1 NO, 3 NC	1.9 [0.86]	PDF
GLS-SS-144002	\$004h_:				No	No	1 NO, 3 NC	4.2 [1.91]	PDF
GLS-SS-144004	\$004h#:				No	No	2 NC, 2 NO	4.2 [1.91]	PDF
GLS-SS-144014	\$;004h!:	100m [328 ft]*	Stainless steel	65mm [2.56 in]	Yes	No	1 NO, 3 NC	4.3 [1.95]	PDF
GLS-SS-144020-AS	\$004h?:			[2.50 III]	Yes	24VDC	1 NO, 3 NC	4.4 [2.00]	PDF
GLS-SS-144020-BS	\$;004h,:	-			Yes	110VAC	1 NO, 3 NC	4.4 [2.00]	PDF
GLHL-141006-AS	\$054bg:				Yes	24 VDC	2 NO, 4 NC	2.4 [1.08]	PDF
GLHL-141006-BS	\$054bh:	-			Yes	110 VAC	2 NO, 4 NC	2.4 [1.08]	PDF
GLHL-141055-AS	\$-054bi:	-	Die-cast	100mm	No	24 VDC	2 NO, 4 NC	2.3 [1.04]	PDF
GLHL-141055-BS	\$-054bj:	125m [410 ft]*	aluminum	[3.94 in] Left-hand head	No	110 VAC	2 NO, 4 NC	2.3 [1.04]	PDF
GLHL-141035	\$054bk:	-		Lore-Haria Hoad	Yes	No	2 NO, 4 NC	2.3 [1.06]	PDF
GLHL-141057	\$-054bl:	-			No	No	2 NO, 4 NC	2.2 [1.02]	PDF
GLHL-SS-145006-AS	\$054bn:				Yes	24 VDC	2 NO, 4 NC	5.6 [2.56]	PDF
GLHL-SS-145006-BS	\$054bo:	-		100mm	Yes	110 VAC	2 NO, 4 NC	5.6 [2.54]	PDF
GLHL-SS-145035	\$054bp:	125m [410 ft]*	Stainless steel	[3.94 in]	Yes	No	2 NO, 4 NC	5.5 [2.49]	PDF
GLHL-SS-145057	\$054bq:			Left-hand head	No	No	2 NO, 4 NC	5.4 [2.47]	PDF
GLHR-141010-AS	\$054bs:				Yes	24 VDC	2 NO. 4 NC	2.4 [1.08]	PDF
GLHR-141010-BS	\$;054bt:	-			Yes	110 VAC	2 NO, 4 NC	2.4 [1.08]	PDF
GLHR-141056-AS	\$054bu:	-	Die-cast	100mm	No	24 VDC	2 NO, 4 NC	2.3 [1.04]	PDF
GLHR-141056-BS	\$054bv:	125m [410 ft]*	aluminum	[3.94 in]	No	110 VAC	2 NO. 4 NC	2.3 [1.04]	PDF
GLHR-141036	\$054bx:	-		Right-hand head	Yes	No	2 NO, 4 NC	2.3 [1.06]	PDF
GLHR-141058	\$054by:	-			No	No	2 NO, 4 NC	2.2 [1.02]	PDF
GLHR-SS-145010-AS	\$054bz:				Yes	24 VDC	2 NO, 4 NC	5.5 [2.51]	PDF
GLHR-SS-145010-BS	\$;054b]:	-		100mm	Yes	110 VAC	2 NO, 4 NC	5.6 [2.54]	PDF
GLHR-SS-145036	\$;054b[:	125m [410 ft]*	Stainless steel	[3.94 in]	Yes	No	2 NO, 4 NC	5.5 [2.49]	PDF
GLHR-SS-145058	\$054b_:	-		Right-hand head	No	No	2 NO, 4 NC	5.3 [2.42]	PDF
GLHD-141002-AS	\$054b6:				Yes	24 VDC	2 NO. 4 NC	2.9 [1.32]	PDF
GLHD-141002-BS	\$054b7:	_			Yes	110 VAC	2 NO, 4 NC	2.9 [1.32]	PDF
GLHD-141030-AS	\$054b7:	1	Die-cast	100mm	No	24 VDC	2 NO, 4 NC	2.8 [1.27]	PDF
GLHD-141030-BS	\$054b9:	250m [820ft]*	aluminum	[3.94 in]	No	110 VAC	2 NO, 4 NC	2.8 [1.27]	PDF
GLHD-141040	\$054ba:	-		Dual head	Yes	No	2 NO, 4 NC	2.8 [1.27]	PDF
GLHD-141042	\$054bb:	1			No	No	2 NO, 4 NC	2.7 [1.22]	PDF
GLHD-SS-145002-AS	\$054bb:				Yes	24 VDC	2 NO, 4 NC	6.5 [2.93]	PDF
GLHD-SS-145002-AS	\$054bd:	1		100mm	Yes	110 VAC	2 NO, 4 NC	6.5 [2.93]	PDF
GLHD-SS-145024	\$054bd:	250m [820ft]*	Stainless steel	[3.94 in]	Yes	No	2 NO, 4 NC	6.3 [2.86]	PDF
01110 00 140024	Φ.ΩΕ.41- C			Dual head	N1.	110	2 110, 4 110	0.0 [2.00]	101



GLM-143067-AS



GLS-142053



GLS-SS-144020-AS



GLHL-SS-145035 Left-hand



GLHD-141002-AS **Dual head**

\$:054bf:

^{*}See Recommended Rope Span Options and Fittings for number of switches recommended with specific maximum rope lengths.

IDEM Cable-Pull Safety Rope Switches



	Cable Kits for IDEM Cable-Pull Safety Switches								
Part Number	Price	Description	Cable Length (m [ft])	Construction Material	Weight (lb [kg])				
140002	\$04g8:	Includes (1) cable, (5) eyebolts,	40 [20]	Galvanized steel	0.8 [0.36]				
<u>140011</u>	\$004gd:	1) tensioner / gripper and (1) allen key.	10 [32]	Stainless steel	1.3 [0.59]				
140004	\$004g9:	Includes (1) cable, (9) eyebolts,	20 [65]	Galvanized steel	2.2 [1.0]				
140013	\$004ge:	004ge: (1) tensioner / gripper and (1) allen key.		Stainless steel	2.9 [1.32]				
<u>140005</u>	\$004ga:	Includes (1) cable, (12) eyebolts,	20 1001	Galvanized steel	2.8 [1.27]				
140014	\$;004gf:	(1) tensioner / gripper and (1) allen key.	30 [98]	Stainless steel	3.9 [1.77]				
140006	\$004gb:	Includes (1) cable, (20) eyebolts,	E0 [464]	Galvanized steel	4.5 [2.04]				
140015	\$004gg:	(1) tensioner / gripper and (1) allen key.	50 [164]	Stainless steel	6.0 [2.72]				
140007	\$004gc:	Includes (1) cable, (30) eyebolts,	90 (363)	Galvanized steel	7.0 [3.18]				
140016	\$004gh:	(2) tensioner / grippers and (1) allen key.	80 [262]	Stainless steel	9.5 [4.31]				
140009	\$054b#:	Includes (1) cable, (45) eyebolts,	106 [442]	Galvanized steel	13.9 [6.28]				
140018	\$;054b!: (2) tensioner / grippers and (2) allen keys. 126 [413]		120 [413]	Stainless steel	14.0 [6.35]				





	Steel Cable for IDEM Cable-Pull Safety Switches							
Part Number	Price	Description	Cable Length (m [ft])	Weight (lb [kg])				
140033	\$-04gl:	5m length steel cable, 4mm diameter, red	5 [16]	0.35 [0.16]				
<u>140034</u>	\$04gn:	10m length steel cable, 4mm diameter, red	10 [32]	0.7 [0.32]				
140036	\$04go:	20m length steel cable, 4mm diameter, red	20 [65]	1.4 [0.64]				
140037	\$04gp:	30m length steel cable, 4mm diameter, red	30 [98]	2.1 [0.95]				
<u>140038</u>	\$04gq:	50m length steel cable, 4mm diameter, red	50 [164]	3.5 [1.59]				
<u>140039</u>	\$004gs:	80m length steel cable, 4mm diameter, red	80 [262]	5.4 [2.45]				
<u>140040</u>	\$;004gt:	100m length steel cable, 4mm diameter, red	100 [328]	6.6 [2.99]				
<u>140041</u>	\$004gu:	126m length steel cable, 4mm diameter, red	126 [413]	8.42 [3.82]				

	IDEM Cable-Pull Safety Switch Accessories								
Part Number	Price	Description	Construction Material	Weight (lb [kg])	Drawings				
<u>140019</u>	\$-04gi:	Cable tensioner / gripper. Includes 4mm allen wrench	Stainless steel	0.5 [0.27]	<u>PDF</u>				
<u>140020</u>	\$-04gj:	Cable tensioner / gripper. includes 4mm allen wienen	Galvanized steel	0.3 [0.14]	<u>PDF</u>				
<u>140021</u>	\$04gk:	Pulley assembly	Stainless steel	0.3 [0.14]	<u>PDF</u>				
<u>140064</u>	\$04gz:	Fulley assembly	Galvanized steel	0.2 [0.09]	<u>PDF</u>				
<u>140045</u>	\$04gx:	Eye bolt 84mm long, M8 x 1.25 threads. Includes (2) flat washers and (2) nuts per	Stainless steel	0.8 [0.36]	<u>PDF</u>				
<u>140046</u>	\$04gy:	eye bolt. Package of 8.	Galvanized steel	0.5 [0.27]	<u>PDF</u>				
<u>140043</u>	\$04gv:	Spring, 220mm long	Stainless steel	0.4 [0.18]	<u>PDF</u>				
140132-AS	\$04h3:	Replacement LED assembly, 24VDC, bi-color steady green and red. Use with GL series cable pull switches.	NA	0.08 [0.04]	PDF				
<u>140132-BS</u>	\$04h4:	Replacement LED assembly, 110VAC, bi-color steady green and red. Use with GL series cable pull switches.	NA	0.08 [0.04]	PDF				











140132-AS

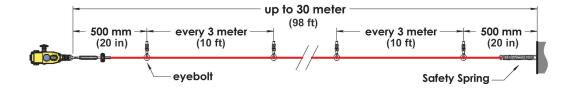
140043

IDEM Cable-Pull Rope Span Options and Fittings



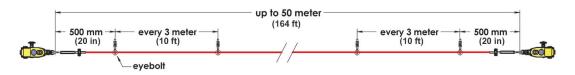
Recommended Rope Span Installations

GLM 30mUp to 30m [98ft] 1 switch / 1 spring



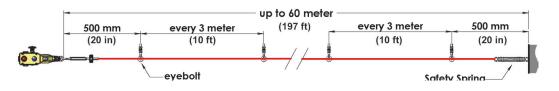
GLM 50m

30 to 60m [98 to 197ft] 2 switches



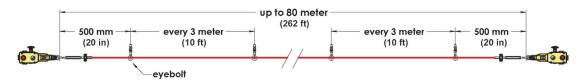
GLS 60m

Up to 60m [197ft] 1 switch / 1 spring



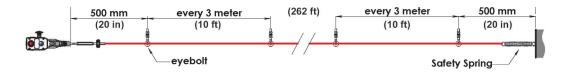
GLS 80m

60 to 80m [197 to 262ft] 2 switches



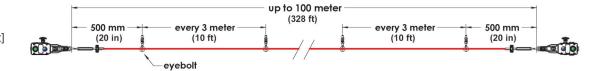
GLS-SS 80m

Up to 80m [262ft] 1 switch / 1 spring



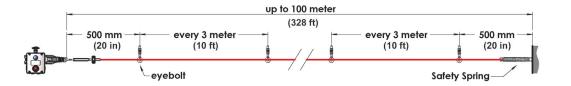
GLS-SS 100m

80 to 100m [262 to 328ft] 2 switches



GLHL/R 100m With Safety Springs

Up to 100m [328ft] 1 switch / 1 spring



GLHL/R 125m

Up to 125m [410ft] 2 switches



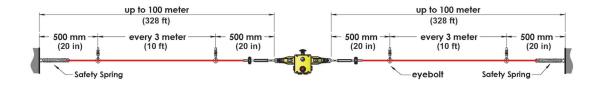
IDEM Cable-Pull Rope Span Options and Fittings



Recommended Rope Span Installations (continued)

GLHD 200m With Safety Springs

Up to 200m [656ft] (100m [328ft] on each side) 1 switch / 2 springs



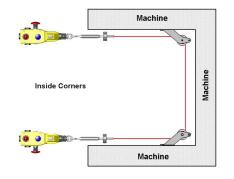
GLHD/L/R 250m

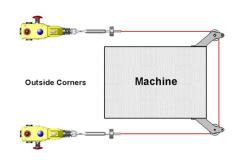
Up to 250m [820ft] (125m [410ft] on each side) 2 switches

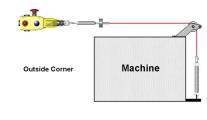


Universal Pulley Examples

- · Use two switches when using two pulleys
- When using a safety spring, use a maximum of one corner pulley

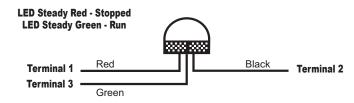






LED

When power is applied to the Red wire (terminal 1), the lamp will illuminate red. When power is applied to the Green Wire (terminal 3), the lamp will illuminate green. Black is OVDC or neutral for 110 VAC and 230VAC versions.



IDEM Interlock Safety Switches Specifications



			Specificat	tions			
	IDIS	INCH/MK1	НС	KIM	KP/K-SS	K-15	GLx
		Safety	Classification an	d Reliability Data	a		
Switching Reliability (B10 _d)		2.5 x 106 operations at 100mA load 1.5 x 10 ⁶ operations at 100mA load					
ISO 13849-1			Up to PLe de	epending upon syster	m architecture		
EN 62061			Up to SIL3 d	epending upon syste	m architecture		
Safety Data - Annual Usage			8 cycles per	hour / 24 hours per o	day / 365 days		
Agency Approvals			cULus (E2	58676), CE			cULus (E258676), CE, TUV
		Elect	rical and General	Specifications			
Conductor Sizes			16-	-12 AWG (1.5 to 2.5 r	nm ²)		
Utilization Category				AC15, A300, 3A			
Thermal Current				10A			
Short Circuit Overload Protection	External 10A Fast Acting recommended						
Rated Insulation Voltage	600VAC 500VAC						
Contact Terminals	Staii	nless steel (Snap action	on plated brass); Max	conductor 1.5 m ² (ID	IS), 2.5 m ² (KM, K/K-15	5); 1 N•m [0.74 lb•ft] to	rque
Maximum Switching Current			2.5A @24 VDC 6A	@ 120VAC, 3A @ 24	0VDC (720VA Break)		
Maximum Approach/Withdrawal Speed			600mm/s	[23.6 in/s]			NA
Enclosure Protection			IP67 (IP69K on all mo	dels with both stainle	ss steel head and body)	
Operating Temperature			-25°	C to 80°C [-13°F to 1	76°F]		
Vibration			IEC 68-2-6, 10H	Iz to 55Hz + 1Hz			10Hz to 500Hz 0.35 mm [0.014 in]
Lid Screws/Torque	Plated brass 1 N•m [0.74 lb•ft]	Stainless steel T20 Torx 1 N•m [0.74 lb•ft]	Stainless steel Stainless steel 1 N•m [0.74 lb•ft] T20 Torx 1.5 N•m [1.11 lb•ft]				
Recommended Mounting Screws/ Torque	M4 1.5 N•m [1.11 lb•ft]	M5 4N•m [2.95 lb•ft]	M4 M5 1.5 N•m [1.11 lb•ft] 4N•m [2.95 lb•ft]				
Head Screws/Torque	Stainless steel, except snap (plated brass) 1 N•m [0.74 lb•ft]	Stainless steel T20 Torx 1 N•m [0.74 lb•ft]	Stainless steel; 1 N•m [0.74 lb•ft]				

IDEM Explosion-Proof Safety Switches Specifications



		Specific	cations					
	HLM-EX / HLM-SS-EX	KM-EX / KM-SS-EX	KP-EX / K-SS-EX	GLS-EX / GLS-SS-EX	GLHx-EX			
	Safety Classification and Reliability Data							
Switching Reliability (B10 _d)	2.5	A load 1.5 x 10 ⁶ operations at 100mA load						
ISO 13849-1		Up to PI	_e depending upon system arc	nitecture				
EN 62061		Up to SI	L3 depending upon system arc	hitecture				
Safety Data - Annual Usage		8 cycles	per hour / 24 hours per day / 3	65 days				
MTTF _d		356 years		214 :	rears			
Agency Approvals		The contact block	ATEX, IECEx, CE c is cURus Hazardous Location	rated (E358295)				
		Electrical and Gene	eral Specifications					
Utilization Category			B300 (pilot duty)					
Minimum Switch Current			5mA, 5VDC					
Thermal Current			2.5 A max					
Maximum Switching Current			250VAC/DC, 2.5 A maximum					
Maximum Approach/Withdrawal Speed		600mm/s [23.6 in/s]		N	A			
Enclosure Protection		IP67 (IP69K on all	models with both stainless ste	el head and body)				
Operating Temperature			-20°C to 60°C [-4°F to 140°F]					
Vibration	IEC 68-2-6, 10Hz to 55Hz 0.35mm [0.01 in]		IEC 68-2-6, 10H	z to 55Hz + 1Hz				
Lid Screws/Torque	Plated brass 1 N•m [0.74 lb•ft]	Stainless steel T20 Torx 1 N•m [0.74 lb•ft]	Stainless steel Stainless steel 1 N•m [0.74 lb•ft] T20 Torx 1.5 N•m [1.11 lb•ft] 1.5 N•m [1.11 lb•ft]		T20 Torx			
Recommended Mounting Screws/ Torque	M4 2 N•m [1,48 lb•ft]		M5 4N•m [2.95 lb•ft]					
Head Screws/Torque	Stainless steel, except snap (plated brass) 1 N•m [0.74 lb•ft]	Stainless steel T20 Torx 1 N•m [0.74 lb•ft]	5	Stainless steel; 1 N•m [0.74 lb•f	[]			

IDEM Interlock/Hinge Safety Travel Charts



Interlock Safety Switch Types

Slow-make/slow-break contacts:

A contact element in which the contact motion is dependent on the actuator speed.

Snap-action contact:

A contact element in which the contact motion is independent of the speed of the actuator. This feature ensures reliable electrical performance even in applications involving very slow moving actuators.

Contacts Configuration

1 NO and 2 NC

Slow-make/slow-break contacts

1 NO and 1 NC Snap action contacts

Slow-make/slow-break contacts

1 NO and 3 NC

1 NO and 1 NC

Slow-make/slow-break contacts

Slow-make/slow-break contacts

Slow-make/slow-break contacts



Travel Charts



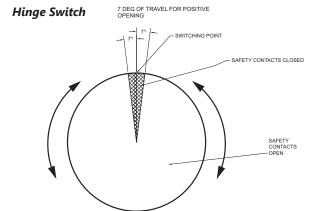
Interlock Switches

2NC 1NO

11/12	Open				
21/22	Open				
33/34			Open		
3NC 1NO	6.	8 6	.0	0	mn
11/12	Open				
21/22	Open				
31/32	Open				
43/44			Open		
1NC 1NO (SNA	AP) 6.	.5		0	mm
11/12	Open				
23/24			Open		

6.8 6.0

3	NC		6.0)		0 m	ım
Γ	11/12	Open					
Г	21/22	Open					
Г	31/32	Open					
2	NC 2NO	6.8	6	.0		0	mm
	11/12	Open					
	21/22	Open					
	33/34				Oper	1	
	43/44				Oper	1	



SHAFT CAN FREELY TURN WITH NO DEAD STOPS.

User to ensure that by correct positioning of the shaft at installation causes the safety contacts to open such that no hazard exists to the operator when the door is opened a few de

Safety Rope Switches

EX 1 NO/2 NC 1 NO/3 N.C. 2 NO/2 N.C. 11/12 11/12 11/12 NC 21/22 21/22 21/22 31/32 43/44 33/44 NO 43/44

0 mm 3.5	mm 14.5	mm 17.0 m	nm
Latched off - Rope Slack	Tension Range (Switch Reset)	Rope Pulled	
Open		Open	
Open		Open	
Open		Open	
	Open		
	Open		

Explosion-Proof Safety Switches Selection Guide





















HLM-EX Grou

HLM-SS-EX Group

Series	HLM-EX Series	HLM-SS-EX Series
Prices Start At	\$054ax:	\$;054a[:
Description	Die-cast metal body safety limit switch	Stainless steel body safety limit switch
Material of Construction	Die-cast zinc aluminum casing	Stainless steel 316 casing
Degree of Protection (IEC529)	IP67	IP67/IP69
Mechanical Service Life	2.6x10 ⁶ cycles at 100mA load	2.6x10 ⁶ cycles at 100mA load
Contact Configuration	2 NC / 2 NO slow action break before make	2 NC / 2 NO slow action break before make
Conduit Opening	Sealed	Sealed
Connection	3m [9.84 ft] prewired pigtail cable	3m [9.84 ft] prewired pigtail cable
Agency Approvals	ATEX, IECEx, CE, UR (file E358295)	ATEX, IECEx CE, UR (file E358295)



KP-EX-200026



K-SS-EX-208026



KM-EX-203026



KM-SS-EX-204026

Series	KP-EX Series	K-SS-EX Series	KM-EX Series	KM-SS-EX Series
Prices Start At	\$;054a!:	\$054a?:	\$054b2:	\$054b3:
Description	Safety switch, tongue (key) interlock			
Material of Construction	Plastic casing	Stainless steel 316 casing	Die-cast zinc aluminum casing	Stainless steel 316 casing
Degree of Protection (IEC529)	IP67	IP67/IP69	IP67	IP67/IP69
Mechanical Service Life	2.6x10 ⁶ cycles at 100mA load			
Contact Configuration	2 NC / 2 NO slow action break before make	2 NC / 2 NO slow action break before make	2 NC / 2 NO slow action break before make	2 NC / 2 NO slow action break before make
Conduit Opening	Sealed	Sealed	Sealed	Sealed
Connection	3m [9.84 ft] prewired pigtail cable			
Agency Approvals	ATEX, IECEx, CE, UR (file E358295)			

IDEM Type HLM Explosion-Proof Safety Limit Switches



IDEM's range of explosion-proof limit switches has been developed to satisfy the latest IECEx and ATEX standards and provide explosion-proof switching for use in hazardous locations created within the oil, chemical, pharmaceutical, food processing, packaging and other hazardous industries.

These switches provide positively operated switching contacts. They combine explosion-proof protection and high functional safety requirements.

These switches are manufactured with ATEX Exd IIC T6 certified explosion-proof contact blocks. All electrical switching elements are fully encapsulated.

IDEM limit switches are designed to be mounted for position sensing applications, such as guard doors, conveyors, machine beds, elevators, etc.

The stainless steel switches have an IP69K rating, which makes them suitable for high-temperature washdown with detergent.

Features

- 3m [9.84 ft] prewired pigtail cable
- · Heavy-duty die-cast aluminum or stainless steel 316 bodies
- Industry standard mounting to EN50041
- · Slow-action break-before-make contacts









Side rotary lever HLM-EX-174015 HLM-SS-EX-175015



Plunger with roller HLM-EX-174065 HLM-SS-EX-175065



Plunger HLM-EX-174115 HLM-SS-EX-175115

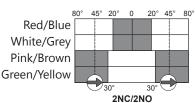


Adjustable side rotary HLM-EX-174315 HLM-SS-EX-175315

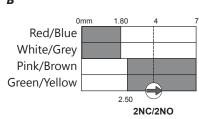
	IDEM Type HLM (Die-Cast Metal Body) Safety Limit Switches										
Part Number	Price	Body Material	Туре	Contacts	Connection	Force Required	Bar Chart	Drawings			
HLM-EX-174015	\$054av:	Die-cast zinc	Side rotary lever	2 NC safety contacts 2 NO monitoring contacts	3m [9.84 ft] prewired pigtail cable	0.4 N•m [0.30 ft•lb]	А	PDF			
HLM-EX-174065	\$054ax:	Die-cast zinc	Plunger with roller	2 NC safety contacts 2 NO monitoring contacts	3m [9.84 ft] prewired pigtail cable	2N [0.45 lbf]	В	<u>PDF</u>			
HLM-EX-174115	\$054ay:	Die-cast zinc	Plunger	2 NC safety contacts 2 NO monitoring contacts	3m [9.84 ft] prewired pigtail cable	2N [0.45 lbf]	В	<u>PDF</u>			
HLM-EX-174315	\$054az:	Die-cast zinc	Adjustable side rotary	2 NC safety contacts 2 NO monitoring contacts	3m [9.84 ft] prewired pigtail cable	0.4 N•m [0.30 ft•lb]	A	PDF			
HLM-SS-EX-175015	\$;054a]:	Stainless steel	Side rotary lever	2 NC safety contacts 2 NO monitoring contacts	3m [9.84 ft] prewired pigtail cable	0.4 N•m [0.30 ft•lb]	А	PDF			
HLM-SS-EX-175065	\$;054a[:	Stainless steel	Plunger with roller	2 NC safety contacts 2 NO monitoring contacts	3m [9.84 ft] prewired pigtail cable	2N [0.45 lbf]	В	PDF			
HLM-SS-EX-175115	\$054a_:	Stainless steel	Plunger	2 NC safety contacts 2 NO monitoring contacts	3m [9.84 ft] prewired pigtail cable	2N [0.45 lbf]	В	PDF			
HLM-SS-EX-175315	\$054a#:	Stainless steel	Adjustable side rotary	2 NC safety contacts 2 NO monitoring contacts	3m [9.84 ft] prewired pigtail cable	0.4 N•m [0.30 ft•lb]	А	<u>PDF</u>			

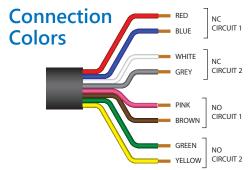
Bar Charts

A



В





Comepi Safety Switches Selection Guide





Series	SP2 Series	SDM Series		
Prices start at	\$04ор:	\$04ok:		
Description	30 mm safety limit switch with keys or shaft lever	50 mm safety limit switch with keys, shaft lever or pull wire		
Material of Construction	Plastic casing, double insulated	ZAMAK (zinc alloy) casing		
Degree of Protection (IEC529)	IEC IP65	IEC IP66		
Maximum Switching Frequency	Contact blocks: 1 cycle per second (all)	Contact blocks: 1 cycle per second (all)		
Mechanical Service Life	1,000,000 operations interlock and limit switches	1,000,000 operations. interlock and limit switches 500,000 operations for K9800 and K9900 cable pull switches 25,000 operations for K98 and K99 cable pull switches		
Contact Configuration positive opening, 1 N.O. + 1 N.C. positive opening, 1 N.O. + 1 N.C. W02 - Simultaneous, slow action, W02 - Simultaneous, slow action,		X11 - Slow action, positive opening, 1 N.O. + 1 N.C. W02 - Simultaneous, slow action, positive opening, 2 N.C.		
Conduit Opening	One cable hole, 1/2" NPT adapter	Three cable holes, 1/2" NPT		
Connection	2x2.5 mm ² (AWG14) to 2x0.5 mm ² (AWG 18)	2x2.5 mm ² (AWG14) to 2x0.5 mm ² (AWG 18)		
Agency Approvals	CE, UL file E189258, RoHS	CE, UL file E189258, RoHS		





Series	SBM Series	SCM Series		
Prices start at	\$;5_Jo:	\$;5_Jy:		
Description	40 mm safety limit switch with keys or pull wire	60 mm safety limit switches with keys or pull wire		
Material of Construction	Aluminum casing	Aluminum casing		
Degree of Protection (IEC529)	IEC IP66	IEC IP66		
Maximum Switching Frequency	Contact blocks: 1 cycle per second (all)	Contact blocks: 1 cycle per second (all)		
Mechanical Service Life	1,000,000 operations. interlock and limit switches 25,000 operations for cable pull switches	1,000,000 operations interlock and limit switches 500,000 operations for K9800 and K9900 cable pull switches 25,000 operations for K98 and K99 cable pull switches		
Contact Configuration	X11 - Slow action, positive opening, 1 N.O. + 1 N.C. W02 - Simultaneous, slow action, positive opening, 2 N.C. X12 - Slow action, positive opening, 1 N.O. + 2 N.C. W03 - Simultaneous, slow action, positive opening 3 N.C.	X11 - Slow action, positive opening, 1 N.O. + 1 N.C. W02 - Simultaneous, slow action, positive opening, 2 N.C. X12 - Slow action, positive opening, 1 N.O. + 2 N.C. W03 - Simultaneous, slow action, positive opening 3 N.C.		
Conduit Opening	One cable hole, 1/2" NPT	Three cable holes, 1/2" NPT		
Connection	2x2.5 mm ² (AWG14) to 2x0.5 mm ² (AWG 18)	2x2.5 mm ² (AWG14) to 2x0.5 mm ² (AWG 18)		
Agency Approvals	CE, UL file E189258, RoHS	CE, UL file E189258, RoHS		



These safety switches are developed and manufactured according to IEC and EN European standards.

Easy to use, electromechanical safety switches provide:

- Visible operation
- Ability to switch large currents (10 A conventional thermal current)
- Precise operating points (consistency)
- Immunity to electromagnetic disturbances
- Electrically separated contacts (Zb)
- N.C. contacts with positive opening operation \odot
- Actuation Speed: 0.5 to 0.01 m/s [19.7 to 0.4 in/s]
- Conduit opening 1/2" NPT threaded or adapter





SBM2K4000W03

SCI	М2	KΔ	NN	N۱	N١	በ3

Safety Tongue Switch Selection Guide									
Part Number	Price	Safety Output Type	Monitoring Output Type	Head Type	IP Rating	Cable Entry	Body Material	Drawing	
SBM2K4000W02	\$;-5_]j:	(2) N.C.	-	90-degree adjustable	IP66	(1) 1/2in NPT	Die-cast aluminum	<u>PDF</u>	
SBM2K4000W03	\$;5_]k:	(3) N.C.	-	90-degree adjustable	IP66	(1) 1/2in NPT	Die-cast aluminum	PDF	
SBM2K4000X11	\$;-5_]I:	(1) N.C.	(1) N.O.	90-degree adjustable	IP66	(1) 1/2in NPT	Die-cast aluminum	<u>PDF</u>	
SBM2K4000X12	\$;5_]n:	(2) N.C.	(1) N.O.	90-degree adjustable	IP66	(1) 1/2in NPT	Die-cast aluminum	PDF	
SCM2K4000W02	\$;;5_]t:	(2) N.C.	-	90-degree adjustable	IP66	(3) 1/2in NPT	Die-cast aluminum	PDF	
SCM2K4000W03	\$;5_]u:	(3) N.C.	-	90-degree adjustable	IP66	(3) 1/2in NPT	Die-cast aluminum	PDF	
SCM2K4000X11	\$;5_]v:	(1) N.C.	(1) N.O.	90-degree adjustable	IP66	(3) 1/2in NPT	Die-cast aluminum	<u>PDF</u>	
SCM2K4000X12	\$;5_]x:	(2) N.C.	(1) N.O.	90-degree adjustable	IP66	(3) 1/2in NPT	Die-cast aluminum	PDF	

Note: Purchase actuating tongue (key) separately

Safety Tongue Switch Key Selection Guide								
Part Number Price Angle Hole Spacing Material Fits								
KEY45	\$;5_]g:	90 degree	13mm	316 stainless steel	Comepi SBM2K and SCM2K series safety switches			
KEY46	\$;5_]h:	straight	13mm	316 stainless steel	Comepi SBM2K and SCM2K series safety switches			
KEY49	\$;-5_]i:	flexible	40mm	316 stainless steel	Comepi SBM2K and SCM2K series safety switches			







KEY46



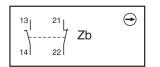
KEY49



Contacts Configuration Charts

Chart 1

X11 Slow action break before make 1NO+1NC



Chart

W02 Simultaneous slow action 2NC

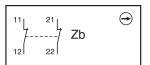


Chart 3

X12 Slow action break before make 1NO+2NC

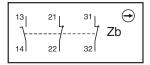


Chart 4

W03 Simultaneous slow action 3NC

Bar Charts For Tongue (Key) Interlock Switches



C = Tripping travel of the N.O. contact

P = Point from which positive opening is assured



Dout Covice	Contact	Displacement Values mm[in]					
Part Series	Configuration	А	В	С	Р		
	X11	26.6 [1.05]	4.4 [0.17]	5.5 [0.22]	5.8 [0.23]		
SBM2K4000	W02	26.6 [1.05]	3.3 [0.13]	_	4.4 [0.17]		
SCM2K4000	X12	26.6 [1.05]	3.9 [0.15]	5.0 [0.20]	5.2 [0.20]		
	W03	26.6 [1.05]	3.8 [0.15]	_	4.9 [0.19]		



These safety switches are developed and manufactured according to IEC and EN European standards.

Easy to use, electromechanical safety switches provide:

- Visible operation
- Ability to switch large currents (10 A conventional thermal current)
- Precise operating points (consistency)
- Immunity to electromagnetic disturbances
- Electrically separated contacts (Zb)
- N.C. contacts with positive opening operation \odot
- Actuation Speed: 0.5 to 0.01 m/s [19.7 to 0.4 in/s]
- Conduit opening 1/2" NPT threaded or adapter



1/2in NPT adapter



Safety Tongue Switch Selection Guide									
Part Number	Price	Safety Output Type	Monitoring Output Type	Head Type	IP Rating	Cable Entry	Body Material	Drawing	
SDM2K10W02	\$;;5_]!:	(2) N.C.	-	90-degree adjustable	IP66	(3) 1/2in NPT	Zinc alloy	PDF	
SDM2K10X11	\$;5_]?:	(1) N.C.	(1) N.O.	90-degree adjustable	IP66	(3) 1/2in NPT	Zinc alloy	PDF	
SDM2K80W02	\$;5_]_:	(2) N.C.	-	360-degree adjustable	IP66	(3) 1/2in NPT	Zinc alloy	<u>PDF</u>	
SDM2K80X11	\$;5_]#:	(1) N.C.	(1) N.O.	360-degree adjustable	IP66	(3) 1/2in NPT	Zinc alloy	<u>PDF</u>	
<u>SP2K10W02</u>	\$;5_[3:	(2) N.C.	-	90-degree adjustable	IP65	(1) PG11 with 1/2in NPT adapter	Thermoplastic	PDF	
<u>SP2K10X11</u>	\$;5_[4:	(1) N.C.	(1) N.O.	90-degree adjustable	IP65	(1) PG11 with 1/2in NPT adapter	Thermoplastic	PDF	
SP2K80W02	\$;5_[1:	(2) N.C.	-	360-degree adjustable	IP65	(1) PG11 with 1/2in NPT adapter	Thermoplastic	PDF	
SP2K80X11	\$;5_[2:	(1) N.C.	(1) N.O.	360-degree adjustable	IP65	(1) PG11 with	Thermoplastic	<u>PDF</u>	

Note: Purchase actuating tongue (key) separately

Safety Tongue Switch Key Selection Guide								
Part Number	Price	Angle	Hole Spacing	Material	Fits			
KEY3	\$;5_]9:	90 degree	22mm	316 stainless steel	Comepi SP2K and SDM2K series safety switches			
KEY4	\$;5_]a:	straight	22mm	316 stainless steel	Comepi SP2K and SDM2K series safety switches			
KEY5	\$;5_]b:	90 degree	13mm	316 stainless steel	Comepi SP2K and SDM2K series safety switches			
KEY6	\$;5_]c:	straight	13mm	316 stainless steel	Comepi SP2K and SDM2K series safety switches			
KEY7	\$;5_]d:	90 degree	15mm	316 stainless steel	Comepi SP2K and SDM2K series safety switches			
KEY8	\$;5_]e:	straight	15mm	316 stainless steel	Comepi SP2K and SDM2K series safety switches			
KEY9	\$;;5_]f:	flexible	40mm	316 stainless steel	Comepi SP2K and SDM2K series safety switches			



KEY3



KEY4



KEY5



KEY6







KEY8

KEY9



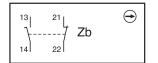
Contacts Configuration Charts

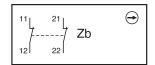
Chart 1

Chart 2

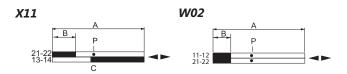
X11 Slow action break before make 1NO+1NC

W02 Simultaneous slow action 2NC





Bar Charts For Tongue (Key) Interlock Switches



A = Max. travel of the operator in mm or degrees

B = Tripping travel of the N.C. contact

C = Tripping travel of the N.O. contact

P = Point from which positive opening is assured



Part Series	Contact	Displacement Values mm[in]				
rait selles	Configuration	A	С	P		
SDM2K10 SDM2K80	X11	21.5 [0.85]	2.7 [0.11]	3.8 [0.15]	4.1 [0.16]	
SP2K10 SP2K80	W02	21.5 [0.85]	3.5 [0.14]	-	4.6 [0.18]	

Comepi Safety Cable Pull Switches € ⊂ ⊃ ⋈≡⊃

These safety cable pull switches are developed and manufactured according to IEC and EN European standards.

Easy to use, electromechanical safety switches provide:

- Visible operation
- Ability to switch large currents (10 A conventional thermal current)

- Precise operating points (consistency)
- Immunity to electromagnetic disturbances
- Electrically separated contacts (Zb)
- N.C. contacts with positive opening operation \odot
- Actuation Speed: 0.5 to 0.01 m/s [19.7 to 0.4 in/s]
- Conduit opening 1/2" NPT threaded or adapter

		S	afety Cable Pu	III Selecti	on Guide		
Part Number	Price	Max Length for Cable Pull	Safety Output Type	Monitoring Output Type	Cable Entry	Body Material	Drawing
SBM2K9900W02	\$;5_]o:	25m [82ft]	(2) N.C.	-	(1) 1/2in NPT	Die-cast aluminum	PDF
SBM2K9900W03	\$;5_]p:	25m [82ft]	(3) N.C.	-	(1) 1/2in NPT	Die-cast aluminum	PDF
SBM2K9900X11	\$;5_]q:	25m [82ft]	(1) N.C.	(1) N.O.	(1) 1/2in NPT	Die-cast aluminum	<u>PDF</u>
SBM2K9900X12	\$;5_]s:	25m [82ft]	(2) N.C.	(1) N.O.	(1) 1/2in NPT	Die-cast aluminum	<u>PDF</u>
SCM2K9900W02	\$;5_]y:	25m [82ft]	(2) N.C.	-	(3) 1/2in NPT	Die-cast aluminum	PDF
SCM2K9900W03	\$;5_]z:	25m [82ft]	(3) N.C.	-	(3) 1/2in NPT	Die-cast aluminum	PDF
SCM2K9900X11	\$;;5_]]:	25m [82ft]	(1) N.C.	(1) N.O.	(3) 1/2in NPT	Die-cast aluminum	PDF
SCM2K9900X12	\$;;5_][:	25m [82ft]	(2) N.C.	(1) N.O.	(3) 1/2in NPT	Die-cast aluminum	PDF
SDM2K9800W02	\$;;5_],:	15m [49ft]	(2) N.C.	-	(3) 1/2in NPT	Zinc alloy	<u>PDF</u>
SDM2K9800X11	\$;5_[0:	15m [49ft]	(1) N.C.	(1) N.O.	(3) 1/2in NPT	Zinc alloy	PDF



SBM2K9900W03



SCM2K9900W03



SDM2K9800W02

Contacts Configuration Charts

Chart 1

X11 Slow action 1NO+1NC

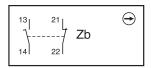


Chart .

W02 Simultaneous slow action 2NC

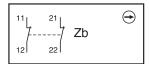


Chart 3

X12 Slow action 1NO+2NC

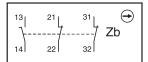
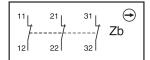


Chart 4

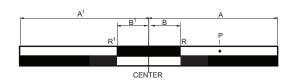
W03 Simultaneous slow action 3NC

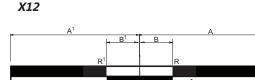


Comepi Safety Cable Pull Switches € ⊂ ⊃ ⋈≡⊃

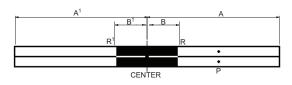
Bar Charts For Cable Pulls

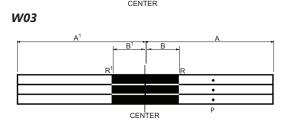
X11





W02





Pull Tension from Center

A = Max. travel of the operator in mm

B = Tripping travel

P = Point from which positive opening is assured

R = Reset latch activates

Lax Tension from Center

 A^1 = Max. travel of the operator in mm

 B^1 = Tripping travel

 R^1 = Reset latch activates



Part	Contact	Displacement Values mm[in]								
Series	Configuration	A1	B1	R1	Center*	В	R	P	А	
	X11	5.6 [0.22]	3.0 [0.12]	3.0 [0.12]	0 [0]	3.0 [0.12]	3.0 [0.12]	3.7 [0.15]	4.0 [0.16]	
SBM2K9900	W02									
SCM2K9900 SDM2K9800	X12									
	W03									

Note

^{*}At center line, green ring on switch will be visible.

Part	Contact	Force Values N [lbf]									
Series	Configuration	A1	B1	R1	Center	В	R	Р	А		
	X11	0 [0]	80 [17.98]	80 [17.98]	120 [26.98]	160 [35.97]					
SBM2K9900	W02						160 [35.97]	170 [38.22]	170 [38.22]		
SCM2K9900	X12										
	W03										
SDM2K0900	X11	40 10 001	00 [47 00]	80 [17.98]	120 [26.98]	160 [35.97]	160 [35.97]	170 [38.22]	170 [20 22]		
SDM2K9800	W02	40 [8.99]	80 [17.98]						170 [38.22]		



		General Sp	ecifications						
		SBM	SCM	SDM	SP2				
		Enviro	nmental						
Degree of Protection		IP66	IP66	IP66	IP65				
Temperature Range		Minimum temperatures assur	-30° to 80°C [- me that the atmosphere is free		se moving parts to freeze up.				
Rated Insulation Volta	age	500V							
Pollution Degree			Degr	ree 3					
		Mechanic	eal Ratings						
Mechanical Life			Cable Pull: 500 Interlock: 1,000						
B10d			Cable Pull: 1,000 Interlock: 2,000						
Enclosure Material		Die-cast aluminum	Die-cast aluminum Die-cast aluminum Zinc alloy		Fiberglass reinforced plastic V0 class (UL94)				
		Contact Bl	ocks Rating						
Positive Opening		Yes							
.	AC15								
Electrical Ratings	DC13		24VD0 125VDC 250VD0	= 0.55 A					
Maximum Switching I	Frequency		one cycle p	per second					
Short Circuit Protection	on	Ca	artridge fuses, general purpose	e, gl 10A-500V 10.3x38 1 100	KA				
Contact Resistance			25 r	mΩ					
Recommended Minim	num Operating Speed		500 mm per minute (applies	only to slow-action contacts)					
Terminals Marking			According to I						
Wiring Connections		2.08 mm ² (14AWG) to 0.82 mm ² (18AWG)							
Terminal Max Tighten	<u> </u>	0.8 N·m							
Wiring Terminal Type		Captive screw with self-lifting pressure plate							
			Needed						
Phillips screwdriver,	#1 #2 / Hex wrench, 10r	nm							

Comepi Safety Solenoid Locking Switches



Comepi's guard locking safety switch is an electromagnetic device with separate actuator.

The solenoid can be used to lock the actuator in place to prevent access to the protected area.

Features:

- Power to Unlock units
- Separate dual circuits to monitor the actuator (guard closed) and solenoid (guard unlocked) individually

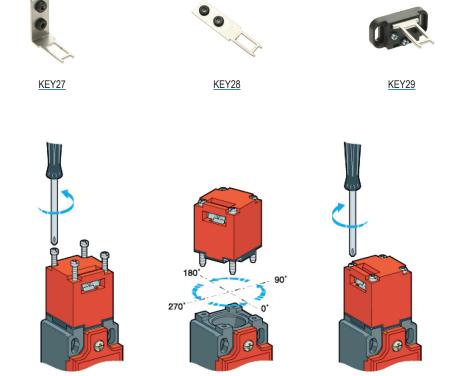


FEP5KP1FA8-024M

	Safety Solenoid Locking Switch Selection Guide											
Part Numbe	r	Price	Locking Mode	Head Position	Holding Force	Safety Output (Solenoid)	Safety Output (Actuator)	IP Rating	Drawing			
FEP5KP1	FA8-024M	\$;05_[9:	24 VAC/VDC to unlock	90-degree adjustable	1200N	(2) N.C.	(2) N.C.	IP65	<u>PDF</u>			
FEP5KP1	FA8-120M	\$;05_[a:	120 VAC to unlock	90-degree adjustable	1200N	(2) N.C.	(2) N.C.	IP65	PDF			

Note: Purchase actuating tongue (key) separately

Safety Solenoid Locking Switch Key Selection Guide										
Part Number	Price	Hole Spacing	Material	Fits	Drawing					
KEY27	\$;5_[b:	20mm	316 stainless steel	Comepi FEP5K series safety switches	PDF					
KEY28	\$;5_[c:	20mm	316 stainless steel	Comepi FEP5K series safety switches	PDF					
KEY29	\$;5_[d:	40mm	316 stainless steel	Comepi FEP5K series safety switches	PDF					

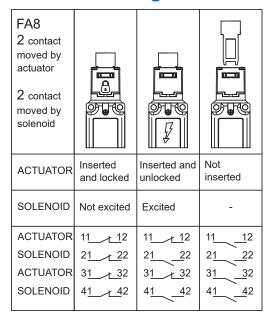


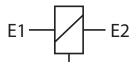
Comepi Safety Solenoid Locking Switches



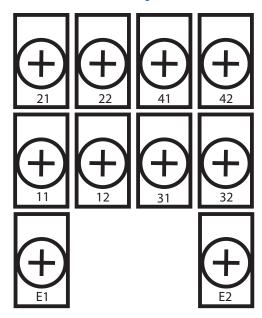
	FEP5K I	ocking Switches Specifications			
		Environmental			
Degree of Protection		IP65			
Operating Temperature	e Range	-25° to 55°C [-13° to 131°F]			
Storage Temperature F	Range	-30° to 80°C [-22° to 176°F]			
Rated Insulation Voltage	ge	250V			
Pollution Degree		Degree 3			
		Mechanical			
Mechanical Life		1,000,000 operations			
B10d		4,000,000 operations			
Enclosure Material		Reinforced thermoplastic			
Manual Unlock		Screw release			
		Electrical			
Electrical Ratings	AC15	24VAC @ 50/60 Hz = 10A 230VAC @ 50/60 Hz = 4A			
	DC13	24VDC = 4A			
Maximum Switching Fi	requency	10 cycles per minute			
Terminals Marking		According to IEC 60947-5-1			
Cable Entry		(3) M20 x 1.5 mm cable entries			
Connecting Wire Size		22 to 16 AWG (0.34 to 1.5 mm ²)			
Reference Standards		IEC 60947-5-1 EN 60947-5-1 EN ISO 14119			
Agency Approvals		cULus, CE			
		Tools Needed			
Phillips screwdriver, #	1 #2				

Connection Diagram





Connection Layout



Connections are located inside the unit beneath the top cover.

Comepi Safety Solenoid Locking Switches with Unique RFID Coding



Comepi's uniquely coded RFID guard locking safety switch is an electromagnetic device with a separate RFID actuator.

This RFID coded version guarantees protection against easy bypass of the device.

The solenoid can be used to lock the actuator in place to prevent access to the protected area.

Features

- Single RFID coded tongue (key) prevents unauthorized bypass
- The AFEPMK series allows for replacement keys to be retaught
- Power to lock units
- Separate circuits to monitor the guard closed and solenoid



	RFID Coded Safety Solenoid Locking Switch Selection Guide												
Part Number Price Locking Mode		Actuator Type	Head Position	Holding Force	Safety Output Type	Monitoring Output Type	IP Rating	Drawing					
AFEPMKR1FR3-024E	\$;05_[5:	24 VDC to lock	Unique RFID	0-degree fixed	1200N	(2) N.C.	(1) N.C.	IP65	PDF				
AFEPMKR2FR3-024E	\$;05_[6:	24 VDC to lock	Unique RFID	90-degree fixed	1200N	(2) N.C.	(1) N.C.	IP65	PDF				
AFEPMKR3FR3-024E	\$;05_[7:	24 VDC to lock	Unique RFID	180-degree fixed	1200N	(2) N.C.	(1) N.C.	IP65	<u>PDF</u>				
AFEPMKR4FR3-024E	\$;05_[8:	24 VDC to lock	Unique RFID	270-degree fixed	1200N	(2) N.C.	(1) N.C.	IP65	<u>PDF</u>				

RFID Coded Safety Solenoid Locking Switch Key Selection Guide									
Part Number	t Number Price RFID Hole Spacing Material Fits Draw								
KEY29R	\$;5_[e:	Uniquely coded	40mm	316 stainless steel	Comepi AFEPMK series safety switches	<u>PDF</u>			



KEY29R

Comepi Safety Solenoid Locking Switches with Unique RFID Coding



AFEPMK Locking Switches with Unique RFID Coding Specifications								
		Environmental						
Degree of Protection		IP65						
Operating Temperature	Range	-20° to 55°C [-4° to 131°F]						
Storage Temperature R	ange	-30° to 80°C [-22° to 176°F]						
Rated Insulation Voltag	e	250V						
Pollution Degree		Degree 3						
		Mechanical						
Mechanical Life		1,000,000 operations						
B10d		2,000,000 operations						
Enclosure Material		Reinforced thermoplastic						
Manual Unlock		Screw release						
		Electrical						
Voltage Range		21.6 to 26.4 VDC						
Maximum Current		0.5 A						
Electrical Ratings	AC15	24VAC @ 50/60 Hz = 2A						
Electrical Ratings	DC13	24VDC = 2A						
Maximum Switching Fro	equency	10 cycles per minute						
Terminals Marking		According to IEC 60947-5-1						
Cable Entry		M12 8-pin connection						
Connecting Wire Size		22 to 16 AWG (0.34 to 1.5 mm ²)						
Reference Standards		IEC 60947-5-1 EN 60947-5-1 EN ISO 14119						
Agency Approvals		cULus, CE						
		Tools Needed						
Phillips screwdriver, #1	#2							

Connection Diagram:



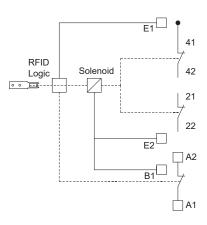


Pin View from Switch M12 Male

	M1	12 8-PIN	MALE C	ONNECTOR
Pin	292 Cable*	295 Cable*	Signal	Description
1	White	Brown	E1	Ground
2	Brown	White	E2/A1**	24 VDC+
3	Green Blue		A2	N.C. Signal Output (from A1)
4	Yellow	Yellow Black		Input for External Consense +24VDC
5	Gray	Gray	21	N.C. Safety Contact 1
6	Pink	Pink	22	N.C. Safety Contact 1
7	Blue Violet		41	N.C. Safety Contact 2
8	Red	Orange	42	N.C. Safety Contact 2

Notes:

- * AutomationDirect sells M12 8-pole cables with two different color patterns (7000-170x1-292xxxx and 7000-170x1-295xxxx).
- ** Terminals E2 and A1 have a factory-installed jumper.



These safety switches are developed and manufactured according to IEC and EN European standards.

Easy to use, electromechanical safety switches provide:

- Visible operation
- Ability to switch large currents (10 A conventional thermal current)

- Precise operating points (consistency)
- Immunity to electromagnetic disturbances
- Electrically separated contacts (Zb)
- N.C. contacts with positive opening operation
- Actuation Speed: Max. 0.5 m/s; Min. 0.01 m/s
- Conduit opening 1/2" NPT threaded or adapter

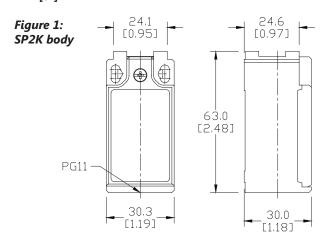
Note: Purchase actuating tongue (key) separately.

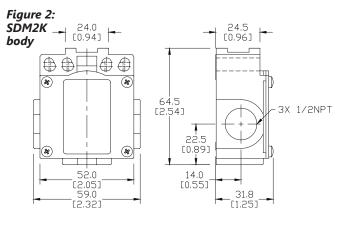
	Safety Limit Switches												
Part Number	Price	Actuator Type	No. of Conduit Holes	Min Torque	Positive Opening Force	B10d	Dimensions Body / Head	Contact Config. Diagram	Weight (lb)	Photo			
SP2K72X11	\$04og:	90° adjustable	One				Figures 1, 3	1	0.2	Α			
SP2K72W02	\$04os:	head, shaft hinge interlock	ŭ	0.12			Figures 1, 3	2	0.2	А			
SP2K61X11	\$04oq:	90° adjustable		Nm	0.60 Nm	2 million	Figures 1, 4	1	0.2	В			
SP2K61W02	\$04op:	head, lever hinge interlock	One				Figures 1, 4	2	0.2	В			
SDM2K72X11	\$0400:	90° adjustable	Three			operations	Figures 2, 3	1	0.6	С			
SDM2K72W02	\$04on:	head. shaft hinge interlock	Three	0.12			Figures 2, 3	2	0.6	С			
SDM2K61X11	\$-04ol:	90° adjustable	Three		0.60 Nm		Figures 2, 4	1	0.6	D			
SDM2K61W02	\$04ok:	head. lever hinge interlock	Three				Figures 2, 4	2	0.6	D			



Dimensions

mm [in]





Actuator Dimensions

mm [in]

Figure 3: 90° adjustable head with shaft hinge interlock - SP2K72, SDM2K72 models

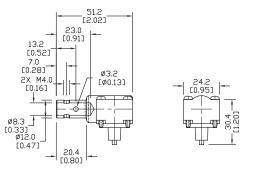
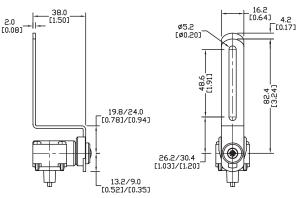


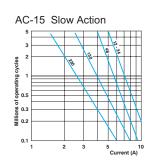
Figure 4: 90° adjustable head with lever hinge interlock - SP2K61, SDM2K61 models



General Technical Specifications					
	Environmental Environmental				
Approvals		All: IEC 947-5-1, EN 60947-5-1, UL 508, CSA C22.2 No 14, RoHS			
Degree of Protection		Plastic models: IP65 according to IEC 529 Aluminum and ZAMAK (zinc alloy) models: IP66 according to IEC 529			
Temperature Range		Plastic models: storage: -30° to 80°C (-22° to 176°F) operating: -25° to 70°C (-13° to 158°F) Aluminum and ZAMAK (zinc alloy)models: storage: -30° to 80°C (-22° to 176°F) operating:25° to 70°C (-13° to 158°F); minimum temperatures assume that the atmosphere is free of moisture, which could cause moving parts to freeze up.			
Rated Insulation Voltage		SDM:400V, All others 500V; (degree of pollution - 3)			
		Mechanical Ratings			
Mechanical Life		1 million operations. Pull wire models - 25,000 operations			
Enclosure Material		Plastic models: fiberglass-reinforced plastic-V0 class (UL94); aluminum models: die-cast aluminum; ZAMAK models: zinc alloy			
		Contact Blocks Rating			
Positive Opening		Yes, all models			
Electrical Ratings	AC15	Make: 60A@120VAC; 30A @ 240VAC; 18A @ 400VAC Break:10A @ 24VAC; 6.5A @130VAC; 3.1A @ 230VAC; 1.8A @ 400VAC			
	DC13	2.8A @ 24VDC; 0.5A @ 110VDC			
Maximum Switching Freq	uency	Contact blocks: all one cycle per second			
Repeat Accuracy		0.01mm on the operating points at 1 million operations			
Short-Circuit Protection		Cartridge fuses, general purpose, gl 10A-500V 10.3x38 1 100KA			
Contact Resistance		25 milli q			
Recommended Minimum	Operating Speed	With slow-action contacts: 500 mm per minute*			
Rated Insulation Voltage		660V			
Terminals Marking		According to CENELEC EN 50013			
Wiring Connections		2 x 2.5mm ² (AWG14) to 2 x 0.5mm ² (AWG18)			
Wiring Terminal Type		Captive screw with self-lifting pressure plate			
Wiring Terminal Markings	;	According to CENELEC EN50013			
User Protection		Double insulation (plastic models only)			
		Contact Blocks Performance			
Operation Frequency		3600 ops/h			
Electrical Durability (according to IEC 947-5-1)		Utilization categories AC-15 and DC-13; load factor of 0.5. See table and curves below.			
		Tools Needed			
Phillips screwdriver, #1 #2	2 / Hex wrench, 10r	nm			

^{*}Note: Slow-action contacts must not be operated at very low speeds because of the tendency to maintain the arc if contacts are not rapidly separated.

Electrical Durability (according to IEC 947-5-1)



DC-13	Slow Action
	Power breaking for a durability of 5 million cycles
24 Volts	12W
48 Volts	9W
110 Volts	6W

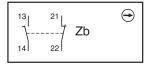
Contacts Configuration Charts

Chart 1

Chart 2

X11 Slow action break before make 1NO+1NC

W02 Simultaneous slow action 2NC.



Bar charts for shaft levers and limit switches



A = Max. travel of the operator in mm or degrees

B = Tripping travel of the N.C. contact C = Tripping travel of the N.O. contact

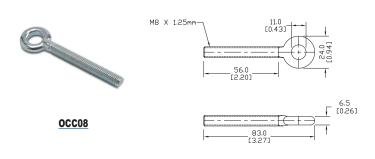
C = Iripping travel of the N.O. contact
P = Point from which positive opening is assured

R = Reset latch activates

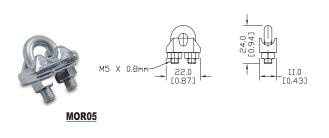


Dout Coving	Contact	Displacement Values mm[in] or degrees				
Part Series	Configuration	Α	В	С	P	
CDOWTO CDOWCA CDMOWTO CDMOWCA	X11	±90°	±6°	±15°	±31°	
SP2K72, SP2K61, SDM2K72, SDM2K61	W02	±90°	±5°	-	±30°	

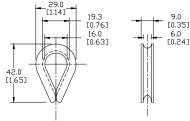
Comepi Safety Switches Accessories



Safety	Safety Limit Switches Cable Pull Accessories				
Part Number	Price	Description	Weight (lb)		
OCC08	\$-4hl:	Eye bolt	0.2		
MOR05	\$4hk:	Cable Clamp	0.1		
RED05	\$4hn:	Eye thimble	0.0		
FUN05M015	\$04h5:	15 meter length steel cable 5 mm diameter, Red	2.0		
FUN05M025	\$04h6:	25 meter length steel cable, 5 mm diameter, Red	3.3		





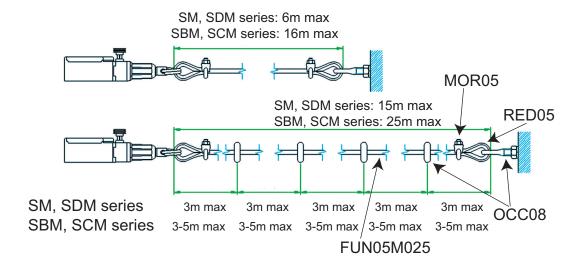




All dimensions are in mm [in].

FUN05M025

Installation example



Safety Limit Switches Selection Guide













Series HLM Series		HLM-SS Series	LSPS Series	
Prices start at	\$2cqx:	\$02cs0:	\$2cs8:	
Description	Die-cast metal body safety limit switch	Stainless steel body safety limit switch	Plastic body safety limit switch	
Material of Construction	Die-cast zinc aluminum casing	Stainless steel 316 casing	Plastic casing	
Degree of Protection (IEC529)	IEC IP67	IEC IP67/IP69	IEC IP67	
Maximum Switching 6,000 operations/day		6,000 operations/day	6,000 operations/day	
Mechanical Service Life	2,500,000 cycles	2,500,000 cycles	2,500,000 cycles	
Contact Configuration	Each model available with: 2 N.C. / 2 N.O. slow action break before make contacts, or 1 N.O. / 1 N.C. snap action contacts	Each model available with: 2 N.C. / 2 N.O. slow action break before make contacts, or 1 N.O. / 1 N.C. snap action contacts	Each model available with: 2 N.C. / 2 N.O. slow action break before make contacts, or 1 N.O. / 1 N.C. snap action contacts	
Conduit Opening	One cable hole	One cable hole	One cable hole	
Connection	1/2 inch female NPT conduit	1/2 inch female NPT conduit	1/2 inch female NPT conduit	
Agency Approvals	CE, UL (file E258676)	CE, UL (file E258676)	CE, UL (file E258676)	











Series LSMM Series		LSPM Series	AP2 Series	
Prices start at	Prices start at \$2csk:		\$04hp:	
Description	Panel mount die-cast metal body safety limit switch	Panel mount plastic body safety limit switch	30 mm limit switches with pull button reset	
Material of Construction	Die-cast zinc aluminum casing	Plastic casing	Plastic casing, double insulated	
Degree of Protection (IEC529)	IEC IP67	IEC IP67	IEC IP65	
Maximum Switching 6,000 operations/day		6,000 operations/day	Contact blocks: 1 cycle per second (all)	
Mechanical Service Life 2,500,000 cycles		2,500,000 cycles	1,000,000 operations interlock and limit switches	
Contact Configuration Each model available with: 2 N.C. / 1 N.O. slow action break before make contacts, or 1 N.O. / 1 N.C. snap action contacts		Each model available with: 2 N.C. / 1 N.O. slow action break before make contacts, or 1 N.O. / 1 N.C. snap action contacts	X11 - Slow action break before make, positive opening, 1 N.O. + 1 N.C. W02 - Simultaneous, slow action, positive opening, 2 N.C.	
Conduit Opening	One cable hole	One cable hole	One cable hole, 1/2" NPT adapter	
Connection Pigtail; 2m / 6.5 ft cable length		Pigtail; 2m / 6.5 ft cable length	2x2.5mm2 (AWG14) to 2x0.5mm2 (AWG 18)	
Agency Approvals	CE, UL (file E258676)	CE, UL (file E258676)	CE, UL file E189258, CSA 176294, RoHS	

IDEM Type HLM (Die-Cast Metal Body) Safety Limit Switches

IDEM limit switches are designed to be mounted for position sensing applications, such as guard doors, conveyors, machine beds, elevators, etc.

They are available with a range of actuator heads and either slow or snap action contacts.

Features

- · Heavy duty zinc aluminum die-cast bodies
- Direct opening NC safety contact(s) to EN60947-5-1 →
- High mechanical life: Over 5 million cycles
- Industry standard mounting to EN50041











HLM-174002

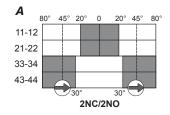
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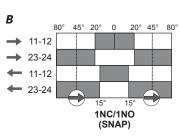
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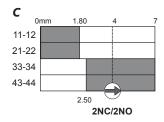
HLM-174302

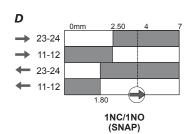
	IDEM Type HLM (Die-Cast Metal Body) Safety Limit Switches					
Part Number	Price	Туре	Contacts	Action	Bar Chart	Connection
HLM-174002	\$2cqu:	Side rotary lever with stainless steel roller	2 N.C. safety contacts / 2 N.O. monitoring contacts	Slow action break before make	А	
HLM-174011	\$2cqv:	•	1 N.C. safety contact / 1 N.O. monitoring contact	Snap action	В	
HLM-174052	\$2cqx:	Plunger with stainless steel roller	2 N.C. safety contacts / 2 N.O. monitoring contacts	Slow action break before make	С	
HLM-174061	\$2cqy:		1 N.C. safety contact / 1 N.O. monitoring contact	Snap action	D	
HLM-174102	\$2cqz:	Stainless steel plunger	2 N.C. safety contacts / 2 N.O. monitoring contacts	Slow action break before make	С	1/2 inch female NPT
HLM-174111	\$;2cq]:		1 N.C. safety contact / 1 N.O. monitoring contact	Snap action	D	conduit
HLM-174252	\$;2cq[:	Side rotary adjustable stainless steel rod	2 N.C. safety contacts / 2 N.O. monitoring contacts	Slow action break before make	А	
HLM-174261	\$2cq_:		1 N.C. safety contact / 1 N.O. monitoring contact	Snap action	В	
HLM-174302	\$2cq#:	Side rotary adjustable lever with stainless	2 N.C. safety contacts / 2 N.O. monitoring contacts	Slow action break before make	А	
HLM-174311	\$;2cq!:	steel roller	1 N.C. safety contact / 1 N.O. monitoring contact	Snap action	В	

Bar Charts



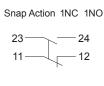






Contacts Configuration Charts

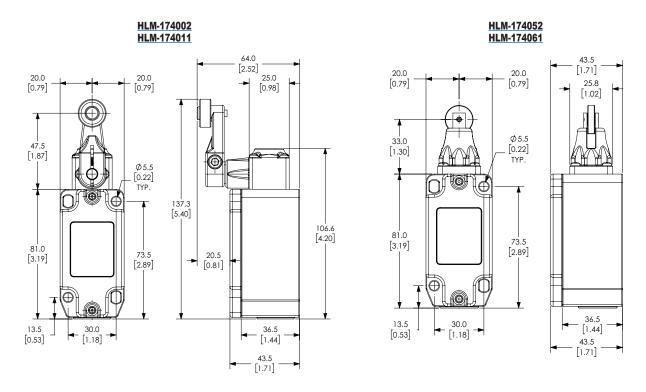
Slow Action 2NC 2NO

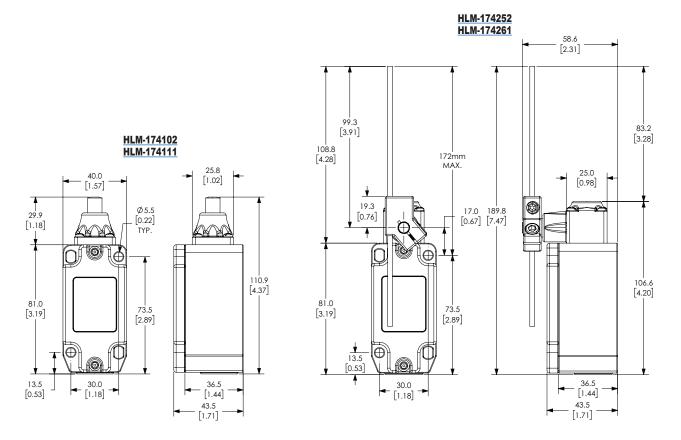


IDEM Type HLM (Die-Cast Metal Body) Safety Limit Switches

Dimensions

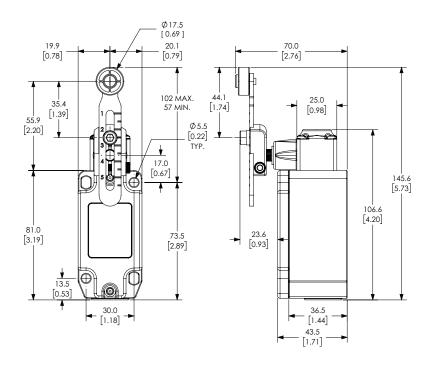
mm [in]





IDEM Type HLM (Die-Cast Metal Body) Safety Limit Switches





IDEM Type HLM (Die-Cast N	Metal Body) Safety Limit Switches Specifications		
Safety Characteristic Data	,, , , , , , , , , , , , , , , , , , , ,		
Performance level	Up to PLe depending on the system architecture		
Category	Up to Cat 4 depending on the system architecture		
Safety Integrity Level	Up to SIL3 depending on the system architecture		
B10d	2.5 x 10 ⁶ operations		
Safety Data - Annual Usage	8 cycles per hour / 24 hours per day / 365 days		
MTTFd	356 years		
PFHd (1/h)	3.44 x 10 ⁻⁸		
Proof Test Interval T1	35 years		
Electrical and General Specifications			
Utilization Category	AC15 A300 240V, 3A		
Minimum Switched Current	5mA, 5VDC		
Thermal Current	10A		
Rated Insulation Voltage	300VAC		
Max. Switching Speed	250 mm/sec		
Max. Switching Frequency	6,000 operations/day		
Case Material	Die-cast zinc aluminum		
Operating Temperature	-25° to +80°C [-13° to +176°F]		
Enclosure Protection	IP67		
Mechanical Life Expectancy	2,500,000 cycles		
Vibration	IEC 68-2-6		
Conductor Size	1.5 mm ²		
Head Screws/Torque	1Nm		
Lid Screws/Torque	1Nm		
Recommended Mounting Bolt Torque	2Nm		
Recommended Mounting Screws	M5		
Agency Approvals	CE, UL (file E258676)		

Note: When the product is used differently from the assumptions shown (different load, operating frequency, etc.) the values must be adjusted accordingly.

IDEM Type HLM-SS (Stainless Steel 316 Body) Safety Limit Switches

IDEM limit switches are designed to be mounted for position sensing applications, such as guard doors, conveyors, machine beds, elevators, etc. These Stainless Steel switches have a IP69K rating which makes them suitable for high-temperature washdown with detergent.

They are available with a range of actuator heads and either slow or snap action contacts.

Features

- Heavy duty Stainless Steel 316 bodies
- Direct opening NC safety contact(s) to EN60947-5-1
- High mechanical life: Over 5 million cycles
- Industry standard mounting to EN50041













HLM-SS-175002

HLM-SS-175052

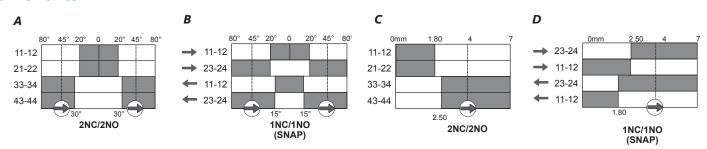
HLM-SS-175102

HLM-SS-175252

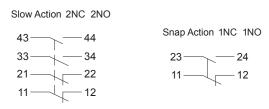
HLM-SS-175302

	IDEM Type HLM-SS (Stainless Steel 316 Body) Safety Limit Switches					
Part Number	Price	Туре	Contacts	Action	Bar Chart	Connection
HLM-SS-175002	\$02cq?:	Cida ratar dayar with atainlaga ataal rallar	2 N.C. safety contacts / 2 N.O. monitoring contacts	Slow action break before make	Α	
HLM-SS-175011	\$;02cq,:	Side rotary lever with stainless steel roller	1 N.C. safety contact / 1 N.O. monitoring contact	Snap action	В	
HLM-SS-175052	\$02cs0:	Plunger with stainless steel roller	2 N.C. safety contacts / 2 N.O. monitoring contacts	Slow action break before make	С	
HLM-SS-175061	\$02cs1:		1 N.C. safety contact / 1 N.O. monitoring contact	Snap action	D	
HLM-SS-175102	\$02cs2:	Ctainless atoplations	2 N.C. safety contacts / 2 N.O. monitoring contacts	Slow action break before make	С	1/2 inch female NPT
HLM-SS-175111	\$02cs3:	Stainless steel plunger	1 N.C. safety contact / 1 N.O. monitoring contact	Snap action	D	conduit
HLM-SS-175252	\$02cs4:	Side rotary adjustable stainless steel rod	2 N.C. safety contacts / 2 N.O. monitoring contacts	Slow action break before make	Α	
HLM-SS-175261	\$02cs5:	Side rotary adjustable stainless steel rod	1 N.C. safety contact / 1 N.O. monitoring contact	Snap action	В	
HLM-SS-175302	\$02cs6:	Side rotary adjustable lever with stainless	2 N.C. safety contacts / 2 N.O. monitoring contacts	Slow action break before make	Α	
HLM-SS-175311	\$02cs7:	steel roller	1 N.C. safety contact / 1 N.O. monitoring contact	Snap action	В	

Bar Charts



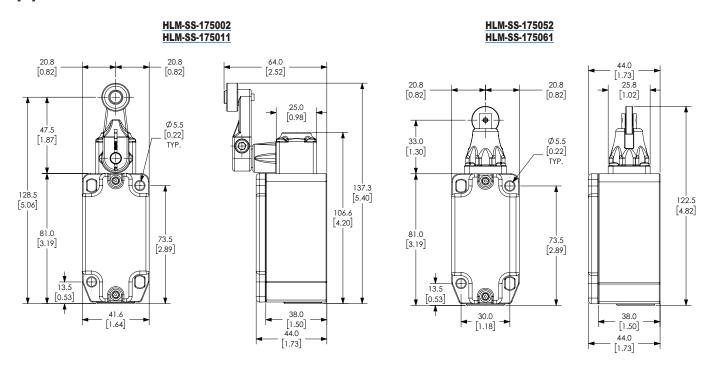
Contacts Configuration Charts

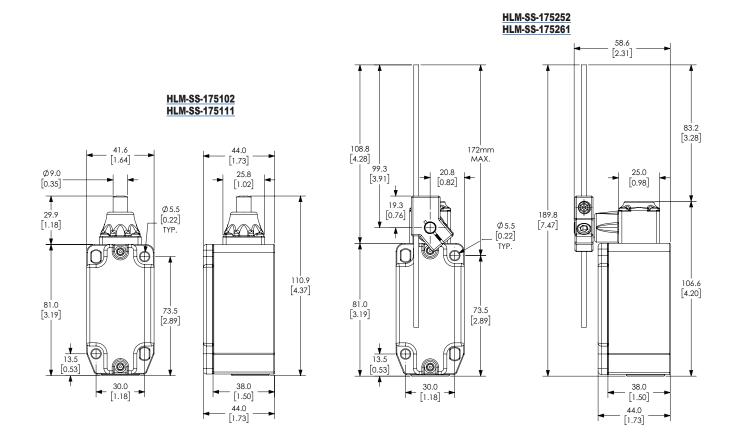


IDEM Type HLM-SS (Stainless Steel 316 Body) Safety Limit Switches

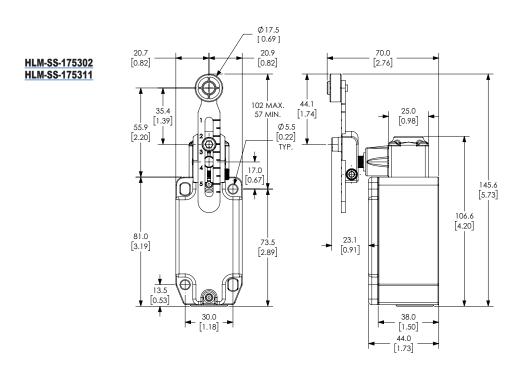
Dimensions

mm [in]





IDEM Type HLM-SS (Stainless Steel 316 Body) Safety Limit Switches



IDEM Type HLM-SS (Stainless Steel 316 Body) Safety Limit Switches Specifications					
Safety Characteristic Data					
Performance level	Up to PLe depending on the system architecture				
Category	Up to Cat 4 depending on the system architecture				
Safety Integrity Level	Up to SIL3 depending on the system architecture				
B10d	2.5 x 10 ⁶ operations				
Safety Data - Annual Usage	8 cycles per hour / 24 hours per day / 365 days				
MTTFd	356 years				
PFHd (1/h)	3.44 x 10 ⁻⁸				
Proof Test Interval T1	35 years				
Electrical and General Specifications					
Utilization Category	AC15 A300 240V, 3A				
Minimum Switched Current	5mA, 5VDC				
Thermal Current	10A				
Rated Insulation Voltage	300VAC				
Max. Switching Speed	250 mm/sec				
Max. Switching Frequency	6,000 operations/day				
Case Material	Stainless steel 316				
Operating Temperature	-25° to +80°C [-13° to +176°F]; (cleaning to +105°C [+221°F])				
Enclosure Protection	IP67/IP69K				
Mechanical Life Expectancy	2,500,000 cycles				
Vibration	IEC 68-2-6				
Conductor Size	1.5 mm ²				
Head Screws/Torque	1Nm				
Lid Screws/Torque	1Nm				
Recommended Mounting Bolt Torque	2Nm				
Recommended Mounting Screws	M5				
Agency Approvals	CE, UL (file E258676)				

Note: When the product is used differently from the assumptions shown (different load, operating frequency, etc.) the values must be adjusted accordingly.

beds, elevators, etc.

IDEM Type LSPS (Plastic Body) Safety Limit Switches

IDEM limit switches are designed to be mounted for position sensing applications, such as guard doors, conveyors, machine

They are available with a range of actuator heads and either slow or snap action contacts.

Features

- Standard duty plastic bodies (red color)
- Enclosure protection to IP67 (suitable for washdown)

• Direct opening NC safety contact(s) to EN60947-5-1 →

















LSPS-171002

LSPS-171011

LSPS-171020

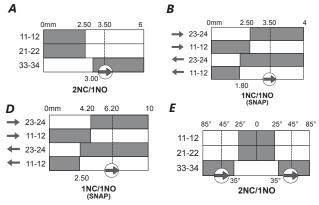
LSPS-171047

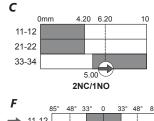
LSPS-171056

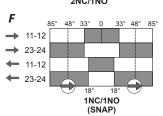
LSPS-171065

	IDEM Type LSPS (Plastic Body) Safety Limit Switches					
Part Number	Price	Туре	Contacts	Action	Bar Chart	Connection
LSPS-171002	\$2cs8:	Polyester plunger	2 N.C. safety contacts / 1 N.O. monitoring contact	Slow action break before make	А	
LSPS-171008	\$2cs9:		1 N.C. safety contact / 1 N.O. monitoring contact	Snap action	В	
LSPS-171011	\$2csa:	Plunger with polyester roller	2 N.C. safety contacts / 1 N.O. monitoring contact	Slow action break before make	Α	
LSPS-171017	\$2csb:		1 N.C. safety contact / 1 N.O. monitoring contact	Snap action	В	
LSPS-171020	\$2csc:	Hinge lever with polyester roller	2 N.C. safety contacts / 1 N.O. monitoring contact	Slow action break before make	С	
LSPS-171026	\$2csd:		1 N.C. safety contact / 1 N.O. monitoring contact	Snap action	D	1/2 inch
LSPS-171047	\$2cse:	Side rotary adjustable lever with large	2 N.C. safety contacts / 1 N.O. monitoring contact	Slow action break before make	Е	female NPT conduit
LSPS-171053	\$;2csf:	rubber roller	1 N.C. safety contact / 1 N.O. monitoring contact	Snap action	F	
LSPS-171056	\$2csg:	Side rotary adjustable lever with	2 N.C. safety contacts / 1 N.O. monitoring contact	Slow action break before make	Е	
LSPS-171062	\$2csh:	polyester roller	1 N.C. safety contact / 1 N.O. monitoring contact	Snap action	F	
LSPS-171065	\$-2csi:	Side rotary adjustable brass rod	2 N.C. safety contacts / 1 N.O. monitoring contact	Slow action break before make	Е	
LSPS-171071	\$-2csj:		1 N.C. safety contact / 1 N.O. monitoring contact	Snap action	F	

Bar Charts







Contacts Configuration Charts

Slow Action 2NC 1NO

33 — 34
21 — 22
11 — 12

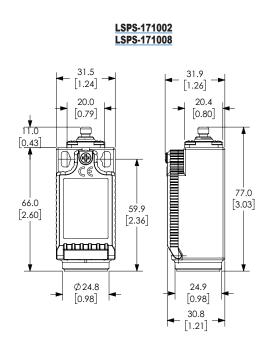
Snap Action 1NC 1NO

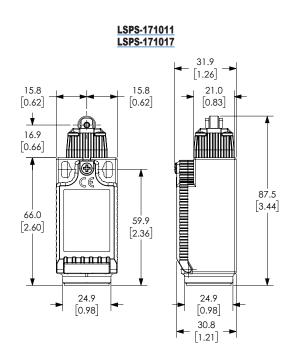
23 — 24
11 — 12

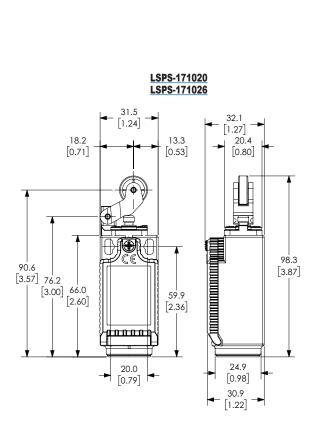
IDEM Type LSPS (Plastic Body) Safety Limit Switches

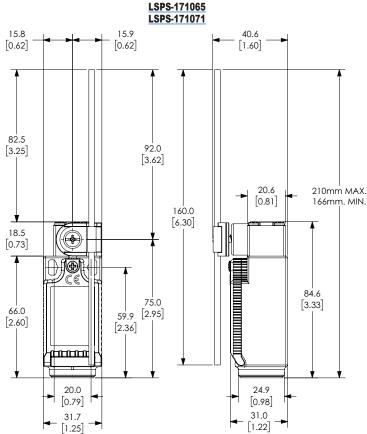
Dimensions

mm [in]

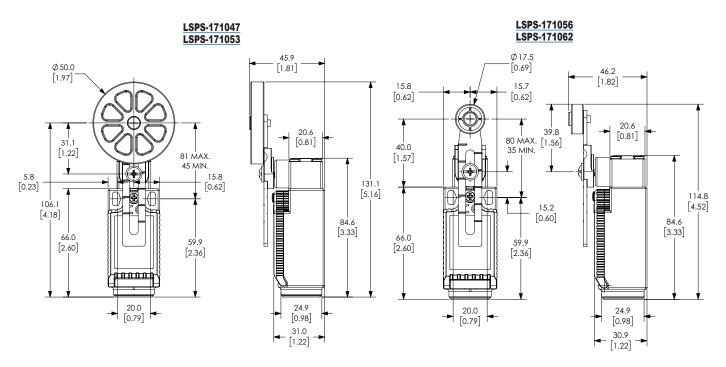








IDEM Type LSPS (Plastic Body) Safety Limit Switches



IDEM Type LSPS (Plastic Bod	ly) Safety Limit Switches Specifications	
Safety Characteristic Data	y) outery minimum opposition and the	
Performance level	Up to PLe depending on the system architecture	
Category	Up to Cat 4 depending on the system architecture	
Safety Integrity Level	Up to SIL3 depending on the system architecture	
B10d	2.5 x 10 ⁶ operations	
Safety Data - Annual Usage	8 cycles per hour / 24 hours per day / 365 days	
MTTFd	356 years	
PFHd (1/h)	3.44 x 10 ⁻⁸	
Proof Test Interval T1	35 years	
Electrical a	nd General Specifications	
Utilization Category	AC15 A300 240V, 3A	
Minimum Switched Current	5mA, 5VDC	
Thermal Current	10A	
Rated Insulation Voltage	300VAC	
Max. Switching Speed	250 mm/sec	
Max. Switching Frequency	6,000 operations/day	
Case Material	Plastic	
Operating Temperature	-25° to +80°C [-13° to +176°F]	
Mechanical Life Expectancy	2,500,000 cycles	
Enclosure Protection	IP67	
Vibration	IEC 68-2-6	
Conductor Size	1.5 mm ²	
Head Screws/Torque	1Nm	
Lid Screws/Torque	1Nm	
Recommended Mounting Bolt Torque	2Nm	
Recommended Mounting Screws	M4	
Agency Approvals	CE, UL (file E258676)	

Note: When the product is used differently from the assumptions shown (different load, operating frequency, etc.) the values must be adjusted accordingly.

IDEM Type LSMM (Die-Cast Metal Body) Safety Limit Switches

IDEM limit switches are designed to be mounted for position sensing applications, such as guard doors, conveyors, machine beds, elevators, etc.

They are available with a range of actuator heads and either slow or snap action contacts.

Features

- Heavy duty die-cast zinc aluminum bodies (painted red)
- Direct opening NC safety contact(s) to EN60947-5-1
- High mechanical life: Over 5 million cycles
- Enclosure protection to IP67 (suitable for washdown)
- Unique 3 pole positively operated contacts











LSMM-172014

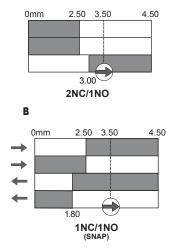
LSMM-172018

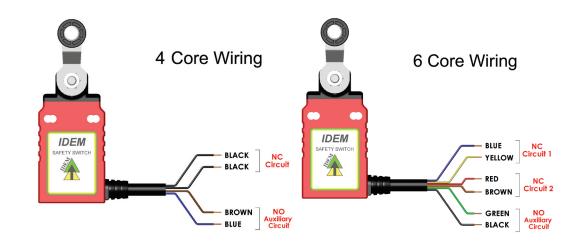
LSMM-172022

	IDEM Type LSMM (Die-Cast Metal Body) Safety Limit Switches							
Part Number	Price	Туре	Contacts	Action	Bar Chart	Connection		
LSMM-172003	\$2csk:	Brass plunger	2 N.C. safety contacts / 1 N.O. monitoring contact	Slow action break before make	Α			
LSMM-172004	\$-2csl:	Brass pluriger	1 N.C. safety contact / 1 N.O. monitoring contact	Snap action	В			
LSMM-172007	\$2csn:	Plunger with brass roller	2 N.C. safety contacts / 1 N.O. monitoring contact	Slow action break before make	Α			
LSMM-172008	\$2cso:	Fluriger with brass roller	1 N.C. safety contact / 1 N.O. monitoring contact	Snap action	В			
LSMM-172014	\$2csp:	Cide retern lever with religence reller	2 N.C. safety contacts / 1 N.O. monitoring contact	Slow action break before make	Α	Pigtail 2m / 6.5 ft		
LSMM-172016	\$2csq:	Side rotary lever with polyester roller	1 N.C. safety contact / 1 N.O. monitoring contact	Snap action	В	cable length		
LSMM-172018	\$2css:	Brass plunger and fixing nuts	2 N.C. safety contacts / 1 N.O. monitoring contact	Slow action break before make	Α	J		
LSMM-172020	\$;2cst:	brass pluriger and lixing huts	1 N.C. safety contact / 1 N.O. monitoring contact	Snap action	В			
LSMM-172022	\$2csu:	Divinger with broom relies and fiving nute	2 N.C. safety contacts / 1 N.O. monitoring contact	Slow action break before make	Α			
LSMM-172024	\$2csv:	Plunger with brass roller and fixing nuts	1 N.C. safety contact / 1 N.O. monitoring contact	Snap action	В			

Bar charts

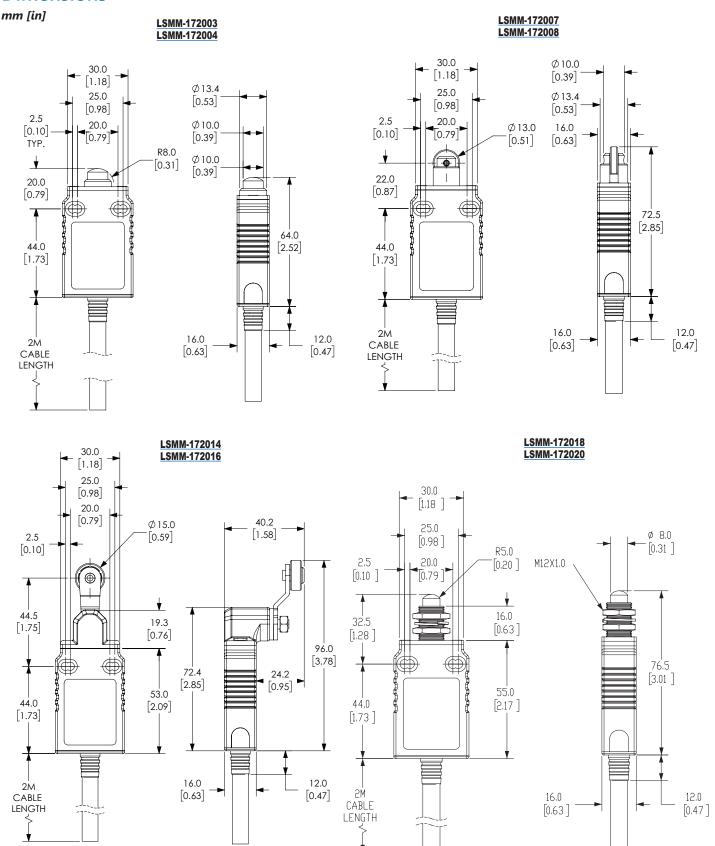
Connections





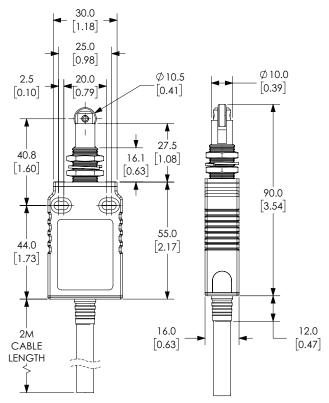
IDEM Type LSMM (Die-Cast Metal Body) Safety Limit Switches

Dimensions



IDEM Type LSMM (Die-Cast Metal Body) Safety Limit Switches





IDEM Type LSMM (Die-Cast Me	tal Body) Safety Limit Switches Specifications			
Safety Characteristic Data				
Performance level	Up to PLe depending on the system architecture			
Category	Up to Cat 4 depending on the system architecture			
Safety Integrity Level	Up to SIL3 depending on the system architecture			
B10d	2.5 x 10 ⁶ operations			
Safety Data - Annual Usage	8 cycles per hour / 24 hours per day / 365 days			
MTTFd	356 years			
PFHd (1/h)	3.44 x 10 ⁻⁸			
Proof Test Interval T1	35 years			
Electrical and General Specifications				
Utilization Category	AC15 A300 240V, 3A			
Minimum Switched Current	5mA, 5VDC			
Thermal Current	10A			
Rated Insulation Voltage	300VAC			
Max. Switching Speed	250 mm/sec			
Max. Switching Frequency	6,000 operations/day			
Case Material	Die-cast zinc aluminum			
Operating Temperature	-25° to +80°C [-13° to +176°F]			
Enclosure Protection	IP67			
Mechanical Life Expectancy	2,500,000 cycles			
Vibration	IEC 68-2-6			
Conductor Size	1.5 mm ²			
Recommended Mounting Bolt Torque	2Nm			
Recommended Mounting Screws	s M4			
Agency Approvals	CE, UL (file E258676)			

Note: When the product is used differently from the assumptions shown (different load, operating frequency, etc.) the values must be adjusted accordingly.

IDEM Type LSPM (Plastic Body) Safety Limit Switches

IDEM limit switches are designed to be mounted for position sensing applications, such as guard doors, conveyors, machine beds, elevators, etc.

They are available with a range of actuator heads and either slow or snap action contacts.

Features

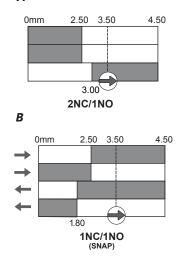
- Standard duty plastic bodies (red color)
- Enclosure protection to IP67 (suitable for washdown)
- Unique 3 pole positively operated contacts
- Direct opening NC safety contact(s) to EN60947-5-1
- High mechanical life: Over 5 million cycles 🕒

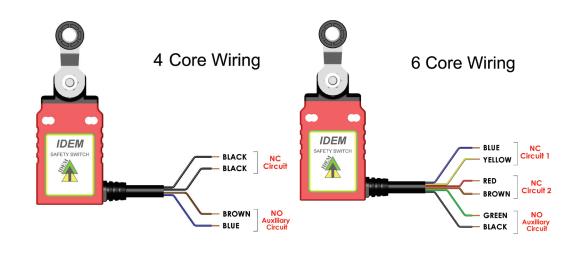


	IDEM Type LSPM (Plastic Body) Safety Limit Switches							
Part Number	Price	Туре	Contacts	Action	Bar Chart	Connection		
LSPM-170003	\$2csx:	Proce plunger	2 N.C. safety contacts / 1 N.O. monitoring contact	Slow action break before make	Α			
LSPM-170004	\$2csy:	Brass plunger	1 N.C. safety contact / 1 N.O. monitoring contact	Snap action	В			
LSPM-170007	\$2csz:	Dhungar with brook raller	2 N.C. safety contacts / 1 N.O. monitoring contact	Slow action break before make	Α			
LSPM-170008	\$;2cs]:	Plunger with brass roller	1 N.C. safety contact / 1 N.O. monitoring contact	Snap action	В			
LSPM-170014	\$;2cs[:	Side rotary lever	2 N.C. safety contacts / 1 N.O. monitoring contact	Slow action break before make	Α	Pigtail 2m / 6.5 ft		
LSPM-170016	\$2dna:	with polyester roller	1 N.C. safety contact / 1 N.O. monitoring contact	Snap action	В	cable length		
LSPM-170018	\$2cs#:	Drago plunger and fiving pute	2 N.C. safety contacts / 1 N.O. monitoring contact	Slow action break before make	Α			
LSPM-170020	\$;2cs!:	Brass plunger and fixing nuts	1 N.C. safety contact / 1 N.O. monitoring contact	Snap action	В			
LSPM-170022	\$2cs?:	Plunger with brass roller	2 N.C. safety contacts / 1 N.O. monitoring contact	Slow action break before make	Α			
LSPM-170024	\$;2cs,:	and fixing nuts	1 N.C. safety contact / 1 N.O. monitoring contact	Snap action	В			

Bar charts

Connections

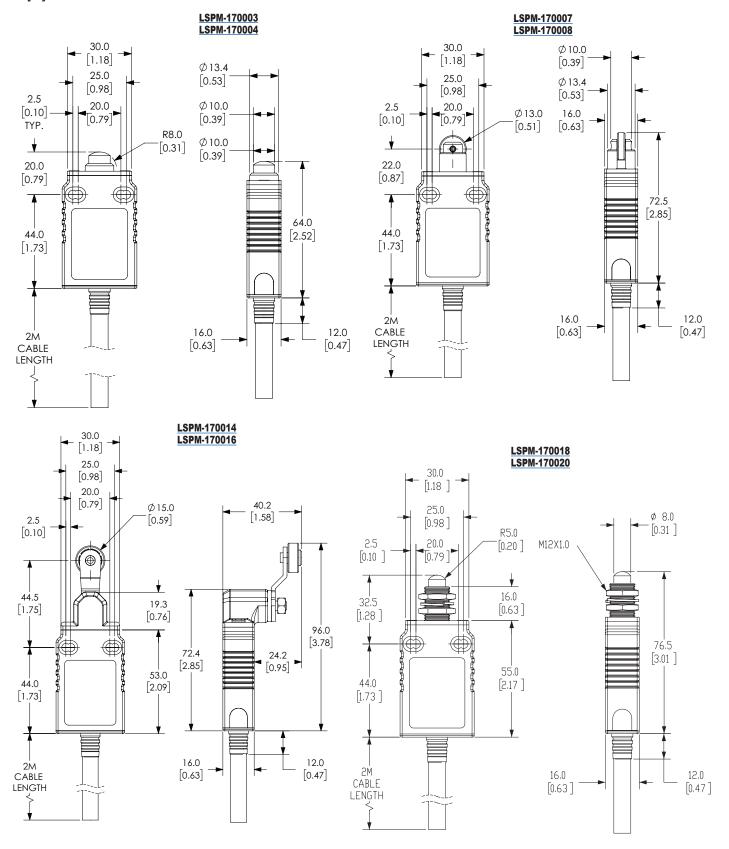




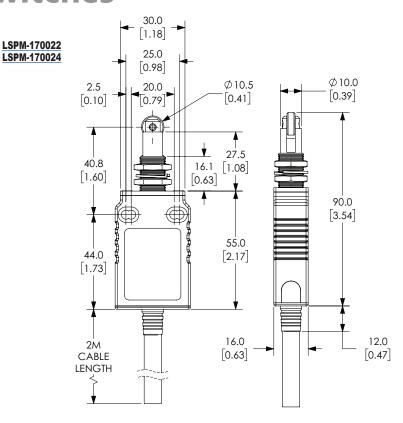
IDEM Type LSPM (Plastic Body) Safety Limit Switches

Dimensions

mm [in]



IDEM Type LSPM (Plastic Body) Safety Limit Switches



IDEM Type LSPM (Pla	astic Body) Safety Limit Switches Specifications	
Safety Characteristic Data		
Performance level	Up to PLe depending on the system architecture	
Category	Up to Cat 4 depending on the system architecture	
Safety Integrity Level	Up to SIL3 depending on the system architecture	
B10d	2.5 x 10 ⁶ operations	
Safety Data - Annual Usage	8 cycles per hour / 24 hours per day / 365 days	
MTTFd	356 years	
PFHd (1/h)	3.44 x 10 ⁻⁸	
Proof Test Interval T1	35 years	
Electrical and General Specifications		
Utilization Category	AC15 A300 240V, 3A	
Minimum Switched Current	5mA, 5VDC	
Thermal Current	10A	
Rated Insulation Voltage	300VAC	
Max. Switching Speed	250 mm/sec	
Max. Switching Frequency	6,000 operations/day	
Case Material	Plastic	
Operating Temperature	-25° to +80°C [-13° to +176°F]	
Enclosure Protection	IP67	
Mechanical Life Expectancy	2,500,000 cycles	
Vibration	IEC 68-2-6	
Conductor Size	1.5 mm ²	
Recommended Mounting Bolt Torque	2Nm	
Recommended Mounting Screws	M4	
Agency Approvals	CE, UL (file E258676)	

Note: When the product is used differently from the assumptions shown (different load, operating frequency, etc.) the values must be adjusted accordingly.

IDEM Non-Contact Safety Accessories

Non-Contact Spacers

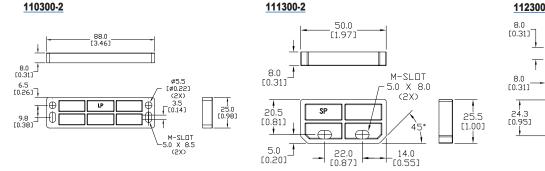
- 5 different spacers available
- Supplied in packages of 2
- · All spacers are made from polyester
- For use with IDEM Non-Contact switches when mounted to a ferrous surface

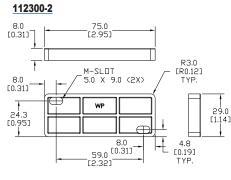


	IDEM Non-Contact Safety Switch Spacers								
Part Price		Description	no		Use with ct switch		or:	Weight	Dimensions
Number	2000 i pilon	LP	SP	WP	CP	MP	_ rrongm	Billionologo	
110300-2	\$42yk:	LP polyester 8mm [0.31 in] spacer for use on ferrous materials	р					0.03 lb [13.6 g]	
111300-2	\$-42yl:	SP polyester 8mm [0.31 in] spacer for use on ferrous materials		р				0.03 lb [13.6 g]	
<u>112300-2</u>	\$42yp:	WP polyester 8mm [0.31 in] spacer for use on ferrous materials			р			0.06 lb [27.2 g]	Refer to drawings below
<u>113300-2</u>			drawings below						
114300-2	\$42yo:	MP polyester 8mm [0.31 in] spacer for use on ferrous materials					р	0.07 lb [31.8 g]	

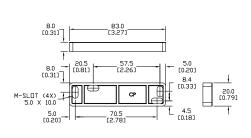
Dimensions

mm [in]

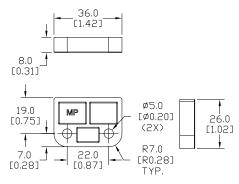




113300-2



114300-2



See our website www.AutomationDirect.com for complete engineering drawings.

IDEM Safety Limit Switches - Operation, Installation and Maintenance











Note: These guidelines apply to all IDEM Safety Limit Switches

Operation:

Operation of the switches is achieved when a moving object causes deflection of the switch plungers or levers. For safety applications it is important that the moving object does not pass completely over the switch actuators so as to cause the actuator to return to its original position.

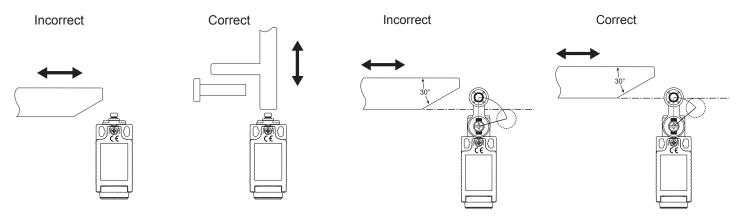
Installation Guide:

Correct mounting of limit switches is critical to obtain optimum performance and ensure safety reliability.

Installation of all switches must be in accordance with a risk assessment for the individual application.

Installation must only be carried out by competent personnel and in accordance with these instructions.

- 1. Never use the switch as a mechanical stop. Ensure that the actuator is protected from mechanical shock.
- 2. For switches with linear actuators the actuating direction and force from the moving object should be applied in line with the axis of the plunger.
- 3. For switches with rotary actuators or rollers the operating cam from the moving object should be designed such that the switch is never operated beyond its over travel position. Always use a 30 degree tapered actuating cam.



- 4. Always ensure that when running electrical conductors that they are routed correctly and no damage can occur to the cable insulation.
- 5. Always use correct mounting bolts (M4 or M5 depending on the switch model) and ensure 2Nm tightening torque for secure fitting.
- 6. Ensure 1Nm tightening torque for conduit plugs and cable glands to achieve IP rating.
- 7. The safety functions and mechanics must be tested regularly. For applications where infrequent guard access is foreseeable, the system must have a manual function test to detect a possible accumulation of faults. Do this at least once per month for PLe Cat3/4 or once per year for PLd Cat3 (ISO13849-1). Where possible, it is recommended that the control system of the machine demands and monitors these tests, and stops or prevents the machine from starting if the test is not done. (See ISO14119).

Maintenance:

Every Month: Check switch actuator and body for signs of mechanical damage and wear. Replace any switch showing damage.

Every 6 Months: Isolate power and remove cover. Check screw terminal tightness and check for signs of moisture ingress. Never attempt to repair any switch.

Contact

Config.

Diagram

2

2

2

1

2

2

2

Head

Dimensions

Figure 1

Figure 1

Figure 2

Figure 2

Figure 3

Figure 3

Figure 4

Figure 4

Figure 5

Figure 5

Figure 6

Figure 6

Weight

(lbs.)

0.2

0.2

0.2

0.2

0.2

0.2

0.2

0.2

0.2

0.2

0.2

0.2

Photo

Α

В

С

D

Ε

F

Comepi Safety Limit Switches

These safety limit switches are developed and manufactured according to IEC and EN European standards. Easy to use, electromechanical limit switches provide:

Actuator Type

Steel plunger with reset

Steel plunger with

nylon roller with reset

Steel plunger with one-

way horizontal actuated

nýlon roller with reset

Steel plunger with one-

way vertical actuated nylon roller with reset

Lever with nylon roller

with reset

Adjustable lever with

nylon roller with reset

· Visible operation

Part Number

AP2R11X11

AP2R11W02

AP2R13X11

AP2R13W02

AP2R31X11

<u> AP2R31W02</u>

AP2R32X11

AP2R32W02

AP2R41X11

AP2R41W02

AP2R51X11

• Ability to switch large currents (10 A conventional thermal current)

Price

\$04hp:

\$04ho:

\$04hs:

\$04hq:

\$04hu:

\$;04ht:

\$04hx:

\$04hv:

\$04hz:

\$04hy:

\$;04h[:

- Precise operating points (consistency)
- Immunity to electromagnetic disturbances
- Electrically separated contacts (Zb)
- N.C. contacts with positive opening operation \bigcirc

B10d

2,000,000

operations

• Conduit threads - 1/2" NPT adapter

Min. Positive

Opening

Force (N) Torque (Nm)

44N

44N

24N

0.32Nm















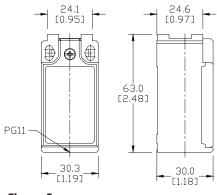




AP2R51W02 \$;04h]:

mm [in]

AP2R Series Body



AP2R Series Safety Limit Switches Selection Chart

Min.

Actuation

Force (N)

Torque(Nm)

9N

12N

7N

0.10Nm

Мах.

Actuation

Speed

(m/s)

0.5

0.3

1.0

1.5

Figure 5

No. of

Conduit

Holes

One







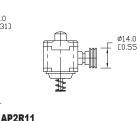
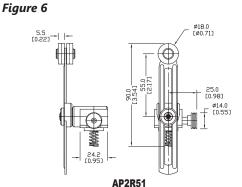


Figure 2 24.1 [0.95] AP2R13

Figure 3 AP2R31

Figure 4

AP2R32



AP2R41

Safety Electrical Components

tESC-174

Comepi Safety Limit Switches

Contacts Configuration Charts

Chart 1

X11 Slow action break before make 1NO+1NC

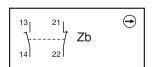


Chart 2

W02 Simultaneous slow action 2NC

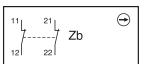


Chart 3

X12 Slow action break before make 1NO+2NC

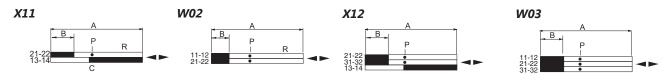


Chart 4

W03 Simultaneous slow action 3NC



Bar charts for keys, shaft lever or limit switches



A = Max. travel of the operator in mm or degrees



B = Tripping travel of the N.C. contact

C = Tripping travel of the N.O. contact

P = Point from which positive opening is assured

R = Reset latch activates

	Contact	Displacement Values mm[in] or degrees					
Part Series	Configuration	А	В	С	P	R	
A D2 D44	X11	5.6 [0.22]	1.6 [0.06]	2.5 [0.10]	3.2 [0.13]	4.4 [0.17]	
AP2R11	W02	5.6 [0.22]	1.5 [0.06]	_	3.1 [0.12]	4.4 [0.17]	
4 D 2 D 4 2	X11	9.6 [0.38]	3.2 [0.13]	4.6 [0.18]	6.0 [0.23]	7.5 [0.30]	
AP2R13	W02	9.6 [0.38]	3.0 [0.12]	_	5.9 [0.23]	7.5 [0.30]	
A DODO4 A DODO0	X11	21.0 [0.83]	6.0 [0.24]	8.6 [0.34]	10.5 [0.41]	15.6 [0.61]	
AP2R31, AP2R32	W02	21.0 [0.83]	5.7 [0.22]	_	10.2 [0.40]	15.6 [0.61]	
ADOD44 ADOD54	X11	±74°	±21°	±30°	±37°	±60°	
AP2R41, AP2R51	W02	±74°	±19°	_	±37°	±60°	

Comepi Safety Limit Switches

Comepi Safety Limit Switches Specifications					
Safety Characteristic Data					
Performance level	Up to PLe depending on the system architecture				
Category	Up to Cat 4 depending on the system architecture				
Safety Integrity Level	Up to SIL3 depending on the system architecture				
B10d	2 million operations				
Safety Data - Annual Usage	8 cycles per hour / 24 hours per day / 365 days				
MTTFd	285 years				
PFHd (1/h)	4.01 x 10 ⁻⁷				
Proof Test Interval T1	Minimum 8,760 hours (depending on site test frequency)				
Electrical and General Specifications					
Utilization Category	AC15 - DC13 / A600 - B600				
Minimum Switched Current	5mA, 5VDC				
Thermal Current	10A				
Rated Insulation Voltage	500V				
Max. Switching Speed	R11: 0.3m/s - R13: 0.3m/s - R31/R32: 1m/s - R41/R51: 1.5m/s				
Max. Switching Frequency	3,600 operations/hour				
Case Material	Thermoplastic				
Operating Temperature	-25° to +70°C [-13° to +158°F]				
Enclosure Protection	IP65				
Mechanical Life Expectancy	1 million operations				
Vibration	According to EN 60068-2-6				
Conductor Size	0.75 to 2.5 mm ²				
Recommended Head Screws Torque	Torque 0.5 Nm recommended / 0.8 Nn maximum				
Recommended Lid Screws Torque	0.5 Nm recommended / 0.8 Nm maximum				
Recommended Mounting Bolt Torque	1 Nm				
Recommended Mounting Screws	M4				
Agency Approvals	CE - cULus - IMQ - CCC - EAC				

Safety Products



Warning: Safety products sold by AutomationDirect are Safety components only. The purchaser/installer is solely responsible for the application of these components and ensuring all necessary steps have been taken to assure each application and use meets all performance and applicable safety requirements and/or local, national and/or international safety codes as required by the application. AutomationDirect cannot certify that our products, used solely or in conjunction with other AutomationDirect or other vendors' products, will assure safety for any application. Any person using or applying any products sold by AutomationDirect is responsible for learning the safety requirements for their individual application and applying them, and therefore assumes all risks, and accepts full and complete responsibility, for the selection and suitability of the product for their respective application.

