

Banner **Минск** т.80447584780 Viber email minsk17@tut.by  
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## Каталог Banner

Автоматизация

## **Banner в Беларуси**

Series	Description	Options	Mounting	Dimensions H x W x D	Protection Rating
	Easy to install 30 mm mount. page 600	Non-Illuminated Illuminated	30 mm	119.8 x ø 80 mm	IP65
	Flat mount with wide variety of options. page 601	Non-Illuminated Illuminated Non-Illuminated Locking Illuminated Locking	Flat mount	102.1 x 80.8 x 80.3 mm	IP65
	Panel mount E-Stop buttons. page 612	Non-Illuminated Illuminated Locking Illuminated Locking	Panel	Varies by model	IP65
	Mechanical E-Stop button kits. page 616	High current Metal shaft	Panel or flat	106 x 70 x 70 mm	IP65

# E-Stop Buttons

## Illuminated 30 mm Mount



- Illumination allows for easy identification of which E-stop has been activated.
- Easy installation and no assembly or individual wiring required
- Push-to-stop, twist-to-release or pull-to-release operation per IEC 60947-5-5
- Compliant with ANSI B11.19, ANSI NFPA79 and IEC/EN 60204-1 Emergency Stop requirements
- Incorporate with OTB/STB optical touch button for a simplified operator station that does not require an additional enclosure.
- “Safe Break Action” ensures NC contacts will open if the contact block is damaged or separated from the actuator
- Models designed to interface with Safety BUS nodes/gateways

## Illuminated Base-mount E-Stop Push-Buttons

Description	Illumination***	Models
2NC / 1NO (PNP)	YEL/RED-Flash/Solid	SSA-EB1PLYR-12ECQ8
2NC / 1NO (PNP)	GREEN/RED-Flash/Solid	SSA-EB1PLGR-12ECQ8
2NC / 1NO (PNP)	OFF/RED-Flash/Solid	SSA-EB1PLXR-12ECQ8
2NC / 1NO (PNP)	OFF/RED-Flash/Solid, with 60 mm button	SSA-EB2PLXR-12ECQ8
2NC / 1NO (PNP)	OFF/RED-Solid/Solid	SSA-EB1PL-12ECQ8
2NC – Safety BUS node compatible*	YEL/RED-Flash	SSA-EB1PLYR-02ECQ5A
2NC – Safety BUS node compatible*	OFF/RED-Flash	SSA-EB1PLXR-02ECQ5A
2NC – Safety BUS node compatible*	OFF/RED-Solid	SSA-EB1PL-02ECQ5A
2NC – Safety BUS node compatible*	Illuminated button, OFF (armed), RED (solid, PUSH ON)	SSA-EB1PL2-02ECQ5A
2NC – Safety BUS node compatible**	YEL/RED-Flash	SSA-EB1PLYR-02ECQ5B
2NC – Safety BUS node compatible**	OFF/RED-Flash	SSA-EB1PLXR-02ECQ5B
2NC – Safety BUS node compatible**	OFF/RED-Solid	SSA-EB1PL-02ECQ5B
2NC – Safety BUS node compatible**	Illuminated button, OFF (armed) RED (solid, PUSH ON)	SSA-EB1PL2-02ECQ5B

For more specifications see page 609.

Connection options: A model with a QD requires a mating cordset (see page 606).

\* CH1 = pins 1 & 2, CH2 = pins 4 & 5, 5-pin M12 QD

\*\* CH1 = pins 1 & 4, CH2 = pins 2 & 5, 5-pin M12 QD

\*\*\* For EZ-LIGHT Illumination logic see page 607.

# E-Stop Buttons

## Illuminated Flush Mount



- Illumination allows for easy identification of which E-stop has been activated.
- Easy installation with no assembly or individual wiring required
- Remotely located E-Stop buttons can be positioned to be clearly identified, clearly visible and readily accessible
- Push-to-stop, twist-to-release or pull-to-release operation per IEC 60947-5-5
- Compliant with ANSI B11.19, ANSI NFPA79 and IEC/EN 60204-1 Emergency Stop requirements
- "Safe Break Action" ensures NC contacts will open if the contact block is damaged or separated from the actuator
- Models designed to interface with Safety BUS nodes/gateways

### Illuminated Flush-mount E-Stop Push-Buttons

Description	Illumination***	Models
2NC / 1NO (PNP)	YEL/RED-Flash/Solid	SSA-EB1PLYR-12ED1Q8
2NC / 1NO (PNP)	YEL/RED-Flash/Solid, 1/2" NPT conduit connection with terminal strip	SSA-EB1PLYR-12ED1
2NC / 1NO (PNP)	GREEN/RED-Flash/Solid	SSA-EB1PLGR-12ED1Q8
2NC / 1NO (PNP)	GREEN/RED-Flash/Solid, 1/2" NPT conduit connection with terminal strip	SSA-EB1PLGR-12ED1
2NC / 1NO (PNP)	OFF/RED-Flash/Solid	SSA-EB1PLXR-12ED1Q8
2NC / 1NO (PNP)	OFF/RED-Flash/Solid, with 60 mm button	SSA-EB2PLXR-12ED1Q8
2NC / 1NO (PNP)	OFF/RED-Flash/Solid, 1/2" NPT conduit connection with terminal strip	SSA-EB1PLXR-12ED1
2NC / 1NO (PNP)	OFF/RED-Solid/Solid	SSA-EB1PL-12ED1Q8
2NC – Safety BUS node compatible*	YEL/RED-Flash	SSA-EB1PLYR-02ED1Q5A
2NC – Safety BUS node compatible*	OFF/RED-Flash	SSA-EB1PLXR-02ED1Q5A
2NC – Safety BUS node compatible*	OFF/RED-Solid	SSA-EB1PL-02ED1Q5A
2NC – Safety BUS node compatible**	YEL/RED-Flash	SSA-EB1PLYR-02ED1Q5B
2NC – Safety BUS node compatible**	OFF/RED-Flash	SSA-EB1PLXR-02ED1Q5B
2NC – Safety BUS node compatible**	OFF/RED-Solid	SSA-EB1PL-02ED1Q5B

For more specifications see page 609.

Connection options: A model with a QD requires a mating cordset (see page 606).

\* CH1 = pins 1 & 2, CH2 = pins 4 & 5, 5-pin M12 QD

\*\* CH1 = pins 1 & 4, CH2 = pins 2 & 5, 5-pin M12 QD

\*\*\* For EZ-LIGHT Illumination logic see page 607.



# E-Stop Buttons

## 30 mm Mount



- Allows for easy installation with no assembly or individual wiring required
- Rugged design
- Push-to-stop, twist-to-release or pull-to-release operation per IEC 60947-5-5
- Compliant with ANSI B11.19, ANSI NFPA79 and IEC/EN 60204-1 Emergency Stop requirements
- “Safe Break Action” ensures NC contacts will open if the contact block is damaged or separated from the actuator
- Models designed to interface with Safety BUS nodes/gateways

## Base-mount E-Stop Push-Buttons

Description	Models
2NC	SSA-EB1P-02ECQ4
1NC / 1NO	SSA-EB1P-11ECQ4
2NC – Safety BUS node compatible*	SSA-EB1P-02ECQ5A
2NC – Safety BUS node compatible with 60 mm button*	SSA-EB2P-02ECQ5A
2NC – Safety BUS node compatible**	SSA-EB1P-02ECQ5B
2NC – Safety BUS node compatible with 60 mm button**	SSA-EB2P-02ECQ5B
2NC / 2NO	SSA-EB1P-22ECQ8
4NC with 60 mm button	SSA-EB2P-04ECQ8

For more specifications see page 609.

 Connection options: A model with a QD requires a mating cordset (see page 606).

\* CH1 = pins 1 & 2, CH2 = pins 4 & 5, 5-pin M12 QD

\*\* CH1 = pins 1 & 4, CH2 = pins 2 & 5, 5-pin M12 QD

# E-Stop Buttons

## Flush Mount



- Easy to install with no assembly or individual wiring required
- Models designed to interface with Safety BUS nodes/gateways
- Rugged design
- Push-to-stop, twist-to-release or pull-to-release operation per IEC 60947-5-5
- Compliant with ANSI B11.19, ANSI NFPA79 and IEC/EN 60204-1 Emergency Stop requirements
- “Safe Break Action” ensures NC contacts will open if the contact block is damaged or separated from the actuator

### Flush-Mount E-Stop Push-Button

Description	Standard Models
2NC	SSA-EB1P-02ED1Q4
2NC - Alternate pinout	SSA-EB1P-02ED1Q4A
1NC/1NO	SSA-EB1P-11ED1Q4
2NC, Safety BUS node compatible*	SSA-EB1P-02ED1Q5A
2NC, Safety BUS node compatible with 60 mm button*	SSA-EB2P-02ED1Q4A
2NC, Safety BUS node compatible**	SSA-EB1P-02ED1Q5B
2NC, Safety BUS node compatible with 60 mm button**	SSA-EB2P-02ED1Q4B
2NC/2NO	SSA-EB1P-22ED1Q8
4NC with 60 mm button	SSA-EB2P-04ED1Q8
2NC/1NO, Illuminated button—Push ON RED	SSA-EB1PL2-12ED1Q8

For more specifications see page 609.

Connection options: A model with a QD requires a mating cordset (see page 606).

\* CH1 = pins 1 & 2, CH2 = pins 4 & 5, 5-pin M12 QD

\*\* CH1 = pins 1 & 4, CH2 = pins 2 & 5, 5-pin M12 QD

# Lockable E-Stop Buttons

## Illuminated Flush Mount



- Easy to install and have a locking capability
- Push-to-stop, twist-to-release operation per IEC 60947-5-5
- Compliant with ANSI B11.19, ANSI NFPA79 and IEC/EN 60204-1 Emergency Stop requirements
- "Safe Break Action" ensures NC contacts will open if the contact block is damaged or separated from the actuator
- Models designed to interface with Safety BUS nodes/gateways
- Rugged design is easy to install with no assembly or individual wiring required

### Lockable Illuminated Flush-mount E-Stop Push-Buttons

Description	Illumination*	Models
2NC / 1NO (PNP)	YEL/RED-Flash/Solid	SSA-EB1MLYRP-12ED1Q8
2NC / 1NO (PNP)	YEL/RED-Flash/Solid, 1/2" NPT conduit connection with terminal strip	SSA-EB1MLYRP-12ED1Q8
2NC / 1NO (PNP)	GREEN/RED-Flash/Solid	SSA-EB1MLGRP-12ED1Q8
2NC / 1NO (PNP)	GREEN/RED-Flash/Solid, 1/2" NPT conduit connection with terminal strip	SSA-EB1MLGRP-12ED1
2NC / 1NO (PNP)	OFF/RED-Flash/Solid	SSA-EB1MLXRP-12ED1Q8
2NC / 1NO (PNP)	OFF/RED-Flash/Solid, 1/2" NPT conduit connection with terminal strip	SSA-EB1MLXRP-12ED1
2NC / 1NO (PNP)	OFF/RED-Solid/Solid	SSA-EB1MLP-12ED1Q8

For more specifications see page 610.

 Connection options: A model with a QD requires a mating cordset (see page 606).

\* For EZ-LIGHT Illumination logic see page 607.

# Lockable E-Stop Buttons

## Flush Mount



- Easy to install and have a locking capability.
- Push-to-stop, twist-to-release operation per IEC 60947-5-5
- Compliant with ANSI B11.19, ANSI NFPA79 and IEC/EN 60204-1 Emergency Stop requirements
- “Safe Break Action” ensures NC contacts will open if the contact block is damaged or separated from the actuator
- Models designed to interface with Safety BUS nodes/gateways
- Rugged design is easy to install with no assembly or individual wiring required

## Lockable Flush-mount E-Stop Push-Button

Description	Models
2NC	SSA-EB1MP-02ED1Q4
2NC - Alternate pinout	SSA-EB1MP-02ED1Q4A
1NC/1NO	SSA-EB1MP-11ED1Q4
2NC, Safety BUS node compatible*	SSA-EB1MP-02ED1Q5A
2NC, Safety BUS node compatible**	SSA-EB1MP-02ED1Q5B
2NC/2NO	SSA-EB1MP-22ED1Q8
2NC/1NO, Illuminated button—Push ON RED	SSA-EB1ML2P-12ED1Q8

For more specifications see page 609.

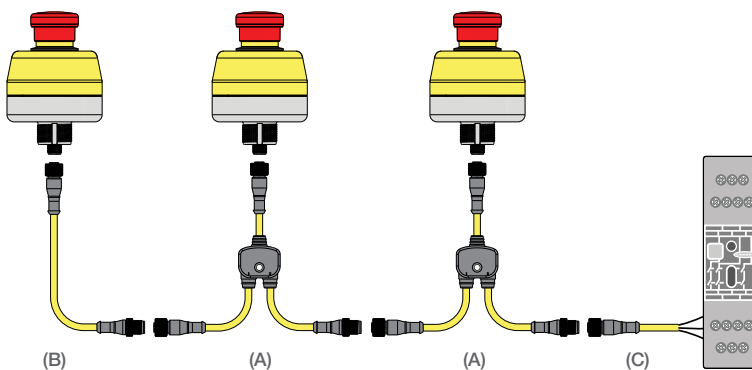
Connection options: A model with a QD requires a mating cordset (see page 606).

\* CH1 = pins 1 & 2, CH2 = pins 4 & 5, 5-pin M12 QD

\*\* CH1 = pins 1 & 4, CH2 = pins 2 & 5, 5-pin M12 QD

### Series Hookup Cordset Solution

This interconnection solution allows for quick hookup of a series string of emergency stop buttons. For the CSS models (A) Branch #1 and Branch #2 are 300 mm (12") in length and the length of the trunk is listed below. See "Cordsets" below and specific model E-Stop datasheet for complete information, including installation instructions, hookup, and accessories.



(A)  
Euro-Style  
Straight splitter

4-Pin	
CSS-M12F41M12M41M12F41	0.3 m (1')
CSS-M12F43M12M41M12F41	0.9 m (3')
CSS-M12F48M12M41M12F41	2.4 m (8')

8-Pin	
CSS-M12F81M12M81M12F81	0.3 m (1')
CSS-M12F83M12M81M12F81	0.9 m (3')
CSS-M12F88M12M81M12F81	2.4 m (8')



(B)  
Euro-Style  
Double-ended  
male/female

5-Pin	8-Pin
DEE2R-51D	DEE2R-81D
0.3 m (1')	0.3 m (1')
DEE2R-53D	DEE2R-83D
0.9 m (3')	0.9 m (3')
DEE2R-58D	DEE2R-88D
2.4 m (8')	2.4 m (8')
DEE2R-515D	DEE2R-815D
4.5 m (15')	4.5 m (15')
DEE2R-525D	DEE2R-825D
7.6 m (25')	7.6 m (25')
DEE2R-550D	DEE2R-850D
15.3 m (50')	15.3 m (50')
DEE2R-575D	DEE2R-875D
22.9 m (75')	22.9 m (75')
DEE2R-5100D	DEE2R-8100D
30.5 m (100')	30.5 m (100')



(C)  
M12/Euro-Style  
Straight connector  
models listed

4-Pin	8-Pin
MQDC-406	MQDC2S-806
2 m (6')	2 m (6')
MQDC-415	MQDC2S-815
5 m (25')	5 m (25')
MQDC-430	MQDC2S-830
9 m (50')	9 m (50')
MQDC-450	MQDC2S-850
15 m (50')	15 m (50')

Additional cordset information is available.  
See page 758



SSA-MBK-EEC1



SSA-MBK-EEC2





SSA-MBK-EEC3



SSA-EB1P-ECWC

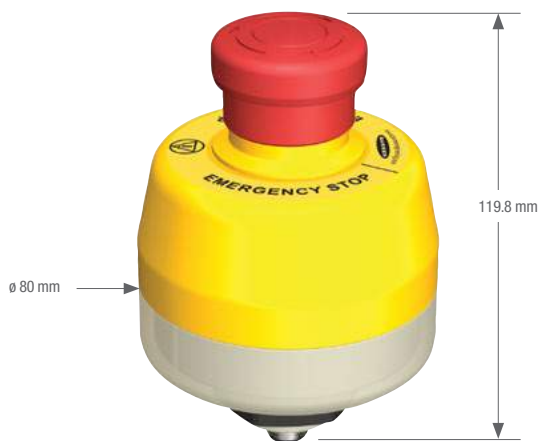
Additional bracket information is available.  
See page 752

## E-Stop Legend Labels (adhesive backed label)

Product	Description	Language	Inscription	Models
	60 mm diameter (OD) Emergency Stop Legend with inscription and ISO 13850 Emergency Stop symbol (adhesive backed label).  41 mm hole for application around the base of <b>SSA-EB1(2)P...</b> (Pack of 10 each)	English	EMERGENCY STOP	ESL-41/60-10
		English & Spanish	PARADA DE EMERGENCIA	ESL-41/60-ENES-10
		Spanish	PARADA DE EMERGENCIA	ESL-41/60-ES-10
		German	NOT-AUS	ESL-41/60-DE-10
		French	ARRÊT D'URGENCE	ESL-41/60-FR-10
		Italian	EMERGENZA ARRESTO	ESL-41/60-IT-10
		Russian	БГ БСЙК Об К ПТУБОПГ	ESL-41/60-RU-10
		Japanese	非常停止	ESL-41/60-JA-10
		Simplified Chinese (Mainland China)	紧急停止	ESL-41/60-CN-10
		Traditional Chinese (Taiwan)	緊急停止	ESL-41/60-TW-10
	70 mm diameter (OD) Emergency Stop Legend with inscription and ISO 13850 Emergency Stop symbol (adhesive backed label).  44 mm hole for application around <b>SSA-EB1M...</b> (Pack of 10 each).	English	EMERGENCY STOP	ESL-44/70-10
		English & Spanish	PARADA DE EMERGENCIA	ESL-44/70-ENES-10
		Spanish	PARADA DE EMERGENCIA	ESL-44/70-ES-10
		German	NOT-AUS	ESL-44/70-DE-10
		French	ARRÊT D'URGENCE	ESL-44/70-FR-10
		Italian	EMERGENZA ARRESTO	ESL-44/70-IT-10
		Russian	АВАРИЙНЫЙ ОСТАНОВ	ESL-44/70-RU-10
		Japanese	非常停止	ESL-44/70-JA-10
		Simplified Chinese (Mainland China)	紧急停止	ESL-44/70-CN-10
		Traditional Chinese (Taiwan)	緊急停止	ESL-44/70-TW-10
		Portuguese	PARADA DE EMERGÊNCIA	ESL-41/60-PT-10
		Portuguese	PARADA DE EMERGÊNCIA	ESL-44/70-PT-10

## EZ-LIGHT™ Illumination Logic for Emergency Stop buttons

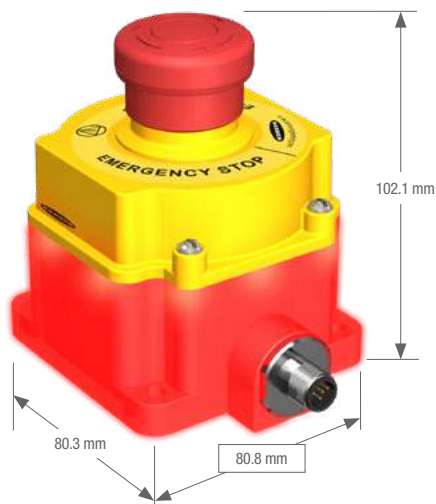
Situation	Indication	Illumination Logic
<b>SSA-EB1xxLYR-xxxxQx or SSA-EB1xxLGR-xxxxQx</b>		
Button Armed Pin 3 open	YELLOW / SOLID or GREEN / SOLID	<ul style="list-style-type: none"> <li>Indicates button is armed</li> <li>If used, ES-FA-11AA Module is in a RESET/RUN condition (31/32 open)</li> </ul>
Button Pushed Pin 3 open or +V dc	RED / FLASH	<ul style="list-style-type: none"> <li>Indicates the button that is pushed (actuated)</li> <li>Signal on Pin 3 has no effect on a button that has been pushed (actuated)</li> </ul>
Button Armed Pin 3 = +V dc	RED / SOLID	<ul style="list-style-type: none"> <li>Indicates the machine is in an Emergency Stop or other stop condition, but that specific button has not been pushed (actuated)</li> <li>This optional signal (12 to 30 V dc) allows the user to indicate a stop condition by turning the armed indication to a RED (steady) Indication</li> </ul>
<b>SSA-EB1xxLXR-xxxxQx</b>		
Button Armed Pin 3 open	OFF	<ul style="list-style-type: none"> <li>Indicates button is armed</li> <li>If used, ES-FA-11AA Module is in a RESET/RUN condition (31/32 open)</li> </ul>
Button Pushed Pin 3 open or +V dc	RED / FLASH	<ul style="list-style-type: none"> <li>Indicates the button that is pushed (actuated)</li> <li>Signal on Pin 3 has no effect on a button that has been pushed (actuated)</li> </ul>
Button Armed Pin 3 = +V dc	RED / SOLID	<ul style="list-style-type: none"> <li>Indicates the machine is in an Emergency Stop or other stop condition, but that specific button has not been pushed (actuated)</li> <li>This optional signal (12 to 30 V dc) allows the user to indicate a stop condition by turning the armed indication to a RED (steady) Indication</li> </ul>
<b>SSA-EB1xxL-xxxxQx</b>		
Button Armed Pin 3 open	OFF	<ul style="list-style-type: none"> <li>Indicates button is armed</li> <li>If used, ES-FA-11AA Module is in a RESET/RUN condition (31/32 open)</li> </ul>
Button Pushed Pin 3 open or +V dc	RED / SOLID	<ul style="list-style-type: none"> <li>Indicates the button that is pushed (actuated)</li> <li>Signal on Pin 3 has no effect on a button that has been pushed (actuated)</li> </ul>
Button Armed Pin 3 = +V dc	RED / SOLID	<ul style="list-style-type: none"> <li>Indicates the machine is in an Emergency Stop or other stop condition, but that specific button has not been pushed (actuated)</li> <li>This optional signal (12 to 30 V dc) allows the user to indicate a stop condition by turning the armed indication to a RED (steady) Indication</li> </ul>



Illuminated models



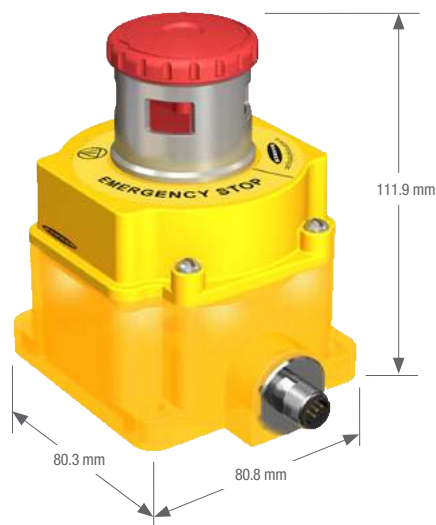
Non-Illuminated models



Illuminated models



Non-Illuminated models





Illuminated models



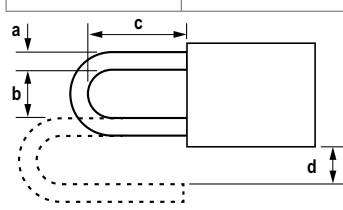


Non-Illuminated models

## 30 mm E-Stop Push Button Specifications

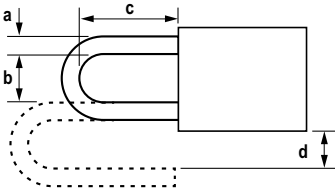


Housing / Button Mounting	Polycarbonate / Polyamide Threaded base has M30 x 1.5 external threads.(M30 hardware included) <b>Max. Tightening Torque:</b> 0.56 N-m (5 in-lbf)					
Operating Temperature	-25 to +55 °C					
Environmental rating	IP65 (IEC60529)					
Operating Humidity	45% to 85% RH (no condensation)					
Insulation Resistance	100M minimum (500 V dc megger)					
Impulse Withstand Voltage	2.5 kV					
Pollution Degree	3					
Overvoltage Category	II					
Contact material / bounce*	Gold plated silver / 20 ms					
Electrical Life	100,000 operations minimum, 250,000 operations minimum at 24 V ac/dc, 100 mA					
Mechanical Life	250,000 operations					
B10d	100,000 (based on ISO13849-1(2006))					
Shock & Vibration Resistance	<b>Operating extremes:</b> 150m/s <sup>2</sup> (15G) <b>Operating extremes:</b> 10 to 500 Hz, amplitude 0.35 mm acceleration 50 m/s <sup>2</sup>					
LED Illumination	<b>Color:</b> Yellow - 590 nm, Red - 618 nm, Green - 525 nm; <b>Flash Rate:</b> 1.6 Hz at 50% duty cycle; <b>Voltage/Current:</b> 12 – 30 V dc; 120 mA at 12 V dc, 65 mA at 24 Vdc, 60 mA at 30 V dc, SSA-EB1..LGR-.. <b>(GREEN) only:</b> 12 – 30 V dc; 135 mA @ 12 V dc, 75 mA @ 24 V dc, 70 mA @ 30 V dc					
Electrical Rating	<b>Minimum load:</b> 1 mA @ 5 V ac/dc <b>SSA-EB1xx-..Q5A/Q5B:</b> 3A @ 250 V maximum <b>SSA-EB1xx-xxED1Q8:</b> 2A at 60 V ac/75 V dc maximum <b>UL Applications (UL/cUL):</b> 1.5A @ 250 V ac, 1A @ 30 V dc (pilot duty) <b>CE Applications: AC-15:</b> 1.5A @ 250 V ac, DC-13: 1A @ 30 V dc					
Rated Insulation Voltage (Ui)	250 V					
Rated Current (Ith)	3A					
Rated Operating Voltage (Ue)	See Electrical Rating		30 V	60 V ac/75 V dc	125 V	250 V
Rated Operating Current	<b>SSA-EB1xxLxx-02ED1Q5A/Q5B</b>					
Safety Contact (NC)	AC 50/60 Hz	Resistive Load (AC-12)	–	–	–	3A
		Inductive Load (AC-15)	–	–	3A	1.5A
	DC	Resistive Load (DC-12)	2A	–	0.4A	0.2A
		Inductive Load (DC-13)	1A	–	0.22A	0.1A
Monitor Contacts (NO)	AC 50/60 Hz	Resistive Load (AC-12)	–	–	1.2A	0.6A
		Inductive Load (AC-15)	–	–	0.6A	0.3A
	DC	Resistive Load (DC-12)	2A	–	0.4A	0.2A
		Inductive Load (DC-13)	1A	–	0.22A	0.1A
<b>SSA-EB1PLxx-02ECQ5A/Q5B (illuminated)</b>						
Safety Contact (NC)	AC 50/60 Hz	Resistive Load (AC-12)	–	–	–	3A
		Inductive Load (AC-15)	–	–	3A	1.5A
	DC	Resistive Load (DC-12)	2A	–	0.4A	0.2A
		Inductive Load (DC-13)	1A	–	0.22A	0.1A
<b>SSA-EB1Pxx-xxECQ8</b> See above for <b>SSA-EB1P-22ECQ8</b> Monitor Contacts						
Safety Contact (NC)	AC 50/60 Hz	Resistive Load (AC-12)	–	2A	–	–
		Inductive Load (AC-15)	–	2A	–	–
	DC	Resistive Load (DC-12)	2A	0.4A	–	–
		Inductive Load (DC-13)	1A	0.22A	–	–
Auxiliary Output (NO)	12 to 30 V dc (from pin 2)	Resistive Load (DC-12)	0.25A	–	–	–
		Inductive Load (DC-13)	0.25A	–	–	–
<ul style="list-style-type: none"> <li>• The rated operating currents are measured at resistive/inductive load types specified in IEC 60947-5-1.</li> <li>• See "Electrical Rating" above for maximum voltage/current rating per model.</li> </ul>						
Design Standards	Compliant with EN/IEC 60497-1 / -5-1, ISO 13850, ANSI B11.19 , ANSI NFPA79, IEC 60204-1					
Certifications	  E-stop button: (pending)					



## Lockable and Illuminated E-Stop Push-Button Specifications

Housing / Button Mounting	Polycarbonate / Polyamide #10 or M5 (M5 hardware included), Max. Tightening Torque: 0.56 N•m (5 in•lbf)																																																																		
Operating Temperature	-25 to +55 °C																																																																		
Environmental rating	IP65 (IEC60529)																																																																		
Operating Humidity	45% to 85% RH (no condensation)																																																																		
Insulation Resistance	100MΩ minimum (500 V dc megger)																																																																		
Impulse Withstand Voltage	2.5kV																																																																		
Pollution Degree	3																																																																		
Overvoltage Category	II																																																																		
Contact material / bounce	Gold plated silver / 20ms																																																																		
Electrical Life	100,000 operations minimum, 250,000 operations minimum at 24 V ac/dc, 100 mA																																																																		
Mechanical Life	250,000 operations,																																																																		
B10d	100,000 (based on ISO13849-1(2006))																																																																		
Total Weight of Padlock and Hasp (SSA-EB1M..P-.. only)	1500g (3.3 lb) maximum		<b>Padlock size</b> <table border="1"> <thead> <tr> <th>a</th> <th>b</th> <th>c</th> <th>d</th> </tr> </thead> <tbody> <tr> <td>7 mm max</td> <td>19 mm min</td> <td>39 mm min</td> <td>15 mm min</td> </tr> </tbody> </table>  <p>Since various form and sizes are available, ensure applicability of padlock and hasp before use. If total weight exceeds 1500g, the switch may malfunction or fail.</p>				a	b	c	d	7 mm max	19 mm min	39 mm min	15 mm min																																																					
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7 mm max	19 mm min	39 mm min	15 mm min																																																																
Shock Resistance	<b>Operating extremes:</b> 150m/s <sup>2</sup> (15G)																																																																		
Vibration Resistance	<b>Operating extremes:</b> 10 to 500 Hz, amplitude 0.35 mm acceleration 50 m/s <sup>2</sup>																																																																		
LED Illumination	<b>Color:</b> Yellow - 590 nm, Red - 618 nm, Green - 525 nm <b>Flash Rate:</b> 1.6 Hz @ 50% duty cycle <b>Voltage/Current:</b> 12 - 30 V dc; 120 mA @ 12 V dc, 65 mA @ 24 V dc, 60 mA @ 30 V dc, SSA-EB1..LGR-..(GREEN) only: 12 - 30 V dc; 135 mA @ 12 V dc, 75 mA @ 24 V dc, 70 mA @ 30 V dc																																																																		
Electrical Rating	<b>Minimum load:</b> 1 mA @ 5 V ac/dc <b>SSA-EB1xx-..Q5A/Q5B:</b> 3A @ 250 V maximum <b>SSA-EB1xx-xxED1Q8:</b> 2A @ 60 V ac/75 V dc maximum <b>UL Applications (UL/cUL):</b> 1.5A @ 250 V ac, 1A @ 30 V dc (pilot duty) <b>CE Applications:</b> <b>AC-15:</b> 1.5A @ 250 V ac, DC-13: 1A @ 30 V dc																																																																		
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Rated Current (Ith)	3A																																																																		
Rated Operating Voltage (Ue)	See Electrical Rating			30 V	60 V ac/75 V dc	125 V	250 V																																																												
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Safety Contact (NC)	AC 50/60 Hz	Resistive Load (AC-12)	—	—	—	3A																																																													
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Auxiliary Output (NO)	12 to 30 V dc (from pin 2)	Resistive Load (DC-12)	0.25A	—	—	—																																																													
		Inductive Load (DC-13)	0.25A	—	—	—																																																													
Design Standards	Compliant with EN/IEC 60497-1 / -5-1, ISO 13850, ANSI B11.19, ANSI NFPA79, IEC 60204-1																																																																		
Certifications	 (pending)  (pending)																																																																		

## Lockable E-Stop Push-Button Specifications

<b>Housing / Button Mounting</b>	Polycarbonate / Polyamide #10 or M5 (M5 hardware included), Max. Tightening Torque: 0.56 N•m (5 in•lbf)													
<b>Operating Temperature</b>	-25 to +55 °C													
<b>Environmental rating</b>	IP65 (IEC60529)													
<b>Operating Humidity</b>	45% to 85% RH (no condensation)													
<b>Insulation Resistance</b>	100MΩ minimum (500 V dc megger)													
<b>Impulse Withstand Voltage</b>	2.5kV													
<b>Pollution Degree</b>	3													
<b>Overvoltage Category</b>	II													
<b>Contact material / bounce</b>	Gold plated silver / 20 ms													
<b>Electrical Life</b>	100,000 operations minimum, 250,000 operations minimum at 24 V ac/dc, 100 mA													
<b>Mechanical Life</b>	250,000 operations,													
<b>B10d</b>	100,000 (based on ISO13849-1(2006))													
<b>Total Weight of Padlock and Hasp (SSA-EB1M..P-.. only)</b>	1500g (3.3 lb) maximum		<p><b>Padlock size</b></p> <table border="1"> <thead> <tr> <th>a</th> <th>b</th> <th>c</th> <th>d</th> </tr> </thead> <tbody> <tr> <td>7 mm max</td> <td>19 mm min</td> <td>39 mm min</td> <td>15 mm min</td> </tr> </tbody> </table> <p>Since various form and sizes are available, ensure applicability of padlock and hasp before use. If total weight exceeds 1500g, the switch may malfunction or fail.</p>  <p>Dimension "d" is 6 mm or more when attaching a padlock from the side of a switch.</p>				a	b	c	d	7 mm max	19 mm min	39 mm min	15 mm min
a	b	c	d											
7 mm max	19 mm min	39 mm min	15 mm min											
<b>Shock Resistance</b>	Operating extremes: 150m/s <sup>2</sup> (15G)													
<b>Vibration Resistance</b>	Operating extremes: 10 to 500 Hz, amplitude 0.35mm acceleration 50m/s <sup>2</sup>													
<b>LED Voltage/Current</b>	24 V ac/dc ±10%, 15mA @ 24 V ac/dc (SSA-EB1PL2-12ED1Q8 only)													
<b>Electrical Rating</b>	Minimum load: 1 mA @ 5 V ac/dc SSA-EB1xx-..Q4 and -..Q5: 3A @ 250 V maximum SSA-EB1xx-..Q8: 2A @ 60 V AC/75 V DC maximum UL Applications (UL/cUL): 1.5A @ 250 V ac, 1A @ 30 V dc (pilot duty) CE Applications: AC-15: 1.5A @ 250 V ac, DC-13: 1A @ 30 V dc													
<b>Rated Insulation Voltage (Ui)</b>	250 V													
<b>Rated Current (Ith)</b>	3A													
<b>Rated Operating Voltage (Ue)</b>	See Electrical Rating			30 V	125 V	250 V								
<b>Rated Operating Current</b>	Safety Contact (NC)	AC 50/60 Hz	Resistive Load (AC-12)	-	-	3A								
			Inductive Load (AC-15)	-	3A	1.5A								
	DC		Resistive Load (DC-12)	2A	0.4A	0.2A								
			Inductive Load (DC-13)	1A	0.22A	0.1A								
	Monitor Contacts (NO)	AC 50/60 Hz	Resistive Load (AC-12)	-	1.2A	0.6A								
			Inductive Load (AC-14)	-	0.6A	0.3A								
	DC		Resistive Load (DC-12)	2A	0.4A	0.2A								
			Inductive Load (DC-13)	1A	0.22A	0.1A								
	<ul style="list-style-type: none"> <li>The rated operating currents are measured at resistive/inductive load types specified in IEC 60947-5-1.</li> <li>See "Electrical Rating" above for maximum voltage/current rating per model.</li> </ul>													
<b>Design Standards</b>	Compliant with EN/IEC 60497-1 / -5-1, ISO 13850, ANSI B11.19, ANSI NFPA79, IEC 60204-1													
<b>Certifications</b>	 (pending)  (pending)													

# E-Stop Buttons

## 30 mm Panel Mount



- Easy to install with locking and illuminated models available
- Up to four contacts; various configurations available
- Push-to-stop, twist-to-release (standard and lockable), or pull-to-release (standard) operation per IEC60947-5-5
- Latching design complies with ISO 13850; direct (positive) opening operation per IEC 60947-5-1
- Compliant with ANSI B11.19, ANSI NFPA79, and IEC/EN 60204-1 Emergency Stop requirements
- “Safe Break Action” ensures N.C. contacts will open if the contact block is separated from the actuator

### Panel Mount E-Stop Push-Buttons

Description	Models 40 mm Button	Models 60 mm Button
2NC	SSA-EB1P-02	SSA-EB2P-02
4NC	SSA-EB1P-04	SSA-EB2P-04
1NC / 1NO	SSA-EB1P-11	SSA-EB2P-11
3NC / 1NO	SSA-EB1P-13	SSA-EB2P-13
2NC / 2NO	SSA-EB1P-22	SSA-EB2P-22

### Lockable Panel Mount E-Stop Push-Buttons

Description	Models 44 mm Button
2NC	SSA-EB1MP-02
4NC	SSA-EB1MP-04
1NC / 1NO	SSA-EB1MP-11
3NC / 1NO	SSA-EB1MP-13
2NC / 2NO	SSA-EB1MP-22

# Illuminated E-Stop Buttons



## 30 mm Panel Mount

- Easy to install with locking and illuminated models available
- Up to four contacts; various configurations available
- Push-to-stop, twist-to-release (standard and lockable), or pull-to-release (standard) operation per IEC60947-5-5
- Latching design complies with ISO 13850; direct (positive) opening operation per IEC 60947-5-1
- Compliant with ANSI B11.19, ANSI NFPA79, and IEC/EN 60204-1 Emergency Stop requirements
- “Safe Break Action” ensures N.C. contacts will open if the contact block is separated from the actuator








### Illuminated Panel Mount E-Stop Push-Buttons

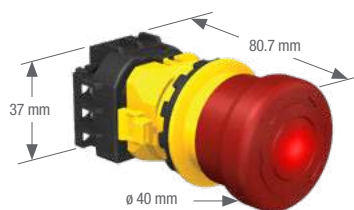
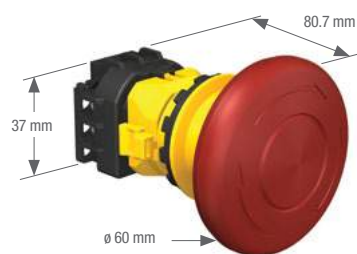
Description	Models 40 mm Button
2NC, LED function per hookup	SSA-EB1PL1-02
4NC, LED function per hookup	SSA-EB1PL1-04
1NC / 1NO, LED function per hookup	SSA-EB1PL1-11
3NC / 1NO, LED function per hookup	SSA-EB1PL1-13
2NC / 2NO, LED function per hookup	SSA-EB1PL1-22
2NC / 1NO, LED function PRESS ON	SSA-EB1PL2-12

### Illuminated Lockable Panel Mount E-Stop Push-Buttons



Description	Models 44 mm Button
2NC, LED function per hookup	SSA-EB1ML1P-02
4NC, LED function per hookup	SSA-EB1ML1P-04
1NC / 1NO, LED function per hookup	SSA-EB1ML1P-11
3NC / 1NO, LED function per hookup	SSA-EB1ML1P-13
2NC / 2NO, LED function per hookup	SSA-EB1ML1P-22
2NC / 1NO, LED function PRESS ON	SSA-EB1ML2P-12

## E-Stop Legend Labels (adhesive backed label)

Product	Description	Language	Inscription	Models
	60 mm diameter (OD) Emergency Stop Legend with inscription and ISO 13850 Emergency Stop symbol (adhesive backed label).  41 mm hole for application around the base of SSA-EB1(2)P... (Pack of 10 each)	English	EMERGENCY STOP	ESL-41/60-10
		English & Spanish	PARADA DE EMERGENCIA	ESL-41/60-ENES-10
		Spanish	PARADA DE EMERGENCIA	ESL-41/60-ES-10
		German	NOT-AUS	ESL-41/60-DE-10
		French	ARRÊT D'URGENCE	ESL-41/60-FR-10
		Italian	EMERGENZA ARRESTO	ESL-41/60-IT-10
		Russian	АВАРИЙНЫЙ ОСТАНОВ	ESL-41/60-RU-10
		Japanese	非常停止	ESL-41/60-JA-10
		Simplified Chinese (Mainland China)	紧急停止	ESL-41/60-CN-10
		Traditional Chinese (Taiwan)	緊急停止	ESL-41/60-TW-10
	70 mm diameter (OD) Emergency Stop Legend with inscription and ISO 13850 Emergency Stop symbol (adhesive backed label).  44 mm hole for application around SSA-EB1M... (Pack of 10 each).	English	EMERGENCY STOP	ESL-44/70-10
		English & Spanish	PARADA DE EMERGENCIA	ESL-44/70-ENES-10
		Spanish	PARADA DE EMERGENCIA	ESL-44/70-ES-10
		German	NOT-AUS	ESL-44/70-DE-10
		French	ARRÊT D'URGENCE	ESL-44/70-FR-10
		Italian	EMERGENZA ARRESTO	ESL-44/70-IT-10
		Russian	АВАРИЙНЫЙ ОСТАНОВ	ESL-44/70-RU-10
		Japanese	非常停止	ESL-44/70-JA-10
		Simplified Chinese (Mainland China)	紧急停止	ESL-44/70-CN-10
		Traditional Chinese (Taiwan)	緊急停止	ESL-44/70-TW-10
	60 mm diameter (OD) Emergency Stop Legend with or without inscription (plastic with seal).  30 mm hole for application with SSA-EB1(2)P... or SSA-EB1M... (1 each)	English	EMERGENCY STOP	ESLP1-30/60
		N.A.	(Blank)	ESLP1-30/60-NW
	IP20 Finger-safe terminal cove			SSA-EB1-FSTC
	Standard terminal cover (supplied)			SSA-EB1-TC
	Jam nut wrench			SSA-EB1-LRW
	Jam nut twist wrench			SSA-EB1-LRTW



## E-Stop Push Button Specifications

Button/Locking Collar	Polyamide/Aluminum																																																	
Operating Temperature	<b>Non-illuminated:</b> -25 to +60 °C <b>Illuminated:</b> -25 to +55 °C																																																	
Environmental rating	IP65 (IEC60529)																																																	
Operating Humidity	45% to 85% RH (no condensation)																																																	
Insulation Resistance	100M minimum (500 V dc megger)																																																	
Impulse Withstand Voltage	2.5kV																																																	
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Shock & Vibration Resistance	<b>Shock Operating extremes:</b> 150m/s <sup>2</sup> (15G) <b>Vibration Operating extremes:</b> 10 to 500 Hz, amplitude 0.35 mm acceleration 50 m/s <sup>2</sup>																																																	
Electrical Rating	<b>Minimum load:</b> 1 mA @ 5 V ac/dc <b>UL Applications:</b> 1.5A @ 250 V ac, 1A @ 30 V dc (pilot duty) <b>CE Applications:</b> AC-15: 1.5A @ 250 V ac, DC-13: 1A @ 30 V dc																																																	
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Safety Contact (NC)		30 V	125 V	250 V																																														
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Design Standards	Compliant with EN/IEC 60497-1 / -5-1, ISO 13850, ANSI B11.19, ANSI NFPA79, IEC 60204-1																																																	
Certifications	 																																																	



# E-Stop Buttons

## Emergency Stop Push Buttons






- E-Stop button solution available as individual components or as kits for easy ordering.
- Higher current rating
- Modular design makes assembly and installation easy for either panel-mount or enclosure mounting
- Push-to-stop, twist-to-release operation per IEC 60497-5-5
- Compliant with ANSI B11.19, ANSI NFPA79, and IEC/EN 60204-1 Emergency Stop requirements
- Panel mount through 22 mm mounting hole

### E-Stop Push-Button Panel Mount Kits

E-Stop Button	Contacts	Legend	Enclosure	Models
	Metal-base 2 NC	Yes	No	SSA-EBM-02L
	Metal-base 1 NC & 1 NO	Yes	No	SSA-EBM-11L
	Metal-base 2 NC & 1 NO	Yes	No	SSA-EBM-12L






### E-Stop Push-Button Enclosure Kits

E-Stop Button	Contacts	Legend	Enclosure	Models*
	Metal 2 NC	Yes	Yes	SSA-EBM-02E
	Metal 1 NC & 1 NO	Yes	Yes	SSA-EBM-11E
	Metal 2 NC & 1 NO	Yes	Yes	SSA-EBM-12E

NC = Normally closed contact, NO = Normally open contact

\* The LPZP1A5 enclosure has replaced 8-L2PP-1A5 (discontinued). Please note changes in size (8-L2PP-1A5: 72mm x 85mm) and mounting hole location (8-L2PP-1A5: 49mm x 54mm).

## E-Stop Push-Button Components

Product	Description	Models
	22.5 mm metal button (8-LM2T-AU120 mounting adapter sold separately)	8-LM2T-B6644*
	Metal mounting adapter (for metal button)	8-LM2T-AU120
	Normally closed (NC) positively driven contact element	8-LM2T-C01**
	Normally open (NO) auxiliary contact element	8-LM2T-C10
	One 22 mm button enclosure, maximum of three contact blocks, wire entry through three sides (M16, M20 or M25) or the bottom (M16)	LPZP1A5***

\* Twist to release, mechanical latching ISO 13850 (EN 418) compliant. Diameter 40 mm (without mounting adapter).

\*\* Direct (positive) opening operation per IEC/EN 60947-5-1.

\*\*\* The LPZP1A5 enclosure has replaced 8-L2PP-1A5 (discontinued). Please note changes in size (8-L2PP-1A5: 72mm x 85mm) and mounting hole location (8-L2PP-1A5: 49mm x 54mm).





E-Stop Legend Labels (adhesive backed label)

Product	Description	Language	Inscription	Models <sup>†</sup>
	60 mm diameter, non-adhesive plastic legend with "Emergency Stop" inscription	English	EMERGENCY STOP	8-LM2T-AU115 <sup>†</sup>
	60 mm diameter (OD) Emergency Stop Legend with inscription and ISO 13850 Emergency Stop symbol (adhesive backed label).  41 mm hole for application around the base of <b>SSA-EB1(2)P...</b> (Pack of 10 each)	English	EMERGENCY STOP	ESL-41/60-10
		English & Spanish	PARADA DE EMERGENCIA	ESL-41/60-ENES-10
		Spanish	PARADA DE EMERGENCIA	ESL-41/60-ES-10
		German	NOT-AUS	ESL-41/60-DE-10
		French	ARRÊT D'URGENCE	ESL-41/60-FR-10
		Italian	EMERGENZA ARRESTO	ESL-41/60-IT-10
		Russian	АВАРИЙНЫЙ ОСТАНОВ	ESL-41/60-RU-10
		Japanese	非常停止	ESL-41/60-JA-10
		Simplified Chinese (Mainland China)	紧急停止	ESL-41/60-CN-10
		Traditional Chinese (Taiwan)	緊急停止	ESL-41/60-TW-10
Portuguese	PARADA DE EMERGÊNCIA	ESL-41/60-PT-10		



<sup>†</sup> Additional E-Stop background labels are available (see p/n 121976).



## E-Stop Push-Button Specifications

Mechanical Life	300,000 operations
Operating Force	0.8 kg
Mounting Adapter	<b>Metal button:</b> The adapter is fixed to the mounting surface by means of incorporated screws (Tmax = 0.8 Nm)
Construction	<b>Plastic parts:</b> Polyamide and polycarbonate <b>Metal parts:</b> Aluminum and zinc alloy
Environmental Rating	IP65
Operating Temperature	-25 to +60 °C
Certifications	  Compliant with EN/IEC 60947-1; -5-1

## Contact Specifications







Mechanical Life	300,000 operations																																								
European Rating	<b>Utilization categories:</b> AC15 and DC13 U <sub>i</sub> = 690 V ac I <sub>th</sub> = 10A UL designation = A 600 Q600																																								
Rated Operating Voltage (U <sub>e</sub> ) and Current	<p><b>IEC operational power in AC15</b></p> <table border="1"> <tr> <td>V</td> <td>12</td> <td>24</td> <td>48</td> <td>120</td> <td>240</td> <td>400</td> <td>480</td> <td>500</td> <td>600</td> </tr> <tr> <td>A</td> <td>6</td> <td>6</td> <td>6</td> <td>6</td> <td>3</td> <td>1.9</td> <td>1.5</td> <td>1.4</td> <td>1.2</td> </tr> </table> <p><b>IEC operational power in DC13</b></p> <table border="1"> <tr> <td>V</td> <td>12</td> <td>14</td> <td>48</td> <td>125</td> <td>250</td> <td>440</td> <td>500</td> <td>600</td> <td></td> </tr> <tr> <td>A</td> <td>3</td> <td>3</td> <td>1.5</td> <td>0.55</td> <td>0.27</td> <td>0.15</td> <td>0.13</td> <td>0.1</td> <td></td> </tr> </table>	V	12	24	48	120	240	400	480	500	600	A	6	6	6	6	3	1.9	1.5	1.4	1.2	V	12	14	48	125	250	440	500	600		A	3	3	1.5	0.55	0.27	0.15	0.13	0.1	
V	12	24	48	120	240	400	480	500	600																																
A	6	6	6	6	3	1.9	1.5	1.4	1.2																																
V	12	14	48	125	250	440	500	600																																	
A	3	3	1.5	0.55	0.27	0.15	0.13	0.1																																	
Mechanical Life	1,000,000 operations																																								
B10d	8-LM2T-Cxx 1,000,000																																								
Connections	(1 or 2) 12 AWG (2.5 mm <sup>2</sup> ) maximum wire size, tightening torque: Tmax = 1 Nm																																								
Construction	Polyamide and polycarbonate																																								
Environmental Rating	IP20																																								
Operating Temperature	-25 to +60 °C																																								
Application Notes	Normally Closed safety contacts (8-LM2T-C01) should only be attached to the left and right snap-on positions of the mounting adaptor. A maximum of two contact elements can be used in a single snap-on position.																																								
Certifications	  Compliant with EN/IEC 60947-1; -5-1																																								



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## Emergency Stop & Stop Control

Rope pull emergency stop switches, when used with steel wire rope, provide emergency stop actuation for conveyors and large machinery.

Series	Description	Application	Dimensions H x W x D	Actuation	Housing Material
	<b>RP-RM83</b> Rated for use in harsh environments and outdoors, and activates if the rope is pulled, becomes loose or breaks. page 622	Emergency Stop	H (varies by model) 90 x 53 mm	Latch	Metal
	<b>RP-LS42</b> Rugged plastic housing to withstand harsh environments and is available with an E-stop button with manual reset. page 623	Emergency Stop	H (varies by model) 42 x 45 mm	Latch	Plastic
	<b>RP-QM72</b> Heavy-duty switch housing withstands harsh environments. page 624	Stop-Control	<b>RP-QM72:</b> 142 x 69 x 82 mm <b>RP-QMT72:</b> 181 x 69 x 82 mm	Latch	Metal
	<b>RP-LM40</b> Heavy-duty switch housing withstands harsh environments. page 625	Stop-Control	<b>RP-LM40D-6:</b> 124.5 x 40 x 37.5 mm <b>RP-LM40D-6L:</b> 147.5 x 40 x 37.5 mm	Trip & Latch	Metal
	<b>RP-QM90</b> Heavy-duty switch housing withstands harsh environments. page 626	Stop-Control	137 x 206 x 90 mm	Latch	Metal
	<b>ED1G</b> Handheld grip-style switch is typically used for manual control of machine functions, including visual observations, minor adjustments, troubleshooting, calibration and more. page 636	Stop-Control	260 x 46 x 58 mm		Plastic









# RP-RM83

## Rope Pull E-Stop Device



- Heavy-duty housing rated to IP67 for use in harsh environments and outdoors, and activates if the rope is pulled, becomes loose or breaks
- Additional solid-state auxiliary output for remote tension monitoring
- Tension indicators
- Operates in a range up to 75 m
- Design meets positive opening requirements for rope pull switches (IEC 60947-5-1)
- Complies with ANSI NFPA 79, ANSI B11.19, IEC 60204-1, EN 13850 and EN ISO 60947-5-5 for Emergency Stop applications




### RP-RM83 Series E-Stop and Stop Control Device

Max. Rope Length	Safety Contacts	Auxiliary Contacts	Action	Contact State				Model*
				Safety		Auxiliary		
				1	2	1	2	
38 m	2 NC in 	2 NO in 	 	open	open	closed	closed	RP-RM83F-38LTE
				open	open	closed	closed	RP-RM83F-38LRE
				open	open	closed	closed	RP-RM83F-38LT
				open	open	closed	closed	RP-RM83F-38LR
75 m	2 NC in 	2 NO in 	 	open	open	closed	closed	RP-RM83F-75LTE
				open	open	closed	closed	RP-RM83F-75LRE
				open	open	closed	closed	RP-RM83F-75LT
				open	open	closed	closed	RP-RM83F-75LR



\* Models with T suffix have a Built-in Turnbuckle for rope  
 Models with R suffix have a Ring connection to rope  
 Models with E suffix have an auxiliary status output

For more specifications see page 632.

 Run Position	 Cable Pulled	 Cable Break	NC = Normally Closed Contact, NO = Normally Open Contact
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RP-RM83 rope pulls comply with IEC 60947-5-1 Positive Opening requirements.  
 See data sheet or Contact Configuration and Switching Diagrams for more information/clarification.(page 633)  
 For dimensions see page 627.













# RP-LS42

## Rope Pull E-Stop Device



- Rugged plastic housing to withstand harsh environments and has an E-stop button model with manual reset.
- Tension indicators
- Operates in ranges up to 75 m
- Switch activates if the rope is pulled, becomes loose or breaks
- Design meets positive opening requirements for rope pull switches (IEC 60947-5-1)
- Complies with ANSI NFPA 79, ANSI B11.19, IEC 60204-1, EN 13850 and EN ISO 60947-5-5 for Emergency Stop applications




### RP-LS42 Series E-Stop and Stop Control Device

Max. Rope Length	Safety Contacts	Auxiliary Contacts	Action	Contact State				Model*
				Safety		Auxiliary		
				1	2	1	2	
25 m	2 NC in 	2 NO in 	 	open	open	closed	closed	RP-LS42F-25L
				open	open	closed	closed	RP-LS42F-25LE
				open	open	closed	closed	RP-LS42F-25LF
37.5 m	2 NC in 	2 NO in 	 	open	open	closed	closed	RP-LS42F-38L
				open	open	closed	closed	RP-LS42F-38LE
				open	open	closed	closed	RP-LS42F-38LF
75 m	2 NC in 	2 NO in 	 	open	open	closed	closed	RP-LS42F-75L
				open	open	closed	closed	RP-LS42F-75LE
				open	open	closed	closed	RP-LS42F-75LF

- Models with LF suffix have a Built-in Turnbuckle for rope
- Models with L suffix have a Ring connection to rope
- Models with LE suffix have a Built-in Turnbuckle for rope and an E-stop button



For more specifications see page 632

	Run Position		Cable Pulled		Cable Break	NC = Normally Closed Contact, NO = Normally Open Contact
RP-RM83 rope pulls comply with IEC 60947-5-1 Positive Opening requirements.						
See data sheet or Contact Configuration and Switching Diagrams for more information/clarification.(page 633)						
For dimensions see page 627.						

# RP-QM72/QMT72

## Rope Pull Switches



- Heavy-duty switch housing withstands harsh environments and have a max. rope pull length of 6, 12 or 20 m depending on model.
- Switches activate if the rope is pulled, becomes loose or breaks
- Manual reset (Latch) design if the rope is pulled
- Rugged metal housing with protective earth terminal (IEC 60947-1)
- Comply with ANSI NFPA 79 and IEC 60204-1 for Stop Control applications

### RP-QM72/QMT72 Series Stop Control Device

Max. Rope Length	Safety Contacts	Auxiliary Contacts	Action	Contact State				Model
6 m				<b>Safety</b>		<b>Auxiliary</b>		RP-QM72D-6L
12 m	2 NC in	—		1		1		RP-QM72D-12L
20 m				open		closed		RP-QMT72D-20L
				open		closed		
12 m	4 NC in	—		<b>Safety</b>		<b>Auxiliary</b>		RP-QMT72F-12L
				1	2	1	2	
				open	open	closed	closed	
				closed	closed	open	open	
12 m	2 NC in	1 NO in		<b>Safety</b>		<b>Auxiliary</b>		RP-QMT72E-12L
				1	2	1	2	
				open	open	closed	closed	
				closed	closed	open	open	



For more specifications see page 632.

	Run Position		Cable Pulled		Cable Break	NC = Normally Closed Contact, NO = Normally Open Contact
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RP-RM83 rope pulls comply with IEC 60947-5-1 Positive Opening requirements.  
 See data sheet or Contact Configuration and Switching Diagrams for more information/clarification.(page 633)  
 For dimensions see page 627.




# RP-LM40

## Rope Pull Switches

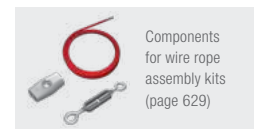


- Heavy-duty switch housing withstands harsh environments
- Manual reset (Latch) design after the rope is pulled and Auto Reset (Trip) models
- Rugged metal housing with protective earth terminal (IEC 60947-1)
- Switches activate if the rope is pulled, becomes loose or breaks
- Design meets positive opening requirements for rope pull switches (IEC 60947-5-1)
- Comply with ANSI NFPA 79 and IEC 60204-1 for Stop Control applications




### RP-LM40 Series Stop Control Device

Max. Rope Length	Safety Contacts	Auxiliary Contacts	Action	Contact State				Model*
				Safety		Auxiliary		
6 m	2 NC in 	—	 	1	2	1	2	RP-LM40D-6
				open	open	closed	closed	RP-LM40D-6L
				closed	closed	open	open	

\* Models with 6 suffix use Trip actuation  
Models with 6L suffix use Latch actuation (typical)



For more specifications see page 632

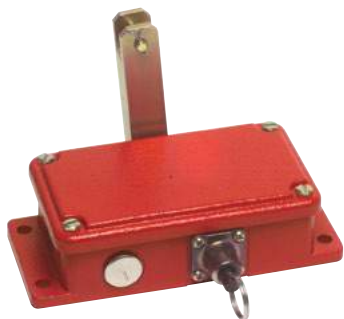
	Run Position		Cable Pulled		Cable Break	NC = Normally Closed Contact, NO = Normally Open Contact
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RP-RM83 rope pulls comply with IEC 60947-5-1 Positive Opening requirements.  
See data sheet or Contact Configuration and Switching Diagrams for more information/clarification.(page 633)  
For dimensions see page 627.



# RP-QM90

## Rope Pull Switches



- Heavy-duty switch housing withstands harsh environments
- Manual reset (Latch) design after the rope is pulled
- Rugged metal housing with protective earth terminal (IEC 60947-1)
- Switch activates if the rope is pulled, becomes loose or breaks
- Operates in a range up to 100 m
- Design meets positive opening requirements for rope pull switches (IEC 60947-5-1)

### RP-QM90 Series Stop Control Device



Max. Rope Length	Safety Contacts	Auxiliary Contacts	Action	Contact State				Model
				Safety		Auxiliary		
				1	2	1	2	
100 m (50 m each side)	2 NC in	2 NO in	 	open	open	closed	closed	RP-QM90F-100L
				open	open	closed	closed	

For more specifications see page 632.

Run Position	Cable Pulled	Cable Break	NC = Normally Closed Contact, NO = Normally Open Contact
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RP-RM83 rope pulls comply with IEC 60947-5-1 Positive Opening requirements.  
See data sheet or Contact Configuration and Switching Diagrams for more information/clarification.(page 633)  
For dimensions see page 627.

REWORK  
SWITCHES

HAND  
CONTROL

LASER  
SCANNERS

MODULES



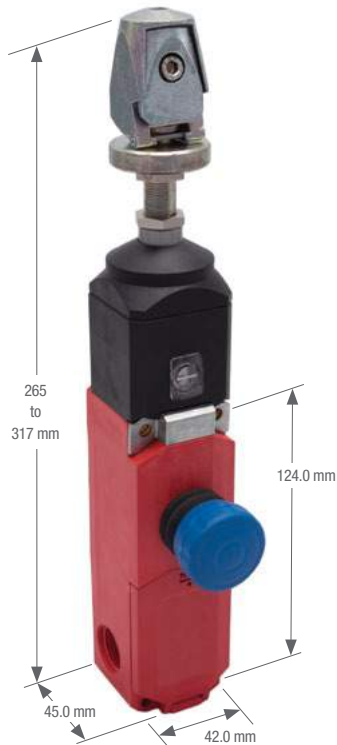
RP-RM83F-75LT.. and RP-RM83F-38LT.. Models



RP-RM83F-75LR.. and RP-RM83F-38LR.. Models



RP-LS42F-...L Model



RP-LS42F-...LF Model



RP-LS42F-...LE Model (with E-Stop Button)










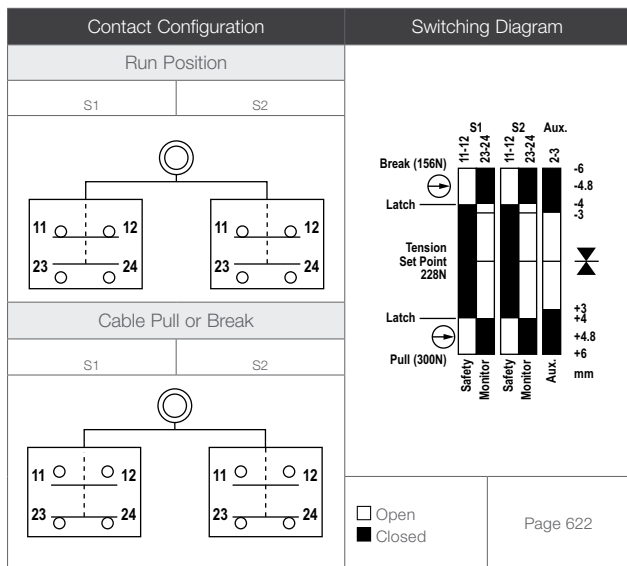
## Wire Rope Assembly Kits (Tensioning Springs ordered separately)

3 mm Rope (Length)	Thimbles (Each)	Clamps (Each)	Eye Bolts (Each)	In-Line Pulleys (Each)	Turnbuckle (Each)	Kit Model
0.5 m	2	2	—	—	—	RPAK-C2SBP-1
10 m	4	4	3	—	—	RPAK-CH2-10
	4	4	3	3	—	RPAK-CHP2-10
	4	4	3	—	1	RPAK-CH2-10-TA
	4	4	3	3	1	RPAK-CHP2-10-TA
20 m	4	4	6	—	—	RPAK-CH2-20
	4	4	6	6	—	RPAK-CHP2-20
	4	4	6	—	1	RPAK-CH2-20-TA
	4	4	6	6	1	RPAK-CHP2-20-TA
40 m	4	4	11	—	—	RPAK-CH2-40
	4	4	11	11	—	RPAK-CHP2-40
	4	4	11	—	1	RPAK-CH2-40-TA
	4	4	11	11	1	RPAK-CHP2-40-TA
50 m	4	4	14	—	—	RPAK-CH2-50
	4	4	14	14	—	RPAK-CHP2-50
	4	4	14	—	1	RPAK-CH2-50-TA
	4	4	14	14	1	RPAK-CHP2-50-TA
80 m	4	4	21	—	—	RPAK-CH2-80
	4	4	21	21	—	RPAK-CHP2-80
	4	4	21	—	1	RPAK-CH2-80-TA
	4	4	21	21	1	RPAK-CHP2-80-TA

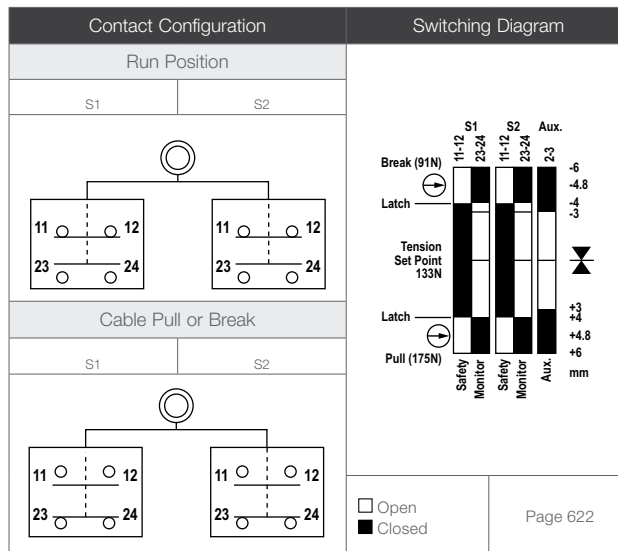
## Rope Pull Switches Specifications

Contact Rating	10A @ 24 V ac, 10A @ 110 V ac, 6A @ 230 V ac, 6A @ 24 V dc 2.5 kV max. transient tolerance NEMA A300 P300																													
Monitoring Solid-State Output Rating	<b>Rated operational voltage:</b> Ue= 10 to 30 V dc <b>Rated operational current:</b> Ie= 50 mA <b>Utilization category:</b> DC13 Protected against reverse polarity and short circuit.																													
European Rating	<b>Utilization categories:</b> AC15 and DC13 Ui= 500V ac, I <sub>n</sub> = 10A <b>Rated Surge Capacity:</b> 2.5 kV (RP-RM83 only)	<table border="1"> <thead> <tr> <th colspan="3">RP-RM83 models (40-60 Hz)</th> </tr> <tr> <th>Ue V</th> <th>Ie/AC-15 A</th> <th>Ie/DC-13 A</th> </tr> </thead> <tbody> <tr> <td>120</td> <td>6</td> <td>0.55</td> </tr> <tr> <td>240</td> <td>3</td> <td>0.27</td> </tr> </tbody> </table>	RP-RM83 models (40-60 Hz)			Ue V	Ie/AC-15 A	Ie/DC-13 A	120	6	0.55	240	3	0.27	<table border="1"> <thead> <tr> <th colspan="3">All others (40-60 Hz)</th> </tr> <tr> <th>Ue V</th> <th>Ie/AC-15 A</th> <th>Ie/DC-13 A</th> </tr> </thead> <tbody> <tr> <td>24</td> <td>10</td> <td>6</td> </tr> <tr> <td>110</td> <td>10</td> <td>1</td> </tr> <tr> <td>230</td> <td>6</td> <td>0.4</td> </tr> </tbody> </table>	All others (40-60 Hz)			Ue V	Ie/AC-15 A	Ie/DC-13 A	24	10	6	110	10	1	230	6	0.4
RP-RM83 models (40-60 Hz)																														
Ue V	Ie/AC-15 A	Ie/DC-13 A																												
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All others (40-60 Hz)																														
Ue V	Ie/AC-15 A	Ie/DC-13 A																												
24	10	6																												
110	10	1																												
230	6	0.4																												
Contact Material	Silver-nickel alloy																													
Maximum Switching Speed	RP-RM83 models: 20 operations per minute <b>All others:</b> 50 operations per minute																													
Recommended Rope Size	<b>40 mm models:</b> 2 mm diameter steel rope <b>42 &amp; 72 mm models:</b> 3 mm diameter steel rope <b>83 mm models:</b> 2-5 mm diameter steel rope (3 mm recommended) <b>90 mm models:</b> 4 mm diameter steel rope																													
Maximum Rope Pull Length	<b>RP-LM40D-6/6L and RP-QM72D-6L:</b> 6 m <b>RP-LS42F-75L/75LE/75LF:</b> 75 m <b>RP-LS42F-38L/38LE/38LF:</b> 37.5 m <b>RP-LS42F-25L/25LE/25LF:</b> 25 m <b>RP-QM72D-12L:</b> 12 m <b>RP-QMT72D-20L:</b> 20 m <b>RP-QMT72E-12L and RP-QMT72F-12L:</b> 12 m <b>RP-RM83F-75LTE/LT/LRE/LR:</b> 75 m <b>RP-RM83F-38LTE/LT/LR/LRE:</b> 38 m <b>RP-QM90F-100L:</b> 100 mm; equal lengths up to 50 m on either side of switch																													
Short Circuit Protection	10 amp Slow Blow, 15 amp Fast Blow. Recommended external fusing or overload protection.																													
Mechanical Life	<b>RP-RM83:</b> 100,000 operations <b>All others:</b> 1 million operations																													
Wire Connections	Screw terminals with pressure plates accept the following wire sizes – <b>Stranded and solid:</b> 20 AWG (0.5 mm <sup>2</sup> ) to 16 AWG (1.5 mm <sup>2</sup> ) for one wire <b>Stranded:</b> 20 AWG (0.5 mm <sup>2</sup> ) to 18 AWG (1.0 mm <sup>2</sup> ) for two wires																													
Cable Entry	M20 x 1.5 threaded entrance Adapter supplied to convert M20 x 1.5 to ½" - 14 NPT threaded entrance																													
Construction	<b>RP-LS42F-..L/..LE/..LF:</b> High-impact thermoplastic housing; zinc die-cast actuator <b>All others:</b> Aluminum alloy die cast																													
Environmental Rating	<b>RP-LS42F and RP-RM83F models:</b> NEMA 4; IEC IP67 <b>All other models:</b> NEMA 4; IP65																													
Operating Temperature	<b>RP-LS42F-..L/..LE/..LF:</b> -25 to +70 °C <b>All other models:</b> -30 to +80 °C																													
Weight	<b>RP-LM40D-6:</b> 0.22 Kg <b>RP-LM40D-6L:</b> 0.26 Kg <b>RP-LS42F-..L:</b> 0.48 Kg <b>RP-LS42F-..LE and RP-LS42F-..LF:</b> 0.65 Kg <b>RP-QM72D-6L:</b> 0.49 Kg <b>RP-QM72D-12L:</b> 0.52 Kg <b>RP-QMT72D-20L, RP-QMT72E-12L and RP-QMT72F-12L:</b> 0.64 Kg <b>RP-QM90F-100L:</b> 3.8 Kg <b>RP-RM83F-75LT and RP-RM83F-75LTE:</b> 1 Kg <b>RP-RM83F-75LR and RP-RM83F-75LRE:</b> 0.77 Kg <b>RP-RM83F-38LT and RP83FLT8:</b> 1 Kg <b>RP-RM83F-38LR and RP-RM83F-38LRE:</b> 0.77 Kg																													
Certifications	   (RP-RM83 and RP-LS42 only)																													
Contact Configurations and Switching Diagrams	<b>RP-LM40 models:</b> SD11, SD12 (page 634) <b>RP-LS42 models:</b> SD05 (page 633) <b>RP-QM72/QMT72 models:</b> SD06, SD07, SD08, SD09 & SD10 (page 634) <b>RP-RM83 models:</b> SD01, SD02, SD03 & SD04 (page 633) <b>RP-QM90 models:</b> SD13 (page 635)																													

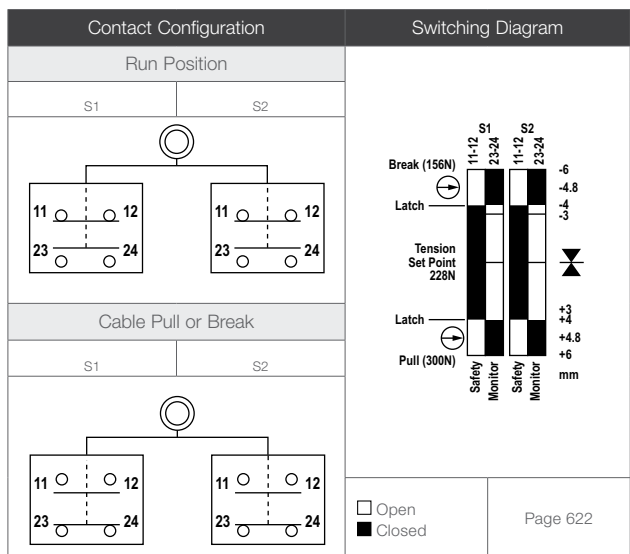
SD01 - RP-RM83F-75LTE/LRE Series



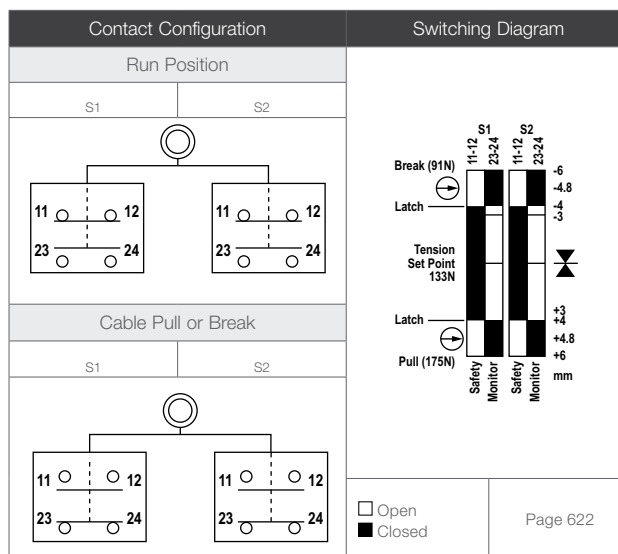
SD02 - RP-RM83F-38LTE/LRE Series



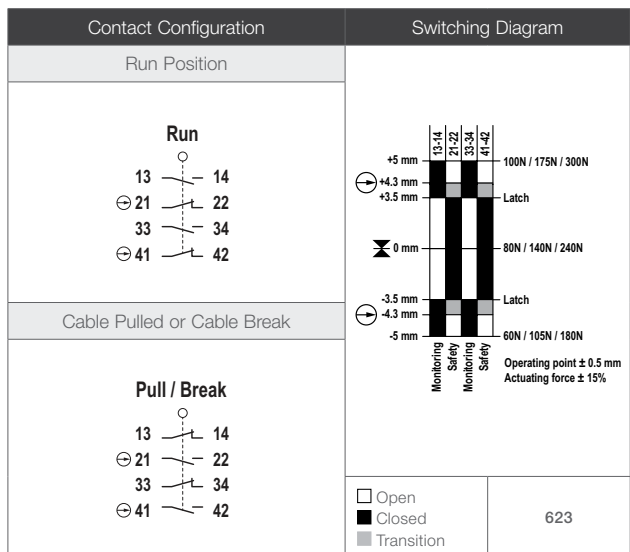
SD03 - RP-RM83-75LT/LR Series



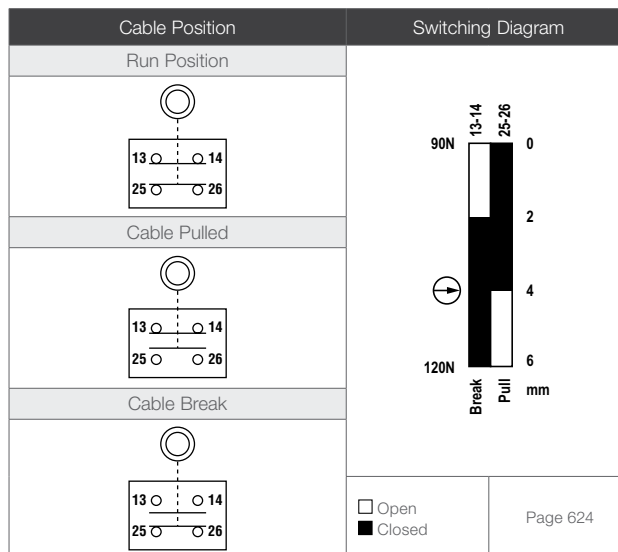
SD04 - RP-RM83-38LT/LR Series



SD05 - RP-LS42F-25/38/75xx Series

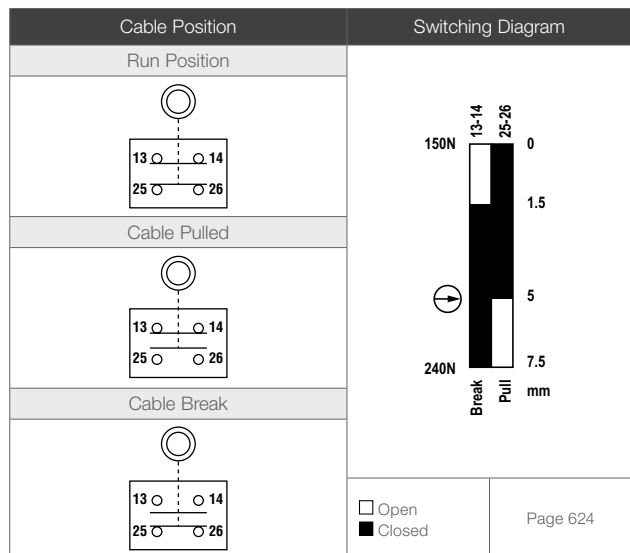


SD06 - RP-QM72D-6L Series

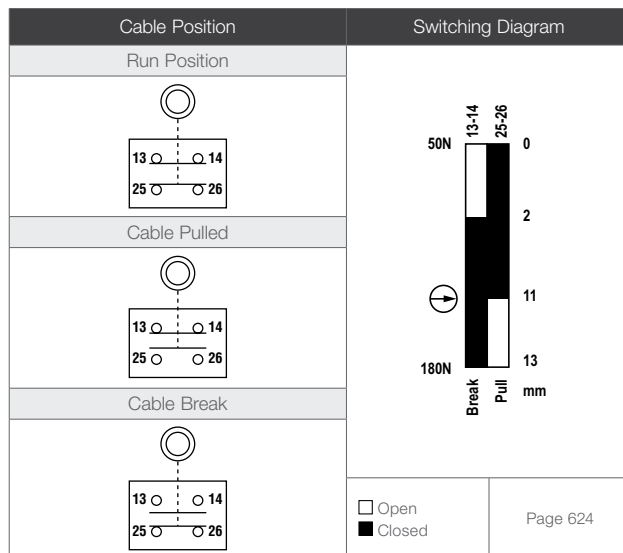




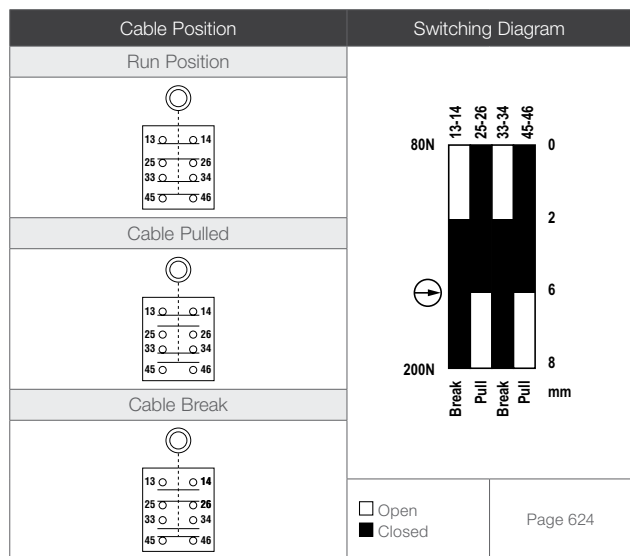
**SD07 - RP-QM72D-12L Series**



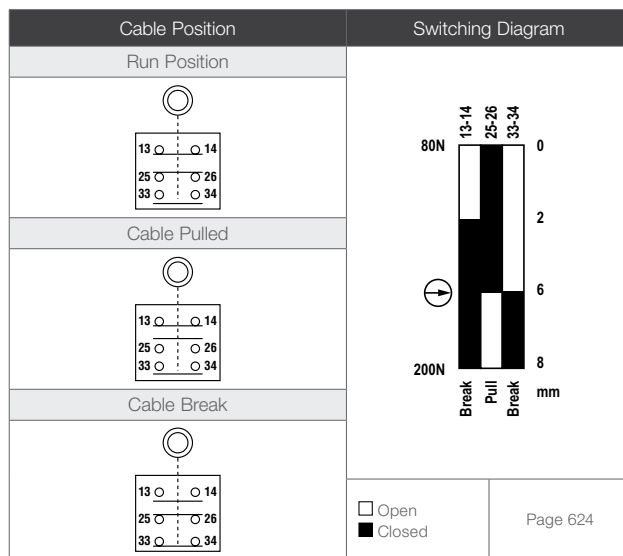
**SD08 - RP-QMT72D-20L Series**



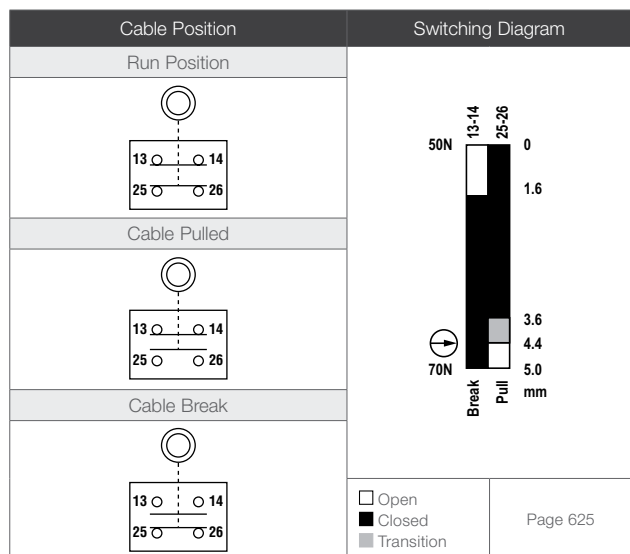
**SD09 - RP-QMT72F-12L Series**



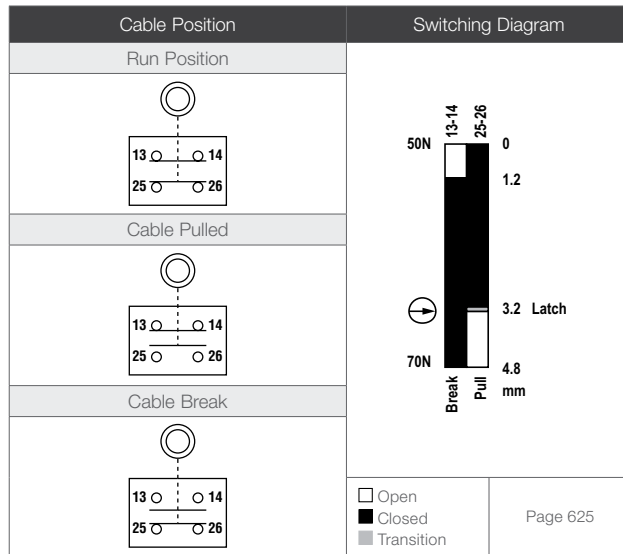
**SD10 - RP-QMT72E-12L Series**



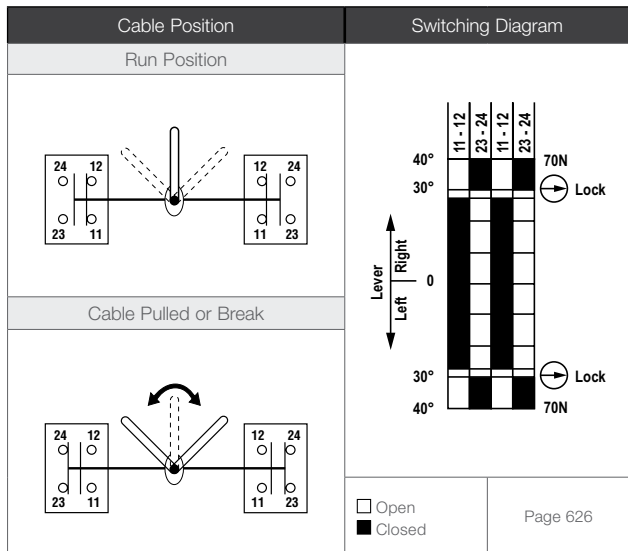
**SD11 - RP-LM40D-6 Series**



**SD12 - RP-LM40D-6L Series**



SD13 - RP-QM90F-100L Series



# ED1G

## Enabling Devices



- Handheld grip-style switch is typically used for manual control of machine functions, including visual observations, minor adjustments, troubleshooting, calibration and more
- Provides the three-position functionality (OFF-ON-OFF) required for manual control of a machine, including enabling and hold-to-run applications
- Ergonomic design has a detented enable position (position 2)
- Design meets or exceeds: ANSI RIA R15.06 and ISO 10218 Robot safety standard, ANSI B11.19 Performance Criteria for Safeguards, and ANSI NFPA 79 (2007) and IEC 60204-1 (2000) Electrical Requirements for Industrial Machines

