



# Accessories

## Cables & Wiring Products . . . . . page 174

- Choice of cable styles and lengths for each sensor or module makes installation easier.
- PICO-GUARD plastic optical fibers are available in precut lengths or in bulk.
- Cable glands and conduit adapters are available for use with bulk cable.
- Interface boxes supply 24V dc power to emitters and receivers.
- Indicator lights and lamps show remote indication of device status.
- Contactor accessories enhance the use of high current for a safety system.



## Mounting Brackets . . . . . page 190

- Broad offering of bracket styles makes it easy to install sensors vertically, horizontally, or diagonally.
- Swivel brackets offer greater range of motion.
- Adapter brackets provide mounting flexibility.
- Retrofit brackets enable you to install a different emitter/receiver using existing mounting holes.
- Replacement brackets are available for brackets included with emitters/receivers.



## Corner Mirrors . . . . . page 204

- Mirrors expand guarding to multiple sides of an area using one emitter/receiver pair.
- Rotating end caps allow mirrors to rotate to any angle.
- Glass and stainless steel models include brackets for quick installation.



## Explosive & Harsh Duty . . . . . page 212

- Lens shields protect emitter and receiver lenses from impact and contamination.
- Tubular enclosures guard entire EZ-SCREEN® or MINI-SCREEN® emitter/receiver in a washdown environment.
- Protective enclosures provide rugged protection for emitters/receivers and mirrors.
- Explosion-proof enclosures protect emitters/receivers in environments with flammable gases, liquids or dust.



## Stands . . . . . page 209

- Stands reliably support Banner light screens and corner mirrors.
- Standalone and mounting models have dual channels to allow easy and accurate height adjustment.
- Protective stands shield emitters/receivers from impact and debris.



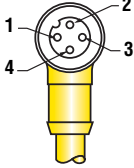
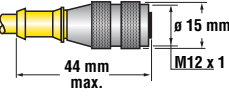
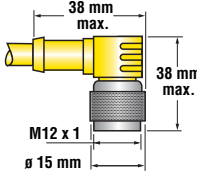
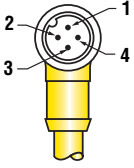
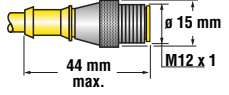
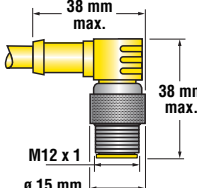
## Replacement Parts . . . . . page 220

- Parts are available to replace lost or damaged parts or to retrofit other manufacturers' parts.
- Replacement parts are designed to be easy to swap in.

### 4-Pin Euro-Style Cables

Cable: PVC jacket, polyurethane connector body, chrome-plated brass coupling nut  
 Conductors: 20 or 22 AWG high-flex stranded, gold-plated contacts  
 Temperature: -40° to +90° C  
 Voltage Rating: 250V ac/300V dc



Pinout	Model	Style	Length	Dimensions	Used With
 <p>1 = Brown 2 = White 3 = Blue 4 = Black</p>	MQDC-406	Female Straight	2 m		<ul style="list-style-type: none"> <li>STB w/solid-state relay</li> <li>Muting Module</li> </ul>
	MQDC-415		5 m		
	MQDC-430		9 m		
	MQDC-450		15 m		
	MQDC-406RA	Female Right Angle	2 m		
	MQDC-415RA		5 m		
	MQDC-430RA		9 m		
	MQDC-450RA		15 m		
 <p>1 = Brown 2 = White 3 = Blue 4 = Black</p>	MQDMC-406	Male Straight	2 m		<ul style="list-style-type: none"> <li>Muting Module</li> </ul>
	MQDMC-415		5 m		
	MQDMC-430		10 m		
	MQDMC-450		15 m		
	MQDMC-406RA	Male Right Angle	2 m		
	MQDMC-415RA		5 m		
	MQDMC-430RA		10 m		
	MQDMC-450RA		15 m		

CABLES & WIRING

BRACKETS

CORNER MIRRORS

STANDS

HARSH DUTY SOLUTIONS

REPLACEMENT PARTS

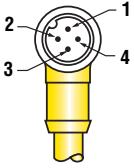
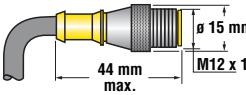
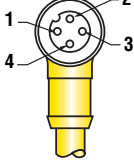
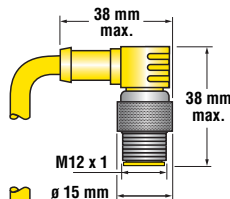
ACCESSORIES



### 4-Pin Euro-Style Cables - Double Ended

Cable: PVC jacket, polyurethane connector body, chrome-plated brass coupling nut  
 Conductors: 22 or 20 AWG high-flex stranded, gold-plated contacts  
 Temperature: -40° to +90° C  
 Voltage Rating: 250V ac/300V dc

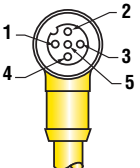
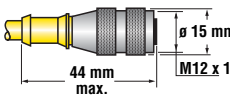
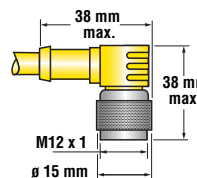


Pinout	Model	Style	Length	Dimensions	Used With
<b>Male</b> 	MQDEC-403SS	Male Straight/ Female Straight	1 m		<ul style="list-style-type: none"> <li>Muting Module</li> </ul>
	MQDEC-406SS		2 m		
	MQDEC-412SS		4 m		
	MQDEC-420SS		7 m		
	MQDEC-430SS		10 m		
MQDEC-450SS	15 m				
<b>Female</b>  <p>1 = Brown 2 = White 3 = Blue 4 = Black</p>	MQDEC-403RS	Male Right Angle/ Female Straight	1 m		
	MQDEC-406RS		2 m		
	MQDEC-412RS		4 m		
	MQDEC-420RS		7 m		
	MQDEC-430RS		10 m		
	MQDEC-450RS		15 m		

### 5-Pin Euro-Style Cables

**Cable:** PVC jacket, polyurethane connector body, chrome-plated brass coupling nut  
**Conductors:** 22 or 20 AWG high-flex stranded, gold-plated contacts  
**Temperature:** -40° to +90° C  
**Voltage Rating:** 250V ac/300V dc



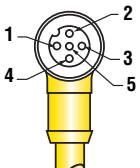
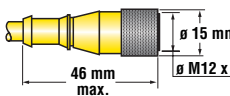
Pinout	Model	Style	length	Dimensions	Used With
 <p>1 = Brown 2 = White 3 = Blue 4 = Black 5 = Gray</p>	MQDC1-506	Female Straight	2 m		• STB w/em relay
	MQDC1-515		5 m		
	MQDC1-530		9 m		
	MQDC1-506RA	Female Right Angle	2 m		
	MQDC1-515RA		5 m		
	MQDC1-530RA		9 m		



