

## Installation Instruction for Safeline SL4 Grabwire



# Operating Instructions: SafeLine SL4

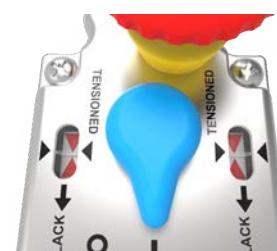
Description	SL4
<p>The stainless steel Safeline 4 cable/push button operated system can be installed where no physical guard is present on conveyors and provide constant emergency stop access. This switch is made from 316 stainless steel or Diecast.</p> <p>The Safeline 4 has the following features in one unit making.</p> <ol style="list-style-type: none"> <li>1. The mechanical mechanism helps ensure that the contacts are immediately latched open on actuation and can only be reset by the intentional action of turning the blue reset knob. The design also protects against nuisance tripping and the effects of thermal expansion.</li> <li>2. A mushroom head emergency stop button is optional on the unit to provide E-Stop access.</li> <li>3. The cable status indicators make the system easy to set up and maintain for spans up to 75 meters.</li> <li>4. Four sets of contacts are provided: 2 N.C. + 2 N.O or 3NC + 1NO</li> <li>5. Sealed to IP66 with rugged construction using 316 stainless steel or Diecast to withstand harsh conditions.</li> <li>6. Tension indicator windows on both sides of the lid, for ease when tensioning.</li> </ol>	

The Mechan Safety Grab wire SL4 conforms to the relevant international standards, such as ISO13850 (EN 418) and IEC60947-5-5. The SL4 has a positive mechanical linkage between the switch contacts and the wire rope mechanism as per IEC60947-5-1. The SL4 switch is brought into the operational condition by pre-tensioning the rope and 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 indicators on both sides of the housing. Once tensioned the switch contact blocks can be set to the operational condition (safety contacts closed, auxiliary contacts open) by turning the blue switch to the "run" position, at this point the machine/safety relay is ready to run.

On pulling/pressing the red E-stop or breaking (tension loss) of the rope, the safety contacts will open and the auxiliary contacts will close. The SL4 is mechanically latched and can then only be returned to the operational condition by turning the blue rest switch into the "run" position as required by ISO13850 (EN418).



**Lid mounted E-stop button**  
A mushroom head emergency stop button is included on the unit to provide total E-Stop access even at the extreme ends of the span.



**Cable status indicator on lid**  
The cable status indicators on both sides of the lid make the system easy to setup and maintain for spans up to 75m (246 ft).

# Technical Specification: SL4

Technology	Mechanical						
<b>Electrical</b>							
Safety Contacts	2 NC + 2 NO or 3 NC + 1 NO						
Rated Insulation Voltage (Ui)	500V						
Withstand Voltage	2500V						
Switching Current @ Voltage, Min	5mA @ 5V DC						
Rating	Utilisation Category: AC15						
Operational Rating	AC15 A300 240V. 3A / 120V 6A ac 24V. 2.5A dc inductive						
Thermal Current	10A						
Operating Life @100mA load	1 x 10 <sup>6</sup>						
<b>Operating Characteristics</b>							
Cable Span Between Switches, Max	75m (246 ft)						
Tension Force To Run Position	103N						
Tensioning Force To Lockout	188N						
Operating Force, Min	<125N @ 300mm Deflection						
Actuation Frequency, Max	1 Cycle/s						
<b>General Information</b>							
Construction	316 Stainless Steel or Diecast						
IP Rating	IP66						
Operating Temperature	-25°C to +80°C						
Fixing	4 X M5 Security Screws						
Connection	Contact Block						
Indication Material	Acetal						
Weight	1.55kg						
Colour	316 Stainless Steel or Yellow						
<b>Mechanical Data</b>							
Conduit entries	3 x M20						
Torque settings	Mounting M5 4.0 Nm, Terminals 1.0 Nm						
Vibration resistance	10-500Hz 0.35mm						
Shock resistance	15g 11ms						
<b>Utilization Category</b>							
A600/AC-15	(Ue)	600V	500V	240V	120V		
	(le)	1.2A	1.4A	3A	6A		
DC-13	(Ue)	24V					
	(le)	2A					
<b>Safety Standards</b>							
Standards	IEC 60947-5-5, ISO 13850, IEC 60947-5-1 Emergency Stop Device In Accordance With ISO 13850 IEC 13849-1						
Certifications	CE marked for all applicable directives						
<b>Safety Related Data</b>							
B10d	2,000,000		PFH	1.1 x 10 <sup>-9</sup>			
TM (Mission Time)	>100 Years		PFHd	1.12 x 10 <sup>-9</sup>			
DC	99%		SFF	99.5%			
MTTFd	High > 385 Years (Based on usage rate of 360 Days/Year, 24 Hours/Day, 10 Operations/Hour)						
SIL up to	SIL 3 acc. to EN 62061 (If connected with safety relay or safety PLC)						
Performance Level (PL) up to	PL-e acc. to EN ISO 13849-1 (If connected with safety relay or safety PLC)						
Safety Category up to	CAT4 acc. to EN ISO 13849-1 (If connected with safety relay or safety PLC)						

