Pull wire emergency stop switch
LineStrong

LineStrong is a pull wire emergency stop switch, used for easy reach of the emergency stop function along machines and sections of conveyors.

A pull wire emergency stop switch allows to initiate the emergency stop command from any point along the installed wire length by pulling the wire. It replaces a series of emergency stop buttons and is easier to install.

LineStrong is also available in different models for different lengths of wires, with different housing material as well as an explosion proof version.

Easy to install

Quick installation
A pull wire emergency stop switch is easier to install than a system of several emergency stop buttons along a carriage path.

Highly adaptable
Several models to choose between gives a variety of mounting possibilities and features.

Long wire length
Can handle wires up to 200 m on a single switch.

Safety and protection

Easily accessible
Easy reach of the emergency stop function along machines, conveyors and processes.

High level of safety
The positive forced disconnect contacts provide a high level of safety and are double switching, i.e. triggers emergency stop in both directions of the wire.

Continuous operation

Reliable in extreme conditions
Robust construction makes LineStrong ideal for use in demanding environments.

LED diagnostics
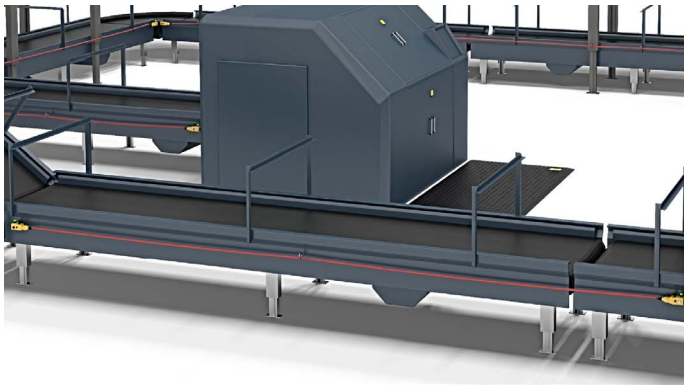Integrated LED diagnostics ensures status can be seen easily from a distance.

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Applications
LineStrong

Instead of multiple emergency stops

A pull wire emergency stop switch is often placed along conveyor belts or carriage paths where access to the stop function must be possible along the whole line. It is often easier to install a pull wire emergency stop switch than to place multiple emergency stop buttons if the distance is longer.

LineStrong can handle wires up to 200 m on one single switch and since the emergency stop command can be initiated from any point along the wire, this gives better access to the emergency stop function than using emergency stop buttons.
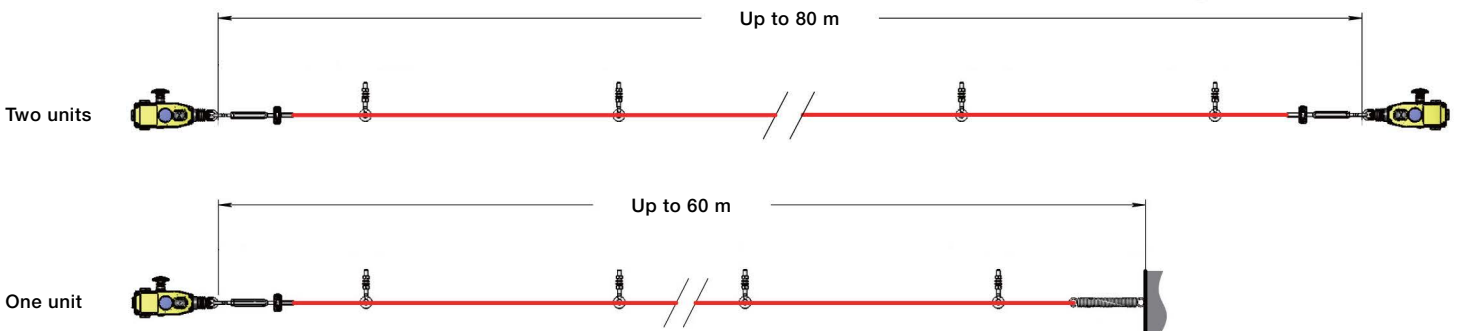
As protective device in low risk applications

LineStrong can be used as protection, for example along conveyors with low risks where the wire can be installed at waist height in front of the conveyor, which provides an emergency stop if someone walks or falls towards the conveyor, hence pulling the wire.