### 5-Pin Euro-Style Cables with Green/Yellow Grounding Wire

**Cable:** PVC jacket, polyurethane connector body, chrome-plated brass coupling nut  
**Conductors:** 22 AWG high-flex stranded, gold-plated contacts  
**Temperature:** -40° to +90° C  
**Voltage Rating:** 250V ac/300V dc



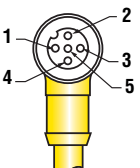
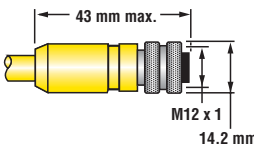
Pinout	Model	Style	Length	Dimensions	Used With
 <p>1 = Brown 2 = White 3 = Blue 4 = Black 5 = Green/Yellow</p>	QDE-515D	Female Straight	5 m		<ul style="list-style-type: none"> <li>• EZ-SCREEN Emitters w/5-pin QD &amp; Test (14 &amp; 30 mm Resolution)</li> <li>• AC Interface Boxes</li> </ul>
	QDE-525D		8 m		
	QDE-550D		15 m		
	QDE-575D		23 m		
	QDE-5100D		30 m		



### 5-Pin Euro-Style Cables with Shield and "Twisted Pair"

**Cable:** PVC jacket, polyurethane connector body, chrome-plated brass coupling nut  
**Conductors:** 20 AWG high-flex stranded, gold-plated contacts  
**Temperature:** -40° to +90° C  
**Voltage Rating:** 250V ac/300V dc



Pinout	Model	Style	Length	Dimensions	Used With
 <p>1 = Brown 2 = White 3 = Blue 4 = Black 5 = Drain</p>	QDU-515C	Female Straight	5 m		• MICRO-SCREEN
	QDU-525C		8 m		
	QDU-550C		15 m		



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### 5-Pin Euro-Style Cables - Double Ended

Cable: PVC jacket, polyurethane connector body, chrome-plated brass coupling nut  
 Conductors: 22 AWG high-flex stranded, gold-plated contacts  
 Temperature: -40° to +90° C  
 Voltage Rating: 250V ac/300V dc



Pinout	Model	Style	Length	Dimensions	Used With			
<b>Female</b> 	DEE2R-51D	Female Straight/ Male Straight	0.3 m		<ul style="list-style-type: none"> <li>EZ-SCREEN Emitters w/5-pin QD &amp; Test (14 &amp; 30 mm Resolution)</li> <li>AC Interface Boxes</li> </ul>			
	DEE2R-53D		1 m					
	DEE2R-58D		2.4 m					
<b>Male</b> 	DEE2R-515D		4.5 m					
	DEE2R-525D		8 m					
	DEE2R-550D		15 m					
	DEE2R-575D		23 m					
	DEE2R-5100D					30 m		

1 = Brown  
 2 = White  
 3 = Blue  
 4 = Black  
 5 = Gn/Ye

### 8-Pin Euro-Style Cables

Cable: PVC jacket, polyurethane connector body, chrome-plated brass coupling nut  
 Conductors: 22 AWG high-flex stranded, gold-plated contacts  
 Temperature: -40° to +90° C  
 Voltage Rating: 250V ac/300V dc



Pinout	Model	Style	Length	Dimensions	Used With
	QDE-815D	Female Straight	5 m		<ul style="list-style-type: none"> <li>EZ-SCREEN Emitters &amp; Receivers w/8-pin QD (14 &amp; 30 mm Resolution)</li> <li>EZ-SCREEN Emitters &amp; Receivers w/8-pin QD (Point &amp; Grid)</li> <li>EZ-SCREEN Type 2</li> <li>AC Interface Boxes</li> </ul>
	QDE-825D		8 m		
	QDE-850D		15 m		
	QDE-875D		23 m		
	QDE-8100D		30 m		

1 = Brown 5 = Black  
 2 = Or/Bk 6 = Blue  
 3 = Orange 7 = Gn/Ye  
 4 = White 8 = Violet

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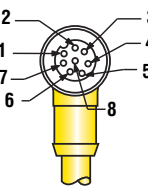
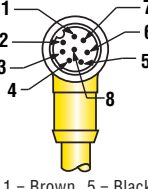
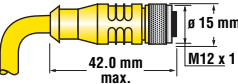

REPLACEMENT PARTS

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### 8-Pin Euro-Style Cables - Double Ended

**Cable:** PVC jacket, polyurethane connector body, chrome-plated brass coupling nut  
**Conductors:** 22 AWG high-flex stranded, gold-plated contacts  
**Temperature:** -40° to +90° C  
**Voltage Rating:** 250V ac/300V dc



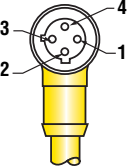
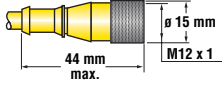
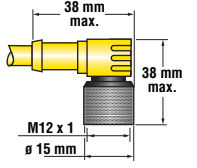
Pinout	Model	Style	Length	Dimensions	Used With	
<b>Female</b>   <b>Male</b>   1 = Brown 5 = Black 2 = Or/Bk 6 = Blue 3 = Orange 7 = Gn/Ye 4 = White 8 = Violet	DEE2R-81D	Female Straight/ Male Straight	0.3 m		<ul style="list-style-type: none"> <li>EZ-SCREEN Emitters &amp; Receivers w/8-pin QD (14 &amp; 30 mm Resolution)</li> <li>EZ-SCREEN Emitters &amp; Receivers w/8-pin QD (Point &amp; Grid)</li> <li>EZ-SCREEN Type 2</li> <li>AC Interface Boxes</li> </ul>	
	DEE2R-83D		1 m			
	DEE2R-88D		2.4 m			
	DEE2R-815D		4.5 m			
	DEE2R-825D		8 m			
	DEE2R-850D		15 m			
	DEE2R-875D		23 m			
	DEE2R-8100D		30 m			



### 4-Pin Micro-Style Cables

**Cable:** PVC jacket, polyurethane connector body, chrome-plated brass coupling nut  
**Conductors:** 22 or 20 AWG high-flex stranded, gold-plated contacts  
**Temperature:** -40° to +80° C  
**Voltage Rating:** 125V ac/150V dc



Pinout	Model	Style	Length	Dimensions	Used With
  1 = Red/Black 2 = Red/White 3 = Red 4 = Green	MQEAC-406	Female Straight	2 m		<ul style="list-style-type: none"> <li>SI-HG80 Hinge-Style Switches</li> </ul>
	MQEAC-415		5 m		
	MQEAC-430		9 m		
	MQEAC-406RA	Female Right Angle	2 m		
	MQEAC-415RA		5 m		
	MQEAC-430RA		9 m		



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### 3-Pin Mini-Style Cable

**Cable:** PVC jacket, polyurethane connector body, nylon coupling nut  
**Conductors:** 18 AWG high-flex stranded, PVC insulation, gold-plated contacts  
**Temperature:** -40° to +80° C  
**Voltage Rating:** 250V ac/300V dc



