IDEM Z-Range Safety Switches

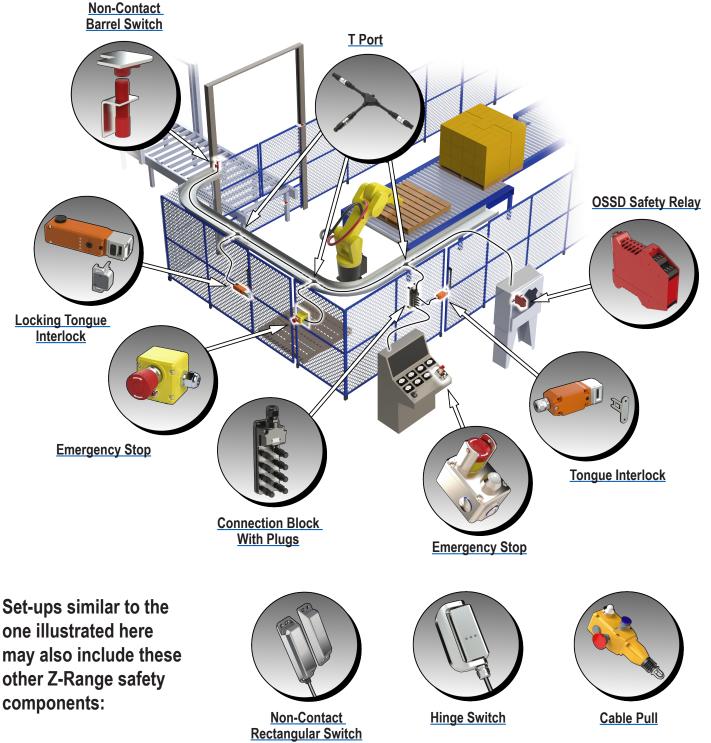


IDEM's Z-Range of products have one set of dual OSSD outputs and one set of dual OSSD inputs. This enables the devices to be wired in series, reducing cost and time associated with wiring back to the panel. Up to 30 Z-Range devices can be connected to one safety relay.

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



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Safety Electrical Components tesc-226

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		
<u>LPZ-U-402102</u>	\$160.00			Pigtail	5m [16.4 ft]		<u>PDF</u>		
<u>LPZ-U-402103</u>	\$172.00		Uniquely coded RFID	Pigtail	10m [32.8 ft]		PDF		
<u>LPZ-U-402104</u>	\$178.00	Polyester		8-pin M12 quick- disconnect	250mm [9.8 in]		PDF		
<u>LPZ-M-402002</u>	\$160.00	Folyester		Pigtail	5m [16.4 ft]	_	<u>PDF</u>		
<u>LPZ-M-402003</u>	\$172.00		Master coded RFID	Pigtail	10m [32.8 ft]		PDF		
<u>LPZ-M-402004</u>	\$178.00			8-pin M12 quick- disconnect	250mm [9.8 in]	2 OSSD and	PDF		
<u>LMZ-U-412101</u>	\$234.00			Pigtail	5m [16.4 ft]	1 Status	<u>PDF</u>		
LMZ-U-412102	\$247.00		Uniquely coded RFID	Pigtail	10m [32.8 ft]		PDF		
LMZ-U-412103	\$252.00	316 stainless steel		8-pin M12 quick- disconnect	250mm [9.8 in]		PDF		
<u>LMZ-M-412001</u>	\$251.00	5 TO SIGNIESS SIEED		Pigtail	5m [16.4 ft]		PDF		
LMZ-M-412002	\$247.00		Master coded RFID	Pigtail	10m [32.8 ft]		PDF		
LMZ-M-412003	\$252.00			8-pin M12 quick- disconnect	250mm [9.8 in]		PDF		

LMZ/LPZ Series Non-Contact Master Coded RFID Safety Switch Actuator Replacement							
Part Number	Price	Body Material	Coding	Drawing			
<u>LPZ-402200</u>	\$46.00	Polyester		PDF			
LMZ-412200	\$64.00	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		with Safety Relay pon 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 years						
Max Response Time (Actuator Removed)	60ms						
Max Response Time (Input Off)	20ms						
Agency Approvals	cULus E2	58676, CE					
	Electrical and General Specifications						
Rated Operating Voltage	20.4 VDC t	o 26.4 VDC					
Power Consumption	0.7	7 W					
Output Current		= 0.2 A = 1mA					
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	IP67 Stainless steel 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		[0.74 lb•ft]					