One, two or several switches

The maximum length of the wire attached to LineStrong depends on if there is a LineStrong unit attached to both ends of the wire or if one end is attached to a wall/fixed object. In the image below LineStrong2 is used as an example.

Two units — Up to 80 m

One unit — Up to 60 m

Features
LineStrong

Positive forced disconnected contacts

The contacts in LineStrong are positive force disconnected, which ensures that the contacts will not be held in a normally closed position due to a failure of the spring mechanism or the welding/sticking of the contacts.

Reset button

All models of LineStrong have an integrated reset button that needs to be pressed in order to reset the emergency stop if the emergency stop function has been triggered.

Emergency stop button

Most LineStrong models have an integrated emergency stop button on the housing of the switch. Since the first half meter of the wire is not intended to pull in order to trigger the emergency stop function, the integrated emergency stop button provides quick and simple access to the emergency stop function if you are standing right in front of LineStrong. The emergency stop button of LineStrong 2 can be moved to either side of LineStrong to enable best access depending on position and height of LineStrong.

Integrated LED

LineStrong2 and LineStrong3 have an integrated 2-color LED that shows if the emergency stop function has been triggered or not. The LED is also available as spare part.

Material

LineStrong is available with a housing in yellow die cast aluminum alloy or with a housing in stainless steel 316 which is recommended for severe applications in e.g. the food processing and the chemical industries.
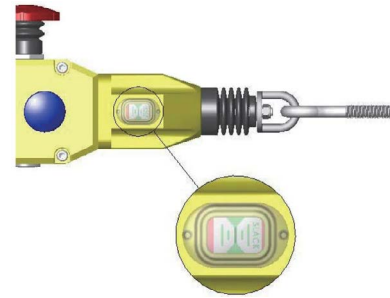
Left hand, right hand or both sides

LineStrong1 and LineStrong2 can be mounted in any direction. Linestrong3 is available in different models depending on installation. L (left hand) should be used if the placement of the grab wire switch is to the left in the installation. R (right hand) should be used if the grab wire switch is to the right in the installation. D (double wire) has wire entries from both sides of the grab wire switch.

Wire breakage monitoring

The contacts are double switching which means that the emergency stop command is given both when someone pulls the wire and if the wire should break.
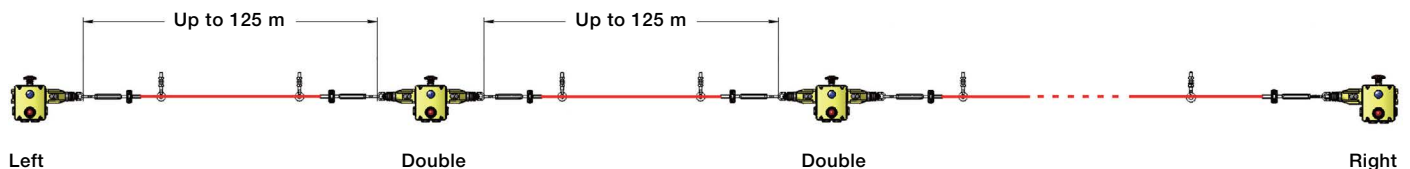
Indication of wire tension

All models are equipped with an indicator of the tension of the wire which simplifies installation and adjustment.

Explosion proof

LineStrong2 also exists in an X-model with certified explosion proof contact blocks. The X-model has a stainless steel body and can be used in ATEX zones 1, 2, 21 and 22 (gas and dust). The X-model is preassembled with a 3 m cable.
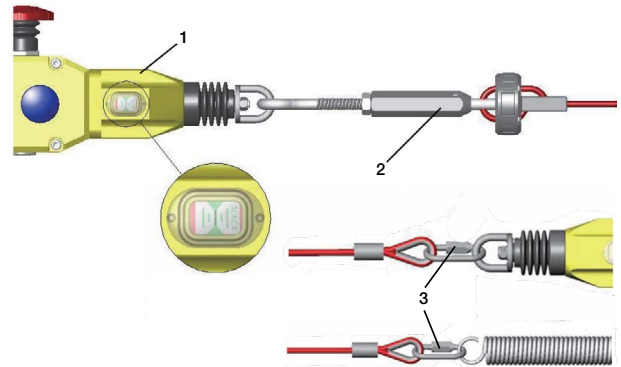
Up to 125 m   Up to 125 m