Pinout	Model	Style	Length	Dimensions	Used With
<p>1 = Green/Yellow 2 = Brown 3 = Blue</p>	QDS-315C	Female Straight	5 m		<ul style="list-style-type: none"> <li>EZ-SCREEN Emitters w/3-pin QD (Point &amp; Grid)</li> </ul>
	QDS-325C		8 m		
	QDS-350C		15 m		
	QDS-375C		23 m		
	QDS-3100C		30 m		

### 4-Pin Mini-Style Cables

**Cable:** PVC jacket, polyurethane connector body, nylon coupling nut  
**Conductors:** 18 AWG high-flex stranded, PVC insulation, gold-plated contacts  
**Temperature:** -40° to +80° C  
**Voltage Rating:** 250V ac/300V dc



Pinout	Model	Style	Length	Dimensions	Used With
<p>1 = Brown 2 = White 3 = Blue 4 = Black</p>	MBCC-406	Female Straight	2 m		<ul style="list-style-type: none"> <li>STB w/solid-state relay</li> <li>OTB w/solid-state relay</li> </ul>
	MBCC-412		4 m		
	MBCC-430		9 m		

### 5-Pin Mini-Style Cables with Yellow Wire

**Cable:** PVC jacket, polyurethane connector body, nylon coupling nut  
**Conductors:** 18 AWG high-flex stranded, PVC insulation, gold-plated contacts  
**Temperature:** -40° to +80° C  
**Voltage Rating:** 250V ac/300V dc



Pinout	Model	Style	Length	Dimensions	Used With
<p>1 = Black 2 = Blue 3 = Yellow 4 = Brown 5 = White</p>	MBCC-506	Female Straight	2 m		<ul style="list-style-type: none"> <li>STB w/em relay</li> <li>OTB w/em relay</li> </ul>
	MBCC-512		4 m		
	MBCC-530		9 m		

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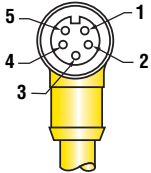
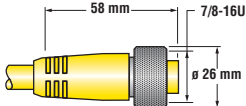
REPLACEMENT PARTS

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### 5-Pin Mini-Style Cables with Green/Yellow Grounding Wire

Cable: PVC jacket, polyurethane connector body, nylon coupling nut  
 Conductors: 20 AWG high-flex stranded, PVC insulation, gold-plated contacts  
 Temperature: -40° to +80° C  
 Voltage Rating: 250V ac/300V dc



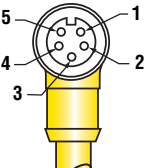
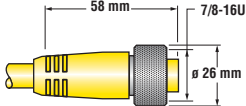
Pinout	Model	Style	Length	Dimensions	Used With
 <p>1 = Black 2 = Blue 3 = Green/Yellow 4 = Brown 5 = White</p>	QDS-515C	Female Straight	5 m		<ul style="list-style-type: none"> <li>EZ-SCREEN Emitters w/5-pin QD &amp; TEST (Point &amp; Grid)</li> </ul>
	QDS-525C		8 m		
	QDS-550C		15 m		



### 5-Pin Mini-Style Cables with Shield and "Twisted Pair"

Cable: PVC jacket, polyurethane connector body, nylon coupling nut  
 Conductors: 18 AWG high-flex stranded, PVC insulation, gold-plated contacts  
 Temperature: -40° to +80° C  
 Voltage Rating: 250V ac/300V dc



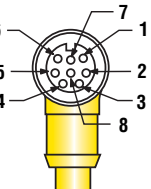
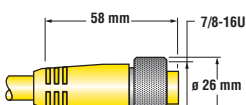
Pinout	Model	Style	Length	Dimensions	Used With
 <p>1 = Black 2 = Blue 3 = Drain 4 = Brown 5 = White</p>	QDC-515C	Female Straight	5 m		<ul style="list-style-type: none"> <li>MINI-SCREEN</li> </ul>
	QDC-525C		8 m		
	QDC-550C		15 m		
	QDC-5100		30 m		
	QDC-5150		45 m		



### 8-Pin Mini-Style Cables

Cable: PVC jacket, polyurethane connector body, nylon coupling nut  
 Conductors: 18 AWG high-flex stranded, PVC insulation, gold-plated contacts  
 Temperature: -40° to +80° C  
 Voltage Rating: 250V ac/300V dc



Pinout	Model	Style	Length	Dimensions	Used With
 <p>1 = Brown 5 = Black 2 = Or/Bk 6 = Blue 3 = Orange 7 = Gn/Ye 4 = White 8 = Violet</p>	QDS-815C	Female Straight	5 m		<ul style="list-style-type: none"> <li>EZ-SCREEN Receivers w/8-pin QD (Point &amp; Grid)</li> <li>Muting Module</li> </ul>
	QDS-825C		8 m		
	QDS-850C		15 m		
	QDS-875C		23 m		



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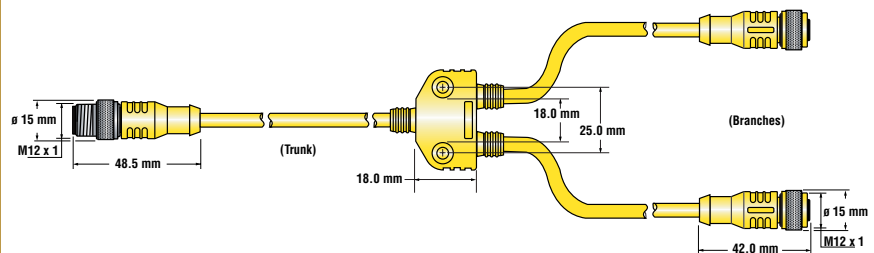
**Splitters**

Cable: PVC jacket, polyurethane connector body, chrome-plated brass coupling nut  
 Conductors: 22 AWG high-flex stranded, gold-plated contacts  
 Temperature: -40° to +90° C  
 Voltage Rating: 250V ac/300V dc



Connections				
Pinout	Model	Branches	Trunk	Used With
<b>Female</b>  <b>Male</b>  1 = Brown 2 = White 3 = Blue 4 = Black	CSB-M1240M1240	4-Pin Euro QD No Branch Female	No Trunk Male	<ul style="list-style-type: none"> <li>• Muting Module</li> </ul>
	CSB-M1241M1241	4-Pin Euro QD 2 x 0.3 m Female	0.3 m Male	
	CSB-M1248M1241		2.5 m Male	
	CSB-M12415M1241		5 m Male	
	CSB-M12425M1241		8 m Male	
	CSB-UNT425M1241		8 m Unterminated	
<b>Female</b>  <b>Male</b>  1 = Brown    5 = Black 2 = Or/Bk    6 = Blue 3 = Orange    7 = Gn/Ye 4 = White    8 = Violet	CSB-M1280M1280	8-Pin Euro QD No Branch Female	No Trunk Male	<ul style="list-style-type: none"> <li>• EZ-SCREEN Emitters &amp; Receivers w/8-pin QD (14 &amp; 30 mm Resolution)</li> <li>• EZ-SCREEN Emitters &amp; Receivers w/8-pin QD (Point &amp; Grid)</li> <li>• EZ-SCREEN Type 2</li> <li>• AC Interface Boxes</li> <li>• EZ-LIGHT Indicator Light</li> <li>• Muting Module</li> </ul>
	CSB-M1281M1281	8-Pin Euro QD 2 x 0.3 m Female	0.3 m Male	
	CSB-M1288M1281		2.5 m Male	
	CSB-M12815M1281		5 m Male	
	CSB-M12825M1281		8 m Male	
	CSB-UNT825M1281		8 m Unterminated	

**Dimensions**



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### QD End-Caps

Replace or convert EZ-SCREEN Grid and Point hard-wire terminal chamber end cap to QD model.