AutomationDirect does not provide design or consulting services, and cannot advise whether any specific application or use of our products would ensure compliance with the safety requirements for any application.

IDEM Non-Contact Safety Switches Overview









Non-Contact Safety Switches

Non-contact safety switches are interlocking devices that are designed to protect both people and machines. They are preferred in certain applications where no physical contact (under normal conditions) takes place between the switch and actuator, such as:

- Where a high level of protection from tampering is required.
- Where reduced wear from frequent mechanical contact is desired.
- Where poor guard alignment exists. Their operating principle enables greater tolerances, making them ideal for applications where precise guidance of guards is difficult.
- Where there is exposure to contamination or where there are strict hygiene standards (for example, in the food industry). The devices are easy to clean, making them ideal for these environments.
- Where a long service life is required. The switches are mechanically non-wearing, insensitive to shock and vibration, and resistant to moisture and extreme temperatures.

Non-Contact Magnetic, Coded Magnetic, and RFID Styles

All three switch styles provide a wide (>10mm) sensing distance and a high tolerance to misalignment after sensing. Plastic and stainless steel housings are available for all models. Up to ten magnetic or four coded / RFID switches can be connected in series to one of our Dold safety relays.

Non-Contact Magnetic Safety Switches

These are simple magnetic reed switches and are designed to conform to IEC 60947-5-3 and be used as directed by ISO14119, EN ISO12100 and EN 60204-1. When the magnet actuator approaches the switch, the magnetic field pulls the reed contacts to a closed position.

Non-Contact Coded Magnetic Safety Switches

Coded non-contact safety switches use coded magnets to close the circuits, thereby offering even more protection than magnetic safety switches. The safety switch and actuator work together in such a way that the enable condition from the safety device is only triggered if the actuating element is within the switch's response range and the code on the actuator matches that of the switch. Codes are not unique and can be used with other models of the same series.

All coded non-contact safety switches are designed to conform to IEC 60947-5-3 and be used as directed by ISO14119, EN ISO12100 and EN 60204-1.

When used in combination with a dual channel safety relay, non-contact coded switches can be used to provide protection up to Category 4 and Ple to ISO13849-1.

Non-Contact RFID Coded Safety Switches

RFID Coded non-contact safety switches use RFID communication between switch and actuator to provide the most tamper proof protection using both master and unique coded actuators. All master coded switch models will work the other master coded actuators including the replacement models available. All unique coded switches are unique per item shipped with no two alike.

When used in combination with a Dual Channel Safety Relay, RFID Coded non-contact safety switches can be used to provide protection up to Category 4 and PLe to ISO13849-1.









IDEM Non-Contact Safety Switches Selection Guide

Magnetic Safety Switches







Specification	MPR and MMR Series Light Duty	LPR and LMR Series Medium Duty	SPR, SMR, and SMR-F Series Medium Duty
Body Material	Plastic, Stainless steel	Plastic, Stainless steel	Plastic, Stainless steel
Contact Configuration & Rating	2 NC and 1 NO contacts; 0.5A	2 NC and 1 NO contacts; 1A	2 NC and 1 NO contacts; 1A





Specification	CPR, CMR, and CMR-F Series Heavy Duty	WPR Series Heavy Duty
Body Material	Plastic, Stainless steel	Plastic
Contact Configuration & Rating	1 NC and 1 NO contacts; 2A	2 NC and 1 NO contacts; 2A

Coded Magnetic Safety Switches







Specification	MPC Series	LPC and LMC Series	SPC, SMC, and SMC-F Series
Body Material	Plastic	Plastic, Stainless steel	Plastic, Stainless steel
Contact Configuration & Rating	2 NC and 1 NO contacts; 0.2A	2 NC and 1 NO contacts; 0.2A	2 NC and 1 NO contacts; 0.2A





Specification	CPC, CMC, and CMC-F Series	WPC Series
Body Material	Plastic, Stainless steel	Plastic
Contact Configuration & Rating	2 NC and 1 NO contacts; 0.2A	2 NC and 1 NO contacts; 0.2A

IDEM Non-Contact Safety Switches Selection Guide

RFID Safety Switches



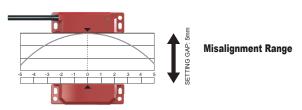


Specification	LPF Series	SPF Series
Body Material	Plastic	Plastic
Contact Configuration & Rating	2 NC and 1 NO contacts; 0.2A	2 NC and 1 NO contacts; 0.2A

IDEM Non-Contact Safety Switches Specifications

	Non-contact Safety Swi	tches Specifications	
	Non-Contact Magnetic Switches	Non-Contact Coded Magnetic Switches	Non-Contact RFID Coded Switches
Safety Classification and Reliability Data		-	
Switching Reliability (B10d)	3.3 x 10 ⁶ operations at 100mA load	No mechanical parts implemented	No mechanical parts implemented
ISO 13849-1		Up to Category 4	
ISO 13849-1		Up to PLe depending upon system architecture	
EN 62061		Up to SIL3 depending upon system architecture	
Safety Data - Annual Usage		8 cycles per hour / 24 hours per day / 365 days	
PFHd	2.8 x 10 ⁻¹⁰	2.6 x 10 ⁻¹⁰	4.77 x 10 ⁻¹⁰
Proof Test Interval (Life)	2.0 × 10	20 years	4.77 X 10
MTTFd	470 years	866 years	1100 years
Agency Approvals	470 years	CE, cULus	1100 years
Electrical and General Specifications		OL, COLUS	
Liectrical and General opecinications	MPR: Voltage free: 250VAC, 0.5 A max.		
Contact Patings: Monitoring (Auxilary)	LPR, LMR, SPR, SMR, SMR-F: Voltage free: 250VAC, 1.0 A max.		
	CPR, CMR, CMR-F, WPR: Voltage free: 250VAC, 2.0 A max.	24VDC, 0.2 A max (optocoupler)	24VDC, 0.2 A max (optocoupler)
	BPR, BMR: 240VAC, 24VAC/DC, 1.0 A max.		
Contact Ratings: Monitoring (Auxilary) Contact NO	Voltage free: 24VDC, 0.2 A max.	24VDC, 0.2A max.	24VDC, 0.2A max.
	MPR: Fuse externally 0.4 A (F)		NA
Recommended Fuses (NC Circuits)	LPR, LMR, SPR, SMR, SMR-F, CMR, CMR-F: Fuse externally 0.8 A (F)	NA	
	CPR, WPR: Fuse externally 1.6 A (F)		
	BPR, BMR: Fuse externally 0.5 A (F)		
Contact Release Time	<2ms	NA	NA
Initial Contact Resistance	<0.5 Ω	NA NA	NA NA
Minimum Switched Current	40.0 12	10 DC, 1mA	IVA.
Dielectic Withstand		250VAC	
Insulation Resistance		100 Megohms	
Recommended Setting Gap		5mm [0.20 in]	
NC Switching Distance	San (assured C	DN) 8mm [0.31 in] close; Sar (assured OFF) 20mi	m [0.70 in] onon
NC Switching Operation	`	circuits are closed when the guard is closed and	
NO Switching Operation	Totali switches the ive	Opens before NC circuits close	the detactor is present.
Tolerance to Misalignment	5mm [0 20 in] in any direction	from 5mm [0.20 in] setting gap (See Misalignmen	ot Range drawing on this nage)
Switching Frequency	onini [o.zo in] in any anoston	1.0 Hz Max.	Trango drawing on the page/
Approach Speed	200r	nm [7.87 in] per minute to 1000mm [39.37] per se	econd
Body Material - Polyester	CPR, LPR, MPR, SPR, WPR, BPR	CPC, LPC, MPC, SPC, WPC	LPF, SPF, BPF
Body Material - 316 Stainless Steel	CMR, CMR-F, LMR, SMR, SMR-F, BMR	CMC, CMC-F, LMC, SMC, SMC-F	LMF, BMF
		Polyester: -25° to +80°C (-13° to +176° F)	ı
Operating Temperature Range	316 Stainless Steel: -25° to +105° C 316 Stainless Steel: -25° to +105° C [-13° to +221° F] [-13° to +221° F]		-25° to +80° C [-13° to +176° F]
Storage Temperature (Low)		-55° to -40° C [-67° to -40° F]	
Enclosure Protection	IP	67, IP69K (QC versions are IP67 due to connect	or)
Shock Resistance		IEC 68-2-27 11ms 30g	
Vibration Resistance		IEC 68-2-6 10-55 Hz 1mm [0.04 in]	
Cable Type	PVC, 6.5 mm outside diameter max.	PVC, 6.5 mm outside diameter max.	PVC, 6mm [0.24 in] outer diameter max.
Mounting Bolts (recommended)		2 x M4; Tightening torque: 1.0 N•m [0.74 lb•ft]	

Note: Always mount onto non-ferrous materials.



IDEM MPR and MMR Light Duty Non-Contact Magnetic Safety Switches





Actuator Operating Direction



MPR/MMR

MPR Series Plastic Housing

MMR Series Stainless Steel Housing

- Compact yet robust fitting suitable for all small guard applications
- Can be mounted unobtrusively in channels or behind doors - left or right cable exit
- Hygenic screw cap covers ensure suitability for food processing washdown
- Can be high-pressure hosed at high temperature IP69K rated
- Wide 12 mm sensing, high tolerance to misalignment
- High switching capability up to 0.5A
- Will operate with most safety relays
- Available with 2m, 5m, or 10m cable or 250mm pigtail cable with quick-disconnect cable
- Codes are not unique and can be used with other models of the same series

MMR-H Series Only

- Specifically designed for food processing applications
- Suitable for CIP SIP cleaning Food Splash Zones per EHEDG guidelines
- 316 Stainless Steel mirror polished finish (Ra4)
- Can be high-pressure hosed at high temperature IP69k rated

See Dimensions later in this section.

MPR/MMR Non-Contact Magnetic Safety Switches					
Part Number	Price	Body Material	Cable Length / Exit Type	Circuits	Contact Type / Rating
			Pigtail Versions		
MPR-114005	\$;04f6:		2m / Right		
MPR-114006	\$;04f7:		5m / Right		
MPR-114007	\$;004f8:	Plastic	10m / Right		
MPR-114013	\$;04f9:	Flasiic	2m / Left		
MPR-114014	\$;04fa:	_	5m / Left	2 NC, 1 NO	Light duty / 0.5A
MPR-114015	\$;004fb:		10m / Left		
MMR-H-131005	\$;01g#,:	-	2m / Right		
MMR-H-131006	\$;01g!0:		5m / Right		
MMR-H-131007	\$;01g!1:	Stainless Steel	10m / Right		
MMR-H-131013	\$;01g!3:	Stairliess Steel	2m / Left		
MMR-H-131014	\$;01g!4:		5m / Left		
MMR-H-131015	\$;01g!5:		10m / Left		
		Quick Disc	onnect Versions (M12 8-pin)		
MPR-114008	\$;-01g!l:	Plastic	250mm / Right		
MPR-114016	\$;01g!n:	Plastic	250mm / Left	2 NO 4 NO	Light duty O.E.A
MMR-H-131008	\$;01g!2:	Ctainless Ctasl	250mm / Right	2 NC, 1 NO	Light duty.0.5A
MMR-H-131016	\$;01g!6:	Stainless Steel	250mm / Left		

Female Quick Disconnect Lead					
Part Number Price Description Exit Type/Cable Length					
<u>140101</u>	\$;1g!_:	Famala OD Land	M12 Female 5m, 8-pin		
<u>140102</u>	\$;1g!#:	Female QD Lead	M12 Female 10m, 8-pin		

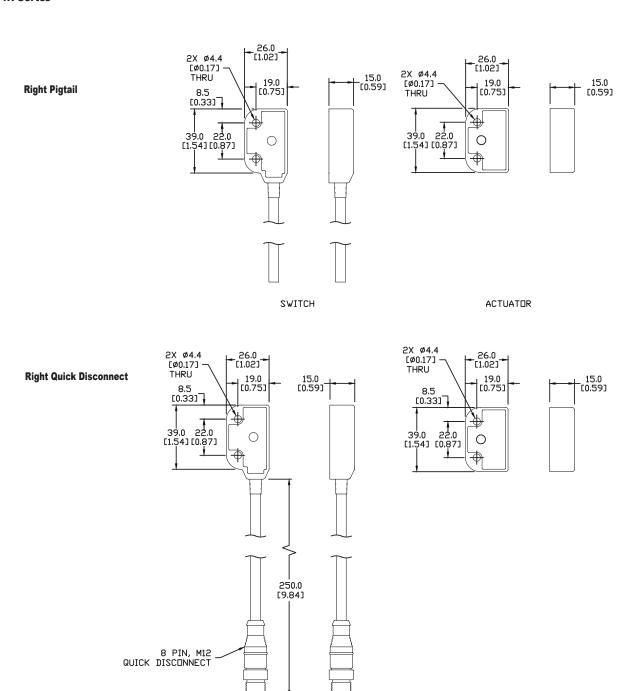


IDEM MPR and MMR Light Duty Non-Contact Magnetic Safety Switches

Dimensions

mm [in]

MMR Series



SWITCH

See our website: www.AutomationDirect.com for complete Engineering drawings.

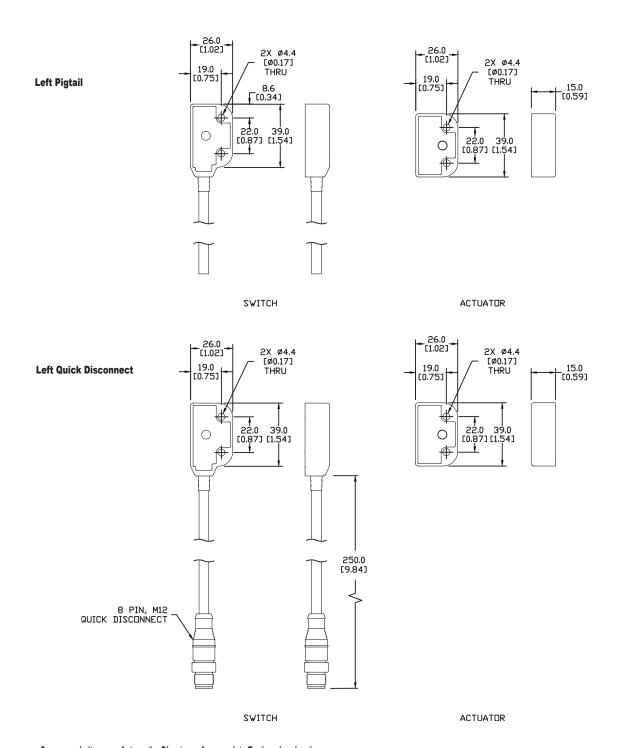
ACTUATOR

IDEM MPR and MMR Light Duty Non-Contact Magnetic Safety Switches

Dimensions

mm [in]

MMR Series







Actuator Operating Direction

LPR Series Plastic Housing

LMR Series Stainless Steel Housing

- Popular housing suitable for all industry applications
- · Narrow style for flush mounting
- Can be high-pressure hosed at high temperature IP69K rated
- Medium duty 1A
- Wide 12 mm sensing, high tolerance to misalignment
- Will operate with most safety relays
- Available with 2m, 5m, or 10m cable or 250mm pigtail with quick-disconnect cable
- Codes are not unique and can be used with other models of the same series

LMR Series Only

- Specifically designed for food processing applications
- Suitable for CIP SIP cleaning food splash zones per EHEDG guidelines
- 316 Stainless steel mirror polished finish

See Dimensions later in this section.



	LPR and LMR Non-Contact Magnetic Safety Switches					
Part Number	Price	Body Material	Cable Length	Circuits	Contact Type / Rating	
	Pigtail Versions					
LPR-110013	\$;004f3:		2m			
LPR-110014	\$;004f4:	Plastic	5m			
LPR-110015	\$;004f5:		10m	2 NO. 4 NO.	Madium duty / 1 A	
LMR-133013	\$;004f0:	Stainless steel	2m	2 NC, 1 NO	Medium duty / 1A	
LMR-133014	\$;004f1:		5m			
LMR-133015	\$;004f2:		10m			
Quick Disconnect Versions (M12 8-pin)						
LMR-133016	\$;;01g!t:	Stainless steel	250mm	2 NC, 1 NO	Medium duty / 1A	

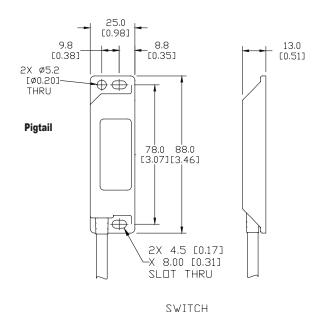
Female Quick Disconnect Lead					
Part Number Price Description Exit Type/Cable Length					
<u>140101</u>	\$;1g!_:	Female QD Lead	M12 Female 5m, 8-pin		
140102	\$;1g!#:	remale QD Lead	M12 Female 10m, 8-pin		

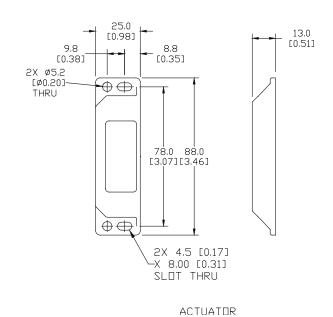


Dimensions

mm [in]

LPR Series

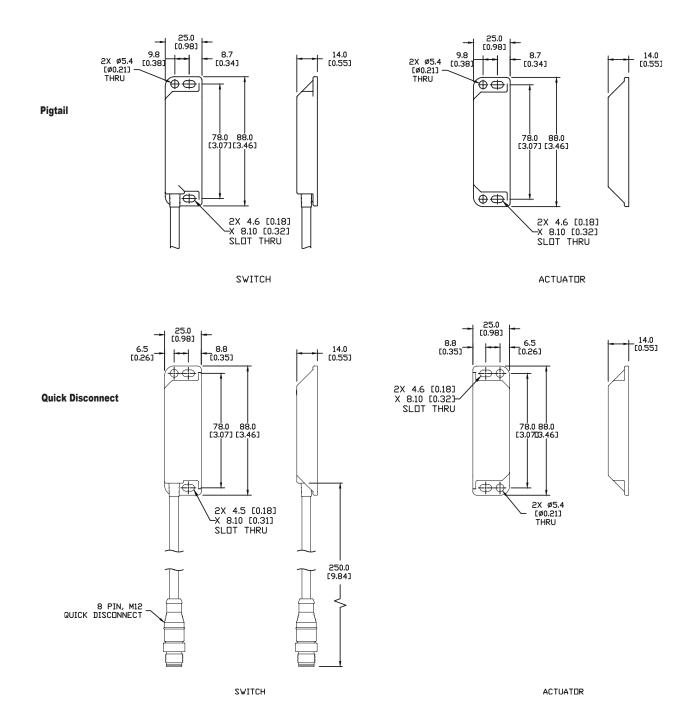




Dimensions

mm [in]

LMR Series







Actuator Operating Direction



SPR Series Plastic Housing

SMR Series Stainless Steel Housing

SMR-F Series Stainless Steel Housing Rear Mount

- Universal housing 22mm fixing footprint suitable for most general applications; 50 mm wide body
- Withstands environments where high humidity or hose down is required.
- Wide 12 mm sensing, high tolerance to misalignment
- · Long life switching capability up to 1A
- · Will operate with most safety relays
- Codes are not unique and can be used with other models of the same series
- Available with 2m, 5m, or 10m cable or 250mm pigtail with quick-disconnect cable

SMR Series, SMR-F Only

- Specifically designed for food processing applications
- Suitable for CIP SIP cleaning Food Splash Zones per EHEDG guidelines
- 316 Stainless steel mirror polished finish
- Can be high-pressure hosed at high temperature IP69K rated

SMR-F Only

- Same as SMR series, but with no-food-trap housing rear mounting holes
- · 5m cable only

See Dimensions later in this section.

SPR, SMR, and SMR-F Non-Contact Magnetic Safety Switches								
Part Number	Price	Body Material	Cable Length	Circuits	Contact Type / Rating			
	Pigtail Versions							
<u>SPR-111013</u>	\$;004fg:		2m					
SPR-111014	\$;004fh:	Plastic	5m					
<u>SPR-111015</u>	\$;-004fi:		10m	2 NC, 1 NO	Medium duty / 1A			
SMR-139013	\$;004fc:		2m					
SMR-139014	\$;004fd:	Stainless steel	5m					
SMR-139015	\$;004fe:	Stairliess steel	10m					
SMR-F-137014	\$;;004ff:		5m					
	Quick Disconnect Versions (M12 8-pin)							
SPR-111016	\$;01g!h:	Plastic	250mm	2 NC, 1 NO	Medium duty / 1A			
SMR-139016	\$;01g!z:	Stainless steel	250mm	Z NO, I NO	iviedidili daty / TA			

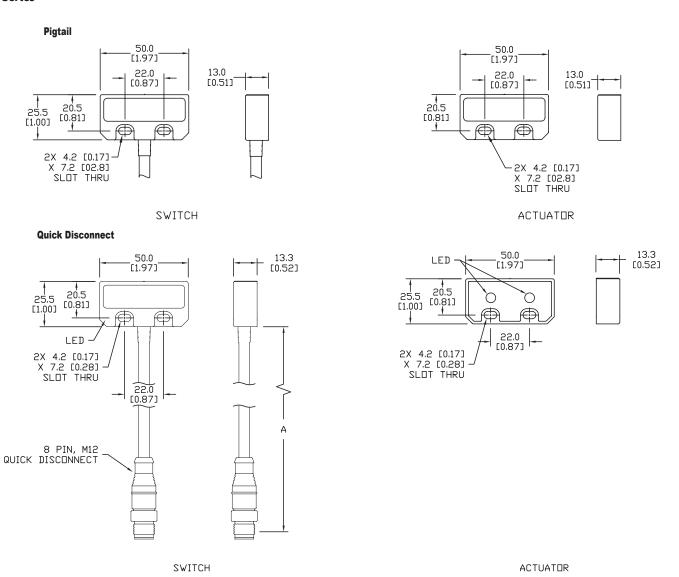
Female Quick Disconnect Lead					
Part Number Price Description Exit Type/Cable Len					
<u>140101</u>	\$;1g!_:	Famala OD Land	M12 Female 5m, 8-pin		
140102	\$;1g!#:	Female QD Lead	M12 Female 10m, 8-pin		



Dimensions

mm [in]

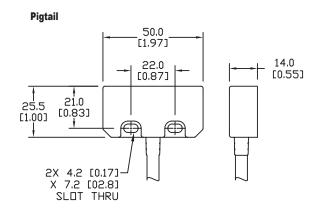
SPR Series

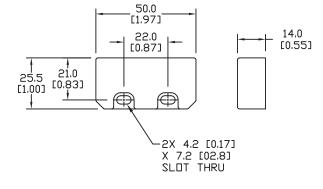


Dimensions

mm [in]

SPR Series

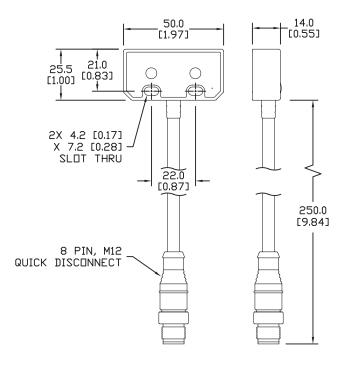


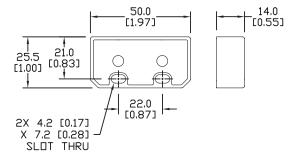


SWITCH

ACTUATOR

Quick Disconnect





ACTUATOR

See our website: <u>www.AutomationDirect.com</u> for complete Engineering drawings.

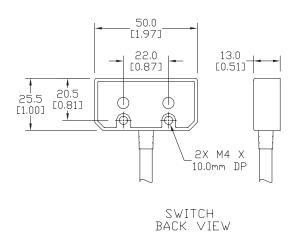
SWITCH

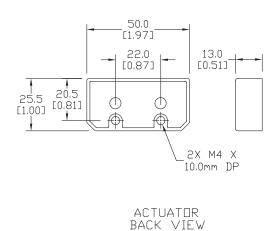
Dimensions

mm [in]

SMR Series

Pigtail









Actuator Operating Direction

CPR Series Plastic Housing

CMR Series Stainless Steel Housing

CMR-F Series Stainless Steel Housing Rear Mount

- Slim 20mm wide housing can be fitted into narrow channels
- Can be high-pressure hosed at high temperature IP69K rated
- Wide 12 mm sensing, high tolerance to misalignment
- High switching capability up to 2A
- Will operate with most safety relays
- Codes are not unique and can be used with other models of the same series
- Available with 2m, 5m, or 10m cable or 250mm pigtail with quick-disconnect cable

CMR Series, CMR-F Only

- Specifically designed for food processing applications
- Suitable for CIP SIP cleaning Food Splash Zones per EHEDG guidelines
- 316 Stainless steel mirror polished finish

CMR-F Only

- Same as CMR series, but with no-food-trap housing rear mounting holes
- 5m cable only

See Dimensions later in this section.



	CPR, CMR, and CMR-F Non-Contact Magnetic Safety Switches						
Part Number	Price	Body Material	Cable Length	Circuits	Contact Type / Rating		
Pigtail Version							
CPR-113013	\$;004e!:		2m				
CPR-113014	\$004e?:	Plastic	5m				
CPR-113015	\$;004e,:		10m	1 NC. 1 NO	Hoover duty / 2A		
CMR-138030	\$;004e[:		5m	I NO, I NO	Heavy duty / 2A		
CMR-138031	\$004e_:	Stainless steel	10m				
CMR-F-135030	\$004e#:		5m				
Quick Disconnect Version (M12 8-pin)							
CPR-113008	\$;01g!k:	Plastic	250mm	1 NC, 1 NO	Hoover duty / 2A		
CMR-138024	\$;01g!x:	Stainless steel	250mm	TING, TING	Heavy duty / 2A		

Female Quick Disconnect Lead					
Part Number Price Description Exit Type/Cable Len					
140101	\$;1g!_:	Famala OD Land	M12 Female 5m, 8-pin		
140102	\$;1g!#:	Female QD Lead	M12 Female 10m, 8-pin		



Dimensions

Pigtail

mm [in]

CPR Series

20.0 17.0 17.0 17.0 10.79]

7.5 11.0 25.0 10.20]

8.0 5.0 10.20]

8.0 5.0 10.20]

8.0 5.0 10.20]

8.0 5.0 10.20]

8.0 5.0 10.20]

8.0 5.0 10.20]

8.0 5.0 10.20]

8.0 5.0 10.20]

8.0 5.0 10.20]

8.0 5.0 10.20]

8.0 5.0 10.20]

8.0 5.0 10.20]

8.0 5.0 10.20]

8.0 5.0 10.20]

8.0 5.0 10.20]

8.0 5.0 10.20]

8.0 5.0 10.20]

8.0 5.0 10.20]

8.0 5.0 10.20]

8.0 5.0 10.20]

8.0 5.0 10.20]

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8.0 5.0 10.20]

8.0 5.0 10.20]

8.0 5.0 10.20]

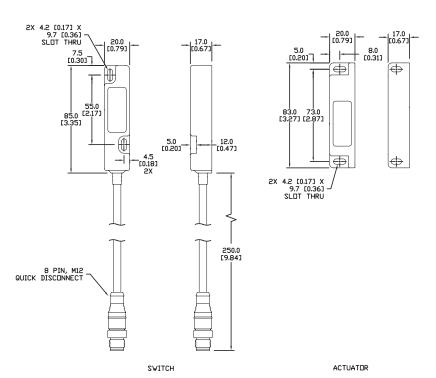
8.0 5.0 10.20]

8.0 5.0 10.20]

8.0 5.0 10.20]

SWITCH

Quick Disconnect



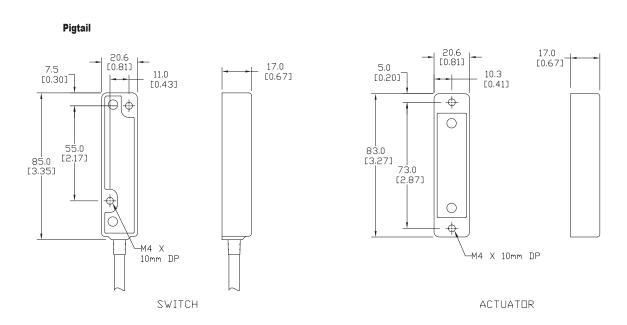
See our website: www.AutomationDirect.com for complete Engineering drawings.

ACTUATOR

Dimensions

mm [in]

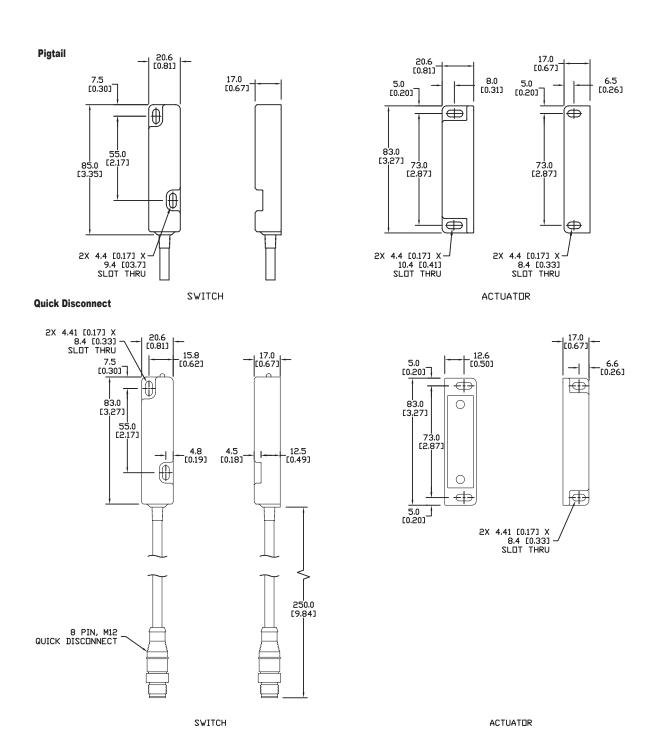
CMR-F Series



Dimensions

mm [in]

CMR Series



WPR Series Plastic Housing

WMR Series Stainless Steel Housing



- Robust wide housing suitable for all industry applications
- Can be high-pressure hosed at high temperature IP69K rated
- Wide 12 mm sensing, high tolerance to misalignment
- High switching capability up to 2A
- Will operate with most safety relays
- Codes are not unique and can be used with other models of the same series
- Available with 2m or 5m cable or 250mm pigtail with quick-disconnect cable

WMR Series only

- Specifically designed for food processing applications
- Suitable for CIP SIP cleaning Food Splash Zones per EHEDG guidelines
- 316 Stainless steel mirror polished finish
- Can be high-pressure hosed at high temperature - IP69K rated

See Dimensions later in this section.



Actuator Operating Direction



WPR/WMR Non-Contact Magnetic Safety Switches						
Part Number	Price	Body Material	Cable Length	Circuits	Contact Type / Rating	
Pigtail Versions						
WPR-112005	\$;-004fj:	Plastic	2m	2 NC, 1 NO	Heavy duty / 2A	
WPR-112006	\$;004fk:	Plastic	5m			
Quick Disconnect Versions (M12 8-pin)						
WPR-112008	\$;-01g!i:	Plastic	250mm	2 NC. 1 NO	Heavy duty / 2A	
WMR-136008	\$;01g!u:	Stainless Steel	250mm	Z NG, I NO		

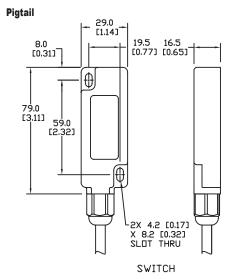
Female Quick Disconnect Lead					
Part Number Price Description Exit Type/Cable Length					
140101	\$;1g!_:	Female QD Lead	M12 Female 5m, 8-pin		
140102	\$;1g!#:	remale QD Lead	M12 Female 10m, 8-pin		

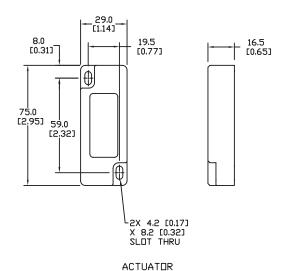


Dimensions

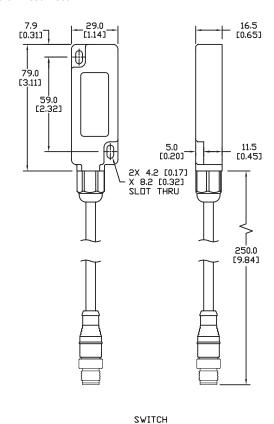
mm [in]

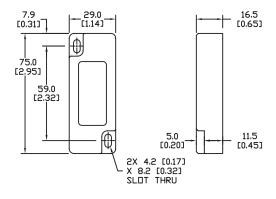
WPR Series





Quick Disconnect





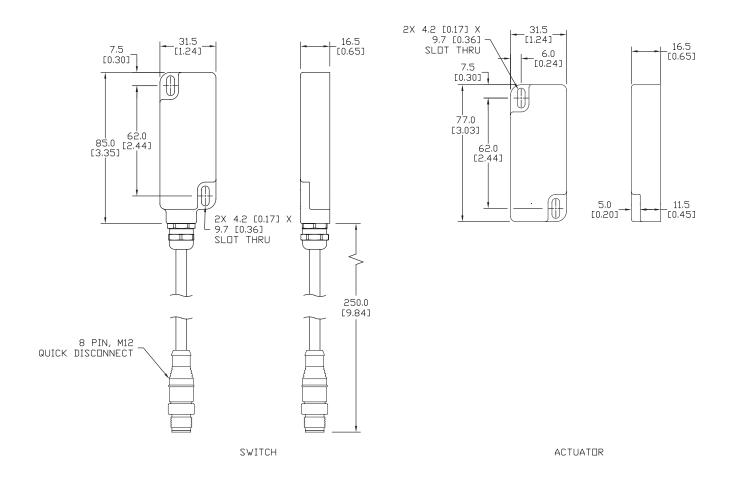
ACTUATOR

Dimensions

mm [in]

WMR Series

Quick Disconnect







Actuator Operating Direction



MPC Series Plastic Housing

MMC Series Stainless Housing

- Coded magnetic actuation
- Compact yet robust fitting suitable for all small guard applications
- Hygenic screw cap covers ensure suitability for food processing washdown
- · Cost effective interlock solution
- Can be mounted unobtrusively in channels or behind doors - left or right cable exit
- High specification polyester housing with backplate
- LED indication
- Can be high-pressure hosed at high temperature IP69K rated
- Sensing distance up to 10 mm
- Switching capability up to 0.2A
- Will operate with most safety relays
- Available with 2m, 5m, or 10m cable or 250mm pigtail with quick-disconnect cable

- MMC Series only
- Specifically designed for food processing applications
- Suitable for CIP SIP cleaning Food Splash Zones per EHEDG guidelines
- · 316 Stainless steel mirror polished finish

See Dimensions later in this section.

	M	PC and MMC Non-Co	ontact Coded Magne	tic Safety Switches	
Part Number	Price	Body Material	Cable Length / Exit Type	Circuits	Contact Rating
			Pigtail Versions		
MPC-114105	\$-004ej:		2m / Right		
MPC-114106	\$004ek:	Plastic -	5m / Right		
MPC-114107	\$-004el:		10m / Right		
MPC-114113	\$004en:		2m / Left		0.2A
MPC-114114	\$004eo:		5m / Left	2 NC, 1 NO	
MPC-114115	\$004ep:		10m / Left		
MMC-H-131105	\$;01g!7:	_	2m / Right		
MMC-H-131106	\$;01g!8:		5m / Right		
MMC-H-131107	\$;01g!9:	Stainland Staal	10m / Right		
MMC-H-131117	\$;01g!b:	Stainless Steel	2m / Left		
MMC-H-131118	\$;01g!c:		5m / Left		
MMC-H-131119	\$;01g!d:		10m / Left		
		Quick Di	isconnect Versions (M12 8-	pin)	
MPC-114108	\$;01g!o:	Plastic	250mm / Right		
MPC-114116	\$;01g!p:	riastic	250mm / Left	2 NC, 1 NO	0.2A
MMC-H-131108	\$;01g!a:	Stainless Steel	250mm / Right	Z INO, I INO	U.ZA
MMC-H-131120	\$;01g!e:	Stairliess Steel	250mm / Left		

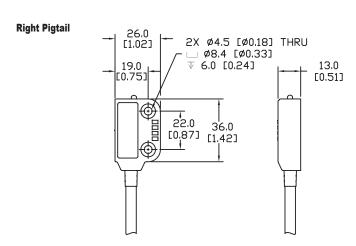
Female Quick Disconnect Lead					
Part Number Price Description Exit Type/Cable Length					
140101	\$;1g!_:	Famala OD Land	M12 Female 5m, 8-pin		
140102	\$;1g!#: Female QD Lead M12 Female 10m, 8				

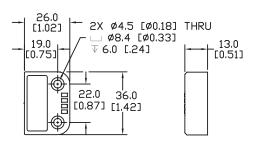


Dimensions

mm [in]

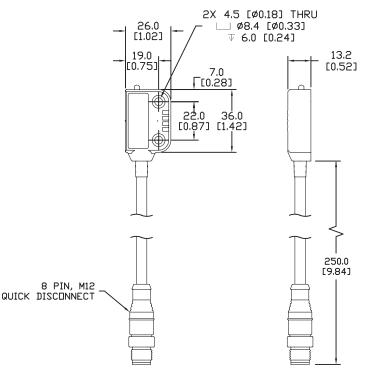
MPC Series



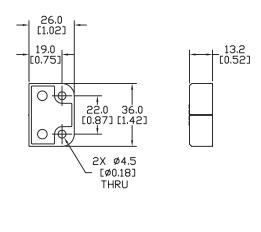


SWITCH

Right Quick Disconnect



ACTUATOR



ACTUATOR

See our website: $\underline{\textit{www.AutomationDirect.com}} \ \textit{for complete Engineering drawings}.$

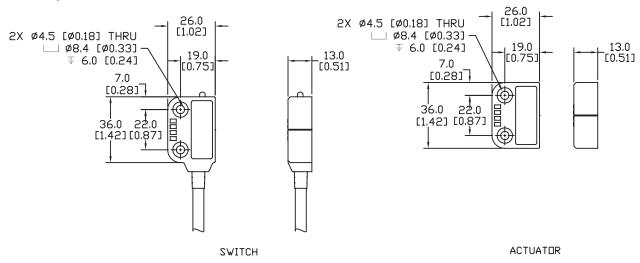
SWITCH

Dimensions

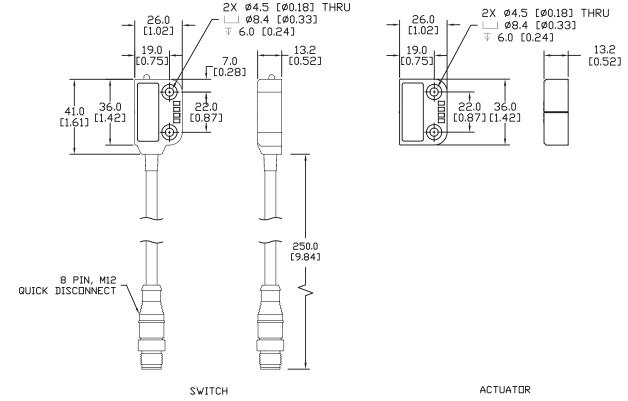
mm [in]

MPC Series





Left Quick Disconnect

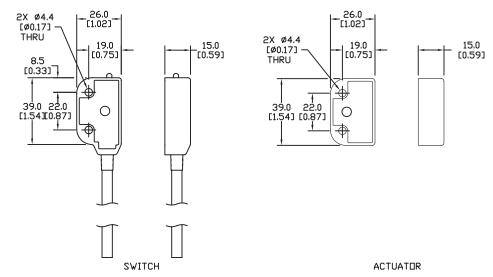


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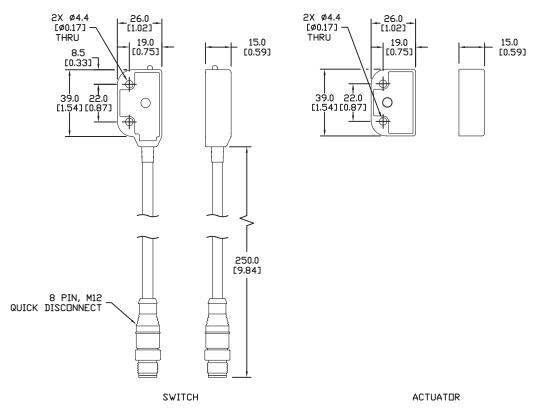
mm [in]

MMC Series

Right Pigtail



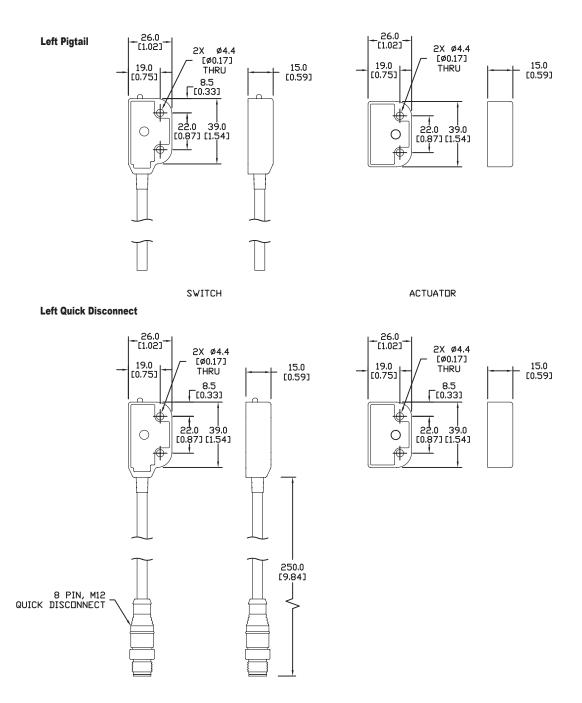
Right Quick Disconnect



Dimensions

mm [in]

MMC Series







Actuator Operating Direction

LPC Series Plastic Housing

LMC Series Stainless Steel Housing

- Coded magnetic actuation
- Narrow housing can be fitted into narrow channels
- Can be high-pressure hosed at high temperature IP69K rated
- LED indication
- Wide 14 mm sensing distance, high tolerance to misalignment
- Long life switching capability up to 0.2A
- Will operate with most safety relays
- Available with 2m, 5m, or 10m cable or 250mm pigtail with quick-disconnect cable

LMC Only

- Specifically designed for food processing applications
- Suitable for CIP SIP cleaning Food Splash Zones per EHEDG guidelines
- 316 Stainless steel mirror polished finish

See Dimensions later in this section.



LPC and LMC Non-Contact Coded Magnetic Safety Switches							
Part Number	Price	Body Material	Cable Length	Circuits	Contact Rating		
	Pigtail Versions						
LPC-110005	\$004eg:		2m				
LPC-110006	\$004eh:	Plastic	5m				
LPC-110007	\$-004ei:		10m	2 NC, 1 NO	0.2A		
LMC-133005	\$004ed:		2m				
LMC-133006	\$004ee:	Stainless steel	5m				
LMC-133007	\$;004ef:		10m				
Quick Disconnect Versions (M12 8-pin)							
LPC-110008	\$;;01g!f:	Plastic	250mm	2 NC 4 NO	0.24		
LMC-133008	\$;01g!s:	Stainless steel	250mm	2 NC, 1 NO	0.2A		

Female Quick Disconnect Lead					
Part Number Price Description Exit Type/Cable Lengtl					
<u>140101</u>	\$;1g!_:	Female QD Lead	M12 Female 5m, 8-pin		
140102	\$;1g!#:	remale QD Lead	M12 Female 10m, 8-pin		

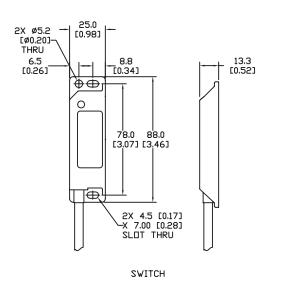


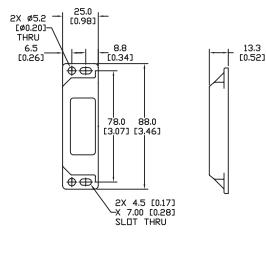
Dimensions

mm [in]

LPC Series

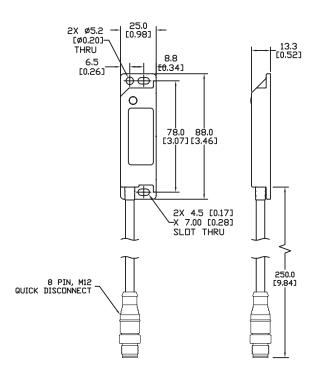
Pigtail

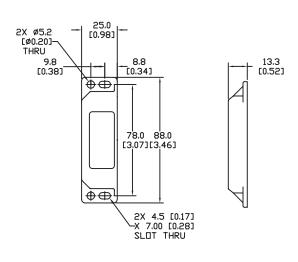




ACTUATOR

Quick Disconnect



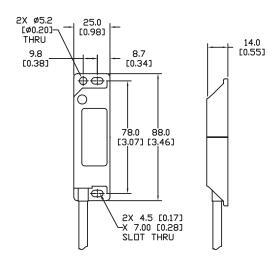


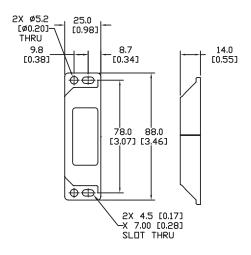
Dimensions

mm [in]

LMC Series

Pigtail

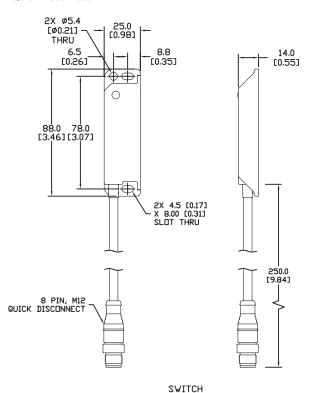


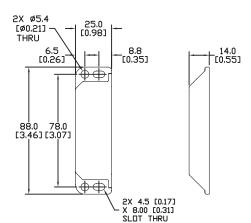


ACTUATOR

SWITCH

Quick Disconnect





ACTUATOR





Actuator Operating Direction

SPC Series Plastic Housing SMC Series Stainless Steel Housing

SMC-F Series Stainless Steel Housing Rear Mount

- Coded magnetic actuation
- Universal housing suitable for most general applications
- Can be high-pressure hosed at high temperature - IP69K rated
- LED indication
- Wide 14 mm sensing distance, high tolerance to misalignment
- Long life switching capability up to 0.2A
- Will operate with most safety relays
- Available with 2m, 5m, or 10m cable or 250mm pigtail with quick-disconnect cable

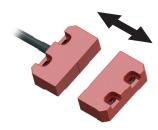
SMC Series Only

- Specifically designed for food processing applications
- Suitable for CIP SIP cleaning Food Splash Zones per EHEDG guidelines
- 316 Stainless steel mirror polished finish

SMC-F Only

- Same as SMC series, but with no-food-trap housing
- rear mounting holes
- 5m cable only

See Dimensions later in this section.



SPC, SMC SMC-F

SPC, SMC, and SMC-F Non-Contact Coded Magnetic Safety Switches						
Part Number	Price	Body Material	Cable Length	Circuits	Contact Rating	
	Pigtail Versions					
SPC-111005	\$004ev:		2m			
SPC-111006	\$004ex:	Plastic	5m	2 NC, 1 NO	0.2A	
SPC-111007	\$004ey:		10m			
SMC-139005	\$004eq:	Stainless steel	2m			
SMC-139006	\$004es:		5m			
SMC-139007	\$;004et:		10m			
SMC-F-137006	\$004eu:		5m			
Quick Disconnect Versions (M12 8-pin)						
SPC-111008	\$;01g!g:	Plastic	250mm	2 NC, 1 NO	0.2A	
SMC-139008	\$;01g!y:	Stainless steel	250mm	Z INO, I INO	U.ZA	

Female Quick Disconnect Lead					
Part Number	Price	Description	Exit Type/Cable Length		
140101	\$;1g!_:	Famala OD Land	M12 Female 5m, 8-pin		
140102	\$;1g!#:	Female QD Lead	M12 Female 10m, 8-pin		

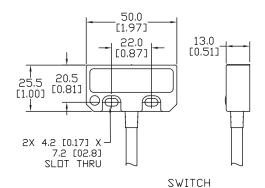


Dimensions

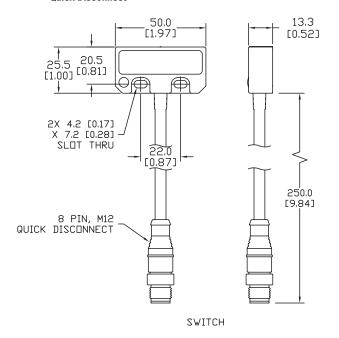
mm [in]

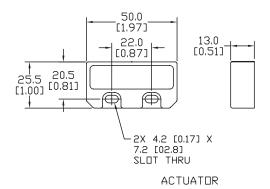
SPC Series

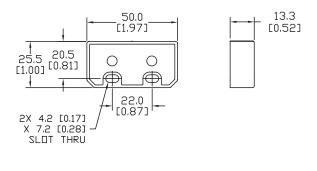
Pigtail



Quick Disconnect







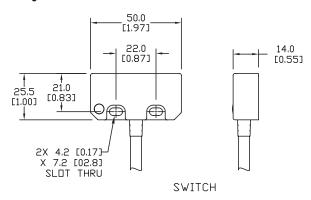
ACTUATOR

Dimensions

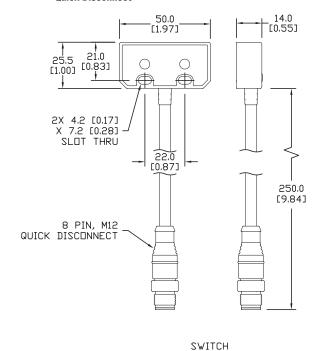
mm [in]

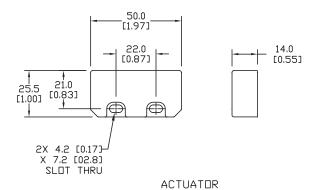
SMC Series

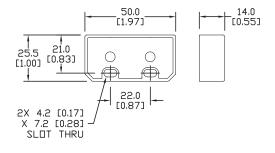




Quick Disconnect







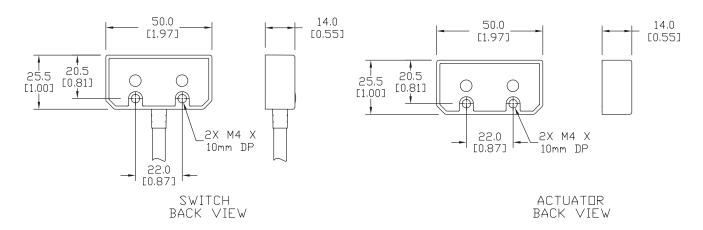
ACTUATOR

Dimensions

mm [in]

SMC-F Series

Pigtail





CPC Series Plastic Housing

CMC Series Stainless Steel Housing

CMC-F Series Stainless Steel Housing Rear Mount

- Coded magnetic actuation
- Universal housing suitable for most general applications
- Can be high-pressure hosed at high temperature - IP69K rated
- LED indication
- Wide 14 mm sensing distance, high tolerance to misalignment
- Long life switching capability up to 0.2A
- Will operate with most safety relays
- Available with 2m, 5m, or 10m cable or 250mm pigtail with quick-disconnect cable

CMC Series Only

- Specifically designed for food processing applications
- Suitable for CIP SIP cleaning Food Splash Zones per EHEDG guidelines
- 316 Stainless steel mirror polished finish

CMC-F Only

- Same as CMC series, but with no-food-trap housing rear mounting holes
- 5m cable only

See Dimensions later in this section.

Actuator Operating Direction



CPC, CMC, and CMC-F Non-Contact Coded Magnetic Safety Switches							
Part Number	Price	Body Material	Cable Length	Circuits	Contact Rating		
	Pigtail Versions						
CPC-115005	\$004ea:		2m				
CPC-115006	\$004eb:	Plastic	5m	2 NC. 1 NO	0.2A		
CPC-115007	\$004ec:		10m				
CMC-138005	\$004e7:		2m	Z NO, I NO	U.ZA		
CMC-138006	\$004e8:	Stainless steel	5m				
CMC-F-135006	\$004e9:		5m				
Quick Disconnect Versions (M12 8-pin)							
CPC-115008	\$;01g!q:	Plastic	250mm	2 NC. 1 NO	0.2A		
CMC-138008	\$;01g!v:	Stainless steel	250mm	Z NO, I NO	U.ZA		

Female Quick Disconnect Lead					
Part Number Price Description Exit Type/Cable Length					
<u>140101</u>	\$;1g!_:	Famala OD Load	M12 Female 5m, 8-pin		
140102 \$;19!#: Female QD Lead M12 Female 10m, 8-pin					

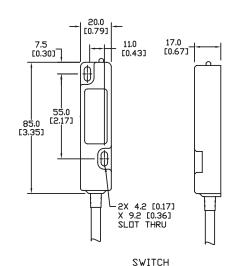


Dimensions

mm [in]

CPC Series





20.0 [0.79]
5.0

[0.20]

8.0

[0.20]

6.5

[0.26]

83.0

[2.87]

73.0

[2.87]

2x 4.2 [0.17]

x 9.7 [0.38]

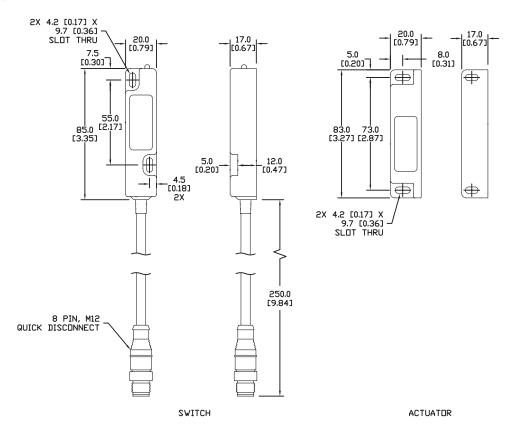
SLOT THRU

2x 4.2 [0.17]

x 9.2 [0.36]

ACTUATOR

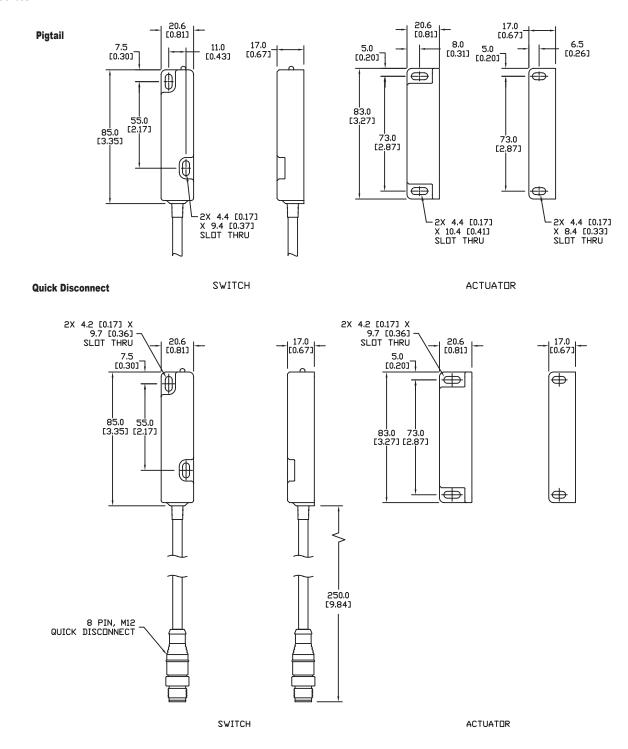
Quick Disconnect



Dimensions

mm [in]

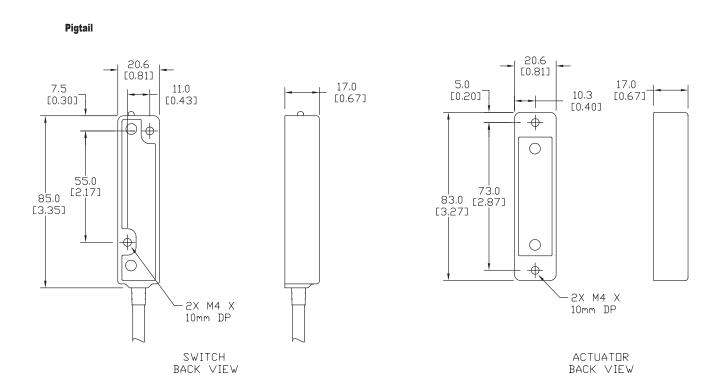
CMC Series



Dimensions

mm [in]

CMC-F Series



IDEM WPC

Non-Contact Coded Magnetic Safety Switches





WPC Series Plastic Housing

- Coded magnetic actuation
- Slim fitting suitable for all industry applications
- LFD indication
- Can be high-pressure hosed at high temperature IP69K rated
- Wide 14 mm sensing, high tolerance to misalignment
- Switching capability up to 0.2A
- Will operate with most safety relays
- Available with 2m or 5m cable or 250mm pigtail with quick-disconnect cable

See Dimensions later in this section.

Actuator Operating Direction



WPC

WPC Non-Contact Coded Magnetic Safety Switches						
Part Number	Price	Body Material	Cable Length	Circuits	Contact Rating	
Pigtail Versions						
WPC-112017	\$004ez:	Plastic	2m	2 NC 4 NO	0.2A	
WPC-112018	\$;004e]:	Plastic	5m	2 NC, 1 NO	U.ZA	
Quick Disconnect Versions (M12 8-pin)						
WPC-112020	\$;-01g!j:	Plastic	250mm	2 NC, 1 NO	0.2A	

Female Quick Disconnect Lead					
Part Number Price Description Exit Type/Cable Length					
<u>140101</u>	\$;1g!_:	Famala OD Load	M12 Female 5m, 8-pin		
140102 \$;1g!#: Female QD Lead M12 Female 10m, 8-pin					



IDEM WPC

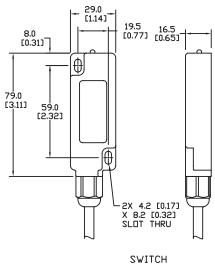
Non-Contact Coded Magnetic Safety Switches

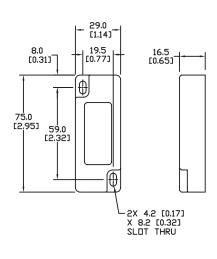
Dimensions

mm [in]

WPC Series

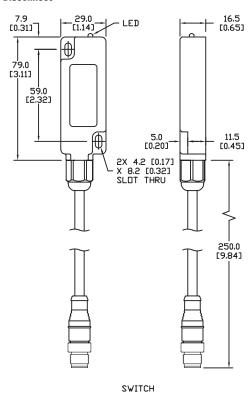
Pigtail





ACTUATOR

Quick Disconnect



_ 29.0 [1.14] 16.5 [0.65] 7.9 [0.31] 0 59.0 [2,32] 5.0 [0.20] 11.5 [0.45] 2X 4.2 [0.17] X 8.2 [0.32] SLOT THRU

ACTUATOR

IDEM LPF

Non-Contact RFID Coded Safety Switches





LPF Series Plastic Housing

- RFID coded actuation
- LED indication
- Switching capability up to 0.2A
- Can be high-pressure hosed at high temperature IP69K rated
- Will operate with most safety relays
- Available with 2m, 5m, or 10m cable or 250mm pigtail with quick-disconnect cable

See Dimensions later in this section.

Actuator Operating Direction



LPF Non-Contact RFID Coded Safety Switches								
Part Number	Price	Body Material	Coding	Cable Length	Circuits	Contact Rating		
Pigtail Versions								
LPF-U-404001	\$01g#o:			2m		0.2A		
LPF-U-404002	\$01g#p:		Unique	5m	2 NC, 1 NO			
LPF-U-404003	\$01g#q:	Plastic		10m				
LPF-M-404101	\$;01g#t:	Plastic	Master	2m				
LPF-M-404102	\$01g#u:			5m				
LPF-M-404103	\$01g#v:			10m				
Quick Disconnect Versions (M12 8-pin)								
LPF-U-404004	\$01g#s:	Diantia	Unique	250	2 NC, 1 NO	0.2A		
LPF-M-404104	\$01g#x:	Plastic	Master	250mm				

Replacement Actuators for LPF Master Units							
Part Number	Price	Body Material	Coding	Cable Length	Circuits	Contact Rating	
LPF-M-404201	\$;;1g!!:	Plastic	Master	_	2 NC, 1 NO	0.2A	

Female Quick Disconnect Lead						
Part Number Prid		Description	Exit Type/Cable Length			
140101	\$;1g!_:	Famala OD Land	M12 Female 5m, 8-pin			
140102	\$;1g!#:	Female QD Lead	M12 Female 10m, 8-pin			



IDEM LPF

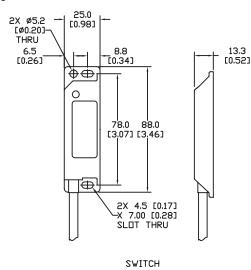
Non-Contact RFID Coded Safety Switches

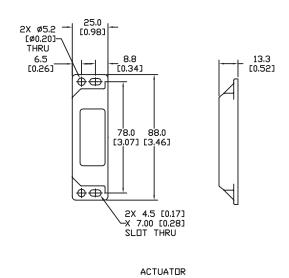
Dimensions

mm [in]

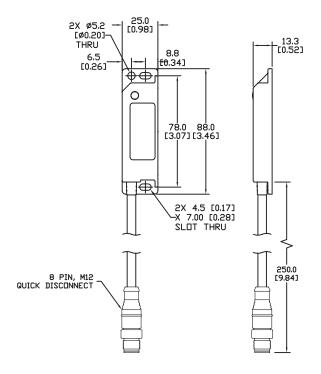
LPF Series

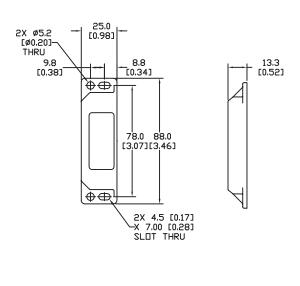
Pigtail





Quick Disconnect





See our website: www.AutomationDirect.com for complete Engineering drawings.

IDEM SPF

Non-Contact RFID Coded Safety Switches



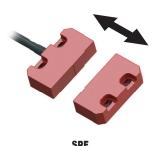
SPF Series Plastic Housing

- RFID coded actuation
- Switching capability up to 0.2A
- Can be high-pressure hosed at high temperature IP69K rated
- Will operate with most safety relays
- Available with 2m, 5m, or 10m cable or 250mm pigtail with quick-disconnect cable

See Dimensions later in this section.



RFID Coded Actuator Operating Direction



SPF Non-Contact RFID Coded Safety Switches								
Part Number	Price	Body Material	Coding	Cable Length	Circuits	Contact Rating		
Pigtail Versions								
SPF-U-405001	\$01g#y:			2m		0.2A		
SPF-U-405002	\$01g#z:		Unique Master	5m	2 NC, 1 NO			
SPF-U-405003	\$;01g#]:	Plastic		10m				
SPF-M-405101	\$01g#_:			2m				
SPF-M-405102	\$01g##:			5m				
SPF-M-405103	\$;01g#!:			10m				
Quick Disconnect Versions (M12 8-pin)								
SPF-U-405004	\$;01g#[:	Dlastia	Unique	250mm	2 NC, 1 NO	0.2A		
SPF-M-405104	\$01g#?:	Plastic	Master					

Replacement Actuators for SPF Master Units								
Part Number	Price	Body Material	Coding	Cable Length	Circuits	Contact Rating		
SPF-M-405201	\$;1g!?:	Plastic	Master	-	2 NC, 1 NO	0.2A		

Female Quick Disconnect Lead						
Part Number Price Description			Exit Type/Cable Length			
140101	\$;1g!_:	Famala OD Land	M12 Female 5m, 8-pin			
140102	\$;1g!#:	Female QD Lead	M12 Female 10m, 8-pin			



IDEM SPF

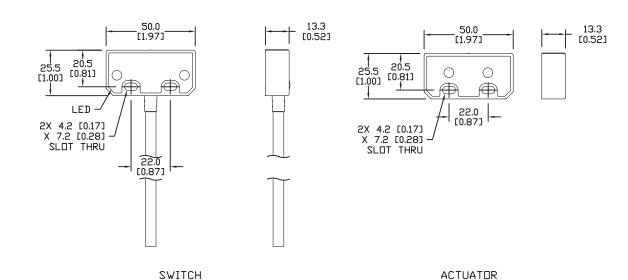
Non-Contact RFID Coded Safety Switches

Dimensions

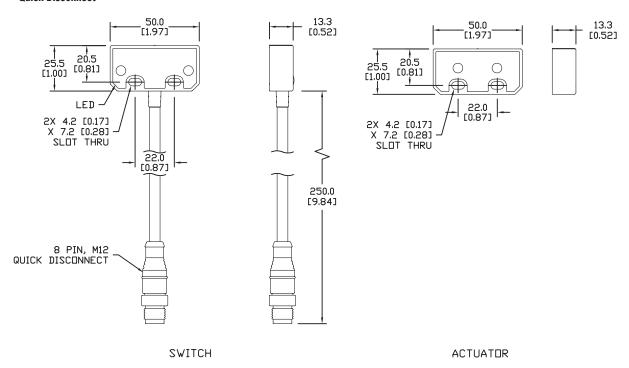
mm [in]

SPF Series

Pigtail



Quick Disconnect

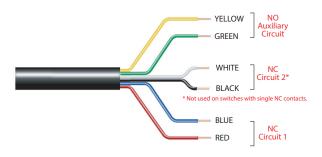


See our website: www.AutomationDirect.com for complete Engineering drawings.

IDEM Non-Contact Safety Switches Electrical Connections and Dimensions

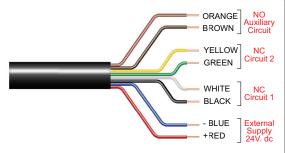
Electrical Connections

Magnetic Switches



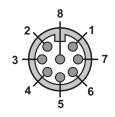
Magnetic Switches - Electrical Connections							
Quick Disconnect Connector Pin Out	Lead Color	Type of Circuit (Actuator Present)					
4	Yellow	Auxiliary (NO)					
6	Green	Auxiliary (NO)					
7	Black	NC2					
1	White	NC2					
2	Red	NC1					
3	Blue	NC1					

Coded Magnetic and RFID Switches



Coded Magnetic Switches - Electrical Connections							
Quick Disconnect Connector Pin Out	Lead Color	Type of Circuit (Actuator Present)	Output Types (Solid State)				
8	Orange	Auxiliary (NO)	200 mA max. 24 VDC				
5	Brown	Auxiliary (NO)	200 MA Max. 24 VDC				
4	Yellow	NC2 +	200 mA max. 24 VDC				
6	Green	NC2 -	(Optocoupler)				
7	Black	NC1+	200 mA max. 24 VDC				
1	White	NC1 -	(Optocoupler)				
2	Red	Supply +24 VDC	Supply 24 VDC				
3	Blue	Supply 0VDC	+10% / -15%				

Connection Colors

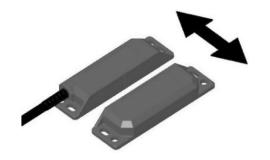


Pin View from Switch M12 Male

1-800-633-0405 IDEM LMF Series **Non-Contact RFID Coded Safety Switches**



Actuator Operating Direction



Description

IDEM's LMF Series of noncantact RFID Coded Safety Switches has been designed to provide interlock protection on hinged, sliding or removable guard doors.

These switches are particularly advantageous when poor guard alignment exists, when high-level anti-tamper is required, where high-hygiene requirements exist (e.g. in food industry hosedown applications) or where long mechanical life is

When used in combination with a dual channel safety relay or control device, Non-Contact Safety Switches can be used to provide protection up to Category 4 and PLe to ISO13849-1.

Features

- Designed to provide a safety interlock on hinged, sliding or removable guard doors
- Suitable for use in extreme temperature or moisture environments
- Wide (>10mm) sensing distance
- · High tolerance for misalignment after
- Supplied factory coded either uniquely (U types) or by a master code (M types)
- Provide a high level of anti-tamper protection
- Suitable for use in high-hygiene requirement areas (e.g. food industry
- · No moving or touching parts for long mechanical life
- Designed to conform to EN60947-5-3
- For use as directed by ISO14119 and EN ISO12100

LMF Series Non-Contact RFID Coded Safety Switches Selection Guide								
Part Number	Price	Body Material	Coding	Connection	Cable Length (Dimension A)	Outputs		
LMF-U-406002	\$;-04jyf:	316 stainless steel	Uniquely coded RFID	Pigtail	5m [16.4 ft]	2 NC safety outputs 1 NO monitoring output		
LMF-U-406003	\$-04jyg:	316 stainless steel	Uniquely coded RFID	Pigtail	10m [32.8 ft]	2 NC safety outputs 1 NO monitoring output		
LMF-U-406004	\$-04jyh:	316 stainless steel	Uniquely coded RFID	8-pin M12 quick- disconnect	250mm [9.8 in]	2 NC safety outputs 1 NO monitoring output		
<u>LMF-M-406102</u>	\$04jyi:	316 stainless steel	Master coded RFID	Pigtail	5m [16.4 ft]	2 NC safety outputs 1 NO monitoring output		
<u>LMF-M-406103</u>	\$04jyj:	316 stainless steel	Master coded RFID	Pigtail	10m [32.8 ft]	2 NC safety outputs 1 NO monitoring output		
LMF-M-406104	\$-04jyk:	316 stainless steel	Master coded RFID	8-pin M12 quick- disconnect	250mm [9.8 in]	2 NC safety outputs 1 NO monitoring output		

LMF Series Non-Contact Master Coded RFID Safety Switch Actuator Replacement						
Part Number	Price	Body Material	Coding			
LMF-406201	\$-4jys:	316 stainless steel	Master			

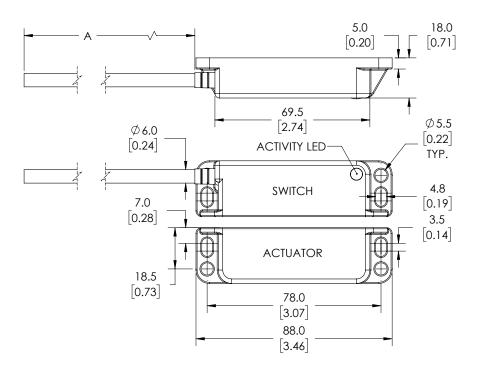
Female Quick Disconnect Lead						
Part Number	Exit Type/Cable Length					
<u>140101</u>	\$;1g!_:	Female QD Lead	M12 Female 5m [16.4 ft], 8-pin			
<u>140102</u>	\$;1g!#:	Female QD Lead	M12 Female 10m [32.8 ft], 8-pin			



IDEM LMF Series Non-Contact RFID Coded Safety Switches

Dimensions

mm [in]



IDEM BPF/BMF Series Non-Contact RFID Coded Safety Switches



Actuator Operating Direction







Description

IDEM's BPF/BMF Series of noncontact RFID Coded Safety Switches has been designed to provide interlock protection on hinged, sliding or removable guard doors.

These switches are particularly advantageous when poor guard alignment exists, when high-level anti-tamper is required, where high-hygiene requirements exist (e.g. in food industry hosedown applications) or where long mechanical life is required.

When used in combination with a dual channel safety relay or control device, Non-Contact Safety Switches can be used to provide protection up to Category 4 and PLe to ISO13849-1.

Features

- Designed to provide a safety interlock on hinged, sliding or removable guard doors
- Suitable for use in extreme temperature or moisture environments
- Wide (>6mm [0.24 in]) sensing distance
- · High tolerance for misalignment after sensing
- Supplied factory coded either uniquely (U types) or by a master code (M types)
- Provide a high level of anti-tamper protection
- Suitable for use in high-hygiene requirement areas (e.g. food industry hosedown)
- No moving or touching parts for long mechanical life
- Designed to conform to EN60947-5-3
- For use as directed by ISO14119 and EN ISO12100

BPF	BPF/BMF Series Non-Contact RFID Coded Safety Switches Selection Guide									
Part Number	Price	Body Material	Coding	Connection	Cable Length (Dim A)	Circuits				
Polyester Housing										
BPF-M-413001	\$04jyl:	Polyester	Master coded RFID	Pigtail	5m [16.4 ft]	2 NC safety outputs 1 NO monitoring output				
BPF-M-413002	\$;-04jyt:	Polyester	Master coded RFID	Pigtail	10m [32.8 ft]	2 NC safety outputs 1 NO monitoring output				
BPF-M-413003	\$-04jyu:	Polyester	Master coded RFID	8-pin M12 quick-disconnect	250mm [9.8 in]	2 NC safety outputs 1 NO monitoring output				
BPF-U-413101	\$;-04jy[:	Polyester	Uniquely coded RFID	Pigtail	5m [16.4 ft]	2 NC safety outputs 1 NO monitoring output				
BPF-U-413102	\$-04jz6:	Polyester	Uniquely coded RFID	Pigtail	10m [32.8 ft]	2 NC safety outputs 1 NO monitoring output				
BPF-U-413103	\$-04jy6:	Polyester	Uniquely coded RFID	8-pin M12 quick-disconnect	250mm [9.8 in]	2 NC safety outputs 1 NO monitoring output				
Stainless Steel Housing										
BMF-M-414001	\$-04jy8:	316 stainless steel	Master coded RFID	Pigtail	5m [16.4 ft]	2 NC safety outputs 1 NO monitoring output				
BMF-M-414002	\$-04jy9:	316 stainless steel	Master coded RFID	Pigtail	10m [32.8 ft]	2 NC safety outputs 1 NO monitoring output				
BMF-M-414003	\$-04jya:	316 stainless steel	Master coded RFID	8-pin M12 quick-disconnect	250mm [9.8 in]	2 NC safety outputs 1 NO monitoring output				
BMF-U-414101	\$-04jyb:	316 stainless steel	Uniquely coded RFID	Pigtail	5m [16.4 ft]	2 NC safety outputs 1 NO monitoring output				
BMF-U-414102	\$-04jyc:	316 stainless steel	Uniquely coded RFID	Pigtail	10m [32.8 ft]	2 NC safety outputs 1 NO monitoring output				
BMF-U-414103	\$-04jyd:	316 stainless steel	Uniquely coded RFID	8-pin M12 quick-disconnect	250mm [9.8 in]	2 NC safety outputs 1 NO monitoring output				

BPF Series Non-Contact Master Coded RFID Safety Switch Actuator Replacement						
Part Number Price Body Material Coding						
BPF-413200						

BMF Series Non-Contact Master Coded RFID Safety Switch Actuator Replacement					
Part Number	Price	Body Material	Coding		
BMF-414200	\$-4jye:	316 stainless steel	Master coded RFID		

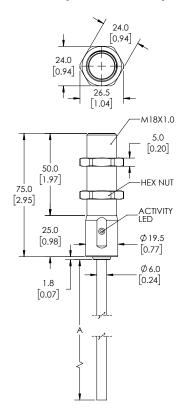
Female Quick Disconnect Lead							
Part Number Price Description Exit Type/Cable Length							
<u>140101</u>	\$;1g!_:	Female QD Lead	M12 Female 5m [16.4 ft], 8-pin				
<u>140102</u>	\$;1g!#:	Female QD Lead	M12 Female 10m [32.8 ft], 8-pin				

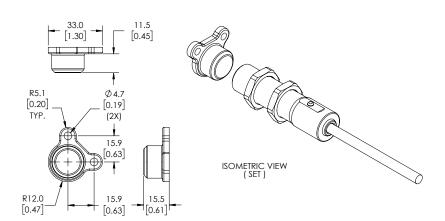


IDEM BPF/BMF Series Non-Contact RFID Coded Safety Switches

Dimensions (BPF Series)

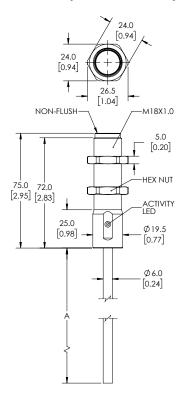
mm [in]

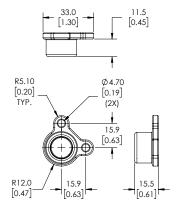


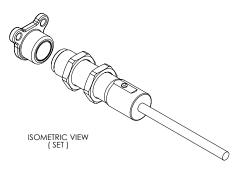


Dimensions (BMF Series)

mm [in]







IDEM Z-Range Safety Switches

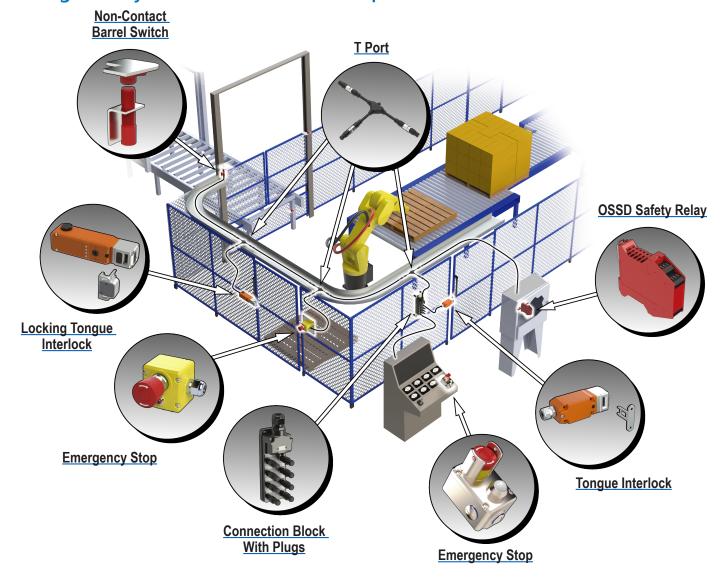


IDEM's Z-Range of products have one set of dual OSSD outputs and one set of dual OSSD inputs. This enables the devices to be wired in series, reducing cost and time associated with wiring back to the panel. Up to 30 Z-Range devices can be connected to one safety relay.

These safety switches feature self monitoring OSSD outputs to achieve CAT 4 PLe, according to ISO 13849-1, and SIL3, according to IEC 62061, even when connected in a series.

Components in the Z-Range consists of non contact switches, hinge switches, emergency stop control stations, solenoid locking RFID tongue interlocks, and non-locking tongue interlocks, along with t-port cables, connection blocks and accessories.

Z-Range Safety Switch Installation Example



Set-ups similar to the one illustrated here may also include these other Z-Range safety components:







vitch Cable Pull

IDEM Z-Range (LPZ/LMZ) Safety Switches





LMZ-M-412001

Description

IDEM's LPZ and LMZ non-contact RFID coded safety switches have been designed to provide interlock protection on hinged, sliding or removable guard doors.

These switches are particularly advantageous when poor guard alignment exists, when high-level anti-tamper is required or where long mechanical life is required.

When used in combination with an OSSD safety relay or control device, non-contact safety switches can be used to provide protection up to Category 4 and PLe to ISO13849-1. They can maintain PLe level protection with other IDEM Z-Range switches connected in series due to internal test functions of the switches.

In addition, each switch provides input, output and guard state LEDs. It is recommended to limit the number of switches connected in series to a maximum of 30.

Features

- Designed to provide a safety interlock on hinged, sliding or removable guard doors
- Suitable for use in extreme temperature or moisture environments
- Wide (>10mm) sensing distance
- High tolerance for misalignment after sensing
- Supplied factory coded either uniquely (U types) or by a master code (M types)
- Provides a high level of anti-tamper protection
- 316 stainless steel for use in highhygiene requirement areas (e.g. food industry hosedown)
- Long mechanical life (no moving or touching parts)
- Designed to conform to EN60947-5-3
- For use as directed by ISO14119 and EN ISO12100

LPZ/	LPZ/LMZ Series Non-Contact RFID Coded Safety Switches Selection Guide								
Part Number	Price	Body Material	Coding	Connection	Cable Length (Dim A)	Outputs	Drawing		
LPZ-U-402102	\$;-05,i9:			Pigtail	5m [16.4 ft]		<u>PDF</u>		
LPZ-U-402103	\$;-05,i0:		Uniquely coded RFID	Pigtail	10m [32.8 ft]		PDF		
LPZ-U-402104	\$;-05,i1:	Dalvastas		8-pin M12 quick- disconnect	250mm [9.8 in]		PDF		
LPZ-M-402002	\$;-05,i5:	Polyester		Pigtail	5m [16.4 ft]		PDF		
LPZ-M-402003	\$;-05,i6:		Master coded RFID	Pigtail	10m [32.8 ft]	2 OSSD	PDF		
<u>LPZ-M-402004</u>	\$;-05,i7:			8-pin M12 quick- disconnect	250mm [9.8 in]		PDF		
LMZ-U-412101	\$;05,k#:			Pigtail	5m [16.4 ft]	and 1 Status	<u>PDF</u>		
LMZ-U-412102	\$;;05,k!:		Uniquely coded RFID	Uniquely coded RFID	Uniquely coded RFID	Pigtail	10m [32.8 ft]		PDF
LMZ-U-412103	\$;05,k?:	216 otoinloop otool		8-pin M12 quick- disconnect	250mm [9.8 in]		PDF		
LMZ-M-412001	\$;-05,i2:	316 stainless steel		Pigtail	5m [16.4 ft]		PDF		
LMZ-M-412002	\$;-05,i3:		Master coded RFID	Pigtail	10m [32.8 ft]		PDF		
LMZ-M-412003	\$;-05,i4:			8-pin M12 quick- disconnect	250mm [9.8 in]	1	PDF		

LMZ/LPZ Series Non-Contact Master Coded RFID Safety Switch Actuator Replacement						
Part Number Price Body Material Coding Drawing						
LPZ-402200	\$;-5,i8:	Polyester	Master and ad DEID	PDF		
LMZ-412200	\$;-5,ia:	316 stainless steel	Master coded RFID	<u>PDF</u>		

Note: Replacement actuators cannot be purchased for Uniquely Coded RFID switches.

IDEM Z-Range (BPZ/BMZ) Safety Switches





BMZ-U-411103

Description

IDEM's BPZ/BMZ Series of non-contact RFID coded safety switches has been designed to provide interlock protection on hinged, sliding or removable guard doors.

These switches are particularly advantageous when poor guard alignment exists, when high-level anti-tamper is required or when long mechanical life is required.

When used in combination with an OSSD safety relay or control device, non-contact safety switches can be used to provide protection up to Category 4 and PLe to ISO13849-1.

They can maintain PLe level protection with other IDEM Z-Range switches connected in series due to internal test functions of the switches.

In addition, each switch provides input, output and guard state LEDs. It is recommended to limit the number of switches connected in series to a maximum of 30.

Features

- Designed to provide a safety interlock on hinged, sliding or removable guard doors
- Suitable for use in extreme temperature or moisture environments
- Wide (>6mm [0.24 in]) sensing distance
- High tolerance for misalignment after sensing
- Supplied factory coded either uniquely (U types) or by a master code (M types)
- Provides a high level of anti-tamper protection
- 316 stailless steel suitable for use in high-hygiene requirement areas (e.g. food industry hosedown)
- Long mechanical life (no moving or touching parts)
- Designed to conform to EN60947-5-3
- For use as directed by ISO14119 and EN ISO12100

BPZ	/BMZ S	eries Non-Con	tact RFID Code	d Safety Switches	Selection	Guide		
Part Number	Price	Body Material	Coding	Connection	Cable Length (Dim A)	Outputs	Drawing	
BPZ-M-410001	\$;-05,ie:			Pigtail	5m [16.4 ft]		PDF	
BPZ-M-410002	\$;;-05,if:		Master coded RFID	Pigtail	10m [32.8 ft]		PDF	
BPZ-M-410003	\$;-05,ig:	Polyester		8-pin M12 quick-disconnect	250mm [9.8 in]		<u>PDF</u>	
BPZ-U-410101	\$;05,ii:	rolyestel	Uniquely coded RFID	Pigtail	5m [16.4 ft]		PDF	
BPZ-U-410102	\$;05,ij:			Uniquely coded RFID Pigtail 10m [32.8 ft]		PDF		
BPZ-U-410103	\$;-05,ik:			8-pin M12 quick-disconnect	250mm [9.8 in]	2 OSSD and	PDF	
BMZ-M-411001	\$;05,il:			Pigtail	5m [16.4 ft]	1 Status	PDF	
BMZ-M-411002	\$;-05,in:		Master coded RFID	Master coded RFID	Pigtail	10m [32.8 ft]		PDF
BMZ-M-411003	\$;-05,io:	316 stainless steel		8-pin M12 quick-disconnect	250mm [9.8 in]		<u>PDF</u>	
BMZ-U-411101	\$;-05,iq:	3 TO Stalliless Steel		Pigtail	5m [16.4 ft]		PDF	
BMZ-U-411102	\$;-05,is:		Uniquely coded RFID	Pigtail	10m [32.8 ft]		PDF	
BMZ-U-411103	\$;;-05,it:			8-pin M12 quick-disconnect	250mm [9.8 in]		<u>PDF</u>	

BPZ/BMZ Series Non-Contact Master Coded RFID Safety Switch Actuator Replacement						
Part Number Price Body Material Coding Drawing						
BPZ-410200	\$;-5,ih:	Polyester	Master and at DEID	PDF		
BMZ-411200	\$;-5,ip:	316 stainless steel	Master coded RFID	PDF		

Note: Replacement actuators cannot be purchased for Uniquely Coded RFID switches.

IDEM Z-Range Non-Contact Safety Switches



IDEM Z-Range Non-Contact Safety Switches General Specifications								
	LPZ/LMZ	BPZ/BMZ						
	Safety Classification and Reliability Data							
Switching Reliability (B10d)	N/A - no mechanical p	parts are implemented						
ISO 13849-1	Up to Category 4 Up to PLe depending u	with Safety Relay oon system architecture						
EN 62061	Up to SIL3 depending u	pon system architecture						
Safety Data - Annual Usage	8 cycles per hour / 24 h	ours per day / 365 days						
MTTFd	771 y	years						
Max Response Time (Actuator Removed)	60ms							
Max Response Time (Input Off)	20ms							
Agency Approvals	cULus E258676, CE							
	Electrical and General Specifications							
Rated Operating Voltage	20.4 VDC to	o 26.4 VDC						
Power Consumption	0.7	W						
Output Current	Max = Min =							
Assured Switching Disances	SAO (Sensing Assured Operating) – 8mm [0.31 in] closed SAR (Sensing Assured Release) – 20mm [0.79 in] open	SAO (Sensing Assured Operating) – 5mm [0.20 in] closed SAR (Sensing Assured Release) – 20mm [0.79 in] open						
Recommended Setting Gap	5mm [0.20 in]	3mm [0.12 in]						
Tolerance to Misalignment	5mm [0.20 in] in any direction from the recommended setting gap							
Enclosure Protection	IP Stainless st	67 eel is IP69K						
Operating Temperature	25°C to +55°C [-13°F to +131°F] For UL applications: -25 to 50°C [-13 to 122°F]							
Recommended Mounting Screws/Torque	M4; 1N•m	[0.74 lb•ft]						

LED Operation

Guard					
Guard Closed	Green				
Guard Open	Red				

Input					
Safety Inputs On	Green (steady)				
Safety Input Missing	Green (flashing)				
Safety Inputs Off	Off				
Internal Fault Red (steady)					

Output				
Green (steady)				
Off				
Red (flashing)				

IDEM Z-Range (HS-SS/HSM) Hinge Safety Switches



Description

HS-SS-Z and HSM-Z hinge switches are designed to be fitted to the hinged axis of machine guard doors and provide a robust hinge function in addition to interlock position sensing. Enclosures are protected to IP67/IP69K with a low profile, hygienic design for washdown

When used in combination with an OSSD safety relay or control device, the hinge safety switches can be used to provide protection up to Category 4 and PLe to ISO13849-1, and they can maintain Ple level protection with other IDEM Z-Range switches connected in series due to internal test functions of the switches.

In addition, each switch provides input, output and guard state LEDs. It is recommended to limit the number of switches connected in series to a maximum of 30.



Features

- Designed to provide a safety interlock on a hinge door
- Suitable for use in extreme temperature or moisture environments
- Adjustable guard open detection of 0 to 10 degrees
- Provides a high level of anti-tamper protection
- Suitable for use in high-hygiene requirement areas (e.g. food industry hosedown) IP67 / IP69K
- Long mechanical life (no moving or touching parts)
- Designed to conform to EN60947-5-3
- For use as directed by ISO14119 and EN ISO12100

IDEM Z-I	Range (I	HS-SS/HSM	Series)	Hinge Safety Switches Sele	ection Guide			
Part Number	Price	Body Material	Coding	Connection	Cable Length (Dim A)	Outputs	Drawing	
HS-SS-Z-RH-352001	\$;-05,iu:			Pigtail	5m [16.4 ft]		PDF	
HS-SS-Z-RH-352002	\$;-05,iv:		Right hand	Pigtail	10m [32.8 ft]		PDF	
HS-SS-Z-RH-352003	\$;-05,ix:	316		8-pin M12 quick-disconnect	250mm [9.8 in]		PDF	
HS-SS-Z-LH-352004	\$;-05,iy:	stainless steel			Pigtail	5m [16.4 ft]		PDF
HS-SS-Z-LH-352005	\$;-05,iz:		Left hand	Pigtail	10m [32.8 ft]		PDF	
HS-SS-Z-LH-352006	\$;;-05,i]:				8-pin M12 quick-disconnect	250mm [9.8 in]	2 OSSD	PDF
HSM-Z-RH-353001	\$;-05,i_:			Pigtail	5m [16.4 ft]	and 1 Status	PDF	
HSM-Z-RH-353002	\$;-05,i#:			Right hand	Pigtail	10m [32.8 ft]		PDF
HSM-Z-RH-353003	\$;;-05,i!:	Die-cast		8-pin M12 quick-disconnect	250mm [9.8 in]		PDF	
HSM-Z-LH-353004	\$;-05,i?:	aluminum alloy		Pigtail	5m [16.4 ft]		PDF	
HSM-Z-LH-353005	\$;;-05,i,:		Left hand	Pigtail	10m [32.8 ft]		PDF	
HSM-Z-LH-353006	\$;-05,j2:		8-pin M12 quick-disconnect	250mm [9.8 in]		PDF		

Blank Hinge

IDEM Z-Range (HS-SS/HSM Series) Blank Hinge Selection Guide				
Part Number	Price Body Material		Handing	Drawing
HS-SS-Z-350020	\$;;-05,i[:	316 stainless steel	PDF	
HSM-Z-351020	\$;-5,j3:	Die-cast aluminum alloy	None PDF	



HS-SS-Z-350020 Works with either right- or left-handed doors

Mounting Plate

IDEM Z-Range (HS-SS/HSM Series) Mounting Plate Selection Guide				
Part Number	Price	Description	Handing	Drawing
HSM-Z-350025	\$;-5,j4:	Door hinge switches ounting bracket	None	PDF



IDEM Z-Range Hinge Safety Switches



IDEM Z-Range Hinge Safety Switches General Specifications				
	HSM-Z / HS-SS-Z			
	Safety Classification and Reliability Data			
Switching Reliability (B10d)	N/A - no mechanical parts are implemented			
ISO 13849-1	Up to Category 4 with Safety Relay Up to PLe depending upon system architecture			
EN 62061	Up to SIL3 depending upon system architecture			
Safety Data - Annual Usage	8 cycles per hour / 24 hours per day / 365 days			
MTTFd	771 years			
Max Response Time (Actuator Removed)	60ms			
Max Response Time (Input Off)	20ms			
Agency Approvals	cULus E258676, CE			
	Electrical and General Specifications			
Rated Operating Voltage	20.4 VDC to 26.4 VDC			
Power Consumption	0.7 W			
Output Current	Max = 0.2 A Min = 1mA			
Switching Angle Window	Fixed at 10 degrees			
Fixed Switching Angle	Typical is 0 to 10 degrees. Alternate installations could be (for example) 90 to 100 degrees, or 355 to 5 degrees, or any other 10-degree range. See illustration below and refer to operating instructions for additional information.			
Enclosure Protection	IP67			
Operating Temperature	-25°C to +80°C [-13°F to +176°F] For UL applications: -25 to 45°C [-13 to 113°F]			
Recommended Mounting Screws/Torque	7 x M5 screws; 1N•m [0.74 lb•ft]			

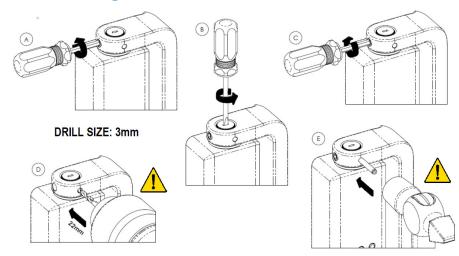
LED Operation

Guard				
Guard Closed Green				
Guard Open	Red			

Input				
Safety Inputs On Green (steady)				
Safety Input Missing	Green (flashing)			
Safety Inputs Off	Off			
Internal Fault Red (steady)				

Output			
Safety Outputs On	Green (steady)		
Safety Outputs Off Off			
External Fault	Red (flashing)		

Final Setting After Installation



Installer MUST drill and pin switch in final switching position. Installer must not rely only on adjustment grub screw for safety. See operating instructions for additional information on switching angle window adjustment.

IDEM Z-Range (KM-Z / KM-SS-Z) Interlock Safety Switches





KM-203300-Z



Description

KM-Z and KM-SS-Z tongue interlock switches are designed to fit to the leading edge of sliding, hinged or lift-off machine guards to provide positively operated switching circuits and a tamper-resistant actuator mechanism. They provide robust position interlock detection for moving guards.

When used in combination with an OSSD safety relay or control device, the tongue interlock safety switches can provide protection up to Category 4 and PLe to ISO13849-1, and they can maintain PLe level performance with other IDEM Z-Range switches connected in series due to internal test functions of the switches.

In addition, each switch provides input, output and guard state LEDs. It is recommended to limit the number of switches connected in series to a maximum of 30.

Application

The switch is rigidly mounted to the frame of the guard or machine. The actuator (sold separately) is fitted to the moving part (frame) of the guard and is aligned to the switch entry aperture. The actuator profile is designed to match a cam mechanism within the switch head and provides a positively operated and not easily defeatable interlock switch. When the actuator is inserted into the switch, the safety circuits close and allow the machine start circuit to be enabled. When the actuator is withdrawn, the safety circuits are positively opened and the machine circuit is broken.

Features

- Tongue (key) interlock operated
- 90 degree adjustable head
- 8 actuator entry positions
- One 1/2 in. NPT female conduit opening
- 30mm mounting profile
- Aluminum and 316 stainless steel options available
- Includes one tamper-proof T20 Torx bit
- Purchase actuating key separately. (See accessories)

IDEM Z-Range (KM-Z /KM-SS-Z) Interlock Safety Switches Selection Guide							
Part Number	Price	Body Material	Head Material	Actuator Travel/Force for Positive Opening	Circuit Configuration	Drawing	
<u>KM-203300-Z</u>	\$;;05,k]:	Die-cast aluminum	Die-cast aluminum	6mm/12N	2 OCCD and 1 Ctatus	PDF	
KM-SS-204300-Z	\$;-05,jh:	316 stainless steel	316 stainless steel	OHIIII/ IZN	2 OSSD and 1 Status	PDF	

Safety Classification and Reliability Data			
Mechanical Reliability B10d 1.5 x 106 operations at 100mA load			
ISO 13849-1	Up to PLe depending upon system architecture		
EN 62061	2061 Up to SIL3 depending upon system architecture		
Safety Data - Annual Usage	8 cycles per hour / 24 hours per day / 365 days		
PFHd	8.8x10 ⁻⁵		
Proof Test Interval (Life)	terval (Life) 20 years		
MTTFd	771 years		

IDEM Z-Range GLx-Z Safety Cable-Pull Switches

Description

Safety cable-pull emergency stop switches are mounted on machines and sections of plant conveyors which cannot be protected by guards. In contrast to traditional mushroom head type emergency stop buttons, safety cable-pull switches can initiate the emergency command from any point along the installed rope length. In combination with any dual channel safety monitoring controllers, IDEM safety cable-pull systems can be used as emergency stop devices and monitored for up to Category PLe/Cat.4 to ISO13849-1. It is the responsibility of the user to ensure the correct overall functionality of its systems and machines. IDEM, its subsidiaries and affiliates, are not in a position to guarantee all of the characteristics of a given system or product not designed by IDEM.

Operation

All IDEM safety cable-pull emergency stop switches conform to Standards ISO13850 and IEC60947-5-5. They have a positive mechanical linkage between the switch circuits and the wire rope as per IEC60947-5-1. The emergency stop switches are brought into the operational condition by pre-tensioning the rope by use of a tensioner/gripper device which clamps the rope and then hooks to the switch eyebolts. Correct tension can be observed by viewing the tension indicator on the switch housing. Once tensioned, the switch circuit blocks can be set to the operational condition (safety circuits closed, auxiliary circuits open) by pressing a blue reset button on the switch cover.

All of the safety cable-pull switches have wire-breakage monitoring. On pulling or breakage (tension loss) of the rope, the safety circuits are positively opened and the auxiliary circuits are closed. The switches are mechanically latched and can then only be returned to the operating condition by pressing the reset button as required by ISO13850.

Features

- Three 1/2 in. NPT female fittings
- Includes one tamper-proof T20 Torx bit
- Rope Pull kits sold separately and recommended for increased reliability
- 50m [164ft], 80m [262ft], 100m [328ft], 125m [410ft] and 250m [820ft] maximum length systems

IDEM Z-Range GLx-Z Safety Cable-Pull Switches Selection Guide							
Part Number	Price	Maximum Rope Length	Construction Material	E-Stop	LED	Outputs	Drawings
GLM-143300-Z	\$;-05,j0:	50m [164ft]*	Die-cast aluminum				PDF
GLM-SS-148300-Z	\$;-05,j1:	50m [164ft]*	316 stainless steel				PDF
GLS-142300-Z	\$;-05,j8:	80m [262ft]*	Die-cast aluminum				PDF
GLS-SS-144300-Z	\$;-05,j9:	100m [328ft]	316 stainless steel				PDF
GLHL-141301-Z	\$;-05,j6:	125m [410ft]	Die-cast aluminum	Vaa	Dual	2 OSSD	PDF
GLHL-SS-145301-Z	\$;-05,jb:	125m [410ft]	316 stainless steel	Yes	color	and 1 Status	PDF
GLHR-141302-Z	\$;;05,k[:	125m [410ft]	Die-cast aluminum				PDF
GLHR-SS-145302-Z	\$;-05,jc:	125m [410ft]	316 stainless steel				PDF
GLHD-141300-Z	\$;-05,j5:	250m [820ft]	Die-cast aluminum				PDF
GLHD-SS-145300-Z	\$;-05,ja:	250m [820ft]	316 stainless steel				PDF

*See Recommended Rope Span Options and Fittings for number of switches recommended with specific maximum rope lengths.

Safety Classification and Reliability Data		
Mechanical Reliability B10d 1.5 x 106 operations at 100mA load		
ISO 13849-1	Up to PLe depending upon system architecture	
EN 62061	Up to SIL3 depending upon system architecture	
Safety Data - Annual Usage 8 cycles per hour / 24 hours per day / 365 day		
PFHd	8.8x10 ⁻⁵	
Proof Test Interval (Life)	20 years	
MTTFd	771 years	





GLM-143300-Z



GLS-142300-Z



GLS-SS-144300-Z



GLHL-SS-145301-Z (left hand)



GLHD-141300-Z (dual head)

IDEM Z-Range Safety Switches



IDEM Z-Range General Specifications					
	GLx-Z (Cable Pull) KM-Z / KM-SS-Z (Interlock Switch) ES-P-Z/ESL-SS-Z (E-Stop Station				
Enclosure / Cover	Polyester or stainless steel 316				
IP Rating / NEMA		IP67 plastic / IP69K stainless steel / NEMA 6			
Mounting		4 x M4			
Torque Settings		Mounting: M4 4.0 N·m Lid: T20 Torx M4 1.5 N·m			
Ambient Temperature	-25 to 50°C [-13 to 122°F]				
Weight	Plastic: 250g [0.55 lb] Stainless steel: 1000g [2.20 lb]				
Rated Operating Voltage	20.4 VDC to 26.4 VDC				
Withstand Voltage (U _{imp})	250V				
Power Consumption	0.7 W				
Output Voltage / Min and Max Current	24VDC /1mA to 0.2 A				
Input Voltage / Current	24VDC / 2mA				
Response Time (Device Activated)	60ms max				
Response Time (Inputs Off)	20ms max				

IDEM Z-Range (ES-P-Z/ESL-SS-Z) Emergency Stop Control Stations







ES-P-230301-Z



- Dual channel OSSD output with one additional status signal
- Plastic housing (IP67) or 316 Stainless Steel housing (IP69K/NEMA6)
- 40mm twist to release mushroom head operator
- Conformance to ISO 13850, IEC 60947-5-1 and IEC 60947-5-5
- UL file E365665
- Lid Safety Trip mechanism ensures that safety contacts will open if the lid is removed
- Includes one tamper proof T20 Torx bit for Stainless steel versions
- Up to 30 Z-Range devices can be connected to one safety relay and still maintain CAT 4, PLe, and SIL3





Safety Classification and Reliability Data		
Mechanical Reliability B10d 1.5 x 106 operations at 100mA lo		
ISO 13849-1	Up to PLe depending upon system architecture	
EN 62061	Up to SIL3 depending upon system architecture	
Safety Data - Annual Usage	8 cycles per hour / 24 hours per day / 365 days	
PFHd	8.8x10 ⁻⁵	
Proof Test Interval (Life)	20 years	
MTTFd	771 years	

IDEM Z-Range (ES-P-Z/ESL-SS-Z) Emergency Stop Control Stations Selection Guide								
Part Number	Price	Housing Material	Output	LED	Cable Length	Cable Exit	Connection	Drawing
ES-P-230300-Z	\$;-05,jd:	Disaffe	2 OSSD and 1 status			Left		PDF
ES-P-230301-Z	\$;;05,k,:	Plastic		D. al autom d	0.0 % (0.50	Right 8-pin M12 quick disconect		PDF
ESL-SS-L-232300-Z	\$;05,k_:	240 -tainless at al		Dual colored	9.8 in [250mm]		PDF	
ESL-SS-LP-232301-Z	\$;05,jj:	316 stainless steel				_		PDF

LED Operation

LED Operation				
Green On	Outputs enabled			
Red On	Outputs disabled			
Red/Green Flash	Fault – remove cover and check internal LEDs (see manual)			

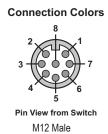
IDEM Z-Range Safety Switches Electrical Connections



Wiring

IDEM Quick Disconnect Leads Color Coding

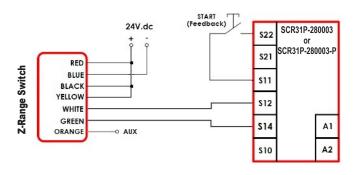




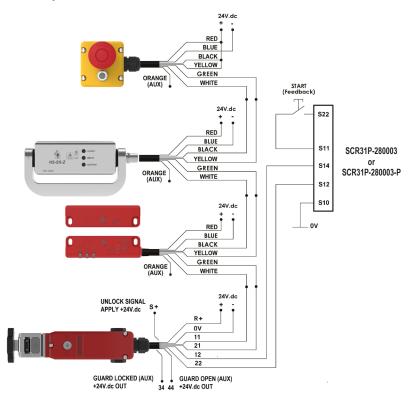
Coded Magnetic Switches Electrical Connections					
Quick Disconnect Connector Pin Out	IDEM Quick Disconnect Leads Color Coding	Terminal	Switch Circuit		
2	Red	R+	Supply +24 VDC		
3	Blue	0V	Supply 0VDC		
7	Black	11	Safety Input 1		
1	White	12	Safety Output 1		
4	Yellow	21	Safety Input 2		
6	Green	22	Safety Output 2		
8	Orange	44	Guard open signal +24VDC out		
N/A	_	34	Guard unlocked signal +24VDC out		
5	Brown	Not used	Not used		

NOTE: Safety outputs 1 and 2 are OSSD signals Safety inputs 1 and 2 are 24VDC if not in series or OSSD inputs if in series

Single Switch to SCR31P-280003 or SCR31P-280003-P

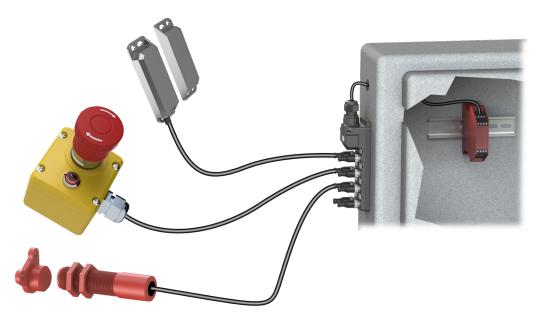


Mulitple Switches to SCR31P-280003 or SCR31P-280003-P



IDEM M12 Connection Box For Use With Z-Range Switches





Features

- When combined with the T-port, allows you to connect up to 30 Z-Range devices in series to a single safety controller
- Configured for dual channel to a safety controller
- Shorting plugs must be inserted into all unused ports
- M20 conduit exit; M20 cable gland accepts cable OD 6.5-12.0 mm [0.26-0.47 in]

	IDEM M12 Connection Box For Use With Z-Range Switches Selection Chart								
Part Number	Price	Description	Ports	Input Connections	Output Connection	Indicators	Drawing		
<u>140210-Z</u>	\$;-05,jg:	IDEM junction block for use with IDEM Z-Range switches only	8	8-pin M12 sockets	Cable clamp for field-wired connection	24VDC LED	<u>PDF</u>		
<u>140205</u>	\$;-5,jk:	Shorting plug, 8 pole, for use with IDEM Z-Range connection blocks	-	-	-	-	<u>PDF</u>		
<u>140204</u>	\$;;-5,jf:	T-port for use with Z-Range safety switches	-	2 8-pole M12 axial male	1 8-pole M12 axial female	-	<u>PDF</u>		

NOTE: The appropriate shorting plug must be inserted into all unused ports.