Left   Double   Double   Right

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Features
LineStrong

Easier installation with tensioner/gripper

The tensioner/gripper accessory significantly reduces the installation time. Traditional grab wire systems normally need turnbuckle and clamps, which are difficult to tension and adjust, and normally require frequent re-tensioning. The tensioner gripper integrates an eyehook, a tensioner thimble and a wire strength gripper in one assembly which enables rapid connection to the switch eyebolts and fast and accurate tensioning of the wire.

Thanks to the switch tension indicator, it is easy to adjust the system accurately and quickly. The double clamp mechanism prevents wire slippage and significantly reduces machine downtime which can occur which traditional turnbuckle systems.

For systems longer than 50 m, the tensioner/gripper is necessary on both sides.

1. Tension to mid position as indicated by the green arrows in the viwing window of each switch
2. The tensioner thimble allows immediate accurate and final tensioning of the wire, whilst viewing the tension marker through the viewing window on the switch.
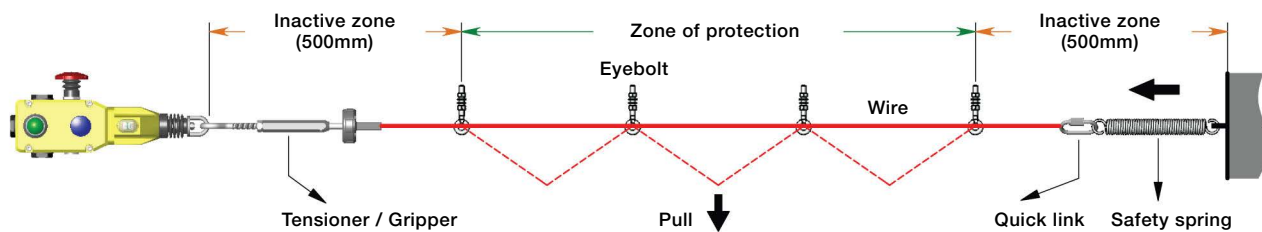3. Quick Link termination.

Quick-link termination

The quick link termination is provided for easy connection to the safety spring or the switch eyebolt for systems up to 50 m.

Mounting accessories

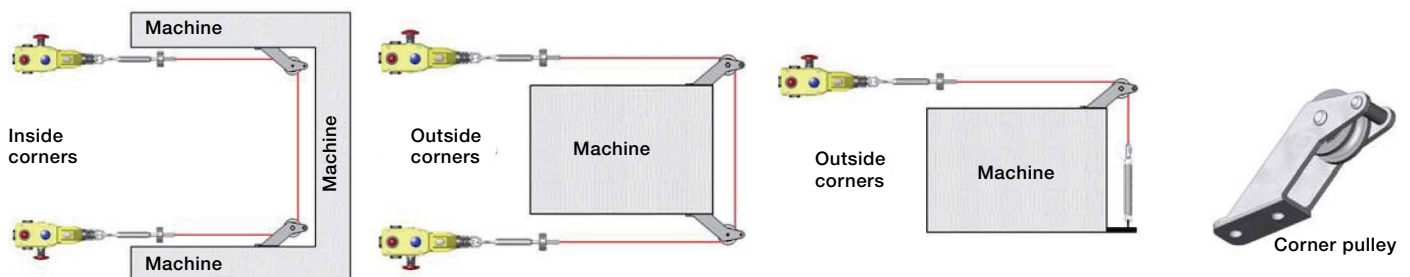The wire pull kits contains the suitable accessories for the included wire length.
- When using one switch, the wire must be anchored at the other end using a safety spring.
- The first eyeball support must be placed no more than 500 mm from the switch eyebolt or safety spring.
- The part of the wire from the wire end to the first eyebolt support shall not be used as part of the active protection coverage.
- Wire support eyebolts must be fitted at 2.5 - 3 meters intervals along the complete wire length.
- The tensioner/gripper is used to adjust the correct tension

Corner pulley

A corner pulley can be used to navigate inside or outside corners without causing damage to the wire. They are in stainless steel and can be rigidly mounted.
When using a safety spring, a maximum of one corner pulley may be used, to ensure that the complete length of the wire is visible from either the switch or the spring anchorage.