Model	Style	Description	Used With
EZA-QDE-3	3-pin Mini QD	Converts terminal chamber end cap to QD model	• EZ-SCREEN Emitters w/Terminal Chamber (Point & Grid)
EZA-QDE-5	5-pin Mini QD		• EZ-SCREEN Emitters w/Terminal Chamber & TEST (Point & Grid)
EZA-QDR-8	8-pin Mini QD		• EZ-SCREEN Receivers w/Terminal Chamber (Point & Grid)

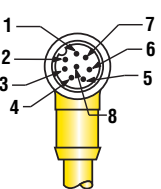
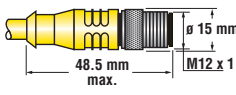
### Unterminated Bulk Cable

Cable: PVC jacket  
 Conductors: 20 AWG high-flex strand, PVC insulation  
 Temperature: -40° to +80° C  
 Voltage Rating: 250V ac/300V dc

Model	Length	Description	Used With
UTB-325C	8 m	3-conductor (Brown, Blue, Green/Yellow)	• EZ-SCREEN Emitters w/Terminal Chamber (Point & Grid) • AC Interface Boxes
UTB-350C	15 m		
UTB-3100C	30 m		
UTB-3250C	75 m		
UTB-525C	8 m	5-conductor (Black, Blue, Brown, White, Green/Yellow)	• EZ-SCREEN Emitters w/Terminal Chamber & TEST (Point & Grid) • AC Interface Boxes
UTB-550C	15 m		
UTB-5100C	30 m		
UTB-5250C	75 m		
UTB-825C	8 m	8-conductor (Brown, Orange/Black, Orange, White, Black, Blue, Violet, Green/Yellow)	• EZ-SCREEN Receivers w/Terminal Chamber (Point & Grid) • AC Interface Boxes
UTB-850C	15 m		
UTB-8100C	30 m		
UTB-8250C	75 m		

### 8-Pin Euro-Style Cables

Cable: PVC jacket, polyurethane connector body, chrome-plated brass coupling nut  
 Conductors: 22 AWG high-flex stranded, gold-plated contacts  
 Temperature: -40° to +90° C  
 Voltage Rating: 250V ac/300V dc

Pinout	Model	Style	Length	Dimensions	Used With
 <p>1 = Brown 5 = n.c.                  2 = Black 6 = n.c.                  3 = Blue 7 = n.c.                  4 = n.c. 8 = White</p>	QDE2R4-815D	Male Straight	5 m		• EZ-SCREEN Cascade Receivers (CSSI to hard contacts)
	QDE2R4-825D		8 m		

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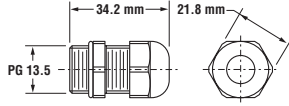
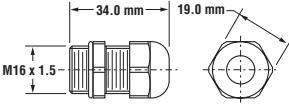
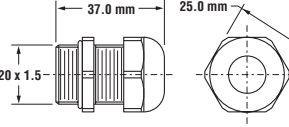
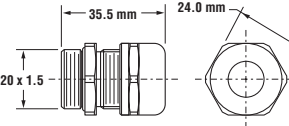
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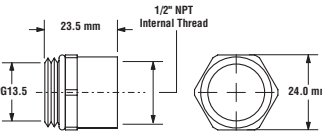
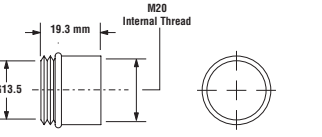
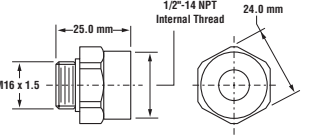
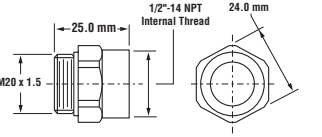
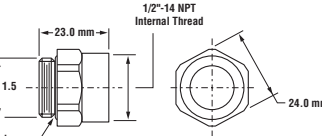
**Cable Glands**

- 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.

Model	Size	For Cable Diameter	Dimensions	Used With
SI-QS-CG13	PG13.5	3.0 to 8.0 mm		<ul style="list-style-type: none"> <li>• EZ-SCREEN w/Terminal Chamber (Point &amp; Grid)</li> </ul>
SI-QS-CGM16	M16 x 1.5 Plastic	3.0 to 8.0 mm		<ul style="list-style-type: none"> <li>• SI-QS75 Safety Interlock Switches</li> <li>• SI-LS83 Safety Interlock Switches</li> </ul>
SI-QS-CGM20	M20 x 1.5 Plastic	5.0 to 12.0 mm		<ul style="list-style-type: none"> <li>• SI-QS90 Safety Interlock Switches</li> <li>• SI-LS100 Safety Interlock Switches</li> <li>• SI-LS31 Safety Interlock Switches</li> <li>• SI-LS42 Safety Interlock Switches</li> <li>• RP-LS42 Rope Pull Switches</li> </ul>
SI-QM-CGM20	M20 x 1.5 Metal	5.0 to 12.0 mm		<ul style="list-style-type: none"> <li>• SI-LM40 Safety Interlock Switches</li> <li>• SI-QM100 Safety Interlock Switches</li> <li>• SI-LM40 Safety Interlock Switches</li> <li>• RP-LM40 Rope Pull Switches</li> <li>• RP-QM72/QMT72 Rope Pull Switches</li> <li>• RP-QM90 Rope Pull Switch</li> </ul>

**Conduit Adapters**

- Connects conduit of different diameters.
- Available for EZ-SCREEN Point and Grid, rope pulls and safety interlock switches.