LED Operation

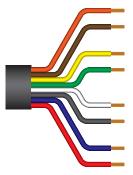
Guard		Inp	out	Output		
Guard Closed	Green	Safety Inputs On	Green (steady)	Safety Outputs On	Green (steady)	
Guard Open	Red	Safety Input Missing	Green (flashing)	Safety Outputs Off	Off	
		Safety Inputs Off	Off	External Fault	Red (flashing)	
		Internal Fault	Red (steady)			

IDEM Z-Range Safety Switches Electrical Connections



Wiring

IDEM Quick Disconnect Leads Color Coding



Orange – Guard open signal out Brown – Not used

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**



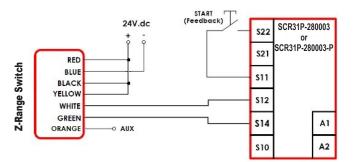
Pin View from Switch M12 Male

Coded Magnetic Switches Electrical Connections

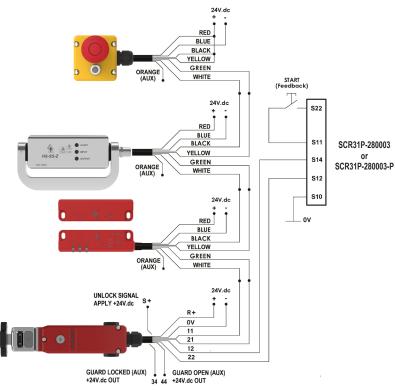
Quick Disconnect Connector Pin Out	IDEM Quick Disconnect Leads Color Coding	Terminal	Switch Circuit
2	Red	R+	Supply +24 VDC
3	Blue	0V	Supply 0VDC
7	Black	11	Safety Input 1
1	White	12	Safety Output 1
4	Yellow	21	Safety Input 2
6	Green	22	Safety Output 2
8	Orange	44	Guard open signal +24VDC out
N/A	_	34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

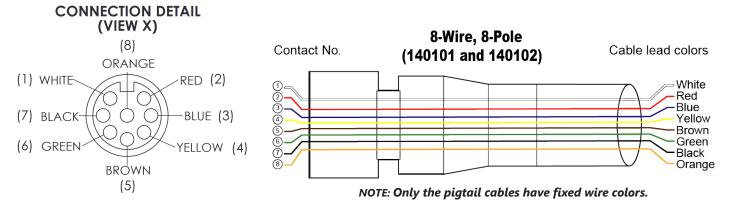


140201

IDEM Connection Cables Selection Chart								
Part Number	Price	Description	Connection	Length	Cable Jacket			
<u>140201</u>	\$41.00	Connection cable	8-pin M12 axial female to 8-pin M12 axial male	2m [6.56 ft]	Black PVC			
<u>140202</u>	\$51.00	Connection cable	8-pin M12 axial female to 8-pin M12 axial male	5m [16.40 ft]	Black PVC			
<u>140203</u>	\$62.00	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>	\$59.00	8-pin M12 female	Pigtail, 5m [16.4 ft]	
<u>140102</u>	\$88.00	quick disconnect	Pigtail, 10m [32.8 ft]	





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 M12 Connection Box For Use With Z-Range Switches





- 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>	\$262.00	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>	\$22.00	Shorting plug, 8 pole, for use with IDEM Z-Range connection blocks	-	_	-	-	<u>PDF</u>		
<u>140204</u>	\$41.00	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.



<u>140210-Z</u>



140204



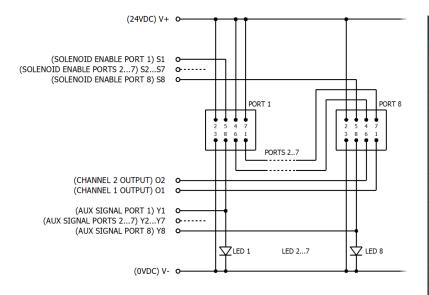
<u>140205</u>

IDEM Connection Box For Use With Z-Range Switches



IDE	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 (apply +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						
O2	Saf	ety output channel 2						

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.