### ED1G Series Enabling Devices, Stop Control Devices

Contact Configuration	Additional Push-Button Switch	Environmental Rating	Model
2 NO & 1 NC Aux	—	IP66	ED1G-L21SM-1N
1 NO & 1 NC Aux & 1 NO Momentary Push Button	Momentary Push Button	IP65	ED1G-L21SMB-1N
2 NO & 2 NO Momentary Push Button	Momentary Push Button	IP65	ED1G-L20MB-1N



ED9Z-GH1

Additional bracket information is available.  
See page 729

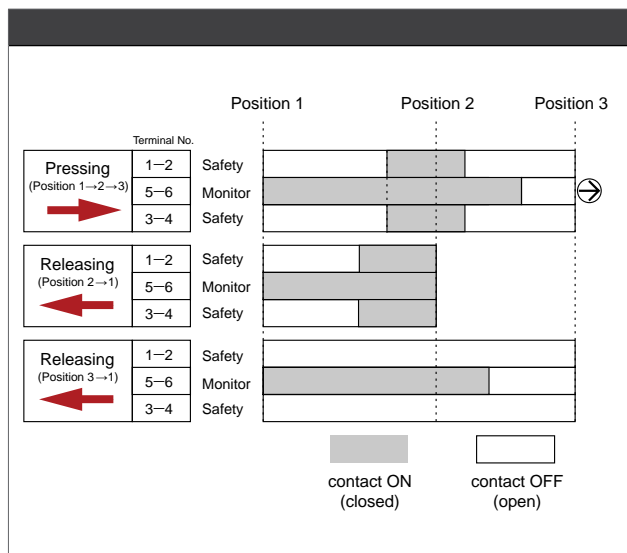


ED1G-L21SM-1N Model

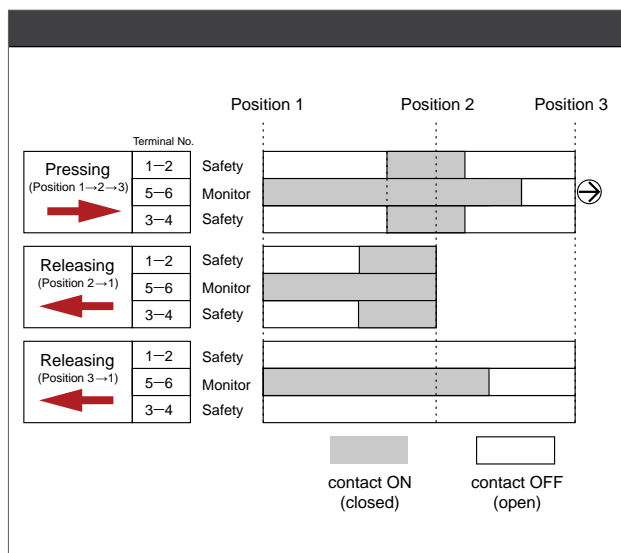


ED1G-L21SMB-1N Model

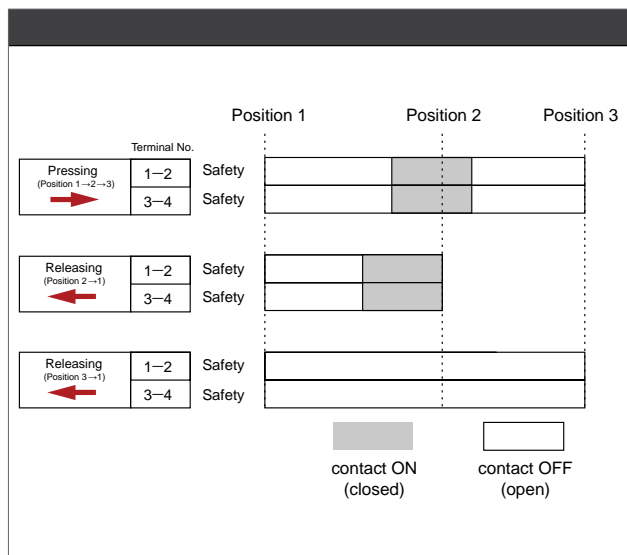
SD01 - ED1G-L21SM-1N Series





SD02 - ED1G-L21SMB-1N Series



SD03 - ED1G-L20MB-1N Series





## ED1G Enabling Device Specifications

Supply Voltage and Current	250 V ac/dc																																																																																								
Impulse Withstand Voltage	Three Position Switch: 2.5 kV Momentary pushbutton: 1.5 kV																																																																																								
Output Contact Ratings	<p><b>Rated Insulation Voltage (Ui):</b> 3-position switch 250 V; momentary push button 125 V  <b>Rated Thermal Current (Ith):</b> 2.5 A*</p> <p>*40 °C ≤ operating temperature &lt; 50 °C: 2 A (4 contacts under load)          *50 °C ≤ operating temperature ≤ 60 °C: 1.5 A (3 contacts under load)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="5">Rated Current (Ie) 3-Position Switch Terminals 1-2 and 3-4 (all models)</th> </tr> <tr> <th colspan="2">Rated Voltage Ue</th> <th>30 V</th> <th>125 V</th> <th>250 V</th> </tr> </thead> <tbody> <tr> <td rowspan="2">AC</td> <td>Resistive load (AC-12)</td> <td>—</td> <td>1 A</td> <td>0.5 A</td> </tr> <tr> <td>Inductive load (AC-15)</td> <td>—</td> <td>0.7 A</td> <td>0.5 A</td> </tr> <tr> <td rowspan="2">DC</td> <td>Resistive load (DC-12)</td> <td>1 A</td> <td>0.2 A</td> <td>—</td> </tr> <tr> <td>Inductive load (DC-13)</td> <td>0.7 A</td> <td>0.1 A</td> <td>—</td> </tr> </tbody> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="5">Rated Current (Ie) Monitor Switch Terminals 5-6 (models..-L21SM.. and..-L21SMB..)</th> <th colspan="5">Rated Current (Ie) Momentary Push Button Switch Terminals 7-8 (model ..-ED1G-L21SMB-1N..); 5-6 and 7-8 (model ED1G-L20MB-1N)</th> </tr> <tr> <th colspan="2">Rated Voltage Ue</th> <th>30 V</th> <th>125 V</th> <th>250 V</th> <th colspan="2">Rated Voltage Ue</th> <th>30 V</th> <th>125 V</th> <th>250 V</th> </tr> </thead> <tbody> <tr> <td rowspan="2">AC</td> <td>Resistive load (AC-12)</td> <td>—</td> <td>2 A</td> <td>1 A</td> <td rowspan="2">AC</td> <td>Resistive load (AC-12)</td> <td>—</td> <td>0.5 A</td> <td>—</td> </tr> <tr> <td>Inductive load (AC-15)</td> <td>—</td> <td>1 A</td> <td>0.5 A</td> <td rowspan="2">DC</td> <td>Inductive load (DC-15)</td> <td>—</td> <td>0.3 A</td> <td>—</td> </tr> <tr> <td rowspan="2">DC</td> <td>Resistive load (DC-12)</td> <td>2 A</td> <td>0.4 A</td> <td>0.2 A</td> <td rowspan="2">DC</td> <td>Resistive load (AC-12)</td> <td>1 A</td> <td>0.2 A</td> <td>—</td> </tr> <tr> <td>Inductive load (DC-13)</td> <td>1 A</td> <td>0.22 A</td> <td>0.1 A</td> <td>Inductive load (DC-13)</td> <td>0.7 A</td> <td>0.1 A</td> <td>—</td> </tr> </tbody> </table>				Rated Current (Ie) 3-Position Switch Terminals 1-2 and 3-4 (all models)					Rated Voltage Ue		30 V	125 V	250 V	AC	Resistive load (AC-12)	—	1 A	0.5 A	Inductive load (AC-15)	—	0.7 A	0.5 A	DC	Resistive load (DC-12)	1 A	0.2 A	—	Inductive load (DC-13)	0.7 A	0.1 A	—	Rated Current (Ie) Monitor Switch Terminals 5-6 (models..-L21SM.. and..-L21SMB..)					Rated Current (Ie) Momentary Push Button Switch Terminals 7-8 (model ..-ED1G-L21SMB-1N..); 5-6 and 7-8 (model ED1G-L20MB-1N)					Rated Voltage Ue		30 V	125 V	250 V	Rated Voltage Ue		30 V	125 V	250 V	AC	Resistive load (AC-12)	—	2 A	1 A	AC	Resistive load (AC-12)	—	0.5 A	—	Inductive load (AC-15)	—	1 A	0.5 A	DC	Inductive load (DC-15)	—	0.3 A	—	DC	Resistive load (DC-12)	2 A	0.4 A	0.2 A	DC	Resistive load (AC-12)	1 A	0.2 A	—	Inductive load (DC-13)	1 A	0.22 A	0.1 A	Inductive load (DC-13)	0.7 A	0.1 A	—
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	Inductive load (DC-13)	1 A	0.22 A	0.1 A		Inductive load (DC-13)	0.7 A	0.1 A	—																																																																																
Contact Resistance	100 mohm max.																																																																																								
Insulation Resistance	Live to dead metal parts: 100 Mohm min.		Positive to negative live parts: 100 Mohm min.																																																																																						
Recommended Wire/Cable Size	Wire: 0.14 to 1.5 mm <sup>2</sup> (25 AWG to 16 AWG)		Cable: ø 7 to 13 mm M20 conduit																																																																																						
Short Circuit Protection	250 V / 10A fast blow fuse (IEC 60127-1)		Conditional short circuit current: 50 A (250 V)																																																																																						
Vibration Resistance	<p><b>Operating extremes:</b> 5 to 55 Hz, half amplitude 0.5 mm minimum  <b>Damage limits:</b> 16.7 Hz, half amplitude 1.5 mm minimum</p>																																																																																								
Shock Resistance	Operating extremes: 150 m/s <sup>2</sup> (15 G)		Damage limits: 1,000 m/s <sup>2</sup> (100 G)																																																																																						
Mechanical Life	Positions 1 & 2 only: 1,000,000 operations minimum Operating frequency: 1,200 operations per hour maximum		Positions 1, 2 & 3: 100,000 operations minimum																																																																																						
Electrical Life	100,000 minimum at rated load																																																																																								
Pollution Degree	3																																																																																								
Terminal Pulling Strength	20 N minimum																																																																																								
Terminal Screw Torque	0.5 to 0.6 N																																																																																								
Operating Conditions (indoor use only)	Temperature: -10 to +60 °C (no freezing)		Humidity: 45 to 85% RH max. (no condensation)																																																																																						
	Storage Temperature: -40 to +80 °C (no freezing)																																																																																								
Construction	Polyamide housing and cable gland, NBR/PVC polyblend rubber grip switch boot; model ED1G-L21SM-1N meets IP66; other models meet IP65																																																																																								
Design Standards	IEC 60947-5-1, EN 60947-5-1, JIS C8201-5-1, UL 508, CSA C22.2 No. 14, GS-ET-22																																																																																								
Certifications	 																																																																																								



## Interlock Switches

Safety interlock switches respond when a guard opens. Interlock switches feature “positive opening” contacts for high reliability and withstand attempts to override the switch and defeat the system.

Series	Description	Style	Protection Rating	Housing Material
	<b>Magnetic style</b> page 642	Non-contact	IP67	Plastic
	<b>Hinge style</b> page 646	Load bearing and rotating	IP67	Plastic & Metal
	<b>Two piece key actuator style</b> page 654	Flat pack and limit switch	IP65	Plastic & Metal
	<b>Locking style</b> page 666	Spring or solenoid locking	IP67	Plastic & Metal






# Magnet Style

## Non-Contact Safety Interlock Switches



- Accommodating to misalignment
- Sealed components resist water and dirt
- Coded magnets minimize the risk of intentional defeat
- Three housing styles available for flat or 30 mm barrel mounting
- For safety applications, switch must be used with Gate Monitoring Module, Safety Controller or comparable control system

### SI-MAG Magnet Style Safety Switches

Description	Contacts	Sensor Cable	Switching Distance		Models	
			Min. ON	Max. OFF		
	Sensor	1 NO & 1 NC	3 m	—	—	SI-MAG1SM
	Sensor	1 NO & 1 NC	3 m	—	—	SI-MAG1SMCO†
	Coded Magnet	—	—	0-3 mm	3-14 mm	SI-MAG1MM
	Coded Magnet	—	—	0-3 mm	3-14 mm	SI-MAG1MM90*
	Coded Magnet	—	—	2-8 mm	8-16 mm	SI-MAG1MMHF
	Sensor	1 NO & 1 NC	3 m	—	—	SI-MAG2SM
	Coded Magnet	1 NO & 1 NC	—	0-4 mm	4-8 mm	SI-MAG2MM
	Sensor	1 NO & 1 NC	3 m	—	—	SI-MAG3SM
	Coded Magnet	—	—	0-3 mm	3-7 mm	SI-MAG3MM

NC = Normally Closed Output, NO = Normally Open Output

#### Connection options:

For 9 m cable, add suffix W/30 to the 3 m model number (example, SI-MAG1SM W/30).

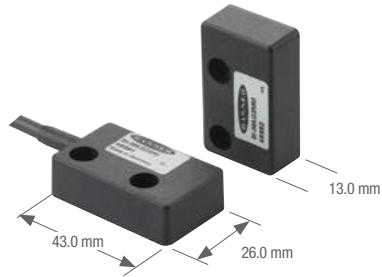
\* Difference is in Direction of Approach. See page 646 for more information.

† Cable opposite

NOTE: The sensor and its magnet must be mounted at a minimum distance of 15 mm from any magnetized or ferrous material (example, steel) for proper operation. SFA-IMB1 or SFA-IMB2 can be used as spacers (see page 646). Depending on the installation, multiple brackets may be required.



SI-MAG1SM.. and SI-MAG1MM.. Models



SI-MAG2SM and SI-MAG2MM Models



SI-MAG3SM and SI-MAG3MM Models

## SI-MAG Safety Switches Specifications

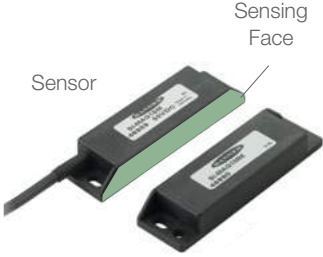
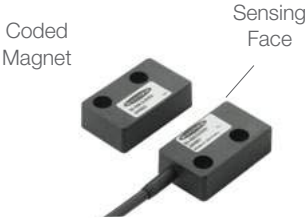

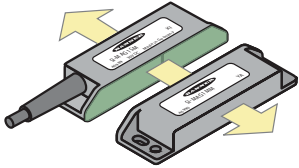
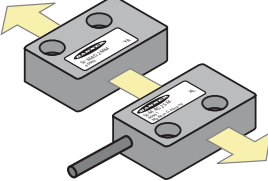
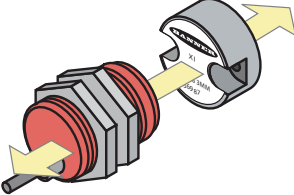
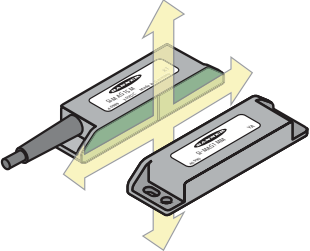
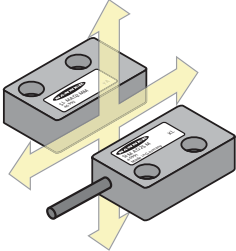
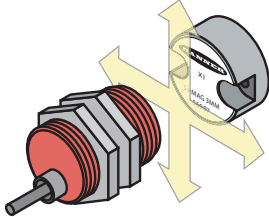
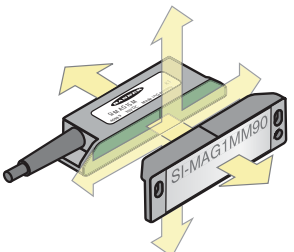
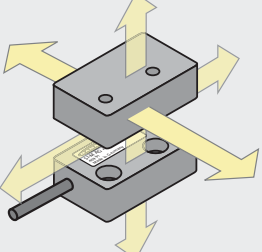
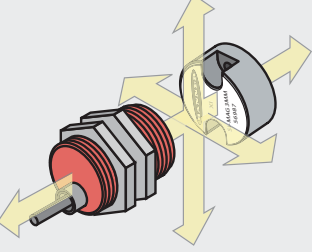
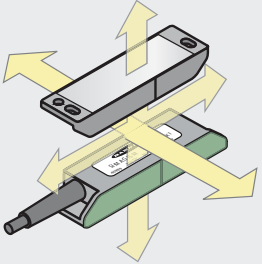
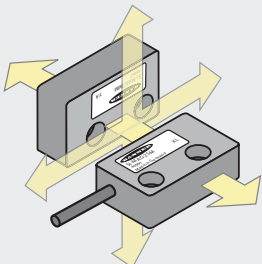
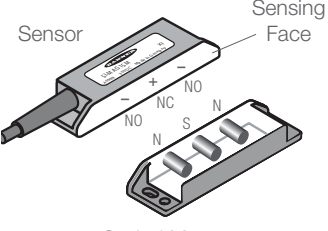
Switching Elements	Three pole-stable reed switches
Repeat Switching Accuracy	± 0.1 mm
Construction	Epoxy-encapsulated circuit in polyamide housing
Environmental Rating	NEMA 4X; IP67
Switching Capacity	30 V dc max. @ 0.25 W
Operating Temperature	-5 to +70 °C
Connections	Integral PVC-jacketed 3 m 4-wire cable. Cable O.D. is 5 mm. Wires are 24 AWG. (0.25 mm)

NOTE: See page 646 for direction of approach information.

## Monitoring Control Module (required for a complete system)

Image	Description	Models	Product Information
	<ul style="list-style-type: none"> <li>The gate module monitors up to 20 Banner coded magnets for contact failure or wiring fault</li> <li>Two-channel operation monitors redundant switches on a single guard; one-channel operation monitors single switches on two guards</li> <li>Two redundant output switching channels connect to control-reliable power interrupt circuits and are rated for up to 250 V ac at up to 6 A</li> <li>The reset input can be used for external device monitoring (EDM)</li> <li>The gate monitoring module uses 24 V ac/dc at less than 150 mA</li> </ul>	GM-FA-10J	Page 698
	<ul style="list-style-type: none"> <li>Control system monitors a variety of input devices such as e-stop buttons, rope pulls, enabling devices, protective safety stops, interlocked guards or gates, optical sensors, two-hand controls and safety mats</li> <li>Intuitive programming environment for easy implementation</li> <li>Configure inputs, outputs and functionality of the controller for more usability</li> <li>Base controller allows eight of the 26 inputs to be configured as outputs for efficient terminal utilization</li> <li>Ethernet models available providing up to 64 virtual status outputs, fault diagnostic codes and messages</li> </ul>	SC26-2, XS26-2  SC26-2D, XS26-2D  SC26-2E, XS26-2E  SC26-2DE, XS26-2DE	Page 584
	<ul style="list-style-type: none"> <li>One controller provides configurable monitoring of multiple safety devices</li> <li>22 input terminals can monitor both contact-based and PNP solid-state input devices</li> <li>Three pairs of independent solid-state safety outputs can be used with selectable one- or two-channel external device monitoring</li> <li>Ten configurable non-safety status outputs track inputs, outputs, lockout, I/O status and other functions</li> <li>All SC22-3 modules use 24 V dc</li> <li>10/100 Base TX Ethernet communication option using EtherNet/IP and Modbus TCP protocols (SC22-3E models)</li> </ul>	SC22-3-S...  SC22-3-C...  SC22-3E-S...  SC22-3E-C...	Page 592

## Magnet-Style Interlocks: Direction of Approach for Sensor/Magnet Pairs

Model SI-MAG1	Model SI-MAG2	Model SI-MAG3
 <p>Sensing Face</p> <p>Sensor</p> <p>Coded Magnet</p>	 <p>Coded Magnet</p> <p>Sensing Face</p> <p>Sensor</p>	 <p>Coded Magnet</p> <p>Sensor</p> <p>Sensing Face</p>
<p><b>Correct</b></p> <p>Movement is <b>perpendicular</b> to the sensing face.</p> 	<p><b>Correct</b></p> <p>Movement is <b>perpendicular</b> to the sensing face.</p> 	<p><b>Correct</b></p> <p>Movement is <b>perpendicular</b> to the sensing face.</p> 
<p><b>Correct</b></p> <p>Movement is <b>parallel</b> to the sensing face.</p> 	<p><b>Correct</b></p> <p>Movement is <b>parallel</b> to the sensing face.</p> 	<p><b>Correct</b></p> <p>Movement is <b>parallel</b> to the sensing face.</p> 
<p><b>Correct</b></p> <p>90° approach of sensor and magnet is approved only for model <b>SI-MAG1MM90</b>.</p> 	<p><b>Incorrect</b></p> <p>Label to label approach of sensor and magnet is not possible.</p> 	<p><b>Incorrect</b></p> <p>Magnet orientation relative to magnet sensor cable is incorrect.</p> 
<p><b>Incorrect</b></p> <p>Label to label approach of sensor and magnet is not possible.</p> 	<p><b>Incorrect</b></p> <p>90° approach of sensor and magnet is not possible.</p> 	<p><b>Detail of Interiors</b></p>  <p>Sensing Face</p> <p>Sensor</p> <p>Coded Magnet</p>

NOTE: With **SI-MAG1C** Controller, approach speed for all magnet-style switches must be greater than 0.2 ms.  
With **GM-FA-10J** Controller, approach speed must be greater than 0.1 ms.


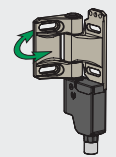

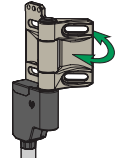

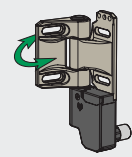

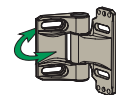
# SI-HG63

## Hinge Style Switches



- Load bearing and operate to a full 270° range of motion with safety switching point
- Safety switching point is adjustable and repositionable
- Housing is constructed of corrosion-resistant stainless steel or zinc die-cast
- Design meets positive opening requirements for safety interlocks (IEC 60947-5-1)
- Right-hinge QD, left-hinge QD, and right-angle QD hinge models available
- High degree of tamper-resistances

### SI-HG63 Hinge Style Switches, 63 mm

Actuator Type	Contact(s)	Construction	Models
 In-line QD Integral load bearing	 2 NC & 1 NO	Stainless Steel	SI-HG63FQDR
		Zinc Die-Cast	SI-HGZ63FQDR
 In-line QD Integral load bearing	 2 NC & 1 NO	Stainless Steel	SI-HG63FQDL
		Zinc Die-Cast	SI-HGZ63FQDL
 Right-angle QD Integral load bearing	 2 NC & 1 NO	Stainless Steel	SI-HG63FQDRR
		Zinc Die-Cast	SI-HGZ63FQDRR
 Blank hinge	 —	Stainless Steel	SI-HG63A
		Zinc Die-Cast	SI-HGZ63A

 Hinge 270° NC = Normally closed contact, NO = Normally open contact

 Connection options: A model with a QD requires a mating cordset.

For contact/switching diagrams see page 672.



6-Pin

**Micro-Style to Flying Leads**

Straight connector models listed; for right-angle, add **RA** to the end of the model number (example, **MQEAC-806RA**)

**MQEAC-606**

2 m (6')

**MQEAC-615**

5 m (25')

**MQEAC-630**

9 m (50')

Additional cordset information is available.  
See page 758



## SI-HG63 Hinge Style Switches Specifications

<b>Contact Rating</b>	3 A @ 230V ac max., 1.0 A @ 24V dc max. 2.5 kV max. transient tolerance
<b>European Rating</b>	U <sub>i</sub> = 250 V, U <sub>e</sub> = 230 V ac, 24 V dc, I <sub>the</sub> = 4 A <b>Utilization categories: AC-15:</b> U <sub>e</sub> /I <sub>e</sub> 230 V / 3A; <b>DC-13:</b> U <sub>e</sub> /I <sub>e</sub> 24 V / 1A (IEC/EN 90497-5-1)
<b>Switching Frequency</b>	Max. 300 operations/h (5 operations per minute)
<b>Switching Angle</b>	<b>NC contact:</b> ±3° <b>NO contact:</b> ±9° <b>Tolerance for all angles:</b> 1.5°
<b>Mechanical Life</b>	1 million operations (Excessive loading (force) and/or vibration, as well as improper installation, can reduce the service life)
<b>Short Circuit Protection</b>	4 amp Slow Blow. Recommended external fusing or overload protection.
<b>Operating Range</b>	0° to 270°
<b>Wire Connections</b>	6-pin Micro-style quick-disconnect fitting (M12 Dual-Key-Way).
<b>Construction</b>	<b>SI-HG63.. Hinge:</b> Cast Stainless (X22CrNi 17), Switch: PBT <b>SI-HGZ63.. Hinge:</b> Zinc Die Cast (Nickel Finish), Switch: PBT
<b>Environmental Rating</b>	IEC IP67 acc. IEC/EN60529
<b>Operating Conditions</b>	<b>Temperature:</b> -25 to +70 °C (connecting cable permanently mounted; no freezing over/no condensation)
<b>Weight</b>	SI-HG63.. ≈ 0.45 kg, SI-HG63A ≈ 0.27 kg SI-HGZ63.. ≈ 0.5 kg, SI-HGZ63A ≈ 0.22 kg
<b>Application Note</b>	To avoid excessive radial stress in applications containing large doors, the hinge switch should be mounted either in pairs of two, or in conjunction with a blank hinge (see page 646).
<b>Certifications</b>	
<b>Contact configuration and Switching Diagram</b>	SD001 (p. 672)

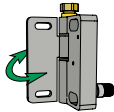
# SI-HG80


## Hinge Style Switches



- Load bearing and operate to a full 180° range of motion
- Housing is constructed of corrosion-resistant zinc die-cast
- One-piece switch eliminates need for alignment, engagement and risk of breakage of a separate actuator
- Design meets positive opening requirements for safety interlocks (IEC 60947-5-1)
- High degree of tamper-resistance

### SI-HG80 Hinge Style Switches, 80 mm

Actuator Type	Contact(s)	Connection	Models
 In-line QD Integral load bearing	 SPDT (Form C)	4-pin Micro QD	SI-HG80DQD
 Right-angle QD Integral load bearing	 SPDT (Form C)	4-pin Micro QD	SI-HG80DQDR
 Blank hinge	 —	—	SI-HG80A

 Hinge 180°    SPDT = Single-Pole, Double-Throw Contacts

 Connection options: A model with a QD requires a mating cordset.

For contact/switching diagrams see page 672.



6-Pin

**Micro-Style to Flying Leads**

Straight connector models listed; for right-angle, add **RA** to the end of the model number (example, **MQEAC-806RA**)

**MQEAC-606**

2 m (6')

**MQEAC-615**

5 m (25')

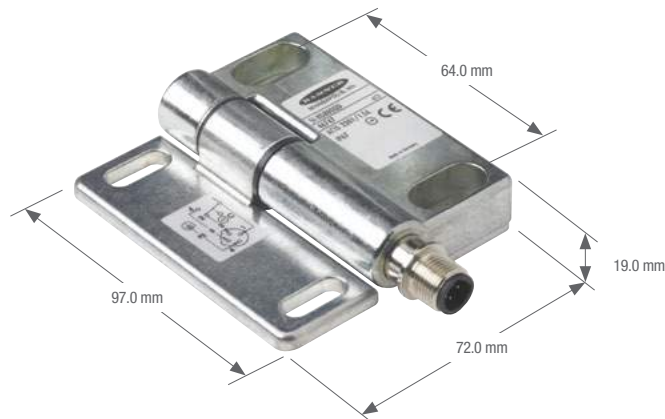
**MQEAC-630**

9 m (50')

Additional cordset information is available.  
See page 758



SI-HG80DQDR



SI-HG80DQD

## SI-HG80 Hinge Style Switches Specifications

<b>Contact Rating</b>	3 A @ 250 V ac max., 0.5 A @ 60 V dc max. 2.5 kV max. transient tolerance NEMA A300 P300
<b>European Rating</b>	<b>Utilization categories:</b> AC15 and DC13 (IEC 90497-5-1) Ui = 250 V ac, Ith= 3A
<b>Minimum Switching Speed</b>	20 operations per minute
<b>Mechanical Life</b>	1 million operations
<b>Short Circuit Protection</b>	6 amp Slow Blow, 10 amp Fast Blow. Recommended external fusing or overload protection.
<b>Force Exerted by Guard per Switch</b>	<b>Axial:</b> 750 N max. <b>Radial:</b> 1000 N max.
<b>Operating Range</b>	0° to 180°
<b>Wire Connections</b>	4-pin Micro-style quick-disconnect (QD) fitting.
<b>Construction</b>	Zinc Die-cast (GD-Zn)
<b>Environmental Rating</b>	NEMA 4; IP67
<b>Operating Conditions</b>	<b>Temperature:</b> -25 to +70 °C
<b>Weight</b>	0.40 kg
<b>Application Notes</b>	To avoid excessive radial stress in applications containing large doors, the hinge switch should be mounted either in pairs of two, or in conjunction with a blank hinge.
<b>Certifications</b>	
<b>Contact Configuration and Switching Diagrams</b>	SD002 (p. 672)




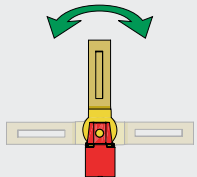

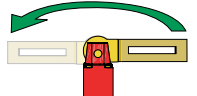

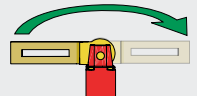
# SI-LS32H

## Hinge Style Switches



- Actuator head rotates in 90° increments
- Built-in hinge lever attaches to doors or flaps, which open 90° in one direction
- Housing is constructed of glass reinforced thermoplastic with plated steel actuator
- One-piece switch eliminates need for alignment, engagement and risk of breakage of a separate actuator
- Design meets positive opening requirements for safety interlocks (IEC 60947-5-1)

### SI-LS31H Hinge Lever Style Switches, 31 mm

Actuator Type		Contact(s)	Models*
 Vertical Hinged Lever ± 90°		1 NC & 1 NO	SI-LS31HGD
		2 NC	SI-LS31HGE
 Right-Hand Hinged Lever 180°		1 NC & 1 NO	SI-LS31HGRD
		2 NC	SI-LS31HGRE
 Left-Hand Hinged Lever 180°		1 NC & 1 NO	SI-LS31HGLD
		2 NC	SI-LS31HGLE



Hinge 90°



One-Directional 180°



One-Directional 180°

NC = Normally Closed Contact, NO = Normally Open Contact

\* Contact factory for integral quick-disconnect (QD) and pigtail QD options.


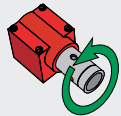
# SI-LS31R

## Hinge Style Switches



- Actuator head rotates in 90° increments
- Rotating actuator connects directly to door hinge
- Housing is constructed of glass reinforced thermoplastic with plated steel actuator
- One-piece switch eliminates need for alignment, engagement and risk of breakage of a separate actuator
- Design meets positive opening requirements for safety interlocks (IEC 60947-5-1)

### SI-LS31R Rotary Hinge Style Switches, 31 mm

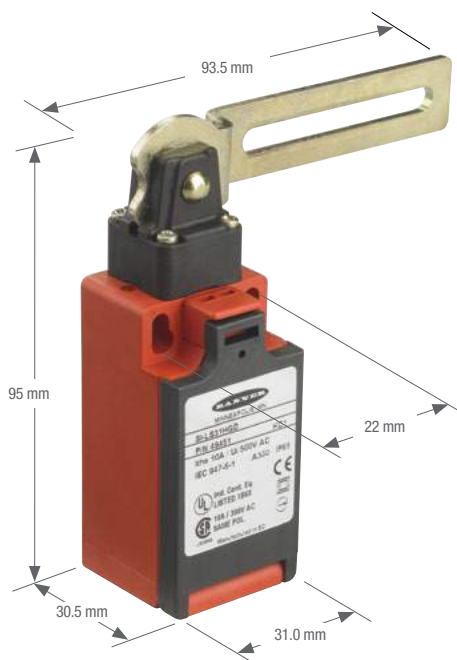
Actuator Type	Contact(s)	Models*
 Rotary Shaft	1 NC & 1 NO	SI-LS31RTD
	2 NC	SI-LS31RTE



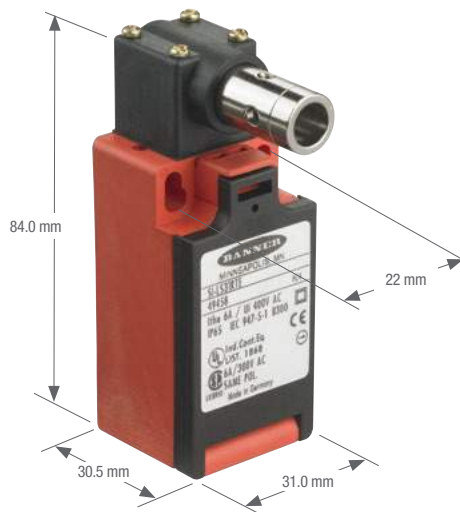
360° Rotary

NC = Normally Closed Contact, NO = Normally Open Contact

\* Contact factory for integral quick-disconnect (QD) and pigtail QD options.




SI-LS32H



SI-LS31R

## SI-LS31 Hinge Style Switches Specifications

<b>Contact Rating</b>	10A @ 24 V ac, 10A @ 110 V ac, 6A @ 230 V ac, 6A @ 24 V dc	2.5 kV max. transient tolerance	NEMA A300 P300															
<b>European Rating</b>	<b>Utilization categories:</b> AC15 and DC13 $U_e = 500V$ ac $I_{th} = 10A$	<table border="1"> <thead> <tr> <th colspan="3">40-60 Hz</th> </tr> <tr> <th><math>U_e</math> V</th> <th><math>I_e/AC-15</math> A</th> <th><math>I_e/DC-13</math> A</th> </tr> </thead> <tbody> <tr> <td>24</td> <td>10</td> <td>6</td> </tr> <tr> <td>110</td> <td>10</td> <td>1</td> </tr> <tr> <td>230</td> <td>6</td> <td>.4</td> </tr> </tbody> </table>	40-60 Hz			$U_e$ V	$I_e/AC-15$ A	$I_e/DC-13$ A	24	10	6	110	10	1	230	6	.4	
40-60 Hz																		
$U_e$ V	$I_e/AC-15$ A	$I_e/DC-13$ A																
24	10	6																
110	10	1																
230	6	.4																
<b>Contact Material</b>	Silver-nickel alloy																	
<b>Maximum Switching Speed</b>	50 operations per minute																	
<b>Mechanical Life</b>	1 million operations																	
<b>Required Actuation Force</b>	<b>SI-LS31R models:</b> 10 N cm <b>SI-LS31H models:</b> 15 N cm																	
<b>Short Circuit Protection</b>	6 amp Slow Blow, 10 amp Fast Blow. Recommended external fusing or overload protection.																	
<b>Wire Connections</b>	Screw terminals with pressure plates accept the following wire sizes – <b>Stranded and solid:</b> 20 AWG (0.5 mm <sup>2</sup> ) to 16 AWG (1.5 mm <sup>2</sup> ) for one wire <b>Stranded:</b> 20 AWG (0.5 mm <sup>2</sup> ) to 18 AWG (1.0 mm <sup>2</sup> ) for two wires																	
<b>Cable Entry</b>	M20 x 1.5 threaded entrance	Adapter supplied to convert from M20 x 1.5 to 1/2" - 14 NPT threaded entrance																
<b>Construction</b>	Glass fiber-reinforced thermoplastic UL94-VO rating; plated steel actuator																	
<b>Environmental Rating</b>	IP65																	
<b>Operating Conditions</b>	<b>Temperature:</b> -30 to +80 °C																	
<b>Weight</b>	0.09 Kg																	
<b>Certifications</b>																		
<b>Contact Configuration and Switching Diagrams</b>	<b>SI-LS31R models:</b> SD009 and SD010 (p. 673) <b>SI-LS31H models:</b> SD003, SD004, SD005, SD006, SD007 and SD008 (p. 672)																	

# SI-LS100

## Non-Locking Plastic Safety Interlock Switches



- Mechanically coded actuators minimize intentional tampering or defeat
- 100 mm plastic style switch
- Rotating head requires no tools
- Limit switch style
- Actuator engagement from four side or four top positions

### SI-LS100 Plastic Style Switches (kits), 100 mm

Actuator Type		Interlock	Contact(s)	Kit Model*
SI-QS-SSA-2 Straight Rigid In-Line		SI-LS100F	2 NC & 1 NO	SI-LS100SF
SI-QS-SSA-3 Rigid In-Line		SI-LS100F	2 NC & 1 NO	SI-LS100SRAF
 SI-QS-SSU Flexible In-Line		SI-LS100F	2 NC & 1 NO	SI-LS100MRFF



Multi-Directional

NC = Normally Closed Contact, NO = Normally Open Contact

\* A kit contains an interlock and actuator. Individual interlocks (without actuator) are for replacement purposes only.  
Contact factory for integral quick-disconnect (QD) and pigtail QD options.

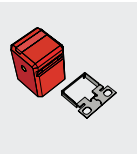
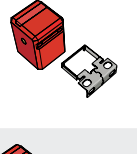

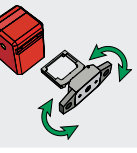
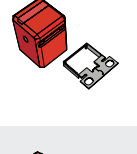
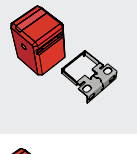

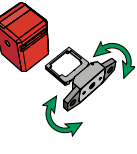
# SI-LS83

## Non-Locking Plastic Safety Interlock Switches



- Mechanically coded actuators minimize intentional tampering or defeat
- 83 mm plastic style switch
- Rotating head requires no tools
- Limit switch style
- Actuator engagement from four side or four top positions

### SI-LS83 Plastic Style Switches (kits), 83 mm

Actuator Type	Interlock	Kit Model*
SI-QS-SSA-2 Straight Rigid In-Line	 SI-LS83D 1 NC & 1 NO	SI-LS83SD
SI-QS-SSA-3 Rigid In-Line	 SI-LS83D 1 NC & 1 NO	SI-LS83SRAD
 SI-QS-SSU Flexible In-Line	 SI-LS83D 1 NC & 1 NO	SI-LS83MRFD
SI-QS-SSA-2 Straight Rigid In-Line	 SI-LS83E 2 NC	SI-LS83SE
SI-QS-SSA-3 Rigid In-Line	 SI-LS83E 2 NC	SI-LS83SRAE
 SI-QS-SSU Flexible In-Line	 SI-LS83E 2 NC	SI-LS83MRFE

 Multi-Directional    NC = Normally Closed Contact, NO = Normally Open Contact

\* A kit contains an interlock and actuator. Individual interlocks (without actuator) are for replacement purposes only. Contact factory for integral quick-disconnect (QD) and pigtail QD options.

# SI-QS90

## Non-Locking Plastic Safety Interlock Switches



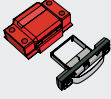

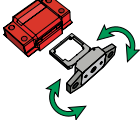
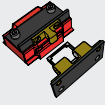
- Mechanically coded actuators minimize intentional tampering or defeat
- 90 mm flat-pack style switch
- Rotating head requires no tools
- Rotating head allows actuator engagement from front or back or either of two top positions

### SI-QS90 Flat-Pack Style Switches(kits), 90 mm



Actuator Type	Interlock	Contact(s)	Kit Model*
<b>SI-QS-SSA-4</b> Rigid In-Line		1 NC & 1 NO	<b>SI-QS90MD</b>
 <b>SI-QS-SSU</b> Flexible In-Line		1 NC & 1 NO	<b>SI-QS90MFD</b>
<b>SI-QS-SSA</b> Rigid In-Line & <b>SI-QS-100</b> High-force Accessory		1 NC & 1 NO	<b>SI-QS90MD-100</b> (High-Force)
<b>SI-QS-SSA-4</b> Rigid In-Line		2 NC	<b>SI-QS90ME</b>
 <b>SI-QS-SSU</b> Flexible In-Line		2 NC	<b>SI-QS90MFE</b>
<b>SI-QS-SSA</b> Rigid In-Line & <b>SI-QS-100</b> High-force Accessory		2 NC	<b>SI-QS90ME-100</b> (High-Force)

## SI-QS90 Flat-Pack Style Switches(kits), 90 mm

Actuator Type		Interlock	Contact(s)	Kit Model*
SI-QS-SSA-4 Rigid In-Line		SI-QS90F	2 NC & 1 NO	SI-QS90MF
 SI-QS-SSU Flexible In-Line		SI-QS90F	2 NC & 1 NO	SI-QS90MFF
SI-QS-SSA Rigid In-Line & SI-QS-100 High-force Accessory		SI-QS90F	2 NC & 1 NO	SI-QS90MF-100 (High-Force)



Multi-Directional

NC = Normally Closed Contact, NO = Normally Open Contact

\* A kit contains an interlock and actuator. Individual interlocks (without actuator) are for replacement purposes only.  
Contact factory for integral quick-disconnect (QD) and pigtail QD options.



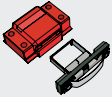

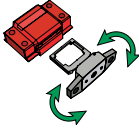
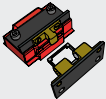
# SI-QS75

## Non-Locking Plastic Safety Interlock Switches



- Mechanically coded actuators minimize intentional tampering or defeat
- 75 mm flat-pack style switch
- Rotating head requires no tools
- Flat pack and limit switch styles
- Rotating head allows actuator engagement from front or back or either of two top positions

### SI-QS75 Flat-Pack Style Switches (kits), 75 mm

Actuator Type		Interlock	Contact(s)	Kit Model*
SI-QS-SSA-4 Rigid In-Line		SI-QS75C	1 NC	SI-QS75MC
 SI-QS-SSU Flexible In-Line		SI-QS75C	1 NC	SI-QS75MFC
SI-QS-SSA Rigid In-Line & SI-QS-100 High-force Accessory		SI-QS75C	1 NC	SI-QS75MC-100 (High-Force)

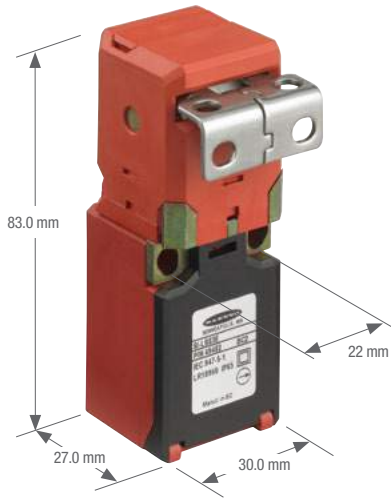


Multi-Directional

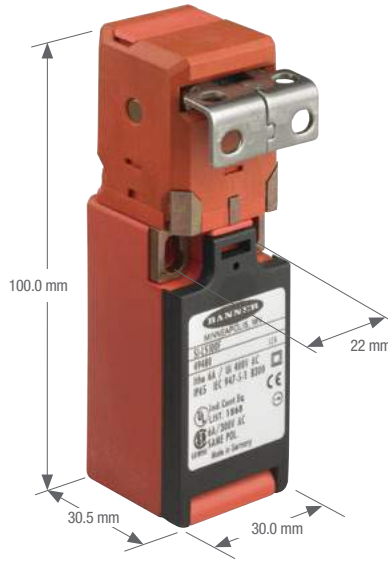
NC = Normally Closed Contact, NO = Normally Open Contact

\* A kit contains an interlock and actuator. Individual interlocks (without actuator) are for replacement purposes only. Contact factory for integral quick-disconnect (QD) and pigtail QD options.

Flat-Pack Style Switches



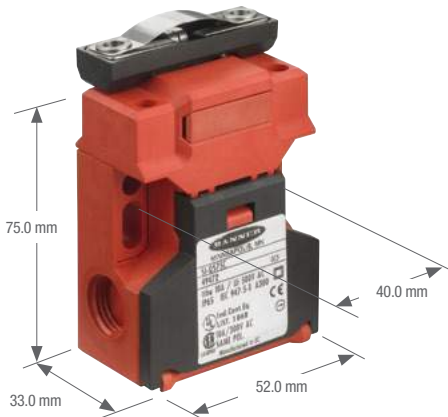
SI-LS83 Models



SI-LS100 Models

(both models shown with right-angle rigid in-line actuator)

Flat-Pack Style Switches






SI-QS75 Models




SI-QS90 Models

(both models shown with rigid in-line actuator)

## SI-LS83 and SI-LS100 Plastic Style Switches Specifications

Contact Rating	10A @ 24 V ac, 10A @ 110 V ac, 6A @ 230 V ac, 6A @ 24 V dc 2.5 kV max. transient tolerance NEMA A300 P300																
European Rating	Utilization categories: AC15 and DC13 (IEC 60947-5-1) Switches with 1 & 2 contact pairs: $U_i= 500V$ ac, $I_{th}= 10A$ Switches with 3 contact pairs: $U_i= 400V$ ac, $I_{th}= 5A$	<table border="1"> <thead> <tr> <th colspan="3">40-60 Hz</th> </tr> <tr> <th><math>U_i</math> V</th> <th><math>I_i/AC-15</math> A</th> <th><math>I_i/DC-13</math> A</th> </tr> </thead> <tbody> <tr> <td>24</td> <td>10</td> <td>6</td> </tr> <tr> <td>110</td> <td>10</td> <td>1</td> </tr> <tr> <td>230</td> <td>6</td> <td>.4</td> </tr> </tbody> </table>	40-60 Hz			$U_i$ V	$I_i/AC-15$ A	$I_i/DC-13$ A	24	10	6	110	10	1	230	6	.4
40-60 Hz																	
$U_i$ V	$I_i/AC-15$ A	$I_i/DC-13$ A															
24	10	6															
110	10	1															
230	6	.4															
Contact Material	Silver-nickel alloy																
Maximum Switching Speed	30 operations per minute																
Maximum Actuator Speed	1 m/second																
Mechanical Life	1 million operations																
Minimum Actuator Engagement Radius	In-line actuators: 150 mm Flexible actuators: 50 mm in all directions																
Actuation Extraction Force	12 N																
Short Circuit Protection	6 amp Slow Blow, 10 amp Fast Blow. Recommended external fusing or overload protection.																
Wire Connections	Stranded and solid: 20 AWG (0.5 mm <sup>2</sup> ) to 18 AWG (1.0 mm <sup>2</sup> ) for one wire Stranded: 20 AWG (0.5 mm <sup>2</sup> ) to 18 AWG (1.0 mm <sup>2</sup> ) for two wires																
Cable Entry	M20 x 1.5 for SI-LS100 and M16 x 1.5 for SI-LS83 threaded entrance. Adapter supplied to convert to 1/2"- 14 NPT threaded entrance.																
Construction	Glass fiber-reinforced thermoplastic UL94-VO rating																
Environmental Rating	IP65 NOTE: Addition of a No. 3 x 1/4" screw (max) to the wiring access door increases sealing to IP67; NEMA 4X																
Operating Conditions	Temperature: -30 to +80 °C																
Weight	SI-LS83 models: 0.12 kg SI-LS100 models: 0.13 kg																
Certifications	  																
Contact Configuration and Switching Diagrams	SI-LS100 models: SD011 (p. 673) SI-LS83 models: SD012 and SD013 (p. 673)																

## SI-QS75 and SI-QS90 Flat-Pack Style Switches Specifications

<b>Contact Rating</b>	10A @ 24V ac, 10A @ 110V ac, 6A @ 230V ac, 6A @ 24V dc 2.5 kV max. transient tolerance NEMA A300 P300																
<b>European Rating</b>	<b>Utilization categories:</b> AC15 and DC13 (IEC 60947-5-1) Switches with 1 & 2 contact pairs: $U_i = 500V$ ac, $I_{th} = 10A$ Switches with 3 contact pairs: $U_i = 400V$ ac, $I_{th} = 5A$	<table border="1"> <thead> <tr> <th colspan="3">40-60 Hz</th> </tr> <tr> <th><math>U_g</math> V</th> <th><math>I_g/AC-15</math> A</th> <th><math>I_g/DC-13</math> A</th> </tr> </thead> <tbody> <tr> <td>24</td> <td>10</td> <td>6</td> </tr> <tr> <td>110</td> <td>10</td> <td>1</td> </tr> <tr> <td>230</td> <td>6</td> <td>.4</td> </tr> </tbody> </table>	40-60 Hz			$U_g$ V	$I_g/AC-15$ A	$I_g/DC-13$ A	24	10	6	110	10	1	230	6	.4
40-60 Hz																	
$U_g$ V	$I_g/AC-15$ A	$I_g/DC-13$ A															
24	10	6															
110	10	1															
230	6	.4															
<b>Contact Material</b>	Silver-nickel alloy																
<b>Maximum Switching Speed</b>	30 operations per minute																
<b>Maximum Actuator Speed</b>	1 m/second																
<b>Mechanical Life</b>	1 million operations																
<b>Minimum Actuator Engagement Radius</b>	<b>In-line actuators:</b> 150 mm <b>Flexible actuators:</b> 50 mm in all directions																
<b>Actuation Extraction Force</b>	<b>High-Force models:</b> adjustable from 50-100 N <b>All others:</b> 10 N																
<b>Short Circuit Protection</b>	6 amp Slow Blow, 10 amp Fast Blow. Recommended external fusing or overload protection.																
<b>Wire Connections</b>	Screw terminals with pressure plates accept the following wire sizes – <b>For switches with one or two contacts:</b> Stranded and solid: 20 AWG (0.5 mm <sup>2</sup> ) to 16 AWG (1.5 mm <sup>2</sup> ) for one wire <b>Stranded:</b> 20 AWG (0.5 mm <sup>2</sup> ) to 18 AWG (1.0 mm <sup>2</sup> ) for two wires  <b>For switches with three contacts:</b> <b>Stranded and solid:</b> 20 AWG (0.5 mm <sup>2</sup> ) to 18 AWG (1.0 mm <sup>2</sup> ) for one wire <b>Stranded:</b> 20 AWG (0.5 mm <sup>2</sup> ) to 18 AWG (1.0 mm <sup>2</sup> ) for two wires																
<b>Cable Entry</b>	M20 x 1.5 for SI-QS90 and M16 x 1.5 for SI-QS75 threaded entrance. Adapter supplied to convert to ½" - 14 NPT threaded entrance.																
<b>Construction</b>	Glass fiber-reinforced thermoplastic UL94-VO rating																
<b>Environmental Rating</b>	IP65 NOTE: Addition of a No. 3 x ¼" screw (max) to the wiring access door increases sealing to IEC IP67; NEMA 4X																
<b>Operating Conditions</b>	<b>Temperature:</b> -30 to +80 °C																
<b>Weight</b>	<b>SI-QS75 models:</b> 0.11 kg <b>SI-QS90 models:</b> 0.13 kg																
<b>Application Notes</b>	Models with one and two contacts have three cable entry locations (bottom and two sides); models with three contacts have two cable entry locations (two sides). All entry locations are sealed with knockouts. To remove knockouts, thread the supplied M16 x 1.5 or M20 x 1.5 to ½" - 14 NPT conduit adapter or optional M16 x 1.5 or M20 x 1.5 cable gland into one of the threaded entry locations. The knockout will break open just before the adapter or cable gland bottoms out.																
<b>Certifications</b>																	
<b>Contact Configuration and Switching Diagrams</b>	<b>SI-QS75 models:</b> SD014 (p. 674) <b>SI-QS90 models:</b> SD015, SD016 and SD017 (p. 674)																

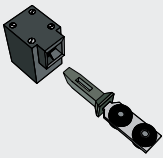

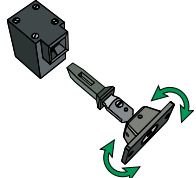
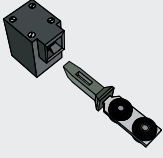

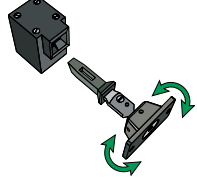
# SI-LM40MKH

## Non-Locking Metal Safety Interlock Switches



- Mechanically coded actuators minimize intentional tampering or defeat
- Rigid or flexible in-line actuators
- Actuator head rotates to four possible positions in 90° increments
- Rugged metal housing
- Design meets positive opening requirements for safety interlocks (IEC 60947-5-1)

### SI-LM40MKH Limit Switch Style (kits), 40 mm

Actuator Type		Interlock	Contact(s)	Kit Model*
SI-QM-SSA Straight Rigid In-Line		SI-LM40KHD	1 NO & 1 NC	SI-LM40MKHD
 SI-QM-SMFA Flexible In-Line		SI-LM40KHD	1 NO & 1 NC	SI-LM40MKHFD
SI-QM-SSA Straight Rigid In-Line		SI-LM40KHE	2 NC	SI-LM40MKHE
 SI-QM-SMFA Flexible In-Line		SI-LM40KHE	2 NC	SI-LM40MKHFE

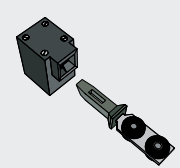

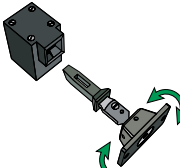


Multi-Directional

NC = Normally Closed Contact, NO = Normally Open Contact

\* A kit contains an interlock and actuator. Individual interlocks (without actuator) are for replacement purposes only. Contact factory for integral quick-disconnect (QD) and pigtail QD options.

## SI-LM40MKH Limit Switch Style (kits), 40 mm (cont'd)

Actuator Type		Interlock	Contact(s)	Kit Model*
SI-QM-SSA Straight Rigid In-Line		SI-LM40KHF	2 NC & 1 NO	SI-LM40MKHF
 SI-QM-SMFA Flexible In-Line		SI-LM40KHF	2 NC & 1 NO	SI-LM40MKHFF



Multi-Directional

NC = Normally Closed Contact, NO = Normally Open Contact

\* A kit contains an interlock and actuator. Individual interlocks (without actuator) are for replacement purposes only.  
Contact factory for integral quick-disconnect (QD) and pigtail QD options.


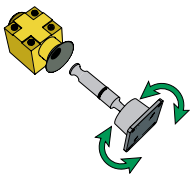

# SI-LM40MKV

## Non-Locking Metal Safety Interlock Switches



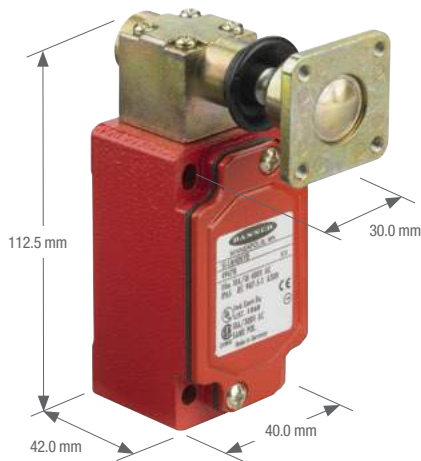
- Mechanically coded actuators minimize intentional tampering or defeat
- In-line Spring-loaded actuator; flexes in all directions
- Actuator head rotates to four possible positions in 90° increments
- Rugged metal housing
- Design meets positive opening requirements for safety interlocks (IEC 60947-5-1)

### SI-LM40MKV Limit Switch Style (kits), 40 mm

Actuator Type	Interlock	Contact(s)	Kit Model*
 SI-QM-90A Flexible In-Line	 SI-LM40KVD	1 NO & 1 NC	SI-LM40MKVD
	 SI-LM40KVE	2 NC	SI-LM40MKVE

 Multi-Directional    NC = Normally Closed Contact, NO = Normally Open Contact

\* A kit contains an interlock and actuator. Individual interlocks (without actuator) are for replacement purposes only. Contact factory for integral quick-disconnect (QD) and pigtail QD options.



SI-LM40MKV Models  
(with flexible in-line actuator)



SI-LM40MKH Models  
(shown with rigid in-line actuator)

## SI-LM40 Limit Style Switches Specifications

<b>Contact Rating</b>	10A @ 24 V ac, 10A @ 110 V ac, 6A @ 230 V ac, 6A @ 24 V dc 2.5 kV max. transient tolerance NEMA A300 P300																			
<b>European Rating</b>	Utilization categories: AC15 and DC13 $U_i = 500V$ ac, $I_n = 10A$	<table border="1"> <thead> <tr> <th colspan="3">40-60 Hz</th> </tr> <tr> <th><math>U_o</math></th> <th><math>I_o/AC-15</math></th> <th><math>I_o/DC-13</math></th> </tr> <tr> <th>V</th> <th>A</th> <th>A</th> </tr> </thead> <tbody> <tr> <td>24</td> <td>10</td> <td>6</td> </tr> <tr> <td>110</td> <td>10</td> <td>1</td> </tr> <tr> <td>230</td> <td>6</td> <td>.4</td> </tr> </tbody> </table>	40-60 Hz			$U_o$	$I_o/AC-15$	$I_o/DC-13$	V	A	A	24	10	6	110	10	1	230	6	.4
40-60 Hz																				
$U_o$	$I_o/AC-15$	$I_o/DC-13$																		
V	A	A																		
24	10	6																		
110	10	1																		
230	6	.4																		
<b>Contact Material</b>	Silver-nickel alloy																			
<b>Maximum Switching Speed</b>	SI-LM40MKH models: 50 operations per minute SI-LM40MKV models: 10 operations per minute																			
<b>Maximum Actuator Speed</b>	SI-LM40MKH models: 1.5 m/second SI-LM40MKV models: 0.5 m/second																			
<b>Mechanical Life</b>	SI-LM40MKH models: 1 million operations SI-LM40MKV models: 25,000 operations																			
<b>Minimum Actuator Engagement Radius</b>	Rigid actuator: 400 mm Flexible actuator: 150 mm																			
<b>Actuation Extraction Force</b>	SI-LM40MKH models: 10 N SI-LM40MKV models: 20 N																			
<b>Short Circuit Protection</b>	6 amp Slow Blow, 10 amp Fast Blow. Recommended external fusing or overload protection.																			
<b>Wire Connections</b>	Screw terminals with pressure plates accept the following wire sizes – <b>Stranded and solid:</b> 20 AWG (0.5 mm <sup>2</sup> ) to 16 AWG (1.5 mm <sup>2</sup> ) for one wire <b>Stranded:</b> 20 AWG (0.5 mm <sup>2</sup> ) to 18 AWG (1.0 mm <sup>2</sup> ) for two wires																			
<b>Cable Entry</b>	M20 x 1.5 threaded entrance Adapter supplied to convert M20 x 1.5 to 1/2" - 14 NPT threaded entrance																			
<b>Construction</b>	Aluminum alloy die cast																			
<b>Environmental Rating</b>	IP65																			
<b>Operating Conditions</b>	Temperature: -30 to +80 °C																			
<b>Weight</b>	SI-LM40MKH models: 0.34 kg SI-LM40MKV models: 0.31 kg																			
<b>Certifications</b>																				
<b>Contact Configuration and Switching Diagrams</b>	SI-LM40MKH..D models: SD018 (p. 674) SI-LM40MKH..E models: SD019 (p. 675)	SI-LM40MKH..F models: SD020 (p. 675) SI-LM40MKV.. models: SD021 and SD022 (p. 675)																		



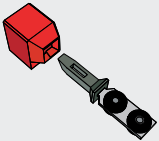
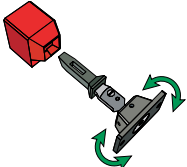
# SI-LS42

## Plastic Locking Style Safety Interlock Switches



- Two locking mechanisms available including spring lock with energized solenoid release and energized solenoid lock with spring release
- Actuator head can be rotated in 90° increments to eight possible actuator positions: four vertical and four horizontal
- Design meets positive opening requirements for safety interlocks (IEC 60947-5-1)
- AC and DC voltage available

### SI-LS42 Safety Switches, 42 mm - Spring Lock and Solenoid Unlock

Actuator Type		Interlock	Contact(s)	Solenoid Voltage	Kit Model *
SI-QM-SSA Straight Rigid In-Line		SI-LS42DSG	Actuator Contacts: 1 NC & 1 NO	24 V ac/dc	SI-LS42DMSG
		SI-LS42WSG	Solenoid Monitor Contacts: 1 NC & 1 NO	110 V ac/ 230 V ac	SI-LS42WMSG
SI-QM-SMFA Flexible In-Line		SI-LS42DSG	Actuator Contacts: 1 NC & 1 NO	24 V ac/dc	SI-LS42DMSGF
		SI-LS42WSG	Solenoid Monitor Contacts: 1 NC & 1 NO	110 V ac/ 230 V ac	SI-LS42WMSGF

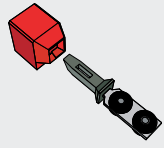
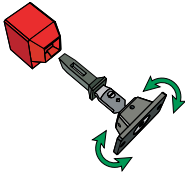
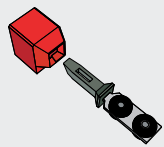
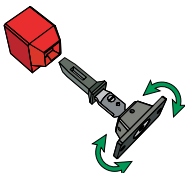
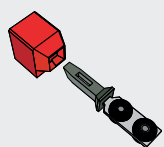
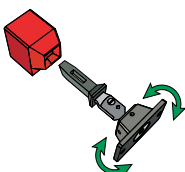


Multi-Directional

NC = Normally Closed Contact, NO = Normally Open Contact

\* A kit contains an interlock and actuator. Individual interlocks (without actuator) are for replacement purposes only. Contact factory for integral quick-disconnect (QD) and pigtail QD options.

## SI-LS42 Safety Switches, 42 mm - Spring Lock and Solenoid Unlock (cont'd)

Actuator Type		Interlock	Contact(s)	Solenoid Voltage	Kit Model *
SI-QM-SSA Straight Rigid In-Line		SI-LS42DSH	Actuator Contacts: 2 NC	24 V ac/dc	SI-LS42DMSH
		SI-LS42WSH	Solenoid Monitor Contacts: 1 NC & 1 NO	110 V ac/ 230 V ac	SI-LS42WMSH
SI-QM-SMFA Flexible In-Line		SI-LS42DSH	Actuator Contacts: 2 NC	24 V ac/dc	SI-LS42DMSHF
		SI-LS42WSH	Solenoid Monitor Contacts: 1 NC & 1 NO	110 V ac/ 230 V ac	SI-LS42WMSHF
SI-QM-SSA Straight Rigid In-Line		SI-LS42DSI	Actuator Contacts: 2 NC & 1 NO	24 V ac/dc	SI-LS42DMSI
		SI-LS42WSI	Solenoid Monitor Contact: 1 NC	110 V ac/ 230 V ac	SI-LS42WMSI
SI-QM-SMFA Flexible In-Line		SI-LS42DSI	Actuator Contacts: 2 NC & 1 NO	24 V ac/dc	SI-LS42DMSIF
		SI-LS42WSI	Solenoid Monitor Contacts: 1 NC	110 V ac/ 230 V ac	SI-LS42WMSIF
SI-QM-SSA Straight Rigid In-Line		SI-LS42DSJ	Actuator Contacts: 3 NC	24 V ac/dc	SI-LS42DMSJ
		SI-LS42DSJ	Solenoid Monitor Contact: 1 NC	24 V ac/dc	SI-LS42DMSJF
SI-QM-SMFA Flexible In-Line		SI-LS42DSJ	Actuator Contacts: 3 NC	24 V ac/dc	SI-LS42DMSJF
		SI-LS42DSJ	Solenoid Monitor Contact: 1 NC	24 V ac/dc	SI-LS42DMSJF

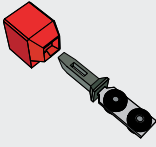

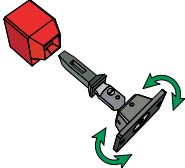
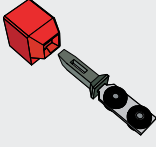

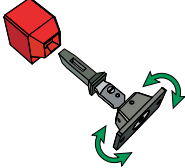
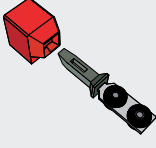

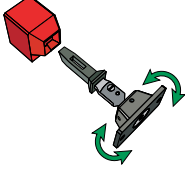
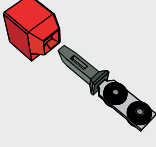

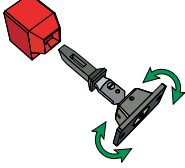


Multi-Directional

NC = Normally Closed Contact, NO = Normally Open Contact

\* A kit contains an interlock and actuator. Individual interlocks (without actuator) are for replacement purposes only.  
Contact factory for integral quick-disconnect (QD) and pigtail QD options.

SI-LS42 Safety Switches, 42 mm - Solenoid Lock and Spring Unlock (cont'd)

Actuator Type		Interlock	Contact(s)	Solenoid Voltage	Kit Model *
SI-QM-SSA Straight Rigid In-Line		SI-LS42DMG	Actuator Contacts: 1 NC & 1 NO	24 V ac/dc	SI-LS42DMMG
		SI-LS42WMG	Solenoid Monitor Contacts: 1 NC & 1 NO	110 V ac/ 230 V ac	SI-LS42WMMG
 SI-QM-SMFA Flexible In-Line		SI-LS42DMG	Actuator Contacts: 1 NC & 1 NO	24 V ac/dc	SI-LS42DMMGF
		SI-LS42WMG	Solenoid Monitor Contacts: 1 NC & 1 NO	110 V ac/ 230 V ac	SI-LS42WMMGF
SI-QM-SSA Straight Rigid In-Line		SI-LS42DMH	Actuator Contacts: 2 NC	24 V ac/dc	SI-LS42DMMH
		SI-LS42WMH	Solenoid Monitor Contacts: 1 NC & 1 NO	110 V ac/ 230 V ac	SI-LS42WMMH
 SI-QM-SMFA Flexible In-Line		SI-LS42DMH	Actuator Contacts: 2 NC	24 V ac/dc	SI-LS42DMMHF
		SI-LS42WMH	Solenoid Monitor Contacts: 1 NC & 1 NO	110 V ac/ 230 V ac	SI-LS42WMMHF
SI-QM-SSA Straight Rigid In-Line		SI-LS42DMI	Actuator Contacts: 2 NC & 1 NO	24 V ac/dc	SI-LS42DMMI
		SI-LS42WMI	Solenoid Monitor Contact: 1 NC	110 V ac/ 230 V ac	SI-LS42WMMI
 SI-QM-SMFA Flexible In-Line		SI-LS42DMI	Actuator Contacts: 2 NC & 1 NO	24 V ac/dc	SI-LS42DMMIF
		SI-LS42WMI	Solenoid Monitor Contact: 1 NC	110 V ac/ 230 V ac	SI-LS42WMMIF
SI-QM-SSA Straight Rigid In-Line		SI-LS42DMJ	Actuator Contacts: 3 NC	24 V ac/dc	SI-LS42DMMJ
		SI-LS42DMJ	Solenoid Monitor Contact: 1 NC	24 V ac/dc	SI-LS42DMMJF
 SI-QM-SMFA Flexible In-Line		SI-LS42DMJ	Actuator Contacts: 3 NC	24 V ac/dc	SI-LS42DMMJF
		SI-LS42DMJ	Solenoid Monitor Contact: 1 NC	24 V ac/dc	SI-LS42DMMJF

 Multi-Directional      NC = Normally Closed Contact, NO = Normally Open Contact

\* A kit contains an interlock and actuator. Individual interlocks (without actuator) are for replacement purposes only. Contact factory for integral quick-disconnect (QD) and pigtail QD options.

# SI-QM100

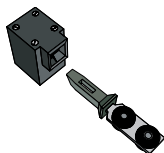
## Metal Locking Style Safety Interlock Switches



- Two locking mechanisms available including spring lock with energized solenoid release and energized solenoid lock with spring release
- Actuator head can be rotated in 90° increments to four possible actuator positions
- Design meets positive opening requirements for safety interlocks (IEC 60947-5-1)
- AC and DC voltage available

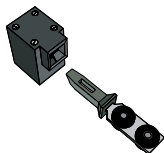
### SI-QM100 Safety Switches, 100 mm - Spring Lock and Solenoid Unlock

Actuator Type	Interlock	Contact(s)	Solenoid Voltage	Kit Model*
<b>SI-QM-SSA</b> Straight Rigid In-Line	SI-QM100DSG	Switching Contacts: 1 NC & 1 NO	24 V dc	SI-QM100DMSG
	SI-QM100ASG	Solenoid Monitor Contacts: 1 NC & 1 NO	120 V ac	SI-QM100AMSG
	SI-QM100DSH	Switching Contacts: 2 NC  Solenoid Monitor Contacts: 1 NC & 1 NO	24 V dc	SI-QM100DMSH



### SI-QM100 Safety Switches, 100 mm - Solenoid Lock and Spring Unlock

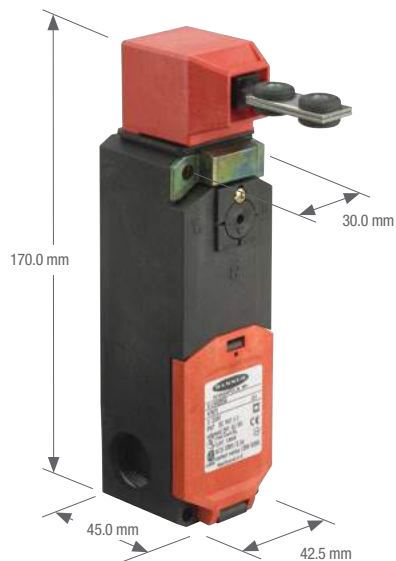
Actuator Type	Interlock	Contact(s)	Solenoid Voltage	Kit Model*
<b>SI-QM-SSA</b> Straight Rigid In-Line	SI-QM100DMG	Switching Contacts: 1 NC & 1 NO	24 V dc	SI-QM100DMMG
	SI-QM100AMG	Solenoid Monitor Contacts: 1 NC & 1 NO	120 V ac	SI-QM100AMMG



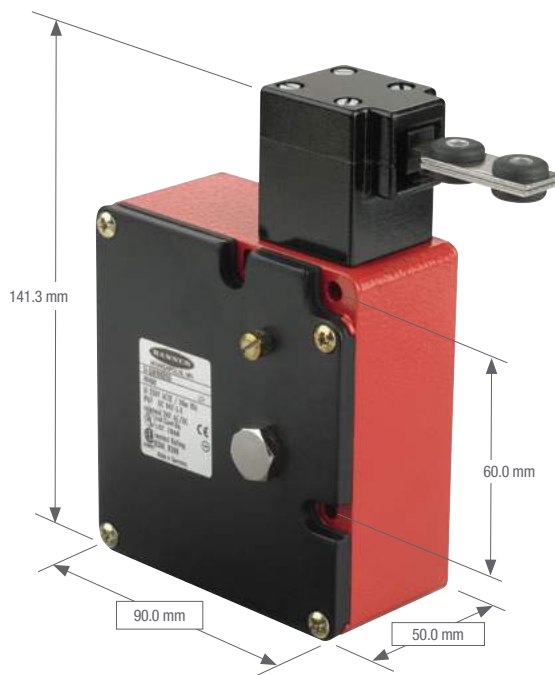
Multi-Directional

NC = Normally Closed Contact, NO = Normally Open Contact

\* A kit contains an interlock and actuator. Individual interlocks (without actuator) are for replacement purposes only. Contact factory for integral quick-disconnect (QD) and pigtail QD options.