Examples of using the corner pulley

Ordering information
LineStrong

LineStrong1

2TLC172377F0201

LineStrong2

2TLC172379F0201

LineStrong2Z

2TLC172350F0201

LineStrong3L

2TLC172385F0201

LineStrong3R

2TLC172387F0201

LineStrong3D

2TLC172383F0201

LineStrong

IP rating	Material	E-stop button	Contacts	Max. wire length (m)		Feature	Type	Order code
				1 unit	2 units			
IP67	Yellow die cast aluminum alloy	No	2 NO + 2 NC	30	50	-	LineStrong1	2TLA050200R0030
		Yes	2 NO + 2 NC	60	80	-	LineStrong2	2TLA050202R0332
			2 NO + 4 NC	100	125	Left hand	LineStrong3L	2TLA050206R0332
						Right hand	LineStrong3R	2TLA050208R0332
				200	325	Both sides	LineStrong3D	2TLA050204R0332
IP67, IP69K	Stainless steel 316	Yes	2 NO + 2 NC	60	80	-	LineStrong2Z	2TLA050202R0322
				80	100	Explosion proof	LineStrong2ZX	2TLA050202R7125
			2 NO + 4 NC	100	125	Left hand	LineStrong3LZ	2TLA050204R0322
						Right hand	LineStrong3RZ	2TLA050206R0322
				200	325	Both sides	LineStrong3DZ	2TLA050208R0322

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Accessories
LineStrong

Wire pull kit

2TLC172577F0201

Wire tensioner

2TLC172220F0201

Corner pulley

2TLC172581F0201

Eyebolt

2TLC172219F0201

Safety spring

2TLC172221F0201

LineStrong Screwdriver

2TLC172215F0201

Gland

2TLC172217F0201

Conduit plug

2TLC172218F0201

LineStrong LED 230

2TLC172902F0201

Mounting accessories

Description	Material	Length	Type	Order code
Wire pull kit including wire, eyebolts, tensioner/gripper and Allen key in right quantity for the included wire length.	Galvanized	10 m wire	10 m wire kit, gal	2TLA050210R0130
		20 m wire	20 m wire kit, gal	2TLA050210R0330
		80 m wire	80 m wire kit, gal	2TLA050210R0630
		100 m wire	100 m wire kit, gal	2TLA050210R0730
	Stainless steel	50 m wire	50 m wire kit, SS	2TLA050210R0520
		100 m wire	100 m wire kit, SS	2TLA050210R0720
Wire tensioner/gripper	Galvanized		Wire tensioner, gal	2TLA050210R4030
	Stainless steel		Wire tensioner, SS	2TLA050210R4020
Corner pulley	Galvanized		Corner pulley, gal	2TLA050210R6030
	Stainless steel		Corner pulley, SS	2TLA050210R6020
Eyebolt M8 x 1.25	Galvanized		Eyebolt M8x1.25, gal	2TLA050210R8030
	Stainless steel		Eyebolt M8x1.25, SS	2TLA050210R8020
Safety spring, 220mm	Stainless steel		Spring 220 mm, SS	2TLA050211R0004

Other accessories

Description	Type	Order code
Screwdriver, anti-tamper, Torx T20	Screwdriver T20	2TLA050211R0006
Gland M20 x 1.5	Gland M20x1.5	2TLA050040R0002
Conduit plug M20 x 1.5	Cond.Plug M20x1.5	2TLA050040R0004

Spare parts

Description	Type	Order code
LineStrong LED Green/Red +24 VDC	LineStrong LED 24	2TLA050211R0001
LineStrong LED Green/Red 230 VAC	LineStrong LED 230	2TLA050211R0003
LineStrong2 and LineStrong3 Emergency stop button.	LineStrong E-Stop	2TLA050211R0005