Note: May be suitable for use in performance levels Plc or Pld systems (according to ISO 13849-1) and for use in SIL2 or SIL3 systems (according to IEC 62061) depending on the architecture and application characteristics.

Note: The safety contacts are described as normally closed (N.C) i.e, wire is tensioned as per indication and the machine is able to start.

## Installation

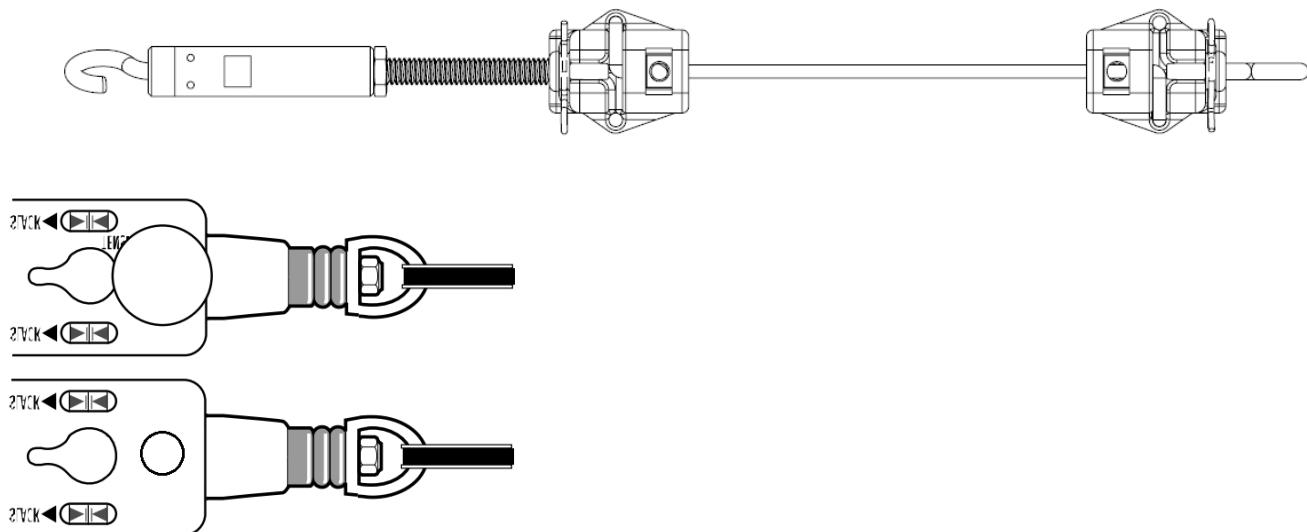
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1. Installation of the Mechan Grab wire SL4 system must be in accordance with a risk assessment for the individual application. Installation must only be conducted by competent personnel and in accordance with these instructions.
2. According to ISO13850 (EN418), 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. 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 the first 500mm is not used as part of the active protection coverage.
4. M5 mounting bolts must be used to fix the switch. 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 the use of any safety tensioner kit or the Mechan Controls tensioner.

On installation, set the tension to the mid position as indicated by the markers in the viewing windows of each SL4. Check the operation of the SL4 and the control circuits by pulling the rope at various locations along the active protection area and resetting each SL4 by turning the Blue Reset switch. Ensure that each time the SL4 latches off and requires manual resetting by turning the blue reset switch. Increase the system tension further, if required, depending upon the checks along the active length of coverage.

With a Mushroom type E-Stop button (Red) then test and reset each SL4 to ensure correct function of the safety control circuits.