Model	Size	Thread Conversion	Dimensions	Used With
SI-QM-13	1/2" NPT to PG13.5	PG 13.5 to 1/2" NPT		<ul style="list-style-type: none"> <li>• EZ-SCREEN w/Terminal Chamber (Point &amp; Grid)</li> </ul>
SI-QM-13-M20	M20 to PG13.5	PG 13.5 to M20		<ul style="list-style-type: none"> <li>• EZ-SCREEN w/Terminal Chamber (Point &amp; Grid)</li> </ul>
SI-QS-M16	1/2" - 14 NPT Plastic	M16 x 1.5 to 1/2" - 14 NPT		<ul style="list-style-type: none"> <li>• SI-QS75 Safety Interlock Switches</li> <li>• SI-LS83 Safety Interlock Switches</li> </ul>
SI-QS-M20	1/2" - 14 NPT Plastic	M20 x 1.5 to 1/2" - 14 NPT		<ul style="list-style-type: none"> <li>• SI-QS90 Safety Interlock Switches</li> <li>• SI-LS100 Safety Interlock Switches</li> <li>• SI-LS31 Safety Interlock Switches</li> <li>• SI-LS42 Safety Interlock Switches</li> <li>• RP-LS42 Rope Pull Switches</li> </ul>
SI-QM-M20	1/2" - 14 NPT Metal	M20 x 1.5 to 1/2" - 14 NPT		<ul style="list-style-type: none"> <li>• SI-LM40 Safety Interlock Switches</li> <li>• SI-QM100 Safety Interlock Switches</li> <li>• SI-LM40 Safety Interlock Switches</li> <li>• RP-LM40 Rope Pull Switches</li> <li>• RP-QM72/QMT72 Rope Pull Switches</li> <li>• RP-QM90 Rope Pull Switch</li> </ul>

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### 4-Pin Euro-Style Field-Wireable Connectors

**Cable:** Gold-plated, 4-pin models rated 250V ac/dc max., 4 A max.  
**Cable Diameter:** 4.0 to 5.0 mm  
**Temperature:** -25° to +90° C  
**Environmental Rating:** NEMA 6P, IP67

Model	Style	Dimensions	Pinout	Used With
FIC-M12M4	Male Straight			<ul style="list-style-type: none"> <li>• Muting Module</li> </ul>
FIC-M12M4A	Male Right Angle			

### MSSI Cordsets for use with Muting Modules

**Cable:** PVC jacket, polyurethane connector body, chrome-plated brass coupling nut  
**Cable Diameter:** 20 AWG high-flex stranded, PVC insulation, gold-plated contacts  
**Temperature:** -40° to +80° C  
**Voltage Rating:** 250V ac/300V dc

Model	Length	Description	Used With
DESE4-508D	2.4 m	8-Pin Female Euro QD to 7-Pin Male Mini QD	<ul style="list-style-type: none"> <li>• EZ-SCREEN Receivers w/Euro QDs (14 &amp; 30 mm Resolution)</li> <li>• Muting Modules</li> </ul>
DESE4-515D	5 m		
DESE4-525D	8 m		
DESE5-508D	2.4 m	8-Pin Female Euro QD to 7-Pin Male Mini QD	<ul style="list-style-type: none"> <li>• EZ-SCREEN Type 2</li> <li>• Muting Modules</li> </ul>
DESE5-515D	5 m		
DESE5-525D	8 m		
DES4-508C	2.4 m	8-Pin Female Mini QD to 7-Pin Male Mini QD	<ul style="list-style-type: none"> <li>• EZ-SCREEN Receivers w/Mini QDs (Grid &amp; Point)</li> <li>• Muting Modules</li> </ul>
DES4-515C	5 m		
DES4-525C	8 m		
QDS-715C	5 m	Unterminated end to 7-Pin Male Mini QD	<ul style="list-style-type: none"> <li>• EZ-SCREEN Receivers w/Terminal Chamber (Grid &amp; Point)</li> <li>• Safeguarding w/Hard-Wired Contacts</li> <li>• Muting Modules</li> </ul>
QDS-725C	8 m		
QDS-750C	15 m		

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**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).



Model	Safety Outputs	EDM	Emitter/Receiver Connection	AC Power Connection	Output and EDM Connections	Used with	Data Sheet
EZAC-R9-QE8	3 NO	Selectable 1- or 2-Channel or no EDM	8-Pin Euro QD	Hard-wired	Hard-wired	• EZ-SCREEN	120321
EZAC-R11-QE8	2 NO & 1 NC			Hard-wired	Hard-wired		
EZAC-R15A-QE8-QS83	1 NO & 1 SPDT	1-Channel		3-Pin Mini QD	8-Pin Mini QD		
EZAC-R8N-QE8-QS53	1 NO & 1 NC	Power Monitoring		3-Pin Mini QD	5-Pin Mini QD		
EZAC-R10N-QE8-QS53	2 NO			3-Pin Mini QD	5-Pin Mini QD		

**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).



Model	Emitter Connection	AC Power Connection	Used with	Data Sheet
EZAC-E-QE8	8-Pin Euro QD	Hard-wired	• EZ-SCREEN SLSE...Q8 (without Test input)	120321
EZAC-E-QE5	5-Pin Euro QD	Hard-wired	• EZ-SCREEN SLSE...Q5 (with Test input)	
EZAC-E-QE8-QS3	8-Pin Euro QD	3-Pin Mini QD	• EZ-SCREEN SLSE...Q8 (without Test input)	
EZAC-E-QE5-QS5	5-Pin Euro QD	5-Pin Mini QD	• EZ-SCREEN SLSE...Q5 (with Test input)	

NC = Normally Closed, NO = Normally Open

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## AC Interface Box Specifications

