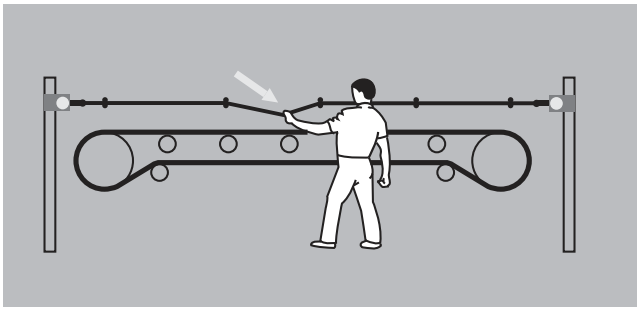
Cable Pull Switches

Overview

Cable Pull Switches Overview

For machinery such as conveyors, it is often more convenient and effective to use a cable pull device along the hazard area (as shown in the figure below) as the emergency stop device. These devices use a steel wire rope connected to latching pull switches so that pulling on the rope in any direction at any point along its length will trip the switch to cut off the machine power.



The cable pull switches must detect both a pull on the cable as well as when the cable goes slack. Slack detection ensures that the cable is not cut and is ready for use.

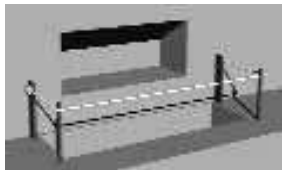
Rockwell Automation developed a unique Lifeline Rope Tensioner System (LRTS) which helps enable quicker installations.

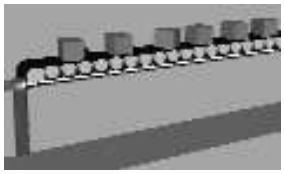
A dedicated stainless steel installation kit must be used with the stainless steel Lifeline 4 instead of the LRTS.

Selection Guide

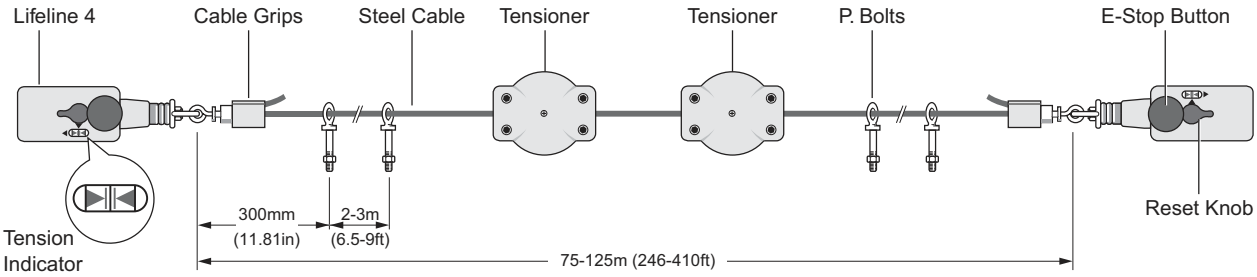
Description	Lifeline 3	Lifeline 4	Stainless Steel Lifeline 4
Material	Painted Zinc Alloy	Painted Aluminum Alloy	Stainless Steel 316
Reset	Yes	Yes	Yes
E-Stop	No	Yes	Yes
Cable Span	30 m (98.42 ft)	75 m (246 ft) 125 m (410 ft) extended model	75 m (246 ft)

Typical Applications





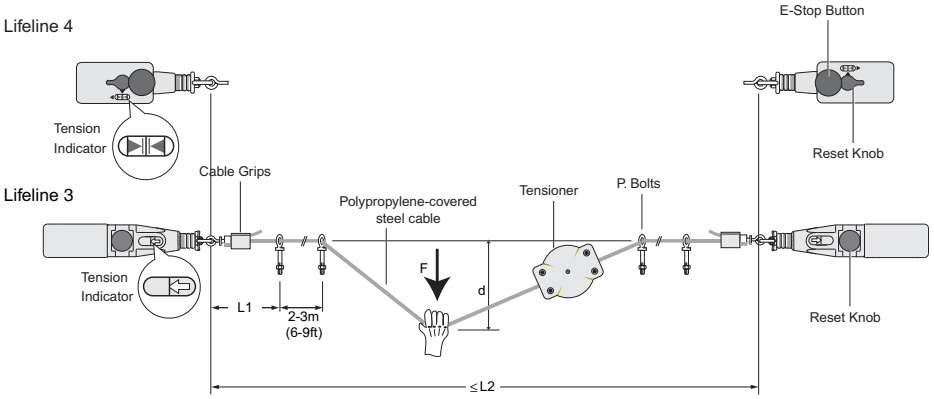
Mounting Specifications for Extended Length Models



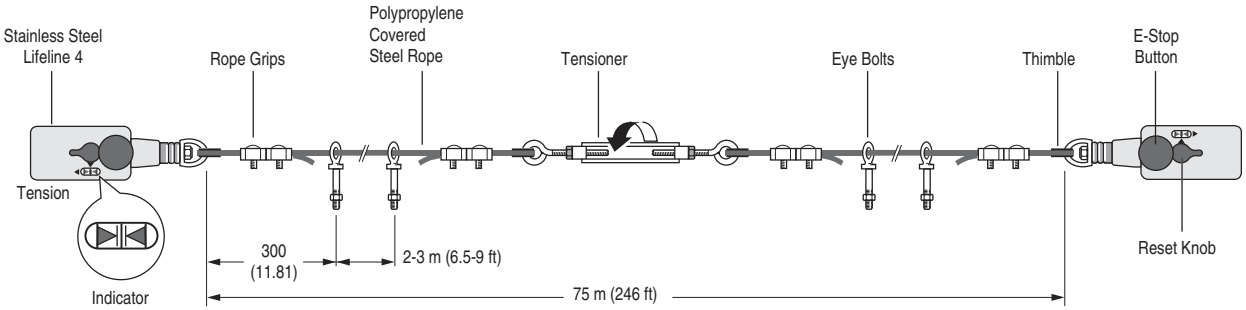
Notes:

1. The first and last **P. bolt/eye bolt** must be located as close as possible to the switch eyelet while maintaining adequate clearance (125 mm/5 in) from the cable grips to allow free movement. This provides for a straight and efficient pulling action on the switches.
2. Additional **P. bolts/eye bolts**, spaced 2-3 m (6-9 ft) apart, help keep the perpendicular pull force, F, and distance, d, within IEC60947-5-5 specifications of 200 N (45 lbs) and 400 mm (15.75 in).
3. We recommend using a switch at both cable ends, especially in applications with long cable runs or cable runs going around bends. This helps ensure that the safety function is fulfilled upon actuation of the cable in any direction.
4. ISO 13850 (EN 418) requires that the full length of cable to be within view when the reset is turned to the run position or the machine must be inspected over the whole length of the cable, both before and after resetting.
5. On shorter cable runs (max 10 m), a Lifeline tensioner spring may be used at one end of the span. The installation must be such that the above requirements can be met. When a spring is used, the last **P. Bolt/eye bolt** must be located as close as possible to the spring while maintaining adequate clearance (125 mm/5 in) from the cable grips to allow free movement. This is intended to help to ensure that a pull near the end of the cable will be between **P. Bolts/eye bolts**. This should result in operation of the switch contacts instead of only the spring moving.
6. Careful attention is required for the design of the installation to ensure that the cable is not likely to become trapped or snagged. This is especially important when using a tensioner spring because a cable snag between the location of the pull and the switch could prevent the actuation of the safety function.
7. It is essential that when the installation is complete, a thorough functional test is made. This should include checking all types and directions of pull over the length of the cable as well as checking for slack-cable tripping.