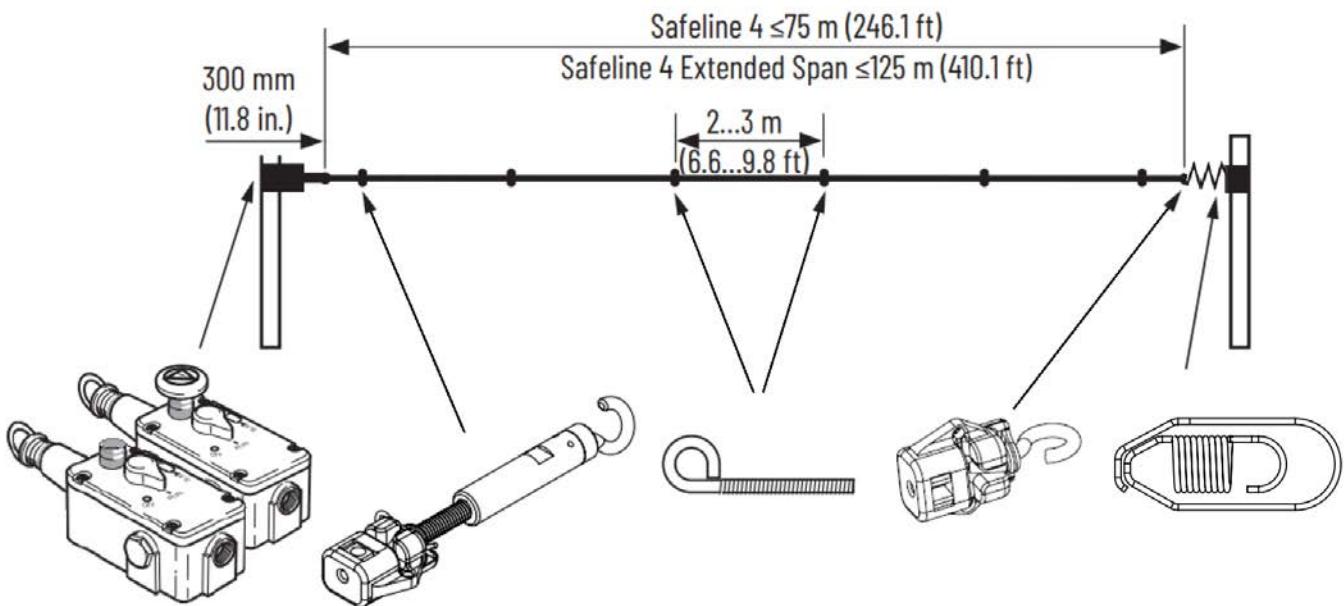
The typical operational condition for the successful operation of the system is less than 75N pulling force and less than 150mm deflection of the rope between the eyebolt supports.



