



OSSD Safety Rope Switches from IDEM

Guardian Line Series

Operating Instructions



Heavy Duty Types: GLHD (Dual Head)
GLHD-SS (Dual Head)



GLHR/L (Single Head)
GLHR/L-SS (Single Head)



Standard Duty Types: GLS
GLS-SS



Mini Duty Type: GLM
GLM-SS



All switches supplied as M12 male
8 way on 250mm (10 inch) flying lead

Using Safety Rope Emergency Stop Switches

Application:

Safety Rope 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 Rope 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 Rope 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. The devices are able to maintain PLe with devices connected in series due to internal self-tests of the contact block Type Z.

These devices can be connected in series with other IDEM 'Z' type devices to form a system.

It is recommended to limit the number of switches connected in series to 30 maximum.

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Operation:

All IDEM Safety Rope Emergency Stop Switches conform to Standards ISO13850 and IEC60947-5-1. They have a positive mechanical linkage between the switch contacts 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 contact blocks can be set to the operational condition (safety circuits ON, auxiliary circuit OFF) by pressing a blue reset button on the switch cover. All of the Safety Rope Switches have wire-breakage monitoring. On pulling or breakage (tension loss) of the rope, the safety circuits are positively turned OFF and the auxiliary circuit turned ON.

The switches are mechanically latched and can then only be returned to the operating condition by pressing the reset button as required by ISO13850.

Installation Guide:

1. Installation of all IDEM Safety Rope Switch systems 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.

2. According to ISO13850 pulleys may only be mounted such that a complete length of the rope can be observed.

3. Rope support eyebolts must be fitted at 2.5 m. min. to 3m. max. intervals along all rope lengths between switches. The rope must be supported no more than 500mm from the Switch eyebolt or Safety Spring (if used). It is important that this first 500mm is not used as part of the active protection coverage.

4. M5 mounting bolts must be used to fix the switches. Tightening torque for mounting bolts to ensure reliable fixing is 4 Nm. Tightening torque for the lid screws, conduit entry plugs and cable glands must be 1.5 Nm to ensure IP seal. Only use the correct size gland for the conduit entry and cable outside diameter.

5. Tensioning of rope is achieved by use of IDEM tensioner/gripper assemblies.

On installation set the tension to the mid position as indicated by the markers in the viewing window of each switch. Check operation of all switches and the control circuits by pulling the rope at various locations along the active protection area and resetting each switch by depressing the Blue Reset button. Ensure each time that the switches latch off and require manual resetting by depressing the blue reset button. Increase the system tension further, if required, depending upon the checks along the active length of coverage.

Typical operational condition for successful operation of the system is less than 75N. pulling force and less than 150mm deflection of rope between eyebolt supports.

6. Maintenance:

Every Month: Check correct operation of system at locations along all coverage length. Check for nominal tension setting, re-tension rope if necessary.

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.

Original Instructions.

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Pour obtenir cette fiche en Français, veuillez contacter info@idemsafety.com
Para solicitar esta hoja de datos en Español, por favor contacto con info@idemsafety.com