SI-LS42 Models  
(shown with rigid in-line actuator)

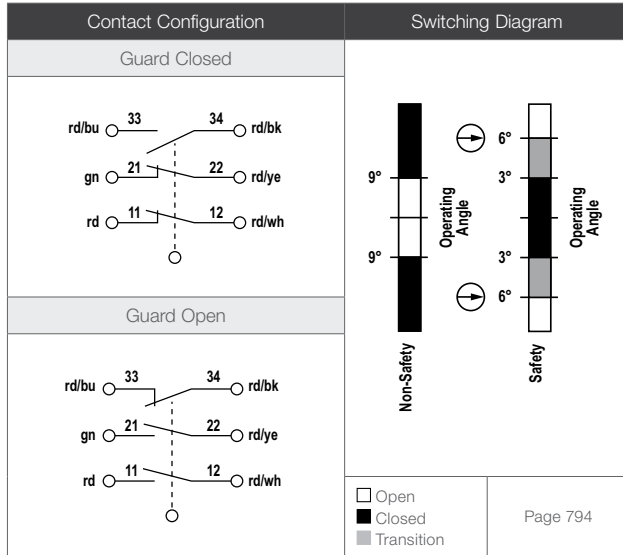


SI-QM100 Models  
(shown with rigid in-line actuator)

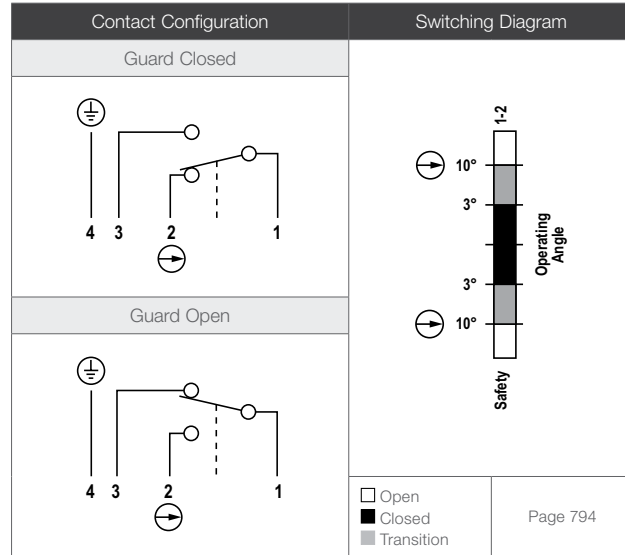
## Locking Style Switches Specifications

Contact Rating	4A @ 250 V ac max. 2.5 kV max. transient tolerance NEMA A300 P300																
European Rating	<b>Utilization categories:</b> AC15 and DC13 (IEC 60947-5-1) <b>Switches with 1 &amp; 2 contact pairs:</b> $U_e = 250V$ ac <b>SI-LS42 models:</b> $I_{th} = 2.5$ A <b>SI-QM100 models:</b> $I_{th} = 10$ A	<table border="1"> <thead> <tr> <th colspan="3">40-60 Hz</th> </tr> <tr> <th><math>U_e</math> V</th> <th><math>I_e/AC-15</math> A</th> <th><math>I_e/DC-13</math> A</th> </tr> </thead> <tbody> <tr> <td>24</td> <td>10</td> <td>6</td> </tr> <tr> <td>110</td> <td>10</td> <td>1</td> </tr> <tr> <td>230</td> <td>6</td> <td>.4</td> </tr> </tbody> </table>	40-60 Hz			$U_e$ V	$I_e/AC-15$ A	$I_e/DC-13$ A	24	10	6	110	10	1	230	6	.4
40-60 Hz																	
$U_e$ V	$I_e/AC-15$ A	$I_e/DC-13$ A															
24	10	6															
110	10	1															
230	6	.4															
Contact Material	Silver-nickel alloy																
Solenoid Power Consumption	<b>SI-LS42 models:</b> 1.1 VA / Inrush 12 VA (0.2 sec) <b>SI-QM100 models:</b> 5.2 W																
Maximum Actuator Speed	1.5 m/second																
Mechanical Life	1 million operations																
Minimum Actuator Engagement Radius	<b>Rigid actuator:</b> 400 mm <b>Flexible actuator:</b> 150 mm																
Actuation Extraction Force	<b>SI-LS42 models:</b> 1500 N when locked <b>SI-QM100 models:</b> 1000 N when locked																
Short Circuit Protection	6 amp Slow Blow, 10 amp Fast Blow. Recommended external fusing or overload protection.																
Wire Connections	<b>SI-LS42 models:</b> 10 cage clamp elements 1.5 mm stranded max. / 16 AWG  <b>SI-QM100 models:</b> Screw terminals with pressure plates accept the following wire sizes – 16 AWG (1.5 mm <sup>2</sup> ) max. solid; 14 AWG (2.5 mm <sup>2</sup> ) max. stranded, 18 AWG (1 mm <sup>2</sup> ) when using all 11 terminals																
Cable Entry	M20 x 1.5 threaded entrance Adapter supplied to convert M20 x 1.5 to ½" - 14 NPT threaded entrance																
Construction	<b>SI-LS42 models:</b> Glass fiber-reinforced polyamide thermoplastic housing; UL 94-V0 rating <b>SI-QM100 models:</b> Aluminum die cast																
Environmental Rating	IP67																
Operating Conditions	<b>Temperature:</b> <b>SI-LS42 models:</b> -30 to +70 °C <b>SI-QM100 models:</b> -30 to +60 °C																
Weight	<b>SI-LS42 models:</b> 0.3 kg <b>SI-QM100 models:</b> 0.81 kg																
Application Notes	When rotating the actuator head, the actuator MUST BE FULLY ENGAGED. When using a model with solenoid locking, the lock mechanism will disengage upon solenoid power failure.																
Certifications																	
Contact Configuration and Switching Diagrams	<b>SI-LS42 models:</b> SD023, SD024, SD025 & SD026 (p. 675) <b>SI-QM100 models:</b> SD027 and SD028 (p. 676)																

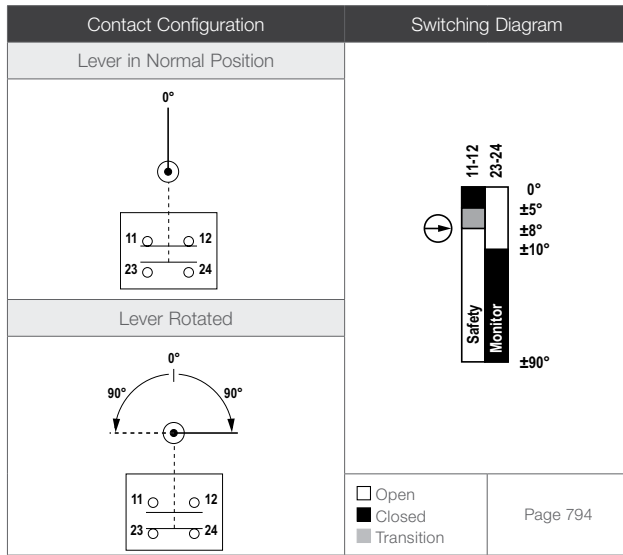
SD001 - SI-HG63 Series



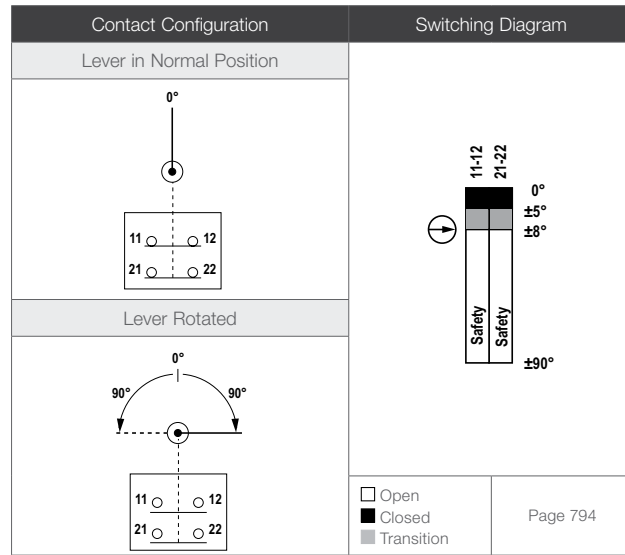
SD002 - SI-HG80 Series



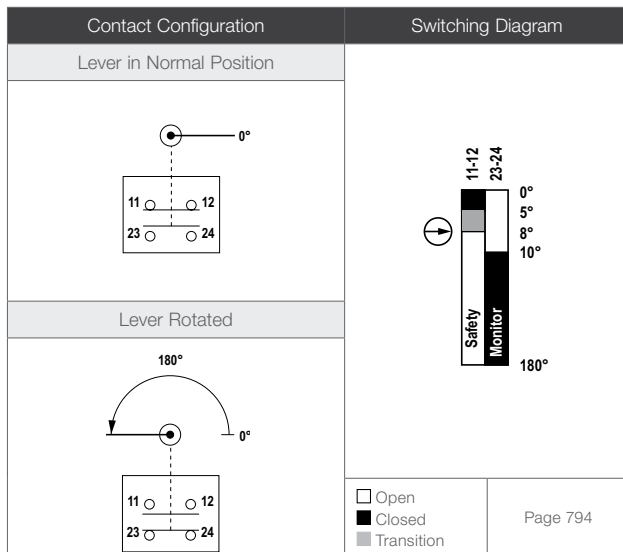
SD003 - SI-LS31HGD Series



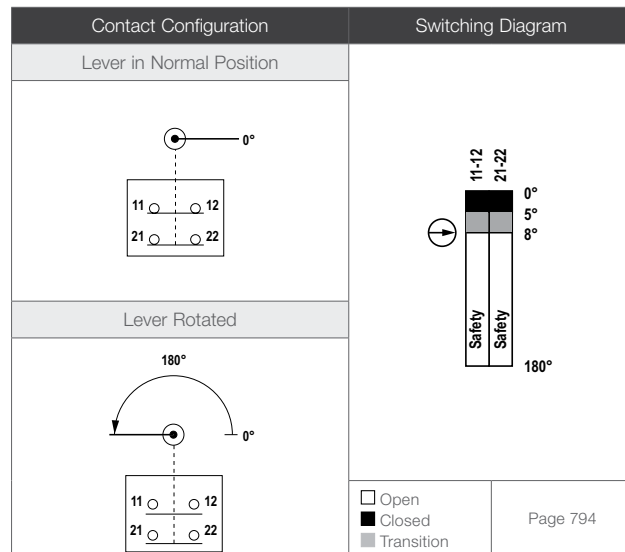
SD004 - SI-LS31HGE Series



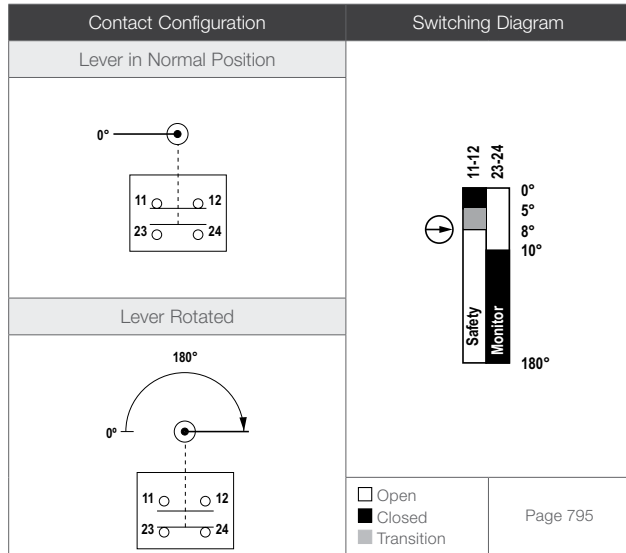
SD005 - SI-LS31HGRD Series



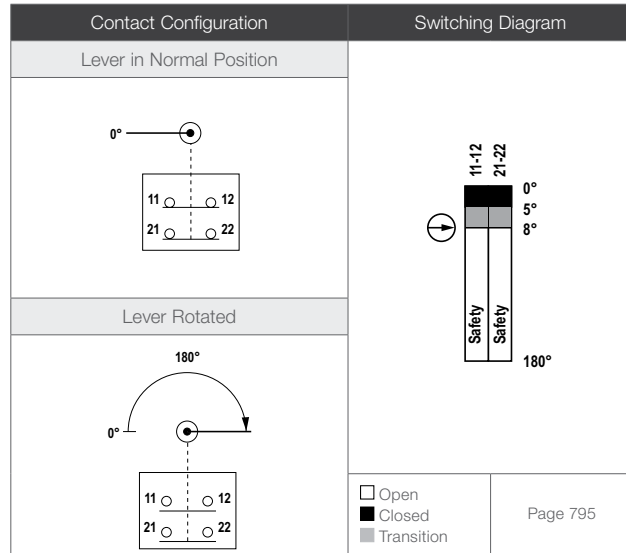
SD006 - SI-LS31HGRE Series



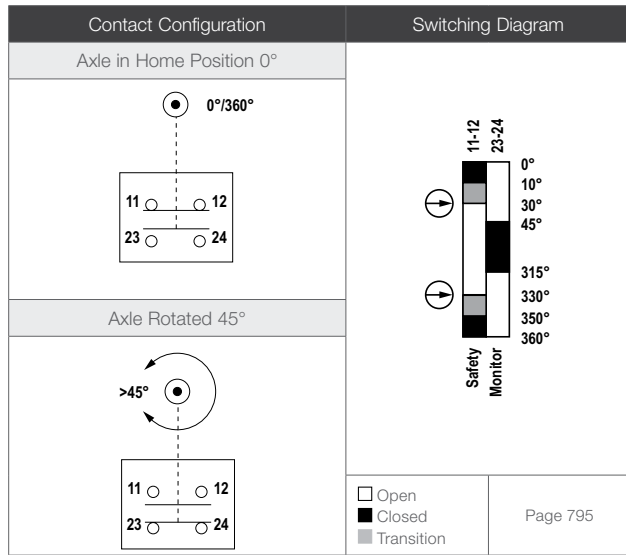
SD007 - SI-LS31HGLD Series



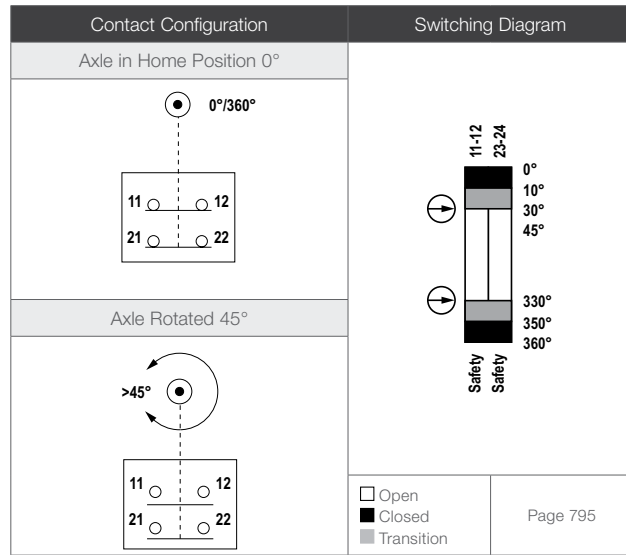
SD008 - SI-LS31HGLE Series



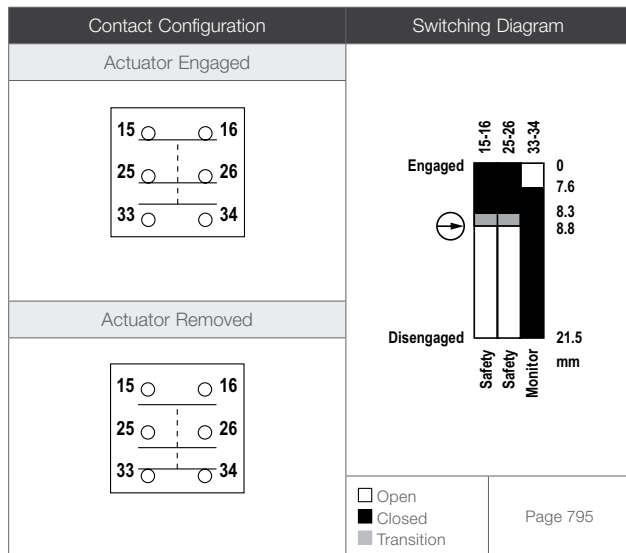
SD009 - SI-LS31RTD Series



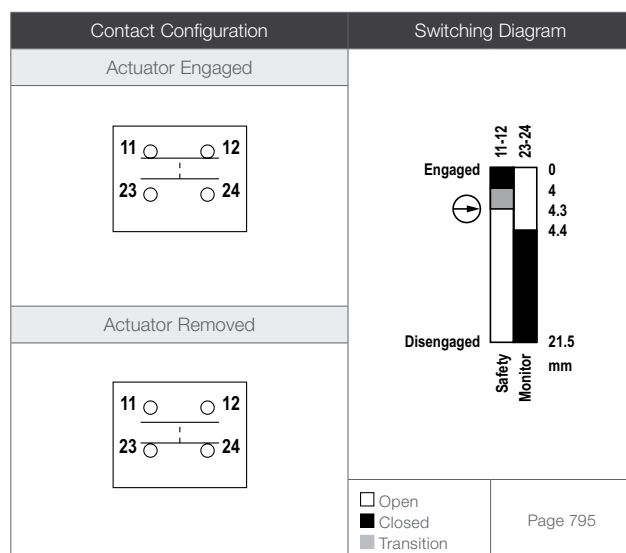
SD010 - SI-LS31RTE Series



SD011 - SI-LS100 Series



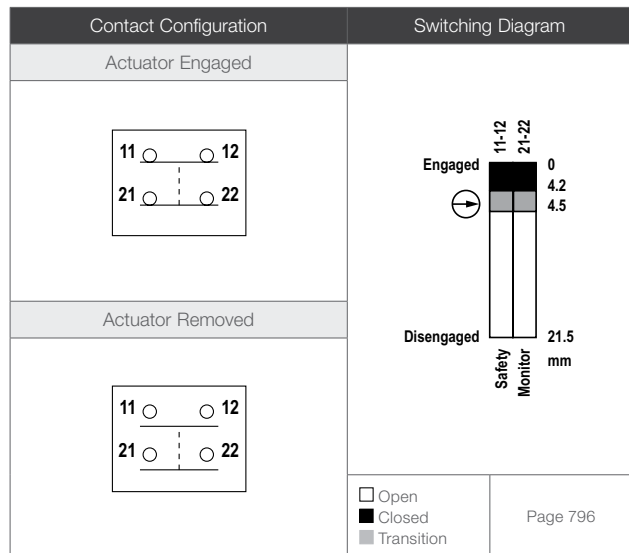
SD012 - SI-LS83..D Series



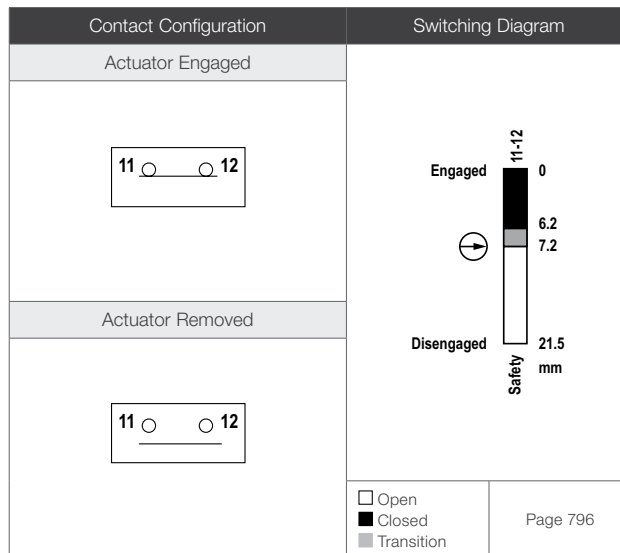
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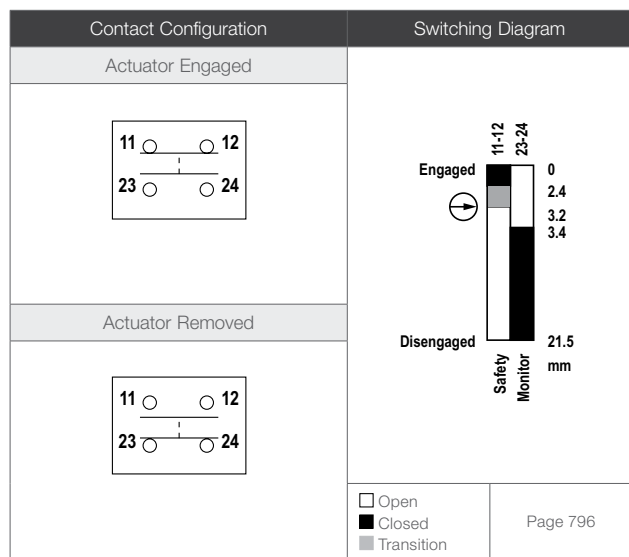
SD013 - SI-LS83..E Series



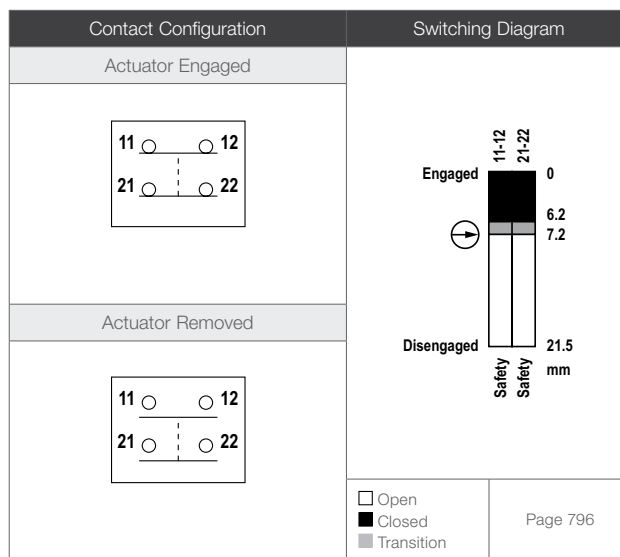
SD014 - SI-QS75 Series



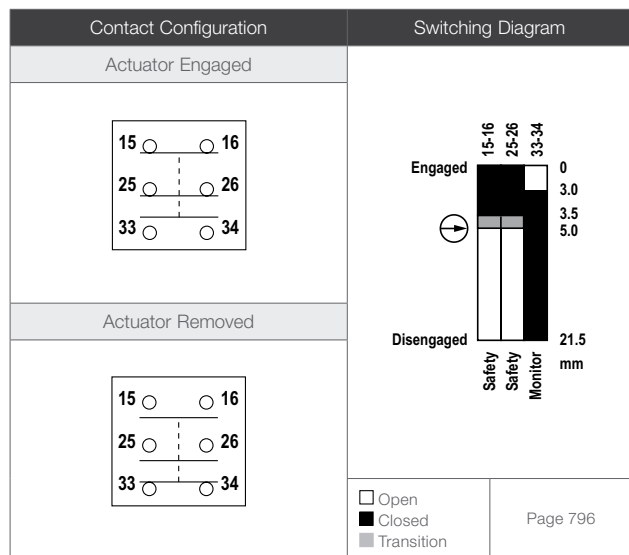
SD015 - SI-QS90MD Series



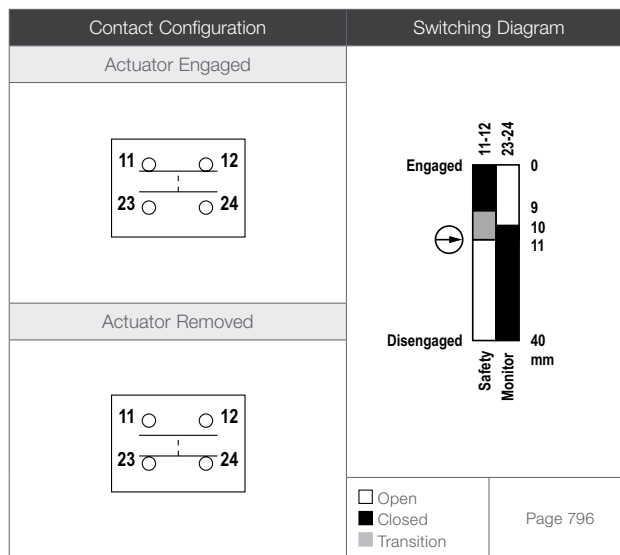
SD016 - SI-QS90ME Series



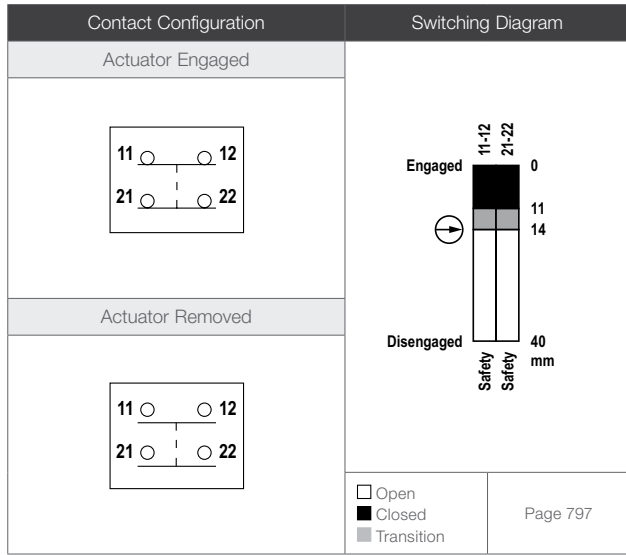
SD017 - SI-QS90MF Series



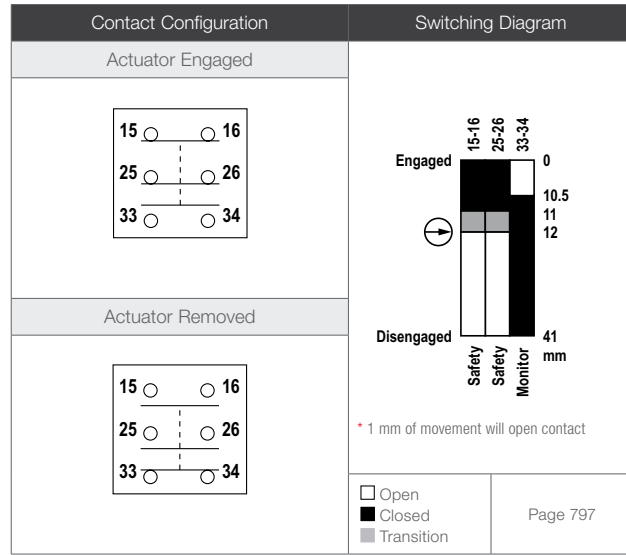
SD018 - SI-LM40MKHD Series



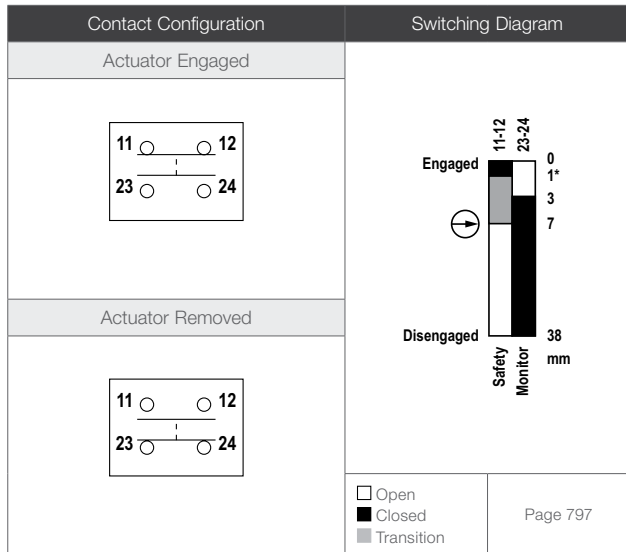
SD019 - SI-LM40MKHE Series



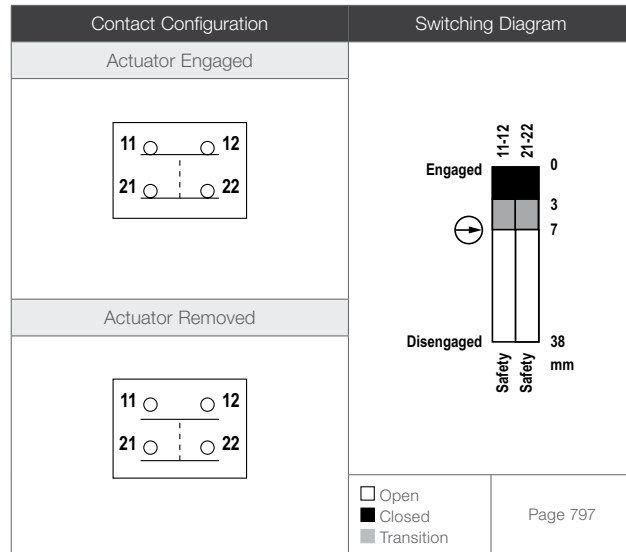
SD020 - SI-LM40MKHF Series



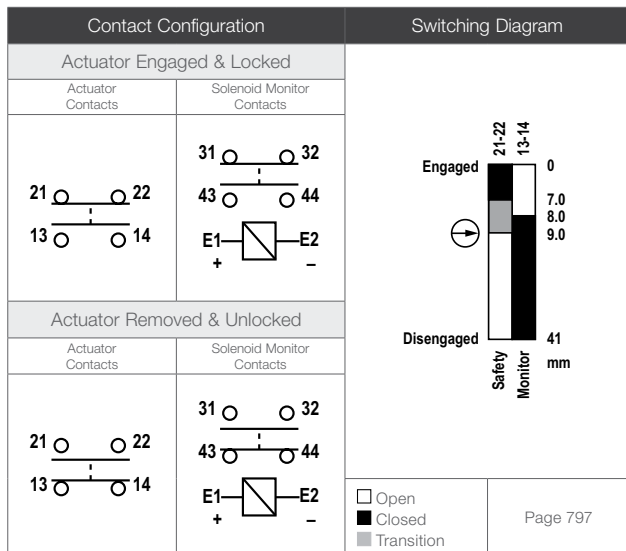
SD021 - SI-LM40MKVD Series



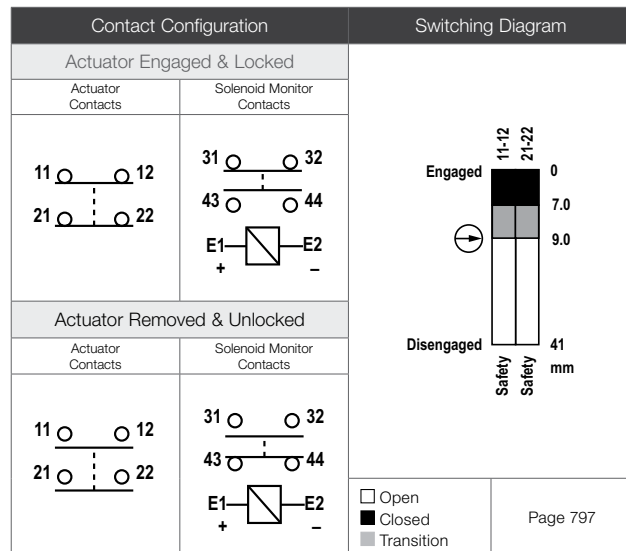
SD022 - SI-LM40MKVE Series



SD023 - SI-LS42..MSG/MMG Series

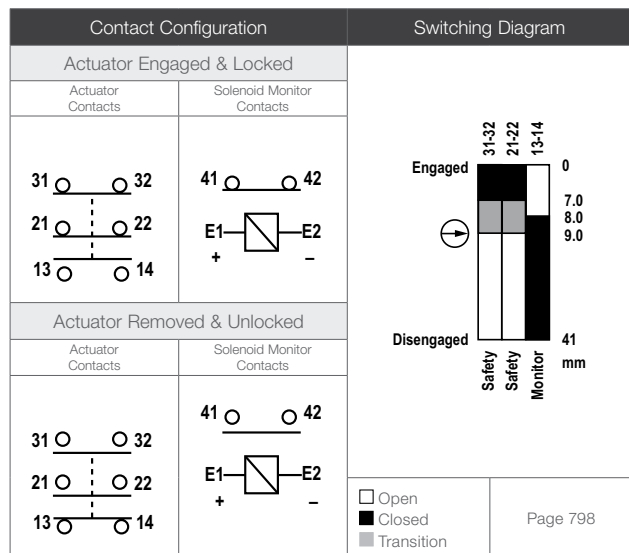


SD024 - SI-LS42..MSH/MMH Series

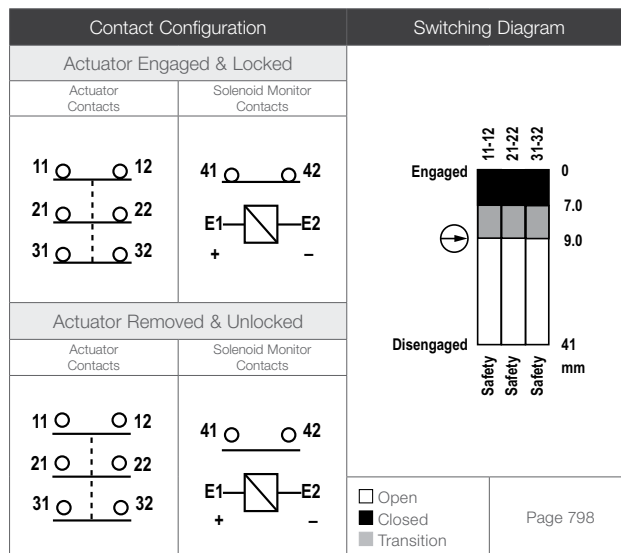


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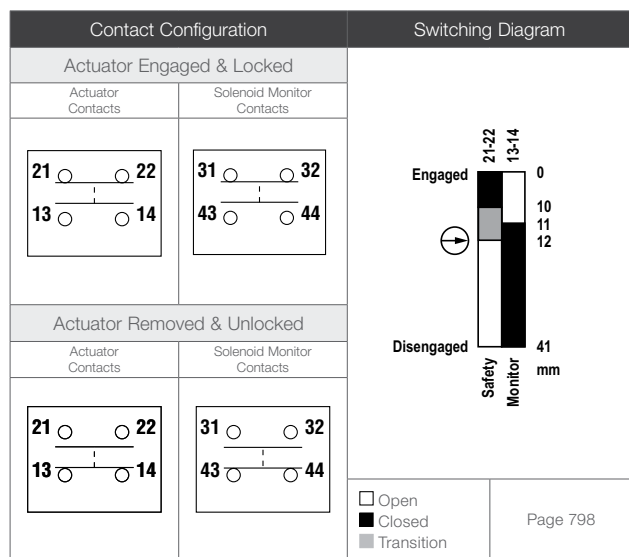
SD025 - SI-LS42..MSI/MMI Series



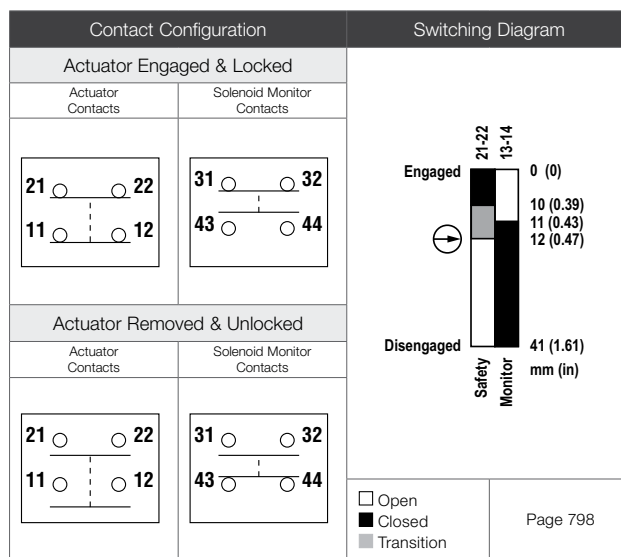
SD026 - SI-LS42..MSJ/MMJ Series



SD027 - SI-QM100..MSG/MMG Series



SD028 - SI-QM100..DMSH Series








## Safety Interlock Switches Replacement Parts






Used In	Description	Model*
SI-LM40MKH..D kits		SI-LM40KHD
SI-LM40MKH..E kits		SI-LM40KHE
SI-LM40MKH..F kits		SI-LM40KHF
SI-LM40MKVD kit		SI-LM40KVD
SI-LM40MKVE kit		SI-LM40KVE
SI-LS42MSG.. kits		SI-LS42DSG
SI-LS42WMSG.. kits		SI-LS42WSG
SI-LS42DMSH.. kits		SI-LS42DSH
SI-LS42WMSH.. kits		SI-LS42WSH
SI-LS42DMSI.. kits		SI-LS42DSI
SI-LS42WMSI.. kits		SI-LS42WSI
SI-LS42DMSJ.. kits		SI-LS42DSJ
SI-LS42DMMG.. kits		SI-LS42DMG
SI-LS42WMMG.. kits		SI-LS42WMG
SI-LS42DMMH.. kits	Individual Interlock (without actuator)	SI-LS42DMH
SI-LS42WMMH.. kits		SI-LS42WMH
SI-LS42DMMI.. kits		SI-LS42DMI
SI-LS42WMMI.. kits		SI-LS42WMI
SI-LS42DMMJ.. kits		SI-LS42DMJ
SI-LS100..F kits		SI-LS100F
SI-LS83..D kits		SI-LS83D
SI-LS83..E kits		SI-LS83E
SI-QM100MSG kit		SI-QM100DSG
SI-QM100AMSG kit		SI-QM100ASG
SI-QM100DMMG kit		SI-QM100DMG
SI-QM100AMMG kit		SI-QM100AMG
SI-QS75..C kits		SI-QS75C
SI-QS90..D kits		SI-QS90D
SI-QS90..E kits		SI-QS90E
SI-QS90..F kits		SI-QS90F

\* Kits with one safety interlock switch and an actuator are available (see pp. 806-821).

## Replacement Actuator Parts for Safety Interlock Switches

Description		Used With	Model
	<p>Flexible in-line, trumpet-style, metal actuator used for doors or covers where alignment is difficult to maintain. Flexes in all directions. Minimum engagement radius for hinged closures is 150 mm.</p>	<ul style="list-style-type: none"> <li>• SI-LM40MKV</li> </ul>	<p>SI-QM-90A</p>
	<p>Rigid in-line metal actuator used for doors or covers. Slide-bolt design for use in heavy-duty applications where alignment is difficult to maintain.</p>	<ul style="list-style-type: none"> <li>• SI-LM40MKH</li> <li>• SI-LS42</li> <li>• SI-QM100</li> </ul>	<p>SI-QM-SB</p>
	<p>Flexible in-line metal actuator used for doors or covers where alignment is difficult to maintain. Flexes in all directions. Minimum engagement radius for hinged closures is 150 mm.</p>	<ul style="list-style-type: none"> <li>• SI-LM40MKH</li> <li>• SI-LS42</li> <li>• SI-QM100</li> </ul>	<p>SI-QM-SMFA</p>
	<p>Rigid in-line metal actuator used for doors or covers with accurate alignment, such as sliding doors. Minimum engagement radius for hinged closures is 400 mm.</p>	<ul style="list-style-type: none"> <li>• SI-LM40MKH</li> <li>• SI-LS42</li> <li>• SI-QM100</li> </ul>	<p>SI-QM-SSA</p>
	<p>High-extraction-force adapter for particularly heavy or large doors. Adjustable from 50 to 100 Newtons (force). Used only for switches with in-line actuator SI-QS-SSA.</p>	<ul style="list-style-type: none"> <li>• SI-QS75</li> <li>• SI-QS90</li> </ul>	<p>SI-QS-100</p>




## Replacement Actuator Parts for Safety Interlock Switches (cont'd)

Description		Used With	Model
	<p>Rigid in-line metal (die-cast steel) actuator for doors or covers with a radius of 150 mm or greater.</p>	<ul style="list-style-type: none"> <li>• SI-QS75 (high-force)</li> <li>• SI-QS90 (high-force)</li> </ul>	<p>SI-QS-SSA</p>
	<p>Rigid in-line metal (stamped stainless steel) actuator used for doors or covers with accurate alignment, such as sliding doors. Minimum engagement radius for hinged closures is 150 mm.</p>	<ul style="list-style-type: none"> <li>• SI-LS83</li> <li>• SI-LS100</li> </ul>	<p>SI-QS-SSA-2</p>
	<p>Rigid in-line metal (stamped stainless steel) actuator used for doors or covers with accurate alignment, such as sliding doors. Right-angle mounting flange. Minimum engagement radius for hinged closures is 150 mm.</p>	<ul style="list-style-type: none"> <li>• SI-LS83</li> <li>• SI-LS100</li> </ul>	<p>SI-QS-SSA-3</p>
	<p>Rigid in-line metal (stamped stainless steel) actuator for doors or covers with a radius of 150 mm or greater.</p>	<ul style="list-style-type: none"> <li>• SI-QS75</li> <li>• SI-QS90</li> </ul>	<p>SI-QS-SSA-4</p>
	<p>Flexible in-line metal (die-cast steel) actuator for hinged doors with a radius of 50 mm or greater. Flexes in all directions. Minimum engagement radius for hinged closures is 150 mm.</p>	<ul style="list-style-type: none"> <li>• SI-LS83</li> <li>• SI-LS100</li> <li>• SI-QS75</li> <li>• SI-QS90</li> </ul>	<p>SI-QS-SSU</p>
<p>Replacement terminal cover</p>		<ul style="list-style-type: none"> <li>• SI-LS42</li> </ul>	<p>SI-LS42-COVER</p>
<p>Tamper Proof Screw (One way)</p>		<ul style="list-style-type: none"> <li>• SI-LS42</li> </ul>	<p>SI-LS42-SCREW OW</p>



## Two-Hand Control

Modules monitor the output of each Banner STB self-checking touch button or electromechanical button and deenergizes when the machine operator removes one or both hands from the buttons, providing protection for the worker actuating the hand controls.

Series	Description	Protection Rating	Power Supply
	<b>Two Hand-Control Module</b> page 682	Category 4 (module); Type IIIC	24 V ac/dc, 115 V ac/24 V dc or 230 V ac/24 V dc, depending on model
	<b>STB Buttons</b> page 686	Dependent on controller/module	10 - 30 V dc or 20-30 V ac/dc depending on model
	<b>Run Bar</b> page 690	Dependent on controller/module	10 to 30 V dc



# DUO-TOUCH® SG

## Two-Hand Control Modules



- Modules work with existing electromechanical palm buttons or with Banner's STB Self-Checking Touch Buttons to create a complete, ergonomic two-hand control system
- Anti-tiedown logic requires both touch buttons to be activated within one-half second or less of each other
- Modules easily interface with DUO-TOUCH® Run Bars with STBs for an economical, convenient means for actuation
- Designed to meet OSHA/ANSI Control Reliability requirements and Category 4 per ISO 13849-1 (EN 954-1) and functional Type IIIC Two-Hand Control per ISO 13851 (EN 574)
- AC modules have a complementary DC power supply to power the STB button
- Relay outputs are capable of reliably switching low or high current applications (depending on model)

### DUO-TOUCH® SG Two-Hand Control Modules

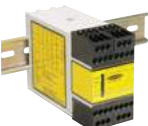

Supply Voltage	Inputs	Safety Outputs	Output Rating	Auxiliary Outputs	Muting	Terminals	Model
24 V ac/dc	2 STB*	2 NO	6 amps	—	—	Removable	AT-FM-10K
115 V ac/24 V dc	2 STB*	4 NO	6 amps	1 NPN, 1 PNP & 1 NC	—	Removable	AT-GM-13A
230 V ac/24 V dc	2 STB*	4 NO	6 amps	1 NPN, 1 PNP & 1 NC	—	Removable	AT-HM-13A

NC = Normally Closed, NO = Normally Open

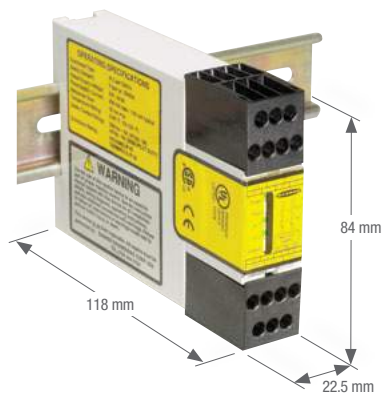
\* May also use two electromechanical push buttons, each with one normally open (NO) and one normally closed (NC) contact (Form C). See data sheets for details.

NOTE: Kits are available which include one DUO-TOUCH SG Safety Module and two STB Touch Buttons. STB Touch Buttons are also available separately. See page 686.

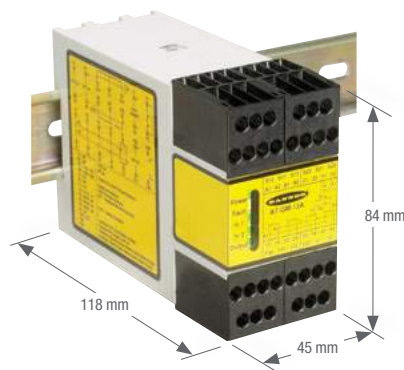
## DUO-TOUCH® SG Kits — Solid-State STB Touch Buttons (Meets Category IIIC)

Kit Components						Kit
DUO-TOUCH® SG Safety Module	STB Touch Buttons (see page 686)	Supply Voltage	Safety Outputs	Auxiliary Outputs	Connection	Includes 2 STB Touch Buttons & a DUO-TOUCH® SG Safety Module
 <b>AT-FM-10K</b>	STBVP6	24 V ac/dc	2 NO	–	2 m	<b>ATK-VP6</b>
	STBVP6Q				4-Pin Mini QD	<b>ATK-VP6Q</b>
	STBVP6Q5				4-Pin Euro QD	<b>ATK-VP6Q5</b>
 <b>AT-GM-13A</b>	STBVP6	115 V ac/ 24 V dc	4 NO	1 NPN, 1 PNP & 1 NC	2 m	<b>ATGMK-VP6</b>
	STBVP6Q				4-Pin Mini QD	<b>ATGMK-VP6Q</b>
	STBVP6Q5				4-Pin Euro QD	<b>ATGMK-VP6Q5</b>
 <b>AT-HM-13A</b>	STBVP6	230 V ac/ 24 V dc	4 NO	1 NPN, 1 PNP & 1 NC	2 m	<b>ATHMK-VP6</b>
	STBVP6Q				4-Pin Mini QD	<b>ATHMK-VP6Q</b>
	STBVP6Q5				4-Pin Euro QD	<b>ATHMK-VP6Q5</b>






NC = Normally Closed, NO = Normally Open




AT-FM-10K Model

AT-GM-13A & AT-HM-13A Models  
(AT-GM-13A shown)

## DUO-TOUCH® SG AT-FM-10K Modules Specifications

Supply Voltage and Current	24 V dc $\pm 15\%$ @ 150 mA (use a SELV-rated supply according to EN IEC 60950, NEC Class 2) 24 V ac $\pm 15\%$ @ 150 mA, 50-60 Hz $\pm 5\%$ (use an NEC Class 2-rated transformer) To comply with UL and CSA standards, the installation's isolated secondary power supply circuit must incorporate a method to limit the overvoltage to 0.8 kV.																
Supply Protection Circuitry	Protected against transient voltages and reverse polarity																
Overvoltage Category	<b>Output relay contact voltage of 1 V to 150 V ac/dc:</b> Category III <b>Output relay contact voltage of 151 V to 250 V ac/dc:</b> Category II (Category III, if appropriate overvoltage reduction is provided, as described in data sheet.)																
Pollution Degree	2																
Safety Outputs	<p>Each normally open output channel is a series connection of contacts from two forced-guided (mechanically linked) relays, K1-K2.</p> <p><b>Contacts:</b> AgNi, 5 <math>\mu</math>m gold-plated</p> <p><b>Low Current Rating:</b> The 5 <math>\mu</math>m gold-plated contacts allow the switching of low current/low voltage. In these low-power applications, multiple contacts can also be switched in series (e.g., "dry switching"). To preserve the gold plating on the contacts, do not exceed the following max. values at any time</p> <table border="0"> <tr> <td><b>Min. voltage:</b> 1V ac/dc</td> <td><b>Max. voltage:</b> 60 V</td> </tr> <tr> <td><b>Min. current:</b> 5 mA ac/dc</td> <td><b>Max. current:</b> 300 mA</td> </tr> <tr> <td><b>Min. power:</b> 5 mW (5 mVA)</td> <td><b>Max. power:</b> 7 W (7 VA)</td> </tr> </table> <p><b>High Current Rating:</b> If higher loads must be switched through one or more of the contacts, the minimum and maximum values of the contact(s) changes to:</p> <table border="0"> <tr> <td rowspan="2"></td> <td><b>Minimum</b></td> <td><b>Maximum</b></td> </tr> <tr> <td><b>Voltage:</b> 15 V ac/dc <b>Current:</b> 30 mA ac/dc <b>Power:</b> 0.45 W (0.45 VA)</td> <td>250 V ac/dc / 24 V dc, 6 A resistive B300, R300 per UL508</td> </tr> <tr> <td rowspan="2"></td> <td><b>Minimum</b></td> <td><b>Maximum</b></td> </tr> <tr> <td><b>Voltage:</b> 15 V ac/dc <b>Current:</b> 30 mA ac/dc <b>Power:</b> 0.45 W (0.45 VA)</td> <td>250 V ac/dc / 24 V dc, 6 A resistive IEC 60947-5-1 AC15 230 V ac, 3A; DC-13: 24 V dc, 2A</td> </tr> </table> <p><b>Mechanical life:</b> 20,000,000 operations <b>Electrical life (switching cycles of the output contacts, resistive load):</b> 150,000 cycles @ 900 VA; 1,000,000 cycles @ 250 VA; 2,000,000 cycles @ 150 VA; 5,000,000 cycles @ 100 VA NOTE: Transient suppression is recommended when switching inductive loads. Install suppressors across load. Never install suppressors across output contacts.</p>	<b>Min. voltage:</b> 1V ac/dc	<b>Max. voltage:</b> 60 V	<b>Min. current:</b> 5 mA ac/dc	<b>Max. current:</b> 300 mA	<b>Min. power:</b> 5 mW (5 mVA)	<b>Max. power:</b> 7 W (7 VA)		<b>Minimum</b>	<b>Maximum</b>	<b>Voltage:</b> 15 V ac/dc <b>Current:</b> 30 mA ac/dc <b>Power:</b> 0.45 W (0.45 VA)	250 V ac/dc / 24 V dc, 6 A resistive B300, R300 per UL508		<b>Minimum</b>	<b>Maximum</b>	<b>Voltage:</b> 15 V ac/dc <b>Current:</b> 30 mA ac/dc <b>Power:</b> 0.45 W (0.45 VA)	250 V ac/dc / 24 V dc, 6 A resistive IEC 60947-5-1 AC15 230 V ac, 3A; DC-13: 24 V dc, 2A
<b>Min. voltage:</b> 1V ac/dc	<b>Max. voltage:</b> 60 V																
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<b>Min. power:</b> 5 mW (5 mVA)	<b>Max. power:</b> 7 W (7 VA)																
	<b>Minimum</b>	<b>Maximum</b>															
	<b>Voltage:</b> 15 V ac/dc <b>Current:</b> 30 mA ac/dc <b>Power:</b> 0.45 W (0.45 VA)	250 V ac/dc / 24 V dc, 6 A resistive B300, R300 per UL508															
	<b>Minimum</b>	<b>Maximum</b>															
	<b>Voltage:</b> 15 V ac/dc <b>Current:</b> 30 mA ac/dc <b>Power:</b> 0.45 W (0.45 VA)	250 V ac/dc / 24 V dc, 6 A resistive IEC 60947-5-1 AC15 230 V ac, 3A; DC-13: 24 V dc, 2A															
Output Response Time	35 milliseconds maximum																
Input Requirements	Outputs from actuating devices must each be capable of switching 25 mA @ 24 V dc (nominal).																
Simultaneity Monitoring Period	$\leq 500$ milliseconds																
Status Indicators	<table border="0"> <tr> <td><b>4 green LEDs:</b></td> <td><b>1 red LED:</b></td> </tr> <tr> <td>Power ON</td> <td>Fault</td> </tr> <tr> <td>Input 1 energized</td> <td></td> </tr> <tr> <td>Input 2 energized</td> <td></td> </tr> <tr> <td>Output</td> <td></td> </tr> </table>	<b>4 green LEDs:</b>	<b>1 red LED:</b>	Power ON	Fault	Input 1 energized		Input 2 energized		Output							
<b>4 green LEDs:</b>	<b>1 red LED:</b>																
Power ON	Fault																
Input 1 energized																	
Input 2 energized																	
Output																	
Construction	Polycarbonate housing																
Environmental Rating	IEC IP20																
Mounting	Mounts to standard 35 mm DIN rail track. Safety Module must be installed inside an enclosure rated NEMA 3 (IP54), or better.																
Vibration Resistance	10 to 55 Hz @ 0.35 mm displacement per IEC 60068-2-6																
Operating Conditions	<b>Temperature:</b> 0° to +50 °C <b>Relative humidity:</b> 90% @ +50 °C (non-condensing)																
Design Standards	 : Cat. 4 PL e, per EN ISO 13849-1; SIL 3 per IEC 61508 and IEC 62061; Type IIIc per ISO 13851 (EN574) (when used with STBs or hard contacts)																
Certifications	  <b>PRESS CONTROL 8N35</b>																

## DUO-TOUCH® SG AT-..M-13A Modules Specifications

Supply Voltage and Current	<b>AT-GM-13A:</b> 115 V ac, ±15%; 50/60 Hz & 24 V dc, ±15%, 10% max. ripple <b>AT-HM-13A:</b> 230 V ac, ±15%; 50/60 Hz & 24 V dc, ±15%, 10% max. ripple											
Power Consumption	Approx. 4 W/7 VA											
Supply Protection Circuitry	Protected against transient voltages and reverse polarity											
Safety Outputs (including Auxiliary NC output 51/52)	<p>Outputs (K1 and K2): four redundant (total of eight) forced-guided safety relay contacts</p> <p><b>Contact ratings:</b></p> <table border="0"> <tr> <td><b>Min. voltage:</b> 15V ac/dc</td> <td><b>Max. voltage:</b> 250 V ac or 250 V dc</td> </tr> <tr> <td><b>Min. current:</b> 30 mA</td> <td><b>Max. current:</b> 6A ac or dc (resistive load)</td> </tr> <tr> <td><b>Min. power:</b> 0.45 VA (0.45 W)</td> <td><b>Max. power:</b> 1500 VA (200 W)</td> </tr> <tr> <td colspan="2"><b>Mechanical life:</b> 50,000,000 operations</td> </tr> <tr> <td colspan="2"><b>Electrical life:</b> 150,000 cycles (typically @ 1.5 kVA switching power)</td> </tr> </table> <p>NOTE: Transient suppression is recommended when switching inductive loads. Install suppressors across load. Never install suppressors across output contacts.</p>		<b>Min. voltage:</b> 15V ac/dc	<b>Max. voltage:</b> 250 V ac or 250 V dc	<b>Min. current:</b> 30 mA	<b>Max. current:</b> 6A ac or dc (resistive load)	<b>Min. power:</b> 0.45 VA (0.45 W)	<b>Max. power:</b> 1500 VA (200 W)	<b>Mechanical life:</b> 50,000,000 operations		<b>Electrical life:</b> 150,000 cycles (typically @ 1.5 kVA switching power)	
<b>Min. voltage:</b> 15V ac/dc	<b>Max. voltage:</b> 250 V ac or 250 V dc											
<b>Min. current:</b> 30 mA	<b>Max. current:</b> 6A ac or dc (resistive load)											
<b>Min. power:</b> 0.45 VA (0.45 W)	<b>Max. power:</b> 1500 VA (200 W)											
<b>Mechanical life:</b> 50,000,000 operations												
<b>Electrical life:</b> 150,000 cycles (typically @ 1.5 kVA switching power)												
Auxiliary Supply Voltage (for Solid-State outputs)	24 V dc @ 1A (between Y30 & Y33)											
Auxiliary Solid-State Output Current	500 mA max., short circuit protected (Y32 or Y33)											
Output Response Time	35 milliseconds max. ON/OFF											
Input Requirements	Outputs from actuating devices (1 NO and 1 NC) must each be capable of switching 20 mA @ 12 V dc.											
Simultaneity Monitoring Period	≤ 500 milliseconds											
Z1/Z2 Courtesy Voltage	24 V dc @ 150 mA (for STB button power)											
External Device Monitoring (EDM)	One pair of terminals (Y1 and Y2) are provided to monitor the state of external devices controlled by the safety outputs. Each device must be capable of switching 15 to 30V dc at 10-50 mA.											
Status Indicators	<table border="0"> <tr> <td><b>4 green LEDs:</b></td> <td><b>1 red LED:</b></td> </tr> <tr> <td>Power ON</td> <td>Fault</td> </tr> <tr> <td>Input 1 energized</td> <td></td> </tr> <tr> <td>Input 2 energized</td> <td></td> </tr> <tr> <td>Output</td> <td></td> </tr> </table>		<b>4 green LEDs:</b>	<b>1 red LED:</b>	Power ON	Fault	Input 1 energized		Input 2 energized		Output	
<b>4 green LEDs:</b>	<b>1 red LED:</b>											
Power ON	Fault											
Input 1 energized												
Input 2 energized												
Output												
Environmental Rating	Polycarbonate. Rated NEMA 1; IP20											
Mounting	Mounts to standard 35 mm DIN rail track. Safety Module must be installed inside an enclosure rated NEMA 3 (IP54), or better.											
Vibration Resistance	10 to 55 Hz @ 0.35 mm displacement per IEC 60068-2-6											
Operating Conditions	<b>Temperature:</b> 0 to +50 °C <b>Relative humidity:</b> 90% @ +50 °C (non-condensing)											
Design Standards	Designed to comply with Category 4 per ISO 13849-1 (EN 954-1); Type IIIC per ISO 13851 (EN 574)											
Certifications		<p><b>Important Notice:</b> European Community Machinery Directive 2006/42/EC The DUO-TOUCH SG AT-..M-13A Two-Hand Control Modules comply with Machinery Directive 98/37/EC, but not with Machinery Directive 2006/42/EC. Therefore, these modules can only be installed as a replacement component within the European Union (EU). For more information, please see <a href="http://www.bannerengineering.com/144763">www.bannerengineering.com/144763</a> or call 1-888-373-6767.</p>										

# Self-Checking Touch Buttons (STB)



## Two-Hand Control

- Provide the highest level of safety for two-hand control input devices via redundant microprocessor and optical path
- Features ergonomic design to prevent repetitive motion stress by responding to a finger blocking light rather than to pressure
- Includes yellow field cover to prevent unintended switching
- For safety applications, STB buttons must be used with DUO-TOUCH® SG Two-Hand control modules, Safety Controller or comparable control Type IIC Two-Hand system


### STB Self-Checking Buttons – Solid-State Outputs, 10-30 V dc

Connection	Upper Housing	Solid-State Outputs	Models
2 m	Polyetherimide	2 Complementary PNP (1 ON, 1 OFF)	STBVP6
4-Pin Mini QD			STBVP6Q
4-Pin Euro QD			STBVP6Q5

### STB Self-Checking Buttons – e/m Relay Outputs, 20-30 V ac/dc

Connection	Upper Housing	Relay Outputs	Models
2 m	Polyetherimide	2 Complementary SPST (1 NC, 1 NO)	STBVR81
5-Pin Mini QD			STBVR81Q
5-Pin Euro QD			STBVR81Q6

For more specifications see page 689.

 Connection options: A model with a QD requires a mating cordset.  
For 9 m cable, add suffix W/30 to the 2 m model number (example, STBVP6 W/30).

## HOOK SWITCHES

## TWO-HAND CONTROL

## LASER SCANNERS

## MODULES



**Euro-Style to Flying Leads**  
Straight connector models listed; for right-angle, add **RA** to the end of the model number (example, **MQDC-406RA**)

4-Pin

**MQDC-406**  
2 m (6.5')  
**MQDC-415**  
5 m (15')  
**MQDC-430**  
9 m (30')

5-Pin

**MQDC1-406**  
2 m (6.5')  
**MQDC1-415**  
5 m (15')  
**MQDC1-430**  
9 m (30')



**Mini-Style**  
Straight connector models only

4-Pin

**MBCC-406**  
2 m (6.5')  
**MBCC-412**  
4 m (12')  
**MBCC-415**  
9 m (30')

5-Pin

**MBCC-506**  
2 m (6.5')  
**MBCC-512**  
4 m (12')  
**MBCC-515**  
9 m (30')

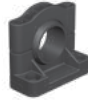
Additional cordset information is available.  
See page 758



SMB30A



SMB30MM



SMB30SC



SMBAMS30P



SMBAMS30RA

Additional bracket information is available.  
See page 737



Field Covers

**OTC-1-BK**  
Black  
**OTC-1-GN**  
Green  
**OTC-1-RD**  
Red  
**OTC-1-YW**  
Yellow

**OTCL-1-BK**  
Black  
**OTCL-1-GN**  
Green  
**OTCL-1-RD**  
Red  
**OTCL-1-YW**  
Yellow




STB models



STB models with cover

## STB Self-Checking Buttons Specifications

<b>Supply Voltage and Current</b>	<b>STBVP6 Models:</b> 10 to 30 V dc @ 75 mA, typical <b>STBVR81 Models:</b> 20 to 30 V ac/dc or 20 V to 30 V ac (peak-to-peak value), (50/60 Hz $\pm$ 5%) @ 75 mA
<b>Supply Protection Circuitry</b>	Protected against transient voltages and reverse polarity
<b>Output Configuration</b>	<b>STBVP6 Models:</b> Complementary PNP (sourcing) open-collector transistors <b>STBVR81 Models:</b> Complementary electromechanical relay
<b>Output Rating</b>	<b>STBVP6 Models (solid-state outputs):</b> Max. load: 150 mA ON-state saturation voltage: +V(supply) -1.5V OFF-state leakage current: less than 1 $\mu$ A  <b>STBVR81 Models (electromechanical relay):</b> Max. switching voltage: 125 V dc/150 V ac Max. switching current: 1A @ 24 V dc; 0.4A @ 125V ac (resistive loads) Max. resistive load power: 24 W dc; 50 VA ac Mechanical life of relay: 109 cycles Electrical life of relay: 1.5 x 10 <sup>5</sup> cycles at 1 amp 24 V resistive
<b>Output Protection</b>	All models protected against false pulse on power-up. Models with solid-state outputs have overload and short-circuit protection.
<b>Output Response Time</b>	20 milliseconds ON/OFF
<b>Indicators</b>	<b>2 green LED indicators:</b> <b>Power:</b> ON –power applied OFF –power off <b>Output/fault:</b> ON –button is activated OFF –button is deactivated Flashing –internal fault or blocked button on power-up detected
<b>Construction</b>	Totally encapsulated, non-metallic enclosure. Black Polyetherimide (PEI) upper housing; fiber-reinforced PBT polyester base. Electronics fully epoxy-encapsulated. Supplied with polypropylene (TP) field cover.
<b>Environmental Rating</b>	Meets NEMA standards 1, 3, 4, 4X, 12 and 13; IP66
<b>Connections</b>	PVC-jacketed 2 m cables standard on integral-cable kits; QD fitting, depending on model. Accessory QD mating cordsets required for QD models. QD cordsets are ordered separately. <b>STBVP6:</b> 4-wire (4-pin Mini-style QD, add suffix <b>Q</b> or 4-pin Euro-style QD, add suffix <b>Q5</b> ) <b>STBVR81:</b> 5-wire (5-pin Mini-style QD, add suffix <b>Q</b> or 5-pin Euro-style QD, add suffix <b>Q6</b> ) Integral 9 m cables are also available by adding suffix <b>W/30</b> to the 2 m model number.
<b>Ambient Light Immunity</b>	Up to 100,000 lux
<b>Applicable Agency Standards</b>	(Used with an AT-FM-10K module or an SC22-3 Safety Controller) Analysis of measures for fault avoidance and fault control according to SIL3 (IEC 61508 and IEC 62061) and Category 4 (EN ISO 13849-1) passes EMI/RFI test levels as specified in IEC61496 and IEC62061.
<b>Operating Conditions</b>	<b>Temperature:</b> 0° to +50 °C <b>Relative humidity:</b> 90% @ +50 °C (non-condensing)
<b>Application Notes</b>	<b>Environmental considerations for models with Polyetherimide (PEI) upper housings:</b> The Polyetherimide upper housing will become brittle with prolonged exposure to outdoor sunlight. Window glass effectively filters ultraviolet light and provides excellent protection from sunlight. Avoid contact with strong alkalis, hydrocarbons and fuels. Clean periodically using mild soap solution and a soft cloth.
<b>Two-Hand Control System Note</b>	When the STBVP6 is used with Banner's SC22-3 Safety Controller in a two-hand control system, the power supply to the STBVP6 must be of the same voltage that is used to power the Safety Controller and they must have a common supply ground.
<b>Certifications</b>	



# DUO-TOUCH® Run Bar with STBs

## Two-Hand Control



- Provide a convenient and economical means for safeguarding when interfaced with DUO-TOUCH® Two-Hand Control Modules or comparable control systems
- Minimizes risk of defeat and accidental machine actuation
- Offers ergonomic design for reduced hand, wrist and arm stress
- Constructed of robust, 13-gauge cold-rolled steel
- Provides knockouts for wiring flexibility and installation of accessories such as EZ-LIGHT™ indicators
- Meets ANSI B11.19 and ISO 13851 (EN 574) standards when monitored by Type IIIC Two-Hand Control logic device (e.g., AT series Two-Hand Control modules, see page 680)

## DUO-TOUCH® Run Bars with STB Self-Checking Touch Buttons

Connection	STB Touch Buttons		Environmental Rating	E-Stop Button	Models*
	Model	Output			
Terminal Strip	STBVP6	Solid-State	IP20	Not included	STBVP6-RB1
8-pin Mini QD**		Complementary PNP		Not included	STBVP6-RB1Q8
Terminal Strip	STBVP6	Solid-State Complementary PNP	IP20	Model SSA-EBM-02L E-stop button (two NC safety contacts)	STBVP6-RB1E02
Terminal Strip	STBVP6	Solid-State	IP65	Not included	STBVP6-RB2
8-pin Mini QD**		Complementary PNP		Not included	STBVP6-RB2Q8
Terminal Strip	STBVP6	Solid-State Complementary PNP	IP65	Model SSA-EBM-02L E-stop button (two NC safety contacts)	STBVP6-RB2E02

\* DUO-TOUCH Run Bar kits available with two-hand control module. Contact factory for combinations.

\*\* Order QDS-8..C cordsets separately.





8-Pin

**QSD-815C**  
4m (15')  
**QSD-825C**  
8 m (25')  
**QSD-850C**  
15 m (50')  
**QSD-875C**  
23 m (75')

**Mini-Style**  
Straight connector  
models only



STBA-RB1-MB1\*



STBA-RB1-MB2\*



STBA-RB1-MB3\*

\* When used with STBVP6-RB2 models change ..-RB1-.. to ..-RB2-..

Telescoping Stands



STBA-RB1-S1



STBA-RB1-S2

\* When used with STBVP6-RB2 models change ..-RB1-.. to ..-RB2-..  
NOTE: DUO-TOUCH SG Run Bars are sold separately.

Additional cordset information is available.  
See page 758

Additional bracket information is available.  
See page 753

## Run Bar Indicators



T30GRYB11P



K50LGRYB11P

## DUO-TOUCH® Run Bars with STB Self-Checking Touch Buttons

Supply Voltage and Current	10 to 30 V dc @ 75 mA (each button) Power consumption: approx. 1.8W @ 24 V dc (with no output load), for each STB
Supply Protection Circuitry	Protected against transient voltages and reverse polarity
Output Configuration	Complementary PNP (sourcing) open-collector transistors
Output Rating	<b>Maximum load:</b> 150 mA <b>ON-state saturation voltage:</b> +V(supply)-1.5V <b>OFF-state leakage current:</b> < 1 µA
Output Protection Circuitry	Protected against false pulse on power-up; overload and short-circuit protection.
Output Response Time	20 milliseconds ON/OFF
STB Indicators	<b>2 green LEDs:</b> <b>Power:</b> ON—power applied <b>Output/fault:</b> ON—button is activated OFF—button is deactivated Flashing internal fault or blocked button on power-up detected
Construction	<b>STB Buttons:</b> Totally encapsulated, non-metallic enclosure; black polyetherimide yoke housing; fiber-reinforced polyester base; electronics fully epoxy-encapsulated. <b>E-Stop Button:</b> Polyamide red button with metal base. <b>Run Bar Housing:</b> 13 ga. cold rolled steel with powder coat paint; polypropylene copolymer STB mount.
Environmental Rating	STBVP6-RB1 Run Bar models meet IP20 STBVP6-RB2 Run Bar models meet IP65
Connections	<b>Models STBVP6-RB1/RB2 and -RB1E02/RB2E02:</b> Terminal strip connections inside run bar housing (STBs are pre-wired). E-stop button and EZ-LIGHT indicator (if used) are wired separately. <b>Models STBVP6-RB1Q8/RB2Q8:</b> 8-pin Mini-style quick-disconnect fitting. Accessory QD mating cordsets required for QD models. QD cordsets are ordered separately.
Ambient Light Immunity	Up to 100,000 lux
EMI/RFI Immunity	Immune to EMI and RFI noise sources, per IEC 60947-5-2
Operating Conditions	<b>Temperature:</b> 0° to +50 °C <b>Relative humidity:</b> 90% @ +50 °C (non-condensing)
Certification	

STB Buttons:   LISTED



## Laser Scanners

Safety laser scanners provide a safety solution for mobile vehicles and stationary applications, such as the interior of robotic work cells, that cannot be solved by other safeguarding solutions.



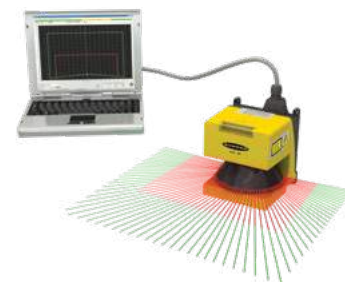
# AG4 Series

## Safety Laser Scanner

- Two-dimensional laser scanners effectively protect personnel, as well as stationary and mobile systems within a user designated area.
- Eight protective warning field pairs are individually defined using a PC
- Scanner has 0.36° lateral resolution and detects objects in 190° working zone
- The highly flexible protective and warning fields can be set to match the shape of the work area
- Exceeds OSHA/ANSI Control Reliability requirements, certified to cTUVus, and CE certified to Type 3, Cat 3 PLd, and SIL 2
- Compact design with a rugged, die-cast aluminum housing for simple installation into work areas
- Cordsets and brackets see page 695

### AG4 Safety Laser Scanners

Protective Fields	Range		Safety Output	Aux. Outputs	Scanning Angle	Response Time	Model*
	Warning Fields						
30 mm Resolution = 1.6 m 40 mm Resolution = 2.2 m 50 mm Resolution = 2.8 m 70 mm Resolution = 4.0 m 150 mm Resolution = 4.0 m	150 mm Resolution = 15 m		2 PNP OSSD	2 PNP	190°	80 ms (Default) adjustable to 640 ms	AG4-4E
30 mm Resolution = 1.6 m 40 mm Resolution = 2.2 m 50 mm Resolution = 2.8 m 70 mm Resolution = 6.25 m 150 mm Resolution = 6.25 m	150 mm Resolution = 15 m		2 PNP OSSD	2 PNP	190°	80 ms (Default) adjustable to 640 ms	AG4-6E



### Configuration and Diagnostic Software

Graphically adjust all device parameters and the protective field contours to both local conditions and required safety distances.

\* Model includes scanner, plugs and CD with diagnostic and configuration software. Cordset ordered separately.

# Test Box



With the test box it's possible to test the following Scanner functions without hooking it up to the machine interface:

- Can be used as a "cloning" device to load the same configuration into multiple scanners
- Switch over between the different field pairs
- Indication of the Safety OSSD outputs (when entering protective field)
- Indication of the Alarm outputs (when entering warning field)
- Machine Interface-to-Test Box cordset included
- Power supply not included

## Test Box for AG4 Safety Laser Scanners

Description	Model
AG4 Test Box	AG4-TB1

## AG4 Safety Laser Scanner Kits

You can purchase a kit that contains a laser scanner, optional interfacing solutions and cordsets.

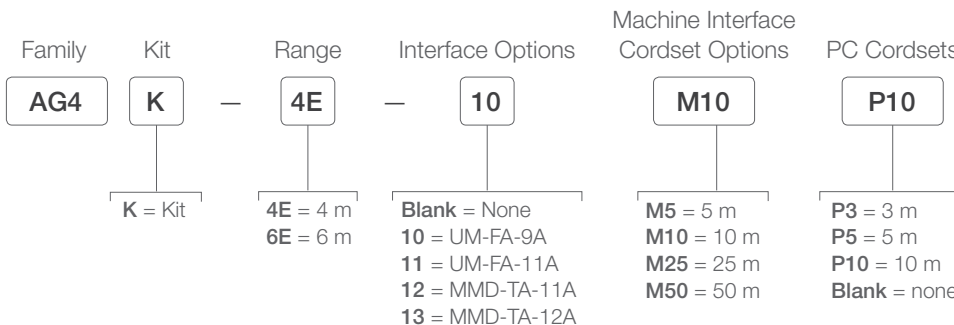


- Scanner page 693
- Interfacing Options page 697
- Cordsets page 695

### To Order:

1. Choose an optional interfacing solution, such as an **UM-FA-9A** or **-11A** universal input safety module.
2. Choose a DB15 machine interface cordset, such as **AG4-CPD15...**
3. Choose a PC communication cordset, such as **AG4-PCD9...**

See [www.bannerengineering.com](http://www.bannerengineering.com) for complete documentation and a current listing of accessories.





AG4-CPD15-5  
5 m  
AG4-CPD15-10  
10 m  
AG4-CPD15-25  
25 m  
AG4-CPD15-50  
50 m

DB15 Machine  
Interface



DB9 PC  
Communication  
RS-232 Serial  
Protocol

AG4-PCD9-3  
3 m  
AG4-PCD9-5  
5 m  
AG4-PCD9-10  
10 m

DB9 to USB†

AG4-PCD9USB-1  
1 m

† Not recommended for use with AG4-PCD9-10

Additional cordset information is available.  
See page 758



AG4-MBK1

Additional bracket information is available.  
See page 729

### Misc. Replacement Parts

Description	Model
Replacement window	AG4-WIN1
Replacement configuration plug, straight	AG4-CP
Replacement PC plug, straight	AG4-PCD9
Cleaning set (150 ml fluid)	AG4-CLN1
Cleaning set (1000 ml fluid)	AG4-CLN2



### Interface



Additional accessory information is available.  
See page 697



## AG4 Laser Scanner Specifications

Supply Voltage (UB)	24 V dc (+20% / -30%) Power supply in acc. with IEC 742 with safe supply isolation and compensation with voltage dips of up to 20 milliseconds in acc. with EN 61496-1. <b>Over current protection:</b> Via 1.6 A fuse, melting fuse in the cabinet <b>Over-voltage protection:</b> Over-voltage protection with safe limit stop <b>Protective earth conductor:</b> Connection not permitted														
Supply Current	420 mA approx. (use 2.5 A power supply)														
Fuse (power supply)	1.6A normal blow, medium time lag fuse (user supplied)														
Response Time	Min. 80 milliseconds (2 scans)      Max. 640 milliseconds (16 scans)														
Wavelength	905 nm														
Protection Field (Sensing Range)	<table border="0"> <tr> <td><b>AG4-4E:</b></td> <td><b>AG4-6E:</b></td> </tr> <tr> <td><b>150 mm resolution:</b> 200 mm to 4.0 m (radius)</td> <td><b>150 mm resolution:</b> 200 mm to 6.25 m (radius)</td> </tr> <tr> <td><b>70 mm resolution:</b> 200 mm to 4.0 m (radius)</td> <td><b>70 mm resolution:</b> 200 mm to 6.25 m (radius)</td> </tr> <tr> <td><b>50 mm resolution:</b> 200 mm to 2.8 m (radius)</td> <td><b>50 mm resolution:</b> 200 mm to 2.8 m (radius)</td> </tr> <tr> <td><b>40 mm resolution:</b> 200 mm to 2.2 m (radius)</td> <td><b>40 mm resolution:</b> 200 mm to 2.2 m (radius)</td> </tr> <tr> <td><b>30 mm resolution:</b> 200 mm to 1.6 m (radius)</td> <td><b>30 mm resolution:</b> 200 mm to 1.6 m (radius)</td> </tr> <tr> <td colspan="2">Sensing object reflectance: Minimum 1.8%</td> </tr> </table>	<b>AG4-4E:</b>	<b>AG4-6E:</b>	<b>150 mm resolution:</b> 200 mm to 4.0 m (radius)	<b>150 mm resolution:</b> 200 mm to 6.25 m (radius)	<b>70 mm resolution:</b> 200 mm to 4.0 m (radius)	<b>70 mm resolution:</b> 200 mm to 6.25 m (radius)	<b>50 mm resolution:</b> 200 mm to 2.8 m (radius)	<b>50 mm resolution:</b> 200 mm to 2.8 m (radius)	<b>40 mm resolution:</b> 200 mm to 2.2 m (radius)	<b>40 mm resolution:</b> 200 mm to 2.2 m (radius)	<b>30 mm resolution:</b> 200 mm to 1.6 m (radius)	<b>30 mm resolution:</b> 200 mm to 1.6 m (radius)	Sensing object reflectance: Minimum 1.8%	
<b>AG4-4E:</b>	<b>AG4-6E:</b>														
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<b>50 mm resolution:</b> 200 mm to 2.8 m (radius)	<b>50 mm resolution:</b> 200 mm to 2.8 m (radius)														
<b>40 mm resolution:</b> 200 mm to 2.2 m (radius)	<b>40 mm resolution:</b> 200 mm to 2.2 m (radius)														
<b>30 mm resolution:</b> 200 mm to 1.6 m (radius)	<b>30 mm resolution:</b> 200 mm to 1.6 m (radius)														
Sensing object reflectance: Minimum 1.8%															
Warning Field	<b>Resolution:</b> 150 mm (at 15 m) <b>Sensing range (radius):</b> 200 mm to 15 m <b>Sensing object reflectance:</b> Minimum 20%														
Monitored Area	0-50 m														
Scanning Angle	max. 190°														
Output Signal Switching Devices (OSSD1, OSSD2)	PNP open-collector transistor 2 outputs: short circuit proofed <b>Rated operating voltage:</b> supply voltage (UB) -3.2 V <b>Max. source current:</b> 250 mA <b>Residual voltage:</b> 3.2 V or less <b>Operation mode:</b> <b>No object in protection field:</b> ON Object inside protection field: OFF <b>Response Time:</b> Min. 80 milliseconds (2 scans) to max. 640 milliseconds (16 scans) switching method														
Alarm (Auxiliary) Outputs 1 & 2	PNP open-collector transistor <b>Rated operating voltage:</b> supply voltage (UB) -4 V <b>Max. source current:</b> 100 mA <b>Residual voltage:</b> 4 V or less <b>Operation mode:</b> Switching method of operation mode (set below) <b>Scanner at normal operation:</b> ON <b>Abnormal operation:</b> OFF <b>No object inside Warning Field:</b> ON Object inside Warning Field: OFF <b>Response Time:</b> Min. 80 milliseconds (2 scans) to max. 640 milliseconds (16 scans) switching method														
Start-Restart	+24 V opto-uncoupled, dynamically monitored														
Field Pair Switchover	Selection of 4 or 8 field pairs via 4 control lines, +24 V opto-uncoupled, dynamically monitored, logically 1 = field pair activated														
Input Signal Definition	<b>High/logical 1:</b> 16-30 V <b>Low/logical 0:</b> less than 3 V														
Laser Protection Class	Class 1 (IEC 60825-1)														
Number of Field Pair Configurations	8 Field Pairs in combination of Protective Field and Warning Field can be switched over by external input. Field Pair number 8 is not user configurable.														
Environmental Rating	IP65 (per IEC 60529)														
Housing Material	Die-cast aluminum with a thermoplastic resin window														
Weight	2.1 kg														
Operating Conditions	<b>Temperature:</b> 0° to 50 °C <b>Humidity:</b> Max. 95%														
Indicators	Five LEDs on front show Safety Sensor Status														
Shock and Vibration	10 to 150 Hz frequency, 5 G max. (50 m/s <sup>2</sup> approx.) in X, Y and Z directions for twenty times each														
Max. Cordset Length	<b>15-pin plug:</b> 50 m <b>9-pin plug:</b> 10 m (RS-232C), 50 m (RS-422)														
Design Standards	IEC 61496-1/-3 (Type 3), ISO 13849-1 (Category 3, PLd), IEC 61508-1 to -7 (SIL2) and IEC 62061 SIL CL2														
Certifications	  <p>TUV Rheinland of North America, a Nationally Recognized Test Laboratory (NRTL) in the United States according to OSHA 29 CFR 1910.7, and accredited by the Standards Council of Canada to test and certify products to Canadian National Standards, has certified the AG4 Laser Scanner to all applicable U.S. and Canadian National Standards. The cTUVus mark is recognized throughout the United States and Canada by OSHA and the SCC.</p>														



AG4 Interfacing Products

	Description	Models	Product Information
Interface Modules and Controllers	 <ul style="list-style-type: none"> <li>• Universal input safety modules monitors both contact-based and PNP solid-state input devices</li> <li>• Convenient plug-in terminal blocks on a 22.5 mm DIN-rail mountable housing</li> </ul>	<p>UM-FA-9A (3 NO)</p> <p>UM-FA-11A (2 NO/1NC)</p>	Page 698
	 <ul style="list-style-type: none"> <li>• Control system monitors a variety of input devices such as e-stop buttons, rope pulls, enabling devices, protective safety stops, interlocked guards or gates, optical sensors, two-hand controls and safety mats</li> <li>• Intuitive programming environment for easy implementation</li> <li>• Configure inputs, outputs and functionality of the controller for more usability</li> <li>• Base controller allows eight of the 26 inputs to be configured as outputs for efficient terminal utilization</li> <li>• Ethernet models available providing up to 64 virtual status outputs, fault diagnostic codes and messages</li> </ul>	<p>SC26-2</p> <p>SC26-2D</p> <p>SC26-2E</p> <p>SC26-2DE</p>	Page 588
	 <ul style="list-style-type: none"> <li>• One controller provides configurable monitoring of multiple safety devices</li> <li>• 22 input terminals can monitor both contact-based and PNP solid-state input devices</li> <li>• 3 pairs of independent solid-state safety outputs can be used with selectable one- or two-channel external device monitoring</li> <li>• Ten configurable non-safety status outputs track inputs, outputs, lockout, I/O status and other functions</li> <li>• All SC22-3 modules use 24 V dc</li> <li>• 10/100 Base TX Ethernet communication option using EtherNet/IP and Modbus TCP protocols (SC22-3E models)</li> </ul>	<p>SC22-3-S...</p> <p>SC22-3-C...</p> <p>SC22-3E-S...</p> <p>SC22-3E-C...</p>	Page 584
Muting Modules	 <ul style="list-style-type: none"> <li>• The Muting Module temporarily inhibits a safety light screen so materials can safely pass through the screen without stopping the machinery</li> <li>• The module uses redundant microcontroller-based logic</li> <li>• MMD Modules can be used as dual controllers when muting function is not used</li> </ul>	<p>MMD-TA-12B</p> <p>MMD-TA-11B</p>	Page 710

NC = Normally closed, NO = Normally open





## Safety Modules

Industrial safety controllers and modules provide an interface between safety devices and the machines; monitoring those devices for an easy-to-use safety control solution.