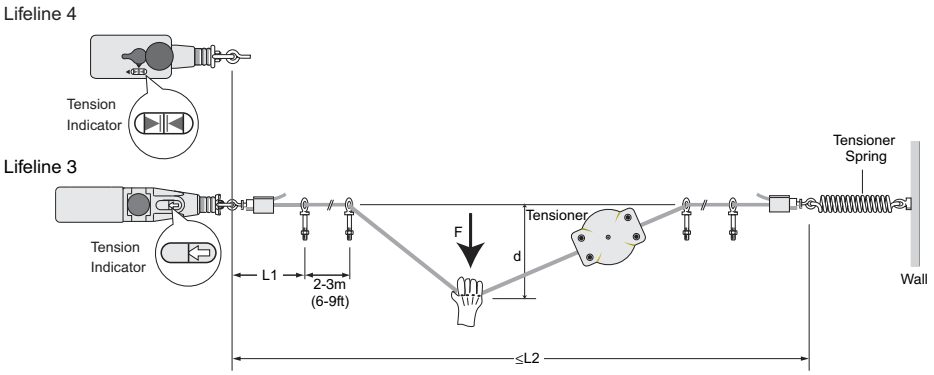
Mounting Specifications



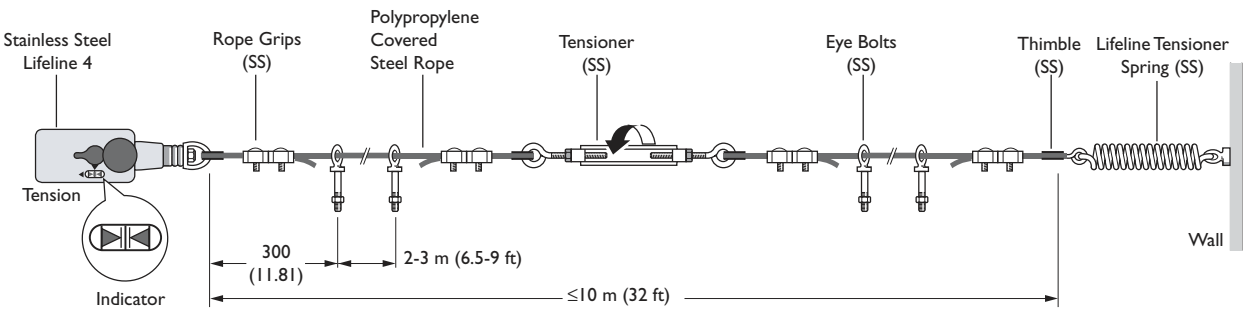
	L1	L2
Lifeline 4	300 mm (11.81 in)	75 m (246 ft)
Lifeline 3	125 mm (5 in)	30 m (98 ft)



Mounting Specifications with Spring Tensioner



	L1	L2
Lifeline 4	300 mm (11.81 in)	20 m (65 ft)
Lifeline 3	125 mm (5 in)	10 m (32 ft)



Cable Pull Switches

Lifeline Rope Tensioner System (LRTS)

Description

The LRTS is a unique cable (rope) tensioning system which enables quicker installation of cable actuated systems. Other methods are traditionally time consuming and sometimes awkward to fit. Features of the system include:

1. Cable adjustment up to 300 mm (11.8 in) (150 mm (5.9 in) either side of tensioner)
2. Quick thread and grip of cable with cable grip
3. Cable tidy incorporated into the cable grips
4. Simple tensioning via the tensioner with allen key.

Due to the appeal of quick installation and universal use, the LRTS can also be used for applications other than cable actuated emergency stop systems.

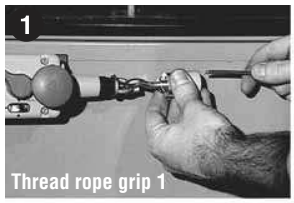
Features

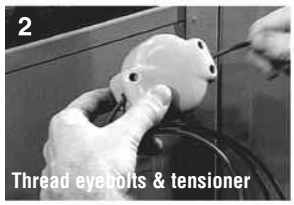
- Unique cable grip system
- Can be installed and commissioned in approximately 3 minutes
- Ease of installation, no specialty tools required
- Up to 300 mm (11.8 in) of cable adjustment
- Cable tidy incorporated into cable grips

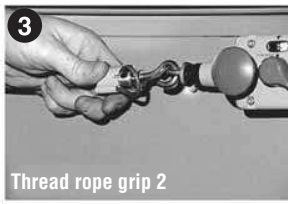
Specifications

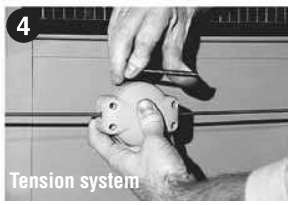
Material	Tensioner: Glass filled nylon Cable gripper: Acetal, zinc alloy, stainless steel Cable gripper gears: Stainless steel Cable: Cable to BS 302:1987, wire Ø4.0 Steel Core with polypropylene sheath P. Bolt: Stainless steel
Color	Tensioner: Yellow Cable gripper: Yellow/natural Cable: Red P. Bolt: Natural
Weight—g (lbs)	Tensioner: 140 (0.31) Cable gripper: 80 (0.17)
Operating Temperature—C (F)	-25…80° (-13…176°)
Cable O.D.	4 mm (0.15 in)
Cable Adjustment Range, Max.	300 mm (11.8 in)
Tensioner Holding Force, Max.	500 N (112.5 lb)
Gripper Holding Force, Max.	280 N (63.0 lb)
Enclosure Type Rating	IP30
Tensioner Adjustment Tool	5 mm A/F Allen key

Four Steps to Install







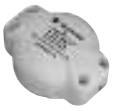


Product Selection

Description		No. of P-Bolts	Cat. No.
	Installation Kit—5 m (16.4 ft)	3	440E-A13079
	Installation Kit—10 m (32.8 ft)	6	440E-A13080
	Installation Kit—15 m (49.2 ft)	8	440E-A13081
	Installation Kit—20 m (65.6 ft)	10	440E-A13082
	Installation Kit—30 m (98.4 ft)	14	440E-A13083
	Installation Kit—50 m (164 ft)	22	440E-A13084
	Installation Kit—75 m (246 ft)	32	440E-A13085