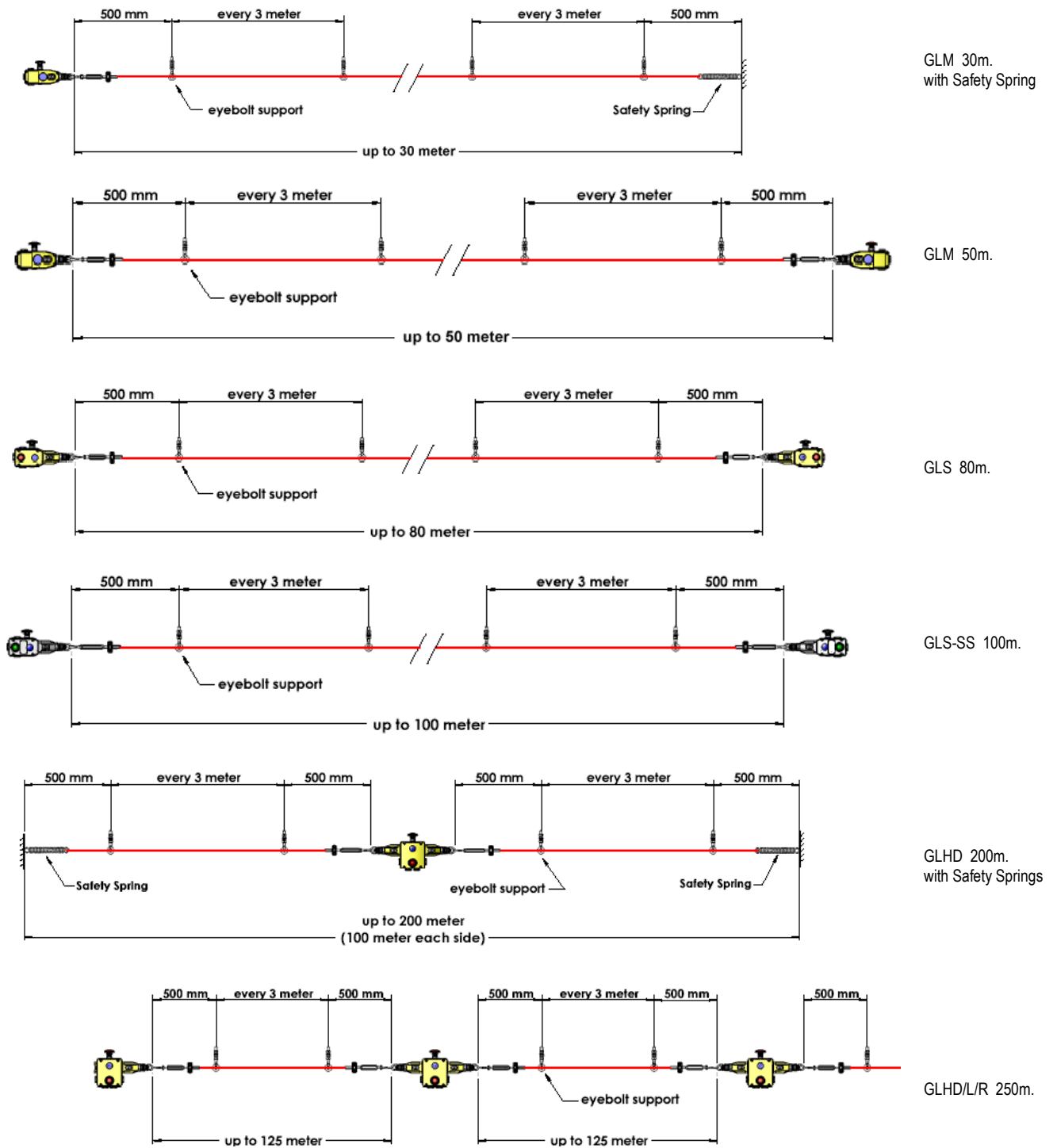


WARNING: DO NOT DEFEAT, TAMPER, OR BYPASS THE SAFETY FUNCTION. FAILURE TO DO SO CAN RESULT IN DEATH OR SERIOUS INJURY.

AVERTISSEMENT: NE PAS DESACTIVER, MODIFIER, RETIRER, OU CONTOURNER CETI INTERVERROUILLAGE IL PEUT EN RESULTER DES BLESSURES GRAVES DU PERSONNEL UTILISATEUR.

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7a. Recommended rope span options and fittings - (subject to an individual risk assessment for the installation):



Typical operating conditions:

	0mm	3.5mm	14.5mm	17.0mm
Safety outputs	Latched off – Rope Slack	Tension Range (Switch Reset)	Rope Pulled	
	Safety Output 1 OFF	Safety Output 1 ON	Safety Output 1 OFF	Safety Output 2 OFF
Auxiliary output	Safety Output 2 OFF	Safety Output 2 ON	ON	
	ON	OFF	ON	

7b. Test conditions after installation: (recommended to check at various operating positions along the whole length of the installation).