Series	Description	Safety Rating	Safety Outputs	Aux Outputs	Power Supply
	<b>E-Stop &amp; Guard</b> Modules monitor contacts of E-stop switches, guard interlock switches or the outputs of other safety modules. page 699	Category 2 or 4, depending on model	2 NO, 3 NO, 4 NO	1 NC, 1 NC & 2 PNP	24 V ac/dc, 115 V ac & 12-24 V dc, 230 V ac & 12-24 V dc or 24 V dc
	<b>Universal Input</b> Modules monitor one or two solid-state PNP or relay contact outputs from safety or non-safety devices, such as sensors or safety light screens. page 706	Category 2, 3 or 4 PLe	3 NO or 2 NO	1 NC, depending on model	24 V ac/dc
	<b>Safety Mat Monitoring</b> Modules monitor one 4-wire safety mat (or multiple connected in series). page 708	Category 3 (with mat)	4 NO	1 NC & 2 PNP	115 V ac & 12-24 V dc or 230 V ac & 12-24 V dc
	<b>Muting</b> Modules suspend safeguarding during non-hazardous time in the machine's cycle. page 710	Category 2, 3 or 4 PLe	2 PNP OSSD or 2 NO	1 PNP or 1 NC	24 V dc
	<b>Safe Speed</b> Modules monitor two sensors with PNP outputs for rotation and linear movements. page 714	Category 3 PLe	2 NO	1 NC	24 V ac/dc
	<b>Interface Relay</b> Dual input accepts the safety output of a safety device with solid-state or contact outputs and external device monitoring. page 716	Category 2, 3 or 4 (Depends on hookup)	3 NO or 2 NO	1 NC, depending on model	24 V dc
	<b>Extension Relay</b> Contact expansion for safety modules with contact outputs and external device monitoring. page 718	Category 2, 3 or 4 (Depends on hookup)	4 NO or 4 NO (w/delay)	—	24 V dc or 24 V ac/dc, depending on model

# E-Stop & Interlocked Guard

## Safety Modules



- Modules monitor positive-opening E-Stop and interlocking switches for proper operation, contact failure or wiring faults
- AC and DC models available
- Module goes into lockout mode if fault is detected
- Housing are rugged polycarbonate and mount to standard 35 mm DIN rail
- Functional Stop Category 0 per NFPA79 and IEC 60204-1
- Relay outputs are capable of reliably switching low or high current applications (depending on model)

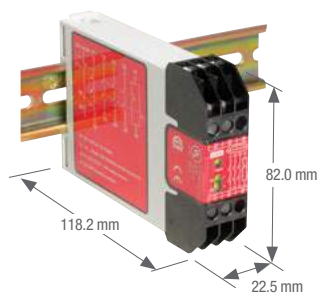
## E-Stop & Guard Safety Modules

Supply Voltage	Inputs	Safety Outputs	Aux. Outputs	Output Rating	Output Response Time	Model
24 V ac/dc	1 NC & 1 NO (single or dual)	2 NO	—	6 amps	35 ms	GM-FA-10J
24 V ac/dc	1 NC (single) or 2 NC (dual)	3 NO	—	6 amps	25 ms	ES-FA-9AA
24 V ac/dc	1 NC (single) or 2 NC (dual)	2 NO	1 NC	7 amps	25 ms	ES-FA-11AA
24 V ac/dc	1 NC (single)	3 NO	1 NC	6 amps	35 ms	ES-FA-6G
115 V ac & 12-24 V dc	1 NC (single) or 2 NC (dual)	4 NO	1 NC & 2 PNP	6 amps	25 ms	ES-UA-5A
230 V ac & 12-24 V dc	1 NC (single) or 2 NC (dual)	4 NO	1 NC & 2 PNP	6 amps	25 ms	ES-VA-5A

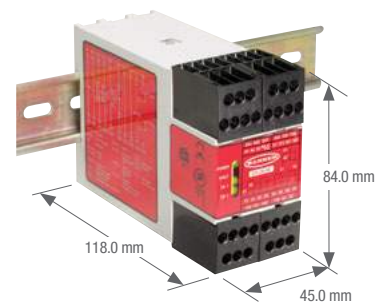
NC = Normally Closed Relay, NO = Normally Open Relay



ES-FA-..AA & GM-FA-10J Models








ES-FA-6G Models



ES-..A-5A Models










## GM-FA-10J Guard Monitoring Module Specifications

Supply Voltage and Current	24 V dc $\pm 15\%$ @ 150 mA (SELV-rated supply according to EN IEC 60950, NEC Class 2) 24 V ac $\pm 15\%$ @ 150 mA, 50-60 Hz +/- 5% (NEC Class 2-rated transformer) <b>Power consumption:</b> approx. 3 VA / 3 W To comply with UL and CSA standards, the isolated secondary power supply circuit in the installation must incorporate a method to limit the overvoltage to 0.8 kV
Supply Protection Circuitry	Protected against transient voltages and reverse polarity
Overvoltage Category	<b>Output relay contact voltage of 1 V to 150 V ac/dc:</b> Category III <b>Output relay contact voltage of 151 V to 250 V ac/dc:</b> Category II (Category III, if appropriate overvoltage reduction is provided, as described in data sheet.)
Pollution Degree	2
Output Configuration	Each normally open output channel is a series connection of contacts from two forced-guided (mechanically linked) relays, K1-K2 <b>Contacts:</b> AgNi, 5 $\mu$ m gold-plated <b>Low Current Rating:</b> The 5 $\mu$ m gold-plated contacts allow the switching of low current/low voltage. In these low-power applications, multiple contacts can also be switched in series (e.g., "dry switching") To preserve the gold plating on the contacts, do not exceed the following max. values at any time: <b>Min. voltage:</b> 1 V ac/dc <b>Max. voltage:</b> 60 V <b>Min. current:</b> 5 mA ac/dc <b>Max. current:</b> 300 mA <b>Min power:</b> 5 mW (5 mVA) <b>Max. power:</b> 7 W (7 VA) <b>High Current Rating:</b> If higher loads must be switched through one or more of the contacts, the minimum and maximum values of the contact(s) changes to:  <b>Minimum:</b> <b>Maximum:</b> <b>Voltage:</b> 15 V ac/dc      250 V ac/24 V dc, 6A resistive <b>Current:</b> 30 mA ac/dc      B300, R300 per UL508 <b>Power:</b> 0.45 W (0.45 VA)  <b>Minimum:</b> <b>Maximum:</b> <b>Voltage:</b> 15 V ac/dc      250 V ac/24 V dc, 6A resistive <b>Current:</b> 30 mA ac/dc <b>IEC 60947-5-1:</b> <b>Power:</b> 0.45 W (0.45 VA) <b>AC15:</b> 230 V ac, 3 A; <b>DC-13:</b> 24 V dc, 2A <b>Mechanical life:</b> $\geq$ 50,000,000 operations <b>Electrical life (switching cycles of the output contacts, resistive load):</b> 150,000 cycles @ 900 VA; 1,000,000 cycles @ 250 VA; 2,000,000 cycles @ 150 VA; 5,000,000 cycles @ 100 VA NOTE: Transient suppression is recommended when switching inductive loads. Install suppressors across load. Never install suppressors across output contacts.
Output Response Time	35 milliseconds max.
Input Requirements	Each switch or sensor must have a normally closed contact and a normally open contact capable of switching 20 to 50 mA @ 15 to 30 V dc <b>Reset switch:</b> 20 mA @ 12 V dc, hard contact only Max. external resistance between terminals S11/S12, S11/S13, S21/S22 and S21/S23: 270 ohms each.
Simultaneity Monitoring	<b>2-Channel operation:</b> 3 seconds <b>1-Channel operation:</b> infinite
Status Indicators	<b>4 green LEDs:</b> <b>1 red LED:</b> <b>Power:</b> power is supplied to Safety Module      Fault <b>Channel 1:</b> inputs satisfied (guard closed) <b>Channel 2:</b> inputs satisfied (guard closed) <b>Output:</b> K1 and K2 energized, safety outputs closed
Construction	Polycarbonate housing
Environmental Rating	IEC IP20
Mounting	Mounts to standard 35 mm DIN rail track. Safety Module must be installed inside an enclosure rated NEMA 3 (IP54), or better.
Vibration Resistance	10 to 55 Hz @ 0.35 mm displacement per IEC 60068-2-6
Operating Conditions	<b>Temperature:</b> 0° to +50 °C <b>Relative humidity:</b> 90% @ +50 °C (non-condensing)
Design Standards	 : Cat. 4 PL e, per EN ISO 13849-1; SIL 3 per IEC 61508 and IEC 62061
Certifications	 

## ES-FA-..AA Safety Module Specifications




Supply Voltage and Current	24 V dc $\pm 10\%$ (SELV-rated supply according to EN IEC 60950, NEC Class 2) 24 V ac $\pm 10\%$ , 50/60Hz (NEC Class 2-rated transformer) <b>Power consumption:</b> approx. 2 W/2 VA																
Supply Protection Circuitry	Protected against transient voltages and reverse polarity																
Overvoltage Category	<b>Output relay contact voltage of 1 V to 150 V ac/dc:</b> Category III <b>Output relay contact voltage of 151 V to 250 V ac/dc:</b> Category III, if appropriate overvoltage reduction is provided, as described in data sheet																
Pollution Degree	2																
Output Configuration	<p><b>ES-FA-9AA:</b> 3 normally open (NO) output channels <b>ES-FA-11AA:</b> 2 normally open (NO) output channels and 1 normally closed (NC) auxiliary output</p> <p>Each normally open output channel is a series connection of contacts from two forced-guided (mechanically linked) relays, K1-K2. The normally closed Aux. output channel of the ES-FA-11AA is a parallel connection of contacts from two forced-guided relays, K1-K2.</p> <p><b>Contacts:</b> AgNi, 5 <math>\mu</math>m gold-plated</p> <p><b>Low Current Rating:</b> The 5 <math>\mu</math>m gold-plated contacts allow the switching of low current/low voltage. In these low-power applications, multiple contacts can also be switched in series (e.g., "dry switching")</p> <p>To preserve the gold plating on the contacts, do not exceed the following max. values at any time:</p> <table border="0"> <tr> <td><b>Minimum:</b></td> <td><b>Maximum:</b></td> </tr> <tr> <td><b>Voltage:</b> 1 V ac/dc</td> <td><b>Voltage:</b> 60 V</td> </tr> <tr> <td><b>Current:</b> 5 mA ac/dc</td> <td><b>Current:</b> 300 mA</td> </tr> <tr> <td><b>Power:</b> 5 mW (5 mVA)</td> <td><b>Power:</b> 7 W (7 VA)</td> </tr> </table> <p><b>High Current Rating:</b> If higher loads must be switched through one or more of the contacts, the minimum and maximum values of the contact(s) change to:</p> <table border="0"> <tr> <td><b>Minimum:</b></td> <td><b>Maximum:</b></td> </tr> <tr> <td><b>Voltage:</b> 15 V ac/dc</td> <td><b>Voltage:</b> 250 V ac/dc</td> </tr> <tr> <td><b>Current:</b> 30 mA ac/dc</td> <td><b>Current:</b> ES-FA-9AA: 6A ES-FA-11AA: 7 A</td> </tr> <tr> <td><b>Power:</b> 0.45 W (0.45 VA)</td> <td><b>Power:</b> ES-FA-9AA: 200 W (1,500 VA) ES-FA-11AA: 200 W (1,750 VA)</td> </tr> </table> <p><b>Mechanical life:</b> &gt; 20,000,000 operations</p> <p><b>Electrical life (switching cycles of the output contacts, resistive load):</b> 150,000 cycles @ 1,500 VA; 1,000,000 cycles @ 450 VA; 2,000,000 cycles @ 250 VA; 5,000,000 cycles @ 125 VA</p> <p>NOTE: Transient suppression is recommended when switching inductive loads. Install suppressors across load. Never install suppressors across output contacts.</p>	<b>Minimum:</b>	<b>Maximum:</b>	<b>Voltage:</b> 1 V ac/dc	<b>Voltage:</b> 60 V	<b>Current:</b> 5 mA ac/dc	<b>Current:</b> 300 mA	<b>Power:</b> 5 mW (5 mVA)	<b>Power:</b> 7 W (7 VA)	<b>Minimum:</b>	<b>Maximum:</b>	<b>Voltage:</b> 15 V ac/dc	<b>Voltage:</b> 250 V ac/dc	<b>Current:</b> 30 mA ac/dc	<b>Current:</b> ES-FA-9AA: 6A ES-FA-11AA: 7 A	<b>Power:</b> 0.45 W (0.45 VA)	<b>Power:</b> ES-FA-9AA: 200 W (1,500 VA) ES-FA-11AA: 200 W (1,750 VA)
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<b>Voltage:</b> 15 V ac/dc	<b>Voltage:</b> 250 V ac/dc																
<b>Current:</b> 30 mA ac/dc	<b>Current:</b> ES-FA-9AA: 6A ES-FA-11AA: 7 A																
<b>Power:</b> 0.45 W (0.45 VA)	<b>Power:</b> ES-FA-9AA: 200 W (1,500 VA) ES-FA-11AA: 200 W (1,750 VA)																
Output Response Time	25 milliseconds typical																
Input Requirements	<p><b>Safety input switch:</b> Dual-Channel (contacts) hookup – 10 to 20 mA steady state @ 12 V dc NOTE: Inputs are designed with a brief contact-cleaning current of 100 mA when initially closed.</p> <p>Single-Channel hookup – 40 to 100 mA @ 24 V ac/dc +/- 10%; 50/60 Hz <b>Reset switch:</b> 20 mA @ 12 V dc, hard contact only</p>																
Minimum OFF-State Recovery Time	250 milliseconds																
Status Indicators	<b>3 green LEDs:</b> Power ON K1 energized K2 energized																
Construction	Polycarbonate housing																
Environmental Rating	Rated NEMA 1; IP40, Terminals IP20																
Mounting	Mounts to standard 35 mm DIN rail track. Safety Module must be installed inside an enclosure rated NEMA 3 (IP54), or better.																
Vibration Resistance	10 to 55Hz @ 0.35 mm displacement per IEC 60068-2-6																
Operating Conditions	<b>Temperature:</b> 0° to +50 °C <b>Relative humidity:</b> 90% @ +50 °C (non-condensing)																
Design Standards	Cat. 4 PL e per EN ISO 13849-1; SIL 3 per IEC 61508 and IEC 62061																
Certifications	  <b>EMERGENCY STOP DEVICE 29YL</b>																

## ES-..A-5A Safety Module Specifications



Supply Voltage and Current	<p><b>AI-A2:</b> 115 V ac (model ES-UA-5A) or 230 V ac (model ES-VA-5A) <math>\pm 15\%</math>, 50/60Hz</p> <p><b>BI-B2:</b> 11 V dc – 27.6 V dc</p> <p><b>Power consumption:</b> approx. 4 W/7 VA</p> <p>The Safety Module should be connected only to a SELV (safety extra-low voltage, for circuits without earth ground) or a PELV (protected extra-low voltage, for circuits with earth ground) power supply.</p>																	
Supply Protection Circuitry	Protected against transient voltages and reverse polarity																	
Overvoltage Category	Output relay contact voltage of 1 V to 150 V ac/dc: Category III Output relay contact voltage of 151 V to 250 V ac/dc: Category III, if appropriate overvoltage reduction is provided, as described in data sheet																	
Pollution Degree	2																	
Output Configuration	<p>4 normally open (NO) output channels; 1 normally closed (NC) and 2 solid-state auxiliary outputs</p> <p>Each normally open output channel is a series connection of contacts from two forced-guided (mechanically linked) relays, K1-K2. The normally closed Aux. output channel is a parallel connection of contacts from two forced-guided relays, K1-K2.</p> <p><b>Contacts:</b> AgNi, 5 <math>\mu</math>m gold-plated</p> <p><b>Low Current Rating:</b> The 5 <math>\mu</math>m gold-plated contacts allow the switching of low current/low voltage. In these low-power applications, multiple contacts can also be switched in series (e.g., "dry switching")</p> <p>To preserve the gold plating on the contacts, do not exceed the following max. values at any time:</p> <table border="0"> <tr> <td><b>Minimum:</b></td> <td><b>Maximum:</b></td> </tr> <tr> <td><b>Voltage:</b> 1 V ac/dc</td> <td><b>Voltage:</b> 60 V</td> </tr> <tr> <td><b>Current:</b> 5 mA ac/dc</td> <td><b>Current:</b> 300 mA</td> </tr> <tr> <td><b>Power:</b> 5 mW (5 mVA)</td> <td><b>Power:</b> 7 W (7 VA)</td> </tr> </table> <p><b>High Current Rating:</b> If higher loads must be switched through one or more of the contacts, the minimum and maximum values of the contact(s) changes to:</p> <table border="0"> <tr> <td>  </td> <td> <p><b>Minimum:</b></p> <p><b>Voltage:</b> 15 V ac/dc</p> <p><b>Current:</b> 250 mA ac/dc</p> <p><b>Power:</b> 5 W (5 VA)</p> </td> <td> <p><b>Maximum:</b></p> <p>NO Safety Contacts (13-14, 23-24, 33-34, 43-44): 250 V ac/ 24 V dc, 6A resistive B300, Q300 (UL508)</p> <p>NC Auxiliary Contact (51-52): 250 V ac/ 24 V dc, 5A resistive B300, Q300 (UL508)</p> </td> </tr> <tr> <td>  </td> <td> <p><b>Minimum:</b></p> <p><b>Voltage:</b> 15 V ac/dc</p> <p><b>Current:</b> 250 mA ac/dc</p> <p><b>Power:</b> 5 W (5 VA)</p> </td> <td> <p><b>Maximum— IEC60947-5-1</b></p> <p><b>NO Safety Contact: AC-1:</b> 250 V ac, 6A; <b>DC-1:</b> 24 V dc, 6A</p> <p><b>AC-15:</b> 230 V ac, 3A; <b>DC-13:</b> 24 V dc, 4A</p> <p><b>NC Auxiliary Contact: AC-1:</b> 250 V ac, 5A; <b>DC-1:</b> 24 V dc, 5A</p> <p><b>AC-15:</b> 230 V ac, 2A; <b>DC-13:</b> 24 V dc, 4A</p> </td> </tr> <tr> <td>  </td> <td> <p><b>Minimum:</b></p> <p><b>Voltage:</b> 15 V ac/dc</p> <p><b>Current:</b> 250 mA ac/dc</p> <p><b>Power:</b> 5 W (5 VA)</p> </td> <td> <p><b>Maximum— IEC60947-5-1</b></p> <p><b>NO Safety Contact: AC-1:</b> 250 V ac, 6A; <b>DC-1:</b> 24 V dc, 6A</p> <p><b>AC-15:</b> 230 V ac, 3A; <b>DC-13:</b> 24 V dc, 4A</p> <p><b>NC Auxiliary Contact: AC-1:</b> 250 V ac, 5A; <b>DC-1:</b> 24 V dc, 5A</p> <p><b>AC-15:</b> 230 V ac, 2A; <b>DC-13:</b> 24 V dc, 4A</p> </td> </tr> </table> <p><b>Mechanical life:</b> &gt; 20,000,000 operations</p> <p><b>Electrical life (switching cycles of the output contacts, resistive load):</b> 150,000 cycles @ 1,500 VA; 1,000,000 cycles @ 450 VA; 2,000,000 cycles @ 250 VA; 5,000,000 cycles @ 125 VA</p> <p>NOTE: Transient suppression is recommended when switching inductive loads. Install suppressors across load. Never install suppressors across output contacts.</p> <p><b>Solid-State Monitor Outputs:</b></p> <ul style="list-style-type: none"> <li>- Two non-safety solid-state dc outputs</li> <li>- Output at Y32 monitors state of outputs – conducts (output high) when both K1 and K2 are energized</li> <li>- Output at Y35 conducts (output high) when in normal operation (no lockout)</li> <li>- Output circuits require application of +12-24 V dc <math>\pm 15\%</math> at terminal Y31; dc common at Y30</li> <li>- Maximum switching current: 100 mA at 12-24 V dc</li> <li>- Both outputs are protected against short circuits</li> </ul>	<b>Minimum:</b>	<b>Maximum:</b>	<b>Voltage:</b> 1 V ac/dc	<b>Voltage:</b> 60 V	<b>Current:</b> 5 mA ac/dc	<b>Current:</b> 300 mA	<b>Power:</b> 5 mW (5 mVA)	<b>Power:</b> 7 W (7 VA)		<p><b>Minimum:</b></p> <p><b>Voltage:</b> 15 V ac/dc</p> <p><b>Current:</b> 250 mA ac/dc</p> <p><b>Power:</b> 5 W (5 VA)</p>	<p><b>Maximum:</b></p> <p>NO Safety Contacts (13-14, 23-24, 33-34, 43-44): 250 V ac/ 24 V dc, 6A resistive B300, Q300 (UL508)</p> <p>NC Auxiliary Contact (51-52): 250 V ac/ 24 V dc, 5A resistive B300, Q300 (UL508)</p>		<p><b>Minimum:</b></p> <p><b>Voltage:</b> 15 V ac/dc</p> <p><b>Current:</b> 250 mA ac/dc</p> <p><b>Power:</b> 5 W (5 VA)</p>	<p><b>Maximum— IEC60947-5-1</b></p> <p><b>NO Safety Contact: AC-1:</b> 250 V ac, 6A; <b>DC-1:</b> 24 V dc, 6A</p> <p><b>AC-15:</b> 230 V ac, 3A; <b>DC-13:</b> 24 V dc, 4A</p> <p><b>NC Auxiliary Contact: AC-1:</b> 250 V ac, 5A; <b>DC-1:</b> 24 V dc, 5A</p> <p><b>AC-15:</b> 230 V ac, 2A; <b>DC-13:</b> 24 V dc, 4A</p>		<p><b>Minimum:</b></p> <p><b>Voltage:</b> 15 V ac/dc</p> <p><b>Current:</b> 250 mA ac/dc</p> <p><b>Power:</b> 5 W (5 VA)</p>	<p><b>Maximum— IEC60947-5-1</b></p> <p><b>NO Safety Contact: AC-1:</b> 250 V ac, 6A; <b>DC-1:</b> 24 V dc, 6A</p> <p><b>AC-15:</b> 230 V ac, 3A; <b>DC-13:</b> 24 V dc, 4A</p> <p><b>NC Auxiliary Contact: AC-1:</b> 250 V ac, 5A; <b>DC-1:</b> 24 V dc, 5A</p> <p><b>AC-15:</b> 230 V ac, 2A; <b>DC-13:</b> 24 V dc, 4A</p>
<b>Minimum:</b>	<b>Maximum:</b>																	
<b>Voltage:</b> 1 V ac/dc	<b>Voltage:</b> 60 V																	
<b>Current:</b> 5 mA ac/dc	<b>Current:</b> 300 mA																	
<b>Power:</b> 5 mW (5 mVA)	<b>Power:</b> 7 W (7 VA)																	
	<p><b>Minimum:</b></p> <p><b>Voltage:</b> 15 V ac/dc</p> <p><b>Current:</b> 250 mA ac/dc</p> <p><b>Power:</b> 5 W (5 VA)</p>	<p><b>Maximum:</b></p> <p>NO Safety Contacts (13-14, 23-24, 33-34, 43-44): 250 V ac/ 24 V dc, 6A resistive B300, Q300 (UL508)</p> <p>NC Auxiliary Contact (51-52): 250 V ac/ 24 V dc, 5A resistive B300, Q300 (UL508)</p>																
	<p><b>Minimum:</b></p> <p><b>Voltage:</b> 15 V ac/dc</p> <p><b>Current:</b> 250 mA ac/dc</p> <p><b>Power:</b> 5 W (5 VA)</p>	<p><b>Maximum— IEC60947-5-1</b></p> <p><b>NO Safety Contact: AC-1:</b> 250 V ac, 6A; <b>DC-1:</b> 24 V dc, 6A</p> <p><b>AC-15:</b> 230 V ac, 3A; <b>DC-13:</b> 24 V dc, 4A</p> <p><b>NC Auxiliary Contact: AC-1:</b> 250 V ac, 5A; <b>DC-1:</b> 24 V dc, 5A</p> <p><b>AC-15:</b> 230 V ac, 2A; <b>DC-13:</b> 24 V dc, 4A</p>																
	<p><b>Minimum:</b></p> <p><b>Voltage:</b> 15 V ac/dc</p> <p><b>Current:</b> 250 mA ac/dc</p> <p><b>Power:</b> 5 W (5 VA)</p>	<p><b>Maximum— IEC60947-5-1</b></p> <p><b>NO Safety Contact: AC-1:</b> 250 V ac, 6A; <b>DC-1:</b> 24 V dc, 6A</p> <p><b>AC-15:</b> 230 V ac, 3A; <b>DC-13:</b> 24 V dc, 4A</p> <p><b>NC Auxiliary Contact: AC-1:</b> 250 V ac, 5A; <b>DC-1:</b> 24 V dc, 5A</p> <p><b>AC-15:</b> 230 V ac, 2A; <b>DC-13:</b> 24 V dc, 4A</p>																
Output Response Time	35 milliseconds max. (25 milliseconds typical)																	
Input Requirements	E-stop switch must have normally closed contacts each capable of switching 20 to 50 mA @ 12 to 30 V dc; and must be open $\geq 15$ milliseconds for a valid stop command Maximum input resistance 250 ohms per channel @ 24 V dc supply voltage Maximum input resistance 25 ohms per channel @ 12 V dc supply voltage Reset switch must have one normally open contact capable of switching 20 to 50 mA @ 12 to 30 V ac/dc																	
OFF-State Recovery Time	350 milliseconds																	
Status Indicators	<table border="0"> <tr> <td><b>3 green LEDs:</b></td> <td><b>1 red LED:</b></td> </tr> <tr> <td>Power ON</td> <td>Fault Condition</td> </tr> <tr> <td>Channel 1</td> <td></td> </tr> <tr> <td>Channel 2</td> <td></td> </tr> </table>	<b>3 green LEDs:</b>	<b>1 red LED:</b>	Power ON	Fault Condition	Channel 1		Channel 2										
<b>3 green LEDs:</b>	<b>1 red LED:</b>																	
Power ON	Fault Condition																	
Channel 1																		
Channel 2																		

Continued on next page

## ES-...A-5A Safety Module Specifications (cont'd)

Construction	Polycarbonate housing
Environmental Rating	Rated NEMA 1; IEC IP20
Mounting	Mounts to standard 35 mm DIN rail track. Safety Module must be installed inside an enclosure rated NEMA 3 (IP54), or better.
Vibration Resistance	10 to 60Hz @ 0.35 mm displacement per UL 991 60 to 150 Hz @ 5 g max.
Operating Conditions	<b>Temperature:</b> 0° to +50 °C (surrounding air) <b>Relative humidity:</b> 90% @ +50 °C (non-condensing)
Design Standards	Cat. 4 PL e per EN ISO 13849-1; SIL 3 per IEC 61508 and IEC 62061
Certifications	  

## ES-FA-6G Safety Module Specifications

Supply Voltage and Current	24 V ac/dc, +/- 10%; 50/60Hz <b>Power consumption:</b> approx. 2 W/0.75 VA
Supply Protection Circuitry	Protected against transient voltages and reverse polarity
Output Configuration	Outputs (K1 & K2): three redundant (total of six) safety relay (forced-guided) contacts – AgSnO2 one auxiliary non-safety monitor output (open when both K1 and K2 are energized; closed when either K1 or K2 are de-energized) <b>Contact ratings:</b> <b>Max. voltage:</b> 250 V ac or 250 V dc <b>Max. current:</b> 6 A ac or dc <b>Min. current:</b> 30 mA @ 10 V dc <b>Max. power:</b> 1500 VA, 150 W <b>Mechanical life:</b> 10,000,000 operations Electrical life: 100,000 at full resistive load  NOTE: Transient suppression is recommended when switching inductive loads. Install suppressors across load. Never install suppressors across output contacts.
Output Response Time	35 milliseconds typical
Input Requirements	Input switch must have a normally closed contact capable of switching 40 to 100 mA @ 13 to 27 V ac/dc Reset switch must have one normally open contact capable of switching 20 to 30 mA @ 13 to 27 V ac/dc
Status Indicators	<b>3 green LEDs:</b> Power ON K1 energized K2 energized
Construction	Polycarbonate
Environmental Rating	Rated NEMA 1; IP40, Terminals IP20
Mounting	Mounts to standard 35 mm DIN rail track. Safety Module must be installed inside an enclosure rated NEMA 3 (IP54), or better.
Vibration Resistance	10 to 55 Hz @ 0.35 mm displacement per IEC 60068-2-6
Operating Conditions	<b>Temperature:</b> 0° to +50 °C <b>Relative humidity:</b> 90% @ +50 °C (non-condensing)
Certifications	<div style="display: flex; align-items: center;">  <div style="margin: 0 10px;"> <p><b>EMERGENCY STOP DEVICE 29YL</b></p> </div>  </div> <p><b>Important Notice:</b> European Community Machinery Directive 2006/42/EC The ES-FA-6G Safety Module complies with Machinery Directive 98/37/EC, but not with Machinery Directive 2006/42/EC. Therefore, this Safety Module can only be installed as replacement component within the European Union (EU). For more information, please see <a href="http://www.bannerengineering.com/144763">www.bannerengineering.com/144763</a> or call 1-888-373-6767.</p>



# Universal Input

## Safety Modules

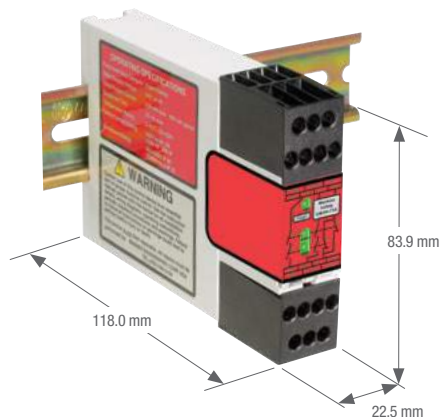


- Modules monitor one or two solid-state PNP outputs or relay contact outputs from safety or non-safety devices such as sensors, safety light screens or one or two electromechanical contacts
- Modules are an ideal choice for monitoring safety devices without external device monitoring (EDM) function
- Modules have single or dual channel inputs to monitor outputs from safety or non-safety devices
- Can be configured to monitor devices with solid-state PNP outputs or hard/relay contact outputs using DIP switches under removable terminals
- Housings are rugged polycarbonate and mount to standard 35 mm DIN rail
- Relay outputs are capable of reliably switching low or high current applications

### Universal Safety Input Modules


Supply Voltage	Inputs	Safety Outputs	Aux. Output	Output Rating	Output Response Time	Model
24 V ac/dc	1 NC (single) or 2 NC (dual)	3 NO	–	6 amps	25 ms	UM-FA-9A
24 V ac/dc	1 NC (single) or 2 NC (dual)	2 NO	1 NC	7 amps	25 ms	UM-FA-11A

NC = Normally Closed Relay, NO = Normally Open Relay



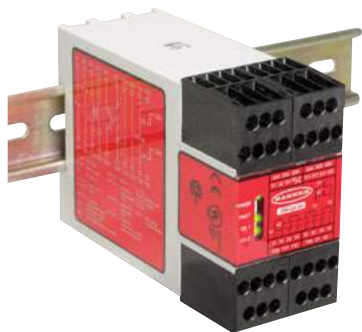
UM-FA-..A Models

## Universal Safety Input Module Specifications

Supply Voltage and Current	24 V dc $\pm 10\%$ (SELV-rated supply according to EN IEC 60950, NEC Class 2) 24 V ac $\pm 10\%$ 50-60 Hz (NEC Class 2-rated transformer) <b>Power consumption:</b> approx. 2 VA / 3 W																		
Supply Protection Circuitry	Protected against transient voltages and reverse polarity																		
Overvoltage Category	<b>Output relay contact voltage of 1 V to 150 V ac/dc:</b> Category III <b>Output relay contact voltage of 151 V to 250 V ac/dc:</b> Category II (Category III if appropriate overvoltage reduction is provided, as described in data sheet.)																		
Pollution Degree	2																		
Output Configuration	<b>UM-FA-9A:</b> 3 normally open (NO) output channels <b>UM-FA-11A:</b> 2 normally open (NO) output channels and 1 normally closed (NC) auxiliary output channel  Each normally open output channel is a series connection of contacts from two forced-guided (mechanically linked) relays, K1-K2. The normally closed Aux. output channel of the UM-FA-11A is a parallel connection of contacts from two forced-guided relays, K1-K2.  <b>Contacts:</b> AgNi, 5 $\mu$ m gold-plated  <b>Low Current Rating:</b> The 5 $\mu$ m gold-plated contacts allow the switching of low current/low voltage. In these low-power applications, multiple contacts can also be switched in series (e.g., "dry switching"). <b>To preserve the gold plating on the contacts, do not exceed the following max. values at any time:</b>  <table border="0"> <tr> <td><b>Min. voltage:</b> 1 V ac/dc</td> <td><b>Max. voltage:</b> 60 V</td> <td></td> </tr> <tr> <td><b>Min. current:</b> 5 mA ac/dc</td> <td><b>Max. current:</b> 300 mA</td> <td></td> </tr> <tr> <td><b>Min. power:</b> 5 mW (5 mVA)</td> <td><b>Max. power:</b> 7 W (7 VA)</td> <td></td> </tr> </table> <b>High Current Rating:</b> If higher loads must be switched through one or more of the contacts, the minimum and maximum values of the contact(s) changes to: <table border="0"> <tr> <td><b>Min. voltage:</b> 15 V ac/dc</td> <td><b>Max. voltage:</b> 250 V ac/dc</td> <td></td> </tr> <tr> <td><b>Min. current:</b> 30 mA ac/dc</td> <td><b>Max. current:</b> <b>UM-FA-9A:</b> 6 A</td> <td><b>UM-FA-11A:</b> 7 A</td> </tr> <tr> <td><b>Min. power:</b> 0.45 W (0.45 VA)</td> <td><b>Max. power:</b> <b>UM-FA-9A:</b> 200 W (1,500 VA)</td> <td><b>UM-FA-11A:</b> 200 W (1,750 VA)</td> </tr> </table> <b>Mechanical life:</b> > 20,000,000 operations <b>Electrical life (switching cycles of the output contacts, resistive load):</b> 150,000 cycles @ 1,500 VA; 1,000,000 cycles @ 450 VA; 2,000,000 cycles @ 250 VA; 5,000,000 cycles @ 125 VA  NOTE: Transient suppression is recommended when switching inductive loads. Install suppressors across load. Never install suppressors across output contacts.	<b>Min. voltage:</b> 1 V ac/dc	<b>Max. voltage:</b> 60 V		<b>Min. current:</b> 5 mA ac/dc	<b>Max. current:</b> 300 mA		<b>Min. power:</b> 5 mW (5 mVA)	<b>Max. power:</b> 7 W (7 VA)		<b>Min. voltage:</b> 15 V ac/dc	<b>Max. voltage:</b> 250 V ac/dc		<b>Min. current:</b> 30 mA ac/dc	<b>Max. current:</b> <b>UM-FA-9A:</b> 6 A	<b>UM-FA-11A:</b> 7 A	<b>Min. power:</b> 0.45 W (0.45 VA)	<b>Max. power:</b> <b>UM-FA-9A:</b> 200 W (1,500 VA)	<b>UM-FA-11A:</b> 200 W (1,750 VA)
<b>Min. voltage:</b> 1 V ac/dc	<b>Max. voltage:</b> 60 V																		
<b>Min. current:</b> 5 mA ac/dc	<b>Max. current:</b> 300 mA																		
<b>Min. power:</b> 5 mW (5 mVA)	<b>Max. power:</b> 7 W (7 VA)																		
<b>Min. voltage:</b> 15 V ac/dc	<b>Max. voltage:</b> 250 V ac/dc																		
<b>Min. current:</b> 30 mA ac/dc	<b>Max. current:</b> <b>UM-FA-9A:</b> 6 A	<b>UM-FA-11A:</b> 7 A																	
<b>Min. power:</b> 0.45 W (0.45 VA)	<b>Max. power:</b> <b>UM-FA-9A:</b> 200 W (1,500 VA)	<b>UM-FA-11A:</b> 200 W (1,750 VA)																	
Output Response Time	25 milliseconds typical																		
Input Requirements	<b>Safety input switch:</b> 2-Channel (contacts) hookup: 10 to 20 mA steady state @ 12 V dc NOTE: Inputs are designed with a brief contact-cleaning current of 100 mA when initially closed. Solid-state Dual Channel hookup: 5 to 20 mA steady state @ 18 to 28 V dc sourcing (PNP), < 2 mA leakage current Single-Channel hookup: 40 to 100 mA @ 24 V ac/dc $\pm 10\%$ ; 50/60 Hz <b>Reset Switch:</b> 20 mA @ 12 V dc, hard contact only																		
Minimum OFF-State Recovery Time	250 milliseconds (When used with the AG4 Safety Laser Scanner; the "Restart delay time after PF release" must be configured 280 milliseconds or greater.)																		
Indicators	<b>3 green LEDs:</b> Power ON K1 energized K2 energized																		
Construction	Polycarbonate housing																		
Environmental Rating	Rated NEMA 1; IEC IP40, Terminals IP20																		
Mounting	Mounts to standard 35 mm DIN rail track. Safety Module must be installed inside an enclosure rated NEMA 3 (IP54), or better.																		
Vibration Resistance	10 to 55 Hz @ 0.35 mm displacement per IEC 60068-2-6																		
Operating Conditions	<b>Temperature:</b> 0° to +50 °C <b>Max. Relative Humidity:</b> 90% @ +50 °C (non-condensing)																		
Design Standards	Cat. 4 PL e per EN ISO 13849-1; SIL 3 per IEC 61508 and IEC 62061																		
Certification	  <b>EMERGENCY STOP DEVICE 29YL</b>																		

# Safety Mat Monitoring

## Safety Modules

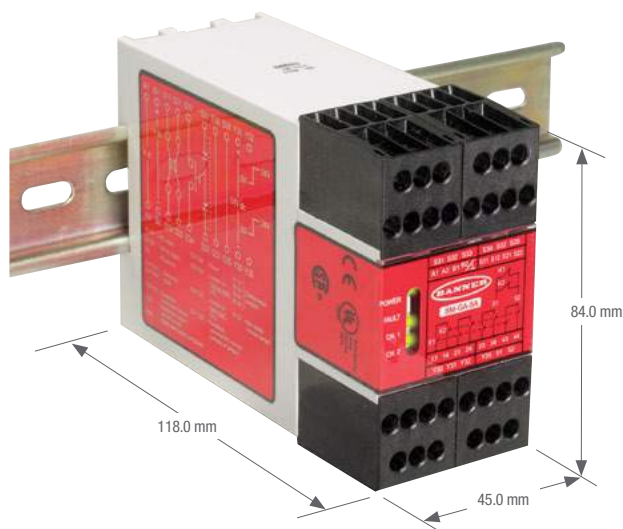


- Module monitors a single or series connection of 4-wire safety mats or safety edge devices
- Models work with AC or DC input voltages
- LED indicators show power on, output and fault
- Housings are rugged polycarbonate and mount to standard 35 mm DIN rail
- Relay outputs are capable of reliably switching low or high current applications

## Safety Mat Monitoring Modules

Supply Voltage	Inputs	Safety Outputs	Aux. Outputs	Output Rating	Output Response Time	Model
115 V ac & 12-24 V dc	1 (or multiple in series) 4-wire Safety Mat	4 NO	1 NC & 2 PNP	6 amps	50 ms	SM-GA-5A
230 V ac & 12-24 V dc	1 (or multiple in series) 4-wire Safety Mat	4 NO	1 NC & 2 PNP	6 amps	50 ms	SM-HA-5A

NC = Normally Closed Relay, NO = Normally Open Relay



SM-..A-5A Models

## Safety Mat Monitoring Module Specifications

Supply Voltage and Current	<p><b>AI-A2:</b> 115 V ac (model SM-GA-SA) or 230 V ac (model SM-HA-5A) <math>\pm</math>15%, 50/60Hz  <b>BI-B2:</b> 11 V dc – 27.6 V dc  <b>Power consumption:</b> approx. 4 W/7 VA  The Safety Module should be connected only to a SELV (safety extra-low voltage, for circuits without earth ground) or a PELV (protected extra-low voltage, for circuits with earth ground) power supply, according to EN IEC 60950, NEC Class 2</p>												
Supply Protection Circuitry	Protected against transient voltages and reverse polarity												
Overvoltage Category	<p><b>Output relay contact voltage of 1 V to 150 V ac/dc:</b> Category III  <b>Output relay contact voltage of 151 V to 250 V ac/dc:</b> Category III, if appropriate overvoltage reduction is provided, as described in data sheet</p>												
Pollution Degree	2												
Output Configuration	<p>4 normally open (NO) output channels; 1 normally closed (NC) and 2 solid-state auxiliary outputs</p> <p>Each normally open output channel is a series connection of contacts from two forced-guided (mechanically linked) relays, K1-K2. The normally closed Aux. output channel is a parallel connection of contacts from two forced-guided relays, K1-K2.</p> <p><b>Contacts:</b> AgNi, 5 <math>\mu</math>m gold-plated  <b>Low Current Rating:</b> The 5 <math>\mu</math>m gold-plated contacts allow the switching of low current/low voltage. In these low-power applications, multiple contacts can also be switched in series (e.g., "dry switching").  <b>To preserve the gold plating on the contacts, the following max. values should not be exceeded at any time:</b></p> <table border="0"> <tr> <td><b>Minimum:</b></td> <td><b>Maximum:</b></td> </tr> <tr> <td><b>Voltage:</b> 1 V ac/dc</td> <td><b>Voltage:</b> 60 V</td> </tr> <tr> <td><b>Current:</b> 5 mA ac/dc</td> <td><b>Current:</b> 300 mA</td> </tr> <tr> <td><b>Power:</b> 5 mW (5 mVA)</td> <td><b>Power:</b> 7 W (7 VA)</td> </tr> </table> <p><b>High Current Rating: If higher loads must be switched through one or more of the contacts, the minimum and maximum values of the contact(s) change to:</b></p> <table border="0"> <tr> <td>   <b>Minimum:</b>  <b>Voltage:</b> 15 V ac/dc  <b>Current:</b> 250 mA ac/dc  <b>Power:</b> 5 W (5 VA) </td> <td> <b>Maximum:</b>  NO Safety Contacts (13-14, 23-24, 33-34, 43-44): 250 V ac/ 24 V dc, 6A resistive B300, Q300 (UL508)  NC Auxiliary Contact (51-52): 250 V ac/ 24 V dc, 5A resistive B300, Q300 (UL508) </td> </tr> <tr> <td>   <b>Minimum:</b>  <b>Voltage:</b> 15 V ac/dc  <b>Current:</b> 250 mA ac/dc  <b>Power:</b> 5 W (5 VA) </td> <td> <b>Maximum—IEC60947-5-1</b>  <b>NO Safety Contact:</b> <b>AC-1:</b> 250 V ac, 6A; <b>DC-1:</b> 24 V dc, 6A  <b>AC-15:</b> 230 V ac, 3A; <b>DC-13:</b> 24 V dc, 4A  <b>NC Auxiliary Contact:</b> <b>AC-1:</b> 250 V ac, 5A; <b>DC-1:</b> 24 V dc, 5A  <b>AC-15:</b> 230 V ac, 2A; <b>DC-13:</b> 24 V dc, 4A </td> </tr> </table> <p><b>Mechanical life:</b> &gt;20,000,000 operations  <b>Electrical life:</b> 150,000 cycles @ 1500 VA; 1,000,000 cycles @ 450 VA; 2,000,000 cycles @ 250 VA; 5,000,000 cycles @ 125 VA</p> <p>NOTE: Transient suppression is recommended when switching inductive loads. Install suppressors across load. Never install suppressors across output contacts.</p> <p><b>Solid-State Monitor Outputs:</b></p> <ul style="list-style-type: none"> <li>- Two non-safety solid-state dc outputs</li> <li>- Output at Y32 monitors state of outputs – conducts (output high) when both K1 and K2 are energized</li> <li>- Output at Y35 conducts (output high) when in normal operation (no lockout)</li> <li>- Output circuits require application of +12-24 V dc <math>\pm</math>15% at terminal Y31; dc common at Y30</li> <li>- Maximum switching current: 100 mA at +12-24 V dc</li> <li>- Both outputs are protected against short circuits</li> </ul>	<b>Minimum:</b>	<b>Maximum:</b>	<b>Voltage:</b> 1 V ac/dc	<b>Voltage:</b> 60 V	<b>Current:</b> 5 mA ac/dc	<b>Current:</b> 300 mA	<b>Power:</b> 5 mW (5 mVA)	<b>Power:</b> 7 W (7 VA)	 <b>Minimum:</b> <b>Voltage:</b> 15 V ac/dc <b>Current:</b> 250 mA ac/dc <b>Power:</b> 5 W (5 VA)	<b>Maximum:</b> NO Safety Contacts (13-14, 23-24, 33-34, 43-44): 250 V ac/ 24 V dc, 6A resistive B300, Q300 (UL508) NC Auxiliary Contact (51-52): 250 V ac/ 24 V dc, 5A resistive B300, Q300 (UL508)	 <b>Minimum:</b> <b>Voltage:</b> 15 V ac/dc <b>Current:</b> 250 mA ac/dc <b>Power:</b> 5 W (5 VA)	<b>Maximum—IEC60947-5-1</b> <b>NO Safety Contact:</b> <b>AC-1:</b> 250 V ac, 6A; <b>DC-1:</b> 24 V dc, 6A <b>AC-15:</b> 230 V ac, 3A; <b>DC-13:</b> 24 V dc, 4A <b>NC Auxiliary Contact:</b> <b>AC-1:</b> 250 V ac, 5A; <b>DC-1:</b> 24 V dc, 5A <b>AC-15:</b> 230 V ac, 2A; <b>DC-13:</b> 24 V dc, 4A
<b>Minimum:</b>	<b>Maximum:</b>												
<b>Voltage:</b> 1 V ac/dc	<b>Voltage:</b> 60 V												
<b>Current:</b> 5 mA ac/dc	<b>Current:</b> 300 mA												
<b>Power:</b> 5 mW (5 mVA)	<b>Power:</b> 7 W (7 VA)												
 <b>Minimum:</b> <b>Voltage:</b> 15 V ac/dc <b>Current:</b> 250 mA ac/dc <b>Power:</b> 5 W (5 VA)	<b>Maximum:</b> NO Safety Contacts (13-14, 23-24, 33-34, 43-44): 250 V ac/ 24 V dc, 6A resistive B300, Q300 (UL508) NC Auxiliary Contact (51-52): 250 V ac/ 24 V dc, 5A resistive B300, Q300 (UL508)												
 <b>Minimum:</b> <b>Voltage:</b> 15 V ac/dc <b>Current:</b> 250 mA ac/dc <b>Power:</b> 5 W (5 VA)	<b>Maximum—IEC60947-5-1</b> <b>NO Safety Contact:</b> <b>AC-1:</b> 250 V ac, 6A; <b>DC-1:</b> 24 V dc, 6A <b>AC-15:</b> 230 V ac, 3A; <b>DC-13:</b> 24 V dc, 4A <b>NC Auxiliary Contact:</b> <b>AC-1:</b> 250 V ac, 5A; <b>DC-1:</b> 24 V dc, 5A <b>AC-15:</b> 230 V ac, 2A; <b>DC-13:</b> 24 V dc, 4A												
Output Response Time	35 milliseconds max, 25 milliseconds typical												
Input Requirements	<p>Safety mat normally open contact must be capable of switching 20 to 100 mA @ 12 to 30 V dc; and must be closed &gt; 25 ms for a valid stop command</p> <p><b>115/230 V ac or 24 V dc:</b> Maximum input resistance 250 ohms per lead; maximum contact resistance: 150 ohms</p> <p><b>12 V dc Supply:</b> Maximum input resistance 25 ohms; maximum contact resistance: 10 ohms</p> <p><b>Reset switch:</b> must have one normally open contact capable of switching 20 to 50 mA @ 12 to 30 V dc</p>												
OFF-State Recovery Time	350 ms max.												
Status Indicators	<p><b>3 green LED indicators:</b> Power ON, Channel 1 (high side), Channel 2 (low side)      <b>1 red LED indicator:</b> indicates a fault condition</p>												
Construction	Polycarbonate housing												
Environmental Rating	Rated NEMA 1; IEC IP20												
Mounting	Mounts to standard 35 mm DIN rail track. Safety Module must be installed inside an enclosure rated NEMA 3 (IP54) or better.												
Vibration Resistance	10 to 60 Hz @ 0.35 mm displacement per UL 991      60 to 150 Hz @ 5 g max.												
Operating Conditions	<p><b>Temperature:</b> 0° to +50 °C      <b>Relative humidity:</b> 90% @ +50 °C (non-condensing)</p>												
Design Standards	Cat. 4, PL e per EN ISO 13849-1; SIL 3 per IEC 61508 and IEC 62061 (Cat 3 with Safety Mat)												
Certifications	  												

# Muting Module

## Safety Modules



- Muting Modules suspend safeguarding during non-hazardous times in the machine's cycle, allowing material to move into or from the process without tripping the muted safeguard
- Monitors hard-relay contact or PNP output safety devices
- Suitable for Type 4 (Category 4) applications
- Connects to supplemental safeguarding devices or E-Stops
- Can be used as a Dual Controller for safety devices, such as two Safety Light Screens, regardless of whether or not the muting function is used
- Housings are rugged polycarbonate and mount to standard 35 mm DIN rail
- Relay outputs are capable of reliably switching low or high current applications

## Muting Modules

Input Device	Supply Voltage	Inputs	Safety Outputs	Aux. Outputs	Output Rating	Output Response Time	Model
Electromechanical & Solid State	24 V dc	2 NC Muteable (dual) & 2 NC SSI (dual)	2 PNP OSSD	1 PNP	0.5 amps	10 ms	MMD-TA-12B
Electromechanical & Solid State	24 V dc	2 NC Muteable (dual) & 2 NC SSI (dual)	2 NO	1 NC	6 amps	20 ms	MMD-TA-11B

NC = Normally Closed Relay, NO = Normally Open Relay



MMD-TA-11B & MMD-TA-12B Muting Modules  
(MMD-TA-12B shown)

## MMD-TA-12B &amp; MMD-TA-11B Muting Modules Specifications



System Power Requirements	<p><b>MMD-TA-11B:</b> +24 V dc <math>\pm 15\%</math> @ 300 mA max (SELV/PELV)  <b>MMD-TA-12B:</b> +24 V dc <math>\pm 15\%</math> @ 250 mA max (SELV/PELV)  (not including draw of the MSSSI power, AUX, ML, M1-M4 and OSSD connections)  The external voltage supply must be capable of buffering brief mains interruptions of 20 milliseconds, as specified in IEC/EN 60204-1</p>												
Overvoltage Category	III (IEC 60664-1)												
Pollution Degree	2												
Supply Protection Circuitry	All inputs and outputs are protected from short circuit to +24 V dc or dc common												
Response Time (MSSI and SSI)	<p><b>MMD-TA-12B:</b> (solid-state output) 20 milliseconds max.  <b>MMD-TA-11B:</b> (relay output) 10 milliseconds max.</p>												
Safety Outputs	<p><b>MMD-TA-11B:</b>  2 normally open contact output channels and 1 normally closed auxiliary contact output channel: Each normally open output channel is a series connection of contacts from two forced-guided (positive-guided) relays, K1-K2. The normally closed AUX contact (non-safety) 31-32 is a parallel connection of contacts from K1-K2.</p> <p><b>Contacts:</b> AgNi, 5 <math>\mu</math>m gold-plated</p> <p><b>Low Current Rating:</b>  <b>Caution: The 5 <math>\mu</math>m gold-plated contacts allow the switching of low current/low voltage.</b>  In these low-power applications, multiple contacts can also be switched in series (e.g., "dry switching"). To preserve the gold plating on the contacts and also guarantee reliable switching, the following values should be kept within the min. and max. ranges shown below.</p> <table border="0"> <tr> <td><b>Min. voltage:</b> 1 V ac/dc</td> <td><b>Max. voltage:</b> 60 V</td> </tr> <tr> <td><b>Min. current:</b> 5 mA ac/dc</td> <td><b>Max. current:</b> 300 mA</td> </tr> <tr> <td><b>Min. power:</b> 5 mW (5 mVA)</td> <td><b>Max. power:</b> 7 W (7 VA)</td> </tr> </table> <p><b>High Current Rating:</b>  If higher loads must be switched through one or more of the contacts, the minimum and maximum values of the contact(s) changes to:</p> <table border="0"> <tr> <td><b>Min. voltage:</b> 15 V ac/dc</td> <td><b>Max. voltage:</b> 120 V ac/dc</td> </tr> <tr> <td><b>Min. current:</b> 30 mA ac/dc</td> <td><b>Max. current:</b> 6 A</td> </tr> <tr> <td><b>Min. power:</b> 0.45 W (0.45 VA)</td> <td><b>Max. power:</b> 160 W (720 VA)</td> </tr> </table> <p><b>Mechanical life:</b> 50,000,000 operations  <b>Electrical life:</b> 120,000 operations (typical at 144 W/[1380 VA] switched power, resistive load)</p> <p><b>NOTE: Transient suppression is recommended when switching inductive loads. Install suppressors across load. Never install suppressors across output contacts</b></p> <p><b>MMD-TA-12B:</b>  <b>Two diverse-redundant solid-state safety outputs:</b> 24 V dc, 0.5 A sourcing OSSD (output signal switching device)</p> <p><b>ON-State voltage:</b> <math>\geq V_{in} - 1.5</math> V dc  <b>OFF-State voltage:</b> 1.2 V dc max. (0-1.2 V dc)  <b>Max. load capacitance:</b> 0.1 <math>\mu</math>F  <b>Max. load inductance:</b> 10 H  <b>Leakage current:</b> 0.50 mA max.  <b>Cable resistance:</b> 10 <math>\Omega</math> max.  <b>OSSD test pulse width:</b> &lt; 100 microseconds  <b>OSSD test pulse period:</b> &gt; 100 milliseconds  <b>Switching current:</b> 0-0.5 A</p>	<b>Min. voltage:</b> 1 V ac/dc	<b>Max. voltage:</b> 60 V	<b>Min. current:</b> 5 mA ac/dc	<b>Max. current:</b> 300 mA	<b>Min. power:</b> 5 mW (5 mVA)	<b>Max. power:</b> 7 W (7 VA)	<b>Min. voltage:</b> 15 V ac/dc	<b>Max. voltage:</b> 120 V ac/dc	<b>Min. current:</b> 30 mA ac/dc	<b>Max. current:</b> 6 A	<b>Min. power:</b> 0.45 W (0.45 VA)	<b>Max. power:</b> 160 W (720 VA)
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<b>Min. power:</b> 0.45 W (0.45 VA)	<b>Max. power:</b> 160 W (720 VA)												

Continued on next page

## MMD-TA-12B &amp; MMD-TA-11B Muting Modules Specifications (cont'd)

Non-Safety Outputs	<p><b>Model MMD-TA-11B:</b> Aux. output 31–32 is a parallel connection of two N.C. contacts from internal relays K1 and K2 <b>Contact:</b> AgNi, 5 µm gold-plated <b>Low Current Rating:</b> <b>Caution: The 5 µm gold-plated contacts allow the switching of low current/low voltage.</b> To preserve the gold plating on the contacts and also guarantee reliable switching, the following values should be kept within the min. and max. ranges shown below:</p> <table border="0"> <tr> <td><b>Min. Voltage:</b> 1 V ac/dc</td> <td><b>Max. Voltage:</b> 24 V ac/dc</td> </tr> <tr> <td><b>Min. Current:</b> 5 mA ac/dc</td> <td><b>Max. Current:</b> 250 mA ac/dc</td> </tr> <tr> <td><b>Min. Power:</b> 5 mW (5 mVA)</td> <td><b>Max. Power:</b> 6 W (6 VA)</td> </tr> </table> <p><b>High Current Rating:</b> For higher loads, the min. and max. values of the contact(s) changes to:</p> <table border="0"> <tr> <td><b>Min. Voltage:</b> 15 V ac/dc</td> <td><b>Max. Voltage:</b> 120 V ac/dc</td> </tr> <tr> <td><b>Min. Current:</b> 30 mA ac/dc</td> <td><b>Max. Current:</b> 6 A</td> </tr> <tr> <td><b>Min. Power:</b> 0.45 W (0.45 VA)</td> <td><b>Max. Power:</b> 160 W/720 VA</td> </tr> </table> <p><b>Mechanical Life:</b> 50,000,000 operations Electrical Life: &gt;10 x 10<sup>6</sup> cycles</p> <p><b>Model MMD-TA-12B:</b> Z4–Z3 = Aux. 24 V / 250 mA PNP output follows the two OSSD safety outputs</p>	<b>Min. Voltage:</b> 1 V ac/dc	<b>Max. Voltage:</b> 24 V ac/dc	<b>Min. Current:</b> 5 mA ac/dc	<b>Max. Current:</b> 250 mA ac/dc	<b>Min. Power:</b> 5 mW (5 mVA)	<b>Max. Power:</b> 6 W (6 VA)	<b>Min. Voltage:</b> 15 V ac/dc	<b>Max. Voltage:</b> 120 V ac/dc	<b>Min. Current:</b> 30 mA ac/dc	<b>Max. Current:</b> 6 A	<b>Min. Power:</b> 0.45 W (0.45 VA)	<b>Max. Power:</b> 160 W/720 VA
<b>Min. Voltage:</b> 1 V ac/dc	<b>Max. Voltage:</b> 24 V ac/dc												
<b>Min. Current:</b> 5 mA ac/dc	<b>Max. Current:</b> 250 mA ac/dc												
<b>Min. Power:</b> 5 mW (5 mVA)	<b>Max. Power:</b> 6 W (6 VA)												
<b>Min. Voltage:</b> 15 V ac/dc	<b>Max. Voltage:</b> 120 V ac/dc												
<b>Min. Current:</b> 30 mA ac/dc	<b>Max. Current:</b> 6 A												
<b>Min. Power:</b> 0.45 W (0.45 VA)	<b>Max. Power:</b> 160 W/720 VA												
Status Indicators	<p><b>3 Status LEDs (Red, Green and Yellow):</b> indicate waiting for Reset, Lockout, Override, and OSSD status Yellow and Green LEDs adjacent to individual inputs/interfaces indicate status (ON = active/closed)</p>												
Diagnostic Code Display	<p>Diagnostic Display is a two-digit numeric display that indicates the cause of lockout conditions and the amount of time remaining for the backdoor timer</p>												
Muting Lamp Output	<p>A monitored or non-monitored (selectable) sinking output. If monitoring has been selected, the current draw must be 10 to 360 mA. Interconnect wire resistance &lt; 30 Ω.</p> <p><b>Max. switching voltage:</b> 30 V dc <b>Max. switching current:</b> 360 mA <b>Min. switching current:</b> 10 mA</p> <p><b>Saturation voltage:</b> ≤ 1.5 V dc @ 10 mA; ≤ 5 V dc @ 360 mA</p>												
Controls and Adjustments	<p><b>All configured on two redundant banks of DIP switches:</b></p> <ul style="list-style-type: none"> <li>Manual/auto reset</li> <li>One-way/two-way muting</li> <li>Monitored/non-monitored mute lamp output</li> <li>One-channel/two-channel/no EDM</li> <li>Backdoor timer</li> <li>Mute on power-up enable</li> </ul>												
Inputs	<p>The MSSl and the SSl can be interfaced with external safety devices that have either hard contact outputs or solid-state sourcing outputs</p> <p>When connecting the MSSl (S11-S12, S21-S22) or SSl (X5-X6, X7-X8) inputs to safety relay outputs or hard contacts, these contacts must be capable of switching 15 to 30 V dc at 10-50 mA</p> <p><b>Operating Range for MSSl and SSl Inputs</b> <b>OFF State:</b> –3 V to +5 V, 0 to 2 mA <b>ON State:</b> 15-30 V, 10-50 mA</p> <p><b>Muteable Safety Stop Interface (MSSl)</b> This input consists of two channels (MSSl-A and MSSl-B), and can be muted when the requirements for a mute cycle have been met. When muted, the OSSDs remain ON, independent of the MSSl status. If not muted, when either or both channels open, the OSSD outputs will go OFF. Maximum external resistance per channel must not exceed 400 Ω.</p> <p><b>Safety Stop Interface (SSl)</b> This input consists of two channels (SSl-A and SSl-B), and is always active. When one or both channels open, the OSSD Outputs will go OFF. Maximum external resistance per channel must not exceed 400 Ω.</p>												
External Device Monitoring (EDM)	<p>Two pairs of terminals are provided to monitor the state of external devices controlled by the OSSD outputs. Each device must be capable of switching 15-30 V dc at 10-50 mA.</p>												
Muting Device Inputs	<p>The muting devices work in pairs (M1 and M2, M3 and M4) and are required to be “closed” within 3 seconds of each other (simultaneity requirement/synchronous actuation) to initiate a mute (assuming all other conditions are met). Each muting device must be capable of switching 15-30 V dc at 10-50 mA.</p>												
Mute Enable Input	<p>The mute enable input must have +24 V dc applied in order to start a mute; opening this input after mute has begun has no effect. The switching device must be capable of switching 15-30 V dc at 10-50 mA.</p>												

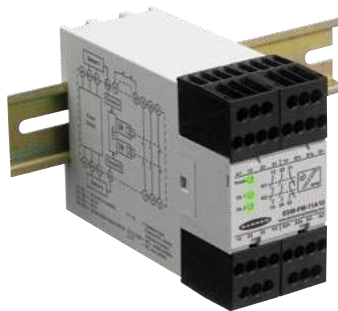
## MMD-TA-12B &amp; MMD-TA-11B Muting Modules Specifications (cont'd)

<b>Override Inputs</b>	The two-channel inputs must be closed within 3 seconds of each other (simultaneity/synchronous action requirement) and held closed during the 30-second Override. To initiate a subsequent Override, open both channels, wait 3 seconds, and then re-close both channels (within 3 seconds). The switching devices must be capable of switching 15-30 V dc at 10-50 mA.
<b>Reset Input</b>	Terminals must be closed for a minimum of 0.25 seconds and not more than 2.0 seconds in order to guarantee a reset. The switching device must be capable of switching 15-30 V dc at 10-50 mA.
<b>Mounting</b>	Mounts to standard 35 mm DIN rail track. Safety Module must be installed inside an enclosure rated NEMA 3 (IP54), or better.
<b>Vibration Resistance</b>	10 to 55 Hz @ 0.35 mm displacement per IEC 60068-2-6
<b>Construction</b>	Polycarbonate housing
<b>Connections</b>	Removable terminal blocks
<b>Environmental Rating</b>	NEMA 1; IP20
<b>Operating Conditions</b>	<b>Temperature range:</b> 0° to +50 °C <b>Relative humidity:</b> 95% (non-condensing)
<b>Design Standards</b>	Designed to comply with Safety Category 4 per SIL 3 (IEC 61508); SIL CL3 (IEC 62061); Category 4, Performance Level (PL) e (ISO 13849-1)
<b>Certifications</b>	 



# Safe Speed Monitoring

## Safety Modules

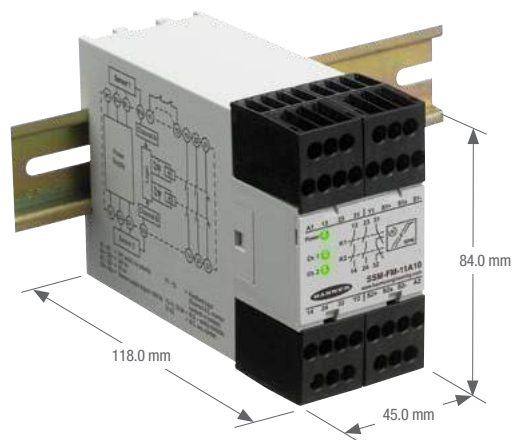


- Safe Speed Safety Modules monitor redundant devices, such as two sensors with PNP outputs for rotation and linear movements allowing locked gates or guards to be opened when speed drops below or above the dangerous level
- Each module has four adjustable RPM ranges
- Provides two normally open safety contacts and one normally closed auxiliary contact, each rated at 4 amps
- Housings are rugged polycarbonate and mount to standard 35 mm DIN rail

## SSM Safe Speed Monitoring Modules

Supply Voltage	Inputs	Safety Outputs	Aux. Outputs	Ranges (lpm)	Output Rating	Model
24 V ac/dc	2 PNP	2 NO	1 NC	5 - 40, 35 - 340, 300 - 2700, 1200 - 10500	4 amps	<b>SSM-FM-11A10</b>
24 V ac/dc	2 PNP	2 NO	1 NC	10 - 80, 80 - 650, 600 - 5300, 2400 - 20000	4 amps	<b>SSM-FM-11A20</b>

NC = Normally Closed Relay, NO = Normally Open Relay



SSM-FM-11A... Models

## SSM Safe Speed Monitoring Module Specifications

Supply Voltage and Current	24 V ac/dc, 50-60 Hz, no polarity AC: 24 V +10% / -15% DC: 24 V ±10% Power consumption: approx. 4 VA/2.5 W
Start-up Reset Time	1.5 second
Hysteresis	6% typical
Input Requirements	<b>PNP-Input sensors:</b> 24 V dc (terminals S1s and S2s) <b>Input current min.:</b> 3 mA <b>Input current max.:</b> 25 mA <b>Min. pulse time:</b> 1 millisecond ON; 1 millisecond OFF
Max. IPM at Inputs S1s and S2s	30,000
Adjustable Setting Ranges (Impulses per Minute)	<b>SSM-FM-11A10:</b> 5...40 ipm, 35...340 ipm, 300...2,700 ipm or 1,200...10,500 ipm <b>SSM-FM-11A20:</b> 10...80 ipm, 80...650 ipm, 600...5,300 ipm or 2,400...20,000 ipm
Output Response Time	<b>Standstill / Under-speed detection:</b> (60 seconds/adjusted IPM value) + 2.5 seconds = tDS tDS = output ON-delay after detection of standstill  <b>Over-speed detection:</b> <b>SSM-FM-11A10:</b> Range 5...10,500: tR = 700 milliseconds typical <b>SSM-FM-11A20:</b> Range 10...20,000: tR = 350 milliseconds typical
Output Configuration	<b>Outputs K1 &amp; K2:</b> two redundant (total of four) safety relay NO (forced-guided) contacts—AgNi, gold flashed; one auxiliary NC contact—AgNi, gold flashed  <b>Contact ratings (all NO and NC output contacts):</b> 2 normally open (NO) output channels and 1 normally closed (NC) auxiliary output  <b>Current Rating:</b> <b>Thermal Current Ith:</b> 4 A <b>Switching Capacity to AC 15:</b> 3 A / 230 V ac for NO contacts (per IEC/EN 60947-5-1) 2 A / 230 V ac for NC contact (per IEC/EN 60947-5-1) <b>Min. voltage:</b> 15 V ac/dc <b>Min. current:</b> 30 mA ac/dc <b>Min. power:</b> 0.45 W (0.45 VA) <b>Max. voltage:</b> 230 V ac/dc <b>Max. current:</b> 4 A <b>Max. power:</b> 100 W (92 VA)  <b>Mechanical Life:</b> ≥50,000,000 operations <b>Electrical life (switching cycles of the output contacts, resistive load):</b> 350,000 cycles @ 920 VA; 1,000,000 cycles @ 440 VA; 2,000,000 cycles @ 250 VA; 5,000,000 cycles @ 125 VA  NOTE: Transient suppression is recommended when switching inductive loads. Install suppressor across load. Never install suppressor across output contacts.
Indicators	<b>3 green LED indicators:</b> Power On, Channel 1 active, and Channel 2 active
Construction	Polycarbonate housing
Environmental Rating	Rated NEMA 1; IEC IP20 (IEC/EN 60529)
Mounting	Mounts to standard 35 mm DIN rail track. Safety Module must be installed inside an enclosure rated NEMA 3 (IEC IP54) or better.
Vibration Resistance	10 to 55 Hz @ 0.35 mm displacement per IEC 60068-2-6
Operating Conditions	<b>Temperature:</b> 0° to 50 °C <b>Max. Rel. Humidity:</b> 90% @ +50 °C (non-condensing)
Design Standards	Cat. 3 PL e per DIN EN ISO 13849-1; SIL CL 3 per IEC 62061
Certifications	Approvals are pending  This module was evaluated by UL to UL508 Industrial Control Equipment, which is not a certification relating to the safety performance of the module

# Interface Relay Modules

## Safety Modules

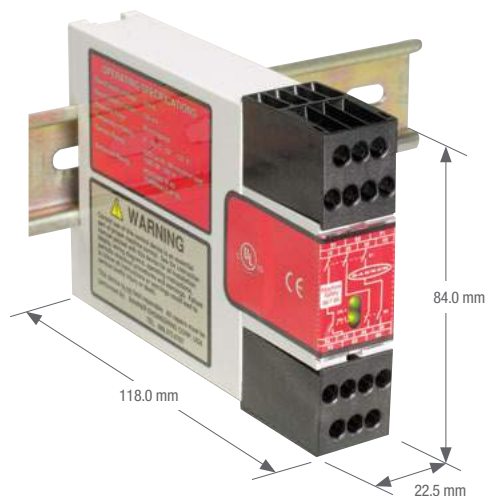


- Interface relay modules serve as a relay for safety devices with OSSD solid-state or hard contact outputs and external device monitoring, such as the EZ-SCREEN®
- Increases the switching current capacity of low-voltage safety devices up to 6 amps
- Requires no adjustment
- Housings are rugged polycarbonate and mount to standard 35 mm DIN rail
- Relay outputs are capable of reliably switching low or high current applications

## Interface Modules


Supply Voltage	Inputs	Safety Outputs	Aux. Outputs	Output Rating	Output Response Time	Models
24 V dc	2 NC (dual)	3 NO	—	6 amps	20 ms	IM-T-9A
24 V dc	2 NC (dual)	2 NO	1 NC	6 amps	20 ms	IM-T-11A

NC = Normally Closed Relay, NO = Normally Open Relay



Interface Models

## Interface Modules Specifications

<b>Input Voltage and Current</b>	24 V dc, +/-15% no polarity, 10% max. ripple; 50 mA per input channel Power consumption: approx. 2.4 W																				
<b>Supply Protection Circuitry</b>	Protected against transient voltages																				
<b>Overvoltage Category</b>	Output relay contact voltage of 1 V to 150 V ac/dc: Category III Output relay contact voltage of 151 V to 250 V ac/dc: Category II (Category III, if appropriate overvoltage reduction is provided, as described in data sheet.)																				
<b>Pollution Degree</b>	2																				
<b>Output Configuration</b>	<p><b>IM-T-9A:</b> 3 normally open output channels  <b>IM-T-11A:</b> 2 normally open output channels and 1 normally closed auxiliary output channel  Each normally open output channel is a series connection of contacts from two forced-guided (mechanically linked) relays, K1-K2.  The normally closed contact 31-32 is a parallel connection of contacts from K1-K2.  <b>Contacts:</b> AgNi, 5 µm gold-plated</p> <p><b>Low Current Rating:</b> The 5 µm gold-plated contacts allow the switching of low current/low voltage. In these low-power applications, multiple contacts can also be switched in series (e.g., "dry switching"). To preserve the gold plating on the contacts, do not exceed the following max. values at any time:</p> <table border="0"> <tr> <td><b>Min. voltage:</b> 1 V ac/dc</td> <td><b>Max. voltage:</b> 60 V</td> </tr> <tr> <td><b>Min. current:</b> 5 mA ac/dc</td> <td><b>Max. current:</b> 300 mA</td> </tr> <tr> <td><b>Min. power:</b> 5 mW (5 mVA)</td> <td><b>Max. power:</b> 7 W (7 VA)</td> </tr> </table> <p><b>High Current Rating:</b> If higher loads must be switched through one or more of the contacts, the minimum and maximum values of the contact(s) changes to:</p> <table border="0"> <tr> <td><b>Min. voltage:</b> 15 V ac/dc</td> <td><b>Max. voltage:</b> 250 V ac/dc, 6A resistive</td> </tr> <tr> <td><b>Min. current:</b> 30 mA ac/dc</td> <td><b>Max. power:</b> 150 W (1,500 VA)</td> </tr> <tr> <td><b>Min. power:</b> 0.45 W (0.45 VA)</td> <td>IEC 60947-5-1:</td> </tr> <tr> <td></td> <td><b>AC-15:</b> 230 V ac, <b>3A:</b> <b>DC-13:</b> 24 V dc, 4 A</td> </tr> </table> <p><b>Mechanical life:</b> 20,000,000 operations  <b>Electrical life:</b> 150,000 cycles @ 1500 VA; 1,000,000 cycles @ 450 VA; 2,000,000 cycles @ 250 VA; 5,000,000 VA @ 125 VA</p> <p><b>Feedback contact rating (Y1-Y2, Y3-Y4):</b></p> <table border="0"> <tr> <td><b>Min. voltage:</b> 1 V ac/dc</td> <td><b>Max. voltage:</b> 60 V</td> </tr> <tr> <td><b>Min. current:</b> 5 mA ac/dc</td> <td><b>Max. current:</b> 300 mA</td> </tr> <tr> <td><b>Min. power:</b> 5 mW (5 mVA)</td> <td><b>Max. power:</b> 7 W (7 VA)</td> </tr> </table> <p>NOTE: Transient suppression is recommended when switching inductive loads. Install suppressors across load. Never install suppressors across output contacts.</p>	<b>Min. voltage:</b> 1 V ac/dc	<b>Max. voltage:</b> 60 V	<b>Min. current:</b> 5 mA ac/dc	<b>Max. current:</b> 300 mA	<b>Min. power:</b> 5 mW (5 mVA)	<b>Max. power:</b> 7 W (7 VA)	<b>Min. voltage:</b> 15 V ac/dc	<b>Max. voltage:</b> 250 V ac/dc, 6A resistive	<b>Min. current:</b> 30 mA ac/dc	<b>Max. power:</b> 150 W (1,500 VA)	<b>Min. power:</b> 0.45 W (0.45 VA)	IEC 60947-5-1:		<b>AC-15:</b> 230 V ac, <b>3A:</b> <b>DC-13:</b> 24 V dc, 4 A	<b>Min. voltage:</b> 1 V ac/dc	<b>Max. voltage:</b> 60 V	<b>Min. current:</b> 5 mA ac/dc	<b>Max. current:</b> 300 mA	<b>Min. power:</b> 5 mW (5 mVA)	<b>Max. power:</b> 7 W (7 VA)
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<b>Min. power:</b> 5 mW (5 mVA)	<b>Max. power:</b> 7 W (7 VA)																				
<b>Output Response Time</b>	20 milliseconds max.																				
<b>Status Indicators</b>	<b>2 green LED indicators:</b> K1 energized    K2 energized																				
<b>Construction</b>	Polycarbonate housing																				
<b>Environmental Rating</b>	Rated NEMA 1; IEC IP20																				
<b>Mounting</b>	Mounts to standard 35 mm DIN rail track. Interface Module must be installed inside an enclosure rated NEMA 3 (IP54), or better.																				
<b>Vibration Resistance</b>	10 to 55Hz @ 0.35 mm displacement per IEC 60068-2-6																				
<b>Operating Conditions</b>	<b>Temperature:</b> 0° to +50 °C <b>Relative humidity:</b> 90% @ 50 °C (non-condensing)																				
<b>Design Standards</b>	EN 60204-1, IEC 61810-1, EN 60255-1, EN 50205																				
<b>Application Notes</b>	There are no adjustments or user-serviceable parts.																				
<b>Certifications</b>																					

# Extension Relay Modules

## Safety Modules

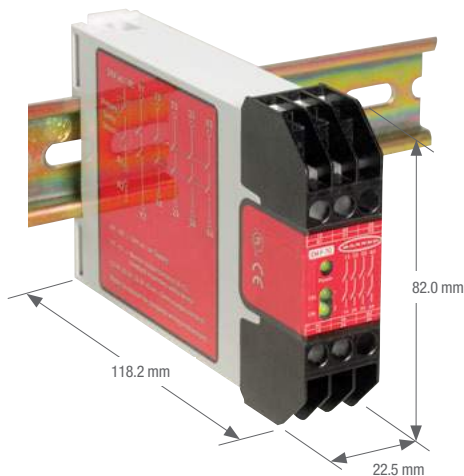


- Extension Relay Modules provide additional safety outputs for a safety modules with relay contact outputs and external device monitoring
- Provides delayed or immediate outputs, depending on model
- Requires no adjustment
- Housings are rugged polycarbonate and mount to standard 35 mm DIN rail

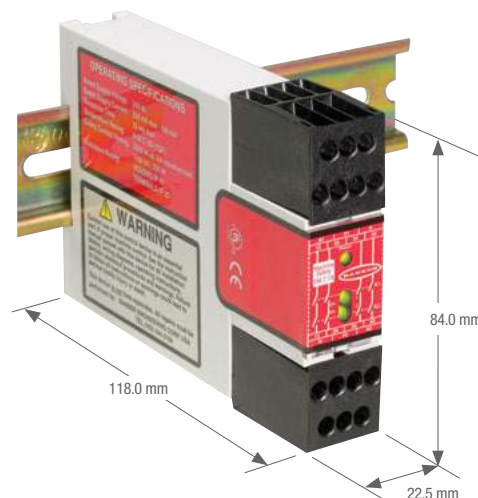
## Extension Modules

Supply Voltage	Inputs	Safety Outputs	Output Rating	Aux. Outputs	Output Response Time	Delay	Model
24 V dc	1 NC (single) or 2 NC (dual)	4 NO	6 amps	—	20 ms	—	EM-T-7A
24 V ac/dc	1 NC (single)	4 NO	6 amps	—	35 ms	—	EM-F-7G
24 V ac/dc	1 NC (single)	4 NO w/delay	6 amps	—	—	0.5 sec.	EM-FD-7G2
24 V ac/dc	1 NC (single)	4 NO w/delay	6 amps	—	—	1.0 sec.	EM-FD-7G3
24 V ac/dc	1 NC (single)	4 NO w/delay	6 amps	—	—	2.0 sec.	EM-FD-7G4

NC = Normally Closed Relay, NO = Normally Open Relay




EM-F.-7G Models



EM-T-7A Models

## Extension Module Specifications

Supply Voltage and Current	<b>EM-T-7A model:</b> A1-A2: 24 V dc, +/-15%, 10% max. ripple <b>EM-F/FD-7G.. models:</b> A1-A2: 24 V ac/dc, +/-10%, 10% max. ripple on dc
Supply Protection Circuitry	Protected against transient voltages and reverse polarity
Output Configuration	<p><b>Four output channels:</b></p> <p><b>EM-T-7A:</b> Each channel is a series connection of two forced-guided (positive-guided) relay contacts – AgNi, gold flashed</p> <p><b>EM-F/FD-7G.. :</b> Each channel is a series connection of two forced-guided (positive-guided) relay contacts – AgSnO2</p> <p><b>Contact ratings:</b></p> <p><b>Max. voltage:</b> 250 V ac/dc      <b>Max. current:</b> 6 A ac/dc  <b>Min. current:</b> 30 mA @ 24 V dc      <b>Max. power:</b> 1500 VA, 200 W  <b>Mechanical life:</b> <b>EM-T-7A model:</b> 50,000,000 operations  <b>EM-F/FD-7G.. models:</b> 10,000,000 operations  <b>Electrical life:</b> 100,000 at full resistive load</p> <p><b>Feedback contact rating (Y1-Y2):</b> <b>EM-T-7A:</b> 24 V dc @ 0.5A  <b>EM-F/FD-7G..:</b> 250 V ac/dc @ 3A</p> <p>NOTE: Transient suppression is recommended when switching inductive loads. Install suppressors across load.  Never install suppressors across output contacts.</p>
Output Response Time	<p><b>EM-T-7A:</b> 20 milliseconds max. (if channel u-k fails, maximum response time is 200 milliseconds)</p> <p><b>EM-F-7G:</b> 35 milliseconds typical</p> <p><b>EM-FD-7G..:</b></p> <p><b>Delay OFF:</b> 0.5 seconds ±30% for <b>EM-FD-7G2</b>,  1 seconds ±30% for <b>EM-FD-7G3</b>,  2 seconds ±30% for <b>EM-FD-7G4</b>,  as measured from the time when the supply voltage to A1 is interrupted</p> <p><b>Delay ON:</b> 30 milliseconds for all models</p>
Input Requirements	<p><b>EM-T-7A:</b> Inputs from Safety Device must each be capable of switching 30 to 250 mA @ 13 to 28 V dc</p> <p><b>EM-F/FD-7G..:</b> Input from Safety Device must be capable of switching 40 to 100 mA @ 13 to 27 V ac/dc</p>
Status Indicators	<p><b>3 green LEDs:</b></p> <p>Power ON  K1 energized  K2 energized</p>
Construction	Polycarbonate housing
Environmental Rating	Rated NEMA 1; IP20
Mounting	Mounts to standard 35 mm DIN rail track. Extension Module must be installed inside an enclosure rated NEMA 3 (IP54), or better.
Vibration Resistance	10 to 55 Hz @ 0.35 mm displacement per IEC 60068-2-6
Operating Conditions	<b>Temperature:</b> 0° to +50 °C      Relative humidity: 90% @ +50 °C (non-condensing)
Design standards	Designed to comply with EN 292-1, ISO 12100-1, EN 292-2, ISO 12100-2, EN 954-1, EN 20604-1, EN 60335-1
Certifications	 <p><b>EMERGENCY STOP DEVICE 29YL</b></p>

# ACCESSORIES



BRACKETS page 722

CORDSETS page 758












RETROREFLECTORS page 790

MISCELLANEOUS page 802



## Banner Bracket Selection Chart

## SENSORS

Q4X page 30		SMB18A page 732	SMBAMS18P page 735	SMBAMS18RA page 735	SMBQ4XFA.. page 755			
Q3X page 38		SMB18FA.. page 733	SMB18A page 732	SMBQ4XFA.. page 755				
Q518 page 40		SMB18A page 732	SMB18FA.. page 733	SMB18ATFA page 732	SMB18FM page 733	SMB18Q page 733	SMB18SF page 733	SMB18UR page 733
		SMB30SUS page 734	SMB312S page 734	SMB46A page xxx	SMB46L page 734	SMB46S page 734	SMB46U page 735	SMBAMS18P page 735
		SMB3018SC page 733	SMB30SK page 733	SMB312PD page 734	SMBQS18RA page 735	SMBQS18Y page 735	SMB4050YL page 734	SMB18FVK
		SMBAMS18RA page 735	SMBQS18A page 735	SMBQS18DIN page 735	SMH241F page 735	SMB18S	SMB18C	SMBQS18VP6LPQ
		SMB18RAVK						
Q530 page 56		SMB30MM page 737	SMB30Q page 737	SMB30RAVK page 737	SMB30SC page 738	SMB46L page 734	SMB46S page 734	SMBAMS30P page 738
		SMBAMS30RA page 738	SMBAMSRAB page 738	SMBQS30L page 738	SMBQS30LT page 738	SMBQS30Y page 738	SMBQS30YL page 738	SMB30A page 737
		SMB30FA page 737	SMB30S	SMB30C	SMB30FVK	SMB30SM		
Q12 page 66		SMBQ12A page 732	SMBQ12T page 732	SMBQ12S				
Q20 page 70		SMBQ20H page 736	SMBQ20L page 736	SMBQ20LV page 736	SMBQ20U page 736			
Q45/Q45U page 84		SMB30A page 737	SMB30FA.. page 737	SMB30MM page 737	SMB30Q page 737	SMB30RAVK page 737	SMB30SC page 737	SMB30UR page 739
		SMBAMS30P page 738	SMBAMS30RA page 738	SMB30C	SMB30FVK	SMB30S	SMB30SM	
Q60 page 88		SMBAMSQ60IP page 739	SMBAMSQ60P page 739	SMBQ60 page 739	SMBQ60IP			
MINI-BEAM page 76		SMB18A page 732	SMB18FA.. page 733	SMB18Q page 733	SMB18SF page 733	SMB18UR page 733	SMB3018SC page 733	SMB30SK page 733
		SMB30SUS page 734	SMB312B page 734	SMB312PD page 734	SMB312S page 734	SMB46L page 734	SMB46S page 734	SMB46U page 735
		SMBAMS18P page 735	SMBAMS18RA page 735	SMH241F page 736	SMB18FM page 733	SMB18S	SMB18C	SMBQS18VLP6LPQ
Q25 page 78		SMB18A page 732	SMB18FA.. page 733	SMB18Q page 733	SMB18SF page 733	SMB18UR page 733	SMB3018SC page 733	SMB30SK page 733
		SMB312PD page 734						
Q40 page 80		SMB30A page 737	SMB30FA.. page 737	SMB30MM page 737	SMB30Q page 737	SMB30RAVK page 737	SMB30SC page 738	SMBAMS30P page 738
		SMBAMS30RA page 738	SMB30C	SMB30FVK	SMB30S	SMB30SM		















## Banner Bracket Selection Chart

## SENSORS

Pico Dot page 92		SMB46A page 867	SMB46L page 868	SMB46S page 868	SMB46U page 868			
QM42/QMT42 page 94		SMB3018SC page 866	SMB30SK page 866	SMB30SUS page 866	SMB42F page 875	SMB42L page 875	SMB42T page 875	SMB42U page 875
		SMB46L page 868	SMB46S page 868	SMB46U page 868	SMH241F page 870			
T8 page 100		SMB8MM page 827	SMBF page 827					
T18/T18U page 102		SMB1815SF page 870	SMB18A page 732	SMB18AFA.. page 864	SMB18FA.. page 733	SMB18FM page 733	SMB18Q page 733	SMB18SF page 733
		SMB18UR page 733	SMB3018SC page 866	SMB30SK page 866	SMBC18 page 888	SMBAMS18P page 868	SMBAMS18RA page 868	SMBT18Y page 870
		SMB18S	SMB18C	SMB312P	SMBQS18VP6LPQ			
TM18 page 106		SMB18A page 732	SMB18AFA.. page 864	SMB18FA.. page 733	SMB18FM page 733	SMB18Q page 733	SMB18SF page 733	SMB18UR page 733
		SMB3018SC page 866	SMB30SK page 866	SMB312PD page 867	SMBAMS18P page 868	SMBAMS18RA page 868	SMBT18Y page 870	SMBC18 page 888
		SMB18C	SMB18A page 732	SMBQS18VP6LPQ				
T30/T30U page 110		SMB1815SF page 870	SMB30A page 872	SMB30FA.. page 872	SMB30MM page 872	SMB30Q page 872	SMB30RAVK page 873	SMB30SC page 873
		SMBAMS30P page 873	SMBAMS30RA page 873	SMB30C	SMB30S	SMB30SM	SMBFVK	
M12 page 116		SMB12FA.. page 863	SMB12MM page 864	SMBQS12PD page 864	SMB1812SF page 865			
S12-2 page 122		SMB12FA.. page 863	SMB12MM page 864	SMBQS12PD page 864	SMB1812SF page 865			
SB12/SB12T page 120		SMB12MM page 864	SMBQS12PD page 864	SMB1812SF page 865				
S18/S18-2/S18U page 122		SMB18A page 732	SMB18FA.. page 733	SMB18FM page 733	SMB18Q page 733	SMB18SF page 733	SMB18UR page 733	SMB3018SC page 866
		SMB30SK page 866	SMB312PD page 867	SMB46A page 867	SMBAMS18P page 868	SMBC18 page 888	SMBQS18VP6LPQ	SMB18C
		SMB18S						
M18 page 126		SMB18A page 732	SMB18FA.. page 733	SMB18FM page 733	SMB18Q page 733	SMB18SF page 733	SMB18UR page 733	SMB3018SC page 866
		SMB30SK page 866	SMB312PD page 867	SMB46A page 867	SMBAMS18P page 868	SMBC18 page 888	SMBQS18VP6LPQ	SMB18C
		SMB18S						




## Banner Bracket Selection Chart

## SENSORS

S30/SM30 page 140		SMB30A page 737	SMB30FA.. page 737	SMB30MM page 737	SMB30Q page 737	SMB30RAVK page 737	SMB30SC page 738	SMBAMS30P page 738
		SMBAMS30RA page 738	SMB30C	SMB30S	SMB30SM	SMB30FVK		
SL10 & SL30 page 147		SMBSL page 740						
LX page 148		SMBLX page 740	SMBLXR page 740					
VS1 page 156		SMBVS1S page 730	SMBVS1SC page 730	SMBVS1T page 731	SMBVS1TC page 731			
VS2 page 158		SMBVS2RA page 731						
VS3 page 160		SMBVS3S page 731	SMBVS3T page 731					
DF-G page 162		DIN-35.. page 730	SA-DIN.. page 730	SMBR55F01 page 730	SMBR55F02	SMBR55RA		
D10 page 172		DIN-35.. page 730	SMBR55F01 page 730	SMBR55FRA page 730	SA-DIN.. page 730	SMBR55F02		
R55F page 294		DIN-35.. page 730	SMBR55F01 page 730	SMBR55FRA page 730	SMBR55F02			
LTF page 204		SMBLTFL	SMBLTFU	SMBAMSSLTFP				
LE page 206		SMBLEU	SMBLEL	SMBLEFA				
LH page 208		SMBLH1 page 740	SMBLH.. page 740					
LT3 page 212		SMBLT3IP page 741	SMBLT32 page 741	SMBLT31 page 740	SMBAMSLT3IP	SMBAMSLT3P		
LT7 page 214		SMBLT7 page 741	SMBLT7F page 741					












## Banner Bracket Selection Chart

## SENSORS

QT50U page 238		SMB30A page 737	SMB30FA.. page 737	SMB30MM page 737	SMB30RAVK page 737	SMB30SC page 738	SMBAMS30P page 738	SMBAMS30RA page 738
		SMB30C	SMB30S	SMB30FVK	SMB30SM			
M25U page 226		SMBM25A page 741	SMBM25B page 741					
QT50R page 244		SMB30A page 737	SMB30FA.. page 737	SMB30MM page 737	SMB30SC page 738	SMBAMS30P page 738	SMBAMS30RA page 738	
		SMB30C	SMB30S	SMB30FVK	SMB30SM			
EZ-ARRAY page 248		EZA-MBK-11 page 750	EZA-MBK-12 page 750	EZA-MBK-20 page 750	SMBLBCZB page 741			
MINI-ARRAY page 252		MSMB-3 page 741						
R58 page 290		SMB55A page 742	SMB55F page 742	SMB55RA page 742	SMB55S page 742			
QC50 page 284		SMBQC50 page 742						
QL56 page 288		SMB55A page 742	SMB55F page 742	SMB55RA page 742	SMB55S page 742			
QM26 page 298		SMBLSTDLQ26 page 737	SMBLSTQ26 page 737					
QMH26 page 300		SMBQMH26-SS-150 page 737						
Q26 page 318		SMBLSTDLQ26 page 737	SMBLSTQ26 page 737					
M18-T page 262		SMB18A page 732	SMB18FA.. page 732	SMB18FM page 733	SMB18Q page 733	SMB18SF page 733	SMB18UR page 733	SMB3018SC page 733
		SMB30SK page 733	SMB312PD page 734	SMB46A page 734	SMBAMS18P page 735	SMBC18 page 747	SMBQS18VP6LPQ	SMB18C