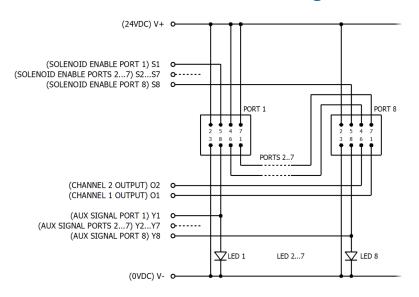


IDEM Connection Box For Use With Z-Range Switches



IDEM M12 Connection Box For Use With Z-Range Switches Specifications					
Port Connection Type	8-pin M12 female sockets (qty 8)				
Operating Temperature	-20 to +40°C [-4 to +104°F]				
Supply Voltage	24VDC ±10%				
Maximum Current	500mA (each port) if solenoid feed is used				
Body Material	Polyester				
Internal Terminals	Spring-type clamp for 22-30 AWG conductors				
Cable Exit	M20 x 1.5 mm cable gland (M20 cable gland accepts cable OD 6.5 mm to 12.0 mm [0.26 in to 0.47 in]				
Mounting	2xM4 bolds, 4.6 mm [0.18 in] diameter clearance holes				
Accessory	Shorting plug for unused ports				
LEDs (1-8)	Red, auxiliary indication of switch open				

Connections (140210-Z) for Z-Range Switches Only



	Output Terminal Connections					
Terminal	Output	Indication	LED Status			
Y1	Auxiliary out +24VDC	Switch 1 open	LED 1 on			
Y2	Auxiliary out +24VDC	Switch 2 open	LED 2 on			
Y3	Auxiliary out +24VDC	Switch 3 open	LED 3 on			
Y4	Auxiliary out +24VDC	Switch 4 open	LED 4 on			
Y5	Auxiliary out +24VDC	Switch 5 open	LED 5 on			
Y6	Auxiliary out +24VDC	Switch 6 open	LED 6 on			
Y7	Auxiliary out +24VDC	Switch 7 open	LED 7 on			
Y8	Auxiliary out +24VDC	Switch 8 open	LED 8 on			
V+	Supply +24VDC					
V-	Supply 0VDC					
S1	Solenoid energize (apply +24VDC (if used) Port 1					
S2	Solenoid energize (apply +24VDC (if used) Port 2					
S3	Solenoid energize (apply +24VDC (if used) Port 3					
S4	Solenoid energize (ap	ply +24VDC (if used)	Port 4			
S5	Solenoid energize (apply +24VDC (if used) Port 5					
S6	Solenoid energize (apply +24VDC (if used) Port 6					
S7	Solenoid energize (apply +24VDC (if used) Port 7					
S8	Solenoid energize (apply +24VDC (if used) Port 8					
01	Saf	ety output channel 1				
02	Saf	ety output channel 2				

IDEM Cables

Connection Cables

IDEM connection cables are sold as a complete cable that is not meant to be cut into, so the manufacturer doesn't guarantee the internal wire colors will always be the same. It will always be pin 1 to pin 1, pin 2 to pin 2, etc., but the internal colors might change.

Only the pigtail cables have fixed wire colors.



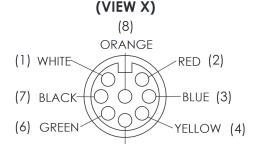


140201

IDEM Connection Cables Selection Chart						
Part Number	Price	Description	Connection	Length	Cable Jacket	
140201	\$-4jz3:	Connection cable	8-pin M12 axial female to 8-pin M12 axial male	2m [6.56 ft]	Black PVC	
140202	\$-4jz4:	Connection cable	8-pin M12 axial female to 8-pin M12 axial male	5m [16.40 ft]	Black PVC	
140203	\$-4jz5:	Connection cable	8-pin M12 axial female to 8-pin M12 axial male	10m [32.81 ft]	Black PVC	

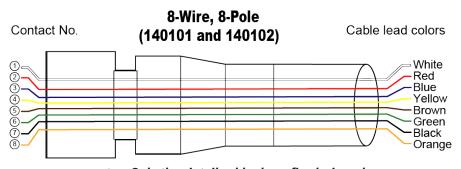
Female Quick Disconnect Lead						
Part Number	Price	Description	Exit Type/Cable Length			
<u>140101</u>	\$;1g!_:	8-pin M12 female	Pigtail, 5m [16.4 ft]			
140102	\$;1g!#:	quick disconnect	Pigtail, 10m [32.8 ft]			





BRÓWN (5)

CONNECTION DETAIL



NOTE: Only the pigtail cables have fixed wire colors.

IDEM Connection Cables General Specifications				
Temperature Rating	105°C [221°F]			
Core	22 strands of 0.12 mm bare copper			
Inner insulation (Core) Diameter	1.35 (±0.1) mm			
Outer Sheath (Jacket) Color	Black (printed)			
Outer Insulation	PVC			
Inner Insulation	PVC			
Number of cores	8 cores (24AWG) UL style 2517			
Rated Voltage/Current	250V / 3A			

IDEM KLP-Z/KLM-Z/KL3-Z Tongue Interlock Safety Switches with Guard Locking and RFID Coding



Description

IDEM's KLP/KLM/KL3 Series of RFID Coded Safety Switches has been designed to fit into the leading edge of machine guard doors to provide robust guard locking while also providing a double tamper resistant interlock mechanism.

They are designed to provide robust position interlock detection for moving guards and will remain locked until the solenoid voltage is applied to the switch.

These switches can be used in conjunction with delay timers to provide the solenoid energize signal only after a pre-determined amount of time has passed.

When used in combination with a dual channel safety relay or control device, Non-Contact Safety Switches can be used to provide protection up to Category 4 and PLe to ISO13849-1.

Features

- Highly effective anti-tamper RFID coding.
- Holding force of 3000N to keep guard doors closed until hazards have been removed
- Unique rotating head offers both front and end actuation.
- Diecast housing fitting with a robust 316 stainless steel head.
- Choice of standard or flexible actuators.
- For use as directed by ISO14119 and EN ISO12100

KLP/KLM/KL3 T	ongue	Interlock Saf	ety Switches	with Guard Lo	ocking and R	FID Codin	g Selectio	n Guide
Part Number	Price	Body Material	Actuator Type*	Connection	Circuits	Head	Holding Force	To Unlock
KLP-Z-455002AZ	\$-04jz8:	Polyester	Standard actuator	Two 0.5 in [12.7 mm] NPT cable entries	2 OSSD outputs	90° adjustable	2000N	24VDC
KLP-Z-455002HFZ	\$-04jz9:	Polyester	Flexible actuator	Two 0.5 in [12.7 mm] NPT cable entries	2 OSSD outputs	90° adjustable	2000N	24VDC
KLP-Z-455003AZ	\$-04jza:	Polyester	Standard actuator	8-pin M12 quick-disconnect	2 OSSD outputs	90° adjustable	2000N	24VDC
KLP-Z-455003HFZ	\$-04jzb:	Polyester	Flexible actuator	8-pin M12 quick-disconnect	2 OSSD outputs	90° adjustable	2000N	24VDC
KLM-Z-454002AZ	\$-04jyy:	Die-cast aluminum	Standard actuator	Two 0.5 in [12.7 mm] NPT cable entries	2 OSSD outputs	90° adjustable	3000N	24VDC
KLM-Z-454002HFZ	\$-04jyz:	Die-cast aluminum	Flexible actuator	Two 0.5 in [12.7 mm] NPT cable entries	2 OSSD outputs	90° adjustable	3000N	24VDC
KLM-Z-454003AZ	\$;-04jy]:	Die-cast aluminum	Standard actuator	8-pin M12 quick-disconnect	2 OSSD outputs	90° adjustable	3000N	24VDC
KLM-Z-454003HFZ	\$-04jz7:	Die-cast aluminum	Flexible actuator	8-pin M12 quick-disconnect	2 OSSD outputs	90° adjustable	3000N	24VDC
KL3-SS-Z-456002AZ	\$-04jy_:	316 stainless steel	Standard actuator	Two 0.5 in [12.7 mm] NPT cable entries	2 OSSD outputs	90° adjustable	3000N	24VDC
KL3-SS-Z-456002HFZ	\$-04jy#:	316 stainless steel	Flexible actuator	Two 0.5 in [12.7 mm] NPT cable entries	2 OSSD outputs	90° adjustable	3000N	24VDC
KL3-SS-Z-456003AZ	\$;-04jy!:	316 stainless steel	Standard actuator	8-pin M12 quick-disconnect	2 OSSD outputs	90° adjustable	3000N	24VDC
KL3-SS-Z-456003HFZ	\$-04jy?:	316 stainless steel	Flexible actuator	8-pin M12 quick-disconnect	2 OSSD outputs	90° adjustable	3000N	24VDC

^{*} All actuators feature uniquely coded RFID

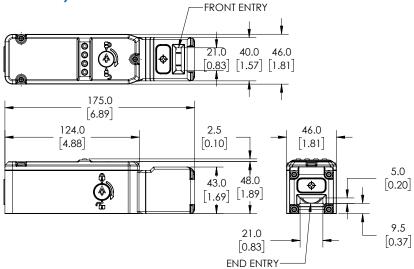
Female Quick Disconnect Lead					
Part Number	Price	Description	Exit Type/Cable Length		
<u>140101</u>	\$;1g!_:	Female QD Lead	M12 Female 5m [16.4 ft], 8-pin		
140102	\$;1g!#:	Female QD Lead	M12 Female 10m [32.8 ft], 8-pin		



IDEM KLP-Z/KLM-Z/KL3-Z Tongue Interlock Safety Switches with Guard Locking and RFID Coding

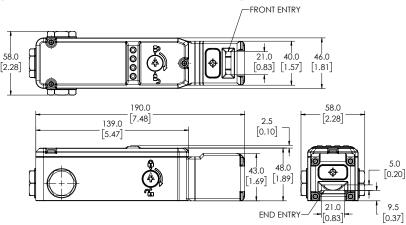
Dimensions (KLP Series)

mm [in]



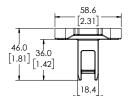
Dimensions (KLM Series and KL3 Series)

mm [in]



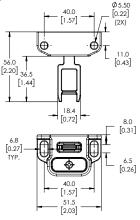
Key (AZ Standard Actuator)

mm [inch]



Key (HFZ Flexible Actuator)

mm [inch]



See our website www.AutomationDirect.com for complete engineering drawings.

IDEM KLP-Z/KLM-Z/KL3-Z Tongue Interlock Safety Switches with Guard Locking and RFID Coding

LED Operation

	GUARD
Guard Closed and Locked	Green (Steady)
Guard Closed and Unlocked	Green (Flash)
Code Incorrect	Red (Flash)
Guard Open	Red





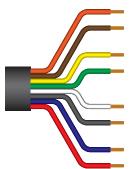
	INPUT		
Safety Inputs On	Green (Steady)		
Safety Input Missing	Green (Flash)		
Safety Inputs Off	Off		
Internal fault	Red (Steady)		

ОИТРИТ	
Green (Steady)	
Off	
Red (Flashing)	

	SOLENOID
Solenoid Energised	Red
Solenoid De-energised	Off

Wiring

IDEM Quick Disconnect Leads Color Coding



Orange – Guard open signal out Brown – Unlock signal +24VDC in

Yellow – Safety input 2 (see note) Green – Safety output 2 (OSSD)

White – Safety output 1 (OSSD) Black – Safety input 1 (see note)

Blue – 0VDC Red – +24VDC

Connection Colors



M12 Male

Coded Magnetic Switches Electrical Connections					
Quick Disconnect Connector Pin Out	IDEM Quick Disconnect Leads Color Coding	Terminal	Switch Circuit		
2	Red	R+	Supply +24 VDC		
3	Blue	0V	Supply 0VDC		
7	Black	11	Safety Input 1		
1	White	12	Safety Output 1		
4	Yellow	21	Safety Input 2		
6	Green	22	Safety Output 2		
8	Orange	44	Guard open signal +24VDC out		
N/A	-	34	Guard unlocked signal +24VDC out		
5	Brown	S+	Unlock signal Apply +24VDC		

NOTE: Safety outputs 1 and 2 are OSSD signals Safety inputs 1 and 2 are 24VDC if not in series or OSSD inputs if in series

Travel Charts

Actuator Insert	ion 15.0 n	nm 5.0	5.0 mm	
11/12	Open	Open		
21/22	Open	Open		
44	Guard open signal ON	Guard open sig	gnal OFF	
34	Guard unlocked signal (ON when solenoid energized)			

IDEM KLP-Z/KLM-Z/KL3-Z Tongue Interlock Safety Switches with Guard Locking and RFID

Solenoid Interlock Safety Switches Specifications					
	KLP-Z	KLM-Z	KL3-Z		
S	afety Classification and Reliab	ility Data			
Switching Reliability (B10d)		2.5M operations at 100mA load			
EN 954-1		Up to Category 4 with Safety Relay			
ISO 13849-1	Up t	to PLe depending upon system archited	cture		
EN 62061	Up t	o SIL3 depending upon system archite	cture		
Safety Data - Annual Usage	8 cy	cles per hour / 24 hours per day / 365	days		
MTTFd	771 years				
Agency Approvals		cULus E258676, CE			
	Electrical and General Specific	cations			
Rated Insulation Voltage		500VAC			
Contact Terminals	Plated Brass, Ma	ax conductor 1mm ² , 16AWG; 0.7 N•m	[0.52 lb•ft] torque		
Solenoid Wattage		12W			
Solenoid Voltage		24VDC			
Max. Switching Current	Safety contacts 2.5	A @24VDC, 6A @ 120VAC, 3A @ 240\ Auxiliary contacts max 230V@0.5A	VDC (720VA Break);		
Maximum Approach/Withdrawal Speed	1000 mm/s [39.37 in/s]	600 mm/s [23.62 in/sec]	600 mm/s [23.62 in/sec]		
Enclosure Protection		IP67 (IP69K on all KL3-Z models)			
Operating Temperature	-25°C to +55°C [-13°F to +131°F]	-25°C to +55°C [-13°F to +131°F]	-25°C to +40°C [-13°F to +104°F]		
Vibration		IEC 68-2-6, 10-55 Hz + 1Hz			
Lid Screws/Torque	Stainless steel; T20 Torx; Stainless steel; T20 Torx; Stainless steel; T20 Torx; 1.5 N•m [1.11 lb•ft] 1N•m [0.74 lb•ft] 1.5 Nm [1.11 lb•ft]				
Recommended Mounting Screws/Torque	M5; 4N•m [2.95 lb•ft]				
Head Screws/Torque	Stainless steel, T20 Torx 1.5 N•m [1.11 lb•ft]	Stainless steel; T20 Torx; 1.5 N•m [1.11 lb•ft]	Stainless steel; T20 Torx; 1N•m [0.74 lb•ft]		

IDEM BPR/BMR Series Non-Contact Magnetic Safety Switches



Actuator Operating Direction







Description

IDEM's BPR/BMR Series of noncontact magnetic Safety Switches has been designed to provide interlock protection on hinged, sliding or removable guard

These switches are particularly advantageous when poor guard alignment exists, where high-hygiene requirements exist (e.g. in food industry hosedown applications) or where long mechanical life is required.

When used in combination with a dual channel safety relay or control device, Non-Contact Magnetic Safety Switches can be used to provide protection up to Category 4 and PLe to ISO13849-1.

Features

- Will operate with most safety relays.
- M18 barrel cylindrical fitting suitable for all industry applicatins.
- Easy to install. M18 threaded body is easy to set
- Wide 8mm [0.31 in] sensing misalignment tolerance.
- Suitable for harsh environments including food processing and packaging.
- Durable red polyester housing.
- Quick connect version available.

ВР	BPR/BMR Series Non-Contact Magnetic Safety Switches Selection Guide					
Part Number	Price	Body Material	Connection	Cable Length (Dimension A)	Circuits	
BPR-415014	\$-4jyn:	Polyester	Pigtail	5m [16.4 ft]	2 NC safety outputs 1 NO monitoring output	
BPR-415015	\$-04jyo:	Polyester	Pigtail	10m [32.8 ft]	2 NC safety outputs 1 NO monitoring output	
BPR-415016	\$-04jyp:	Polyester	8-pin M12 quick-disconnect	250mm [9.8 in]	2 NC safety outputs 1 NO monitoring output	
BMR-416014	\$-04jyq:	316 stainless steel	Pigtail	5m [16.4 ft]	2 NC safety outputs 1 NO monitoring output	
BMR-416015	\$-04jyv:	316 stainless steel	Pigtail	10m [32.8 ft]	2 NC safety outputs 1 NO monitoring output	
BMR-416016	\$-04jyx:	316 stainless steel	8-pin M12 quick-disconnect	250mm [9.8 in]	2 NC safety outputs 1 NO monitoring output	

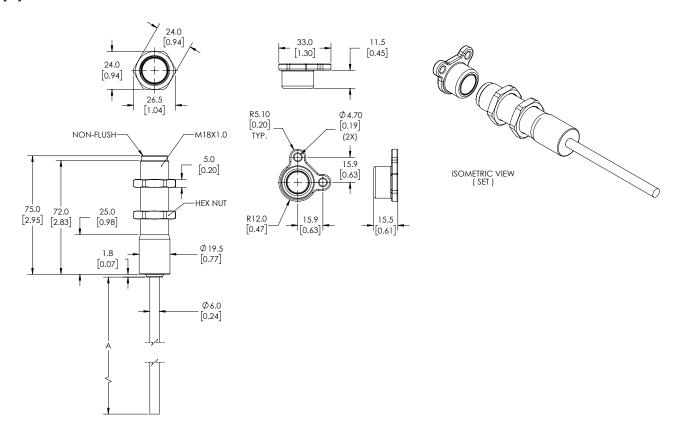
Female Quick Disconnect Lead			
Part Number Price Description Exit Type/Cable Length			
<u>140101</u>	\$;1g!_:	Female QD Lead	M12 Female 5m [16.4 ft], 8-pin
140102	\$;1g!#:	Female QD Lead	M12 Female 10m [32.8 ft], 8-pin



IDEM BPR/BMR Series Non-Contact Magnetic Safety Switches

Dimensions

mm [in]

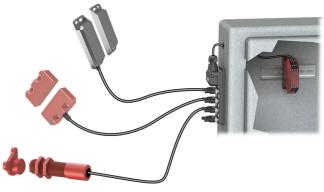


M12 Connection Box

For Use With Magnetic and RFID Coded







Features

- Allows you to connect up to eight switches in series to a single safety controller
- · Configured for dual channel to a safety controller
- Shorting plugs must be inserted into all unused ports
- M20 conduit exit; M20 cable gland accepts cable OD 6.5-12.0 mm [0.26-0.47 in]

IDEM Junction Block Selection Chart						
Part Number	Price	Description	Ports	Input Connections	Output Connection	Indicators
For use with IDEM coded	and RFID	switches only:				
140210	\$;-04jy,:	IDEM junction block for use with IDEM coded and RFID switches only	8	8-pin M12 sockets	Cable clamp for field- wired connection	24VDC LED
<u>140207</u>	\$-4jz0:	Shorting plug, 8 pole, for use with IDEM coded and RFID connection blocks	-	-	-	-
For use with IDEM magne	etic switch	es only:				
140213	\$-04jz1:	IDEM junction block for use with IDEM magnetic switches only	8	8-pin M12 sockets	Cable clamp for field- wired connection	24VDC LED
140209	\$-4jz2:	Shorting plug, 8-pole, for use with IDEM magnetic connection blocks	-	-	-	-

NOTE: The appropriate shorting plug must be inserted into all unused ports.

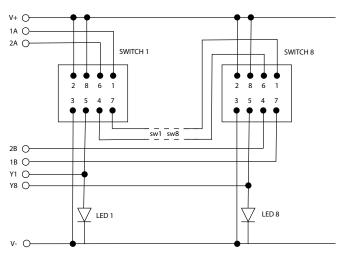
IDEM Junction Block Accessories Selection Chart					
Part Number	Price	Description	Connection	Length	Cable Jacket
140201	\$-4jz3:	Connection cable	8-pole M12 axial female to 8-pole M12 axial male	2m [6.56 ft]	Black PVC
140202	\$-4jz4:	Connection cable	8-pole M12 axial female to 8-pole M12 axial male	5m [16.40 ft]	Black PVC
140203	\$-4jz5:	Connection cable	8-pole M12 axial female to 8-pole M12 axial male	10m [32.81 ft]	Black PVC



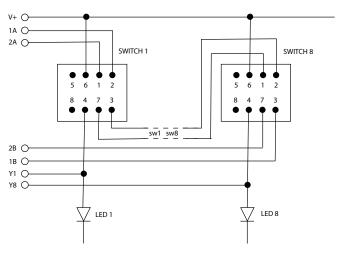
M12 Connection Box For Use With Magnetic and RFID Coded Non-Contact Switches

M12 Connection Box Specifications				
Port Connection Type	8x8 pin M12 female sockets			
Operating Temperature	-20 to +40°C [-4 to +104°F]			
Supply Voltage	24VDC ±10%			
Maximum Current	500mA			
Body Material	Polyester			
Internal Terminals	Screw type clamp for 16-30 AWG conductors			
Cable Exit	M20 x 1.5 mm cable gland (M20 cable gland accepts cable OD 6.5 mm to 12.0 mm [0.26 in to 0.47 in]			
Mounting	2xM4 bolds, 4.6 mm [0.18 in] diameter clearance holes			
Accessory	Shorting plug for unused ports			
LEDs (1-8)	Red, auxiliary indication of switch open			

Connections (140210) for Coded and RFID Switches Only



Connections (<u>140213</u>) for Magnetic Switches Only

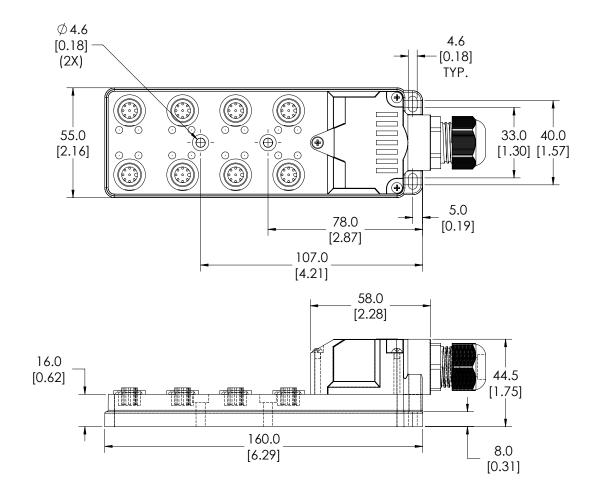


	Output Termi	nal Connectio	ns		
Terminal	Output	Indication	LED Status		
Y1	Auxiliary out +24VDC	Switch 1 open	LED 1 on		
Y2	Auxiliary out +24VDC	Switch 2 open	LED 2 on		
Y3	Auxiliary out +24VDC	Switch 3 open	LED 3 on		
Y4	Auxiliary out +24VDC	Switch 4 open	LED 4 on		
Y5	Auxiliary out +24VDC	Switch 5 open	LED 5 on		
Y6	Auxiliary out +24VDC	Switch 6 open	LED 6 on		
Y7	Auxiliary out +24VDC	Switch 7 open	LED 7 on		
Y8	Auxiliary out +24VDC	Switch 8 open	LED 8 on		
2A	N00				
2B	NC2 closed when all switches are closed (series connection)				
1A	NC1 closed when all switches are closed (series connection)				
1B					
V+	Supply +24VDC				
V-		Supply 0VDC			

M12 Connection Box For Use With Magnetic and RFID Coded Non-Contact Switches

Dimensions

mm [in]



ifm Fail-Safe Inductive 12mm Barrel Proximity Sensor



Safety technology in automation is important for safe human-machine interaction, and fail-safe sensors with safety functions are a key part of safety systems for persons and machines.

The capabilities and characteristics of inductive sensors can be used to advantage in many safety applications, for direct detection of metal allows system designers to meet many design challenges. For example, the use of inductive proximity sensors means that magnetic or mechanical characteristics do not come into play. In addition, the resulting freedom from physical wear (due to the non-contact nature of these sensors) combined with a high protection rating helps to guarantee high uptime of machines and installations.



GF711S

A magnet or coded target is not necessary for the function of these fail-safe sensors. The sensors detect metals and operate with an enable zone which is monitored for target position and dwell time.

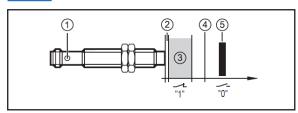
Features

- Certification to EN 60947-5-3 for electromechanical control gear
- · No special actuator for electronic fail-safe sensors required
- Series connection of sensors possible
- Standard 12mm barrel housing
- OSSD output

ifm Fail-Safe Inductive 12mm Barrel Proximity Sensor Selection Guide										
Part Number	Price	Housing Diameter	Housing Material	Enable Zone	Safe Switch-Off Distance	Mounting Type	IP Rating	SIL Level/ Performance Level	Safe State Position	Drawing
<u>GF711S</u>	\$-06k1j:	12mm [0.47 in]	Stainless steel	0.5 - 4 mm [0.2 - 0.16 in]	6mm [0.24 in]	Non-flush	IP65, IP67	SIL 2 / PLd	Target not present	PDF
<u>GF854S</u>	\$06k1p:	12mm [0.47 in]	Brass plated with white bronze	> 6mm [> 0.24 in]	< 3mm [< 0.12 in]	Non-flush	IP65, IP67, IP68, IP69K*	SIL 2 / PLd	Target present	PDF

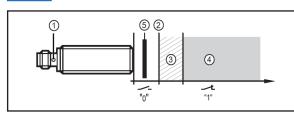
^{*} IP69K only when used with a properly installed IP69K cable similar to EVTxxxx

GF711S



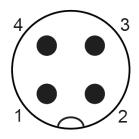
- 1 Dual LED: signal (yellow), power (green)
- 2 Close zone
- 3 Enable zone
- 4 Safe switch-off distance
- 5 Target

GF854S



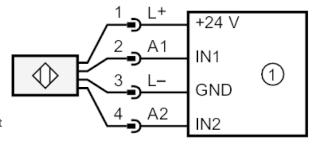
- 1 LED: signal (yellow)
- 2 Close zone
- 3 Enable zone
- 4 Safe switch-off distance
- 5 Target

Connections



M12 4-pin Male Connector								
1	1 Brown +24VDC							
2	White	OSSD 1						
3	Blue	0VDC						
4	Black	OSSD 2						

NOTE: Confirm the specific color to each pinout based on the cable used during installation.



ifm Fail-Safe Inductive 12mm Barrel Proximity Sensor



ifm Fail-Safe Inductive 12mm Barrel Proximity Sensor Technical Specifications						
	<u>GF7118</u>	<u>GF854S</u>				
Category and PL Level (ISO 13849-1)	Category 2, PLd					
SIL Level (IEC 61508 / IEC 62061)	SIL 2					
Mission Time	≤ 175,200 hours if operated at ideal operating temperature ≤ 87,600 hours if not operated at ideal operating temperature					
PFH	1.0 x 10 ⁻⁷	5 x 10 ⁻⁸				
Mounting Type	Non-	flush				
Enable Zone	0.5-4 mm [.04 - 0.16 in]	> 6mm [0.24 in]				
Safe Switch-Off Distance	6mm [0.24 in]	< 3mm [0.12 in]				
Safe State Position	Target not present	Target present				
Output Type	Dual char	nnel OSSD				
Operating Voltage	19.2-30 VDC	8-32 VDC				
Reverse Polarity Protection	Yes					
Current Consumption	< 20mA	< 20mA				
Voltage Drop (Output)	2.5V @ 30mA					
Short-Circuit Protection (Output)	Yes					
Overload Protection (Output)	No	Yes				
Ideal Operating Temperature	10 to 40°C [50 to 104°F]	-25 to 70°C [-13 to 158°F]				
Operating Temperature Range (Note that operating temperature affects mission time)	-25 to 70°C [-13 to 158°F]	-40 to 85°C [-40 to 185°F]				
Protection Degree (DIN 40050)	IP65, IP67	IP65, IP67, IP68, IP69K* (*IP69K only when used with a properly installed IP69K cable similar to EVTxxxx)				
Indication/Switch Status	Operation (GREEN) LED Signal (YELLOW) LED	Signal (YELLOW) LED				
Housing Material	Stainless Steel (316L)	Brass plated with white bronze				
Sensing Face Material	PBT (polybutylene terephthalate)	LCP (liquid crystal polymer)				
Shock Resistance	Meets or exceeds IEC 60947-5-2	Meets or exceeds IEC60068-2-27 Ea				
Vibration Resistance	Meets or exceeds IEC 60947-5-2	Meets or exceeds IEC60068-2-6 Fc				
Tightening Torque	<7 N•m	< 7 N•m				
Weight	105.5 g [3.72 oz]	86.8 g [3.06 oz]				
Connection	M12, A cc	ded, 4-pin				
Agency Approvals	CE, cULus, TÜV	CE, cULus, TÜV				

ifm Fail-Safe Inductive 18mm Barrel Proximity Sensor







Safety technology in automation is important for safe human-machine interaction, and failsafe sensors with safety functions are a key part of safety systems for persons and machines.

The capabilities and characteristics of inductive sensors can be used to advantage in many safety applications, for direct detection of metal allows system designers to meet many design challenges. For example, the use of inductive proximity sensors means that magnetic or mechanical characteristics do not come into play. In addition, the resulting freedom from physical wear (due to the non-contact nature of these sensors) combined with a high protection rating helps to guarantee high uptime of machines and installations.

A magnet or coded target is not necessary for the function of these fail-safe sensors. The sensors detect metals and operate with an enable zone which is monitored for target position and dwell time.

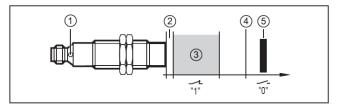
Features

- Certification to EN 60947-5-3 for electromechanical control gear
- No special actuator for electronic fail-safe sensors required
- Series connection of sensors possible
- Standard 18mm barrel housing
- OSSD output

ifm Fail-Safe Inductive 18mm Barrel Proximity Sensor Selection Guide										
Part Number	Price	Housing Diameter	Housing Material	Enable Zone	Safe Switch-Off Distance	Mounting Type	IP Rating	SIL Level/ Performance Level	Safe State Position	Drawing
<u>GG711S</u>	\$06k1k:	18mm [0.71 in]	Stainless steel	1-8 mm [0.04 - 0.31 in]	12mm [0.47 in]	Non-flush	IP65, IP67	SIL 2 PLd	Target not present	PDF
<u>GG712S</u>	\$-06k1I:	18mm [0.71 in]	Brass plated with white bronze	1-5 mm [0.04 - 0.20 in]	7mm [0.28 in]	Flush	IP65, IP67	SIL 2 PLd	Target not present	PDF
<u>GG851S</u>	\$06k1o:	18mm [0.71 in]	Brass plated with white bronze	> 10mm > 0.39 in]	< 5mm [< 0.20 in]	Flush	IP65, IP67	SIL 2 PLd	Target present	PDF
<u>GG854S</u>	\$06k1u:	18mm [0.71 in]	Brass plated with white bronze	> 11.5 mm [> 0.45 in]	< 6.5 mm [< 0.26 in]	Non-flush	IP65, IP67, IP68, IP69K*	SIL 2 PLd	Target present	PDF
<u>GG855S</u>	\$06k1v:	18mm [0.71 in]	Brass plated with white bronze	> 7.5 mm [> 0.30 in]	< 4mm [< 0.16 in]	Flush	IP65, IP67, IP68, IP69K*	SIL 2 PLd	Target present	PDF

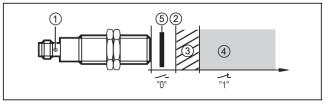
^{*} IP69K only when used with a properly installed IP69K cable similar to EVTxxxx

GG71xS



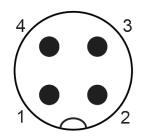
- 1 Dual LED: signal (yellow), power (green)
- 2 Close zone
- 3 Enable zone
- 4 Safe switch-off distance
- 5 Target

GG85xS



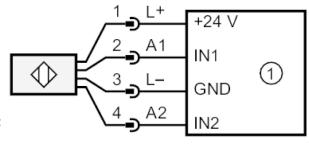
- 1 Status LEDs
- 2 Close zone
- 3 Enable zone
- 4 Safe switch-off distance
- 5 Target

Connections



M12 4-pin Male Connector								
1	1 Brown +24VDC							
2	White	OSSD 1						
3	Blue	0VDC						
4	Black	OSSD 2						

NOTE: Confirm the specific color to each pinout based on the cable used during installation.



Safety Electrical Components

ifm Fail-Safe Inductive 18mm Barrel Proximity Sensor



ifm Fail-Safe Inductive 18mm Barrel Proximity Sensor Technical Specifications								
	<u>GG7118</u>	<u>GG7128</u>	<u>GG851S</u>	<u>GG854S</u>	<u>GG855S</u>			
Category and PL Level (ISO 13849-1)	Category 2, PLd							
SIL Level (IEC 61508 / IEC 62061)			SIL 2					
Mission Time	≤ 175,200 hours if operated at ideal operating temperature ≤ 87,600 hours if not operated at ideal operating temperature							
PFH	1.0 x 10 ⁻⁷	1.0 x 10 ⁻⁷	1.0 x 10 ⁻⁷	5 x 10 ⁻⁸	5 x 10 ⁻⁸			
Mounting Type	Non-flush	Flush	Flush	Non-flush	Flush			
Enable Zone	1 - 8 mm [0.04 - 0.31 in]	1 - 5 mm [0.04 - 0.20 in]	>10mm [0.39 in]	> 11.5 mm [0.45 in]	> 7.5 mm [0.30 in]			
Safe Switch-Off Distance	12mm [0.47 in]	7mm [0.28 in]	< 5mm [0.20 in]	< 6.5 mm [0.26 in]	< 4mm [0.16 in]			
Safe State Position	Target not present	Target not present	Target present	Target present	Target present			
Output Type	Dual channel OSSD							
Operating Voltage	19.2-30 VDC	19.2-30 VDC	10-30 VDC	8-32 VDC	8-32 VDC			
Reverse Polarity Protection	Yes							
Current Consumption	< 30mA	< 30mA	< 30mA	< 20mA	< 20mA			
Voltage Drop (Output)	2.5V @ 30mA							
Short-Circuit Protection (Output)	Yes							
Overload Protection (Output)	No	No	No	Yes	Yes			
Ideal Operating Temperature	10 to 40°C [50 to 104°F]	10 to 40°C [50 to 104°F]	10 to 40°C [50 to 104°F]	-25 to 70°C [-13 to 158°F]	-25 to 70°C [-13 to 158°F]			
Operating Temperature Range (Note that operating temperature affects mission time)	-25 to 70°C [-13 to 158°F]	-25 to 70°C [-13 to 158°F]	-25 to 70°C [-13 to 158°F]	-40 to 85°C [-40 to 185°F]	-40 to 85°C [-40 to 185°F]			
Protection Degree (DIN 40050)	IP65, IP67	IP65, IP67	IP65, IP67	IP65, IP67, IP68, IP69K* (*IP69K only when used with a properly installed IP69K cable similar to EVTxxxx)	IP65, IP67, IP68, IP69K* (*IP69K only when used with a properly installed IP69K cable similar to EVTxxxx)			
Indication/Switch Status	Operation (GREEN) LED Signal (YELLOW) LED	Operation (GREEN) LED Signal (YELLOW) LED	Operation (GREEN) LED Signal (YELLOW) LED	Signal (YELLOW) LED	Signal (YELLOW) LED			
Housing Material	Stainless steel (316Ti)	Brass plated with white bronze	Brass plated with white bronze	Brass plated with white bronze	Brass plated with white bronze			
Sensing Face Material	PBT (Polybutylene terephthalate)	PBT (Polybutylene terephthalate)	PBT (Polybutylene terephthalate)	LCP (Liquid crystal polymer)	LCP (Liquid crystal polymer)			
Shock Resistance	Meets or exceeds IEC 60947-5-2	Meets or exceeds IEC 60947-5-2	Meets or exceeds IEC 60947-5-2	Meets or exceeds IEC60068-2-27 Ea	Meets or exceeds IEC60068-2-27 Ea			
Vibration Resistance	Meets or exceeds IEC 60947-5-2	Meets or exceeds IEC 60947-5-2	Meets or exceeds IEC 60947-5-2	Meets or exceeds IEC60068-2-6 Fc	Meets or exceeds IEC60068-2-6 Fc			
Tightening Torque	< 25 N•m	< 25 N•m	< 20 N•m	< 25 N•m	< 25 N•m			
Weight	129.5 g [4.57 oz]	133g [4.69 oz]	163.5 g [5.77 oz]	106.8 g [3.77 oz]	109.2 g [3.85 oz]			
Connection	M12, A coded, 4-pin							
Agency Approvals	CE, cULus, TÜV	CE, cULus, TÜV	CE, cULus, TÜV	CE, cULus, TÜV	CE, cULus, TÜV			

ifm Fail-Safe Inductive 30mm Barrel Proximity Sensor





Safety technology in automation is important for safe human-machine interaction, and fail-safe sensors with safety functions are a key part of safety systems for persons and machines.

The capabilities and characteristics of inductive sensors can be used to advantage in many safety applications, for direct detection of metal allows system designers to meet many design challenges. For example, the use of inductive proximity sensors means that magnetic or mechanical characteristics do not come into play. In addition, the resulting freedom from physical wear (due to the non-contact nature of these sensors) combined with a high protection rating helps to guarantee high uptime of machines and installations.

A magnet or coded target is not necessary for the function of these fail-safe sensors. The sensors detect metals and operate with an enable zone which is monitored for target position and dwell time.



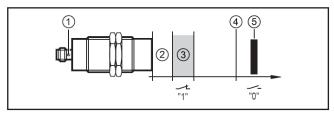
Features

- Certification to EN 60947-5-3 for electromechanical control gear
- No special actuator for electronic fail-safe sensors required
- Series connection of sensors possible
- Standard 30mm barrel housing
- OSSD output

	ifm Fail-Safe Inductive 30mm Barrel Proximity Sensor Selection Guide									
Part Number	Price	Housing Diameter	Housing Material	Enable Zone	Safe Switch-Off Distance	Mounting Type	IP Rating	SIL Level/ Performance Level	Safe State Position	Drawing
<u>GI701S</u>	\$;06k1t:	30mm [1.18 in]	Stainless steel	6-12 mm [0.24 - 0.47 in]	30mm [1.18 in]	Non-flush	IP68, IP69K*	SIL 3 / PLe	Target not present	PDF
<u>GI711S</u>	\$06k1n:	30mm [1.18 in]	Stainless steel	1-15 mm [0.04 - 0.59 in]	22mm [0.87 in]	Non-flush	IP65, IP67	SIL 2 / PLd	Target not present	PDF
<u>GI854S</u>	\$06k1x:	30mm [1.18 in]	Brass plated with white bronze	> 21.5 mm [> 0.85 in]	< 12mm [< 0.47 in]	Non-flush	IP65, IP67, IP68, IP69K*	SIL 2 / PLd	Target present	<u>PDF</u>
<u>GI855S</u>	\$06k1y:	30mm [1.18 in]	Brass plated with white bronze	> 14.5 mm [> 0.57 in]	< 8mm [< 0.31 in]	Flush	IP65, IP67, IP68, IP69K*	SIL 2 / PLd	Target present	<u>PDF</u>

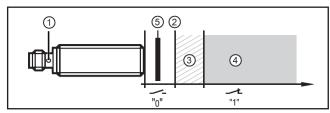
^{*} IP69K only when used with a properly installed IP69K cable similar to EVTxxxx

GI7xxS



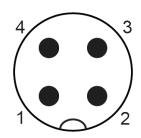
- 1 Dual LED: signal (yellow), power (green)
- 2 Close zone
- 3 Enable zone
- 4 Safe switch-off distance
- 5 Target

GI85xS



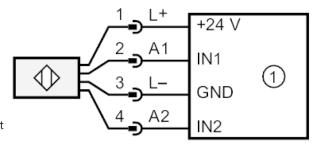
- 1 LED: signal (yellow)
- 2 Close zone
- 3 Enable zone
- 4 Safe switch-off distance
- 5 Target

Connections



	M12 4-pin Male Connector				
1	Brown	+24VDC			
2	White	OSSD 1			
3	Blue	0VDC			
4	Black	OSSD 2			

NOTE: Confirm the specific color to each pinout based on the cable used during installation.



ifm Fail-Safe Inductive 30mm Barrel Proximity Sensor



ifm Fail-Safe	Inductive 30mm Ba	arrel Proximity Sens	or Technical Specific	cations
	<u>GI701S</u>	<u>GI7118</u>	GI854S	<u>GI855S</u>
Category and PL Level (ISO 13849-1)	Category 3, Ple	Category 2, PLd	Category 2, PLd	Category 2, PLd
SIL Level (IEC 61508 / IEC 62061)	SIL 3	SIL 2	SIL 2	SIL 2
Mission Time		≤ 175,200 hours if operated a ≤ 87,600 hours if not operated		
PFH	1.0 x 10 ⁻⁸	1.0 x 10 ⁻⁷	5 x 10 ⁻⁸	5 x 10 ⁻⁸
Mounting Type	Non-flush	Non-flush	Non-flush	Flush
Enable Zone	6-12mm [0.24 - 0.47 in]	1-15mm [0.04 - 0.59 in]	>21.5mm [0.85 in]	>14.5mm [0.57 in]
Safe Switch-Off Distance	30mm [1.18 in]	22mm [0.87 in]	<12mm [0.47 in]	<8mm [0.31 in]
Safe State Position	Target not present	Target not present	Target present	Target present
Output Type		Dual chan	nel OSSD	
Operating Voltage	19.2-30 VDC	19.2-30 VDC	8-32 VDC	8-32 VDC
Reverse Polarity Protection		Ye	es	
Current Consumption	< 30mA	< 30mA	< 20mA	< 20mA
Voltage Drop (Output)	2.5V @ 100mA	2.5V @ 30mA	2.5V @ 30mA	2.5V @ 30mA
Short-Circuit Protection (Output)		Ye	es	
Overload Protection (Output)	No	No	Yes	Yes
Ideal Operating Temperature	10 to 40°C [50 to 104°F]	10 to 40°C [50 to 104°F]	-25 to 70°C [-13 to 158°F]	-25 to 70°C [-13 to 158°F]
Operating Temperature Range (Note that operating temperature affects mission time)	-25 to 70°C [-13 to 158°F]	-25 to 70°C [-13 to 158°F]	-40 to 85°C [-40 to 185°F]	-40 to 85°C [-40 to 185°F]
Protection Degree (DIN 40050)	IP68, IP69K* (*IP69K only when used with a properly installed IP69K cable similar to EVTxxxx)	IP65, IP67	IP65, IP67, IP68, IP69K* (*IP69K only when used with a properly installed IP69K cable similar to EVTxxxx)	IP65, IP67, IP68, IP69K* (*IP69K only when used with a properly installed IP69K cable similar to EVTxxxx)
Indication/Switch Status	Operation (GREEN) LED Signal (YELLOW) LED	Operation (GREEN) LED Signal (YELLOW) LED	Signal (YELLOW) LED	Signal (YELLOW) LED
Housing Material	Stainless steel 316L	Stainless steel 316Ti	Brass plated with white bronze	Brass plated with white bronze
Sensing Face Material	PBT (polybutylene terephthalate)	PBT (polybutylene terephthalate)	LCP (liquid crystal polymer)	LCP (liquid crystal polymer)
Shock Resistance	Meets or exceeds IEC 60947-5-2	Meets or exceeds IEC 60947-5-2	Meets or exceeds IEC60068-2-27 Ea	Meets or exceeds IEC60068-2-27 Ea
Vibration Resistance	Meets or exceeds IEC 60947-5-2	Meets or exceeds IEC 60947-5-2	Meets or exceeds IEC60068-2-6 Fc	Meets or exceeds IEC60068-2-6 Fc
Tightening Torque	< 50N•m	< 50N•m	< 50N•m	< 50N•m
Weight	259.5 g [9.15 oz]	193.5 g [6.83 oz]	189.6 g [6.69 oz]	196.8 g [6.94 oz]
Connection		M12, A co	ded, 4-pin	
Agency Approvals	CE, cULus, TÜV	CE, cULus, TÜV	CE, cULus, TÜV	CE, cULus, TÜV

ifm Fail-Safe Inductive 40mm Cube Proximity Sensor





Safety technology in automation is important for safe human-machine interaction, and fail-safe sensors with safety functions are a key part of safety systems for persons and machines.

The capabilities and characteristics of inductive sensors can be used to advantage in many safety applications, for direct detection of metal allows system designers to meet many design challenges. For example, the use of inductive proximity sensors means that magnetic or mechanical characteristics do not come into play. In addition, the resulting freedom from physical wear (due to the non-contact nature of these sensors) combined with a high protection rating helps to guarantee high uptime of machines and installations.

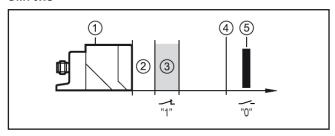
A magnet or coded target is not necessary for the function of these fail-safe sensors. The sensors detect metals and operate with an enable zone which is monitored for target position and dwell time.

Features

- Certification to EN 60947-5-3 for electromechanical control gear
- No special actuator for electronic fail-safe sensors required
- Series connection of sensors possible
- 40mm cube housing
- OSSD output

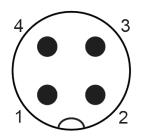
	ifm Fail-Safe Inductive 40mm Cube Proximity Sensor Selection Guide									
Part Number	Price	Housing	Housing Material	Enable Zone	Safe Switch-Off Distance	Mounting Type	IP Rating	SIL Level/ Performance Level	Safe State Position	Drawing
<u>GM701S</u>	\$06k1s:	40mm [1.57 in] cube	Die-cast zinc	10-15 mm [0.40 - 0.59 in]	30mm [1.18 in]	Non-flush	IP65, IP67	SIL 3 / PLe	Target not present	PDF
<u>GM705S</u>	\$06k1q:	40mm [1.57 in] cube	Die-cast zinc	4-20 mm [0.16 - 0.79 in]	45mm [1.77 in]	Non-flush	IP65, IP67	SIL 3 / PLe	Target not present	PDF

GM70xS



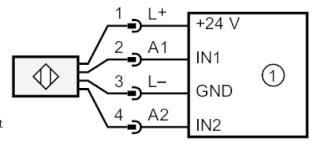
- 1 Dual LED: signal (yellow), power (green)
- 2 Close zone
- 3 Enable zone
- 4 Safe switch-off distance
- 5 Target

Connections



	M12 4-pin Male Connector				
1	Brown	+24VDC			
2	White	OSSD 1			
3	Blue	0VDC			
4	Black	OSSD 2			

NOTE: Confirm the specific color to each pinout based on the cable used during installation.



ifm Fail-Safe Inductive 40mm Cube Proximity Sensor



ifm Fail-Safe Inductive 40mm C	ube Proximity Sensor Technic	al Specifications	
	<u>GM701S</u>	<u>GM7058</u>	
Category and PL Level (ISO 13849-1)	Category 3, Ple		
SIL Level (IEC 61508 / IEC 62061)	SII	_3	
Mission Time	≤ 175,200 hours if operated a ≤ 87,600 hours if not operated	at ideal operating temperature at ideal operating temperature	
PFH	1.0 x	10-8	
Mounting Type	Non-	flush	
Enable Zone	10-15 mm [0.39 - 0.59 in]	4-20 mm [0.16 - 0.79 in]	
Safe Switch-Off Distance	30mm [1.18 in]	45mm [1.77 in]	
Safe State Position	Target no	ot present	
Output Type	Dual chan	nel OSSD	
Operating Voltage	19.2-3	0 VDC	
Reverse Polarity Protection	Yes		
Current Consumption	< 15mA	< 30mA	
Voltage Drop (Output)	2.5V @ 100mA		
Short-Circuit Protection (Output)	Yes		
Overload Protection (Output)	No	No	
Ideal Operating Temperature	10 to 40°C [50 to 104°F]	10 to 40°C [50 to 104°F]	
Operating Temperature Range (Note that operating temperature affects mission time)	-25 to 70°C [-13 to 158°F]	-25 to 60°C [-13 to 140°F]	
Protection Degree (DIN 40050)	IP65,	IP67	
Indication/Switch Status	Operation (G Signal (YEL		
Housing Material	Die-cast zinc	Die-cast zinc	
Sensing Face Material	PPE (polyphenylene ether)	PPE (polyphenylene ether)	
Shock Resistance	Meets or exceeds IEC 60947-5-2	Meets or exceeds IEC 60947-5-2	
Vibration Resistance	Meets or exceeds IEC 60947-5-2	Meets or exceeds IEC 60947-5-2	
Weight	342.5 g [12.08 oz] 355 g [12.52 oz]		
Connection	M12, A coded, 4-pin		
Agency Approvals	CE, cUL	us, TÜV	

IDEM SKORPION Rotary Trapped Key





800000-CS-A103



800001-A103



800003-A103



800002-A103



800004-A104



800005-A103

The SKORPION Trapped Key System has been developed to provide extremely robust mechanical coded key safeguarding and interlocking for dangerous machinery.

The SKORPION system works on the principle of releasing factory coded mechanical keys in a predetermined sequence to ensure that machine power is isolated before any access can be gained to a dangerous machine or specific hazard.

After the machine control has been isolated (that is, after the first key in the system has been turned to the OFF position) the key from the isolator can then be used to release other trapped keys to enable access to the guarded areas.

With this system, safeguarding can be achieved without the need for extensive electrical wiring. This makes the system ideal for use in harsh environments.

When the control switch is used in conjuntion with a safety relay/safety controller, the system can be used to achieve up to PLe/Cat 3.

Features

- No reduction of integrity due to the distance between movable guard and control system.
- High mechanical integrity with robust mountings suitable for all types of guards.
- Eliminates the need for electrical wiring to each movable quard.
- · All keys are coded at the factory
- It is virtually impossible to override the system.
- Provides for quick yet safe and reliable access to machinery.
- Can prevent shortcuts and enforce a logical set of procedures.
- Until the control switch key is returned to its original position within the lock, there is no way to enable the machinery to be re-started.

How a Trapped Key System Works

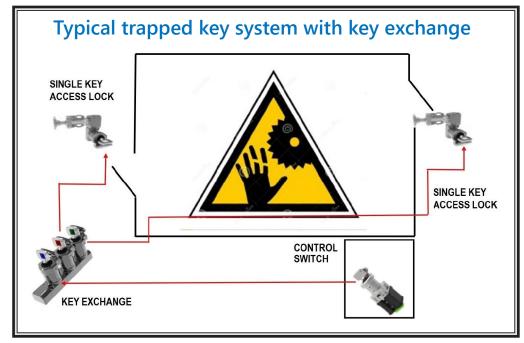
A trapped key guarding system relies on the transfer of keys between a power isolation switch (or control switch) and a locking mechanism fixed on a guard.

The essential feature of the system is that a removable key is literally trapped either in the guard lock or in the control switch. The lock on the guard is arranged so that the key can be released only when the guard has been closed and locked. This allows transfer of the key from the guard to the control switch.

Closing the switch traps the key so that it cannot be removed while the switch is in the ON position.

Where there is more than one guard, the exchange box will accommodate an equivalent number of access keys.

Where a number of operations have to be carried out in a pre-determined sequence, then the transferable key is locked in and exchanged for a different one at each stage.



IDEM SKORPION Rotary Trapped Key

How to select a trapped key system

You will need to determine four things in order to select the correct trapped key system for your application:

- 1) Do you need a solenoid or a non-solenoid trapped key control switch?
- 2) How many doors or gates do you need to protect.
- 3) Do you need full-body or partial-body access?
- 4) Select a key code

FIRST

Determine whether you need a solenoid or a non-solenoid trapped key control switch by asking, "Does the machine require time to come to a complete stop?"

If YES, then you need a solenoid trapped key control switch.

You'll use one of the following: 800000-CS-SKR-A101 800000-CS-SKR-A102 800000-CS-SKR-A103 800000-CS-SKR-A104 800000-CS-SKR-A105 If NO, then you need a non-solenoid trapped key control switch.

You'll use one of the following:

800000-CS-A101 800000-CS-A102 800000-CS-A103 800000-CS-A104

800000-CS-A105

Pro Tip:

The last four charaters are the key code. All components in your system should have the same key code.

If multiple machines will be installed within the same vicinity, then a different key code should be used.

	-		_	_
п	П			М.
		_	_	

Determine how many door three doors/gates.	rs or gates you will need to	protect in your system.	Systems are available t	o protect up to
--	------------------------------	-------------------------	-------------------------	-----------------

I need to protect

	i need to protect	
One door/gate	Two doors/gates	Three doors/gates

Also ask...

Can you step fully into the guard and close the door or gate?

If YES, then you need a full-body access system.

If NO, then you need a partial body access system.

Now use the following table to select the correct door/gate access for your application:

One Door/Gate		Two Doo	Three Doors/ Gates		
Key Code	Full Body	Partial Body	Full Body	Partial Body	Full Body
A101	-	800001-A101	-	-	-
A102	-	800001-A102	-	-	-
A103	800003-A103	800001-A103	800004-A103	800002-A103	800005-A103
A104	800003-A104	800001-A104	800004-A104	800002-A104	800005-A104
A105	<u>800003-A105</u>	800001-A105	800004-A105	800002-A105	800005-A105

IDEM SKORPION Rotary Trapped Key Control Switch



Control Switch Without Solenoid

Used to immediately turn off machine control circuits



Features

- · No solenoid
- 4 normally open (NO) contacts
- 2 normally closed (NC) contacts
- · Die-cast aluminum alloy

		Control Switch Without Solenoid Selection Guide		
Part Number	Price	Description	Key Code	Drawing
800000-CS-A101	\$05n#3:	IDEM SKORPION Series control switch and key	A101	<u>PDF</u>
800000-CS-A102	\$05n#4:	IDEM SKORPION Series control switch and key	A102	PDF
800000-CS-A103	\$05n#5:	IDEM SKORPION Series control switch and key	A103	PDF
800000-CS-A104	\$05n#6:	IDEM SKORPION Series control switch and key	A104	PDF
800000-CS-A105	\$05n#7:	IDEM SKORPION Series control switch and key	A105	<u>PDF</u>

IDEM SKORPION Rotary Trapped Key Control Switches General Specifications				
Mechanical Life (B10 _d)	1,000,000 cycles			
Electrical Output Contacts	Rated 240V 3A (A300)			
Temperature	-20 C to 40 C [-4 F to 104 F]			
Wire Size	16-28 AWG			
Terminal Torque	6 lb•in (0.7 N•m)			
Ingress Protection	IP50 (IP51 with 800050 enclosure)			
Weight	2.5 lb [1.13 kg]			
Standards	UL60947-5-1, ISO14119, PD/ISO/TS 19837			
Agency Approvals	UL and CE			

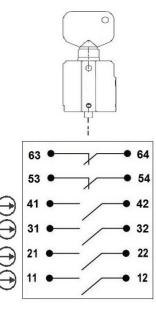
Connection Diagram

Machine Able to Run Condition:

- Key inserted and turned to trapped position
- 11/12, 21/22, 31/32, 41,42 are closed (control contacts)
- 53/54, 63,64 are open (auxiliary contacts)

Machine In Safe Condition:

- Turning the key will cause the following to occur
- 11/12, 21/22, 31/32, 41/42 will open (control contacts)
- 53/54, 63/64 will close (auxiliary contacts)
- · Key can be removed



IDEM SKORPION Rotary Trapped Key Solenoid Control Switch



Control Switch With Solenoid

Used to turn off machine control circuits after the internal solenoid is energized.

The solenoid version is often used in systems that require the operator to "Request to Enter" from the HMI or a pushbutton. This would cause the machine to come to a controlled stop and then unlock the trapped key.



Features

- · A solenoid to prevent the key from being turned
- 4 normally open (NO) contacts
- 2 normally closed (NC) contacts
- · Die-cast aluminum alloy

Control Switch With Solenoid Selection Guide					
Part Number	Price	Description	Key Code	Drawing	
800000-CS-SKR-A101	\$05n#8:	IDEM SKORPION Series solenoid control switch and key	A101	<u>PDF</u>	
800000-CS-SKR-A102	\$05n#9:	IDEM SKORPION Series solenoid control switch and key	A102	PDF	
800000-CS-SKR-A103	\$05n#a:	IDEM SKORPION Series solenoid control switch and key	A103	<u>PDF</u>	
800000-CS-SKR-A104	\$05n#b:	IDEM SKORPION Series solenoid control switch and key	A104	<u>PDF</u>	
800000-CS-SKR-A105	\$05n#c:	IDEM SKORPION Series solenoid control switch and key	A105	PDF	

IDEM SKORPION Rotary Trapped Key Control Switches General Specifications				
Mechanical Life (B10 _d)	1,000,000 cycles			
Electrical Output Contacts	Rated 240V 3A (A300)			
Solenoid Operating Voltage	24V+/- 10% Class 2			
Temperature	-20 C to 40 C [-4 F to 104 F]			
Wire Size	16-28 AWG			
Terminal Torque	6 lb•in (0.7 N•m)			
Ingress Protection	IP50 (IP51 with 800050 enclosure)			
Weight	2.5 lb [1.13 kg]			
Standards	UL60947-5-1, ISO14119, PD/ISO/TS 19837			
Agency Approvals	UL and CE			

Connection Diagram

Machine Able to Run Condition:

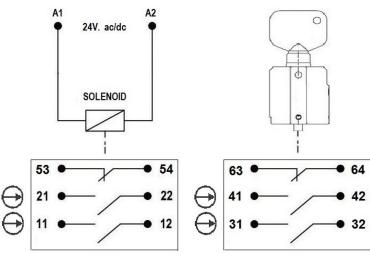
- No power applied to A1 and A2
- Key inserted and turned to trapped position
- 11/12, 21/22, 31/32, 41,42 are closed (control contacts)
- 53/54, 63,64 are open (auxiliary contacts)

Applying 24VDC to A1 and A2:

- · Energizes the solenoid
- 11/12 and 21/22 will open (control contacts)
- 53/54 will close (auxiliary contacts)
- Key can be turned and removed

Turning and Removing the Key:

- 31/32 and 41/42 will open (control contacts)
- 63/64 will close (auxiliary contacts)



IDEM SKORPION Rotary Trapped Key Control Switch Enclosure



Enclosure for Control Switch

IDEM provides an optional polycarbonate enclosure for all of its control switches.

- IP51 with control switch installed
- Pre-drilled holes for convenient installation



	IDEM SKORPION Enclosure Selection Guide						
Part Number	Price Description Material For use with Weight Drawing					Drawing	
<u>800050</u>	\$5n#u:	Control switch enclosure	Polycarbonate	800000-x control switches	0.8 lb [0.36 kg]	<u>PDF</u>	



800050 with 800000-CS-SKR-A104 mounted inside.

IDEM SKORPION Rotary Trapped Key Gate Interlocks



A complete trap key system includes the control switch as well as a gate interlock system. Depending on the number and type of entries being protected, your system will require certain specific components.

We have made system selection simple by offering various packages based on different system architectures. The tables below will help you select the correct interlock kit for your application.

Note that the use of a control switch is required with any of these interlock kits.

Features

- · Die-cast aluminum alloy
- Interlocks are suitable for CIP and SIP cleaning processes and can be highpressure hosed with detergents at high temperatures.
- High mechanical integrity with robust mountings suitable for all types of guards.
- Eliminates the need for electrical wiring to each movable guard.
- All keys are coded at the factory
- Can prevent shortcuts and enforce a logical set of procedures.
- Until the isolator key is returned to its original position within the lock, there is no way to enable the machinery to be re-started.

	IDEM SKORPION Trapped Key Gate Interlock System Selection Guide					
Part Number	Price	Access Type	Number of Doors/Gates	Key Exchange	Weight	Drawing
	Partial Body, 1 Door/Gate					
800001-A101	\$05n#d:	Partial body	1	None	3.15 lb [1.43 kg]	<u>PDF</u>
800001-A102	\$05n#e:	Partial body	1	None	3.15 lb [1.43 kg]	<u>PDF</u>
800001-A103	\$;05n#f:	Partial body	1	None	3.15 lb [1.43 kg]	<u>PDF</u>
800001-A104	\$05n#g:	Partial body	1	None	3.15 lb [1.43 kg]	<u>PDF</u>
800001-A105	\$05n#h:	Partial body	1	None	3.15 lb [1.43 kg]	<u>PDF</u>

Partial Body, 2 Doors/Gates						
800002-A103	\$;-005n#i:	Partial body	2	Yes	13.15 lb [5.96 kg]	<u>PDF</u>
800002-A104	\$;-005n#j:	Partial body	2	Yes	13.15 lb [5.96 kg]	<u>PDF</u>
800002-A105	\$;005n#k:	Partial body	2	Yes	13.15 lb [5.96 kg]	<u>PDF</u>

			Whole Body, 1 Door/Gate	2		
800003-A103	\$-05n#I:	Whole body	1	None	5.05 lb [2.29 kg]	PDF
800003-A104	\$05n#n:	Whole body	1	None	5.05 lb [2.29 kg]	<u>PDF</u>
800003-A105	\$05n#o:	Whole body	1	None	5.05 lb [2.29 kg]	PDF

Whole Body, 2 Doors/Gates						
800004-A103	\$;005n#p:	Whole body	2	Yes	16.75 lb [7.60 kg]	<u>PDF</u>
800004-A104	\$;005n#q:	Whole body	2	Yes	16.75 lb [7.60 kg]	<u>PDF</u>
800004-A105	\$;005n#s:	Whole body	<u>2</u>	Yes	16.75 lb [7.60 kg]	PDF

Whole Body, 3 Doors/Gates						
800005-A103	\$;;005n#t:	Whole body	3	Yes	23.35 lb [10.59 kg]	<u>PDF</u>
800005-A104	\$;005n#v:	Whole body	3	Yes	23.35 lb [10.59 kg]	<u>PDF</u>
800005-A105	\$;005n#x:	Whole body	3	Yes	23.35 lb [10.59 kg]	<u>PDF</u>

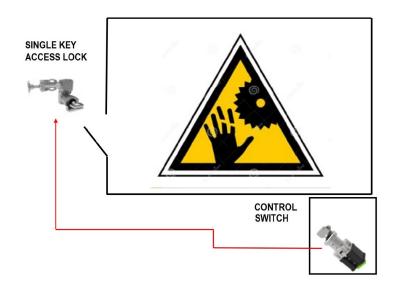
^{*} A control switch with the same key code (the last four characters of the part number) is required.

IDEM SKORPION Rotary Trapped Key Gate Interlocks General Specifications				
Mechanical Life (B10 _d) 1,000,000 cycles				
Holding Force	3000N [674.4 lbf]			
Temperature	-20 C to 40 C [-4 F to 104 F]			
Mounting Specifications	M6 screws (not supplied) should be tightened to 2 N•m [1.5 lb•ft]			
Standards	ISO14119, PD/ISO/TS 19837			
Agency Approvals	CE			

IDEM SKORPION Rotary Trapped Key

Examples of trapped key systems

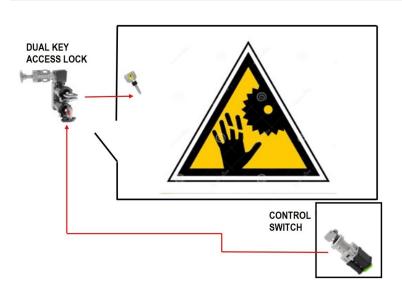




One Door/Gate With Only Partial Body Access				
Required Components				
If machine DOES NOT have run-down time	If machine DOES have run-down time			
(1) <u>800000-CS-A101</u>	(1) <u>800000-CS-SKR-A101</u>			
(1) <u>800001-A101</u>	(1) <u>800001-A101</u>			

NOTE:

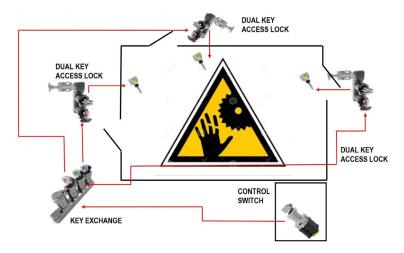
In order to avoid cross-controlling when multiple machines are in close proximity, A101 can be replaced with A102, A103, A104 or A105.



One Door/Gate With Whole Body Access				
Required Components				
If machine DOES NOT have run-down time	If machine DOES have run-down time			
(1) <u>800000-CS-A103</u>	(1) <u>800000-CS-SKR-A103</u>			
(1) <u>800003-A103</u>	(1) <u>800003-A103</u>			

NOTE: In order to avoid cross-controlling when multiple machines are in close proximity, A103 can be replaced with A104 or A105.

If whole body access is allowed, then the operator should remove a key from the access lock and retain the key while inside to prevent someone else from shutting the door and turning on the machine.



Three Doors/Gates With Whole Body Access				
Required Components				
If machine DOES NOT have run-down time	If machine DOES have run-down time			
(1) <u>800000-CS-A103</u>	(1) <u>800000-CS-SKR-A103</u>			
(1) <u>800005-A103</u>	(1) <u>800005-A103</u>			

NOTE: In order to avoid cross-controlling when multiple machines are in close proximity, A103 can be replaced with A104 or A105.

If whole body access is allowed, then the operator should remove a key from the access lock and retain the key while inside to prevent someone else from shutting the door and turning on the machine.

Dold Trapped Key System Overview

Trapped Key System

A trapped key system uses a series of mechanical locks and keys to control the access via gates or doors to operating equipment or machines, ensuring safe access to those machines. Systems are set up in a predefined sequence, preventing accidental access to operating equipment.

An operator must shut down machinery and lock it down, then remove the key and use the same key to unlock the door or doors that access the machinery. Keys are trapped and released in a sequential order.

- Main station has a switch module and optional solenoid actuator; Door stations have mechanical, rather than electrical, systems to provide safety for one or a series of gates.
- Allows control of a series of lock points.
- Human operation of locking/unlocking provides peace of mind of firsthand, observable safety.
- Cost-effective for multiple locks over a large area; eliminates cost of running electrical wiring over long distances.

Note: Ordering a larger gate set than needed for the number of gates in a system compromises the safety integrity of that system. Spare keys are not available.

Dold Standard and Solenoid Trapped Key Gate Sets

Dold Trapped Key System Gate Sets provide you with a full trapped key safety system, in one- to five-gate sets. They are available in either standard (SX) or solenoid-locking (ZRH) versions. All keys and their corresponding 01 and 10 modules are unique within a set. We also offer tongue key actuators (purchased separately from the gate sets), and optional items such as door actuators, captive safety key sets, key modules for key exchange box setup, and mounting plates.

See the following section, "Selecting a Dold Trapped Key Gate Set," for more information.

Tongue Key Actuators

Our gate sets require one or more tongue key actuators:

- Standard right-angle actuator (part no. <u>ST2317-T-ACTUATOR</u>).
- 4-spring actuator (part no. <u>ST2311-C-ACTUATOR</u>).
- Sliding actuator with spring (part no. ST2312-CS-ACTUATOR).

Accessories

The following optional actuator key sets can be used with any of our trapped key gate sets:

- Safety key (part no. <u>01-SAFETY-KEY-SET</u>) or padlock captive door actuator key (part no. <u>PADLOCKMODULE-SET</u>).
- Door actuator set (part no. <u>ACTUATOR-SET-B</u>) for use in "door at main" situation.
- Key module set for implementing a key exchange box (part no. 1001-KEYMODULE-SET).

Mounting Plates

- Steel plates sized to easily mount various configured trapped key stations.
- 8 pre-fabricated sizes.
- Mounting plate size depends on size and number of modules in your application.
- See Mounting Plates section for options.





ZRH-3GATE-SET

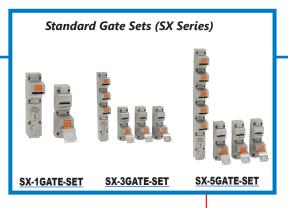
Selecting a Dold Trapped Key Gate Set

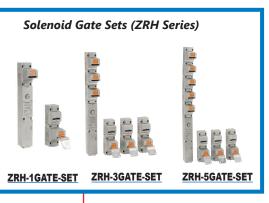




STEP 1

Select the required gate set type for your application, either standard or solenoid locking.





STEP 2

Select the required number of gates for your set (1-5).

Note: Selecting a larger set than needed can compromise the safety integrity of the system. (See Dold Trapped Key Interlock Gate Sets.)

SX Series SX-1GATE-SET SX-2GATE-SET SX-3GATE-SET SX-4GATE-SET SX-5GATE-SET ZRH Series ZRH-1GATE-SET ZRH-2GATE-SET ZRH-3GATE-SET ZRH-4GATE-SET ZRH-5GATE-SET

STEP 3

Select the required number of tongue key actuators to match the number of gates in your application. Select one tongue key actuator per gate. (See Tongue Key Lock Actuators.)



Actuator tongue, 90° mounting tab Order no. **ST2317-T-ACTUATOR**

Tongue Key Actuators

Actuator tongue, 90° flexible mounting tab Order no. ST2311-C-ACTUATOR

Accessories



Actuator tongue, 90° flexible handle Order no. **ST2312-CS-ACTUATOR**

STEP 4

Select optional accessories for your application. (See Dold Trapped Key Accessories.)



Key module kit Order no. 01-SAFETY-KEY-SET



Padlock module Order no. PADLOCKMODULE-SET



Gate actuator module Order no. ACTUATOR-SET-B



Safety key set Order no. 1001-KEYMODULE-SET

STEP 5

Select a mounting plate for your application. (See Dold Trapped Key Mounting Plates.)



Order part number:

ST2361100-PLATE-2 ST2362100-PLATE-3 ST2363100-PLATE-4 ST2364100-PLATE-5 ST2365100-PLATE-6 ST2366100-PLATE-7 ST2367100-PLATE-8 ST2368100-PLATE-9

Dold Trapped Key Interlock Gate Sets DUL





SX and ZRH Series

- Dold Safemaster trapped key modular and expandable interlock gate sets
- · Easy installation through comprehensive accessories
- · Wireless mechanical safeguarding
- One- to five-gate sets available
- Solenoid and standard versions available
- One conduit opening that accepts M20x1.5
- 316L stainless steel interlock safety switch body, coded trap key modules, coded keys, and tongue (key) gate actuator modules
- For safety applications up to PLe/Category 4 according to EN/ISO 13849-1
- Order actuating tongue (key) separately
- Includes 2 M4x50 T20 tamper proof screws provided for the main station installation and each additional door installation

Solenoid Gate Sets (ZRH)

- Interlocking safety switch with solenoid (24 VAC/DC), power to unlock
- 1 NC and 2 forced opening NO and NC changeover contacts for actuator tongue (key) status, 2 NC and 1 forced opening NO and NC changeover contacts for solenoid status

Standard Gate Sets (SX)

- 316L stainless steel body interlock safety
- 1 NC and 2 forced opening NO/NC changeover contacts







ZRH-1GATE-SET

	Dold Trapped Key Interlock Gate Sets*				
Part Number	Price	Description	Weight (kg [lb])		
ZRH-1GATE-SET	\$;0005e0:	Solenoid trapped key interlock system, 1-gate set. Includes 1 interlocking safety switch with solenoid, 2 coded trap key modules and 1 coded key, and 1 tongue (key) gate actuator module.	3.45 [7.6]		
ZRH-2GATE-SET	\$;0005e1:	Solenoid trapped key interlock system, 2-gate set. Includes 1 interlocking safety switch with solenoid, 4 coded trap key modules and 2 coded keys, and 2 tongue (key) gate actuator modules.	5.31 [11.7]		
ZRH-3GATE-SET	\$;0005e2:	Solenoid trapped key interlock system, 3-gate set. Includes 1 interlocking safety switch with solenoid, 6 coded trap key modules and 3 coded keys, and 3 tongue (key) gate actuator modules.	7.21 [15.9]		
ZRH-4GATE-SET	\$;0005e3:	Solenoid trapped key interlock system, 4-gate set. Includes 1 interlocking safety switch with solenoid, 8 coded trap key modules and 4 coded keys, and 4 tongue (key) gate actuator modules.	9.07 [20.0]		
ZRH-5GATE-SET	\$;0005e4:	Solenoid trapped key interlock system, 5-gate set. Includes 1 interlocking safety switch with solenoid, 10 coded trap key modules and 5 coded keys, and 5 tongue (key) gate actuator modules.	10.98 [24.2]		
SX-1GATE-SET	\$;0005e5:	Trapped key interlock system, 1-gate set. Includes 1 interlock safety switch, 2 coded trap key modules and 1 coded key, and 1 tongue (key) gate actuator module.	2.63 [5.8]		
SX-2GATE-SET	\$;0005e6:	Trapped key interlock system, 2-gate set. Includes 1 interlock safety switch, 4 coded trap key modules and 2 coded keys, and 2 tongue (key) gate actuator modules.	4.54 [10.0]		
SX-3GATE-SET	\$;0005e7:	Trapped key interlock system, 3-gate set. Includes 1 interlock safety switch, 6 coded trap key modules and 3 coded keys, and 3 tongue (key) gate actuator modules.	6.40 [14.1]		
SX-4GATE-SET	\$;0005e8:	Trapped key interlock system, 4-gate set. Includes 1 interlock safety switch, 8 coded trap key modules and 4 coded keys, and 4 tongue (key) gate actuator modules.	8.30 [18.3]		
SX-5GATE-SET	\$;0005e9:	Trapped key interlock system, 5-gate set. Includes 1 interlock safety switch, 10 coded trap key modules and 5 coded keys, and 5 tongue (key) gate actuator modules.	10.16 [22.4]		

^{*} See corresponding key transfer plans for each gate set.

Tongue Key Lock Actuators

- Tongue key lock actuators for use with Dold Trapped Key System gate sets
- Standard right-angle, 4-spring, and sliding with spring actuators available
- Includes one T20 tamper proof screw

ST2317-T-ACTUATOR



ST2311-C-ACTUATOR







Dold Trapped Key Interlock Actuator Tongue (Keys)					
Part Number	Weight g [lb]	Minimum Entry Radius			
ST2317-T-ACTUATOR	\$42pb:	Dold Safemaster actuator tongue (key), for trapped key interlock systems, 316L stainless steel, 90° mounting tab	45.4 [0.1]	NA	
ST2311-C-ACTUATOR \$04d#: Dold Safemaster actuator tongue (key), for trapped key interlock systems, 316L stainless steel, 90° flexible mounting tab		90.7 [0.2]	200mm (7.87 in)		
ST2312-CS-ACTUATOR	\$;004d!:	Dold Safemaster actuator tongue (key), for trapped key interlock systems, 316L stainless steel, flexible handle	408.2 [0.9]	NA	

Note: Spare keys compromise the safety of the system and are not available.

Dold Trapped Key Accessories



Accessory Sets

- Protection from being locked into machine
- TÜV certificate according to the legal and standard requirements
- For safety applications up to PLe/Category 4 according to EN/ISO 13849-1
- 316L stainless steel

1001-KEYMODULE-SET



1001-KEYMODULE-SET modifies an SX-GATE-SET or a ZRH-GATE-SET to implement a key exchange box. Uniquely keyed within itself, the

1001-KEYMODULE-SET allows for expansion of a key exchange plan.

ACTUATOR-SET-B



ACTUATOR-SET-B is a gate actuator. It can be added anywhere a gate function is required, so that the SX or ZRH module can be used to protect or to lock a gate (mounting it directly on the gate).

Example: Add to an SX or ZRH unit to add a gate lock at the main key station.

(Purchase tongue key separately.)

PADLOCKMODULE-SET



PADLOCKMODULE-SET adds a personal safety feature for protection against being locked into a gate. One or more personal padlocks can be applied to the module. While a padlock is fixed to the module, the system cannot be restarted.

module can be inserted in an SX or ZRH module or for individual protection on the actual gate modules.

01-SAFETY-KEY-SET



<u>01-SAFETY-KEY-SET</u> adds a personal safety key as protection against being locked into any module of an SX or ZRH gate set.

This key is normally trapped; when released the operator can take it while in the machine.

Dold Trapped Key Interlock Accessory Sets					
Part Number	Part Number Description				
1001-KEYMODULE-SET	1001-KEYMODULE-SET S004dz: Dold Safemaster key module set, for trapped key interlock systems, includes (2) 316L stainless steel coded trap key modules, (1) coded key, (1) bayonet mounting ring and (2) end modules		3.1		
PADLOCKMODULE-SET \$;004d[: Dold Safemaster padlock module, for trapped key interlock systems, 316L stainless steel. Includes bayonet mounting ring.		1.4			
ACTUATOR-SET-B \$;004d]:		Dold Safemaster gate actuator module, for trapped key interlock systems, 316L stainless steel. Includes bayonet mounting ring. Order actuating tongue (key) separately.	1.1		
01-SAFETY-KEY-SET	\$004dy:	Dold Safemaster safety key set, for trapped key interlock systems. Includes (1) 316L stainless steel coded trap key module and (1) coded key	1.3		

Dold Trapped Key Mounting Plates **DOLD**



Mounting Plates

- For mounting trapped key interlock systems to gates or
- Choose a mounting plate based on the number of modules/gates in your application.
- 316 stainless steel
- T20 M4 x 40 mounting screws (2 tamper proof) included



ST2361100-PLATE-2 ST2362100-PLATE-3 ST2363100-PLATE-4 ST2364100-PLATE-5

ST2365100-PLATE-6 ST2366100-PLATE-7 ST2367100-PLATE-8 ST2368100-PLATE-9

Dold Trapped Key Interlock Mounting Plates					
Part Number	Price	Description	Weight (lbs)		
ST2361100-PLATE-2	\$06bv:	Dold Safemaster mounting plate, for trapped key interlock systems, 316L stainless steel, 40mm wide by 291mm long	0.8		
ST2362100-PLATE-3	\$06bx:	Dold Safemaster mounting plate, for trapped key interlock systems, 316L stainless steel, 40mm wide by 351mm long	1.0		
ST2363100-PLATE-4	\$06by:	Dold Safemaster mounting plate, for trapped key interlock systems, 316L stainless steel, 40mm wide by 411mm long	1.2		
ST2364100-PLATE-5	\$06bz:	Dold Safemaster mounting plate, for trapped key interlock systems, 316L stainless steel, 40mm wide by 471mm long	1.4		
ST2365100-PLATE-6	\$;06b]:	Dold Safemaster mounting plate, for trapped key interlock systems, 316L stainless steel, 40mm wide by 531mm long	1.6		
ST2366100-PLATE-7	\$;006b[:	Dold Safemaster mounting plate, for trapped key interlock systems, 316L stainless steel, 40mm wide by 591mm long	1.8		
ST2367100-PLATE-8	\$006b_:	Dold Safemaster mounting plate, for trapped key interlock systems, 316L stainless steel, 40mm wide by 651mm long	2.0		
ST2368100-PLATE-9	\$006b#:	Dold Safemaster mounting plate, for trapped key interlock systems, 316L stainless steel, 40mm wide by 711mm long	2.2		

Choosing a Mounting Plate

Choose a mounting plate based on the number of modules/gates in your application:

- ZRH counts as three.
- · SX counts as one.
- Each actuator counts as one.

Example: A ZRH-4GATE-SET requires four ST2361100-PLATE-2 and one ST2366100-PLATE-7.

Dold Trapped Key Safety and Electrical Specifications



Specifications				
	Standard (SX)	Solenoid (ZRH)		
Safety Cla	ssification and Reliability Data			
Switching Reliability (B10d)	2 x 10 ⁶ switc	ching cycles		
EN 954-1	Up to Ca	tegory 4		
ISO 13849-1	Up to	PLe		
Electrica	l and General Specifications			
Short Circuit Strength	4A max	fusing		
Rated Insulation Voltage	<60) V		
Contact Terminals	Cage tension plugs Min. 0.25 mm ² ; max 1.5 mm ² (16 to 22 AWG)			
Current Consumption	0.3W	6W		
Solenoid Voltage	NA	24 VAC/VDC		
Max. Switching Current	2A @ 24 \	/AC/VDC		
Enclosure Protection	IP 65 (electrical c	omponents only)		
Operating Temperature (Electrical Components)	-25 °C to + 65 °C [-13°F – 149°F]	-25 °C to + 60 °C [-13°F – 140°F]		
Storage Temperature (Electrical Components)	Storage temperature	e: - 40 °C to + 80 °C		
Operating/Storage Temperature (Mechanical Components)	- 75 °C to	o 140 °C		
Recommended Mounting Screws/Torque	M4; 2	2Nm		
Cable Entry	M20 x 1.5			
Solenoid Holding Force	>1000N			
Operating Speed (Key/Tongue)	Max 500 mm/s; Min 100 mm/s			
Switching Frequency (Contacts)	Max 360/h			
Agency Approvals	CE,	TUV		

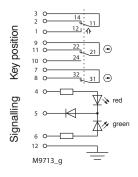
Note: To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific part number's web page.

Dold Trapped Key Safety and Electrical Specifications



Electrical Drawings and Travel Charts

SX Series



Locked while activated: Key inserted

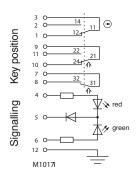
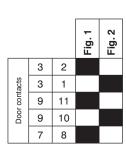


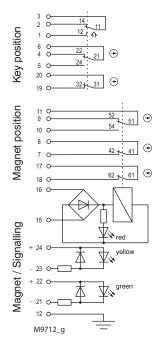
Fig. 2: Lock deactivated: Key removed



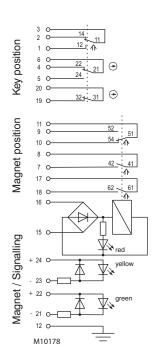
Switching logic



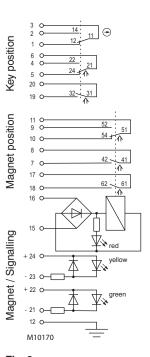
ZRH Series



Solenoid locking activated: Magnet locked, Key inserted

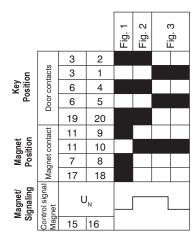


Solenoid locking deactivated: Magnet released, Key inserted



Solenoid locking deactivated: Magnet released, Key removed

Switching logic





The state shown in Figure 3 does not depend on the control signal of the magnet.

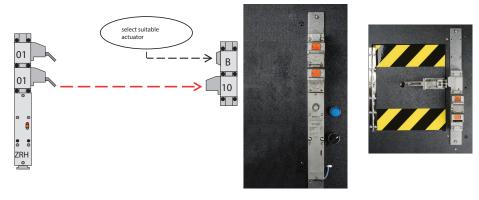
If the control signal is applied and the key inserted the solenoid locking changes to the state of Figure 2. If no signal is applied and the key inserted the solenoid locking changes to the state of Figure 1

Dold Trapped Key Transfer Plans





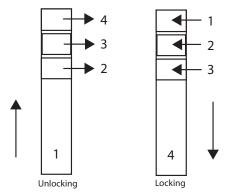
Example: 2-gate Set Mechanical Trapped Key Path



Keys trapped at main station (left). Door station with optional padlock module (right).

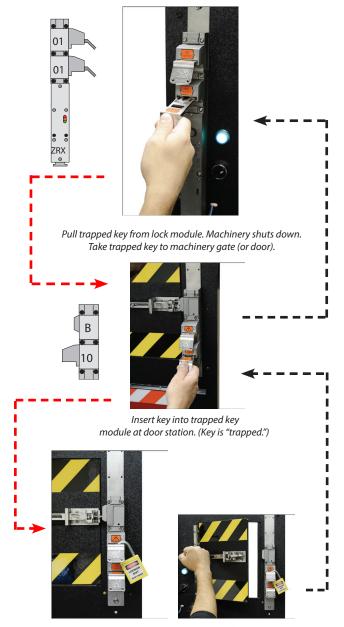
The following example shows the path of the mechanical key opening and closing one gate in a 2-gate set trapped key system.

Trapped Key Locking/Unlocking Sequence



In the locking sequence, when each module is activated, it releases the module above it. Similarly, during the unlocking sequence, when a module is locked, it allows locking of the module below it.

	Transfer Plan Legend			
Gate Sets				
SX	Standard key set base (main station)			
ZRH	Solenoid locking key set base (main station)			
01	Trapped key removal module (main station)	A-labeled keys		
В	Door actuator (door station)			
10	Trapped key Insertion module (door station)			
	Accessories			
10/01	Key exchange box (main station)	B-labeled keys		
V	Padlock Module (main station)	_		
В	Door actuator (main station)	_		
01	Safety key (door station)	C-labeled keys		



Remove (or optionally, lock out) optional safety key. (Access to machinery is unlocked. Enter machinery.)

Reverse steps to restart machine.

Dold Trapped Key Transfer Plans DOL

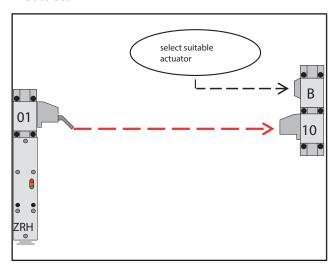




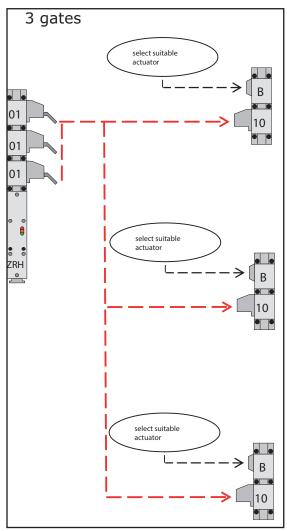
SX and ZRH Series

*ZRH Series gate sets shown. (SX series 01 modules have smaller footprint.)

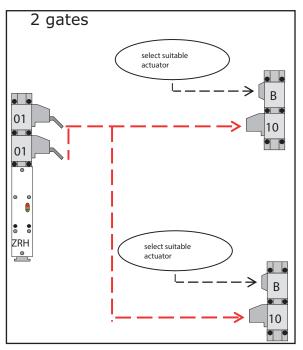
1-Gate Set



3-Gate Set



2-Gate Set



*Suitable actuators: ST2317-T-ACTUATOR ST2311-C-ACTUATOR ST2312-CS-ACTUATOR

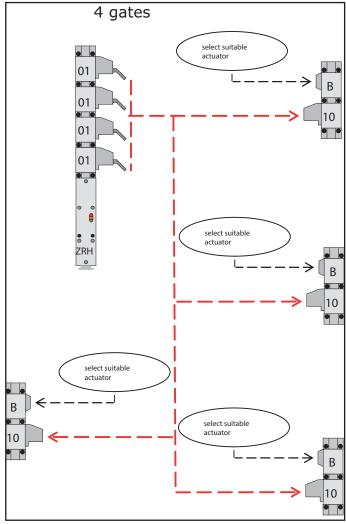
Transfer Plan Legend				
	Gate Sets			
SX	Standard key set base (main station)			
ZRH	Solenoid locking key set base (main station)			
01	Trapped key removal module (main station)	A-labeled keys		
В	Door actuator (door station)			
10	Trapped key Insertion module (door station)			
	Accessories			
10/01	Key exchange box (main station)	B-labeled keys		
V	Padlock Module (main station)	_		
В	Door actuator (main station)	_		
01	Safety key (door station)	C-labeled keys		

Dold Trapped Key Transfer Plans DOL





4-Gate Set



*Suitable actuators: ST2317-T-ACTUATOR ST2311-C-ACTUATOR ST2312-CS-ACTUATOR

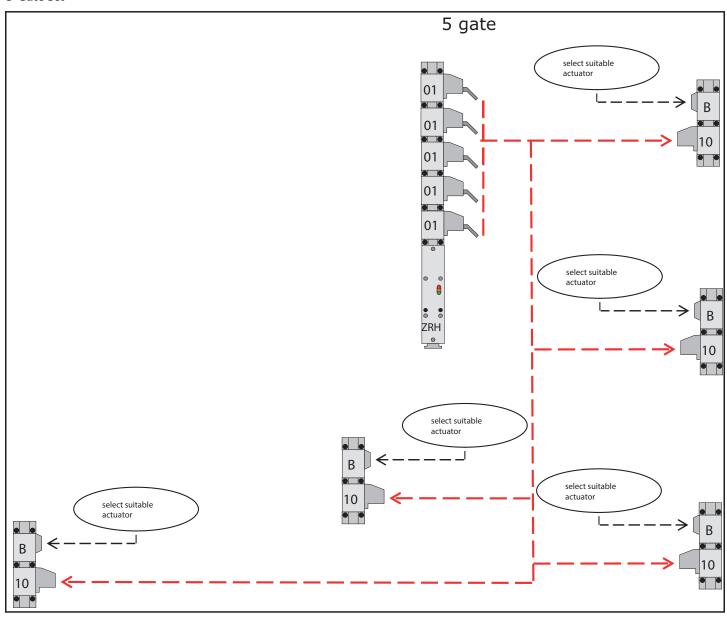
Transfer Plan Legend					
	Gate Sets				
SX	Standard key set base (main station)				
ZRH	Solenoid locking key set base (main station)				
01	Trapped key removal module (main station)	A-labeled keys			
В	Door actuator (door station)				
10	Trapped key Insertion module (door station)				
	Accessories				
10/01	Key exchange box (main station)	B-labeled keys			
V	Padlock Module (main station)	_			
В	Door actuator (main station)	_			
01	Safety key (door station)	C-labeled keys			

Dold Trapped Key Transfer Plans DOL





5-Gate Set



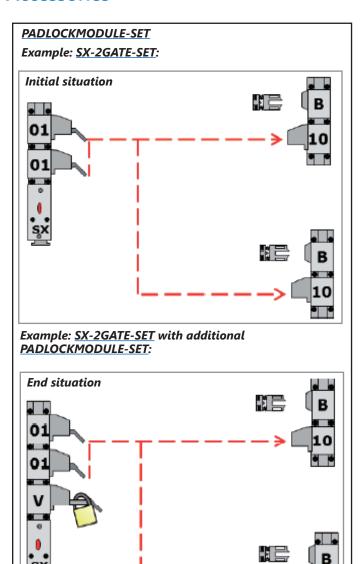
*Suitable actuators: ST2317-T-ACTUATOR ST2311-C-ACTUATOR ST2312-CS-ACTUATOR

	Transfer Plan Legend				
	Gate Sets				
SX	Standard key set base (main station)				
ZRH	Solenoid locking key set base (main station)				
01	Trapped key removal module (main station)	A-labeled keys			
В	Door actuator (door station)				
10	Trapped key Insertion module (door station)				
	Accessories				
10/01	Key exchange box (main station)	B-labeled keys			
V	Padlock Module (main station)	_			
В	Door actuator (main station)	_			
01	Safety key (door station)	C-labeled keys			

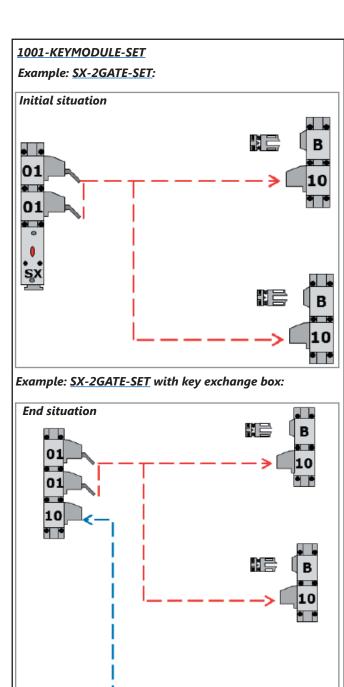
Dold Trapped Key Accessories



Accessories



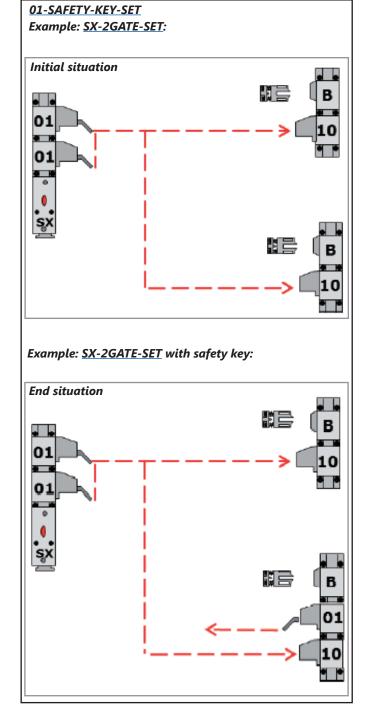
	Transfer Plan Legend				
	Gate Sets				
SX	Standard key set base (main station)				
ZRH	Solenoid locking key set base (main station)				
01	Trapped key removal module (main station)	A-labeled keys			
В	Door actuator (door station)				
10	Trapped key Insertion module (door station)				
	Accessories				
10/01	Key exchange box (main station)	B-labeled keys			
V	Padlock Module (main station)	_			
В	Door actuator (main station)	_			
01	Safety key (door station)	C-labeled keys			

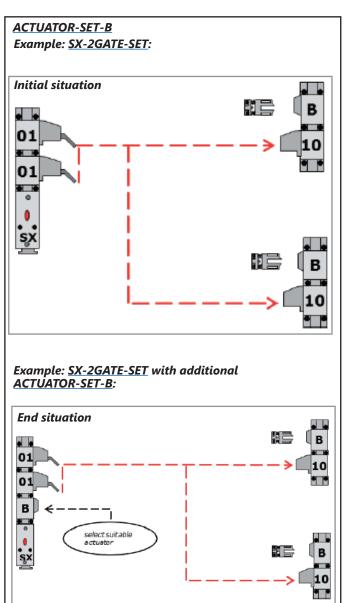


Dold Trapped Key Accessories



Accessories





	Transfer Plan Legend			
	Gate Sets			
SX	Standard key set base (main station)			
ZRH	Solenoid locking key set base (main station)			
01	Trapped key removal module (main station)	A-labeled keys		
В	Door actuator (door station)			
10	Trapped key Insertion module (door station)			
	Accessories			
10/01	Key exchange box (main station)	B-labeled keys		
V	Padlock Module (main station)	_		
В	Door actuator (main station)	_		
01	Safety key (door station)	C-labeled keys		

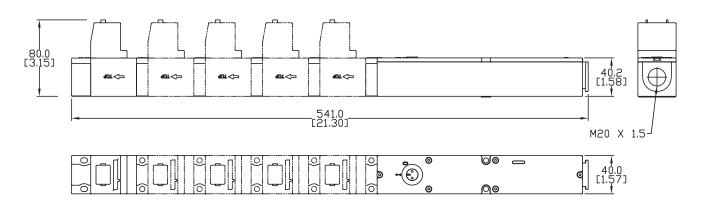


Dimensions

mm [in]

ZRH-XGATE-SET

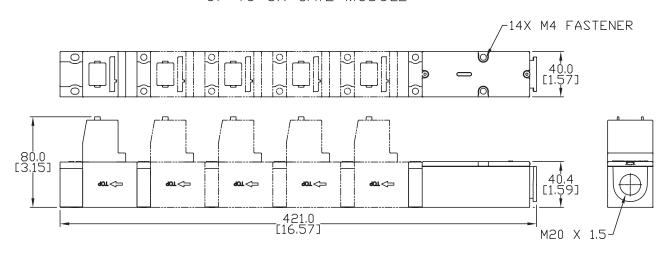
UP TO 5X GATE MODULE



Note: ZRH-XGATE-SET also includes 1-5 GATE ACTUATOR MODULES, depending on the gate set kit number (1-5).

SX-XGATE-SET

UP TO 5X GATE MODULE



Note: SX-XGATE-SET also includes 1-5 GATE ACTUATOR MODULES, depending on the gate set kit number (1-5).

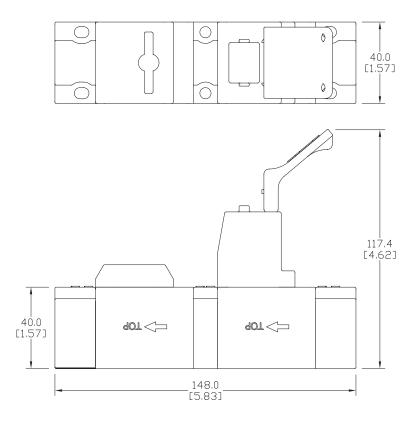


Dimensions

mm [in]

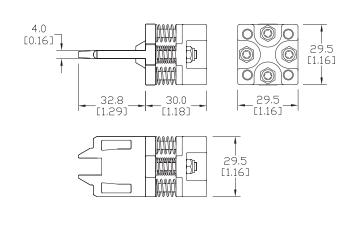
Gate Actuator Module

Gate actuator modules are included with both ZRH-XGATE-SET and SX-XGATE-SET. The number of gate actuator modules included in a gate set corresponds to the gate set number (1-5). Example: <u>ZRH-3GATE-SET</u> kit includes three gate actuator modules.



\$\frac{60.0}{2.36} \\ 44.0 \\ [1.73] \\ \frac{7}{1.73} \\ \frac{7}{1.16} \\ \frac{9.5}{2.9MM \times 90^{\circ}} \\ \frac{32.8}{1.49} \\ [1.49] \\ [0.20]

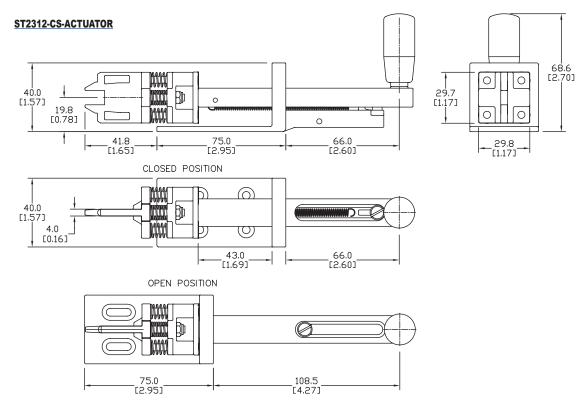
ST2311-C-ACTUATOR

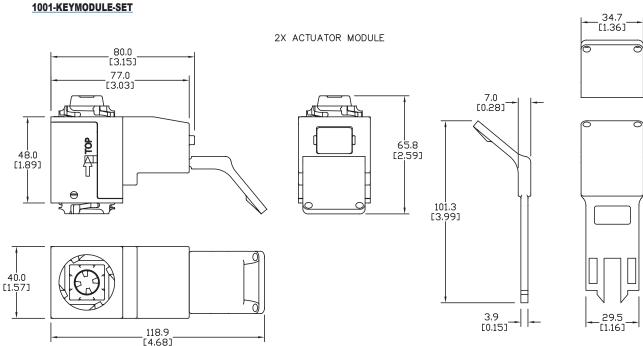




Dimensions

mm [in]



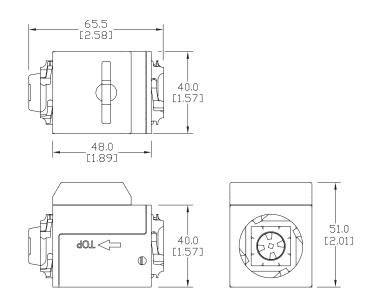




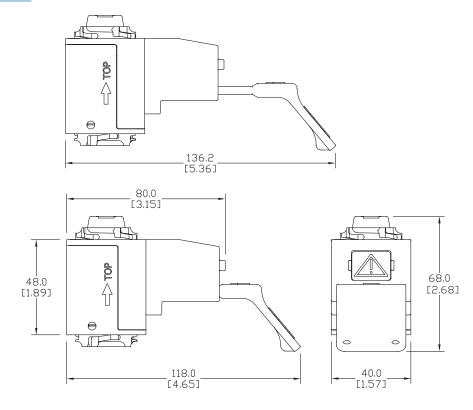
Dimensions

mm [in]

ACTUATOR-SET-B



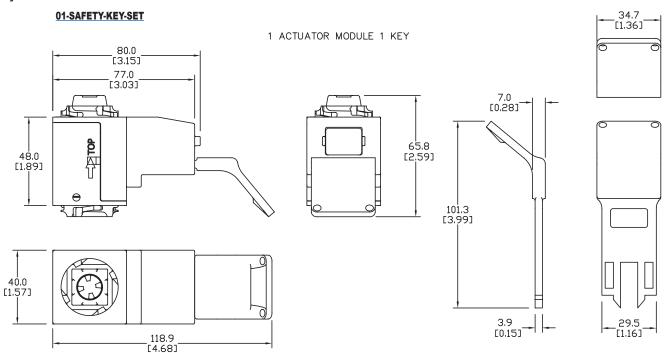
PADLOCKMODULE-SET





Dimensions

mm [in]



STX36XXXX-PLATE-X



	DIMENSION	TABLE	
PART NO.	А	В	# OF MODULE MNTG HOLES
STE361100-PLATE-2	231.0 [9.09]	266.0 [10.47]	8
STE362100-PLATE-3	291.0 [11.46]	326.0 [12.83]	10
STE363100-PLATE-4	351.0 [13.82]	386.0 [15.20]	12
STE364100-PLATE-5	411.0 [16.18]	446.0 [17.56]	14
STE365100-PLATE-6	471.0 [18.54]	506.0 [19.92]	16
STE366100-PLATE-7	531.0 [20.91]	566.0 [22.28]	18
STE367100-PLATE-8	591.0 [23.27]	626.0 [24.65]	20
STE368100-PLATE-9	651.0 [25.63]	686.0 [27.01]	22

Dold LG5944 Safety Mat Relay







- · Safety mat relay with manual or automatic restart
- Can also be used for safety edges
- Output: 2 N.O. contacts
- · Line fault detection at the ON pushbutton
- LED indicator for state of operation







Safety Data – Values per EN ISO 13849-1				
Category	3			
Performance level	е			
MTTF _d	703.0			
DC _{avg}	99.0%			
Safety Data – Values per IEC/EI	N 62061 /IEC/EN 61508			
SIL CL	3			
SIL	3			
HFT (Hardware Failure Tolerance)	1			
DC _{avg}	99.0%			
PFHD	6.7e-11			

Safety Relays Selection Chart					
Part Number	Price	Marking Type	Number of Safety Mat Inputs	Voltage	Outputs
LG5944-02-010-24	\$-0414j:	Dold safety relay module, safety	1 safety mat (2 or 4 wire configuration)		2 N.O. positive guided safety
LG5944-02-110-24	\$0414k:	mat/edges, dual channel, manual or automatic restart	2 safety mats (2 wire configuration only)	24VDC	contact(s)

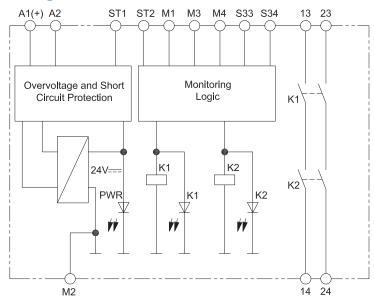
Relay Mat and Edge Specification Table			
General Specifications			
Temperature	Storage: -25°C to 85°C (-13°F to 185°F) Operating: -15°C to 55°C (5°F to 131°F)		
Altitude	< 2,000m (6562ft)		
Vibration Resistance	IEC/EN 60-068-2-6		
Degree of Protection	Housing: IP40; Terminals IP20		
Housing	UL 94V-0 Thermoplastic; DIN mount 35mm (1.38 in) x 7.5 mm (0.30 in)		
Weight	Approx 200g (7.05 oz)		
Terminal Designation	EN 50005		
Wire Fixing	Box terminal with wire protection		
Wire Connection	Min. 60°C (140°F) copper conductors, 0.8 N•m (0.59 ft•lb) torque		
	Input Specifications		
Nominal Voltage	24VDC		
Voltage Range	0.9 to 1.2 VDC		
Maximum Consumption	DC approx. 1.6 W		
Control Voltage - S11	UN: 23VDC		
Control Current on S12, S22	40mA at UN		
Minimum Voltage on Terminals S12, S22 (when relay activated)	21VDC		
Short Circuit Protection	Internal		
Overvoltage Protection	Internal VDR (Voltage Dependent Resistor)		
	Output Specifications		
Electrical Contact Life	To 2A, AC 230V: 105 switching cycles IEC/EN 60 947-5-1		
Mechanical Life	10 x 10 ⁶ switching cycles		
Contact Type	Forcibly guided		
Operate Delay	Operate delay typ at UN: manual start 20ms; automatic start: 20ms		
Release Delay	Release delay typ at UN: Disconnecting the supply: 80ms.; Disconnecting S12, S22: 15ms		
Nominal Output Voltage	AC: 250V; DC: See continuous current limit curve in installation manual.		
Thermal Current (Ith)	Max. 5A per contact. See continuous current limit curve in installation manual.		
Short Circuit Strength	Max fuse rating: 10A gl (IEC/EN 60 947-5-1); Line circuit breaker: B 6A		
Switching Capacity	AC15: N.O. contacts: 3A/230V DC13: N.O. contacts: 2A/24V DC, 0.5A/110V AC; N.O. contacts: 2A/24V DC		
Switching Frequency	Max. 1,200 switching cycles/hr		
Agency Approvals	cULus file E107778, CE, RoHS, TUV		

To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific part number's web page at www.AutomationDirect.com

Dold LG5944 Safety Mat Relay

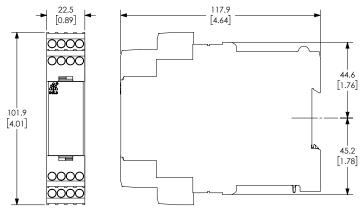


Block Diagram

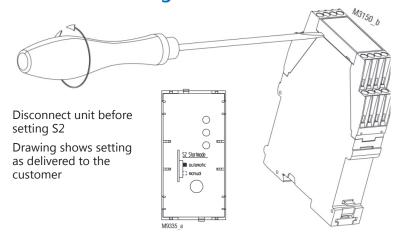


Dimensions

mm [in]



S2 Switch Setting Instructions

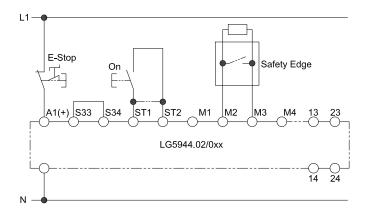


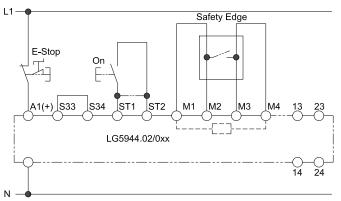
Dold Safety Relay Mat and Edge





Application Examples





Application example for /0xx

Safety device for safety edges Switches in pos.: S2: manual start

(for automatic restart S2 on autostart and ST1-ST2 bridged).

Connection: 2-wire circuit

Suited up to SIL3, Performance level e, Cat.3.

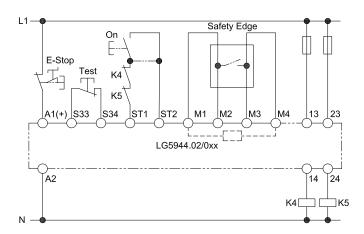
Application example for /0xx

Safety device for safety edges Switches in pos.: S2: manual start

(for automatic restart S2 on autostart and ST1-ST2 bridged).

Connection: 4-wire circuit

Suited up to SIL3, Performance level e, Cat.3.

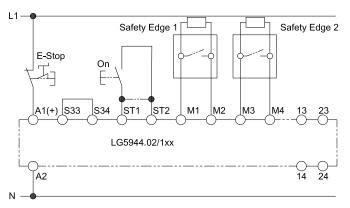


Application example for /0xx

Contact multiplication by external contactors.

The function of the external contactors is monitored by connecting the N.C. contacts into the feedback circuit.

ST1-ST2 (for automatic restart S2 on autostart and instead of the ON button, ST1-ST2 has to be bridged).



Application example for /1xx

Safety device for safety edges.

Switches in pos.: S2: manual start

(for automatic restart S2 on autostart and ST1-ST2 bridged)

If only 1 sensor is connected to the M1/M2 sensor input, the M3/M4 sensor input has to be bridged with a resistor

(/10x: 1.2k ohm±1%; /11x: 8.2k ohm±1%).

Suited up to SIL3, Performance level e, Cat.3.

Dold UH6932 Speed Monitor Relays DOLD &







UH6932 speed monitoring safety relay modules use inputs from proximity sensors that are detecting rotating targets on the motor that needs monitoring.