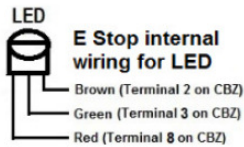
Information with regard to IEC 60947-5-5:
 Perpendicular Force to operate the switches midway between
 Eyebolt supports: Check <200N. Rope Deflection <400mm

Information with regard to AS/NZS 4024.3610:
 Perpendicular Force to operate the switches midway between
 Eyebolt supports: Check <70N. Rope Deflection <300mm

8. Wiring and Technical data:

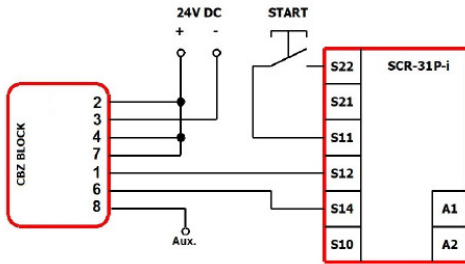
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External LED:

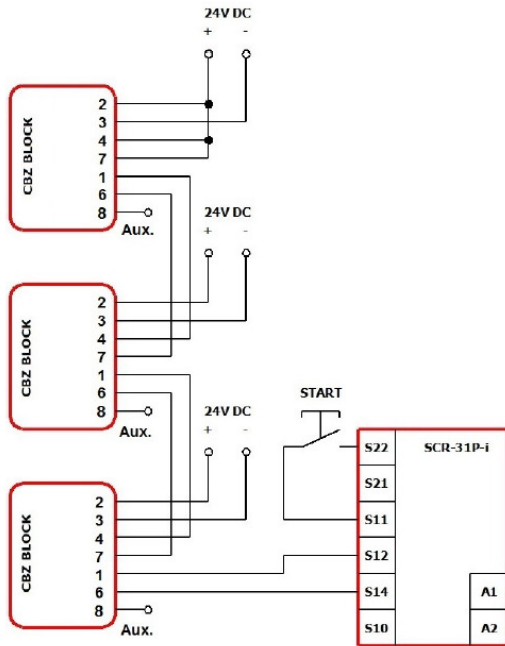


GREEN ON	Outputs enabled
RED ON	Outputs disabled
RED FLASH	Fault – check internal LED's Diagnostics

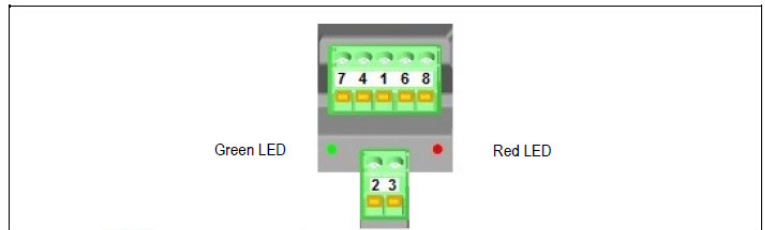
Single switch to an SCR-31-P-i Safety Relay



Switches in series to an SCR-31-P-i Safety relay.



Internal LED's (remove switch cover):



LED Function		Status
GREEN	RED	
ON	OFF	Inputs active, outputs enabled.
OFF	ON	Outputs disabled.
FLASHING	ON	Inputs missing, outputs disabled.
OFF	FLASH 2Hz	Output fault (check for wiring short circuits)
OFF	FLASH 4Hz	Internal fault

Z Internal Connections	External connections M12 Male 8 pin (on 25cm (10 inch) flying lead. Pin view from switch.	Circuit
Terminal 8	Pin 8	Aux. +24VDC out
Terminal 7	Pin 7	Safety Input 1
Terminal 1	Pin 1	Safety Output 1
Terminal 4	Pin 4	Safety Input 2
Terminal 6	Pin 6	Safety Output 2
Terminal 2	Pin 2	Supply +24V DC
Terminal 3	Pin 3	Supply 0V DC
	Pin 5	Not used