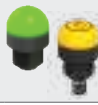




## Banner Bracket Selection Chart

## VISION

iVu page 342		SMBIVUB page xxx	SMBIVURAL page xxx	SMBIVURAR page xxx	SMBIVUU page xxx			
PresencePLUS® PRO page 358		SMBPPDE page xxx	SMBPPDH page xxx	SMBPPLU page xxx	SMBPPRA page xxx	SMBPPROMRA page xxx	SMBPPSU page xxx	SMBPPU page xxx
PresencePLUS® P4 page 354		SMBP4RAB page xxx	SMBP4RAS page xxx	SMBP4SRAF page xxx				
Ring Lights page 366		SMBPMPRHI page xxx	SMBPPRHI page xxx					
Area Lights page 378		SMBABM page xxx	SMBACM page xxx	SMBAMS70A page xxx	SMBAMS70AS page xxx	SMBASCMM page xxx	SMBP42ASM page xxx	SMBP4ASM page xxx
		SMBAMS30PL52	SMBVLA62X62RA page xxx					
Backlights page 370		SMBABM page xxx	SMBACM page xxx	SMBBSSM page xxx				
Linear Array Backlights page 371		SMBLAXRA page xxx	SMBLAXU page xxx					
Linear Array page 372		SMBLASRA page xxx	SMBLAXRA page xxx	SMBLAXU page xxx				
On-Axis Lights page 373		SMBP40AL100 page xxx	SMBP40AL50 page xxx	SMBPPOAL100 page xxx	SMBPPOAL50 page xxx			
Spot Lights page 374		SMBP42ASM page xxx	SMBPPLK					
Spot Lights page 375		SMB30A page xxx	SMB30FA. page xxx	SMB30SC page xxx	SMBAMS30P page xxx	SMBAMS30RA page xxx		





## Banner Bracket Selection Chart

## LIGHTING &amp; INDICATORS

WLA page 402		SMBBSSM page 885	SMBBSRA page 885					
WL50S page 404		SMB30A page 872	SMB30SC page 873	SMB30FA.. page 872	SMBAMS30RA page 873	SMB30MM page 872	SMBAMS30P page 873	
WL50-2 page 406		SMB30A page 872	SMB30SC page 873	SMB30MM page 872				
Tower Lights page 412		SMB30A page 872	SMB30FA.. page 872	SMB30MM page 872	SMB30RAVK page 873	SMB30SC page 873	SMBAMS30P page 873	SMBAMS30RA page 873
		SMBAMS30RLJ page 887	SMB30Q page 872	SMBAMS30RLS page 888	SMBAMS30R52	SMBAMS30RL52R	SMB30FVK	SMB30C
		SMB30S	SMB30SM					
K50 Housing page 434		SMB30A page 872	SMB30FA.. page 872	SMB30MM page 872	SMB30RAVK page 873	SMB30SC page 873	SMBAMS30P page 873	SMB30Q page 872
		SMBAMS30PL52R	SMBAMS30PL52	SMBAMS30RA page 873	SMBAMS30RLJ page 887	SMBAMS30RLS page 888	SMB30C	SA-K50A18 page 888
		SMBARP...30 page 888	SMBAMS30P page 873	SMB30FVK	SMB30S	SMB30SM		
K30 Housing page 434		SMB22A	SMBAMS22RA	SMBAMS22P	SMB22FVK	SMB30RAVK		
S18L page 450		SMB18A page 732	SMB18FA.. page 864	SMB18FM page 865	SMB18Q page 865	SMB18SF page 865	SMB18UR page 865	SMB3018SC page 866
		SMB30SK page 866	SMB312PD page 867	SMB46A page 867	SMBAMS18P page 868	SMB18C page 888	SMBQS18VP6LPQ	SMB18C
		SMB18S						
S22L page 451		SMB22A	SMB22FVK	SMB22RAVK	SMBAMS22P	SMBAMS22RA		
T8L page 454		SMB8MM page 863	SMBF page 860					
K80 Housing page 458		SMBDX80DIN page 860	SMBAMS80PL52R	SMBAMS80PL52				













## Banner Bracket Selection Chart

## LIGHTING &amp; INDICATORS

OTB/LTB/VTB page 478		SMB30A page 872	SMB30FA.. page 872	SMB30MM page 872	SMB30Q page 872	SMB30RAVK page 873	SMB30SC page 873	SMBAMS30P page 873
		SMBAMS30RA page 873	SMBAMS30RLJ page 887	SMBAMS30RLS page 888	SMBAMS30PL52	SMBAMS30PL52R	K50-SA-K50	SMB30C
		SMB30S	SMB30SM	SMBFVR				
PVD page page 496		SMBPVA1 page 888	SMBPVA11 page 889	SMBPVA2 page 889	SMBPVA..C page 889	SMBPVA6 page 890	SMBPVA7 page 890	SMBPVA8 page 890
		SMBPVA9 page 890	SMBPVA..A page 889	SMBPVA..AB page 889				
PVL page 498		SMBPVL1 page 890	SMBPVL2 page 889	SMBPVL3 page 891	SMBPVL4 page 891	SMBPVL5 page 891		
PVA page 522		SMBPVA1 page 888	SMBPVA2 page 889	SMBPVA.. page 889	SMBPVA..A page 889	SMBPVA..AB page 889	SMBPVA..C page 889	SMBPVA6 page 890
		SMBPVA7 page 890	SMBPVA8 page 890	SMBPVA9 page 890				

## Banner Bracket Selection Chart

## SAFETY

EZ-SCREEN® 14 & 30 mm Resolution page 556		EZA-MBK-11 page 892	EZA-MBK-12 page 892	EZA-MBK-21 page 893				
EZ-SCREEN® LP 14 & 25 m Resolution page 564		LPA-MBK-11 page 894	LPA-MBK-12 page 894	LPA-MBK-20 page 894	LPA-MBK-135 page 894	LPA-MBK-180 page 895	LPA-MBK-PXXX page 896	LPA-MBK-21 page 894
EZ-SCREEN® Grid page 572		EZA-MBK-1 page 892	EZA-MBK-2 page 892	EZA-MBK-3 page 893	EZA-MBK-9 page 894			
EZ-SCREEN® Point page 573		EZA-MBK-1 page 892	EZA-MBK-2 page 892	EZA-MBK-3 page 893	EZA-MBK-4 page 893	EZA-MBK-5 page 893	EZA-MBK-9 page 894	
EZ-SCREEN® Type 2 30 mm Resolution page 578		USCMB-.. page 897	USMB-1 page 897	USMB-6 page 898	USMB-8 page 898			
AG4 page 693		AG4-MBK1 page 896						
XS26-2 page 588		DIN-35-.. page 860						
SC22-3 page 592		DIN-35-.. page 860						
Safety Modules page xxx		DIN-35-.. page 860						
DUO-TOUCH® SG Run Bars page xxx		STBA-RB1-MB1 page 897	STBA-RB1-MB2 page 897	STBA-RB1-MB3 page 897	STBA-RB2-MB1 page 897	STBA-RB2-MB2 page 897	STBA-RB2-MB3 page 897	
30 mm Mount E-Stops page xxx		SSA-MBK-EEC1 page 896	SSA-MBK-EEC2 page 896	SSA-MBK-EEC3 page 896				
ED1G Enabling Devices page 636		ED9Z-GH1 page 898						



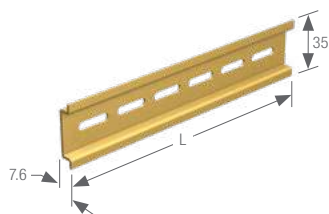
## ACCESSORIES

## BRACKETS

## CORDSETS

## RETROREFLECTORS

## DIN-35... (All measurements in mm)



Hole center spacing: 35.1  
Hole size: 25.4 x 5.3

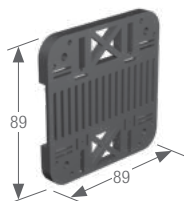
Model	Length (L)
DIN-35-70	70
DIN-35-105	105
DIN-35-140	140

- Available in 70, 105 & 140 mm lengths

Used with:

DF-G1	R55F	SC22-3 Controllers
D10	MINI-ARRAY Controller	Two-Hand Control Modules
D12	High-Res MINI-ARRAY Controller	Safety Modules

## SMBDX80DIN (All measurements in mm)

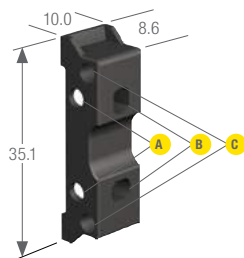


- Black reinforced thermoplastic
- Bracket for mounting on 35 mm DIN rail

Used with:

K80	EZ-LIGHT SP150	DX81
EZ-LIGHT K80L	DX80	DX91
EZ-LIGHT K80CLR	DX85	DX90

## SA-DIN-BRACKET\* (All measurements in mm)



Hole center spacing:  
A = 16, B = 25.4, C = 15.2

Hole size:  
A =  $\varnothing$  3.2, B =  $\varnothing$  3.3, C =  $\varnothing$  4.4

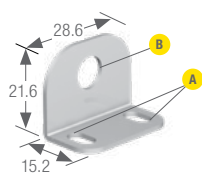
- Plastic bracket with mounting screws

\* SA-DIN-BRACKET-10  
(Kit of 10 brackets and mounting screws)

Used with:

DF-G1  
D10

## SMBF (All measurements in mm)



Hole center spacing:  
A = 19.1

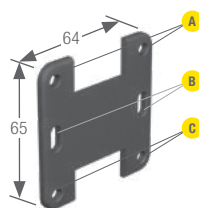
Hole size:  
A = 8 x 4.6, B =  $\varnothing$  8.3

- Right-angle bracket for glass fiber optic with 5/16" 24 threaded tip
- 18-ga. stainless steel

Used with:

Glass fiber with 5/16" - 24 threaded tip

## SMBR55F01 (All measurements in mm)



Hole center spacing:

A, B, C = 50.8, A to B,  
B to C = 25.3

Hole size:

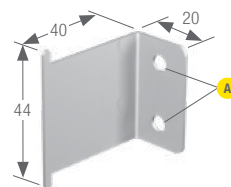
A, C =  $\varnothing$  5.6, B = 11 x 5

- Flat-mounting bracket
- Eliminates need for DIN rail
- Molded PBT polyester
- Black reinforced thermoplastic polyester

Used with:

R55F D10  
DF-G1 D12

## SMBR55FRA (All measurements in mm)



Hole center spacing:

A = 20

Hole size

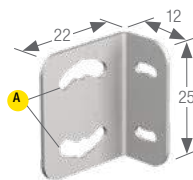
A =  $\varnothing$  5.4

- Side-mounting bracket
- Eliminates need for DIN rail
- 19-ga. stainless steel

Used with:

R55F D10  
DF-G1 D12

## SMBVS1S (All measurements in mm)



Hole center spacing:

A = 16.8

Hole size:

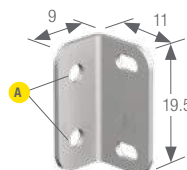
A = 3.5 x 12.3

- Short right-angle bracket
- 18-ga. stainless steel

Used with:

VS1

## SMBVS1SC (All measurements in mm)



Hole center spacing:

A = 10.0

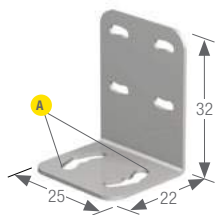
Hole size:

A =  $\varnothing$  2.8

- Short right-angle bracket
- 18-ga. stainless steel

Used with:

VS1

**SMBVS1T** (All measurements in mm)

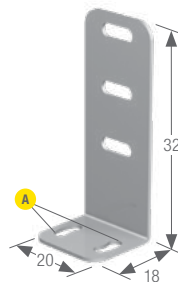
Hole center spacing:

$$\text{A} = 16.8$$

Hole size:

$$\text{A} = 3.5 \times 12.3$$

- Tall right-angle bracket
- Stainless steel

Used with:  
VS1**SMBVS3T** (All measurements in mm)

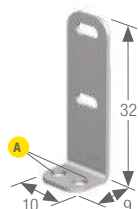
Hole center spacing:

$$\text{A} = 13.5$$

Hole size:

$$\text{A} = 3.2 \times 7.7$$

- Tall right-angle bracket
- 300 stainless steel

Used with:  
VS3**SMBVS1TC** (All measurements in mm)

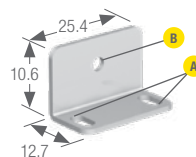
Hole center spacing:

$$\text{A} = 5.5$$

Hole size:

$$\text{A} = \varnothing 2.8$$

- Tall right-angle compact bracket
- 300 stainless steel

Used with:  
VS1**SMBFP3** (All measurements in mm)

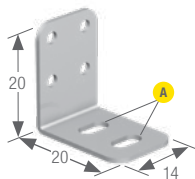
Hole center spacing:

$$\text{A} = 19.1$$

Hole size:

$$\text{A} = 6.5 \times 3.6, \text{ B} = \varnothing 3.2$$

- Right-angle bracket for glass fiber optic with 3 mm threaded tip
- 18-ga. stainless steel

Used with:  
Plastic fiber with M3 tip**SMBVS2RA** (All measurements in mm)

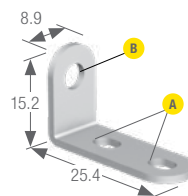
Hole center spacing:

$$\text{A} = 80$$

Hole size:

$$\text{A} = 3.2 \times 6$$

- Right-angle bracket
- Stainless steel

Used with:  
VS2**SMBFP4N** (All measurements in mm)

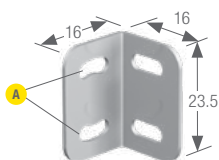
Hole center spacing:

$$\text{A} = 12$$

Hole size:

$$\text{A} = 4.8 \times 5, \text{ B} = \varnothing 4.2$$

- Low-profile right-angle bracket for plastic fiber optics with 4 mm threaded tip
- 18-ga. stainless steel

Used with:  
Plastic fiber with M4 tip**SMBVS3S** (All measurements in mm)

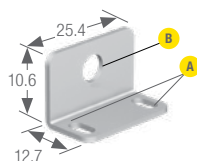
Hole center spacing:

$$\text{A} = 13.5$$

Hole size:

$$\text{A} = 3.2 \times 7.7$$

- Right-angle bracket
- 300 stainless steel

Used with:  
VS3**SMBFP6** (All measurements in mm)

Hole center spacing:

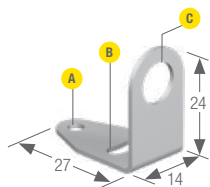
$$\text{A} = 19.1$$

Hole size:

$$\text{A} = 6.5 \times 3.6, \text{ B} = \varnothing 6.2$$

- Right-angle bracket for plastic fiber optics with 6 mm threaded tip
- 18-ga. stainless steel

Used with:  
Plastic fiber with M6 tip

**SMB8MM** (All measurements in mm)

Hole center spacing:

$$A \text{ to } B = 14$$

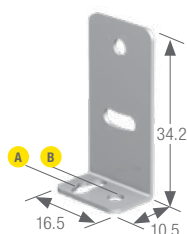
Hole size:

$$A = \varnothing 3.5, B = 8.3 \times 3.5, C = \varnothing 8.4$$

- Right-angle bracket
- 300 series stainless steel

Used with:

T8  
EZ-LIGHT T8L2  
Glass fiber with 5/116" - 24 threaded tip

**SMBQ12A** (All measurements in mm)

Hole center spacing:

$$A \text{ to } B = 7.6$$

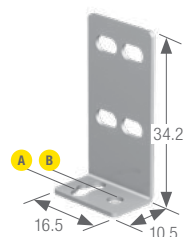
Hole size:

$$A = 3.5 \times 8.1, B = \varnothing 3.2$$

- Adjustable right-angle bracket
- 20-ga. 300 series stainless steel

Used with:

Q12

**SMBQ12T** (All measurements in mm)

Hole center spacing:

$$A \text{ to } B = 7.6$$

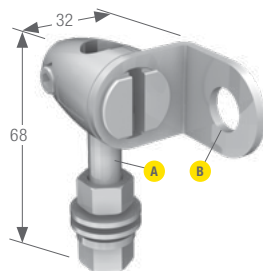
Hole size:

$$A = 3.5 \times 8.1, B = \varnothing 3.2$$

- Right-angle bracket
- 20-ga. 300 series stainless steel

Used with:

Q12

**SMB12FA..** (All measurements in mm)

Hole size:

$$B = \varnothing 12.1$$

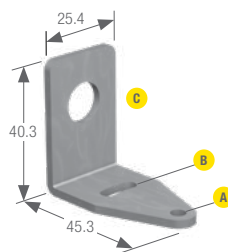
Model	Bolt Thread (A)
SMB12FA	3/8 - 16 x 2"
SMB12FAM10	M10 - 1.5 x 50

SMB12FA	3/8 - 16 x 2"
SMB12FAM10	M10 - 1.5 x 50

- Swivel bracket with tilt and pan movement for precision adjustment
- Easy sensor mounting to extruded rail T-slots
- Metric and inch size bolts available
- 12 mm sensor mounting hole

Used with:

M12  
S12

**SMB12MM** (All measurements in mm)

Hole center spacing:

$$A \text{ to } B = 26$$

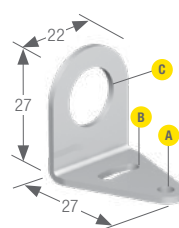
Hole size:

$$A = \varnothing 4.6, B = 12.8 \times 4.6, C = \varnothing 12.3$$

- $\pm 10^\circ$  of lateral movement
- 12-ga. stainless steel
- Mounting holes for M4 (#6) hardware
- 12 mm sensor mounting hole

Used with:

M12  
S12

**SMBQS12PD** (All measurements in mm)

Hole center spacing:

$$A \text{ to } B = 14$$

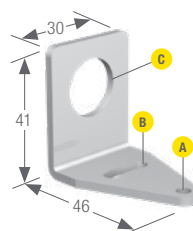
Hole size:

$$A = \varnothing 3.5, B = 3.5 \times 10.6, C = \varnothing 13$$

- Right-angle, nose-mount bracket
- 16-ga. 300 series stainless steel

Used with:

M12  
S12

**SMB18A** (All measurements in mm)

Hole center spacing:

$$A \text{ to } B = 24.2$$

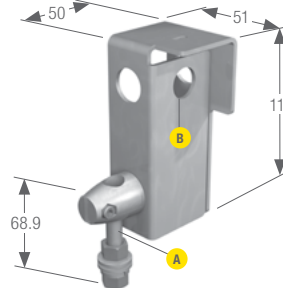
Hole size:

$$A = \varnothing 4.6, B = 17 \times 4.6, C = \varnothing 18.5$$

- Right-angle mounting bracket with a curved slot for versatile orientation
- 12-ga. stainless steel, 18 mm sensor mounting hole
- Clearance for M4 (#8) hardware

Used with: M18 TM18 T18U  
QS18 S18 S18U Q25  
T18 QS18U

MINI-BEAM EZ-LIGHT T18  
Q45UR M18C2 EZ-LIGHT M18  
Q45UR S18C2

**SMB18ATFA..** (All measurements in mm)

Hole size:

$$B = \varnothing 18.1$$

Model	Bolt Thread (A)
SMB18ATFA	3/8 - 16 x 2"
SMB18ATFAM10	M10 - 1.5 x 50

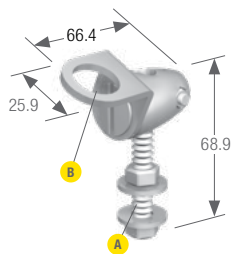
SMB18ATFA	3/8 - 16 x 2"
SMB18ATFAM10	M10 - 1.5 x 50

- Protective, swivel bracket with tilt and pan movement for precision adjustment
- Easy sensor mounting to extruded rail T-slots
- Metric and inch size bolts available
- Mounting hole for 18 mm sensors

Used with:

TM18  
T18

QS18 (AC/DC models)

**SMB18FA..** (All measurements in mm)

Hole size:

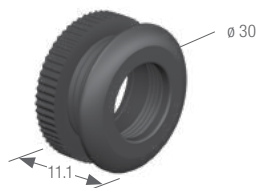
● **B** =  $\varnothing$  18

Model	Bolt Thread (A)
SMB18FA	3/8 - 16 x 2"
SMB18FAM10	M10 - 1.5 x 50

- Swivel bracket with tilt and pan movement for precision adjustment
- Easy sensor mounting to extruded rail T-slots
- Metric and inch size bolts available
- 18 mm sensor mounting hole

Used with:	TM18
QS18	QS18U
S18U	T18U

MINI-BEAM	Q45UR S18C2
S18/M18/T18	EZ-LIGHT M18
Q45UR M18C2	EZ-LIGHT T18

**SMB18FM** (All measurements in mm)

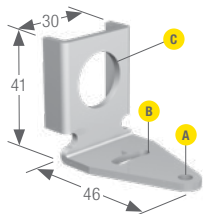
Hole center spacing:

Hole size:

- Two-piece thermoplastic through-mount bracket
- Mounting nut (M22 x 1.5) and outer flange (M22 x 1.5 external, M18 x 1 internal)

Used with:	S18
QS18	T18
M18	TM18

S18-2
S18U
QS18U

**SMB18Q** (All measurements in mm)

Hole center spacing:

● **A** to **B** = 24.2

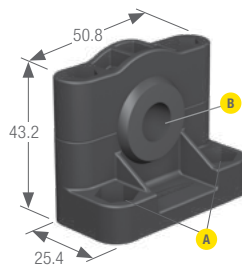
Hole size:

● **A** =  $\varnothing$  4.6, ● **B** = 17 x 4.6, ● **C** =  $\varnothing$  19

- Right-angle flanged bracket
- 18 mm sensor mounting hole
- 12-ga. stainless steel

Used with:	S18	S18U	QS18U
QS18	M18	TM18	
	T18	T18U	

MINI-BEAM	Q45UR M18C2
Q45UR S18C2	EZ-LIGHT T18
Q45UR M18C2	EZ-LIGHT M18

**SMB1812SF** (All measurements in mm)

Hole center spacing:

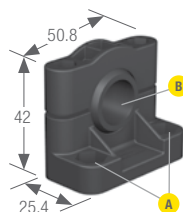
● **A** = 36.1

Hole size:

● **A** =  $\varnothing$  5, ● **B** =  $\varnothing$  12

- Swivel bracket with 12 mm mounting hole
- Black reinforced thermoplastic polyester
- Stainless steel mounting and swivel locking hardware included

Used with:
M12
S12

**SMB18SF** (All measurements in mm)

Hole center spacing:

● **A** = 36

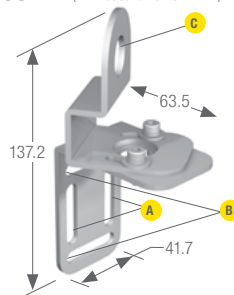
Hole size:

● **A** =  $\varnothing$  5.3, ● **B** =  $\varnothing$  18

- 18 mm swivel bracket with M18 x 1 internal thread
- Black thermoplastic polyester
- Stainless steel swivel locking hardware included

Used with:	S18	Q25
QS18	M18	T18
	S18U	QS18U
	T18U	

EZ-LIGHT T18	Q45UR S18C2
EZ-LIGHT M18	Q45UR M18C2
MINI-BEAM	

**SMB18UR** (All measurements in mm)

Hole center spacing:

● **A** = 25.4, ● **B** = 46.7

Hole size:

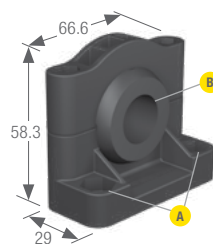
● **A**, ● **B** = 6.9 x 32, ● **C** =  $\varnothing$  18.3

- 2-piece universal swivel bracket
- 300 series stainless steel
- Stainless steel swivel locking hardware included
- Mounting hole for 18 mm sensor

Used with:	T18	T18U
QS18*	TM18	Q25
S18	S18U	EZ-LIGHT T18
M18	QS18U*	EZ-LIGHT M18

Q45UR S18C2	Q45UR M18C2
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\* Contact factory to verify compatibility with integral QD models.

**SMB3018SC** (All measurements in mm)

Hole center spacing:

● **A** = 50.8

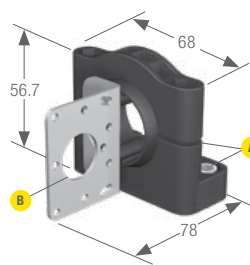
Hole size:

● **A** =  $\varnothing$  7, ● **B** =  $\varnothing$  18

- 18 mm swivel side or barrel-mount bracket
- Black reinforced thermoplastic polyester
- Stainless steel swivel locking hardware included

Used with:	T18U	Q25
QS18	S18U	S18/M18/T18
	QS18U	

M18/S18/T18	EZ-LIGHT T18
Q45UR S18C2	MINI-BEAM
Q45UR M18C2	QM42/QMT42

**SMB30SK** (All measurements in mm)

Hole center spacing:

● **A** = 50.8

Hole size:

● **A** =  $\varnothing$  7, ● **B** =  $\varnothing$  18

- Flat-mount swivel bracket with extended range of motion
- Black reinforced thermoplastic polyester and 316 stainless steel
- Stainless steel swivel locking hardware included

Used with:	T18U	Q25
QS18	S18U	MINI-BEAM
	QS18U	

QM42/QMT42	EZ-LIGHT T18
S18/M18/T18	EZ-LIGHT M18
Q45UR S18C2	Q45UR M18C2

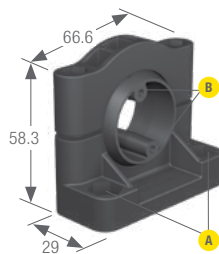
## ACCESSORIES

## BRACKETS

## CORDSETS

## RETROREFLECTORS

## SMB30SUS (All measurements in mm)



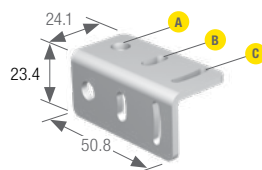
Hole center spacing:  
**A** = 50.8, **B** = 24.1  
 Hole size:  
**A** =  $\varnothing$  7, **B** =  $\varnothing$  7.6

- Side-mount swivel bracket with extended range of motion
- Black reinforced thermoplastic polyester
- Stainless steel swivel locking hardware included

Used with:  
 QS18

MINI-BEAM  
 QM42/QMT42  
 QS18U

## SMB312B (All measurements in mm)

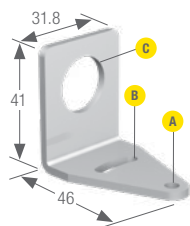


Hole center spacing:  
**A** to **B** = 17.3, **B** to **C** = 17.7, **A** to **C** = 35  
 Hole size:  
**A** =  $\varnothing$  6.9, **B** = 4.3 x 10.5, **C** = 3.1 x 15.2

- Right-angle
- Stainless steel base mounting bracket
- Includes mounting foot

Used with:  
 MINI-BEAM

## SMB312PD (All measurements in mm)

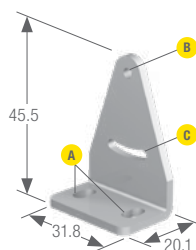


Hole center spacing:  
**A** = 20.3, **B** to **C** = 5.1  
 Hole size:  
**A** = 4.3 x 7.5, **B** =  $\varnothing$  3, **C** = 3 x 15.3

- Right-angle mounting bracket with a curved slot for versatile orientation
  - 12-ga. stainless steel, 18 mm sensor mounting hole
  - Clearance for M4 (#8) hardware
- NOTE: Not for use with plastic fiber optic sensors

Used with:	S18	TM18	T18U	EZ-LIGHT T18	Q45UR
	QS18	M18	S18U	EZ-LIGHT M18	S18C2
		T18	QS18U	MINI-BEAM	Q45UR
					M18C2

## SMB312S (All measurements in mm)



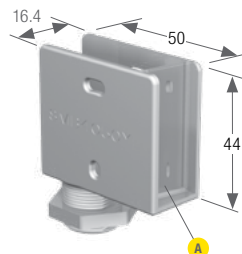
Hole center spacing:  
**A** = 20.3, **B** to **C** = 5.1  
 Hole size:  
**A** = 4.3 x 7.5, **B** =  $\varnothing$  3, **C** = 3 x 15.3

- Stainless steel 2-axis side-mounting bracket

Used with:  
 QS18

MINI-BEAM  
 QS18U

## SMB4050YL (All measurements in mm)



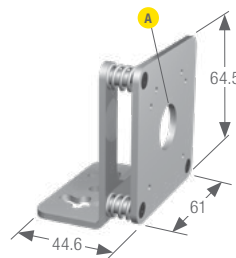
Hole center spacing:

Hole size:  
**A** =  $\varnothing$  15.3

- Heavy-duty die-cast bracket for industrial protection
- Replaceable window for use with some sensor models
- M18 vertical mounting option
- Nut and lock washer included

Used with:  
 QS18 DC Models (except AF)

## SMB46A (All measurements in mm)



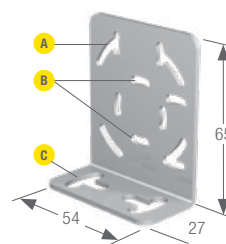
Hole center spacing:

Hole size:  
**A** =  $\varnothing$  18.3

- Stainless steel
- Adjustable mounting

Used with:  
 QS18  
 S18  
 PICODOT

## SMB46L (All measurements in mm)



Hole center spacing:

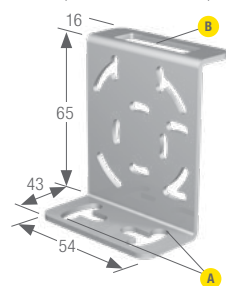
**A** = 45.42  
**B** = 24.1  
 Hole size:  
**A** = 3X  $\varnothing$  3.5  
**B** = 8X  $\varnothing$  3.5  
**C** =  $\varnothing$  6.5

- 14-ga. 316 stainless steel

Used with:  
 QS18  
 S18  
 QS30

QM42/QM42T  
 MINI-BEAM  
 PICODOT

## SMB46S (All measurements in mm)



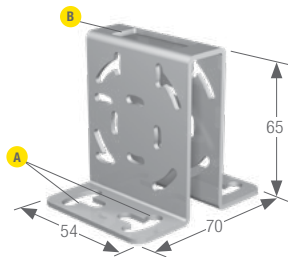
Hole center spacing:

**A** = 16  
 Hole size:  
**A** = 16.5 x 18.7,  
**B** = 34 x 10

- Right-angle
- S bracket
- 14-ga. 316 stainless steel

Used with:  
 QS18  
 MINI-BEAM  
 QS30

PicoDot  
 QM42/QMT42  
 QS18U

**SMB46U** (All measurements in mm)

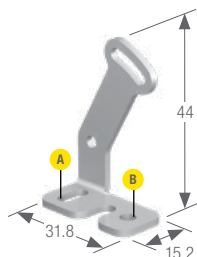
Hole center spacing:

A = 16

Hole size:

A = 16.5 x 18.7, B = 34 x 13

- Right-angle
- U bracket for sensor protection
- 14-ga. 316 stainless steel

Used with:  
QS18  
MINI-BEAMPicoDot  
QM42/QMT42  
QS18U**SMBQS18AF** (All measurements in mm)

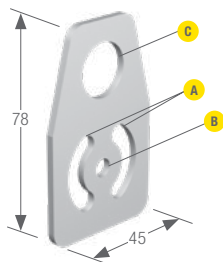
Hole center spacing:

A to B = 20.3

Hole size:

A = 4.3 x 9.4, B =  $\varnothing$  4.3

- Right-angle mounting bracket
- 14-ga. 304 stainless steel

Used with:  
QS18AF (Only)**SMBAMS18P** (All measurements in mm)

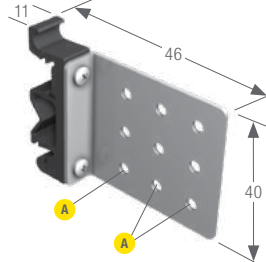
Hole center spacing:

A = 26, A to B = 13

Hole size:

A = 26.8 x 7, B =  $\varnothing$  6.5, C =  $\varnothing$  19

- Flat SMBAMS series bracket with 18 mm hole for mounting sensors
- Articulation slots for 90+° rotation
- 12-ga. (2.6 mm) cold-rolled steel

Used with:  
QS18  
S18  
M18T18  
TM18  
S18U  
T18UQ45UR S18C2  
Q45UR M18C2  
QS18UEZ-LIGHT T18  
EZ-LIGHT M18**SMBQS18DIN** (All measurements in mm)

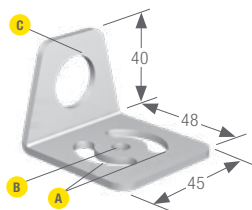
Hole center spacing:

A = 12.1

Hole size:

A = 9x  $\varnothing$  3.5

- Right-angle bracket assembly for mounting on 35 mm DIN rail
- 300 series stainless steel and glass filled nylon; zinc-plated screws

Used with:  
QS18 (shown with DIN-35..)**SMBAMS18RA** (All measurements in mm)

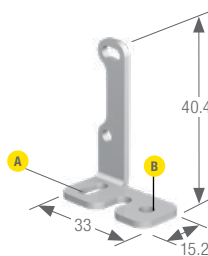
Hole center spacing:

A = 26, A to B = 13

Hole size:

A = 26.8 x 7, B =  $\varnothing$  6.5, C =  $\varnothing$  19

- Right-angle SMBAMS series bracket with 18 mm hole for mounting sensors
- Articulation slots for 90+° rotation
- 12-ga. (2.6 mm) cold-rolled steel

Used with:  
QS18  
S18  
M18T18  
TM18  
S18U  
T18UMINI-BEAM  
Q45UR S18C2  
Q45UR M18C2EZ-LIGHT T18  
EZ-LIGHT M18  
QS18U**SMBQS18RA** (All measurements in mm)

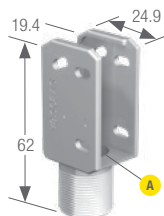
Hole center spacing:

A to B = 20.3

Hole size:

A = 4.3 x 9.4, B =  $\varnothing$  4.3

- Right-angle mounting bracket
- 14-ga. 304 stainless steel

Used with:  
QS18 (except QS18AF)  
QS18U**SMBQS18A** (All measurements in mm)

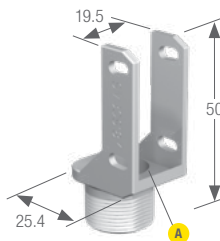
Hole size:

A =  $\varnothing$  15.3

- Wrap-around protection bracket
- Base fits 18 mm threaded hole
- Metal hex nut, lock washer and grommet included
- Mounting holes specially designed for QS18AF sensors

Used with:  
QS18 (DC only)  
QS18U

QS18AF

**SMBQS18Y** (All measurements in mm)

Hole size:

A =  $\varnothing$  15.3

- Die-cast bracket for 18 mm holes
- Includes metal hex nut and lock washer
- Allows  $\pm$  8° for cabled sensors

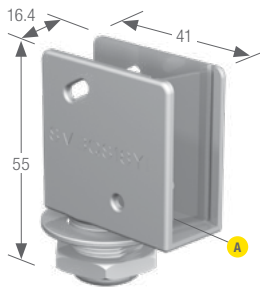
Used with:  
QS18 (DC only)  
QS18U

## ACCESSORIES

## BRACKETS

## CORDSETS

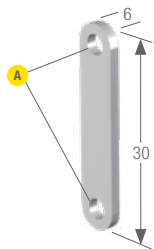
## RETROREFLECTORS

**SMBQS18YL** (All measurements in mm)

Hole size:  
**A** =  $\varnothing$  15.3

- Heavy-duty die-cast bracket for industrial protection
- Replaceable window
- M18 vertical mount-option
- Nut and lock washer included

Used with:  
 QS18AF  
 (Class 2 Laser Only)

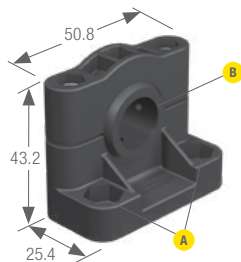
**SMH241F** (All measurements in mm)

Hole center spacing:  
**A** = 24  
 Hole size:  
**A** =  $\varnothing$  2.5

- Nut strap replaces two M3 mounting nuts and washers
- 16-ga. stainless steel

Used with:  
 QS18  
 MINI-BEAM

QM42/QMT42  
 QS18U

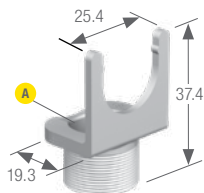
**SMB1815SF** (All measurements in mm)

Hole center spacing:  
**A** = 36  
 Hole size:  
**A** =  $\varnothing$  5, **B** =  $\varnothing$  15

- Swivel with set screws for mounting sensors by the cable hub
- Black reinforced thermoplastic polyester
- Stainless steel swivel locking hardware and hex wrench included

Used with:  
 T18  
 T18U

T30  
 T30U  
 EZ-LIGHT T18  
 EZ-LIGHT T30

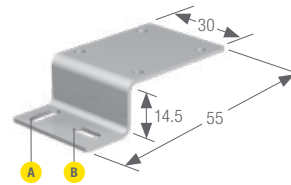
**SMBT18Y** (All measurements in mm)

Hole size:  
**A** =  $\varnothing$  15.3

- Die-cast bracket for 18 mm holes
- Includes metal hex nut
- For use with Euro-style QD connectors and cabled versions

Used with:  
 T18  
 TM18

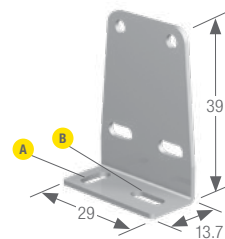
T18U  
 EZ-LIGHT T18

**SMBQ20H** (All measurements in mm)

Hole center spacing:  
**A** to **B** = 20  
 Hole size:  
**A** = 2.8 x 9.3, **B** = 8.4 x 4.5

- Sensor horizontal flange mount
- $\pm$  10° swivel
- Stainless steel

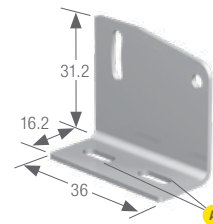
Used with:  
 Q20

**SMBQ20L** (All measurements in mm)

Hole center spacing:  
**A** to **B** = 20  
 Hole size:  
**A** = 2.8 x 9.3, **B** = 8.4 x 4.5

- Right-angle bracket
- $\pm$  5° tip,  $\pm$  5° swivel
- Stainless steel

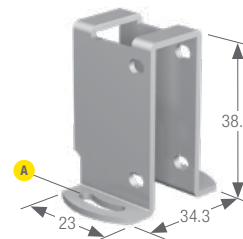
Used with:  
 Q20

**SMBQ20LV** (All measurements in mm)

Hole center spacing:  
**A** = 12  
 Hole size:  
**A** = 3 x 9.4

- Right-angle bracket
- $\pm$  10° tip
- Stainless steel

Used with:  
 Q20

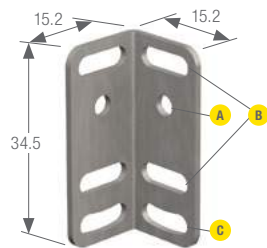
**SMBQ20U** (All measurements in mm)

Hole center spacing:  
**A** = 26.5  
 Hole size:  
**A** = 3 x 12.6

- Protective bracket
- $\pm$  22.5° swivel
- Stainless steel

Used with:  
 Q20



**SMBLSTDLQ26** (All measurements in mm)

Hole center spacing:

B = 10

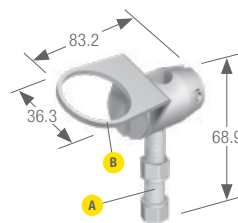
Hole size:

A =  $\varnothing$  3.5, B = 10.5 x 3.5,

C = 10.5 x 3.5

- Adjustable right-angle metal bracket
- 304 stainless steel

Used with:  
Q26  
QM26

**SMB30FA..** (All measurements in mm)

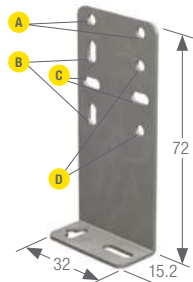
Hole size:

B =  $\varnothing$  30.1

Model	Bolt Thread (A)
SMB30FA	3/8 - 16 x 2"
SMB30FAM10	M10 - 1.5 x 50

- Swivel bracket with tilt and pan movement for precision adjustment
- Mounting hole for 30 mm sensor
- Metric and inch size bolt available
- Easy sensor mounting to extruded rail T-slot

Used with:	T30U	Q45UR	STB	SM30/SMI30	EZ-LIGHT T30
	QS30	Q40	QT50U	WL50 Work Lights	EZ-LIGHT K50L
	S30	Q45	OTB/LTB	SM30/SMI30	EZ-LIGHT TL50
	T30	Q45U	VTB		EZ-LIGHT CL50

**SMBLSTQ26** (All measurements in mm)

Hole center spacing:

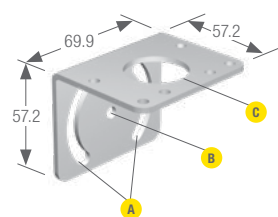
A, B, C, D = 20

Hole size:

A, D =  $\varnothing$  3.5, B, C =  $\varnothing$  3.5

- Right-angle bracket
- 304 stainless steel

Used with:  
Q26  
QM26

**SMB30MM** (All measurements in mm)

Hole center spacing:

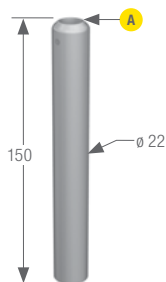
A = 51, A to B = 25.4

Hole size:

A = 42.6 x 7, B =  $\varnothing$  6.4, C =  $\varnothing$  30.1

- 12-ga. stainless steel bracket with curved mounting slots for versatility and orientation
- Clearance for M6 (1/4") hardware
- Mounting hole for 30 mm sensor

Used with:	T30U	VTB	Q45UR	SM30/SMI30	EZ-LIGHT T30
	QS30	Q40	STB	OMNI-BEAM	EZ-LIGHT K50L
	S30	Q45	QT50U	WL50 Work Lights	EZ-LIGHT TL50
	T30	OTB/LTB	Q45U		EZ-LIGHT CL50

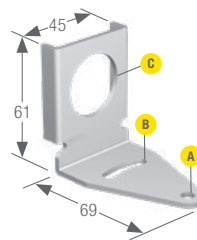
**SMBQMH26-SS-150** (All measurements in mm)

Hole size:

A =  $\varnothing$  12

- Smooth surface for easy cleaning
- Setscrew adjustment of sensor
- 316L stainless steel

Used with:  
QMH26

**SMB30Q** (All measurements in mm)

Hole center spacing:

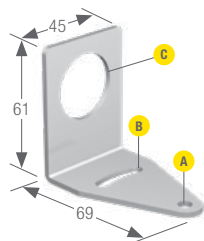
A to B = 40

Hole size:

A =  $\varnothing$  6.3, B = 27.1 x 6.3, C =  $\varnothing$  30.7

- Right-angle flanged mounting bracket with curved slot for versatile orientation
- 12-ga. stainless steel
- Mounting hole for 30 mm sensor

Used with:	Q40	Q45U	SM30/SMI30	EZ-LIGHT T30
	QS30	Q45	Q45UR	OMNI-BEAM
	S30	VTB	OTB/LTB	WL50 Work Lights
	T30	STB		

**SMB30A** (All measurements in mm)

Hole center spacing:

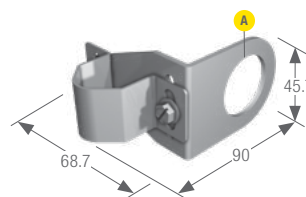
A to B = 40

Hole size:

A =  $\varnothing$  6.3, B = 27.1 x 6.3, C =  $\varnothing$  30.5

- Right-angle bracket with curved slot for versatile orientation
- Clearance for M6 (1/4") hardware
- Mounting hole for 30 mm sensor
- 12-ga. stainless steel

Used with:	T30U	STB	QT50R	SM30/SMI30	EZ-LIGHT K50L
	QS30	Q40	Q45U	OMNI-BEAM	EZ-LIGHT TL50
	S30	Q45	Q45UR	WL50 Work Lights	EZ-LIGHT CL50
	T30	VTB	QT50U		EZ-LIGHT T30

**SMB30RAVK** (All measurements in mm)

Hole size:

A =  $\varnothing$  30.5

- V-clamp, right-angle bracket and fasteners for mounting sensors to pipe or extrusions
- Clamp accommodates 28 mm dia. tubing or 1" square extrusions
- 30 mm hole for mounting sensors

Used with:	T30U	Q45UR	STB	SM30/SMI30	EZ-LIGHT T30
	QS30	Q40	QT50U	OMNI-BEAM	EZ-LIGHT K50L
	S30	Q45	OTB/LTB	WL50 Work Lights	EZ-LIGHT TL50
	T30	Q45U	VTB		WL50 Work Lights

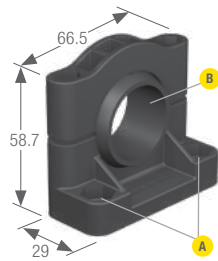


## ACCESSORIES

## BRACKETS

## CORDSETS

## RETROREFLECTORS

**SMB30SC** (All measurements in mm)

Hole center spacing:

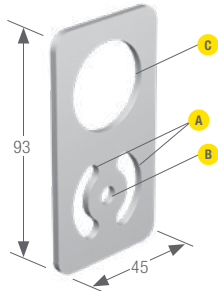
A = 50.8

Hole size:

A =  $\varnothing$  7, B =  $\varnothing$  30

- Swivel bracket with 30 mm mounting hole for sensor
- Black reinforced thermoplastic polyester
- Stainless steel mounting and swivel locking hardware included

Used with:	T30U	STB	QT50R	SM30/SMI30	EZ-LIGHT T30
QS30	Q40	QT50U	K50	OMNI-BEAM	EZ-LIGHT K50
S30	Q45	Q45U	OTB/LTB	WL50 Work Lights	EZ-LIGHT TL50
T30	VTB	Q45UR			EZ-LIGHT CL50

**SMBAMS30P** (All measurements in mm)

Hole center spacing:

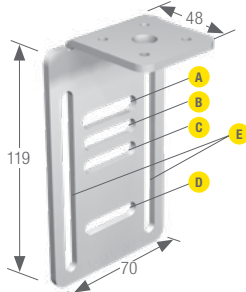
A = 26, A to B = 13

Hole size:

A = 26.8 x 7, B =  $\varnothing$  6.5, C =  $\varnothing$  31

- Flat SMBAMS series bracket with 30 mm hole for mounting sensors
- Articulation slots for 90+° rotation
- 12-ga. (2.6 mm) cold-rolled steel

Used with:	T30U	STB	Q45UR	SM30/SMI30	EZ-LIGHT T30
QS30	Q40	QT50R	OTB/LTB	OMNI-BEAM	EZ-LIGHT K50L
S30	Q45	QT50U		WL50 Work Lights	EZ-LIGHT TL50
T30	VTB	Q45U			EZ-LIGHT CL50

**SMBAMSRAB** (All measurements in mm)

Hole center spacing:

A to B = 12

B to C = 11, A to C = 23,

A to D = 55, E to E = 50.8

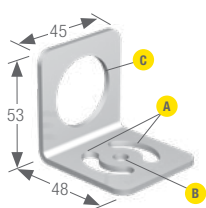
Hole size:

A, B, C, D = 6.9 x 32, E = 6.9 x 89.4

- 10-ga. (3.4 mm) cold-rolled steel with zinc finish
- Retrofit WORLD-BEAM QS30 in place of MULTI-BEAM, MAXI-BEAM, Q45, OMNI-BEAM and VALU-BEAM sensors

Used with:  
QS30\*

\* Requires a **SMBAMS30RA** bracket (sold separately)

**SMBAMS30RA** (All measurements in mm)

Hole center spacing:

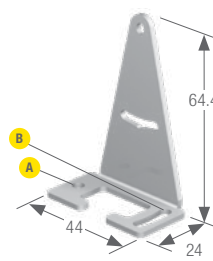
A = 26, A to B = 13

Hole size:

A = 26.8 x 7, B =  $\varnothing$  6.5, C =  $\varnothing$  31

- Right-angle SMBAMS series bracket with 30 mm hole for mounting sensors
- Articulation slots for 90+° rotation
- 12-ga. (2.6 mm) cold-rolled steel

Used with:	T30U	VTB	QT50U	SM30/SMI30	EZ-LIGHT T30
QS30	Q40	STB	QT50R	WL50 Work Lights	EZ-LIGHT K50L EZ-
S30	Q45	Q45U	K50	OMNI-BEAM	LIGHT TL50
T30	OTB/LTB	Q45UR			EZ-LIGHT CL50

**SMBQS30L** (All measurements in mm)

Hole center spacing:

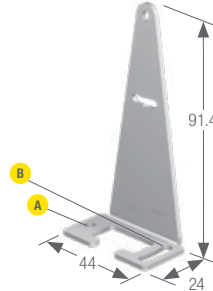
A to B = 35

Hole size:

A =  $\varnothing$  4.3, B = 4.25 x 16.3

- Right-angle bracket for cable sensor models
- Clearance for M4 (#8) hardware
- ± 12° tilt adjustment
- 14-ga. stainless steel

Used with:  
QS30

**SMBQS30LT** (All measurements in mm)

Hole center spacing:

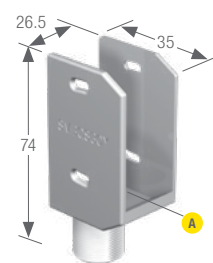
A to B = 35

Hole size:

A =  $\varnothing$  4.3, B = 4.25 x 16.3

- Tall right-angle bracket for QD models
- ± 8° tilt adjustment
- 14-ga. stainless steel

Used with:  
QS30 with integral QDs

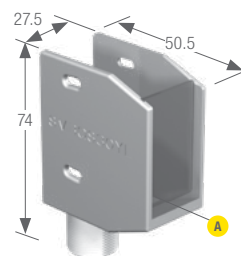
**SMBQS30Y** (All measurements in mm)

Hole size:

A =  $\varnothing$  15.3

- Heavy-duty die-cast bracket
- M18 vertical mount option
- ± 8° tilt adjustment with cabled units
- Includes nuts and lock washer

Used with:  
QS30 (DC only)

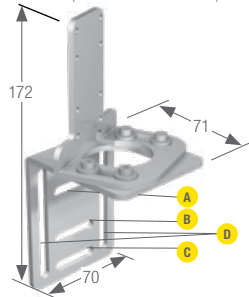
**SMBQS30YL** (All measurements in mm)

Hole size:

A =  $\varnothing$  15.3

- Heavy-duty die-cast bracket designed for industrial protection
- Replaceable window
- M18 vertical mount option
- Includes nuts and lock washer

Used with:  
QS30 (DC only)

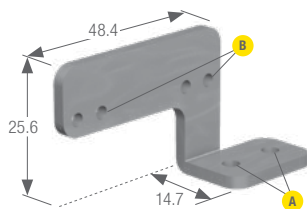
**SMB30UR** (All measurements in mm)

Hole center spacing:  
**A** to **B** = 31.8, **B** to **C** = 19,  
**A** to **C** = 50.8, **D** = 50.8  
 Hole size:  
**A**, **B**, **C** = 6.9 x 32, **D** = 73 x 6.9

- 2-piece universal swivel bracket for limit-switch style sensors
- 300 series stainless steel
- Stainless steel swivel locking hardware included

Used with:  
 Q45  
 OMNI-BEAM

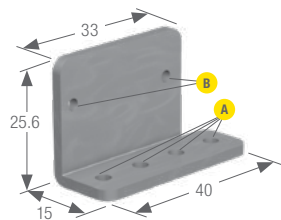
Q45U  
 Q45UR

**SMB42F** (All measurements in mm)

Hole center spacing:  
**A** = 10, **B** = 25.4  
 Hole size:  
**A** =  $\varnothing$  3.4, **B** =  $\varnothing$  2.5

- 13-ga. stainless steel
- Hardware included

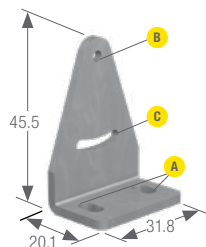
Used with:  
 QM42/QMT42

**SMB42L** (All measurements in mm)

Hole center spacing:  
**A** = 10, **B** = 25.4  
 Hole size:  
**A** =  $\varnothing$  3.4, **B** =  $\varnothing$  2.5

- 13-ga. stainless steel
- Hardware included

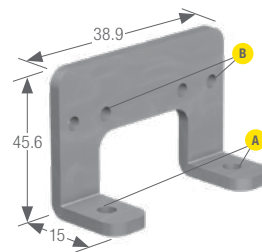
Used with:  
 QM42/QMT42

**SMB42T** (All measurements in mm)

Hole center spacing:  
**A** = 20.3, **B** to **C** = 5.1  
 Hole size:  
**A** = 4.3 x 7.5, **B** =  $\varnothing$  3, **C** = 3 x 15.3

- Stainless steel 2-axis side-mounting bracket
- Nut strap included for replacing two M3 mounting nuts

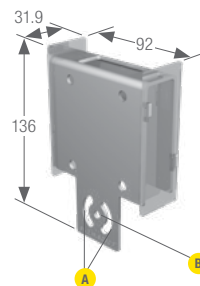
Used with:  
 QM42/QMT42

**SMB42U** (All measurements in mm)

Hole center spacing:  
**A** = 30, **B** = 25.4  
 Hole size:  
**A** =  $\varnothing$  3.4, **B** =  $\varnothing$  2.5

- 13-ga. stainless steel
- Hardware included

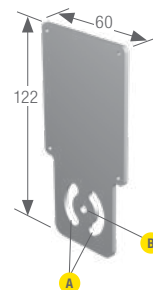
Used with:  
 QM42/QMT42

**SMBAMSQ60IP** (All measurements in mm)

Hole center spacing:  
**A** = 26, **A** to **B** = 13  
 Hole size:  
**A** = 26.8 x 7, **B** =  $\varnothing$  6.5

- Industrial protection SMBAMS series bracket for Q60 with replaceable window
- Articulation slots for 90+° rotation
- 12-ga. (2.6 mm) 300 series stainless steel

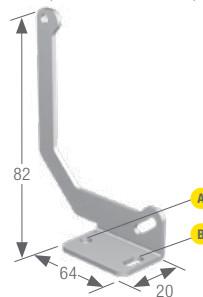
Used with:  
 Q60

**SMBAMSQ60P** (All measurements in mm)

Hole center spacing:  
**A** = 26, **B** = 13  
 Hole size:  
**A** = 26.8 x 7, **B** =  $\varnothing$  6.5

- Flat SMBAMS series bracket for mounting Q60
- Articulation slots for 90+° rotation
- 12-ga. 300 series stainless steel

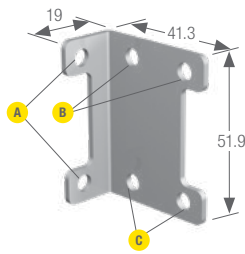
Used with:  
 Q60

**SMBQ60** (All measurements in mm)

Hole center spacing:  
**A** to **B** = 24.1  
 Hole size:  
**A** =  $\varnothing$  4.5, **B** = 8.4 x 4.5

- Right-angle bracket
- 14-ga. 304 stainless steel

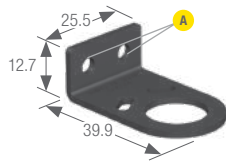
Used with:  
 Q60

**SMBSL** (All measurements in mm)

Hole center spacing:  
**A** = 40, **B**, **C** = 21.6, **B** to **C** = 39.9  
 Hole size:  
**A**, **B**, **C** =  $\varnothing$  5.5

- Right-angle bracket
- 304 stainless steel
- Hardware included

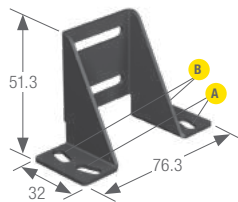
Used with:  
 SL10  
 SL30

**SMBLX** (All measurements in mm)

Hole center spacing:  
**A** = 12.7  
 Hole size:  
**A** =  $\varnothing$  4.3

- End-cap brackets; set of 2
- Zinc-plated cold-rolled steel

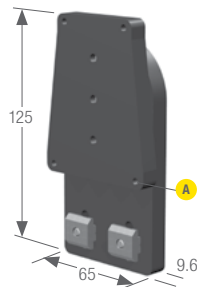
Used with:  
 LX

**SMBLXR** (All measurements in mm)

Hole center spacing:  
**A**, **B** = 63.5, **A** to **B** = 10.2  
 Hole size:  
**A**, **B** = 5.2 x 11.6

- Back-mount bracket for secure one-end mounting
- Zinc-plated cold-rolled steel

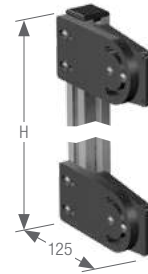
Used with:  
 LX

**SMBLH1** (All measurements in mm)

Hole size:  
**A** = M4

- Main mounting bracket for LH sensor
- T-slot or "bolt-on" bracket for mounting one sensor
- Anodized Aluminum

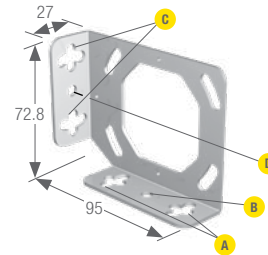
Used with:  
 LH

**SMBLH..** (All measurements in mm)

Hole size:  
**A** = M4

- LH series adjustable bracket
- Brackets for thickness and displacement measurement
- Anodized Aluminum

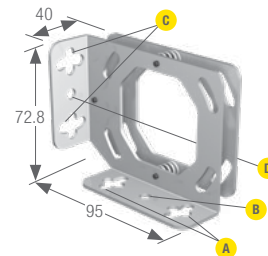
Used with:  
 LH

**SMBLG** (All measurements in mm)

Hole center spacing:  
**A** = 56, **A** to **B** = 20, **C** = 44.5, **C** to **D** = 14  
 Hole size:  
**A** = 19.1 x 14.2, **B** =  $\varnothing$  6.3, **C** = 19.3 x 15.3, **D** =  $\varnothing$  6.3

- LG series sensor mounting bracket
- 304 stainless steel

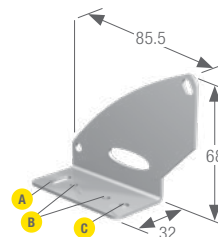
Used with:  
 LG5  
 LG10

**SMBLGA** (All measurements in mm)

Hole center spacing:  
**A** = 56, **A** to **B** = 20, **C** = 44.5, **C** to **D** = 14  
 Hole size:  
**A** = 19.1 x 14.2, **B** =  $\varnothing$  6.3, **C** = 19.3 x 15.3, **D** =  $\varnothing$  6.3

- LG series adjustable bracket assembly
- Precision adjustment screws
- 304 stainless steel

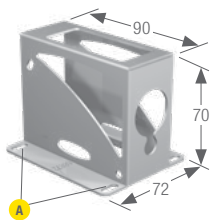
Used with:  
 LG5  
 LG10

**SMBLT31** (All measurements in mm)

Hole center spacing:  
**A** to **C** = 47.5, **B** to **B** = 24.1  
 Hole size:  
**A** = 13.2 x 5, **B** =  $\varnothing$  4, **C** =  $\varnothing$  5

- Right-angle bracket
- 300 stainless steel

Used with:

**SMBLT32** (All measurements in mm)

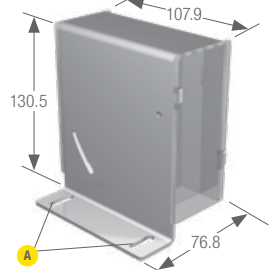
Hole center spacing:

$$A = 80$$

Hole size:

$$A = 5 \times 12$$

- Full protection bracket
- 300 stainless steel
- Mounting hardware included

Used with:  
LT3**SMBLT3IP** (All measurements in mm)

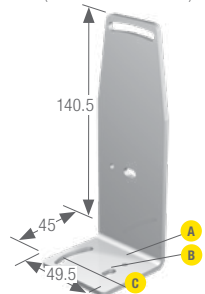
Hole center spacing:

$$A = 82.5$$

Hole size:

$$A = 6 \times 20.5$$

- Protective bracket with replaceable window
- Stainless steel construction
- Includes replacement windows

Used with:  
LT3**SMBLT7F** (All measurements in mm)

Hole center spacing:

$$A \text{ to } C = 31.8$$

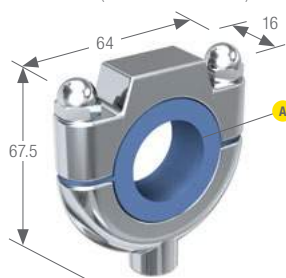
Hole size:

$$A = \varnothing 3.1, B = 5 \times 9, C = 5.2 \times 28$$

- Fine-adjust accessory for bracket SMBLT7
- Mounting hardware included
- SMBLT7 required (sold separately)
- Cold-rolled steel

Used with:  
TL7**SMBLT7F** (All measurements in mm)

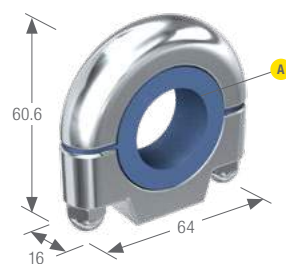
- Fine-adjust accessory for bracket SMBLT7
- Mounting hardware included
- SMBLT7 required (sold separately)
- Cold-rolled steel

Used with:  
LT7\*\*Shown mounted on **SMBLT7** (sold separately)**SMBM25A** (All measurements in mm)

Hole size:

$$A = \varnothing 25.4$$

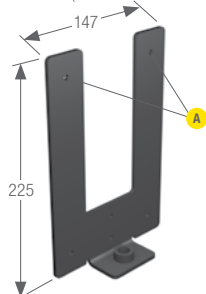
- Top mount swivel bracket
- Stainless steel with rounded edges for cleanliness in demanding environments
- Non-metallic FDA compliant bushing for acoustically isolating M25U sensors
- M10 x 1.5 mount on opposite side of clamping nuts

Used with:  
M25U**SMBM25B** (All measurements in mm)

Hole size:

$$A = \varnothing 25.4$$

- Bottom mount swivel bracket
- Stainless steel with rounded edges for cleanliness in demanding environments
- Non-metallic FDA compliant bushing for acoustically isolating M25U sensors
- M10 x 1.5 mount on same side as clamping nuts

Used with:  
M25U**SMBLBCZB** (All measurements in mm)

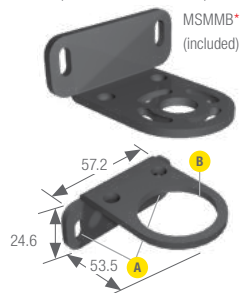
Hole center spacing:

$$A = 107$$

Hole size:

$$A = \varnothing 5.2$$

- U-shaped bracket for mounting EZ-ARRAY emitter/receiver 67 mm apart
- 8-ga. (4 mm) cold-rolled steel, black zinc plated

Used with:  
EZ-ARRAY**MSMB-3** (All measurements in mm)

Hole center spacing:

$$A = 44.5$$

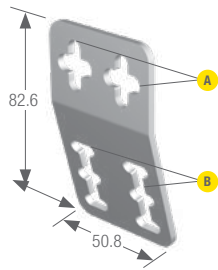
Hole size:

$$A = 10.2 \times 4.8, B = \varnothing 30.5$$

- Two-bracket replacement kit for emitter/receiver
- 11-ga. cold-rolled steel with black corrosion-resistant zinc chromate finish

\* Includes 1 bracket from model MSMMB (see page 903 for dimensions).

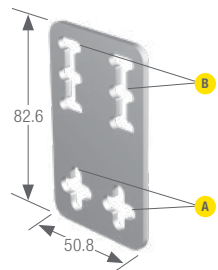
Used with:  
High-Resolution MINI-ARRAY  
MINI-ARRAY

**SMB55A** (All measurements in mm)

Hole center spacing:  
**A** = 24.1, **B** = 27.9  
 Hole size:  
**A** = 12.7 x 11.4, **B** = 24.8 x 7.6

- 15° offset bracket
- 12-ga. stainless steel

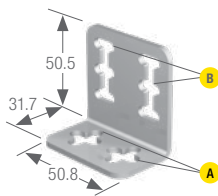
Used with:  
 R58E/R58A  
 QL56

**SMB55F** (All measurements in mm)

Hole center spacing:  
**A** = 24.1, **B** = 27.9  
 Hole size:  
**A** = 12.7 x 11.4, **B** = 24.8 x 7.6

- Flat-mount bracket
- 12-ga. stainless steel

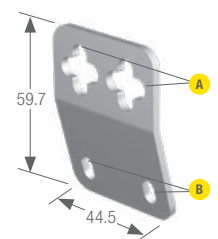
Used with:  
 R58E/R58A  
 QL56

**SMB55RA** (All measurements in mm)

Hole center spacing:  
**A** = 24.1, **B** = 27.9  
 Hole size:  
**A** = 12.7 x 11.4, **B** = 24.8 x 7.6

- Right-angle bracket
- 12-ga. stainless steel

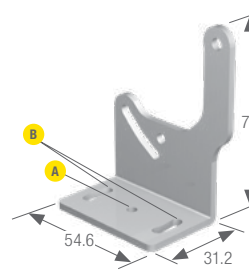
Used with:  
 R58E/R58A  
 QL56

**SMB55S** (All measurements in mm)

Hole center spacing:  
**A** = 30.5, **B** = 28  
 Hole size:  
**A** = 12.7 x 11.4, **B** = 5.2 x 8.9

- 15° offset bracket
- 12-ga. stainless steel

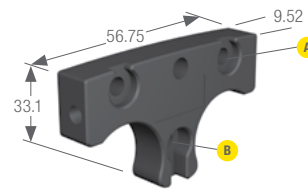
Used with:  
 R58E/R58A  
 QL56

**SMBQC50** (All measurements in mm)

Hole center spacing:  
**A** to **B** = 18, **B** to **B** = 36  
 Hole size:  
**A** = ø 4, **B** = 4 x 13.3

- Multidirectional stainless steel right-angle bracket
- Variety of mounting options

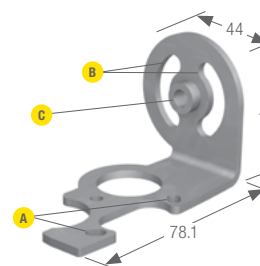
Used with:  
 QC50  
 QCX50

**SMBIVUB** (All measurements in mm)

Hole center spacing:  
**A** = 35, **A** to **B** = 18  
 Hole size:  
**A**, **B** = ø 4.4

- Bottom mounting bracket
- Black anodized aluminum
- Hardware included

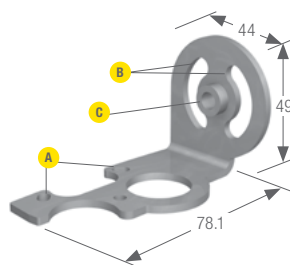
Used with:  
 iVu TG

**SMBIVURAL** (All measurements in mm)

Hole center spacing:  
**A** = 36.4, **B** = 26  
 Hole size:  
**A** = 4.4 x 6.4, **B** = 7 x 26, **C** = 1/4-20

- Right-angle bracket for mounting sensor from the left
- 12-ga. stainless steel
- Hardware included

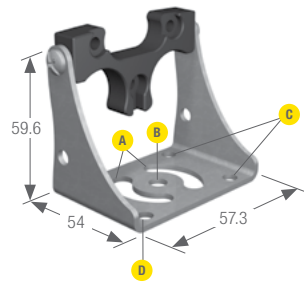
Used with:  
 iVu  
 iVu Plus

**SMBIVURAR** (All measurements in mm)

Hole center spacing:  
**A** = 36.4, **B** = 26  
 Hole size:  
**A** = 4.4 x 6.4, **B** = 7 x 26, **C** = 1/4-20

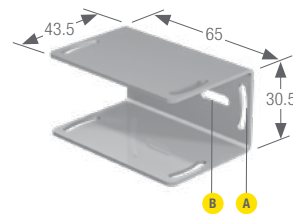
- Right-angle bracket for mounting sensor from right
- 12-ga. stainless steel
- Hardware included

Used with:  
 iVu  
 iVu Plus

**SMBIVUU** (All measurements in mm)

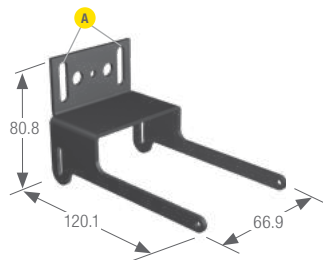
- Hole center spacing:  
**A** = 26, **C** = 30, **C** to **D** = 42  
 Hole size:  
**A** = 6.5 x 3.6, **B** = ø 6.6, **C**, **D** = 5.4
- U-shaped swivel bracket kit
  - 14-ga. stainless steel
  - Hardware included

Used with:  
 iVu  
 iVu Plus

**SMBPPLU** (All measurements in mm)

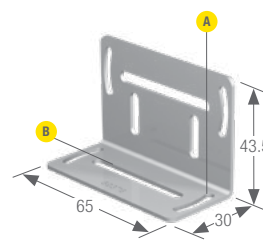
- Hole center spacing:  
**A** = 58.5, **B** = 30  
 Hole size:  
**A** = 18.7 x 3.4, **B** = 14.3 x 4.4
- Highly stable U-Shaped bracket
  - Bright corrosion-resistant finish
  - Hardware included

Used with:  
 Presence PLUS Pro Camera

**SMBP4RAB** (All measurements in mm)

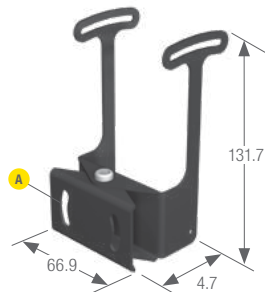
- Hole center spacing:  
**A** = 47  
 Hole size:  
**A** = 3.3 x 19.1
- Heavy-duty, black corrosion-resistant zinc finish
  - 8° of rotation on image-axis
  - Hardware included

Used with:  
 P4 (right-angle)

**SMBPPRA** (All measurements in mm)

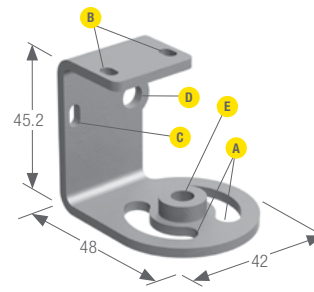
- Hole center spacing:  
**A** = 58.5  
 Hole size:  
**A** = 18.7 x 3.4, **B** = 44.5 x 4.4
- Right-angle bracket with single-side mounting for difficult-to-access sites
  - Bright corrosion-resistant finish
  - Hardware included

Used with:  
 Presence PLUS Pro Camera

**SMBP4RAS** (All measurements in mm)

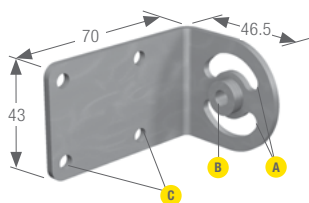
- Hole center spacing:  
**A** = 43.5  
 Hole size:  
**A** = 6.8 x 2.5
- Right-angle swivel bracket
  - 70° rotation on image's x-axis and 20° on the y-axis
  - Black corrosion-resistant zinc finish
  - Hardware included

Used with:  
 P4 (right-angle)

**SMBPPROMRA** (All measurements in mm)

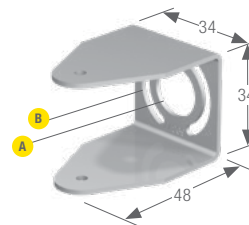
- Hole center spacing:  
**A** = 26, **B** = 20, **C** to **D** = 20  
 Hole size:  
**A** = 7 x 26, **B** = 3.6 x 5.6, **C** = 3.6 x 6.6,  
**D** = ø 6.8, **E** = ø 8 (1/4-20)
- Right-angle bracket
  - 316 stainless steel
  - Hardware included

Used with:  
 Presence PLUS Pro Camera

**SMBP4SRAF** (All measurements in mm)

- Hole center spacing:  
**A** to **B** = 12.5, **C** = 36  
 Hole size:  
**A** = 7 x 26, **B** = ø 8 (1/4-20),  
**C** = ø 5.5
- Right-angle, stainless steel bracket
  - Stainless steel hardware included

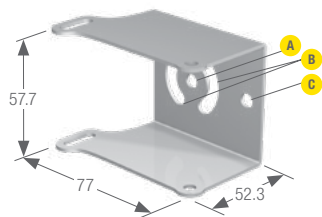
Used with:  
 P4 (sealed)

**SMBPPU** (All measurements in mm)

- Hole center spacing:  
**B** = 25  
 Hole size:  
**A** = ø 16, **B** = 3.3 x 25
- U-Shaped swivel bracket for variable rotation
  - Bright corrosion-resistant finish
  - Hardware included

Used with:  
 Presence PLUS Pro Camera



**SMBPPSU** (All measurements in mm)

Hole center spacing:

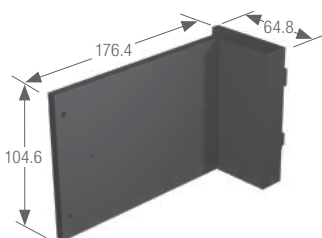
A to C = 31.8, B = 25

Hole size:

A =  $\varnothing$  6.5, B = 20.2 x 7,C =  $\varnothing$  6.5

- 316 stainless steel
- 10° of rotation on image's y-axis
- Hardware included

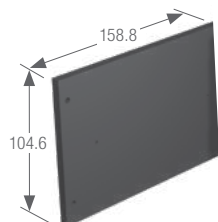
Used with:  
Presence PLUS Pro Camera

**SMBPPDE** (All measurements in mm)

N/A

- DIN-rail edge mounting bracket to save linear track space
- Black ABS plastic
- Hardware included

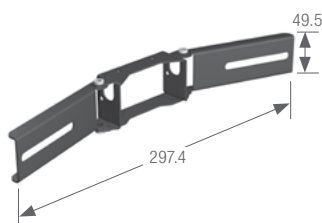
Used with:  
Presence PLUS Pro Controller

**SMBPPDH** (All measurements in mm)

N/A

- DIN-rail flat mounting for easy viewing of LED's
- Black ABS plastic
- Hardware included

Used with:  
Presence PLUS Pro Controller

**SMBP42ASM** (All measurements in mm)

N/A

- For mounting two lights to P4 sensor housing
- Black corrosion-resistant zinc finish
- Hardware included

Used with:  
Area Light (80 x 80 mm)\*  
Area Light (62 x 62 mm)

Spot Light

**SMBP4ASM\*** (All measurements in mm)

N/A

- For mounting light to P4 sensor housing
- Black corrosion-resistant zinc finish
- Hardware included

Used with:  
Area Light (80 x 80 mm)\*  
Area Light (62 x 62 mm)

Spot Light

**SMBP40AL100** (All measurements in mm)

Hole center spacing:

A = 15

Hole size:

A =  $\varnothing$  5.3

- For mounting On-Axis light to P4 housing
- Centers lens on light opening
- Black zinc-plated steel
- Hardware included

Used with:  
On-Axis Lights (100 mm)

\* Dimensions include 100 mm light (sold separately)

**SMBP40AL50** (All measurements in mm)

Hole center spacing:

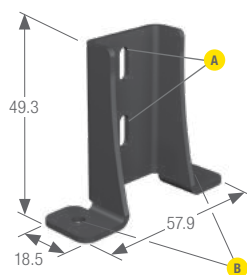
A = 15

Hole size:

A =  $\varnothing$  5.3

- For mounting On-Axis light to P4 housing
- Centers lens on light opening
- Black zinc-plated steel
- Hardware included

Used with:  
On-Axis Lights (50 mm)

**SMBPMPRHI** (All measurements in mm)

Hole center spacing:

A = 20.1, B = 44.8

Hole size:

A = 3.5 x 9.9, B = 3.8

- Black zinc plated steel
- For mounting light to Pro Mini Camera
- Black zinc plated finish
- Hardware included

Used with:  
Ring Light (70 mm)

\* Requires one SMBACM bracket with each light (see page 886)

**SMBPPOAL100**

(All measurements in mm)



Hole center spacing:

A = 15

Hole size:

A =  $\varnothing$  5.3

- For mounting On-Axis light to Pro housing
- Centers lens on light opening
- Black zinc-plated steel
- Hardware included

Used with:

On-Axis Lights (100 mm)

**SMBPPOAL50**

(All measurements in mm)



Hole center spacing:

A = 15

Hole size:

A =  $\varnothing$  5.3

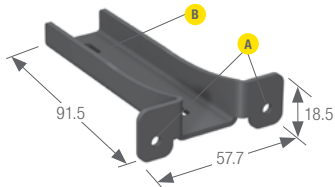
- For mounting On-Axis light to Pro housing
- Centers lens on light opening
- Black zinc-plated steel
- Hardware included

Used with:

On-Axis Lights (50 mm)

**SMBPPRHI**

(All measurements in mm)



Hole center spacing:

A = 44.5, B = 52.3

Hole size:

A =  $\varnothing$  3.8, B = 3.6 x 6.4

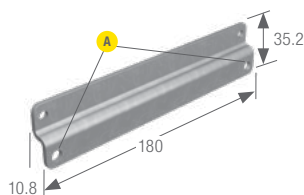
- Black anodized aluminum bracket
- For mounting light to Pro camera
- Hardware included

Used with:

Ring Light (70 mm)

**SMBBSSM**

(All measurements in mm)



Hole center spacing:

A = 167.8

Hole size:

A =  $\varnothing$  5.5

- Surface-mount bracket
- 316 stainless steel
- Stainless steel hardware included
- Set of two brackets

Used with:

Backlights (75 x 150 mm)

Backlights (150 x 150 mm)

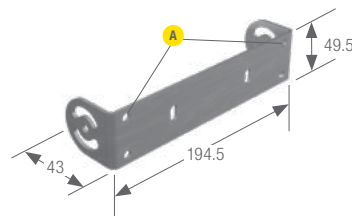
Backlights (150 x 225 mm)

Backlights (150 x 300 mm)

WLA Work Lights

**SMBBSRA**

(All measurements in mm)



Hole center spacing:

A = 167.8

Hole size:

A =  $\varnothing$  6.5

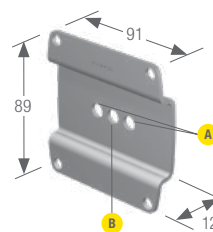
- Swivel bracket for versatile orientation
- 316 stainless steel hardware

Used with:

WLA Work Lights

**SMBASCM**

(All measurements in mm)



Hole center spacing:

A = 25.4, A to B = 12.7

Hole size:

A =  $\varnothing$  5 (M16), B =  $\varnothing$  5 (1/4-20)

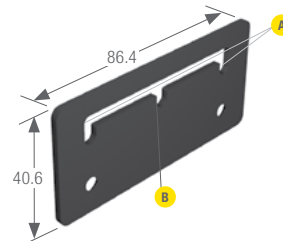
- Column-mount bracket
- 316 stainless steel
- Stainless steel hardware included

Used with:

NOTE: Shown with optional SMBPPK6 mounting kit.

**SMBABM**

(All measurements in mm)



Hole center spacing:

A = 61, A to B = 30.5

Hole size:

A, B = 9.1 x 2.3

- Surface-mount bracket for mounting light from front
- Black corrosion-resistant zinc finish
- Hardware included

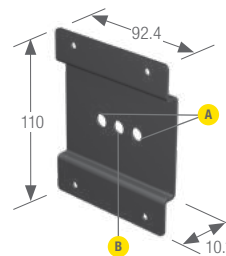
Used with:

Area Lights (80 x 80 mm)

Backlights (70 x 70 mm)

**SMBACM**

(All measurements in mm)



Hole center spacing:

A = 30, A to B = 15

Hole size:

A =  $\varnothing$  5 (M16), B =  $\varnothing$  5 (1/4 - 20)

- Column-mount bracket
- Black corrosion-resistant zinc finish
- Hardware included

Used with:

Area Lights (80 x 80 mm)

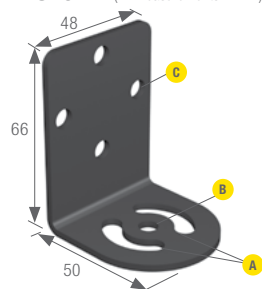
Backlights (70 x 70 mm)

NOTE: Shown with optional

SMBPPK6 mounting kit.