- Two PNP or NPN sensors
- Adjustable range
- Monitors rotation and linear movement
- LED status indicators
- Time delay settings available

Safety Data – Values per EN ISO 13849-1				
Category	4			
Performance level	е			
MTTF _d	146.1 years			
DC _{avg}	99%			
Safety Data – Values per IEC/EN (62061/IEC/EN 61508			
SIL CL	3			
SIL	3			
HFT (Hardware Failure Tolerance)	1			
DC _{avg}	99%			
PFH _D	1.8e-10			

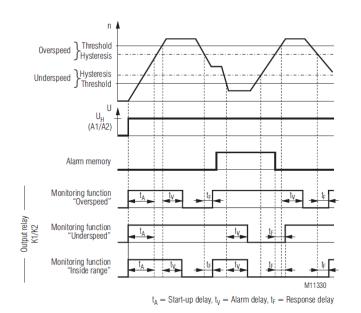
Safety Speed Monitor Relays Selection Chart					
Part Number Price Marking Type			Voltage	Sensor Input	Outputs
UH6932-02PS-24	\$0414b:	Digital speed-monitoring safety relay module	24VDC	NPN	2 N.O. and 1 N.C.
UH6932-02PS-010-24	\$0414c:	Digital speed-monitoring salety relay module	24VDC	PNP	Z IN.O. AIIQ T IN.O.

Safety Speed Monitor Relay Module Specification Table				
General Specifications				
Temperature	Storage: -20°C to 70°C (-4°F to 158°F) – Operating: -20°C to 60°C (-4°F to 140°F)			
Altitude	< 2,000m (6562ft)			
Vibration Resistance	IEC/EN 60-068-2-6			
Degree of Protection	Housing: IP40; Terminals IP20			
Housing	UL 94V-0 Thermoplastic; DIN mount 35mm (1.38 in) x 7.5 mm (0.30 in)			
Weight	320g (11.29 oz.)			
Agency Approvals and Standards	cULus file E107778, CE, RoHS			
Terminal Designation	EN 50005			
Wire Fixing	Captive slotted screw. Torque 0.8 Nm (7 lb-in)			
Input Specifications				
Nominal Voltage 24VDC				
Voltage Range	0.8 to 1.1 VDC			
Nominal Consumption	Typ 3.2 W			
Nominal Frequency	-			
Control Current	Maximum 30mA			
Overvoltage Protection	Internal VDR (Voltage Dependent Resistor)			
Sensor Inputs	Output: PNP or NPN HIGH-level: 10 - 26.4 VDC LOW-level: < 2VDC Min. pulse duration (e.g. on and off time): 75µs Input frequency: < 3kHz			
	Output Specifications			
Electrical Contact Life	To AC15 at 3A, 230V: 2.2x10 ⁵ switching cycles IEC/EN 60 947-5-1			
Mechanical Life	20x10 ⁶ switching cycles			
Contact Type	2 N.O. positively driven and 2 semiconductor monitoring outputs			
Reaction Time of Frequency Monitoring	Duration of 1 cycle (inverse value of adjusted frequency) + 10ms + adjusted response delay			
Nominal Output Voltage	250VAC			
Thermal Current (I _{th})	Max. 8A per contact. See continuous current limit curve in installation manual.			
Short Circuit Strength	Max fuse rating: 10A gl (IEC/EN 60 9470-5-1)			
Switching Capacity IEC/EN 60 947-5-1	AC15: 3A/230V; DC13: 2A/24V			
Switching Frequency	Max. 1,200 switching cycles/hr			

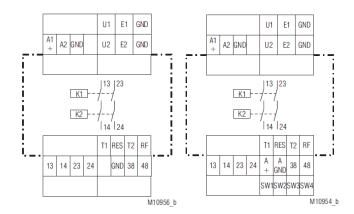
Dold UH6932 Speed Monitor Relays



Function Diagram

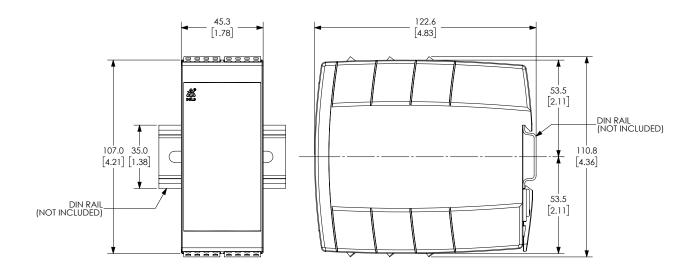


Block Diagram



Dimensions

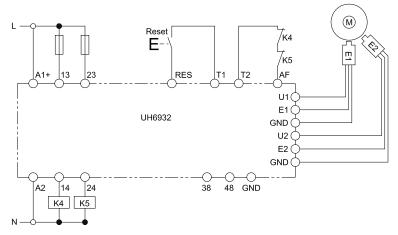
mm [in]



Dold UH6932 Speed Monitor Relays

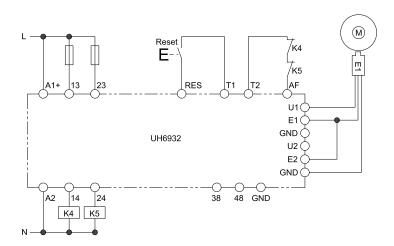


Application Examples



Standard connection

Suited up to SIL3, Performance Level e, Cat.4



Connection with a proximity sensor

Suited up to SIL2, Performance Level c, Cat.2

(To achieve Cat. 2, the safety function has to be tested on a regular basis.)

Dold UH6937 Frequency Monitor Relays





UH6937 frequency monitoring safety relay modules monitor the output frequency of inverters or rotor frequency of slip-ring motors

- No external sensors necessary
- Independent of direction
- Broken wire detection
- 2-channel operation for frequency monitoring
- LED status indicator
- Time delay settings available

Safety Data – Values per EN ISO 13849-1				
Category	4			
Performance level	е			
MTTF _d	139.6 years			
DC _{avg}	99%			
Safety Data – Values per IEC/EN	62061/IEC/EN 61508			
SIL CL	3			
SIL	3			
HFT (Hardware Failure Tolerance)	1			
DC _{avg}	99%			
PFH _D	1.9e-10			

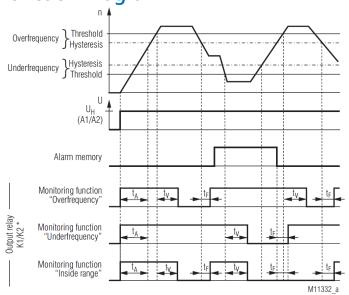
Safety Frequency Monitor Relays Selection Chart					
Part Number	Price	Marking Type	Frequency Range	Voltage	Outputs
UH6937-02PS-24	\$0414d:	Fraguency monitoring agents relay module	1-600 Hz	24VDC	2 N.O.
UH6937-02PS-100-24	\$0414e:	Frequency monitoring safety relay module	1-1000 Hz	24VDC	2 semiconductor

Safety Frequency Monitor Relays Specification Table			
General Specifications			
Temperature	Storage: -20°C to 70°C (-4°F to 158°F) Operating: -20°C to 60°C (-4°F to 140°F)		
Altitude	< 2,000m (6562ft)		
Vibration Resistance	IEC/EN 60-068-2-6		
Degree of Protection	Housing: IP40; Terminals IP20		
Housing	UL 94V-0 Thermoplastic; DIN mount 35mm (1.38 in) x 7.5 mm (0.30 in)		
Weight	320g (11.29 oz)		
Agency Approvals and Standards	cULus file E107778, CE, RoHS, TUV		
Terminal Designation	EN 50005		
Wire Fixing	Captive slotted screw. Torque 0.8 Nm (7 lb-in)		
Inj	put Specifications		
Nominal Voltage	24VDC		
Measuring/Motor Voltage	8 to 280 VAC for single phase 16 to 690 VAC for three-phase		
Response Value Uan	Variant /0: adjustable from 1-600Hz Variant /1: adjustable from 1-1000Hz		
Voltage Range	0.8-1.1 VDC		
Nominal Consumption	3.2W		
Nominal Frequency	-		
Overvoltage Protection	Internal VDR (Voltage Dependent Resistor)		
Out	tput Specifications		
Electrical Contact Life	To AC15 at 3A, 230V: 22x10 ⁵ switching cycles IEC/EN 60 947-5-1		
Mechanical Life	20 x 10 ⁶ switching cycles		
Contact Type	2 N.O. positively driven and 2 semiconductor outputs for monitoring		
Operate Delay on Standstill	Depends on setting; adjust by potentiometer		
Release Delay on Overspeed	t _{off} = typ. 700 ms		
Nominal Output Voltage	250VAC		
Thermal Current (Ith)	Max. 8A per contact. See continuous current limit curve in installation manual.		
Short Circuit Strength	Max fuse rating: 10A gl (IEC/EN 60 9470-5-1)		
Switching Capacity IEC/EN 60 947-5-1	AC15: N.O. contacts: 2A/230V; DC13 2A/24V		
Switching Frequency	Max. 1,200 switching cycles/hr		
Semiconductor Monitoring	100mA DC 24V; supply via A3+/A4		

Dold UH6937 Frequency Monitor Relays

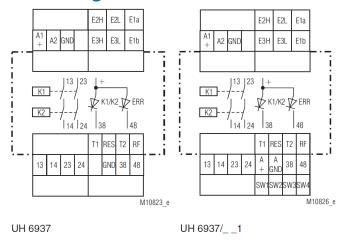






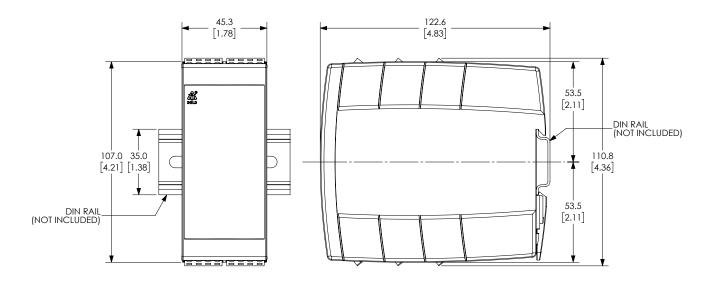
 $t_A = Start$ -up delay, $t_V = Alarm$ delay, $t_F = Reset$ delay

Block Diagram



Dimensions

mm [in]

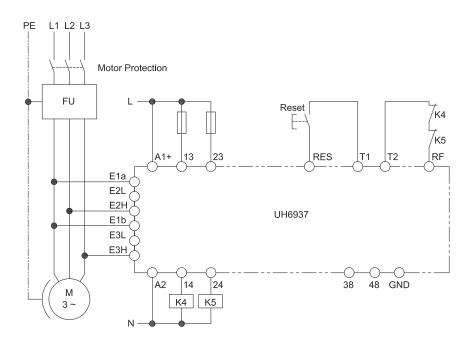


^{*} Depending on the direction of rotation monitoring

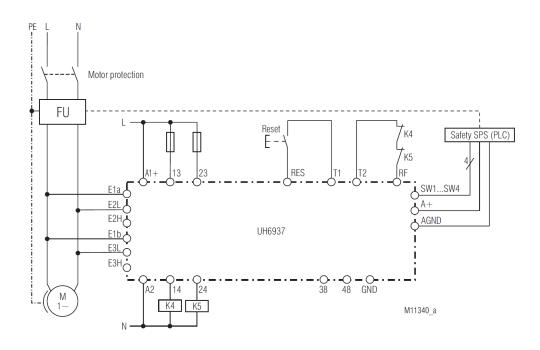
Dold UH6937 Frequency Monitor Relays



Application Examples



Inverter monitoring function, 3-phase, suited up to SIL3, Performance Level e, Cat. 4



Inverter monitoring function, single-phase, suited up to SIL3, Performance Level e, Cat. 4

Dold UF6925 Series 2-Channel Emergency Stop and Safety Gates





Designed to protect people and machines in applications with E-stop buttons and safety gates.

- 17.5 mm (0.69 in) slim housing
- Supply voltage 8-36 VDC
- Outputs: N.O. contacts (all models) plus 1 N.C. contact on UF6925-22-DC8-36
- Overvoltage and short-circuit protection
- Monitored restart
- LED indicators for power and state of operation

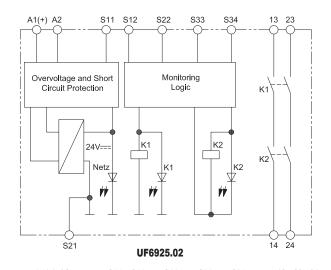
Safety Data – Values per EN ISO 13849-1								
Category	4							
Performance level	е							
MTTF _d	284.6 years							
DC _{avg}	99%							
Safety Data – Values pe	r IEC/EN 62061 /IEC/EN 61508							
SIL CL	3							
SIL	3							
HFT (Hardware Failure Tolerance)	1							
DC _{avg}	99%							
PFH _D	8.30e-11							

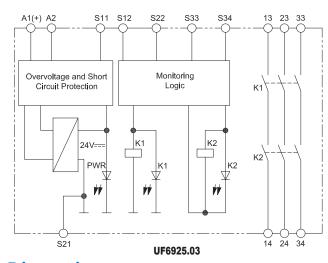
Safety Relays Selection Chart										
Part Number	Price	Marking Type	Voltage	Outputs						
UF6925-03-DC8-36	\$0414g:			3 N.O.						
UF6925-22-DC8-36	\$0414h:	2-channel E-STOP / GATE	8-36 VDC	2 N.O. and 1 N.C.						
UF6925-02-DC8-36	\$-0414i:			2 N.O.						

UF6925 Controllers Safety Relay Specification Table								
General Specifications								
Temperature	Storage: -25°C to 85°C (-13°F to 185°F)							
Altitude	< 2,000m (6562ft)							
Vibration Resistance	IEC/EN 60-068-2-6							
Degree of Protection	Housing: IP40; Terminals IP20							
Housing	UL 94V-0 Thermoplastic; DIN mount 35mm (1.38 in) x 7.5 mm (0.30 in)							
Weight	140g (4.94 oz)							
Agency Approvals and Standards	CSA, cULus file E107778, CE, RoHS, TUV							
Terminal Designation per EN 50 005 Wire Connections	Min. 60°C copper conductors 28-14 AWG							
Wire Fixing	Fixed spring clamp terminals							
Input Specifications								
Nominal Voltage	8-36 VDC							
Voltage Range	0.8-1.1 VDC							
Maximum Consumption	< 1.6 W at 24VDC; < 2.2 W at 8-36 VDC							
Nominal Frequency	-							
Minimum Off-time	150ms							
Control Voltage on S11 At UN	23VDC							
Control Current Typ. Over S12, S22	30mA at UN							
Min. Voltage on S12, S22 (relay activated)	19VDC							
Short Circuit Protection	Internal with PTC (Positive Temperature Coefficient resistor)							
Overvoltage Protection	Internal VDR (Voltage Dependent Resistor)							
Output Specifications								
Electrical Contact Life	AC 15 at 8A, 230VAC; > 1.0x105 switching cycles							
Mechanical Life	> 40x10 ⁶ switching cycles							
Contact Type	UF6925.02: 2 N.O. contacts – UF6925.03: 3 N.O. contacts UF6925.22: 2 N.O. contacts, 1 N.C. contact positively driven, N.O. contacts are safety contacts							
Operating time at UN	< 350ms							
Release Delay	< 90ms at 8-36 VDC — Disconnecting S12, S22: DC units: < 25ms							
Nominal Output Voltage	AC: 230V; DC: See continuous current limit curve in installation manual.							
Thermal Current (Ith)	Max. 8A. See continuous current limit curve in installation manual.							
Short Circuit Strength	Max. fuse rating: 8A gL (IEC/EN 60 947-5-1); Line circuit breaker: B 6A							
Switching Capacity (IEC/EN 60 947-5-1)	AC15 N.O. contact: 3A / 230VAC; N.C. contact 1A / 230VAC DC13 N.O. contact: 2A / 24VDC; N.C. contact: 2A / 24VDC DC13 N.O. contact: 4A / 24VDC at 0.1 Hz; N.C. contact: 4A / 24VDC at 0.1 Hz							
Switching Frequency	Max. 1200 switching cycles/hr							

Dold UF6925 Series 2-Channel Emergency Stop and Safety Gates

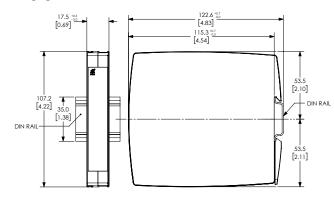
Block Diagrams





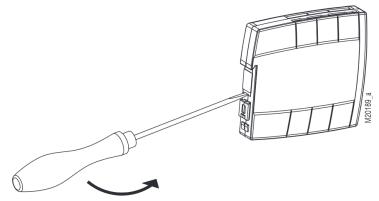
Dimensions

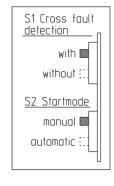
mm [in]



A1(+) A2 S11 S12 S22 S33 S34 13 23 31 Monitoring Overvoltage and Short Circuit Protection K2 K1 24V= |K2 PWR K1 14 24 32 UF6925.22

S1 and S2 Switch Setting Instructions





M11589 a

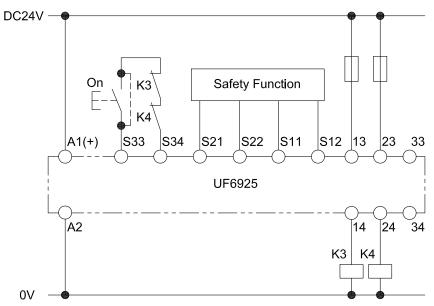
The selection of the functions auto start, manual start, with or without cross fault monitoring, is done with switches S1 and S2. These switches are located behind a cover at the back of the device. The setting of S1 and S2 must be made before starting the device.

Disconnect unit before setting S1 and S2.

Drawing shows setting as delivered to the customer.

Dold UF6925 Series 2-Channel Emergency Stop and Safety Gates

Application Examples

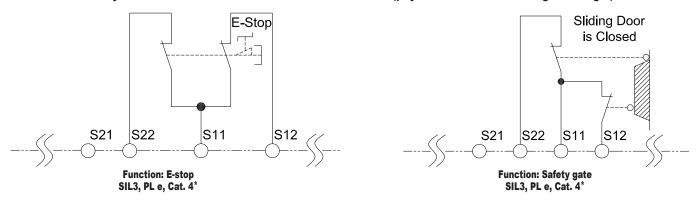


A jumper must be fitted at S33-S34 for the automatic ON function. The ON pushbutton is not required. The required start function has to be selected on switch S1 before starting the device. See "Unit Programming."

Safety function for units with cross fault detection (pay attention to "Unit Programming"!)



Safety function for units without cross fault detection (pay attention to "Unit Programming"!)



^{*} To achieve the safety classification, cross fault wiring must be installed.





PROTECT-SELECT-CC-AD

The PROTECT SELECT compact safety module offers greater flexibility during installation and integration of safety systems into machine functions. Thanks to the four preloaded safety programs, programming skills are not required as with conventional safety PLCs. These programs can be selected and further modified via the rocker switch and screen. Program information, device status, warnings, and errors are shown on the graphic color display in plain text for quick and easy diagnostics.

The module provides monitoring of all common safety sensors:

- Emergency stop
- · Safety light curtains
- · Safety switches
- · Four-wire safety mats
- Two-hand control

This saves time and money during project planning, wiring, programming, functional testing and maintenance.

Features

- · Simple and flexible parameter setting
- · No programming skills required
- Up to 18 safety inputs (9 pairs) for redundant inquiry of all common safety sensors
- 4 safety semiconductor outputs
- 2 safety relay outputs
- Replaces up to 8 safety monitoring modules up to PLe/SIL 3
- Error and status messages in plain text
- Multilingual menu navigation via color display

Safety Data Values per EN ISO 13849-1, EN 62061, IEC 61508								
Performance Level	Up to e							
MTTF(d)	>100 years							
DC Average	High							
SIL CL	Up to 3							
HFT (Hardware Failure Tolerance)	1							
SFF	>90							
PFH(D)	1.78x10 ⁻⁸ (valid for dual channel and 60% load)							

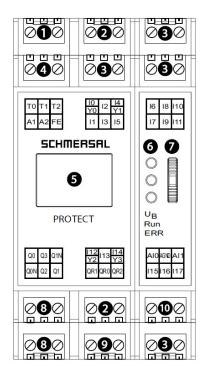
Schmersal PROTECT SELECT Selection Chart										
Part Number	Price	Number of Configurations	Safety Input Type	Outputs	Status Outputs	Connection	Drawing			
PROTECT-SELECT-CC-AD	\$06c9h:	4 programs	18 digital	2 NO and 4 OSSD (2 pairs and 2 singles)	4 status outputs	Removable cage terminals	<u>PDF</u>			
PROTECT-SELECT-SK-AD	\$06c9g:	4 programs	18 digital	2 NO and 4 OSSD (2 pairs and 2 singles)	4 status outputs	Removable screw terminals	<u>PDF</u>			

Schmersal PROTECT SELECT Specifications								
Input/Output Specifications								
Operating Temperature -25°C [-13°F] to 55°C [131°F]								
Vibration Resistance	Tested to EN 60068-2-6							
Degree of Protection	IP20							
Housing	Polyamide / V0							
Weight	300g [10.6 oz]							
Agency Approvals	CE, UL (listed number E57648)							
Wire Fixing	Plug-in terminals							
Cable Section Min/Max	0.25 mm ² [24 AWG] - 2.5 mm ² [14 AWG]							
Operating Voltage Range	19.2 to 28.8 VDC							
Maximum Consumption	Max 500mA (plus load of semiconductor outputs)							
	Input/Output Specifications							
Digital Inputs	Up to 18 single channel; up to 9 dual channel							
Test Outputs	3							
Safe Semiconductor Outputs	2 pairs and 2 single channel							
Safe Relay Outputs	2							
Signaling Outputs	Up to 4							
Switching Frequency (Max)	0.1 Hz							
Overvoltge Protection	Category III							
Operate Delay	Semiconductor inputs: 30ms Relay outputs: 50ms							
Release Delay	Semiconductor inputs: 45ms Relay outputs: 65ms							
Nominal Output Voltage	24VDC							

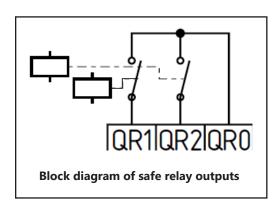


Terminal Descriptions									
	A1	+24VDC							
Voltage	A2	0VDC							
	FE	Functional ground connection							
Inputs	10 - 117	Safety digital inputs							
	Q0, Q0N	Safe semiconductor output p/n switching							
	Q1, Q1N	Safe semiconductor output p/n switching							
	Q2	Safe semiconductor output p-switching							
	Q3	Safe semiconductor output p-switching							
Outputs	QR0	Supply of safe relay output							
	QR1	Safe relay outputs							
	QR2	Safe relay outputs							
	Y0-Y3	Operational outputs (signalling output)							
	T0-T2	Clock outputs for the supply of safe digital inputs for short-circuit recognition							

Connection and operating elements



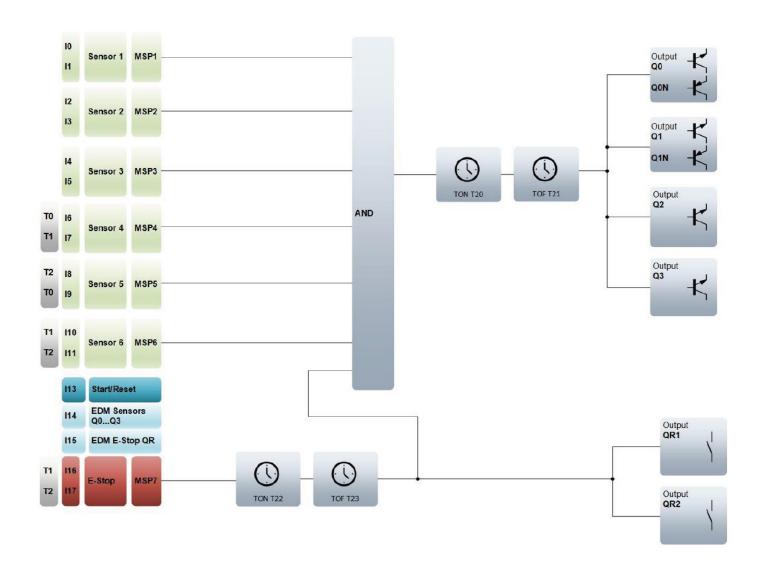
- 1 Cycle outputs T0...T2
- 2 Safe inputs / optional signalling outputs
- 3 Safe inputs
- 4 Supply voltage
- 5 Graphic colour display
- 6 Status LEDs
- 7 Rocker switch
- 8 Safe semi-conductor outputs
- 9 Safe relay outputs
- 10 Safe analog inputs





Program 1 Functional Diagram

Collector module for six configurable safety devices with global E-Stop functionality



MSP = Multifunctional Sensor Processor

A parameter assigned by a 3-digit hexadecimal number. The first digit describes the sensor. The second digit describes the additional function, and the third digit describes the contact properties. For further information, refer to the manual.

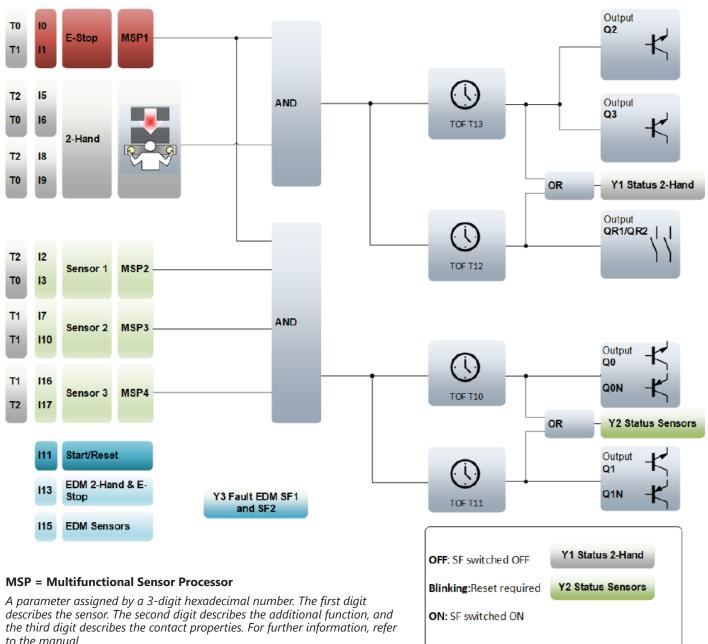
TON = Timer ON delay

Switching ON delay

TOF = Timer OFF delay



Program 2 Functional Diagram



to the manual.

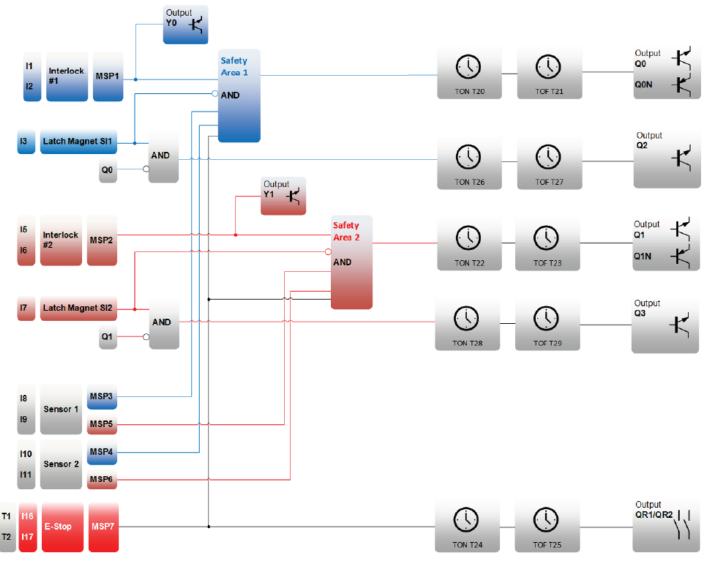
TON = Timer ON delay

Switching ON delay

TOF = Timer OFF delay



Program 3 Functional Diagram





Release E-Stop requires valid EDM on I12 (E-Stop/QR), I14 (Safety Area 1/Q0) and I15 (Safety Area 2/Q1)

MSP = Multifunctional Sensor Processor

A parameter assigned by a 3-digit hexadecimal number. The first digit describes the sensor. The second digit describes the additional function, and the third digit describes the contact properties. For further information, refer to the manual.

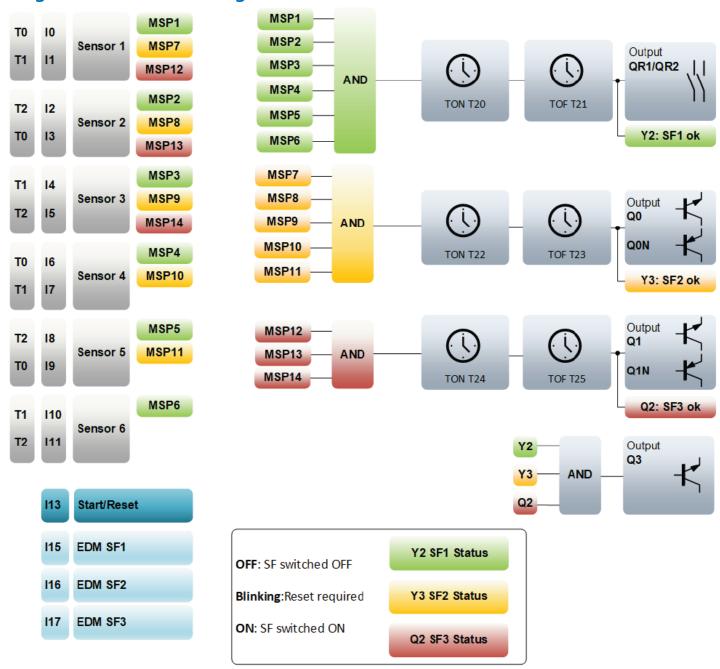
TON = Timer ON delay

Switching ON delay

TOF = Timer OFF delay



Program 4 Functional Diagram



MSP = Multifunctional Sensor Processor

A parameter assigned by a 3-digit hexadecimal number. The first digit describes the sensor. The second digit describes the additional function, and the third digit describes the contact properties. For further information, refer to the manual.

TON = Timer ON delay

Switching ON delay

TOF = Timer OFF delay

Schmersal Configurable Safety Relays





SRB-E Electronic Safety Relays

The SRB-E modules are a series of multi-functional, configurable electronic safety relays. Each module can be adjusted to one of multiple preset configurations, which include selecting the type of reset, activating or deactivating cross-wire monitoring, and selecting the monitored contact configuration – all via the rotary dial on the front of the unit.

The SRB-E series provides a higher level of diagnostic capabilities with LEDs for both controller status as well as error fault codes, assisting with troubleshooting safety circuits.

Once the configurations have been set, the lid may be closed and sealed to prevent tampering with the settings.

Features

- · Modules with safe PNP outputs
- · Modules with safe relay outputs
- Modules with monitoring of two-hand controls
- Modules with monitored input expansion up to Cat 4 PLe
- Fast cycle times (60 switching cycles/min)
- Modules with high 5.5A PNP switching capacity
- Snap-in blank equipment labels
- Removable terminal blocks for easy wiring

Schmersal SRB-E Electronic Safety Relays Selection Chart																					
				Safety guard monitoring	Pull wire emergency stop	Magnetic safety sensors	Light curtains	Input expander module for up to 4 sensors	Two hand control panels	Input signals: 1 channel	Input signals: 2 channel	Input signals: antivalent	Cross-wire detection	Start button/ autostart	Start button with edge detection	Safe Stop 0 dry contact	Safe Stop 0 semiconductor	Safe Stop 1 dry contact	Safe Stop 1 semiconductor	Not safe dry contact	Not safe semiconductor
											√ A	LLOWA	ABLE								
Part Number	Price	Drawing			App	olicatio	ons				Input S	Signals	3	Sta Cond			0	utput (Contac	ts	
SRB-E-201LC	\$06c91:	PDF	✓	✓	✓	✓	✓			✓	✓	✓	✓		✓		2				1
<u>SRB-E-201ST</u>	\$06c92:	PDF	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓		✓		2				1
SRB-E-201ST-CC	\$06c93:	<u>PDF</u>	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓		✓		2				1
<u>SRB-E-301ST</u>	\$06c94:	PDF	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	3				1	
SRB-E-301ST-CC	\$06c95:	<u>PDF</u>	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	3				1	
<u>SRB-E-402EM</u>	\$06c96:	<u>PDF</u>	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	4				2	
<u>SRB-E-232ST</u>	\$06c97:	PDF	✓	✓	✓	✓	✓			✓	✓	✓	✓		✓		2	3		1	1
SRB-E-232ST-CC	\$06c98:	<u>PDF</u>	✓	✓	✓	✓	✓			✓	✓	✓	✓		✓		2	3		1	1
<u>SRB-E-322ST</u>	\$06c99:	<u>PDF</u>	✓	✓	✓	✓	✓			✓	✓	✓	✓		✓	3			2	1	1
SRB-E-322ST-CC	\$06c9a:	<u>PDF</u>	✓	✓	✓	✓	✓			✓	✓	✓	✓		✓	3			2	1	1
<u>SRB-E-204ST</u>	\$06c9b:	PDF	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓		2				4
SRB-E-204ST-CC	\$06c9c:	PDF	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓		2				4
SRB-E-204PE	\$;06c9f:	PDF	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓			2				4
			C	ombii	natio	n Mod	lule fo	or Tw	o Pro	tectiv	re De	vices									
SRB-E-402ST	\$06c9d:	PDF	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓		✓	2	2			1	1
SRB-E-402ST-CC	\$06c9e:	PDF	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓		✓	2	2			1	1

Notes:

Stop Category 0 (Stop 0) means immediate loss of power. This is often referred to as an uncontrolled stop.

Stop Category 1 (Stop 1) means there is a delay before the loss of power. The control system should bring the machine to a stop prior to the loss of power. This is often referred to as a controlled stop with removal of power.

Schmersal SRB-E-201 and SRB-E-301 Configurable Safety Relays





SRB-E-301ST

Features

- Pluggable screw terminals or cage clamps
- SAFE STOP 0 function
- 1 or 2-channel control
- Start button / auto-start
- High 5.5 A PNP switching capacity (201ST only)
- Safe PNP outputs (201LC and 201ST only)
- Safe relay outputs (301ST only)
- Monitoring of two-hand controls (201ST only)

Safety Data Values per EN ISO 13849-1, EN 62061, IEC 61508								
Performance Level	Up to e							
DC Average	High							
SIL CL	Up to 3							
HFT (Hardware Failure Tolerance)	1							
PFH(D)	≤ 2.66x10 ⁻⁹ /h (valid for dual channel and 60% load)							

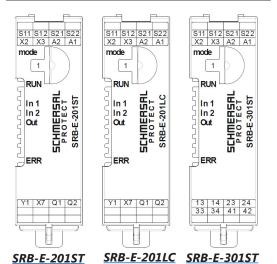
Schmersal SRB-E-201 and SRB-E-301 Selection Chart										
Part Number	Price	Туре	Voltage	Connection	Configurations	Safety Input	Safety Output	Monitoring Outputs	Drawing	
SRB-E-201LC	\$06c91:		24 VDC	Diversible corew terminals	10		2 OSSD 3 NO	1 status	<u>PDF</u>	
SRB-E-201ST	\$06c92:		24 VDC	Pluggable screw terminals Push-in cage clamp	11	1 pair digital			<u>PDF</u>	
SRB-E-201ST-CC	\$06c93:	Safety relay	24 VDC		11				<u>PDF</u>	
SRB-E-301ST	\$06c94:	lolay	24 VAC/VDC	Pluggable screw terminals	12			1 NC	<u>PDF</u>	
SRB-E-301ST-CC	\$06c95:		24 VAC/VDC	Push-in cage clamp	12				<u>PDF</u>	

Schmersal SRB-E-201 and SRB-E-301 Specifications							
Input/Output Specifications							
Operating Temperature	-25°C [-13°F] to 60°C [140°F]						
Storage Temperature	-40°C [-40°F] to 85°C [185°F]						
Altitude	2000m [6562ft] max						
Vibration Resistance	Tested to EN 60068-2-6						
Degree of Protection	IP40						
Housing	Glass-fiber reinforced thermoplastic, ventilated						
Weight	130g [4.59 oz] for 201ST and 201LC 175g [6.17 oz] for 301ST						
Agency Approvals and Standards	CE, UL (listed number E57648)						
Terminal Designation per EN 50005	EN 60947-1						
Wire Fixing	Plug-in terminals						
Cable Section Min/Max	0.25 mm ² [24 AWG] – 2.5 mm ² [14 AWG]						
Switching Frequency, Max	0.3 Hz						
	Input/Output Specifications						
Operating Voltage Range	19.2 to 28.8 VDC for 201ST and 201LC 19.2 to 28.8 VAC/VDC for 301ST						
Maximum Consumption	2.4 W (plus load of semiconductor outputs)						
Overvoltage Protection	Category III						
Control Voltage on S11 etc.	24VDC						
Control Current Over S12 etc.	8mA						
Mechanical Life	10 ⁷ operations						
Contact Type	Ag-Ni, self-cleaning, positive drive						
Operating Delay (Pull-In Delay)	<150ms						
Release Delay (Drop-Out Delay)	<10ms						
Switching Capacity	201ST: 24VDC, max 5.5 A 201LC: 24VDC, max 2.0 A 301ST: dry contacts, max 250V / 6A						

Schmersal SRB-E-201 and SRB-E-301 Configurable Safety Relays



Те	Terminal Descriptions								
Pin	Function								
A1	Operating voltage + 24 VDC 24 VAC (SRB-E-301ST)								
A2	Operating voltage 0 V 24 VAC (SRB-E-301ST)								
X2	Input of start circuit								
X 3	Input feedback circult								
X7	Input release signal								
S11/S21	Test pulse outputs								
S12	Input channel 1								
S22	Input channel 2								
Y1	Signalling output (NC)								
41/42	Signalling contact (NC)								
Q1/Q2 13/14 23/24 33/34	Safety outputs								



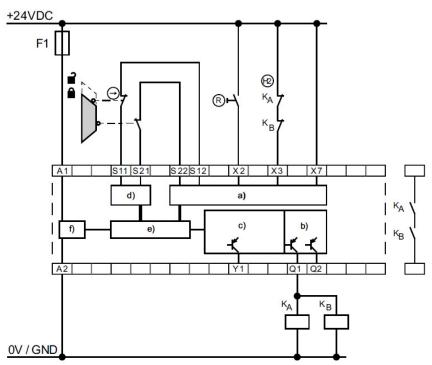
	LED Indication Descriptions				
LED	Function				
RUN	Operating voltage OK – RUN mode				
ERR	Error code				
In 1	High level at S12				
In 2	High level at S22				
Out	Out Outputs activated				
	NOTE: For flash codes, refer to product manual				

Configuration Selection							
Rotary Knob Position	Reset Button	Cross-Wire Monitoring Active	Input / Sensor Configuration	Monitoring of Sensor Channels For Synchronization			
С		Configuration	Mode				
1	Trailing Edge	Yes	NC / NC	Yes			
2	Trailing Edge	Yes	NC / NC	No			
3	Trailing Edge	No	NC / NC	Yes			
4	Trailing Edge	No	NC / NC	No			
5	Trailing Edge	Yes	NC / NO	Yes			
6	Autostart	Yes	NC / NO	No			
7	Autostart	Yes	NC / NC	Yes			
8	Autostart	Yes	NC / NC	No			
9	Autostart	No	NC / NC	Yes			
10	Autostart	No	NC / NC	No			
11	Function two-hand co	ontrol type IIIC (SRB-E-201ST)	NC/NO, NC/NO	Yes			
	SRB-E	-301ST: Evaluation of sa	fety mats SMS				
12	Autostart	No	NC / NC	No			
13	Trailing Edge	No	NC / NC	No			

Schmersal SRB-E-201 and SRB-E-301 Configurable Safety Relays



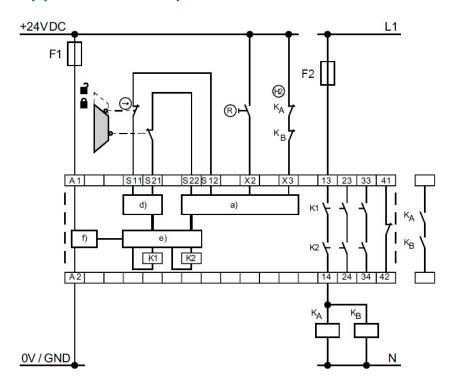
Application Example for <u>SRB-E-201ST</u> and <u>SRB-E-201LC</u>



Key

- a) Safety inputs
- b) Safety outputs
- c) Signalling outputs
- d) Clock outputs
- e) Processing
- f) Power

Application Example for SRB-E-301ST



Key

- a) Safety inputs
- b) Safety outputs
- c) Signalling outputs
- d) Clock outputs
- e) Processing
- f) Power

Schmersal SRB-E-402EM Expansion Module





Features

- Extension module for contact duplication
- 4 safety contacts with SAFE STOP 0
- 2 signal outputs

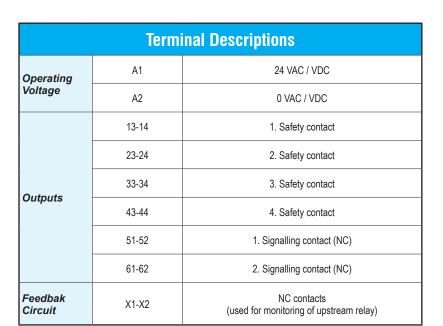
Safety Data Values per EN ISO 13849-1, EN 62061, IEC 61508				
Performance Level Up to e				
DC Average	High			
SIL CL	Up to 3			
HFT (Hardware Failure Tolerance)	1			
PFH(D)	≤ 2x10 ⁻⁸ /h			

SRB-E-402EM

	Schmersal SRB-E-402EM Selection Chart							
Part Number	Price	Туре	Voltage	Connection	Safety Input	Safety Output	Monitoring Outputs	Drawing
<u>SRB-E-402EM</u>	\$06c96:	Safety relay extension	24 VAC/VDC	Pluggable screw terminals		4 NO	2 NC	PDF

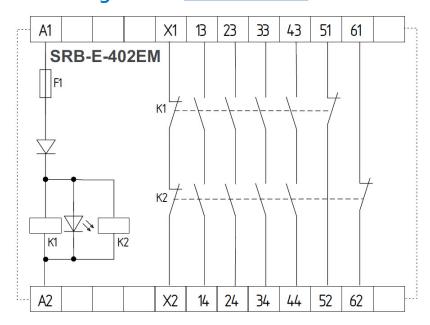
Schmersal SRB-E-402EM Specifications						
Input/Output Specifications						
Operating Temperature	-25°C [-13°F] to 60°C [140°F]					
Storage Temperature	-40°C [-40°F] to 85°C [185°F]					
Altitude	2000m [6562ft] max					
Vibration Resistance	Tested to EN 60068-2-6					
Degree of Protection	IP40					
Housing	Glass-fiber reinforced thermoplastic, ventilated					
Weight	215g [7.58 oz]					
Agency Approvals and Standards	CE, UL (listed number E57648)					
Terminal Designation per EN 50005	EN 60947-1					
Wire Fixing	Plug-in screw clamps					
Cable Section Min/Max	0.25 mm ² [24 AWG] - 2.5 mm ² [14 AWG]					
Switching Frequency, Max	NA					
Input/Output Specifications						
Operating Voltage Range	20.4 to 28.8 VDC					
Maximum Consumption	1.3 W					
Overvoltage Protection	Category III					
Mechanical Life	10 ⁷ operations					
Contact Type	Ag-Ni, self-cleaning, positive drive					
Operating Delay (Pull-In Delay)	Max 35ms					
Release Delay (Drop-Out Delay)	Max 35ms					
Switching Capacity	NC safety contacts: Max 24V / 6A NO aux contacts: 24VDC / 2A					

Schmersal SRB-E-402EM Expansion Module

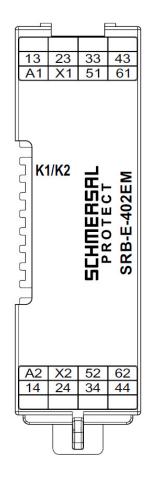


NOTE: Signalling contacts must not be used in safety circuits.

Block Diagram for **SRB-E-402EM**







SRB-E-402EM

Schmersal SRB-E-232 Configurable Safety Relay





Features

- Pluggable screw terminals or cage clamps
- SAFE STOP 0 and SAFE STOP 1 function
- 1 or 2-channel control
- Drop-out delay 0-30 s

Safety Data Values per EN ISO 13849-1, EN 62061, IEC 61508					
Performance Level Up to e					
DC Average	High				
SIL CL	Up to 3				
HFT (Hardware Failure Tolerance) 1					
PFH(D)	≤ 2.66x10 ⁻⁹ /h				

SRB-E-232ST-CC

Schmersal SRB-E-232 Selection Chart										
Part Number	Price	Туре	Voltage	Connection	Delay	Configurations	Safety Input	Safety Output	Monitoring Outputs	Drawing
SRB-E-232ST	\$06c97:	Safety	24 VDC	Pluggable screw terminals	Vaa	10	1 pair	3 NO and	1 NC	<u>PDF</u>
SRB-E-232ST-CC	\$06c98:	relay	24 VDC	Push-in cage clamp	Yes	10	digital	2 delayed OSSD	and 1 status	<u>PDF</u>

Schmersal SRB-E-232 Specifications						
Input/Output Specifications						
Operating Temperature	-25°C [-13°F] to 60°C [140°F]					
Storage Temperature	-40°C [-40°F] to 85°C [185°F]					
Altitude	2000m [6562ft] max					
Vibration Resistance	Tested to EN 60068-2-6					
Degree of Protection	IP40					
Housing	Glass-fiber reinforced thermoplastic, ventilated					
Weight	180g [6.35 oz]					
Agency Approvals and Standards	CE, UL (listed number E57648)					
Terminal Designation per EN 50005	EN 60947-1					
Wire Fixing	Plug-in terminals					
Cable Section Min/Max	0.25 mm ² [24 AWG] - 2.5 mm ² [14 AWG]					
Switching Frequency, Max	0.3 Hz					
	Input/Output Specifications					
Operating Voltage Range	19.2 to 28.8 VDC					
Maximum Consumption	3W (plus load of semiconductor outputs)					
Overvoltage Protection	Category III					
Control Voltage on S11 etc.	24VDC					
Control Current Over S12 etc.	8mA					
Mechanical Life	10 ⁷ operations					
Contact Type	Ag-Ni, self-cleaning, positive drive					
Operating Delay (Pull-In Delay)	<150ms					
Release Delay (Drop-Out Delay)	<10ms					
Switching Capacity	Q1 and Q2: 24VDC, max 2A Y1 and Y2: 24VDC / 100mA NO dry contacts: max 250V / 6A					

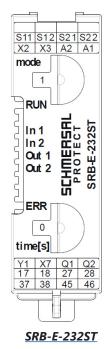
Schmersal SRB-E-232 Configurable Safety Relay



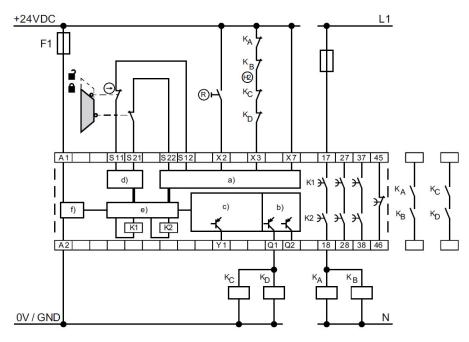
Term	Terminal Descriptions					
Pin	Function					
A1	Operating voltage +24VDC					
A2	Operating voltage 0VDC					
X2	Input of start circuit					
X3	Input feedback circult					
X7	Input release signal					
S11/S21	Test pulse outputs					
S12	Input channel 1					
S22	Input channel 2					
Y1	Signalling output (NC) STOP 0					
45/46	Signalling contact (NC) STOP 1					
17/18, 27/28, 37/38	Safety outputs STOP 1					
Q1/Q2	Safety outputs STOP 0					

	LED Indication Descriptions				
LED	Function				
RUN	Operating voltage OK – RUN mode				
ERR	Error code				
In 1	High level at S12				
In 2	High level at S22				
Out 1	Outputs activated				
Out 2	Outputs activated				
	NOTE: For flash codes, refer to product manual				

	Configuration Selection								
Rotary Knob Position	Reset Button	Cross-Wire Monitoring Active	Input / Sensor Configuration	Monitoring of Sensor Channels For Synchronization					
С		Configura	tion Mode						
1	Trailing Edge	Yes	NC / NC	Yes					
2	Trailing Edge	Yes	NC / NC	No					
3	Trailing Edge	No	NC / NC	Yes					
4	Trailing Edge	No	NC / NC	No					
5	Trailing Edge	Yes	NC / NO	Yes					
6	Autostart	Yes	NC / NO	No					
7	Autostart	Yes	NC / NC	Yes					
8	Autostart	Yes	NC / NC	No					
9	Autostart	No	NC / NC	Yes					
10	Autostart	No	NC / NC	No					



Application Example for SRB-E-232ST



Schmersal SRB-E-322 Configurable Safety Relays





Features

- Pluggable screw terminals or cage clamps
- SAFE STOP 0 and SAFE STOP 1 function
- 1 or 2-channel control
- Drop-out delay 0 ... 30 s

Safety Data Values per EN ISO 13849-1, EN 62061, IEC 61508				
Performance Level Up to e				
DC Average	High			
SIL CL	Up to 3			
HFT (Hardware Failure Tolerance)	1			
PFH(D)	≤ 2.66x10 ⁻⁹ /h			

SRB-E-322ST

Schmersal SRB-E-322 Selection Chart										
Part Number	Price	Туре	Voltage	Connection	Delay	Configurations	Safety Input	Safety Output	Monitoring Outputs	Drawing
SRB-E-322ST		Safety	24 VDC	Pluggable screw terminals	Yes	10	1 pair	3 delayed NO	1 NC	
SRB-E-322ST-CC		relay	24 VDC	Push-in cage clamp	res	10	digital	and 2 OSSD	and 1 status	

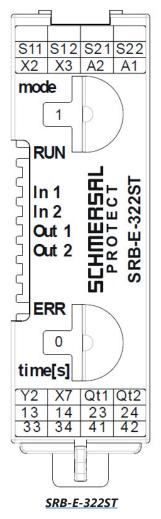
Schmersal SRB-E-322 Specifications							
Input/Output Specifications							
Operating Temperature	-25°C [-13°F] to 60°C [140°F]						
Storage Temperature	-40°C [-40°F] to 85°C [185°F]						
Altitude	2000m [6562ft] max						
Vibration Resistance	Tested to EN 60068-2-6						
Degree of Protection	IP40						
Housing	Glass-fiber reinforced thermoplastic, ventilated						
Weight	180g [6.35 oz]						
Agency Approvals and Standards	CE, UL (listed number E57648)						
Terminal Designation per EN 50005	EN 60947-1						
Wire Fixing	Plug-in terminals						
Cable Section Min/Max 0.25 mm² [24 AWG] - 2.5 mm² [14 AWG]							
Switching Frequency, Max	0.3 Hz						
	Input/Output Specifications						
Operating Voltage Range	19.2 to 28.8 VDC						
Maximum Consumption	3W (plus load of semiconductor outputs)						
Overvoltage Protection	Category III						
Control Voltage on S11 etc.	24VDC						
Control Current Over S12 etc.	8mA						
Mechanical Life	10 ⁷ operations						
Contact Type	Ag-Ni, self-cleaning, positive drive						
Operating Delay (Pull-In Delay)	<150ms						
Release Delay (Drop-Out Delay)	<10ms						
Switching Capacity	Q1 and Q2: 24VDC, max 2A Y1 and Y2: 24VDC / 100mA NO dry contacts: max 250V / 6A						



Schmersal SRB-E-322 Configurable Safety Relays

Terminal Descriptions							
Pin	Function						
A1	Operating voltage +24VDC						
A2	Operating voltage 0VDC						
X2	Input of start circuit / input two-hand						
X 3	Input feedback circult / input two-hand						
X7	Input release signal / feedback circuit for two-hand						
S11/S21	Test pulse outputs						
S12	Input channel 1 / input two-hand						
S22	Input channel 2 / input two-hand						
Y1	Signalling output (NC) STOP 0						
Y2	Signalling contact (NC) STOP 1						
41/42	Signalling contact (NC) STOP 0						
13/14, 23/24, 33/34	Safety outputs STOP 0						
Q1/Q2	Safety outputs STOP 1						

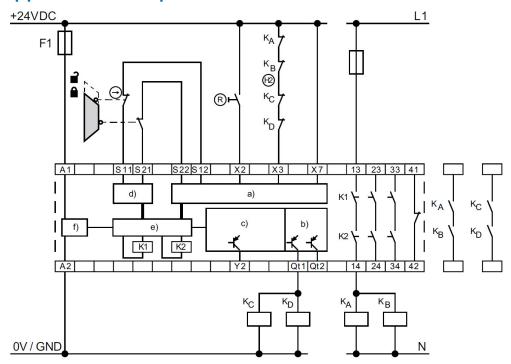
LED Indication Descriptions							
LED) Function						
RUN	Operating voltage OK – RUN mode						
ERR	Error code						
In 1	High level at S12						
In 2	In 2 High level at S22						
Out 1	Outputs activated						
Out 2	Out 2 Outputs activated						
NOTE: For flash codes, refer to product manual							



Schmersal SRB-E-322 Configurable Safety Relays



Application Example for SRB-E-322ST



Key

- a) Safety inputs
- b) Safety outputs
- c) Signalling outputs
- d) Clock outputs
- e) Processing
- f) Power

	Configuration Selection									
Rotary Knob Position	Reset Button	Cross-Wire Monitoring Active	Input / Sensor Configuration	Monitoring of Sensor Channels For Synchronization						
С		Configuration Mod	le							
1	Trailing Edge	Yes	NC / NC	Yes						
2	Trailing Edge	Yes	NC / NC	No						
3	Trailing Edge	No	NC / NC	Yes						
4	Trailing Edge	No	NC / NC	No						
5	Trailing Edge	Yes	NC / NO	Yes						
6	Autostart	Yes	NC / NO	No						
7	Autostart	Yes	NC / NC	Yes						
8	Autostart	Yes	NC / NC	No						
9	Autostart	No	NC / NC	Yes						
10	Autostart	No	NC / NC	No						
11	Function two-hand control type IIIC NC/NO, NC/NO Yes									
12	Function two-hand control type IIIA NO / NO Yes									

Schmersal SRB-E-204 Configurable Safety Relays





SRB-E-204ST

Features

- Pluggable screw terminals or cage clamps
- 2 safety outputs
- 4 signal outputs
- Cascadable to add additional inputs to a safety system

Safety Data Values per EN ISO 13849-1, EN 62061, IEC 61508						
Performance Level Up to e						
DC Average High						
SIL CL Up to 3						
HFT (Hardware Failure Tolerance) 1						
PFH(D)	≤ 2.66x10 ⁻⁹ /h					

Schmersal SRB-E-204 Selection Chart									
Part Number Price Type Voltage Connection Configurations Safety Input Output Output D								Drawing	
SRB-E-204ST	\$06c9b:	Cafaboralass	24 VDC	Pluggable screw terminals	14				<u>PDF</u>
SRB-E-204ST-CC	\$06c9c:	Safety relay 2	24 VDC	Push-in cage clamp	14	4 pair	2 OSSD	4 status	<u>PDF</u>
SRB-E-204PE	\$;06c9f:	Safety input extension	24 VDC	Pluggable screw terminals	15	digital	2 0000	4 olalus	<u>PDF</u>

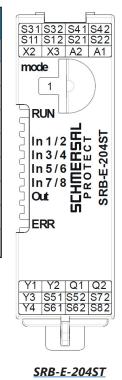
Schmersal SRB-E-204 Specifications							
Input/Output Specifications							
Operating Temperature	-25°C [-13°F] to 60°C [140°F]						
Storage Temperature	-40°C [-40°F] to 85°C [185°F]						
Altitude	2000m [6562ft] max						
Vibration Resistance	Tested to EN 60068-2-6						
Degree of Protection	IP40						
Housing	Glass-fiber reinforced thermoplastic, ventilated						
Weight	150g [5.29 oz]						
Agency Approvals and Standards	CE, UL (listed number E57648)						
Terminal Designation per EN 50005	EN 60947-1						
Wire Fixing	Plug-in terminals						
Cable Section Min/Max	0.25 mm ² [24 AWG] - 2.5 mm ² [14 AWG]						
Switching Frequency, Max	1 Hz						
	Input/Output Specifications						
Operating Voltage Range	19.2 to 28.8 VDC						
Maximum Consumption	3W (plus load of semiconductor outputs)						
Overvoltage Protection	Category III						
Control Voltage on S11 etc.	24VDC						
Control Current Over S12 etc.	8mA						
Mechanical Life	10 ⁷ operations						
Contact Type	Ag-Ni, self-cleaning, positive drive						
Operating Delay (Pull-In Delay)	<150ms						
Release Delay (Drop-Out Delay)	<10ms						
Switching Capacity	Safety outputs Q: 24VDC, max 2A Y1 through Y4: 24VDC / 100mA						

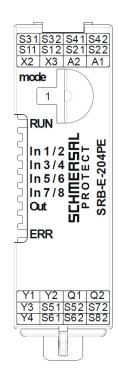
Schmersal SRB-E-204 Configurable Safety Relays



Teri	Terminal Descriptions							
Pin	Function							
A1	Operating voltage +24VDC							
A2	Operating voltage 0VDC							
X2	Input of start circuit / cascading							
X3	Input feedback circult / cascading							
S11/S21 S31/S41 S51/S61	Test pulse outputs							
S12 S22	Input channel 1 Input channel 2							
S32 S42	Input channel 1 Input channel 2							
S52 S62	Input channel 1 Input channel 2							
S72 S82	Input channel 1 Input channel 2							
Y1	Signalling output, sensor 1							
Y2	Signalling output, sensor 2							
Y 3	Signalling output, sensor 3							
Y4	Signalling output, sensor 4							
Q1/Q2	Safety outputs							

LED Indication Descriptions							
LED	Function						
RUN	Operating voltage OK – RUN mode						
ERR	Error code						
In 1/2	High level at S12 / S22						
In 3/4	High level at S32 / S42						
In 5/6	In 5/6 High level at S52 / S62						
In 7/8	1 7/8 High level at S72 / S82						
Out Outputs activated							
NOTE: For flash codes, refer to product manual							



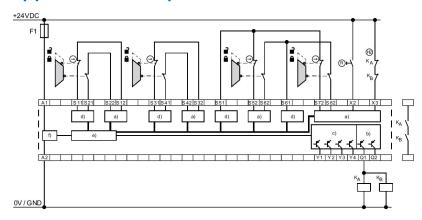


SRB-E-204PE

Schmersal SRB-E-204ST Configurable Safety Relays



Application Example for SRB-E-204ST



Key

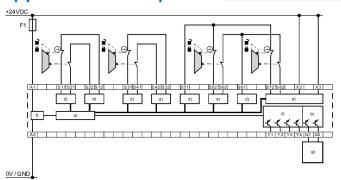
- a) Safety inputs
- b) Safety outputs
- c) Signalling outputs
- d) Clock outputs
- e) Processing
- f) Power
- g) Safety modules

Safe signal processing, e.g. by PROTECT SRB-E-series with start and reset functions as well as feedback circuit monitoring

	Configuration Selection								
Rotary Knob Position	Reset Button	Cross-Wire Monitoring Active	Input Number	Input / Sensor Configuration	Monitoring of Sensor Channels For Synchronization	Function Signalling Outputs Y1 - Y4			
С	Configuration Mode								
1	Trailing Edge	Yes	1-4	NC / NC	Yes				
2	Trailing Edge	Yes	1-4	NC / NC	No				
3	Trailing Edge	No	1-4	NC / NC	Yes				
4	Trailing Edge	No	1-4	NC / NC	No				
5	Trailing Edge	Yes	1-4	NC / NO	Yes				
6	Autostart	Yes	1-4	NC / NO	No				
7	Autostart	Yes	1-4	NC / NC	Yes				
8	Autostart	Yes	1-4	NC / NC	No				
9	Autostart	No	1-4	NC / NC	Yes				
10	Autostart	No	1-4	NC / NC	No				
		Yes	1	NC / NC	No				
44	Trailing Edge	Yes	2			NO Sensor = 0			
11		No	3						
		No	4			Output = 0			
		Yes	1			Sensor = 1 Output = 1			
12	Attt	Yes	2	NC / NC	No				
12	Autostart	No	3						
		No	4						
		Yes	1						
42	Trailing Edge	Yes	2	NC / NC	No				
13	Trailing Edge	Yes	3	NC/NC	No				
		No	4						
		Yes	1						
4.4	A	Yes	2	NC / NC	No				
14	Autostart	Yes	3						
		No	4						

Schmersal SRB-E-204PE Configurable Safety Relays

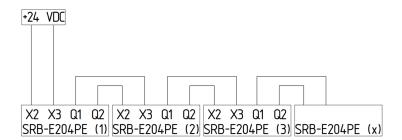
Application Example for SRB-E-204PE



Key

- a) Safety inputs
- b) Safety outputs
- c) Signalling outputs
- d) Clock outputs
- e) Processing
- f) Power
- g) Safety modules
 Safe signal processing, e.g. by PROTECT SRB-E-series
 with start and reset functions as well as feedback
 circuit monitoring

Application Example Cascading Wiring Example



NOTE: While there is not a limit to the number of modules that can be wired in series, it is important to note that the response time of the system will change as more modules are added. For example, one unit will have a response time of less than 10ms. But if the user uses 10 modules in series (for a total of 40 inputs) then the response time of the system will be less than 100ms.

Schmersal SRB-E-204PE Configurable Safety Relays

		Co	onfiguration Se	election	
Rotary Knob Position	Cross-Wire Monitoring Active	Input Number	Input / Sensor Configuration	Monitoring of Sensor Channels For Synchronization	Function Signalling Outputs Y1 - Y4
С					
1	Yes	1-4	NC / NC	Yes	
2	Yes	1-4	NC / NC	No	
3	No	1-4	NC / NC	Yes	
4	No	1-4	NC / NC	No	
5	Yes	1-4	NC / NO	Yes	
6	Yes	1-4	NC / NO	No	
	Yes	1			NO
7	No	2	NC / NC	No	NO
,	No	3		No	Sensor = 0
	No 4		Output = 0		
	Yes	1			Sensor = 1
•	Yes	2	NO /NO	No	Output = 1
8	No	3	NC / NC		
	No	4			
	Yes	1			
•	Yes	2	NC / NC	No	
9	Yes	3			
	No	4			
10	Yes	1-4	NC / NO	No	
11	Yes	1-4	NC / NC	No	
12	No	1-4	NC / NC	No	
	Yes	1			
13	No	2	NC / NC	N _a	
13	No	3	NC / NC	No	NC
	No	4			Sensor = 0
	Yes	1			Output = 1
44	Yes	2	NO / NO	N-	Sensor = 1
14	No	3	NC / NC	No	Output = 0
	No	4			
	Yes	1			
45	Yes	2	NO /NO	ķ1.	
15	Yes	3	NC / NC	No	
	No	4			

Schmersal SRB-E-402 Configurable Safety Relays





Features

- Pluggable screw terminals or cage clamps
- SAFE STOP 0 function
- 2 separate 1- or 2-channel controls
- 2 separate start button/autostart inputs
- 2 separate safety contacts
- 2 separate safety outputs

Safety Values per EN EN 62061,	ISO 13849-1,
Performance Level	Up to e
DC Average	High
SIL CL	Up to 3
HFT (Hardware Failure Tolerance)	1
PFH(D)	≤ 2.66x10 ⁻⁹ /h

SRB-E-402ST

		Schm	ersal SR	B-E-402 Se	lection Cha	art			
Part Number	Price	Туре	Voltage	Connection	Configurations	Safety Input	Safety Output	Monitoring Outputs	Drawing
SRB-E-402ST	\$06c9d:	Safety	24 VDC	Pluggable screw terminals	20	2 pair	2 NO	1 NC	<u>PDF</u>
SRB-E-402ST-CC	\$06c9e:	relay	24 VDC	Push-in cage clamp	22	digital	and 2 OSSD	and 1 status	PDF

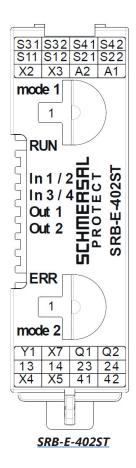
	Schmersal SRB-E-402 Specifications
	Input/Output Specifications
Operating Temperature	-25°C [-13°F] to 60°C [140°F]
Storage Temperature	-40°C [-40°F] to 85°C [185°F]
Altitude	2000m [6562ft] max
Vibration Resistance	Tested to EN 60068-2-6
Degree of Protection	IP40
Housing	Glass-fiber reinforced thermoplastic, ventilated
Weight	190g [6.70 oz]
Agency Approvals and Standards	CE, UL (listed number E57648)
Terminal Designation per EN 50005	EN 60947-1
Wire Fixing	Plug-in terminals
Cable Section Min/Max	0.25 mm ² [24 AWG] - 2.5 mm ² [14 AWG]
Switching Frequency, Max	0.3 Hz
	Input/Output Specifications
Operating Voltage Range	19.2 to 28.8 VDC
Maximum Consumption	3.6 W (plus load of semiconductor outputs)
Overvoltage Protection	Category III
Control Voltage on S11 etc.	24VDC
Control Current Over S12 etc.	8mA
Mechanical Life	10 ⁷ operations
Contact Type	Ag-Ni, self-cleaning, positive drive
Operating Delay (Pull-In Delay)	<150ms
Release Delay (Drop-Out Delay)	<10ms
Switching Capacity	Q1 and Q2: 24VDC, max 2A Y1 and Y2: 24VDC / 100mA NO dry contacts: max 250V / 6A



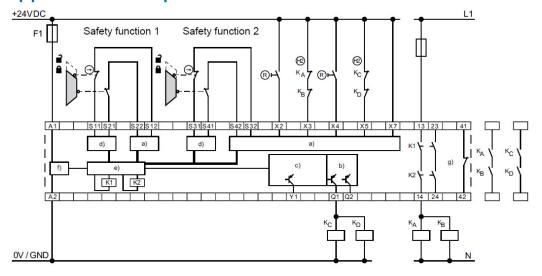
Schmersal SRB-E-402 Configurable Safety Relays

Teri	ninal Descriptions
Pin	Function
A1	Operating voltage +24VDC
A2	Operating voltage 0VDC
X2/X4	Inputs start circuit
X3/X5	Inputs feedback circuit
X 7	Input release signal
S11/S21 S31/S41	Test pulse outputs
S12 S22	Input channel 1 Input channel 2 (safety function 1)
S32 S42	Input channel 1 Input channel 2 (safety function 2)
Y1	Signalling output (NC)
41/42	Signalling contact (NC)
13/14 23/24	Safety outputs (safety function 1)
Q1/Q2	Safety outputs (safety function 2)

LED In	dication Descriptions
LED	Function
RUN	Operating voltage OK RUN mode
ERR	Error code
In 1/2	High level at S12 / S22
In 3/4	High level at S32 / S42
Out 1	Outputs activated
Out 2	Outputs activated
NOTE: For	flash codes, refer to product manual



Application Example for SRB-E-402ST



Key

- a) Safety inputs
- b) Safety outputs Safety function 2
- c) Signalling outputs
- d) Clock outputs
- e) Processing
- f) Power
- g) Safety function 1

Schmersal SRB-E-402 Configurable Safety Relays



		Configuration Selecti	on	
Rotary Knob Position	Reset Button	Cross-Wire Monitoring Active	Input / Sensor Configuration	Monitoring of Sensor Channels For Synchronization
С		Configuration Mod	le	
1	Trailing Edge	Yes	NC / NC	Yes
2	Trailing Edge	Yes	NC / NC	No
3	Trailing Edge	No	NC / NC	Yes
4	Trailing Edge	No	NC / NC	No
5	Trailing Edge	Yes	NC / NO	Yes
6	Autostart	Yes	NC / NO	No
7	Autostart	Yes	NC / NC	Yes
8	Autostart	Yes	NC / NC	No
9	Autostart	No	NC / NC	Yes
10	Autostart	No	NC / NC	No
11		hand control type IIIC ary Mode Switch 2)	NC/NO, NC/NO	Yes
12		hand control type IIIA ary Mode Switch 2)	NO / NO	Yes

ReeR MZERO Stand-Alone Safety Controller

The Reer MZERO makes it easy to manage safety systems and sensors. It is compact and configurable, allowing cost reductions and minimal wiring when compared to using several hardwired safety relays.

Features

- · Sixteen digital inputs
- Four inputs for Start/Stop interlock and external device monitoring (EDM)
- Four OSSD pairs
- Four test outputs and four programmable digital signal outputs
- 45mm housing suitable for DIN rail mounting
- All functions are configured through the graphical MZERO Safety Designer software. Ships with USB 2.0 connector. Cable sold separately.



MZERO-16-4



Safety Data	per EN 13849-1
Category	4
Performance level	е
MTTF _d (years)	30-100
DC _{avg}	High
	er IEC/EN 62061, N 61508
Sil CL	3
Sil	3
HFT	1
DC _{avg}	High
SFF	99.8%
PFH _{cl} (t-20a)	6.86e ⁻⁹

		MZER	D Stand-Alone	e Safety Controllei	r	
Part Number	Price	Voltage	Inputs	Outputs	Connection	Drawing
MZERO-16-4	\$06azc:	24VDC	16 digital inputs	4 pairs OSSD safety outputs	Pluggable screw terminals	<u>PDF</u>
MZERO-16-4C	\$06azd:	24VDC	4 secondary inputs	4 status outputs 4 test outputs	Pluggable push-in cage clamp	<u>PDF</u>







	MZERO Specifications
	General Specifications
Operating Temperature	-10°C to +55°C [14°F to 131°F]
Storage Temperature	-20°C to +85°C [-4°F to 185°F]
Altitude	2000m (max)
Vibration Resistance	Tested to IEC 60068-2-6
Degree of Protection	IP 20
Housing	Polyamide
Weight	260g [9.17 oz]
Agency Approvals and Standard	cULus, CE, TÜV
Terminal Designation per EN 50 005	AWG 12-30 solid/stranded. Use 60/75°C copper (Cu) conductor only.
Wire Fixing	Screw pluggable terminal blocks. Terminal tightening torque 5-7 lb•in (0.6-0.7 N•m).
	Specifications
Nominal Voltage	24VDC
Voltage Range	± 20%
Maximum Consumption	3W
Digital Inputs	8 PNP active high
Input FBK / Reset	2 for EDM control / possible automatic or manual operation with RESTART button
Test Outputs	4 test outputs to monitor short circuits
OSSD Outputs	2 pairs solid state safety outputs PNP active high 400ma @ 24VDC max
Signaling Outputs	2 programmable – PNP high
	Expansion
Minimum Number of Modules	1 (MOSAIC M1 used as stand-alone module) (8 inputs, 2 ECM/RST, 2 Safety Outputs, 2 Status Outputs)
Maximum Number of Modules	15 (MOSAIC M1 plus 14 expansion modules) (128 inputs, 16 EDM/RST, 16 Safety Outputs, 32 Status Outputs) No more than 4 expansion modules of the same type

Note: See product manual for complete details.

Note: To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific part number's web page.

Electrical Connections For MZERO



- Wire size range: AWG 12-30 (solid/stranded) (UL).
- Use 60/75°C copper (Cu) conductor only.
- Turn off power before making connections.
- The supply voltage must be 24VDC \pm 20% (PELV, in compliance with the standard EN 60204-1 (Chapter 6.4).
- Do not use the MZERO to supply power to external devices.
- The same ground connection (0VDC) must be used for all system components.
- Separate power supplies are recommended for the safety module and for other electrical power equipment (electric motors, inverters, frequency converters) or other sources of disturbance.
- Cables used for connections of longer than 50m [164ft] must have a cross-section of at least 1mm² (AWG16).

		MZERO Module	Connections	
Terminal	Signal	Туре	Description	Operation
1	24VDC	-	24VDC power supply	-
2	24VDC	_	24VDC power supply	-
3	NC	-	-	_
4	0VDC	_	0VDC power supply	-
5	OSSD1_A	Output	Chatia autout 4	DND astive high
6	OSSD1_B	Output	Static output 1	PNP active high
7	RESTART_FBK1	Input	Feedback/Restart 1	Input (type 2) according to EN 61131-2
8	OUT_STATUS1	Output	SIL 1/PLc output	PNP active high
9	OSSD2_A	Output	Chatia autout O	DND active high
10	OSSD2_B	Output	Static output 2	PNP active high
11	RESTART_FBK2	Input	Feedback/Restart 2	Input (type 2) according to EN 61131-2
12	OUT_STATUS2	Output	SIL 1/PLc output	PNP active high
13	OSSD3_A	Output	Chatia autout 2	PNP active high
14	OSSD3_B	Output	Static output 3	PNP active high
15	RESTART_FBK3	Input	Feedback/Restart 3	Input (type 2) according to EN 61131-2
16	OUT_STATUS3	Output	SIL 1/PLc output	PNP active high
17	OSSD4_A	Output	Chatia autout 4	PNP active high
18	OSSD4_B	Output	Static output 4	PNP active high
19	RESTART_FBK4	Input	Feedback/Restart 4	Input (type 2) according to EN 61131-2
20	OUT_STATUS4	Output	SIL 1/PLc output	PNP active high
21	OUT_TEST1	Output	Short circuit detection output	PNP active high
22	OUT_TEST2	Output	Short circuit detection output	PNP active high
23	OUT_TEST3	Output	Short circuit detection output	PNP active high
24	OUT_TEST4	Output	Short circuit detection output	PNP active high
25	INPUT1	Input	Digital input 1	Input (type 3) according to EN 61131-2
26	INPUT2	Input	Digital input 2	Input (type 3) according to EN 61131-2
27	INPUT3	Input	Digital input 3	Input (type 3) according to EN 61131-2
28	INPUT4	Input	Digital input 4	Input (type 3) according to EN 61131-2
29	INPUT5	Input	Digital input 5	Input (type 3) according to EN 61131-2
30	INPUT6	Input	Digital input 6	Input (type 3) according to EN 61131-2
31	INPUT7	Input	Digital input 7	Input (type 3) according to EN 61131-2
32	INPUT8	Input	Digital input 8	Input (type 3) according to EN 61131-2
33	INPUT9	Input	Digital input 9	Input (type 3) according to EN 61131-2
34	INPUT10	Input	Digital input 10	Input (type 3) according to EN 61131-2
35	INPUT11	Input	Digital input 11	Input (type 3) according to EN 61131-2
36	INPUT12	Input	Digital input 12	Input (type 3) according to EN 61131-2
37	INPUT13	Input	Digital input 13	Input (type 3) according to EN 61131-2
38	INPUT14	Input	Digital input 14	Input (type 3) according to EN 61131-2
39	INPUT15	Input	Digital input 15	Input (type 3) according to EN 61131-2
40	INPUT16	Input	Digital input 16	Input (type 3) according to EN 61131-2

Please see the ReeR MOSAIC Supplemental Manual for basic wiring examples.





MODULAR **SA**FETY INTEGRATED CONTROLLER

The MOSAIC system is a unique safety controller that's modular, expandable and configurable for managing all safety functions of a single machine or an entire plant. It offers cost reductions with minimal wiring.

COMMS



MOSAIC-MBEI

Industrial Fieldbus: EtherNet/IP.

MOSAIC-MBEM

Industrial Fieldbus: ModBus TCP/IP.

DIGITAL INPUTS



MOSAIC-MI8

8 digital inputs and four test outputs.

MOSAIC-MI16

16 digital inputs and 4 test outputs.

MOSAIC-MI12T8

12 digital inputs, 8 test outputs.

I/O EXPANSION UNIT



MOSAIC-MI8O2

8 digital inputs, 2 EDM/ RST inputs, 4 test outputs, 2 OSSD pairs, and 2 status outputs.

MOSAIC-MI8O4

- 8 digital inputs, 4 test outputs,
- 4 individual or 2 pair OSSD outputs, and
- 4 configurable I/O.

SPEED MONITORING

MOSAIC-MV0

2 prox switch inputs.

MOSAIC-MV1T

1 TTL encoder and 2 prox switch inputs.



MOSAIC-MV1H

1 HTL encoder and 2 prox switch inputs.

MOSAIC-MV1S

1 SIN/COS encoder and 2 prox switch inputs.

MOSAIC-MV2T

2 TTL encoder and 2 prox switch inputs.

MOSAIC-MV2H

2 HTL encoder and 2 prox switch inputs.

MOSAIC-MV2S

2 SIN/COS encoder and 2 prox switch inputs.

MOSAIC SYSTEM



MOSAIC M1, M1S, or M1S-USBC controller units are able to interface with up to 14 individual expansion modules (up to a maximum of 4 of any one module type).

Controller units can also be used in a stand-alone configuration.

Blue-highlighted modules work only with the MOSAIC-M1S or MOSAIC-M1S-USBC controller.

SAFETY RELAYS

MOSAIC-MR2

2 relays – 2 NO + 1 NC connectable to 1 OSSD pair + 1 NC contact for external device monitoring. 2 safety relays with guided contacts. Screw contacts.



MOSAIC-MR4

4 relays – 4 NO + 2 NC connectable to 2 OSSD pair + 2 NC contacts for external device monitoring. 4 safety relays with guided contacts. Screw contacts.

These extension relays can connect to the outputs on the MOSAIC M1, M1S, or to any of the output cards

DIGITAL OUTPUTS

MOSAIC-MO2

2 EDM/RST inputs, 2 OSSD pairs and 2 status outputs.



MOSAIC-MO4

4 EDM/RST inputs, 4 OSSD pairs and 4 status outputs.

MOSAIC-MOR4

4 single-channel outputs or 2 dual-channel outputs.

MOSAIC-MOR4S8

4 single-channel outputs or 2 dual-channel outputs with 8 status outputs.

MOSAIC-MO4L

4 individual or 2 pair OSSD outputs, and 4 configurable I/O.

ANALOG INPUTS



MOSAIC-MA4 4 analog inputs.

STATUS OUTPUTS

MOSAIC-MOS8

8 status outputs.



16 status outputs.



ACCESSORIES

MOSAIC-MSC-C

Safety communication bus connector and terminal end caps. Required to connect additional module to MOSAIC-M1, MOSAIC-M1S, or MOSAIC-M1S-USBC.

MOSAIC-MCM, MOSAIC-MCMB

A proprietary removable memory card that can be used to save MOSAIC configuration data for subsequent transfer to a new device without using a PC.



ReeR MOSAIC-M1 Modular **Safety Integrated Controller**

The Reer MOSAIC (MOdular SAfety Integrated Controller) makes it easy to manage safety systems and sensors. It is modular, expandable and configurable for managing all safety functions of a single machine or an entire plant. The main MOSAIC M1 unit is able to control a variety of expansion modules.

Features

- Able to stand alone or to control other expansion modules
- · Eight digital safety inputs
- Two inputs for Start/Stop interlock and external device monitoring (EDM)
- Two OSSD pairs
- Four test outputs and two programmable digital signal outputs
- Compact 22.5 mm housing suitable for DIN rail mounting
- All functions are configured through the MOSAIC graphical Safety Designer Software. Ships with USB 2.0 connector. Cable sold separately.



MOSAIC-M1

	MOSAIC	-M1 M	odular Safety	Integrated Contro	oller
Part Number	Price	Voltage	Inputs	Outputs	Connection
MOSAIC-M1	\$02exh:	24VDC	8 digital safety inputs, 2 inputs for start/ restart	2 pairs OSSD Cat. 4 safety outputs, 2 status outputs, 4 test outputs	Removable terminal blocks, screw contacts



Safety Data	per EN 13849-1
Category	4
Performance level	е
MTTF _d (years)	30-100
DC _{avg}	High
Safety Data n	er IEC/EN 62061,
	N 61508
IEC/E	N 61508
Sil CL	N 61508
Sil CL Sil	N 61508 3 3
SII CL SII HFT	N 61508 3 3







MOSAIC-M1 Specifications				
General Specifications				
Operating Temperature	-10°C to +55°C [14°F to 131°F]			
Storage Temperature	<i>mperature</i> -20°C to +85°C [-4°F to 185°F]			
Altitude	2000m (max)			
Vibration Resistance	Tested to IEC 60068-2-6			
Degree of Protection	IP 20			
Housing	Polyamide			
Weight	260g [9.17 oz]			
Agency Approvals and Standard	cULus, CE, TÜV			
Terminal Designation per EN 50 005	AWG 12-30 solid/stranded. Use 60/75°C copper (Cu) conductor only.			
Wire Fixing	Screw pluggable terminal blocks. Terminal tightening torque 5-7 lb•in (0.6-0.7 N•m).			
Specifications				
Nominal Voltage	24VDC			
Voltage Range	± 20%			
Maximum Consumption	3W			
Digital Inputs	8 PNP active high			
Input FBK / Reset	2 for EDM control / possible automatic or manual operation with RESTART button			
Test Outputs	4 test outputs to monitor short circuits			
OSSD Outputs	2 pairs solid state safety outputs PNP active high 400ma @ 24VDC max			
Signaling Outputs	2 programmable – PNP high			
Expansion				
Minimum number of modules	1 (MOSAIC M1 used as stand-alone module) (8 inputs, 2 ECM/RST, 2 Safety Outputs, 2 Status Outputs)			
Maximum number of modules	15 (MOSAIC M1 plus 14 expansion modules) (128 inputs, 16 EDM/RST, 16 Safety Outputs, 32 Status Outputs) No more than 4 expansion modules of the same type			

Note: See product manual for complete details.

Note: To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific part number's web page.

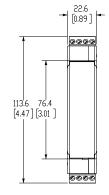
Electrical connections to MOSAIC-M1

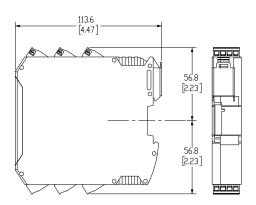


- Wire size range: AWG 12-30 (solid/stranded) (UL).
- Use 60/75°C copper (Cu) conductor only.
- Turn off power before making connections.
- The supply voltage must be 24VDC \pm 20% (PELV, in compliance with the standard EN 60204-1 (Chapter 6.4).
- · Do not use the MOSAIC to supply power to external devices.
- The same ground connection (0VDC) must be used for all system components.
- Separate power supplies are recommended for the safety module and for other electrical power equipment (electric motors, inverters, frequency converters) or other sources of disturbance.
- Cables used for connections of longer than 50m [164ft] must have a cross-section of at least 1mm² (AWG16).

Dimensions

mm [inches]





MOSAIC-M1 Module Connections					
Terminal	Signal	Туре	Description		
1	24VDC	_	24VDC power supply		
2	MASTER_ENABLE1	Input	Master Enable 1		
3	MASTER_ENABLE2	Input	Master Enable 2		
4	0VDC	_	0VDC power supply		
5	OSSD1_A	Output	Chatia aafah cautaut 1		
6	OSSD1_B	Output	Static safety output 1		
7	RESTART_FBK1	Input	Feedback/Restart 1		
8	OUT_STATUS1	Output	Programmable signal output		
9	OSSD2_A	Output	Static safety output 2		
10	OSSD2_B	Output	Static salety output 2		
11	RESTART_FBK2	Input	Feedback/Restart 2		
12	OUT_STATUS2	Output	Programmable signal output		
13	OUT_TEST1	Output	Short circuit detected output		
14	OUT_TEST2	Output	Short circuit detected output		
15	OUT_TEST3	Output	Short circuit detected output		
16	OUT_TEST4	Output	Short circuit detected output		
17	INPUT1	Input	Digital input 1		
18	INPUT2	Input	Digital input 2		
19	INPUT3	Input	Digital input 3		
20	INPUT4	Input	Digital input 4		
21	INPUT5	Input	Digital input 5		
22	INPUT6	Input	Digital input 6		
23	INPUT7	Input	Digital input 7		
24	INPUT8	Input	Digital input 8		

Please see the ReeR MOSAIC Supplemental Manual for basic wiring examples.

ReeR MOSAIC-M1S Enhanced Safety Controller



The ReeR MOSAIC (MOdular SAfety Integrated Controller) makes it easy to manage safety systems and sensors. It is modular, expandable, and configurable for managing all safety functions of a single machine or an entire plant. The main MOSAIC-M1S or MOSAIC-M1S-USBC unit is able to control a variety of expansion modules.

MOSAIC-MSC-C five-way ReeR proprietary buss is required to expand the controller. Buss connector not included.

Features

- Able to stand alone or to control other expansion modules
- · Eight digital inputs
- Four configurable I/O for start/restart interlock, external device monitoring (EDM) and output status monitoring
- Four individual or two pair output switching signal device (OSSD) signals
- Four test outputs
- Compact 22.5 mm housing suitable for DIN rail mounting
- All functions are configured through the MOSAIC graphical Safety Designer Software via a built-in USB 2.0 connector. Cable sold separately.



MOSAIC-M1S-USBC

hei Eir 190				
Category 4				
Performance level e				
MTTF _d (years)	30-100			
DC _{avg}	High			
Safety Data per IEC/EN 62061, IEC/EN 61508				
IEC/EN 61				
IEC/EN 61 SIL CL SIL	508			
SIL CL	508			
SIL CL SIL HFT	3 3			
SIL CL SIL	3 3 1			
SIL CL SIL HFT DC _{avg}	3 3 1 High			

Safety Data

ner FN 13849-1

Safety data is dependent on circuit architecture. See manual for further details.







MOSAIC Modular Safety Integrated Controller								
Part Number	Price	Voltage	Inputs	Outputs	Configurable I/O	Connection	Programming Port	Drawing
MOSAIC-M1S	Retired	241/DC	8 digital safety inputs	4 individual or 2 pair OSSD safety outputs, 4 test outputs	4 terminals: FBK_RST or STATUS	Removable terminal blocks, screw contacts	USB-B mini	PDF
MOSAIC-M1S-USBC	\$06aze:	24VDC					USB-C	PDF

MOSAIC-M1S Specifications				
General Specifications				
Operating Temperature	-10°C to +55°C [14°F to 131°F]			
Storage Temperature	-20°C to +85°C [-4°F to 185°F]			
Altitude	2000m (max)			
Vibration Resistance	Tested to IEC 60068-2-6			
Degree of Protection	IP 20			
Housing	Polyamide			
Weight	260g [9.17 oz]			
Agency Approvals and Standard	cULus, CE, TÜV			
Terminal Designation per EN 50 005	AWG 12-30 solid/stranded. Use 60/75°C copper (Cu) conductor only.			
Wire Fixing	Screw pluggable terminal blocks. Terminal tightening torque 5-7 lb•in (0.6-0.7 N•m).			
USB Connection	Type B mini-USB connector			
Specifications				
Nominal Voltage	24VDC			
Voltage Range	± 20%			
Maximum Consumption	3W			
Digital Inputs	8 PNP active high			
Test Outputs	4 test outputs to monitor short circuits			
OSSD Outputs	4 individual or 2 pair solid state safety outputs – PNP active high 400ma @ 24VDC max			
Configurable I/O	4 terminals to be used for I/O – Input: EDM, feedback, reset, restart – Output: status monitoring			
Expansion				
Minimum Number of Modules	1 (MOSAIC-M1S used as stand-alone module) (8 inputs, up to 4 EDM/RST, 4 safety outputs, up to 4 status outputs)			
Maximum Number of Modules	15 (MOSAIC-M1S plus 14 expansion modules) (128 inputs, 16 EDM/RST, 32 safety outputs, 48 status outputs) No more than 4 expansion modules of the same type			

Note: See product manual for complete details.

Electrical Connections To MOSAIC-M1S



- Wire size range: AWG 12-30 (solid/stranded) (UL).
- Use 60/75°C copper (Cu) conductor only.
- Turn off power before making connections.
- The supply voltage must be 24VDC ± 20% (PELV, in compliance with the standard EN 60204-1 (Chapter 6.4).
- Do not use the MOSAIC to supply power to external devices.
- The same ground connection (OVDC) must be used for all system components.
- Separate power supplies are recommended for the safety module and for other electrical power equipment (electric motors, inverters, frequency converters) or other sources of disturbance.
- Cables used for connections of longer than 50m [164ft] must have a cross-section of at least 1mm² (AWG16).

MOSAIC-M1S and MOSAIC-M1S-USBC Module Connections					
Terminal	Signal	Туре	Description		
1	24VDC	-	24VDC power supply		
2	Not connected	_	-		
3	Not connected	-	-		
4	0VDC	-	0VDC power supply		
5	OSSD1	Output	Static safety output 1		
6	OSSD2	Output	Static safety output 2		
7	RESTART_FBK1 or	Input	Feedback/Restart 1		
7	STATŪS1	Output	SIL 1 / PLc		
0	RESTART_FBK2 or	Input	Feedback/Restart 2		
8	STATŪS2	Output	SIL 1 / PLc		
9	OSSD3	Output	Static safety output 3		
10	OSSD4	Output	Static safety output 4		
11	RESTART_FBK3 or STATUS3	Input	Feedback/Restart 3		
11		Output	SIL 1 / PLc		
12	RESTART_FBK4 or	Input	Feedback/Restart 4		
12	STATUS4	Output	SIL 1 / PLc		
13	OUT_TEST1	Output	Short circuit detected output		
14	OUT_TEST2	Output	Short circuit detected output		
15	OUT_TEST3	Output	Short circuit detected output		
16	OUT_TEST4	Output	Short circuit detected output		
17	INPUT1	Input	Digital input 1		
18	INPUT2	Input	Digital input 2		
19	INPUT3	Input	Digital input 3		
20	INPUT4	Input	Digital input 4		
21	INPUT5	Input	Digital input 5		
22	INPUT6	Input	Digital input 6		
23	INPUT7	Input	Digital input 7		
24	INPUT8	Input	Digital input 8		

ReeR MOSAIC-MBEI EtherNet/IP Communications Module

The ReeR MOSAIC (MOdular SAfety Integrated Controller) MBEI EtherNet/IP Communications Module allows connection to the most commonly used industrial fieldbus systems for diagnostics and data transmission. The MBEI adds an EtherNet/IP connection.

Features

- · Adds EtherNet/IP connectivity
- · LED status/diagnostic signaling
- Module is configured through a Type B mini-USB connector via a software configurator
- Connection to M1 or M1S via MSC 5-way ReeR proprietary bus. Bus connector included.

MOSAIC-MBEI Expansion Unit					
Part Number	Price	Voltage	Description	Connection	
MOSAIC-MBEI	\$02exa:	24VDC	Expansion unit for connection to industrial field bus systems. Adds EtherNet/IP connectivity.	Removable terminal blocks, screw contacts, two RJ45 connectors (EtherNet/IP protocol)	





MOSAIC-MBEI







MOSAIC-MBEI Specifications					
General Specifications					
Operating Temperature -10°C to +55°C [14°F to 131°F]					
Storage Temperature	-20°C to +85°C [-4°F to 185°F]				
Altitude	2000m (max)				
Vibration Resistance	Tested to IEC 60068-2-6				
Degree of Protection	IP 20				
Housing	Polyamide				
Weight	200g [7.05 oz]				
Agency Approvals and Standard CULus, CE, TÜV					
Terminal Designation per EN 50 005	AWG 12-30 solid/stranded. Use 60/75°C copper (Cu) conductor only.				
Wire Fixing Screw pluggable terminal blocks. Terminal tightening torque 5-7 lb•in (0.6-0.7 N•m).					
USB Connection	Type B mini-USB connector				
	Specifications Specification Speci				
Nominal Voltage	24VDC				
Voltage Range	± 20%				
Maximum Consumption	5W				
Comunication	EtherNet/IP				

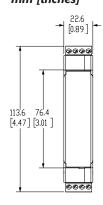
Note: See product manual for complete details.

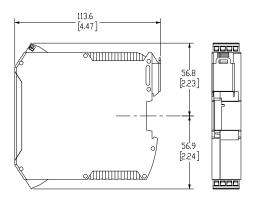
Electrical Connections to MOSAIC-MBEI



- Wire size range: AWG 12-30 (solid/stranded) (UL).
- Use 60/75°C copper (Cu) conductor only.
- Turn off power before making connections.
- The supply voltage must be 24VDC \pm 20% (PELV, in compliance with the standard EN 60204-1 (Chapter 6.4).
- Do not use the MOSAIC to supply external devices.
- The same ground connection (0VDC) must be used for all system components.
- Separate power supplies are recommended for the safety module and for other electrical power equipment (electric motors, inverters, frequency converters) or other sources of disturbance.
- Cables used for connections of longer than 50m [164ft] must have a cross-section of at least 1mm² (AWG16).

Dimensions mm [inches]





MBEI Module Connections					
Terminal	Signal	Туре	Description		
	Termi	nal Block (Side A – TO	P)		
1	24VDC	_	24VDC power supply		
2	Not connected	_	_		
3	Not connected	_	-		
4	0VDC	_	0VDC power supply		
	Terminal Block (Side B – BOTTOM)				
5	Not connected	-	-		
6	Serial line	_	RS-485-(A)		
7	0VDC	_	0VDC power supply		
8	Serial line	_	RS-485+(B)		

Note: RS-485 connections are used for proprietary connections. Not for general use.

ReeR MOSAIC-MBEM Modbus **TCP Communications** Module



The ReeR MOSAIC (MOdular SAfety Integrated Controller) MBEM Communications Module allows connection to the most commonly used industrial fieldbus systems for diagnostics and data transmission. The MBEM adds a Modbus TCP connection.

Features

- Adds Modbus TCP connectivity
- LED status/diagnostic signaling
- Module is configured through a Type B mini-USB connector via a software configurator
- Connection to M1 or M1S via MSC 5-way ReeR proprietary bus. Bus connector included.

MOSAIC-MBEM Expansion Unit				
Part Number	Price	Voltage	Description	Connection
MOSAIC-MBEM	\$02exb:	24VDC	Expansion unit for connection to industrial field bus systems. Adds Modbus TCP connectivity.	Removable terminal blocks, screw contacts, two RJ45 connectors (Modbus TCP protocol)



MOSAIC-MBEM







MOSAIC-MBEM Specifications					
General Specifications					
Operating Temperature -10°C to +55°C [14°F to 131°F]					
Storage Temperature	-20°C to +85°C [-4°F to 185°F]				
Altitude	2000m (max)				
Vibration Resistance	Tested to IEC 60068-2-6				
Degree of Protection	IP 20				
Housing Polyamide					
Weight	200g [7.05 oz]				
Agency Approvals and Standard cULus, CE, TÜV					
Terminal Designation per EN 50 005	AWG 12-30 solid/stranded. Use 60/75°C copper (Cu) conductor only.				
Wire Fixing	Screw pluggable terminal blocks. Terminal tightening torque 5-7 lb•in (0.6-0.7 N•m).				
USB Connection	Type B mini-USB connector				
	Specifications				
Nominal Voltage	24VDC				
Voltage Range	± 20%				
Maximum Consumption	5W				
Comunication	Modbus TCP				

Note: See MOSAIC Fieldbus Module manual for complete details.

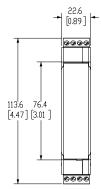
Electrical Connections to MOSAIC-MBEM

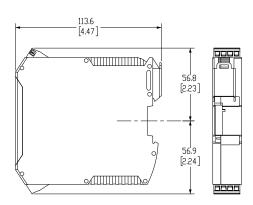


- Wire size range: AWG 12-30 (solid/stranded) (UL).
- Use 60/75°C copper (Cu) conductor only.
- Turn off power before making connections.
- \bullet The supply voltage must be 24VDC \pm 20% (PELV, in compliance with the standard EN 60204-1 (Chapter 6.4).
- · Do not use the MOSAIC to supply external devices.
- The same ground connection (0VDC) must be used for all system components.
- Separate power supplies are recommended for the safety module and for other electrical power equipment (electric motors, inverters, frequency converters) or other sources of disturbance.
- Cables used for connections of longer than 50m [164ft] must have a cross-section of at least 1mm² (AWG16).

Dimensions

mm [inches]





MBEM Module Connections						
Terminal	Signal Type Description		Description			
	Terminal Block (Side A – TOP)					
1	24VDC	_	24VDC power supply			
2	Not connected	_	-			
3	Not connected	_	_			
4	0VDC	_	0VDC power supply			
	Ter	minal Block (S	ide B – BOTTOM)			
5	Not connected	_	-			
6	Serial line	_	RS-485-(A)			
7	0VDC	_	0VDC power supply			
8	Serial line	_	RS-485+(B)			

Note: RS-485 connections are used for proprietary connections. Not for general use.

ReeR MOSAIC-MI8 **Input Expansion Unit**

₽REER

The ReeR MOSAIC (MOdular SAfety

The receivings, ac (Modalar Shirety
Integrated Controller) MI8 input
expansion unit provides eight digital
inputs and four test outputs to monitor
short circuits or overloads.



Safety	Data per EN 13849-1			
Category	4			
Performance level	е			
MTTF _d (years)	30-100			
DC _{avg}	High			
Safety Data per IEC/EN 62061, IEC/EN 61508				
SIL CL	3			
SIL	3			
HFT	1			
DC _{avg}	High			
SFF	99.8%			
PFH _d (t-20a)	4.46e ⁻⁹			

Safety data is dependent on circuit architecture. See manual for further details.

Features

- Eight digital safety inputs programmable with the Mosaic Safety Designer software
- Four test outputs to monitor short circuits or overloads
- Connection to M1 or M1S via MSC 5-way ReeR proprietary bus. Bus connector included.
- · Removable terminal block plus screw contacts

MOSAIC-MI8 Expansion Unit				
Part Number Price Voltage Description Connection				Connection
MOSAIC-MI8	\$02exk:	24VDC	Input expansion unit providing 8 digital safety inputs with 4 test outputs	Removable terminal block, screw contacts

MOSAIC-MI8



MOSAIC-MI8 Specifications					
General Specifications					
Operating Temperature	-10°C to +55°C [14°F to 131°F]				
Storage Temperature	-20°C to +85°C [-4°F to 185°F]				
Altitude	2000m (max)				
Vibration Resistance	Tested to IEC 60068-2-6				
Degree of Protection	IP 20				
Housing	Polyamide				
Weight	240g [8.47 oz]				
Agency Approvals and Standard	cULus, CE, TÜV				
Terminal Designation per EN 50 005	AWG 12-30 solid/stranded. Use 60/75°C copper (Cu) conductor only.				
Wire Fixing	Screw pluggable terminal blocks. Terminal tightening torque 5-7 lb•in (0.6-0.7 N•m).				
Specifications Specification Specif					
Nominal Voltage	24VDC				
Voltage Range	± 20%				
Maximum Consumption	3W				
Digital Inputs	8 PNP active high				
Input FBK / Reset	-				
Test Outputs	4 test outputs to monitor short circuits				
OSSD Outputs	-				
Signaling Outputs	-				

Note: See product manual for complete details.

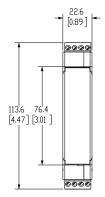
Electrical Connections to MOSAIC-MI8

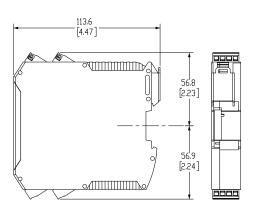


- Wire size range: AWG 12-30 (solid/stranded) (UL).
- Use 60/75°C copper (Cu) conductor only.
- Turn off power before making connections.
- Do not use the MOSAIC to supply external devices.
- The same ground connection (0VDC) must be used for all system components.
- Separate power supplies are recommended for the safety module and for other electrical power equipment (electric motors, inverters, frequency converters) or other sources of disturbance.
- Cables used for connections of longer than 50m [164ft] must have a cross-section of at least 1mm² (AWG16).

Dimensions

mm [inches]





MI8 Module Connections					
Terminal	Signal	Туре	Description		
1	24VDC	_	24VDC power supply		
2	NODE_SEL0	Input	Node selection		
3	NODE_SEL1	Input	Node Selection		
4	0VDC	_	0VDC power supply		
5	INPUT1	Input	Digital input 1		
6	INPUT2	Input	Digital input 2		
7	INPUT3	Input	Digital input 3		
8	INPUT4	Input	Digital input 4		
9	OUT_TEST1	Output	Short circuit detected output		
10	OUT_TEST2	Output	Short circuit detected output		
11	OUT_TEST3	Output	Short circuit detected output		
12	OUT_TEST4	Output	Short circuit detected output		
13	INPUT5	Input	Digital input 5		
14	INPUT6	Input	Digital input 6		
15	INPUT7	Input	Digital input 7		
16	INPUT8	Input	Digital input 8		

ReeR MOSAIC-MI16 Input Expansion Unit

The ReeR MOSAIC (MOdular SAfety Integrated Controller) MI16 input expansion unit provides 16 digital inputs and four test outputs to monitor short circuits or overloads.

Features

- 16 digital safety inputs programmable with the Mosaic Safety Designer software
- Four test outputs to monitor short circuits or overloads
- Connection to M1 or M1S via MSC 5-way ReeR proprietary bus. Bus connector included.
- · Removable terminal block plus screw contacts



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Safety Data per EN 13849-1		
Category	4	
Performance level	е	
MTTF _d (years)	30-100	
DC _{avg}	High	
	r IEC/EN 62061, IEC/EN 61508	
SIL CL	3	
SIL	3	
HFT	1	
DC _{avg}	High	
SFF	99.8%	
PFH _d (t-20a)	4.93e ⁻⁹	

Safety data is dependent on circuit architecture. See manual for further details.

MOSAIC-MI16 Expansion Unit				
Part Number	Price	Voltage	Description	Connection
MOSAIC-MI16	\$-02exl:	24VDC	Input expansion unit providing 16 digital safety inputs with 4 test outputs	Removable terminal block, screw contacts







MOSAIC-MI16 Specifications				
General Specifications				
Operating Temperature	-10°C to +55°C [14°F to 131°F]			
Storage Temperature	-20°C to +85°C [-4°F to 185°F]			
Altitude	2000m (max)			
Vibration Resistance	Tested to IEC 60068-2-6			
Degree of Protection	IP 20			
Housing	Polyamide			
Weight	240g [8.47 oz]			
Agency Approvals and Standard	cULus, CE, TÜV			
Terminal Designation per EN 50 005	AWG 12-30 solid/stranded. Use 60/75°C copper (Cu) conductor only.			
Wire Fixing	Screw pluggable terminal blocks. Terminal tightening torque 5-7 lb•in (0.6-0.7 N•m).			
Specifications Specification Spe				
Nominal Voltage	24VDC			
Voltage Range	± 20%			
Maximum Consumption	3W			
Digital Inputs	16 PNP active high			
Input FBK / Reset	-			
Test Outputs	4 test outputs to monitor short circuits			
OSSD Outputs	-			
Signaling Outputs	-			

Note: See product manual for complete details.

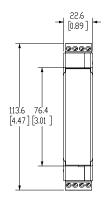
Electrical Connections to MOSAIC-MI16

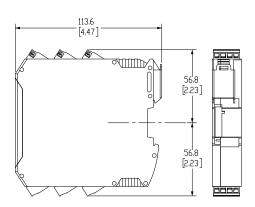


- Wire size range: AWG 12-30 (solid/stranded) (UL).
- Use 60/75°C copper (Cu) conductor only.
- Turn off power before making connections.
- \bullet The supply voltage must be 24VDC \pm 20% (PELV, in compliance with the standard EN 60204-1 (Chapter 6.4).
- Do not use the MOSAIC to supply external devices.
- The same ground connection (0VDC) must be used for all system components.
- Separate power supplies are recommended for the safety module and for other electrical power equipment (electric motors, inverters, frequency converters) or other sources of disturbance.
- Cables used for connections of longer than 50m [164ft] must have a cross-section of at least 1mm² (AWG16).

Dimensions

mm [inches]





MI16 Module Connections			
Terminal	Signal	Туре	Description
1	24VDC	_	24VDC power supply
2	NODE_SEL0	Input	Node colories
3	NODE_SEL1	Input	Node selection
4	0VDC	_	0VDC power supply
5	INPUT1	Input	Digital input 1
6	INPUT2	Input	Digital input 2
7	INPUT3	Input	Digital input 3
8	INPUT4	Input	Digital input 4
9	OUT_TEST1	Output	Short circuit detected output
10	OUT_TEST2	Output	Short circuit detected output
11	OUT_TEST3	Output	Short circuit detected output
12	OUT_TEST4	Output	Short circuit detected output
13	INPUT5	Input	Digital input 5
14	INPUT6	Input	Digital input 6
15	INPUT7	Input	Digital input 7
16	INPUT8	Input	Digital input 8
17	INPUT9	Input	Digital input 9
18	INPUT10	Input	Digital input 10
19	INPUT11	Input	Digital input 11
20	INPUT12	Input	Digital input 12
21	INPUT13	Input	Digital input 13
22	INPUT14	Input	Digital input 14
23	INPUT15	Input	Digital input 15
24	INPUT16	Input	Digital input 16

ReeR MOSAIC-MI12T8 Input/Output Expansion Unit



The ReeR MOSAIC (MOdular SAfety Integrated Controller) MI12T8 input/output expansion unit provides a variety of inputs and outputs. This card has the ability to connect to multiple 4-wire safety

Features

- Twelve digital safety inputs programmable with the MOSAIC Safety Designer Software
- Eight test outputs
- Two programmable digital signal outputs
- · Removable terminal block plus screw contacts
- Connection to M1 or M1S via MSC 5-way ReeR proprietary bus. Bus connector included.



MOSAIC-MI12T8

Safety Data per EN 13849-1		
Category	4	
Performance level	е	
MTTF _d (years)	30-100	
DC _{avg}	High	
Safety Data per IEC/EN 62061, IEC/EN 61508		
SIL CL	3	
SIL	3	
HFT	1	
DC _{avg}	High	
SFF	99.8%	
PFH _d (t-20a)	5.60e ⁻⁹	

Safety data is dependent on circuit architecture. See manual for further details.

MOSAIC-MI12T8 Expansion Unit				
Part Number	Price	Voltage	Description	Connection
MOSAIC-MI12T8	\$057h#:	24VDC	Input expansion unit providing 12 digital safety inputs with 8 test outputs	Removable terminal block, screw contacts







MOSAIC-MI12T8 Specifications				
General Specifications				
Operating Temperature	-10°C to +55°C [14°F to 131°F]			
Storage Temperature	-20°C to +85°C [-4°F to 185°F]			
Altitude	2000m (max)			
Vibration Resistance	Tested to IEC 60068-2-6			
Degree of Protection	IP 20			
Housing	Polyamide			
Weight	240g [8.47 oz]			
Agency Approvals and Standard	cULus, CE, TÜV			
Terminal Designation per EN 50 005	AWG 12-30 solid/stranded. Use 60/75°C copper (Cu) conductor only.			
Wire Fixing	Screw pluggable terminal blocks. Terminal tightening torque 5-7 lb•in (0.6-0.7 N•m).			
	Specifications			
Nominal Voltage	24VDC			
Voltage Range	± 20%			
Maximum Consumption	3W			
Digital Inputs	12 PNP active high			
Input FBK / Reset	-			
Test Outputs	8 test outputs to monitor short circuits			
OSSD Outputs	-			
Signaling Outputs	-			

Note: See product manual for complete details.