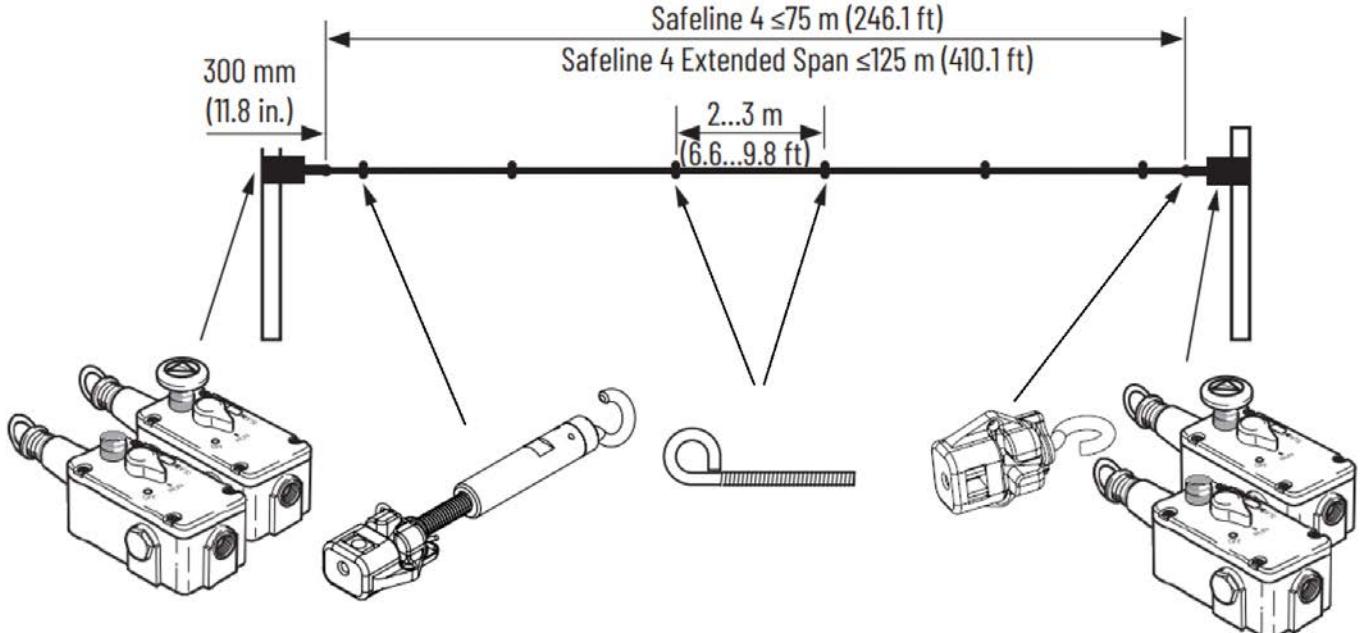
## Mounting

Use M5 or #10-32 bolts to mount the SL4 to the frame of the machine.