Cables
LineStrong

M12-C01

C5 cable

Separate cables and connectors

Description	Type	Order code
Connectors		
M12-5 pole female, straight	M12-C01	2TLA020055R1000
M12-5 pole male, straight	M12-C02	2TLA020055R1100
M12-8 pole female, straight	M12-C03	2TLA020055R1600
M12-8 pole male, straight	M12-C04	2TLA020055R1700
Cable with 5 conductors		
10 m cable with 5 x 0.34 shielded conductors	C5 cable 10 m	2TLA020057R0001
50 m cable with 5 x 0.34 shielded conductors	C5 cable 50 m	2TLA020057R0005
100 m cable with 5 x 0.34 shielded conductors	C5 cable 100 m	2TLA020057R0010
200 m cable with 5 x 0.34 shielded conductors	C5 cable 200 m	2TLA020057R0020
500 m cable with 5 x 0.34 shielded conductors	C5 cable 500 m	2TLA020057R0050
Cable with 8 conductors		
50 m cable with 8 x 0.34 shielded conductors	C8 cable 50 m	2TLA020057R1005
100 m cable with 8 x 0.34 shielded conductors	C8 cable 100 m	2TLA020057R1010
200 m cable with 8 x 0.34 shielded conductors	C8 cable 200 m	2TLA020057R1020
500 m cable with 8 x 0.34 shielded conductors	C8 cable 500 m	2TLA020057R1050

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Technical data
LineStrong

Technical data

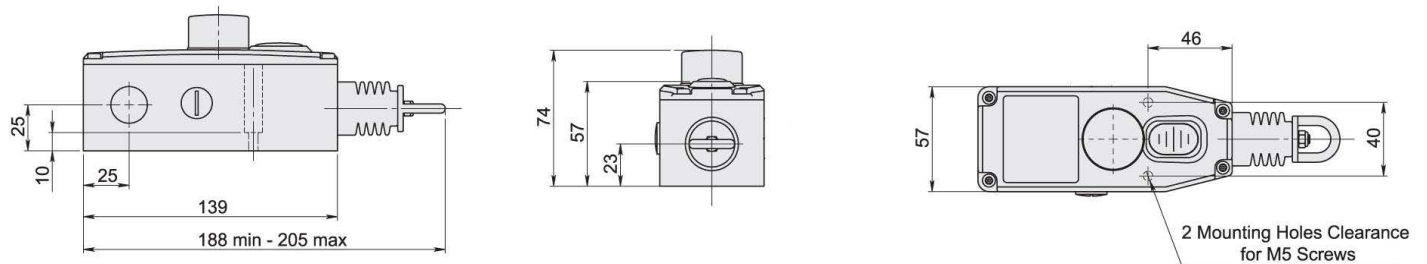| Approvals	
LineStrong	cULus LISTED, TÜV
LineStrong-X	cULus LISTED, TÜV, Ex
Conformity	CE
LineStrong	2006/42/EC - Machinery EN ISO 12100:2010, EN ISO 13850:2008, EN 60204-1:2006+A1:2009, EN 60947-1:2007+A1:2011, EN 60947-5-1:2004+A1:2009, EN 60947-5-5:1997+A1:2005
LineStrong-X	CE 2006/42/EC - Machinery 94/9/EC - ATEX EN ISO 12100:2010, EN ISO 13850:2008, EN 60204-1:2006:+A1:2009, EN 60079-0:2011, EN 60079-1:2007, EN 60079-31:2008, EN 60947-1:2007:+A1:2011, EN 60947-5-1:2004:+A1:2009, EN 60947-5-5:1997:+A1:2005
Functional safety data	
EN ISO 13849-1:2008	Up to Cat. 4, PL e, depending on system architecture.
EN/IEC 62061:2005	Up to SILCL3, depending on system architecture.
IEC 61508	Up to SIL3, depending on system architecture.
$B10_d$	1 500 000
Electrical data	
	240 VAC / 3 A
Utilization category	+24 VDC / 2.5 A
LED	+24 VDC
Mechanical data	
Operating temperature	-25…+80°C
Protection class	
LineStrong1, LineStrong2, LineStrong3	IP67
LineStrong2Z(X), LineStrong3Z	IP66, IP67, IP69K
Weight	
LineStrong1	675 g
LineStrong2	880 g
LineStrong2Z(X)	1635 g
LineStrong3L/R	1100 g
LineStrong3LZ/RZ	2000 g
LineStrong3D	1320 g
LineStrong3DZ	2200 g
Material	
LineStrong1, LineStrong2, LineStrong3D/L/R	Die cast painted yellow
LineStrong2Z(X), LineStrong3LZ/RZ/DZ	Stainless steel 316
Wire type	PVC sheath steel wire 4.0 mm outside diameter
Conduit entries	
LineStrong1/2	3 x M20 x 1.5
LineStrong3	4 x M20 x 1.5