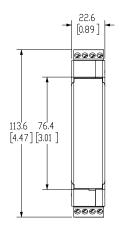
Electrical Connections to MOSAIC-MI12T8

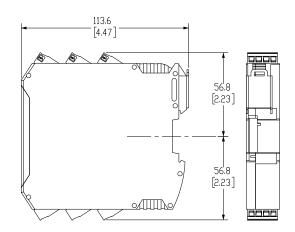


- Wire size range: AWG 12-30 (solid/stranded) (UL).
- Use 60/75°C copper (Cu) conductor only.
- Turn off power before making connections.
- The supply voltage must be 24VDC \pm 20% (PELV, in compliance with the standard EN 60204-1 (Chapter 6.4).
- Do not use the MOSAIC to supply external devices.
- The same ground connection (0VDC) must be used for all system components.
- Separate power supplies are recommended for the safety modules and for other electrical power equipment (electric motors, inverters, frequency converters) or other sources of disturbance.
- Cables used for connections of longer than 50m [164ft] must have a cross-section of at least 1mm² (AWG16).

Dimensions

mm [inches]





	MI12T8 Module Connections				
Terminal	Signal	Туре	Description		
1	24VDC	_	24VDC power supply		
2	NODE_SEL0	Input	Node selection		
3	NODE_SEL1	Input	Node Selection		
4	0VDC	_	0VDC power supply		
5	INPUT1	Input	Digital input 1		
6	INPUT2	Input	Digital input 2		
7	INPUT3	Input	Digital input 3		
8	INPUT4	Input	Digital input 4		
9	OUT_TEST1	Output	Short circuit detected output		
10	OUT_TEST2	Output	Short circuit detected output		
11	OUT_TEST3	Output	Short circuit detected output		
12	OUT_TEST4	Output	Short circuit detected output		
13	INPUT5	Input	Digital input 5		
14	INPUT6	Input	Digital input 6		
15	INPUT7	Input	Digital input 7		
16	INPUT8	Input	Digital input 8		
17	OUT_TEST5	Output	Short circuit detected output		
18	OUT_TEST6	Output	Short circuit detected output		
19	OUT_TEST7	Output	Short circuit detected output		
20	OUT_TEST8	Output	Short circuit detected output		
21	INPUT9	Input	Digital input 9		
22	INPUT10	Input	Digital input 10		
23	INPUT11	Input	Digital input 11		
24	INPUT12	Input	Digital input 12		

ReeR MOSAIC-MI8O2 Input/Output Expansion Unit



The ReeR MOSAIC (MOdular SAfety Integrated Controller) MI8O2 input/ output expansion unit provides a variety of inputs and outputs.

Features

- Eight digital safety inputs programmable with the MOSAIC Safety Designer Software
- Two inputs for start/restart interlock and device monitoring
- Two OSSD pairs
- · Four test outputs
- Two programmable digital signal outputs
- · Removable terminal block plus screw contacts
- · Connection to M1 or M1S via MSC 5-way ReeR proprietary bus. Bus connector included.



Safety Data per EN 13849-1		
Category	4	
Performance level	е	
MTTF _d (years)	30-100	
DC _{avg}	High	
Safety Data per	IEC/EN 62061, IEC/EN 61508	
SIL CL	3	
SIL	3	
HFT	1	
DC _{avg}	High	
SFF	99.8%	
PFH _d (t-20a)	5.67e ⁻⁹	

Safety data is dependent on circuit architecture. See manual for further

MOSAIC-MI802 Expansion Unit				
Part Number	Price	Voltage	Description	Connection
MOSAIC-MI8O2	\$;02eyf:	24VDC	Input/output expansion unit providing 8 digital safety inputs and 2 pair OSSD outputs	Removable terminal block, screw contacts







MOSAIC-MI802 Specifications				
General Specifications				
Operating Temperature	-10°C to +55°C [14°F to 131°F]			
Storage Temperature	-20°C to +85°C [-4°F to 185°F]			
Altitude	2000m (max)			
Vibration Resistance	Tested to IEC 60068-2-6			
Degree of Protection	IP 20			
Housing	Polyamide			
Weight	240g [8.47 oz]			
Agency Approvals and Standard	cULus, CE, TÜV			
Terminal Designation per EN 50 005	AWG 12-30 solid/stranded. Use 60/75°C copper (Cu) conductor only.			
Wire Fixing	Screw pluggable terminal blocks. Terminal tightening torque 5-7 lb•in (0.6-0.7 N•m).			
Specifications Specification Specificatio				
Nominal Voltage	24VDC			
Voltage Range	± 20%			
Maximum Consumption	3W			
Digital Inputs	8 PNP active high			
Input FBK / Reset	2 for EDM control/possible automatic or manual operation with RESTART button			
Test Outputs	4 test outputs to monitor short circuits			
OSSD Outputs	2 pairs solid state safety outputs PNP active high 400mA@24VDC max			
Signaling Outputs	2 programmable PNP high			

Note: See product manual for complete details.

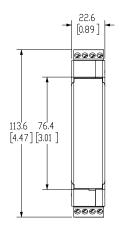
Electrical Connections to MOSAIC-MI8O2

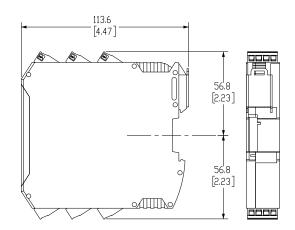


- Wire size range: AWG 12-30 (solid/stranded) (UL).
- Use 60/75°C copper (Cu) conductor only.
- Turn off power before making connections.
- The supply voltage must be 24VDC \pm 20% (PELV, in compliance with the standard EN 60204-1 (Chapter 6.4).
- Do not use the MOSAIC to supply external devices.
- The same ground connection (0VDC) must be used for all system components.
- Separate power supplies are recommended for the safety modules and for other electrical power equipment (electric motors, inverters, frequency converters) or other sources of disturbance.
- Cables used for connections of longer than 50m [164ft] must have a cross-section of at least 1mm² (AWG16).

Dimensions

mm [inches]





MI802 Module Connections				
Terminal	Signal Type Description			
1	24VDC	_	24VDC power supply	
2	NODE_SEL0	Input	Node selection	
3	NODE_SEL1	Input	Node Selection	
4	0VDC	_	0VDC power supply	
5	OSSD1_A	Output	Chatin and the section of 4	
6	OSSD1_B	Output	Static safety output 1	
7	RESTART_FBK1	Input	Feedback/Restart 1	
8	OUT_STATUS1	Output	Programmable signal output	
9	OSSD2_A	Output	Chatin possible authorit 2	
10	OSSD2_B	Output	Static safety output 2	
11	RESTART_FBK2	Input	Feedback/Restart 2	
12	OUT_STATUS2	Output	Programmable signal output	
13	OUT_TEST1	Output	Short circuit detected output	
14	OUT_TEST2	Output	Short circuit detected output	
15	OUT_TEST3	Output	Short circuit detected output	
16	OUT_TEST4	Output	Short circuit detected output	
17	INPUT1	Input	Digital input 1	
18	INPUT2	Input	Digital input 2	
19	INPUT3	Input	Digital input 3	
20	INPUT4	Input	Digital input 4	
21	INPUT5	Input	Digital input 5	
22	INPUT6	Input	Digital input 6	
23	INPUT7	Input	Digital input 7	
24	INPUT8	Input	Digital input 8	

ReeR MOSAIC-MI8O4 Input/Output Expansion Unit



The ReeR MOSAIC (MOdular SAfety Integrated Controller) MI8O4 input/ output expansion unit provides a variety of inputs and outputs.

Features

- Eight digital safety inputs programmable with the MOSAIC Safety Designer Software
- Four configurable I/O for start/restart interlock, external device monitoring (EDM) and output status monitoring
- · Four individual or two pair OSSD outputs
- Four test outputs
- · Removable terminal block plus screw contacts
- Connection to M1S via MSC 5-way ReeR proprietary bus. Bus connector included.

This expansion unit works only with the M1S controller.



MOSAIC-MI804

Safety Data per EN 13849-1		
Category	4	
Performance level	е	
MTTF _d (years)	30-100	
DC _{avg}	High	
Safety Data per IEC/EN 62061, IEC/EN 61508		
SIL CL	3	
SIL	3	
HFT	1	
DC _{avg}	High	
SFF	99.8%	
PFH _d (t-20a)	1.32e ⁻⁸	

Safety data is dependent on circuit architecture. See manual for further

MOSAIC-MI804 Expansion Unit				
Part Number	Price	Voltage	Description	Connection
MOSAIC-MI8O4	\$;057h[:	24VDC	Input/output expansion unit providing 8 digital safety inputs and 4 single or 2 pair OSSD outputs, and 4 configurable I/O	Removable terminal block, screw contacts







MOSAIC-MI804 Specifications				
General Specifications				
Operating Temperature	-10°C to +55°C [14°F to 131°F]			
Storage Temperature	-20°C to +85°C [-4°F to 185°F]			
Altitude	2000m (max)			
Vibration Resistance	Tested to IEC 60068-2-6			
Degree of Protection	IP 20			
Housing	Polyamide			
Weight	240g [8.47 oz]			
Agency Approvals and Standard CULus, CE, TÜV				
Terminal Designation per EN 50 005	AWG 12-30 solid/stranded. Use 60/75°C copper (Cu) conductor only.			
Wire Fixing	Screw pluggable terminal blocks. Terminal tightening torque 5-7 lb•in (0.6-0.7 N•m).			
Specifications Specification				
Nominal Voltage	24VDC			
Voltage Range	± 20%			
Maximum Consumption	3W			
Digital Inputs	8 PNP active high			
Test Outputs	4 test outputs to monitor short circuits			
OSSD Outputs	4 individual or 2 pair solid state safety outputs PNP active high 400mA@24VDC max			
Configurable I/O 4 terminals to be used for I/O Input: EDM, feedback, reset, restart Output: status monitoring				

Note: See product manual for complete details.

Electrical Connections To MOSAIC-MI8O4

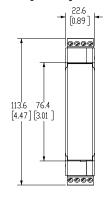


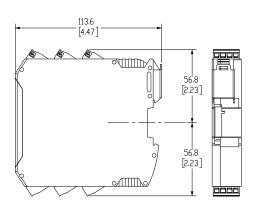
- Wire size range: AWG 12-30 (solid/stranded) (UL).
- Use 60/75°C copper (Cu) conductor only.
- Turn off power before making connections.
- The supply voltage must be 24VDC \pm 20% (PELV, in compliance with the standard EN 60204-1 (Chapter 6.4).
- · Do not use the MOSAIC to supply power to external devices.
- The same ground connection (0VDC) must be used for all system components.
- Separate power supplies are recommended for the safety module and for other electrical power equipment (electric motors, inverters, frequency converters) or other sources of disturbance.
- Cables used for connections of longer than 50m [164ft] must have a cross-section of at least 1mm² (AWG16).

This expansion unit works only with the M1S controller.

Dimensions

mm [inches]





	MI804 Module Connections				
Terminal	Signal	Туре	Description		
1	24VDC	-	24VDC power supply		
2	NODE_SEL0	Input	Node selection		
3	NODE_SEL1	Input	Node selection		
4	0VDC	-	0VDC power supply		
5	OSSD1	Output	Static safety output 1		
6	OSSD2	Output	Static safety output 2		
7	RESTART_FBK1 or	Input	Feedback/Restart 1		
7	STATUS1	Output	SIL 1 / PLc		
0	RESTART_FBK2 or	Input	Feedback/Restart 2		
8	STATUS2	Output	SIL 1 / PLc		
9	OSSD3	Output	Static safety output 3		
10	OSSD4	Output	Static safety output 4		
11	RESTART_FBK3 or	Input	Feedback/Restart 3		
11	STATUS3	Output	SIL 1 / PLc		
12	RESTART_FBK4 or	Input	Feedback/Restart 4		
12	STATUS4	Output	SIL 1 / PLc		
13	OUT_TEST1	Output	Short circuit detected output		
14	OUT_TEST2	Output	Short circuit detected output		
15	OUT_TEST3	Output	Short circuit detected output		
16	OUT_TEST4	Output	Short circuit detected output		
17	INPUT1	Input	Digital input 1		
18	INPUT2	Input	Digital input 2		
19	INPUT3	Input	Digital input 3		
20	INPUT4	Input	Digital input 4		
21	INPUT5	Input	Digital input 5		
22	INPUT6	Input	Digital input 6		
23	INPUT7	Input	Digital input 7		
24	INPUT8	Input	Digital input 8		

ReeR MOSAIC-MA4 **Analog Input Expansion Unit**



The ReeR MOSAIC (MOdular SAfety Integrated Controller) MA4 input expansion unit provides four analog inputs. Applications include load cells, pressure switches, temperature measurement, flow and level measurements, etc.

Features

- · Four independent isolated analog safety inputs programmable with the Mosaic Safety Designer software
- · Individual channels can be paired to allow sensor reading redundancy
- LED status and fault diagnostic indicators
- Removable terminal block plus screw
- · Connection to M1S via MSC 5-way ReeR proprietary bus. Bus connector included.



MOSAIC-MA4

Safety Data per EN 13849-1				
Category	4			
Performance level	е			
MTTF _d (years)	30-100			
DC _{avg}	High			
Safety Data per IEC/EN 62061, IEC/EN 61508				
SIL CL	3			
SIL	3			
HFT	1			
DC _{avg}	High			
SFF	99.8%			
PFH _d (t-20a)	1.53e ⁻⁸			

Safety data is dependent on circuit architecture. See manual for further details.

This expansion unit works only with the M1S controller.

MOSAIC-MA4 Expansion Unit				
Part Number	Price	Voltage	Description	Connection
MOSAIC-MA4	\$-057i4:	24VDC	Input expansion unit providing 4 analog safety inputs	Removable terminal block, screw contacts







MOSAIC-MA4 Specifications				
	General Specifications			
Operating Temperature	-10°C to +55°C [14°F to 131°F]			
Storage Temperature	-20°C to +85°C [-4°F to 185°F]			
Altitude	2000m (max)			
Vibration Resistance	Tested to IEC 60068-2-6			
Degree of Protection	IP 20			
Housing	Polyamide			
Weight	240g [8.47 oz]			
Agency Approvals and Standard	cULus, CE, TÜV			
Terminal Designation per EN 50 005	AWG 12-30 solid/stranded. Use 60/75°C copper (Cu) conductor only.			
Wire Fixing	Screw pluggable terminal blocks. Terminal tightening torque 5-7 lb•in (0.6-0.7 N•m).			
Specifications				
Nominal Voltage	24VDC			
Voltage Range	± 20%			
Maximum Consumption	5W			
Safety Inputs	4 analog inputs			
Resolution	16 bit with 2.5 to 4000 samples per second, selectable via MSD software			
Input FBK / Reset	-			
Test Outputs	-			
OSSD Outputs	-			
Signaling Outputs	-			
Technical Data	Each channel can detect a 4-20 mA current or a 0-10 VDC voltage, selectable via MSD software			

Note: See product manual for complete details.

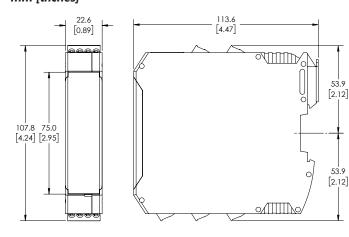
Electrical Connections to MOSAIC-MA4



- Wire size range: AWG 12-30 (solid/stranded) (UL).
- Use 60/75°C copper (Cu) conductor only.
- Turn off power before making connections.
- \bullet The supply voltage must be 24VDC \pm 20% (PELV, in compliance with the standard EN 60204-1 (Chapter 6.4).
- · Do not use the MOSAIC to supply external devices.
- The same ground connection (0VDC) must be used for all system components.
- Separate power supplies are recommended for the safety module and for other electrical power equipment (electric motors, inverters, frequency converters) or other sources of disturbance.
- • Cables used for connections of longer than 50m [164ft] must have a cross-section of at least 1mm^2 (AWG16).

This expansion unit works only with the M1S controller.

Dimensions mm [inches]



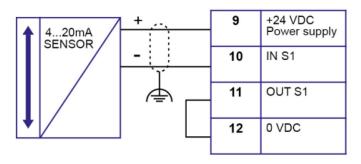
MA4 Module Connections					
Terminal	Signal	Туре	Operation	Description	
1	24VDC	_	-	24VDC power supply	
2	NODE_SEL0	Input		Alada adada a	
3	NODE_SEL1	Input	_	Node selection	
4	0VDC	_	-	0VDC power supply	
9	24VDC_S1	Output	Isolated 24VDC power supply for Sensor 1		
10	IN_S1	lanut	4-20 mA Sensor 1 input		
10	NEG_S1	Input	0-10 VDC Sensor 1 negative input	Sensor 1 connections	
11	OUT_S1	Output	4-20 Sensor 1 output	Sensor I connections	
"	POS_S1	Input	0-10 VDC Sensor 1 positive input		
12	0VDC_S1	Output	Isolated 0VDC reference for Sensor 1		
13	24VDC_S3	Output	Isolated 24VDC power supply for Sensor 3		
14	IN_S3	land.	4-20 mA Sensor 3 input		
14	NEG_S3	Input	0-10 VDC Sensor 3 negative input	Sensor 3 connections	
15	OUT_S3	Output	4-20 Sensor 3 output	Sensor 3 connections	
15	POS_S3	Input	0-10 VDC Sensor 3 positive input		
16	0VDC_S3	Output	Isolated 0VDC reference for Sensor 3		
17	24VDC_S2	Output	Isolated 24VDC power supply for Sensor 2		
18	IN_S2	IN_S2 4-20 mA S	4-20 mA Sensor 2 input		
10	NEG_S2	Input	0-10 VDC Sensor 2 negative input	Sensor 2 connections	
19	OUT_S2	Output	4-20 Sensor 2 output	Sensor 2 connections	
19	POS_S2	Input	0-10 VDC Sensor 2 positive input		
20	0VDC_S2	Output	Isolated 0VDC reference for Sensor 2		
21	24VDC_S4	Output	Isolated 24VDC power supply for Sensor 4		
22	IN_S4	Input	4-20 mA Sensor 4 input		
22	NEG_S4	прис	0-10 VDC Sensor 4 negative input	Sensor 4 connections	
23	OUT_S4	Output	4-20 Sensor 4 output	Sensor 4 connections	
23	POS_S4	Input 0-10 VDC Sensor 4 positive input			
24	0VDC_S4	Output	Isolated 0VDC reference for Sensor 4		

Electrical Connections to MOSAIC-MA4

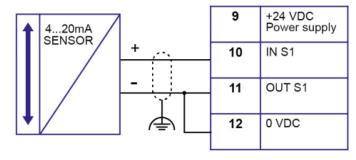


MOSAIC-MA4 Connection Diagrams

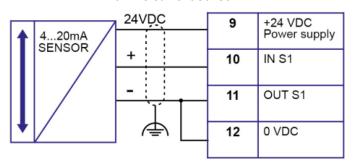
2-wire current sensor



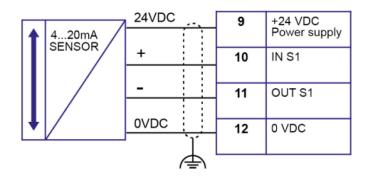
3-wire current sensor with external power supply



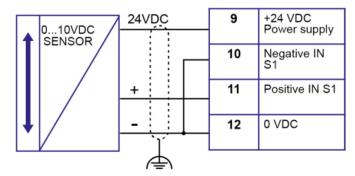
3-wire current sensor



4-wire current sensor



3-wire voltage sensor



ReeR MOSAIC MV Series Speed Monitor Expansion Units LERER The Rear MOSAIC (Modules CAL)



The ReeR MOSAIC (MOdular SAfety Integrated Controller) MV Series Safety Speed Monitor expansion units provide the ability to safely monitor speed using proximity switches or encoders.

Features

- All speed monitor expansion units can receive inputs from two proximity switches
- Allows the monitoring of zero speed, max speed, speed range, and motion direction
- Programmable with the Mosaic Safety Designer software
- LED status and fault diagnostic indicators
- Connection to M1 or M1S via MSC 5-way ReeR proprietary bus. Bus connector included.
- · Removable terminal block plus screw contacts



MOSAIC-MV2T

Safety Data per EN 13849-1				
Category	4			
Performance level	е			
MTTF _d (years)	30-100			
DC _{avg}	High			
Safety Data per IEC/EN 62061, IEC/EN 61508				
SIL CL	3			
SIL	3			
HFT	1			
DC _{avg}	High			
SFF	99.8%			
PFH _d (t-20a)	Varies – see Specifications table			

Safety data is dependent on circuit architecture. See manual for further details.

	MOSAIC MV Series Expansion Unit Selection Guide						
Part Number	Price	Number of Encoders	Type of Encoder	Number of Proximity Switches	Maximum Number of Axes		
MOSAIC-MV0	\$-057i3:	0	_	2	2		
MOSAIC-MV1T	\$;057h!:	1	TTL (line driver)	2	2		
MOSAIC-MV1H	\$057h?:	1	HTL (push-pull)	2	2		
MOSAIC-MV1S	\$;057h,:	1	SIN/COS	2	2		
MOSAIC-MV2T	\$-057i0:	2	TTL (line driver)	2	2		
MOSAIC-MV2H	\$-057i1:	2	HTL (push-pull)	2	2		
MOSAIC-MV2S	\$-057i2:	2	SIN/COS	2	2		







	MOSAIC MV Series Specifications				
	General Specifications				
Operating Temperature		-10°C to +55°C [14°F to 131°F]			
Storage Temperatur	re	-20°C to +85°C [-4°F to 185°F]			
Altitude		2000m (max)			
Vibration Resistanc	е	Tested to IEC 60068-2-6			
Degree of Protection	n	IP 20			
Housing		Polyamide			
Weight		240g [8.47 oz]			
Agency Approvals a	and Standard	cULus, CE, TÜV			
Terminal Designation	on per EN 50 005	AWG 12-30 solid/stranded. Use 60/75°C copper (Cu) conductor only.			
Wire Fixing		Screw pluggable terminal blocks. Terminal tightening torque 5-7 lb•in (0.6-0.7 N•m).			
Specifications Specification Spec					
Nominal Voltage		24VDC			
Voltage Range		± 20%			
Maximum Consump	otion	3W			
Maximum Encoder I	Frequency	500kHz (HTL: 300kHz)			
	MOSAIC-MV0	7.48e ⁻⁹			
	MOSAIC-MV1T	8.58e ⁻⁹			
	MOSAIC-MV1H	8.20e ⁻⁹			
PFH _d (t-20a)	MOSAIC-MV1S	9.43e ⁻⁹			
	MOSAIC-MV2T	9.68e ⁻⁹			
	MOSAIC-MV2H	8.92e ⁻⁹			
	MOSAIC-MV2S	1.14e ⁻⁸			

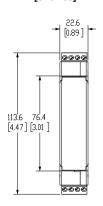
Note: See product manual for complete details.

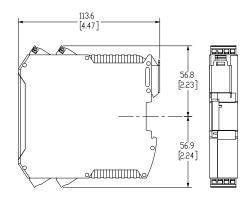
Electrical Connections to MOSAIC-MV0



- Wire size range: AWG 12-30 (solid/stranded) (UL).
- Use 60/75°C copper (Cu) conductor only.
- Turn off power before making connections.
- \bullet The supply voltage must be 24VDC \pm 20% (PELV, in compliance with the standard EN 60204-1 (Chapter 6.4).
- Do not use the MOSAIC to supply external devices.
- The same ground connection (0VDC) must be used for all system components.
- Separate power supplies are recommended for the safety module and for other electrical power equipment (electric motors, inverters, frequency converters) or other sources of disturbance.
- Cables used for connections of longer than 50m [164ft] must have a cross-section of at least 1mm² (AWG16).

Dimensions mm [inches]

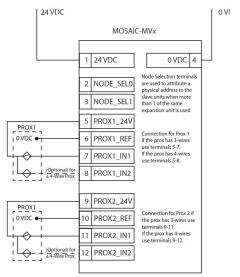




	MV0 Terminal Connections					
Terminal	Signal	Туре	<u>Operation</u>	Description		
1	24VDC	_	-	24VDC power supply		
2	NODE_SEL0	Input		Node selection		
3	NODE_SEL1	Input	_	Node Selection		
4	0VDC	_	_	0VDC power supply		
5	PROX1_24V	Output	Power supply 24VDC to PROX1			
6	PROX1_REF	Output	Power supply 0VDC to PROX1	Denviseit A compostions		
7	PROX1 IN1 (3 wires)	Input	PROX1 NO input	Proximity 1 connections		
8	PROX1 IN2 (4 wires)	Input	PROX1 NC input			
9	PROX2_24V	Output	Power supply 24VDC to PROX2			
10	PROX2_REF	Output	Power supply 0VDC to PROX2	Denviseit 2 composting		
11	PROX2 IN1 (3 wires)	Input	PROX2 NO input	Proximity 2 connections		
12	PROX2 IN2 (4 wires)	Input	PROX2 NC input			
13	Not connected	_	-	-		
14	Not connected	_	-	-		
15	Not connected	_	-	-		
16	Not connected	_	-	-		

Please see the ReeR MOSAIC Supplemental Manual for basic wiring examples.

Proximity Connection Diagram



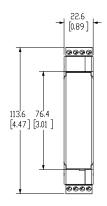
Electrical Connections to MOSAIC MVxT Series

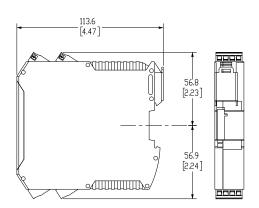


- Wire size range: AWG 12-30 (solid/stranded) (UL).
- Use 60/75°C copper (Cu) conductor only.
- Turn off power before making connections.
- The supply voltage must be 24VDC \pm 20% (PELV, in compliance with the standard EN 60204-1 (Chapter 6.4).
- Do not use the MOSAIC to supply external devices.
- The same ground connection (0VDC) must be used for all system components.
- Separate power supplies are recommended for the safety module and for other electrical power equipment (electric motors, inverters, frequency converters) or other sources of disturbance.
- Cables used for connections of longer than 50m [164ft] must have a cross-section of at least 1mm² (AWG16).
- TTL (Line Driver) encoders are compatible with the MVxT series.

Dimensions

mm [inches]

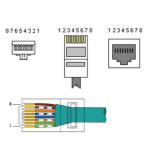




	MVxT Terminal Connections					
Terminal	Signal	Туре	<u>Operation</u>	Description		
1	24VDC	-	-	24VDC power supply		
2	NODE_SEL0	Input		Node selection		
3	NODE_SEL1	Input	_	Node Selection		
4	0VDC	_	-	0VDC power supply		
5	PROX1_24V	Output	Power supply 24VDC to PROX1			
6	PROX1_REF	Output	Power supply 0VDC to PROX1	Dravinsk 1 connections		
7	PROX1 IN1 (3 wires)	Input	PROX1 NO input	Proximity 1 connections		
8	PROX1 IN2 (4 wires)	Input	PROX1 NC input			
9	PROX2_24V	Output	Power supply 24VDC to PROX2			
10	PROX2_REF	Output	Power supply 0VDC to PROX2	Dravinsity 2 connections		
11	PROX2 IN1 (3 wires)	Input	PROX2 NO input	Proximity 2 connections		
12	PROX2 IN2 (4 wires)	Input	PROX2 NC input			
13	Not connected	_	-	-		
14	Not connected	_	-	-		
15	Not connected	_	-	-		
16	Not connected	_	_	_		

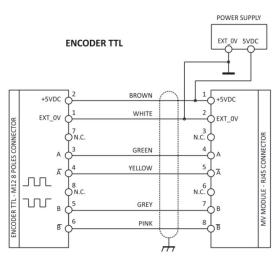
Please see the ReeR MOSAIC Supplemental Manual for basic wiring examples.

TTL Encoder Connection Diagram



PI	'N	MV1T MV2T
1		5VDC
2		EXT_0V
3		Not connected
4	INDIIT	Α
5	INPUT	Ā
6		Not connected
7		В
8		Ē

NOTE: All inputs must be utilized. For example, an encoder without the Ā signal will not work. Be sure to select a compatible encoder type.



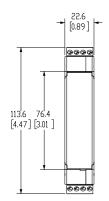
Electrical Connections to MOSAIC MVxH Series

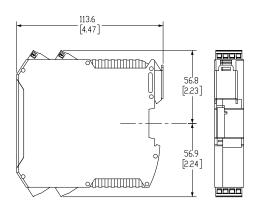


- Wire size range: AWG 12-30 (solid/stranded) (UL).
- Use 60/75°C copper (Cu) conductor only.
- Turn off power before making connections.
- · Do not use the MOSAIC to supply external devices.
- The same ground connection (0VDC) must be used for all system components.
- Separate power supplies are recommended for the safety module and for other electrical power equipment (electric motors, inverters, frequency converters) or other sources of disturbance.
- Cables used for connections of longer than 50m [164ft] must have a cross-section of at least 1mm² (AWG16).
- HTL (Push-Pull) encoders are compatible with the MVxH series.

Dimensions

mm [inches]

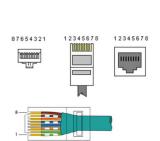




MVxH Terminal Connections					
Terminal	Signal	Туре	<u>Operation</u>	Description	
1	24VDC	_	-	24VDC power supply	
2	NODE_SEL0	Input		Nede calcution	
3	NODE_SEL1	Input	_	Node selection	
4	0VDC	_	_	0VDC power supply	
5	PROX1_24V	Output	Power supply 24VDC to PROX1		
6	PROX1_REF	Output	Power supply 0VDC to PROX1	Dravimity 1 connections	
7	PROX1 IN1 (3 wires)	Input	PROX1 NO input	Proximity 1 connections	
8	PROX1 IN2 (4 wires)	Input	PROX1 NC input		
9	PROX2_24V	Output	Power supply 24VDC to PROX2		
10	PROX2_REF	Output	Power supply 0VDC to PROX2	Drawinsity 2 connections	
11	PROX2 IN1 (3 wires)	Input	PROX2 NO input	Proximity 2 connections	
12	PROX2 IN2 (4 wires)	Input	PROX2 NC input		
13	Not connected	_	-	<u>-</u>	
14	Not connected	_	-	-	
15	Not connected	_	-	-	
16	Not connected	_	-	-	

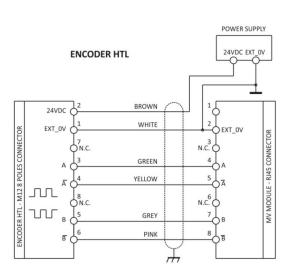
Please see the ReeR MOSAIC Supplemental Manual for basic wiring examples.

HTL Encoder Connection Diagram



PI	'N	MV1TH MV2TH
1		Not connected
2		EXT_0V
3		Not connected
4	INPUT	Α
5	INPUI	Ā
6		Not connected
7		В
8		Ē

NOTE: All inputs must be utilized. For example, an encoder without the Ā signal will not work. Be sure to select a compatible encoder type.



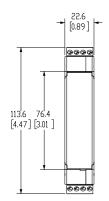
Electrical Connections to MOSAIC MVxS Series

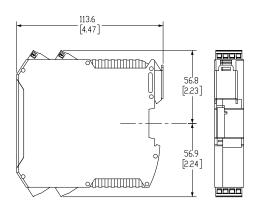


- Wire size range: AWG 12-30 (solid/stranded) (UL).
- Use 60/75°C copper (Cu) conductor only.
- Turn off power before making connections.
- \bullet The supply voltage must be 24VDC \pm 20% (PELV, in compliance with the standard EN 60204-1 (Chapter 6.4).
- · Do not use the MOSAIC to supply external devices.
- The same ground connection (0VDC) must be used for all system components.
- Separate power supplies are recommended for the safety module and for other electrical power equipment (electric motors, inverters, frequency converters) or other sources of disturbance.
- Cables used for connections of longer than 50m [164ft] must have a cross-section of at least 1mm² (AWG16).
- SIN/COS encoders are compatible with the MVxS series.

Dimensions

mm [inches]

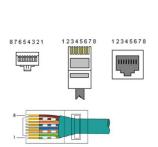




	MVxS Terminal Connections					
Terminal	Signal	Туре	Operation	Description		
1	24VDC	-	-	24VDC power supply		
2	NODE_SEL0	Input		Nada salastian		
3	NODE_SEL1	Input	_	Node selection		
4	0VDC	_	_	0VDC power supply		
5	PROX1_24V	Output	Power supply 24VDC to PROX1			
6	PROX1_REF	Output	Power supply 0VDC to PROX1	Descipit 4 consections		
7	PROX1 IN1 (3 wires)	Input	PROX1 NO input	Proximity 1 connections		
8	PROX1 IN2 (4 wires)	Input	PROX1 NC input			
9	PROX2_24V	Output	Power supply 24VDC to PROX2			
10	PROX2_REF	Output	Power supply 0VDC to PROX2	Decircit Occupations		
11	PROX2 IN1 (3 wires)	Input	PROX2 NO input	Proximity 2 connections		
12	PROX2 IN2 (4 wires)	Input	PROX2 NC input			
13	Not connected	_	-	-		
14	Not connected	_	-	-		
15	Not connected	_	-	-		
16	Not connected	_	_	-		

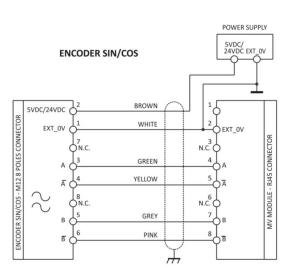
Please see the ReeR MOSAIC Supplemental Manual for basic wiring examples.

SIN/COS Encoder Connection Diagram



PIN		MV1S MV2S
1		Not connected
2		EXT_0V
3		Not connected
4	INPUT	А
5	INPUI	Ā
6		Not connected
7		В
8		Ē

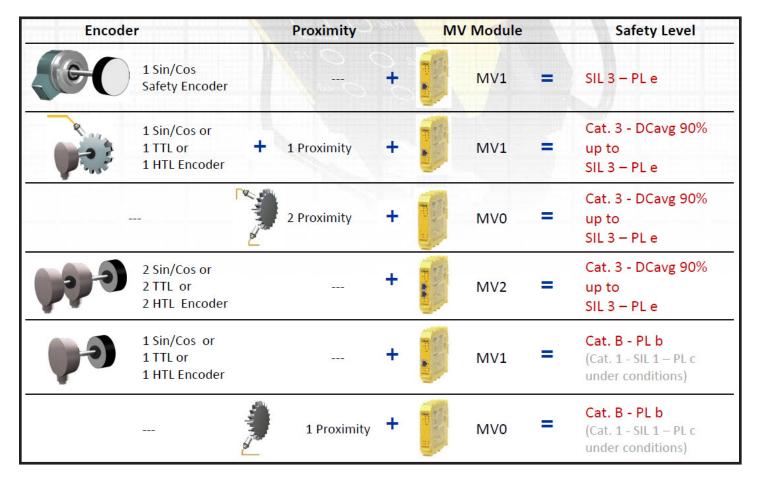
NOTE: All inputs must be utilized. For example, an encoder without the Å signal will not work. Be sure to select a compatible encoder type.



ReeR MOSAIC MV Series Speed Monitor Expansion Units CREER



Configuration-Dependent Safety Levels



All MV Series Speed Monitor Expansion Units allow for up to 2 axes.

ReeR MOSAIC-MO2 Output Expansion Unit



The ReeR MOSAIC (MOdular SAfety Integrated Controller) MO2 output expansion unit provides additionl outputs.

Features

- Two pairs OSSD Cat. 4 safety outputs (PNP 400mA)
- Two inputs for start/restart interlock and EDM
- Two status outputs (PNP 100mA)
- Two programmable digital signal outputs
- · Removable terminal block plus screw contacts
- · Connection to M1 or M1S via MSC 5-way ReeR proprietary bus. Bus connector included.



Safety	Data per EN 13849-1
Category	4
Performance level	е
MTTF _d (years)	30-100
DC _{avg}	High
Safety Data per	IEC/EN 62061, IEC/EN 61508
SIL CL	3
SIL	3
HFT	1
DC _{avg}	High
SFF	99.8%
PFH _d (t-20a)	4.08e ⁻⁹

Safety data is dependent on circuit architecture. See manual for further details.

MOSAIC-MO2 Expansion Unit					
Part Number	Price	Voltage	Description	Connection	
MOSAIC-MO2	\$-02exi:	24VDC	Output expansion unit providing 2 pair OSSD safety outputs	Removable terminal block, screw contacts	







MOSAIC-MO2 Specifications				
General Specifications				
Operating Temperature	-10°C to +55°C [14°F to 131°F]			
Storage Temperature	-20°C to +85°C [-4°F to 185°F]			
Altitude	2000m (max)			
Vibration Resistance	Tested to IEC 60068-2-6			
Degree of Protection	IP 20			
Housing	Polyamide			
Weight	240g [8.47 oz]			
Agency Approvals and Standard	Is and Standard cULus, CE, TÜV			
Terminal Designation per EN 50 005	AWG 12-30 solid/stranded. Use 60/75°C copper (Cu) conductor only.			
Wire Fixing	Screw pluggable terminal blocks. Terminal tightening torque 5-7 lb•in (0.6-0.7 N•m).			
	Specifications			
Nominal Voltage	24VDC			
Voltage Range	± 20%			
Maximum Consumption	3W			
Digital Inputs	-			
Input FBK / Reset	2 for EDM control/possible automatic or manual operation with RESTART button			
Test Outputs	-			
OSSD Outputs	2 pairs solid state safety outputs PNP active high 400mA@24VDC max			
Signaling Outputs	2 programmable - PNP high			

Note: See product manual for complete details.

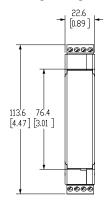
Electrical Connections to MOSAIC-MO2

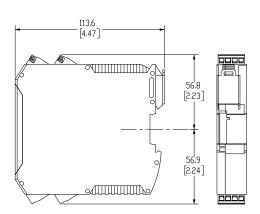


- Wire size range: AWG 12-30 (solid/stranded) (UL).
- Use 60/75°C copper (Cu) conductor only.
- Turn off power before making connections.
- The supply voltage must be 24VDC \pm 20% (PELV, in compliance with the standard EN 60204-1 (Chapter 6.4).
- Do not use the MOSAIC to supply external devices.
- The same ground connection (0VDC) must be used for all system components.
- Separate power supplies are recommended for the safety module and for other electrical power equipment (electric motors, inverters, frequency converters) or other sources of disturbance.
- Cables used for connections of longer than 50m [164ft] must have a cross-section of at least 1mm² (AWG16).

Dimensions

mm [inches]





	MO2 Module Connections					
Terminal	Signal	Туре	Description			
1	24VDC	_	24VDC power supply			
2	NODE_SEL0	Input	Node selection			
3	NODE_SEL1	Input	Node Selection			
4	0VDC	_	0VDC power supply			
5	OSSD1_A	Output	Ctatio potatu autout 1			
6	OSSD1_B	Output	Static safety output 1			
7	RESTART_FBK1	Input	Feedback/Restart 1			
8	OUT_STATUS1	Output	Programmable signal output			
9	OSSD2_A	Output	Ctatio andatu autaut 2			
10	OSSD2_B	Output	Static safety output 2			
11	RESTART_FBK2	Input	Feedback/Restart 2			
12	OUT_STATUS2	Output	Programmable signal output			
13	24VDC	_	24VDC power supply			
14	Not connected	_	_			
15	0VDC	_	0VDC power supply			
16	Not connected	_	_			

ReeR MOSAIC-MO4 Output Expansion Unit



The ReeR MOSAIC (MOdular SAfety Integrated Controller) MO4 output expansion unit provides additional outputs.

Features

- Four pair OSSD Cat. 4 safety outputs (PNP 400mA)
- Four inputs for start/restart interlock and EDM
- Four programmable digital signal outputs (PNP 100mA)
- LED input/output status and fault diagnostics indicators
- Removable terminal block plus screw contacts
- Connection to M1 or M1S via MSC 5-way ReeR proprietary bus. Bus connector included.



Safety	Data per EN 13849-1
Category	4
Performance level	е
MTTF _d (years)	30-100
DC _{avg}	High
Safety Data per	IEC/EN 62061, IEC/EN 61508
SIL CL	3
SIL	3
HFT	1
DC _{avg}	High
SFF	99.8%
PFH _d (t-20a)	5.83e ⁻⁹

Safety data is dependent on circuit architecture. See manual for further details.

MOSAIC-MO4 Expansion Unit				
Part Number	er Price Voltage Description Connection			
MOSAIC-MO4	\$-02exj:	24VDC	Output expansion unit providing 4 pair OSSD safety outputs	Removable terminal block, screw contacts







MOSAIC MO4 Specifications				
General Specifications				
Operating Temperature	-10°C to +55°C [14°F to 131°F]			
Storage Temperature	-20°C to +85°C [-4°F to 185°F]			
Altitude	2000m (max)			
Vibration Resistance	Tested to IEC 60068-2-6			
Degree of Protection	IP 20			
Housing	Polyamide			
Weight	240g [8.47 oz]			
Agency Approvals and Standard	cULus, CE, TÜV			
Terminal Designation per EN 50 005	AWG 12-30 solid/stranded. Use 60/75°C copper (Cu) conductor only.			
Wire Fixing	Screw pluggable terminal blocks. Terminal tightening torque 5-7 lb•in (0.6-0.7 N•m).			
Specifications Specification Specificatio				
Nominal Voltage	24VDC			
Voltage Range	± 20%			
Maximum Consumption	3W			
Digital Inputs	<u>-</u>			
Input FBK / Reset	4 for EDM control/possible automatic or manual operation with RESTART button			
Test Outputs	-			
OSSD Outputs	4 pairs solid state safety outputs PNP active high 400mA@24VDC max			
Signaling Outputs	4 programmable - PNP high			

Note: See product manual for complete details.

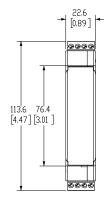
Electrical Connections to MOSAIC-MO4

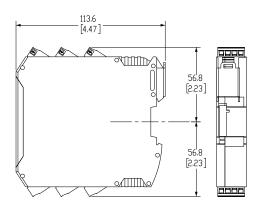


- Wire size range: AWG 12-30 (solid/stranded) (UL).
- Use 60/75°C copper (Cu) conductor only.
- Turn off power before making connections.
- \bullet The supply voltage must be 24VDC \pm 20% (PELV, in compliance with the standard EN 60204-1 (Chapter 6.4).
- · Do not use the MOSAIC to supply external devices.
- The same ground connection (0VDC) must be used for all system components.
- Separate power supplies are recommended for the safety module and for other electrical power equipment (electric motors, inverters, frequency converters) or other sources of disturbance.
- Cables used for connections of longer than 50m [164ft] must have a cross-section of at least 1mm² (AWG16).

Dimensions

mm [inches]





MO4 Module Connections					
Terminal	Signal	Туре	Description		
1	24VDC	_	24VDC power supply		
2	NODE_SEL0	Input	Node colostico		
3	NODE_SEL1	Input	Node selection		
4	0VDC	_	0VDC power supply		
5	OSSD1_A	Output	Static safety output 1		
6	OSSD1_B	Output	Static salety output 1		
7	RESTART_FBK1	Input	Feedback/Restart1		
8	OUT_STATUS1	Output	Programmable signal output		
9	OSSD2_A	Output	Ctatia andatu autaut 2		
10	OSSD2_B	Output	Static safety output 2		
11	RESTART_FBK2	Input	Feedback/Restart2		
12	OUT_STATUS2	Output	Programmable signal output		
13	24VDC	_	24VDC power supply		
14	24VDC	_	24VDC power supply		
15	0VDC	_	0VDC power supply		
16	0VDC	_	0VDC power supply		
17	OSSD4_A	Output	Static safety output 4		
18	OSSD4_B	Output	Static salety output 4		
19	RESTART_FBK4	Input	Feedback/Restart 4		
20	OUT_STATUS4	Output	Programmable signal output		
21	OSSD3_A	Output	Static safety output 3		
22	OSSD3_B	Output	Static safety output 3		
23	RESTART_FBK3	Input	Feedback/Restart 3		
24	OUT_STATUS3	Output	Programmable signal output		

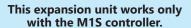
ReeR MOSAIC-MO4L **Output Expansion Unit**



The ReeR MOSAIC (MOdular SAfety Integrated Controller) MO4L output expansion unit provides additional OSSD outputs.

Features

- Four configurable I/O for start/restart interlock, external device monitoring (EDM) and output status monitoring
- Four individual or two pair OSSD safety outputs (PNP 400mA)
- · LED status and fault diagnostics indicator
- Removable terminal block plus screw contacts
- · Connection to M1S via MSC 5-way ReeR proprietary bus. Bus connector included.





MOSAIC-MO4L

Safety	Data per EN 13849-1	
Category	4	
Performance level	е	
MTTF _d (years)	30-100	
DC _{avg}	High	
Safety Data per	IEC/EN 62061, IEC/EN 61508	
SIL CL	3	
SIL 3		
HFT	1	
DC _{avg}	High	
SFF	99.8%	
PFH _d (t-20a)	1.11e ⁻⁸	

Safety data is dependent on circuit architecture. See manual for further details.

MOSAIC-MO4L Expansion Unit				
Part Number	Price	Voltage	Description	Connection
MOSAIC-MO4L	\$057h_:	24VDC	Output expansion unit providing 4 single or 2 pair OSSD outputs and 4 configurable I/O	Removable terminal block, screw contacts







MOSAIC-MO4L Specifications				
General Specifications				
Operating Temperature	-10°C to +55°C [14°F to 131°F]			
Storage Temperature	-20°C to +85°C [-4°F to 185°F]			
Altitude	2000m (max)			
Vibration Resistance	Tested to IEC 60068-2-6			
Degree of Protection	IP 20			
Housing	Polyamide			
Weight	240g [8.47 oz]			
Agency Approvals and Standard	cULus, CE, TÜV			
Terminal Designation per EN 50 005	AWG 12-30 solid/stranded. Use 60/75°C copper (Cu) conductor only.			
Wire Fixing	Screw pluggable terminal blocks. Terminal tightening torque 5-7 lb•in (0.6-0.7 N•m).			
Specifications Specification Specifi				
Nominal Voltage 24VDC				
Voltage Range	± 20%			
Maximum Consumption	3W			
Digital Inputs	None			
Test Outputs	None			
OSSD Outputs	4 individual or 2 pair solid state safety outputs PNP active high 400mA@24VDC max			
Configurable I/O	4 terminals to be used for I/O Input: EDM, feedback, reset, restart Output: status monitoring			

Note: See product manual for complete details.

Electrical Connections to MOSAIC-MO4L

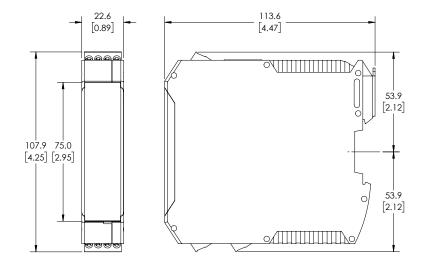


- Wire size range: AWG 12-30 (solid/stranded) (UL).
- Use 60/75°C copper (Cu) conductor only.
- Turn off power before making connections.
- The supply voltage must be 24VDC \pm 20% (PELV, in compliance with the standard EN 60204-1 (Chapter 6.4).
- Do not use the MOSAIC to supply external devices.
- The same ground connection (0VDC) must be used for all system components.
- Separate power supplies are recommended for the safety modules and for other electrical power equipment (electric motors, inverters, frequency converters) or other sources of disturbance.
- Cables used for connections of longer than 50m [164ft] must have a cross-section of at least 1mm² (AWG16).

This expansion unit works only with the M1S controller.

Dimensions

mm [inches]



	MO4L Module Connections				
Terminal	Signal	Туре	Description		
1	24VDC	_	24VDC power supply		
2	NODE_SEL0	Input	Node selection		
3	NODE_SEL1	Input	Node Selection		
4	0VDC	-	0VDC power supply		
5	OSSD1	Output	Static safety output 1		
6	OSSD2	Output	Static safety output 2		
7	RESTART_FBK1 or	Input	Feedback/Restart 1		
/	STATUS1	Output	SIL 1 / PLc		
8	RESTART_FBK2 or	Input	Feedback/Restart 2		
0	STATUS2	Output	SIL 1 / PLc		
9	OSSD3	Output	Static safety output 3		
10	OSSD4	Output	Static safety output 4		
11	RESTART_FBK3 or	Input	Feedback/Restart 3		
11	STATUS3	Output	SIL 1 / PLc		
12	RESTART_FBK4 or	Input	Feedback/Restart 4		
12	STATUS4	Output	SIL 1 / PLc		

ReeR MOSAIC-MOR4 **Output Expansion Unit**



The ReeR MOSAIC (MOdular SAfety Integrated Controller) MOR4 safety relay expansion unit offers configurable outputs.

Features

- Four single channel NO outputs (safety category 1 or 2), or two dual channel NO outputs (safety category
- · Removable terminal block plus screw contacts
- Connection to M1 or M1S via MSC 5-way ReeR proprietary bus. Bus connector included.



Safety	Data per EN 13	849-1	
	Paired Relay	Single Relay	
Category	4	1-2	
Performance level	е	c (category 1) d (category 2)	
MTTF _d (years)	Please refer to product insert		
DC _{avg}	High		
Safety Data per IEC/EN 62061, IEC/EN 61508			
SIL CL	3	1 (category 1) 2 (category 2)	
SIL	3	1 (category 1) 2 (category 2)	
HFT	•	1	
DC _{avg}	High		
SFF	99.8%		
PFH _d (t-20a)	Please refer to	product insert	

Safety data is dependent on circuit architecture. See manual for further

MOSAIC-MOR4 Expansion Unit				
Part Number	ort Number Price Voltage Description Connection			
MOSAIC-MOR4	\$02exd:	24VDC	Safety relay expansion unit with configurable outputs	Removable terminal block, screw contacts







MOSAIC-MOR4 Specifications				
General Specifications				
Operating Temperature	-10°C to +55°C [14°F to 131°F]			
Storage Temperature	-20°C to +85°C [-4°F to 185°F]			
Altitude	2000m (max)			
Vibration Resistance	Tested to IEC 60068-2-6			
Degree of Protection	IP 20			
Housing	Polyamide			
Weight	300g [10.58 oz]			
Agency Approvals and Standard	cULus, CE, TÜV			
Terminal Designation per EN 50 005	AWG 12-30 solid/stranded. Use 60/75°C copper (Cu) conductor only.			
Wire Fixing	Screw or clamp terminal blocks with 8, 16 or 24 terminals, plus rear panel plug-in connector. Terminal tightening torque 5-7 lb•in (0.6-0.7 N•m).			
Input Specifications				
Nominal Voltage	24VDC			
Voltage Range	± 20%			
Maximum Consumption	3W			
Output Specifications				
Electrical Contact LIfe >10 ⁵ switching cycles				
Mechanical Life	>40x10 ⁶			
Contact Type	4 NO positively driven			
Signaling Output	-			
Input/FBK/Reset	1-4 depending on configuration			
Operate Delay	Typ. 10ms			
Release Delay	Typ. 5ms			
Nominal Output Voltage	240VAC			
Thermal Current (I _{th})	6A			
Short Circuit Strength	Fuse: NO contacts 10 A gG/gL / NC contacts: 6A gG/gL IEC/EN 60269			
Switching Capacity	AC15: 3A/250VAC – DC13:2A/24VDC			
Switching Frequency	Max 20 switching cycles/min			

Note: See product manual for complete details.

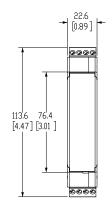
Electrical Connections to MOSAIC-MOR4

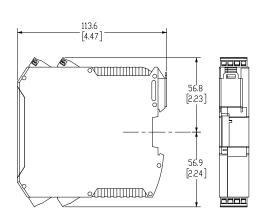


- Wire size range: AWG 12-30 (solid/stranded) (UL).
- Use 60/75°C copper (Cu) conductor only.
- Turn off power before making connections.
- \bullet The supply voltage must be 24VDC \pm 20% (PELV, in compliance with the standard EN 60204-1 (Chapter 6.4).
- · Do not use the MOSAIC to supply external devices.
- The same ground connection (0VDC) must be used for all system components.
- Separate power supplies are recommended for the safety module and for other electrical power equipment (electric motors, inverters, frequency converters) or other sources of disturbance.
- Cables used for connections of longer than 50m [164ft] must have a cross-section of at least 1mm² (AWG16).

Dimensions

mm [inches]





MOR4 Module Connections				
Terminal	Signal	Туре	Description	
1	24VDC	_	24VDC power supply	
2	NODE_SEL0	Input	Node selection	
3	NODE_SEL1	Input	Node Selection	
4	0VDC	_	0VDC power supply	
5	REST_FBK1	Input	Feedback/Restart 1	
6	REST_FBK2	Input	Feedback/Restart 2	
7	REST_FBK3	Input	Feedback/Restart 3	
8	REST_FBK4	Input	Feedback/Restart 4	
9	A_NO1	Output	NO contact Channel 1	
10	B_NO1	Output	NO contact Channel 1	
11	A_NO2	Output	NO contact Channel 2	
12	B_NO2	Output	NO contact Channel 2	
13	A_NO3	Output	NO contact Channel 2	
14	B_NO3	Output	NO contact Channel 3	
15	A_NO4	Output	NO contact Channel 4	
16	B_NO4	Output	NO contact Channel 4	

ReeR MOSAIC-MOR4S8 Output Expansion Unit



The ReeR MOSAIC (MOdular SAfety Integrated Controller) MOR4S8 safety relay expansion unit offers configurable outputs.

Features

- Four single channel outputs (safety category 1 or 2), or two dual channel outputs (safety category 4)
- Removable terminal block plus screw contacts
- LED signaling of input/output status and fault diagnostics
- Provides status outputs
- Connection to M1 or M1S via MSC 5-way ReeR proprietary bus. Bus connector included.



Safety Data per EN 13849-1				
	Paired Relay	Single Relay		
Category	4	1-2		
Performance level	е	c (category 1) d (category 2)		
MTTF _d (years)	Please refer to product insert			
DC _{avg}	High			
Safety Data	per IEC/	EN 62061, IEC/EN 61508		
SIL CL	3	1 (category 1) 2 (category 2)		
SIL	3 1 (category 1) 2 (category 2)			
HFT	1			
DC _{avg}	High			
SFF	99.8%			
PFH _d (t-20a)	Please refer to product insert			

Safety data is dependent on circuit architecture. See manual for further details.

MOSAIC-MOR4S8 Expansion Unit				
Part Number	Price	Voltage	Description	Connection
MOSAIC-MOR4S8	\$;;03!tg:	24VDC	Safety relay expansion unit with configurable outputs	Removable terminal block, screw contacts







MOSAIC-MOR4S8 Specifications				
General Specifications				
Operating Temperature	-10°C to +55°C [14°F to 131°F]			
Storage Temperature	-20°C to +85°C [-4°F to 185°F]			
Altitude	2000m (max)			
Vibration Resistance	Tested to IEC 60068-2-6			
Degree of Protection	IP 20			
Housing	Polyamide			
Weight	320g [11.29 oz]			
Agency Approvals and Standard cULus, CE, TÜV				
Terminal Designation per EN 50 005	AWG 12-30 solid/stranded. Use 60/75°C copper (Cu) conductor only.			
Wire Fixing	Screw or clamp terminal blocks with 8, 16 or 24 terminals, plus rear panel plug-in connector. Terminal tightening torque 5-7 lb•in (0.6-0.7 N•m).			
Input Specifications				
Nominal Voltage	24VDC			
Voltage Range	± 20%			
Maximum Consumption	3W			
	Output Specifications			
Electrical Contact Llfe	>10 ⁵ switching cycles			
Mechanical Life	>40x10 ⁶			
Contact Type	4 NC positively driven			
Signaling Output	8 programmable PNP active high, 100ma@24VDC max			
Input/FBK/Reset	1-4 depending on configuration			
Operate Delay	Typ. 10ms			
Release Delay	Typ. 5ms			
Nominal Output Voltage	240VAC			
Thermal Current (I _{th})	6A			
Short Circuit Strength	Fuse: NO contacts 10 A gG/gL / NC contacts: 6A gG/gL IEC/EN 60269			
Switching Capacity	AC15: 3A/250VAC – DC13:2A/24VDC			
Switching Frequency	Max 20 switching cycles/min			

Note: See product manual for complete details.

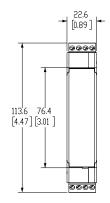
Electrical Connections to MOSAIC-MOR4S8

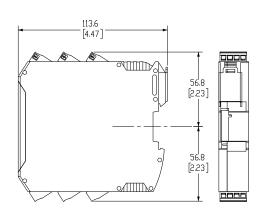


- Wire size range: AWG 12-30 (solid/stranded) (UL).
- Use 60/75°C copper (Cu) conductor only.
- Turn off power before making connections.
- The supply voltage must be 24VDC \pm 20% (PELV, in compliance with the standard EN 60204-1 (Chapter 6.4).
- · Do not use the MOSAIC to supply external devices.
- The same ground connection (0VDC) must be used for all system components.
- Separate power supplies are recommended for the safety module and for other electrical power equipment (electric motors, inverters, frequency converters) or other sources of disturbance.
- Cables used for connections of longer than 50m [164ft] must have a cross-section of at least 1mm² (AWG16).

Dimensions

mm [inches]





MOR4S8 Module Connections				
Terminal	Signal	Туре	Description	
1	24VDC	_	24VDC power supply	
2	NODE_SEL0	Input	Node selection	
3	NODE_SEL1	Input	Node selection	
4	0VDC	_	0VDC power supply	
5	REST_FBK1	Input	Feedback/Restart 1	
6	REST_FBK2	Input	Feedback/Restart 2	
7	REST_FBK3	Input	Feedback/Restart 3	
8	REST_FBK4	Input	Feedback/Restart 4	
9	A_NO1	Output	NO contact Channel 1	
10	B_NO1	Output	NO contact Channel 1	
11	A_NO2	Output	NO contact Channel 2	
12	B_NO2	Output	NO contact channel 2	
13	A_NO3	Output	NO contact Channel 3	
14	B_NO3	Output	NO contact channel 3	
15	A_NO4	Output	NO contact Channel 4	
16	B_NO4	Output	NO contact channel 4	
17	OUT_STATUS1	Output	Programmable signal output 1	
18	OUT_STATUS2	Output	Programmable signal output 2	
19	OUT_STATUS3	Output	Programmable signal output 3	
20	OUT_STATUS4	Output	Programmable signal output 4	
21	OUT_STATUS5	Output	Programmable signal output 5	
22	OUT_STATUS6	Output	Programmable signal output 6	
23	OUT_STATUS7	Output	Programmable signal output 7	
24	OUT_STATUS8	Output	Programmable signal output 8	

ReeR MOSAIC-MOS8 Output Expansion Module



The ReeR MOSAIC (MOdular SAfety Integrated Controller) MOS8 output expansion module provides eight programmable digital signal outputs.

Features

- 8 programmable digital signal outputs programmable with the MOSAIC Safety Designer Software
- Removable terminal block plus screw contacts
- Connection to M1 or M1S via MSC 5-way ReeR proprietary bus. Bus connector included.

MOSAIC-MOS8 Expansion Unit				
Part Number	Price	Voltage	Description	Connection
MOSAIC-MOS8	\$02exo:	24VDC	Automation expansion module with 8 programmable digital signal outputs	Removable terminal block, screw contacts









MOSAIC-MOS8 Specifications				
General Specifications				
Operating Temperature	-10°C to +55°C [14°F to 131°F]			
Storage Temperature	-20°C to +85°C [-4°F to 185°F]			
Altitude	2000m (max)			
Vibration Resistance	Tested to IEC 60068-2-6			
Degree of Protection	IP 20			
Housing	Polyamide			
Weight	200g [7.05 oz]			
Agency Approvals and Standard	cULus, CE, TÜV			
Terminal Designation per EN 50 005	AWG 12-30 solid/stranded. Use 60/75°C copper (Cu) conductor only.			
Wire Fixing	Screw or clamp terminal blocks with 8, 16 or 24 terminals, plus rear panel plug-in connector. Terminal tightening torque 5-7 lb•in (0.6-0.7 N•m).			
Input Specifications				
Nominal Voltage	24VDC			
Voltage Range	± 20%			
Maximum Consumption	3W			
Digital Inputs	-			
Input FBK / Reset	-			
Test Outputs	-			
OSSD Outputs	-			
Signaling Outputs	8 programmable - PNP high			

Note: See product manual for complete details.

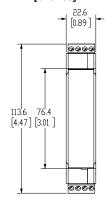
Electrical Connections to MOSAIC-MOS8

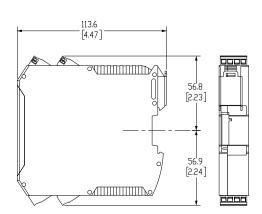


- Wire size range: AWG 12-30 (solid/stranded) (UL).
- Use 60/75°C copper (Cu) conductor only.
- Turn off power before making connections.
- The supply voltage must be 24VDC \pm 20% (PELV, in compliance with the standard EN 60204-1 (Chapter 6.4).
- · Do not use the MOSAIC to supply external devices.
- The same ground connection (0VDC) must be used for all system components.
- Separate power supplies are recommended for the safety module and for other electrical power equipment (electric motors, inverters, frequency converters) or other sources of disturbance.
- Cables used for connections of longer than 50m [164ft] must have a cross-section of at least 1mm² (AWG16).

Dimensions

mm [inches]





MOS8 Module Connections				
Terminal	Signal	Туре	Description	
1	24VDC	_	24VDC power supply	
2	NODE_SEL0	Input	Node selection	
3	NODE_SEL1	Input	Node Selection	
4	0VDC	1	0VDC power supply	
5	24VDC STATUS 108	ı	24VDC power supply OUTPUT STATUS 1-8	
6	Not connected	_	-	
7	Not connected	_	_	
8	Not connected	-	_	
9	OUT_STATUS1	Output	Programmable signal output 1	
10	OUT_STATUS2	Output	Programmable signal output 2	
11	OUT_STATUS3	Output	Programmable signal output 3	
12	OUT_STATUS4	Output	Programmable signal output 4	
13	OUT_STATUS5	Output	Programmable signal output 5	
14	OUT_STATUS6	Output	Programmable signal output 6	
15	OUT_STATUS7	Output	Programmable signal output 7	
16	OUT_STATUS8	Output	Programmable signal output 8	

ReeR MOSAIC-MOS16 Output Expansion Module



The ReeR MOSAIC (MOdular SAfety Integrated Controller) MOS16 output expansion module provides 16 programmable digital signal outputs.

Features

- 16 programmable digital signal outputs programmable with the MOSAIC Safety Designer Software
- Removable terminal block plus screw contacts
- Connection to M1 or M1S via MSC 5-way ReeR proprietary bus. Bus connector included.

MOSAIC-MOS16 Expansion Unit				
Part Number	Price	Voltage	Description	Connection
MOSAIC-MOS16	\$02exp:	24VDC	Automation expansion module with 16 programmable digital signal outputs	Removable terminal block, screw contacts









	MOSAIC-MOS16 Specifications	
	General Specifications	
Operating Temperature	-10°C to +55°C [14°F to 131°F]	
Storage Temperature	-20°C to +85°C [-4°F to 185°F]	
Altitude	2000m (max)	
Vibration Resistance	Tested to IEC 60068-2-6	
Degree of Protection	IP 20	
Housing	Polyamide	
Weight	260g [9.17 oz]	
Agency Approvals and Standard	cULus, CE, TÜV	
Terminal Designation per EN 50 005	AWG 12-30 solid/stranded. Use 60/75°C copper (Cu) conductor only.	
Wire Fixing	Screw or clamp terminal blocks with 8, 16 or 24 terminals, plus rear panel plug-in connector. Terminal tightening torque 5-7 lb•in (0.6-0.7 N•m).	
	Input Specifications	
Nominal Voltage	24VDC	
Voltage Range	± 20%	
Maximum Consumption	3W	
Digital Inputs	-	
Input FBK / Reset	-	
Test Outputs	-	
OSSD Outputs	-	
Signaling Outputs	16 programmable - PNP high	

Note: See product manual for complete details.

Note: To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific part number's web page.

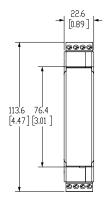
Electrical Connections to MOSAIC-MOS16

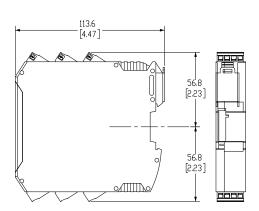


- Wire size range: AWG 12-30 (solid/stranded) (UL).
- Use 60/75°C copper (Cu) conductor only.
- Turn off power before making connections.
- The supply voltage must be 24VDC \pm 20% (PELV, in compliance with the standard EN 60204-1 (Chapter 6.4).
- Do not use the MOSAIC to supply external devices.
- The same ground connection (0VDC) must be used for all system components.
- Separate power supplies are recommended for the safety module and for other electrical power equipment (electric motors, inverters, frequency converters) or other sources of disturbance.
- Cables used for connections of longer than 50m [164ft] must have a cross-section of at least 1mm² (AWG16).

Dimensions

mm [inches]





MOS16 Module Connections					
Terminal	Signal	Туре	Description		
1	24VDC	-	24VDC power supply		
2	NODE_SEL0	Input	Node selection		
3	NODE_SEL1	Input	Node selection		
4	0VDC	_	0VDC power supply		
5	24VDC STATUS 1-8	-	24VDC power supply OUTPUT STATUS 1-8		
6	24VDC STATUS 9-16	-	24VDC power supply OUTPUT STATUS 9-16		
7	Not connected	_	_		
8	Not connected	_	_		
9	OUT_STATUS1	Output	Programmable signal output 1		
10	OUT_STATUS2	Output	Programmable signal output 2		
11	OUT_STATUS3	Output	Programmable signal output 3		
12	OUT_STATUS4	Output	Programmable signal output 4		
13	OUT_STATUS5	Output	Programmable signal output 5		
14	OUT_STATUS6	Output	Programmable signal output 6		
15	OUT_STATUS7	Output	Programmable signal output 7		
16	OUT_STATUS8	Output	Programmable signal output 8		
17	OUT_STATUS9	Output	Programmable signal output 9		
18	OUT_STATUS10	Output	Programmable signal output 10		
19	OUT_STATUS11	Output	Programmable signal output 11		
20	OUT_STATUS12	Output	Programmable signal output 12		
21	OUT_STATUS13	Output	Programmable signal output 13		
22	OUT_STATUS14	Output	Programmable signal output 14		
23	OUT_STATUS15	Output	Programmable signal output 15		
24	OUT_STATUS16	Output	Programmable signal output 16		

Please see the ReeR MOSAIC Supplemental Manual for basic wiring examples.

ReeR MOSAIC-MR2 **Safety Relay**



The ReeR MOSAIC (MOdular SAfety Integrated Controller) MR2 safety relay module provides 2 relays with 2 NO safety contacts, plus 1 NC contact connectable to 1 OSSD pair, plus 1 NC contact for external device monitoring.

Features

- Two NO dry contact safety outputs
- One NC dry contact monitoring output
- One NC contact for external device monitoring
- · Two safety relays with guided
- · Removable terminal block plus screw contacts
- MR2 is not on the MSC 5-way ReeR proprietary bus



Sat	ety Data per EN 13849-1
Category	4
Performance level	е
MTTF _d (years)	2335
DC _{avg}	98.9%
Safety Data	per IEC/EN 62061, IEC/EN 61508
SIL CL	3
SIL	3
HFT	1
DC _{avg}	98.9%
SFF	99.6%
PFH _d (t-20a)	Please refer to product insert

Safety data is dependent on circuit architecture. See manual for further details.

MOSAIC-MR2 Expansion Unit				
Part Number	Price	Voltage	Description	Connection
MOSAIC-MR2	\$;02exf:	24VDC	Safety relay extension module, 2 NO safety outputs, 1 NC monitoring output	Removable terminal block, screw contacts







MOSAIC-MR2 Specifications				
	General Specifications			
Operating Temperature	-10°C to +55°C [14°F to 131°F]			
Storage Temperature	-20°C to +85°C [-4°F to 185°F]			
Altitude	2000m (max)			
Vibration Resistance	Tested to IEC 60068-2-6			
Degree of Protection	IP 20			
Housing	Polyamide			
Weight	260g [9.17 oz]			
Agency Approvals and Standard	cULus, CE, TÜV			
Terminal Designation per EN 50 005	AWG 12-30 solid/stranded. Use 60/75°C copper (Cu) conductor only.			
Wire Fixing	Screw or clamp terminal blocks with 8, 16 or 24 terminals, plus rear panel plug-in connector. Terminal tightening torque 5-7 lb•in (0.6-0.7 N•m).			
Input Specifications				
Nominal Voltage	24VDC			
Voltage Range	± 20%			
Maximum Consumption	3W			
	Output Specifications			
Electrical Contact LIfe	>105 switching cycles			
Mechanical Life	>20x106			
Contact Type	2 NO positively driven / 1 NC auxiliary contact			
Operate Delay	Typ. 10ms			
Release Delay	Typ. 5ms			
Nominal Output Voltage	240VAC			
Thermal Current (Ith)	Max 6A			
Short Circuit Strength	Fuse: NO contacts 10 A gG/gL / NC contacts: 6A gG/gL IEC/EN 60269			
Switching Capacity	AC15: 3A/250VAC – DC13:2A/24VDC			
Switching Frequency	Max 20 switching cycles/min			

Note: See product manual for complete details.

Note: To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific part number's web page.

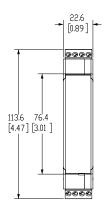
Electrical Connections to MOSAIC-MR2

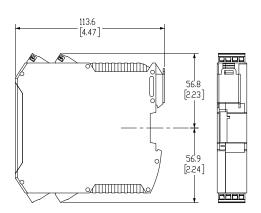


- Wire size range: AWG 12-30 (solid/stranded) (UL).
- Use 60/75°C copper (Cu) conductor only.
- Turn off power before making connections.
- \bullet The supply voltage must be 24VDC \pm 20% (PELV, in compliance with the standard EN 60204-1 (Chapter 6.4).
- · Do not use the MOSAIC to supply external devices.
- The same ground connection (0VDC) must be used for all system components.
- Separate power supplies are recommended for the safety module and for other electrical power equipment (electric motors, inverters, frequency converters) or other sources of disturbance.
- Cables used for connections of longer than 50m [164ft] must have a cross-section of at least 1mm² (AWG16).

Dimensions

mm [inches]





MR2 Module Connections				
Terminal	Signal	Туре	Description	
1	24VDC	_	24VDC power supply	
4	0VDC	_	0VDC power supply	
5	OSSD1_A	Input	Control ZONE 1	
6	OSSD1_B	Input	CONTROL ZONE 1	
7	FBK_K1_K2_1	Output	Feedback K1K2 ZONE 1	
9	A_NC1	Output	NC contact ZONE 1	
10	B_NC1	Output	INC CONTACT ZONE 1	
13	A_NO11	Output	NO1 contest ZONE 1	
14	B_NO11	Output	NO1 contact ZONE 1	
15	A_NO12	Output	NO2	
16	B_NO12	Output	NO2 contact ZONE 1	

Please see the Mosaic manual for wiring examples.

ReeR MOSAIC-MR4 **Safety Relay**



The ReeR MOSAIC (MOdular SAfety Integrated Controller) MR4 safety relay module provides four relays (4 NO) safety contacts plus 2 NC connectable to two OSSD pairs plus 2 NC auxiliary contacts for external device monitoring.

Features

- Four NO dry contact safety outputs
- Two NC dry contact monitoring outputs
- Two NC contacts for external device monitoring
- · Four safety relays with guided contacts
- · Removable terminal block plus screw contacts
- MR4 is not on the MSC 5-way ReeR proprietary bus



Safety Data per EN 13849-1					
Category	4				
Performance level	е				
MTTF _d (years)	2335				
DC _{avg}	98.9%				
Safety Data	per IEC/EN 62061, IEC/EN 61508				
SIL CL	3				
SIL	3				
HFT	1				
DC _{avg}	98.9%				
SFF	99.6%				
PFH _d (t-20a)	Please refer to product insert				

Safety data is dependent on circuit architecture. See manual for further details.

MOSAIC-MR4 Expansion Unit				
Part Number	Price Voltage Description Connection			
MOSAIC-MR4	\$02exn:	24VDC	Safety relay extension module, 4 NO safety outputs, 2 NC monitoring output	Removable terminal block, screw contacts







MOSAIC-MR4 Specifications				
General Specifications				
Operating Temperature	-10°C to +55°C [14°F to 131°F]			
Storage Temperature	-20°C to +85°C [-4°F to 185°F]			
Altitude	2000m (max)			
Vibration Resistance	Tested to IEC 60068-2-6			
Degree of Protection	IP 20			
Housing	Polyamide			
Weight	260g [9.17 oz]			
Agency Approvals and Standard	cULus, CE, TÜV			
Terminal Designation per EN 50 005	AWG 12-30 solid/stranded. Use 60/75°C copper (Cu) conductor only.			
Wire Fixing	Screw or clamp terminal blocks with 8, 16 or 24 terminals, plus rear panel plug-in connector. Terminal tightening torque 5-7 lb•in (0.6-0.7 N•m).			
Input Specifications				
Nominal Voltage	24VDC			
Voltage Range	± 20%			
Maximum Consumption	3W			
	Output Specifications			
Electrical Contact LIfe	>10 ⁵ switching cycles			
Mechanical Life	>20x10 ⁶			
Contact Type	4 NO positively driven, 2 NC auxiliary contacts			
Operate Delay	Typ. 10ms			
Release Delay	Typ. 5ms			
Nominal Output Voltage	240VAC			
Thermal Current (I _{th})	Max 6A			
Short Circuit Strength	Fuse: NO contacts 10 A gG/gL / NC contacts: 6A gG/gL IEC/EN 60269			
Switching Capacity	AC15: 3A/250VAC – DC13:2A/24VDC			
Switching Frequency	Max 20 switching cycles/min			

Note: See product manual for complete details.

Note: To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific part number's web page.

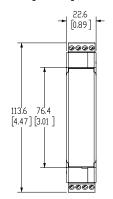
Electrical Connections to MOSAIC-MR4

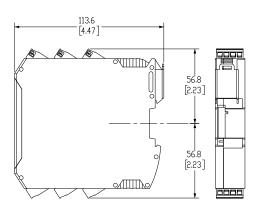


- Wire size range: AWG 12-30 (solid/stranded) (UL).
- Use 60/75°C copper (Cu) conductor only.
- Turn off power before making connections.
- Do not use the MOSAIC to supply external devices.
- The same ground connection (0VDC) must be used for all system components.
- Separate power supplies are recommended for the safety module and for other electrical power equipment (electric motors, inverters, frequency converters) or other sources of disturbance.
- Cables used for connections of longer than 50m [164ft] must have a cross-section of at least 1mm² (AWG16).

Dimensions

mm [inches]





	MR4 Module Connections					
Terminal	Signal	Туре	Description			
1	24VDC	_	24VDC power supply			
4	0VDC	_	0VDC power supply			
5	OSSD1_A	Input	Control ZONE 1			
6	OSSD1_B	Input	CONTROL ZONE 1			
7	FBK_K1_K2_1	Output	Feedback K1K2 ZONE 1			
9	A_NC1	Output	NC contact ZONE 1			
10	B_NC1	Output	NC CONTACT ZONE 1			
13	A_NO11	Output	NO1 contest ZONE 1			
14	B_NO11	Output	NO1 contact ZONE 1			
15	A_NO12	Output	NO2 contact ZONE 1			
16	B_NO12	Output	NO2 contact ZONE 1			
11	A_NC2	Output	NC contact ZONE 2			
12	B_NC2	Output	NC CONTACT ZONE Z			
17	OSSD2_A	Input	Control ZONE 2			
18	OSSD2_B	Input	Control ZONE 2			
19	FBK_K1_K2_2	Output	Feedback K1K2 ZONE 2			
21	A_NO21	Output	NO1 contact ZONE 2			
22	B_NO21	Output	NOT CONTACT ZONE Z			
23	A_NO22	Output	NICO contest ZONE O			
24	B_NO22	Output	NO2 contact ZONE 2			

Please see the Mosaic manual for wiring examples.

ReeR MOSAIC Accessories



ReeR MOSAIC-MSC-C Connector

The ReeR MOSAIC (MOdular SAfety Integrated Controller) MSC-C Safety Communication Connector with terminal end caps (MSCPC) permits communication between various system units. Required to connect any additional cards to the MOSAIC-M1, MOSAIC-M1S, or MOSAIC-M1S-USBC.

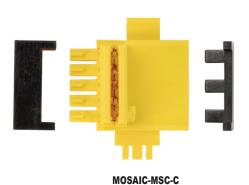
Features

- 5-way connector for communication among MOSAIC modules
- Comes in the box with all expansion modules and is only needed for the <u>MOSAIC-M1</u>, <u>MOSAIC-M1S</u>, or <u>MOSAIC-M1S-USBC</u> unit

MOSAIC-MSC-C Connector			
Part Number	Price	Description	
MOSAIC-MSC-C	\$2ex8:	Safety communication connector with terminal end caps (MSCPC). Permits communication between various system units.	

Note: See product manual for complete details.

Note: To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific part number's web page.



ReeR MOSAIC-MCM Memory Card

The ReeR MOSAIC (MOdular SAfety Integrated Controller) MCM Memory Card is a proprietary removable memory card that can be used to save MOSAIC configuration data for subsequent transfer to a new device without using a PC.

MOSAIC-MCM Memory Card					
Part Number	Price	For Use With	Description		
MOSAIC-MCM	\$2ex7:	MOSAIC-M1 and M1S	Proprietary removable memory card that can be used to save		
MOSAIC-MCMB	\$6azb:	MOSAIC-M1S-USBC	MOSAIC configuration data for subsequent transfer to a new device without using a PC.		

Note: See product manual for complete details.

Note: To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific part number's web page.



MOSAIC-MCMB

ReeR Programming Cable

The ReeR MOSAIC (MOdular SAfety Integrated Controller) programming cable is an interconnection cable used to connect the <u>MOSAIC-M1</u>, <u>MOSAIC-M1S</u>, or <u>MOSAIC-M1S-USBC</u> to a PC for programming with the MSD configuration software.

MOSAIC CSU Cable						
Part Number Price Connector A Connector B (ft [m]) For Use With						
MOSAIC-CSU	\$2ex9:	LICD A	USB-B Mini	5.91 [1.8]	MOSAIC-M1 and MOSAIC-M1S	
USB-CBL-AC6	\$4vz8:	USB-A	USB-C	6 [1.83]	MOSAIC-M1S-USBC	

Note: See product manual for complete details.



Dold Safety Relays Selection Guide DOL











Specification	E-Stop and Gat	Time Delay Safety Relay	
Coil Voltages	24VDC, 110VAC, 230VAC	24VDC, 110VAC, 230VAC 24VAC/DC, 110VAC, 230VAC	
Contact Configuration	N.O. positive guided safety contacts or 3 N.O. positive guided safety contacts and 1 N.C. monitoring contact	3 N.O. positive guided safety contacts and 1 N.C. monitoring contact	3 N.O. time delay positive guided safety contacts, 2 N.O. instantaneous positive guided safety contacts and 1 N.C. instantaneous monitoring contact
Safety Data	Category 2 according to 13849-1 PLd according to EN 13849-1 SIL 2 according to IEC/EN 61508	Category 4 according to 13849-1 PLe according to EN 13849-1 SIL 3 according to IEC/EN 61508	Category 4 according to 13849-1 PLe according to EN 13849-1 SIL 3 according to IEC/EN 61508
Agency Approvals	cULus, RoHS, CE, TUV	cULus, RoHS, CE, TUV	cULus, RoHS, CE, TUV













Specification	Two-hand Control Safety Relay	OSSD/Light Curtain Safety Relay	Safety Mat and Edge Safety Relay
Coil Voltages	24VDC, 110VAC, 230VAC	24VDC	24VDC
Contact Configuration	N.O. positive guided safety contacts and 1 N.C. monitoring contact or 3 N.O. positive guided safety contacts and 1 N.C. monitoring contact	N.O. positive guided safety contacts and 1 N.C. monitoring contact or 3 N.O. positive guided safety contacts and 1 N.C. monitoring contact	2 N.O. positive guided safety contacts and 1 N.C. monitoring contact or
Safety Data	Category 4 according to EN 13849-1 PLe according to EN 13849-1 SIL 3 according to IEC/EN 61508	Category 4 according to 13849-1 PLe according to EN 13849-1 SIL 3 according to IEC/EN 61508	Category 4 according to 13849-1 PLe according to EN 13849-1 SIL 3 according to IEC/EN 61508
Agency Approvals	cULus, RoHS, CE, TUV	cULus, RoHS, CE, TUV	cULus, RoHS, CE, TUV







Specification	Speed Monitoring Relays (Prox, Frequency, and Motor Standstill)	Extension Relays	Multifunction Safety Relay
Coil Voltages	24VAC/VDC	24VAC/VDC	24VDC
Safety Data	Category 4 according to 13849-1 PLe according to EN 13849-1 SIL 3 according to IEC/EN 61508	Category 4 according to 13849-1 PLe according to EN 13849-1 SIL 3 according to IEC/EN 61508	Category 4 according to 13849-1 PLe according to EN 13849-1 SIL 3 according to IEC/EN 61508
Agency Approvals	cULus, RoHS, CE, TUV	cULus, RoHS, CE, TUV	cULus, RoHS, CE, TUV

Dold LG5924 Series 1-Channel Emergency Stop





LG5924-48-61-24

Designed to protect people and machines in applications with E-stop buttons.

- Single channel operation
- Output options: 2 NO contacts or 3 NO contacts and 1 NC contact
- LED indicators for power and state of operation
- Short circuit detection between terminal Y1 and common

LG5924 Series Single Channel Safety Relays Selection Chart						
Part Number	Price	Marking Type	Voltage	Outputs	Connection	Drawing
LG5924-02-61-24	\$00492:	1-channel E-STOP	24VDC	2 NO	Fixed screw terminals	PDF
LG5924-02PC-61-24	\$06aqb:	1-channel E-STOP	24VDC	2 NO	Push-in cage clamp	PDF
LG5924-48-61-24	\$00495:	1-channel E-STOP	24VDC	3 NO, 1 NC	Fixed screw terminals	PDF
LG5924-48PC-61-24	\$06aqe:	1-channel E-STOP	24VDC	3 NO, 1 NC	Push-in cage clamp	PDF
LG5924-48-61-110	\$00493:	1-channel E-STOP	110VAC	3 NO, 1 NC	Fixed screw terminals	PDF
LG5924-48PC-61-110	\$06aqc:	1-channel E-STOP	110VAC	3 NO, 1 NC	Push-in cage clamp	PDF
LG5924-48-61-230	\$00494:	1-channel E-STOP	230VAC	3 NO, 1 NC	Fixed screw terminals	PDF

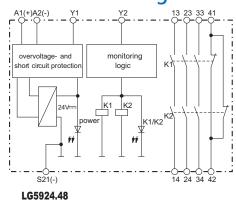
Safety Data -	Values ner FN
ISO 13	
Category	Up to 4
Performance level	PLe
MTTF _d	220.9 years
DC _{avg}	99%
Safety Data	– Values per
IEC/EN 62061	/ IEC/EN 61508
SIL	Up to 3
HFT (Hardware Failure Tolerance)	1
DC _{avg}	99%
SFF	1.08E ⁻¹⁰
PFH _D	5.81E ⁻⁵

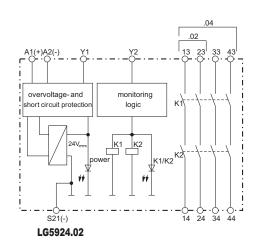
LG592	24 Controllers Safety Relay Specification Table
	General Specifications
Temperature	Storage: -25°C to 85°C [-13°F to 185°F] Operating: -25°C to 55°C [-13°F to 131°F]
Altitude	< 2,000m [6562ft]
Vibration Resistance	Amplitude: 0.35 mm, Frequency: 10 to 55 Hz (IEC/EN 60-068-2-6)
Degree of Protection	Per IEC/EN 60 529. Housing: IP40; Terminals IP20
Housing	UL 94V-0 Thermoplastic; DIN mount, 35 mm x 7.5 mm
Weight	LG5924 24VDC 200g [7.05 oz]; LG5924 110, 230VAC 270g [9.52 oz]
Agency Approvals and Standards	cULus file E107778, CE, RoHS, TUV
Terminal Designation per EN 50 005 Wire Connections	1x4 mm ² solid or 1 x 2.5 mm ² stranded ferruled (isolated) or 2 x 1.5 mm ² stranded ferruled (isolated) DIN 46 228-1/-2/-3/-4 or 2 x 2.5 mm ² solid DIN 46 228-1/-2/-3
Wire Fixing	Plus-minus terminal screws M3.5 box terminals with self-lifting wire protection or cage clamp terminals.
	Input Specifications
Nominal Voltage	110, 230VAC, 24VDC
Voltage Range	AC: 0.85 to 1.1 UN. At 10% residual ripple: DC: 0.9 to 1.1 UN. At 48% residual ripple: DC: 0.85 to 1.1 UN
Maximum Consumption	230VAC approx. 3.5 A; 24V DC approx. 1.5W
Nominal Frequency	50 to 60 Hz
Control Voltage on Y1	24VDC: typ: 22VDC. 110V, 230VAC: typ. 45VDC
Control Current	24VDC: typ. DC 65mA. 110V, 230VAC: typ. AC 16mA
Short Circuit Protection	Internal with PTC (Positive Temperature Coefficient resistor)
Overvoltage Protection	Internal VDR (Voltage Dependent Resistor)
	Output Specifications
Electrical Contact Life	At 5A, 230VAC: cos Ø = 1: > 2.2 x 105 switching cycles
Mechanical Life	>10x10 ⁶ switching cycles
Contact Type	LG5924.02: 2 NO relay contacts, positively driven. LG5924.48: 3 NO positively driven and 1 NC relay contacts. (NO contacts are safety contacts.)
Operate Delay	Operate delay: 24VDC: typ. 40ms; 110VAC, 230VAC typ. 200ms
Release Delay	Release delay: 24VAC/DC typ. 70ms; 230VAC typ. 35ms
Nominal Output Voltage	250VAC
Thermal Current (I _{th})	Max. 5A. See continuous current limit curve in installation manual.
Short Circuit Strength	Max. fuse rating: 10A gL (IEC/EN 60 947-5-1); Line circuit breaker: B 6A
Switching Capacity (IEC/EN 60947-5-1)	To AC 15: N.O. contacts: 3A/230VAC; NC contacts: 2A/230VAC To DC 13: N.C. contacts: 4A/24VDC; NO contacts: 4A/24VDC
Switching Frequency	Max. 600 switching cycles/hr

Dold LG5924 Series 1-Channel Emergency Stop

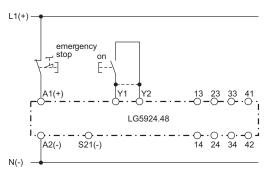


LG5924 Block Diagrams



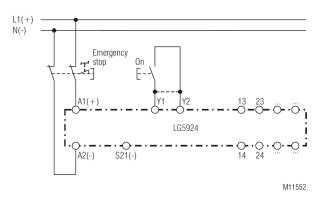


Applications



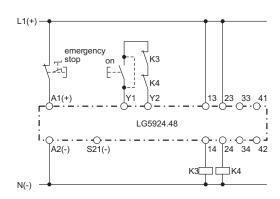
Single-channel, emergency-stop circuit without feedback loop, with or without automatic restart. For automatic restart, terminals Y1 - Y2 must be jumpered. No ON pushbutton necessary.

Suited up to SIL2, Performance Level d, Cat. 3*.



Two-channel emergency-stop circuit without feedback loop, with or without automatic restart. For automatic restart, terminals Y1-Y2 must be linked. No ON pushbutton necessary.

Suited up to SIL3, Performance Level e, Cat. 4*.



Contact reinforcement by external contactors, 2-channel controlled. For currents>5A, the output contacts can be reinforced by external contactors. Functioning of the external contactors is monitored by looping the N.C. contacts into the start circuit (Y1 - Y2).

Suited up to SIL2, Performance Level d, Cat. 3*.

Note: When switching inductive loads, surge suppressors are recommended.

- * Suited up to stated SIL, Performance Level, and Category for E-stop systems according to IEC 60947-5-5, under the following conditions:
- A maximum number of operations for the E-stop button is observed.
- The E-stop button and the E-stop module are installed in the same cabinet

Dold LG5925 Series 2-Channel Emergency Stop and Safety Gates



Designed to protect people and machines in applications with E-stop buttons and safety gates.

- Outputs: 3 NO contacts and 1 NC contact
- Feedback circuit to monitor external contactors used for reinforcement of contacts
- Overvoltage and short-circuit protection
- Monitored manual restart
- Single and 2-channel operation

LG5925-48-61-24

• LED indicators for power and state of operation

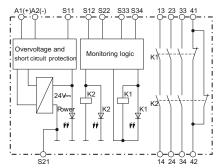
Safety Relays Selection Chart								
Part Number	Price	Marking Type	Voltage	Outputs	Connection	Drawing		
LG5925-48-61-24	\$00498:	2-channel E-STOP/GATE	24 VAC/DC	3 NO	Fixed screw terminal	<u>PDF</u>		
LG5925-48PC-61-24	\$06aqg:				Push-in cage clamp	<u>PDF</u>		
LG5925-48-61-110	\$00496:				Fixed screw terminal	PDF		
LG5925-48PC-61-110	\$;06aqf:		TIUVAC		Push-in cage clamp	<u>PDF</u>		
LG5925-48-61-230	\$00497:		230VAC		Fixed screw terminal	PDF		

Safety Data – Values per EN ISO 13849-1					
Category	4 according to EN 954-1				
Performance level	PLe according to EN 13849-1				
MTTF _d	>100 years				
DC _{avg}	99%				
Safety Data – Values per IEC/EN 62061 / IEC/EN 61508					
SIL CL	3 per IEC/EN 62061				
SIL	3 per IEC/EN 61508				
HFT (Hardware Failure Tolerance)	1				
DC _{avg}	99%				
SFF	99.7%				
PFH _D	2.66E ⁻¹⁰ h ⁻¹				

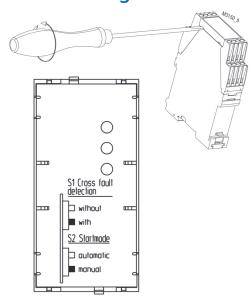
LG5925 Controllers Safety Relay Specification Table					
General Specifications					
Temperature	Storage: -40°C to 85°C [-40°F to 185°F]; Operating: -25°C to 60°C [-13°F to 140°F]				
Altitude	< 2,000m [6562ft]				
Vibration Resistance	Amplitude: 0.35 mm, Frequency: 10 to 55 Hz (IEC/EN 60-068-2-6)				
Degree of Protection	Per IEC/EN 60 529. Housing: IP40; Terminals IP20				
Housing	UL 94V-0 Thermoplastic; DIN mount 35mm x 7.5 mm				
Weight	LG5925 24V AC/DC: 210g [7.40 oz]; LG5925 110V, 230V AC: 275g [9.70 oz]				
Agency Approvals and Standards	CSA, cULus file E107778, CE, RoHS, TUV				
Terminal Designation per EN 50 005 Wire Connections	1x4 mm 2 solid or 1 x 2.5 mm 2 stranded ferruled (isolated) or 2 x 1.5 mm 2 stranded ferruled (isolated) DIN 46 228-1/-2/-3/-4 or 2 x 2.5 mm 2 solid DIN 46 228-1/-2/-3/-4				
Wire Fixing	Terminal screws M3.5 box terminals with wire protection or cage clamp terminals.				
	Input Specifications				
Nominal Voltage	110VAC, 230VAC, 24VAC/DC				
Voltage Range	At 10% residual ripple: AC/DC: 0.9 to 1.1 UN; AC: 0.85 to 1.1 UN				
Maximum Consumption	DC approx. 1.7 W; AC approx. 3.7 VA				
Minimum Off-time	250ms				
Control Voltage on S11 At UN	AC/DC units: 22VDC; AC units: 24VDC				
Control Current Typ. Over S12, S22	30mA at UN				
Min. Voltage on S12, S22 (relay activated)	AC/DC units: 20VDC; AC units: 19VDC				
Short Circuit Protection	Internal with PTC (Positive Temperature Coefficient resistor)				
Overvoltage Protection	Internal VDR (Voltage Dependent Resistor)				
	Output Specifications				
Electrical Contact Life	AC 15 at 5A, 230VAC: > 2.2x10 ⁵ switching cycles				
Mechanical Life	> 20x10 ⁶ switching cycles				
Contact Type	3 positively driven NO and 1 NC relay contacts (NO contacts are safety contacts)				
Operate Delay	Manual start: 30ms; automatic start: 350ms				
Release Delay	Disconnecting the supply: AC units: 150ms; DC units: 50ms Disconnecting S12, S22: AC units: 130ms. DC units: 50ms				
Nominal Output Voltage	AC: 250V; DC: See continuous current limit curve in installation manual.				
Thermal Current (I _{th})	Max. 8A. See continuous current limit curve in installation manual.				
Short Circuit Strength	Max. fuse rating: 10A gL (IEC/EN 60 947-5-1); Line circuit breaker: B 6A				
Switching Capacity (IEC/EN 60 947-5-1)	AC 15: NO contacts: 3A/230V; NC contacts: 2A/230V DC 13: N.O. contacts: 4A/DC24V. 0.5A/110V; NC. contacts: 4A/24V; DC 13: N.O. contacts: 8A/24V >25x103. ON: 0.4 s, OFF: 9.6 s				
Switching Frequency	Max. 1200 switching cycles/hr				

Dold LG5925 Series 2-Channel Emergency Stop and Safety Gates

Wiring LG5925 Block Diagram



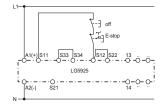
S1 and S2 **Switch Setting Instructions**



Disconnect unit before setting switches.

Drawing shows settings as delivered to the customer.

Applications



Single channel emergency stop circuit. This circuit does not have any ongle challet energency stop control circuit.

Note: Refer to "Unit programming"

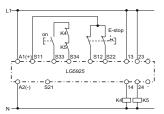
Set switch or dip switch in pos.: \$1 no cross fault detection
\$2 automatic start

Activated N.O. contact (contact position: closed)

2-channel safety gate monitoring.

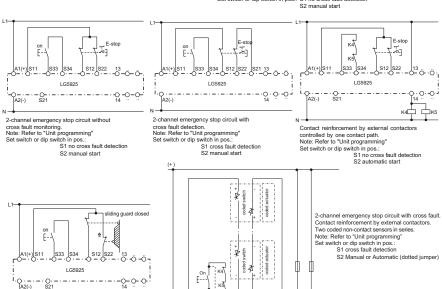
Note: Refer to "Unit programming"

Set switch or dip switch in pos.: S1 no cross fault detection



Contact reinforcement by external contactors, 2-channel controlled

Contact reinforcement by external contractors, 2-channel controlled. The output contacts can be reinforced by external contactors with positive guided contacts for switching currents > 8 A. Functioning of the external contactors is monitored by looping the N.C. contacts into the closing circuit (terminals \$33-\$34). Note: Refer to 'Unit programming' or or consistent or display of the switch or dip switch in pos.: \$1 no cross fault detection \$2 manual start



Note: When switching inductive loads, surge suppressors are recommended.

Dold BH5928 Series – 2-Channel **DOLD** & Emergency Stop and Safety Gates with Delay



BH5928-92-61-24-1

Designed to protect people and machines in applications with E-stop buttons and safety gates. One or two channels can be monitored with time-delay function.

- Three time-delay options with potentiometer adjustment
- Single and 2-channel operation
- Output: 3 N.O. contacts with delay, 2 N.O. instantaneous contacts, 1 N.C. instantaneous contact
- Line fault detection for ON button, when connected to S33-S34
- Manual restart with button on S33-S34 or automatic restart with jumper between S13-S14
- Can be wired with or without cross-fault monitoring in the E-stop loop
- LED indicators for power and state of operation

Safety Relays							
Part Number	Price	Marking Type	Voltage	Outputs	Time Delay		
BH5928-92-61-24-1	\$-00491:	2-channel E-STOP / GATE	24 VDC	3 N.O. time delay positive guided safety contacts,	0.1 to 1 second		
BH5928-92-61-24-5	\$0049o:	2-channel E-STOP / GATE	24 VDC	2 N.O. instantaneous positive	0.5 to 5 seconds		
BH5928-92-61-24-30	\$0049n:	2-channel E-STOP / GATE	24 VDC	1 N.C. instantaneous monitoring contact	3 to 30 seconds		

Safety Data – Values per EN ISO 13849-1		
Category	4 according to EN 954-1	
Performance level	PLe according to EN 13849-1	
MTTF _d	>240.5 years	
DC _{avg}	99%	
Safety Data – Values per IEC/EN 62061 /IEC/EN 61508		
SIL CL	3 per IEC/EN 62061	
SIL	3 per IEC/EN 61508	
HFT (Hardware Failure Tolerance)	1	
DC _{avg}	99%	
SFF	99.9%	
31 1	33.570	

Two-Hand Controllers Safety Relay Specification Table		
General Specifications		
Temperature	Storage: -25°C to 85°C (-13°F to 185°F) Operating: -15°C to 55°C (5°F to 131°F)	
Altitude	< 2,000 meters	
Vibration Resistance	Amplitude: 0.35mm, Frequency: 10 to 55 Hz (IEC/EN 60-068-2-6)	
Degree of Protection	Per IEC/EN 60 529. Housing: IP40; Terminals IP20	
Housing	UL 94V-0 Thermoplastic; Din mount 35 mm x 7.5 mm	
Weight	400 g (14.11 oz.)	
Agency Approvals and Standards	cULus file E107778, CE, RoHS	
Terminal Designation per EN 50 005 Wire Connections	1x4 mm² solid or 1 x 2.5 mm² stranded ferruled (isolated) or 2 x 1.5 mm² stranded ferruled (isolated) DIN 46 228-1/-2/-3/-4 or 2 x 2.5 mm² stranded ferrruled DIN 46 228-1/-2/-3	
Wire Fixing	Box terminal with wire protection	
	Input Specifications	
Nominal Voltage	24VDC	
Voltage Range	At 10% residual ripple: DC: 0.9 to 1.1 UN At 48% residual ripple: DC: 0.8 to 1.1 UN	
Maximum Consumption	DC approx. 3.5W	
Minimum Off-time	1.0 second	
Short Circuit Protection	Internal with PTC (Positive Temperature Coefficient resistor)	
Overvoltage Protection	Internal VDR (Voltage Dependent Resistor)	
	Output Specifications	
Electrical Contact Life	To DC 13 at 2A, DC 24V: >1.5 x 10 ⁵ switching cycles To AC 15 at 2A, 230VAC: 10 ⁵ switching cycles IEC/EN 60 947-5-1	
Mechanical Life	10 x 10 ⁶ switching cycles	
Contact Type	2 N.O. positively driven and 1 N.C relay contacts, and 3 N.O. positively driven relay contacts with delay. (N.O. contacts are safety contacts)	
Operate Delay	Operate delay typ at UN: manual start: 40 ms; automatic start: 500 ms	
Release Delay	Release delay typ at UN: Disconnecting supply: 40 ms; Disconnecting S12, S22, S31 and S32: 15ms	
Repeat Accuracy	±1% of setting value	
Nominal Output Voltage	AC: 250V; DC: See continuous current limit curve in manual.	
Thermal Current (I _{th})	Max. 5A, See continuous current limit curve in manual.	
Switching of Low Loads	M100 mV; (contacts with 5µ Au) M 1 mA	
Short Circuit Strength	Max. fuse rating: 6 A gL (IEC/EN 60 947-5-1); Line circuit breaker C 8 A	
Switching Capacity	AC 15: N.O. contacts: 3A/230V; N.C. contacts: 2A/230VAC; DC 13: N.O. contacts: 5A/24VDC; ON: 0.4s, OFF: 9.6 s	
Switching Frequency	Max. 1200 switching cycles/hr, with manual restart and short release delay time	
Indicator Contact	DC 13: N.C. contact: 2A/24VDC	

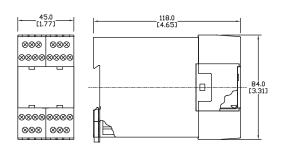
Dold BH5928 Series – 2-Channel **DOLD** & Emergency Stop and Safety Gates with Delay

Wiring

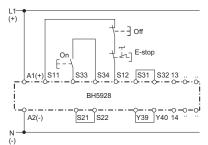
BH5928 Block Diagram

Dimensions

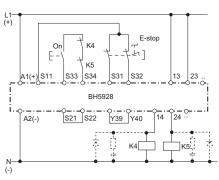
mm [in]



Applications

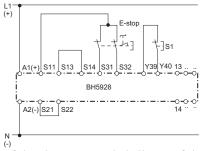


Single channel emergency stop circuit. This circuit does not have any redundancy in the emergency-stop control circuit.

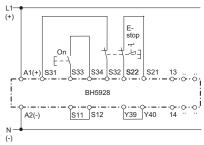


Contact reinforcement by external contactors, 2-channel controlled. The output contacts can be reinforced by external contactors with positive guided contacts for switching currents > 5 A.

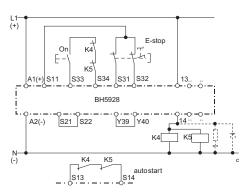
Functioning of the external contactors is monitored by looping the N.C. contacts into the closing circuit (terminals S13-S14 or S33-S34)



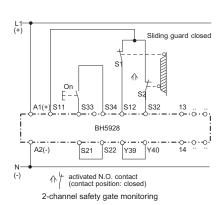
2-channel emergency stop circuit without cross fault monitoring autostart and interruption of time by S1



2-channel emergency stop circuit with cross fault detection



Contact reinforcement by external contactors controlled by one contact path. S33 - S34 must be opened.



*Note: When switching inductive loads, surge suppressors are recommended.

Dold UG6960 Series Dual Channel Emergency Stop with Adjustable Delay





Designed to protect people and machines in applications with E-stop buttons and safety

- · Various delay functions adjustable at device (power off before selecting the desired function):
 - Release delay
 - Release delay retriggerable
 - On delay
 - Fleeting on make / break
 - Delay function settable via potentiometer

Note: See Delay Functions for more information.

- · According to:
- Performance Level (PL) e and category 4 to EN ISO 13849-1: 2008
- SIL Claimed Level (SIL CL) 3 to IEC/EN 62061
- Safety Integrity Level (SIL) 3 to IEC/EN 61508 and IEC/EN 61511
- Acc. to EN 50156-1 for furnaces
- Line fault detection at the ON pushbutton:
- · Manual restart or automatic restart
- · With cross fault monitoring
- 2-channel
- · Forcibly guided output contacts
- Output: 2 N.O. instantaneous contact and 2 N.O. delayed contacts
- 1 semiconductor monitoring output for instantaneous contacts, 1 semiconductor monitoring output for delayed contacts
- · LED indicator for operation, safety function, time delay and failure
- Width: 22.5 mm





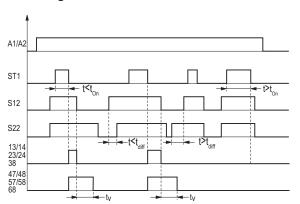




	Values per
EN ISO	13849-1
Category	4
Performance level	PLe
MTTF _d	>100 years
DC _{avg}	99%
Safety Data	 Values per
IEC/EN 62061	/IEC/EN 61508
SIL CL	3
SIL	3
HFT (Hardware Failure Tolerance)	1
DC _{avg}	99%
SFF	99.7%
PFH _D	3.59E ⁻¹⁰ h ⁻¹

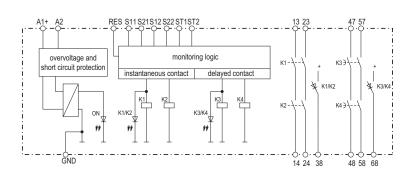
Safety Relays Selection Chart				
Part Number	Price	Marking Type	Voltage	Outputs
<u>UG6960-</u> <u>04PS100-300</u>	\$-010i4:	Safety relay module	24VDC	2 N.O. instantaneous positive guided safety contact(s), 2 N.O. time delay (selectable) positive guided safety contact(s), 1 N.O. instantaneous monitoring contact, 1 N.O. time delay monitoring contact

Function Diagram



- t: max. time delay for simultaneity demand dependent on selected safety function E-Stop, safety gate, safety mat t are: max. 3s Light curtains t_{diff}: max. 1s Two-hand control t_{diff}: max. 0,5s other times on request
- t_{on} : max. actuation time of start button Standard t_{oc} : max. 3s other times on request
- t_V: Time delay Example: release delay

Block Diagram



Dold UG6960 Series Dual Channel **DOLD** & Emergency Stop with Adjustable Delay

Dold UG6960 Series Dual Channel	Emergency Stop with Adjustable Delay Specification Table
	General Specifications
Temperature	Storage: -25°C to 85°C (-13°F to 185°F) Operating: -15°C to 55°C (5°F to 131°F)
Altitude	<2000 meters
Vibration Resistance	Amplitude: 0.35 mm, Frequency: 10 to 55 Hz (IEC/EN 60-068-2-6)
Degree of Protection	Per IEC/EN 60 529. Housing: IP40; Terminals IP20
Housing	UL 94V-0 thermoplastic
Weight	250g (8.82 oz.)
Terminal Designation per EN 50 005 Wire Connections	1x4 mm 2 solid or 1 x 2.5 mm 2 stranded ferruled (isolated) or 2 x 1.5 mm 2 stranded ferruled (isolated) DIN 46 228-1/-2/-3/-4 or 2 x 2.5 mm 2 solid DIN 46 228-1/-2/-3/-4
Wire Fixing	Terminal screws M3.5 box terminals with wire protection.
Wire Connection	60°C/75°C Copper conductors only; AWG20-12 Sol/Str Torque 0.5 Nm
	Input Specifications
Nominal Voltage	24VDC
Voltage Range	At 10% residual ripple: 0.8 to 1.1 U_N (19.2 to 26.4 VDC)
Maximum Consumption	DC approx. 3.2 W
Nominal Frequency	Not applicable
Minimum Off-time	250 ms
Control Voltage on S11 At UN	22VDC
Control Current Typ. Over S12, S22	8mA at U _N
Minimum Voltage On S12, S22 (Relay Activated)	10VDC
Short Circuit Protection	Internal with PTC (Positive Temperature Coefficient resistor)
Overvoltage Protection	Internal VDR (Voltage Dependent Resistor)
	Output Specifications
Electrical Contact Life	AC 15 at 5A, 230VAC: > 1.5x10 ⁵ switching cycles
Mechanical Life	> 10x10 ⁶ switching cycles
Contact Type	2 N.O. instantaneous contacts 2 N.O. delayed contacts (N.O. contacts are safety contacts)
Operate Delay	Manual start: 30 ms; automatic start: 350 ms.
Release Delay	E-Stop (1) (6), Safety gate (2) (7), Exclusive or contacts (5): Start up at U : < 65ms Release delay at U and disconnecting the supply: <40ms Release delay at U and disconnecting S12,S22: <60ms
Nominal Output Voltage	24VDC: See continuous current limit curve in installation manual.
Thermal Current (Ith)	Max. 8A. See continuous current limit curve in installation manual.
Short Circuit Strength	Max. fuse rating: 6A gL (IEC/EN 60 947-5-1); Line circuit breaker: 6A
Switching Capacity (IEC/EN 60 947-5-1)	AC 15: N.O. contacts: 3A/230V DC 13: N.O. contacts: 2A/DC24V.
Switching Frequency	Instantaneous: Max. 1800 switching cycles/hr Delayed: Max. 360 switching cycles/hr
Agency Approvals and Standards	CSA, cULus file E107778, CE, RoHS, TUV

To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific part number's web page at www.automationdirect.com

Release Delay: When disconnecting the signal the contacts remain closed and only open after the time is finished. Restarting the unit during time delay has no influence. The time has to run down fully before you can restart the unit.

Release Delay Retriggerable: Same as above, but you can restart the unit while the time is running and before the contacts open.