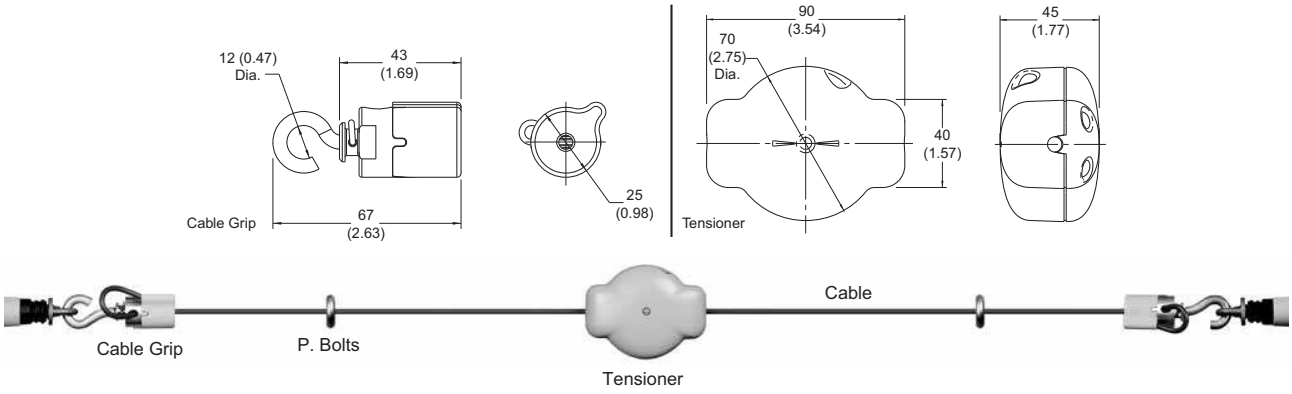
A stainless steel tensioner kit is available for use with the Lifeline 4 Stainless Steel, see page 4-18.

Accessories

Description			Cat. No.
	Lifeline tensioner and Allen key only		440E-A17105
	Lifeline gripper two pack		440E-A17107
	Lifeline gripper 20 pack		440E-A17106
	Lifeline Tensioner, 2 Grippers and Allen wrench		440E-A17112
	2 Lifeline Tensioners, 2 Grippers and Allen wrench		440E-A17140
 Red Cable	Polypropylene covered steel cable	15 m (49.2 ft)	440E-A17026
		30 m (98.4 ft)	440E-A17027
		100 m (328 ft)	440E-A17028
		125 m (410 ft)	440E-A17129
		300 m (984 ft)	440E-A17095
		500 m (1640 ft)	440E-A17032
	UV resistant polypropylene covered steel cable	100 m (328 ft)	440E-A14739
		300 m (984 ft)	440E-A14740

Approximate Dimensions—mm (inches)

Dimensions are not intended to be used for installation purposes.



***Note**: 2D, 3D and electrical drawings are available on www.ab.com.*

Cable Pull Switches

Lifeline 3

Description

The Lifeline 3 is a cable (rope) operated emergency stop device designed to meet the stringent requirements of ISO 13850 (EN 418) (Safety of Machinery—Emergency Stop Equipment). The Lifeline 3 system can be installed along or around awkward machinery such as conveyors and provides a constant-access emergency-stop facility.

1. The positive-mode 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.
2. The cable-status indicator makes the system easy to set up and maintain for spans up to 30 m (98 ft).
3. Four sets of contacts are provided: 2 N.C. + 2 N.O., or 3 N.C. + 1 N.O. contacts.
4. Sealed to IP 67 with rugged construction using die-cast alloy and stainless steel to withstand harsh conditions.

Features

- Switches up to 30 m (98 ft) span
- Universal mounting and operation
- Switch lockout on cable pulled and cable slack
- Cable-status indicator on switch lid
- Industry standard fixing centers to DIN/EN 50041
- Quick disconnect styles available

Specifications

Safety Ratings				
Standards	EN 418, ISO 13850, EN ISO 12100, IEC 60947-5-1, IEC 60947-5-5			
Safety Classification	Cat. 1 device per EN 954-1 May be suitable for use in Cat 3 or Cat 4 systems depending on the architecture and application characteristics			
Functional Safety Data ✶ **Note**: For up-to-date information, visit *http://www.ab.com/Safety/*	B10d: > 2 x 10^6 operations at min. load PFH_D: < 3 x10^{-7} MTTFd: > 385 years May be suitable for use in performance levels Ple or Pld systems (according to ISO 13849-1:2006) and for use in SIL2 or SIL3 systems (according to IEC 62061) depending on the architecture and application characteristics			
Certifications	CE marked for all applicable directives, cULus, TÜV, and CCC			
Outputs				
Safety Contacts ❄	2 N.C. direct-opening action	3 N.C. direct-opening action		
Auxiliary Contacts	2 N.O. direct-opening action	1 N.O. direct-opening action		
Thermal Current I_{lth}	10 A			
Rated Insulation Voltage	(Ui) 500V			
Switching Current @ Voltage, Min.	5 mA @ 5V DC			
Utilization Category				
A600/AC-15 (Ue)	600V	500V	240V	120V
(Ie)	1.2 A	1.4 A	3 A	6 A
N600/DC-13 (Ue)	600V	500V	250V	120V
(Ie)	0.4 A	0.55 A	1.1 A	2.2 A
Operating Characteristics				
Cable Span Between Switches, Max.	30 m (98.42 ft)			
Tensioning Force to Run Position	103 N (23.17 lbs) typical			
Tensioning Force to Lockout	188 N (42.3 lbs) typical			
Operating Force, Min.	<125 N (28.1 lb) at 300 mm deflection			
Actuation Frequency, Max.	1 cycle per sec			
Operating Life @ 100 mA load	1 x 10^6			
Environmental				
Enclosure Type Rating	IP 67			
Operating Temperature—C (F)	-25…80° (-13…176°)			
Physical Characteristics				
Housing Material	Heavy-Duty Painted Zinc-Based Die-Cast Alloy			
Indicator Material	Glass Filled Nylon			
Eye Nut Material	Stainless Steel			
Weight—g (lbs)	610 (1.34)			
Color	Yellow body, blue reset button			

✶ Usable for ISO 13849-1:2006 and IEC 62061. Data is based on the B10d value given and:
- Usage rate of 1op/10 mins., 24 hrs/day, 360 days/year, representing 51840 operations per year
- Mission time/Proof test interval of 38 years

❄ The safety contacts are described as normally closed (N.C.) i.e., with the guard closed, actuator in place (where relevant) and the machine able to be started.

Note: It is recommended that the LRTS (Lifeline Rope Tensioning System) should be used with the Lifeline 3 cable rope switch.