<b>Input Voltage and Current</b>	100-230V ac $\pm$ 15%; 16.8W max., output 24V dc 0.7A <b>Input current:</b> typ. 0.37A @ 100V ac in typ. 0.23A @ 200V ac in <b>Inrush current:</b> typ. 15A @ 100V ac in (5 milliseconds max.) typ. 30A @ 200V ac in (5 milliseconds max.)																		
<b>Output Voltage and Current</b>	24V dc @ 0.7 A (16.8 W) SELV; capable of buffering 20 milliseconds power interruptions																		
<b>Supply Protection Circuitry</b>	Protected against transient voltages																		
<b>Output Configuration</b>	<b>Models EZAC-R.. only;</b> see models listing on previous page. Each normally open output channel is a series connection of contacts from two forced-guided (positive-guided) relays, K1-K2. The normally closed contact is a parallel connection of contacts from K1-K2. <b>Contacts:</b> AgNi, 5 $\mu$ m gold-plated <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> To preserve the gold plating on the contacts, the following max. values should not be exceeded at any time: <table style="width: 100%; border: none;"> <tr> <td><b>Min. voltage:</b> 1V ac/dc</td> <td><b>Max. voltage:</b> 60V ac/dc</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> <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 style="width: 100%; border: none;"> <tr> <td><b>Min. voltage:</b> 15V ac/dc</td> <td><b>Max. voltage:</b> 250V ac/dc</td> </tr> <tr> <td><b>Min. current:</b> 30 mA ac/dc</td> <td><b>Max. current:</b> 8 A</td> </tr> <tr> <td><b>Min. power:</b> 5 W (5 VA)</td> <td><b>Max. power:</b> 200 W (2000 VA)</td> </tr> </table> <b>Mechanical life:</b> 50,000,000 operations <b>Electrical life:</b> 100,000 operations (typical @ 200 W [2000 VA] switched power, resistive load) <b>Feedback Contact Rating (Y1-Y2, Y3-Y4):</b> <table style="width: 100%; border: none;"> <tr> <td><b>Min. voltage:</b> 1V ac/dc</td> <td><b>Max. voltage:</b> 60V ac/dc</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> <b>NOTE: Transient suppression is recommended when switching inductive loads. Install suppressors across load. Never install suppressors across output contacts.</b>	<b>Min. voltage:</b> 1V ac/dc	<b>Max. voltage:</b> 60V ac/dc	<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> 15V ac/dc	<b>Max. voltage:</b> 250V ac/dc	<b>Min. current:</b> 30 mA ac/dc	<b>Max. current:</b> 8 A	<b>Min. power:</b> 5 W (5 VA)	<b>Max. power:</b> 200 W (2000 VA)	<b>Min. voltage:</b> 1V ac/dc	<b>Max. voltage:</b> 60V ac/dc	<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> 1V ac/dc	<b>Max. voltage:</b> 60V ac/dc																		
<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> 15V ac/dc	<b>Max. voltage:</b> 250V ac/dc																		
<b>Min. current:</b> 30 mA ac/dc	<b>Max. current:</b> 8 A																		
<b>Min. power:</b> 5 W (5 VA)	<b>Max. power:</b> 200 W (2000 VA)																		
<b>Min. voltage:</b> 1V ac/dc	<b>Max. voltage:</b> 60V ac/dc																		
<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>Output Response Time</b>	10 milliseconds max.																		
<b>Status Indicators</b>	<b>Models EZAC-R.. :</b> One bicolor (Red/Green) LED indicator on box cover indicates the power and output status of internal relays K1 and K2. <b>Models EZAC-E.. :</b> One Green LED indicator on box cover indicates the power status (ON when power is ON).																		
<b>Construction</b>	Welded steel box with yellow polyester powder paint finish																		
<b>Environmental Rating</b>	IEC IP65																		
<b>Vibration Resistance</b>	10 to 50 Hz @ 0.35 mm displacement per IEC 68-2-6																		
<b>Mounting</b>	Box provides flanges for screw mounting; can be mounted directly to EZ-SCREEN receiver or emitter housing.																		
<b>Operating Conditions</b>	<b>Temperature:</b> 0° to +55° C <b>Relative humidity:</b> 90% @ +55° C (non-condensing)																		
<b>Application Notes</b>	The box offers a field-replaceable relay module; see Repairs section of data sheet for more information.																		
<b>Certifications</b>	Approvals are in process.																		
<b>Wiring Diagrams</b>	<b>EZAC-R9QE8:</b> WD009 (p. 250) <b>EZAC-R11-QE8:</b> WD010 (p. 251) <b>EZAC-R15A-QE8-QS83:</b> WD011 (p. 252) <b>EZAC-R8N-QE8-QS53:</b> WD012 (p. 252) <b>EZAC-R10N-QE8-QS53:</b> WD013 (p. 253) <b>EZAC-E-QE8/QE5:</b> WD014 (p. 253)																		

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### Cables & Wiring Products

## Mechanically Linked Contactors\*

Provides an additional 10 or 16 amp carrying capability to any safety system.



Models	Coil Voltage	Contacts	Contact Rating	Dimensions (h x w x l)	Used With	Data Sheet	
	11-BG00-31-A12060	120V ac	3 NO & 1 NC	10 amps	57 x 44 x 58 mm	<ul style="list-style-type: none"> <li>• EZ-SCREEN</li> <li>• PICO-GUARD</li> <li>• MICRO-SCREEN</li> <li>• MINI-SCREEN</li> </ul>	111881
	11-BG00-31-D-024	24V dc		10 amps	57 x 44 x 58 mm		
	11-BF1601-12060	120V ac		16 amps**	80 x 44 x 80 mm		
	11-BF16C01-024	24V dc		16 amps**	80 x 44 x 80 mm		

NC = Normally Closed, NO = Normally Open

\* 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.




Models	Contacts	Positively Guided	Used With	Data Sheet	
	11-BGX10-40	4 NO	No (Aux. only)	<ul style="list-style-type: none"> <li>• 11-BG Series</li> </ul>	111881
	11-G484-30	3 NO	Yes	<ul style="list-style-type: none"> <li>• 11-BF Series</li> </ul>	

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.



Models	Voltage	Used With	Data Sheet	
	11-BGX77-048	48V dc	<ul style="list-style-type: none"> <li>• 11-BG00-31-D024</li> </ul>	111881
	11-BGX77-240	125-240V ac	<ul style="list-style-type: none"> <li>• 11-BG00-31-A12060</li> </ul>	
	11-G318-48	48V dc	<ul style="list-style-type: none"> <li>• 11-BF1C01-024</li> </ul>	
	11-G477-240	125-240V ac	<ul style="list-style-type: none"> <li>• 11-BF1601-12060</li> </ul>	

NC = Normally Closed, NO = Normally Open

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### EZ-LIGHT™ Smart Indicator Lights

- Indicates the status of a machine or process, using a solid or flashing color light in a sealed housing.
- Replaces panel indicators and post and stack lights with a single, compact unit.




Model	Construction	Connector*	LED Function	Inputs	Used With	Data Sheet
 <b>M18RGX8PQ8</b>	18 mm Threaded barrel Nickel-plated brass	8-pin Euro QD	Red/Green indication follows OSSD output of the EZ-SCREEN receiver	PNP	• EZ-SCREEN	121901
 <b>T18RGX8PQ8</b>	18 mm T-style Right-angle Thermoplastic polyester			PNP		
 <b>T30RGX8PQ8</b>	30 mm T-style Right-angle Thermoplastic polyester			PNP		

\* A mating cable is required (see page 180). Typically a CSB splitter and DEE2R-8..D cables are used.

### Indicator Lamps


- Indicates whether a switch is open or closed.
- Available in red or green, 120V ac or 24V ac/dc.

Model	Supply Voltage	Lamp Color	Thread	Used With	Data Sheet
	<b>SI-PL3T-R</b>	24V ac/dc	M20 x 1.5	<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-QM90 Rope Pull Switch</li> </ul>	—
	<b>SI-PL3A-R</b>	120V ac			
	<b>SI-PL3T-G</b>	24V ac/dc	Green		
	<b>SI-PL3A-G</b>	120V ac			

### Muting Lamps

- Indicates when muting is active for optical safety features with a muting module.
- Uses a solid-state LEDs light, eliminating the need to replace bulbs.