On Delay: The output contacts are energized after the adjusted time after restarting the unit.

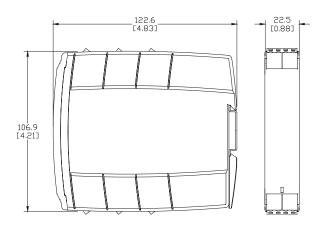
Fleeting on Make: The output contacts are energized after restarting the unit for the adjusted time, and then go off again.

Fleeting on Break: The output contacts are energized for the adjusted time after disconnecting the signal, and then go off again.

Dold UG6960 Series Dual Channel Emergency Stop with Adjustable Delay

Dimensions

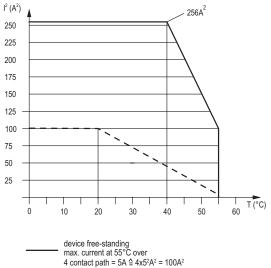
mm [in]



Connection Terminals

Terminal designation	Signal designation
A1 +	DC 24 V
A2	0 V
13, 14, 23, 24	Forcibly guided NO contacts for release circuit
47, 48, 57, 58	Forcibly guided NO contacts for delayed contacts
38, 68	Semiconductor monitoring output
GND	Reference potential for Semiconductor monitoring output
S11, S21	Control output
S12, S22, ST1, ST2, RES	Control input

Characteristic Curves



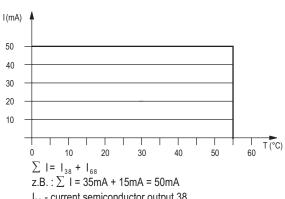
4 contact path = $5A \triangleq 4x5^2A^2 = 100A^2$

device mounted without distance heated by devices with same load, max. current at 55°C over 4 contact path = $1A \triangleq 4x1^2A^2 = 4A^2$

$$\sum_{1} \mathbf{I}^{2} = \mathbf{I}_{1}^{2} + \mathbf{I}_{2}^{2} + \mathbf{I}_{3}^{2} + \mathbf{I}_{4}^{2}$$

$$\mathbf{I}_{1}, \mathbf{I}_{2}, \mathbf{I}_{3} - \text{current in contact paths}$$

Quadratic total current limit curve output contacts



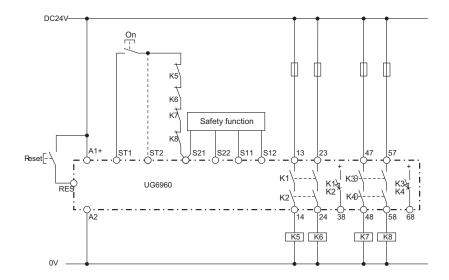
I₃₈ - current semiconductor output 38

I₆₈ - current semiconductor output 68

Quadratic total current limit curve semiconductor monitoring outputs

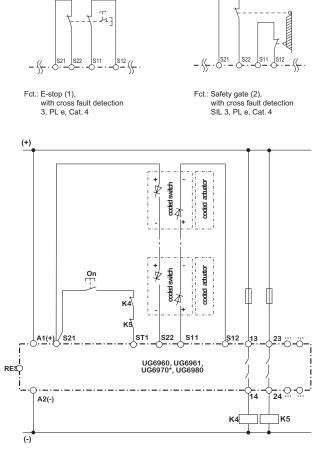
Dold UG6960 Series Dual Channel **DOLD** & Emergency Stop with Adjustable Delay

Application Examples



Safety function: see below, Manual-Start (for automatic start make a bridge to ST2 instead of ON button). Delay function: release delay (1)

K1/K2 instantaneous contact, K3/K4 delayed contact



Dold UG6961 Series Dual Channel Emergency Stop with Adjustable Delay



Designed to protect people and machines in applications with E-stop buttons and safety

- · Various delay functions adjustable at device (power off before selecting the desired function):
- Release delay
- Release delay retriggerable
- On delay
- Fleeting on make / break
- Delay function settable via potentiometer

Note: See Delay Functions for more information.







- · According to:
- Performance Level (PL) e and category 4 to EN ISO 13849-1: 2008
- SIL Claimed Level (SIL CL) 3 to IEC/EN 62061
- Safety Integrity Level (SIL) 3 to IEC/EN 61508 and IEC/EN 61511
- Acc. to EN 50156-1 for furnaces
- · Line fault detection on Push-button:
- · Manual restart or automatic restart
- · With cross fault monitoring
- 2-channel
- 2 N.O. time delay (selectable) positive guided safety contact(s), 1 N.O. time delay monitoring contact
- LED indicator for operation, delay contacts and failure
- · Pluggable terminal blocks for easy exchange of devices

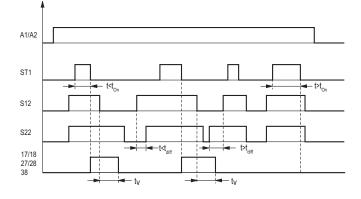
Safety Relays Selection Chart				
Part Number	Price	Marking Type	Voltage	Outputs
<u>UG6961-02PS100-300</u>	\$-010i6:	Safety relay module	24VDC	2 N.O. time delay (selectable) positive guided safety contact(s), 1 N.O. time delay monitoring contact

Safety Relays Selection Chart				
Part Number	Price	Marking Type	Voltage	Outputs
<u>UG6961-02PS100-300</u>	\$-010i6:	Safety relay module	24VDC	2 N.O. time delay (selectable) positive guided safety contact(s), 1 N.O. time delay monitoring contact

	Safety
	Category
ectable)	Performand
ontact(s), nitoring	MTTF _d
	DCavg
	Safety I

Safety Data – Values per EN ISO 13849-1		
Category	4	
Performance level	PLe	
MTTF _d	215.7 years	
DC _{avg}	99%	
Safety Data – Va	llues per IEC/EN 62061 /	
IE(C/EN 61508	
SIL CL	3	
SIL	3	
HFT (Hardware Failure Tolerance)	1	
DC _{avg}	99%	
SFF	99.6%	
PFH _D	2.33E ⁻¹⁰ h ⁻¹	

Function Diagram

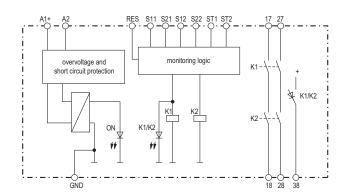


t,iff: max. time delay for simultaneity demand dependent on selected safety function E-Stop, safety gate, safety mat t_{niff}: max. 3s Light curtains t_{diff}: max. 1s Two-hand control t_{diff}: max. 0,5s other times on request

 t_{On} : max. actuation time of start button Standard t_{on}: max. 3s other times on request

ty: Time delay Example: release delay

Block Diagram



Dold UG6961 Series Dual Channel **DOLD** & Emergency Stop with Adjustable Delay

Dold UG6961 Series Dual Chanr	nel Emergency Stop with Adjustable Delay Specification Table
General Specifications	
Temperature	Storage: -25°C to 85°C (-13°F to 185°F) Operating: -15°C to 55°C (5°F to 131°F)
Altitude	<2,000 meters
Vibration Resistance	Amplitude: 0.35mm, Frequency: 10 to 55 Hz (IEC/EN 60-068-2-6)
Degree of Protection	Per IEC/EN 60 529. Housing: IP40; Terminals IP20
Housing	UL 94V-0 Thermoplastic; DIN mount 35 mm x 7.5 mm
Weight	210g (210 oz.)
Agency Approvals and Standards	CSA, cULus file E107778, CE, RoHS, TUV
Terminal Designation per EN 50 005 Wire Connections	1x4 mm ² solid or 1 x 2.5 mm ² stranded ferruled (isolated) or 2 x 1.5 mm ² stranded ferruled (isolated) DIN 46 228-1/- $\frac{2}{3}$ or 2 x 2.5 mm ² solid DIN 46 228-1/- $\frac{2}{3}$ /-4
Wire Fixing	Terminal screws M3.5 box terminals with wire protection.
Wire Connection	60degC/75degC Copper conductors only; AWG20-12 Sol/Str Torque 0.5NM
	Input Specifications
Nominal Voltage	24VDC
Voltage Range	At 10% residual ripple: DC: 0.8 to 1.1 UN;
Maximum Consumption	DC approx. 1.9W
Nominal Frequency	Not applicable
Minimum Off-time	250 ms
Control Voltage on S11 At UN	22VDC
Control Current Typ. Over S12, S22	8mA at UN
Min. Voltage on S12, S22 (relay activated)	10VDC
Short Circuit Protection	Internal with PTC (Positive Temperature Coefficient resistor)
Overvoltage Protection	Internal VDR (Voltage Dependent Resistor)
	Output Specifications
Electrical Contact Life	AC 15 at 5A, 230VAC: > 2.2x10 ⁵ switching cycles
Mechanical Life	> 10x10 ⁶ switching cycles
Contact Type	2 N.O. time delay (selectable) positive guided safety contact(s), 1 N.O. time delay contact
Operate Delay	Manual start: 30ms; automatic start: 350 ms.
Release Delay	E-Stop (1) (6), Safety gate (2) (7), Exclusive or contacts (5): Start up at U : < 65ms Release delay at U and disconnecting the supply: < 40ms Release delay at U and disconnecting S12,S22: < 60ms
Nominal Output Voltage	24VDC: See continuous current limit curve in installation manual.
Thermal Current (I _{th})	Max. 8A. See continuous current limit curve in installation manual.
Short Circuit Strength	Max. fuse rating: 6A gL (IEC/EN 60 947-5-1)
Switching Capacity (IEC/EN 60 947-5-1)	AC 15: N.O. contacts: 3A/230V DC 13: N.O. contacts: 2A/DC24V
Switching Frequency	Max. 1800 switching cycles/hr
Agency Approvals and Standards	CSA, cULus file E107778, CE, RoHS, TUV

To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific part number's web page at www.automationdirect.com

Release Delay: When disconnecting the signal the contacts remain closed and only open after the time is finished. Restarting the unit during time delay has no influence. The time has to run down fully before you can restart the unit.

Release Delay Retriggerable: Same as above, but you can restart the unit while the time is running and before the contacts open.

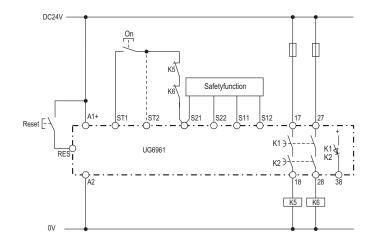
On Delay: The output contacts are energized after the adjusted time after restarting the unit.

Fleeting on Make: The output contacts are energized after restarting the unit for the adjusted time, and then go off again.

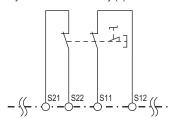
Fleeting on Break: The output contacts are energized for the adjusted time after disconnecting the signal, and then go off again.

Dold UG6961 Series Dual Channel **DOLD** & Emergency Stop with Adjustable Delay

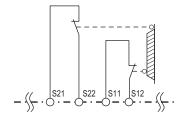
Application Examples



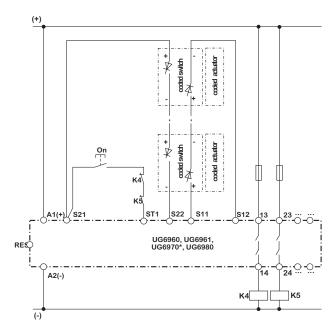
Safety function: see below, Manual-Start (for automatic start make a bridge to ST2 instead of ON button). Delay function: release delay (1)



Fct.: E-stop (1), with cross fault detection 3, PL e, Cat. 4



Fct.: Safety gate (2), with cross fault detection SIL 3, PL e, Cat. 4



*UG6970: The safety function 2 is connected as well as safety function 1, but S11'= S31, S12 = S32, S21 = S41, S22 = S42 and ST1 = ST2

256A

Dold UG6961 Series Dual Channel DOLD & Emergency Stop with Adjustable Delay

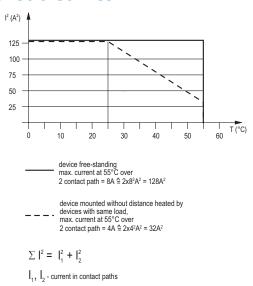
I2 (A2)

250

225

200

Characteristic Curves



Quadratic total current limit curve

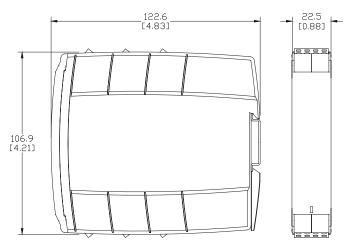
175 150 125 100 75 25 device free-standing max. current at 55° C over 4 contact path = $5A \triangleq 4x5^{2}A^{2} = 100A^{2}$ devices with same load, max. current at 55° C over 4 contact path = $1A \triangleq 4x1^{2}A^{2} = 4A^{2}$

 $\sum ||^2 = ||_1^2 + ||_2^2 + ||_3^2 + ||_4^2$ $||_1, ||_2, ||_3, ||_4 - \text{current in contact paths}$

Quadratic total current limit curve

Dimensions

mm [in]



Setting Delay Mode

On the variant /_0_ the delay mode can be set via rotary switch $t_{\text{\rm Ekt}}$. Possible functions:

t _{Fkt}	Function
1	Release delay
2	Release delay retriggerable
3	On delay
4	Fleeting on make
5	Fleeting on break

Dold LG5928 Series Dual Channel Safety Relay with Delay





Designed to protect people and machines in applications with E-stop buttons and safety gates. One or two channels can be monitored with timedelay function.

- · Compact, flexible and safe
- Short response time
- LED indicators for power and state of operation
- Performance Level (PL) e and category 4 to EN ISO 13849-1: 2008
- SIL Claimed Level (SIL CL) 3 to IEC/EN 62061
- Safety Integrity Level (SIL) 3 to IEC/EN 61508 and IEC/ EN 61511
- Output: 2 N.O. instantaneous contacts and 1 N.O. Release-Delayed contact

- Manual restart with button on S33-S34 or automatic restart with bridge between S13-S34
- With or without cross fault monitoring in the E-stop
- Indication for released time circuit
- LED indication for supply, channel 1/2 and Release-Delayed contacts





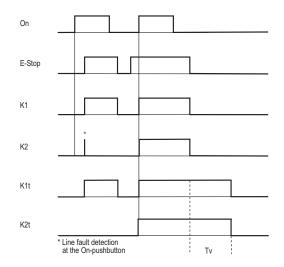


Safety Data – Values per

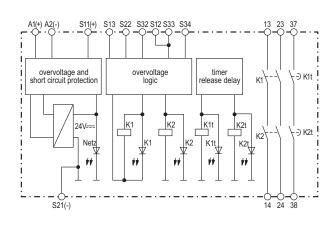


1- or 2-channel connection Line fault detection at the ON pushbuttons at connection on terminals S33-S34						EN	I ISO 13849-1				
							Non-Delayed Contacts	Delayed Contacts			
		COTITICO	ction on t	C1111111013 333 33 1		Category	4	3			
						Performance level	PLe	PLd			
						MTTF _d	351.8 years	495.4 years			
Safety Relays				DCavg	99%	97.3%					
art Number	Price	Marking Type	Voltage	ge Outputs Time Safety Data –							
		n!:	24VDC	2 N.O. instantaneous positive guided safety contact(s), 1 N.O. time	0.3 to 3 second	IEC/EN 6	Values per 2061 /IEC/EN	61508			
.G5928-41-61-3	\$;010h!:					SIL CL	3	2			
								delay positive guided safety contact(s)		SIL	3
		Dual safety relay module?:		2 N.O. instantaneous		HFT (Hardware Failure Tolerance)	1	1			
05000 44 04 40	\$010h?:		24VDC	positive guided safety contact(s), 1 N.O. time delay positive	1 to 10 second	DC _{avg}	99%	97.3%			
G5928-41-61-10						SFF	99.9%	99.1%			
	guided safety contact(s)			PFH _D	1.37E ⁻¹⁰ h ⁻¹	2.76E ⁻¹⁰ h ⁻¹					

Function Diagram



Block Diagram



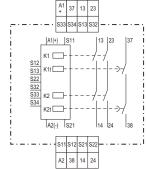
Id I CE020 Corios

Dola LG5928	beries	DOLD	व्या		
Dual Channel	Safety Relay with	Delay			
Dual Channel Safety Relay with Delay Specification Table					
General Specifications					
Temperature	Storage: -25°C to 85°C (-13°F to 185°F) Operation	ng: -15°C to 55°C (5°F to 131°F)			

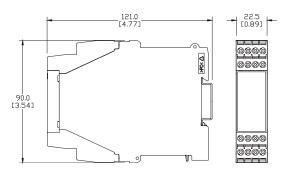
Duai Ghainlei Salety Nelay With Delay Specification Table			
General Specifications			
Temperature	Storage: -25°C to 85°C (-13°F to 185°F) Operating: -15°C to 55°C (5°F to 131°F)		
Altitude	< 2,000 meters		
Vibration Resistance	Amplitude: 0.35mm, Frequency: 10 to 55 Hz (IEC/EN 60-068-2-6)		
Degree of Protection	Per IEC/EN 60 529. Housing: IP40; Terminals IP20		
Housing	UL 94V-0 Thermoplastic; Din mount 35 mm x 7.5 mm		
Weight	210 g (7.41 oz.)		
Agency Approvals and Standards	cULus file E107778, CE, RoHS		
Terminal Designation per EN 50 005 Wire Connections	$1 \times 4 \text{ mm}^2 \text{ solid or } 2 \times 2.5 \text{ mm}^2 \text{ stranded ferruled (isolated) or } 2 \times 1.5 \text{ mm}^2 \text{ stranded ferruled (isolated) DIN } 46 228-1/-2/-3/-4$ or $2 \times 2.5 \text{ mm}^2 \text{ stranded ferruled DIN } 46 228-1/-2/-3$		
Wire Fixing	Box terminal with wire protection		
Wire Connection	60degC/75degC Copper conductors only; AWG20-12 Sol/Str Torque 0.8NM		
	Input Specifications		
Nominal Voltage	24VDC		
Voltage Range	At 10% residual ripple: DC: 0.9 to 1.1 UN At 48% residual ripple: DC: 0.8 to 1.1 UN		
Maximum Consumption DC approx. 3.5W			
Minimum Off-time 1.0 second			
Short Circuit Protection Internal with PTC (Positive Temperature Coefficient resistor)			
Overvoltage Protection	Internal VDR (Voltage Dependent Resistor)		
Output Specifications			
Electrical Contact Life	To DC 13 at 2A, DC 24V: >1.5 x 10 ⁵ switching cycles To AC 15 at 2A, 230VAC: 10 ⁵ switching cycles IEC/EN 60 947-5-1		
Mechanical Life	10 x 10 ⁶ switching cycles		
Contact Type	2 N.O. contacts instantaneous and 1 contact release delay		
Operate Delay	Operate delay typ at UN: manual start: 25 ms; automatic start: 100ms;		
Release Delay	Release delay typ at UN: Disconnecting supply: 20 ms; Disconnecting S12, S22, S31 and S32: 10ms		
Repeat Accuracy	±1% of setting value		
Nominal Output Voltage	AC: 250V; DC: See continuous current limit curve in manual.		
Thermal Current (Ith)	Max. 8A/6A, See quadratic total current curve in manual.		
Switching of Low Loads	M100 mV; (contacts with 5μ Au) M 1 mA		
Short Circuit Strength	Max. fuse rating: 10 A gL (IEC/EN 60 947-5-1); Line circuit breaker B 6 A		
Switching Capacity	AC 15: N.O. contacts: 3A/230V; DC 13: N.O. contacts: 2A/24VDC		
Switching Frequency	Max. 360 switching cycles/hr, with short release delay time		
Indicator Contact	DC 13: N.C. contact: 2A/24VDC		
Agency Approvals and Standards	cULus file E107778, CE, RoHS		

To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific part number's web page at www.automationdirect.com

Connection Terminals



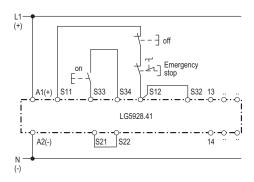
Dimensions mm(in)



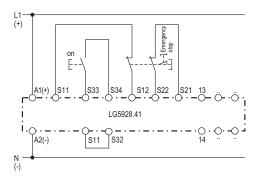
See our website: $\underline{\textit{www.AutomationDirect.com}} \ \textit{for complete Engineering Drawings}.$

Dold LG5928 Series Dual Channel Safety Relay with Delay

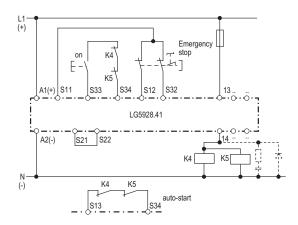
Application Examples



Single channel emergency stop circuit. This circuit does not have any redundancy in the emergency-stop control circuit. Suited up to SIL2, Performance Level d, Cat. 3

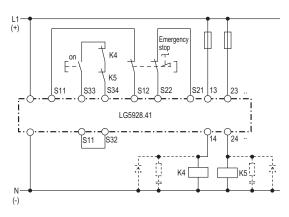


2-channel emergency stop circuit with cross fault monitoring. Suited up to SIL3, Performance Level e, Cat. 4



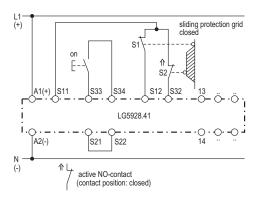
Contact reinforcement by external contactors controlled by one contact path. S33 - S34 must stay open on auto start.

Suited up to SIL3, Performance Level e, Cat 4, if the external contactors are in the same cabinet and the wiring is short circuit and crossfault prove.

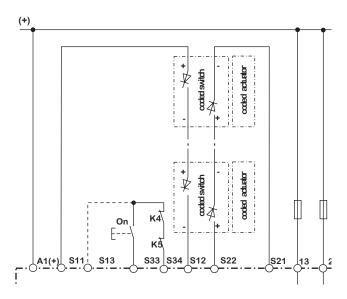


Contact reinforcement by external contactors, 2-channel controlled. The output contacts can be reinforced by external contactors with forcibly guided contacts for switching currents > 8 A e.g. 6 A.

Functioning of the external contactors is monitored by looping the NC contacts into the closing circuit (terminals S13-S34 or S33-S34). Suited up to SIL3, Performance Level e, Cat. 4

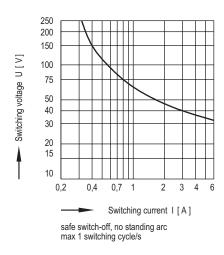


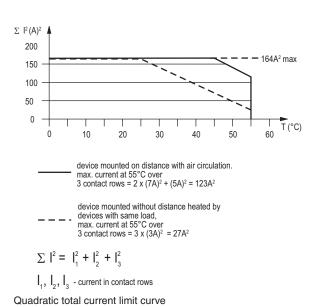
2-channel safety gate monitoring. Suited up to SIL3, Performance Level e, Cat. 4



Dold LG5928 Series Dual Channel Safety Relay with Delay

Curves





Dold BG5933 and BH5933 Series DOLD & **Two-Hand Controllers**







BH5933-48-61-110

Designed to protect people and machines in applications with two-hand buttons or production machinery with dangerous closing movements.

- Inputs for 2 pushbuttons, each with 1 N.C. and 1 N.O. contact.
- Output options: 2 N.O. contacts and 1 N.C. contact, or 3 N.O. contacts and 1 N.C. contact
- Feedback circuit Y1 Y2 to monitor external contactors used for reinforcement of contacts
- Overvoltage and short-circuit protection
- LED indicators for power and state of operation

Two-Hand Controllers Selection Chart				
Part Number	Price	Marking Type	Voltage	Outputs
BG5933-22-61-24	\$0049p:	Two-hand controller	24VDC	2 N.O. and 1 N.C.
BH5933-48-61-110	\$0049q:	Two-hand controller	110VAC	3 N.O. and 1 N.C.

Note: Output contacts will be switched if both pushbuttons are operated within m0.5s. If both buttons are pressed while switching on the operating voltage (e.g. after voltage functions), the ouput contacts do not energize.

Safety Data – Values per EN ISO 13849-1			
Category	4 according to EN 954-1		
Performance level	PLe according to EN 13849-1		
MTTF _d	30.7 years		
DC _{avg}	99%		
Safety Data – Values per IEC/EN 62061 /IEC/EN 61508			
SIL CL	3 per IEC/EN 62061		
SIL	3 per IEC/EN 61508		
HFT (Hardware failure Tolerance)			
DC _{avg}	99%		
SFF	99.7%		
PFH _D	7.51E ⁻⁹ h ⁻¹		

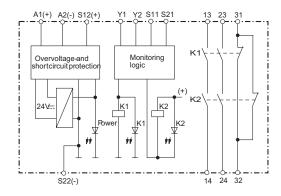
Two-Hand Controllers Safety Relay Specification Table			
Part Numbers	BG5933-22-61-24	<u>BH5933-48-61-110</u>	
	General Specifications		
Temperature	Storage: -25°C to 85°C (-13°F to 185°F)	Operating: -15°C to 55°C (5°F to 131°F)	
Altitude	< 2,000) meters	
Vibration Resistance	Amplitude: 0.35mm, Frequency:	10 to 55 Hz (IEC/EN 60-068-2-6)	
Degree of Protection	Per IEC/EN 60 529. Hous	sing: IP40; Terminals IP20	
Housing	UL 94V-0 Thermoplastic; [Din mount 35 mm x 7.5 mm	
Weight	200g (7.05 oz.)	400g (14.11 oz.)	
Agency Approvals and Standards		8, CE, RoHS, TUV	
Terminal Designation per EN 50 005 Wire		or 2 x 1.5 mm ² stranded ferruled (isolated) DIN 46 228-1/-2/-	
Connections		/-4 errruled DIN 46 228-1/-2/-3	
Mina Fining			
Wire Fixing		nals with self-lifting wire protection	
Manufact Vellana	Input Specifications	440)/ 40, 020)/ 40	
Nominal Voltage	24V DC	110V AC, 230V AC	
Voltage Range	At 10% residual ripple: DC: 0.9 to 1.1 UN	At 10% residual ripple: AC: 0.85 to 1.1 UN	
Maximum Consumption	DC approx. 2.3 W	AC approx. 4 VA	
Nominal Frequency	0.5	50 to 60 Hz	
Time Delay for Simultaneous Demand		ec max	
Recovery time	1 second		
Control Contacts	2 x (1 N.O. and 1 N.C. contacts)		
Current via Control Contacts with 24VDC	N.O. contact: typ. 50mA; N.C. contact: typ. 20mA		
Short Circuit Protection		mperature Coefficient resistor)	
Overvoltage Protection	Internal VDR (Voltage Dependent Resistor)		
	Output Specifications	4 = 405	
Electrical Contact Life	To DC 13 at 2A, DC 24V: >1.5 x 10 ⁵ switching cycles To AC 15 at 2A, 230 VAC : 10 ⁵ switching cycles IEC/EN 60 947-5-1		
Mechanical Life		itching cycles	
Contact Type (N.O. are safety contacts)	2 N.O. positively driven and 1 N.C. relay contacts	3 positively driven N.O. and 1 N.C. relay contacts	
Derate Time Operate time: typ. 40ms		e: typ. 40ms	
Release Time	Release time: typ. 15ms		
Nominal Output Voltage	AC: 250V; DC: See continuous current limit curve in manual.		
Thermal Current (Ith)	Max. 5A See continuous current limit curve in manual.		
Switching of Low Loads	M100 mV; (contacts with 5µ Au) M 1mA		
Short Circuit Strength	Max. fuse rating: 6 A gl (IEC/EN 60	947-5-1); line circuit breaker C 6 K	
		0V; N.C. contacts: 2A/230VAC	
Switching Capacity		tacts: 2A/24VDC	
	· · · · · · · · · · · · · · · · · · ·	24V >105. ON: 0.4s, OFF: 9.6 s	
Switching Frequency	Max. 1800 swit	tching cycles/hr	

Dold BG5933 and BH5933 Series Two-Hand Controllers

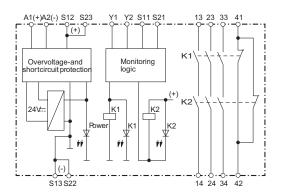


Wiring

BG5933 Block Diagram



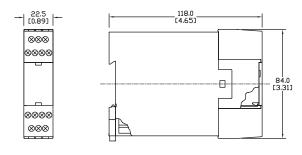
BH5933 Block Diagram



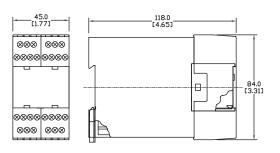
Dimensions

mm [in]

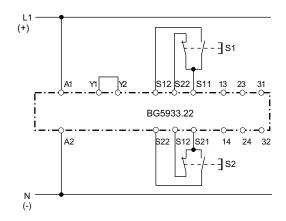
BG5933



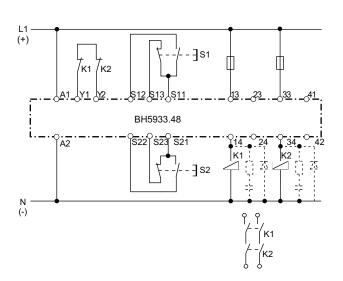
BH5933



Applications



Two-hand control



Two-hand control with contact reinforcement via external positively-driven contactors

*Note: When switching inductive loads, surge suppressors are recommended.

Dold UG6960 Series Safety Relay Light Curtain with Adjustable Delay



Designed to protect people and machines in applications with light curtains.

- · Various delay functions adjustable at device (power off before selecting the desired function):
- Release delay
- Release delay retriggerable
- On delay
- Fleeting on make / break
- Delay function settable via potentiometer

Note: See Delay Functions for more information.

- · According to:
- Performance Level (PL) e and category 4 to EN ISO 13849-1: 2008
- SIL Claimed Level (SIL CL) 3 to IEC/EN 62061
- Safety Integrity Level (SIL) 3 to IEC/EN 61508 and IEC/ EN 61511
- Acc. to EN 50156-1 for furnaces







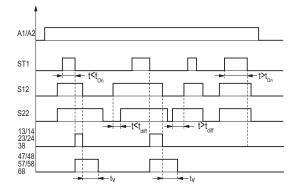


Safety Relays Selection Chart					
Part Number	Price	Marking Type	Voltage	Outputs	
<u>UG6960-04PS800-300</u>	\$-010i5:	Safety Relay Light Curtain	24 VDC	2 N.O. instantaneous positive guided safety contact(s), 2 N.O. time delay (selectable) positive guided safety contact(s), 1 N.O. instantaneous monitoring contact, 1 N.O. time delay monitoring contact	

- · Line fault detection ON pushbutton
- · Manual restart or automatic restart
- · Without cross fault monitoring
- 2-channel
- Forcibly guided output contacts
- Output: max. 2 N.O. instantaneous semiconductor monitoring outputs, 2 N.O. time-delay guided contacts, 1 instant monitoring contact, and 1 time-delayed monitoring
- LED indicator for operation, delay contacts and failure
- luggable terminal blocks for easy exchange of devices
- · Two PNP sensor inputs only

Safety Data – Values per EN ISO 13849-1			
Category	4		
Performance level	PLe		
MTTF _d	584.5 years		
DC _{avg}	99%		
Safety Data – Values per IEC/EN 62061 /IEC/EN 61508			
SIL CL	3		
SIL	3		
HFT (Hardware Failure Tolerance)	1		
DC _{avg}	99%		
SFF	99.7%		
PFH _D	3.59E ⁻¹⁰ h ⁻¹		

Function Diagram

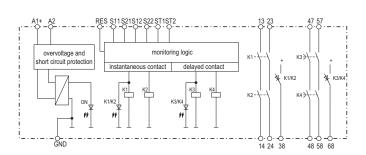


t max. time delay for simultaneity demand dependent on selected safety function E-Stop, safety gate, safety mat t :: max. 3s Light curtains t :: max. 1s Two-hand control t max. 0,5s other times on request

t nax. actuation time of start button Standard t_{on}: max. 3s other times on request

ty: Time delay Example: release delay

Block Diagram



Dold UG6960 Series Safety Relay **DOLD** & Light Curtain with Adjustable Delay

Dold UG6960 Series Safety Relay Light Curtain with Adjustable Delay Specification Table			
General Specifications			
Temperature	Storage: -25°C to 85°C (-13°F to 185°F) Operating: -15°C to 55°C (5°F to 131°F)		
Altitude	<2.000 meters		
Vibration Resistance	Amplitude: 0.35mm, Frequency: 10 to 55 Hz (IEC/EN 60-068-2-6)		
Degree of Protection	Per IEC/EN 60 529. Housing: IP40; Terminals IP20		
Housing	UL 94V-0 Thermoplastic		
Weight	250g (8.82 oz.)		
Terminal Designation per EN 50 005 Wire Connections	1x4 mm 2 solid or 1 x 2.5 mm 2 stranded ferruled (isolated) or 2 x 1.5 mm 2 stranded ferruled (isolated) DIN 46 228-1/-2/-3/-4 or 2 x 2.5 mm 2 solid DIN 46 228-1/-2/-3/-4		
Wire Fixing	Terminal screws M3.5 box terminals with wire protection.		
Wire Connection	60degC/75degC Copper conductors only; AWG20-12 Sol/Str Torque 0.5NM		
	Input Specifications		
Nominal Voltage	24VDC		
Voltage Range	At 10% residual ripple: AC/DC: 0.9 to 1.1 UN; AC: 0.85 to 1.1 UN		
Maximum Consumption	DC approx. 3.2 W		
Nominal Frequency	Not applicable		
Minimum Off-time	250 ms		
Control Voltage on S11 At UN	22VDC		
Control Current Typ. Over S12, S22	8mA at UN		
Min. Voltage on S12, S22 (relay activated)	20VDC		
Short Circuit Protection	Internal with PTC (Positive Temperature Coefficient resistor)		
Overvoltage Protection	Internal VDR (Voltage Dependent Resistor)		
	Output Specifications		
Electrical Contact Life	AC 15 at 5A, 230VAC: > 1.5x10 ⁵ switching cycles		
Mechanical Life	> 10x10 ⁶ switching cycles		
Contact Type	2 N.O. instantaneous contacts 2 N.O. delayed contacts (N.O. contacts are safety contacts)		
Operate Delay	Manual start: 30 ms; automatic start: 350 ms.		
	E-Stop (1) (6), Safety gate (2) (7), Exclusive or contacts (5): Start up at U : < 65 ms		
Release Delay	Light curtains (8) Start up at U : < 35 ms Release delay at U and disconnecting the supply: < 40 ms Release delay at U and disconnecting S12,S22: < 25 ms		
Nominal Output Voltage	24VDC: See continuous current limit curve in installation manual.		
Thermal Current (Ith)	Max. 8A. See continuous current limit curve in installation manual.		
Short Circuit Strength	Max. fuse rating: 6A gL (IEC/EN 60 947-5-1); Line circuit breaker: B 6A		
Switching Capacity (IEC/EN 60 947-5-1)	AC 15: N.O. contacts: 3A/230V DC 13: N.O. contacts: 2A/DC24V.		
Switching Frequency	instantaneous: Max. 1800 switching cycles/hr delayed: Max. 360 switching cycles/hr		
Agency Approvals and Standards	CSA, cULus file E107778, CE, RoHS, TUV		

To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific part number's web page at www.automationdirect.com

Release Delay: When disconnecting the signal the contacts remain closed and only open after the time is finished. Restarting the unit during time delay has no influence. The time has to run down fully before you can restart the unit.

Release Delay Retriggerable: Same as above, but you can restart the unit while the time is running and before the contacts open.

On Delay: The output contacts are energized after the adjusted time after restarting the unit.

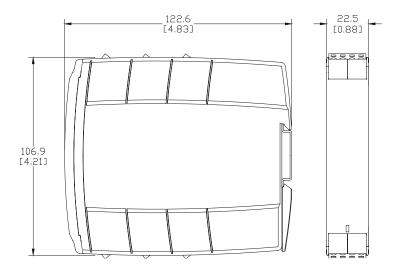
Fleeting on Make: The output contacts are energized after restarting the unit for the adjusted time, and then go off again.

Fleeting on Break: The output contacts are energized for the adjusted time after disconnecting the signal, and then go off again.

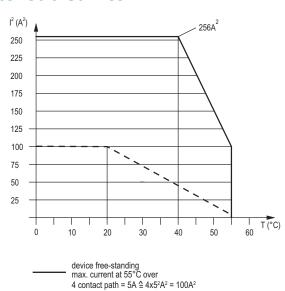
Dold UG6960 Series Safety Relay **DOLD** & Light Curtain with Adjustable Delay

Dimensions

mm [in]



Characteristic Curves

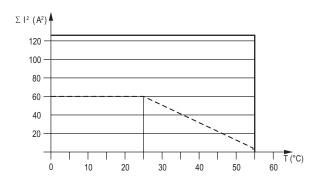


device mounted without distance heated by devices with same load, max. current at 55°C over

4 contact path = $1A \triangleq 4x1^2A^2 = 4A^2$

 $\sum_{1} | ^{2} = | ^{2} _{1} + | ^{2} _{2} + | ^{2} _{3} + | ^{2} _{4}$ $| ^{1} _{1}, | ^{2} _{2}, | ^{3} _{3} - \text{current in contact paths}$

Quadratic total current limit curve output contacts



— AC 230V device mounted on distance with air circulation. max. current at 55°C over

5 contact path = $5A \triangleq 5x5^2A^2 = 125A^2$

 – AC 230V device mounted without distance heated by devices with same load.

max. current at 55°C over 5 contact path = $1A \triangleq 5x1^2A^2 = 5A^2$

Quadratic total current

$$\sum |_{\text{th}}^{2} = |_{\text{th1}}^{2} + |_{\text{th2}}^{2} + |_{\text{th3}}^{2} + |_{\text{th4}}^{2} + |_{\text{th5}}^{2}$$

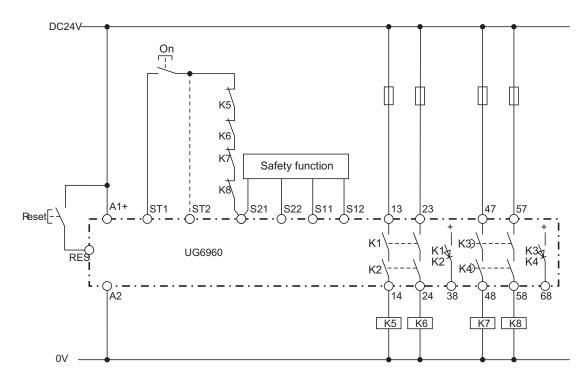
 \mathbf{I}_{th1} , \mathbf{I}_{th2} , \mathbf{I}_{th3} , \mathbf{I}_{th4} , \mathbf{I}_{th5} : current in contact paths

Quadratic total current limit curve AC 230 V

See our website: www.AutomationDirect.com for complete Engineering Drawings.

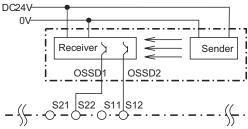
Dold UG6960 Series Safety Relay **DOLD** & Light Curtain with Adjustable Delay

Application Examples



Safety function: see below, Manual-Start (for automatic start make a bridge to ST2 instead of ON button). Delay function: release delay (1)

K1/K2 instantaneous contact, K3/K4 delayed contact



Fct.: Light curtain (8), without cross fault detection SIL 3, PL e, Cat. 4 ²⁾

2) To achieve the stated safety classification light curtains with selftest (type 4) according to IEC/EN 61496-1 have to be used.

Dold Safety Relays Multi-Function Light Curtain Controller





Designed to protect people and machinery in applications with light curtains; can be operated in protection, muting and stepping modes.

- Connect up to 3 light curtains
- · Broken wire detection on light curtain input
- Multifunction device different functions selectable by rotational switches: protective, muting, stepping
- Suitable to connect light curtains of type 4 or self-testing light curtains type 2 according to IEC/EN 61 496-1, cross-fault monitoring in the light curtain
- Undervoltage and overvoltage detection and indication
- LED indicators for RUN and Status Outputs 1 and 2
- Two PNP sensor inputs only

Selection Chart				
Part Number	Price	Marking Type	Voltage	Outputs
BH5902-22-01MF2-61	\$0049a:	Light curtain controller, with 2-channel operation and selectable standard, with protective, muting or stepping modes	24 VDC	2 N.O. and 1 N.C.

Safety Data – Values per EN ISO 13849-1			
Category	4 according to EN 954-1		
Performance level	PLe according to EN 13849-1		
MTTF _d	31.5 years		
DC _{avg}	98.9%		
Safety Data – Values per IEC/EN 62061 /IEC/EN 61508			
SIL CL	3 per IEC/EN 62061		
SIL	3 per IEC/EN 61508		
HFT (Hardware Failure Tolerance)			
DC _{avg}	98.9%		
SFF	99.6%		
PFH _D	7.80E ⁻⁹ h ⁻¹		

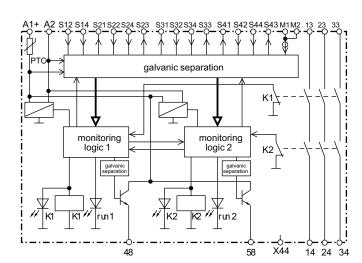
2-Channel Light Curtain Controller Specification Table			
General Specifications			
Temperature	Storage: -25°C to 85°C (-13°F to 185°F) Operating: 0°C to 50°C (32°F to 122°F)		
Altitude	< 2,000 meters		
Vibration Resistance	Amplitude: 0.35mm, Frequency: 10 to 55 Hz (IEC/EN 60-068-2-6)		
Degree of Protection	Per IEC/EN 60 529. Housing: IP40; Terminals IP20		
Housing	UL 94V-0 Thermoplastic; Din mount 35 mm x 7.5 mm		
Weight	320 g (11.29 oz.)		
Agency Approvals and Standards	cULus file E107778, CE, RoHS, TUV		
Terminal Designation per EN 50 005 Wire Connections	1x4 mm² solid or 1 x 2.5 mm² stranded ferruled (isolated) or 2 x 1.5 mm² stranded ferruled (isolated) DIN 46 228-1/-2/-3/-4 or 2 x 2.5 mm² stranded ferruled DIN 46 228-1/-2/-3		
Wire Fixing	Terminal screws M3.5 box terminals with wire protection or cage clamp terminals.		
	Input Specifications		
Nominal Voltage	24VDC		
Voltage Range	At 5% residual ripple: 0.85 to 1.15 UN		
Maximum Consumption	170 mA (no load on semiconductor outputs)		
Control Voltage - S21, S23, S31, S33, S41, S43, S48, S58	23VDC at UN		
Control Current on S12, S14, S22, S24, S32, S34, S42, S44	Each 4.5 mA at UN		
Minimum Voltage on Terminals S12, S14, S22, S24, S32, S34, S42, S44	16VDC		
Minimum Current on M1, M2	25mA with active lamp		
Short Circuit Protection	Internal with PTC (Positive Temperature Coefficient resistor)		
Overvoltage Protection	Internal VDR (Voltage Dependent Resistor)		
	Output Specifications		
Electrical Contact Life	To AC 15 at 2A, AC 230V: 10 ⁵ switching cycles IEC/EN 60 947-5-1		
Mechanical Life	10 x 10 ⁶ switching cycles		
Contact Type	2 N.O., positively driven and 1 N.C relay contacts; (N.O. contacts are safety contacts)		
Operate Delay	Operate delay typ. at UN: manual start 50 ms; automatic start: 1.5 s.; automatic restart: max. 55ms.;		
Release Delay	Release delay typ at UN: Max: 30 ms (max 50ms when failure on LC and only one input channel de- energizes)		
Nominal Output Voltage	AC: 250V; DC: See continuous current limit curve in manual.		
Thermal Current (Ith)	Max. 5A. See continuous current limit curve in manual.		
Switching of Low Loads	M100 mV; (contacts with 5μ Au) M 1mA		
Short Circuit Strength	Max fuse rating: 6A gl (IEC/EN 60 9470-5-1); Line circuit breaker: C 8 A		
Switching Capacity	AC 15: N.O. contacts: 3A/230V; N.C. contacts: 2A/230V AC DC 13 at 0.1 Hz: N.C. contacts: 8A/24V DC		
Switching Frequency	Max. 1,200 switching cycles/hr		
Semi-conductor Output Type (over-temperature and overload protected)	Transistor plus switching, max 100mA continuous; 400mA for 0.5 sec.		

84.0 [3.31]

Dold Safety Relays Multi-Function Light Curtain Controller

Wiring

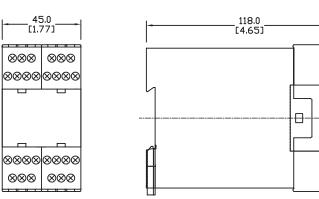
BH5902-22-01MF2-61 Block Diagram



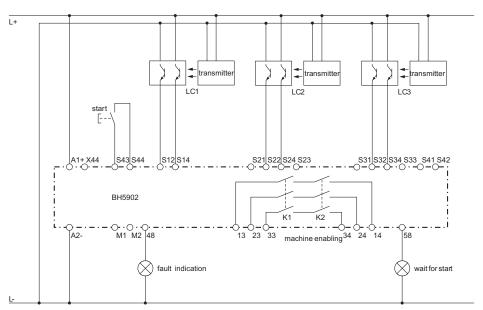
Note: All drawings are for a 3 N.O. configuration. The units will actually have a 2 N.O. and 1 N.C. configuration.

Dimensions

mm [in]



Applications

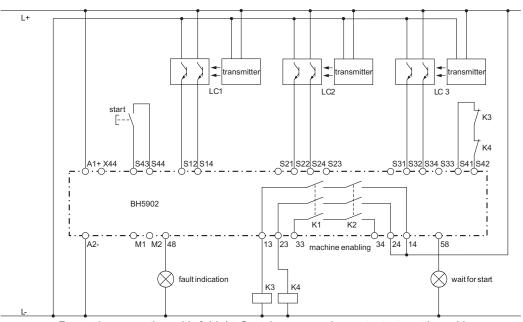


Protective operation with 3 Light Curtains, manual or auto start, setting without feedback input

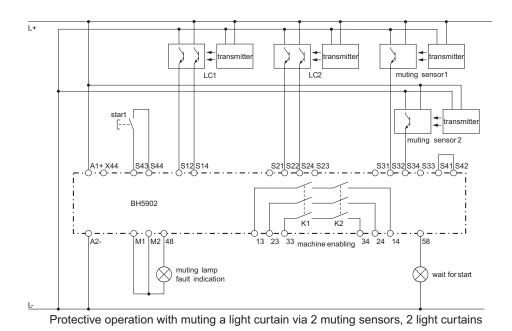
*Note: When switching inductive loads, surge suppressors are recommended.

Dold Safety Relays Multi-Function Light Curtain Controller

Applications



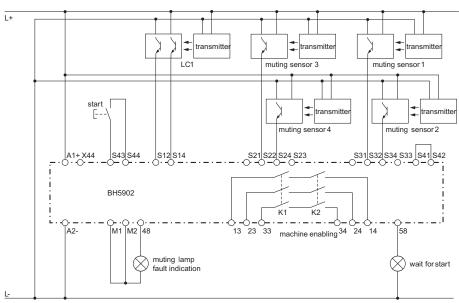
Protective operation with 3 Light Curtains, manual or autostart, setting with contact reinforcement and feedback input



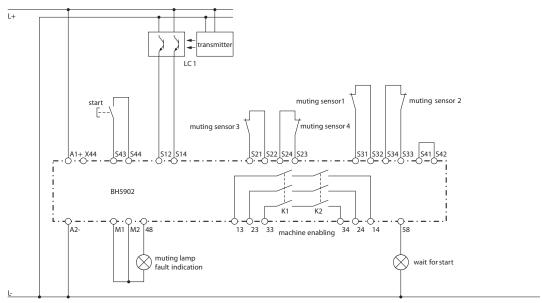
*Note: When switching inductive loads, surge suppressors are recommended.

Dold Safety Relays Multi-Function Light Curtain Controller

Applications



Protective operation with muting, 1 light curtain, 4 muting sensors



Protective operation with muting via 4 muting sensor contacts

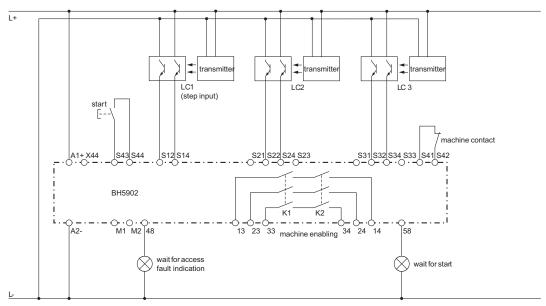
Contact reinforcement

If external relays or contactors are used to reinforce or multiply the contacts of the safety relays, these must be monitored by feeding back one N.C. contact from each relay/contactor into the feedback inputs.

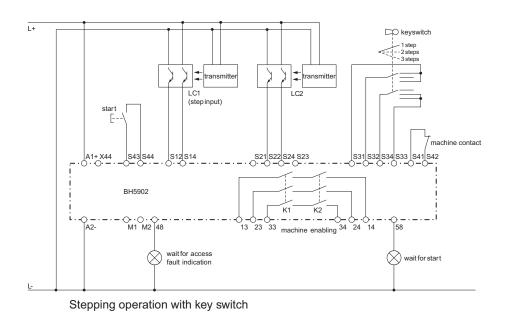
*Note: When switching inductive loads, surge suppressors are recommended.

Dold Safety Relays Multi-Function Light Curtain Controller

Applications



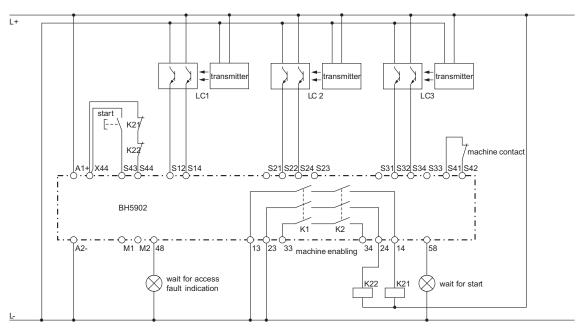
Stepping operation with 3 light curtains



*Note: When switching inductive loads, surge suppressors are recommended.

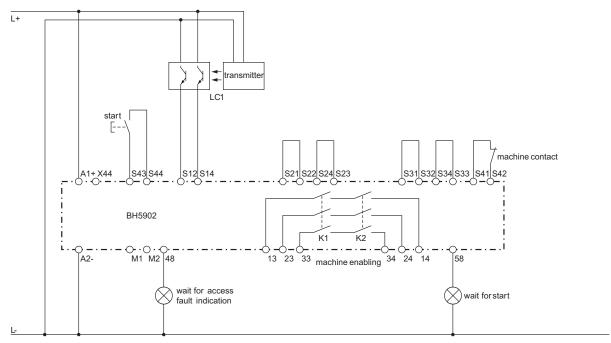
Dold Safety Relays Multi-Function Light Curtain Controller

Applications



Stepping operation with 3 light curtains and contact reinforcement by external contactors, 2-channel operation (switching of feedback input can also be used at protective operation with muting)

The feedback circuit of the external relays is only tested when the module is started by pressing the pushbutton. When using this circuit, the safe function has to be tested at regular intervals. This can be done by interrupting a light curtain so that a reset requires activation of the START button. Activating the module is only possible when all external relays are de-energized.



Stepping operation with one light curtain (with all operating modes, unused inputs must be jumpered).

*Note: When switching inductive loads, surge suppressors are recommended.

Dold Safety Relays Light Curtain Controller





Designed to protect people and machinery in applications with light curtains.

- For light curtains with symmetric or asymmetric outputs, adjustment with switch S1
- Output: 3 NO and 1 NC contacts
- Line fault detection for ON-button
- LED indicators for power and state of operation
- Single and 2-channel operation

LG5925-48-900-61						
Safety Relays Selection Chart						
Part Number	Price	Marking Type	Voltage	Outputs	Connection	Drawing
<u>LG5925-48-900-61</u>	\$0049b:	Light curtain	041/00	3 NO	Fixed screw terminals	PDF
LG5925-48PC-900-24	\$06aqh:	controller, 2-channel	24 VDC	1 NC	Push-in cage clamp	PDF
				·	·	

Safety Data – Values per EN ISO 13849-1		
Category	4	
Performance level	PLe	
MTTF _d	584.5 years	
DC _{avg}	99%	
Safety Data –		
Values per IEC/EN	62061 /IEC/EN 61508	
SIL CL	3 per IEC/EN 62061	
SIL	3 per IEC/EN 61508	
HFT (Hardware Failure Tolerance)	1	
DC _{avg}	99%	
SFF	1.1E ⁻¹⁰	
PFH _D	8.2E ⁻⁵	

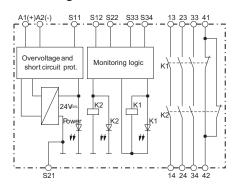
2-Channel Light Curtain Controller Specification Table			
General Specifications			
Temperature	Storage: -40°C to 85°C [-40°F to 185°F]; Operating: -25°C to 60°C [-13°F to 140°F]		
Altitude	< 2,000m [6562ft]		
Vibration Resistance	Amplitude: 0.35 mm; Frequency: 10 to 55 Hz (IEC/EN 60-068-2-6)		
Degree of Protection	Per IEC/EN 60 529. Housing: IP40; Terminals IP20		
Housing	UL 94V-0 Thermoplastic; DIN mount 35mm x 7.5 mm		
Weight	220g [7.76 oz.)]		
Agency Approvals and Standards	cULus file E107778, CE, RoHS, TUV		
Terminal Designation per EN 50 005 Wire Connections	1x4 mm ² solid or 1 x 2.5 mm ² stranded ferruled (isolated) or 2 x 1.5 mm ² stranded ferruled (isolated) DIN 46 228-1/-2/-3/-4 or 2 x 2.5 mm ² stranded ferruled DIN 46 228-1/-2/-3		
Wire Fixing	Terminal screws M3.5 box terminals with wire protection or cage clamp terminals.		
Input Specifications			
Nominal Voltage	24VDC		
Voltage Range	At 5% residual ripple: 0.9 to 1.1 UN		
Maximum Consumption	DC approx. 1.7 W		
Control Voltage - S11	U _N : 22.5 VDC		
Control Current on S12, S22	35mA at U _N		
Minimum Voltage on Terminals S12, S22(when relay activated)	21VDC		
Short Circuit Protection	Internal with PTC (Positive Temperature Coefficient resistor)		
Overvoltage Protection	Internal VDR (Voltage Dependent Resistor)		
Outp	ut Specifications		
Electrical Contact Life	To 5A, AC 230V: >2.2 x 10 ⁵ switching cycles IEC/EN 60 947-5-1		
Mechanical Life	20 x 10 ⁶ switching cycles		
Contact Type	3 NO positively driven and 1 NC relay contacts, (NO contacts are safety contacts)		
Operate Delay	Operate delay typ at U_{N} : manual start 20ms; automatic start: 350ms		
Release Delay	Release delay typ. at U $_{\mbox{\scriptsize N}}$: Disconnecting the supply: 20ms.; Disconnecting S12, S22: 15ms		
Nominal Output Voltage	AC: 250V; DC: See continuous current limit curve in installation manual.		
Thermal Current (Ith)	Max. 8A per contact. See continuous current limit curve in installation manual.		
Short Circuit Strength	Max fuse rating:10A gl (IEC/EN 60 9470-5-1); Line circuit breaker: B 6A		
Switching Capacity	AC 15: NO contacts: 3A/230VAC; NC contacts: 2A/230VAC DC 13: NO contacts: 2A/24VDC, NC contacts: 2A/24VDC DC 13: NO contacts: 4A/24VDC @ 0.1 Hz, NC contacts: 4A/24VDC @ 0.1 Hz		
Switching Frequency	Max. 1,200 switching cycles/hr		

Dold Safety Relays Light Curtain Controller

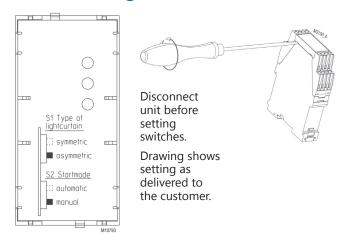


Wiring

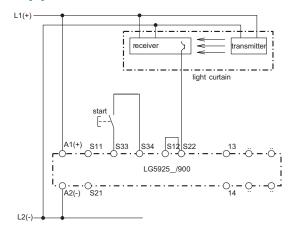
LG5925-48-900-61 and LG5925-48PC-900-24 **Block Diagram**



S1 and S2 **Switch Setting Instructions**



Applications



Single channel connection of light curtains with self-test according to EN 61 496-1.

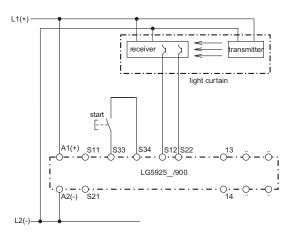
> Note: Refer to "Unit programming" Set switches or dip switches in position:

Note: Refer to "Unit programming" Set switch or dip switches in position:

S1 "without"

S2 "manual'

With autostart link S33 - S34 set to "automatic."



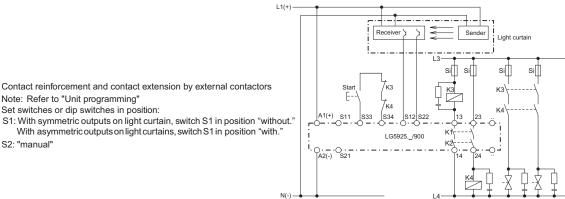
2 channel connection of light curtains with self-test according to EN 61 496-1.

Cross fault detection in the light curtain.

Note: Refer to "Unit programming"

Set switch or dip switches in position:

With symmetric outputs on light curtain, switch S1 in position "without." With asymmetric outputs on light curtains, switch S1 in position "with." S2: "manual" $\,$



Contact reinforcement and contact extension by external contactors

*Note: When switching inductive loads, surge suppressors are recommended.

S2: "manual"

Dold Safety Relay Mat and Edge DOLD &







- Safety-mat switch gear with manual or automatic
- · Can also be used for safety edges
- Output: 2 NO contacts
- Line fault detection at the ON pushbutton
- LED indicator for state of operation
- LED indicator for channel 1 and 2
- Wire connection: also 2 x 1.5 mm² stranded ferruled (isolated), DIN 46 228-1/-2/-3/-4 or 2 x 2.5 mm²









Safety Data – V	alues per EN ISO 13849-1	
Category	4	
Performance level	PLe	
MTTF _d	236.3 years	
DC _{avg}	99%	
Safety Data –		
Values per IEC/EN 62061 /IEC/EN 61508		
SIL CL	3	
SIL	3	
HFT (Hardware Failure Tolerance)	1	
DC _{avg}	99%	
SFF	99.7%	
PFH _D	2.09E ⁻¹⁰ h ⁻¹	

Safety Relays Selection Chart				
Part Number	Price	Marking Type	Voltage	Outputs
		2 NO positive guided safety contact(s), 1 NC monitoing contact(s)		

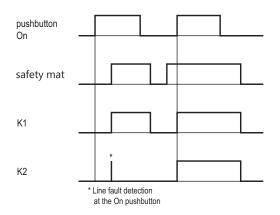
Relay Mat and Edge Specification Table				
General Specifications				
Temperature	Storage: -25°C to 85°C (-13°F to 185°F) Operating: -15°C to 55°C (5°F to 131°F)			
Altitude	< 2000m (6562ft)			
Vibration Resistance	Amplitude: 0.35mm, Frequency: 10 to 55 Hz (IEC/EN 60-068-2-6)			
Degree of Protection	Per IEC/EN 60 529. Housing: IP40; Terminals IP20			
Housing	UL 94V-0 Thermoplastic; DIN mount 35 mm x 7.5 mm			
Weight	220g (7.76 oz.)			
Terminal Designation per EN 50 005 Wire Connections	1x4 mm² solid or 1x2.5 mm² stranded ferruled (isolated) or 2x1.5 mm² stranded ferruled (isolated) DIN 46 228-1/-2/-3/-4 or 2 x 2.5 mm² stranded ferruled DIN 46 228-1/-2/-3			
Wire Fixing	Box terminal with wire protection, removable terminal strips			
Wire Connection	60°C/75°C Copper conductors only AWG20-12 Sol Torque 0.8N•m (0.59 lb•ft) AWG 20-14 STR Torque 0.8 NM(0.59 lb•ft)			
Input Specifications				
Nominal Voltage	24VDC			
Voltage Range	At 10% residual ripple: 0.9 to 1.1 UN			
Maximum Consumption	DC approx. 2W			
Control Voltage - S11	UN: 23VDC			
Control Current on S12, S22	40mA at UN			
Minimum Voltage on Terminals S12, S22 (when relay activated)	21VDC			
Short Circuit Protection	Internal fuse rating			
Overvoltage Protection	Internal VDR (Voltage Dependent Resistor)			
Output Specifications				
Electrical Contact Life	To 2A, AC 230V: > 10 ⁵ switching cycles IEC/EN 60 947-5-1			
Mechanical Life	10 x 10 ⁶ switching cycles			
Contact Type	Forcibly guided			
Operate Delay	Operate delay typ at UN: manual start 80ms; automatic start 170ms			
Release Delay	Release delay typ. at UN: Disconnecting the supply: 50ms; Disconnecting S12, S22: 15ms			
Nominal Output Voltage	AC: 250V; DC: See continuous current limit curve in installation manual.			
Thermal Current (Ith)	Max. 5A per contact. See continuous current limit curve in installation manual.			
Switching of Low Loads	M100mV; (contacts with 5μ Au) M 1mA			
Short Circuit Strength	Max fuse rating: 6A gl (IEC/EN 60 947-5-1); Line circuit breaker: C 8A			
Switching Capacity	AC 15: NO contacts: 3A/230V; NC contacts: 2A/230V AC DC 13: NO contacts: 1A/24V DC, 0.5A/110V AC; NO contacts: 1A/24V DC			
Switching Frequency	Max. 1200 switching cycles/hr			
Agency Approvals	cULus file E107778, CE, RoHS, TUV			

Dold Safety Relay Mat and Edge

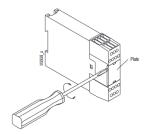




Function Diagram



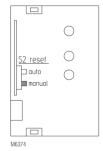
S1 and S2 Switch Setting Instructions



Disconnect unit before setting switches.

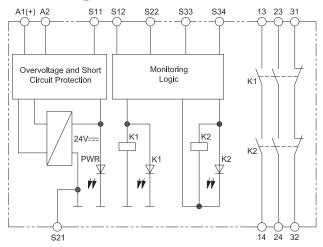
Drawing shows setting as delivered to the customer.





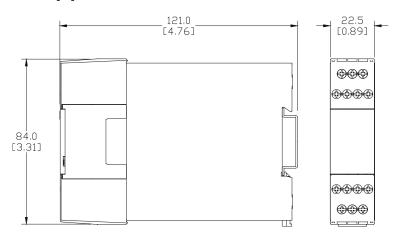


Block Diagram

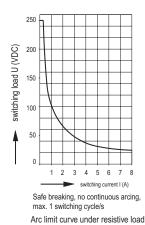


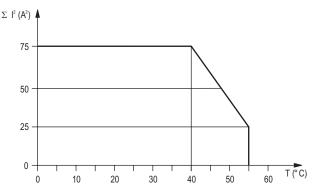
Dimensions

mm [in]



Characteristic Curves





Quadratic total current

 $\sum_{1}^{2} = I_{1}^{2} + I_{2}^{2} + I_{3}^{2}$

I₁, I₂, I₃ - current in contact paths

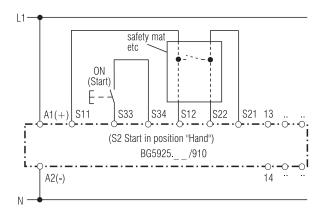
See our website: www.AutomationDirect.com for complete Engineering Drawings.

Quadratic total current limit curve

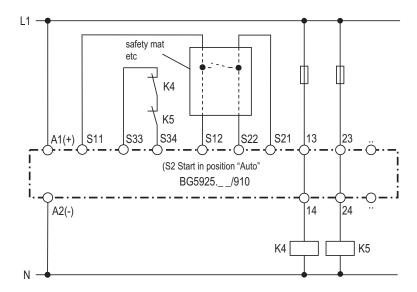
Dold Safety Relay Mat and Edge



Application Examples



Switch gear for safety mats and edges switch S2 position: Manual start (For automatic restart S2 in position Autostart and link on S33-S34) Suited up to SIL3, Performance Level e, Cat. 4



Switch gear for safety mats and edges
Contact reinforcement by external contactors, 2-channel.
switch S2 position:
Auto start
Suited up to SIL3, Performance Level e, Cat. 4

Dold BH5932 Speed Monitor Relays







BH5932 speed monitoring safety relay modules use inputs from proximity sensors that are detecting rotating targets on the motor that needs monitoring.

- Energized when speed is under setting value
- Two PNP sensor inputs
- 10 to 20,000 IPM (impulses per minute) adjustable range
- Monitors rotation and linear movement
- 2-channel operation for standstill and over-speed monitoring
- 2 N.O. and 1 N.C. positive-guided contacts
- LED status indicators

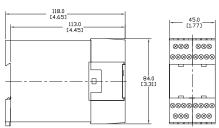
Safety Speed Monitor Relays Selection Chart			
arking Type Volta	ge Outputs		
onitoring safety relay module 24 VAC	/VDC 2 NO and 1 NC		
	arking Type Volta onitoring safety relay		

Safety Data – V	alues per EN ISO 13849-1	
Category	3 according to EN 954-1	
Performance level	PLe according to EN 13849-1	
MTTF _d	>273 years	
DC _{avg}	99%	
Safety Data –		
Values per IEC/	EN 62061 /IEC/EN 61508	
SIL CL	3 per IEC/EN 62061	
SIL	3 per IEC/EN 61508	
HFT (Hardware Failure Tolerance)	1	
DC _{avg}	99%	
SFF	99.7%	
PFH _D	1.69E ⁻¹⁰ h ⁻¹	

Safety Speed Monitor Relay Module Specification Table		
General Specifications		
Temperature	Storage: -25°C to 85°C (-13°F to 185°F) Operating: -25°C to 60°C (-13°F to 140°F)	
Altitude	< 2000m (6562ft)	
Vibration Resistance	Amplitude: 0.35mm, Frequency: 10 to 55 Hz (IEC/EN 60-068-2-6)	
Degree of Protection	Per IEC/EN 60 529. Housing: IP40; Terminals IP20	
Housing	UL 94V-0 Thermoplastic; Din mount 35 mm x 7.5 mm	
Weight	410g (14.46 oz)	
Agency Approvals and Standards	cULus file E107778, CE, RoHS	
Terminal Designation per EN 50 005 Wire Connections	1x4 mm ² solid or 1 x 2.5 mm ² stranded ferruled (isolated) or 2 x 1.5 mm ² stranded ferruled (isolated) DIN 46 228-1/-2/-3/-4 or 2 x 2.5 mm ² solid per DIN 46 228-1/-2/-3 /-4	
Wire Fixing	Plus-minus terminal screws M3.5 box terminals with wire protection. Torque 0.8N•m (0.59 lb•ft)	
Input Specifications		
Nominal Voltage	24V AC/DC, 110 VAC, 239VAC	
Voltage Range	AC: 0.85 to 1.1 UN. At 10% residual ripple: 0.9 to 1.1 UN; At 48% residual ripple: 0.85 to 1.1 UN DC: 0.9 to 1.1 UN. At 10% residual ripple: 0.9 to 1.1 UN; At 48% residual ripple: 0.85 to 1.1 UN	
Nominal Consumption	ca. 4VA, 2.5W	
Nominal Frequency	50 to 60 Hz. Frequency range: 45 to 65 Hz	
Control Current	Control current typ. at 24V over 2 relays: 75mA	
Overvoltage Protection	Internal VDR (Voltage Dependent Resistor)	
Sensor Inputs	24VDC; 25mA max./3 mA min. per channel.; 1ms On/1ms Off min. pulse time; 30,000 lpm max. at inputs INA and INB	
Output Specifications		
Electrical Contact Life	To AC15 at 2A, 230V: 3x10 ⁵ switching cycles IEC/EN 60 947-5-1	
Mechanical Life	M50 x 10 ⁶ switching cycles	
Contact Type	2 NO positively driven and 1 NC relay contacts (NO contacts are safety contacts)	
Operate Delay on Standstill	Depends on setting; see manual and supplement	
Release Delay on Overspeed	t _{off} = typ. 350ms	
Nominal Output Voltage	250VAC	
Thermal Current (I _{th})	Max. 4A per contact. See continuous current limit curve in installation manual.	
Short Circuit Strength	Max fuse rating: 4A gl (IEC/EN 60 9470-5-1)	
Switching Capacity IEC/EN 60 947-5-1	AC 15: NO contacts: 3A/230V; NC contacts: 2A/230VAC	
Switching Frequency	Max. 1200 switching cycles/hr	

Dimensions

mm [in]

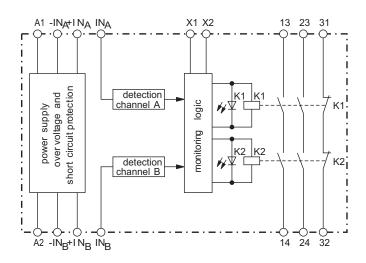


Dold BH5932 Speed Monitor Relays

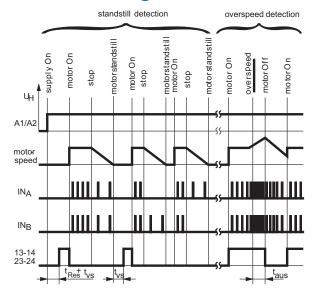


Wiring

BH5932 Block Diagram



Function diagram



INA: proximity switch A INB: proximity switch B

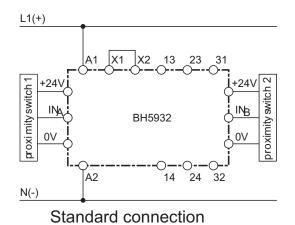
t : reset time after connection of supply voltage Res

t_{vs}: operate delayafter detection of

vs standstill/underspeed taus release delay after detection of overspeed

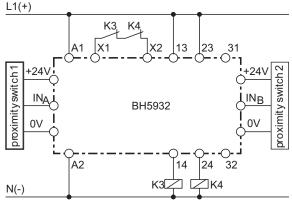
Application

Two PNP Proximity Sensors Monitoring a 3-Phase Motor



Connection Terminals

Terminal designation	Signal designation
A1 (+)	+ / L
A2	- / N
X1, X2	Feedback circuit
+24V	+ supply for proximity sensors 1 e. g. 2
OV	- supply for proximity sensors 1 e. g. 2
INA, INB	measuring output of proximity sensors 1 e. g. 2
13, 14, 23, 24	Positive driven NO contacts for release circuit
31, 32	Positive driven NC contacts for release circuit



Connection with external contactors

Dold Standstill Monitor Relays







UG6946-02PS-40

Dold speed monitoring safety relay modules provide safe standstill detection on 3-phase and single-phase motors by monitoring remanence voltage.

- Can monitor motor voltages up to 690 VAC
- No external sensors necessary
- Independent of direction
- Broken wire detection
- · Monitors rotation and linear movement
- 2-channel operation for standstill monitoring
- Up to 3 NO and 1 NC positive-guided safety contacts
- LED status indicator
- · Adjustable voltage setting
- · Adjustable standstill time delay
- · Semiconductor outputs for monitoring

Safety Data – Values per EN ISO 13849-1		
4 according to EN ISO 13849-1		
PLe according to EN ISO 13849-1		
>93 years for LH5946 >222 years for UG6946		
99%		

Safety Data -

Values per IEC/EN 62061 /IEC/EN 61508	
SIL CL	3 per IEC/EN 62061
SIL	3 per IEC/EN 61508
HFT (Hardware Failure Tolerance)	1
DC _{avg}	99%
PFHD	4.10 x 10 ⁻¹⁰ for LH5946 4.20 x 10 ⁻¹⁰ for UG6946

Safety Standstill Monitor Relays Selection Chart								
Part Number	Price	Marking Type	Voltage Monitor Range	Voltage	Outputs	Connection	Muting	Drawing
LH5946-48-24-04	\$-0049j:			24 VDC		Fixed screw terminals	No	<u>PDF</u>
LH5946-PC-24-04	\$-06aql:			24 VDC	3 NO / 1 NC	Push-in cage clamp	No	<u>PDF</u>
<u>LH5946-48-115-04</u>	\$;0049f:		20mV to 400mV	115 VAC	3 NO / I NC	Fixed screw terminals	No	<u>PDF</u>
LH5946-PC-115-04	\$-06aqi:			115 VAC		Push-in cage clamp	No	<u>PDF</u>
UG6946-02PS-04	\$05q16:			24 VDC	2 NO / 1 NC	Pluggable screw terminals	No	<u>PDF</u>
UG6946-02PS-001-04	\$05q18:	Standstill-monitoring		24 VDC	Z NO / T NC	Pluggable screw terminals	Yes	<u>PDF</u>
LH5946-48-24-40	\$0049k:	safety relay module		24 VDC		Fixed screw terminals	No	PDF
LH5946-PC-24-40	\$06aqn:		200mV to 4V	24 VDC	3 NO / 1 NC	Push-in cage clamp	No	PDF
LH5946-48-115-40	\$0049g:			115 VAC		Fixed screw terminals	No	PDF
LH5946-PC-115-40	\$06aqk:			115 VAC		Push-in cage clamp	No	PDF
UG6946-02PS-40	\$05q17:				2 NO /4 NO	Pluggable screw terminals	No	PDF
UG6946-02PS-001-40	\$05q19:			24 VDC	2 NO / 1 NC	Pluggable screw terminals	Yes	PDF

Note: The -04 models are recommended for applications where motors are controlled directly from contactors.

The -40 models are recommended for applications involving VFDs or soft starters where OFF-state leakage is present and higher voltage settings are required.

Dold Standstill Monitor Relays DOLD &

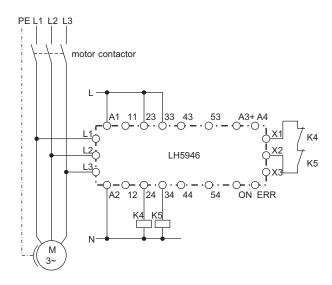


Safety Standsti	ill Monitor Relays Specification Table	
General Specifications	LH5946 UG6946	
Temperature	Storage: -40°C to 75°C [-40°F to 167°F)]	
Altitude	< 2,000m [6562ft]	
Vibration Resistance	Amplitude: 0.35 mm	
Degree of Protection	Housing: IP40 Terminals: IP20	
Housing	Thermoplastic with VO behavior; DIN rail mount	
Weight	400g [14.11 oz.] 295g [10.41 oz.]	
Agency Approvals and Standards	cULus file E107778, CE, TUV	
Wire Connections	1x AWG 20-12 solid or stranded 2x AWG 20-14 solid or stranded 2x AWG 20-14 solid or stranded 2x AWG 24-18 solid or stranded	
Wire Fixing	Plus-minus terminal screws M3.5 box terminals with wire protection. Torque 0.8 Nm [7 lb•in] Captive slotted screw. Torque 0.8 N•m [7 lb•in]	
	Input Specifications	
Nominal Voltage	24VDC, 115VAC, 230VAC 24VDC	
Measuring/Motor Voltage	690 VAC/VDC (for UL applications, max 600 VAC/VDC)	
Input Resistance	500ΚΩ	
Response Value U _{an}	20mV to 400mV, adjustable or 0.2 V to 4V adjustable	
	<i>Input Frequency (Hz)</i> 50 100 200 400 600 1k 1.5k 2k	
Response Value Dependent on Frequency	Response Value U _{an} 1.0 1.1 1.2 1.5 2.0 2.8 5 8	
Voltage Range	AC: 0.8 to 1.1 U _N At 10% residual ripple: 0.9 to 1.1 U _N DC: 0.9 to 1.2 U _N At 10% residual ripple: 0.9 to 1.1 U _N At 10% residual ripple: 0.9 to 1.1 U _N	
Nominal Consumption	3W	
Nominal Frequency	50 to 60 Hz. Frequency range: 45 to 65 Hz N/A	
Control Current	Control current typical at 24V over two relays: 75mA	
Overvoltage Protection	Internal VDR (Voltage Dependent Resistor)	
	Output Specifications	
Electrical Contact Life	To AC15 at 3A, 230V: 2x10 ⁵ switching cycles IEC/EN 60 947-5-1	
Mechanical Life	50 x 10 ⁶ switching cycles 20 x 10 ⁶ switching cycles	
Contact Type	3 NO positively driven and 1 NC relay contacts (NO contacts are safety contacts) 2 NO positively driven and 1 NC relay contacts (NO contacts are safety contacts)	
Operate Delay on Standstill	Depends on setting; adjust by potentiometer	
Release Delay for Detection of Running Motor	<100ms	
Nominal Output Voltage	250VAC 250VAC (for NO contacts) 24VDC (for NC contacts)	
Thermal Current (I _{th})	5A per contact See continuous current limit curve in manual. 5A (for NO contacts) 2A (for NC contacts) See quadratic total current limit curves in manual.	
Short Circuit Strength	Max fuse rating: 4 AGL (IEC/EN 60 9470-5-1), line circuit breaker C6A	
Switching Capacity IEC/EN 60 947-5-1	AC 15: NO contacts: 3A/230V NC contacts: 1A/230VAC DC13: 4A/24V AC 15: NO contacts: 3A/230V DC13: 4A/24V	
Switching Frequency	Max. 1,200 switching cycles/hr	
Semiconductor Monitoring	100 mA DC 24V; supply via A3+/A4 N/A	

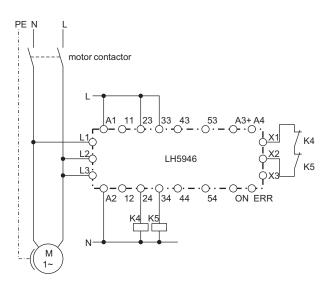
Dold LH5946 Standstill Monitor Relays



Applications

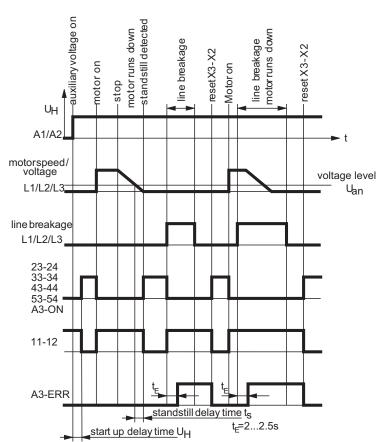


With 3-phase motor



With single-phase motor

Function diagram



Connection Terminals			
Terminal Designation	Signal Description		
L1-L2-L3	Connection to monitored motor		
11-12	Safety contacts (NC)		
23-24, 33-34, 43-44	Safety contacts (NO)		
<u>53-54</u>	Monitoring contact (NO)		
X1-X2	Connection of feedback circuit (for external contactors)		
X2-X3	Manual reset for external faults		
A1-A2	Auxiliary supply (UH)		
<u>A3(+) - A4</u>	Supply for semiconductor outputs		
ON:	Semiconductor output indicates state of safety contacts		
ERR:	Semiconductor output indicates failures		

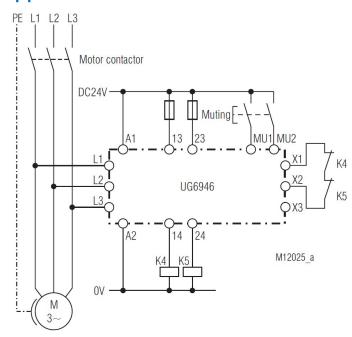
Note: The outputs 53-54, ON and ERR are only monitoring outputs and must not be used in safety circuits.

Setting			
Potentiometer U _{an}	Adjustment of voltage level for standstill detection		
Potentiometer t _S	Adjustment of time delay before activation of safety contacts		

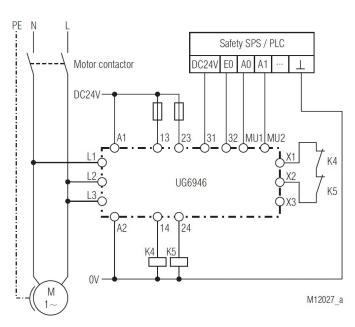
Dold UG6946 Standstill Monitor Relays



Applications

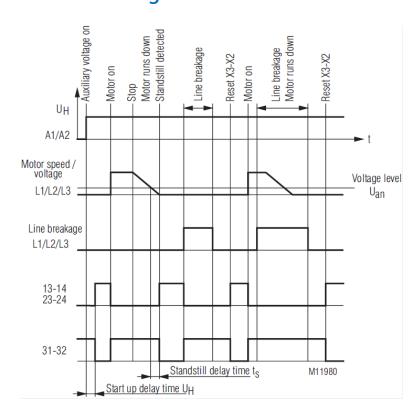


With 3-phase motor



With single-phase motor

Function Diagram



Connection Terminals			
Terminal Designation	Signal Description		
L1-L2-L3	Connection to monitored motor		
31-32	Forcibly guided indicator output		
13-14, 23-24	Forcibly guided NO contacts for release circuit		
X1-X2	Connection of feedback circuit (for external contactors)		
X2-X3	Manual reset for external faults		
A1-A2	Auxiliary supply (U _H)		
MU1, MU2	Muting inputs		

Setting			
Potentiometer U _{an}	Adjustment of voltage level for standstill detection		
Potentiometer t _S	Adjustment of time delay before activation of safety contacts		

Dold Safety Relay Standstill, Speed, and Gate Monitoring





UH5947-04PS24

The Dold speed and standstill monitor provides safe monitoring of motors and rotating equipment using encoders or proximity switches. The front displays user-selected parameters which can be easily and conveniently changed depending on the application.

Features

- Adjustable operation mode
- Single or 2-channel safety gate monitoring
- Adjustable start-up delay
- Adjustable monitoring time
- LED status Indicator
- · Forcibly guided contacts

Safety Data – Values per EN ISO 13849-1			
Category	4 according to EN ISO 13849-1		
Performance level	PLe according to EN ISO 13849-1		
MTTF _d	>93 years for LH5946 >222 years for UG6946		
DC _{avg}	99%		
IEC/	Safety Data – Values per EN 62061 /IEC/EN 61508		
SIL CL	3 per IEC/EN 62061		
SIL	3 per IEC/EN 61508		
HFT (Hardware Failure Tolerance)	1		
DC _{avg}	99%		
PFH _D	4.10 x 10 ⁻¹⁰ for LH5946 4.20 x 10 ⁻¹⁰ for UG6946		

Standstill, Speed, and Gate Monitoring Relays Selection Chart						
Part Number	Price	Marking Type	Monitoring Circuit	Control Voltage	Connection	Drawing
<u>UH5947-04PS24</u>	\$06aqd:		(2) PNP or NPN sensor inputs _ and/or (1) encoder	24VDC	Pluggable screw terminals - Push-in cage clamp	<u>PDF</u>
<u>UH5947-04PS110</u>	\$-06aqj:			110-240 VAC/VDC		<u>PDF</u>
<u>UH5947-04-001PS24</u>	\$06aqo:		NAMUR sensor inputs and/or (1) encoder (2) PNP or NPN sensor inputs and/or (1) encoder	24VDC		<u>PDF</u>
<u>UH5947-04-001PS110</u>	\$06aqp:	Motor standstill, speed and		110-240 VAC/VDC		<u>PDF</u>
<u>UH5947-04PC24</u>	\$06aqq:	safety gate monitoring		24VDC		<u>PDF</u>
<u>UH5947-04PC110</u>	\$06aq8:			110-240 VAC/VDC		<u>PDF</u>
UH5947-04-001PC24	\$06aq9:		NAMUR sensor inputs and/or	24VDC		<u>PDF</u>
UH5947-04-001PC110	\$06aqa:		(1) encoder	110-240 VAC/VDC		<u>PDF</u>

Note: The -04 models are recommended for applications where motors are controlled directly from contactors.

The -40 models are recommended for applications involving VFDs or soft starters where OFF-state leakage is present and higher voltage settings are required.

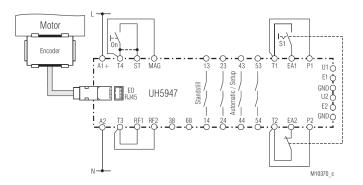


Dold Safety Relay Standstill, Speed, and Gate Monitoring

Standstill, Speed, and Gate Monitoring Relays Specifications				
	General Specifications			
Storage Temperature	-20 to 70°C [-4 to 158°F]			
Operating Temperature	-20 to 60°C	[-4 to 140°F]		
Altitude	< 2,000m	n [6562ft]		
Vibration Resistance	Amplitude Frequency: 10 to 55 H			
Degree of Protection	IP:	20		
Housing	Thermoplastic with VO b	pehavior; DIN rail mount		
Weight	420g [0	0.93 lb]		
Agency Approvals and Standards	cULus file E10	7778, CE, TUV		
Wire Connections	Pluggable screw term Push in cage clamp teri	inal: 1x AWG 28 - 12 minals: 1x AWG 24 - 12		
	Input Specifications			
	UH5947-04xx110 UH5947-04xx24			
Nominal Voltage	110 to 240 VAC/VDC 24VDC			
Voltage Range	88 to 288 VAC/DC 21.6 to 26.4 VDC			
Nominal Consumption	<6.5 W <5 W			
Frequency Range	50 to 60 Hz (+/- 5 Hz)	N/A		
Minimum Off Time	600ms 150ms			
	Output Specifications			
Electrical Contact Life	To AC15 at 5A, 230V: 2x10 ⁶ swi	tching cycles IEC/EN 60947-5-1		
Mechanical Life	≥ 50 x 10 ⁶ Switching Cycles			
Contact Type	4 NO positively driven and 2 semiconductor-monitoring outputs (NO contacts are safety contacts)			
Thermal Current (I _{th})	5A (max)			
Short Circuit Strength	4A gG/gL (IEC/EN 60947-5-1)			
Switching Capacity IEC/ EN 60 947-5-1	AC 15: NO contacts: 3A/230V DC13: NO contacts: 1A/24VDC DC13: 4A/24V @0.1 Hz			
Semiconductor Monitoring	2 piece; 20mA DC	24V, plus switching		

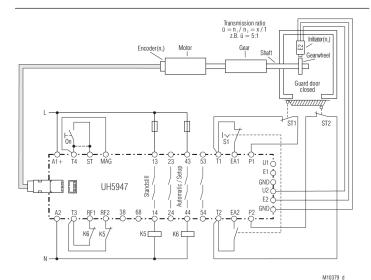
Dold Safety Relay Standstill, Speed, and Gate Monitoring

Applications



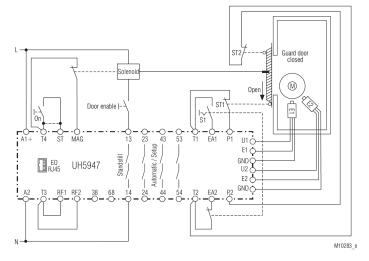
Rotational speed and standstill monitoring with suitable encoder, automatic mode

- For manual start: ON/OFF pushbutton to T4/ST
- For automatic start: jumper to T4/ST
- Suited up to SIL3, Performance Level e, Cat. 4 (requirement for Cat. 4 is, that during longer periods of standstill, a forced dynamization (t<24h) has to be carried out).



Rotational speed and standstill monitoring by means of encoder and one NPN or PNP proximity sensor, setup mode

- Gear ratio set
- Safety gate monitoring active
- For manual start: ON/OFF pushbutton to T4/ST
- For automatic start: jumper to T4/ST
- Suited up to SIL3, Performance Level e, Cat. 4 (Requirement for Cat. 4 is, that during longer periods of standstill a forced dynamization (t<24h) has to be carried out).



Two-channel rotational speed and standstill monitoring by means of two NPN or PNP proximity sensors, automatic mode

- · Safety gate monitoring active
- For manual start: ON/OFF pushbutton to T4/ST
- For automatic start: jumper to T4/ST
- Suited up to SIL3, Performance Level e Cat. 4 (Requirement for Cat. 4 is, that during longer periods of standstill a forced dynamization (t<24h) has to be carried out).
- NOTE: For NAMUR Sensor there is no GND connection

Terminal Designation	Signal Description
A1 (+)	+ / L
A2	- / N
U1, U2	+ supply for proximity sensors or NAMUR sensors
GND	- supply for proximity sensors
E1, E2	Input for pulse signal from proximity sensors or NAMUR sensors
13, 14, 23, 24, 43, 44, 53, 54	Forcibly guided NO contacts for release circuit
38, 68	Semiconductor monitoring output
T1, T2, T3, T4	Control output
ST, MAG, RF1, RF2, P1, P2, EA1, EA2	Control input





UG6929-60PS-100-2

Part Number

UG6929-60PS-100-24

UG6929-61PS-100-24

UG6929-62PS-100-24

Additional contacts for emergency-stop modules and safety gate monitors.

- · Safety contact multiplication
- According to
 - Performance Level (PL) e and category 4 to EN ISO 13849-1: 2008
- SIL Claimed Level (SIL CL) 3 to IEC/EN 62061
- Safety Integrity Level (SIL) 3 to IEC/EN 61508 and IEC/EN 61511 when connected to a suitable safety module
- EN 50156-1 for furnaces
- · Control with safety semiconductor outputs (light curtain, e-stop) possible
- · Redundant and forcibly guided contacts

- Output: up to 7 NO contacts, 1 NC contact for feedback circuit
- 2-channel
- LED Indicator
- Pluggable terminal blocks for easy exchange of devices





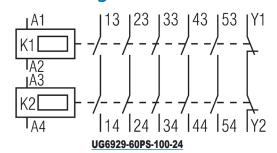


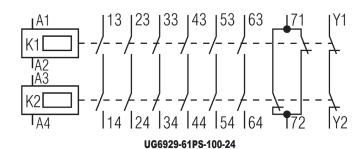


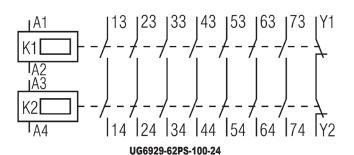
Safety Data – Values per

0-24				EN ISO 1	13849-1	
<u></u>					Category	4
Safet	y Relays Sel	action Ch	nart		Performance level	PLe
					MTTF _d	144.3 years
Price	Marking Type	Voltage	Outputs	Drawing	DC.	99%
			5 NO positive		DC _{avg}	
\$-010i9:	Safety relay	24V AC/DC	guided safety	PDF	Safety	Data –
extension module		211710720	contacts, 1 NC monitoring contacts		Value	
			6 NO positive guided		IEC/EN 62061	/IEC/EN 61508
\$05q15: Safety rela	Safety relay	e 24V AC/DC	safety contacts, 2 NC monitoring contacts and	PDF	SIL CL	3
φυσ φ 15.	extension module			<u>FDI</u>	SIL	3
			indicator		HFT (Hardware Failure Tolerance)	1
	0.64		7 NO positive guided	<u>PDF</u>	,	
	Safety relay extension module		safety contacts, 1 NC monitoring contact		DC _{avg}	99%
	Oxfortion modulo				PFH _D	3.59E ⁻¹⁰

Block Diagrams







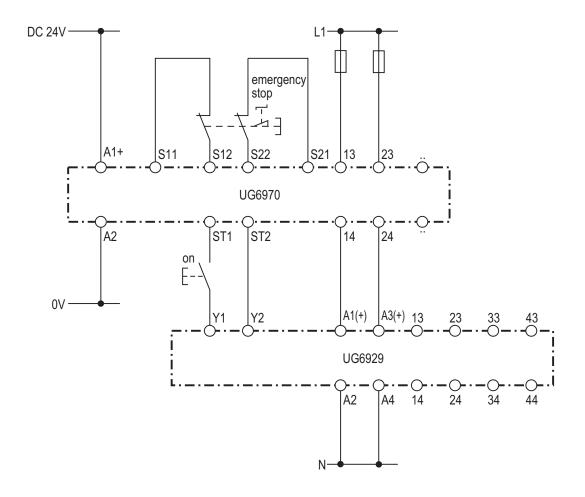


Dold UG6929 Series Safety Relay Extension Module Specification Table				
General Specifications				
Temperature	Storage: -25°C to 85°C (-13°F to 185°F) Operating: -15°C to 55°C (5°F to 131°F)			
Altitude	< 2,000 meters			
Vibration Resistance	Amplitude: 0.35mm Frequency: 10 to 55 Hz (IEC/EN 60068-2-6)			
Degree of Protection	Per IEC/EN 60 529. Housing: IP40; Terminals IP20			
Housing	UL 94V-0 thermoplastic DIN rail mount			
Weight	280g (9.88 oz)			
Terminal Designation per EN 50005 Wire Connections	1x AWG 24-12 solid or stranded 2x AWG 24-18 solid or stranded			
Wire Fixing	Plus-minus terminal screws M3.5 box terminals with wire protection.			
Wire Connection	60°C/75°C Copper conductors only AWG20-12 Sol/Str Torque 0.5 N∙m			
	Input Specifications			
Nominal Voltage	24V AC/DC			
Voltage Range	AC: 0.85 to 1.1 U _N At 10% residual ripple: 0.9 to 1.1 U _N ; At 48% residual ripple: 0.85 to 1.1 U _N			
Maximum Consumption	24VAC/DC: 1.8VA			
Nominal Frequency	50 to 60 Hz			
Control Current	Control current typ. at 24V over 2 relays: 75 mA			
Overvoltage Protection	Internal VDR (Voltage Dependent Resistor)			
Output Specifications				
Electrical Contact Life	To AC15 at 5A, 230V: 2.2x10 ⁵ switching cycles IEC/EN 60947-5-1			
Mechanical Life	20 x 10 ⁶ switching cycles			
Operate/Release Time	Operate: typical at U _N 20ms Release: typical at U _N 35ms			
Nominal Output Voltage	250VAC			
Thermal Current (I _{th})	Max. 8A per contact. See quadratic total current limit curve in installation manual.			
Short Circuit Strength	Max fuse rating: 6A gl (IEC/EN 60 9470-5-1); Line circuit breaker: B6A			
Switching Capacity IEC/EN 60 947-5-1	AC 15: NO contacts: 3A/230V; NC contacts: 2A/230VAC DC 13: N.O. contacts: 4A/24V; NC contacts: 4A/24VDC; NO contact: 8A/24V >25x103 ON: 0.4s, OFF: 9.6s			
Switching Frequency	Max. 1,200 switching cycles/hr			
Agency Approvals and Standards	CSA, cULus file E107778, CE, TUV			

To obtain the most current agency approval information, see the Agency Compliance & Certifications Checklist section on the specific part number's web page.



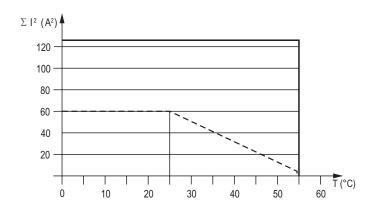
Application Example



Contact extensions with UG6929/100; suited up to SIL3, Performance Level e, Cat. 4



Characteristic Curves



AC 230V device mounted on distance with air circulation. max. current at 55°C over

5 contact path = $5A \triangleq 5x5^2A^2 = 125A^2$

 – AC 230V device mounted without distance heated by devices with same load,

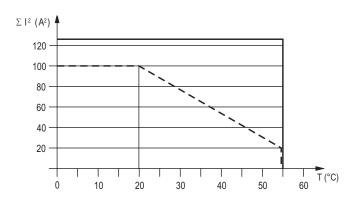
max. current at 55°C over 5 contact path = $1A \triangleq 5x1^2A^2 = 5A^2$

Quadratic total current

$$\sum_{th}^{2} = t_{th1}^{2} + t_{th2}^{2} + t_{th3}^{2} + t_{th4}^{2} + t_{th5}^{2}$$

 \mathbf{I}_{th1} , \mathbf{I}_{th2} , \mathbf{I}_{th3} , \mathbf{I}_{th4} , \mathbf{I}_{th5} : current in contact paths

Quadratic total current limit curve AC 230 V



— AC / DC 24V device mounted on distance with air circulation. max. current at 55°C over

5 contact path = $5A \triangleq 5x5^2A^2 = 125A^2$

- - AC / DC 24V device mounted without distance heated by

devices with same load, max. current at 55°C over

5 contact path = $2A \triangleq 5x2^2A^2 = 20A^2$

Quadratic total current

$$\sum_{\text{th}}^{2} = ||_{\text{th}1}^{2} + ||_{\text{th}2}^{2} + ||_{\text{th}3}^{2} + ||_{\text{th}4}^{2} + ||_{\text{th}5}^{2}$$

 \mathbf{I}_{th1} , \mathbf{I}_{th2} , \mathbf{I}_{th3} , \mathbf{I}_{th4} , \mathbf{I}_{th5} : current in contact paths

Quadratic total current limit curve AC/DC 24 V

Dold LG7927/ LG7928 **Extension Module**



Additional contacts for emergency-stop modules and safety gate monitors.

- Safe timing circuits
- 4 forcibly guided output contacts at only 22.5 mm width
- According to:
- Performance Level (PL) d and category 3 to EN ISO 13849-1: 2008
- SIL Claimed Level (SIL CL) 2 to IEC/EN 62061
- -Safety Integrity Level (SIL) 2 to IEC/EN 61508 and IEC/EN 61511 when connected to a suitable safety module
- · Adjustable time delay
- On Delayed / Released Delayed
- Long life stability due to digital time base



- · Adjustable with or without cross fault detection
- Output: 3 N.O. contacts + 1 N.C. contact, 1 positive guided feedback contact
- LED indicator for channel 1, 2 and operation





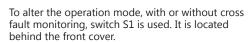




	Safety Relays Selection Chart					
Part Number	Price	Marking Type	Voltage	Outputs		
LG7927-97-61-10	\$-010i0:	On-Delayed Safety Relay Extension Model	24VAC/VDC	3 NO time delay (1 to 10 second) positive guided safety contact(s) 1 NC time delay (1 to 10 second) positive guided safety contact(s) 1 NC time delay monitoring contact		
LG7928-97-61-10	\$-010i2:	Release-Delayed Safety Relay Extension Model	24VAC/VDC	3 NO time delay (1 to 10 second) positive guided safety contact(s) 1 NC time delay (1 to 10 second) positive guided safety contact(s) 1 NC time delay monitoring contact		

Safety Data – Values per EN ISO 13849-1			
Category	3		
Performance level	PLd		
MTTF _d	172.3 years		
DC _{avg}	99%		
Safety Data – Values per IEC/EN 62061 / IEC/EN 61508			
SIL CL	2		
SIL	2		
HFT (Hardware Failure Tolerance)	1		
DC _{avg}	99%		
SFF	99.7%		
PFH _D	2.95E-10 h-1		

S1 Switch Setting Instructions



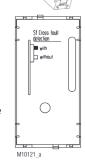
First, turn the time potentiometer fully counterclockwise.

Then remove the cover.

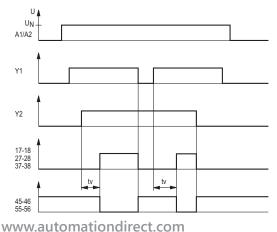
Then set the operating mode.

Then replace the cover, making sure that the setting knob is in the fully counterclockwise position.

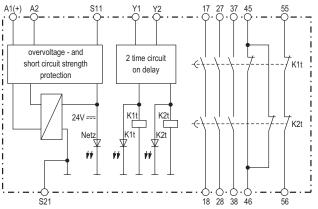
Finally, confirm that the setting control still can be adjusted through its full range.



Function Diagram



Block Diagram

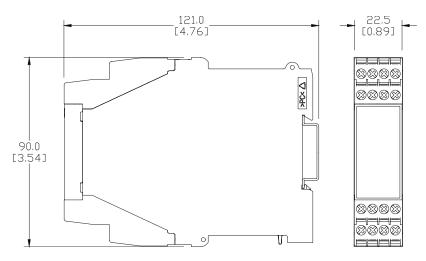


Dold LG7927/LG7928 Extension Module



Safety Relay Extenson Module Specification Table				
General Specifications				
Temperature	Storage: -25°C to 85°C (-13°F to 185°F) Operating: -15°C to 55°C (5°F to 131°F)			
Altitude	< 2.000 meters			
Vibration Resistance	Amplitude: 0.35mm, Frequency: 10 to 55 Hz (IEC/EN 60-068-2-6)			
Degree of Protection	Per IEC/EN 60 529. Housing: IP40; Terminals IP20			
Housing	UL 94V-0 Thermoplastic; DIN mount 35 mm x 7.5 mm			
Weight	approximately 190g (6.70 oz.)			
Agency Approvals and Standards	CSA, cULus file E107778, CE, RoHS, TUV			
Terminal Designation per EN 50 005 Wire Connections	2 x 2.5 mm 2 stranded ferruled (isolated) or 2 x 1.5 mm 2 stranded ferruled (isolated) DIN 46 228-1/-2/-3/-4 or 2 x 2.5 mm 2 solid per DIN 46 228-1/-2/-3 /-4			
Wire Fixing	Plus-minus terminal screws M3.5 box terminals with wire protection.			
Wire Connection	60degC/75degC Copper conductors only; AWG20-12 Sol/Str Torque 0.8NM			
Input Specifications				
Nominal Voltage	24VAC/DC			
Voltage Range	AC: 0.9 to 1.1 U _N At 10% residual ripple: 0.9 to 1.1 U _N ; At 48% residual ripple: 0.85 to 1.1 U _N			
Maximum Consumption	24VAC/DC: 3.5 VA/2.0 W			
Nominal Frequency	50 to 60 Hz			
Control Current	Control current typ. at 24V over 2 relays: 75 mA			
Overvoltage Protection	Internal VDR (Voltage Dependent Resistor)			
Output Specifications				
Electrical Contact Life	To AC15 at 5A, 230V: 2.2 x 10 ⁵ switching cycles IEC/EN 60 947-5-1			
Mechanical Life	20 x 10 ⁶ switching cycles			
Contact Type	3 N.O. contacts + 1 N.C. contact + 1 forcibly guided feedback contact			
Operate/Release Time	Operate typ at UN: DC - 2.2 mA.; AC - 3.1mA. Release typ at U _N : 35 ms.			
Nominal Output Voltage	24VDC/24VAC			
Thermal Current (I _{th})	Max. 5A per contact. See quadratic total current limit curve in installation manual.			
Short Circuit Strength	Max fuse rating:6A gl (IEC/EN 60 9470-5-1); Line circuit breaker: B6A			
Switching Capacity IEC/EN 60 947-5-1	AC 15: N.O. contacts: 3A/230V; N.C. contacts: 2A/230VAC DC 13: N.O. contacts: 2A/24V; N.C. contacts: 2A/24VDC; N.O. contact: 4A/24V at 0.1Hz			
Switching Frequency	Max. 1,200 switching cycles/hr			
Agency Approvals and Standards	cULus file E107778, CE, RoHS			

To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific part number's web page at www.automationdirect.com

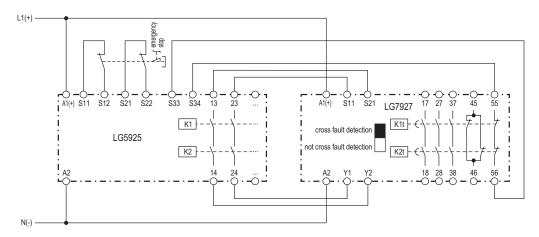


See our website: www.AutomationDirect.com for complete Engineering Drawings.

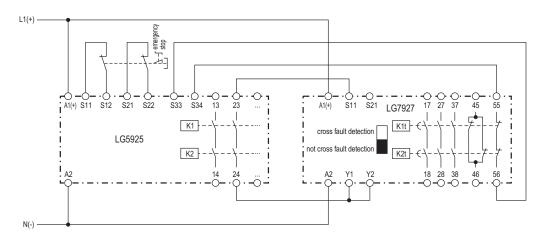
Dold LG7927/LG7928 Extension Module



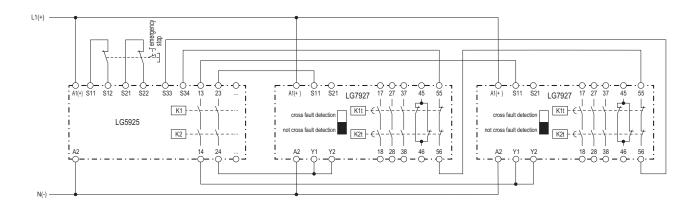
LG7927 Application Examples



LG 5925 with LG 7927, cross fault detection, suitable up to SIL2, Performance Level d, Cat. 3



LG 5925 with LG 7927, non cross fault detection, suitable up to SIL2, Performance Level d, Cat. 3

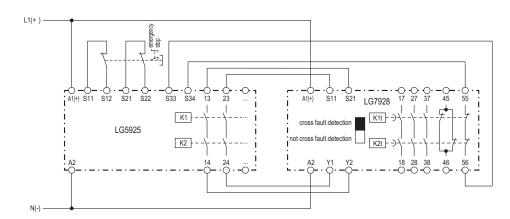


LG 5925 with two LG 7927, non cross fault detection, suitable up to SIL2, Performance Level d, Cat. 3

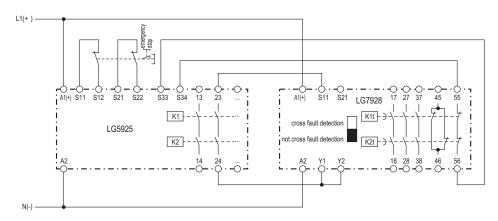
Dold LG7927/LG7928 Extension Module



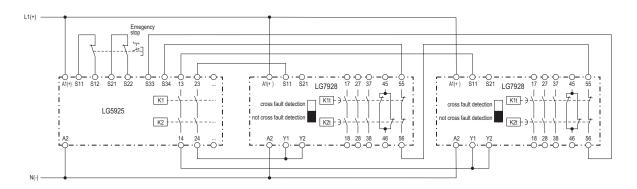
LG7928 Application Examples



LG 5925 with LG 7928, cross fault detection, suitable up to SIL2, Performance Level d, Cat. 3



LG 5925 with LG 7928, non cross fault detection, suitable up to SIL2, Performance Level d, Cat. 3



LG 5925 with 2 LG 7928, non cross fault detection, suitable up to SIL2, Performance Level d, Cat. 3

Dold LG5929 Extension Module







Additional contacts for emergency-stop modules and safety gate monitors.

- 1-channel or 2-channel connection
- LED indication for operation
- Output: 5 N.O. and 1 N.C. contacts

Safety Data – Values per EN ISO 13849-1			
Category	4 according to EN 954-1		
Performance level	PLe according to EN 13849-1		
MTTF _d	>100 years		
DC _{avg}	99%		
Safety Data – Values per IEC/EN 62061 /IEC/EN 61508			
SIL CL	3 per IEC/EN 62061		
SIL	3 per IEC/EN 61508		
HFT (Hardware Failure Tolerance)	1		
DC _{avg}	99%		
SFF	99.7%		
PFHD	4.68E ⁻¹⁰ h ⁻¹		

Safety Relays Selection Chart				
Part Number	Price	Marking Type	Voltage	Outputs
LG5929-60-100-61	\$00499:	Safety relay extension module	24 VAC/VDC	5 N.O./1 N.C.