Product Selection

Contacts		Cat. No.				
		Conduits		Connectors∗		
Safety	Auxiliary	M20	1/2 inch NPT	12-Pin M23	8-Pin Micro (M12)❄	Connect to ArmorBlock Guard I/O 5-Pin Micro (M12)‡
2 N.C.	2 N.O.	440E-D13118	440E-D13120	440E-D13132	440E-D21BNYH	440E-D2NNNYS
3 N.C.	1 N.O.	440E-D13112	440E-D13114	440E-D13124	—	—

∗ For connector ratings, see page 3-9.
❄ With an 8-pin micro (M12) connector, not all contacts are connected. See *Typical Wiring Diagram* on page 4-9 for wiring details.
‡ For connection to ArmorBlock Guard I/O. With a 5-pin micro (M12) connector, not all contacts are connected. See *Typical Wiring Diagram* on page 4-9 for wiring details.

Recommended Logic Interfaces

Description	Safety Outputs	Auxiliary Outputs	Terminals	Reset Type	Power Supply	Cat. Page No.	Cat. No.
Single-Function Safety Relays for 2 N.C. Contact Switch							
MSR127RP	3 N.O.	1 N.C.	Removable (Screw)	Monitored Manual	24V AC/DC	5-24	440R-N23135
MSR127TP	3 N.O.	1 N.C.	Removable (Screw)	Auto./Manual	24V AC/DC	5-24	440R-N23132
MSR126T	2 N.O.	None	Fixed	Auto./Manual	24V AC/DC	5-22	440R-N23117
MSR30RT	2 N.O. Solid State	1 N.O. Solid State	Removable	Auto./Manual or Monitored Manual	24V DC	5-16	440R-N23198
Modular Safety Relays							
MSR210P Base 2 N.C. only	2 N.O.	1 N.C. and 2 PNP Solid State	Removable	Auto./Manual or Monitored Manual	24V DC from the base unit	5-74	440R-H23176
MSR220P Input Module	—	—	Removable	—	24V DC	5-78	440R-H23178
MSR310P Base	MSR300 Series Output Modules	3 PNP Solid State	Removable	Auto./Manual Monitored Manual	24V DC	5-94	440R-W23219
MSR320P Input Module	—	2 PNP Solid State	Removable	—	24V DC from the base unit	5-98	440R-W23218

Note: For additional Safety Relays connectivity, see the Safety Relays section (page 5-8) of this catalog.
For additional Safety I/O and Safety PLC connectivity, see the Programmable Safety System section (page 5-107) of this catalog.
For application and wiring diagrams, see the Safety Applications section (page 10-1) of this catalog.

Connection Systems

Description	5-Pin Micro (M12)⌘	8-Pin Micro (M12)	12-Pin M23
Cordset	—	889D-F8AB-§	889M-F12AH-§
Patchcord	889D-F5ACDM-♣	889D-F8ABDM-♣	889M-F12AMMU-➢

§ Replace symbol with 2 (2 m), 5 (5 m), or 10 (10 m) for standard cable lengths.
♣ Replace symbol with 1 (1 m), 2 (2 m), 3 (3 m), 5 (5 m), or 10 (10 m) for standard cable lengths.
➢ Replace symbol with 0M3 (0.3 m), 0M6 (0.6 m), 1 (1 m), 2 (2 m) or 3 (3 m) for standard lengths.
⌘ To connect to ArmorBlock Guard I/O.

Cable Pull Switches

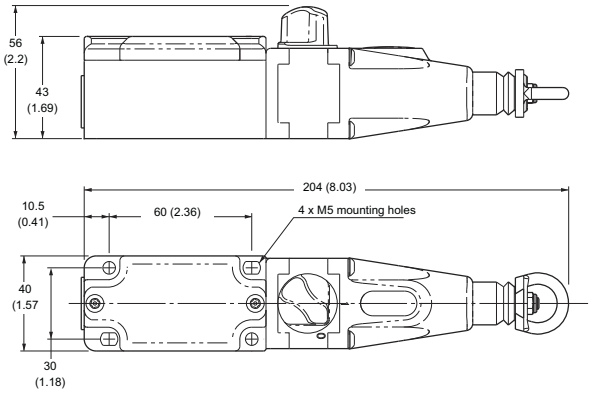
Lifeline 3

Accessories

Description		Cat. No.
	Lifeline P. Bolt M8 x 1.25 thread size, 58 mm (2.28 in.) threaded length, 12 mm (0.47 in.) dia. eye, 95 mm (3.74 in.) overall length	440E-A17003
	Lifeline Tensioner Spring 19 mm (0.75 in) diameter, 210 mm (8.27 in) overall length, 50 N force	440E-A13078
	Lifeline inside corner pulley Internal diameter 16 mm (0.64 in) zinc-plated mild steel	440A-A17101
	Lifeline Outside Corner Pulley Outside diameter 38 mm (1.5 in) zinc-plated mild steel	440A-A17102
	Blanking Plug, M20 Conduit	440A-A07265
	Cable Grip, M20 Conduit, accommodates cable diameter 7…10.5 mm (0.41…0.27 in)	440A-A09028
	Adaptor, Conduit, M20 to 1/2 inch NPT, Plastic	440A-A09042
	Screwdriver Including Security Bit	440A-A09018

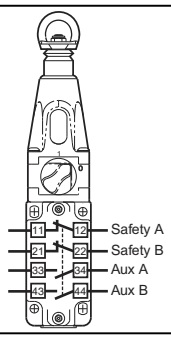
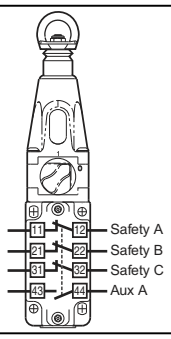
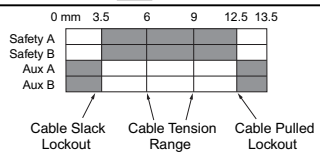
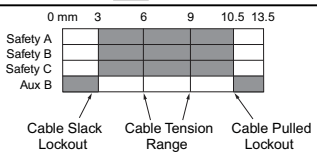
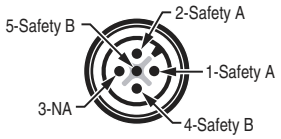
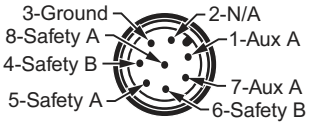
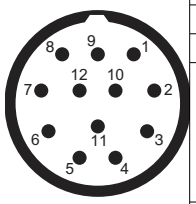
Approximate Dimensions—mm (inches)

Dimensions are not intended to be used for installation purposes.



***Note**: 2D, 3D and electrical drawings are available on www.ab.com.*

Typical Wiring Diagrams

Description		2 N.C. & 2 N.O.	3 N.C. & 1 N.O.
Contact Configuration			
Contact Action ☐Open ■Closed			
5-Pin Micro (M12) for ArmorBlock Guard I/O			—
8-Pin Micro (M12)			—
12-Pin M23  Pins 2, 5, 11 not connected	1-3	Safety A	Safety A
	4-6	Safety B	Safety B
	7-8	Aux A	Safety C
	9-10	Aux B	Aux A
	12	Ground	Ground
8-Pin Cordset 889D-F8AB-✶	Grey Red	Safety A	
	Yellow Pink	Safety B	
	White Blue	Aux A	
	Green	Ground	
	Brown	Not Used	
12-Pin Cordset 889M-F12X9AE-❄	Brown Blue	Safety A	Safety A
	White Green	Safety B	Safety B
	Yellow Grey	Aux A	Safety C
	Pink Red	Aux B	Aux A
	Green Yellow	Ground	Ground

✶ Replace symbol with 2 (2 m), 5 (5 m), or 10 (10 m) for standard cable lengths.
❄ Replace symbol with 0F5 (0.5 ft) or 1F (1 ft) for standard cable lengths.