\* Requires one SMBACM bracket with each light (see page 886)



**SMBAMS70A** (All measurements in mm)

Hole center spacing:

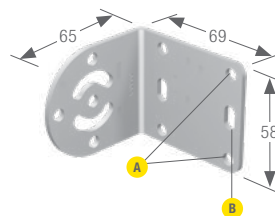
$$A = 26, A \text{ to } B = 13$$

Hole size:

$$A = 26.8 \times 7, B = \varnothing 6.5, C = \varnothing 7$$

- Right-angle zinc-plated cold-rolled steel
- Articulated slots for 90+° rotation
- Two 1/4-20 screws included

Used with:  
Area Light (70 mm)

**SMBLASRA** (All measurements in mm)

Hole center spacing:

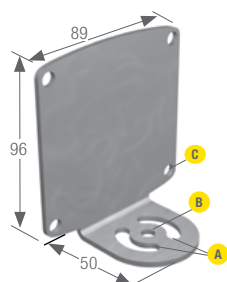
$$A, B = 45, A \text{ to } B = 22.5$$

Hole size:

$$A = \varnothing 6.6, B = 6.6 \times 12.4$$

- Right-angle metal bracket
- May be used individually or two used in combination
- 316 stainless steel bracket and hardware
- Set of two brackets

Used with:  
Sealed Linear Array Lights (IP68)

**SMBAMS70AS** (All measurements in mm)

Hole center spacing:

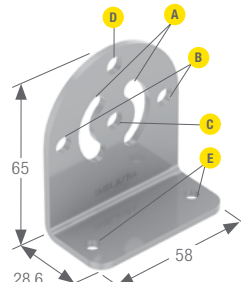
$$A = 26, A \text{ to } B = 13$$

Hole size:

$$A = 26.8 \times 7, B = \varnothing 6.5, C = \varnothing 7$$

- Right-angle, 12-ga. 316 stainless steel
- Articulated slots for 90+° rotation
- Four 1/4-20 stainless steel screws included

Used with:  
Sealed Area Light (70 mm)

**SMBLAXRA** (All measurements in mm)

Hole center spacing:

$$A = 26, B = 45,$$

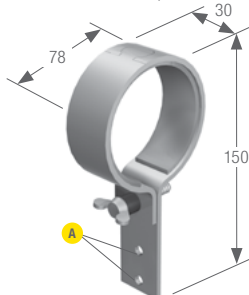
$$C \text{ to } D \text{ \& } B \text{ to } C = 22.5, E = 4.5$$

Hole size:

$$A = 7 \times 26, B, C, D = \varnothing 6.6, E = \varnothing 5.4$$

- Right-angle metal bracket
- May be used individually or with **SMBLAXU** to provide swivel adjustment
- 316 stainless steel bracket and hardware
- Set of two brackets

Used with:  
Linear Array Lights (IP50)

**SMBWFTLS** (All measurements in mm)

Hole center spacing:

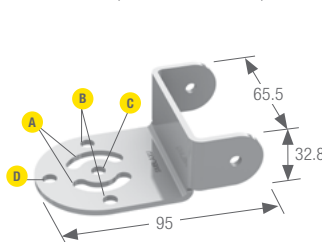
$$A = 27$$

Hole size:

$$A = \varnothing 6.5$$

- In-line bracket
- Mounts around light
- Bright zinc-coated steel construction

Used with:  
Tubular Fluorescent Lights

**SMBLAXU** (All measurements in mm)

Hole center spacing:

$$A = 25, B = 45,$$

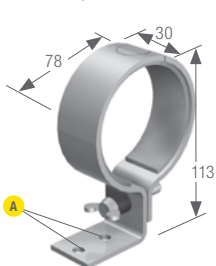
$$C \text{ to } D \text{ \& } B \text{ to } C = 22.5$$

Hole size:

$$A = 7 \times 26, B, C, D = \varnothing 6.6$$

- U-shaped metal bracket
- Used with **SMBLAXRA** to provide swivel adjustment
- 316 stainless steel bracket and hardware
- Set of two brackets

Used with:  
Linear Array Lights (IP50)

**SMBWFTLR** (All measurements in mm)

Hole center spacing:

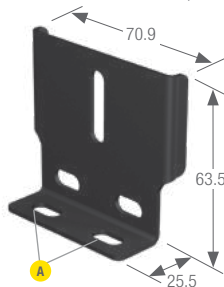
$$A = 27$$

Hole size:

$$A = \varnothing 6.5$$

- Right-angle bracket
- Mounts around light
- Bright zinc-coated steel construction

Used with:  
Tubular Fluorescent Lights

**SMBVLA62X62RA** (All measurements in mm)

Hole center spacing:

$$A = 36.4$$

Hole size:

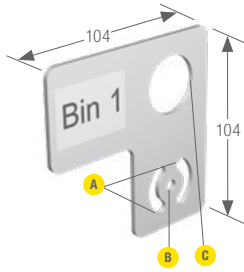
$$A = 13.1 \times 6.6$$

- For mounting a light at a right angle
- 14-ga. steel, black zinc-plated

Used with:  
Area Lights (62 x 62 mm)

MISCELLANEOUS

**SMBAMS30PL52R** (All measurements in mm)



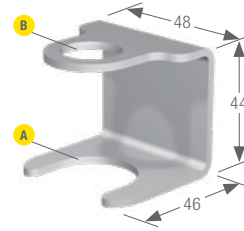
Hole center spacing:  
**A** = 26, **A** to **B** = 13  
 Hole size:  
**A** = 26.8 x 7, **B** =  $\varnothing$  6.5, **C** =  $\varnothing$  31

- Flat SMBAMS series bracket with space for 60 x 58 mm label
- 30 mm hole for mounting sensors
- Articulation slots for 90+° rotation
- 12-ga. (2.6 mm) cold-rolled steel

Used with:  
 EZ-LIGHT T30  
 VTB

EZ-LIGHT K50L

**SA-K50A18** (All measurements in mm)

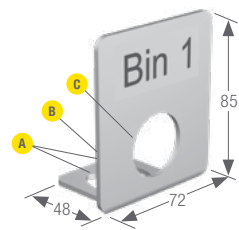


Hole center spacing:  
 Hole size:  
**A** =  $\varnothing$  30.5, **A** =  $\varnothing$  20

- Protective mounting bracket for EZ-LIGHT K50 sensors
- 12-ga. cold-rolled steel

Used with:  
 K50

**SMBAMS30RLJ** (All measurements in mm)



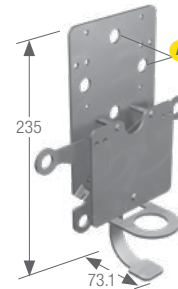
Hole center spacing:  
**A** = 26, **A** to **B** = 13  
 Hole size:  
**A** = 26.8 x 7, **B** =  $\varnothing$  6.5, **C** =  $\varnothing$  31

- Right-angle SMBAMS series bracket with 70 x 40 mm space for label
- 30 mm hole for mounting sensor
- Articulation slots for 90+° rotation
- 12-ga. (2.6 mm) cold-rolled steel

Used with:  
 EZ-LIGHT T30  
 VTB

EZ-LIGHT K50L  
 EZ-LIGHT CL50

**SMBARP..30** (All measurements in mm)

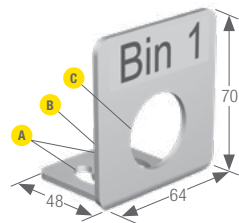


Hole center spacing:  
**A** = 69.9  
 Hole size:  
**A** =  $\varnothing$  12.8

Model	Rope Pull
SMBARPL30	Left
SMBARPR30	Right
SMBARPB30	Both

Used with:  
 K50

**SMBAMS30RLS** (All measurements in mm)



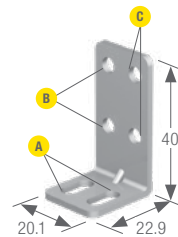
Hole center spacing:  
**A** = 26, **A** to **B** = 13  
 Hole size:  
**A** = 26.8 x 7, **B** =  $\varnothing$  6.5, **C** =  $\varnothing$  31

- Right-angle SMBAMS series bracket with 62 x 26 mm space for label
- 30 mm hole for mounting sensor
- Articulation slots for 90+° rotation
- 12-ga. (2.6 mm) cold-rolled steel

Used with:  
 EZ-LIGHT T30L  
 VTB

EZ-LIGHT K50L  
 EZ-LIGHT CL50

**SMBPVA1** (All measurements in mm)



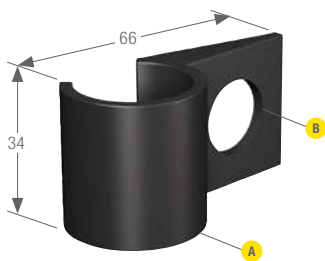
Hole center spacing:  
**A** = 10.2, **B** to **B** = 18, **B** to **C** = 10.2  
 Hole size:  
**A** = 10 x 4.8, **B**, **C** =  $\varnothing$  4.6

- Right-angle bracket
- 303 stainless steel
- Replacement brackets for brackets included with sensors

Used with:  
 PVA  
 PVD

EZ-LIGHT TL30F

**SMBC18** (All measurements in mm)

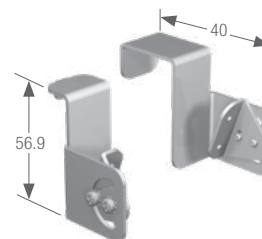


Hole center spacing:  
 N/A  
 Hole size:  
**A** =  $\varnothing$  26.9, **B** =  $\varnothing$  18.4

- Snaps onto 28 mm diameter structural framing

Used with:  
 S18L

**SMBPVA11** (All measurements in mm)

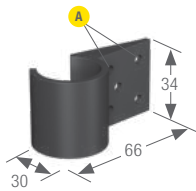


Hole center spacing:  
 NA  
 Hole size:  
 NA

- Pair of two-piece swivel brackets for mounting sensor to 5/16" metal rack system
- Articulation slot for  $\pm 90^\circ$  rotation
- May be used with **SMBPVA..C** bracket

Used with:  
 PVD  
 EZ-LIGHT TL30F

SMBPVD..A  
 SMBPVD..AB

**SMBPVA2** (All measurements in mm)

Hole center spacing:

A = 18.8

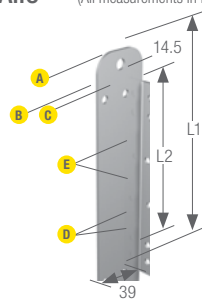
Hole size:

A =  $\varnothing$  4.4

- Set of 4 molded brackets
- Snaps onto standard 28 mm diameter pipe
- 2 required per sensor

Used with:  
PVA SMBPVA..  
PVD SMBPVA..A  
EZ-LIGHT TL30F SMBPVA..AB

SMBPVD..A  
SMBPVD..AB

**SMBPVA..C** (All measurements in mm)

Hole center spacing: A to C = 20,

B to C = 18, D = 13, E = 32

Hole size: A =  $\varnothing$  7.3,B, C, D, E =  $\varnothing$  5.2

- Back-mounted bracket for mounting to SMBPVA7 or SMBPVA8 brackets
- Cold-rolled steel with zinc finish

Models	L1	L2
SMBPVA5C	188.7	139.5
SMBPVA10C	317.2	268.0

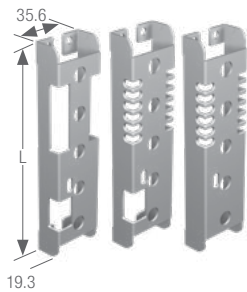
Used with:  
SMBPVA7\*  
SMBPVA8\*  
SMBPVA...  
SMBPVA...A  
SMBPVA...AB  
SMBPVD...A  
SMBPVD...AB

PVA, PVD

\* Sensor must be mounted to a SMBPVA..C bracket.

**SMBPVA.., SMBPVA..A, SMBPVA..AB**

(All measurements in mm)

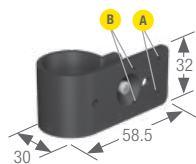


Models	DIP Switch Access	Light Protected	Length (L)	Used With
SMBPVA5	Yes	No		
SMBPVA5A	Yes	Yes	139.7	PVA100
SMBPVA5AB	No	Yes		
SMBPVA10	Yes	No		
SMBPVA10A	Yes	Yes	268.2	PVA225
SMBPVA10AB	No	Yes		
SMBPVA13	Yes	No		
SMBPVA13A	Yes	Yes	343.3	PVA300
SMBPVA13AB	No	Yes		
SMBPVA16	Yes	No		
SMBPVA16A	Yes	Yes	418.2	PVA375
SMBPVA16AB	No	Yes		

- Pair of brackets protects sensor from impact; provides DIP-switch and/or indicator light exposure (depending on model)
- Heavy-duty cold-rolled steel-zinc finish
- May be used with SMBPVA..C for mounting to SMBPVA7 or SMBPVA8 brackets

Used with:  
PVA (see chart)  
SMBPVA..2  
SMBPVA..7\*  
SMBPVA..8\*  
SMBPVA..C bracket

\* Protective bracket must be mounted to a SMBPVA..C bracket.

**SMBPVA6** (All measurements in mm)

Hole center spacing:

A, B, A to B = 18

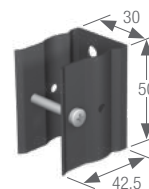
Hole size:

A =  $\varnothing$  3.2

- Set of 4 molded brackets
- Brackets clamp onto 28 mm pipe
- Request data sheet p/n 64900 for more information

Used with:  
PVA EZ-LIGHT TL30F  
PVD SMBPVA..

SMBPVA..A  
SMBPVA..AB  
SMBPVD..A  
SMBPVD..AB

**SMBPVA7** (All measurements in mm)

Hole center spacing:

N/A

Hole size:

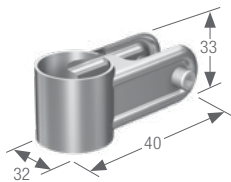
N/A

- One-piece bracket for mounting to 28 mm diameter pipe
- Black-painted steel
- Requires SMBPVA..C for mounting at an angle  $\pm 90^\circ$

Used with:  
PVA\*  
PVD\*  
SMBPVA5C  
SMBPVA10C

\* Sensor must be mounted to SMBPVA..C bracket. (sold separately)

## MISCELLANEOUS

**SMBPVA8** (All measurements in mm)

Hole center spacing:

N/A

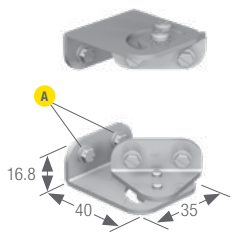
Hole size:

N/A

- Heavy-duty 2-part bracket mounts to 28 mm diameter pipe
- Cold-rolled steel with zinc finish
- Requires SMBPVA..C for mounting

Used with: SMBPVA5C  
PVA\* SMBPVA10C  
PVD\*

\* Sensor must be mounted to SMBPVA..C bracket. (sold separately)

**SMBPVA9** (All measurements in mm)

Hole center spacing:

A = 18

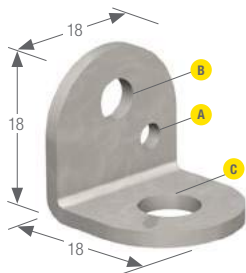
Hole size:

A =  $\varnothing$  5

- Pair of 2-piece swivel brackets
- Mount directly to sensor or to PVD/PVA protective brackets
- Designed for mounting sensor to "look down"

Used with: EZ-LIGHT TL30F  
PVA SMBPVA...  
PVD

SMBPVA..A SMBPVD...A  
SMBPVA...AB SMBPVD...AB

**SMBPVL1** (All measurements in mm)

Hole center spacing:

NA

Hole size:

A =  $\varnothing$  3, B =  $\varnothing$  4.8, C =  $\varnothing$  7

- 14 gauge cold rolled steel
- Right-angle bracket for mounting the pick-to-light array

Used with: PVL225  
PLV500

**SMBPVL4** (All measurements in mm)

Hole center spacing:

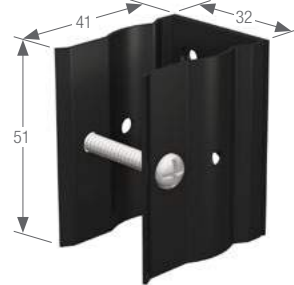
NA

Hole size:

A =  $\varnothing$  M6 x 1

- Painted cold rolled steel
- 28 mm tubular mount bracket for mounting outside bin
- Clearance for M6 (1/4 in) hardware

Used with: PVL225  
PLV500

**SMBPVL5** (All measurements in mm)

Hole center spacing:

NA

Hole size:

NA

- Painted cold rolled steel
- 28 mm tubular mount bracket for mounting inside bin
- Clearance for M6 (1/4 in) hardware

Used with: PVL225  
PLV500

**SMBPVL2-225** (All measurements in mm)

Hole center spacing:

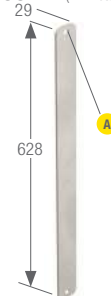
A = 331.5

Hole size:

A =  $\varnothing$  7

- 14 gauge cold rolled steel
- Flat bracket for mounting reflector inside bin
- Includes retroreflective tape

Used with: PVL225

**SMBPVL2-500** (All measurements in mm)

Hole center spacing:

Hole size:

A =  $\varnothing$  7

- 14 gauge cold rolled steel
- Flat bracket for mounting reflector inside bin
- Includes retroreflective tape

Used with: PLV500

**SMBPVL3-225** (All measurements in mm)

Hole center spacing:

Hole size:

A =  $\varnothing$  7

- 14 gauge cold rolled steel
- Right-angle bracket for mounting reflector outside bin
- Includes retroreflective tape

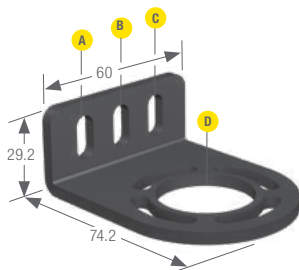
Used with: PVL225

**SMBPVL3-500** (All measurements in mm)

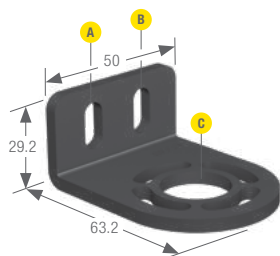
Hole center spacing:

Hole size:  
A =  $\varnothing 7$ 

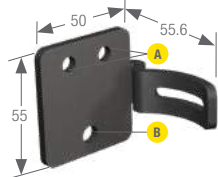
- 14 gauge cold rolled steel
- Right-angle bracket for mounting reflector outside bin
- Includes retroreflective tape

Used with:  
PLV500**EZA-MBK-1** (All measurements in mm)Hole center spacing:  
A to B = 15.8, A to C = 31.5Hole size:  
A, B, C = 15 x 7,  
D =  $\varnothing 32$ 

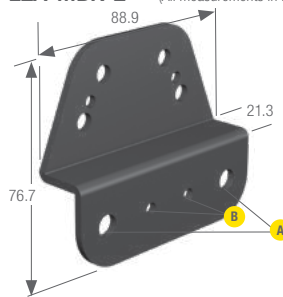
- Two end-cap replacement brackets for one emitter/receiver
- 8-ga. cold-rolled steel with black corrosion-resistant zinc chromate finish
- M5 and M6 mounting hardware

Used with:  
EZ-SCREEN Point & Grid**EZA-MBK-11** (All measurements in mm)Hole center spacing:  
A to B = 20Hole size:  
A, B = 15 x 7, C =  $\varnothing 21.5$ 

- Two end-cap replacement brackets for one emitter/receiver
- 8-ga. cold-rolled steel with black corrosion-resistant zinc chromate finish
- M5 and M6 mounting hardware

Used with:  
EZ-ARRAY  
EZ-SCREEN Standard 14 & 30 mm**EZA-MBK-12** (All measurements in mm)Hole center spacing:  
A = 20, A to B = 36Hole size:  
A =  $\varnothing 7$ , B =  $\varnothing 8.3$ 

- Two-piece center bracket for one emitter/receiver
- 8-ga. cold-rolled steel with black corrosion-resistant zinc chromate finish
- M5 and M6 mounting hardware

Used with:  
EZ-ARRAY  
EZ-SCREEN Standard 14 & 30 mm**EZA-MBK-2** (All measurements in mm)

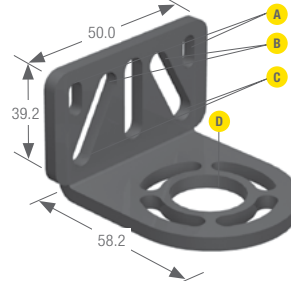
Hole center spacing:

A = 63.9, B = 19.9, A to B = 22

Hole size:

A =  $\varnothing 8.3$ , B =  $\varnothing 4.8$ 

- Bracket adapter (Qty 2) for attaching EZA-MBK-1 to any MSA series stand

Used with:  
EZ-SCREEN Point & Grid  
MSA Stands**EZA-MBK-20** (All measurements in mm)

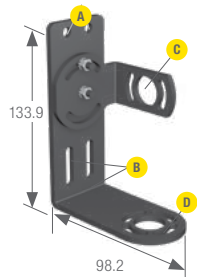
Hole center spacing:

A = 44.4, B = 20, C = 40

Hole size:

A = 10.2 x 4.8, B, C = 25 x 7, D =  $\varnothing 21.5$ 

- Two-bracket kit for one sensor
- Adapter brackets for mounting to engineered/slotted aluminum framing such as 80/20™ and Unistrut™
- Order EZA-MBK-20U for bracket and M5 and M6 mounting hardware

Used with:  
EZ-ARRAY  
EZ-SCREEN Standard 14 & 30 mm  
EZ-SCREEN Cascade 14 & 30 mm**EZA-MBK-21** (All measurements in mm)

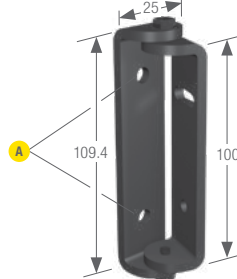
Hole center spacing:

A = 20, B = 20, A to B = 101.4

Hole size:

A =  $\varnothing 7$ , B = 30 x 7.2, C, D =  $\varnothing 21.5$ 

- Mounting bracket system for L configuration of two cascaded EZ-SCREEN light screens
- 8-ga. cold-rolled steel with black corrosion-resistant zinc chromate finish
- M5 and M6 mounting hardware

Used with:  
EZ-SCREEN Cascade 14 & 30 mm**EZA-MBK-3** (All measurements in mm)

Hole center spacing:

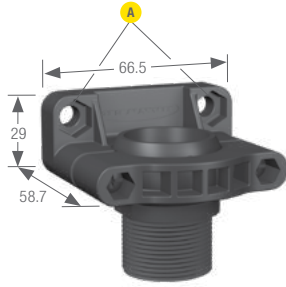
A = 65

Hole size:

A =  $\varnothing 7$ 

- Two-piece side-swivel bracket kit
- 180° range of motion
- 8-ga. cold-rolled steel with black corrosion-resistant zinc chromate finish

Used with:  
EZ-SCREEN Point & Grid

**EZA-MBK-4** (All measurements in mm)

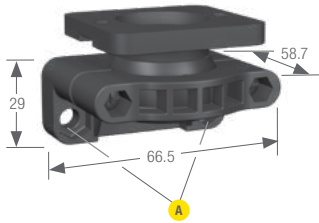
Hole center spacing:

A = 50.8

Hole size:

ø 7

- Top-mounting kit with SMB30SC swivel bracket and threaded adapter
- 45° rotation in any direction
- Black reinforced thermoplastic polyester

Used with:  
EZ-SCREEN Point**EZA-MBK-5** (All measurements in mm)

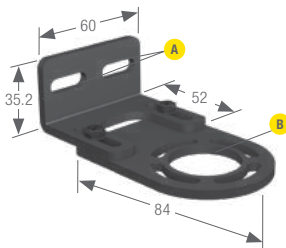
Hole center spacing:

A = 50.8

Hole size:

ø 7

- Bottom-mounting kit with SMB30SC swivel bracket and threaded adapter plate
- 45° rotation in any direction
- Black reinforced thermoplastic polyester

Used with:  
EZ-SCREEN Point**EZA-MBK-9** (All measurements in mm)

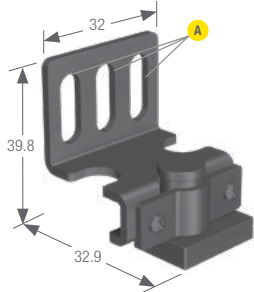
Hole center spacing:

A = 30.8

Hole size:

A = 21 x 7, B = ø 32

- Two-bracket kit with 30 mm range of motion for mounting sensor
- 8-ga. cold-rolled steel with black corrosion-resistant zinc chromate finish
- M5 and M6 mounting hardware

Used with:  
EZ-SCREEN Grid & Point**LPA-MBK-11** (All measurements in mm)

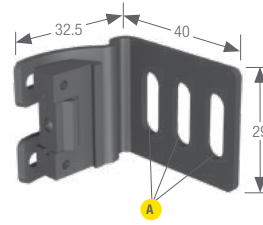
Hole center spacing:

A = 10

Hole size:

A = 5.5 x 15.5

End-cap bracket kit  
360° sensor rotation  
14-ga. (1.9 mm) steel, black zinc plated; die-cast metal clamp  
Includes 2 brackets and hardware

Used with:  
EZ-SCREEN LP 14 & 25 mm**LPA-MBK-12** (All measurements in mm)

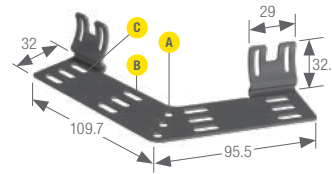
Hole center spacing:

A = 10

Hole size:

A = 15.5 x 5.5

- Side-mount bracket kit
- +10°/-30° sensor rotation
- 14-ga. (1.9 mm) steel, black zinc plated; die-cast zinc clamp
- Includes 1 bracket and hardware

Used with:  
EZ-SCREEN LP 14 & 25 mm**LPA-MBK-120** (All measurements in mm)

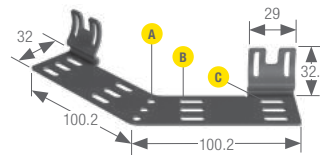
Hole center spacing:

A, B, C = 10, B to D = 50

Hole size:

A = ø 5.8, B, C = 15.5 x 5.5

- Pair of angled L brackets for two cascaded emitter/receiver pairs
- Fixed 120° orientation
- +10°/-30° sensor rotation
- 14-ga. (1.9 mm) steel, black zinc plated

Used with:  
EZ-SCREEN LP Cascade 14 & 25 mm**LPA-MBK-135** (All measurements in mm)

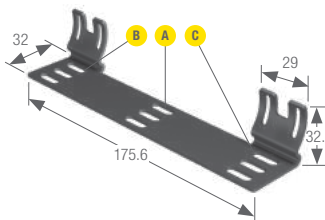
Hole center spacing:

A, B, C = 10, B to D = 50

Hole size:

A = ø 5.8, B, C = 15.5 x 5.5

- Pair of angled L brackets for two cascaded emitter/receiver pairs
- Fixed 135° orientation
- +10°/-30° sensor rotation
- 14-ga. (1.9 mm) steel, black zinc plated

Used with:  
EZ-SCREEN LP Cascade 14 & 25 mm**LPA-MBK-180** (All measurements in mm)

Hole center spacing:

A, B, C = 10, A to B = 73.3,

A to C = 73.3

Hole size:

A, B, C = 15.5 x 5.5

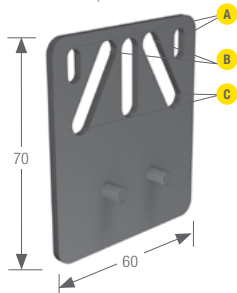
- Pair of inline (straight) brackets for two cascaded emitter/receiver pairs
- Fixed 180° orientation
- +10°/-30° sensor rotation
- 14-ga. (1.9 mm) steel, black zinc plated

Used with:  
EZ-SCREEN LP Cascade 14 & 25 mm



## LPA-MBK-20

(All measurements in mm)



Hole center spacing:

A = 44.5, B = 20, C = 40

Hole size: A = 4.8 x 10.2, B = 7 x 26.8, C = 7 x 26.8

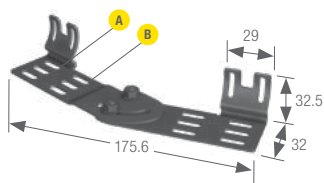
- Universal adapter bracket for mounting to engineered/slotted aluminum framing (example, 80/20™, Bosch)
- Use with LPA-MBK-11, -12 or -13
- 12-ga. (2.66 mm) steel; black zinc plated
- Includes 1 bracket and hardware

Used with:

EZ-SCREEN LP 14 &amp; 25 mm

## LPA-MBK-21

(All measurements in mm)



Hole center spacing:

A, B = 10, A to B =

Hole size:

A, B = 15.5 x 5.5

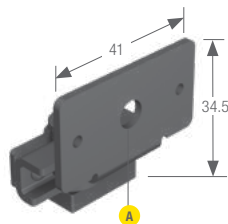
- Pivoting "L" bracket system for two cascaded emitters/receivers; uses clamps from side-mount bracket LPA-MBK-12
- Adjustable 90° to 180° orientation
- +10°/-30° sensor rotation
- 14-ga. (1.9 mm) steel, black zinc plated

Used with:

EZ-SCREEN LP Cascade 14 &amp; 25 mm

## LPA-MBK-22

(All measurements in mm)



Hole center spacing:

Hole size:

A =  $\varnothing$  6.6

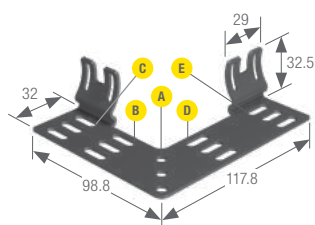
- End-cap bracket for mounting inside Unistrut® metal framing
- Fits Unistrut® P1000 size (1 5/8"), with M6 or 1/4" channel nuts
- 14-ga. (1.9 mm) steel, black zinc, plated; die-cast zinc clamp
- Used with LPA-MBK-11
- Includes 2 brackets and hardware (does not include Unistrut® channel nuts)

Used with:

EZ-SCREEN LP 14 &amp; 25 mm

## LPA-MBK-90

(All measurements in mm)



Hole center spacing:

A, B, C, D, E = 10, B to C = 30, D to E = 50

Hole size:

A =  $\varnothing$  5.8, B, C, D, E = 15.5 x 5.5

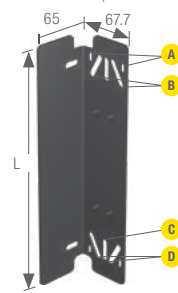
- Pair of angled L brackets for two cascaded emitter/receiver pairs
- Fixed 90° orientation
- +10°/-30° sensor rotation
- 14-ga. (1.9 mm) steel, black zinc plated

Used with:

EZ-SCREEN LP Cascade 14 &amp; 25 mm

## LPA-MBK-PXXX

(All measurements in mm)



Hole center spacing:

A = 44.5, B = 40, D = 18

Hole size:

A = 4.8 x 10.2, B = 7 x 26.8, C = 7 x 25

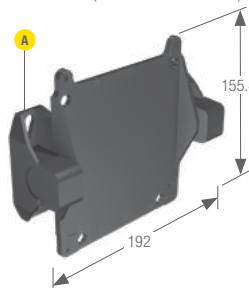
- L-shaped protective bracket for one emitter/receiver
- Sized to match emitter/receiver length; replace XXX in model number with emitter/receiver size (example, LPA-MBK-P270 for use with SLP.-270)
- +10°/-30° sensor rotation
- 12-ga. (2.66 mm) steel, black zinc plated or painted

Used with:

EZ-SCREEN LP 14 &amp; 25 mm

## AG4-MBK1

(All measurements in mm)



Hole center spacing:

A = 63

Hole size:

9 x 20.4

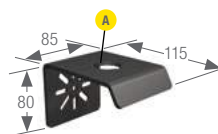
- Metal swivel bracket for mounting and aligning

Used with:

AG4 Laser Scanner

## SSA-MBK-EEC1

(All measurements in mm)



Hole center spacing:

NA

Hole size:

A =  $\varnothing$  30.5

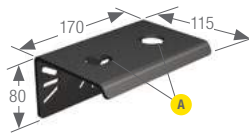
- Allows for horizontal and vertical (post) mounting
- 8 gauge steel, black finish (zinc-plated)

Used with:

E-Stop Buttons

## SSA-MBK-EEC2

(All measurements in mm)



Hole center spacing:

A = 85

Hole size:

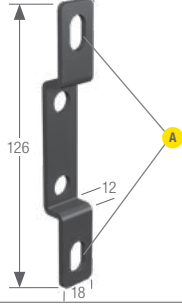
A =  $\varnothing$  30.5

- Allows for horizontal and vertical (post) mounting
- 8 gauge steel, black finish (zinc-plated)

Used with:

E-Stop Buttons

**STBA-RB1-MB1** (All measurements in mm)



Hole center spacing:

**A** = 106

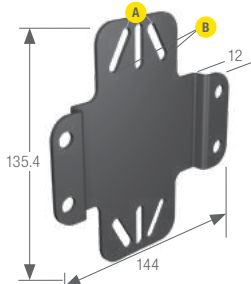
Hole size:

**A** = 9 x 15

- Pair of wall-mount brackets; run bar "hangs" on vertical surface
- Slotted holes for vertical adjustment
- 12-ga. cold-rolled steel with black powdercoat paint

Used with:  
DUO-TOUCH Run Bar

**STBA-RB1-MB2** (All measurements in mm)



Hole center spacing:

**A** = 20, **B** = 40, **A** to **B** = 20

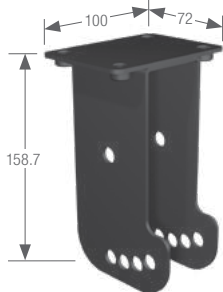
Hole size:

**A**, **B** = 27 x 7

- Universal-mount bracket; allows run bar to mount to vertical stand or surface
- Slotted holes for adjustment
- 12-ga. cold-rolled steel with black powdercoat paint

Used with:  
DUO-TOUCH Run Bar

**STBA-RB1-MB3** (All measurements in mm)



Hole center spacing:

NA

Hole size:

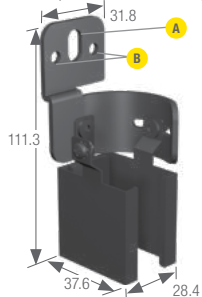
NA

- Swivel-mount bracket; mounts to telescoping stand
- Holes for radial adjustment, 0° to 30° in 10° increments
- 12-ga. cold-rolled steel with black powdercoat paint

Used with:  
DUO-TOUCH Run Bar

NOTE:  
Included with telescoping stands  
STBA-RB1-S1 and STBA-RB1-S2

**USCMB-..** (All measurements in mm)



Hole center spacing:

**B** = 19.9, **A** to **B** = 10

Hole size:

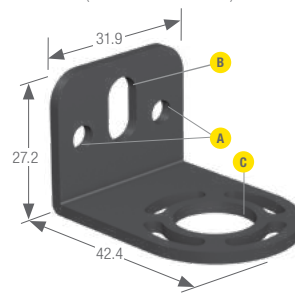
**A** = 12.2 x 7.1, **B** =  $\varnothing$  4.8

- Two-piece center mounting replacement kit for bracket that comes with emitter/receiver
- 13-ga. cold-rolled steel with black power coat paint
- Bracket hardware included

Used with:  
EZ-SCREEN Type 2

NOTE:  
USCMB-1 fits emitters/receivers 600 to 900 mm long  
USCMB-2 fits emitters/receivers 1050 mm and longer.

**USMB-1** (All measurements in mm)



Hole center spacing:

**A** = 20, **A** to **B** = 10

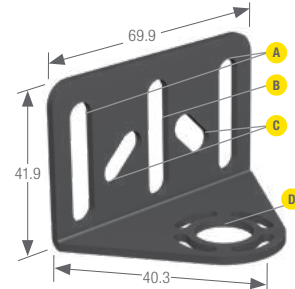
Hole size:

**A** =  $\varnothing$  4.8, **B** = 12.7 x 7, **C** =  $\varnothing$  15.2

- Two-bracket replacement kit for brackets that come with emitter/receiver
- 13-ga. cold-rolled steel with black corrosion-resistant zinc chromate finish
- Bracket hardware included

Used with:  
EZ-SCREEN Type 2

**USMB-6** (All measurements in mm)



Hole center spacing:

**A** = 52.1, **A** to **B** = 26, **C** = 30.6

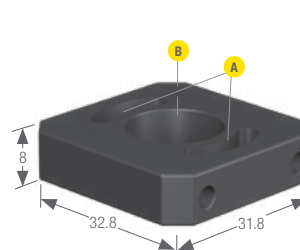
Hole size:

**A**, **B** = 25.4 x 7.1,  
**C** = 15.5 x 7, **D** =  $\varnothing$  15.2

- Two-bracket universal-mounting surface kit
- 13-ga. cold-rolled steel with black corrosion-resistant zinc chromate finish
- Bracket hardware included

Used with:  
EZ-SCREEN Type 2

**USMB-8** (All measurements in mm)



Hole center spacing:

**A** = 22.7

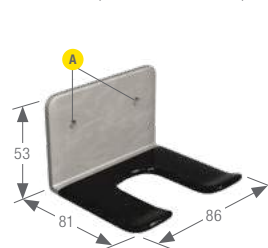
Hole size:

**A** = 15 x 3.5, **B** =  $\varnothing$  14.8

- Two-bracket kit for one emitter/receiver
- Mounting plate for 90° sensor direction
- Black anodized aluminum

Used with:  
EZ-SCREEN Type 2

**ED9Z-GH1** (All measurements in mm)



Hole center spacing:

**A** = 50

Hole size:

**A** =  $\varnothing$  5.3

- Right-angle bracket for mounting switch to upright surface
- Stainless steel

Used with:  
ED1G Enabling Devices



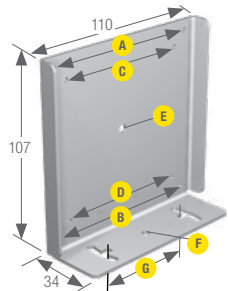
## ACCESSORIES

## BRACKETS

## CORDSETS

## RETROREFLECTORS

## RMB100 (All measurements in mm)



Hole center spacing:

**A**, **B**, **A** to **B** = 92,  
**C**, **D**, **C** to **D** = 77, **E** = 56

Hole size:

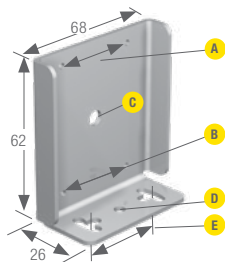
**A**, **B**, **C**, **D** =  $\varnothing$  0.5,  
**E** =  $\varnothing$  4.8, **F** =  $\varnothing$  4.5, **G** = 21.5 x 4.5

- Protective mounting bracket for retroreflective targets
- 14-ga. 316 stainless steel
- Stainless steel M3 x 0.5 hardware included

Used with:  
 BRT-3  
 BRT-84

BRT-77X77C  
 BRT-92X92C  
 BRT-92X92CB

## RMB50 (All measurements in mm)



Hole center spacing:

**A**, **B** = 34, **A** to **B** = 52, **E** = 26

Hole size:

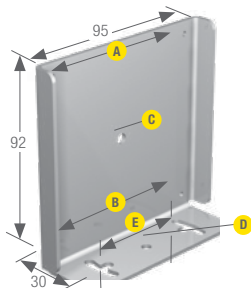
**A**, **B** =  $\varnothing$  0.5, **C** =  $\varnothing$  6.3, **D** =  $\varnothing$  4.5,  
**E** = 13.8 X 4.5

- Protective mounting bracket for retroreflective targets
- 14-ga. 316 stainless steel
- Stainless steel M3 x 0.5 hardware included

Used with:  
 BRT-50D  
 BRT-50R  
 BRT-2X2

BRT-51X51BM  
 BRT-60X40AF  
 BRT-60X40C  
 BRT-60X40IP69K

## RMB85 (All measurements in mm)



Hole center spacing:

**A**, **B**, **A** to **B** = 77, **E** = 46

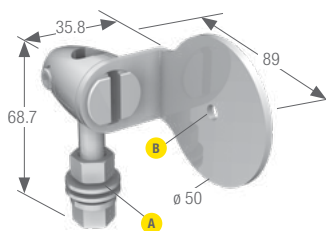
Hole size:

**A**, **B** =  $\varnothing$  0.5, **C** =  $\varnothing$  4.8, **D** =  $\varnothing$  4.5,  
**E** = 19 x 4.5

- Protective mounting bracket for retroreflective targets
- 14-ga. 316 stainless steel
- Stainless steel M3 x 0.5 hardware included

Used with:  
 BRT-3  
 BRT-77X77C

## SMB50RFA.. (All measurements in mm)



Model	Bolt Thread (A)
SMB50RFA	3/8 - 16 x 2"
SMB50RFAM10	M10 - 1.5 x 50

Hole center spacing:  
**B** = 5.4

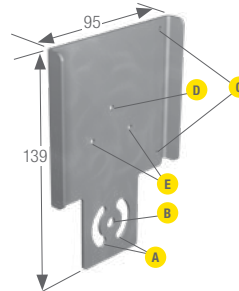
Hole size:

- Swivel bracket with tilt and pan movement for precision adjustment
- Easy sensor mounting to extruded rail T-slots
- 50 mm diameter plate for mounting a reflector

Used with:  
 BRT-35DM  
 BRT-50D

BRT-42D  
 BRT-34T

## SMBAMSR85P (All measurements in mm)



Hole center spacing:

**A** = 26, **B** = 13, **C** = 77, **E** = 30

Hole size:

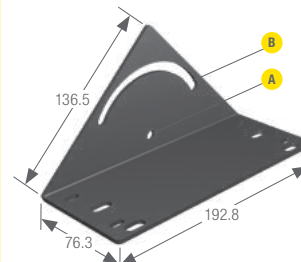
**A** = 26.8 x 7, **B** =  $\varnothing$  6.5,  
**C** = 2.3, **D** = 3.2, **E** = 3.2

- Flat SMBAMS series bracket for mounting reflectors
- Articulation slots for 90+° rotation
- 14-ga. 300 series stainless steel

Used with:  
 BRT-3  
 BRT-84

BRT-77X77C  
 BRT-51X51BM

## MSMB-MSM-45 (All measurements in mm)



Hole center spacing:

**A** to **B** = 50.8

Hole size:

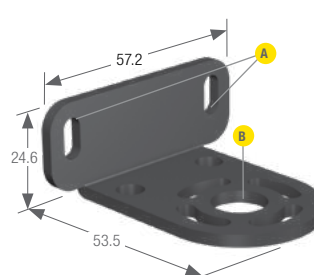
**A** =  $\varnothing$  7, **B** = 87.7 x 7

- Bracket for 45° mounting of mirror
- 11-ga. cold-rolled steel with black corrosion-resistant zinc chromate finish
- Bracket hardware included

Used with:  
 MSM4A Mirror

NOTE:  
 For a kit containing a bracket and MSM4A mirror, order model number MSA-MBM-K45

## MSMMB (All measurements in mm)



Hole center spacing:

**A** = 44.5

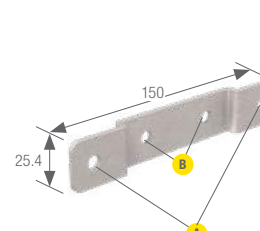
Hole size:

**A** = 10.2 x 4.8, **B** =  $\varnothing$  13.2

- Replacement (pair) for brackets that come with MSM mirrors
- 11-ga. cold-rolled steel with black corrosion-resistant zinc chromate finish
- Bracket hardware included

Used with:  
 MSM Mirror

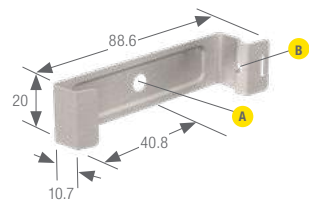
## LMBWLB92 (All measurements in mm)

Hole center spacing: **B** = 45, **A** = 124.6Hole size: **A**, **B** = 4x  $\varnothing$  7.0

- Stainless steel
- Surface mount
- Hardware included

Used with:  
 WLB92

**LMBWL92-CLIP** (All measurements in mm)



Hole center spacing: n/a  
Hole size: **A** =  $\varnothing 6.5$ , **B** =  $3.6 \times 5.5$

- Stainless steel
- Mounting Clip
- Hardware included

Used with:  
WLB92

**LMBWL92HKS** (All measurements in mm)

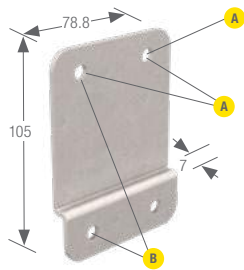


Hole center spacing: **A** = 45  
Hole size: n/a

Hanging kit; 1.5 m (5 ft) cable with looped end  
Galvanized Steel  
Packaged 2 per kit  
Hardware included

Used with:  
WLB92

**LMBWL92S** (All measurements in mm)

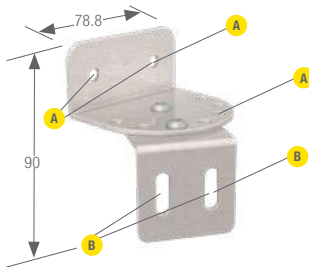


Hole center spacing: **A** = 45, **B** = 80  
Hole size: **A** =  $4X \varnothing 7$

Surface Mount; Set of two brackets for end of light  
Stainless Steel  
hardware included

Used with:  
WLB92

**LMBWL92RAS** (All measurements in mm)

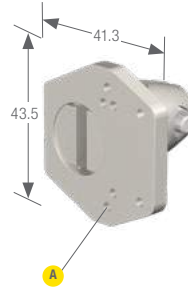


Hole center spacing: **A** = 45, **B** = 25  
Hole size: **A** =  $\varnothing 7$ , **B** =  $7 \times 15$

- Swivel Right Angle Mount; Pair of two swivel right-angle brackets
- Stainless Steel hardware included

Used with:  
WLB92

**SMBQ4XF.** (All measurements in mm)



Hole center spacing:  
Hole size:  
**A** =  $7 \times M3 \times 0.5$

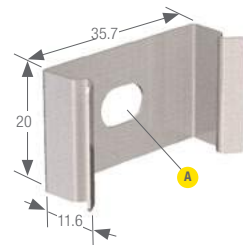
Model	Bolt Thread (A)
SMBQ4XFA	$3/8 - 16 \times 2 \frac{1}{4}$ "
SMBQ4XFAM10	M10 - 1.5 x 50
SMBQ4XFAM12	n/a; no bolt included. Mounts directly to 12 mm (1/2 in) rods

- 304 stainless steel bracket
- Swivel bracket with tilt and pan movement for precision adjustment
- Clamps on dia. 12mm rod (not included)

Used with:  
Q3X  
Q4X

QS18  
QS30

**LMBWL32** (All measurements in mm)

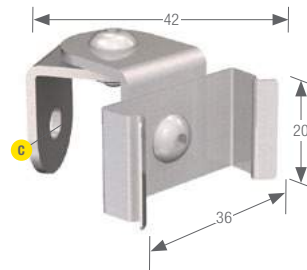


Hole center spacing: n/a  
Hole size: **A** =  $2x \varnothing 6.5$

Replaces bracket that ships with the WLB32 light  
Stainless steel  
Includes 4 snap clips, 4 screws, and

Used with:  
WLB32

**LMBWL32-180S** (All measurements in mm)

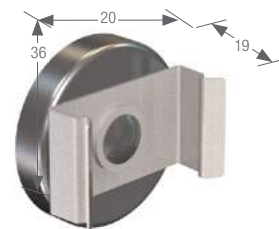


Hole center spacing: n/a  
Hole size: **A** =  $\varnothing 6.4$

- Swivel bracket kit allows 180° of movement
- Stainless steel

Used with:  
WLB32

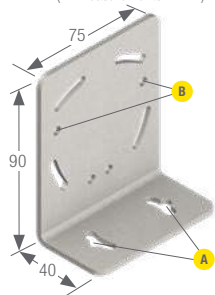
**LMBLWB32MAG** (All measurements in mm)



Hole center spacing: n/a  
Hole size: n/a

- Magnet mounting bracket for easy attachment to steel or iron
- Stainless steel

Used with:  
WLB32

**SMBLTFL** (All measurements in mm)

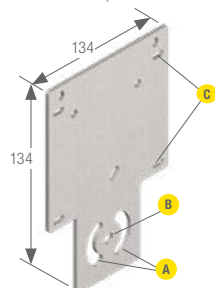
Hole center spacing:

A = 45, B = 54.5

Hole size:

A = 6x  $\varnothing$  4.5, B = 4x  $\varnothing$  4.5

- Right-angle bracket
- 12-ga. stainless steel
- Hardware included

Used with:  
LTF**SMBAMSLTFP** (All measurements in mm)

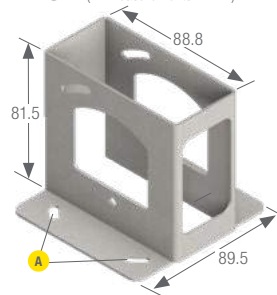
Hole center spacing:

C = 67

Hole size:

A = 26.8 x 7, B =  $\varnothing$  6.5, C = 3.5

- 12-ga. stainless steel
- Articulated slots for 90+° rotation
- Hardware included

Used with:  
LTF**SMBLTFU** (All measurements in mm)

Hole center spacing: A = 62.6

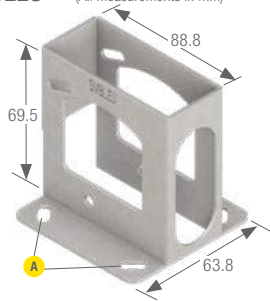
Hole size: A = 8x  $\varnothing$  5.0

- Protective bracket
- 12-ga. stainless steel
- Hardware included

Used with:  
LTF

MISCELLANEOUS

**SMBLEU** (All measurements in mm)

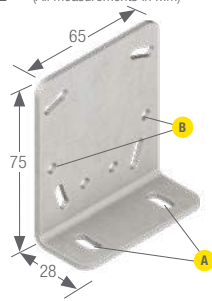


Hole center spacing: **A** = 48  
 Hole size: **A** = 8x  $\varnothing$  2.5

- Protective bracket
- 12-ga. stainless steel
- Hardware included

Used with:  
 LE

**SMBLEL** (All measurements in mm)

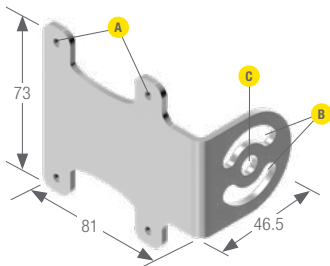


Hole center spacing:  
**A** = 47, **B** = 50.8  
 Hole size:  
**A** = 4x  $\varnothing$  5.7, **B** = 8x  $\varnothing$  4.5

- Right-angle bracket
- 12-ga. stainless steel
- Hardware included

Used with:  
 LE

**SMBVERA** (All measurements in mm)

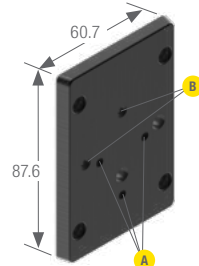


Hole center spacing:  
**A** = 47, **B** = 25  
 Hole size:  
**A** = 4x  $\varnothing$  4.5, **B** = 7 x 26, **C** = 1/4-20

- Right-angle bracket
- 12-ga. stainless steel
- M3 x 0.5 hardware included

Used with:  
 VE

**SMBVEMP** (All measurements in mm)



Hole center spacing:  
 Hole size:  
**A** = 3x 10-32 2B THRU  
**B** = M8x 1.25 THRU

- Black ABS plastic
- Hardware included

Used with:  
 VE



## Banner Cordset Selections

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### M8/Pico-Style

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3-Pin	page 760
4-Pin	page 762
6-Pin	page 763

### M12/Euro-Style

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4-Pin	page 764
5-Pin	page 766
8-Pin	page 768
12-Pin	page 775

### M12/Micro-Style

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3-Pin	page 777
4-Pin	page 777
5-Pin	page 778

### Mini-Style

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3-Pin	page 779
4-Pin	page 779
5-Pin	page 779
8-Pin	page 780

### Communication

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Communication	page 781
Ethernet	page 783

### Washdown

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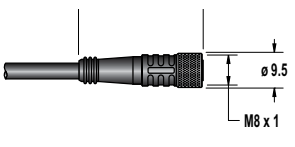

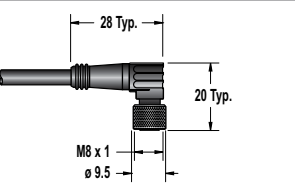
Washdown	page 784
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### Miscellaneous

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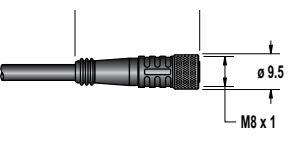
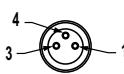
Unterminated Bulk Cable	page 786
Cable Glands	page 786
Field-Wireable Connectors	page 788

## 3-Pin Threaded M8/Pico-Style

Specifications	Style	Dimensions (mm)	Length	Cable Diameter	Model	Pinout
<b>Cable:</b> PVC jacket, PUR (polyurethane) connector body <b>Coupling Nut:</b> Nickel-plated brass <b>Conductors:</b> 24 AWG, gold-plated contacts <b>Voltage/Current Rating:</b> 125 V ac/dc, 4.0 A <b>Temperature:</b> -40 to +105 °C <b>Environmental Rating:</b> IP67	Straight		2.00 m	4.40 mm	PKG3M-2	Female 
			5.00 m		PKG3M-5	
			7.00 m		PKG3M-7	
			9.00 m		PKG3M-9	
			10.0 m		PKG3M-10	
	Right-Angle		2.00 m	4.40 mm	PKW3M-2	1 = Brown 3 = Blue 4 = Black
			5.00 m		PKW3M-5	
			9.00 m		PKW3M-9	

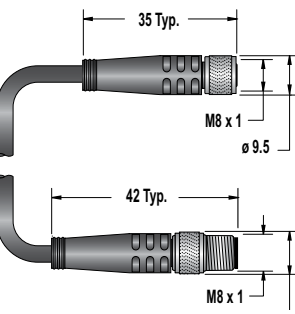

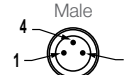
Used with: Q12, T8, SB12, VSM, VS1, VS2, VS3, SLM, IP68 Sealed Ring Light, On-axis Lights

## 3-Pin Threaded M8/Pico-Style

Specifications	Style	Dimensions (mm)	Length	Cable Diameter	Model	Pinout
<b>Cable:</b> PVC jacket and connector body <b>Coupling Nut:</b> Stainless steel <b>Conductors:</b> 24 AWG, gold-plated contacts <b>Voltage/Current Rating:</b> 125 V ac/dc, 4.0 A <b>Temperature:</b> -40 to +90 °C <b>Environmental Rating:</b> IP67	Straight		4.00 m	4.40 mm	PKGV3M-4	Female 
			7.00 m		PKGV3M-7	
			10.0 m		PKGV3M-10	

Used with: IP68 Sealed Ring Lights (stainless steel)

## 3-Pin Threaded/Snap M8/Pico-Style—Double-Ended

Specifications	Style	Dimensions (mm)	Length	Cable Diameter	Model	Pinout
<b>Cable:</b> PVC jacket, PUR (polyurethane) connector body <b>Coupling Nut:</b> Nickel-plated brass (female) Nylon/nickel-plated brass (male) <b>Conductors:</b> 24 AWG, gold-plated contacts <b>Voltage/Current Rating:</b> 125 V ac/dc, 4.0 A <b>Temperature:</b> -40 to +105 °C <b>Environmental Rating:</b> IP67	Straight		0.35 m	4.40 mm	PKG3M-.35-PSG3M	Female 
			2.00 m		PKG3M-2-PSG3M	Male 

Used with: IP68 Sealed P4 (connect IP68 Sealed Ring Light to P4)

### 3-Pin Threaded M8/Pico-Style Splitter—Flat Junction

Specifications	Branches	Trunk	Cable Diameter	Model	Pinout
<b>Cable:</b> PVC jacket, PUR (polyurethane) connector body <b>Coupling Nut:</b> Nickel-plated brass (female) Nylon/nickel-plated brass (male) <b>Conductors:</b> 24 AWG, gold-plated contacts <b>Voltage/Current Rating:</b> 125 V ac/dc, 4.0 A <b>Temperature:</b> -40 to +105 °C <b>Environmental Rating:</b> IP67 <b>Wiring:</b> Parallel wired Y-cords	3-Pin Pico QD 2 x 0.20 m Female	0.20 m Male	4.40 mm	CSB-M831M831	Female   Male  1 = Brown 3 = Blue 4 = Black
Dimensions (mm)					

**Used with:** Connect *P4* to two lights, Spot Lights, Area Lights, Backlights

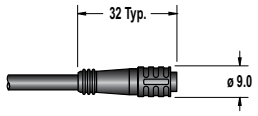

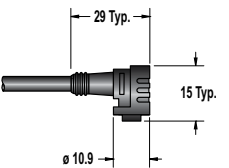
### 3-Pin M8/Pico-Style and 4-Pin M12/Euro-Style to Flying Leads Splitter—Flat Junction

Specifications	Branches	Trunk	Cable Diameter	Model	Pinout
<b>Cable:</b> PVC jacket, PUR (polyurethane) connector body <b>Coupling Nut:</b> Nickel-plated brass <b>Conductors:</b> 24 AWG (3-pin) or 22 AWG (4-pin), gold-plated contacts <b>Voltage/Current Rating:</b> 250 V ac/ 300 V dc, 4.0 A <b>Temperature:</b> -40 to +105 °C <b>Environmental Rating:</b> IP67	3-Pin Pico QD 0.3 m Male 4-pin Euro QD 0.3 m Female	Flying Leads 4 m	4.40 mm (branches) 5.50 mm (trunk)	CSB-UNT213M831F1241	Female   Male  1 = NC 3 = Blue 4 = Black
Dimensions (mm)					

**Used with:** *P4* to High Intensity Area Lights (to strobe from *P4*)

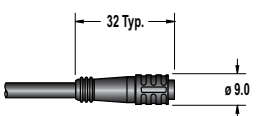

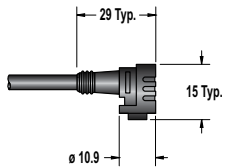


## 4-Pin Snap-on M8/Pico-Style

Specifications	Style	Dimensions (mm)	Length	Cable Diameter	Model	Pinout
<b>Cable:</b> PVC jacket, PUR (polyurethane) connector body, nylon coupling nut <b>Coupling Nut:</b> Nylon <b>Conductors:</b> 26 AWG, gold-plated contacts <b>Voltage/Current Rating:</b> 125 V ac/dc, 2.0 A <b>Temperature:</b> -40 to +90 °C <b>Environmental Rating:</b> IP67	Straight		2.00 m	3.20 mm	PKG4-2	Female  1 = Brown 2 = White 3 = Blue 4 = Black
	Right-Angle		2.00 m	3.20 mm	PKW4Z-2	

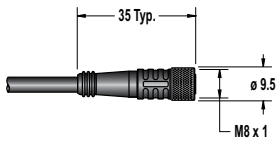
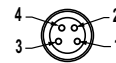
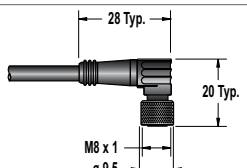
Used with: QS18 (Integral or Pigtail), Q20 (Integral or Pigtail), D12, D10A, DF-G1, S12

## 4-Pin Snap-On M8/Pico-Style with Shield

Specifications	Style	Dimensions (mm)	Length	Cable Diameter	Model	Pinout
<b>Cable:</b> PVC jacket, PUR (polyurethane) connector body, nylon or PUR coupling nut <b>Coupling Nut:</b> Nylon or PUR <b>Conductors:</b> 26 AWG (shielded), gold-plated contacts <b>Voltage/Current Rating:</b> 125 V ac/dc, 2.0 A <b>Temperature:</b> -40 to +90 °C <b>Environmental Rating:</b> IP67	Straight		2.00 m	4.40 mm	PKG4S-2	Female  1 = Brown 2 = White 3 = Blue 4 = Black
	Right-Angle		2.00 m	4.40 mm	PKW4ZS-2	

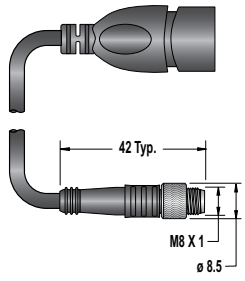
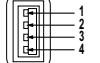
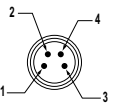
Used with: QS18U

## 4-Pin Threaded M8/Pico-Style

Specifications	Style	Dimensions (mm)	Length	Cable Diameter	Model	Pinout
<b>Cable:</b> PVC jacket, PUR (polyurethane) body <b>Coupling Nut:</b> Nickel-plated brass <b>Conductors:</b> 26 AWG, gold-plated contacts <b>Voltage/Current Rating:</b> 125 V ac/dc, 2.0 A <b>Temperature:</b> -40 to +105 °C <b>Environmental Rating:</b> IP67	Straight		2.00 m	3.80 mm	PKG4M-2	Female  1 = Brown 2 = White 3 = Blue 4 = Black
			5.00 m		PKG4M-5	
			9.00 m		PKG4M-9	
	Right-Angle		2.00 m	4.30	PKW4M-2	
			5.00 m		PKW4M-5	
			9.00 m		PKW4M-9	

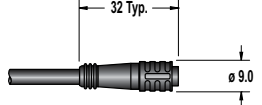
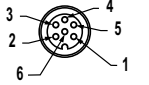
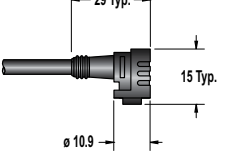
Used with: Q12, QS18 (Pigtail), Q20 (Pigtail), S12, QMH26, Q26, D12, DF-G1

## 4-Pin Threaded M8/Pico-Style to USB with Shield—Double-Ended

Specifications	Style	Dimensions (mm)	Length	Cable Diameter	Model	Pinout
<b>Cable:</b> PVC jacket, PUR (polyurethane) connector body <b>Coupling Nut:</b> Nickel-plated brass on Pico QD end <b>Conductors:</b> 28 AWG and 24 AWG, gold-plated contacts <b>Voltage/Current Rating:</b> 60V ac/75V dc, 2.0 A <b>Temperature:</b> -40 to +105 °C <b>Environmental Rating:</b> IP67	Straight Pico QD/USB		0.15 m	4.80 mm	PSG-4M-4005-USB	USB  1 = Red    3 = Green 2 = White   4 = Black
			0.30 m		PSG-4M-401-USB	
			0.91 m		PSG-4M-403-USB	Male  1 = Red    3 = Black 2 = White   4 = Green
			3.05 m		PSG-4M-410-USB	
			4.88 m		PSG-4M-416-USB	

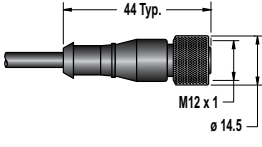
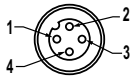
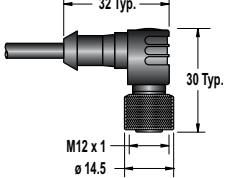
Used with: iVu TG &amp; BCR — Remote Touch Screen models, iVu Plus

## 6-Pin Snap-On M8/Pico-Style

Specifications	Style	Dimensions (mm)	Length	Cable Diameter	Model	Pinout
<b>Cable:</b> PVC jacket, PUR (polyurethane) connector body <b>Coupling Nut:</b> Nylon or PUR <b>Conductors:</b> 26 AWG (shielded), gold-plated contacts <b>Voltage/Current Rating:</b> 125V ac/dc, 2.0 A <b>Temperature:</b> -40 to +90 °C <b>Environmental Rating:</b> IP67	Straight		2.00 m	4.70 mm	PKG6Z-2	Female  1 = Brown 2 = White 3 = Blue 4 = Black 5 = Gray 6 = Pink
			9.00 m		PKG6Z-9	
	Right-Angle		2.00 m	4.70 mm	PKW6Z-2	
			9.00 m		PKW6Z-9	

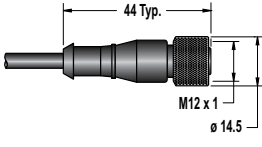
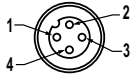
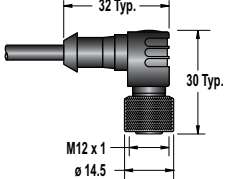
Used with: D10

## 4-Pin Threaded M12/Euro-Style

Specifications	Style	Dimensions (mm)	Length	Cable Diameter	Model	Pinout
<b>Cable:</b> PVC jacket, PUR (polyurethane) connector body <b>Coupling Nut:</b> Nickel-plated brass <b>Conductors:</b> 22 AWG, gold-plated contacts <b>Voltage/Current Rating:</b> 250V ac/dc, 4.0 A <b>Temperature:</b> -40 to +105 °C <b>Environmental Rating:</b> IP67/IP69K	Straight		1.83 m	5.20 mm	MQDC-406	Female  1 = Brown 2 = White 3 = Blue 4 = Black
			4.57 m		MQDC-415	
			9.14 m		MQDC-430	
			15.2 m		MQDC-450	
	Right-Angle		2.00 m	5.20 mm	MQDC-406RA-2	
			5.00 m		MQDC-415RA	
			9.00 m		MQDC-430RA	
					MQDC-450RA	

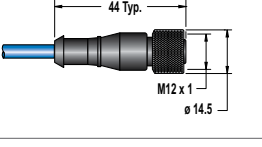
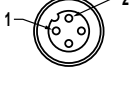
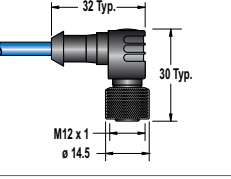
Used with: Q12, M12, QS18, Q20, OMNI-BEAM (QDH suffix), Q45 dc sensors (Q5 suffix), MINI-BEAM dc, SM312 sensors, S18, M18, T18, Q25, S30, T30, Q40, TM18/TM18 Expert, QM42/QMT42, QL50/QL51, SLM, R58A, T18U, TL50/TL30F, K5, K80, PVA/PVL, VTB, STB with solid-state relay, EZ-LIGHT, WL50, WLS28-2, QM26, Q26, DF-G1, WLA, WLC60, WLC90, E-Stops w/ Q4 suffix

## 4-Pin Threaded M12/Euro-Style with Shield

Specifications	Style	Dimensions (mm)	Length	Cable Diameter	Model	Pinout
<b>Cable:</b> PVC jacket, PUR (polyurethane) connector body, nickel-plated <b>Coupling Nut:</b> Nickel-plated brass <b>Conductors:</b> 22 AWG (shielded), gold-plated contacts <b>Voltage/Current Rating:</b> 250 V ac/dc, 4.0 A <b>Temperature:</b> -40 to +105 °C <b>Environmental Rating:</b> IP67	Straight		1.83 m	5.20 mm	MQDEC2-406	Female  1 = Brown 2 = White 3 = Blue 4 = Black
			4.57 m		MQDEC2-415	
			9.14 m		MQDEC2-430	
	Right-Angle		1.83 m	5.20 mm	MQDEC2-406RA	
			4.57 m		MQDEC2-415RA	
			9.14 m		MQDEC2-430RA	

Used with: QS18U, T30UX

## 4-Pin Threaded M12/Euro-Style (for use with NAMUR sensors)

Specifications	Style	Dimensions (mm)	Length	Cable Diameter	Model	Pinout
<b>Cable:</b> PVC jacket, PUR (polyurethane) connector body <b>Coupling Nut:</b> Nickel-plated brass <b>Conductors:</b> 20 AWG, gold-plated contacts <b>Voltage/Current Rating:</b> 250 V ac/dc, 4.0 A <b>Temperature:</b> -40 to +105 °C <b>Environmental Rating:</b> IP67	Straight		1.83 m	5.20 mm	MQD9-406	Female  1 = Brown 2 = Blue
			4.57 m		MQD9-415	
			9.14 m		MQD9-430	
	Right-Angle		1.83 m	5.20 mm	MQD9-406RA	
			4.57 m		MQD9-415RA	
			9.14 m		MQD9-430RA	

Used with: MINI-BEAM & Q45 NAMUR sensors

## 4-Pin Threaded M12/Euro-Style—Double-Ended

Specifications	Style	Dimensions (mm)	Length	Cable Diameter	Model	Pinout
<b>Cable:</b> PVC jacket, PUR (polyurethane) connector body <b>Coupling Nut:</b> Nickel-plated brass <b>Conductors:</b> 22 AWG, gold-plated contacts <b>Voltage/Current Rating:</b> 250 V ac/dc, 4.0 A <b>Temperature:</b> -40 to +105 °C <b>Environmental Rating:</b> IP67	Straight		0.31 m	5.90 mm	MQDEC-401SS	Female  Male  1 = Brown 2 = White 3 = Blue 4 = Black
			0.91 m		MQDEC-403SS	
			1.83 m		MQDEC-406SS	
			3.66 m		MQDEC-412SS	
			6.10 m		MQDEC-420SS	
			9.14 m		MQDEC-430SS	
			15.2 m		MQDEC-450SS	
			Right-Angle			
	1.83 m	MQDEC-406RS				
	3.66 m	MQDEC-412RS				
	6.10 m	MQDEC-420RS				
	9.14 m	MQDEC-430RS				
	15.2 m	MQDEC-450RS				

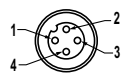

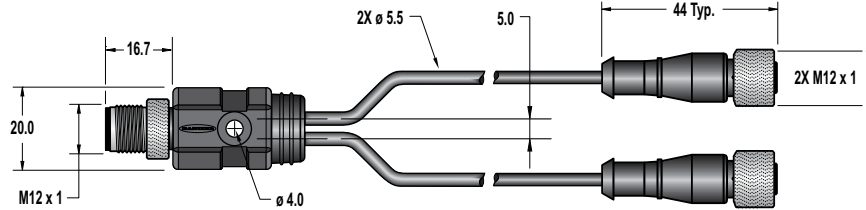
Used with: M12, QS18, Q20, OMNI-BEAM (QDH suffix), Q45 dc sensors (Q5 suffix), MINI-BEAM dc, SM312 sensors, S18, M18, T18, Q25, S30, T30, Q40, QM42/QMT42, SLM, R58A, T18U, TL50, TL30F, K50, K80, PVA/PVL, VTB and STB, EZ-LIGHT, WL50, WLS28-2, QM26, Q26, DF-G1, WLA, WLC60/WLC90, QL50

## 4-Pin Threaded M12/Euro-Style Splitter—Flat Junction

Specifications	Branches(Female)	Trunk(Male)	Cable Diameter	Model	Pinout	
<b>Cable:</b> PVC jacket, PUR (polyurethane) connector body <b>Coupling Nut:</b> Nickel-plated brass <b>Conductors:</b> 22 AWG, gold-plated contacts <b>Voltage/Current Rating:</b> 250 V ac/300 V dc, 4.0A <b>Temperature:</b> -40 to +105 °C <b>Environmental Rating:</b> IP67 <b>Wiring:</b> Parallel wired Y-cord	No branch	No trunk	5.50 mm	CSB-M1240M1240	Female  Male  1 = Brown 2 = White 3 = Blue 4 = Black	
	2 x 0.30 m	No trunk				CSB-M1240M1241
		0.30 m				CSB-M1241M1241
		2.50 m				CSB-M1248M1241
		4.60 m				CSB-M12415M1241
		7.60 m				CSB-M12425M1241
		7.60 m Unterminated				CSB-UNT425M1241
	<b>Dimensions (mm)</b>					

Used with: Sensors w/4-Pin Euro QD, EZ-LIGHT, DX80 (10 to 30 V dc), DX85, WLS28-2, WL50, WLA, WLC60, WLC90

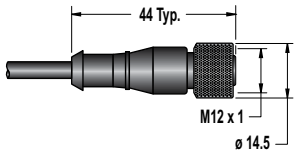
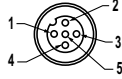
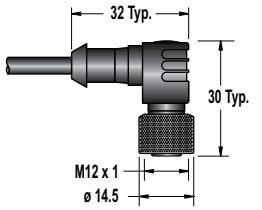
## 4-Pin Threaded M12/Euro-Style Splitter—Rounded Junction

Specifications	Branches(Female)	Trunk(Male)	Cable Diameter	Model	Pinout
<b>Cable:</b> PVC jacket, PUR (polyurethane) connector body <b>Coupling Nut:</b> nNickel-plated brass <b>Conductors:</b> 22 AWG, gold-plated contacts <b>Voltage/Current Rating:</b> 60 V ac/75 V dc, 2.0A <b>Temperature:</b> -40 to +105 °C <b>Environmental Rating:</b> IP67 <b>Wiring:</b> Parallel wired Y-cord	0.31 m	No trunk	5.50 mm	CSRB-M1240M1241	Female  Male  1 = Brown 2 = White 3 = Blue 4 = Black
	0.61 m			CSRB-M1240M1242	
	0.91 m			CSRB-M1240M1243	
	1.22 m			CSRB-M1240M1244	
<b>Dimensions (mm)</b>					
					

Used with: Sensors w/4-Pin Euro QD, EZ-LIGHT, DX80 (10 to 30 V dc), DX85, WLS28-2, WL50, WLA, WLC60, WLC90

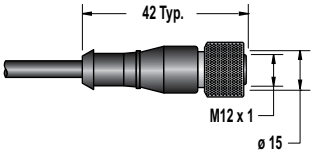
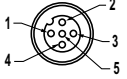
Specifications

## 5-Pin Threaded M12/Euro-Style

Specifications	Style	Dimensions (mm)	Length	Cable Diameter	Model	Pinout
<b>Cable:</b> PVC jacket, PUR (polyurethane) connector body <b>Coupling Nut:</b> Nickel-plated brass <b>Conductors:</b> 22 AWG, gold-plated contacts <b>Voltage/Current Rating:</b> 250 V ac/dc, 4.0 A <b>Temperature:</b> -40 to +105 °C <b>Environmental Rating:</b> IP67	Straight		0.50 m	5.20 mm	MQDC1-501.5	Female  1 = Brown 2 = White 3 = Blue 4 = Black 5 = Gray
			1.83 m		MQDC1-506	
			4.57 m		MQDC1-515	
			9.14 m		MQDC1-530	
	Right-Angle		1.83 m	5.20 mm	MQDC1-506RA	
			4.57 m		MQDC1-515RA	
9.14 m			MQDC1-530RA			

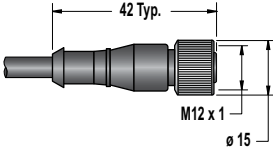

Used with: MINI-BEAM Expert, QS30, PicoDot, Q45 Laser Retro, R55F, SL30 & SL30E, SL10 & SL10E, VTB (2-color), QL56, Q60, PVD, STB, K50, K80, DX80, DX81, DX85, EZ-LIGHT, STB w/em relay, High-Intensity Area Lights, High-Intensity Ring Lights, Sealed Backlights, R58 Expert, QL56

## 5-Pin Threaded M12/Euro-Style

Cordset Specs	Style	Dimensions (mm)	Length	Cable Diameter	Model	Pinout
<b>Cable:</b> PVC jacket, PUR (polyurethane) connector body <b>Coupling Nut:</b> Nickel-plated brass <b>Conductors:</b> 20 AWG, gold-plated contacts <b>Voltage/Current Rating:</b>  250 V ac/dc, 4.0 A <b>Temperature:</b> -40 to +105 °C <b>Environmental Rating:</b> IP67	Straight		1.83 m	6.00 mm	MQDC20-506	Female  1 = Brown 2 = White 3 = Blue 4 = Black 5 = Gray
			4.57 m		MQDC20-515	
			9.14 m		MQDC20-530	

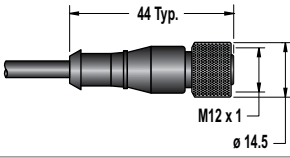
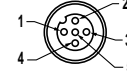
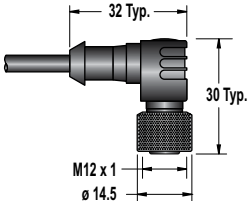
Used with: High Intensity Area Lights, High Intensity Ring Lights, Sealed Linear Array Lights, Sealed Backlights **NOTE:** Except stainless steel models

## 5-Pin Threaded M12/Euro-Style

Specifications	Style	Dimensions (mm)	Length	Cable Diameter	Model	Pinout
<b>Cable:</b> PVC jacket, PUR (polyurethane) connector body <b>Coupling Nut:</b> 316 stainless steel <b>Conductors:</b> 20 AWG, gold-plated contacts <b>Voltage/Current Rating:</b> 250 V ac/dc, 4.0 A <b>Temperature:</b> -40 to +105 °C <b>Environmental Rating:</b> IP67	Straight		1.83 m	6.00 mm	MQDC20SS-506	Female  1 = Brown 2 = White 3 = Blue 4 = Black 5 = Gray
			4.57 m		MQDC20SS-515	
			9.14 m		MQDC20SS-530	

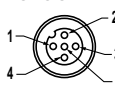

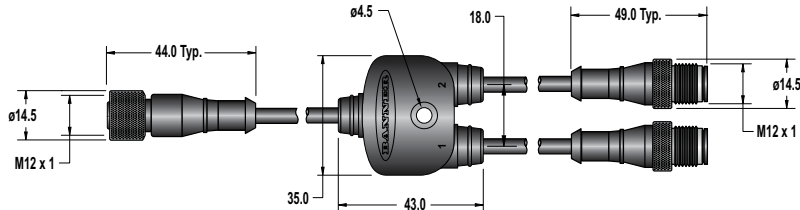
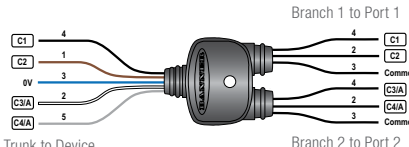
Used with: M25U, QM26

## 5-Pin Threaded M12/Euro-Style with Shield

Specifications	Style	Dimensions (mm)	Length	Cable Diameter	Model	Pinout
<b>Cable:</b> PVC jacket, PUR (polyurethane) connector body <b>Coupling Nut:</b> nickel-plated brass <b>Conductors:</b> 22 AWG (shielded), gold plated contacts <b>Voltage/Current Rating:</b> 250 V ac/dc, 4.0 A <b>Temperature:</b> -40 to +105 °C <b>Environmental Rating:</b> IP67	Straight		1.83 m	5.60 mm	MQDEC2-506	Female  1 = Brown 2 = White 3 = Blue 4 = Black 5 = Gray
			4.57 m		MQDEC2-515	
			9.14 m		MQDEC2-530	
			15.2 m		MQDEC2-550	
	Right-Angle		1.83 m	5.60 mm	MQDEC2-506RA	
			4.57 m		MQDEC2-515RA	
			9.14 m		MQDEC2-530RA	
			15.2 m		MQDEC2-550RA	

Used with: R58E, QT50U dc sensors, S18U, T30U, M25U, Q45U, Q45UR, LX, QT50R, Q120RA

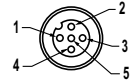

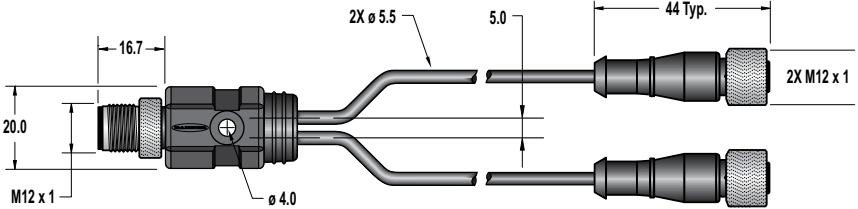
## 5-Pin Threaded M12/Euro-Style to 4-Pin Threaded M12/Euro Style Splitter—Flat Junction

Specifications	Branches(Male)	Trunk(Female)	Cable Diameter	Model	Pinout	
<b>Cable:</b> PVC jacket, PUR (polyurethane) connector body <b>Coupling Nut:</b> Nickel-plated brass <b>Conductor:</b> 22 AWG, gold-plated contacts <b>Voltage/Current Rating:</b> 250 V ac/ 300 V dc, 4.0 A <b>Temperature:</b> -40 to +105 °C <b>Environmental Rating:</b> IP67 <b>Wiring:</b> Combiner Y-cord	4-pin Euro QD 2 x 0.31 m	5-pin Euro QD 0.31 m	5.50 mm	CSF-M12F51M12M41	Female  Male 	
<b>Dimensions (mm)</b>						
						
	<b>Branch 1</b> 1 = NC 2 = Brown 3 = Blue 4 = Black	<b>Branch 2</b> 1 = NC 2 = Gray 3 = Blue 4 = White	<b>Trunk</b> 1 = Brown 2 = White 3 = Blue 4 = Black 5 = Gray			

Used with: 3- or 4-Segmented EZ-LIGHT, 3- or 4-function TL50 Tower Lights

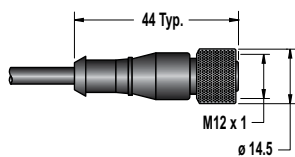

NOTE: Use to connect device to a "2-output" I/O block

## 5-Pin Threaded M12/Euro-Style Splitter—Rounded Junction

Specifications	Branches(Female)	Trunk(Male)	Cable Diameter	Model	Pinout	
<b>Cable:</b> PVC jacket, PUR (polyurethane) connector body <b>Coupling Nut:</b> Nickel-plated brass <b>Conductor:</b> 22 AWG, gold-plated contacts <b>Voltage/Current Rating:</b> 60 V ac/ 75 V dc, 2.0 A <b>Temperature:</b> -40 to +105 °C <b>Environmental Rating:</b> IP67 <b>Wiring:</b> Parallel wired Y-cord	<b>Branch 1</b> 0.14 m <b>Branch 2</b> 0.22 m	No trunk	5.60 mm	CSRB-M1250M125.47M125.73	Female  Male  1 = Brown 2 = White 3 = Blue 4 = Black 5 = Green/Yellow	
<b>Dimensions (mm)</b>						
						

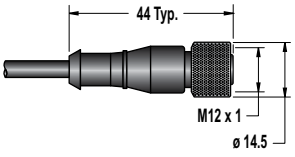
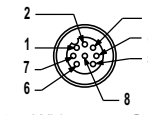
Used with: EZ-LIGHTS w/5-Pin Euro QD, DX80 (FlexPower), LX

## 8-Pin Threaded M12/Euro-Style with Shield

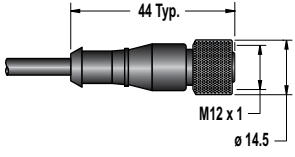

Specifications	Style	Dimensions (mm)	Length	Cable Diameter	Model	Pinout
<b>Cable:</b> PVC jacket, PUR (polyurethane) connector body <b>Coupling Nut:</b> Nickel-plated brass <b>Conductors:</b> 24 AWG (shielded), gold-plated contacts <b>Voltage/Current Rating:</b> 75 V ac/dc, 2.0 A <b>Temperature:</b> -40 to +105 °C <b>Environmental Rating:</b> IP67	Straight		1.83 m	5.60 mm	MQDC-806	Female  1 = White 5 = Gray 2 = Brown 6 = Pink 3 = Green 7 = Blue 4 = Yellow 8 = Shield
4.58 m			MQDC-815			
9.14 m			MQDC-830			

Used with: LT3, LG5, LG10

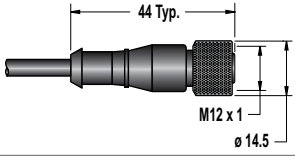
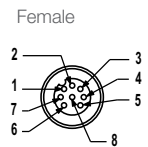
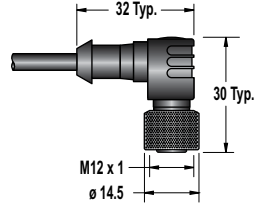
## 8-Pin Threaded M12/Euro-Style with Shield

Specifications	Style	Dimensions (mm)	Length	Cable Diameter	Model	Pinout
<b>Cable:</b> PVC jacket, PUR (polyurethane) connector body <b>Coupling Nut:</b> Nickel-plated brass <b>Conductors:</b> 24 AWG (shielded), gold-plated contacts <b>Voltage/Current Rating:</b> 75 V ac/dc, 2.0 A <b>Temperature:</b> -40 to +105 °C <b>Environmental Rating:</b> IP67	Straight		1.83 m	5.60 mm	MAQDC-806	Female  1 = White 5 = Gray 2 = Brown 6 = Pink 3 = Green 7 = Blue 4 = Yellow 8 = Red
			4.58 m		MAQDC-815	
			9.14 m		MAQDC-830	
			15.2 m		MAQDC-850	
Used with: EZ-ARRAY, Emitters/Receivers						

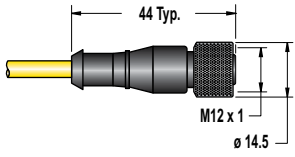
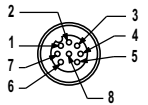
## 8-Pin Threaded M12/Euro-Style with Shield

Specifications	Style	Dimensions (mm)	Length	Cable Diameter	Model	Pinout
<b>Cable:</b> PVC jacket, PUR (polyurethane) connector body <b>Coupling Nut:</b> Nickel-plated brass <b>Conductors:</b> 24 AWG (shielded), gold-plated contacts <b>Voltage/Current Rating:</b> 75 V ac/dc, 2.0 A <b>Temperature:</b> -40 to +105 °C <b>Environmental Rating:</b> IP67	Straight		1.83 m	6.00 mm	MQLH-806-F	Female  1 = White 5 = Gray 2 = Brown 6 = Green 3 = Shield 7 = Blue 4 = Yellow 8 = Shield
			4.58 m		MQLH-815-F	
			9.14 m		MQLH-830-F	
Used with: LH						

## 8-Pin Threaded M12/Euro-Style with Open-Shield

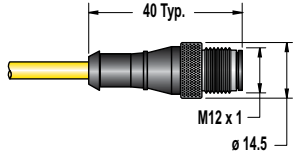
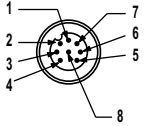
Specifications	Style	Dimensions (mm)	Length	Cable Diameter	Model	Pinout
<b>Cable:</b> PVC jacket, PUR (polyurethane) connector body <b>Coupling Nut:</b> Nickel-plated brass <b>Conductors:</b> 24 AWG (shielded), gold-plated contacts <b>Voltage/Current Rating:</b> 75 V ac/dc, 2.0 A <b>Temperature:</b> -40 to +105 °C <b>Environmental Rating:</b> IP67	Straight		1.83 m	5.60 mm	MQDC2S-806	Female  1 = White 2 = Brown 3 = Green 4 = Yellow 5 = Gray 6 = Pink 7 = Blue 8 = Red
			4.57 m		MQDC2S-815	
			9.14 m		MQDC2S-830	
			15.2 m		MQDC2S-850	
	Right-Angle		1.83 m	5.60 mm	MQDC2S-806RA	1 = White 2 = Brown 3 = Green 4 = Yellow 5 = Gray 6 = Pink 7 = Blue 8 = Red
			4.57 m		MQDC2S-815RA	
			9.14 m		MQDC2S-830RA	
			15.2 m		MQDC2S-850RA	
Used with: QC50, QCX50, EZ-LIGHT, iVu TG—Integrated Touch Screen models, E-Stops w/Q8 suffix						

## 8-Pin Threaded M12/Euro-Style

Specifications	Style	Dimensions (mm)	Length	Cable Diameter	Model	Pinout
<b>Cable:</b> PVC jacket, PUR (polyurethane) connector body <b>Coupling Nut:</b> Nickel-plated brass <b>Conductors:</b> 22 AWG, gold-plated contacts <b>Voltage/Current Rating:</b> 75 V ac/dc, 2.0 A <b>Temperature:</b> -40 to +105 °C <b>Environmental Rating:</b> IP67	Straight		4.57 m	6.00 mm	QDE-815D	Female  1 = Brown 5 = Black 2 = Or/Bl 6 = Blue 3 = Orange 7 = Gn/Ye 4 = White 8 = Violet
			7.62 m		QDE-825D	
			15.3 m		QDE-850D	
			22.9 m		QDE-875D	
			30.5 m		QDE-8100D	
Used with: EZ-SCREEN w/8-pin QD (14 & 30 mm Resolution), EZ-SCREEN LP w/8-pin QD, (14 & 25 mm Resolution), EZ-SCREEN w/8-pin QD (Point & Grid), EZ-SCREEN Type 2						



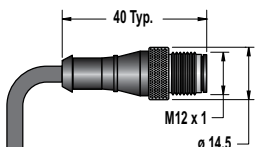
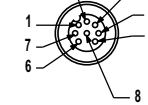
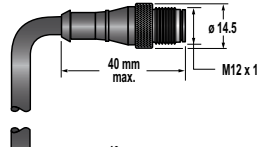
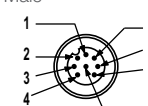
## 8-Pin Threaded M12/Euro-Style Cordsets

Specifications	Style	Dimensions (mm)	Length	Cable Diameter	Model	Pinout
<b>Cable:</b> PVC jacket, PUR (polyurethane) connector body <b>Coupling Nut:</b> Nickel-plated brass <b>Conductors:</b> 22 AWG, gold-plated contacts <b>Voltage/Current Rating:</b> 60 V ac 75 V dc, 2.0 A <b>Temperature:</b> -40 to +105 °C <b>Environmental Rating:</b> IP67	Straight		4.57 m	5.50 mm	QDE2R4-815D	Male  1 = Brown    5 = Blue 2 = Not Used    6 = Not Used 3 = Not Used    7 = Not Used 4 = Black    8 = White
			7.62 m		QDE2R4-825D	
			15.2 m		QDE2R4-850D	

Used with: EZ-SCREEN Receiver (Cascade) CSSI QD (14 & 30 mm), EZ-SCREEN LP Receiver (Cascade) CSSI QD and a DELPEF-810 (14 & 25 mm)

NOTE: For connection of E-Stop or other hard/relay contacts.