Safety Relay E	xtenson Module Specification Table	
General Specifications		
Temperature	Storage: -25°C to 85°C (-13°F to 185°F) Operating: -15°C to 55°C (5°F to 131°F)	
Altitude	< 2,000 meters	
Vibration Resistance	Amplitude: 0.35mm, Frequency: 10 to 55 Hz (IEC/EN 60-068-2-6)	
Degree of Protection	Per IEC/EN 60 529. Housing: IP40; Terminals IP20	
Housing	UL 94V-0 Thermoplastic; Din mount 35 mm x 7.5 mm	
Weight	205g (7.23 oz.)	
Agency Approvals and Standards	CSA, cULus file E107778, CE, RoHS, TUV	
Terminal Designation per EN 50 005 Wire Connections	1x4 mm ² solid or 1 x 2.5 mm ² stranded ferruled (isolated) or 2 x 1.5 mm ² stranded ferruled (isolated) DIN 46 228-1/-2/-3/-4 or 2 x 2.5 mm ² solid per DIN 46 228-1/-2/-3 /-4	
Wire Fixing	Plus-minus terminal screws M3.5 box terminals with wire protection or cage clamp terminals.	
Input Specifications		
Nominal Voltage	24V AC/DC	
Voltage Range	AC: 0.85 to 1.1 U $_{ m N}$ At 10% residual ripple: 0.9 to 1.1 U $_{ m N}$; At 48% residual ripple: 0.85 to 1.1 U $_{ m N}$	
Maximum Consumption	24VAC/DC: 1.8VA	
Nominal Frequency	50 to 60 Hz	
Control Current	Control current typ. at 24V over 2 relays: 75 mA	
Overvoltage Protection	Internal VDR (Voltage Dependent Resistor)	
Output Specifications		
Electrical Contact Life	To AC15 at 2 A,230V: 10 ⁵ switching cycles IEC/EN 60 947-5-1	
Mechanical Life	20 x 10 ⁶ switching cycles	
Contact Type	5 N.O. positively driven and 1 N.C. relay contacts (N.O. contacts are safety contacts)	
Operate/Release Time	Operate typ at U _N : 20 m.; Release typ at U _N : 35 ms.	
Nominal Output Voltage	250VAC	
Thermal Current (I _{th})	Max. 5A per contact. See continuous current limit curve in installation manual.	
Short Circuit Strength	Max fuse rating:10A gl (IEC/EN 60 9470-5-1); Line circuit breaker: B6A	
Switching Capacity IEC/EN 60 947-5-1	AC 15: N.O. contacts: 3A/230V; N.C. contacts: 2A/230VAC DC 13: N.O. contacts: 4A/24V; N.C. contacts: 4A/24VDC; N.O. contact: 8A/24V >25x10 ³ ON: 0.4s, OFF: 9.6s	
Switching Frequency	Max. 1,200 switching cycles/hr	

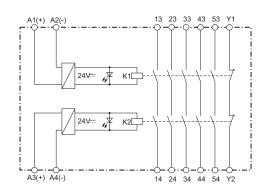
Dold LG5929 Extension Module

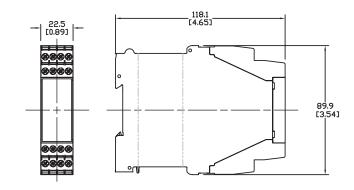


Wiring

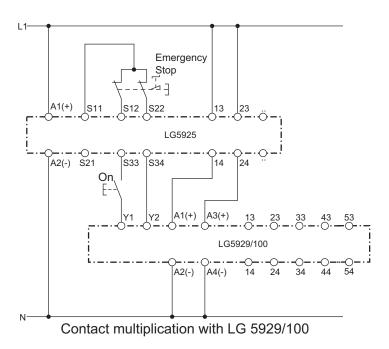
Dimensions mm [in]

LG5929 Block Diagram





Applications



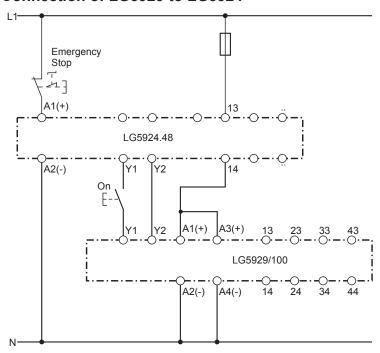
Note: This is a representative drawing. Depending on the LG5925 safety relay you select, different voltage sources may be required.

Dold LG5929 Extension Module

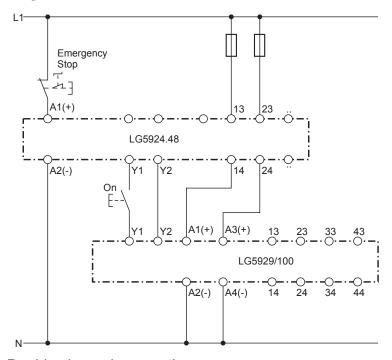


Applications

Connection of LG5929 to LG5924



Single channel connection



Dold UG6970 Series Safety Relay 2 With Independent Selectable Function





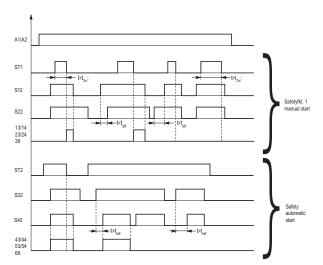
- Designed to protect people and machines in applications with various safety devices.
- Two independent, separately adjustable safety funcions: (power off before selecting the desired function):
 - E-Stop
- Safety gate
- Two-hand control
- Safety mat / Safety edge
- Exclusive XOR contacts
- Light curtain
- Only one device, two safety functions at the same time

- · According to:
- Performance Level (PL) e and category 4 to EN ISO 13849-1: 2008
- SIL Claimed Level (SIL CL) 3 to IEC/EN 62061
- Safety Integrity Level (SIL) 3 to IEC/EN 61508 and IEC/EN 61511
- Acc. to EN 50156-1 for furnaces
- · Line fault detection on Pushbutton:
- Manual restart or automatic restart
- · With or without cross fault monitoring
- 2-channel
- · Forcibly guided output contacts
- Output: 2 N.O. contacts per safety function
- One semiconductor output per safety function
- LED indicator for operation, safety function 1, 2 and failure
- Pluggable terminal blocks for easy exchange of devices
- Width: 22.5 mm
- Two PNP sensor inputs only

Safety Da	ta – Values per EN ISO 13849-1
Category	4
Performance level	PLe
MTTF _d	134.5 years
DC _{avg}	99%
Safety Data – Val	ues per IEC/EN 62061 /IEC/EN 61508
SIL CL	3
SIL	3
HFT (Hardware Failure Tolerance)	1
DC _{avg}	99%
SFF	99.6%
PFH _D	3.89E ⁻¹⁰ h ⁻¹

Safety Relays Selection Chart				
Part Number	Price	Marking Type	Voltage	Outputs
UG6970-04PS-61-24	\$-010i7:	Safety relay module	24VDC	4 N.O. positive guided safety contact(s), 2 N.O. monitoring contact(s)

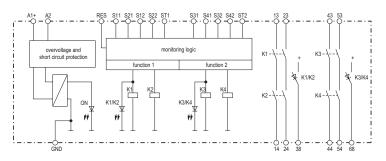
Function Diagram



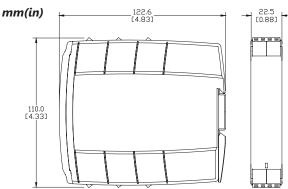
t_{air} max. time delay for simultaneity demand dependent on selected safety function E-Stop, safety gate, safety mat t_{air}: max. 3s Light curtains t_{air}: max. 1s Two-hand control t_{air}: max. 0,5s other times on request

t_{on}: max. actuation time of start button Standard t_{on}: max. 3s other times on request

Block Diagram



Dimensions



Safety Electrical Components

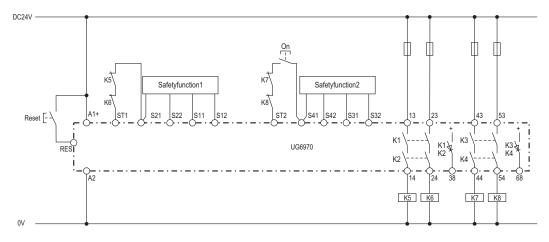
Dold UG6970 Series Safety Relay 2 **DOLD** & With Independent Selectable Function

Dold UG6970 Series Safety Relay 2 with Independent Selectable Function Specification Table			
	General Specifications		
Temperature	Storage: -25°C to 85°C (-13°F to 185°F) Operating: -15°C to 55°C (5°F to 131°F)		
Altitude	<2,000 meters		
Vibration Resistance	Amplitude: 0.35mm, Frequency: 10 to 55 Hz (IEC/EN 60-068-2-6)		
Degree of Protection	Per IEC/EN 60 529. Housing: IP40; Terminals IP20		
Housing	UL 94V-0 Thermoplastic; DIN mount 35 mm x 7.5 mm		
Weight	275g (9.7 oz.)		
Terminal Designation per EN 60 000 Wire Connections 1x4 mm² solid or 1 x 2.5 mm² stranded ferruled (isolated) or 2 x 1.5 mm² stranded ferruled (isolated)			
Wire Fixing	Terminal screws M3.5 box terminals with wire protection.		
Wire Connection	60degC/75degC Copper conductors only; AWG20-12 Sol/Str Torque 0.5NM		
	Input Specifications		
Nominal Voltage	24VDC		
Voltage Range	At 10% residual ripple: DC: 0.8 to 1.1 U _N		
Maximum Consumption	DC approx. 3.2W		

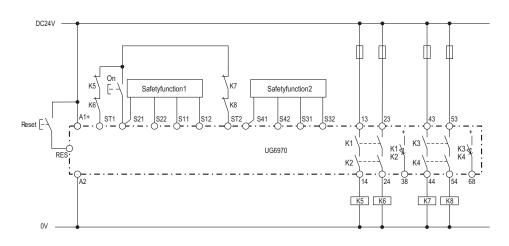
Nominal Frequency Minimum Off-time	Not applicable		
	250ms		
Control Voltage on S11 At UN	20VDC		
Control Current Typ. Over S12, S22	8mA at U _N		
Min. Voltage on S12, S22 (relay activated)	10VDC		
Short Circuit Protection	Internal with PTC (Positive Temperature Coefficient resistor)		
Overvoltage Protection	Internal VDR (Voltage Dependent Resistor)		
	Output Specifications		
Electrical Contact Life	al Contact Life AC 15 at 5A, 230VAC: > 1.5x10 ⁵ switching cycles		
Mechanical Life	> 10x10 ⁶ switching cycles		
Contact Type	Independent N.O. positive-guided safety contacts (2 per safety function)		
Operate Delay	Manual start: 30ms; automatic start: 350ms		
	E-Stop (1) (6), Safety gate (2) (7), Exclusive or contacts (5): Start up at U : < 65ms Release delay at U and disconnecting the supply: < 40ms Release delay at U and disconnecting S12,S22: < 60ms Two-hand control (3) Start up at U : < 110ms		
Release Delay	Release delay at U and disconnecting the supply: < 40ms Release delay at U and disconnecting S12,S22: < 60ms Simultaneity demand: max. 0,5 s Safety mat (4) Start up at U : < 85ms Release delay at U and disconnecting the supply: < 40ms		
	Release delay at U and disconnecting S12,S22: < 60ms Light curtains (8) Start up at U : < 35ms Release delay at U and disconnecting the supply: < 40ms Release delay at U and disconnecting S12,S22: < 25ms		
Nominal Output Voltage	AC: 24VDC: See continuous current limit curve in installation manual.		
Thermal Current (Ith)	Max. 8A. See quadratic total current limit curve in installation manual.		
Short Circuit Strength	Max. fuse rating: 6A gL (IEC/EN 60 947-5-1); Line circuit breaker: B 6A		
Switching Capacity (IEC/EN 60 947-5-1)	AC 15: N.O. contacts: 3A/230V DC 13: N.O. contacts: 2A/DC24V		
Switching Frequency	Safety function 1: Max. 1800 switching cycles/hr Safety function 1: Max. 360 switching cycles/hr		
Agency Approvals and Standards	CSA, cULus file E107778, CE, RoHS, TUV		

Dold UG6970 Series Safety Relay 2 **DOLD** & With Independent Selectable Function

Application Examples



Operating mode:3 Fkt1=AUTO; Fkt2=MANUAL

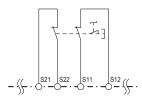


Operating mode: 5 (MANUAL with common button)

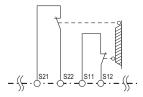
Note: See page for Safety Function example drawings.

Dold UG6970 Series Safety Relay 2 **DOLD A** With Independent Selectable Function

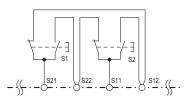
Safety Functions



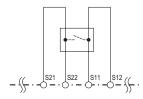
Fct.: E-stop (1), with cross fault detection SIL 3, PL e, Cat. 4



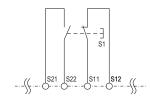
Fct.: Safety gate (2), with cross fault detection SIL 3, PL e, Cat. 4



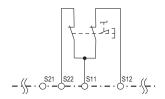
Fct.: Two-hand control (3), with cross fault detection SIL 3, PL e, Cat. 4 Type III C to EN 574



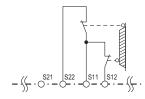
Fct.: Safety mat / Safety edge (4), with cross fault detection SIL 3, PL e, Cat. 4



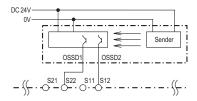
Fct.: Exclusive XOR contacts (5), with cross fault detection SIL 3, PL e, Kat. 4



Fct.: E-Stop (6), without cross fault detection SIL 3, PL e, Cat. 4¹⁾

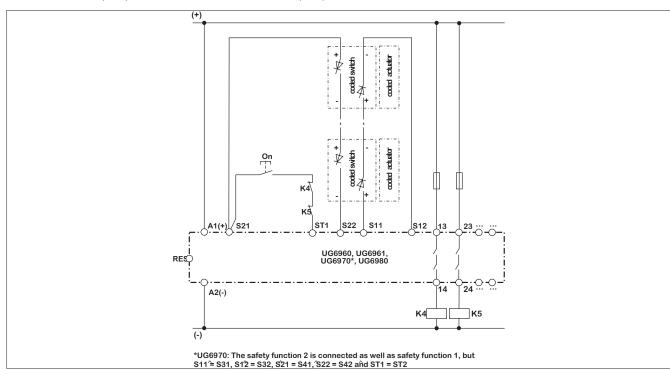


Fct.: Safety gate (7), without cross fault detection SIL 3, PL e, Cat. 41)



Fct.: Light curtain (8), without cross fault detection SIL 3, PL e, Cat. 4²⁾

¹⁾To achieve the stated safety classification the wiring has to be done with crossfault monitoring. ²⁾To achieve the stated safety classification light curtains with selftest (type 4) according to IEC/EN 61496-1 have to be used.

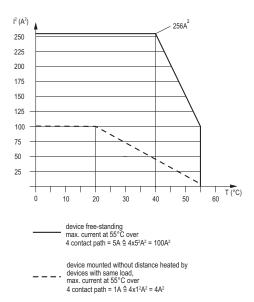


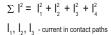
Dold UG6970 Series Safety Relay 2 **DOLD** & With Independent Selectable Function

Connection Terminals

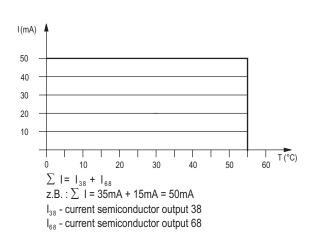
Terminal designation	Signal designation
A1 +	DC 24 V
A2	0 V
13, 14, 23, 24, 43, 44, 53, 54	Forcibly guided NO contacts for release circuit
38, 68	Semiconductor monitoring output
GND	Reference potential for Semiconductor monitoring output
S11, S21, S31, S41	control output
S12, S22, S32, S42, ST1, ST2, RES	control input

Characteristic Curves





Quadratic total current limit curve output contacts



Quadratic total current limit curve semiconductor monitoring outputs

Function Setting

Fkt. 1/Fkt. 2	Safety Function	
1	E-Stop	
2	Safety Gate	
3	Two-hand Control	Cross fault detection
4	Safety mat / safety edge	
5	Exclusive XOR contacts	
6	E-stop	
7	Safety gate	Without cross fault defection
8	Light curtain	dolodion

Dold UG6980 Series Safety Relay DOLD & With Selectable Function







Designed to protect people and machines in applications with various safety devices.

- Adjustable safety functions (power off before selecting the desired function):
- E-Stop
- Safety gate
- Two-hand control
- Safety mat / Safety edge
- **Exclusive XOR contacts**
- Light curtain

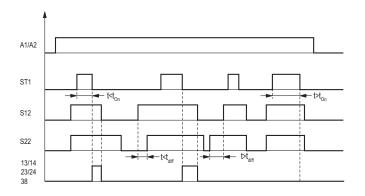
Safety I	Data – Values per EN ISO 13849-1	
Category	4	
Performance level	PLe	
MTTF _d	>100 years	
DCavg	99%	
Safety Data - \	Values per IEC/EN 62061 /IEC/EN 61508	
SIL CL	3	
SIL	3	
HFT (Hardware Failure Tolerance)	1	
DC _{avg}	99%	
SFF	99.7%	
PFH _D	1.88E ⁻¹⁰ h ⁻¹	

· According to:

- Performance Level (PL) e and category 4 to EN ISO 13849-1: 2008
- SIL Claimed Level (SIL CL) 3 to IEC/EN 62061
- Safety Integrity Level (SIL) 3 to IEC/EN 61508 and IEC/ EN 61511
- Acc. to EN 50156-1 for furnaces
- ine fault detection on pushbutton:
- · Manual restart or automatic restart
- · With or without cross fault monitoring
- · 2-channel
- · Forcibly guided output contacts
- Output: 2 N.O. contacts per safety function
- One semiconductor output per safety function
- LED indicator for operation, safety function 1, 2 and failure
- Pluggable terminal blocks for easy exchange of devices
- Two PNP sensor inputs only

Safety Relays Selection Chart					
Part Number	Price	Marking Type	Voltage	Outputs	
<u>UG6980-02PS-61-24</u>	\$-010i8:	Safety relay module	24VDC	2 N.O. positive guided safety contact(s), 1 N.O. monitoring contact(s)	

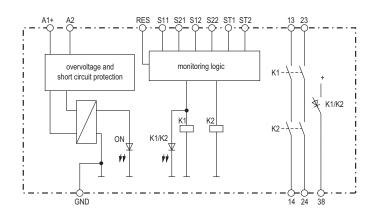
Function Diagram



 $t_{\mbox{\tiny diff}}$: max. time delay for simultaneity demand dependent on selected safety function E-Stop, safety gate, safety mat t_{eff}: max. 3s Light curtains t_{diff} : max. 1s Two-hand control t_{diff}: max. 0,5s other times on request

 t_{On} : max. actuation time of start button Standard t_{oo}: max. 3s other times on request

Block Diagram



Dold UG6980 Series Safety Relay DOLD & With Selectable Function





Dold UG6980 Series Safety Relay with Selectable Function Specification Table				
General Specifications				
Temperature	Storage: -25°C to 85°C (-13°F to 185°F) Operating: -15°C to 55°C (5°F to 131°F)			
Altitude	<2,000 meters			
Vibration Resistance	Amplitude: 0.35mm, Frequency: 10 to 55 Hz (IEC/EN 60-068-2-6)			
Degree of Protection	Per IEC/EN 60 529. Housing: IP40; Terminals IP20			
Housing	UL 94V-0 Thermoplastic; DIN mount 35mm x 7.5 mm			
Weight	210g (7.40 oz.)			
Terminal Designation per EN 50 005 Wire Connections	1x4 mm 2 solid or 1 x 2.5 mm 2 stranded ferruled (isolated) or 2 x 1.5 mm 2 stranded ferruled (isolated) DIN 46 228-1/-2/-3/-4 or 2 x 2.5 mm 2 solid DIN 46 228-1/-2/-3/-4			
Wire Fixing	Terminal screws M3.5 box terminals with wire protection.			
Wire Connection	60degC/75degC Copper conductors only; AWG20-12 Sol/Str Torque 0.5NM			
Input Specifications				
Nominal Voltage	24VDC			
Voltage Range	At 10% residual ripple: 0.8 to 1.1 U _N			
Maximum Consumption	DC approx. 1.9W			
Nominal Frequency	Not applicable			
Minimum Off-time	250ms			
Control Voltage on S11, S21, S31, S41 At UN	20VDC pulsed, 10ms ON, 10ms OFF			
Control Current Over S12, S22, S32, S42	Typ. 8mA at UN; Safety mats: Typ. 15mA at UN			
Min. Voltage on S12, S22, S32, S42 (relay activated)	10VDC			
Short Circuit Protection	Internal with PTC (Positive Temperature Coefficient resistor)			
Overvoltage Protection	Internal VDR (Voltage Dependent Resistor)			
Output Specifications				
Electrical Contact Life	AC 15 at 5A, 230VAC: > 2.2x10 ⁵ switching cycles			
Mechanical Life	> 20x10 ⁶ switching cycles			
Contact Type	2 positive guided N.O. safety contacts			
Operate Delay	Manual start: 30ms; automatic start: 350ms			
Release Delay	Disconnecting the supply: AC units:150ms; DC units: 50ms Disconnecting S12, S22: AC units: 130ms. DC units: 50ms			
Nominal Output Voltage	AC: 250V; DC: See continuous current limit curve in installation manual.			
Thermal Current (I _{th})	Max. 8A. See quadratic total current limit curve in installation manual.			
Short Circuit Strength	Max. fuse rating: 6A gL (IEC/EN 60 947-5-1); Line circuit breaker: B 6A			
Switching Capacity (IEC/EN 60 947-5-1)	AC 15: N.O. contacts: 3A/230V; N.C. contacts: 2A/230V DC 13: N.O. contacts: 4A/DC24V. 0.5A/110V; N.C. contacts: 4A/24V; DC 13: N.O. contacts: 8A/24V >25x103. ON: 0.4 s, OFF: 9.6 s			
Switching Frequency	Max. 1200 switching cycles/hr			
Agency Approvals and Standards	CSA, cULus file E107778, CE, RoHS, TUV			

To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific part number's web page at www.automationdirect.com

Settings

On the variant /0_ _ the safety function can be set via rotary switch. Possible functions:

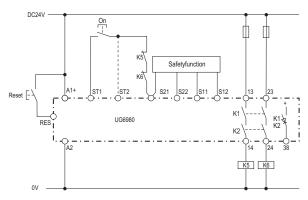
Fct.	Safety function		
1	E-Stop		
2	Safety gate		
3	Two-hand control	cross fault detection	
4	Safety mat / Safety edge		
5	Exclusive or contacts	ots	
6	E-Stop		
7	Safety gate without cross fault dete		
8	Light curtain	oroso iddit detection	

Dold UG6980 Series Safety Relay With Selectable Function

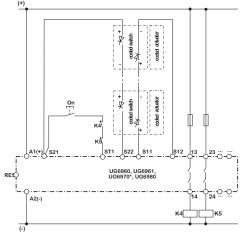




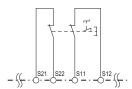
Applications



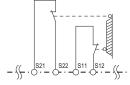
Safety function: see below, Manual-Start (for automatic start make a bridge to ST2 instead of ON button).



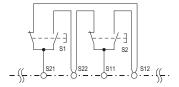
*UG6970: The safety function 2 is connected as well as safety function 1, but S11′= S31, S1′2 = S32, S'21 = S41, 'S22 = S42 and ST1 = ST2



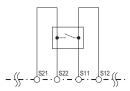
Fct.: E-stop (1), with cross fault detection 3, PL e, Cat. 4



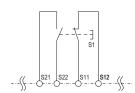
Fct.: Safety gate (2), with cross fault detection SIL 3, PL e, Cat. 4



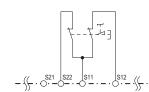
Fct.: Two-hand control (3), with cross fault detection SIL 3, PL e, Cat. 4 Type III C to EN 574



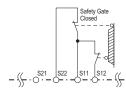
Fct.: Safety mat / Safety edge (4), with cross fault detection SIL 3, PL e, Cat. 4



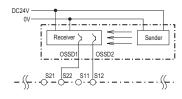
Fct.: Exclusive XOR contacts (5), with cross fault detection SIL 3, PL e, Kat. 4



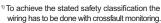
Fct.: E-Stop (6), without cross fault detection SIL 3, PL e, Cat. 4 1)



Fct.: Safety gate (7), without cross fault detection SIL 3, PL e, Cat. 4 1)



Fct.: Light curtain (8), without cross fault detection SIL 3, PL e, Cat. 4 2)

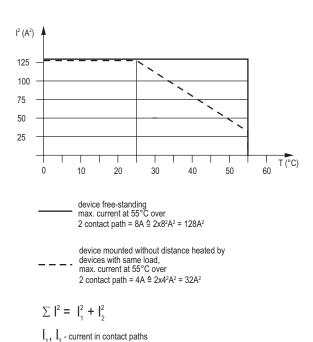


²⁾ To achieve the stated safety classification light curtains with selftest (type 4) according to IEC/EN 61496-1 have to be used.

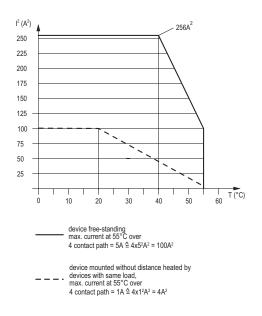
Dold UG6980 Series Safety Relay DOLD & With Selectable Function



Characteristic Curves



UG 6980.02 Quadratic total current limit curve

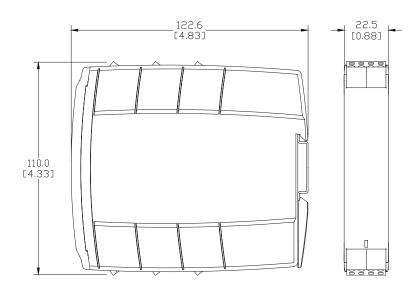


Quadratic total current limit curve output contacts

 $\sum_{1}^{2} | |^{2} = ||^{2} + ||^{2} + ||^{2} + ||^{2} + ||^{2}$

 I_1, I_2, I_3 - current in contact paths

Dimensions mm(in)



Connection Terminals

Terminal designation	Signal designation
A1 +	DC 24 V
A2	0 V
13, 14, 23, 24, 43, 44, 53, 54	Forcibly guided NO contacts for release circuit
38	Semiconductor monitoring output
GND	Reference potential for Semiconductor monitoring output
S11, S21	control output
S12, S22, ST1, ST2, RES	control input

See our website: www.AutomationDirect.com for complete Engineering Drawings.

ASO Safety Solutions ELMON Safety Relay Mat and Edge



1114-0210

ELMON safety relays are used to evaluate safety contact mats, safety contact edges and safety bumpers sensors at crush and shear locations. An ASO sensor can be connected to the switching device. An integrated terminating resistor in the sensor enables steady-state current monitoring.

Features

- Single channel operation
- Two safety output contacts and 1 auxiliary output
- · Allows evaluation of a sensor in two and four-wire systems
- · Manual or Auto reset via dip switch setting
- Easy diagnostic status via 3 LEDs
- · DIN rail mounting

Safety Data per EN 13849-1					
Category	3				
Performance level	Ple				
MTTF _d	195				
DC _{avg}	99%				
Safety Data per IEC/EN 62061, IEC/EN 61508					
Sil CL	SIL CL 3				
Sil	SIL3				
HFT	1 [Single channel]				
DC _{avg}	99%				
SFF	99%				
PFH _d (t-20a)	6.51E ⁻⁰⁹				







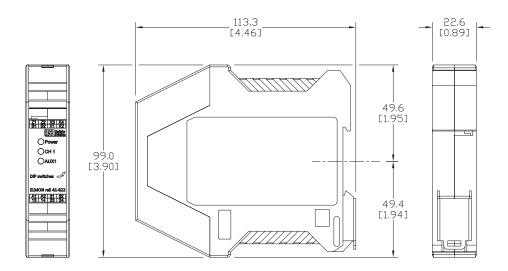
ELMON Safety Relay					
Part Number	Part Number Price Type Voltage Outputs Connection				
<u>1114-0210</u>	\$01ohk:	Single channel	120V AC/ 24V AC/DC	2 NO safety contacts; 1 NO monitoring contact	Fixed screw terminals

ELMON Safety Relay Specifications				
General Specifications				
Single mounting: -20° to +55°C [-4° to +131°F]; Mounted in a row: Max. +35°C [+95°F] (NOTE: Single mounting requires 1 inch [25.4 mm] of free space on each side of the relay.)				
Altitude	< 2,000 meters			
Vibration Resistance	Tested to IEC 60068-2-6			
Degree Of Protection	IP20			
Housing	Polyamide PA 6.6			
Weight	210g [7.4 oz]			
Agency Approvals and Standard	cULus file E329422, CE, TUV			
Terminal Designation per EN 50 005	Single or fine stranded cable 0.75 to 1.5 mm ²			
Wire Fixing	M3.5 terminals			
	Input Specifications			
Nominal Voltage	24V AC/DC or 120VAC			
Voltage Range	90-110%			
Maximum Consumption	1.5 W [24VDC]; 1.2 VA [24VAC]; 3.5 VA [120VAC / 60Hz]; 3.8 VA [120VAC / 50Hz]			
Nominal Frequency	50Hz-60Hz			
Control Voltage	5V DC			
Control Current	63mA			
Short Circuit Protection	Yes			
Over Voltage Protection	Yes			
	Output Specifications			
Electrical Contact Life	1,000,000 cycles			
Mechanical Life	10 x 10 ⁶			
Contact Type	2 NO safety contacts and 1 NO monitoring contact(s)			
Operate Delay	≤ 550ms [Power on: >850ms]			
Release Delay	11ms			
Nominal Output Voltage	230VAC			
Thermal Current (I _{th})	1A			
Short Circuit Strength	1A middle time-lag fuse (glass tube 5x20)			
Switching Capacity	AC-15 (230V AC, 1A, 800,000 operations); DC-13 (24V DC, 1A, 950,000 operations)			
Switching Frequency	Max. 6600 cycles/hour			

ASO Safety Solutions ELMON Safety Relay Mat and Edge

Dimensions

mm [in]



ASO Safety Solutions ELMON Safety Relay Mat and Edge

Application Examples

Note: Safety-oriented monitoring of a safety contact edge with start release via release pushbutton and separate continuation of the control circuits (category 3 compliant application according to EN ISO 13849-1).

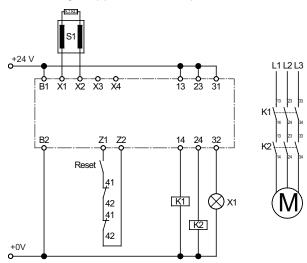
In order to check the functionality of the load breaking K1 and K2 relays the break contacts of these contactors are integrated into the start circuit (Z1 Z2).

The signaling relay output is used to visualize the switching state of the safety contact strip.

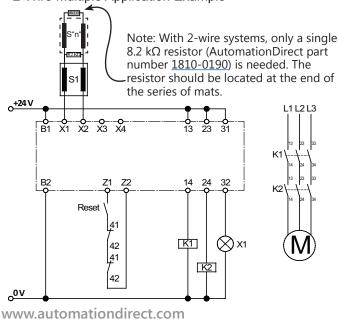
Circuit diagram in voltage-free state. Sensor not operated.

- 1 Sensor (edge, mat, or bumper)
- 2 Release key

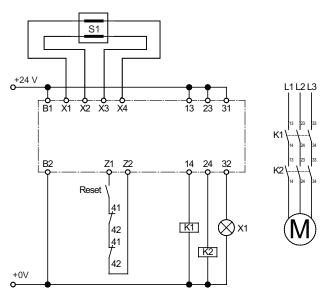
2-Wire Single Application Example



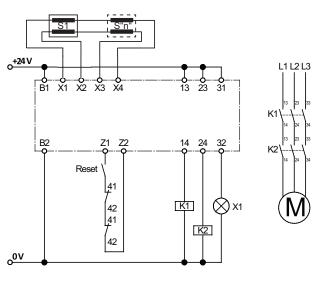
2-Wire Multiple Application Example



4-Wire Single Application Example



4-Wire Multiple Application Example



IDEM SCR21 Series Single/Dual Channel Viper Safety Relays



SCR21-280001

The Viper Safety Relay series from IDEM are designed with enhanced LED diagnostics and simplified wiring. Applications include guard door monitoring, emergency stop devices and sensors. The SCR21 series' internal logic use's force guided relays to achieve cross monitoring. This ensures that a single fault does not lead to the loss of the safety function and that all faults are detected at or before the next safety demand.

Note: Not for use with safety light curtains

Features

- Single or dual channel operation
- Monitored manual or auto start /reset
- Up to 2 safety output contacts and 1 auxiliary output contact
- Easy diagnostics of status via 6 LEDs
- Compact 22.5 mm housing suitable for DIN rail mounting

Safety Data per EN 13849-1				
Category	4			
Performance level	Ple			
MTTF _d	142a (High)			
DC _{avg}	99% (High)			
Safety Data				
per IEC/EN	N 62061, IEC/EN 61508			
Sil CL	SIL CL 3			
Sil	SIL3			
HFT	1 (Dual channel)			
DC _{avg}	99% (High)			
SFF	90-99%			
PFH _d (t-20a)	3.60E ⁻⁰⁵			

SCR21 Series Single/Dual Channel Safety Relays					
Part Number	Price	Туре	Voltage	Outputs	Connection
SCR21-280001	\$01n_c:	Single and dual channel operation	24V AC/DC	2 NO / 1 NC	Fixed screw terminals
SCR21-280001-P	\$01n_d:	channel operation			Pluggable terminals





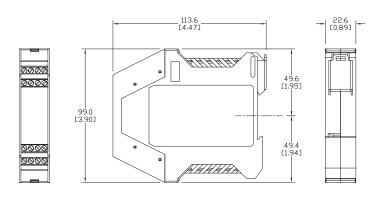


SCR21 Series Specifications					
	General Specifications				
Temperature	-20° to +55°C [-4° to +131°F]				
Altitude	< 2,000 meters				
Vibration Resistance	Tested to IEC 60068-2-6				
Degree Of Protection	IP20				
Housing	UL 94V-0 Thermoplastic				
Weight	150g (5.3 oz)				
Agency Approvals and Standard	cULus file E258676, CE, TUV				
Terminal Designation per EN 50 005	1 x 4 mm ² stranded ferruled (isolated) or 2 x 1.5 mm ² stranded ferruled (isolated) or 2 x 2.5 mm ² solid				
Wire Fixing	M3.5 terminals with self-lifting wire protection or cage clamp terminals				
	Input Specifications				
Nominal Voltage	24V AC/DC				
Voltage Range	85-110%				
Maximum Consumption	2.5 W (24VDC)				
Nominal Frequency	50Hz-60Hz				
Control Voltage	24VDC (S11)				
Control Current	100mA (S11)				
Short Circuit Protection	Internal PTC (Positive Temperature Coefficient resistor)				
Over Voltage Protection	Internal VDR (Voltage Dependent resistor)				
	Output Specifications				
Electrical Contact Life	6A / 250VAC 100,000 cycles, 1A / 250VAC 1,000,000 cycles				
Mechanical Life	10 x 10 ⁶				
Contact Type	2 NC positively driven and 1 NO auxiliary contacts				
Operate Delay	100ms				
Release Delay	25ms				
Nominal Output Voltage	250VAC				
Thermal Current (I _{th})	Max. 6A				
Short Circuit Strength	Minimum Contact Fuses - 4A slow blow, 6A fast blow				
Switching Capacity	AC - 250V, 1500V, 6A, Ohmic 230V, 4A for AC-15; DC - 24V, 30W, 1.25 A, Ohmic				
Switching Frequency	Max. 360 switching cycles/hr				

IDEM SCR21 Series Single/Dual Channel Viper Safety Relays

Dimensions

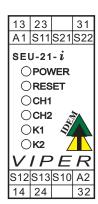
mm [in]



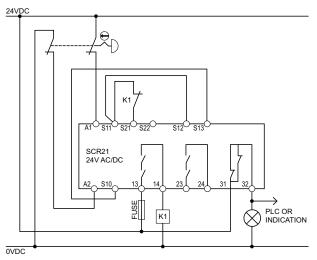
LED Diagnostics

When safety relay in operation

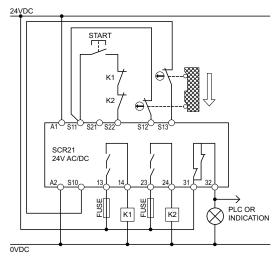
Power	Power applied to device
Reset	Reset circuit is closed
CH1	External switch input 1 closed
CH2	External switch input 2 closed
K1	Internal relay safety ouput contacts closed
K2	Internal relay safety output contacts closed



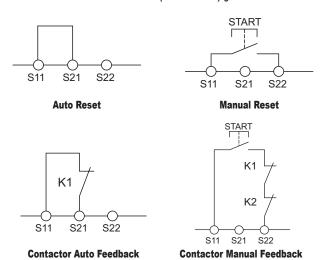
Applications



Automatic restart mode (single channel) E-Stop



Manual restart mode (dual channel) guard



Note: A power supply unit with electrical isolation from the mains supply must be connected. External fusing of each safety output contact is necessary, a 4A slow-blow or 6A (quick action) must be provided. The maximum cabling and connecting resistance of control lines must not be exceed 300 Ohms.

IDEM SCR31 Series Single/Dual Channel Viper Safety Relays



SCR31-280002

The Viper Safety Relay series from IDEM are designed with enhanced LED diagnostics and simplified wiring. Applications include guard door monitoring, emergency stop devices and sensors. The SCR31 series' internal logic uses force guided relays to achieve cross monitoring. This ensures that a single fault does not lead to the loss of the safety function and that all faults are detected at or before the next safety demand.

Note: Not for use with safety light curtains

Features

- Single or dual channel operation
- Monitored manual or auto start/reset
- Up to 3 safety output contacts and 1 auxiliary output contact
- · Easy diagnostics of status via 6 LEDs
- Compact 22.5 mm housing suitable for DIN rail mounting

Safety Data	per EN 13849-1			
Category	4			
Performance level	Ple			
MTTF _d	142a (High)			
DC _{avg}	99% (High)			
Safety Data per IEC/EN				
62061, IE	C/EN 61508			
Sil CL	SIL CL 3			
Sil	SIL3			
HFT	1 (Dual channel)			
DC _{avg}	99% (High)			
SFF	90-99%			
PFH _d (t-20a)	3.60E ⁻⁰⁵			





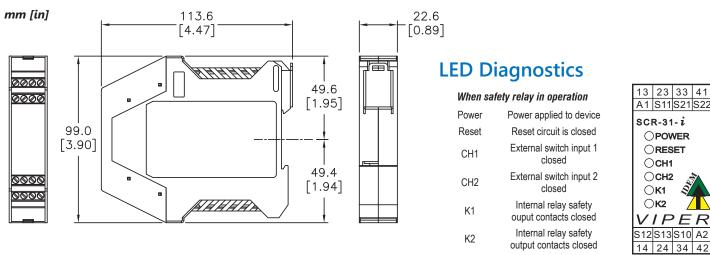


SCR31 Series Single/Dual Channel Safety Relays					
Part Number Price Type Voltage Outputs Connection					Connection
SCR31-280002	\$01n_e:	Single/Dual	24V AC/DC	3 N0 / 1 NC	Fixed screw terminals
SCR31-280002-P	\$;01n_f:	channel operation			Pluggable terminals

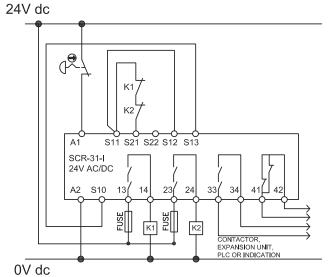
SCR31 Series Specifications				
General Specifications				
Temperature -20° to +55°C [-4° to +131°F]				
Altitude	< 2,000 meters			
Vibration Resistance	Tested to IEC 60068-2-6			
Degree Of Protection	IP20			
Housing	UL 94V-0 Thermoplastic			
Weight	150g (5.3 oz)			
Agency Approvals and Standard	cULus file E258676, CE, TUV			
Terminal Designation per EN 50 005	1 x 4 mm² stranded ferruled (isolated) or 2 x 1.5 mm² stranded ferruled (isolated) or 2 x 2.5 mm² solid			
Wire Fixing	M3.5 terminals with self-lifting wire protection or cage clamp terminals			
Input Specifications				
Nominal Voltage	24V AC/DC			
Voltage Range	85-110%			
Maximum Consumption	2.5 W (24VDC)			
Nominal Frequency	50Hz-60Hz			
Control Voltage	24VDC (S11)			
Control Current	100mA (S11)			
Short Circuit Protection	Internal PTC (Positive Temperature Coefficient resistor)			
Over Voltage Protection Internal VDR (Voltage Dependent resistor)				
	Output Specifications			
Electrical Contact Life	6A / 250VAC 100,000 cycles, 1A / 250VAC 1,000,000 cycles			
Mechanical Life	10 x 10 ⁶			
Contact Type	3 NC positively driven and 1 NO auxiliary contacts			
Operate Delay	100ms			
Release Delay	25ms			
Nominal Output Voltage	250VAC			
Thermal Current (I _{th})	Max. 6A			
Short Circuit Strength	Minimum Contact Fuses - 4A slow blow, 6A fast blow			
Switching Capacity	AC - 250V, 1500V, 6A, Ohmic 230V, 4A for AC-15; DC - 24V, 30W, 1.25 A, Ohmic			
Switching Frequency	Max. 360 switching cycles/hr			

IDEM SCR31 Series Single/Dual Channel Viper Safety Relays

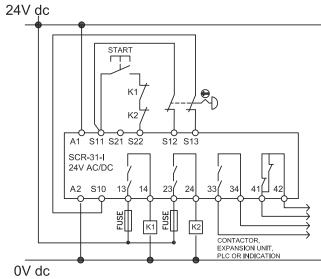
Dimensions



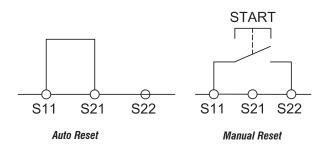
Applications

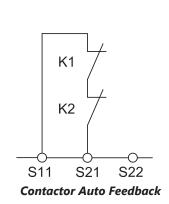


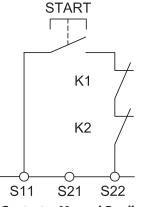




Manual restart mode (dual channel) estop







Contactor Manual Feedback

Note: A power supply unit with electrical isolation from the mains supply must be connected. External fusing of each safety output contact is necessary, a 4A slow-blow or 6A (quick action) must be provided. The maximum cabling and connecting resistance of control lines must not be exceed 300 Ohms.

IDEM SCR73 Series Single/Dual Channel Viper Safety Relays



SCR73-280005

The Viper Safety Relays series from IDEM are designed with enhanced LED diagnostics and simplified wiring. Applications include guard door monitoring, emergency stop devices and sensors. The SCR73 series' internal logic uses force guided relays to achieve cross monitoring. This ensures that a single fault does not lead to the loss of the safety function and that all faults are detected at or before the next safety demand.

Note: Not for use with safety light curtains

Features

- Single or dual channel operation
- Monitored manual or automatic start
- Up to 7 safety output contacts and 3 auxiliary output contacts
- Easy diagnostics of status via 6 LEDs
- 45mm housing suitable for DIN rail mounting

• 45mm nousing suitable for DIN rail mounting					
SCR73 Series Single/Dual Channel Safety Relay					
Part Number Price Type Voltage Outputs Connection					Connection
SCR73-280005	\$01n_g:	Single/Dual	24V AC/DC	7 NO / 3 NC	Fixed screw terminals
SCR73-280005-P	\$01n_h:	channel operation	Z4V AC/DC	/ NO / 3 NC	Pluggable terminals



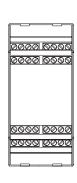
Safety Data per EN 13849-1				
Category	4			
Performance level	Ple			
MTTF _d	71a (High)			
DC _{avg}	99% (High)			
Safety Data				
per IEC/EN 62061, IEC/EN 61508				
Sil CL	SIL CL 3			
Sil	SIL3			
HFT	1 (Dual channel)			
DC _{avg}	99% (High)			
SFF	90-99%			
PFH _d (t-20a)	7.20E ⁻⁰⁵			

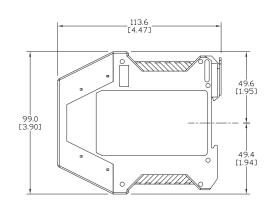
SCR73 Series Specifications							
General Specifications							
Temperature	-20° to +55°C [-4° to +131°F]						
Altitude	< 2,000 meters						
Vibration Resistance	Tested to IEC 60068-2-6						
Degree Of Protection	IP20						
Housing	UL 94V-0 Thermoplastic						
Weight	300g (10.5 oz)						
Agency Approvals and Standard	cULus file E258676, CE, TUV						
Terminal Designation per EN 50 005	1 x 4 mm ² stranded ferruled (isolated) or 2 x 1.5 mm ² stranded ferruled (isolated) or 2 x 2.5 mm ² solid						
Wire Fixing	M3.5 terminals with self-lifting wire protection or cage clamp terminals						
Input Specifications							
Nominal Voltage	24V AC/DC						
Voltage Range	85-110%						
Maximum Consumption	5W (24VDC)						
Nominal Frequency	50Hz-60Hz						
Control Voltage	24VDC (S11)						
Control Current	100mA (S11)						
Short Circuit Protection	Internal PTC (Positive Temperature Coefficient resistor)						
Over Voltage Protection Internal VDR (Voltage Dependent resistor)							
	Output Specifications						
Electrical Contact Life	6A / 250VAC 100,000 cycles, 1A / 250VAC 1,000,000 cycles						
Mechanical Life	10 x 10 ⁶						
Contact Type	7 NC positively driven and 3 NO auxiliary contacts						
Operate Delay	100ms						
Release Delay	25ms						
Nominal Output Voltage	250VAC						
Thermal Current (I _{th})	Max. 6A						
Short Circuit Strength	Minimum Contact Fuses - 4A slow blow, 6A fast blow						
Switching Capacity	AC - 250V, 1500V, 6A, Ohmic 230V, 4A for AC-15; DC - 24V, 30W, 1.25 A, Ohmic						
Switching Frequency	Max. 360 switching cycles/hr						

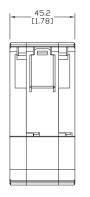
IDEM SCR73 Series Single/Dual Channel Viper Safety Relays

Dimensions

mm [in]







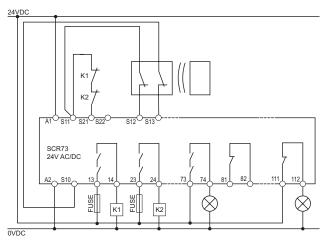
LED Diagnostics

When safety relay in operation

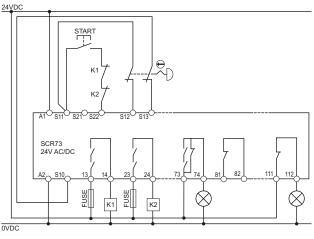
Power	Power applied to device				
Reset	Reset circuit is closed				
CH1	External switch input 1 closed				
CH2	External switch input 2 closed				
K1	Internal relay safety ouput contacts closed				
K2	Internal relay safety output contacts closed				

							_	
13	23	33	81	43	53	63	73	
A1	S11	S21	S22	91	92	101	102	
SCR-73-i								
C	POV	VER						
C	RES	ET						
C	○CH1							
C	CH2							
C	K1	Ş						
Ок2 7								
VIPER								
S12	S13	S10	A2					
14	24	34	82	44	54	64	74	

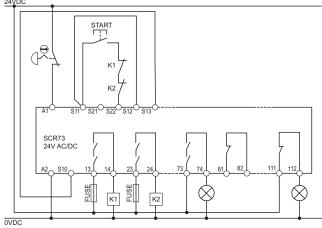
Applications



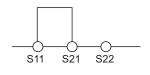
Automatic restart mode (dual channel) non contact



Manual restart mode (dual channel) E-Stop



Manual restart mode (single channel) E-stop

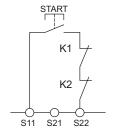


K1 K2 K2 S11 S21 S22

START

S11 S21 S22

Manual Reset



Contactor Auto Feedback

Contactor Manual Feedback

Note: A power supply unit with electrical isolation from the mains supply must be connected. External fusing of each safety output contact is necessary, a 4A slow-blow or 6A (quick action) must be provided. The maximum cabling and connecting resistance of control lines must not be exceed 300 Ohms.

IDEM SCR3142TD Series Dual Channel Viper Safety Relays w/Configurable Delay



SCR3142TD-280006

The SCR3142TD Viper Safety Relays series from IDEM are designed with simplified wiring, configurable delay function and 8 LEDs for easy diagnostics. Applications include guard door monitoring, emergency stop devices and sensors. The SCR3142TD internal logic uses force guided relays to achieve cross monitoring. This ensures that a single fault does not lead to the loss of the safety function and that all faults are detected at or before the next safety demand.

Note: Not for use with safety light curtains

Features

- Emergency stop and guard interlock monitoring
- Monitored manual or automatic start/reset
- Time delay contacts
- Easy diagnostics of status via 8 LEDs
- 45mm housing suitable for DIN rail mounting

SCR3142TD Series Dual Channel Relays with Configurable Delay							
Part Number	Price	Туре	Voltage	Outputs	Connection		
SCR3142TD-280006	\$-01n_i:	Dual channel	2Δ\/ Δ(:/[)(:	3 N0 / 1 NC 4 delayed NO 2 delayed NC	Fixed screw terminals		
SCR3142TD-280006-P	\$-01n_j:	operation			Pluggable terminals		



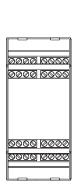
Salety D	ala per en	13849-1				
	Instant	Delayed				
Category	4	3				
Performance level	Ple	Ple				
MTTF _d	134a (High)	134a (High)				
DC _{avg}	95% (High)	95% (High)				
Safety Data						
per IEC/EN	62061, IEC	C/EN 61508				
Sil CL	SIL CL 3	SIL CL 3				
Sil	SIL3	SIL3				
	1 (Dual channel)					
HFT		1 (Dual channel)				
HFT DC _{avg}		1 (Dual channel) 95% (High)				
	channel)	,				

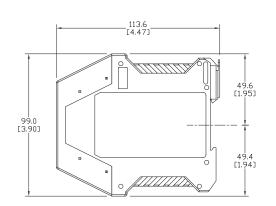
SCR3142TD Series Specifications						
General Specifications						
Temperature	-20° to +55°C [-4° to +131°F]					
Altitude	< 2,000 meters					
Vibration Resistance	Tested to IEC 60068-2-6					
Degree Of Protection	IP20					
Housing	UL 94V-0 Thermoplastic					
Weight	300g (10.5 oz)					
Agency Approvals and Standard	cULus file E258676, CE, TUV					
Terminal Designation per EN 50 005	1 x 4 mm ² stranded ferruled (isolated) or 2 x 1.5 mm ² stranded ferruled (isolated) or 2 x 2.5 mm ² solid					
Wire Fixing	M3.5 terminals with self-lifting wire protection or cage clamp terminals					
Input Specifications						
Nominal Voltage	24V AC/DC					
Voltage Range	85-110%					
Maximum Consumption	5W (24VDC)					
Nominal Frequency	50Hz-60Hz					
Control Voltage	24VDC (S11)					
Control Current	100mA (S11)					
Short Circuit Protection	Internal PTC (Positive Temperature Coefficient resistor)					
Over Voltage Protection Internal VDR (Voltage Dependent resistor)						
	Output Specifications					
Electrical Contact Life	6A / 250VAC 100,000 cycles, 1A / 250VAC 1,000,000 cycles					
Mechanical Life	10 x 10 ⁶					
Contact Type	3 NO positively driven and 1 NC auxiliary contacts. Delayed: 4 NO and 2 NC					
Operate Delay	100ms					
Release Delay	25ms					
Nominal Output Voltage	250VAC					
Thermal Current (I _{th})	Max. 6A					
Short Circuit Strength	Minimum Contact Fuses - 4A slow blow, 6A fast blow					
Switching Capacity	AC - 250V, 1500V, 6A, Ohmic 230V, 4A for AC-15; DC - 24V, 30W, 1.25 A, Ohmic					
Switching Frequency	Max. 360 switching cycles/hr					

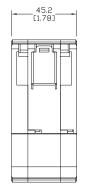
IDEM SCR3142TD Series Dual Channel Viper Safety Relays w/Configurable Delay

Dimensions

mm [in]



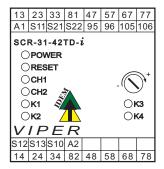




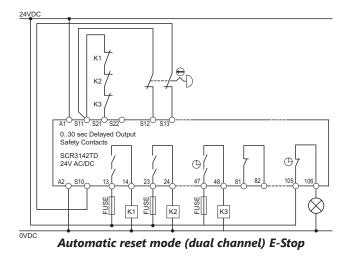
LED Diagnostics

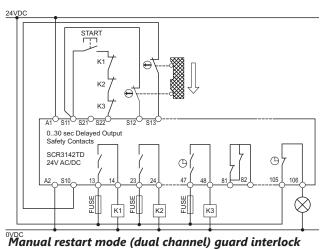
When safety relay in operation

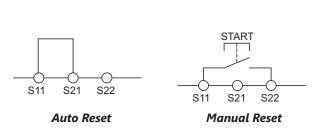
Power	Power applied to device					
Reset	Reset loop S11-S21 or					
	S11-S22 is closed					
CH1	Channel 1 - S11-S12 is closed					
CH2	Channel 2 - S13-S10 is closed					
K1	Power to internal relay K1					
K2	Power to internal relay K2					
K3	Power to internal relay K3					
K4	Power to internal relay K4					

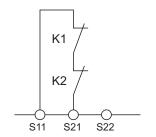


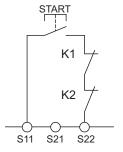
Applications











Contactor Auto Feedback

Contactor Manual Feedback

Note: A power supply unit with electrical isolation from the mains supply must be connected. External fusing of each safety output contact is necessary, a 4A slow-blow or 6A (quick action) must be provided. The maximum cabling and connecting resistance of control lines must not be exceed 300 Ohms.

IDEM SEU31 Series Viper Safety Relay Expansion Modules



The SEU31 series Viper safety relay expansion modules can be directly wired to the SCR21, SCR31, SCR73, and SCR3142TD series safety relays to increase the number of safety output contacts and expand functionality of the base unit safety relays.







Note: Not for use with safety light curtains

Features

- Stop category 0
- Fault monitored via feedback contacts
- Multiple expansion modules can be connected to a single base unit
- Easy diagnostics of status via 3 LEDs
- Compact 22.5 mm housing suitable for DIN rail mounting

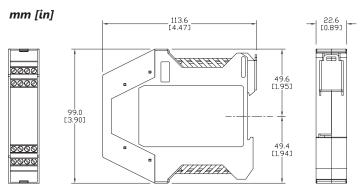
SEU31 Series Safety Relay Expansion Modules							
Part Number Price Type Voltage Outputs Connection							
SEU31-280007	\$01n_k:	Expansion		3 NO positively	Fixed screw terminals		
SEU31-280007-P	\$-01n_l:	module	24V AC/DC	driven and 1 NC auxiliary	Pluggable terminals		

Safety Data per EN 13849-1					
Category	4				
Performance level	Ple				
MTTF _d	71a (High)				
DC _{avg}	99% (High)				
Safety Data per IEC/EN 62061, IEC/EN 61508					
Sil CL	SIL CL 3				
Sil	SIL3				
HFT	1 (Dual channel)				
DC _{avg}	99% (High)				
SFF	90-99%				
PFH _d (t-20a)	7.20E ⁻⁰⁵				

SEU31 Series Specifications					
	General Specifications				
Temperature	-20° to +55°C [-4° to +131°F]				
Altitude	< 2,000 meters				
Vibration Resistance	Tested to IEC 60068-2-6				
Degree Of Protection	IP20				
Housing	UL 94V-0 Thermoplastic				
Weight	150g (5.3 oz)				
Agency Approvals and Standard	cULus file E258676, CE, TUV				
Terminal Designation per EN 50 005	1 x 4 mm ² stranded ferruled (isolated) or 2 x 1.5 mm ² stranded ferruled (isolated) or 2 x 2.5 mm ² solid				
Wire Fixing	M3.5 terminals with self-lifting wire protection or cage clamp terminals				
	Input Specifications				
Nominal Voltage	24V AC/DC				
Voltage Range	85-110%				
Maximum Consumption	2.5 W (24VDC)				
Nominal Frequency	50Hz-60Hz				
Control Voltage	N/A				
Control Current	N/A				
Short Circuit Protection	Internal PTC (Positive Temperature Coefficient resistor)				
Over Voltage Protection	Internal VDR (Voltage Dependent resistor)				
	Output Specifications				
Electrical Contact Life	6A / 250VAC 100,000 cycles, 1A / 250VAC 1,000,000 cycles				
Mechanical Life	10 x 10 ⁶				
Contact Type	3 NC positively driven and 1 NO auxiliary contacts				
Operate Delay	100ms				
Release Delay	25ms				
Nominal Output Voltage	250VAC				
Thermal Current (I _{th})	Max. 6A				
Short Circuit Strength	Minimum Contact Fuses - 4A slow blow, 6A fast blow				
Switching Capacity	AC - 250V, 1500V, 6A, Ohmic 230V, 4A for AC-15; DC - 24V, 30W, 1.25 A, Ohmic				
Switching Frequency	Max. 360 switching cycles/hr				

IDEM SEU31 Series Viper Safety Relay Expansion Modules

Dimensions

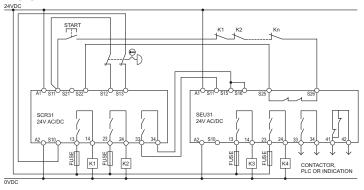


LED Diagnostics

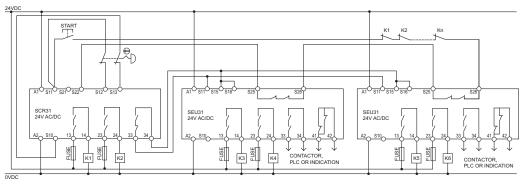


POWER	Power to the safety relay
K1	Power to internal relay K1
K2	Power to internal relay K2

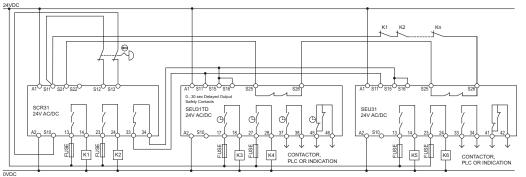
Applications



Dual channel, E-Stop, manual reset with expansion unit



Dual channel, E-Stop, Manual reset with multiple expansion units



Dual channel, E-Stop, Auto reset with multiple expansion units

Note: A safety transformer according to EN 61558-2-6 or a power supply unit with electrical isolation from the mains supply must be connected. External fusing of the safety contacts (6A slow-blow or 8A quick action or 10 AgG) must be provided. A maximum length of the control lines of 1000m with a line cross section of 0.75 mm² must not be exceeded. The line cross section must not exceed 2.5 mm². If the device does not function after commissioning, it must be returned to the AutomationDirect unopened. Opening the device will void the warranty.

IDEM SEU31TD Series Viper Expansion Modules w/Configurable Delay



The SEU31TD series Viper safety relay expansion modules can be directly wired to the SCR21, SCR31, SCR73, and SCR3142TD series safety relays to increase the number of safety output contacts and expand functionality of the base unit safety relays. They can also be used in conjunction with the SEU31 series expansion modules.

Note: Not for use with safety light curtains

Features

- Configurable time delay between 0-30 seconds
- Fault monitored via feedback contacts
- Multiple expansion modules can be connected to a single base SCR unit
- Easy diagnostics of status via 3 LEDs
- Compact 22.5 mm housing suitable for DIN rail mounting

SEU31TD Series Release Delay Expansion Modules							
Part Number	Price	Туре	Voltage	Outputs	Connection		
SEU31TD-280008	\$01n_n:	Expansion	24V AC/DC	Delayed: 3 NO and 1 NC (0-30 Seconds)	Fixed screw terminals		
SEU31TD-280008-P	\$01n_o:	module			Pluggable terminals		

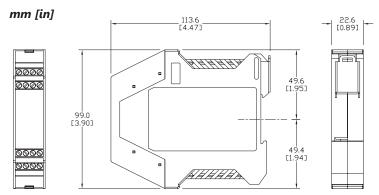


Safety Data per EN 13849-1							
	Instant	Delayed					
Category	4	3					
Performance level	Ple	Ple					
MTTF _d	134a (High)	134a (High)					
DC _{avg}	95% (High)	95% (High)					
Safety Data							
per IEC/EN	62061, IE	C/EN 61508					
Sil CL	SIL CL 3	SIL CL 3					
Sil	SIL3	SIL3					
HFT	1 (Dual channel)	1 (Dual channel)					
DC _{avg}	95% (High)	95% (High)					
SFF	90-99%	90-99%					
PFH _d (t-20a)	2.00E ⁻⁰⁴	2.00E ⁻⁰⁴					

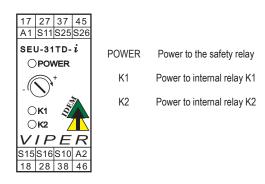
SEU31TD Series Specifications						
	General Specifications					
Temperature	-20° to +55°C [-4° to +131°F]					
tude < 2,000 meters						
Vibration Resistance	Tested to IEC 60068-2-6					
Degree Of Protection	IP20					
Housing	UL 94V-0 Thermoplastic					
Weight	150g (5.3 oz)					
Agency Approvals and Standard	cULus file E258676, CE, TUV					
Terminal Designation per EN 50 005	1 x 4 mm ² stranded ferruled (isolated) or 2 x 1.5 mm ² stranded ferruled (isolated) or 2 x 2.5 mm ² solid					
Wire Fixing	M3.5 terminals with self-lifting wire protection or cage clamp terminals					
	Input Specifications					
Nominal Voltage	24V AC/DC					
Voltage Range	85-110%					
Maximum Consumption 2.5 W (24VDC)						
Nominal Frequency	50Hz-60Hz					
Control Voltage	N/A					
Control Current	N/A					
Short Circuit Protection	Internal PTC (Positive Temperature Coefficient resistor)					
Over Voltage Protection	Internal VDR (Voltage Dependent resistor)					
	Output Specifications					
Electrical Contact Life	6A / 250VAC 100,000 cycles, 1A / 250VAC 1,000,000 cycles					
Mechanical Life	10 x 10 ⁶					
Contact Type	Delayed: 3 NC and 1 NO (0 to 30 seconds)					
Operate Delay	100ms					
Release Delay	25ms					
Nominal Output Voltage	250VAC					
Thermal Current (Ith)	Max. 6A					
Short Circuit Strength	Minimum Contact Fuses - 4A slow blow, 6A fast blow					
Switching Capacity	AC - 250V, 1500V, 6A, Ohmic 230V, 4A for AC-15; DC - 24V, 30W, 1.25 A, Ohmic					
Switching Frequency	Max. 360 switching cycles/hr					

IDEM SEU31TD Series Viper Expansion Modules w/Configurable Delay

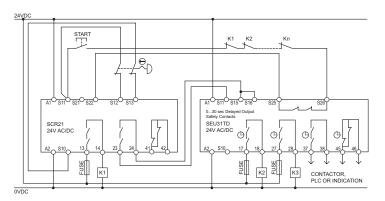
Dimensions



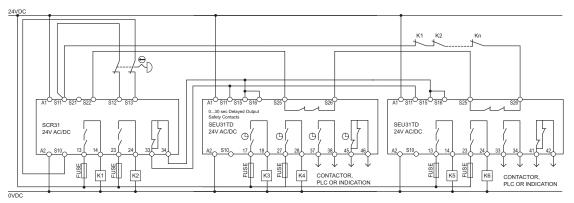
LED Diagnostics



Applications



Dual channel, E-Stop, manual reset with expansion unit



Dual channel, E-Stop, auto reset with multiple SEU31TD expansion units

Note: A power supply unit with electrical isolation from the mains supply must be connected. External fusing of each safety output contact is necessary, a 4A slow-blow or 6A (quick action) must be provided. The maximum cabling and connecting resistance of control lines must not be exceed 300 Ohms.

STAHL Intrinsically Safe Isolators



Overview

STAHL's easy-to-connect and user-friendly isolating barriers provide intrinsic safety and galvanic separation between the control system and the field device, insulating the field device from other parts of the system. Their isolating barrier range is easy to use and boasts an impressive range of functions and a long service life.



Features

- Compact: Dual Channel modules for most functions
- · Analog cards are HART capable
- Analog and digital cards are rated for SIL applications
- pac-Bus provides time-saving system for wiring

STAHL Intrinsically Safe Isolators Selection Guide								
Part Number	Part Number Price Isolator Type Field Device Channels Controller Side (PLC/DCS)					Drawing		
Analog Input (From Hazardous Area)								
9260-13-11-10S	\$;050]_:	Transmitter (1 channel)	0 to 20 mA or 4 to 20 mA	1 in / 1 out	Output range will match input range (active or passive)	PDF		
9260-19-11-10S	\$;;050]t:	Transmitter (splitter)	0 to 20 mA or 4 to 20 mA	1 in / 2 out	Output range will match input range (active)	PDF		
9260-23-11-10S	\$;050]u:	Transmitter (2 channel)	0 to 20 mA or 4 to 20 mA	2 in / 2 out	Output range will match input range (active)	<u>PDF</u>		

Analog Output (To Hazardous Area)						
<u>9165-16-11-11S</u>	\$;050]v:	Isolating repeater	Output range will match input range (active)	1 in / 1 out	0 to 20 mA or 4 to 20 mA	PDF
<u>9265-26-11-10S</u>	\$05oob:	Isolating repeater	Output range will match input range (active)	2 in / 2 out	0 to 20 mA or 4 to 20 mA	PDF

	Digital Input (From Hazardous Area)								
<u>9270-11-16-14S</u>	\$;050]x:	Switching repeater, 1 channel DC power	NAMUR sensor* or dry contacts	1 in / 1 out	1 changeover contact (SPDT relay)	PDF			
<u>9170-11-13-21S</u>	\$05004:	Switching repeater, 1 channel AC power	NAMUR sensor* or dry contacts	1 in / 2 out	2 changeover contacts (2 SPDT relays)	PDF			
9270-21-17-14S	\$;050]y:	Switching repeater, 2 channel DC power	NAMUR sensor* or dry contacts	2 in / 2 out	1 NO relay (max 250V / 2A)	PDF			
<u>9170-21-12-21S</u>	\$05003:	Switching repeater, 2 channel AC power	NAMUR sensor* or dry contacts	2 in / 2 out	1 changeover contact (SPDT relay)	PDF			
<u>9172-20-11-00S</u>	\$;050]z:	Ex i relay module (2 channel)	Intrinsically safe coil (14 to 30 V)	2 in / 2 out	1 changeover contact (SPDT relay)	PDF			

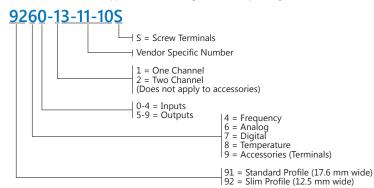
Digital Output (To Hazardous Area)						
9275-10-24-48- 11S	\$;;050]]:	Digital output	Open circuit: 24.3 V 48mA at 9.7 V	1 in / 1 out	15 to 30 V for ON 0 to 5 V for OFF	PDF
<u>9175-20-14-11S</u>	\$05ooc:	Digital output	Open circuit: 17.5 V 43mA at 12V	2 in / 2 out	15 to 31.2 V for ON 0 to 5 V for OFF	PDF

	Temperature Converter (From Hazardous Area)							
9182-10-51-11S	\$;;050][:	Temperature transmitter	Thermocouple and RTD	1 in / 1 out	0 to 20 mA or 4 to 20 mA (active)	PDF		
9180-10-77-11S	\$05005:	RTD repeater	RTD (PT 100)	1 in / 1 out	Equal to input signal (resistor)	PDF		
<u>9180-20-77-11S</u>	\$05006:	RTD repeater	RTD (PT 100)	2 in / 2 out	Equal to input signal (resistor)	<u>PDF</u>		

Frequency Transmitter (From Hazardous Area)							
<u>9146-10-11-12S</u>	\$05008:	Frequency transmitter	NAMUR sensor* or voltage pulses	1 in / 1 out	0 to 20 mA or 4 to 20 mA (active) with two configurable dry contacts	PDF	
<u>9146-20-11-11S</u>	\$;005009:	Frequency transmitter	NAMUR sensor* or voltage pulses	2 in / 2 out	0 to 20 mA or 4 to 20 mA (active)	<u>PDF</u>	

^{*} A NAMUR sensor is an intrinsically safe 2-wire sensor which supplies one of two signal levels depending on sensor state.

Part Number Nomenclature



STAHL Intrinsically Safe Isolators Analog

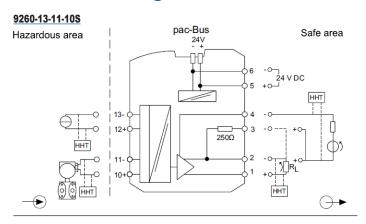


		STAHL Analog In	trinsically Safe	Isolators Specifi	cations	
			Analog Input		Analog	Output
		9260-13-11-10S	9260-19-11-10S	9260-23-11-10S	9165-16-11-118	9265-26-11-10S
Isolator Type		Transmitter (1 channel)	Transmitter (splitter)	Transmitter (2 channel)	Isolating repeater	Isolating repeater
	Installation Location (per NEC 500)	Class I, Division 2	Class I, Division 2			
	Ex Interface (per NEC 500)	Class I, II, III Division 1 or 2	Class I, II, III Division 1 or 2			
Explosion Protection	Agency Approvals	ATEX (BVS), Canada / USA (UL), IEC Ex (BVS), SIL (BVD)	ATEX (BVS), Canada / USA (UL), IEC Ex (BVS), SIL (BVD)	ATEX (BVS), Canada / USA (UL), IEC Ex (BVS), SIL (BVD)	ATEX (BVS), Canada (FM), EAC (ENDCE), IECEx (BVS), India (PESO), Korea (KTL), Russia (Meteorological certificate), SIL (exida), USA (FM)	ATEX (BVS), Canada/USA (UL), EAC (ENDCE), IECEx (BVS), Korea (KTL), SIL (BVS)
	Max Voltage (U ₀)	25.2 V	25.2 V	25.2 V	25.6 V	25.2 V
Safety Data	Max Current (I ₀)	93mA	93mA	93mA	96mA	93mA
	Max Power (P ₀)	587mW	587mW	587mW	605mW	587mW
Functional Safety	Safety Integrity Level (SIL)	2	2	2	2	2
	Number of Channels	1 in / 1 out	1 in / 2 out	2 in / 2 out	1 in / 1 out	2 in / 2 out
	Line Fault Detection Relay	No	No	No	Yes	No
	Auxiliary Power Range	19.2 to 30VDC	19.2 to 30VDC	19.2 to 30VDC	18 to 31.2 VDC	19.2 to 30 VDC
	Nominal Current	76mA	75mA	100mA	55mA	85mA
	Power Consumption	1.8 W	1.8 W	2.4 W	1.3 W	2W
	Max Power Dissipation	1.2 W	1.45 W	1.45 W	1.1 W	1.4 W
	Operation Indication	Green LED "PWR"	Green LED "PWR"	Green LED "PWR"	Green LED "PWR" Red LED "LF1"	Green LED "PWR"
	Input Function	Galvanic isolated transmitter power supply	Galvanic isolated transmitter power supply	Galvanic isolated transmitter power supply	Galvanic isolated current repeater	Galvanic isolated current repeater
Electrical Data	Input Type	0 to 20 mA or 4 to 20 mA	0 to 20 mA or 4 to 20 mA	0 to 20 mA or 4 to 20 mA	0 to 20 mA or 4 to 20 mA	0 to 20 mA or 4 to 20 mA
Dutu	Output (Channel A)	Output range will match input range (active or passive)	Output range will match input range (active)	Output range will match input range (active)	Output range will match input range (active)	Output range will match input range (active)
	Output Load Resistance Max (R _L)	1000Ω	450Ω	450Ω	800Ω	700Ω
	HART Compatible	Yes - transparent to HART	Yes - transparent to HART (output channel A)	Yes - transparent to HART	Yes - transparent to HART	Yes - transparent to HART
	Supply Voltage for Transmitter	≥ 16V at 20mA	≥ 16V at 20mA	≥ 16V at 20mA	-	-
	Output (Channel B)	-	Output range will match input range (active) (without HART)	Output range will match input range (active)	-	Output range will match input range (active)
	Operating Temperature				-20°C to 60°C	
Ambient	(Group Assembly) Operating Temperature	-20°C to 60°C [-4°F to 140°F]	-20°C to 60°C [-4°F to 140°F]	-20°C to 60°C [-4°F to 140°F]	[-4°F to 140°F] -20°C to 70°C	-40°C to 70°C [-40°F to 158°F]
Conditions	(Single Device Installation) Storage Temperature	-40°C to 80°C [-40°F to 176°F]	-40°C to 80°C [-40°F to 176°F]	-40°C to 80°C [-40°F to 176°F]	[-4°F to 158°F] -40°C to 80°C [-40°F to 176°F]	-40°C to 85°C [-40°F to 185°F]
	Degree of Protection	IP20	IP20	IP20	IP20	IP20
	Width	12.5 mm [0.49 in] (slim profile)	12.5 mm [0.49 in] (slim profile)	12.5 mm [0.49 in] (slim profile)	17.6 mm [0.69 in] (standard)	12.5 mm [0.49 in] (slim profile)
Mechanical	Mounting Type	DIN rail	DIN rail	DIN rail	DIN rail	DIN rail
Data	Wire Gauge Range	24 - 12 AWG	16 - 12 AWG			
	Mounting Position	Vertical or horizontal	Vertical or horizontal	Vertical or horizontal	Vertical or horizontal	Vertical or horizontal
	Weight	0.23 lb [103g]	0.24 lb [108g]	0.23 lb [105g]	0.25 lb [114g]	0.43 lb [195g]
		0.20 .2 [1009]	0.2 [1009]	0.20 .2 [1008]	2.20.0[11.18]	00.0[1009]

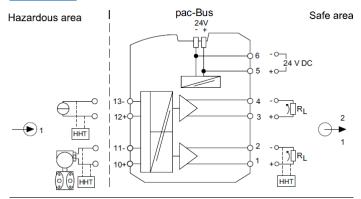
STAHL Intrinsically Safe Isolators Analog



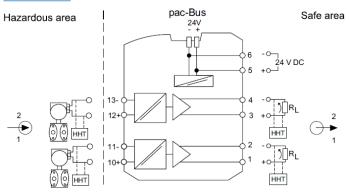
Connection Diagrams

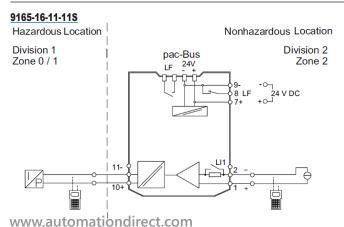


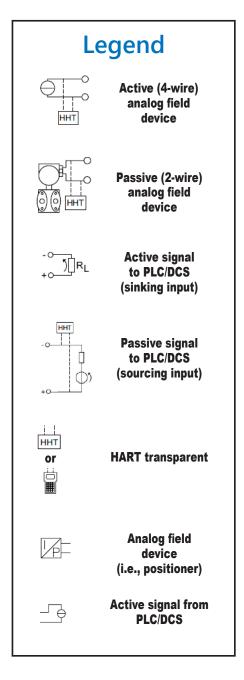
9260-19-11-10S

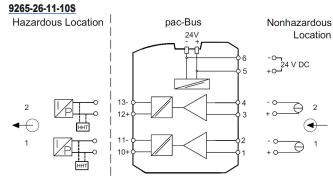


9260-23-11-10S









STAHL Intrinsically Safe Isolators Digital Input

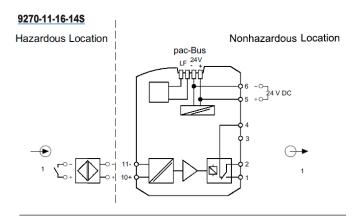


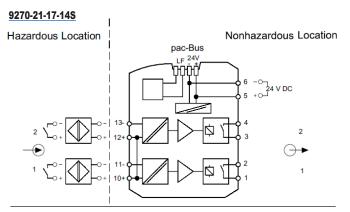
	S1	TAHL Digital Inpu	t Intrinsically S	afe Isolators Spe	cifications	
		<u>9270-11-16-14S</u>	<u>9170-11-13-218</u>	<u>9270-21-17-14S</u>	<u>9170-21-12-218</u>	9172-20-11-00S
Isolator Typ	9	Switching repeater (1 channel)	Switching repeater (1 channel)	Switching repeater (2 channel)	Switching repeater (2 channel)	Ex i relay module (2 channel)
	Installation Location (per NEC 500)	Class I, Division 2	Safe area	Class I, Division 2	Safe area	Class I, Division 2
	Ex Interface (per NEC 500)	Class I, II, III Division 1 or 2	Class I, II, III Division 1 or 2	Class I, II, III Division 1 or 2	Class I, II, III Division 1 or 2	Class I, II, III Division 1 or 2
Explosion Protection	Agency Approvals	ATEX (IBE), Canada / USA (UL), IECEx (IBE), SIL (exida)	ATEX (BVS) Canada /USA (FM and UL) EAC (ENDCE), IECEX (BVS), SIL (exida), along with Brazil, India, and Korea	ATEX (IBE), Canada / USA (UL), IECEx (IBE), SIL (exida)	ATEX (BVS) Canada /USA (FM and UL) EAC (ENDCE), IECEx (BVS), SIL (exida), along with Brazil, India, and Korea	ATEX (BVS), Canada (FM), EAC (ENDCE), IECEx (BVS), India (PESO), SIL (exida), USA (FM), USA (UL)
	Max Voltage (U ₀)	9.6 V	9.6 V	9.6 V	9.6 V	30V
Safety Data	Max Current (I _O)	10mA	10mA	10mA	10mA	150mA
	Max Power (P ₀)	25mW	24mW	25mW	24mW	1.3 W
Functional Safety	Safety Integrity Level (SIL)	2	2	2	2	2
-	Number of Channels	1 in / 1 out	1 in / 2 out	2 in / 2 out	2 in / 2 out	2 in / 2 out
	Line Fault Detection Relay	Yes - via pac-Bus (requires <u>9294-31-12</u>)	No	Yes - via pac-Bus (requires <u>9294-31-12</u>)	No	No
	Auxiliary Power Range	19.2 to 30VDC	96 to 253 VAC	19.2 to 30VDC	96 to 253 VAC	No aux power
	Nominal Current	21mA	12mA	35mA	18mA	_
	Power Consumption	0.65 W	1.8 W	1.0 W	2.8 W	12 V (<16 mA) 24-30 V (<11 mA)
	Max Dissipation	0.65 W	1.3 W	1.0 W	2W	0.4W
	Operation Indication	Green LED "PWR" Red LED "LF" Yellow LED "OUT"	Green LED "PWR" Red LED "LF" Yellow LED "OUT"	Green LED "PWR" (2) Red LED "LF" (2) Yellow LED "OUT"	Green LED "PWR" (2) Red LED "LF" (2) Yellow LED "OUT"	(2) Yellow LED "OUT"
Electrical Data	Input Function	Galvanic isolated switching Repeater	Galvanic isolated switching Repeater	Galvanic isolated switching repeater	Galvanic isolated switching repeater	Intrinsically safe interposing relay
	Input Type	NAMUR sensor or dry contacts	NAMUR sensor or dry contacts	NAMUR sensor or dry contacts	NAMUR sensor or dry contacts	Intrinsically safe coil (14 to 30 V)
	Output (Channel A)	1 changeover contact (SPDT relay)	2 changeover contacts (2 SPDT relays)	1 NO relay (max 250V / 2A)	1 changeover contact (SPDT relay)	1 changeover contact (SPDT relay)
	HART Compatible	No	No	No	No	No
	Output Min Load	5V / 10mA	12V / 0.1 mA	5V / 10mA	12V / 0.1 mA	1V / 1mA
	Output Max Load	250 VAC / 2A 30 VDC / 2A	250VAC / 4A 250VDC / 2A	250 VAC / 2A 30 VDC / 2A	250VAC / 4A 250VDC / 2A	250VAC / 4A* 30VDC / 4A *In case of Zone 2, max = 125V AC/DC
	Output (Channel B)	-	-	1 NO relay	1 changeover contact (SPDT relay)	1 changeover contact (SPDT relay)
	Operating Temperature (Group Assembly)	-20°C to 60°C	-20°C to 65°C [-4°F to 149°F]	-20°C to 60°C	-20°C to 60°C [-4°F to 140°F]	-20°C to 60°C [-4°F to 140°F]
Ambient Conditions	Operating Temperature (Single Assembly)	[-4°F to 140°F]	-20°C to 70°C [-4°F to 158°F]	[-4°F to 140°F]	-20°C to 70°C [-4°F to 158°F]	-20°C to 70°C [-4°F to 158°F]
	Storage Temperature	-40°C to 80°C [-40°F to 176°F]	-40°C to 80°C [-40°F to 176°F]	-40°C to 80°C [-40°F to 176°F]	-40°C to 80°C [-40°F to 176°F]	-40°C to 80°C [-40°F to 176°F]
	Degree of Protection	IP20	IP20	IP20	IP20	IP20
	Width	12.5 mm [0.49 in] (slim profile)	17.6 mm [0.69 in] (standard)	12.5 mm [0.49 in] (slim profile)	17.6 mm [0.69 in] (standard)	17.6 mm [0.69 in] (standard)
Mechanical Data	Mounting Type	DIN rail	DIN rail	DIN rail	DIN rail	DIN rail
	Wire Gauge Range	16 - 12 AWG	24-14 AWG	16 - 12 AWG	24-14 AWG	16 - 12 AWG
	Mounting Position	Vertical or horizontal	Vertical or horizontal	Vertical or horizontal	Vertical or horizontal	Vertical or horizontal
	Weight	0.22 lb [99g]	0.4 lb [180g]	0.24 lb [109g]	0.5 lb [225g]	0.25 lb [112g]

STAHL Intrinsically Safe Isolators Digital Input

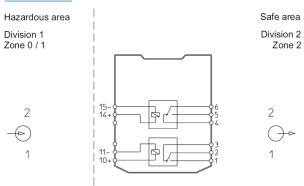


Connection Diagrams

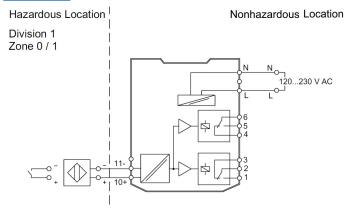




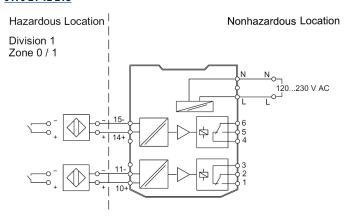
9172-20-11-008



9170-11-13-21S



9170-21-12-21S



STAHL Intrinsically Safe Isolators Digital Output



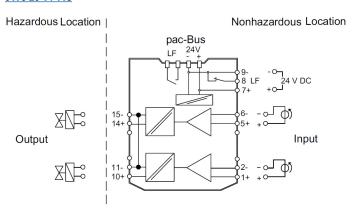
	STAHL Digital (Output Intrinsically Safe Isolators Sp	ecifications
		9275-10-24-48-11S	<u>9175-20-14-118</u>
solator Type		Digital output	Digital output
	Installation Location (per NEC 500)	Class I, Division 2	Class I, Division 2
Explosion Protection	Ex Interface (for intrinsically safe interface) (per NEC 500)	Class I, II, III Division 1 or 2	Class I, II, III Division 1 or 2
	Agency Approvals	ATEX (IBE), Canada / USA (UL), IECEx (IBE), SIL (BVS)	ATEX (IBE) Canada (FM) USA (FM/UL), EAC (ENDCE), IECEx(BVS), SIL(exida), along with Brazil, India, and Korea
	Max Voltage (U ₀)	27.06 V	19.6 V
Safety Data	Max Current (I _O)	91.11 mA	150mA per individual channel 300mA if both channels are in parallel
	Max Power (P ₀)	616mW	732mW per individual channel 1464mW if both channels are in parallel
Functional Safety	Safety Integrity Level (SIL)	3	3
	Number of Channels	1 in / 1 out	2
	Line Fault Detection Relay	Yes	Yes
	Auxiliary Power Range	19.2 to 30VDC	18 to 31.2 VDC
	Nominal Current	90mA	140mA
	Power Consumption	2.16 W	3.4 W
	Max Power Dissipation	1.62 W	2.4 W
	Operation Indication	Green LED "PWR" Red LED "LF" Yellow LED "STAT"	Green LED "PWR" Red LED "LF"
	Input Function	Galvanic isolated discrete output	Galvanic isolated discrete output
Electrical Data	Input Type	15 to 30 V for ON 0 to 5 V for OFF	15 to 31.2 V for ON 0 to 5 V for OFF
	Output (Channel A)	Open circuit: 24.3 V 48mA at 9.7 V	Open circuit: 17.5 V 42mA at 12V
	HART Compatible	No	No
	Output Min Load	-	-
	Output Max Load	24.3 V (open circuit) Max current = 48 mA	17.5 V (open circuit) Max current = 45 mA
	Output (Channel B)	-	Open circuit: 17.5 V 42mA at 12V
	Parallel Output (Channel A+B)	-	Open circuit: 17.5 V 84mA at 12V
	Operating Temperature (Group Assembly)	-20°C to 60°C [-4°F to 140°F]	-20°C to 60°C [-4°F to 140°F]
Ambient Conditions	Operating Temperature (Single Device Installation)	-20 6 10 00 6 [-4 1 10 140 1]	-20°C to 70°C [-4°F to 158°F]
	Storage Temperature	-40°C to 80°C [-40°F to 176°F]	-40°C to 80°C [-40°F to 176°F]
	Degree of Protection	IP20	IP20
	Width	12.5 mm [0.49 in] (slim profile)	17.6 mm [0.69 in] (standard)
Analoguia I B	Mounting Type	DIN rail	DIN rail
Mechanical Data	Wire Gauge Range	16 - 12 AWG	24 to 14 AWG
	Mounting Position	Vertical or horizontal	Vertical or horizontal
	Weight	0.21 lb [93 g]	0.42 lb [190g]

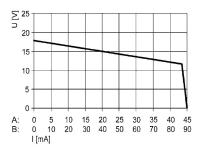
STAHL Intrinsically Safe Isolators Digital Output



Connection Diagrams

9175-20-14-11S



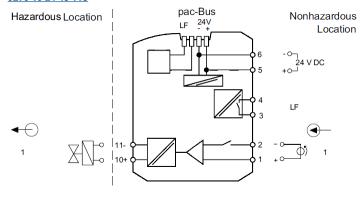


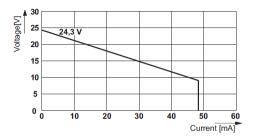
Output characteristic 9175/.0-14-11, 9176/.0-14-00 X-axis (I [mA])

A: Characteristic curve for each channel

B: Characteristic curve channel 1 parallel with channel 2

9275-10-24-48-118





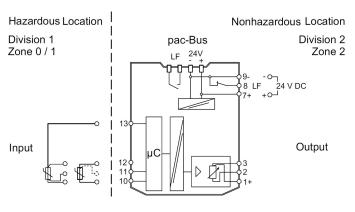
STAHL Intrinsically Safe Isolators RTD Repeater



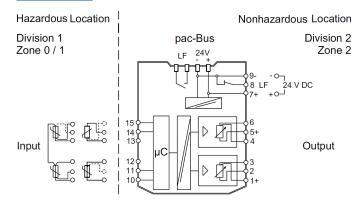
	STAHL Intrinsically	Safe Isolators RTD Repeater Spo	ecifications	
		<u>9180-10-77-118</u>	<u>9180-20-77-118</u>	
Isolator Type		RTD repeater	RTD repeater	
	Installation Location (per NEC 500)	Class I, Division 2	Class I, Division 2	
Explosion	Ex Interface (for intrinsically safe interface) (per NEC 500)	Class I, II, III Division 1 or 2	Class I, II, III Division 1 or 2	
Protection	Agency Approvals	ATEX (BVS), Brazil (ULB), Canada (FM), EAC (ENDCE), IECEx (BVS), India (PESO), Korea (KTL), Russia (Meteorological certificate), USA (FM)	ATEX (BVS), Brazil (ULB), Canada (FM), EAC (ENDCE), IECEx (BVS), India (PESO), Korea (KTL), Russia (Meteorological certificate), USA (FM)	
	Max Voltage (U ₀)	6.5 V	6.5 V	
Safety Data	Max Current (I _o)	16.4 ma	16.4 ma	
	Max Power (P _O)	27mw	27mw	
Functional Safety	Safety Integrity Level (SIL)	-	-	
	Number of Channels	1 in / 1 out	2 in / 2 out	
	Line Fault Detection Relay	Yes	Yes	
	Auxiliary Power Range	18 to 31.2 VDC	18 to 31.2 VDC	
	Nominal Current	27mA	37mA	
	Power Consumption	0.65 W	0.89 W	
	Max Power Dissipation	0.6 W	0.72 W	
Electrical Data	Operation Indication	Green LED "PWR" and Red LED "LF"	Green LED "PWR" and Red LED "LF"	
	Input Function	2-wire, 3-wire, or 4-wire circuits	2-wire, 3-wire, or 4-wire circuits	
	Resistance Temperature Detector (RTD) Input Type	PT 100	PT 100	
	Measuring range	18 to 391Ω	18 to 391Ω	
	HART Compatible	No	No	
	Output	Equal to input signal (resistor)	Equal to input signal (resistor)	
	Operating Temperature (Group Assembly)	-20°C to 60°C [-4°F to 140°F]	-20°C to 60°C [-4°F to 140°F]	
Ambient Conditions	Operating Temperature (Single Device Installation)	-20°C to 70°C [-4°F to 158°F]	-20°C to 70°C [-4°F to 158°F]	
	Storage Temperature	-40°C to 80°C [-40°F to 176°F]	-40°C to 80°C [-40°F to 176°F]	
	Degree of Protection	IP20	IP20	
	Width	17.6 mm [0.69 in] (standard)	17.6 mm [0.69 in] (standard)	
ManhaniadDei	Mounting Type	DIN rail	DIN rail	
Mechanical Data	Wire Gauge Range	16 - 12 AWG	16 - 12 AWG	
	Mounting Position	Vertical or horizontal	Vertical or horizontal	
	Weight	0.35 lb [160g]	0.4 lb [180g]	

Connection Diagrams

9180-10-77-11S



9180-20-77-118



STAHL Intrinsically Safe Isolators Temperature Converter

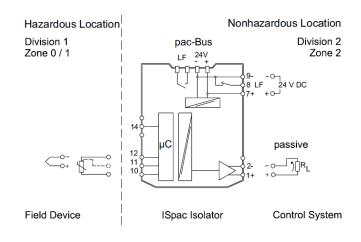


OTALII I I I O (I I I I							
	AHL Intrinsically						
lemp	erature Converte	r Specifications					
		Thermal Input					
		<u>9182-10-51-11S</u>					
Isolator Type		Temperature transmitter					
Explosion Protection	Installation Location (per NEC 500)	Class I, Division 2					
	Ex Interface (for intrinsically safe interface) (per NEC 500)	Class I, II, III Division 1 or 2					
	Agency Approvals	ATEX (BVS), Brazil (ULB), Canada (FM), EAC (ENDCE), IECEx (BVS), India (PESO), Korea (KTL), Russia (Meteorological certificate), USA (FM), USA (UL)					
	Max Voltage (U ₀)	6.5 V					
Safety Data	Max Current (I _O)	19.7 mA					
	Max Power (P ₀)	32mW					
Functional Safety Safety Integrity Level (SIL)		-					
	Number of Channels	1 in / 1 out					
	Line Fault Detection Relay	Yes					
	Auxiliary Power Range	18 to 31.2 VDC					
	Nominal Current	70mA					
	Power Consumption	1.9 W					
	Max Power Dissipation	1.9 W					
	Operation Indication	Green LED "PWR" Red LED "LF"					
	Input Function	2 wire circuits, 3 wire circuits, or 4 wire circuits					
Electrical Data	Thermocouple Input Type	B, E, J, K, N, R, T (Part <u>9191-VS-05</u> is required)					
	Resistance Temperature Detector (RTD) Input Type	PT 100					
	HART Compatible	No					
	Supply Voltage for Transmitter	Sensor current potentiometer < 0.25 mA					
	Output	0 to 20 mA or 4 to 20 mA (active)					
	Output Load Resistance Max (R _L)	750Ω					
Ambiant	Operating Temperature (Group Assembly)	-20°C to 60°C [-4°F to 140°F]					
Ambient Conditions	Operating Temperature (Single Device Installation)	-20°C to 70°C [-4°F to 158°F]					
	Storage Temperature	-40°C to 80°C [-40°F to 176°F]					
	Degree of Protection	IP20					
	Width	17.6 mm [0.69 in] (standard)					
Mechanical Data	Mounting Type	DIN rail					
mechanicai Dala	Wire Gauge Range	16 - 12 AWG					
	Mounting Position	Vertical or horizontal					
	Weight	0.28 lb [126 g]					



Connection Diagram

9182-10-51-11S



STAHL Temperature Converter Isolators Accessories Selection Guide					
Part Number	Price	Description	Weight		
9191-VS-05	\$053?2:	External reference junction (cold junction compensation [CJC]) is required for thermocouple applications	0.19 oz [5 g]		



External reference junction (CJC) is required for thermocouple applications with 9182-10-51-11S

STAHL Intrinsically Safe Isolators Configuration Set



ISpac Wizard Software and Configuration Set

The 9199-20-02 configuration set allows serial communication between a PC and an isolator via the included USB-to-Serial Converter.

This set-up allows for quick programming. The software is provided on an included USB drive or as a free download. The software allows the user to save configuration files easily so that the same configuration can be duplicated on multiple cards. Windows operating system is required

The configuration set will work with the following safety isolators:

- 9182 series Temperature Converter Isolator (for thermocouple applications)
- 9146 series Frequency Transmitter Isolator



Configuration Set Selection Guide					
Part Number	Part Number Price Description				
9199-20-02 \$0500a: STAHL configuration set, for use with STAHL 9146 and 9182 isolators.					

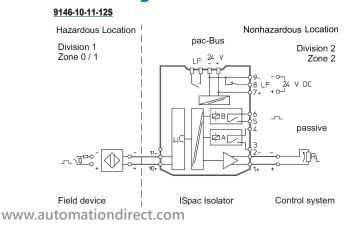
STAHL Intrinsically Safe Isolators Frequency Converter



	STAHL Intrinsically Safe	Isolators Frequency Converter S	Specifications*
		9146-10-11-12S	<u>9146-20-11-118</u>
Isolator Type		Frequency converter (1 channel)	Frequency converter (2 channel)
	Installation Location (per NEC 500)	Class I, Division 2	Class I, Division 2
Explosion Protection	Ex Interface (for intrinsically safe interface) (per NEC 500)	Class I, II, III Division 1 or 2	Class I, II, III Division 1 or 2
Totection	Agency Approvals	ATEX (BVS), Canada (FM), EAC (ENDCE), IECEx (BVS), India (PESO), USA (FM)	ATEX (BVS), Canada (FM), EAC (ENDCE), IECEx (BVS), India (PESO), USA (FM)
	Max Voltage (U _o)	10.5 V	10.5 V
Safety Data	Max Current (I _o)	23.4 mA	23.4 mA
	Max Power (P _O)	61.4 mW	61.4 mW
Functional Safety	Safety Integrity Level (SIL)	-	-
	Number of Channels	1 in / 1 out with two configurable dry contacts	2 in / 2 out
	Line Fault Detection Relay	Yes	Yes
	Auxiliary Power Range	18 to 31.2 VDC	18 to 31.2 VDC
	Nominal Current	55mA	75mA
	Power Consumption	1.32 W	1.8 W
	Max Power Dissipation	1.1 W	1.5 W
	Operation Indication	Green LED "PWR" Red LED "LF" Yellow LED "STAT"	Green LED "PWR" (2) Red LED "LF" (2) Yellow LED "STAT"
Electrical Data	Input Function	Galvanic isolated frequency converter	Galvanic isolated frequency converter
	Input Type	NAMUR sensor or voltage pulses (not to be used with magnetic pickup sensors)	NAMUR sensor or voltage pulses (not to be used with magnetic pickup sensors
	Frequency Range	0.001 Hz to 20kHz	0.001 Hz to 20kHz
	HART Compatible	No	No
	Output (Channel A)	0-20 mA or 4-20 mA (active) with two configurable dry contacts	0-20 mA or 4-20 mA (active)
	Output Load Resistance Max (R _L)	600Ω	600Ω
	Output (Channel B)	-	0-20 mA or 4-20 mA (active)
	Operating Temperature (Group Assembly)	-40°C to 60°C [-40°F to 140°F]	-40°C to 60°C [-40°F to 140°F]
Ambient Conditions	Operating Temperature (Single Device Installation)	-40°C to 70°C [-40°F to 158°F]	-40°C to 70°C [-40°F to 158°F]
	Storage Temperature	-40°C to 80°C [-40°F to 176°F]	-40°C to 80°C [-40°F to 176°F]
	Degree of Protection	IP20	IP20
	Width	17.6 mm [0.69 in] (standard)	17.6 mm [0.69 in] (standard)
Machanical Data	Mounting Type	DIN rail	DIN rail
Mechanical Data	Wire Gauge Range	24 - 14 AWG	24 - 14 AWG
	Mounting Position	Vertical or horizontal	Vertical or horizontal
	Weight	0.28 lb [125g]	0.3 lb [135g]

^{*} The 9146 series frequency converter requires configuration using the 9199-20-02 cable and software.

Connection Diagrams



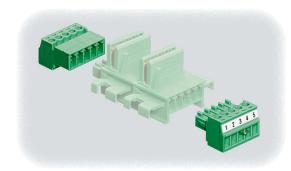
Hazardous Location Division 1 Zone 0 / 1 Pac-Bus Division 2 Zone 2 B LF 24 V DC 71 Passive passive 1 14 V DC 71 Passive Field device ISpac Isolator Control system

Safety Electrical Components

tESC-458

STAHL Intrinsically Safe Isolators Accessories – pac-Bus System





Benefits of Using the pac-Bus System

- · Quick, easy wiring
- Can be installed on standard DIN rail without tools by simply snapping into place
- Can be expanded at any time with additional pac-Bus units
- Suitable for industrial environments subject to vibration
- Optional power supply module 9193 enables refused redundant 24VDC supply and fault signalization

STA	STAHL Intrinsically Safe Isolators Accessories (pac-Bus System) Selection Guide								
Part Number	mber Price Description Weight Drawing								
9194-50-01	\$;;4,6!:	End terminal set for pac-Bus system 0.29 oz [8 g]							
9294-31-12	\$;4,73:	pac-Bus terminal for 92xx (12.5 mm [0.49 in] width) isolators 0.16 oz [5 g]							
9194-31-17	\$;4,74:	pac-Bus terminal for 91xx (17.6 mm [0.69 in] width) isolators 0.16 oz [5 g]							
9193/21-11-11S	\$;;06f4,:	pac-Bus supply module 0.4 lb [180g] PDF							
<u>111412</u>	\$;6f55:	Qty 10 spare fuses for use with pac-Bus supply module	0.07 lb [2g]	<u>PDF</u>					





9294-31-12



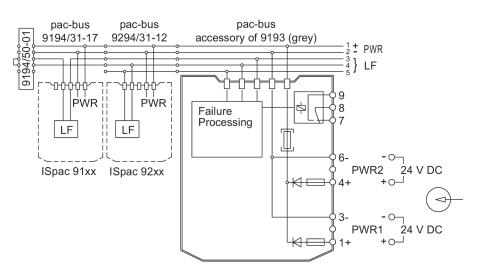
9194-31-17





9193/21-11-11S

Connection Diagram





Refer to installation instructions for details

STAHL Intrinsically Safe Isolators Accessories – pac-Bus System



	STAHL	pac-Bus Supply Module Specifications
		<u>9193/21-11-118</u>
	Installation Location (per NEC 500)	Class I, Division 2
Explosion Protection	Ex Interface (for intrinsically safe interface) (per NEC 500)	Class I, II, III Division 1 or 2
	Agency Approvals	ATEX (BVS), Canada (FM), China (NEPSI), IECEx (BVS), India (PESO), USA (FM)
	Power Supply	24VDC 4A, primary and redundant
Electrical Data	AuxiliaryPower Voltage Range	18.0 to 31.2 VDC
	Max Power Dissipation	2.5 W
Ambient	Operating Temperature	-40°C to 55°C [-40°F to 131°F]
Conditions Storage -40°C to 80°C Temperature [-40°F to 176°F]		
	Degree of Protection	IP20
Mechanical Data	Mounting Type	DIN rail
	Wire Gauge Range	16AWG for terminals 12AWG for ground connections





9002-77-093-300001

Overview

The Zener Barrier provides intrinsically safe operation of thermocouple applications or any other intrinsically safe device that falls within the safety data and electrical data parameters of the Zener Barrier.

This compact, space-saving device is easy to install on a DIN rail. Simply snapping the barrier onto a grounded DIN rail provides a connection to ground.

Features

- Space-saving design
- Easily grounded via the DIN rail
- Convenient grounding lugs on top and bottom of barrier
- Only one type of exchangeable fuse allows reduced stocking requirements and eliminates risk of errors during fuse replacement

The Zener Barrier must be grounded in accordance with Article 504/505 of the National Electrical Code or the Canadian Electrical Code, Part 1, whichever applies. There are multiple ways to ground the Zener Barrier:

- The DIN rail connection can provide a path to ground if the DIN rail is properly grounded.
- Ground the Zener Barrier by utilizing the top or bottom grounding lug.

Refer to the installation manual for full installation instructions. NOTE: An isolator barrier can be used if grounding is unavailable.

STAHL Intrinsically Safe Zener Barrier Selection Guide								
Part Number	Price	Signal Type	Field Device Example	Drawing				
9002-77-093-300001	\$05007:	Temperature input (mV signal)	Ungrounded thermocouple	PDF				
9002/13-280-110-001	\$;06f50:	Binary input (3-wire prox) Binary output 4-20 mA input or output	PNP prox sensor, solenoid valve, indicators 4-20 mA transmitter 4-20 mA positioner	PDF				
9002/11-280-186-001	\$;06f51:	Binary input (NPN sensors or dry contacts)	Dry contact NPN prox sensor	PDF				
9002/22-158-200-001	\$;06f52:	11V pulse train	15.8 entity parameter	PDF				
9002/22-240-024-001	\$;06f53:	18V pulse train	24V entity parameter	PDF				
9002/11-130-360-001	\$;;06f4!:	Strain gauge	Load cell, 10VDC excitation	PDF				
9002/11-120-024-001	\$;06f4?:	Strain gauge	Load cell, 10VDC signal	PDF				

Replacement Fuses

STAHL Zener Barrier Replacement Fuses				
Selection Guide				
Part Number	ber Price Quantity Per Package		For Use With	
<u>158964</u>	\$500d:	5	STAHL Zener Barriers	

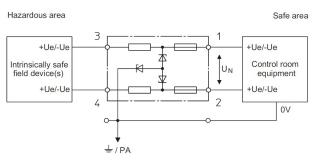




		STAH	L Intrinsical	y Safe Zene	r Barrier Spe	cifications			
9002-77-093- 300001 9002/13-280- 110-001 9002/11-280- 186-001 9002/22-158- 200-001 9002/22-240- 024-001 9002/11-130- 360-001								9002/11-120- 024-001	
	Installation Location (per NEC 500)	Class I, Division 2							
Explosion Protection	Ex Interface (for intrinsically safe interface) (per NEC 500)				Class I, II, III Division 1 or 2				
	Agency Approvals	ATEX (PTB),	Brazil (ULB), Canada	(FM), China (CQST),	IECEx (PTB), India (F	PESO), Japan (CML),	Korea (KGS), USA (F	M), USA (UL)	
	Max Voltage (V _{oc})	9.3 V	28.0 V	28.0 V	7.9 V	12.0 V	13.0 V	12.0 V	
Safety Data*	Max Current (I _{SC})	150mA	107mA	93mA	100mA	12mA	321mA	12mA	
	Max Power (P ₀)	350mW	749mW	650mW	198mW	40mW	1040mW	40mW	
	Number of Channels	2 in / 2 out (or 1 thermocouple in/ out)	2 in / 2 out (or 1 combined in/out)	2 in / 2 out (or 1 combined in/out)	2 in / 2 out (or 1 combined in/out)	2 in / 2 out (or 1 combined in/out)	2 in / 2 out (or 1 combined in/out)	2 in / 2 out (or 1 combined in/out)	
	Nominal Voltage (V _{nom})	6.00 V	24.00 V	25.00 V	5.5 V	9.00 V	10.00 VDC	9.00 V	
Electrical Data	Min Resistance (R _{min})	71.7 Ω	270Ω	322Ω	84Ω	1051Ω	46Ω	1052Ω	
	Max Resistance (R _{max})	81.5 Ω	296Ω	359Ω	95Ω	1164Ω	52Ω	1165Ω	
	Output				Equal to input signal				
Ambient	Operating Temperature				-20°C to 60°C [-4°F to 140°F]				
Conditions	Storage Temperature	-20°C to 75°C [-4°F to 167°F]							
	Degree of Protection		IP20						
Mechanical Data	Mounting Type				DIN rail				
	Wire Gauge Range			12A\	16AWG for terminals NG for ground connec				

^{*} These safety data values are for one of two channels.

Connection Diagram for 9002-77-093-300001



Two-channel safety barriers, star barrier / star barrier

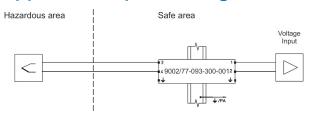
The Zener Barrier must be grounded in accordance with Article 504/505 of the National Electrical Code or the Canadian Electrical Code, Part 1, whichever applies. There are multiple ways to ground the Zener Barrier:

- The DIN rail connection can provide a path to ground if the DIN rail is properly grounded.
- Ground the Zener Barrier by utilizing the top or bottom grounding lug.

Refer to the installation manual for full installation instructions. NOTE: An isolator barrier can be used if grounding is unavailable.

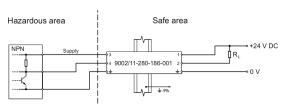


Application-Specific Diagrams



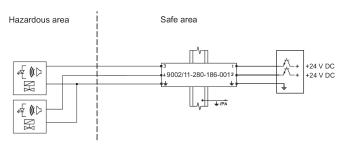
Application: Thermocouples

9002-77-093-300001



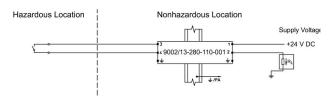
Application: 3-wire NPN inputs (negative switching) of proximity switches, photocells and encoders

9002/11-280-186-001



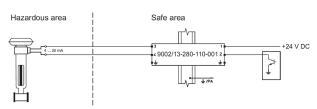
Application: Discrete 2-wire output for solenoid valves, LEDs and signalling devices

9002/11-280-186-001



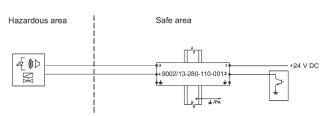
Application: Use of potential-free contacts

9002/13-280-110-001



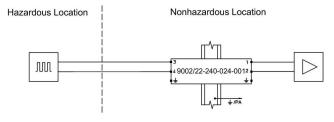
Application: 2-wire 4 to 20 mA I/P converters and control valves – standard and HART, 4 to 20 mA

9002/13-280-110-001



Application: Discrete 2-wire output for solenoid valves, LEDs and signalling devices

9002/13-280-110-001



Application: Voltage pulse inputs

9002/22-240-024-001 or 9002/22-158-200-001

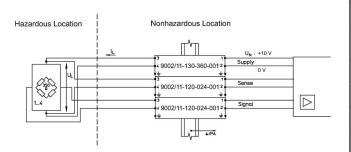
The Zener Barrier must be grounded in accordance with Article 504/505 of the National Electrical Code or the Canadian Electrical Code, Part 1, whichever applies. There are multiple ways to ground the Zener Barrier:

- The DIN rail connection can provide a path to ground if the DIN rail is properly grounded.
- Ground the Zener Barrier by utilizing the top or bottom grounding lug.