Model	Supply Voltage	Lamp Color	Overall Height	Used with	Data Sheet
	24V ac/dc	Amber	383 mm	<ul style="list-style-type: none"> <li>• PICO-GUARD</li> <li>• MICRO-SCREEN</li> <li>• MINI-SCREEN</li> <li>• EZ-SCREEN</li> <li>• Muting Modules</li> </ul>	62097
		White (clear)			

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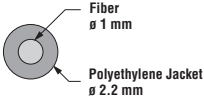
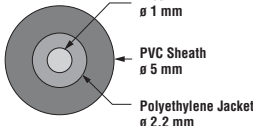
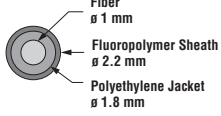
HARSH DUTY SOLUTIONS

REPLACEMENT PARTS

ACCESSORIES

### PICO-GUARD™ Plastic Fiber Optics

Plastic optical fiber for use with Banner PICO-GUARD optical elements is available in bulk form (to be cut to length in the field) or precut lengths with polished ends for maximum excess gain.

Length	Standard Polyethylene Jacket	PVC Sheath	Fluoropolymer Sheath	
<b>Dimensions</b>				
<b>Bulk</b>	9 m	PIU430U	PIU430UXP	PIU430UXT
	18 m	PIU460U	PIU460UXP	PIU460UXT
	30.5 m	PIU4100U	PIU4100UXP	PIU4100UXT
	61 m	PIU4200U	PIU4200UXP	PIU4200UXT
	100.5 m	PIU4330U	PIU4330UXP	PIU4330UXT
	152.5 m	PIU4500U	PIU4500UXP	PIU4500UXT
	488 m	PIU41600U	PIU41600UXP	PIU41600UXT
<b>Cut Lengths with Polished Ends</b>	0.3 m	PWS43P	PWXP43P	PWXT43P
	0.5 m	PWS45P	PWXP45P	PWXT45P
	0.7 m	PWS47P	PWXP47P	PWXT47P
	1 m	PWS410P	PWXP410P	PWXT410P
	1.5 m	PWS415P	PWXP415P	PWXT415P
	2 m	PWS420P	PWXP420P	PWXT420P
	2.5 m	PWS425P	PWXP425P	PWXT425P
	3 m	PWS430P	PWXP430P	PWXT430P
	3.5 m	PWS435P	PWXP435P	PWXT435P
	4 m	PWS440P	PWXP440P	PWXT440P
	4.5 m	PWS445P	PWXP445P	PWXT445P
	5 m	PWS450P	PWXP450P	PWXT450P
	6 m	PWS460P	PWXP460P	PWXT460P
	7 m	PWS470P	PWXP470P	PWXT470P
	8 m	PWS480P	PWXP480P	PWXT480P
	9 m	PWS490P	PWXP490P	PWXT490P
	10 m	PWS4100P	PWXP4100P	PWXT4100P
	11 m	PWS4110P	PWXP4110P	PWXT4110P
	12 m	PWS4120P	PWXP4120P	PWXT4120P
	13 m	PWS4130P	PWXP4130P	PWXT4130P
	14 m	PWS4140P	PWXP4140P	PWXT4140P
15 m	PWS4150P	PWXP4150P	PWXT4150P	
20 m	PWS4200P	PWXP4200P	PWXT4200P	
25 m	PWS4250P	PWXP4250P	PWXT4250P	
30 m	PWS4300P	PWXP4300P	PWXT4300P	

CABLES & WIRING

BRACKETS

CORNER MIRRORS

STANDS

HARSH DUTY SOLUTIONS




REPLACEMENT PARTS

ACCESSORIES

## PICO-GUARD™ Plastic Fiber Optic Accessories

Fiber optic devices used with PICO-GUARD optical elements improve performance and simplify installation.



	Model	Description	Data Sheet
Attenuator	 SFA-FA	<ul style="list-style-type: none"> <li>Reduces excess gain in short-run applications</li> <li>Uses Banner 2.2 mm OD plastic fiber optic cable (1 mm core)</li> <li>Made of impact-resistant polycarbonate plastic</li> <li>Rated IEC IP67</li> </ul>	109910
Splice	 SFA-FS	<ul style="list-style-type: none"> <li>Provides easy connection of two fiber sections</li> <li>Simplifies connecting and disconnecting fibers</li> <li>Uses Banner 2.2 mm OD plastic fiber optic cable (1 mm core)</li> <li>Made of impact-resistant polycarbonate plastic</li> <li>Rated IEC IP67</li> </ul>	109910
Fiber Cutter	 PFC-2-25	<ul style="list-style-type: none"> <li>Uses Banner 2.2 mm OD diameter unterminated fiber optic cable (1 mm core)</li> <li>Contains 25 fiber cutters</li> </ul>	—

## PICO-GUARD™ Cable Glands and Conduits

Conduit and gland used with PICO-GUARD Grids provide MEK-resistant protection.

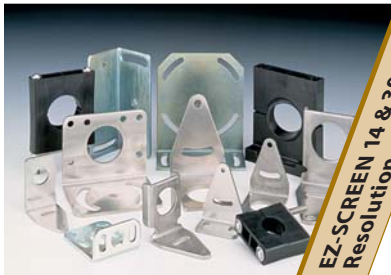
Model	Description	
SFA-FCC-008	2.4 m	Conduit <ul style="list-style-type: none"> <li>Made of flexible MEK-resistant polyamide</li> <li>Protects fiber</li> <li>Snaps into emitter/receiver</li> <li>Easily cuts to length</li> </ul>
SFA-FCC-015	4.5 m	
SFA-FCC-025	7.5 m	
SFA-FCC-050	15 m	
SFA-FCC-100	30 m	
SFA-FCC-CGM20	M20 Threads	Cable Gland <ul style="list-style-type: none"> <li>Use with MEK-resistant conduit</li> <li>Made of MEK resistant polyamide</li> <li>Attaches conduit to emitter/receiver and PICO-GUARD controller</li> </ul>

- CABLES & WIRING
- BRACKETS
- CORNER MIRRORS
- STANDS
- HARSH DUTY SOLUTIONS
- REPLACEMENT PARTS

ACCESSORIES



# Banner Bracket



EZ-SCREEN 14 & 30 mm Resolution  
 EZ-SCREEN Cascade  
 EZ-SCREEN Point  
 EZ-SCREEN Grid  
 PICO-GUARD 12 mm Point  
 PICO-GUARD 30 mm Point  
 PICO-GUARD Grid  
 MICRO-SCREEN Emitter/Receiver  
 MICRO-SCREEN Emitter/Box  
 MICRO-SCREEN Metal  
 MINI-SCREEN DIN Box Receiver  
 Heavy-Duty MINI-SCREEN Emitter/Receiver  
 MINI-SCREEN Metal Box  
 MINI-SCREEN DIN Box  
 EZ-SCREEN Type 2

Page References	21	25	28	28	38	38	37	42	45	46	58	63	64	65	78
DIN-35-..															
192 EZA-MBK-1															
EZA-MBK-11															
EZA-MBK-12															
193 EZA-MBK-2															
EZA-MBK-20															
EZA-MBK-21															
194 EZA-MBK-3															
EZA-MBK-4															
EZA-MBK-5															
195 EZA-MBK-9															
MSAMB															
MSMB-1															
196 MSMB-2															
MSMB-3															
MSMB-MSM-45															
197 MSMMB															
MSVM-1															
MSMV10-8															
SFA-IMB1															
198 SFA-IMB2															
SMA-MBK-1															
SMB12MM															
199 SMB1812SF															
SMB30A															
SMB30MM															
200 SMB30SC															
SMBAMS30P															
SMBAMS30RA															
201 SMBAMSBRA															
SMBR55F01															
SMBR55F02															
202 SMBR55FRA															
USCMB-..															
USMB-1															
203 USMB-6															
USMB-8															