Cable Pull Switches

Lifeline 4

Description

The Lifeline 4 cable/push button operated system can be installed along or around awkward machinery such as conveyors and provide a constant emergency stop access.

The Lifeline 4 is the only device of its kind to incorporate the following features in one unit making it the most versatile cable switch on the market.

1. The positive mode 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.
2. A mushroom head emergency stop button is included on the unit to provide E-Stop access even at the extreme ends of the span.
3. The cable status indicator makes the system easy to set up and maintain for spans up to 125 meters.
4. Four sets of contacts are provided: 2 N.C. + 2 N.O. or 3 N.O. + 1 N.O. contacts
5. Sealed to IP 66 with rugged construction using die-cast alloy and stainless steel to withstand harsh conditions.

Features

- Switches up to 125 meter span
- Universal mounting and operation
- Lid mounted emergency stop button, designed to conform to EN 418
- Switch lockout on cable pulled and cable slack
- Cable status indicator on switch lid

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 indicator makes the system easy to setup and maintain for spans up to 125 meters.

Specifications

Safety Ratings				
Standards	EN 418, ISO 13850, EN ISO 12100, IEC 60947-5-1, IEC 60947-5-5			
Safety Classification	Cat. 1 device per EN 954-1 May be suitable for use in Cat 3 or Cat 4 systems depending on the architecture and application characteristics			
Functional Safety Data ✶ **Note**: For up-to-date information, visit *http://www.ab.com/Safety/*	B10d: > 2 x 10^6 operations at min. load PFH_D: < 3 x10^{-7} MTTFd: > 385 years May be suitable for use in performance levels Ple or Pld systems (according to ISO 13849-1:2006) and for use in SIL2 or SIL3 systems (according to IEC 62061) depending on the architecture and application characteristics			
Certifications	CE marked for all applicable directives, cULus, TÜV, and CCC			
Outputs				
Safety Contacts ❄	2 N.C. direct-opening action	3 N.C. direct-opening action		
Auxiliary Contacts	2 N.O. direct-opening action	1 N.O. direct-opening action		
Thermal Current I_{th}	10 A			
Rated Insulation Voltage	(Ui) 500V			
Switching Current @ Voltage, Min.	5 mA @ 5V DC			
Utilization Category				
A600/AC-15 (Ue)	600V	500V	240V	120V
(Ie)	1.2 A	1.4 A	3 A	6 A
N600/DC-13 (Ue)	600V	500V	250V	120V
(Ie)	0.4 A	0.55 A	1.1 A	2.2 A
Operating Characteristics				
Cable Span Between Switches, Max.	75 m (246 ft) standard model and 75…125 m (146…410 ft) extended length model			
Tensioning Force to Run Position	103 N (23.17 lbs) typical			
Tensioning Force to Lockout	188 N (42.3 lbs) typical			
Operating Force, Min.	<125 N (28.1 lbs) at 300 mm deflection			
Actuation Frequency, Max.	1 cycle per sec			
Operating Life @ 100 mA load	1 x 10^6			
Environmental				
Enclosure Type Rating	IP 67			
Operating Temperature—C (F)	-25…+80° (-13…+176°)			
Physical Characteristics				
Housing Material	Heavy-Duty Painted Zinc-Based Die-Cast Alloy (LM24)			
Indicator Material	Glass Filled Nylon			
Eye Nut Material	Stainless Steel			
Weight—g (lbs)	630 (1.38)			
Color	Yellow Body, Blue Reset Button			

✶ Usable for ISO 13849-1:2006 and IEC 62061. Data is based on the B10d value given and:
- Usage rate of 1op/10 mins., 24 hrs/day, 360 days/year, representing 51840 operations per year
- Mission time/Proof test interval of 38 years

❄ The safety contacts are described as normally closed (N.C.) i.e., with the guard closed, actuator in place (where relevant) and the machine able to be started.

Note: It is recommended that the LRTS (Lifeline Rope Tensioning System) should be used with the Lifeline 4 cable rope switch.

Product Selection

Cable Span	Safety Contacts	Auxiliary Contacts	Cat. No.				
			Conduits		Connectors∗		
			M20	1/2 inch NPT	12-Pin M23	8-Pin Micro❄	Connect to ArmorBlock Guard I/O 5-Pin Micro (M12)‡
75 m (246 ft)	2 N.C.	2 N.O.	440E-L13137	440E-L13133	440E-L13140	440E-L21BNYH	440E-L2NNNYS
	3 N.C.	1 N.O.	440E-L13042	440E-L13043	440E-L13141	—	—
75…125 m (246…410 ft)	2 N.C.	2 N.O.	440E-L13153	440E-L13155	440E-L13163	440E-L21BTYH	—
	3 N.C.	1 N.O.	440E-L13150	440E-L13152	440E-L13164	—	—

∗ For connector ratings, see page 3-9.
❄ For connection to ArmorBlock Guard I/O. With a 5-pin micro (M12) connector, not all contacts are connected. See *Typical Wiring Diagram* on page 4-15 for wiring details.
‡ With an 8-pin micro (M12) connector, not all contacts are connected. See *Typical Wiring Diagram* on page 4-15 for wiring details.

Recommended Logic Interfaces

Description	Safety Outputs	Auxiliary Outputs	Terminals	Reset Type	Power Supply	Cat. Page No.	Cat. No.
Single-Function Safety Relays for 2 N.C. Contact Switch							
MSR127RP	3 N.O.	1 N.C.	Removable (Screw)	Monitored Manual	24V AC/DC	5-24	440R-N23135
MSR127TP	3 N.O.	1 N.C.	Removable (Screw)	Auto./Manual	24V AC/DC	5-24	440R-N23132
MSR126T	2 N.O.	None	Fixed	Auto./Manual	24V AC/DC	5-22	440R-N23117
MSR30RT	2 N.O. Solid State	1 N.O. Solid State	Removable	Auto./Manual or Monitored Manual	24V DC	5-16	440R-N23198
Modular Safety Relays							
MSR210P Base 2 N.C. only	2 N.O.	1 N.C. and 2 PNP Solid State	Removable	Auto./Manual or Monitored Manual	24V DC from the base unit	5-74	440R-H23176
MSR220P Input Module	—	—	Removable	—	24V DC	5-78	440R-H23178
MSR310P Base	MSR300 Series Output Modules	3 PNP Solid State	Removable	Auto./Manual Monitored Manual	24V DC	5-94	440R-W23219
MSR320P Input Module	—	2 PNP Solid State	Removable	—	24V DC from the base unit	5-98	440R-W23218

Note: For additional Safety Relays connectivity, see the Safety Relays section (page 5-8) of this catalog.
For additional Safety I/O and Safety PLC connectivity, see the Programmable Safety System section (page 5-107) of this catalog.
For application and wiring diagrams, see the Safety Applications section (page 10-1) of this catalog.