Refer to the installation manual for full installation instructions. NOTE: An isolator barrier can be used if grounding is unavailable.



Application-Specific Diagrams, continued



9002/11-130-360-001 with two 9002/11-120-024-001

The Zener Barrier must be grounded in accordance with Article 504/505 of the National Electrical Code or the Canadian Electrical Code, Part 1, whichever applies. There are multiple ways to ground the Zener Barrier:

- The DIN rail connection can provide a path to ground if the DIN rail is properly grounded.
- Ground the Zener Barrier by utilizing the top or bottom grounding lug.

Refer to the installation manual for full installation instructions.

NOTE: An isolator barrier can be used if grounding is unavailable.

	Operating	Data		
Operating Voltage		V _{nom}	= 10V	
Maximum Resistance of the Zener Barrier	$R_{\text{max}} = 2 \times 52\Omega = 104\Omega$			
Number of Load Cells		35	50Ω	
Connected in Parallel	R _{sum} (Ω)	V _L (V)	I _L (mA)	
1	454.0	7.7	22.0	
2	279.0	35.8		
3	220.7	45.3		
4	191.5 4.6 52.2			
Safety Data				
Maximum Voltage	V _{OC} / U _O = max (13V; 12V; 12V) = 13V			
Maximum Current	I _{SC} / I _O =	360ma+24	4mA + 24mA = 408mA	
Maximum Power	P _O = 1070	0mW+70m	W+70mW = 1210mW	
Acco	rding to El	N 60079-1	1	
Maximum Permissible		A, B, E	C, D, F, G	
External Inductance	L _a /L _o	or IIC	or IIB	
		0.18 mH	1.45 mH	
Martin or Brooks 9.1		A, B, E	C, D, F, G	
Maximum Permissible External Capacitance	c _a /c _o	or IIC	or IIB	
		0.270 μF	1.64 μF	

Application Note

For 4-wire circuits (without sense) there is no need for the corresponding zener barrier. The operating data remains unchanged. The safety-relevant maximum current is reduced to $\rm I_{SC}$ / $\rm I_{O}$ = 384mA, and the maximum power to Po=1330mW.

RN22 Intrinsically Safe Analog Input Isolators



Part No. RN22-CB1A-LT

The Endress+Hauser RN22 intrinsically safe isolation barriers provide galvanic isolation and intrinsically safe transmission of 0/4 to 20 mA analog signals from process instruments located in hazardous locations to the control system located in a non-hazardous location. The RN22 can accept current input from 2-wire or 4-wire process instruments or transmitters and includes an internal power supply output for loop-powered transmitters. The output signal is 0/4-20mA and equal to the input signal. Models are available in 1-channel, 2-channel, or signal doubler configurations with either screw terminals or push-in terminals. Bidirectional transmission of digital HART communication signals is possible and includes connection lugs on the front for HART communicator devices. The RN22 is powered from a nominal 24VDC power supply.

Applications

- 1- or 2-channel or signal doubler analog input isolation barrier
- Transmission and galvanic isolation of analog 0/4 to 20 mA signals, intrinsically safe from the hazardous
- · HART transparent: allows bidirectional transmission of digital HART communication signals
- For ambient temperatures -40 to +60°C (-40 to 140°F)

Features

- Input 0/4 to 20 mA with internal power supply for loop-powered transmitters
- Output 0/4 to 20 mA
- Connection lugs integrated on front for HART
- Simple and quick wiring with either screw or push-in terminals
- Compact housing width: 12.5 mm (0.49 in)







	RN22 Intrinsically Safe Analog Input Isolators															
Part Number	Input	Output	Operating Voltage	Connection	Pcs/Pkg	Wt(lb)	Price	Vendor QSG	Vendor Manual	Drawing Link						
RN22-CB1A-LT	0-20 mA or	0-20 mA or		Screw terminals	1	0.45	\$-06c9I:			PDF						
RN22-CB1B-LT	4-20 mA	4-20 mA		Push-in terminals	1	0.45	\$06c9p:			PDF						
RN22-CB2A-LT	(2) 0-20 mA or	(2) 0-20 mA or	40.04-20.7/00	Screw terminals	1	0.45	\$06c9n:	DDE	DDE	PDF						
RN22-CB2B-LT		(2) 4-20 mA	(2) 4-20 mA	(2) 4-20 mA	(2) 4-20 mA	(2) 4-20 mA	(2) 4-20 mA	20 mΔ 19.2 to 30 VDC	19.2 to 30 VDC	Push-in terminals	1	0.45	\$06c9q:	PDF	PDF	PDF
RN22-CB3A-LT	0-20 mA or	(2) 0-20 mA or		Screw terminals	1	0.45	\$06c9o:			PDF						
RN22-CB3B-LT	4-20 mA	`(2) 4-20 mA		Push-in terminals	1	0.45	\$-06c9i:			<u>PDF</u>						

For additional details and information, refer to the vendor Quick Start Guide and Manual.

RN22 Intrinsically Safe Analog Input Isolator Specifications							
	Input						
Input Data, Measuring	Input signal range (underrange / overrange	0 to 22 mA					
	Function range, input signal	0/4 to 20 mA					
Range	Input voltage drop signal for 4-wire connection	< 7V at 20 mA					
	Transmitter supply voltage	17.5 V ± 1V at 20 mA Open-circuit voltage: 24.5 V ± 5%					
		Output					
	Output signal range (underrange / overrange)	0 to 22 mA					
	Function range, output signal	0/4 to 20 mA					
	Transmission behavior	1:1 to input signal					
	NAMUR NE 43	A current at the input that is valid according to NAMUR NE 43 is transmitted to the output (within the specified measuring uncertainty range)					
Output Data	Maximum load, active mode	≤ 500Ω					
	Open-circuit voltage, active mode	17.5 V (± 5%)					
	Maximum load, passive mode	Rmax = (Uext - 2 V) / 0.022 A					
	External voltage, passive mode	Uext = 12 to 30 V					
	Transmissible communication protocols	HART					



RN22 Intrinsically Safe Analog Input Isolators

RN22 Intrinsically Safe Analog Input Isolator Specifications Continued						
	Output Continued					
Signal On Alarm	Line break in input	Input 0mA / output 0mA				
	Line short circuit in input	Input > 22mA/ output > 22mA				
Galvanic Isolation	Power supply / input; power supply / output Input / output; output / output	Testing voltage: 3,000 VAC 50Hz, 1 min				
	Input / input	Testing voltage: 500VAC 50Hz, 1 min				
Power Supply*						
	Supply voltage	24VDC (-20% / +25%)				
	Supply current to the DIN rail bus connector	max. 400mA				
Performance Characteristics	Power consumption at 24 VDC	1-channel: ≤ 1.5 W (20 mA) / ≤ 1.6 W (22mA) 2-channel: ≤ 3 W (20 mA) / ≤ 3.2 W (22mA) Signal doubler: ≤ 2.4 W (20 mA) / ≤ 2.5 W (22mA)				
	Current consumption at 24 VDC	1-channel: ≤ 0.07 A (20 mA) / ≤ 0.07 A (22mA) 2-channel: ≤ 0.13 A (20 mA) / ≤ 0.14 A (22mA) Signal doubler: ≤ 0.1 A (20 mA) / ≤ 0.11 A (22mA)				
	Power loss at 24 VDC	1-channel: ≤ 1.2 W (20 mA) / ≤ 1.3 W (22mA) 2-channel: ≤ 2.4 W (20 mA) / ≤ 2.5 W (22mA) Signal doubler: ≤ 2.1 W (20 mA) / ≤ 2.2 W (22mA)				
	Screw terminals Tightening torque: minimum 0.5	Rigid or flexible (Stripping length = 7 mm (0.28 in); cable cross-section 0.2 to 2.5 mm² (24 to 14 AWG)				
Terminals	Nm/maximum 0.6 Nm	Flexible with wire end ferrules (with or without plastic ferrule); cable cross-section 0.25 to 2.5 mm ² (24 to 14 AWG)				
Terminars	D. da in a da animala	Rigid or flexible (Stripping length = 10 mm (0.39 in); cable cross-section 0.2 to 2.5 mm² (24 to 14 AWG)				
	Push-in spring terminals	Flexible with wire end ferrules (with or without plastic ferrule); cable cross-section 0.25 to 2.5 mm ² (24 to 14 AWG)				
	Performance Characteristics					
Response Time	Step response (10 to 90 %)	≤ 1ms				
nesponse time	Step response (10 to 90 %) signal doubler output 2 HART filter	≤ 50ms				
Reference Operating Conditions	 Calibration temperature: +25°C ±3 K (77°F ± 5.4°F) Supply voltage: 24VDC Output load: 225Ω External output voltage (passive output): 20VDC Warm-up: > 1 hour 					
Maximum Measured	Transmission error	< 0.1 % / of full scale value (< 20μA)				
Error (Accuracies)	Temperature coefficient	< 0.01 % /K				
	Max. ±0.1 %/year (of full scale value)					
Long-Term Drift						
Long-Term Drift						
Long-Term Drift Mounting Location	The device is design	Max. ±0.1 %/year (of full scale value)				
		Max. ±0.1 %/year (of full scale value) Installation				
Mounting Location		Max. ±0.1 %/year (of full scale value) Installation and for installation on 35 mm (1.38 in) DIN rails in accordance with IEC 60715 (TH35).				
Mounting Location		Max. ±0.1 %/year (of full scale value) Installation and for installation on 35 mm (1.38 in) DIN rails in accordance with IEC 60715 (TH35). In position (horizontal or vertical) on the DIN rail without lateral clearance from neighboring devices.				
Mounting Location	The device can be installed in an	Max. ±0.1 %/year (of full scale value) Installation ded for installation on 35 mm (1.38 in) DIN rails in accordance with IEC 60715 (TH35). By position (horizontal or vertical) on the DIN rail without lateral clearance from neighboring devices. Environment				
Mounting Location	The device can be installed in an	Max. ±0.1 %/year (of full scale value) Installation led for installation on 35 mm (1.38 in) DIN rails in accordance with IEC 60715 (TH35). led position (horizontal or vertical) on the DIN rail without lateral clearance from neighboring devices. Environment -40 to 60°C (-40 to 140°F)				
Mounting Location DIN rail Installation	The device can be installed in an Ambient temperature range Storage temperature	Max. ±0.1 %/year (of full scale value) Installation led for installation on 35 mm (1.38 in) DIN rails in accordance with IEC 60715 (TH35). led for installation on vertical) on the DIN rail without lateral clearance from neighboring devices. Environment -40 to 60°C (-40 to 140°F) -40 to 80°C (-40 to 176°F)				
Mounting Location	Ambient temperature range Storage temperature Degree of protection	Max. ±0.1 %/year (of full scale value) Installation ded for installation on 35 mm (1.38 in) DIN rails in accordance with IEC 60715 (TH35). By position (horizontal or vertical) on the DIN rail without lateral clearance from neighboring devices. Environment -40 to 60°C (-40 to 140°F) -40 to 80°C (-40 to 176°F) IP 20				
Mounting Location DIN rail Installation	Ambient temperature range Storage temperature Degree of protection Overvoltage category	Max. ±0.1 %/year (of full scale value) Installation led for installation on 35 mm (1.38 in) DIN rails in accordance with IEC 60715 (TH35). Let y position (horizontal or vertical) on the DIN rail without lateral clearance from neighboring devices. Environment -40 to 60°C (-40 to 140°F) -40 to 80°C (-40 to 176°F) IP 20 II				
Mounting Location DIN rail Installation	Ambient temperature range Storage temperature Degree of protection Overvoltage category Pollution degree	Max. ±0.1 %/year (of full scale value) Installation ded for installation on 35 mm (1.38 in) DIN rails in accordance with IEC 60715 (TH35). By position (horizontal or vertical) on the DIN rail without lateral clearance from neighboring devices. Environment -40 to 60°C (-40 to 140°F) -40 to 80°C (-40 to 176°F) IP 20 II 2				

^{*} The data apply for the following operating scenario: input active / output active / output load 0 Ω. When external voltages are connected to the output, the power loss in the device can be reduced by connecting an external output load.

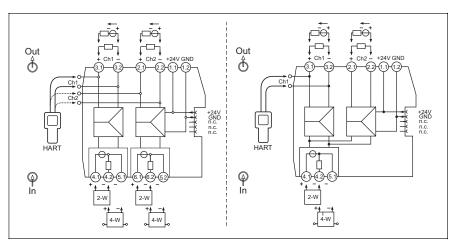


RN22 Intrinsically Safe Analog Input Isolators

RN22 Intrinsically Safe Analog Input Isolator Specifications Continued				
Environment Continued				
Maximum Temperature Change Rate		0.5 °C/min, no condensation permitted		
Shock and Vibration Resistance	Sinusoidal vibrations, in accordance with IEC 60068-2-6 • 5 to 13.2 Hz: 1 mm peak • 13.2 to 100 Hz: 0.7g peak			
Electromagnetic Compatibility (EMC)	CE compliance*	Electromagnetic compatibility in accordance with all the relevant requirements of the IEC/EN 61326 series and NAMUR Recommendation EMC (NE21). For details, refer to the Declaration of Conformity. • Maximum measured error < 1% of measuring range • Strong, pulse-like EMC interference can result in transient (< 1) deviations in the output signal (≥ ±1 %). • Interference immunity as per IEC/EN 61326 series, industrial requirements • Interference emission as per IEC/EN 61326 series (CISPR 11) Group 1 Class A		
Mechanical Construction				
Materials	Housing: polycarbonate (PC); flammability rating according to UL94: V-0			
	Certificates and approvals			
Agency Approvals		cULus (E225237), cCSAus (200600), CE		

^{*} This unit is not intended for use in residential environments and cannot guarantee adequate protection of the radio reception in such environments.

Wiring Diagrams



1- and 2-channel version (left), signal doubler (right)



Note: HART communicators can be connected to the HART connecting points. Ensure an adequate external resistance ($\geq 230\Omega$) in the output circuit. With the signal doubler model, the active barrier is used for the galvanic isolation of a 0/4 to 20 mA signal, which is transmitted to two galvanically isolated outputs

- Output 1 is HART-transparent. HART communication signals are transmitted bidirectionally between the input and output 1.
- As output 2 contains a HART filter, only the galvanically isolated analog 4 to 20 mA signal is transmitted.



Warning: Safety products sold by AutomationDirect are Safety components only.

The purchaser/installer is solely responsible for the application of these components and ensuring all necessary steps have been taken to assure each application and use meets all performance and applicable safety requirements and/or local, national and/or international safety codes as required by the application. AutomationDirect cannot certify that our products used solely or in conjunction with other AutomationDirect or other vendors' products will assure safety for any application.

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RN42 Intrinsically Safe Analog Input Isolators



Part No. RN42-CB1BO-LT

The Endress+Hauser RN42 intrinsically safe isolation barriers provide galvanic isolation and intrinsically safe transmission of 0/4 to 20 mA analog signals from process instruments located in hazardous locations to the control system located in a non-hazardous location. The RN42 can accept current input from a 2-wire or 4-wire process instrument or transmitter and includes an internal power supply output for loop-powered transmitters. The output signal is 0/4-20mA and equal to the input signal. Models are available in a 1-channel configuration with either screw terminals or push-in terminals. Bidirectional transmission of digital HART communication signals is possible and includes connection sockets on the front for HART communicator devices. The RN42 is powered from a wide range power supply of 19.2 to 253 VAC/DC.

Applications

- 1-channel analog input isolation barrier
- Transmission and galvanic isolation of analog 0/4 to 20 mA signals, intrinsically safe from the hazardous
- HART transparent: allows bidirectional transmission of digital HART communication signals
- For ambient temperatures -40 to +60°C (-40 to 140°F)

Features

- Wide 19.2 to 253 VAC/DC power supply range
- Input 0/4 to 20 mA with internal power supply for loop-powered transmitters
- Output 0/4 to 20 mA
- 2mm Connection sockets integrated on front for HART communicators
- · Simple and quick wiring with either screw or push-in terminals
- Compact housing width: 17.5 mm (0.69 in)







RN42 Intrinsically Safe Analog Input Isolators										
Part Number	Input	Output	Operating Voltage	Connection	Pcs/Pkg	Wt(lb)	Price	Vendor QSG	Vendor Manual	Drawing Link
RN42-CB1AO-LT	0-20 mA or 4-20 mA	0-20 mA or 4-20 mA	19.2 to 253 VAC/ VDC	Screw terminals	1	0.45	\$-06c9j:	- <u>PDF</u>	PDF -	<u>PDF</u>
RN42-CB1BO-LT				Push-in terminals	1	0.45	\$06c9k:			PDF
Ear additional details and information refer to the vander Quick Start Quick and Manual										

For additional details and information, refer to the vendor Quick Start Guide and Manual.

RN42 Intrinsically Safe Analog Input Isolator Specifications					
Input					
	Input signal range (underrange / overrange	0 to 22 mA			
Input Data, Measuring	Function range, input signal	0/4 to 20 mA			
Range	Input voltage drop signal for 4-wire connection	< 7V at 20 mA			
	Transmitter supply voltage	17.5 V \pm 1V at 20 mA Open-circuit voltage: 24.5 V \pm 5%			
Output					
	Output signal range (underrange / overrange)	0 to 22 mA			
	Function range, output signal	0/4 to 20 mA			
	Transmission behavior	1:1 to input signal			
	NAMUR NE 43	A current at the input that is valid according to NAMUR NE 43 is transmitted to the output (within the specified measuring uncertainty range)			
Output Data	Maximum load, active mode	≤ 500Ω			
	Open-circuit voltage, active mode	17.5 V (± 5%)			
	Maximum load, passive mode	Rmax = (Uext - 2 V) / 0.022 A			
	External voltage, passive mode	Uext = 12 to 30 V			
	Transmissible communication protocols	HART			



RN42 Intrinsically Safe Analog Input Isolators

	RN42 Intrinsically Safe Analog Input Isolator Specifications Continued						
Output Continued							
Signal On Marm	Line break in input	Input 0mA / output 0mA					
Signal On Alarm	Line short circuit in input	Input > 22mA/ output > 22mA					
Galvanic Isolation	Power supply for input/output	Testing voltage: 3,000 VAC 50Hz, 1 min					
		Power Supply*					
	Supply voltage	24 to 230 VAC/DC (-20% / +10%, 0/50/60 Hz)					
	Power consumption	≤ 4.9 VA / 2.4 W (20mA); ≤ 5 VA / 2.5 W (22mA)					
Performance Characteristics	Power loss	≤ 2 W (20mA); ≤ 2.1 W (22mA)					
	Current consumption at 24 VDC	≤ 0.1 A (20mA); ≤ 0.1 A (22mA)					
	Current consumption at 230 VAC	$\leq 0.02 \text{ A (20mA)}; \leq 0.02 \text{ A (22mA)}$					
	Screw terminals	Rigid or flexible (Stripping length = 7 mm (0.28 in); cable cross-section 0.2 to 2.5 mm² (24 to 14 AWG)					
To was in a fa	Tightening torque: minimum 0.5 Nm/maximum 0.6 Nm	Flexible with wire end ferrules (with or without plastic ferrule); cable cross-section 0.25 to 2.5 mm ² (24 to 14 AWG)					
Terminals	5	Rigid or flexible (Stripping length = 10 mm (0.39 in); cable cross-section 0.2 to 2.5 mm² (24 to 14 AWG)					
	Push-in spring terminals	Flexible with wire end ferrules (with or without plastic ferrule); cable cross-section 0.25 to 2.5 mm ² (24 to 14 AWG)					
	Performance Characteristics						
Response Time	Step response (10 to 90 %)	≤1ms					
Reference Operating Conditions		 Calibration temperature: +25°C ±3 K (77°F ± 5.4°F) Supply voltage: 24VDC / 230VAC Output load: 225Ω External output voltage (passive output): 20VDC Warm-up: > 1 hour 					
Maximum Measured	Transmission error	< 0.1 % / of full scale value (< 20μA)					
Error (Accuracies)	Temperature coefficient	< 0.01 % /K					
Long-Term Drift		Max. ±0.1 %/year (of full scale value)					
		Installation					
Mounting Location	The device is design	ned for installation on 35 mm (1.38 in) DIN rails in accordance with IEC 60715 (TH35).					
DIN rail Installation	The device can be installed in ar	y position (horizontal or vertical) on the DIN rail without lateral clearance from neighboring devices.					
		Environment					
	Ambient temperature range	-40 to 60°C (-40 to 140°F)					
	Storage temperature	-40 to 80°C (-40 to 176°F)					
	Degree of protection	IP 20					
Ambient Conditions	Overvoltage category	II					
	Pollution degree	2					
	Humidity	5 to 95%					
	Insulation class	Class III					
	III GUIGUOTI GIGOS						

^{*} The data apply for the following operating scenario: input active / output active / output load 0Ω . When external voltages are connected to the output, the power loss in the device may increase. The power loss in the device can be reduced by connecting an external output load.

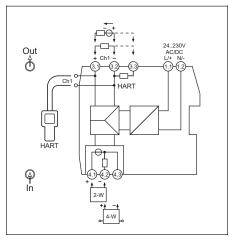


RN42 Intrinsically Safe Analog Input Isolators

	RN42 Intrinsically Safe Analog Input Isolator Specifications Continued						
	Environment Continued						
Maximum Temperature Change Rate		0.5 °C/min, no condensation permitted					
Shock and Vibration Resistance	Sinusoidal vibrations, in accordance with IEC 60068-2-6 • 5 to 13.2 Hz: 1 mm peak • 13.2 to 100 Hz: 0.7g peak						
Electromagnetic Compatibility (EMC)	CE compliance*	Electromagnetic compatibility in accordance with all the relevant requirements of the IEC/EN 61326 series and NAMUR Recommendation EMC (NE21). For details, refer to the Declaration of Conformity. • Maximum measured error < 1% of measuring range • Strong, pulse-like EMC interference can result in transient (< 1) deviations in the output signal (≥ ±1 %). • Interference immunity as per IEC/EN 61326 series, industrial requirements • Interference emission as per IEC/EN 61326 series (CISPR 11) Group 1 Class A					
		Mechanical Construction					
Materials	Aterials Housing: polycarbonate (PC); flammability rating according to UL94: V-0						
		Certificates and approvals					
Agency Approvals		cULus (E225237), cCSAus (200600), CE					

^{*} This unit is not intended for use in residential environments and cannot guarantee adequate protection of the radio reception in such environments.

Wiring Diagrams





Note: HART communicators can be connected to the 2mm HART connection sockets. Ensure an adequate external resistance (\geq 230 Ω) in the output circuit. To use the HART terminals, the internal 250 Ω communication resistor can be added to the measuring loop via the alternative terminal assignment (terminal 3.3)



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Safegate Type 4 access control barriers provide the ideal solution for protection in a wide range of high-risk industrial applications, in particular those requiring a high level of integration of the muting functions. Safegate greatly simplifies seamless integration of muting sensors with light curtain access control barriers

Hardware configuration with integrated status and muting lamp





SMO-3B, SMO-4B, SMO-3B-TRX, SMO-4B-TRX

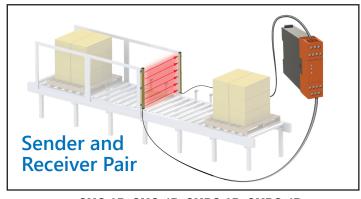
Hardware or software configuration with integrated status and muting lamp



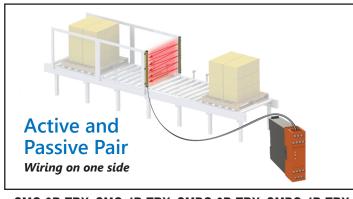




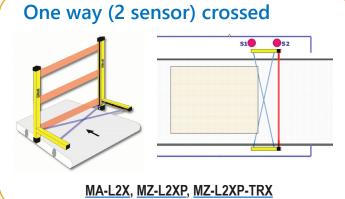
SMPO-3B, SMPO-4B, SMPO-3B-TRX, SMPO-4B-TRX

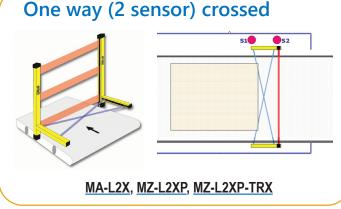


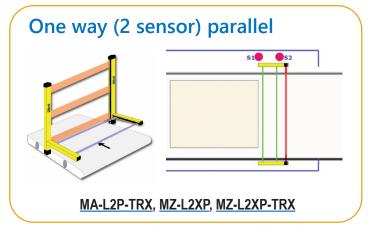
SMO-3B, SMO-4B, SMPO-3B, SMPO-4B

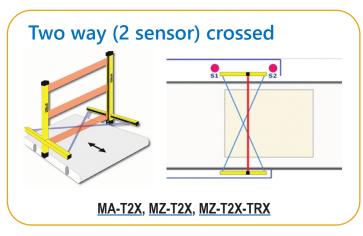


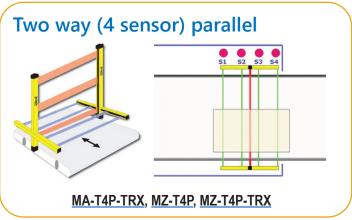
SMO-3B-TRX, SMO-4B-TRX, SMPO-3B-TRX, SMPO-4B-TRX











With Muting Arm/Brackets

Muting Arms: MA-L2X MA-T2X MA-L2P-TRX MA-T4P-TRX

Muting Brackets:

MZ-L2XP

MZ-T2X

MZ-T4P

MZ-L2XP-TRX

MZ-T2X-TRX

MZ-T4P-TRX

Cable M12 12-pin cable (See recommended items for cabling)





Light Curtains:

SMO-3B
SMO-4B
SMPO-3B
SMPO-4B
SMO-3B-TRX
SMO-4B-TRX
SMPO-3B-TRX

If a TRX light curtain is selected, then the muting arms/brackets part number should end in TRX as well.

Protective Columns (optional)

FMC-SGB3 (for SMxO-3B

or SMxO-3B-TRX)

FMC-SGB4 (for SMxO-4B

or SMxO-4B-TRX)

Protective Column Base: (Required with Protective Column) FMC-CB (shown)

or

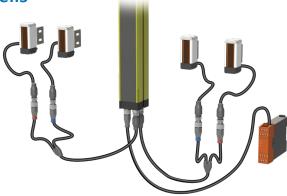
FMC-CBL (not shown)

With Muting Photocells

Photo Cells
M5-A
M5-B
M-TRX-A
M-TRX-B

Y-Splitters CSY12TX CSY12RX

Cable M12 12-pin cable (See recommended items for cabling)





Light Curtain:

SMO-3B

SMO-4B

SMPO-3B

SMPO-4B

SMO-3B-TRX

SMO-4B-TRX

SMPO-3B-TRX

SMPO-4B-TRX

If a TRX light curtain is selected, then the muting arms/brackets part number should end in TRX as well.

Protective Columns (optional)
FMC-SGB3 (for SMxO-3B
or SMxO-3B-TRX)
FMC-SGB4 (for SMxO-4B
or SMxO-4B-TRX)

Protective Column Base: (Required with Protective Column)

FMC-CB (shown)

or

FMC-CBL (not shown)



Features

- Integrated muting functions
- Pre-configured and pre-wired muting arms and muting brackets (sold separately)
- Hardware or software configuration options
- Bright LED status and muting lamp
- Status display on unit
- · Fully scalable
- Passive retro-reflective elements available (TRX)

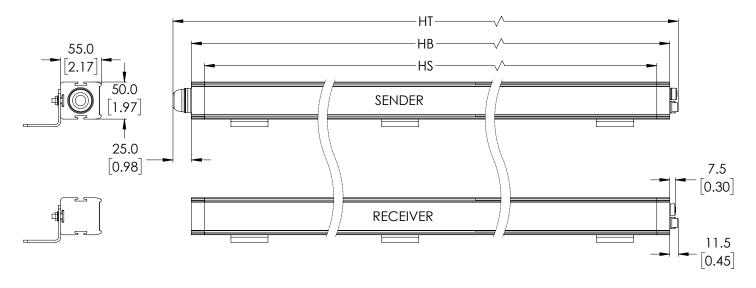
Benefits of Software Configurable Models (SMPO-xxx)

- Upload/download settings
- Specify muting parameters
- Utilize up to two partial muting configurations
- Check and validate programmable configuration
- · Light curtain status and monitoring
- Free configuration software

Ree	ReeR Safegate Light Curtains – Body Protection With Muting Functions – Selection Chart											
Part Number	Price	Protective Height Hs mm [in]	Housing Height Hb mm [in]	Total Height Ht mm [in]	Number of Beams	PFHd	Response Time [ms]	MTTFd [years]	DCavg	Weight kg [lb]	Resolution mm [in]	Dimensional Drawing
					Sender and F	Receiver Pa	ir					
			Hard	lware configu	ration with in	tegrated sta	atus and muti	ing LED				
SMO-3B	\$;004oqd:	810 [31.89]	974 [38.33]	1010 [39.76]	3	9.63E-09	5.5	262.4	98.5%	6.08 [13.40]	400 [15.75]	<u>PDF</u>
SMO-4B	\$;004opv:	910 [35.83]	1073 [42.24]	1110 [43.70]	4	1.03E-08	5.5	253.3	98.4%	6.56 [14.46]	300 [11.81]	<u>PDF</u>
			Hardware	or software c	onfiguration v	vith integra	ted status an	d muting L	.ED			
SMPO-3B	\$;004opx:	810 [31.89]	974 [38.33]	1010 [39.76]	3	9.63E-09	5.5	262.4	98.5%	6.08 [13.40]	400 [15.75]	<u>PDF</u>
SMPO-4B	\$;004opy:	910 [35.83]	1073 [42.24]	1110 [43.70]	4	1.03E-08	5.5	253.3	98.4%	6.56 [14.46]	300 [11.81]	<u>PDF</u>
					Active and I	Passive Pail	r					
			Hard	lware configu	ration with in	tegrated sta	atus and muti	ing LED				
SMO-3B-TRX	\$;004opz:	810 [31.89]	935 [36.79]	970 [38.19]	3	7.58E-09	5.5	401.0	98.2%	5.98 [13.18]	400 [15.75]	<u>PDF</u>
SMO-4B-TRX	\$;;004op]:	910 [35.83]	1035 [40.73]	1070 [42.13]	4	7.68E-09	5.5	399.4	99.2%	6.54 [14.42]	300 [11.81]	<u>PDF</u>
	Hardware or software configuration with integrated status and muting LED											
SMPO-3B-TRX	\$;004op#:	810 [31.89]	935 [36.79]	970 [38.19]	3	7.58E-09	5.5	401.0	98.2%	5.98 [13.18]	400 [15.75]	<u>PDF</u>
SMPO-4B-TRX	\$;;004op!:	910 [35.83]	1035 [40.73]	1070 [42.13]	4	7.68E-09	5.5	399.4	99.2%	6.54 [14.42]	300 [11.81]	<u>PDF</u>

Note: SMO and SMPO are designed to work with integrated muting arms, brackets, or photocells and do not work as stand-alone access barriers.

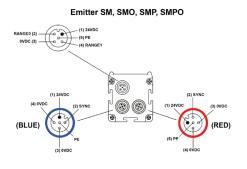
Dimensions (see table above)



Re	eR Safeg	ate Light Curtains – E	Body Protection With	Muting Functions – S	pecifications		
		Sender and F	Receiver Pair	Active and Passive Pair			
		<u>SMO-3B</u> , <u>SMO-4B</u>	<u>SMPO-3B</u> , <u>SMPO-4B</u>	SMO-3B-TRX, SMO-4B-TRX SMPO-3B-TRX, SMPO-4B-TRX			
Supply Voltage)	24VDC		24VD	C ±20%		
Safety Outputs	(OSSDs)	2 PNP – 400n	nA @ 24VDC	2 PNP – 400	lmA @ 24VDC		
Status Outputs	3	1 PNP – 100n	nA @ 24VDC	1 PNP – 100	lmA @ 24VDC		
Operating Tem	perature	-30°C to 55°C [-	-22°F to 131°F]	-30°C to 55°C	[-22°F to 131°F]		
LED Status Lamp		LED indication of Muting and Curtain Status on RX Curtain	LED indication of Muting, Curtain Status, and Override on RX Curtain	LED indication of Muting and Curtain Status on Active Curtain	LED indication of Muting, Curtain Status, and Override on Receiver Curtain		
	Type 4	EN 61496-1:2013	IEC 61496-2:2013	EN 61496-1:2013	IEC 61496-2:2013		
Safety Category	SIL3	61508-4	` '	` ´ 61508-	-2: (ed.2) IEC 61508-3: (ed.2) IEC 4: (ed.2)		
	PLe	EN ISO 138	349-1:2015	EN ISO 13	3849-1:2015		
	CAT4	EN ISO 138			3849-1:2015		
CCF		80			0%		
Degree of Prot	ection	IP65 ar		IP65 a	ind IP67		
Working Range	e	0-4 m [0-13 0-12 m [0-39 (See Range/Test Select	9.37 ft] high	0-8 m [()-26.25 ft]		
Power Consun	ption	Transmitter: 1W	; Receiver: 2W	3	BW		
Connections		Power on TX: N Power on RX: N Muting sensor connectors/muting I fem	112 12-pin male amp/configuration: Two M12 5-pin	Power on Active: M12 12-pin male Muting sensor connectors/muting lamp/configuration: Two M12 5-pin female			
EDM Input		Available on F	RX, selectable	Available on Active, selectable			
Restart Auto/M	anual	Available on F	RX, selectable	Available on Active, selectable			
Test Input		Available on T	X, selectable	Not available			
Configuration		Hardware on RX connector Hardware or software with USB		Hardware on active element connector Hardware or software with			
Conductor req		20AWG if length is les 17AWG if length is between 50m	[164.04 ft] and 100m [328.1 ft]	20AWG if length is less than 50m [164.04 ft] 17AWG if length is between 50m [164.04 ft] and 100m [328.1 ft]			
Max Connection		100m [3	28.1 ft]	100m	[328.1 ft]		
Current Rating for Muting Sen	sors	50r		50mA			
Muting Lamp C	•	24VDC, 0	.5 to 5 W	24VDC, 0.5 to 5 W			
Muting Signal I) -	100	-	100ms			
Muting Signal Levels (Sensor		<5VDC: Cle 11-30 VDC:Ac		11-30 VDC:A	ctuated Sensor		
Time Out Mutir	ng	30s 9h (non-sequential) Can be excluded (sequential)	Configurable via software	30s 9h (non-sequential) Can be excluded (sequential)	Configurable via software		
Muting Overrio	le	Selectable by pulse or by action maintained	Selectable by pulse or by action maintained; configurable via software	Selectable by pulse or by action maintained	Selectable by pulse or by action maintained; configurable via software		
Override Max 1	- Timeout	15m (renewable) 15m (renewable) software configurable		15m (renewable) 15m (renewable) software configurable			
Maximum Num Consecutive O		31	0	30			
Muting Logic		Crossed beams or sequential	Fully configurable with ReeR software	Crossed beams or sequential	Fully configurable with ReeR software		
Partial Muting		NA	Possibility to interrupt only a selected number of beams	NA	Possibility to interrupt only a selected number of beams		
Tolerance Time Sensors 1 and		4s	2 to 5 s Configurable via software	4s	2 to 5 s Configurable via software		
Muting Enable		Pin on main connector, disable	d if not required and monitored	Pin on main connector, disable	ed if not required and monitored		

Pin outs for SMO-3B, SMO-4B, SMPO-3B and SMPO-4B

Sender



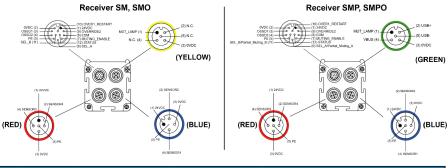
	RANGE SELECTION / TEST M12 5 PIN MALE CONNECTOR								
Pin	Color	Signal	In/Out	Description					
1	Brown	24VDC	1	24VDC power supply					
2	White	RANGE0	Input	Range/Test selection (see chart below)					
3	Blue	0VDC	-	0VDC power supply					
4	Black	RANGE1	Input	Range/Test selection (see chart below)					
5	Gray	PE	-	Ground connection					

RANGE / TEST SELECTION					
Pin 2 Pin 4 Function					
24DC	0VDC	LOW range			
OVDC 24DC		HIGH range			
OVDC OVDC		SAFEGATE in TEST mode			
24VDC	24DC	Not allowed			

N	SENSORS 1-2 M12 5-PIN FEMALE CONNECTOR (BLUE)							
Pin	Color	Signal	In/Out	Description				
1	Brown	24VDC	-	24VDC sensors power supply				
2	White	SYNC	Output	M5 arms synchronisation				
3	Blue	0VDC	-	0VDC				
4	Black	0VDC	-	0VDC				
5	Gray	PE	-	Ground connection				

SENSORS 3-4 M12 5-PIN FEMALE CONNECTOR (RED)							
Pin	Color	Signal	In/Out	Description			
1	Brown	24VDC	-	24VDC sensors power supply			
2	White	SYNC	Output	M5 arms synchronisation			
3	Blue	0VDC	-	0VDC			
4	Black	OVDC	-	0VDC			
5	Gray	PE	-	Ground connection			

Receiver



		PRIMARY M1	2 12-PIN MAI	LE CONNECTOR
Pin	Color	Signal	In/Out	Description
1	Brown	24VDC	-	24VDC power supply
2	Blue	0VDC	-	0VDC power supply
3	White	OSSD1	Output	Cofety static cutouts
4	Green	OSSD2	Output	Safety static outputs
5	Pink	PE	-	Ground connection
		SEL_A		Muting configuration
6	Yellow	PARIAL_MUTING_A (see note)	Input	Partial muting control
7	Black	MUT_ENABLE	Input	External muting enable
8	Gray	EDM	Input	K1/K2 feedback
9	Red	OVERRIDE2	Input	Override request
10	Purple	OVERRIDE1	Input	Override request
"	ruipie	RESTART	input	Restart interlock
		SEL_B		Muting configuration
11	Grey/Pink	PARTIAL_MUTING_B (see note)	Input	Partial muting control
12	Red/Blue	STATUS	Output	System status

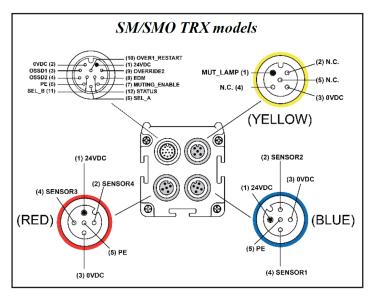
NOTE: PARTIAL_MUTING signal is present on programmable models (SMP/SMPO)

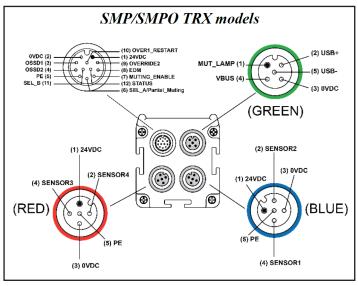
	SENSORS 1-2 – M12 5-PIN FEMALE CONNECTOR (BLUE)							
Pin	Color	Signal	In/Out	Description				
1	Brown	24VDC	-	24VDC power supply				
2	White	SENSOR2	Input	SENSOR2 status				
3	Blue	0VDC	-	0VDC				
4	Black	SENSOR1	Input	SENSOR1 status				
5	Gray	PE	-	Ground connection				

	SENSORS 3-4 – M12 5-PIN FEMALE CONNECTOR (RED)								
Pin	Color	Signal	In/Out	Description					
1	Brown	24VDC	-	24VDC power supply					
2	White	SENSOR4	Input	SENSOR4 status					
3	Blue	0VDC	-	0VDC					
4	Black	SENSOR3	Input	SENSOR3 status					
5	Gray	PE	-	Ground connection					

	USB/MUTING LAMP CONNECTOR								
Pin	Color	SMO Signal (Yellow)	SMPO Signal (Green)	IN/OUT	Description				
1	Brown	MUT_LAMP	MUT_LAMP	Output	Active muting 24VDC				
2	White	NC	USB+	In/Out	-				
3	Blue	0VDC	0VDC	-	0VDC				
4	Black	NC	VBUS	Input	5VDC				
5	Gray	NC	USB-	In/Out	-				

Pin outs for SMO-3B-TRX, SMO-4B-TRX, SMPO-3B-TRX and SMPO-4B-TRX





	PRIM	ARY M12 12-F	PIN MALI	CONNECTOR
Pin	Color	Signal	In/Out	Description
1	Brown	24VDC	-	24VDC power supply
2	Blue	0VDC	-	0VDC power supply
3	White	OSSD1	Output	Cofety etatic autoute
4	Green	OSSD2	Output	Safety static outputs
5	Pink	PE	-	Ground connection
		SEL_A		Muting configuration
6	Yellow	PARTIAL_MUTING_A (see note)	Input	Partial muting control
7	Black	MUT_ENABLE	Input	External muting enable
8	Gray	EDM	Input	K1/K2 feedback
9	Red	OVERRIDE2	Input	Override request
10	Purple	OVERRIDE1	Innut	Override request
10	Fuiple	RESTART	Input	Restart interlock
11	Grey/Pink	SEL_B	Input	Muting configuration
12	Red/Blue	STATUS	Output	System status

NOTE: PARTIAL_MUTING signal is present on programmable models (SMP/SMPO)

SE	SENSORS 1-2 – M12 5-PIN FEMALE CONNECTOR (BLUE)					
Pin	Color	Signal	In/Out	Description		
1	Brown	24VDC	-	24VDC power supply		
2	White	SENSOR2	Input	SENSOR2 status		
3	Blue	0VDC	-	0VDC		
4	Black	SENSOR1	Input	SENSOR1 status		
5	Gray	PE	-	Ground connection		

SENSORS 3-4 – M12 5-PIN FEMALE CONNECTOR (RED)					
Pin	Color	Signal	In/Out	Description	
1	Brown	24VDC	-	24VDC power supply	
2	White	SENSOR4	Input	SENSOR4 status	
3	Blue	0VDC	-	0VDC	
4	Black	SENSOR3	Input	SENSOR3 status	
5	Gray	PE	-	Ground connection	

	USB/MUTING LAMP CONNECTOR							
Pin	Color	SM/SMO Signal (Yellow)	SMP/ SMPO Signal (Green)	IN/OUT	Description			
1	Brown	MUT_LAMP	MUT_LAMP	Output	Active muting 24VDC			
2	White	NC	USB+	In/Out	-			
3	Blue	0VDC	0VDC	1	0VDC			
4	Black	NC	VBUS	Input	5VDC			
5	Gray	NC	USB-	In/Out	-			

ReeR Safegate Light Curtains – Muting Arms

Features

- Pre-configured and pre-wired muting arms and muting brackets
- MZ series offers five photo beams per sensor, useful for sensing unconventional objects (only one beam on the TRX versions)
- One way (parallel)
- One way (crossed)
- Two way (parallel)
- Two way (crossed)









	ReeR Safegate Light Curtains – Muting Arms Selection Chart							
Part Number	Price	Description	Working Range (m [ft])	Dimensional Drawing				
MA-L2X	\$04op?:	Muting arm, sender/receiver pair, 2 crossed beams, one way	1-2.5 [3.28-8.20]	<u>PDF</u>				
MA-T2X	\$04oq0:	Muting arm, sender/receiver pair, 2 crossed beams, two way	1-2.5 [3.28-8.20]	<u>PDF</u>				
MA-L2P-TRX	\$;04op,:	Muting arm, active/passive pair, 2 parallel beams, one way	0-3.5 [0-11.48]	<u>PDF</u>				
MA-T4P-TRX	\$04oq2:	Muting arm, active/passive pair, 4 parallel beams, two way	0-3.5 [0-11.48]	<u>PDF</u>				
MZ-T2X	\$04oq5:	Bracket with M5, sender/receiver pair, 2 crossed beams, two way	1-3.5 [3.28-11.48]	<u>PDF</u>				
MZ-T4P	\$04oq8:	Bracket with M5 sender/receiver pair, 4 parallel beams, two way	0-3.5 [0-11.48]	PDF				
MZ-L2XP	\$04oq3:	Bracket with M5, sender/receiver pair, 2 crossed or parallel beams, one way	0-3.5 [0-11.48] when parallel 1-3.5 [3.28-11.48] when crossed	PDF				
MZ-L2XP-TRX	\$04oq4:	Bracket with M-TRX, active/passive pair, 2 crossed or parallel beams, one way	0-3.5 [0-11.48] when parallel 1-3.5 [3.28-11.48] when crossed	PDF				
MZ-T2X-TRX	\$04oq6:	Bracket with M-TRX, active/passive pair, 2 crossed beams, two way	1-3.5 [3.28-11.48]	<u>PDF</u>				
MZ-T4P-TRX	\$04oq9:	Bracket with M-TRX, active/passive pair, 4 parallel beams, two way	0-3.5 [0-11.48]	<u>PDF</u>				

ReeR Muting and Automation Photocells

ReeR Muting and Automation Photocells – Selection Chart							
Part Number	Price	Number of Beams	Sensing Range	Coding	Dimensional Drawing		
	Emitter/Receiver Versions						
<u>M5-A</u>	\$04oqa:	5	0 to 3.5 m [0 to 11.48 ft]	Α	<u>PDF</u>		
<u>M5-B</u>	\$04oqb:	5	0 to 3.5 m [0 to 11.48 ft]	В	PDF		
	Reflector Versions						
M-TRX-A	\$04oqc:	1	0 to 5 m [0 to 16.40 ft]*	Α	PDF		
M-TRX-B	\$-04oqj:	1	0 to 5 m [0 to 16.40 ft]*	В	<u>PDF</u>		

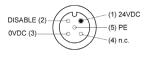


M5-A / M5-B

^{*} Dependent on type of reflector used (see specifications below)

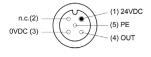
	ReeR Muting and Automation Photocells – Specifications						
Model		Micron M5 Emitter	Micron M5 Receiver	<u>M-TRX-A</u> / <u>M-TRX-B</u>			
Power Supply			24VDC ± 20%				
Power Consumption at 24	VDC	11	W	0.2 W			
Number of Beams		Į.	5	1			
				0 to 2.5 m [0 to 8.20 ft] with C3F10 reflector			
Working Range		0-3.5 m [0	to 11.48 ft]	0 to 3.5 m [0 to 11.48 ft] with C3F8 reflector			
				0 to 3 m [0 to 9.84 ft] with CD8 reflector			
Beams Pitch		10mm [[0.39 in]	NA			
Immunity to Ambient Ligh	t	>10,000	NA				
Emission Angle		±5°	±5°	±5°			
Emission Wavelength		940nm (moduated infrared) –		660nm (moduated red)			
Response Time		<10ms <10ms		65ms			
Output		_	PNP 100maA max / dark-on	PNP 100maA max / dark-on			
Connections		Pigtail 90cm [2.95 ft] with M12 5 pin connector	Pigtail 90cm [2.95 ft] with M12 5 pin connector	Pigtail 90cm [2.95 ft] with M12 5 pin connector			
MTTF _d		414.02 years	414.02 years	1759.31 years			
Operating Temperature		-30 to +55°C [-22 to 131°F] (with no condensation)	-30 to +55°C [-22 to 131°F] (with no condensation)	-30 to +55°C [-22 to 131°F] (with no condensation)			
Protection Degree		IP65	IP65	IP65			
	Width	28mm [1.10 in]	28mm [1.10 in]	28mm [1.10 in]			
Dimensions	Depth	30mm [1.18 in]	30mm [1.18 in]	30mm [1.18 in]			
	Height	70mm [2.76 in]	70mm [2.76 in]	70mm [2.76 in]			

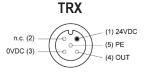
Emitter



	M5 Emitter						
Pin	Color	Signal	Description				
1	Brown	24VDC	24VDC power supply				
2	White	DISABLE	0VDC=ENABLE	24VDC=DISABLE			
3	Blue	0VDC	0VDC	0VDC power supply			
4	Black	NA	Not connected				
5	Gray	PE	Ground connection				

Receiver

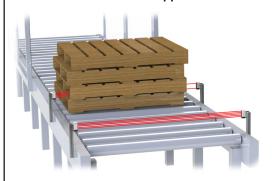




	M5 Receiver					
Pin	Color	Signal	De	Description		
1	Brown	24VDC	24VD0	24VDC power supply		
2	White	NA	Not connected			
3	Blue	0VDC	0VDC	power supply		
4	Black	OUT	0VDC=Area Free	24VDC=Area Obstructed		
5	Gray	PE	Ground connection			

	M TRX					
Pin	Color	Signal	Description			
1	Brown	24VDC	24VD0	24VDC power supply		
2	White	NA	No	Not connected		
3	Blue	0VDC	0VDC	power supply		
4	Black	OUT	0VDC=Area Free	24VDC=Area Obstructed		
5	Gray	PE	Ground connection			

Emitter/Receiver Application



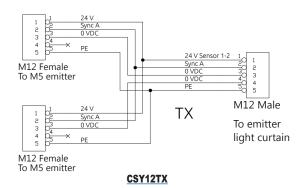
M5 photocells have five beams that are sent out by the emitter. If any one of the five beams is blocked, then the receiver's status signal will change to signify that there is an object in front of the photocell. This is particularly useful when there is a need to detect irregularly shaped items.

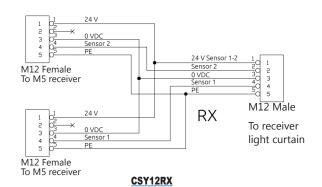
ReeR Safegate Light Curtain Accessories

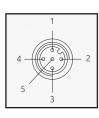
Safegate Light Curtains Accessories Overview							
Part Number	Price	Description	Use With	Dimensional Drawing			
Reflectors							
<u>C3F10</u>	\$-4oql:	ReeR reflector, rectangular, 30 x 116 mm [1.18 x 4.57 in].	M-TRX-A or M-TRX-B	<u>PDF</u>			
<u>C3F8</u>	\$4oqn:	ReeR reflector, rectangular, 30 x 78 mm, [1.18 x 3.07 in] with bracket.	M-TRX-A or M-TRX-B	<u>PDF</u>			
<u>CD8</u>	\$4oqo:	ReeR reflector, round, 84mm [3.31 in].	M-TRX-A or M-TRX-B	<u>PDF</u>			
		Mounting Brackets					
SFB-4SG	\$;4oqt:	ReeR mounting bracket, replacement, standard, zinc plated steel. Package of 4. Mounting hardware included.	ReeR Safegate Light Curtains	PDF			
SFB-6SG	\$4oqu:	ReeR mounting bracket, replacement, standard, zinc plated steel. Package of 6. Mounting hardware included.	ReeR Safegate Light Curtains	PDF			
		Cables					
CS12USB	\$4oqp:	ReeR programming cable, USB Type A male to 5-pin M12 quick-disconnect, 5-pole, PVC jacket, black, 6.5 ft [2m] cable length.	SMPO models	NA			
CSY12RX	\$4oqv:	ReeR muting receiver cable, 5-pin M12 quick-disconnect to (2) 5-pin M12 quick-disconnects, 5-pole, 24 VDC, PVC jacket, black, 1.3 ft [400mm] cable length, IP67.	ReeR Safegate Light Curtains	NA			
CSY12TX	\$4oqx:	ReeR muting emitter cable, 5-pin M12 quick-disconnect to (2) 5-pin M12 quick-disconnects, 5-pole, 24 VDC, PVC jacket, black, 1.3ft [400mm] cable length, IP67.	ReeR Safegate Light Curtians	NA			



Pinouts



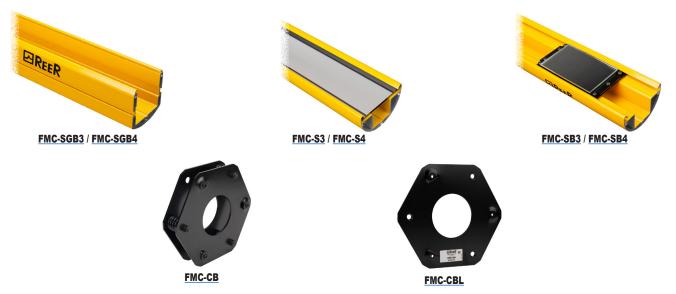




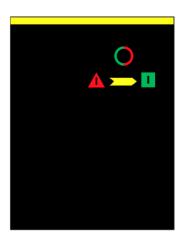
ReeR Safegate Light Curtain Accessories

	Safegate Light Curtains Accessories Overview					
Part Number	Price	Description	Use With	Dimensional Drawing		
		Protective Columns*				
FMC-SGB3	\$04oqk:	ReeR protective column, 1200mm housing.	SMO-3B SMPO-3B SMO-3B-TRX SMPO-3B-TRX S-3B S-3B-TRX	<u>PDF</u>		
FMC-SGB4	\$04oqe:	ReeR protective column, 1330mm housing.	SMO-4B SMPO-4B SMO-4B-TRX SMPO-4B-TRX S-4B S-4B-TRX	<u>PDF</u>		
		Mirror Columns*				
FMC-S3	\$;04oqf:	ReeR single mirror column, 1200mm housing, 1198mm mirror(s).	SMO-3B SMPO-3B SMO-3B-TRX SMPO-3B-TRX S-3B S-3B-TRX	<u>PDF</u>		
FMC-S4	\$04oqg:	ReeR single mirror column, 1330mm housing, 1328mm mirror(s).	SMO-4B SMPO-4B SMO-4B-TRX SMPO-4B-TRX S-4B S-4B-TRX	<u>PDF</u>		
FMC-SB3	\$04oqh:	ReeR three mirror column, 1200mm housing, (3) 150mm mirror(s).	SMO-3B SMPO-3B SMO-3B-TRX SMPO-3B-TRX S-3B S-3B-TRX	PDF		
FMC-SB4	\$-04oqi:	ReeR four mirror column, 1330mm housing, (4) 150mm mirror(s).	SMO-4B SMPO-4B SMO-4B-TRX SMPO-4B-TRX S-4B S-4B-TRX	PDF		
		Column Base				
FMC-CB	\$04oqq:	ReeR column base, 202 x 224 x 55 mm housing. Mounting hardware included.	FMC-Sx	PDF		
FMC-CBL	\$4oqs:	ReeR column base, 202 x 224 x 37 mm housing. Mounting hardware included.	FMC-Sx	<u>PDF</u>		

^{*} Column base must be purchased separately

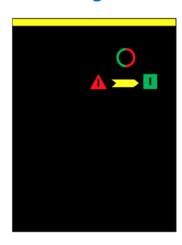


Emitter (non TRX models) LED Functions



TRI-COLOR LED						
RED	YELLOW	GREEN	MEANING			
On	_	_	Power on - Initial Test			
Flashing	_	_	Fail condition			
_	On	_	Curtain under test			
_	_	On	Normal operation			

Fault Diagnostices (non TRX models)



NUMBER OF FLASHES	ERROR	POSSIBLE CAUSE		
RED	POSSIBLE CAUSE	POSSIBLE CAUSE		
2	RANGE0 / RANGE1 incorrect wiring	Check pin 2 and 4 connections on the main connector		
3/4	Internal error	Contact tech support		
5	SYNC incorrect wiring	Check pin 2 connection on the sensors connectors		

Receiver/Active (All Models) - LED Functions



PRG	• сом	CLR	0 🗾	MUT	OVR	S1	MEANING
Blue							Curtain programmed via USB
	Orange						Communication with active PC
	Blue						Weak signal (TRXmodels only)
	Alternating Blue/Orange						Weak signal (TRXmodels only)
		Yellow					Curtain awaiting RESTART (clear gate)
			Green				Normal operation (clear gate)
			Red				Occupied gate
			Red flashing				Detected failure (Refer to "Troubleshooting" section in User's Manual)
				Yellow			Muting active
					Yellow		Override active
					Yellow flashing		Override request
						Yellow	Sensor interrupted
Blue flashing	Orange flashing						No barrier configuration
Blue flashing	Orange flashing		Red flashing				Detected double configuration (hardware and software) – SMPO only



BREAK Occupied curtain with at least one occupied beam



FAIL Curtain in error condition



CLEAR Curtain awaiting RESTART



GUARD Normal operation condition



MUTING Muting underway



OVERRIDE (Request)

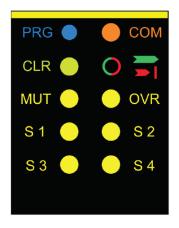


OVERRIDE (In progress)

LIGHT	MEANING			
Yellow/Green	Curtain awaiting RESTART (gate clear)			
Green	Normal operation (gate clear)			
Red	Occupied gate			
Red Flashing	Detected failure (see DIAGNOSTICS)			
Yellow	Muting active			
Yellow Flashing	Override active			
Yellow/Red	Override request			

Fault Diagnostics

NOTE regarding SMP and SMPO models: In addition to the corresponding LED indication, when the operator connects SAFEGATE to a computer via USB, a pop-up window with the error code appears on the monitor.



			LED			
0 🗾	CLR 🛑	MUT	OVR	S1	ERROR	POSSIBLE CAUSE
2					Configuration error SEL_A/SEL_B/EDM	Pin 6-8-11 connections on the RX male connector
2				2 (\$1/\$2)	Inconsistency between red and blue connector selection for S2 wiring and the physical wiring of S2	Wire S2 with the selected wiring option (red or blue connector)
3					Wrong EDM configuration	Pin 8 connections on the RX male connector
3	3				EDM feed back failure	Contact connectors EDM Power Contactors
3		3			STATUS input failure	Pin 12 connections on the RX male connector
3			3		Override1 / Override2 input failure	Pin connections9-10 on the male connector on the RX
3				3	Sensor input failure	Pin connections 2-4 on the sensor connectors
3	3	3	3		MUTING LAMP FAILURE	Connections on the auxiliary lamp connector
4					OSSD1 / OSSD2 error	3-4 pin connectors on the male connector on the RX
5					MAIN CARD ERROR	Contact tech support
5	5				MAIN CARD (EEPROM) error	Contact tech support
5			5		MAIN CARD ERROR	Contact tech support
6					MAIN CARD (Microcontroller) error	Contact tech support
6	6				Generic Default Boad Error	6-7-8-9-10-11 pin connections on the male connector on the RX
6		6			Beam error	Contact tech support
6			6		24VDC power supply overload	Eventual short-circuit on OSSD outputs
6		6	6		LAMP/STATUS over current	Short circuit on pin 12 or auxiliary lamp connector
7					Receiving beams failure	Contact tech support
8					Interfering Emitter Detected	Verify the presence of another curtain not correctly positioned. Refer to "Multiple Systems" section of User's Manual.

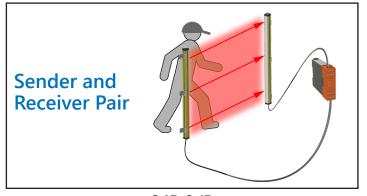
ReeR non-muting Safegate light curtains are a great choice for applications where a simple light curtain is needed. These light curtains feature built-in, selectable manual/automatic start/restart with an LED status display on the face of each device. Passive retro-reflective elements are also available. All mounting hardware is included to simplify installation.

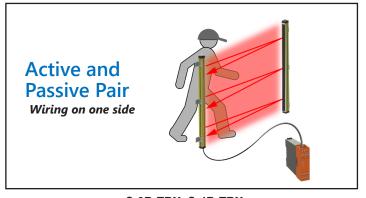
Non-Muting Light Curtain





S-3B, S-4B, S-3B-TRX, S-4B-TRX





<u>S-3B</u>, <u>S-4B</u>

Light Curtains:

S-3B
S-4B
S-3B-TRX
S-4B-TRX

Protective Columns (optional)

FMC-SGB3 (for S-3B

or S-3B-TRX)

FMC-SGB4 (for S-4B

or S-4B-TRX)

Protective Column Base: (Required with Protective Column) FMC-CB (shown)

or FMC-CBL (not shown)



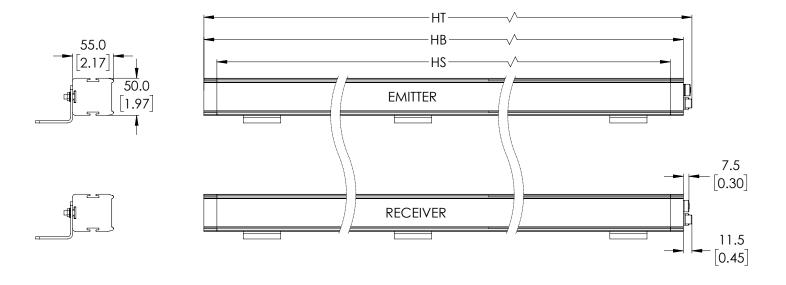


Features

- LED status display on face of device
- Built-in, selectable manual/automatic Start/Restart
- Dual safety PNP static outputs, auto-controlled
- M12 quick-disconnect (order cable separately)
- Type 4 and Category 4 PLe
- Instruction manual and mounting hardware included
- Passive retro-reflective elements available (TRX)

Ree	ReeR Safegate Light Curtains – Body Protection Without Muting Functions – Selection Chart											
Part Number	Price	Protective Height HS mm [in]	Housing Height HB mm [in]	Total Height HT mm [in]	Number of Beams	PFHd	Response Time [ms]	MTTF _d [years]	DC _{avg}	Weight kg [lb]	Resolution mm [in]	Dimensional Drawing
				S	ender and F	Receiver F	Pair					
S-3B	\$;;004op[:	810 [31.89]	974 [38.33]	984 [38.74]	3	9.63E-09	5.5	262.4	98.5%	4.16 [9.15]	400 [15.75]	PDF
<u>S-4B</u>	\$;004op_:	910 [35.83]	1074 [42.26]	1084 [42.68]	4	1.03E-08	5.5	253.3	98.4%	4.60 [10.15]	300 [11.81]	PDF
	Active and Passive Pair											
S-3B-TRX	\$;004oq1:	810 [31.89]	935 [36.79]	945 [37.20]	3	7.58E-09	5.5	401.0	98.2%	4.22 [9.30]	400 [15.75]	PDF
S-4B-TRX	\$;004oq7:	910 [35.83]	1035 [40.73]	1045 [41.14]	4	7.68E-09	5.5	399.4	99.2%	4.62 [10.20]	300 [11.81]	PDF

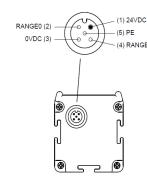
Dimensions (see table above)



	ReeR Safegate Light Curtains – Body Protection Without Muting Functions Specifications for S-3B and S-4B						
Supply Voltage 24VDC ±20%							
Safety Output	s (OSSDs)	2 PNP – 400mA @ 24VDC					
Operating Ten	nperature	-30°C to 55°C [-22°F to 131°F]					
	Type 4	EN 61496-1:2013 IEC 61496-2:2013					
Safety	SIL3	IEC 61508-1: (ed.2) IEC 61508-2: (ed.2) IEC 61508-3: (ed.2) IEC 61508-4: (ed.2)					
Category	PLe	EN ISO 13849-1:2015					
	CAT4	EN ISO 13849-1:2015					
CCF	CCF 80%						
Degree of Protection		IP65 and IP67					
Working Range		0-4 m [0-13.12 ft] low 0-12 m [0-39.37 ft] high (See Range/Test Selection Chart on next page)					
Power Consul	mption	Transmitter: 1W; Receiver: 2W					
Connections		Power on TX: M12 5-pin male Power on RX: M12 8-pin male					
EDM Input		Available on RX, selectable					
Restart Auto/Manual		Available on RX, selectable					
Test Input Available on TX, selectable		Available on TX, selectable					
Conductor requirements		20AWG if length is less than 50m [164.04 ft] 17AWG if length is between 50m [164.04 ft] and 100m [328.1 ft]					
Max Connecti	on Length	100m [328.1 ft]					

Pin outs for S-3B and S-4B

Emitter Connections

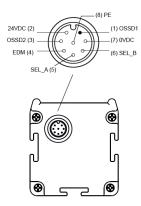


	EMITTER M12 5 PIN MALE CONNECTOR						
Pin	Color	Signal	In/Out	Description			
1	Brown	24VDC	-	24VDC power supply			
2	White	RANGE0	Input	Range/Test selection (see table at right)			
3	Blue	0VDC	-	0VDC power supply			
4	Black	RANGE1	Input	Range/Test selection (see table at right)			
5	Gray	PE	-	Ground connection			

RANGE / TEST SELECTION						
Pin 2	Function					
24DC	0VDC	LOW range				
0VDC	24DC	HIGH range				
0VDC	0VDC	SAFEGATE in TEST mode				
24VDC	24DC	Not allowed				

OPERATING MODE CONFIGURATION							
Function	Pin 4	Pin 5	Pin 6				
Auto no EDM	0VDC	OSSD1 (1)	OSSD2 (3)				
Auto with EDM	EDM signal	OSSD2 (3)	OSSD1 (1)				
Manual no EDM	0VDC	24VDC	Reset PB				
Manual with EDM	EDM signal	Reset PB	24VDC				

Receiver Connections



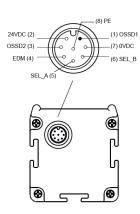
	RECEIVER M12 8-PIN MALE CONNECTOR							
Pin	Reer Cable	292 Cable	295 Cable	Signal	In/Out	Description		
1	White	White	Brown	OSSD1	Output	Static Safety Outputs		
2	Brown	Brown	White	24VDC	_	Power Supply 24VDC		
3	Green	Green	Blue	OSSD2	Output	Static Safety Outputs		
4	Yellow	Yellow	Black	EDM	Input	K1/K2 Feedback		
5	Gray	Gray	Gray	SEL_A	Input	Operating Mode Configuration		
6	Pink	Pink	Pink	SEL_B	Input	Operating Mode Configuration		
7	Blue	Blue	Violet	0VDC	_	Power Supply 0VDC		
8	Red	Red	Orange	PE	_	Ground Connection		

AutomationDirect sells M12 8-pole cables with two different color patterns (7000-170x1-292xxxx and 7000-170x1-295xxxx). We recommend the "292" series on our website, which matches the ReeR cable's color code. However, to help avoid confusion, please refer to the table above comparing the color codes.

	ReeR	Safegate Light Curtains – Body Protection Without Muting Functions Specifications for S-3B-TRX and S-4B-TRX			
Supply Voltag	je	24VDC ±20%			
Safety Output	ts (OSSDs)	2 PNP – 400mA @ 24VDC			
Operating Ter	nperature	-30°C to 55°C [-22°F to 131°F]			
	Type 4	EN 61496-1:2013 IEC 61496-2:2013			
Safety	SIL3	IEC 61508-1: (ed.2) IEC 61508-2: (ed.2) IEC 61508-3: (ed.2) IEC 61508-4: (ed.2)			
Category	PLe	EN ISO 13849-1:2015			
	CAT4	EN ISO 13849-1:2015			
CCF		80%			
Degree of Pro	tection	IP65 and IP67			
Working Rang	ge	0-8 m [0-26.25 ft]			
Power Consu	mption	3W			
Connections		Power on Active: M12 8-pin male			
EDM Input		Available on Active, selectable			
Restart Auto/Manual		Available on Active, selectable			
Test Input		Not available			
Conductor re	quirements	20AWG if length is less than 50m [164.04 ft] 17AWG if length is between 50m [164.04 ft] and 100m [328.1 ft]			
Max Connecti	on Length	100m [328.1 ft]			

Pin outs for <u>S-3B-TRX</u> and <u>S-4B-TRX</u>

Active Element



	M12 8-PIN MALE CONNECTOR								
Pin	Reer Cable	292 Cable	295 Cable	Signal	In/Out	Description			
1	White	White	Brown	OSSD1	Output	Static Safety Outputs			
2	Brown	Brown	White	24VDC	-	Power Supply 24VDC			
3	Green	Green	Blue	OSSD2	Output	Static Safety Outputs			
4	Yellow	Yellow	Black	EDM	Input	K1/K2 Feedback			
5	Gray	Gray	Gray	SEL_A	Input	Operating Mode Configuration			
6	Pink	Pink	Pink	SEL_B	Input	Operating Mode Configuration			
7	Blue	Blue	Violet	0VDC	_	Power Supply 0VDC			
8	Red	Red	Orange	PE	-	Ground Connection			

AutomationDirect sells M12 8-pole cables with two different color patterns (7000-170x1-292xxxx and 7000-170x1-295xxxx). We recommend the "292" series on our website, which matches the ReeR cable's color code. However, to help avoid confusion, please refer to the table above comparing the color codes.

OPERATING MODE CONFIGURATION							
Function	Pin 4	Pin 5	Pin 6				
Auto no EDM	0VDC	OSSD1 (1)	OSSD2 (3)				
Auto with EDM	EDM signal	OSSD2 (3)	OSSD1 (1)				
Manual no EDM	0VDC	24VDC	Reset PB				
Manual with EDM	EDM signal	Reset PB	24VDC				

IDEM PSA and MSA Non-Contact Coded Magnetic Stand-Alone Safety Switches







PSA Series Plastic Housing MSA Series Stainless Steel Housing PSA-D and MSA-D Series Dual Switch

- Coded magnetic actuation
- Universal housing suitable for most general applications
- LED indication
- · Wide 14mm [0.55 in] sensing distance, high tolerance to misalignment
- Available with 2m, 5m, or 10m [6.56 ft, 16.40 ft, or 32.81 ft] cable or 250mm [9.84 in] pigtail with quick-disconnect cable
- No need for a separate safety relay
- · Contains internal monitoring system
- Uses force guided mechanical contacts
- External reset monitoring circuit
- Will maintain PLe (ISO13849-1) even when connected in series

MSA Series Only

- · Specifically designed for food processing applications
- Can be high-pressure hosed at high temperature - IP69K rated
- Suitable for CIP SIP cleaning Food Splash Zones per EHEDG guidelines
- 316 Stainless steel mirror polished finish

PSA-D AND MSA-D Only

- Dual actuator versions are available for use with "double door" guards
- Both actuators must be used





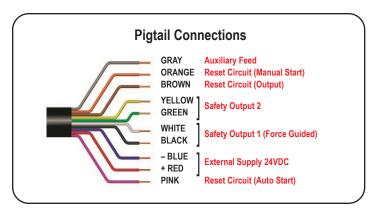


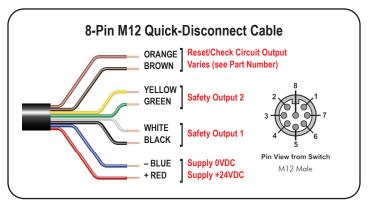
		PSA and I	MSA Series	Non-Conta	ct Stand-Alon	e Selecti	on Chart		
Part Number	Price	Body Material	Connection	Cable Length	Outputs	Number of Actuators	Automatic or Manual Start	Weight kg [lb]	Dimensional Drawing
PSA-117002	\$04z7o:	Plastic	Pigtail	5m [16.40 ft]	2 NC & 1 PNP Status	1	Selectable	0.54 [1.20]	<u>PDF</u>
PSA-117003	\$04z7p:	Plastic	Pigtail	10m [32.81 ft]	2 NC & 1 PNP Status	1	Selectable	0.94 [2.05]	<u>PDF</u>
PSA-117004	\$04z7q:	Plastic	8-pin M12 quick-disconnect	250mm [0.82 ft]	2 NC	1	Automatic	0.20 [0.45]	PDF
PSA-117005	\$04z7s:	Plastic	8-pin M12 quick-disconnect	250mm [0.82 ft]	2 NC	1	Manual	0.20 [0.45]	PDF
PSA-D-117102	\$;04z7t:	Plastic	Pigtail	5m [16.40 ft]	2 NC & 1 PNP Status	2	Selectable	0.60 [1.35]	<u>PDF</u>
PSA-D-117103	\$04z7u:	Plastic	Pigtail	10m [32.81 ft]	2 NC & 1 PNP Status	2	Selectable	0.96 [2.15]	PDF
<u>PSA-D-117104</u>	\$04z7v:	Plastic	8-pin M12 quick-disconnect	250mm [0.82 ft]	2 NC	2	Automatic	0.26 [0.60]	<u>PDF</u>
PSA-D-117105	\$04z7x:	Plastic	8-pin M12 quick-disconnect	250mm [0.82 ft]	2 NC	2	Manual	0.26 [0.60]	PDF
MSA-130002	\$04z7z:	316 stainless steel	Pigtail	5m [16.40 ft]	2 NC & 1 PNP Status	1	Selectable	0.80 [1.75]	PDF
MSA-130003	\$;04z7]:	316 stainless steel	Pigtail	10m [32.81 ft]	2 NC & 1 PNP Status	1	Selectable	1.18 [2.60]	PDF
MSA-130004	\$;04z7[:	316 stainless steel	8-pin M12 quick-disconnect	250mm [0.82 ft]	2 NC	1	Automatic	0.48 [1.05]	PDF
MSA-130005	\$04z7_:	316 stainless steel	8-pin M12 quick-disconnect	250mm [0.82 ft]	2 NC	1	Manual	0.48 [1.05]	PDF
MSA-D-130102	\$04z7#:	316 stainless steel	Pigtail	5m [16.40 ft]	2 NC & 1 PNP Status	2	Selectable	0.98 [2.15]	<u>PDF</u>
MSA-D-130103	\$;04z7!:	316 stainless steel	Pigtail	10m [32.81 ft]	2 NC & 1 PNP Status	2	Selectable	1.35 [3.00]	<u>PDF</u>
MSA-D-130104	\$04z7?:	316 stainless steel	8-pin M12 quick-disconnect	250mm [0.82 ft]	2 NC	2	Automatic	0.66 [1.45]	<u>PDF</u>
MSA-D-130105	\$;04z7,:	316 stainless steel	8-pin M12 quick-disconnect	250mm	2 NC	2	Manual	0.66 [1.45]	PDF

Stand-Alone Non-Contact Coded Magnet Safety Switch Actuator Replacement Selection Chart						
Part Number	Price	Body Material	Weight (kg [lb])	Dimensional Drawing		
PSA-117200	\$4z7y:	Plastic	0.06 [0.15]	PDF		
MSA-130200	\$4z80:	316 stainless steel	0.18 [0.40]	<u>PDF</u>		

IDEM PSA and MSA Non-Contact Coded Magnetic Stand-Alone Safety Switches

Electrical Connections



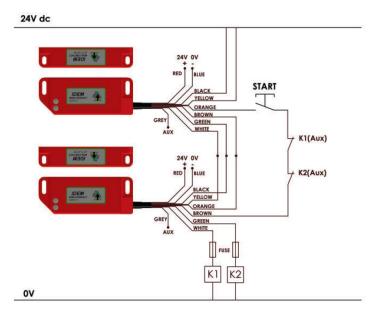


Pigtail Connection Flying Lead Color	Circuit	8-Pin M12 Male Quick-Disconnect Pin Number (Wire Color*)
Red	Supply +24VDC	2 (Red)
Blue	Supply 0VDC	3 (Blue)
White	Safety Output 1 (Force Guided Relay)	1 (White)
Black	Safety Output 1 (Force Guided Relay)	7 (Black)
Yellow	Safety Output 2	4 (Yellow)
Green	Safety Output 2	6 (Green)
Brown	Reset/Check Circuit - Output	8 (Orange)
Orange	Reset Check Circuit - Manual Start Version (see Part Number)	5 (Brown)
Pink	Reset/Check Circuit - Automatic Start version (see Part Number)	5 (Brown)
Gray	Auxiliary Feed	Not Used

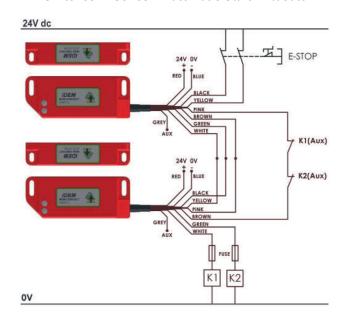
^{*}When using IDEM/AutomationDirect cable part number 140101 or 140102

Connection Examples

Switches in Series - Manual Start PLe



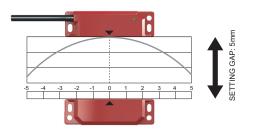
Switches in Series - Automatic Start PLd/Cat3



IDEM PSA and MSA Non-Contact Coded Magnetic Stand-Alone Safety Switches

Idem Non-Contact Cod	ed Magnetic Stand-Alone Safety Sv	witches Specifications			
	PSA or MSA series with Quick Disconnect Connections	PSA or MSA series with Flying Lead Connections			
Safety Classification	and Reliability Data According to IEC62061 (us	ed as a sub System)			
Safety Integrity Level	SI	L3			
PFH (1/h)	3.95 x 10 ⁻¹⁰ correspo	onds to 4.0% of SIL3			
PFD	3.46 x 10 ⁻⁵ correspo	nds to 3.5% of SIL3			
Proof Test Interval T1	20 y	ears			
Safety Class	sification and Reliability Data According to EN I	SO13849-1			
Performance Level	P	e			
Category	Ca	at4			
MTTFd	446 y	vears			
Diagnostic Coverage (DC)	99% (high)				
Safety Data - Annual Usage	1 cycle per day / Machine in operation 24 hours per day, 365 days per year				
Switching Reliability (B10d)	150,000 AC1 Load 3.0 A 2,000,000 AC1 Load 0.5 A				
	Electrical and General Specifications				
Supply Voltage	24VDC +/- 10%				
Power Consumption	150mA max				
Safety Outputs	2 NC Max: 2A (240VAC or 24VDC) Min 10VDC 1mA	2 NC Max: 3A (240VAC or 24VDC) Min 10VDC 1mA			
Status Outputs	None	1 PNP - 500mA @ 24VDC			
Operating Temperature	-25°C to 45°C [-13°F to 113°F]			
Shock Resistance	IEC 68-2-27	11ms 30g			
Vibration Resistance	IEC 68-2-6 1	0-55Hz 1mm			
Recommended Setting Gap	5mm [0	.197 in]			
Tolerance to Misalignment	5mm [0.197 in] in any dire	ction from the setting gap			
Approach Speed	600mm/min to 1000mm/se	c [23in/min to 39in/second]			
NC Switching Distance	Sao (assured ON) 1 Sar (assured OFF) 1				
NC Switching Operation	For all switches the NC circuits are closed when	the guard is closed and the actuator is present.			
NO Switching Operation	None	Opens before NC circuits close			
Cable Type	PVC 8 core 7mm [0.28 in] outer diameter max	PVC 10 core 7mm [0.28 in] outer diameter max.			
Mounting Bolts (Recommended)	2 x M4; Tightening torque: 1.0 N·m [0.74 lb-ft]				
Ingress Protection	PSA: IP67 MS	A: IP69K/IP67			
Agency Approvals	CE, cUL	us, TÜV			
NOTE: Always mount onto non forrous material					

NOTE: Always mount onto non-ferrous material



Misalignment Range

IDEM SCR31P Series Dual Channel Viper OSSD/Light Curtain Safety Relays



The Viper Safety Relay series from IDEM is designed with enhanced LED diagnostics and simplified wiring. Applications include Output Signal Switching Device (OSSD) monitoring such as light curtains and other OSSD safety devices. The SCR31P series' internal logic uses force guided relays.







Features

- Monitored manual or auto start /reset
- Up to three safety output contacts and 1 NC auxiliary output
- Easy diagnostics of status via 6 LEDs
- Compact 22.5 mm housing suitable for DIN rail mounting

SCR31P-280003-P

SCR31P Series Single/Dual Channel Safety Relays							
Part Number Price Ivne Voltage Hithlite Connection					Dimensional Drawing		
SCR31P-280003	\$;04,5z:	OSSD / Light	24V	2 NO	Fixed screw terminals	<u>PDF</u>	
SCR31P-280003-P	\$;;04,5]:	Curtain	AC/DC	1 NC	Pluggable terminals	<u>PDF</u>	

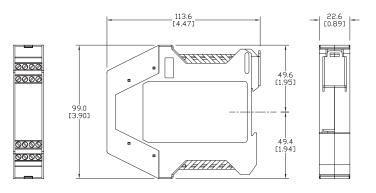
Safety Data per EN 13849-1						
Category	4					
Performance level	Ple					
MTTF _d	142a (High)					
DC _{avg}	99% (High)					
Safety Data						
per IEC/EN	62061, IEC/EN 61508					
Sil CL	SIL CL 3					
Sil	SIL3					
HFT	1 (Dual channel)					
DC _{avg}	99% (High)					
SFF	90-99%					
PHD _{avg} (T=20a)	3.60E-05					

SCR21 Series Specifications						
	General Specifications					
Temperature	-20° to +55°C [-4° to +131°F]					
Altitude	< 2,000m [6562ft]					
Vibration Resistance	Tested to IEC 60068-2-6					
Degree Of Protection	IP20					
Housing	UL 94V-0 Thermoplastic					
Weight	160g (5.64 oz)					
Agency Approvals and Standard	cULus, CE, TUV					
Terminal Designation per EN 50 005	1 x 4 mm ² stranded ferruled (isolated) or 2 x 1.5 mm ² stranded ferruled (isolated) or 2 x 2.5 mm ² solid					
Wire Fixing	M3.5 terminals with self-lifting wire protection or cage clamp terminals					
Input Specifications						
Nominal Voltage	24V AC/DC					
Voltage Range	85-110%					
Maximum Consumption	2.5 W (24V AC/DC)					
Nominal Frequency	50Hz-60Hz					
Control Voltage	24VDC (S11)					
Control Current	100mA (S11 through S14)					
Short Circuit Protection	Internal PTC (Positive Temperature Coefficient resistor)					
Over Voltage Protection	Internal VDR (Voltage Dependent resistor)					
	Output Specifications					
Electrical Contact Life	6A / 250VAC 100,000 cycles, 1A / 250VAC 1,000,000 cycles					
Mechanical Life	10 x 10 ⁶					
Contact Type	3 NC positively driven and 1 NO auxiliary contacts					
Operate Delay	100ms					
Release Delay	25ms					
Nominal Output Voltage	250VAC					
Thermal Current (I _{th})	Max. 6A					
Short Circuit Strength	Minimum Contact Fuses - 4A slow blow, 6A fast blow					
Switching Capacity	AC-15 230VAC, 4A; DC-13 24VDC, 30W, 2A					
Switching Frequency	Max. 360 switching cycles/hr					

IDEM SCR31P Series Dual Channel Viper OSSD/Light Curtain Safety Relays

Dimensions

(mm [in])



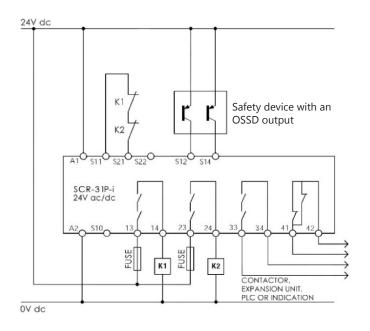
LED Diagnostics

When Safety Relay In Operation				
Power	Power applied to device			
Reset	Reset circuit is closed			
CH1	External switch input 1 closed			
CH2	External switch input 2 closed			
K1	Internal relay safety ouput contacts closed			
K2	Internal relay safety output contacts closed			

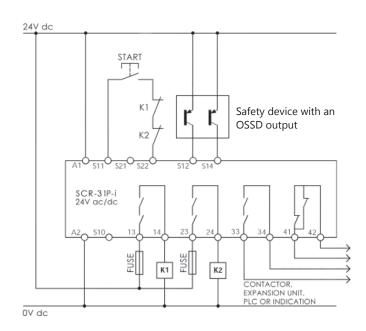
13	23	33	41				
Α1	\$11	\$21	S22				
SC	R-3	1P-i					
0	POV	VER					
0	RESE	ΕT					
0	CH1						
0	CH2	2					
0	K1						
○ K2							
V	I F	E	R				
S12	S14	S10	Α2				
14	24	34	42				
	SC 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	A1 S11 SCR-3 POW RESH CH1 CH2 K1 K2 VIF	~				

Applications

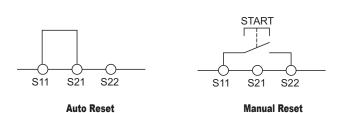
Auto Restart (Dual Channel) OSSD (PNP) INPUTS

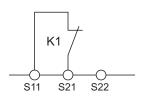


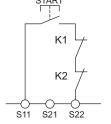
Manual Restart (Dual Channel) OSSD (PNP) INPUTS



Reset Wiring Options







Contactor Auto Feedback

Contactor Manual Feedback

Note: A power supply unit with electrical isolation from the mains supply must be connected. External fusing of each safety output contact is necessary, a 4A slow-blow or 6A (quick action) must be provided. The maximum cabling and connecting resistance of control lines must not exceed 300Ω.

SSP (Safety System Products) Three-Position Safety Enabling Switches



Enabling switches, commonly referred to as "dead-man switches"), can be designed into a safety system to provide a special operating mode for specific tasks such as commissioning, maintenance, repair, or process set-up.

The safety system can be designed in a way that allows the enabling switch to activate other safety devices (for example, the enabling switch can allow slow-speed motion while a guard door is opened) in order to accomplish the specified tasks. The enabling unit consists of a spring-return, three-position grip (resting position (NO), middle position (NC), and fully squeezed position (NO)). If the operator releases the grip on the enabling device or squeezes it too much, then the safety system will activate and return the machine to a safe state.

Additional normally open pushbuttons are available on select models to wire into your system to perform actions such as machine reset, position setting, jogging the machine, inputs to a plc and more.

Features

- Ergonomic (right- or left-handed)
- Easy to operate (even when wearing gloves)
- Robust housing in IP67
- Optional increased protection against manipulation with in-hand detection
- Optional built-in Estop, LED, pushbuttons, and activity ("home" position) sensor
- Universal connection via cable or terminals

	SSP Z	EUS Three	-Position S	Safety Ena	bling Switc	hes Select	ion Guide		
Part Number	Price	Three-Position Enabling Device	Estop Pushbutton	LED Diagnostic	Number of Momentary Pushbuttons	Activity ("Home") Sensor	In-Hand Sensor	Connection	Drawing
ZEUS01-000000	\$05nkv:	✓	-	-	_	-	-	Terminals	PDF
ZEUS01-000400	\$05nkx:	✓	-	_	_	_	_	5m [16.4 ft] cable	PDF
ZEUS01-100000	\$05nky:	~	-	✓	_	_	_	Terminals	PDF
ZEUS01-100400	\$05nkz:	~	-	✓	_	_	_	5m [16.4 ft] cable	PDF
ZEUS01-120000	\$05nkq:	~	-	✓	1	_	_	Terminals	PDF
ZEUS01-120400	\$05nks:	~	-	✓	1	_	_	5m [16.4 ft] cable	PDF
ZEUS01-130000	\$05nk#:	\	-	✓	2	_	_	Terminals	PDF
ZEUS01-130400	\$;05nk!:	\	-	✓	2	_	_	5m [16.4 ft] cable	PDF
ZEUS11-030000	\$;05nk[:	\	✓	_	2	_	_	Terminals	PDF
ZEUS11-030400	\$05nk_:	>	✓	_	2	_	_	5m [16.4 ft] cable	PDF
ZEUS11-100000	\$;05nk]:	\	✓	✓	_	_	-	Terminals	PDF
ZEUS11-100400	\$05nkp:	✓	✓	√	-	-	-	5m [16.4 ft] cable	PDF
ZEUS11-120000	\$;05nkt:	√	✓	√	1	-	-	Terminals	PDF
ZEUS11-120400	\$05nku:	√	✓	√	1	-	-	5m [16.4 ft] cable	PDF
ZEUS11-130000	\$05nk?:	√	✓	√	2	-	-	Terminals	PDF
ZEUS11-130400	\$-05nl0:	√	✓	√	2	-	-	5m [16.4 ft] cable	PDF

Three-Position Safety Enabling Switches With Enhanced Sensors

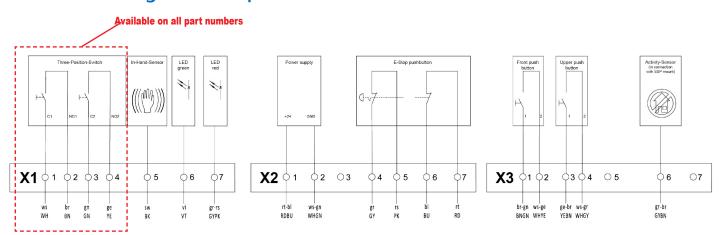
In addition to the standard models listed above, the following three SSP ZEUS Safety Enabling Switches feature two enhanced sensing capabilities. The activity sensor, or "home" position sensor, detects when the switch is placed in the ZEUS-H mounting bracket. The in-hand sensor detects when the sensor is being held in the user's hand.

SSP ZEUS	SSP ZEUS Three-Position Safety Enabling Switches With Enhanced Sensors Selection Guide								
Part Number	Price	Three-Position Enabling Device	Estop Pushbutton	LED Diagnostic	Number of Momentary Pushbuttons	Activity ("Home") Sensor	In-Hand Sensor	Connection	Drawing
ZEUS01-131430	\$-05nl1:	✓	-	✓	2	√	✓	5m [16.4 ft] cable	PDF
ZEUS11-121430	\$-05nl2:	√	√	√	1	√	√	5m [16.4 ft] cable	PDF
ZEUS11-131430	\$-05nl3:	✓	✓	✓	2	✓	✓	5m [16.4 ft] cable	<u>PDF</u>

SSP (Safety System Products) Three-Position Safety Enabling Switches

SSP ZEUS Three-Position Safety Enabling Switches Specifications			
Operating Voltage	24VDC +-5%		
Storage Temperature	-40°C to 80°C [-40°F to 176°F]		
Operating Temperature	-5°C to 60°C [23°F to 140°F]		
Wire Size for Terminal	0.14 to 0.34 mm ² [25 to 22AWG]		
Terminal Type	Spring-loaded		
Base Plate Connection	M20 female thread		
Screw Torque (Base Plate Attachment)	0.8 N•m [0.59 ft•lb]		
Cable Maximum Outer Diameter	7mm [0.28 in]		
Material	Handle body: Glass fiber reinforced thermoplastic Enable button: Silicone Base plate: Stainless steel		
Weight	330g [11.64 oz]		
Ingress Protection Rating	IP65, IP67		
B10d Value (for Enable Button)	100,000		
Service Life	Position 1>2>1: 1,000,000 cycles Position 1>2>3>1: 100,000 cycles		
Agency Approvals	cULus, TÜV, and CE		

Connection Diagram Example



NOTE: The connection diagram above shows the terminals for all functions of the ZEUS.

Not all functions will be available on all part numbers.

Please refer to the data sheet for each specific part number for the corresponding connection diagram.

SSP (Safety System Products) Three-Position Safety Enabling Switches Mounting Brackets

SSP ZEUS Three-Position Safety Enabling Switch Mounting Brackets

SSP ZEUS Mounting Bracket Selection Guide				
Part Number	Price	Material	Weight g [oz]	Drawing
ZEUS-H *	\$-05nl4:	Glass-fiber reinforced thermoplastic	30 [1.1]	<u>PDF</u>
ZEUS-H2	\$;5nk,:	Stainless steel	119 [4.2]	<u>PDF</u>

^{*} For the Activity Sensor to work, a ZEUS-H is required.





ZEUS-H2

Examples of Mounting Brackets Attached to Unit



ZEUS01-000000 resting in the ZEUS-H2 stainless steel mounting bracket



ZEUS11-131430 resting in the ZEUS-H glass-fiber reinforced mounting bracket

IDEM TouchSafe Two-Hand Control Panels



IDEM TouchSafe Two-Hand Control Panels are an all-in-one-box solution that is ergonomic, easy to set up, and easy to use. These panels take the guesswork out of two-hand pushbutton spacing and provide straightforward mounting options.





Applications

Two-hand control panels are designed for use in combination with a two-hand control monitoring device and require an operator to use both hands at the same time when initiating a hazardous operation. This forces operators to have their hands on the twohand control actuator elements and out of the danger zone while the system is actuated.

Safety Design

These panels are designed with guard hoods over the actuator elements, which prevent individuals from circumventing the protection function using just one hand or other body parts. For additional safety, these two-hand control panels have been designed so that it is not possible to operate them from the back side of a panel. The two-hand control station is a complementary device designed to ensure that the operator's hands remain away from a hazard. Additional safety measures – for example, guarding - may be needed to ensure operator safety.

Features

- Pre-installed two-hand pushbuttons for ease of installation
- Five additional pre-drilled M22 holes (ships with hole covers installed)
- Ergonomic operation
- Two-part enclosure
- Die-cast aluminum enclosure
- · Ability to be wall mounted
- Guard hoods over the actuator elements
- · Safety yellow and black finish
- Optional empty enclosure
- Convenient terminal block inside the enclosure





IDEM Two-Hand Control Panel Selection Guide							
Part Number	Price Type of Pushbutton Pushbutton Contacts Ingress Protection (kg [lb]) Draw				Drawing		
	Control Panel Versions With Pushbuttons						
2H-240001	\$;05xfa:	Zero Force touch switch with LED indication	2 (1 NO, 1 NC)	IP65	5.4 [11.92]	PDF	
2H-240002	\$;05xfb:	Mechanical momentary pushbuttons	2 (1 NO, 1 NC)	IP65	5.5 [12.19]	PDF	

Co	Control Panel Without Pushbuttons Selection Guide					
Part Number	Price	Type of Pushbutton	Pushbutton Contacts	Ingress Protection	Weight (kg [lb])	Drawing
2H-240000	\$;05xf9:	Aluminum die-cast, powder coated	Two 30mm holes (for two-hand control buttons) and five 22mm holes for additional buttons or lamps	IP65	5.2 [11.40]	PDF



IDEM TouchSafe Two-Hand Control Panels – Connections



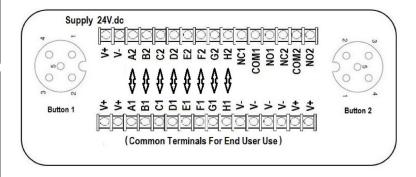
The enclosure features an internal connection PCB. This board makes it very simple to change out a puhbutton or a light, reducing the overall cost of ownership. The PCB has two M12 5-pin connectors for connection to either of IDEM's pushbuttons (the <u>2H-240021</u> Zero Force pushbutton or the <u>2H-240022</u> mechanically activated pushbutton) for two-hand control. In addition, the board provides four V+ terminals, four V- terminals, and eight pairs of pass-through terminals for end-user use.

PCB Connections

	IDEM TouchSafe Two Hand Control Panels PCB Terminals Wiring Connections				
	Top-Row Terminals				
Terminal	Terminal Connects to Description				
V+	DC supply	Required when using Zero Force type buttons			
V-	DC supply	Required when using Zero Force type buttons			
NC1	Button 1	Normally closed (NC) circuit			
СОМ1	Button 1	Common			
NO1	Button 1	Normally open (NO) circuit			
NC2	Button 2	Normally closed (NC) circuit			
СОМ2	Button 2	Common			
NO2	Button 2	Normally open (NO) circuit			

	Pass-Through Terminals			
Terminal	Connects to Description			
A1	A2	Common connection for end user use		
B1	B2	Common connection for end user use		
C1	C2	Common connection for end user use		
D1	D2	Common connection for end user use		
E1	E2	Common connection for end user use		
F1	F2	Common connection for end user use		
G1	G2	Common connection for end user use		
H1	H2	Common connection for end user use		

Bottom-Row Common Terminals				
Terminal	Connects to	Description		
AII V+	Internally connected	Common connection for end user use		
AII V-	Internally connected	Common connection for end user use		



IDEM Zero Force Touch Switch For Two-Hand Control





IDEM Zero Force Touch Switch			
Part Number	<u>2H-240021</u>		
Price	\$;05xf8:		
Description	IDEM touch switch, IP65, 30mm, zero force, LED illuminated, (1) N.O./(1) N.C. contact(s), black, mushroom, 68mm, round.		
Mounting Diameter	30mm [1.18 in]		
Actuating Stroke	Zero stroke (touch sensitive)		
Pushbutton Material	Polyester		
Front Panel Thickness	2 to 9 mm [0.08 to 0.35 in]		
Weight	139g [0.31 lb]		
Mounting Screws Tightening Torque	1.0 N•m [0.74 lb•ft]		
Ambient Temperature	-20°C to +40°C [-4°F to +104°F]		
Ingress Protection Rating	IP65		
Standards	ISO 13851; UL File E258676		
Drawing	PDF		

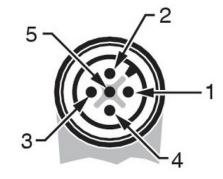
The IDEM Zero Force Touch Switch is activated when touched. The switch does not require any force to activate. It was designed to eliminate hand or wrist stresses associated with frequent repetitive machine operations. It features solid state construction as well as high-visibility LED status indication (red when the button is not being touched, as shown at left, or green when the button is being touched).

This touch switch is supplied with a 250mm [9.84 in] flying lead with a 5-pin M12 male plug. The plug makes it easy to connect to the PCB connection board which is part of IDEM's two-hand control stations.

Note that if gloves must be worn by the operator, mechanical pushbuttons (such as 2H-240022) should be used instead.

Cable Connections

5-Pi	5-Pin M12 Connections				
1	+24VDC				
2	NC contact				
3	0 VDC				
4	NO contact				
5	Common				



IDEM Mechanical Pushbutton For Two-Hand Control





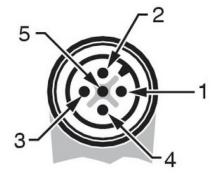
The IDEM Mechanical Pushbutton is a mechanically activated pushbutton with 1 NO and 1 NC set of contacts. This pushbutton was designed for use with any two-hand control system. This pushbutton is supplied with a 250mm [9.84 in] flying lead with a 5-pin M12 male plug. The plug makes it easy to connect to the PCB connection board which is part of IDEM's two-hand control stations.

For systems with frequent operational use, Zero Force touch switches (<u>2H-240021</u>) are recommended for more ergonomic operation.

IDEM Mechanical	Pushbutton
Part Number	2H-240022
Price	\$;05xf7:
Description	IDEM pushbutton, IP65, 30mm, momentary, (1) N.O./(1) N.C. contact(s), black, mushroom, 68mm, round
Mounting Diameter	30mm [1.18 in]
Actuating Stroke	3mm [0.12 in]
Pushbutton Material	Polyester
Front Panel Thickness	4 to 5 mm [0.16 to 0.20 in]
Weight	177g [0.39 lb]
Mounting Screws Tightening Torque	1.0 N•m [0.74 lb•ft]
Terminal Tightening Torque	0.8 N•m [0.58 lb•ft]
Ambient Temperature	-20°C to +40°C [-4°F to +104°F]
Ingress Protection Rating	IP65
Mechanical Life	1,000,000 operations
Standards	ISO 13851; UL File E258676
Drawing	PDF

Cable Connections

5-Pin M12 Connections			
1	Not used		
2 (white)	NC contact		
3	Not used		
4 (black)	NO contact		
5 (gray)	Common		



Note: The product ships with a jumper between the NO contact and the NC contact so that the common signal can be used for both the NC and the NO contact.

IDEM SCR-2H Dual Channel Two-Hand Control Safety Relays





SCR2H-180030

in a compact housing. Two-Hand Control monitoring protects operators and machinery during tasks that require the machine to be clear. It is intended for use in safety Circuts that are designed in accordance with EN 60204-1 for example on presses, punches, and bending tools. This safety relay is designed to achieve Type IIIc Two-Hand Control Device (THCD) per ISO 13851.

The IDEM Two-Hand Control Safety Relay is designed

Features

- Cyclical monitoring of the output contacts
- Feedback loop for monitoring downstream contactors or expansion modules
- · Short circuit and ground fault monitoring
- Compact 22.5 mm housing suitable for DIN rail mounting
- Two NC output contacts

Safety Data per EN 13849-1					
Category	4				
Performance level	Ple				
MTTF _d	High (100 years)				
DC _{avg}	High (99%)				
Safety Data per IEC/EN 62061					
Sil	SIL3				
HFT	1				
DC _{avg}	>90%				
SFF	95%				
PHD _{avg} (T=20a)	>3x10 ⁻⁸				

SCR-2H Dual Channel Safety Relays						
Part Number Price		Туре	Voltage	Outputs	Connection	Drawing
SCR2H-180030	\$;05xf6:	Two-hand control	24V AC/DC	2 NO	Fixed screw terminals	PDF



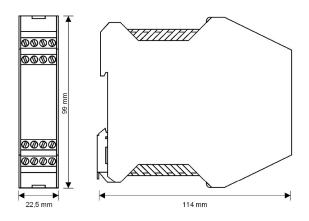




SCR21 Series Specifications					
General Specifications					
Temperature	-20° to +55°C [-4° to +131°F]				
Altitude	<2000m [6562ft]				
Degree Of Protection	IP20				
Housing	UL94 V-0 thermoplastic				
Weight	160g (5.64 oz)				
Agency Approvals and Standard	cULus, CE, TUV				
Terminal Designation per EN 50 005	0.15 to 2.5 mm ² [26 to 14 AWG]				
Input Specifications					
Nominal Voltage 24V AC/DC					
Voltage Range	90-110%				
Maximum Consumption	1.5 W (24V AC/DC)				
Nominal Frequency	50Hz-60Hz				
Control Voltage	24VDC				
Control Current	<100mA				
Short Circuit Protection	Internal PTC (Positive Temperature Coefficient) resistor				
Over Voltage Protection	Internal VDR (Voltage Dependent Resistor)				
	Output Specifications				
Mechanical Life	10 x 10 ⁶				
Contact Type	2 NC positively driven contacts				
Operate Delay	<20ms				
Release Delay	<20ms				
Maximum Switching Voltage	250V				
Thermal Current (Ith)	Max. 12A				
Short Circuit Strength	Minimum Contact Fuses - 6A slow blow, 8A fast blow, or 10A gG				
Switching Capacity	AC-15 230VAC, 3A; DC-13 24VDC, 3A				
Switching Frequency	Max. 360 switching cycles/hr				

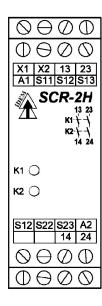
IDEM SCR-2H Dual Channel Two-Hand Control Safety Relays

Dimensions



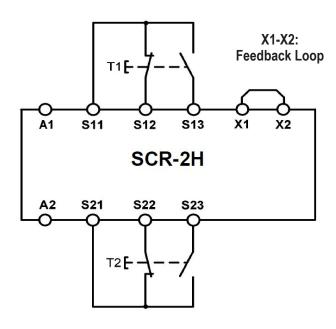
LED Diagnostics

When Safety Relay In Operation				
Power	Power applied to device			
K1	Internal relay safety ouput contacts closed			
K2	Internal relay safety output contacts closed			

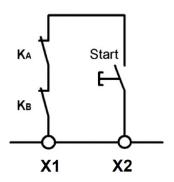


Applications

Wiring of the SCR-2H with two-hand pushbuttons



Feedback wiring



Contactor Manual Feedback

Schmersal Two-Hand Control Panels



Schmersal Two-Hand Control Panels are an all-in-one-box solution that is ergonomic, easy to set up, and easy to use. These panels take the guesswork out of two-hand pushbutton spacing and provide straightforward mounting options.



SEPK02.0.S-3065

Applications

Two-hand control panels are designed for use in combination with a two-hand control monitoring device and require an operator to use both hands at the same time when initiating a hazardous operation. This forces operators to have their hands on the two-hand control actuator elements and out of the danger zone while the system is actuated.

Safety Design

These panels are designed with guard hoods over the actuator elements, which prevent individuals from circumventing the protection function using just one hand or other body parts. For additional safety, these two-hand control panels have been designed so that it is not possible to operate them from the back side of a panel.

Wiring Connections 11



23 — 24 31 — 32 43 — 44

Momentary Pushbutton

2 NC 2 NO Emergency Stop Pushbutton



SEPG05.3.S-3063

Features

- Pre-installed pushbuttons for ease of installation
- Ergonomic operation
- · Two-part enclosure
- Thermoplastic or die-cast aluminum enclosure
- · Ability to be wall mounted
- Guard hoods over the actuator elements
- · Panels come with captive screws
- Light gray finish (RAL 7035)
- · Optional empty enclosure

Additional features on SEPG05 version:

- Extended wrist support
- Nylon straps secured to the top and the bottom housing to prevent them from falling to the floor during maintenance work
- • Includes removable wall mounting brackets

Pre-Installed Pushbuttons

The panels with push buttons are fitted with an Emergency Stop button that has two NO and two NC positive-break safety contacts and complies with EN ISO 13850. These panels are also fitted with two mushroom-head momentary contact pushbuttons. Each has one NO and one NC positive-break safety contacts.

Listings





Schmersal Two-Hand Control Panel Selection Chart							
Part Number	Price	Material	Pushbutton Options		Ingress Protection	Weight (kg [lb])	Dimensional Drawing
Control Panel Versions With Pushbuttons							
			Type	Pushbutton Contacts			
SEPK02.0.S-3065 \$;04]s#	Ф.О.41#-	Thermoplastic	1 emergency stop	2 NO, 2 NC	IP65	2.2 [4.4]	PDF
	\$,04JS#:		2 momentary	2 (1 NO, 1 NC)			
<u>SEPG05.3.S-3063</u> \$;	¢04142.	Aluminum dia anat naudar anatad	1 emergency stop	2 NO, 2 NC	IDCE	4.4 [9.6]	PDF
	\$;;04]t3:	Aluminum die-cast, powder coated	2 momentary	2 (1 NO, 1 NC)	IP65		

Schmersal Two-Hand Control Replacement Pushbuttons





EDRR40RT



EDP55SW

Schmersal Two-Hand Control Replacement Pushbuttons*					
Part Number	EDRR40RT **	EDP55SW			
Price	\$;;4]t0:	\$;;4]t1:			
Description	Emergency stop pushbutton with mounting flange, push to latch, twist and pull to unlatch, front plate mounting	Momentary pushbutton with mounting flange, from plate mounting			
Front Ring Color	Gold	Silver			
Mounting Diameter	22.3 mm [0.88 in]	22.3 mm [0.88 in]			
Actuating Stroke	5mm [0.20 in]	5mm [0.20 in]			
Dome Material	Anodized aluminum	Anodized aluminum			
Front Ring Material	Anodized aluminum	Anodized aluminum			
Front Panel Thickness	1.5 to 6 mm [0.06 to 0.24 in]	1.5 to 6 mm [0.06 to 0.24 in]			
Weight	91g [3.20 oz]	91g [3.20 oz]			
Mounting Screws Tightening Torque	0.6 N•m [0.44 lb•ft]	0.6 N•m [0.44 lb•ft]			
Ambient Temperature	-25°C to +75°C [-13°F to +167°F]	-25°C to +75°C [-13°F to +167°F]			
Shock Resistance	30g / 18ms	30g / 18ms			
Ingress Protection Rating	IP65	IP65			
Mechanical Life	100,000 operations	1,000,000 operations			
Standards	EN 60947-5-1; EN 60947-1; UL File E57648	EN 60947-5-1; UL File 57648			
Dimensional Drawing	PDF	PDF PDF			

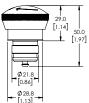
^{*} Operator only. Purchase contact blocks separately.

Dimensions

mm [in]



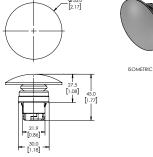






ISOMETRIC VIEW

EDP55SW



Schmersal Legend Plate					
Part Number	Price	Description	Dimensional Drawing		
MDP-8.1	\$;;4]t2:	Schmersal legend plate, thermoplastic, round, yellow field, yellow background, blank legend plate.	<u>PDF</u>		



^{**} Part number EFR is required to use this operator