## 8-Pin Threaded M12/Euro-Style with Shield—Double-Ended

Specifications	Style	Dimensions (mm)	Length	Cable Diameter	Model	Pinout		
<b>Cable:</b> PVC jacket, PUR (polyurethane) connector body <b>Coupling Nut:</b> Nickel-plated brass <b>Conductors:</b> 24 AWG (shielded), gold-plated contacts <b>Voltage/Current Rating:</b> 60 V ac/ 75 V dc, 2.0 A <b>Temperature:</b> -40 to +105 °C <b>Environmental Rating:</b> IP67	Male Straight/ Female Straight		1.83 m	6.00 mm	MQLH-806-MF	Female  1 = White    5 = Gray 2 = Brown    6 = Green 3 = Shield    7 = Blue 4 = Yellow    8 = Shield		
			4.57 m		MQLH-815-MF			
			9.14 m		MQLH-830-MF			
	Male Straight/ Male Straight		0.30 m	6.00 mm	MQLH-801-MM	Male  1 = White    5 = Gray 2 = Brown    6 = Green 3 = Shield    7 = Blue 4 = Yellow    8 = Shield		

Used with: LH

## 8-Pin Threaded M12/Euro-Style—Double-Ended

Specifications	Style	Dimensions (mm)	Length	Cable Diameter	Model*	Pinout		
<b>Cable:</b> PVC jacket, PUR (polyurethane) connector body <b>Coupling Nut:</b> Nickel-plated brass <b>Conductors:</b> 22 AWG, gold-plated contacts <b>Voltage/Current Rating:</b> 60 V ac/75 V dc, 2.0 A <b>Temperature:</b> -40 to +105 °C <b>Environmental Rating:</b> IP68	Female Straight/ Male Straight		0.31 m	6.00 mm	8-pin/8-pin	8-Pin Female to 5-Pin Male 1 ↔ 1 2 ↔ 2 3 ↔ 3 4 ↔ 4 5 ↔ 5 6 ↔ 6 7 ↔ 7 8 ↔ 8		
			0.91 m		DEE2R-81D		DEE8-41D	
			2.44 m		DEE2R-83D		—	DEE8-58D
			4.57 m		DEE2R-88D		DEE8-48D	DEE8-51D
			7.62 m		DEE2R-815D		DEE8-48D	DEE8-515D
			15.2 m		DEE2R-825D		DEE8-425D	DEE8-525D
			22.9 m		DEE2R-850D		—	—
			30.5 m		DEE2R-875D		—	—
					DEE2R-8100D		—	—

Used with: EZ-SCREEN w/8-pin QD (14 & 30 mm Resolution), EZ-SCREEN LP w/8-pin QD, (14 & 25 mm Resolution), EZ-SCREEN w/8-pin QD, (Point & Grid), EZ-SCREEN Type 2 (DEE2R only), AC Interface Boxes (DEE2R only), E-Stops 8-pin QD w/Q8 suffix

## 8-Pin Threaded M12/Euro-Style Splitter with Shield—Flat Junction

Specifications	Branches(Female)	Trunk(Male)	Cable Diameter	Model	Pinout
<b>Cable:</b> PVC jacket, PUR (polyurethane) connector body <b>Coupling Nut:</b> nickel-plated brass <b>Conductors:</b> 24 AWG (shielded), gold-plated contacts <b>Voltage/Current Rating:</b> 60 V ac/75 V dc, 2.0 A <b>Temperature:</b> -40 to +80 °C <b>Environmental Rating:</b> IP67 <b>Wiring:</b> Parallel wired Y-cord	No branches	No trunk	6.00 mm	CSB-M1280M1280-LH	Female  Male  1 = White 5 = Gray 2 = Brown 6 = Green 3 = Shield 7 = Blue 4 = Yellow 8 = Shield
	0.60 m	0.30 m		CSB-M1281M1282-LH	
	<b>Dimensions (mm)</b> 				

Used with: LH

## 8-Pin Threaded M12/Euro-Style Splitter with Shield—Flat Junction

Specifications	Branches(Female)	Trunk(Male)	Cable Diameter	Model	Pinout	
<b>Cable:</b> PVC jacket, PUR (polyurethane) connector body <b>Coupling Nut:</b> nickel-plated brass <b>Conductors:</b> 24 AWG (shielded), gold-plated contacts <b>Voltage/Current Rating:</b> 60 V ac/75 V dc, 2.0 A <b>Temperature:</b> -40 to +80 °C <b>Environmental Rating:</b> IP67 <b>Wiring:</b> Parallel wired Y-cord	0.60 m	0.30 m	6.00 mm	CSB3-M1281M1282-LH	Female  Male  1 = White 5 = Gray 2 = Brown 6 = Green 3 = Shield 7 = Blue 4 = Yellow 8 = Shield	
	<b>Dimensions (mm)</b> 					

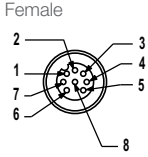
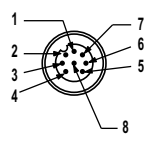
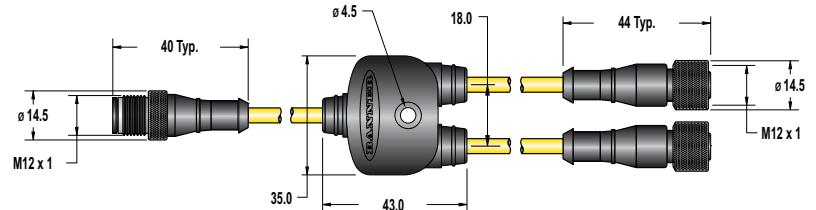
Used with: LH

\* Standard cordsets are yellow PVC with black overmold. For black PVC and overmold, add suffix **B** to model number (example, DEE2R-81DB)

\*\* For connection to safety BUS gateway/node, a "smart" self-monitored safety module, safety controller or safety PLC.

† DEE8-4..D do not have the pin 5 GND/chassis connection. GND/chassis connection should be made via the mounting hardware.

## 8-Pin Threaded M12/Euro-Style Splitter Cordsets—Flat Junction

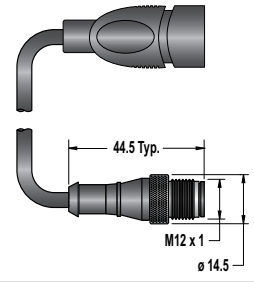
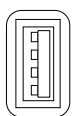
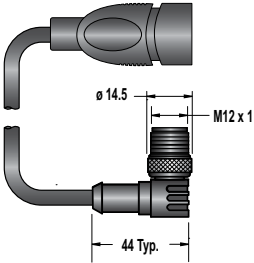

Specifications	Branches(Female)	Trunk(Male)	Cable Diameter	Model	Pinout
<b>Cable:</b> PVC jacket, PUR (polyurethane) connector body <b>Coupling Nut:</b> nickel-plated brass <b>Conductors:</b> 22 AWG, gold-plated contacts <b>Voltage/Current Rating:</b> 60 V ac/75 V dc, 2.0 A <b>Temperature:</b> -40 to +105 °C <b>Environmental Rating:</b> IP68 <b>Wiring:</b> Parallel wired Y-cord	No branches	No trunk	6.00 mm	CSB-M1280M1280	Female  Male  1 = Brown 5 = Black 2 = Or/Bk 6 = Blue 3 = Orange 7 = Gn/Ye 4 = White 8 = Violet
	2 x 0.3 m	0.3 m		CSB-M1281M1281	
		2.5 m		CSB-M1288M1281	
		4.6 m		CSB-M12815M1281	
		7.6 m		CSB-M12825M1281	
		7.6 m Unterminated		CSB-UNT825M1281*	
<b>Dimensions (mm)</b>					
					

**Used with:** EZ-ARRAY, EZ-LIGHT Indicator Lights, EZ-SCREEN w/8-pin QD (14 & 30 mm Resolution), EZ-SCREEN LP w/8-pin QD (14 & 25 mm Resolution), EZ-SCREEN w/8-pin QD (Point & Grid), EZ-SCREEN Type 2, AC Interface Boxes

\* Unterminated cordset is not compatible with the EZ-ARRAY

NOTE: Standard cordsets are yellow PVC with black overmold. For black PVC and overmold, add suffix B to model number (example, CSB-M1280M1280B).

## 8-Pin Threaded M12/Euro-Style to USB—Double Ended

Specifications	Style	Dimensions (mm)	Length	Cable Diameter	Model	Pinout
<b>Cable:</b> PVC jacket, PUR (polyurethane) connector body <b>Coupling Nut:</b> Nickel-plated brass on Euro QD end <b>Conductors:</b> 28 AWG or 24 AWG, gold-plated contacts <b>Voltage Rating:</b> 60 V ac/75 V dc <b>Temperature:</b> -40 to +90 °C	Straight Euro QD/USB		0.15 m	4.80 mm	MQDEC-8005-USB	USB 
			0.30 m		MQDEC-801-USB	
			0.90 m		MQDEC-803-USB	
			3.00 m		MQDEC-810-USB	
	Right-Angle Euro QD/USB		0.15 m	4.80 mm	MQDEC-8005RA-USB	Male 
			0.30 m		MQDEC-801RA-USB	
			0.90 m		MQDEC-803RA-USB	
			3.00 m		MQDEC-810RA-USB	

**Used with:** iVu TG & BCR— Integrated Touch Screen models

## 8-Pin Threaded M12/Euro-Style to Molex—Double Ended

Specifications	Style	Dimensions (mm)	Length	Cable Diameter	Model	Pinout
<b>Cable:</b> Euro, PVC jacket, PUR (polyurethane) connector body <b>Coupling Nut:</b> Nickel-plated brass <b>Molex:</b> Nylon (polyamide)/PUR (polyurethane) <b>Conductors:</b> 24 AWG, gold-plated contacts <b>Voltage Rating:</b> 30 V ac/dc 2.0 A <b>Temperature:</b> -40 to +105 °C <b>Environmental Rating:</b> IP67	Straight Euro QD/ Molex		0.91 m	6.10 mm	IVURD-MX-803	 Molex  Male 1 = Orange 5 = Green 2 = Brown 6 = Blue 3 = Wh/Bn 7 = Wh/Or 4 = Wh/Bl 8 = Wh/Gn
			1.83 m		IVURD-MX-806	
			4.57 m		IVURD-MX-815	
			9.14 m		IVURD-MX-830	
			15.2 m		IVURD-MX-850	
	Right-Angle Euro QD/ Molex		0.91 m	6.10 mm	IVURD-MX-803RA	
			1.83 m		IVURD-MX-806RA	
			4.57 m		IVURD-MX-815RA	
			9.14 m		IVURD-MX-830RA	
			15.2 m		IVURD-MX-850RA	

Used with: iVu RD35 remote display

## 8-Pin Threaded M12/Euro-Style—Double-Ended

Specifications	Style	Dimensions (mm)	Length	Cable Diameter	Model	Pinout
<b>Cable:</b> Euro, PVC jacket, PUR (polyurethane) connector body <b>Molex:</b> Nylon (polyamide)/PUR (polyurethane) <b>Coupling Nut:</b> Nickel-plated brass <b>Conductors:</b> 24 AWG, gold-plated contacts <b>Voltage Rating:</b> 30 V ac/dc 2.0 A <b>Temperature:</b> -40 to +105 °C <b>Environmental Rating:</b> IP67	Straight Euro QD/ Straight Euro QD		0.91 m	6.10 mm	IVURDM-QD-803	 Female 1 = Wh/Or 5 = Wh/Bl 2 = Green 6 = Blue 3 = Wh/Bn 7 = Wh/Gn 4 = Orange 8 = Brown
			1.83 m		IVURDM-QD-806	
			4.57 m		IVURDM-QD-815	
			9.14 m		IVURDM-QD-830	
			15.2 m		IVURDM-QD-850	
	Straight Euro QD/ Right-Angle Euro QD		0.91 m	6.10 mm	IVURDM-QD-803RA	 Male 1 = Orange 5 = Green 2 = Brown 6 = Blue 3 = Wh/Bn 7 = Wh/Or 4 = Wh/Bl 8 = Wh/Gn
			1.83 m		IVURDM-QD-806RA	
			4.57 m		IVURDM-QD-815RA	
			9.14 m		IVURDM-QD-830RA	
			15.2 m		IVURDM-QD-850RA	

Used with: iVu RDM35 remote display

## 8-Pin Threaded M12/Euro-Style with Shield

Specifications	Style	Dimensions (mm)	Length	Cable Diameter	Model	Pinout
<b>Cable:</b> PVC jacket, PUR (polyurethane) connector body <b>Coupling Nut:</b> Nickel-plated brass <b>Conductors:</b> 24 AWG (shielded), gold-plated contacts <b>Voltage/Current Rating:</b> 75 V ac/dc, 2.0 A <b>Temperature:</b> -40 to +105 °C <b>Environmental Rating:</b> IP67	Straight (High Flex)/DB15		1.83 m	7.60 mm	PPC06SHF	Female 
			3.96 m		PPC13SHF	
			7.01 m		PPC23SHF	
			9.75 m		PPC32SHF	
			1.83 m		7.60 mm	
	3.96 m	PPC13SRAHF				
	7.01 m	PPC23SRAHF				
	9.75 m	PPC32SRAHF				

Used with: Pro, Mini Pro, Sealed Pro

## 8-Pin Threaded M12/Euro-Style QD to RD

Specifications	Style	Dimensions (mm)	Length	Cable Diameter	Model	Pinout
<b>Cable:</b> Euro: PVC jacket, PUR (polyurethane) connector body <b>RD:</b> Nylon (polyamide)/PUR (polyurethane) RD connector <b>Coupling Nut:</b> Nickel-plated brass <b>Conductors:</b> 22 AWG, gold-plated contacts <b>Voltage/Current Rating:</b> 60 V ac/75 V dc, 2.0 A <b>Temperature:</b> 0 to +55 °C <b>Environmental Rating:</b> IP67	RD/ Male Straight		0.31 m	6.00 mm	DELPE-81D	RD  Male  1 = Brown 5 = Black 2 = Or/Bk 6 = Blue 3 = Orange 7 = Gn/Ye 4 = White 8 = Violet
			0.91 m		DELPE-83D	
			2.44 m		DELPE-88D	
			4.57 m		DELPE-815D	
			7.62 m		DELPE-825D	
			15.2 m		DELPE-850D	
			22.9 m		DELPE-875D	
			30.5 m		DELPE-8100D	

Used with: EZ-SCREEN LP w/RD (14 &amp; 25 mm Resolution)

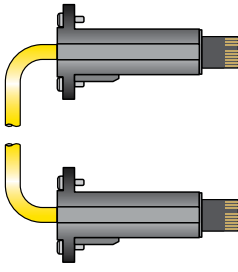

NOTE: Requires QDE-8...D, DEE2R-8...D, CSB-M128... or other M12/Euro QD cordset

## 8-Pin Threaded M12/Euro-Style QD to RD

Specifications	Style	Dimensions (mm)	Length	Cable Diameter	Model	Pinout
<b>Cable:</b> Euro: PVC jacket, PVC connector body, <b>RD:</b> Nylon (polyamide)/PUR (polyurethane) RD connector <b>Coupling Nut:</b> Nickel-plated brass <b>Conductors:</b> 22 AWG, gold-plated contacts <b>Voltage/Current Rating:</b> 60 V ac/75 V dc, 2.0 A <b>Temperature:</b> 0 to +55 °C <b>Environmental Rating:</b> IP67	RD/ Female Straight		0.31 m	6.00 mm	DELPEF-81D	RD  Female  1 = Brown 5 = Black 2 = Or/Bk 6 = Blue 3 = Orange 7 = Gn/Ye 4 = White 8 = Violet
			0.91 m		DELPEF-83D	
			2.44 m		DELPEF-88D	
			4.57 m		DELPEF-815D	

Used with: EZ-SCREEN LP (Cascade) w/RD (14 &amp; 25 mm); requires QDE2R4-8...D cordset or connection of E-Stop or other hard/relay contact; for connection to DEE2R-8...D or to EZ-SCREEN LP w/8-pin QD

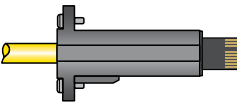

## RD to RD

Specifications	Style	Dimensions (mm)	Length	Cable Diameter	Model	Pinout
<b>Cable:</b> PVC jacket, nylon (polyamide)/PUR (polyurethane) RD connector <b>Conductors:</b> 22 AWG, gold-plated contacts <b>Voltage/Current Rating:</b> 60 V ac/75 V dc, 2.0 A <b>Temperature:</b> 0 to +55 °C <b>Environmental Rating:</b> IP67	RD/RD		0.05 m	6.00 mm	DELP-110E	RD 
			0.30 m		DELP-111E	
			0.91 m		DELP-113E	
			2.44 m		DELP-118E	
			4.57 m		DELP-1115E	
			7.62 m		DELP-1125E	
			15.2 m		DELP-1150E	
			22.9 m		DELP-1175E	
			30.5 m		DELP-11100E	

Used with: EZ-SCREEN LP w/RD Cascading (14 & 25 mm Resolution)

\* Standard cordsets are yellow PVC with black overmold. For black PVC cable and overmold, add suffix **B** to model number (example, **DELP-110EB**).

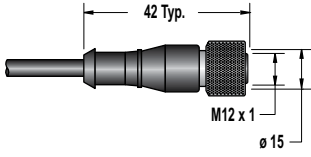
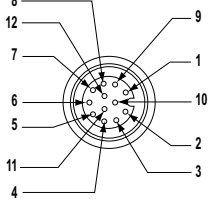
## RD to Flying Lead

Specifications	Style	Dimensions (mm)	Length	Cable Diameter	Model	Pinout	
<b>Cable:</b> PVC jacket, nylon (polyamide)/PUR (polyurethane) RD connector <b>Conductors:</b> 22 AWG, gold-plated contacts <b>Voltage/Current Rating:</b> 60 V ac/75 V dc, 2.0 A <b>Temperature:</b> 0 to +55 °C <b>Environmental Rating:</b> IP67	RD		4.57 m	6.00 mm	8-Wire	RD 	
			7.62 m		RDLP-815D		RDLP6G-415D
			15.2 m		RDLP-825D		RDLP6G-425D
			22.9 m		RDLP-850D		RDLP6G-450D
			30.5 m		RDLP-875D		—
					RDLP-8100D		—

Used with: EZ-SCREEN LP w/RD (14 & 25 mm Resolution)

† For connection of E-Stop or other hard/relay contacts. See EZ-SCREEN installation manual p/n 140044 for more information.

## 12-Pin M12/Euro-Style with Open Shield

Specifications	Style	Dimensions (mm)	Length	Cable Diameter	Model	Pinout
<b>Cable:</b> PVC jacket, PUR (polyurethane) connector body <b>Coupling Nut:</b> Nickel-plated brass <b>Conductors:</b> 20 and 24 AWG, gold-plated contacts <b>Voltage Rating:</b> 250 V ac/300 V dc <b>Temperature:</b> -40 to +105 °C <b>Environmental Rating:</b> IP67	Straight		1.83 m	7.50 mm	MQDC2S-1206	Female 
			4.57 m		MQDC2S-1215	
			9.14 m		MQDC2S-1230	
			15.2 m		MQDC2S-1250	
			22.9 m		MQDC2S-1275	

Used with: IP68 Sealed P4, iVu BCR—Integrated Touch Screen models, iVu Plus (For CE compliance)

## 12-Pin M12/Euro-Style

Specifications	Style	Dimensions (mm)	Length	Cable Diameter	Model	Pinout
<b>Cable:</b> PVC jacket, PUR (polyurethane) connector body <b>Coupling Nut:</b> Nickel-plated brass <b>Conductors:</b> 24, 20 AWG, gold-plated contacts <b>Voltage Rating:</b> 300 V ac/dc, 2.0, 7.0 A <b>Temperature:</b> -40 to +105 °C <b>Environmental Rating:</b> IP67	Straight		1.83 m	7.50 mm	iVUC-1206	Female 
			4.57 m		iVUC-1215	
			9.14 m		iVUC-1230	
			15.2 m		iVUC-1250	
			22.9 m		iVUC-1275	
	Right-Angle		1.83 m	7.50 mm	iVUC-1206RA	
			4.57 m		iVUC-1215RA	
			9.14 m		iVUC-1230RA	
			15.2 m		iVUC-1250RA	
			22.9 m		iVUC-1275RA	

Used with: iVu TG & BCR Remote Touch Screen models, iVu BCR—Integrated Touch Screen models, iVu Plus

## 12-Pin M16

Specifications	Style	Dimensions (mm)	Length	Cable Diameter	Model	Pinout
<b>Cable:</b> PVC jacket <b>Coupling Nut:</b> nickel-plated brass <b>Conductors:</b> 22 AWG, gold-plated contacts <b>Voltage/Current Rating:</b> 60 V ac/dc, 4.0 A <b>Temperature:</b> 40 to +80° C <b>Environmental Rating:</b> IP67	Straight		3.05 m	7.60 mm	MQDC-1210ST	Female 
			9.14 m		MQDC-1230ST	
			24.4 m		MQDC-1280ST	

Used with: LT7

## 12-Pin QD

Specifications	Style	Dimensions (mm)	Length	Cable Diameter	Model	Pinout
	Straight		1.83 m	7.70 mm	P4C06	Female 
			7.01 m		P4C23	
			9.75 m		P4C32	
			15.2 m		P4C50	
			22.9 m		P4C75	
			34.0 m		P4C110	

Used with: P4, PPSIM with terminal strip to P4

## 12-Pin QD to DB15

Specifications	Style	Dimensions (mm)	Length	Cable Diameter	Model	Pinout
	Straight/ DB15		2.00 m	6.9 mm	P4C06SIM	Female 
			7.00 m		P4C23SIM	
			10.0 m		P4C32SIM	Male 

Used with: P4 to PPSIM

## 3-Pin Micro-Style

Specifications	Style	Dimensions (mm)	Length	Cable Diameter	Model	Pinout
	Straight		1.83 m	5.20 mm	MQDC-306	Female 
			4.57 m		MQDC-315	
			9.14 m		MQDC-330	
	Right-Angle		1.83 m	5.20 mm	MQDC-306RA	1 = Green 2 = Red/Black 3 = Red/White
			4.57 m		MQDC-315RA	
			9.14 m		MQDC-330RA	

Used with: MINI-BEAM ac, SM2A312 sensors

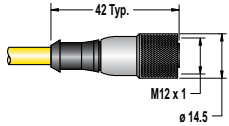

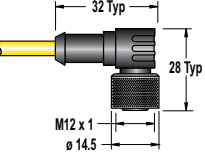
## 4-Pin Micro-Style

Specifications	Style	Dimensions (mm)	Length	Cable Diameter	Model	Pinout	
<b>Cable:</b> PVC jacket, PUR (polyurethane) connector body <b>Coupling Nut:</b> Nickel-plated brass <b>Conductors:</b> 22 AWG, gold-plated contacts <b>Voltage/Current Rating:</b> 250 V ac/dc, 4.0 A <b>Temperature:</b> -40 to +105 °C <b>Environmental Rating:</b> IP67	Straight		1.83 m	5.70 mm	MQAC-406	Female 	
					4.57 m		MQAC-415
					9.14 m		MQAC-430
		Right-Angle		1.83 m	5.70 mm	MQAC-406RA	1 = Red/Black 2 = Red/White 3 = Red 4 = Green
				5.00 m		MQAC-415RA	
				9.14 m		MQAC-430RA	

Used with: QS18 ac/dc sensors, Q45 ac series (suffix Q1), S18, M18, T18, Q25, S30, T30 &amp; Q40 ac sensors (suffix Q1), Q60 ac series

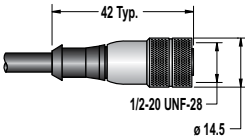



## 4-Pin Micro-Style

Cordset Specs	Style	Dimensions (mm)	Length	Cable Diameter	Model	Pinout
<b>Cable:</b> PVC jacket, PUR (polyurethane) connector body <b>Coupling Nut:</b> Nickel-plated brass <b>Conductors:</b> 22 AWG, gold-plated contacts <b>Voltage Rating:</b> 125 V ac/150 V dc <b>Temperature:</b> -40 to +80 °C <b>Environmental Rating:</b> IP67	Straight		1.83 m	5.7 mm	MQEAC-406	Female 
			4.57 m		MQEAC-415	
			9.14 m		MQEAC-430	
	Right-Angle		1.83 m	5.70 mm	MQEAC-406RA	1 = Red/Black 2 = Red/White 3 = Red 4 = Green
			4.57 m		MQEAC-415RA	
			9.14 m		MQEAC-430RA	

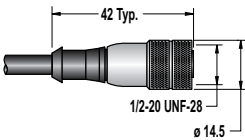

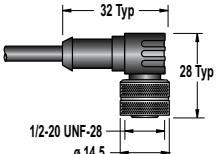
Used with: SI-HG80 hinge-style switches

## 5-Pin Micro-Style

Specifications	Style	Dimensions (mm)	Length	Cable Diameter	Model	Pinout
<b>Cable:</b> PVC jacket, PUR (polyurethane) connector body <b>Coupling Nut:</b> Nickel-plated brass <b>Conductors:</b> 22 AWG, gold-plated contacts <b>Voltage/Current Rating:</b> 250 V ac/dc, 4.0 A <b>Temperature:</b> -40 to +105 °C <b>Environmental Rating:</b> IP67	Straight		1.83 m	6.10 mm	MQAC2-506	Female 
			4.57 m		MQAC2-515	
			9.14 m		MQAC2-530	

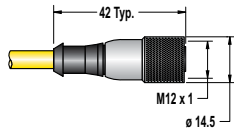

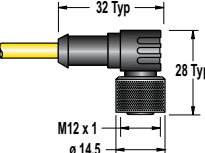
Used with:

## 5-Pin Micro-Style with Shield

Specifications	Style	Dimensions (mm)	Length	Cable Diameter	Model	Pinout
<b>Cable:</b> PVC jacket, PUR (polyurethane) connector body <b>Coupling Nut:</b> Nickel-plated brass <b>Conductors:</b> 22 AWG with 22 AWG drain wire (shielded), gold-plated contacts <b>Voltage/Current Rating:</b> 250 V ac/dc, 4.0 A <b>Temperature:</b> -40 to +105 °C <b>Environmental Rating:</b> IP67	Straight		1.83 m	6.10 mm	MQVR3S-506	Female 
			1.83 m		MQVR3S-515	
			9.14 m		MQVR3S-530	
	Right-Angle		1.83 m	6.10 mm	MQVR3S-506RA	1 = Brown 2 = White 3 = Yellow 4 = Black 5 = Blue
			4.57 m		MQVR3S-515RA	
			9.14 m		MQVR3S-530RA	

Used with: QT50U ac/dc sensors, EZ-LIGHT ac indicators

## 5-Pin Threaded M12/Micro-Style

Specifications	Style	Dimensions (mm)	Length	Cable Diameter	Model	Pinout
<b>Cable:</b> PVC jacket, PUR (polyurethane) connector body <b>Coupling Nut:</b> Nickel-plated brass <b>Conductors:</b> 22 AWG (shielded), gold-plated contacts <b>Voltage/Current Rating:</b> 250 V ac/dc, 4.0 A <b>Temperature:</b> -40 to +105 °C <b>Environmental Rating:</b> IP67	Straight		1.83 m	5.60 mm	MQEAC-606	Female 
			4.57 m		MQEAC-615	
			9.14 m		MQEAC-630	
	Right-Angle		1.83 m	5.60 mm	MQEAC-606RA	1 = Red/White 2 = Red 3 = Green 4 = Red/Yellow 5 = Red/Black 6 = Red/Blue
			4.57 m		MQEAC-615RA	
			9.14 m		MQEAC-630RA	

Used with: SI-HG63 hinge-style switches

## 3-Pin Mini-Style

Specifications	Style	Dimensions (mm)	Length	Cable Diameter	Model	Pinout
<b>Cable:</b> PVC jacket, PUR (polyurethane) connector body <b>Coupling Nut:</b> Nylon <b>Conductors:</b> 18 AWG, PVC insulation, gold-plated contacts <b>Voltage/Current Rating:</b> 300 V ac/dc, 9.0 A <b>Temperature:</b> -40 to +80 °C <b>Environmental Rating:</b> IP67	Straight		1.83 m	7.00 mm	MBCC-306	Female 
			3.66 m		MBCC-312	
			9.14 m		MBCC-330	
	Straight		1.83 m		SMICC-306	1 = Brown 3 = Blue 4 = Black
			3.66 m		SMICC-312	
			9.14 m		SMICC-330	
	Straight		1.83 m		SM30CC-306	1 = Red/Black 3 = Red/White 4 = Green
			3.66 m		SM30CC-312	

Used with: Q45, SMI30 Intrinsically, SM30 2-wire ac sensors safe dc sensors,

## 3-Pin Mini-Style

Specifications	Style	Dimensions (mm)	Length	Cable Diameter	Model	Pinout
<b>Cable:</b> PVC jacket, PUR (polyurethane) connector body <b>Coupling Nut:</b> Nickel-plated brass <b>Conductors:</b> 18 AWG, PVC insulation, gold-plated contacts <b>Voltage Rating:</b> 250 V ac/300 dc <b>Temperature:</b> -40 to +80 °C <b>Environmental Rating:</b> IP67	Straight		4.75 m	7.00 mm	QDS-315C	Female 
			7.62 m		QDS-325C	
			15.2 m		QDS-350C	
			22.9 m		QDS-375C	
			30.5 m		QDS-3100C	

Used with: EZ-SCREEN Emitters w/3-pin mini-style QD (Point & Grid), EZAC Box w/3-pin mini-style QD

## 4-Pin Mini-Style

Specifications	Style	Dimensions (mm)	Length	Cable Diameter	Model	Pinout
<b>Cable:</b> PVC jacket, PUR (polyurethane) connector body <b>Coupling Nut:</b> Nylon <b>Conductors:</b> 18 AWG, gold-plated contacts <b>Voltage/Current Rating:</b> 300 V ac/dc, 9.0 A <b>Temperature:</b> -40 to +80 °C <b>Environmental Rating:</b> IP67	Straight		1.83 m	7.00 mm	MBCC-406	Female 
			3.66 m		MBCC-412	
			9.14 m		MBCC-430	

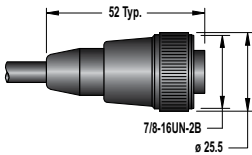

Used with: Q45 dc sensors (suffix Q), OMNI-BEAM dc power blocks, SM30 dc sensors, OTB w/solid-state output, STB with solid-state output, Q45 4-wire ac/dc

## 5-Pin Mini-Style

Specifications	Style	Dimensions (mm)	Length	Cable Diameter	Model	Pinout
<b>Cable:</b> PVC jacket, PUR (polyurethane) connector body <b>Coupling Nut:</b> Nylon <b>Conductors:</b> 18 AWG, gold-plated contacts <b>Voltage/Current Rating:</b> 300 V ac/dc, 9.0 A <b>Temperature:</b> -40 to +80 °C <b>Environmental Rating:</b> IP67	Straight		1.83 m	7.00 mm	MBCC-506	Female 
			3.66 m		MBCC-512	
			9.14 m		MBCC-530	

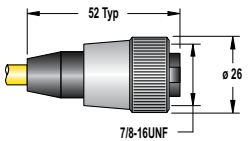
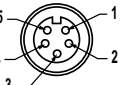
Used with: Q45 Laser Retro, OMNI-BEAM ac power blocks, OMNI-BEAM dc w/ e/m relay, OTB & LTB w/SPDT relay, Q45 5-wire ac, STB with e/m relay

## 5-Pin Mini-Style with Shield

Specifications	Style	Dimensions (mm)	Length	Cable Diameter	Model	Pinout
<b>Cable:</b> PVC jacket, PUR (polyurethane) connector body <b>Coupling Nut:</b> Nylon <b>Conductors:</b> 22 AWG (shielded), PVC insulation, gold-plated contacts <b>Voltage/Current Rating:</b> 300 V ac/dc, 9.0 A <b>Temperature:</b> -40 to +80 °C <b>Environmental Rating:</b> IP67	Straight		1.83 m	6.10 mm	MBCC2-506	Female  1 = Brown 2 = White 3 = Blue 4 = Black 5 = Yellow
			3.66 m		MBCC2-512	
			9.14 m		MBCC2-530	

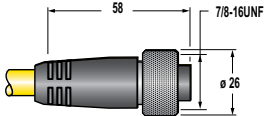

Used with: QT50U, Q45U, Q45UR

## 5-Pin Mini-Style with Green/Yellow Grounding Wire

Specifications	Style	Dimensions (mm)	Length	Cable Diameter	Model	Pinout
<b>Cable:</b> PVC jacket, PUR (polyurethane) connector body <b>Coupling Nut:</b> Nickel-plated brass <b>Conductors:</b> 20 AWG, gold-plated contacts <b>Voltage/Current Rating:</b> 250 V ac/300 V dc, 9.0 A <b>Temperature:</b> -40 to +90 °C <b>Environmental Rating:</b> IP67	Straight		4.75 m	7.00 mm	QDS-515C	Female  1 = Black 2 = Blue 3 = Gn/Ye 4 = Brown 5 = White
			7.62 m		QDS-525C	
			15.2 m		QDS-550C	

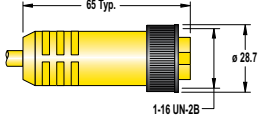
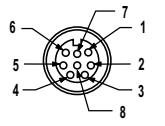
Used with: EZ-SCREEN Receivers w/5-pin mini-style QD &amp; TEST (Point &amp; Grid), EZAC Box w/5-pin mini-style QD

## 8-Pin Threaded M12/Euro-Style with Shield

Specifications	Style	Dimensions (mm)	Length	Cable Diameter	Model	Pinout
<b>Cable:</b> PVC jacket, PUR (polyurethane) connector body <b>Coupling Nut:</b> Nickel-plated brass <b>Conductors:</b> 24 AWG (shielded), gold-plated contacts <b>Voltage/Current Rating:</b> 75 V ac/dc, 2.0 A <b>Temperature:</b> -40 to +105 °C <b>Environmental Rating:</b> IP67	Straight		4.57 m	7.00 mm	QDC-515C	Female  1 = Black 2 = Blue 3 = Drain 4 = Brown 5 = White
			7.62 m		QDC-525C	
			15.2 m		QDC-550C	
			22.9 m		MAQDC-575C	
			30.5 m		MAQDC-5100C	
			38.1 m		MAQDC-5125C	
			45.7 m		MAQDC-5150C	

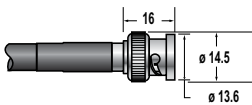

Used with: MINI-ARRAY, High-Resolution MINI-ARRAY

## 8-Pin Mini-Style

Specifications	Style	Dimensions (mm)	Length	Cable Diameter	Model	Pinout
<b>Cable:</b> PVC jacket, PUR (polyurethane) connector body <b>Coupling Nut:</b> Nylon <b>Conductors:</b> 20 AWG, PVC insulation, gold-plated contacts <b>Voltage Rating:</b> 250 V ac/300 V dc <b>Temperature:</b> -40 to +80 °C <b>Environmental Rating:</b> IP67	Straight		4.51 m	6.90 mm	QDS-815C	Female  1 = Brown 2 = Or/Bk 3 = Orange 4 = White 5 = Black 6 = Blue 7 = Gn/Ye 8 = Violet
			7.62 m		QDS-825C	
			15.2 m		QDS-850C	
			22.9 m		QDS-875C	

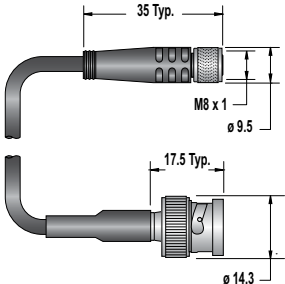


Used with: EZ-SCREEN Receivers w/8-pin mini-style QD (Point &amp; Grid), DUO-TOUCH SG Run Bar, EZAC Box w/8-pin mini-style QD

## BNC Coaxial Video

Specifications	Style	Dimensions (mm)	Length	Cable Diameter	Model	Pinout
	Video Coaxial with BNC		1.83 m	6.00 mm	BNC06	
			4.57 m		BNC15	
			9.14 m		BNC30	
			14.6 m		BNC48	

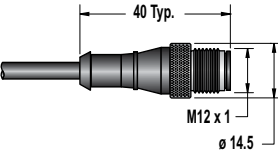
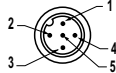
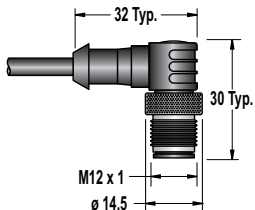
Used with: Pro, P4

## BNC to 4-Pin Threaded M8/Pico-Style with Shield

Specifications	Style	Dimensions (mm)	Length	Cable Diameter	Model	Pinout
<b>Cable:</b> PVC jacket, PUR (polyurethane) connector body <b>Coupling Nuts:</b> Nickel-plated brass on QD end <b>Conductors:</b> 26 AWG <b>Voltage/Current Rating:</b> 125 V ac/ 125 V dc, 4.0 A <b>Temperature:</b> -40 to +105 °C <b>Environmental Rating:</b> IP67	BNC/ Pico QD Straight		2.00 m	4.40 mm	PKG4M-2/CS	Female  1 = Brown 3 = Blue 2 = Not Used 4 = Drain Male 
			5.00 m		PKG4M-5/CS	
			9.00 m		PKG4M-9/CS	

Used with: IP68 Sealed P4

## Communication

Specifications	Style	Dimensions (mm)	Length	Cable Diameter	Model	Pinout
	5-Pin M12/Euro-Style, Straight		1.83 m	5.60 mm	MQDMC-506	<b>Male</b>  1 = Brown 2 = White 3 = Blue 4 = Black 5 = Gray
			4.57 m		MQDMC-515	
			9.14 m		MQDMC-530	
	5-Pin M12/Euro-Style, Right-Angle		1.83 m	5.60 mm	MQDMC-506RA	
			4.57 m		MQDMC-515RA	
			9.14 m		MQDMC-530RA	

Used with: EZ-ARRAY to INTUSB485-1 USB Serial Adapter

## DB9 Communication Cordsets

Style	Dimensions (mm)	Length	Cable Diameter	Model	Pinout
Male DB9/ Female DB9		1.83 m	6.00 mm	DB9P06	
		4.57 m		DB9P15	
		9.14 m		DB9P30	
Male DB9/ Female DB9		3.00 m	5.00 mm	AG4-PCD9-3	
		5.00 m		AG4-PCD9-5	
		10.0 m		AG4-PCD9-10	
USB/ Male DB9		1.00 m	4.6 mm	AG4-PCD9USB-1	 
Male DB9/ Female DB9		2.00 m	5.00 mm	MASC	 2 = Transmit (TX) 3 = Receive (RX) 5 = Ground (GRD)

Used with: Pro, AG4, AG4 Serial-to USB Adapter, MINI-ARRAY, High-Resolution, MINI-ARRAY

## DB15 Configuration/Machine Interface Cordsets

Style	Dimensions (mm)	Length	Cable Diameter	Model	Pinout
DB15		5.00 m	8.50 mm	AG4-CPD15-5	
		10.0 m		AG4-CPD15-10	
		25.0 m		AG4-CPD15-25	
		25.0 m		AG4-CPD15-50W	

Used with: AG4

## RJ45 Ethernet Cordsets

Style	Dimensions (mm)	Length	Cable Diameter	Model	Pinout
Cat5e Shielded		2.13 m	6.80 mm	STP07	
Cat5e Crossover Shielded				STPX07	
Cat5e Shielded		7.62 m		STP25	
Cat5e Crossover Shielded				STPX25	
Cat5e Shielded		15.2 m		STP50	
Cat5e Crossover Shielded				STPX50	
Cat5e Shielded		22.9 m		STP75	
Cat5e Crossover Shielded				STPX75	

Used with: Pro, P4, SC22-3E

### RJ45 Ethernet to 4-Pin Threaded M8/Pico-Style Cordsets

Style	Dimensions (mm)	Length	Cable Diameter	Model	Pinout
Cat5e Shielded		2.00 m	6.00 mm	IVUC-E-406	Male 
		5.00 m		IVUC-E-415	Female  1 = Blue TX- 2 = White/Blue TX+ 3 = White/Orange RX+ 4 = Orange RX
		9.00 m		IVUC-E-430	
		16.0 m		IVUC-E-450	
		23.0 m		IVUC-E-475	

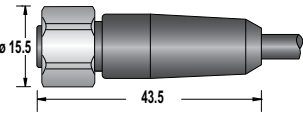
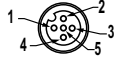
Used with: iVu Plus

### 8-Pin Threaded M12/Euro-Style Cordsets with Shield

Style	Dimensions (mm)	Length	Cable Diameter	Model	Pinout
Straight		1.83 m	7.90 mm	STP-MAQDC-806	Male 
		4.57 m		STP-MAQDC-815	Male  1 = Wh/Bl 5 = Wh/Gr 2 = Wh/Br 6 = Wh/Or 3 = Brown 7 = Blue 4 = Orange 8 = Green
		9.14 m		STP-MAQDC-830	

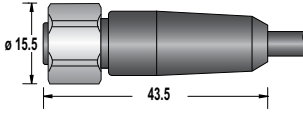

Used with: IP68 Sealed P4

## 5-Pin Threaded M12/Euro-Style—Washdown Stainless Steel

Specifications	Style	Dimensions (mm)	Length	Cable Diameter	Model	Pinout
<b>Cable:</b> PVC jacket and over-mold, EPDM o-ring <b>Coupling Nut:</b> Stainless steel coupling nut <b>Conductors:</b> 22 AWG, gold-plated contacts <b>Voltage/Current Rating:</b> 300 V dc, 4.0 A <b>Temperature:</b> -40 to +105 °C <b>Environmental Rating:</b> IP69K	Straight		1.83 m (6 ft)	4.80 mm	MQDC-WDSS-0506	Female  1 = Brown 2 = White 3 = Blue 4 = Black 5 = Gray
			4.57 m (15 ft)		MQDC-WDSS-0515	
			9.14 m (30 ft)		MQDC-WDSS-0530	

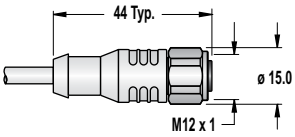

Used with: Q4X, Q3X

## 4-Pin Threaded M12/Euro-Style—Washdown Stainless Steel

Specifications	Style	Dimensions (mm)	Length	Cable Diameter	Model	Pinout
<b>Cable:</b> PVC jacket and over-mold, EPDM o-ring <b>Coupling Nut:</b> Stainless steel coupling nut <b>Conductors:</b> 22 AWG, gold-plated contacts <b>Voltage/Current Rating:</b> 300 V dc, 4.0 A <b>Temperature:</b> -40 to +105 °C <b>Environmental Rating:</b> IP69K	Straight		1.83 m (6 ft)	4.80 mm	MQDC-WDSS-0406	Female  1 = Brown 2 = White 3 = Blue 4 = Black
			4.57 m (15 ft)		MQDC-WDSS-0415	
			9.14 m (30 ft)		MQDC-WDSS-0430	

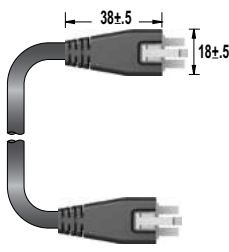

Used with: QM26

## 5-Pin Threaded M12/Euro-Style—Washdown

Specifications	Style	Dimensions (mm)	Length	Cable Diameter	Model	Pinout
<b>Cable:</b> Polypropylene jacket and connector body <b>Coupling Nut:</b> Stainless steel <b>Conductors:</b> 22 AWG, gold-plated contacts <b>Voltage/Current Rating:</b> 250 V ac/dc, 4.0 A <b>Temperature:</b> -4 to +105 °C <b>Environmental Rating:</b> IP68	Straight		1.83 m	4.50 mm	MQDCWD-506	Female  1 = Brown 2 = White 3 = Blue 4 = Black 5 = Gray
			9.14 m		MQDCWD-530	

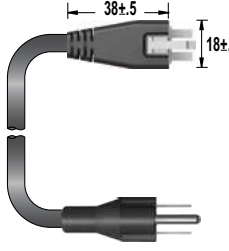

Used with: M25U, QM26

## Molex for Cascading

Specifications	Style	Dimensions (mm)	Length	Cable Diameter	Model	Pinout
<b>Cable:</b> PVC Black <b>Coupling Nut:</b> Slide Snap	Straight		0.15 m	6.6 mm	LQMAEC-3005SS	
			0.31 m		LQMAEC-301SS	
			0.91 m		LQMAEC-303SS	
			1.83 m		LQMAEC-306SS	
			3.66 m		LQMAEC-312SS	
			6.10 m		LQMAEC-320SS	
			9.14 m		LQMAEC-330SS	

Used with: AC WLB32

## Molex to Power

Specifications	Style	Dimensions (mm)	Length	Cable Diameter	Model	Pinout
<b>Cable:</b> PVC <b>Coupling Nut:</b> Slide Snap	Straight		3.0 m	6.6 mm	LQMAC-306B	

Used with: AC WLB32



## QD End-Caps

Cordset Specs	Style	Dimensions (mm)	Model
Replace or convert EZ-SCREEN Grid and Point hard-wire terminal chamber end cap to QD model.	8-pin Euro QD	Converts terminal chamber end cap to QD model	EZA-QDE-8E
	8-pin Euro QD		EZA-QDR-8E

**Used with:** EZ-SCREEN Emitters w/Terminal Chamber (Point & Grid), EZ-SCREEN Receivers w/Terminal Chamber (Point & Grid)

## Unterminated Bulk Cable

Cordset Specs	Dimensions (mm)	Length	Models
<b>Cable:</b> PVC jacket <b>Conductors:</b> 20 AWG, PVC insulation <b>Voltage Rating:</b> 250 V ac/300 V dc <b>Temperature:</b> -40 to +80 °C	3-conductor (Brown, Blue, Green/Yellow)	7.6 m	UTB-325C
		15.2 m	UTB-350C
		30.4 m	UTB-3100C
		76.2 m	UTB-3250C
	5-conductor (Black, Blue, Brown, White, Green/Yellow)	7.6 m	UTB-525C
		15.2 m	UTB-550C
		30.4 m	UTB-5100C
		76.2 m	UTB-5250C
	8-conductor (Brown, Orange/Black, Orange, White, Black, Blue, Violet, Green/Yellow)	7.6 m	UTB-825C
		15.2 m	UTB-850C
		30.4 m	UTB-8100C
		76.2 m	UTB-8250C

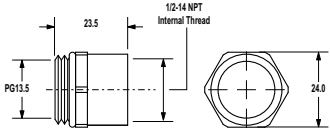
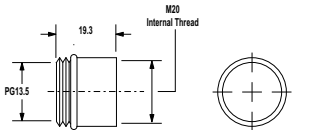
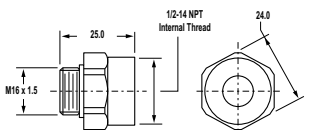
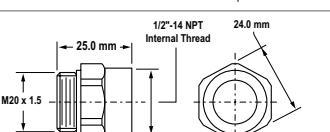
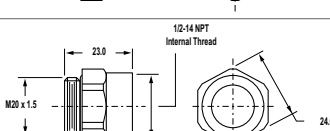
**Used with:** EZ-SCREEN Emitters w/Terminal Chamber (Point & Grid), EZAC Interface Boxes, EZ-SCREEN Emitters w/Terminal Chamber & TEST (Point & Grid), EZAC Interface Boxes, EZ-SCREEN Receivers w/Terminal Chamber (Point & Grid), EZAC Interface Boxes, DUO-TOUCH SG Run Bars

## Cable Glands

Cordset Specs	Dimensions (mm)	Cable Diameter	Model	Size
Secures the cable end in the housing and seals the point of connection  Available for EZ-SCREEN Point and Grid, rope pulls and safety interlock switches		3.0 to 8.0 mm	SI-QS-CG13	PG13.5 Plastic
		3.0 to 8.0 mm	SI-QS-CGM16	M16 x 1.5 Plastic
		5.0 to 12.0 mm	SI-QS-CGM20	M20 x 1.5 Plastic
		5.0 to 12.0 mm	SI-QM-CGM20	M20 x 1.5 Metal

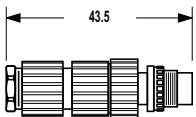
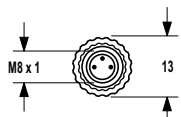
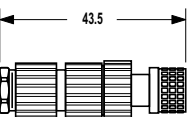
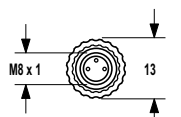
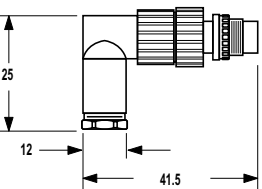
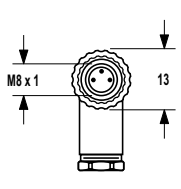
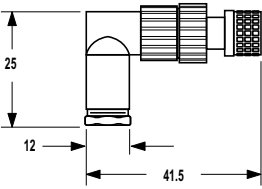
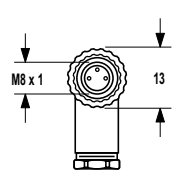
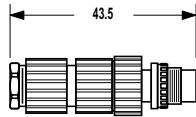
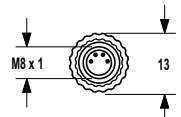
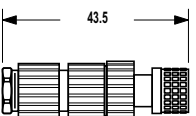
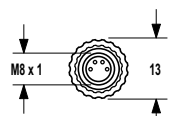
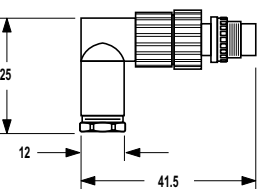
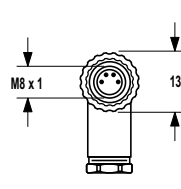
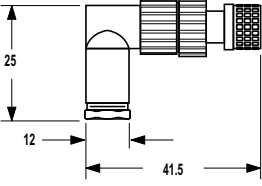
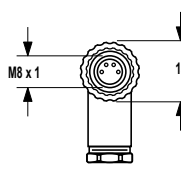
**Used with:** EZ-SCREEN w/Terminal Chamber (Point & Grid), SI-QS75 Safety Interlock Switches, SI-LS83 Safety Interlock Switches, • SI-QS90 Safety Interlock Switches, SI-LS100 Safety Interlock Switches, SI-LS31 Safety Interlock Switches, SI-LS42 Safety Interlock Switches, RP-LS42 Rope Pull Switches, • SI-LM40 Safety Interlock Switches, SI-QM100 Safety Interlock Switches, SI-LM40 Safety Interlock Switches, RP-RM83 Rope Pull Switches, RP-LM40 Rope Pull Switches, RP-QM72/QMT72 Rope Pull Switches, RP-QM90 Rope Pull Switch

## Cable Glands

Cordset Specs	Dimensions (mm)	Thread Conversion	Model	Size
Connects conduit of different diameters  Available for EZ-SCREEN Point and Grid, rope pulls and safety interlock switches		PG 13.5 to 1/2" NPT	<b>SI-QM-13</b>	1/2" NPT to PG13.5 Metal
		PG 13.5 to M20	<b>SI-QM-13-M20</b>	M20 to PG13.5 Metal
		M16 x 1.5 to 1/2" - 14 NPT	<b>SI-QS-M16</b>	1/2" - 14 NPT Plastic
		M20 x 1.5 to 1/2" - 14 NPT	<b>SI-QS-M20</b>	1/2" - 14 NPT Plastic
		M20 x 1.5 to 1/2" - 14 NPT	<b>SI-QM-M20</b>	1/2" - 14 NPT Metal

**Used with:** EZ-SCREEN w/Terminal Chamber (Point & Grid), EZ-SCREEN w/Terminal Chamber (Point & Grid), SI-QS75 Safety Interlock Switches, SI-LS83 Safety Interlock Switches, SI-QS90 Safety Interlock Switches, SI-LS100 Safety Interlock Switches, SI-LS31 Safety Interlock Switches, SI-LS42 Safety Interlock Switches, RP-LS42 Rope Pull Switches, SI-LM40 Safety Interlock Switches, SI-QM100 Safety Interlock Switches, SI-LM40 Safety Interlock Switches, RP-RM83 Rope Pull Switches, RP-LM40 Rope Pull Switches, RP-QM72/QMT72 Rope Pull Switches, RP-QM90 Rope Pull Switch

## Pico-Style Field-Wireable Connectors (M8)

Cordset Specs	Style	Dimensions (mm)	Model	Pinout
<b>Contacts:</b> Gold-plated, rated 60V ac/dc max., 4.0 A max. <b>Cable Diameter:</b> 4.0 to 5.0 mm <b>Temperature:</b> -25 to +70 °C <b>Environmental Rating:</b> NEMA 6P, IP67	3-Pin Male Straight		FIC-M8M3	
	3-Pin Female Straight		FIC-M8F3	
	3-Pin Male Right-Angle		FIC-M8M3A	
	3-Pin Female Right-Angle		FIC-M8F3A	
	4-Pin Male Straight		FIC-M8M4	
	4-Pin Female Straight		FIC-M8F4	
	4-Pin Male Right-Angle		FIC-M8M4A	
	4-Pin Female Right-Angle		FIC-M8F4A	

## Euro-Style Field-Wireable Connectors (M12)

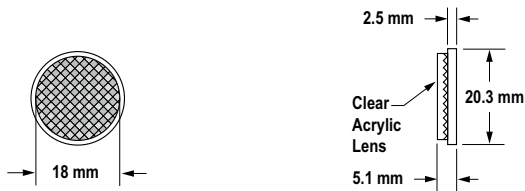
Cordset Specs	Style	Dimensions (mm)	Model	Pinout
<b>Contacts:</b> Gold-plated; 4-pin models rated 250 V ac/dc max., 4.0 A max.; 5-pin models rated 50 V ac/dc max., 4.0 A max. <b>Cable Diameter:</b> 4.0 to 5.0 mm <b>Temperature:</b> -25 to +90 °C <b>Environmental Rating:</b> NEMA 6P, IP67	4-Pin Male Straight		FIC-M12M4	
	4-Pin Female Straight		FIC-M12F4	
	4-Pin Male Right-Angle		FIC-M12M4A	
	4-Pin Female Right-Angle		FIC-M12F4A	
	5-Pin Male Straight		FIC-M12M5	
	5-Pin Female Straight		FIC-M12F5	

## Euro-Style Field-Wireable Connectors (M12)

Cordset Specs	Style	Dimensions (mm)	Model	Pinout
<b>Contacts:</b> Gold-plated; 4-pin models rated 250 V ac/dc max., 4.0 A max.; 5-pin models rated 50 V ac/dc max., 4.0 A max. <b>Cable Diameter:</b> 4.0 to 5.0 mm <b>Temperature:</b> -25 to +90 °C <b>Environmental Rating:</b> NEMA 6P, IP67	5-Pin Male Right-Angle		FIC-M12M5A	
	5-Pin Female Right-Angle		FIC-M12F5A	

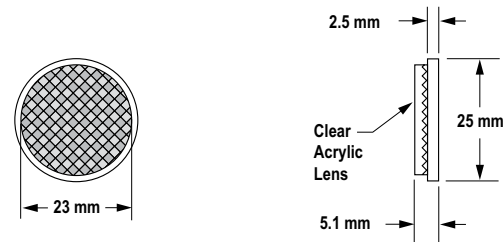
## BRT-.6

Description: Round, acrylic target  
 Reflectivity Factor: 1.0  
 Temperature: -20 to +60 °C



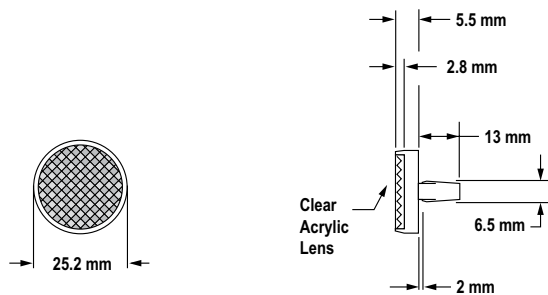
## BRT-1

Description: Round, acrylic target  
 Reflectivity Factor: 1.0  
 Temperature: -20 to +60 °C



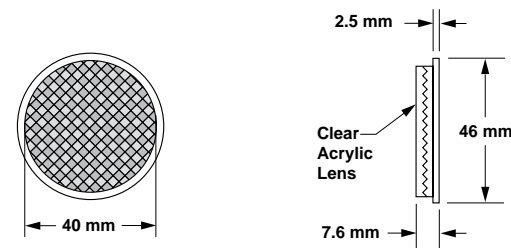
## BRT-25R

Description: Round, rivet-secured acrylic target  
 Reflectivity Factor: 1.0  
 Temperature: -20 to +60 °C



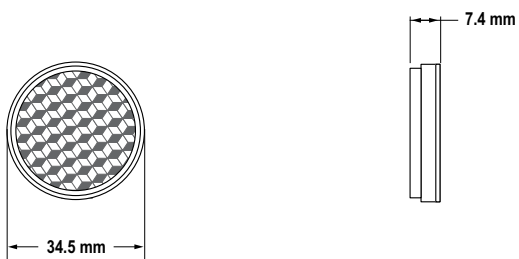
## BRT-1.5

Description: Round, acrylic target  
 Reflectivity Factor: 1.0  
 Temperature: -20 to +60 °C



## BRT-34

Description: Round, acrylic target  
 Reflectivity Factor: 1.2  
 Temperature: -20 to +60 °C



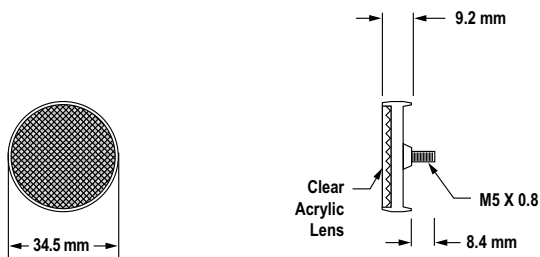
## BRT-34T

Description: Round, acrylic target includes mounting tape  
 Reflectivity Factor: 1.2  
 Temperature: -20 to +60 °C



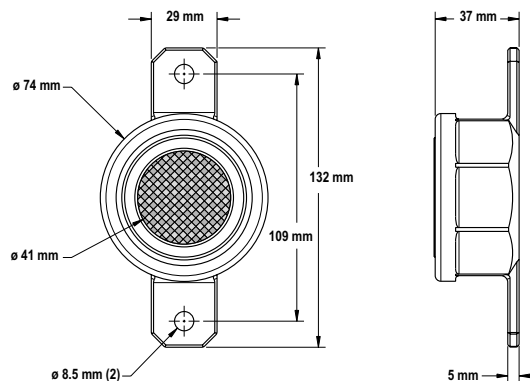
### BRT-35DM

Description: Round, acrylic target with mounting stud  
 Reflectivity Factor: 1.2  
 Temperature: -20 to +60 °C  
 Other: This target has micro-prism geometry.



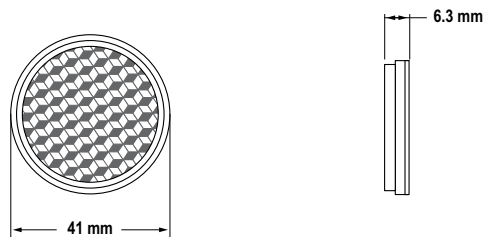
### BRT-41AHT

Description: Round, borosilicate (Pyrex type) glass target  
 Reflectivity Factor: 1.0  
 Temperature: -20 to +200 °C



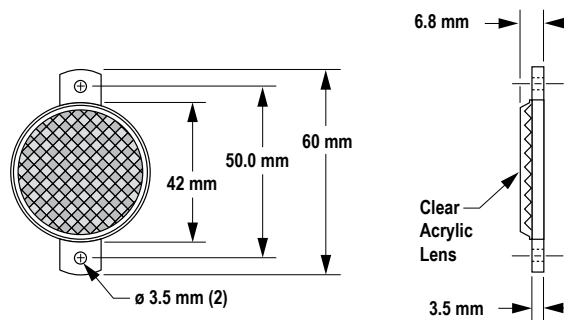
### BRT-42

Description: Round, acrylic target  
 Reflectivity Factor: 1.0  
 Max. Temperature: 65 °C



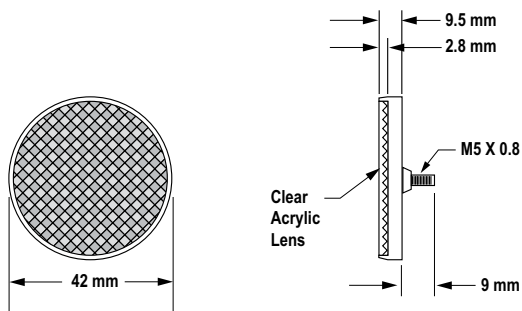
### BRT-42A

Description: Round, acrylic target  
 Reflectivity Factor: 1.0  
 Temperature: -20 to +60 °C



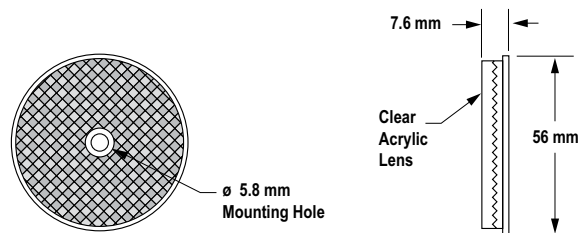
### BRT-42D

Description: Round, acrylic target with mounting stud  
 Reflectivity Factor: 1.0  
 Temperature: -20 to +60 °C



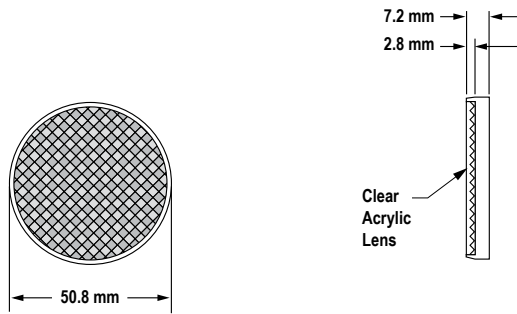
### BRT-2A

Description: Round, acrylic target  
 Reflectivity Factor: 1.0  
 Max. Temperature: 65 °C



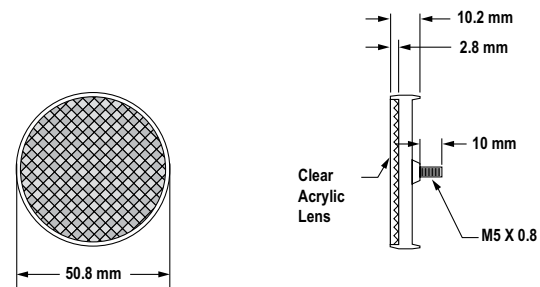
## BRT-50

Description: Round, acrylic target  
 Reflectivity Factor: 1.0  
 Temperature: -20 to +60 °C



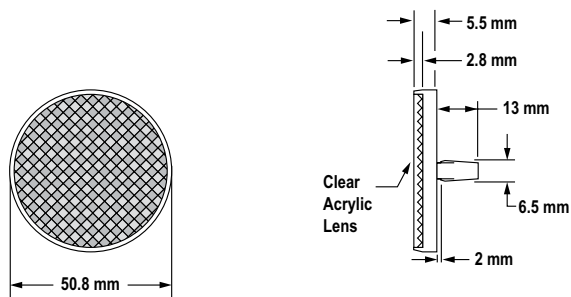
## BRT-50D

Description: Round, acrylic target with mounting stud  
 Reflectivity Factor: 1.0  
 Temperature: -20 to +60 °C  
 Other: Optional brackets are available.



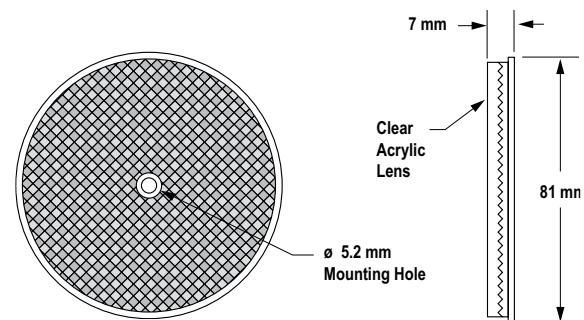
## BRT-50R

Description: Round, rivet-secured acrylic target  
 Reflectivity Factor: 1.0  
 Max. Temperature: -20 to +60 °C  
 Other: Optional brackets are available.



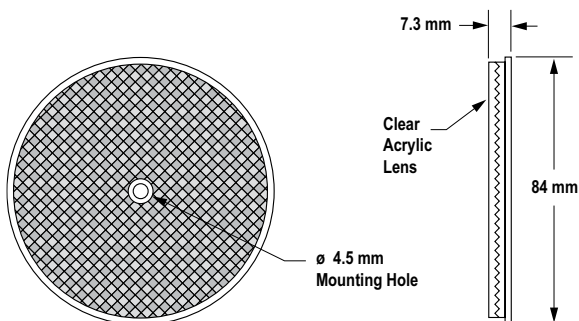
## BRT-3

Description: Round, acrylic target  
 Reflectivity Factor: 1.0  
 Temperature: -20 to +60 °C  
 Other: Optional brackets are available.



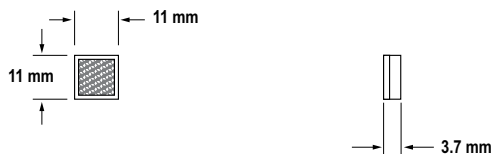
## BRT-84

Description: Round, acrylic target  
 Reflectivity Factor: 1.4  
 Max. Temperature: -20 to +60 °C  
 Other: Optional brackets are available.



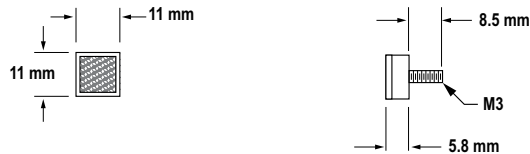
### BRT-11X11M

Description: Square, acrylic target  
 Reflectivity Factor: 1.2  
 Temperature: -20 to +60 °C  
 Other: This target has micro-prism geometry.



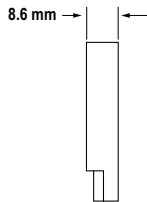
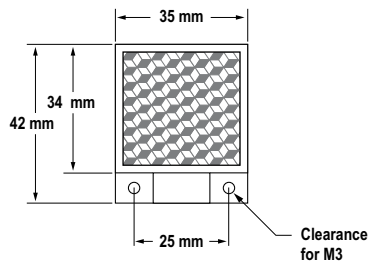
### BRT-11X11MD

Description: Square, acrylic target with mounting stud  
 Reflectivity Factor: 1.2  
 Temperature: -20 to +60 °C  
 Other: This target has micro-prism geometry.



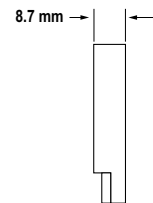
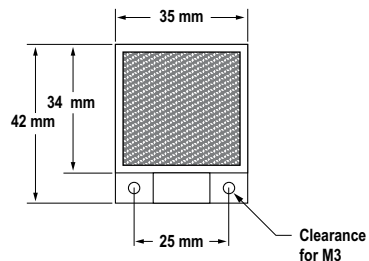
### BRT-35X35B

Description: Square, acrylic target  
 Reflectivity Factor: 1.3  
 Temperature: -20 to +60 °C



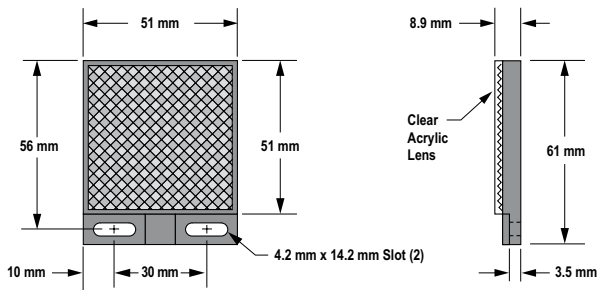
### BRT-35X35BM

Description: Square, acrylic target  
 Reflectivity Factor: 1.2  
 Temperature: -20 to +60 °C  
 Other: This target has micro-prism geometry.



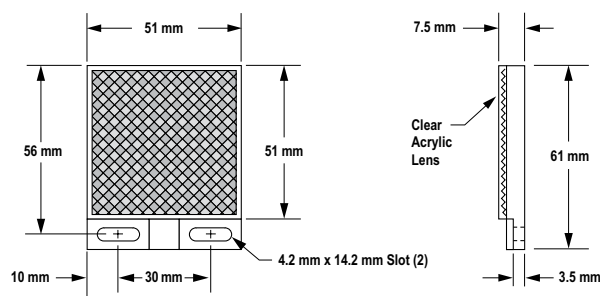
### BRT-2X2

Description: Square, acrylic target  
 Reflectivity Factor: 1.0  
 Max. Temperature: 50 °C  
 Others: Optional brackets are available.



### BRT-2X2LVC

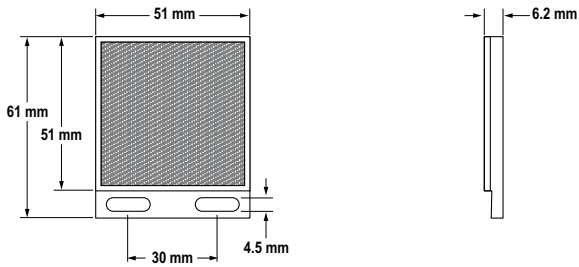
Description: Square, acrylic target  
 Reflectivity Factor: 1.0  
 Max. Temperature: -20 to +60 °C  
 Others: Optional brackets are available.





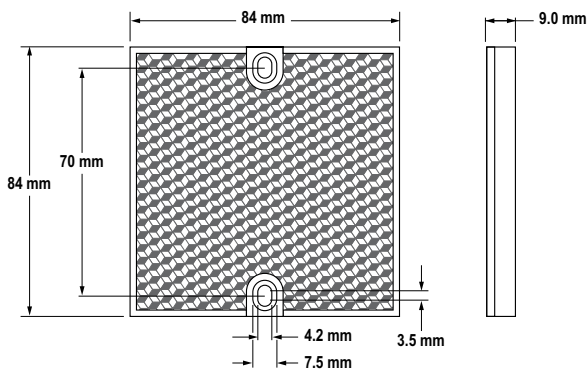
## BRT-51X51BM

Description: Square, acrylic target  
 Reflectivity Factor: 1.5      Max. Temperature: 50 °C  
 Other: This target has micro-prism geometry. Optional brackets are available. Replaces reflector BRT-36X40BM.



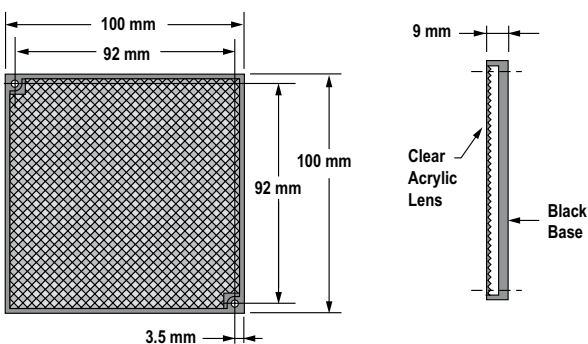
## BRT-84X84A

Description: Square, acrylic target  
 Reflectivity Factor: 2.0  
 Temperature: -20 to +60 °C



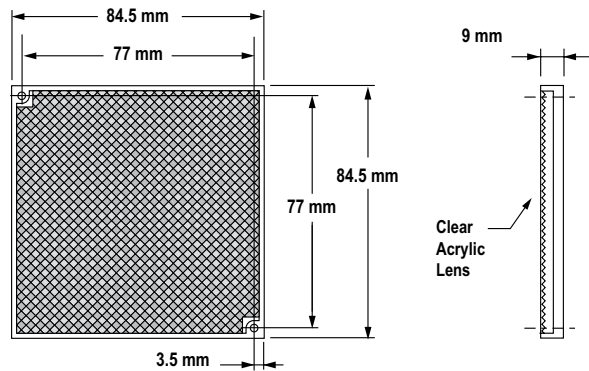
## BRT-92X92CB

Description: Square, acrylic target with black mounting base  
 Reflectivity Factor: 3.0  
 Max. Temperature: 50 °C  
 Other: Optional brackets are available.



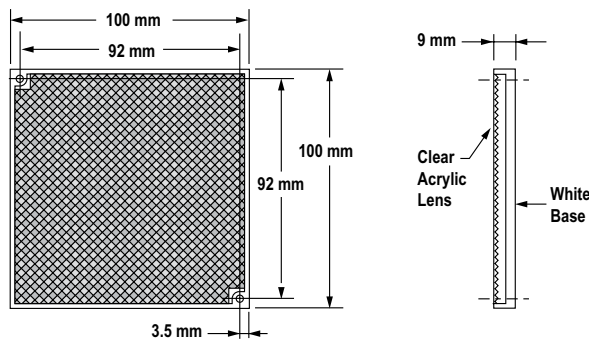
## BRT-77X77C

Description: Square, acrylic target  
 Reflectivity Factor: 2.0  
 Temperature: -20 to +60 °C  
 Other: Optional brackets are available.



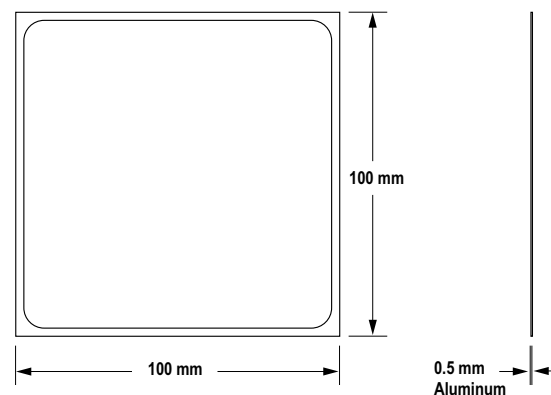
## BRT-92X92C

Description: Square, acrylic target  
 Reflectivity Factor: 3.0  
 Temperature: -20 to +60 °C  
 Other: Optional brackets are available.



## BRT-4HT

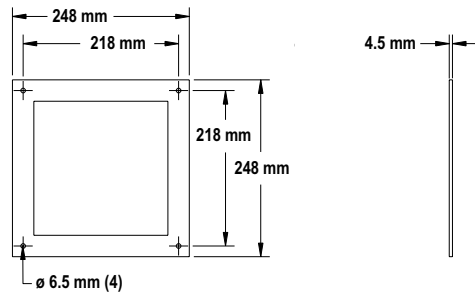
Description: Square, aluminum target  
 Reflectivity Factor: 0.15  
 Max. Temperature: 480 °C  
 Other: This target is not recommended for polarized retroreflective sensors.



### BRT-250 (250 x 250 mm)

Temperature: -20 to +50° C

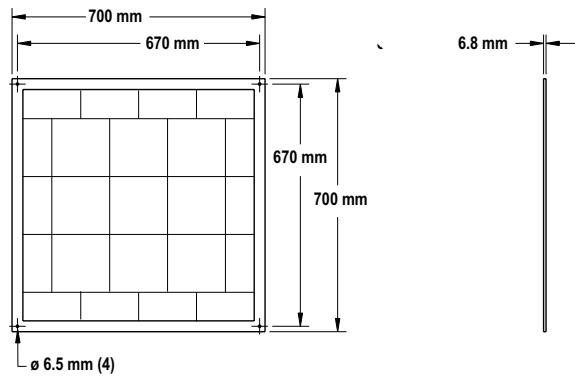
Other: Square reflector with rigid aluminum backing for use with LT7



### BRT-700 (700 x 700 mm)

Temperature: -20 to +50° C

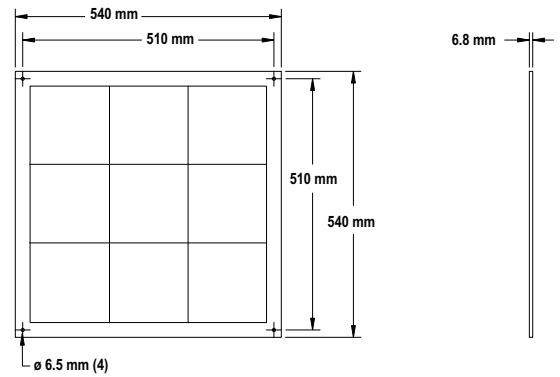
Other: Square reflector with rigid aluminum backing for use with LT7



### BRT-540 (540 x 540 mm)

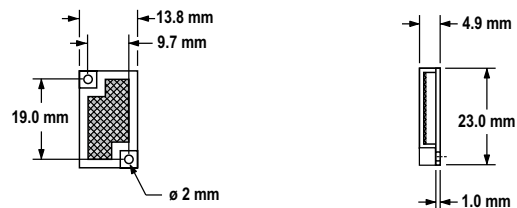
Temperature: -20 to +50° C

Other: Square reflector with rigid aluminum backing for use with LT7



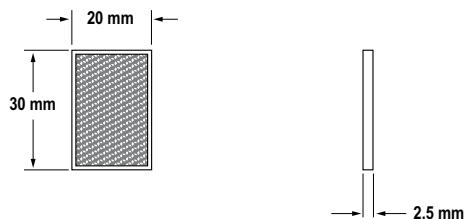
## BRT-23X14CM

Description: Rectangular, acrylic target  
 Reflectivity Factor: 1.2  
 Temperature: -20 to +60° C  
 Other: This target has micro-prism geometry.