Connection Systems

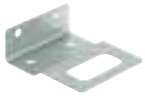
Description	5-Pin Micro (M12)	8-Pin Micro (M12)	12-Pin M23
Cordset	—	889D-F8AB-§	889M-F12AH-§
Patchcord	889D-F5ACDM-∗	889D-F8ABDM-♣	889M-F12AMMU-➢

∗ Replace symbol with 0M3 (0.3 m), 1 (1 m), 2 (2 m), 3 (3 m), 5 (5 m), or 10 (10 m) for standard lengths.
§ Replace symbol with 2 (2 m), 5 (5 m), or 10 (10 m) for standard cable lengths.
♣ Replace symbol with 1 (1 m), 2 (2 m), 3 (3 m), 5 (5 m), or 10 (10 m) for standard cable lengths.
➢ Replace symbol with 0M3 (0.3 m), 0M6 (0.6 m), 1 (1 m), 2 (2 m) or 3 (3 m) for standard length.

Cable Pull Switches

Lifeline 4

Accessories

Description		Cat. No.
	Lifeline P. Bolt	440E-A17003
	Lifeline Tensioner Spring	440E-A13078
	Replacement cover for Lifeline 4 cable/push button	440E-A13054
	Replacement cover for Lifeline 4 cable/push button, no E-Stop	440E-A17115
	Lifeline inside corner pulley	440A-A17101
	Lifeline Outside Corner Pulley	440A-A17102
	Mounting Bracket for Lifeline 4 cable/push button	440E-A17130
	Blanking Plug, M20 Conduit	440A-A07265
	Cable Grip, M20 Conduit, accommodates cable diameter 7…10.5 mm (0.41…0.27 in)	440A-A09028
	Adaptor, Conduit, M20 to 1/2 inch NPT, Plastic	440A-A09042
	Screwdriver Including Security Bit	440A-A09018

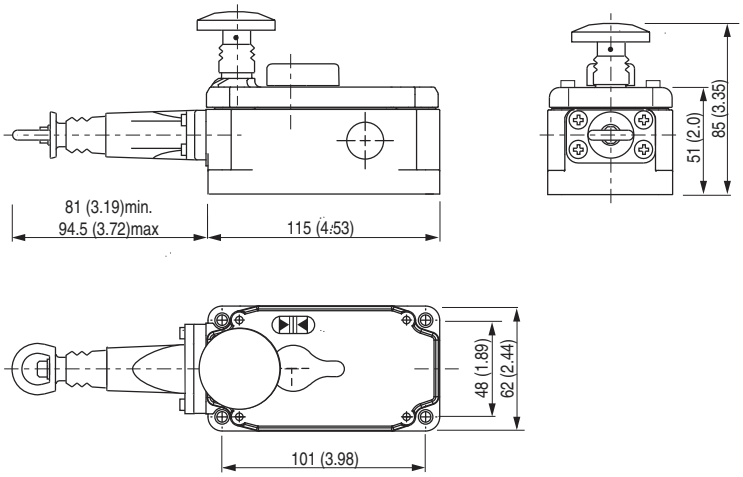
Accessories (continued)

	Description	Cat. No.
	Indicator, M20 Conduit Pilot Light—Amber Lens T-3 1/4 Insert Use T-3 1/4 Bulb (Sold Separately)	440A-A19001
	Indicator, 1/2in NPT Conduit Pilot Light—Amber Lens T-3 1/4 Insert Use T-3 1/4 Bulb (Sold Separately)	440A-A19005
	Indicator, M20 Conduit Pilot Light—Amber Lens Bayonet Style Insert Use LED Bulb (Sold Separately)	440A-A17124
	Indicator, 1/2in NPT Conduit Pilot Light—Amber Lens Bayonet Style Insert Use LED Bulb (Sold Separately)	440A-A17122
	Indicator, M20 Conduit Pilot Light—Red Lens T-3 1/4 Insert Use T-3 1/4 Bulb (Sold Separately)	440A-A19002
	Indicator, 1/2in NPT Conduit Pilot Light—Red Lens T-3 1/4 Insert Use T-3 1/4 Bulb (Sold Separately)	440A-A19007
	Indicator, M20 Conduit Pilot Light—Red Lens Bayonet Style Insert Use LED Bulb (Sold Separately)	440A-A17125
	Indicator, 1/2in NPT Conduit Pilot Light—Red Lens Bayonet Style Insert Use LED Bulb (Sold Separately)	440A-A17123
	Bulb, 24V for Conduit Pilot Light 2.8W T-3 1/4 Bulb, Miniature Screw Base	440A-A09056
	Bulb, 110V for Conduit Pilot Light 2.6W T-3 1/4 Bulb, Miniature Screw Base	440A-A09055
	Bulb, 240V for Conduit Pilot Light 0.75W T-3 1/4 Bulb, Miniature Screw Base	440A-A09054
	Red LED Bulb, 24V AC/DC for Conduit Pilot Light Bayonet Style Insert	800T-N319R
	Amber LED Bulb, 24V AC/DC for Conduit Pilot Light Bayonet Style Insert	800T-N319A
	Red LED Bulb, 120V AC for Conduit Pilot Light Bayonet Style Insert	800T-N320R
	Amber LED Bulb, 120V AC for Conduit Pilot Light Bayonet Style Insert	800T-N320A

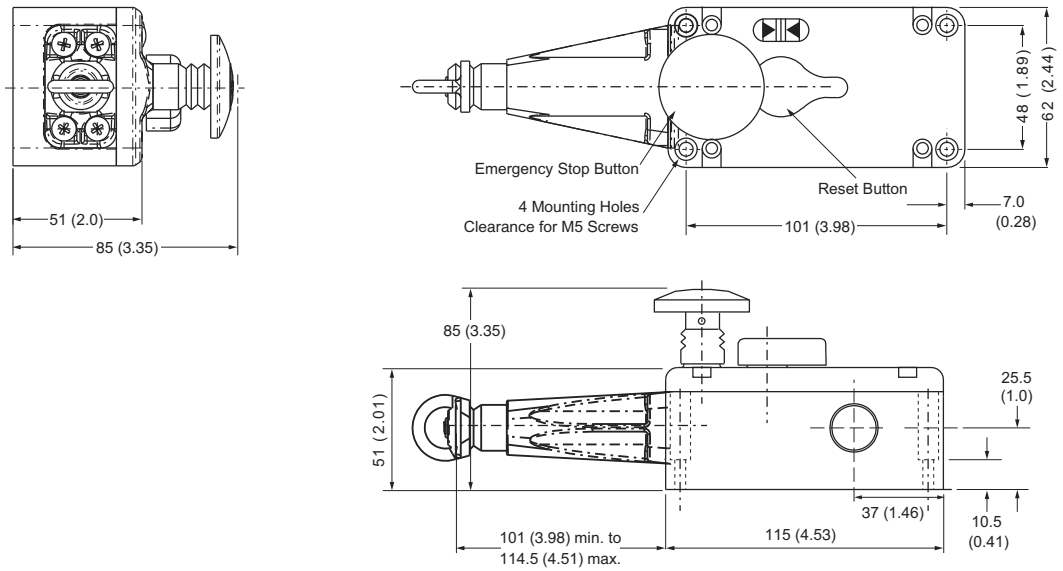
Approximate Dimensions—mm (inches)

Dimensions are not intended to be used for installation purposes.