**Figure 1 - Typical Mounting –Safeline 4 Cable Pull Switch**

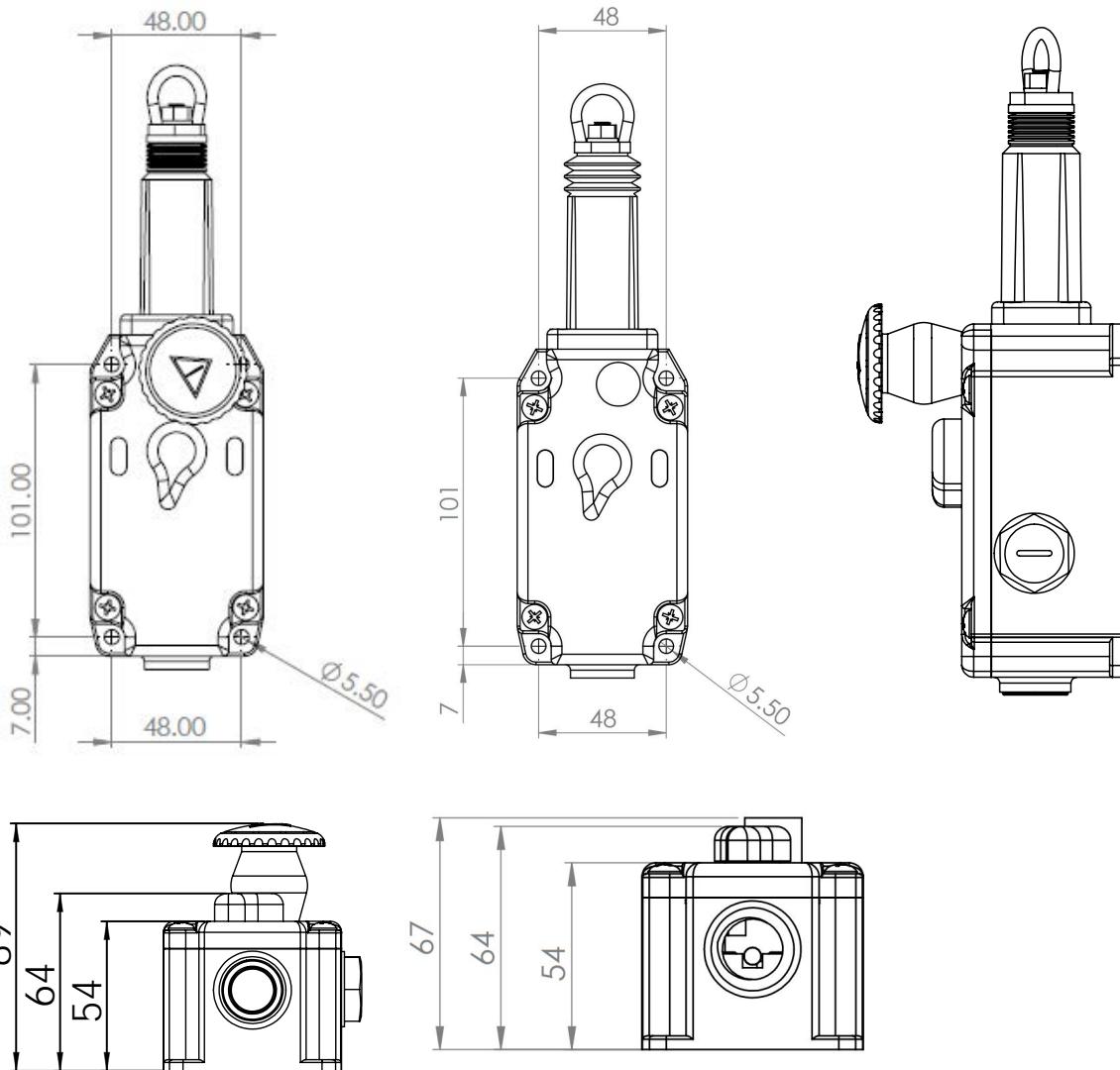


**Figure 2 - Typical Mounting –Safeline 4 Extended Span Cable Pull Switch**

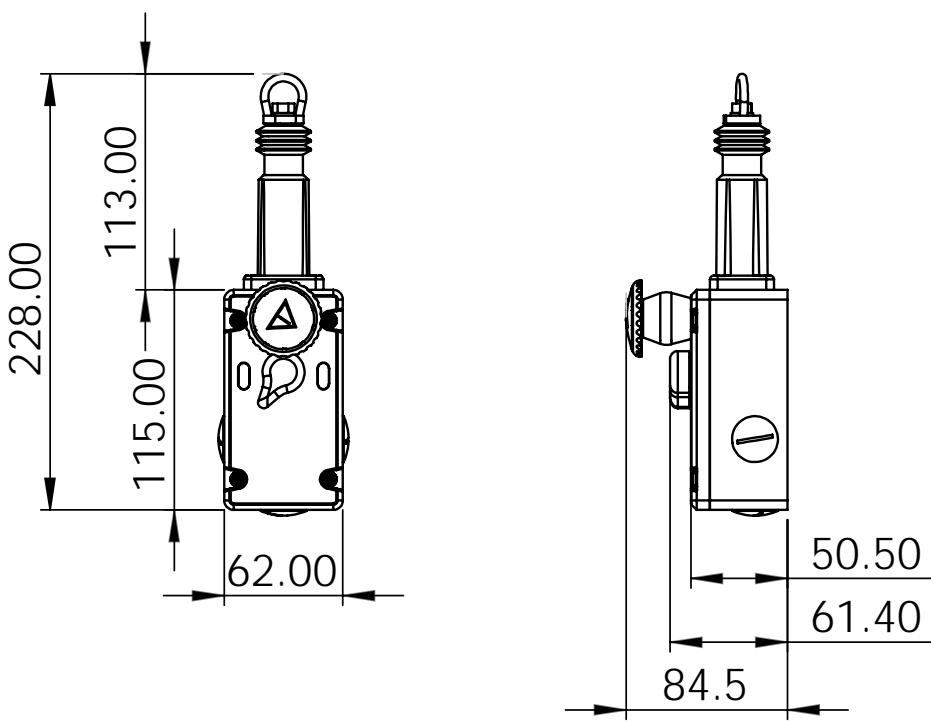


## Dimensions

### 316 Stainless Steel



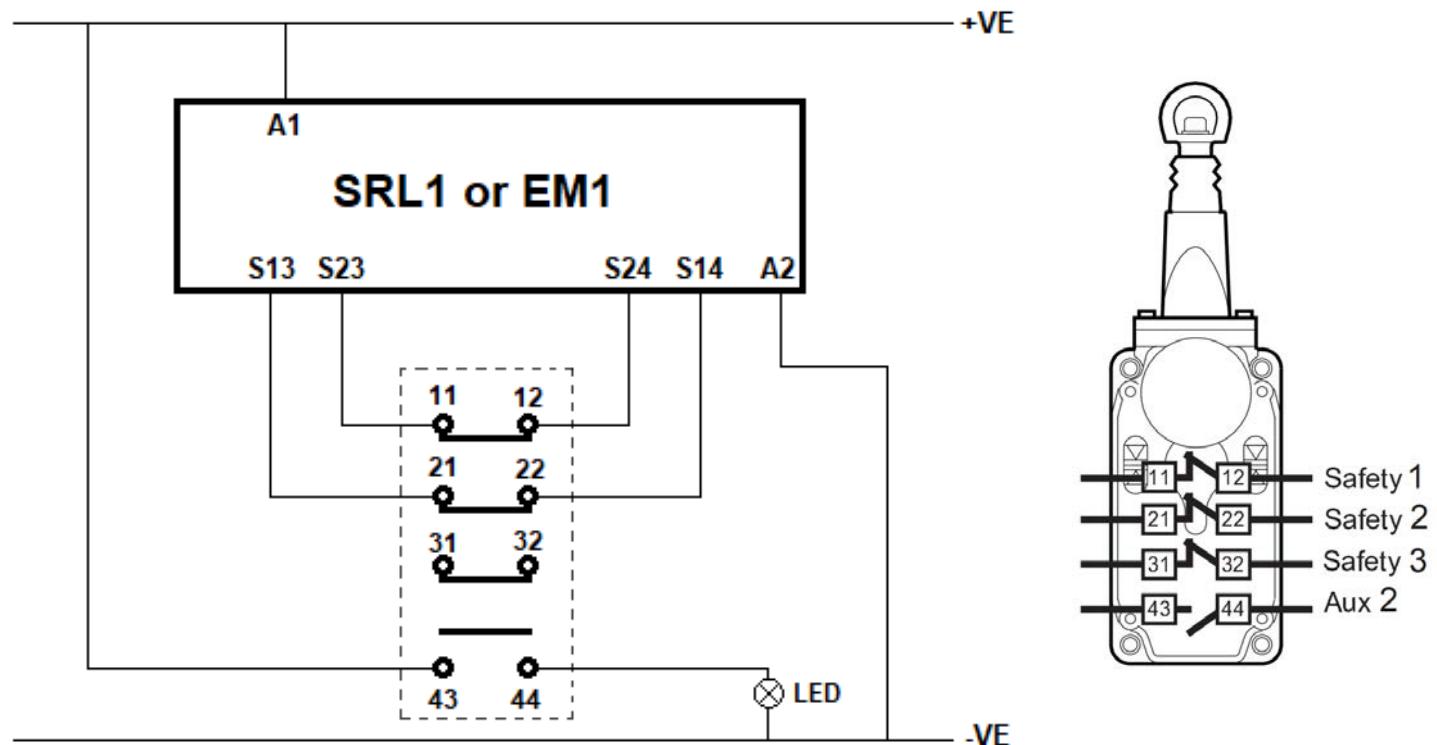
### Diecast



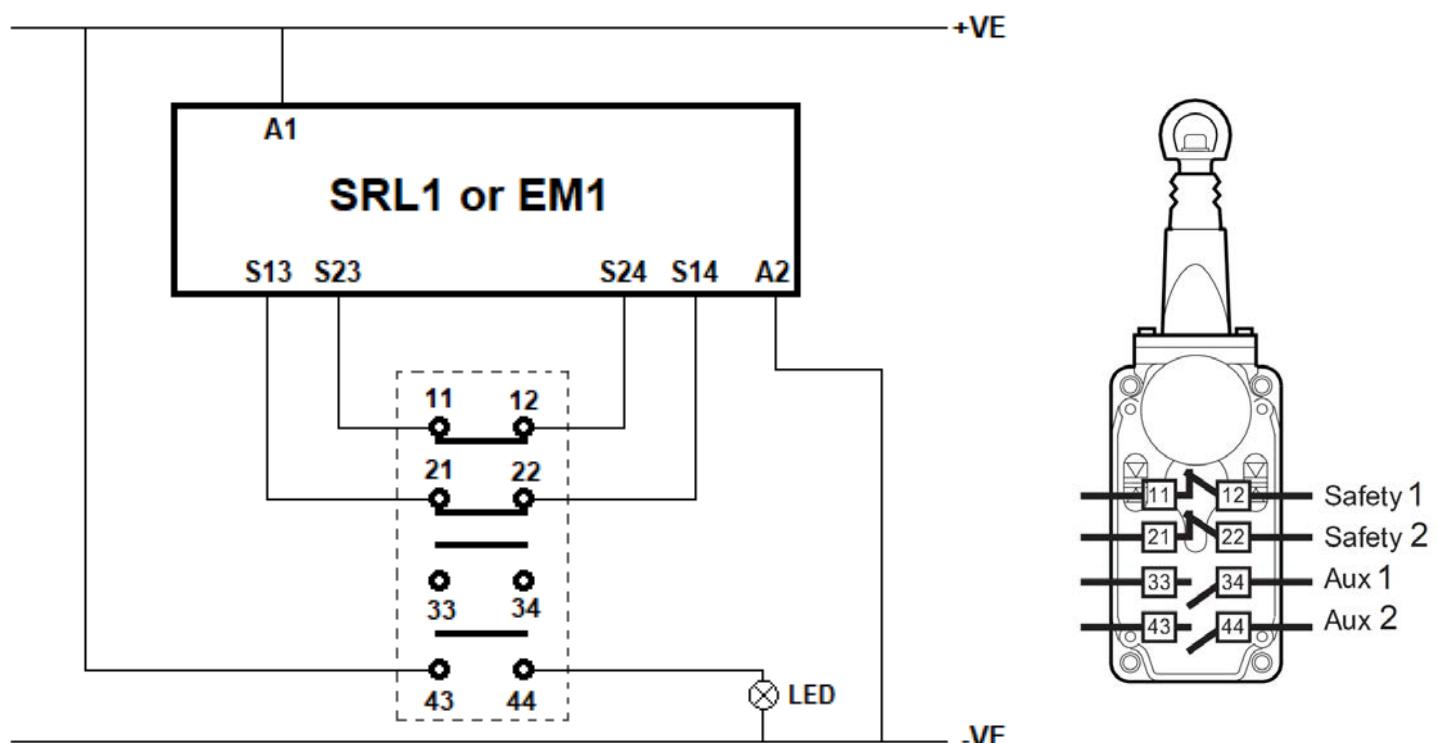
***\*All dimensions are in MM***

## Wiring/Connection Diagrams

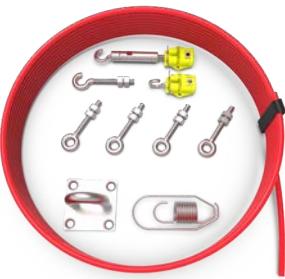
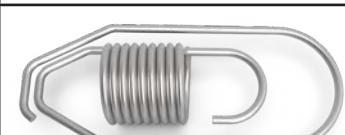
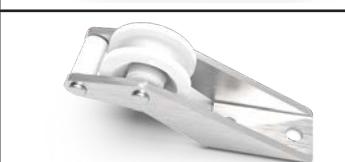
### Typical connection for SL4 with Mechan safety relay



### Typical connection for SL4 with Mechan safety relay



## Accessories

Description	Material	Part Number
	Polypropylene Plastic 316 Stainless Steel	314.010
SL4 installation Kit - 10m (32.8 ft)		314.011