More information

Fore more information, e.g. the complete technical information, see product manual for:
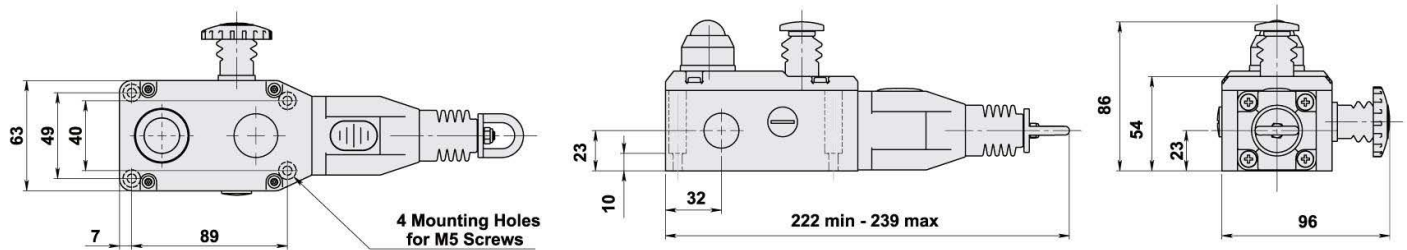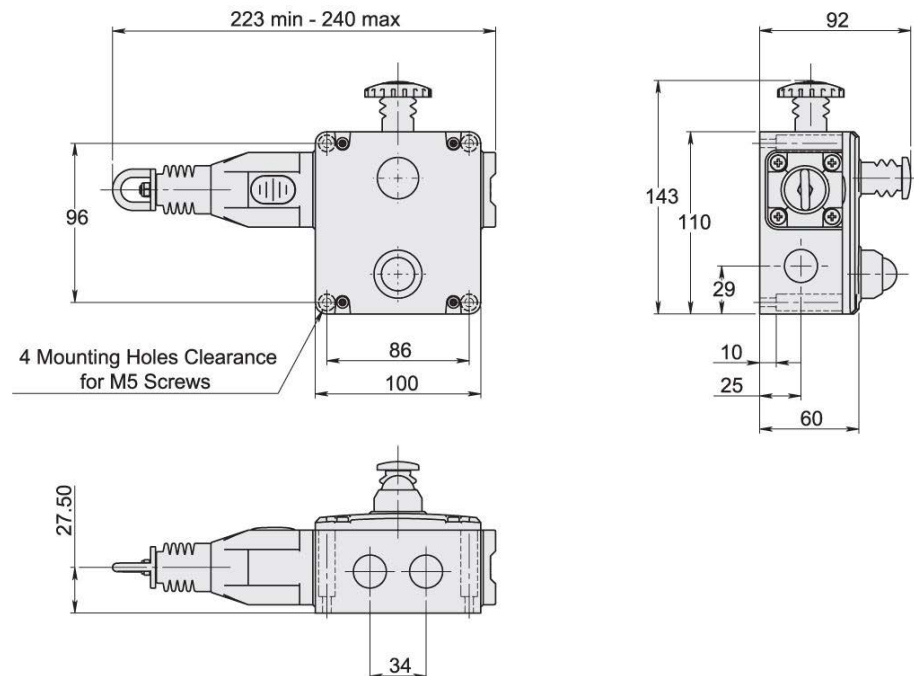LineStrong 2TLC172248M0201

Dimension drawings
LineStrong

LineStrong1

LineStrong2

LIneStrong3L-R

All dimensions in mm

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