Standard Model

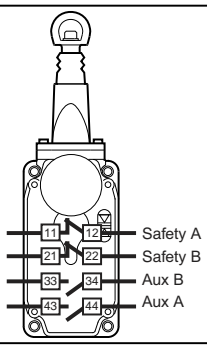
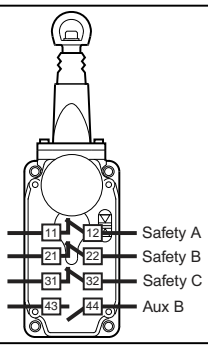
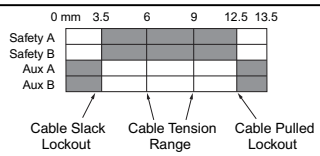
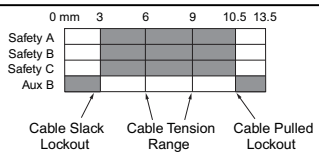
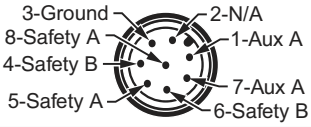
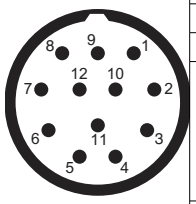
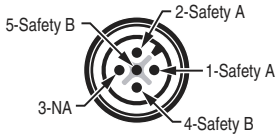


Extended Length Models (75 to 125 m cable span)



***Note**: 2D, 3D and electrical drawings are available on www.ab.com.*

Typical Wiring Diagrams

Description		2 N.C. & 2 N.O.	3 N.C. & 1 N.O.
Contact Configuration			
Contact Action ☐Open ■Closed			
8-Pin Micro (M12)			—
12-Pin M23  Pins 2, 5, 11 not connected	1-3	Safety A	Safety A
	4-6	Safety B	Safety B
	7-8	Aux A	Safety C
	9-10	Aux B	Aux A
	12	Ground	Ground
5-Pin Micro for ArmorBlock Guard I/O			—
8-Pin Cordset 889D-F8AB-✶	Grey Red	Safety A	—
	Yellow Pink	Safety B	—
	White Blue	Aux A	—
	Green	Ground	—
	Brown	Not Used	
12-Pin Cordset 889M-F12X9AE-✶	Brown Blue	Safety A	Safety A
	White Green	Safety B	Safety B
	Yellow Grey	Aux A	Safety C
	Pink Red	Aux B	Aux A
	Green Yellow	Ground	Ground

✶ Replace symbol with 2 (2 m), 5 (5 m), or 10 (10 m) for standard cable lengths.
❄ Replace symbol with 0F5 (0.5 ft) or 1F (1 ft) for standard cable lengths.

Cable Pull Switches

Lifeline 4 Stainless Steel

Description

The stainless steel Lifeline 4 cable/push button operated system can be installed along or around awkward machinery such as conveyors and provide a constant emergency stop access. This switch is made from stainless steel 316 and is suitable for external use, applications where there are hygiene requirements and other situations where a level of corrosion resistance is required.

The Lifeline 4 is the only device of its kind to incorporate the following features in one unit making it the most versatile cable switch on the market.

1. The positive mode 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.
2. A mushroom head emergency stop button is included on the unit to provide E-Stop access even at the extreme ends of the span.
3. The cable status indicator makes the system easy to set up and maintain for spans up to 75 meters.
4. Four sets of contacts are provided: 2 N.C. + 2 N.O.
5. Sealed to IP 66 and IP 69K with rugged construction using stainless steel 316 to withstand harsh conditions.

Features

- Switches up to 75 m (246 ft) span
- Universal mounting and operation
- Lid mounted emergency stop button, designed to conform to EN–418
- Switch lockout on cable pulled and cable slack
- Cable status indicator on switch lid
- Made from stainless steel 316

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 indicator makes the system easy to setup and maintain for spans up to 75 m (246 ft).

Specifications

Safety Ratings					
Standards		EN 60947-5-5, ISO 13850, EN ISO 12100, IEC 60947-5-1, EN 418			
Safety Classification		Cat. 1 device per EN 954-1 May be suitable for use in Cat 3 or Cat 4 systems depending on the architecture and application characteristics			
Functional Safety Data ✶ **Note**: For up-to-date information, visit *http://www.ab.com/Safety/*		B10d: > 2 x 10^6 operations at min. load PFH_D: < 3 x10^{-7} MTTFd: > 385 years May be suitable for use in performance levels Ple or Pld systems (according to ISO 13849-1:2006) and for use in SIL2 or SIL3 systems (according to IEC 62061) depending on the architecture and application characteristics			
Certifications		CE marked for all applicable directives, cULus certified and TÜV			
Outputs					
Safety Contacts ❄		2 N.C. direct opening action			
Auxiliary Contacts		2 N.O.			
Thermal Current I_{th}		10 A			
Rated Insulation Voltage		(Ui) 500V			
Switching Current @ Voltage, Min.		5 mA @ 5V DC			
Utilization Category					
A600/AC-15	(Ue)	600V	500V	240V	120V
	(Ie)	1.2 A	1.4 A	3 A	6 A
N600/DC-13	(Ue)	600V	500V	250V	125V
	(Ie)	0.4 A	0.55 A	1.1 A	2.2 A
Operating Characteristics					
Cable Span Between Switches, Max.		75 m (246 ft)			
Tensioning Force to Run Position		103 N (23.17 lbs) typical			
Tensioning Force to Lockout		188 N (42.3 lbs) typical			
Operating Force, Min.		<125 N (300 mm deflection; 28.1 lb deflection)			
Actuation Frequency, Max.		1 Cycle per sec			
Operating Life @ 100 mA load		1 x 10^6			
Environmental					
Enclosure Type Rating		IP 66, IP 67, IP 69K			
Operating Temperature—C (F)		-25…80° (-13…176°)			
Physical Characteristics					
Housing Material		Stainless Steel 316			
Indicator Material		Acetal			
Eye Nut Material		Stainless Steel			
Weight—g (lbs)		1442 (3.17)			
Color		Unpainted metal			

✶ Usable for ISO 13849-1:2006 and IEC 62061. Data is based on the B10d value given and:
- Usage rate of 1op/10 mins., 24 hrs/day, 360 days/year, representing 51840 operations per year
- Mission time/Proof test interval of 38 years

❄ The safety contacts are described as normally closed (N.C.) i.e., with the guard closed, actuator in place (where relevant) and the machine able to be started.