SL4 installation Kit - 15m (49.2 ft)		314.012
SL4 installation Kit - 20m (65.6 ft)		314.013
SL4 installation Kit - 30m (98.4 ft)		314.014
SL4 installation Kit - 50m (164 ft)		314.015
SL4 installation Kit - 75m (246 ft)		314.016
	Polypropylene Covered Steel Cable	314.017
Rope Only - 5M		314.018
Rope Only - 10M		314.019
Rope Only - 20M		314.020
Rope Only - 30M		314.021
Rope Only - 40M		314.022
Rope Only - 50M		314.023
Rope Only - 60M		314.024
	Tensionner	316 Stainless Steel
	Cable Clamp	Plastic & 316 Stainless Steel
	Eyebolt M8	316 Stainless Steel
	Anchor Plate	316 Stainless Steel
	Open Hook M8	316 Stainless Steel
	Anchor Spring	316 Stainless Steel
	Corner Bracket	316 Stainless Steel

# SL4-SS-E-31

Version		Auxiliary Contacts	
SL4	SafeLine 4	1	1 NO
Enclosure		2	2 NO
Blank	Diecast	Normally Closed Contacts	
SS	Stainless Steel	2	2 NC
Emergency Stop Button		3	3 NC
E	With E Stop		
NA	Without E Stop		

## SL4 Installation Kit \*\*

Connection Type	
05M	SL4 installation Kit (16.4ft)
10M	SL4 installation Kit (32.8ft)
15M	SL4 installation Kit (49.2ft)
20M	SL4 installation Kit (65.6ft)
30M	SL4 installation Kit (98.4ft)
50M	SL4 installation Kit (164ft)
75M	SL4 installation Kit (246ft)

Example 1: Safeline4 with E|Stop, 2NC & 2NO contacts

# SL4-SS-E-22

Standard Grabwire housing      Has 2NC and 2NO output contacts  
 Stainless Steel Enclosure      E|Stop Included

Example 2: Safeline4 without E|Stop, 3NC & 1NO contacts

# SL4-SS-31

Standard Grabwire housing      Has 3NC and 1NO output contacts  
 Stainless Steel Enclosure

## Emergency Stop Button

The SafeLine4 comes with an optional emergency stop button for applications that require an E|stop.