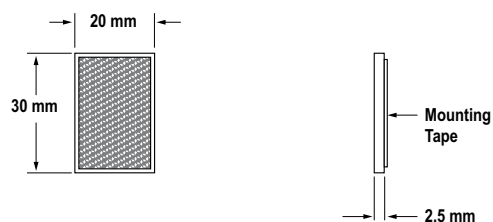
## BRT-30X20M

Description: Rectangular, acrylic target  
 Reflectivity Factor: 1.2  
 Temperature: -20 to +60° C



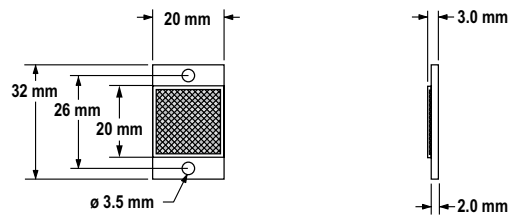
## BRT-30X20MT

Description: Rectangular, acrylic target includes mounting tape  
 Reflectivity Factor: 1.2  
 Temperature: -20 to 60° C



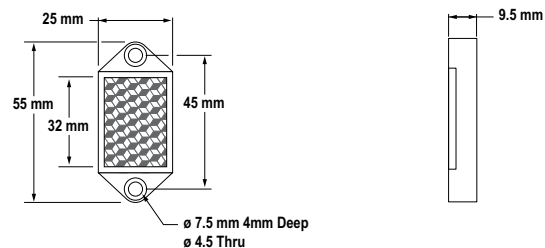
## BRT-32X20AM

Description: Rectangular, thin profile acrylic target  
 Reflectivity Factor: 1.2  
 Temperature: -20 to +60° C  
 Other: This target has micro-prism geometry.



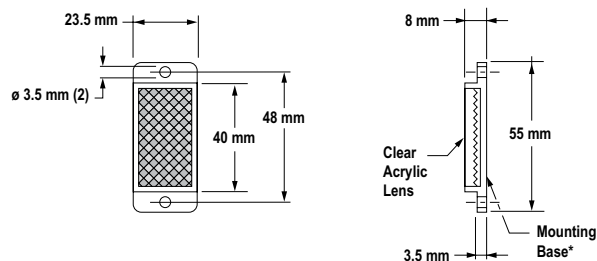
## BRT-32X22A

Description: Rectangular, acrylic target  
 Reflectivity Factor: 1.3  
 Max. Temperature: 65° C



## BRT-35X20A BRT-35X20AB

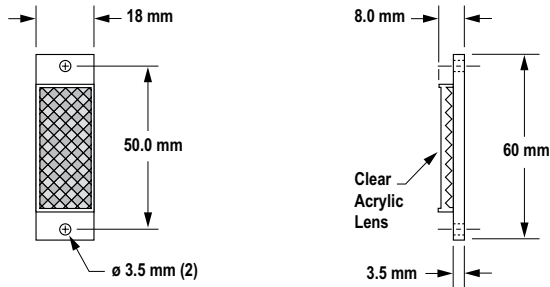
Description: Rectangular, acrylic target\*  
 Reflectivity Factor: 1.4  
 Temperature: -20 to +60° C



\*Mounting base available in white (BRT-35X20A) or black (BRT-35X20AB).

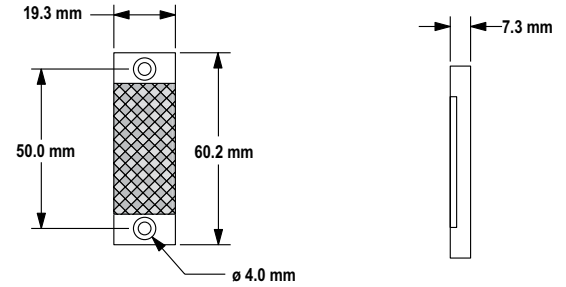
### BRT-40X18A

Description: Rectangular, acrylic target  
 Reflectivity Factor: 1.0  
 Temperature: -20 to +60 °C



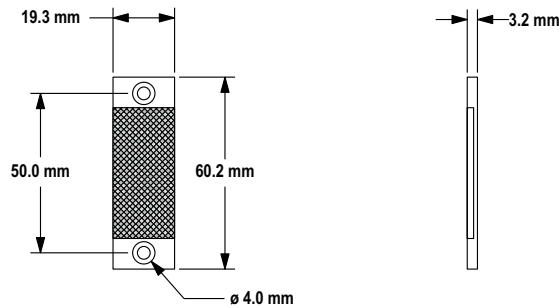
### BRT-40X19A

Description: Rectangular, acrylic target  
 Reflectivity Factor: 1.3  
 Temperature: -20 to +60 °C



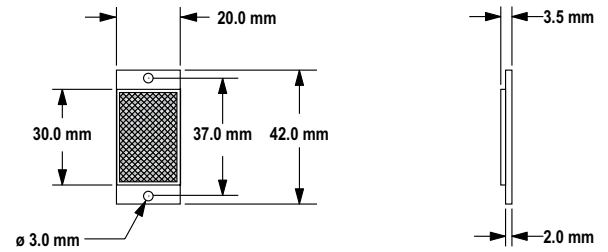
### BRT-40X19AM

Description: Rectangular, thin profile acrylic target  
 Reflectivity Factor: 1.2  
 Temperature: -20 to +60 °C  
 Other: This target has micro-prism geometry.



### BRT-40X20AM

Description: Rectangular, thin profile acrylic target  
 Reflectivity Factor: 1.2  
 Temperature: -20 to +60 °C  
 Other: This target has micro-prism geometry.



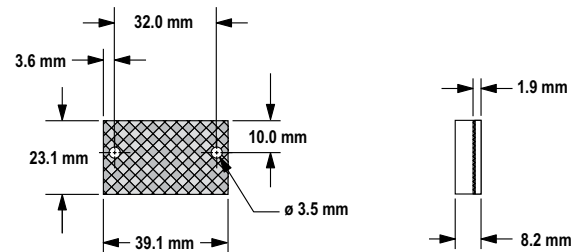
### BRT-40X23

Description: Rectangular, acrylic target  
 Reflectivity Factor: 1.4  
 Temperature: -20 to +60 °C



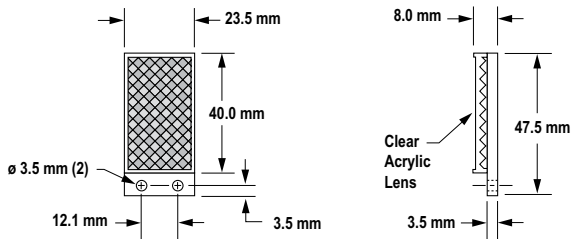
### BRT-40X23A

Description: Rectangular, acrylic target  
 Reflectivity Factor: 1.4  
 Max. Temperature: -20 to +60 °C



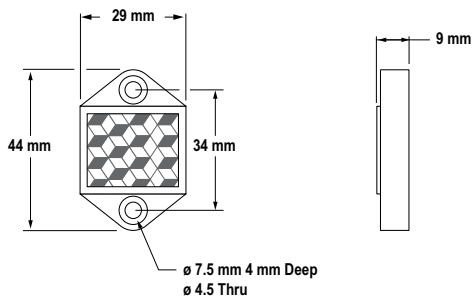
## BRT-40X23B

Description: Rectangular, acrylic target  
 Reflectivity Factor: 1.4  
 Max. Temperature: -20 to +60 °C



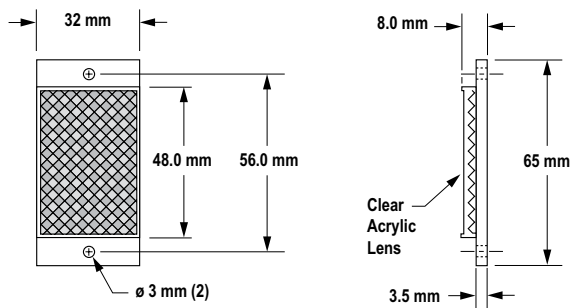
## BRT-44X29A6

Description: Rectangular, acrylic target  
 Reflectivity Factor: 1.1  
 Max. Temperature: 50 °C  
 Other: 6 mm facets; close to the face retroreflective sensing with bifurcated lens.



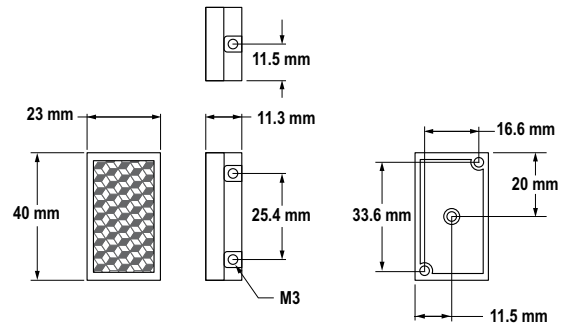
## BRT-48X32A

Description: Rectangular, acrylic target  
 Reflectivity Factor: 1.0  
 Temperature: -20 to +60 °C



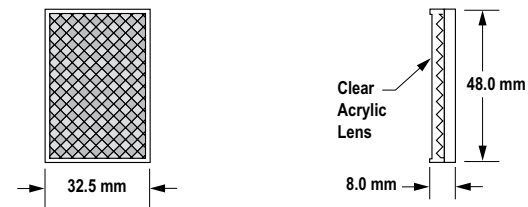
## BRT-40X23ABC

Description: Rectangular, acrylic target  
 Reflectivity Factor: 1.4  
 Max. Temperature: 50 °C



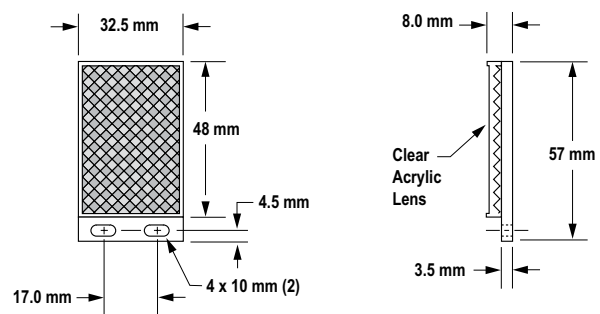
## BRT-48X32

Description: Rectangular, acrylic target  
 Reflectivity Factor: 1.0  
 Temperature: -20 to +60 °C



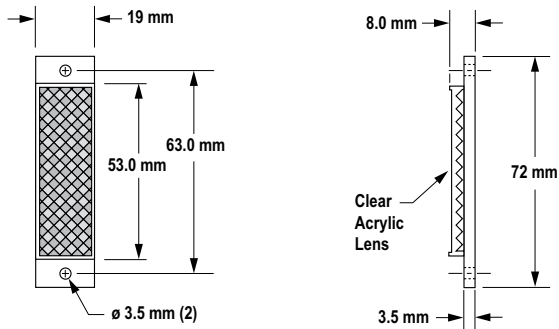
## BRT-48X32B

Description: Rectangular, acrylic target  
 Reflectivity Factor: 1.0  
 Temperature: -20 to +60 °C



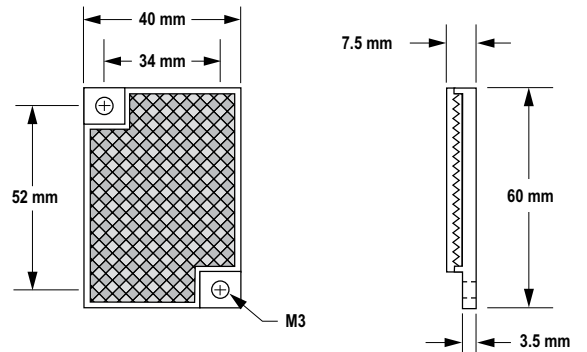
### BRT-53X19A

Description: Rectangular, acrylic target  
 Reflectivity Factor: 1.4  
 Max. Temperature: -20 to +60 °C



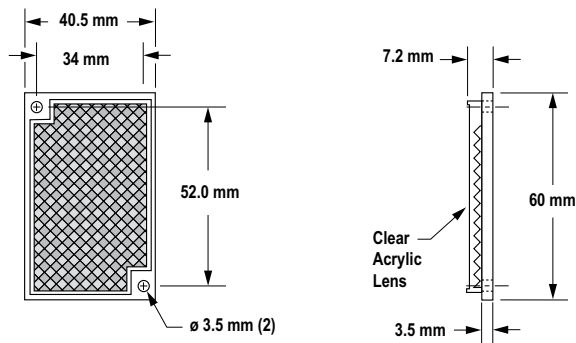
### BRT-60X40AF

Description: Rectangular, acrylic target  
 Reflectivity Factor: 1.4 Max. Temperature: -20 to +60 °C  
 Other: Anti-fogging coating for use around steam. Optional brackets are available.



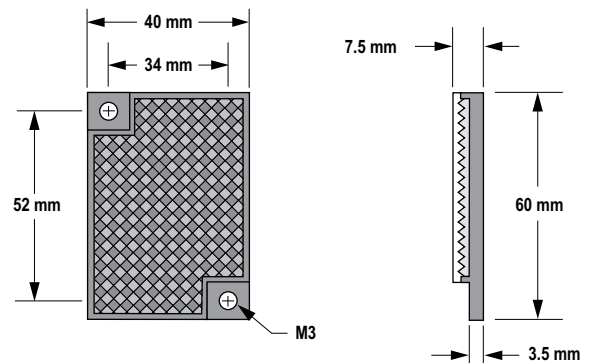
### BRT-60X40C

Description: Rectangular, acrylic target  
 Reflectivity Factor: 1.4 Max. Temperature: -20 to +60 °C  
 Other: Optional brackets are available.



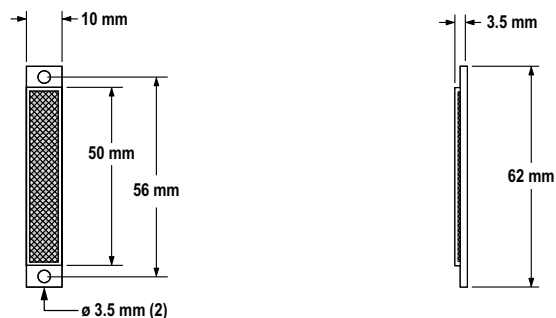
### BRT-60X40IP69K

Description: Rectangular, acrylic target (color is amber)  
 Reflectivity Factor: 0.7 Max. Temperature: -20 to 60 °C  
 Other: Chemically resistant and IP69K washdown rated. Optional brackets are available



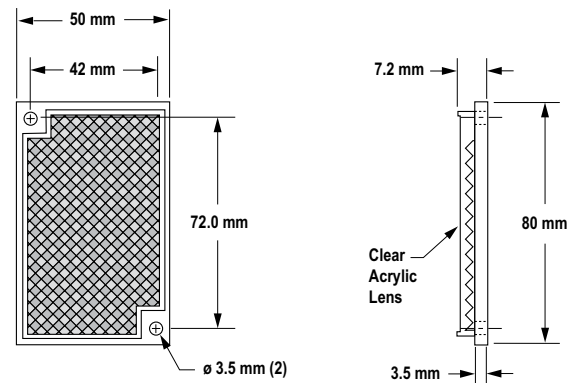
### BRT-62X10AM

Description: Rectangular, thin profile acrylic target  
 Reflectivity Factor: 1.2  
 Max. Temperature: -20 to +60 °C  
 Other: This target has micro-prism geometry.



### BRT-80X50C

Description: Rectangular, acrylic target  
 Reflectivity Factor: 1.4  
 Temperature: -20 to +60 °C

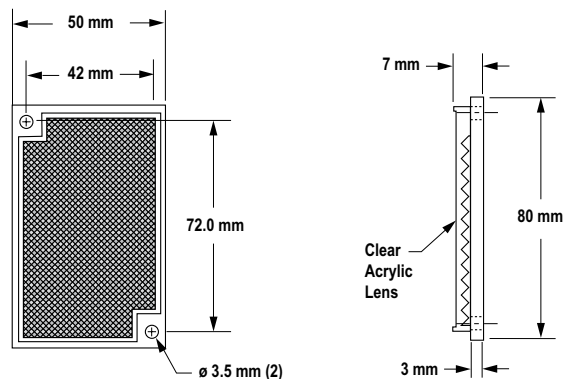


## BRT-80X50CM

Description: Rectangular, acrylic target

Reflectivity Factor: 1.4

Temperature: -20 to +60 °C

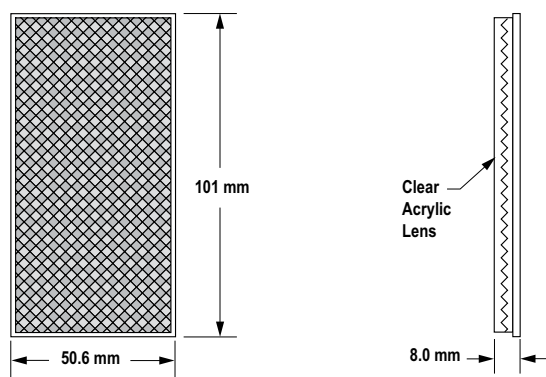


## BRT-100X50

Description: Rectangular, acrylic target

Reflectivity Factor: 1.5

Temperature: -20 to +60 °C

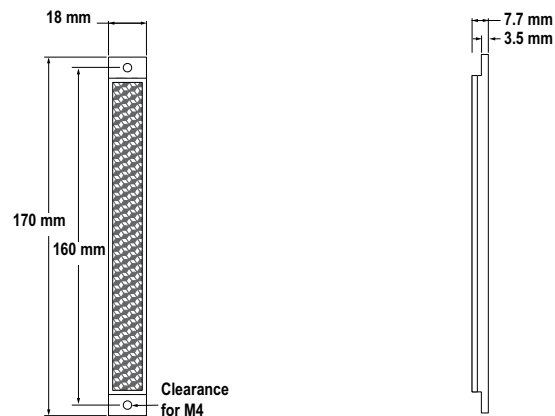


## BRT-150X18A

Description: Rectangular, acrylic target

Reflectivity Factor: 1.4

Temperature: -20 to +60 °C

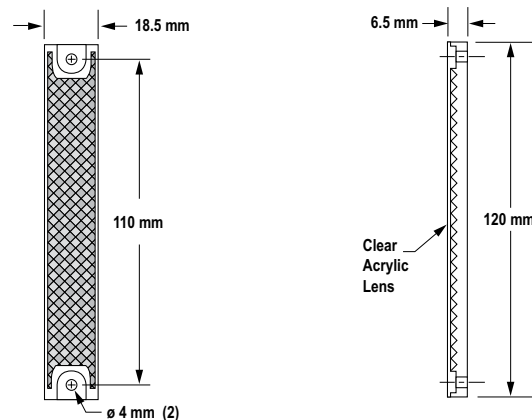


## BRT-100X18A

Description: Rectangular, acrylic target

Reflectivity Factor: 1.4

Temperature: -20 to +60 °C

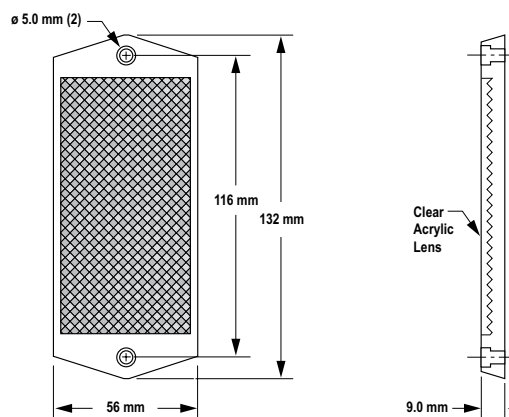


## BRT-100X55A

Description: Rectangular, acrylic target

Reflectivity Factor: 1.5

Temperature: -20 to +60 °C

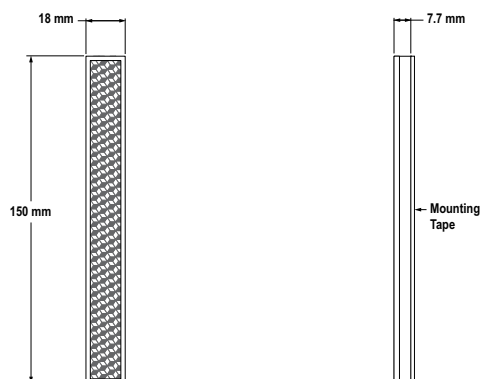


## BRT-150X18T

Description: Rectangular, acrylic target includes mounting tape.

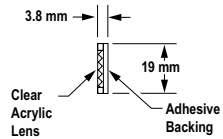
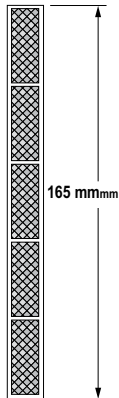
Reflectivity Factor: 1.4

Temperature: -20 to 60 °C



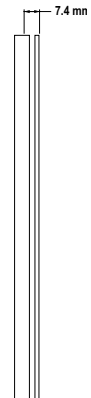
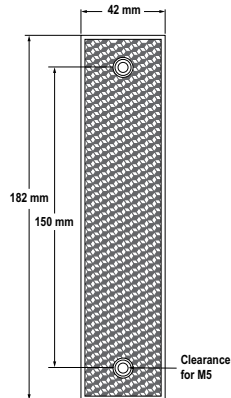
### BRT-L

Description: Rectangular, acrylic target  
Reflectivity Factor: 0.8  
Max. Temperature: 65 °C



### BRT-180X40A

Description: Rectangular, acrylic target  
Reflectivity Factor: 1.4  
Temperature: -20 to +60 °C





## Retroreflective Tape

NOTE: Sensing range and signal strength at any given sensor-to-target distance will vary due to target reflectivity and target area. A "Reflectivity Factor" is included for each target model to help predict sensor performance, relative to the excess gain curve plotted for target model BRT-3. Consider, also, target area when predicting performance. Changing to a high reflectivity reflector (like BRT-92X92C) may also extend sensor range and/or reduce the need for frequent reflector maintenance. A high reflectivity factor AND large surface area are needed for maximum range.

Reflectivity Factor	Maximum Temperature	Size	Model	Unit
0.7	60 °C	75 x 75 mm	BRT-THG-3X3-10	10 per pack
0.7	60 °C	100 x 100 mm	BRT-THG-4X4-5	5 per pack
0.7	60 °C	216 x 280 mm	BRT-THG-8.5X11-2	2 per pack
0.7	60 °C	457 x 914 mm	BRT-THG-18X36	Single sheet
0.7	60 °C	25 mm wide	BRT-THG-1-100	2.5 m length
0.7	60 °C	50 mm wide	BRT-THG-2-100	2.5 m length
0.7	60 °C	75 mm wide	BRT-THG-3-100	2.5 m length
0.07	175 °C	25 mm wide	BRT-THT-100 <sup>†</sup>	2.5 m length
0.2	85 °C	25 mm wide	BRT-T-100CC	2.5 m length
0.8	60 °C	50 x 50 mm	BRT-TVHG-2X2 <sup>*</sup>	4 per pack
0.8	60 °C	203 x 254 mm	BRT-TVHG-8X10P <sup>†</sup>	1 per pack



NOTE: Retroreflective material has a pressure-sensitive adhesive. For maximum adhesion, surfaces must be clean and dry before applying. For best results, use full size; target may be trimmed as necessary.

<sup>†</sup> These targets are not recommended for polarized retroreflective sensors.

<sup>\*</sup> These are sealed micro-prism style pieces and may not be cut.

Suitable for use with Laser sensors, VS3 sensors and SME312LPC model sensors.

Not suggested for close range (less than 102 mm), except with VS3 sensors.

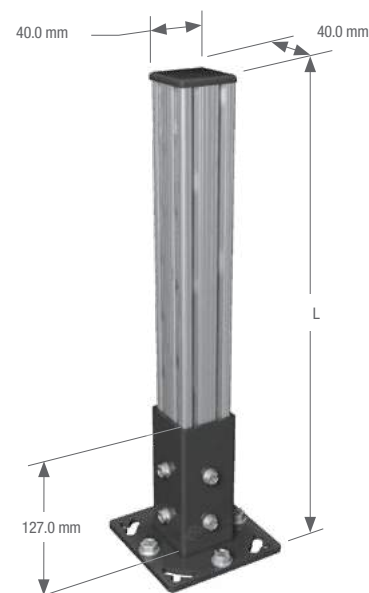
## MSA Series Stands

- Supports emitter, receiver or corner mirror
- Available without stand base, for attaching to a surface
- Assembles easily
- Includes mounting hardware
- Provides mounting T-slots with center dimension of 20 mm

Used With**	Stand Height (L)	Usable Stand Length	Model*
EZ-SCREEN, PICO-GUARD Grids/Points, Mirrors, EZ-ARRAY, MINI-ARRAY and High-Resolution MINI-ARRAY	616 mm	483 mm	MSA-S24-1
	1073 mm	940 mm	MSA-S42-1
	1682 mm	1550 mm	MSA-S66-1
	2140 mm	2007 mm	MSA-S84-1
	2673 mm	2667 mm	MSA-S105-1

\* Available without a base by adding suffix NB to model number (example, MSA-S24-1NB).

\*\* Adapter brackets EZA-MBK-2 (2 each) are required for mounting EZ-SCREEN Grid and Point emitters/receivers or SSM Series mirrors (ordered separately).



## Telescoping Stands for use with Run Bars

- Locates touch buttons 800 to 1232 mm above the floor surface
- Includes swivel-mount bracket to mount Run Bar (Run Bar not included)
- Made of cold-rolled steel; black powdercoat finish

Used with	Description	Model
STBVP6-RB1	Floor-mounted telescoping stand Stationary base with 4 mounting holes in corners	STBA-RB1-S1
STBVP6-RB2		STBA-RB2-S1
STBVP6-RB1	Free-standing, telescoping stand Movable H-shaped floor base with mounting holes 560 mm apart	STBA-RB1-S2
STBVP6-RB2		STBA-RB2-S2



STBA...S1



STBA...S2

## Adjustable Mounting Systems

- Provides flexible mounting and positioning of sensors and lights
- Includes 3" and 6" column mounting kits for mounting area lights and backlights
- Features Bogen Arm and clamp for use with P4 and Pro sensors
- Offers 2" mounting knuckle assembly for spot lights

Used With	Description	Model
Pro P4 Vision Lights	3" Column, Base, and Knuckle Kit	SMBPPK3
	6" Column, Base, and Knuckle Kit	SMBPPK6
	Mounting Bracket Knuckle	SMBPPK
	3" Column	SMBPPKE3
	6" Column	SMBPPKE6
	Mounting Bracket Base	SMBPPKB
	2" Mounting Knuckle Assembly	SMBPPLK
	Bogen Arm with Single Knob	SMBPPF1
	Bogen Arm Clamp	SMBPPFB



SMBPPF1 &amp; SMBPPFB



SMBPPLK



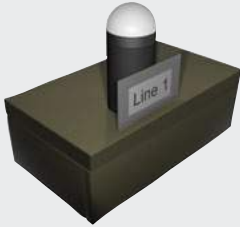


SMBPPK6 SMBPPK3

## Elevated Use—Stand-off Pipe, Brackets and Adapters



Description	Length	Model	Used With
Thermoplastic Acetal adapter and cover (M30 to 1/2" NPSM/DN15)	—	SA-M30TE12	TL50
Thermoplastic Acetal adapter and cover (M30 to 1/2" NPSM/DN15)	—	SA-M30E12	K50L K80L
Stainless steel pipe (1/2" NPSM/DN15)	150 mm	SOP-E12-150SS	K50L
	300 mm	SOP-E12-300SS	K80L
	900 mm	SOP-E12-900SS	TL50
Anodized aluminum pipe (1/2" NPSM/D15)	150 mm	SOP-E12-150AC	K50L
	300 mm	SOP-E12-300AC	K80L
	900 mm	SOP-E12-900AC	TL50
Black Anodized aluminum pipe (1/2" NPSM/D15)	150 mm	SOP-E12-150A	K50L
	300 mm	SOP-E12-300A	K80L
	900 mm	SOP-E12-900A	TL50
Thermoplastic Acetal mounting base (1/2" NPSM/DN15 to M30)	—	SA-E12M30	K50L, K80L, TL50
Stainless steel bracket for wall or other flat surfaces	—	SMBE12USS	K50L K80L TL50

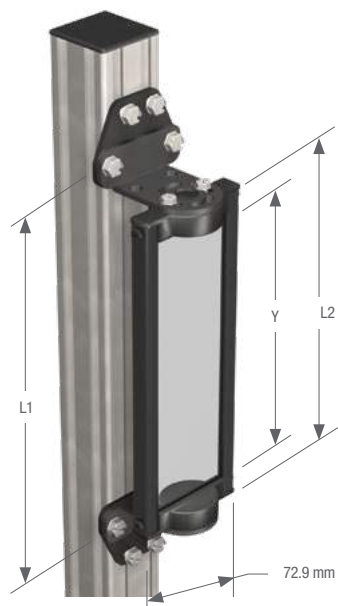


## Elevated Use—Enclosure Mounts and Extensions

Description	Length	Model	Used With
 <p>Thermoplastic Acetal standoff with 30 mm mounting base for cabinet mounting or use with most 30 mm brackets</p>	75 mm	SA-M30M30-75	K50L
 <p>Zinc coated, oversized right-angle legend plate for identification labels</p>	—	SA-30RL55X93	SA-M30M30-75
 <p>Thermoplastic Acetal standoff with 22.5 mm mounting base for cabinet mounting</p>	50 mm	SA-M22M22-50	K30L

## Elevated Use—Hanging Bracket

Description	Length	Model	Used With
 <p>Zinc coated bracket with strain relief for mounting one device</p>	—	SA-30RL55X93C	K50 Push Button VTB
 <p>Zinc coated bracket for mounting two devices</p>	—	SA-30DRL55X93C	Sensors and indicators with 30 mm base or barrel mount



MSM Corner Mirrors  
(shown with standard brackets and MSAMB\*\* adapter bracket mounted on MSA stand)

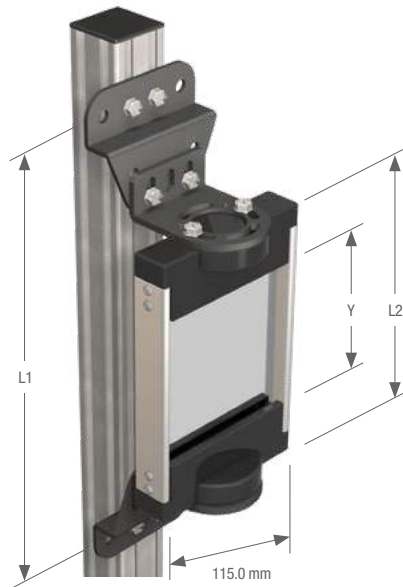
## MSM Corner Mirrors

- Compact for light-duty applications
- Available in 12 lengths
- Decreases range by 8%
- Rated 85% efficiency

Reflective Area (Y)	Mounting Height (L1)*	Mirror Height (L2)	Model
165 mm	221 mm	191 mm	MSM4A
267 mm	323 mm	292 mm	MSM8A
356 mm	411 mm	381 mm	MSM12A
457 mm	513 mm	483 mm	MSM16A
559 mm	615 mm	584 mm	MSM20A
660 mm	716 mm	686 mm	MSM24A
762 mm	818 mm	787 mm	MSM28A
864 mm	919 mm	889 mm	MSM32A
965 mm	1021 mm	991 mm	MSM36A
1067 mm	1123 mm	1092 mm	MSM40A
1168 mm	1224 mm	1194 mm	MSM44A
1270 mm	1326 mm	1295 mm	MSM48A

\* The mounting brackets may be inverted from the positions shown (flanges pointing "inward" instead of "outward," as shown). When this is done, dimension L1 decreases by 57 mm.

\*\* MSAMB adapter bracket kit included with each MSA stand.



SSM and SSM-S Corner Mirrors  
(shown with standard brackets and EZA-MBK-2\*\*  
adapter bracket mounted on MSA stand)

## SSM Glass Corner Mirrors

- Robust for heavy-duty applications
- Extra wide for use with long-range optical safety systems
- Available in stainless steel for harsh applications
- Available in 20 lengths
- Rated 85% efficiency for SSM models and 50% on SSM-S models
- Decreases range by 8% for SSM models and 30% for SSM-S models

Reflective Area (Y)	Mounting Height (L1)*	Mirror Height (L2)	Glass Models	Stainless Steel Models
100 mm	211 mm	178 mm	SSM-100	SSM-100-S
150 mm	261 mm	228 mm	SSM-150	SSM-150-S
200 mm	311 mm	278 mm	SSM-200	SSM-200-S
250 mm	361 mm	328 mm	SSM-250	SSM-250-S
375 mm	486 mm	453 mm	SSM-375	SSM-375-S
475 mm	586 mm	553 mm	SSM-475	SSM-475-S
550 mm	661 mm	628 mm	SSM-550	SSM-550-S
675 mm	786 mm	753 mm	SSM-675	SSM-675-S
825 mm	936 mm	903 mm	SSM-825	SSM-825-S
875 mm	986 mm	953 mm	SSM-875	SSM-875-S
975 mm	1086 mm	1053 mm	SSM-975	SSM-975-S
1100 mm	1211 mm	1178 mm	SSM-1100	SSM-1100-S
1175 mm	1286 mm	1253 mm	SSM-1175	SSM-1175-S
1275 mm	1386 mm	1353 mm	SSM-1275	SSM-1275-S
1400 mm	1511 mm	1478 mm	SSM-1400	SSM-1400-S
1475 mm	1586 mm	1553 mm	SSM-1475	SSM-1475-S
1550 mm	1661 mm	1628 mm	SSM-1550	SSM-1550-S
1675 mm	1786 mm	1753 mm	SSM-1675	SSM-1675-S
1750 mm	1861 mm	1828 mm	SSM-1750	SSM-1750-S
1900 mm	2011 mm	1978 mm	SSM-1900	SSM-1900-S

\* The mounting brackets may be inverted from the positions shown (flanges pointing "inward" instead of "outward," as shown). When this is done, dimension L1 decreases by 58 mm.

\*\* One EZA-MBK-2 adapter bracket kit required if used with a MSA stand.

NOTE: The total range decreases by approximately 8% per mirror.

## Tubular Enclosures

- Available for EZ-ARRAY™, MINI-ARRAY® or EZ-SCREEN® standard 14 & 30 mm
- Ideal for high-pressure washdown environments
- Made of clear FDA-grade polycarbonate tubing, with acetal end caps
- Includes stainless mounting brackets and hardware
- Rated NEMA 4X; IP67



## EZA-TE Tubular Enclosures

Emitter/Receiver Model		Used With Emitter/Receiver		
EZ-SCREEN	EZ-ARRAY	Defined Area/Array Length	Enclosure Height (L)	Model
SLS..-150	EA5..-150	150 mm	439 mm	EZA-TE-150
SLS..-300	EA5..-300	300 mm	541 mm	EZA-TE-300
SLS..-450	EA5..-450	450 mm	744 mm	EZA-TE-450
SLS..-600	EA5..-600	600 mm	846 mm	EZA-TE-600
SLS..-750	EA5..-750	750 mm	1024 mm	EZA-TE-750
SLS..-900	EA5..-900	900 mm	1151 mm	EZA-TE-900
SLS..-1050	EA5..-1050	1050 mm	1354 mm	EZA-TE-1050
SLS..-1200	EA5..-1200	1200 mm	1455 mm	EZA-TE-1200
SLS..-1350	—	1350 mm	1608 mm	EZA-TE-1350
SLS..-1500	EA5..-1500	1500 mm	1760 mm	EZA-TE-1500
SLS..-1650	—	1650 mm	1913 mm	EZA-TE-1650
SLS..-1800	EA5..-1800	1800 mm	2065 mm	EZA-TE-1800

NOTE: Use of the enclosure affects the sensing range of the emitter/receiver used: when in pairs, range can be reduced by 50%.

## MSA-TE Tubular Enclosures

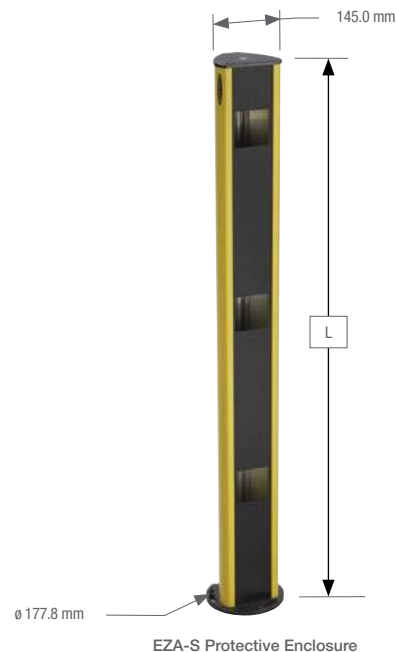
Emitter/Receiver Model		Used With		
MINI-ARRAY	High-Resolution MINI-ARRAY	Emitter/Receiver Array Length	Enclosure Height (L)	Model
MINI-ARRAY	High-Resolution MINI-ARRAY	201 mm	439 mm	MSA-TE-8
MINI-ARRAY	High-Resolution MINI-ARRAY	233 mm		
MINI-ARRAY	High-Resolution MINI-ARRAY	356 mm	541 mm	MSA-TE-12
MINI-ARRAY	High-Resolution MINI-ARRAY	396 mm		
MINI-ARRAY	High-Resolution MINI-ARRAY	505 mm	744 mm	MSA-TE-20
MINI-ARRAY	High-Resolution MINI-ARRAY	559 mm		
MINI-ARRAY	High-Resolution MINI-ARRAY	659 mm	846 mm	MSA-TE-24
MINI-ARRAY	High-Resolution MINI-ARRAY	721 mm		
MINI-ARRAY	High-Resolution MINI-ARRAY	721 mm	947 mm	MSA-TE-28

NOTE: Use of the enclosure affects the sensing range of the emitter/receiver used: when in pairs, range can be reduced by 50%.

## MSA-TE Tubular Enclosures (cont'd)

Used With		Emitter/Receiver Array Length	Enclosure Height (L)	Model
MINI-ARRAY	BMEL3016A/BMRL3016A	810 mm	1049 mm	MSA-TE-32
High-Resolution MINI-ARRAY	BMEL3032A/BMRL3032A	884 mm		
MINI-ARRAY	BMEL3616A/BMRL3616A	963 mm	1151 mm	MSA-TE-36
High-Resolution MINI-ARRAY	BMEL3632A/BMRL3632A	1046 mm		
MINI-ARRAY	BMEL4216A/BMRL4216A	1115 mm	1354 mm	MSA-TE-44
High-Resolution MINI-ARRAY	BMEL4232A/BMRL4232A	1212 mm		
MINI-ARRAY	BMEL4816A/BMRL4816A	1267 mm		
High-Resolution MINI-ARRAY	BMEL4832A/BMRL4832A	1377 mm	1455 mm	MSA-TE-48

NOTE: Use of the enclosure affects the sensing range of the emitter/receiver used: when in pairs, range can be reduced by 50%.



## EZA-S Protective Enclosures

- Provide rugged protection for sensors and mirrors in high-traffic areas
- Available for mirrors and EZ-SCREEN® Point and Grid
- Meets ANSI/RIA 15.06 and ISO 13855 standards for beam spacing
- Includes independently adjustable mirrors and bubble level to simplify alignment
- Rotates up to 20°

## EZA-S EZ-SCREEN® Protective Enclosures

Used With		Enclosure Height (L)	No. of Openings	Application Standard	Models
SG..4-300	900 mm	1543 mm	4	ANSI/RIA R15.06 ISO 13855	EZA-S300 EZA-S300-M*
SG..3-400	800 mm	1238 mm	3	ANSI/RIA R15.06 ISO 13855	EZA-S400 EZA-S400-M*

Continued on next page

\* Model numbers with suffix **M** include vertical mirrors for perimeter-guarding applications.

Model numbers with suffix **M45** include two 45°-mounted mirrors for access-guarding applications.

NOTE: The rear-surfaced glass mirrors are rated at 85% efficiency per mirror and reduce maximum range by 8% per mirror.



## EZA-S EZ-SCREEN® Protective Enclosures (cont'd)

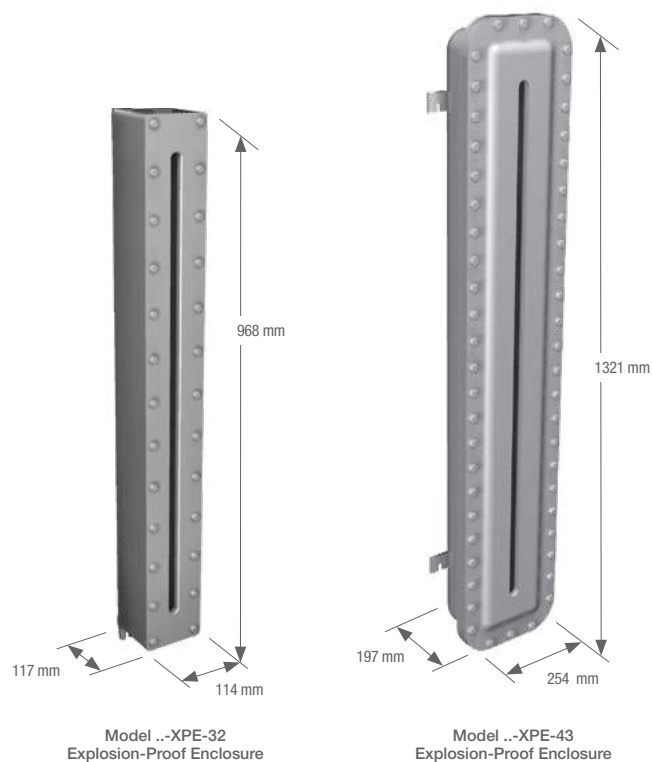
## Used With

Emitter/Receiver Model	Emitter/Receiver Protected Area	Enclosure Height (L)	No. of Openings	Application Standard	Models
SG..2-500	500 mm	1035 mm	2	ISO 13855	EZA-S500 EZA-S500-M*
SP.1	—				EZA-S500-M45*
SG..3-533	1066 mm	1543 mm	3	ANSI/RIA R15.06	EZA-S533 EZA-S533-M*
SG..2-584	584 mm	1238.2 mm	2	ANSI/RIA R15.06	EZA-S584 EZA-S584-M*
SP.1	—				EZA-S584-M45*

\* Model numbers with suffix **M** include vertical mirrors for perimeter-guarding applications.

Model numbers with suffix **M45** include two 45°-mounted mirrors for access-guarding applications.

NOTE: The rear-surfaced glass mirrors are rated at 85% efficiency per mirror and reduce maximum range by 8% per mirror.



## Explosion-Proof Enclosures

- Protects light screen in environments with flammable gases, liquids or dust
- Available for EZ-SCREEN® 14 and 30 resolution models
- Complies with UL and CSA for use in specific hazardous atmospheres
- Includes mounting brackets and hardware
- Reduces range by approximately 25% per emitter/receiver pair

## Used With

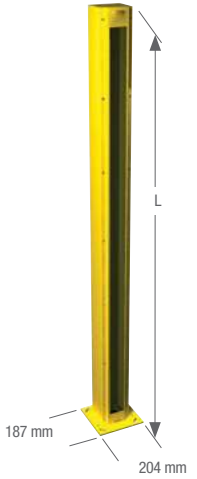
Model Family	Emitter/Receiver Defined Area	Model
EZ-SCREEN (14 and 30 mm Resolution)	450 to 600 mm	SS-XPE-32
EZ-SCREEN (14 and 30 mm Resolution)	750 to 1050 mm	SS-XPE-43

NOTE: Use of enclosure affects the sensing range of emitter/receiver used: when used in pairs, range can be reduced by 25%.

## Heated Enclosures

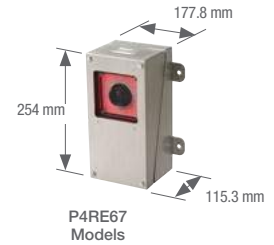
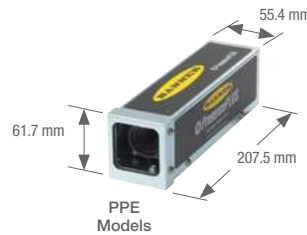
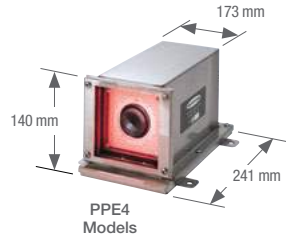
- Available for MINI-ARRAY® or High-Resolution MINI-ARRAY®
- Protects emitter/receiver in outdoor environments
- Includes humidistat and resistance wires to keep window free of condensation, snow or ice
- Provides choice of stainless steel or aluminum housings

Material	Finish*	Array Length	Overall Enclosure/Height (L)	Clear Window Height	Model
Aluminum	Painted	133 to 1210 mm	1.7 m	1.5 m	BMHE4A/BMHL4G
Aluminum	Painted	1505 to 1514 mm	2.0 m	1.8 m	BMHE5A/BMHL5G
Aluminum	Painted	1810 to 1819 mm	2.2 m	2.0 m	BMHE6A/BMHL6G
Stainless Steel	Painted	133 to 1210 mm	1.7 m	1.5 m	BMHE4SS/BMHL4GSS
Stainless Steel	Painted	1505 to 1514 mm	2.0 m	1.8 m	BMHE5SS/BMHL5GSS
Stainless Steel	Painted	1810 to 1819 mm	2.2 m	2.0 m	BMHE6SS/BMHL6GSS
Stainless Steel	Non-painted	133 to 1210 mm	1.7 m	1.5 m	BMHE4SSN/BMHL4GSSN
Stainless Steel	Non-painted	1505 to 1514 mm	2.0 m	1.8 m	BMHE5SSN/BMHL5GSSN
Stainless Steel	Non-painted	1810 to 1819 mm	2.2 m	2.0 m	BMHE6SSN/BMHL6GSSN



NOTE: Enclosures require a power (see page 819).

\* Standard color is Federal Safety Yellow (Federal Standard color# 23538). Contact Factory for other colors.



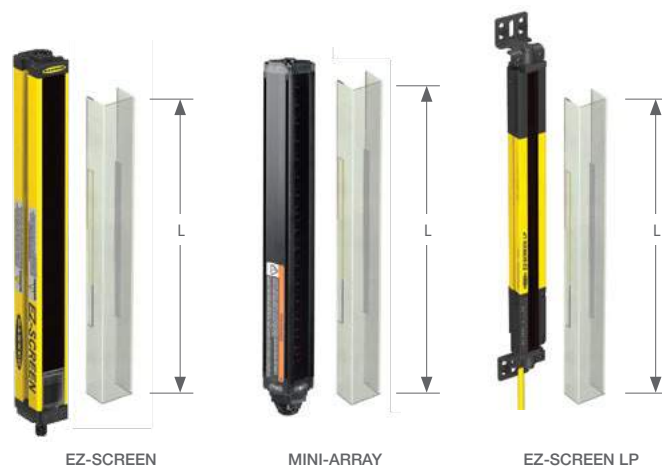
## PresencePLUS® Enclosure Kits

- Protects sensor, ring light or both
- Keeps dust and dirt off lens and light
- Prevents accidental bumps and scratches
- Discourages vandalism and tampering
- Helps maintain lens focus by enclosing the lens and sensor
- Available in models that protect camera and light during washdown
- Offers choice of models with glass or plastic viewport

Description	Used With	Model
Heavy-duty stainless-steel enclosure kit—glass viewport; NEMA 6 rated	P4 (right-angle) & Ring Light	P4RE67-G
Heavy-duty stainless-steel enclosure kit—polycarbonate viewport; NEMA 6 rated		P4RE67-P
Heavy-duty cold-rolled steel industrial protection kit—glass viewport; NEMA 1 rated	Pro Camera & Lens	PPE-G
Heavy-duty cold-rolled steel industrial protection kit—polycarbonate viewport; NEMA 1 rated		PPE-P
Replacement viewport—glass	PPE-G	PPE-RG
Replacement viewport—polycarbonate	PPE-P	PPE-RP
Straight Mounting bracket		SMBPPES
Right-angle mounting bracket	PPE-P & PPE-G	SMBPPEA
Front mounting bracket		SMBPPEF
Heavy-duty stainless-steel enclosure kit—glass viewport; NEMA 4 rated	Pro Camera & Ring Light	PPE4-G
Heavy-duty stainless-steel enclosure kit—polycarbonate viewport; NEMA 4 rated		PPE4-P

## Lens Shields

- Covers the lens of the emitter/receiver to prevent damage
- Available for the LX, EZ-ARRAY™, MINI-ARRAY® and EZ-SCREEN®
- Installs easily
- Made of rugged polycarbonate



## EZ-ARRAY™ & EZ-SCREEN® (14 & 30 mm Resolution) Lens Shields

Installation*	Used With		Defined Area/Array Length	Lens Shield Length (L)	Model
	EZ-ARRAY	EZ-SCREEN			
Adhesive	EA5..150	—	150 mm	218 mm	EZS-150EA
Snap-on				196 mm	EZSS-150EA
Adhesive	—	SLS..-150..	150 mm	258 mm	EZS-150
Snap-on				236 mm	EZSS-150
Adhesive	EA5..300	SLS..-300..	300 mm	368 mm	EZS-300
Snap-on				346 mm	EZSS-300
Adhesive	EA5..450	SLS..-450..	450 mm	518 mm	EZS-450
Snap-on				496 mm	EZSS-450
Adhesive	EA5..600	SLS..-600..	600 mm	667 mm	EZS-600
Snap-on				645 mm	EZSS-600
Adhesive	EA5..750	SLS..-750..	750 mm	817 mm	EZS-750
Snap-on				795 mm	EZSS-750
Adhesive	EA5..900	SLS..-900..	900 mm	967 mm	EZS-900
Snap-on				945 mm	EZSS-900
Adhesive	EA5..1050	SLS..-1050..	1050 mm	1116 mm	EZS-1050
Snap-on				1094 mm	EZSS-1050
Adhesive	EA5..1200	SLS..-1200..	1200 mm	1266 mm	EZS-1200
Snap-on				1244 mm	EZSS-1200
Adhesive	—	SLS..-1350..	1350 mm	1416 mm	EZS-1350
Snap-on				1394 mm	EZSS-1350
Adhesive	—	SLS-1650..	1650 mm	1715 mm	EZS-1650
Snap-on				1693 mm	EZSS-1650
Adhesive	EA5..1500	SLS..-1500..	1500 mm	1565 mm	EZS-1500
Snap-on				1543 mm	EZSS-1500
Adhesive	EA5..1800	SLS..-1800..	1800 mm	1865 mm	EZS-1800
Snap-on				1843 mm	EZSS-1800
Snap-on	EA5..2100	—	2100 mm	2144 mm	EZSS-2100

NOTE: When shields are installed on both the emitter and receiver, maximum operating range is reduced by 20%.

\* Adhesive models are polycarbonate with neoprene gasket. Snap-on models are constructed of copolyester.

## MINI-ARRAY® Lens Shields

Installation	Used With		Array Length	Lens Shield Length (L)*	Model
	Emitter/Receiver Model				
Adhesive	MINI-ARRAY	BMEL1216A/BMRL1216A	286 mm	341 mm	MSS12
		BMEL1232A/BMRL1232A	295 mm		
Adhesive	MINI-ARRAY	BMEL2416A/BMRL2416A	591 mm	643 mm	MSS24
		BMEL2432A/BMRL2432A	600 mm		
Adhesive	MINI-ARRAY	BMEL3616A/BMRL3616A	895 mm	948 mm	MSS36
		BMEL3632A/BMRL3632A	905 mm		
Adhesive	MINI-ARRAY	BMEL4816A/BMRL4816A	1200 mm	1253 mm	MSS48
		BMEL4832A/BMRL4832A	1210 mm		

NOTE: When shields are installed on both the emitter and receiver, maximum operating range is reduced by 20%.

\* Other lens shield lengths are available, contact factory at 1-888-373-6767.

## EZ-SCREEN® LP (14 &amp; 25 mm Resolution) Lens Shields

Installation*	Used With		Lens Shield Length (L)	Model
	Emitter/Receiver Model			
Snap-on	SLP.-270		270 mm	LPSS-270
Snap-on	SLP.-410		410 mm	LPSS-410
Snap-on	SLP.-550		550 mm	LPSS-550
Snap-on	SLP.-690		690 mm	LPSS-690
Snap-on	SLP.-830		830 mm	LPSS-830
Snap-on	SLP.-970		970 mm	LPSS-970
Snap-on	SLP.-1110		1110 mm	LPSS-1110
Snap-on	SLP.-1250		1250 mm	LPSS-1250
Snap-on	SLP.-1390		1390 mm	LPSS-1390
Snap-on	SLP.-1530		1530 mm	LPSS-1530
Snap-on	SLP.-1670		1670 mm	LPSS-1670
Snap-on	SLP.-1810		1810 mm	LPSS-1810

NOTE: When shields are installed on both the emitter and receiver, maximum operating range is reduced by 20%.

\* Adhesive models are polycarbonate with neoprene gasket. Snap-on models are constructed of copolyester.

## EZ-SCREEN® Grids and Points Lens Shields—Adhesive Backed

Type	Lens Shield Length (L)	Emitter/Receiver Model	Emitter/Receiver Protected Height	Model
Point	149 mm	SP..1	—	EZS-149
	684 mm	SG..2-500	500 mm	EZS-684
	768 mm	SG..2-584	584 mm	EZS-768
Grid	984 mm	SG..3-400	800 mm	EZS-984
	1251 mm	SG..3-533	900 mm	EZS-1251
	1084 mm	SG..4-300	1066 mm	EZS-1084

Polycarbonate construction with neoprene gasket

## EZ-SCREEN® Type 2 Lens Shields—Adhesive Backed

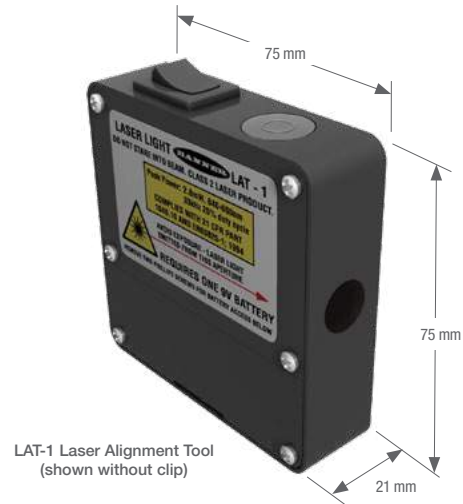
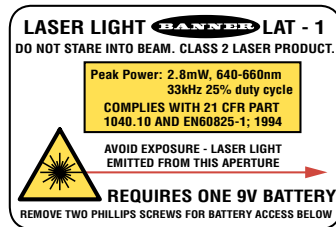
Used With			
Emitter/Receive Model	Emitter/Receiver Defined Area	Lens Shield Length (L)	Model
LS2..30-300	300 mm	360 mm	LSS-300
LS2..30-450	450 mm	510 mm	LSS-450
LS2..30-600	600 mm	660 mm	LSS-600
LS2..30-750	750 mm	810 mm	LSS-750
LS2..30-900	900 mm	959 mm	LSS-900
LS2..30-1050	1050 mm	1109 mm	LSS-1050
LS2..30-1200	1200 mm	1558 mm	LSS-1200
LS2..30-1350	1350 mm	1708 mm	LSS-1350
LS2..30-1500	1500 mm	1858 mm	LSS-1500

Polycarbonate construction with neoprene gasket.

## LX Lens Shields

Installation	Used With		Lens Shield Length (L)	Model
	Emitter/Receiver Model	Array Length		
Adhesive	LX3 models	67 mm	98.3 mm	LXS3
	LX6 models	143 mm	174.5 mm	LXS6
	LX12 models	295 mm	326.9 mm	LXS12




NOTE: When shields are installed on both the emitter and receiver, maximum operating range is reduced by 20%.



## Laser Alignment Tools

- Simplifies the alignment of any emitter/receiver pair
- Available for EZ-SCREEN®, PICO-GUARD™, LT7, and 18 and 30 mm barrel sensors
- Includes a built-in bubble level
- Uses one 9-volt battery, which is included (some models)


Used With	Supply Voltage	LAT-1 with Clip Kit	Clip w/Target*
EZ-SCREEN Grid or Points and PICO-GUARD Grids	9 V battery for 20 hours of continuous use	LAT-1-HD	EZA-LAT-1
EZ-SCREEN 14 & 30 mm Resolution		LAT-1-SS	EZA-LAT-2
EZ-SCREEN LP 14 & 25 mm Resolution		LAT-1-LP	LPA-LAT-1
EZ-SCREEN Type 2		LAT-1-LS	LSA-LAT-1
EZ-SCREEN Grid or Points, PICO-GUARD Grids, EZ-SCREEN 14 & 30 mm Resolution, EZ-SCREEN LP 14 & 25 mm Resolution and EZ-SCREEN Type 2		LAT-1	-

Description	Used With	Supply Voltage	Model
 <p>LAT-2 shown with LT7</p> <ul style="list-style-type: none"> <li>• Allows for long distance alignment greater than 50 m</li> <li>• Clip-on attachment for sensor</li> </ul>	LT7	—	LAT-2
 <ul style="list-style-type: none"> <li>• Enables easy sensor alignment at long distances</li> <li>• Kit includes one SMB1812 bracket and M12 laser emitter (Class 2 visible red laser)</li> <li>• Clip-on attachment for 18 mm threaded barrel sensors</li> </ul>	18 mm threaded barrel sensors	10 to 30V dc	LAT1812
 <ul style="list-style-type: none"> <li>• Enables easy sensor alignment at long distances</li> <li>• Kit includes one SMB3012 bracket and M12 laser emitter (Class 2 visible red laser)</li> <li>• Clip-on attachment for 30 mm threaded barrel sensors</li> </ul>	30 mm threaded barrel sensors	10 to 30V dc	LAT3012

\* LAT-1 purchased separately.

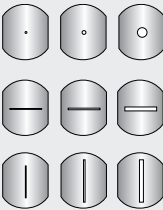
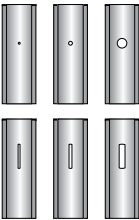
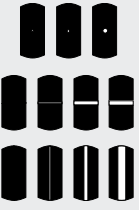
## BEAM-TRACKER™ Alignment Tool

The BEAM-TRACKER is a low-cost, wireless, battery-operated and completely self-contained photoelectric diagnostic sensor. It is a quick and simple way to evaluate photoelectric system performance. It receives light from all modulated photoelectric emitters and transmits light to receivers to check the system operation. It has a built-in frequency emitter that will be detected by any Banner photoelectric receiver, as well as by those of most other photoelectric manufacturers. It is a valuable tool for locating the center of the beam when installing long-range opposed-mode photoelectric sensor pairs and for locating sources of severe EMI and RFI noise.



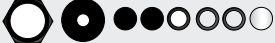


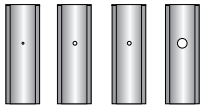
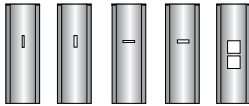
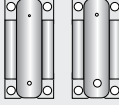
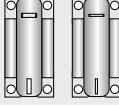
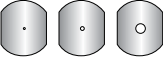
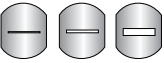

	Supply Voltage	Beam	Construction	Model
	9 V battery for 10 hours of continuous use	70 kHz infrared	Cyclocac® T case	<b>BT-1</b>

## Apertures and Aperture Kits

Opposed-mode sensors may be fitted with apertures which narrow or shape the effective beam of the sensor to more closely match the size of profile of the object to be sensed. A common example is the use of "line" or "slit" type aperture when wire or thread is being sensed.

Aperture Description	Units	Model	Product	Used With		
Circular, 0.5 mm dia.	6	APQS18-020		QS18 Opposed-mode		
Circular, 1.0 mm dia.	6	APQS18-040				
Circular, 2.5 mm dia.	6	APQS18-100				
Horizontal, slotted, 0.5 x 6.4 mm	6	APQS18-020H				
Horizontal, slotted, 1.0 x 6.4 mm	6	APQS18-040H				
Horizontal, slotted, 2.5 x 6.4 mm	6	APQS18-100H				
Vertical, slotted, 0.5 x 12.7 mm	6	APQS18-020V				
Vertical, slotted, 1.0 x 12.7 mm	6	APQS18-040V				
Vertical, slotted, 2.5 x 12.7 mm	6	APQS18-100V				
Kit with 2 of each aperture	18	APQS18-DVHX2				
Circular, 0.5 mm dia.	2	APQ20-0.5		Q20 Opposed-mode		
Circular, 1 mm dia.	2	APQ20-1				
Circular, 2 mm dia.	2	APQ20-2				
Vertical, slotted, 0.5 mm	2	APQ20-0.5V				
Vertical, slotted, 1 mm	2	APQ20-1V				
Vertical, slotted, 2 mm	2	APQ20-2V				
Kit with 2 of each aperture	12	APK-Q20				
Circular, 0.5 mm dia.	20	AP31-020		MINI-BEAM Opposed-mode		
Circular, 1.0 mm dia.	20	AP31-040				
Circular, 2.5 mm dia.	20	AP31-100				
Horizontal, slotted, 0.5 x 6.4 mm	20	AP31-020H				
Horizontal, slotted, 1.0 x 6.4 mm	20	AP31-040H				
Horizontal, slotted, 2.5 x 6.4 mm	20	AP31-100H				
Horizontal, slotted, 5.1 x 6.4 mm	20	AP31-200H				
Vertical, slotted, 0.5 x 12.7 mm	20	AP31-020V				
Vertical, slotted, 1.0 x 12.7 mm	20	AP31-040V				
Vertical, slotted, 2.5 x 12.7 mm	20	AP31-100V				
Vertical, slotted, 5.1 x 12.7 mm	20	AP31-200V				
Kit with 2 of each aperture	22	AP31-DVHX2				

## Apertures and Aperture Kits (cont'd)

Aperture Description	Units	Model	Product	Used With
Kit includes 3 round apertures of: 0.5, 1.0 & 2.5 mm dia.	3	AP18SC*		S18 & M18
Kit includes 3 rectangular apertures of: 0.5, 1.0 & 2.5 mm dia.	3	AP18SR*		S18 & M18
Kit includes 3 round apertures of: 0.5, 1.0 & 2.5 mm dia.	3	AP18SCN*		T18 & TM18
Kit includes 3 rectangular apertures of: 0.5, 1.0 & 2.5 mm dia.	3	AP18SRN*		T18 & TM18
* Kits include Teflon® FEP® lens, o-ring and thread-on housing.				
Kit with glass lens to protect plastic sensor lens from chemical environments	1	APG18S		S18, M18, T18 & TM18
Circular, 0.5 mm dia.	10	APQ12-.5		
Circular, 1.0 mm dia.	10	APQ12-1		
Circular, 1.5 mm dia.	10	APQ12-1.5		
Circular, 2.0 mm dia.	10	APQ12-2		
Horizontal, slotted, 0.5 mm dia.	10	APQ12-.5H		
Horizontal, slotted, 1.0 mm dia.	10	APQ12-1H		
Vertical, slotted, 0.5 mm dia.	10	APQ12-.5V		
Vertical, slotted, 1.0 mm dia.	10	APQ12-1V		
Protective jacket, 4 mm square	10	APQ12-4S		
Kit containing 2 of each aperture	18	APKQ12		Q12 Opposed-mode
Circular, 2 openings, 0.5 & 1.0 mm dia.	2	APVS2-0204		
Circular, 2 openings, 1.5 and 2.0 mm dia.	2	APVS2-0608		
Horizontal (1) and vertical (1), slotted, 0.5 mm wide	2	APVS2-02R		
Horizontal (1) and vertical (1), slotted, 1.0 mm wide	2	APVS2-04R		
Circular, 1.0 mm dia.	6	APQS30-040		
Circular, 2.5 mm dia.	6	APQS30-100		
Circular, 5 mm dia.	6	APQS30-200		
Horizontal, slotted, 1 x 12 mm	6	APQS30-040H		
Horizontal, slotted, 2.5 x 12 mm	6	APQS30-100H		
Horizontal, slotted, 5 x 12 mm	6	APQS30-200H		
Vertical, slotted, 1 x 17 mm	6	APQS30-040V		
Vertical, slotted, 2.5 x 17 mm	6	APQS30-100V		
Vertical, slotted, 5 x 17 mm	6	APQS30-200V		
Kit with 2 of each aperture	18	APQS30-DVHX2		QS30 Opposed-mode

\* Teflon® is a registered trademark of Dupont™.

## Ultrasonic Wave Guides

Guide attaches to 18 mm threaded barrel of ultrasonic sensors to focus ultrasonic sensing beam.



Size	Style	Model	Used With
5.0 mm inside dia.	Barrel	UWG18-5.0	QS18U S18U
6.4 mm inside dia.	Barrel	UWG18-6.4	



## Replacement Lens Assemblies

Lens assemblies are field-replaceable. In addition, some lenses may be used to convert from one sensing mode to another, or to change the sensing range of a particular sensor. The possible conversions are listed in the table below.

Replacement Lens for	Possible Sensing Mode or Range Changes	Model	Used With
LVAG	Change LV to LVAG	UC-300AG	MINI-BEAM
W and DBZ	Change D to DBZ and F to DBZ	UC-300BZ	
C, CV and CVG	Change CV2 to CV	UC-300C.7	
C2 and CV2	Change CV to CV2	UC-300C2	
E and R	—	UC-300E	
EL and RL	Extend range of E/R	UC-300EL	
EPD	—	UC-300EPD	
F and FV	Change D to F and DBZ to F	UC-300F	
FP (old style)	—	UC-300FP	
FP	—	UC-300FP2	
LV and D	Change F to D, LVAG to LV and DBZ to D	UC-300L	
LP	—	UC-300LP	
RPD	—	UC-300RPD	
E, R, DL, DX and LV		UC-45L	
LL		UC-45LL	
LLP		UC-45LLP	
LP		UC-45LP	
D	N/A	UC-45D	
F and FV		UC-45F	
FP		UC-45FP	
CV		UC-45C	
CV4		UC-45C4	

## Portable Demo Box

The Portable Demo Box is used to power dc self-contained photoelectric sensors for testing purposes. It is battery-powered and features bicolor LEDs which indicate sensor output status and output type (NPN or PNP). It is designed for a 4-pin Euro-style connector, but cable adapters are available to convert to Pico-style or Mini-style connectors. A 4-pin wiring barrier is mounted on the top of the box to allow connection of cabled dc sensors.



Supply Voltage	Cable Type	Model	Cable Adapters
3 - 9 V battery	4-pin Euro	DBQ5	Euro-to-Pico p/n 39536  Euro-to-Mini p/n 39537

## Test Power Supply

Test power supply is a 1 amp power supply used to power *P4* sensors and lighting for proving an application without integration into a control panel.



Input	Input	Trigger Option	Model	Used With
100-240 V ac	North America (AC plug)	<ul style="list-style-type: none"> <li>• 24 V dc NPN Sensor</li> <li>• Continuous pulse</li> <li>• Single pulse</li> </ul>	<b>P4D1</b>	<i>P4</i> Vision Lighting

## A-GAGE® MINI-ARRAY® Series Power Supplies for Heated Enclosures



Used With	Primary	Secondary	Models
Two BMHE4 Enclosures	105 to 130 V ac	23 V ac	<b>BMHPS4</b>
Two BMHE5 Enclosures	105 to 130 V ac	27 V ac	<b>BMHPS5</b>
Two BMHE6 Enclosures	105 to 130 V ac	35 V ac	<b>BMHPS6</b>
One BMHE4 Enclosure	105 to 130 V ac	23 V ac	<b>BMHPS14</b>
One BMHE5 Enclosure	105 to 130 V ac	27 V ac	<b>BMHPS15</b>
One BMHE6 Enclosure	105 to 130 V ac	35 V ac	<b>BMHPS16</b>




## Continuous Power Supplies

12 or 24V dc power supplies provide power to dc sensors, safety products and specialty lights.

Input	Input Cord	Outputs	Output Cable	Model	Used With
100-240 V ac 50/60 Hz	—	24 V dc @ 4 A max.	—	<b>PSDINA-24-4</b> (DIN-rail mountable)	dc Sensors Vision Lights
115/230 V ac, 50-60 Hz	—	24 V dc (22.5-28.5 V dc adj.) @ 2.5 A (60 W)	—	<b>PSDINA-24*</b> (DIN-rail mountable)	Safety products requiring a SELV rating (EN 60950)



\* These products are not stocked and are non-returnable.

## USB Serial Adapter

Description	Power	Model	Used With
 USB to RS-485 serial adapter with integral communication cordset and USB cable for advanced configuration with a PC.	USB Cable	<b>EZA-USB485-01</b>	EZ-ARRAY
 USB to RS-485 serial adapter with integral communication cordset and USB cable for easy configuration of a single sensor or a network of sensors.	USB Cable	<b>INTUSB485-LH</b>	LH
 USB to RS-485 serial adapter for advanced configuration with a PC. NOTE: Communication cordset ordered separately.	USB Cable	<b>INTUSB485-1</b>	EZ-ARRAY



## Power Supplies and Interface Modules

The power supplies provide a low-cost interface between ac power supply and dc-operated sensors. They can source up to 100 milliamps. All models are available with integral TEACH push button and remote TEACH function. The interface module is a passive module that allows additional status indicators to be located in the user's control cabinet. It provides remote indication and TEACH capability.

	Description	Sensor Input	Input Supply	Sensor Supply	Models
	Power Supply e/m relay output, status lights, and TEACH button	NPN	24 V ac	15 V dc	PS24-1N
		PNP			PS24-1P
		NPN	115 V ac		PS115-1N
		PNP			PS115-1P
	Passive Interface Module Status lights and TEACH button	—	10-30V dc	—	SIM-525T

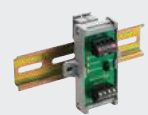
## Sensor Interface Modules

Low-cost modules provide a dc powered interface for sensors.

	Input	Outputs	Connections	Model	Used With
	10-30 V dc	Current Sinking (NPN)	Two 13-pin Terminals	PPSIM-NT	<i>PresencePLUS P4</i>
			One 13-pin Terminals One DB-15 Connector	PPSIM-NC	
		Current Sourcing (PNP)	Two 13-pin Terminals	PPSIM-PT	
			One 13-pin Terminals One DB-15 Connector	PPSIM-PC	
	10-30 V dc	Current Sinking (NPN)/ Current Sourcing (PNP)	Two 13-pin Terminals	IVUSIM	iVu


## Light Interface Modules

Low-cost interface module allows strobe operation of Banner vision lighting with any vision sensor or system.

	Input	Strobe Output	Model	Used With
	24 V dc	5 V @ 10 mA max.	PPLIM	Vision lighting

## EZ-LIGHT™ Controllers

- Manually operated controllers for Andon, call-for-parts and machine status indication
- Toggle switch model can control up to 5 indicators simultaneously

	Description	Switch Function	Supply Voltage	Model	Used With
	5 toggle switches	ON-OFF-FLASH	30 V dc	LC80T	EZ-LIGHT indicators with PNP input
	12-position rotary switch			LC80R	

## AC Emitter/Receiver Interface Boxes

- Provides AC power for up to three receivers or two cascaded emitter/receiver pairs, with external device monitoring (EDM) available
- Supplies +24V dc power at 0.7 amps (16.8 W max. power) and accepts input voltages from 100-250V ac (50-60 Hz)



Safety Outputs	EDM	Emitter/Receiver Connection	AC Power Connection	Output and EDM Connections	Model	Used with
3 NO 2 NO & 1 NC	Selectable 1- or 2-Channel or no EDM	8-Pin M12/Euro QD	Hard-wired	Hard-wired	<b>EZAC-R9-QE8</b>	EZ-SCREEN
			Hard-wired	Hard-wired	<b>EZAC-R11-QE8</b>	
1 NO & 1 SPDT	1-Channel	8-Pin M12/Euro QD	3-Pin Mini QD	8-Pin Mini QD	<b>EZAC-R15A-QE8-QS83</b>	EZ-SCREEN
1 NO & 1 NC	Power Monitoring	8-Pin M12/Euro QD	3-Pin Mini QD	5-Pin Mini QD	<b>EZAC-R8N-QE8-QS53</b>	EZ-SCREEN
2 NO			3-Pin Mini QD	5-Pin Mini QD	<b>EZAC-R10N-QE8-QS53</b>	

## AC Emitter Interface Boxes

- Provides AC power for up to four emitters, with external device monitoring (EDM) available
- Supplies +24V dc power at 0.7 amps (16.8 W max. power) and accepts input voltages from 100-250V ac (50-60 Hz)



Emitter Connection	AC Power Connection	Model	Used with
8-Pin M12/Euro QD	Hard-wired	<b>EZAC-E-QE8</b>	<ul style="list-style-type: none"> <li>• EZ-SCREEN SLSE...Q8 (without Test input)</li> <li>• EZ-SCREEN SLPE..</li> </ul>
5-Pin M12/Euro QD	Hard-wired	<b>EZAC-E-QE5</b>	<ul style="list-style-type: none"> <li>• EZ-SCREEN SLSE...Q5 (with Test input)</li> </ul>
8-Pin M12/Euro QD	3-Pin Mini QD	<b>EZAC-E-QE8-QS3</b>	<ul style="list-style-type: none"> <li>• EZ-SCREEN SLSE...Q8 (without Test input)</li> <li>• EZ-SCREEN SLPE..</li> </ul>
5-Pin M12/Euro QD	5-Pin Mini QD	<b>EZAC-E-QE5-QS5</b>	<ul style="list-style-type: none"> <li>• EZ-SCREEN SLSE...Q5 (with Test input)</li> </ul>

NC = Normally Closed, NO = Normally Open

## AC Interface Box Specifications


## Important Notice:

## European Community Machinery Directive 2006/42/EC

The EZ-SCREEN EZAC- Interface Boxes comply with Machinery Directive 98/37/EC, but not with Machinery Directive 2006/42/EC. Therefore, these Interface Boxes can only be installed as a replacement component within the European Union (EU). For more information, please see [www.bannerengineering.com/144763](http://www.bannerengineering.com/144763) or call 1-888-373-6767.

## Mechanically Linked Contactors\*

Provides an additional 10 or 18 amp carrying capability to any safety system.

	Coil Voltage	Contacts	Contact Rating	Dimensions (h x w x l)	Model	Used With
	120 V ac	3 NO & 1 NC	10 amps	57 x 44 x 58 mm	11-BG00-31-A12060	<ul style="list-style-type: none"> <li>EZ-SCREEN</li> <li>SC22-3/-3E</li> </ul>
	24 V dc		10 amps (thermal)	57 x 44 x 58 mm	11-BG00-31-D-024	
	120 V ac	3 NO & 1 NC	18 amps**	80 x 44 x 80 mm	BF1801A-12060	
	24 V dc		18 amps** (inductive)	80 x 44 x 80 mm	BF1801L-024	


NC = Normally Closed, NO = Normally Open, minimum switching current (power): 5 mA @ 17 V dc (85 mw)

\* One Arc Suppressor is needed for each relay across the coil (see below).

\*\* NC contact is rated at 10 amps

## Auxiliary Contacts for Mechanically Linked Contactors




Adds contacts to mechanically linked contactors.

	Contacts	Positively Guided	Model	Used With
	4 NO	No (Aux. only)	11-BGX10-40	11-BG Series
	3 NO	Yes	11-G484-30	BF Series

NC = Normally Closed, NO = Normally Open

## Suppressors for Mechanically Linked Contactors

Extends the life of the actuating device—such as a light screen or control module—that uses a mechanically linked contactor.

	Voltage	Model	Used With
	48V dc	11-BGX77-048	11-BG00-31-D024
	125-240V ac	11-BGX77-240	11-BG00-31-A12060
	48V dc	11-G318-48	BF1801L-024
	125-240V ac	BFX77-240	BF1801A-12060

NC = Normally Closed, NO = Normally Open

## Lighting &amp; Indicators



## Models

- LED Lighting
- Tower Lights
- Base Mount
- T-Style Mount
- Barrel Mount
- Flat Mount
- Indicators for Safety devices

See page 380

## Indicator Lamps

- Indicates whether a switch is open or closed
- Available in red or green, 120 V ac or 24 V ac/dc



Supply Voltage	Lamp Color	Thread	Models	Used With
24 V ac/dc	Red	M20 x 1.5	SI-PL3T-R	<ul style="list-style-type: none"> <li>• SI-QS90 Safety Interlock Switches</li> <li>• SI-LS42 Safety Interlock Switches</li> <li>• SI-QM100 Safety Interlock Switches</li> <li>• RP-LS42 Rope Pull Switches</li> <li>• RP-QM72/QMT72 Rope Pull Switches</li> <li>• RP-RM83 Rope Pull Switches</li> <li>• RP-QM90 Rope Pull Switch</li> </ul>
120 V ac			SI-PL3A-R	
24 V ac/dc	Green	M20 x 1.5	SI-PL3T-G	
120 V ac			SI-PL3A-G	

## Muting Lamps

- Indicates when muting is active for optical safety systems with a muting module
- Uses a solid-state LEDs light, eliminating the need to replace bulbs

Supply Voltage	Lamp Color	Overall Height	Models	Used with
18-30 V dc or 24 V ac	Green, Yellow, Red, White	142.6 mm	TL50GYRWQ	<ul style="list-style-type: none"> <li>• EZ-SCREEN</li> <li>• Muting Modules</li> </ul>
	Yellow	61.2 mm	TL50YQ	
	White		TL50WQ	
+24 V dc	Red, Green, Yellow (Amber)	ø 18 mm	M18RGR5PNQ	
12-30 V dc	Green, Red, White	58 mm	K50LGRW2PQ-18886	
12-30 V dc	White	58 mm	K50LWXXPQ	
12-30 V dc	Yellow	58 mm	K50LYXXPQ	

## English-Metric Conversion

Inch Fraction	Inch Decimal	Millimeter	Inch Fraction	Inch Decimal	Millimeter	Inch Fraction	Inch Decimal	Millimeter
—	.0039	0.1	9/32	.2812	7.144	21/32	.6562	16.669
—	.0079	0.2	19/64	.2969	7.541	—	.6693	17
—	.0118	0.3	5/16	.3125	7.938	43/64	.6719	17.066
1/64	.0156	0.397	—	.3150	8	11/16	.6875	17.462
—	.0157	0.4	21/64	.3281	8.334	45/64	.7031	17.859
—	.0197	0.5	11/32	.3438	8.731	—	.7087	18
—	.0236	0.6	—	.3543	9	23/32	.7188	18.256
—	.0276	0.7	23/64	.3594	9.128	47/64	.7344	18.653
1/32	.0312	0.794	3/8	.375	9.525	—	.7480	19
—	.0315	0.8	25/64	.3906	9.922	3/4	.750	19.050
—	.0354	0.9	—	.3937	10	49/64	.7656	19.447
—	.0394	1	13/32	.4062	10.319	25/32	.7812	19.844
3/64	.0469	1.191	27/64	.4219	10.716	—	.7874	20
1/16	.0625	1.588	—	.4331	11	51/64	.7969	20.241
5/64	.0781	1.984	7/16	.4375	11.112	13/16	.8125	20.638
—	.0787	2	29/64	.4531	11.509	—	.8268	21
3/32	.0938	2.381	15/32	.4688	11.906	53/64	.8281	21.034
7/64	.1094	2.778	—	.4724	12	27/32	.8438	21.431
—	.1181	3	31/64	.4844	12.303	55/64	.8594	21.828
1/8	.1250	3.175	1/2	.500	12.700	—	.8661	22
9/64	.1406	3.572	—	.5118	13	7/8	.875	22.225
5/32	.1562	3.969	33/64	.5156	13.097	57/64	.8906	22.622
—	.1575	4	17/32	.5312	13.494	—	.9055	23
11/64	.1719	4.366	35/64	.5469	13.891	29/32	.9062	23.019
3/16	.1875	4.762	—	.5512	14	59/64	.9219	23.416
—	.1968	5	9/16	.5625	14.288	15/16	.9375	23.812
13/64	.2031	5.159	37/64	.5781	14.684	—	.9449	24
7/32	.2188	5.556	—	.5905	15	61/64	.9531	24.209
15/64	.2344	5.953	19/32	.5938	15.081	31/32	.9688	24.606
—	.2362	6	39/64	.6094	15.478	—	.9842	25
1/4	.2500	6.350	5/8	.625	15.875	63/64	.9844	25.003
17/64	.2656	6.747	—	.6299	16	1	1.000	25.400
—	.2756	7	41/64	.6406	16.272	—	—	—

To convert millimeters to inches, multiply by 0.0394.

To convert inches to millimeters, multiply by 25.4.

# Temperature Conversion

Celsius°	Fahrenheit°	Celsius°	Fahrenheit°	Celsius°	Fahrenheit°
-62	-80	0.0	32	22.2	72
-57	-70	0.6	33	22.8	73
-51	-60	1.1	34	23.3	74
-46	-50	1.7	35	23.9	75
-40	-40	2.2	36	24.4	76
-34	-30	2.8	37	25.0	77
-29	-20	3.3	38	25.6	78
-23	-10	3.9	39	26.1	79
-17.8	0	4.4	40	26.7	80
-17.2	1	5.0	41	27.2	81
-16.7	2	5.6	42	27.8	82
-16.1	3	6.1	43	28.3	83
-15.6	4	6.7	44	28.9	84
-15.0	5	7.2	45	29.4	85
-14.4	6	7.8	46	30.0	86
-13.9	7	8.3	47	30.6	87
-13.3	8	8.9	48	31.1	88
-12.8	9	9.4	49	31.7	89
-12.2	10	10.0	50	32.2	90
-11.7	11	10.6	51	32.8	91
-11.1	12	11.1	52	33.3	92
-10.6	13	11.7	53	33.9	93
-10.0	14	12.2	54	34.4	94
-9.4	15	12.8	55	35.0	95
-8.9	16	13.3	56	35.6	96
-8.3	17	13.9	57	36.1	97
-7.8	18	14.4	58	36.7	98
-7.2	19	15.0	59	37.2	99
-6.7	20	15.6	60	37.8	100
-6.1	21	16.1	61	43	110
-5.6	22	16.7	62	49	120
-5.0	23	17.2	63	54	130
-4.4	24	17.8	64	60	140
-3.9	25	18.3	65	66	150
-3.3	26	18.9	66	71	160
-2.8	27	19.4	67	77	170
-2.2	28	20.0	68	82	180
-1.7	29	20.6	69	88	190
-1.1	30	21.1	70	93	200
-0.6	31	21.7	71	100	212

Temperature Scale	Water Boiling Point	Water Freezing Point	Conversion Formula
° F (Fahrenheit)	212° F	32° F	° F = (° C x 9/5) + 32
° C (Celsius or Centigrade)	100° C	0° C	° C = (° F - 32) x 5/9

NOTE: For temperatures not given in the table, use the conversion formula above.



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