Note: It is recommended that the stainless steel installation kit should be used with the stainless steel Lifeline 4 as it is made of suitable materials for harsh conditions.

Product Selection

Cable Span	Safety Contacts	Auxiliary Contacts	Cat. No.		
			Conduits		Connectors§
			M20	1/2 inch NPT	12-Pin M23
Up to 75 m (246 ft)	2 N.C.	2 N.O.	440E-L22BNSM	440E-L22BNST	440E-L22BNSL

§ For connector ratings, see page 3-9.

Recommended Logic Interfaces

Description	Safety Outputs	Auxiliary Outputs	Terminals	Reset Type	Power Supply	Cat. Page No.	Cat. No.
Single-Function Safety Relays for 2 N.C. Contact Switch							
MSR127RP	3 N.O.	1 N.C.	Removable (Screw)	Monitored Manual	24V AC/DC	5-24	440R-N23135
MSR127TP	3 N.O.	1 N.C.	Removable (Screw)	Auto./Manual	24V AC/DC	5-24	440R-N23132
MSR126T	2 N.O.	None	Fixed	Auto./Manual	24V AC/DC	5-22	440R-N23117
MSR30RT	2 N.O. Solid State	1 N.O. Solid State	Removable	Auto./Manual or Monitored Manual	24V DC	5-16	440R-N23198
Modular Safety Relays							
MSR210P Base 2 N.C. only	2 N.O.	1 N.C. and 2 PNP Solid State	Removable	Auto./Manual or Monitored Manual	24V DC from the base unit	5-74	440R-H23176
MSR220P Input Module	—	—	Removable	—	24V DC	5-78	440R-H23178
MSR310P Base	MSR300 Series Output Modules	3 PNP Solid State	Removable	Auto./Manual Monitored Manual	24V DC	5-94	440R-W23219
MSR320P Input Module	—	2 PNP Solid State	Removable	—	24V DC from the base unit	5-98	440R-W23218

Note: For additional Safety Relays connectivity, see the Safety Relays section (page 5-8) of this catalog.
For additional Safety I/O and Safety PLC connectivity, see the Programmable Safety System section (page 5-107) of this catalog.
For application and wiring diagrams, see the Safety Applications section (page 10-1) of this catalog.

Connection Systems

Description	12-Pin M23
Cordset	889M-F12AH-✶
Patchcord	889M-F12AMMU-❄

✶ Replace symbol with 2 (2 m), 5 (5 m), or 10 (10 m) for standard cable lengths.
❄ Replace symbol with 0M3 (0.3 m), 0M6 (0.6 m), 1 (1 m), 2 (2 m) or 3 (3 m) for standard length.

Cable Pull Switches

Lifeline 4 Stainless Steel

Accessories

	Description	Eye Bolts	Cat. No.
	Stainless steel installation kit—5 m (16.4 ft)	4	440E-A13194
	Stainless steel installation kit—10 m (32.8 ft)	4	440E-A13195
	Stainless steel installation kit—15 m (49.2 ft)	7	440E-A13196
	Stainless steel installation kit—20 m (65.6 ft)	8	440E-A13197
	Stainless steel installation kit—30 m (98.4 ft)	12	440E-A13198
	Stainless steel installation kit—50 m (164 ft)	20	440E-A13199
	Stainless steel installation kit—75 m (246 ft)	30	440E-A13200
	Stainless steel 304 eyebolt complete M8 x 1.25 thread size, 58 mm (2.28 in) threaded length, 12 mm (0.47 in) dia. eye 95 mm (3.74 in) overall length		440E-A13201
	Stainless steel 316 tensioner spring, 19 mm (0.75 in) dia. 210 mm (8.27 in) overall length		440E-A13202
	Replacement Cover		440E-A13203
	Replacement cover no E-Stop		440E-A13204
	Stainless steel 316 inside corner pulley		440E-A13205
	Stainless steel outside corner pulley		440E-A13206

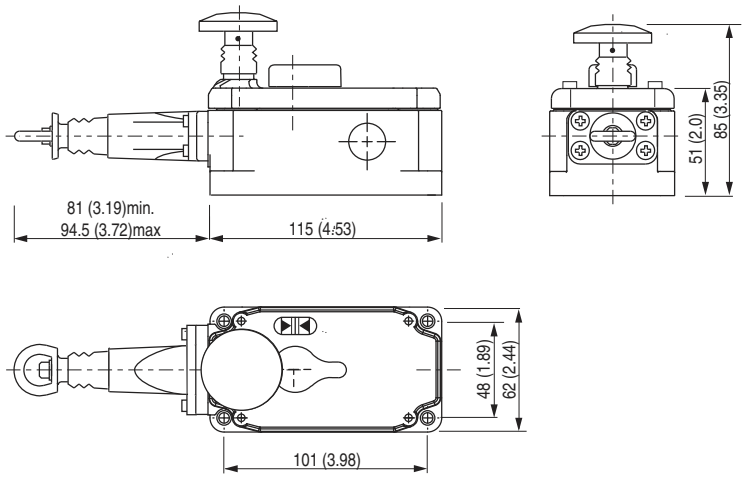
Note:

Installation Kits include the following parts: 1 rope, 1 turnbuckle tensioner, 4 thimbles, 8 rope grips and eyebolts, nuts and washers depending on the length of the rope.

Approximate Dimensions—mm (inches)

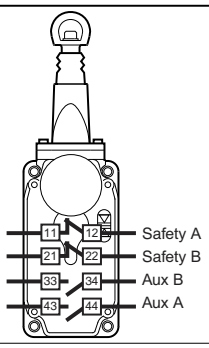
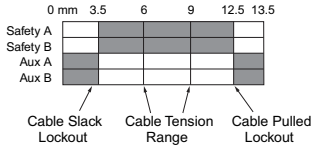
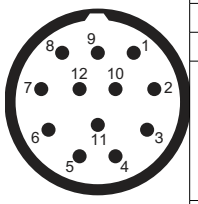
Dimensions are not intended to be used for installation purposes.

Standard Model



***Note**: 2D, 3D and electrical drawings are available on www.ab.com.*

Typical Wiring Diagrams

Description		2 N.C. & 2 N.O.
Contact Configuration		
Contact Action ☐Open ■Closed		
12-Pin M23 	1-3	Safety A
	4-6	Safety B
	7-8	Aux A
	9-10	Aux B
Pins 2, 5, 11 not connected	12	Ground
12-Pin Cordset 889M-F12X9AE-✶	Brown Blue	Safety A
	White Green	Safety B
	Yellow Grey	Aux A
	Pink Red	Aux B
	Green Yellow	Ground

✶ Replace symbol with 0F5 (0.5 ft) or 1F (1 ft) for standard cable lengths.