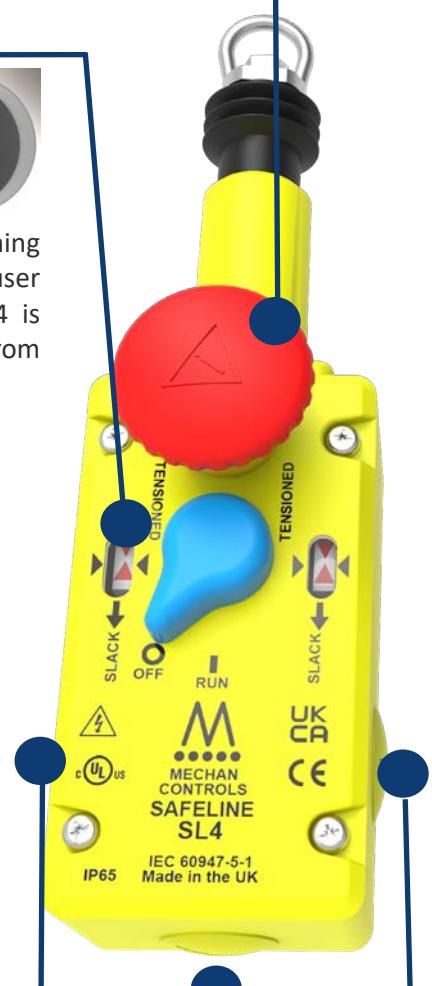
## What is the SafeLine4 Grab Wire?

The SafeLine4 grabwire is a cable/E|Stop button operated system that can be installed where no physical guarding is present on conveyors, providing constant emergency stop access.

## Tensioning Screen

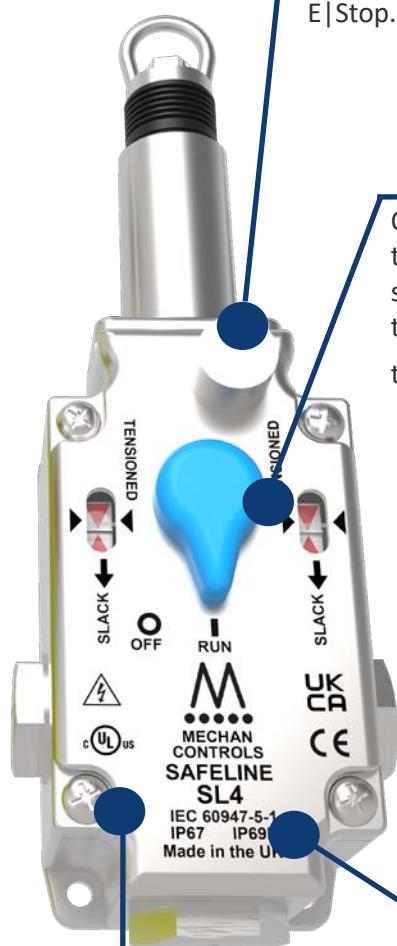


There are 2 tensioning screens to allow the user to see if the SafeLine 4 is correctly tensioned from multiple angles.



## Emergency Stop Button

For situations where an E|Stop would cause nuisance tripping, the SafeLine4 has an option without an E|Stop.



## Reset Switch

Once the SafeLine4 is tensioned correctly, the reset switch must be turned into the "RUN" position to allow the machine to be started.



## IP Rated

Tested and approved to IP66 suitable for strict wash down environments.

## 3 Cable Entry Points

Designed for ease of installation, the SafeLine4 has 3 cable entry points.

## Security

The SafeLine lid is fixed with M5 security screws.

# Information

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## Safety Assessment

A risk assessment should take place to establish that the specifications of the SafeLine 4 product are suitable for the application required. See Technical Specifications below or contact Mechan Controls for further information.

The products may only be installed, commissioned, operated and maintained by competent persons.

A competent person is a qualified and knowledgeable person who, because of their training, experience and current professional activity, has the specialist knowledge required. An understanding of European and International laws, directives and standards is recommended.

## Maintenance

It is recommended to check the safe operation of the unit and look for signs of damage or excessive wear on a weekly basis. Damaged units should be replaced or returned to the manufacturer for repair where practical.

## Disclaimer

In the interest of product development specifications are subject to change without notice. It is the responsibility of the user to ensure compliance with any acts or by-laws in place. All information regarding Mechan equipment is believed to be accurate at the time of printing. Responsibility cannot be accepted for errors or omissions.

## Warranty

Warranty will be void if the following points are true:

- The product was not used for its intended purpose
- Damaged was caused by usage not stated in the manual
- Modifications have been made to the products (e.g exchanging components)
- Operating personnel are not suitably qualified

## Warning!



The Mechan Controls SafeLine 4 Grab Wire system should not be manipulated or overridden.

Security screws are provided with every Mechan product.

# Mechan Controls Safety Products



**M M E C H A N  
.... C O N T R O L S**

14/16 Seddon Place Stanley Industrial Estate Skelmersdale Lancashire WN8 8EB  
Telephone: +44 (0) 1695 722264 Fax: +44 (0) 1695 729664 Email: sales@mechancontrols.co.uk  
[www.mechancontrols.com](http://www.mechancontrols.com)