Standards:		
ISO14119 EN 60947-5-3 EN 60204-1 ISO 13849-1 EN 62061 UL508 UL60947-5-1 IEC 60947-5-5		
Technical Data:		
Rated Operating Voltage	24V DC -15% +10%	Use SELV/PELV
Power Consumption	0.7W	
Outputs Rated Voltage	24V DC	
Outputs max. / min. Current	0.2 A / 1mA	
Outputs Type	OSSD, PNP	
Inputs Rated Voltage / Current	24V DC / 2mA	
Auxiliary Signalling Output Rated Voltage	24V DC	
Auxiliary Signalling Output Max. Current	0.2 A PNP	
Mechanical Reliability B10d	1.5 x 10 ⁶ operations	
Response Time Guard Open	60ms max.	
Response Time Inputs Off	20ms max.	
Operating Temperature	-20 / 50C	
Dielectric Withstand	250V AC	
Enclosure Protection	IP67 (Die Cast Metal) IP69K (S/Steel) (Temporary cleaning)	
Body material	Die Cast Metal or S/Steel 316	
Characteristic Data according to IEC62061 (used as a sub system)		
Safety Integrity Level	SIL3	
PFH (1/h)	1.0 E-09	Corresponds to 1% of SIL3
PFD	8.8 E-05	Corresponds to 9% of SIL3
Proof Test Interval T ₁	20a	
Characteristic Data according to EN ISO13849-1		
Performance Level	e	
Category	4	
MTTF _d	771a	
Diagnostic Coverage DC	High	

INFORMATION WITH REGARD TO UL standards:

Type 1 Enclosures.
Max. Temp: 50°C.
Use Class 2 supply or equivalent
Max. Output: 24V.dc 100mA.

Earth bonding terminal inside enclosure if required. Wire range: 16AWG – 12AWG Copper. Torque 7lb/in (0.8Nm)

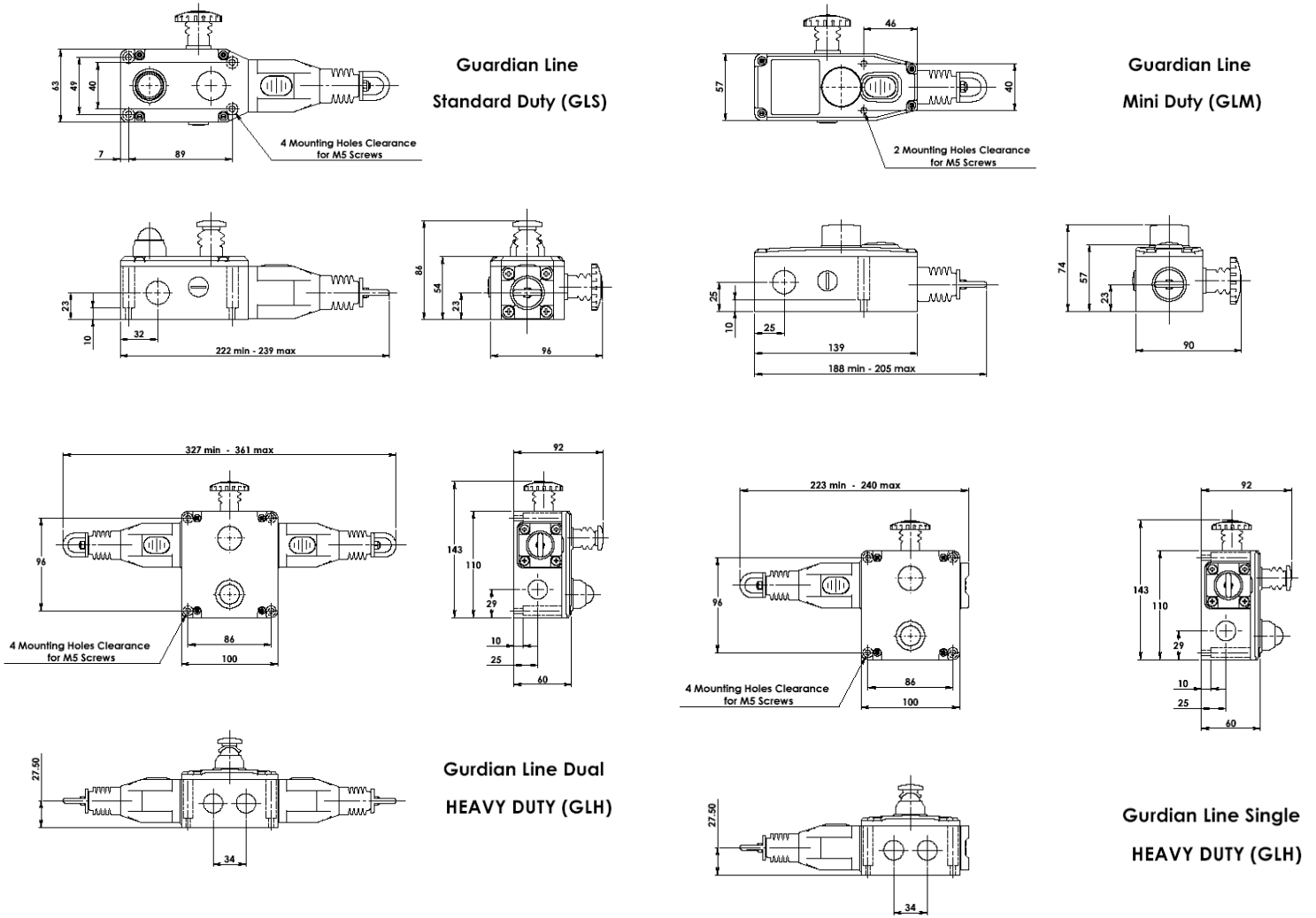
9. To fit Mushroom type Emergency stop Buttons:

- Remove M12 threaded plug from the mounting port.
- Apply thread locking solution to the threads of the E Stop mechanism.
- Insert the Emergency Stop Mechanism into the mounting port and tighten to 1.5Nm.
- After installation test and reset to ensure all safety circuits are functioning correctly.

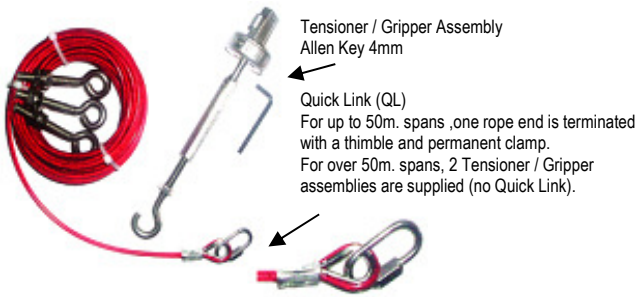


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10. Dimensions (mm):



11. Accessories



Sales Number		Description	Rope	Eyebolts	Tensioner Gripper S/S	Allen Key
Galvanised	Stainless Steel					
140001	140010	5M Rope Kit	5M QL	3	1	1
140002	140011	10M Rope Kit	10M. QL	5	1	1
140003	140012	15M Rope Kit	15M. QL	7	1	1
140004	140013	20M Rope Kit	20M. QL	9	1	1
140005	140014	30M Rope Kit	30M. QL	12	1	1
140006	140015	50M Rope Kit	50M. QL	20	1	1
140007	140016	80M Rope Kit	80M.	30	2	2
140008	140017	100M Rope Kit	100M.	37	2	2
140009	140018	125M Rope Kit	126M.	45	2	2
140033		Rope only 5M				
140034		Rope only 10M				
140036		Rope only 20M				
140037		Rope only 30M				
140038		Rope only 50M				
140039		Rope only 80M				
140040		Rope only 100M				
140041		Rope only 126M				

Sales Number	Description
140019 140020	Rope Tensioner / Gripper Stainless Steel Rope Tensioner / Gripper Galvanised
140021 140064	77mm Long 40mm High Fixing Hole centres 20mm Universal Pulley Stainless Steel Universal Pulley Galvanised
140045 140046	84mm Long Thread length 51mm M8 x 1.25 Eyebolt Stainless Steel Eyebolt Galvanised
140044 140144	E-Stop Mechanism – Standard E-Stop Mechanism – Stainless Steel
140043	Safety Spring 220mm long