CABLES & WIRING

BRACKETS

CORNER MIRRORS

STANDS

HARSH DUTY SOLUTIONS

REPLACEMENT PARTS

ACCESSORIES

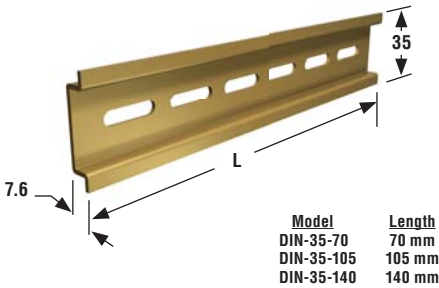




DIN-35-..

DIN rail is available in 70, 105 and 140 mm lengths, to hold one, two, or three modules.

Dimensions



Hole center spacing in mm: 35.1  
Hole size in mm: 25.4 x 5.3

Used With

MICRO-SCREEN DIN Modules



Two-Hand Control Modules



MINI-SCREEN DIN Modules



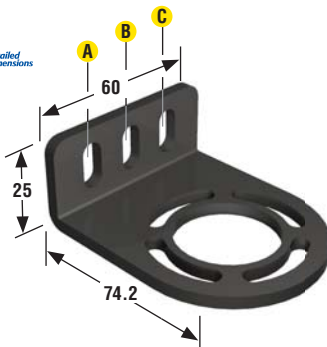
Safety Modules



EZA-MBK-1

Two-bracket kit contains a replacement for the brackets that come with the emitter/receiver and includes mounting hardware. Bracket is made of cold-rolled steel with a black corrosion-resistant zinc chromate finish.

Dimensions



Hole center spacing in mm: A to B = 15.8, A to C = 31.5  
Hole size in mm: 15.0 x 7.0

Used With

EZ-SCREEN Point & Grid Flanges Out



Flanges In



Heavy-Duty MINI-SCREEN Flanges Out



Flanges In



PICO-GUARD Grid Flanges Out



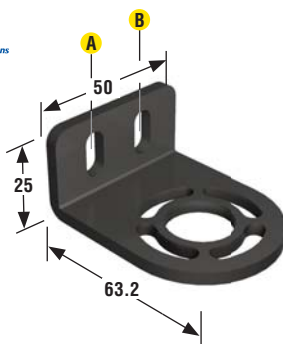
Flanges Out



EZA-MBK-11

Kit contains two end-cap brackets to replace the brackets that come with the emitter/receiver and includes mounting hardware. Brackets are made of cold-rolled steel with a black corrosion-resistant zinc chromate finish.

Dimensions



Hole center spacing in mm: A to B = 20  
Hole size in mm: 15.0 x 7.0

Used With

EZ-SCREEN 14 & 30 mm Resolution

Flanges Out



Flanges In

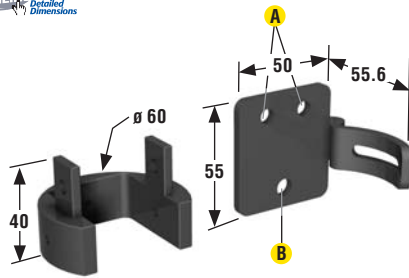


NOTE: All dimensions in millimeters unless otherwise stated.

**EZA-MBK-12**

Kit contains two-piece center bracket to replace the support bracket that comes with the emitter/receiver and includes mounting hardware. Bracket is made of cold-rolled steel with a black corrosion-resistant zinc chromate finish.

Dimensions



Hole center spacing in mm: **A** to **A** = 20, **A** to **B** = 37.4  
 Hole size in mm: **A** = ø 7.0, **B** = ø 8.3

Used With

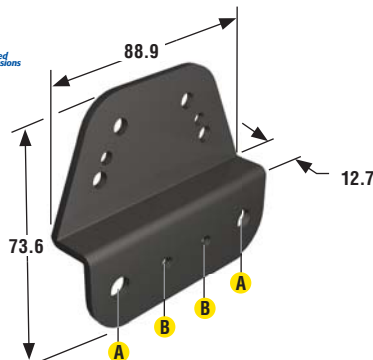
EZ-SCREEN 14 & 30 mm Resolution



**EZA-MBK-2**

Kit contains two adapter brackets for attaching the standard EZA-MBK-1 bracket (included with the sensor) to any MSA series stand.

Dimensions



Hole center spacing in mm: **A** to **A** = 63.9, **B** to **B** = 19.9,  
**A** to **B** = 22  
 Hole size in mm: **A** = ø 8.3, **B** = ø 4.78

Used With

EZ-SCREEN 14 & 30 mm Resolution  
 Flanges Out Flanges In



Heavy-Duty MINI-SCREEN  
 Flanges Out Flanges In



PICO-GUARD Grid  
 Flanges Out Flanges In



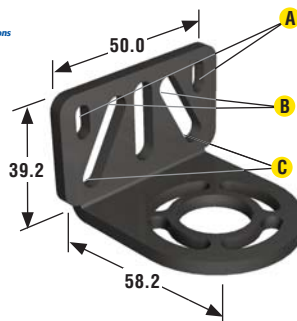
MSA Stands



**EZA-MBK-20**

Universal adapter bracket attaches emitters and receivers to engineered/slotted aluminum framing such as 80/20™ and Unistrut™. It retrofits the MINI-SCREEN, MICRO-SCREEN and MACHINE-GUARD.

Dimensions



Hole center spacing in mm: **A** to **A** = 44.4, **B** to **B** = 20.0,  
**C** to **C** = 40.0  
 Hole size in mm: **A** = 10.2 x 5.4, **B** = 27.6 x 7.0, **C** = 25.0 x 7.0

Used With

EZ-SCREEN 14 & 30 mm Resolution

Flanges Out



Flanges In



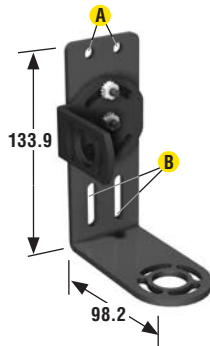
NOTE: All dimensions in millimeters unless otherwise stated.

- CABLES & WIRING
- BRACKETS
- CORNER MIRRORS
- STANDS
- HARSH DUTY SOLUTIONS
- REPLACEMENT PARTS

**EZA-MBK-21**

Kit contains four brackets for one side of an L-mounting, allowing four mounting variations. Inclined installations of 0° to 30° or 0° to 45° are possible. Use for mounting cascading light screens at right angles (L-configuration).

Dimensions



Hole center spacing in mm: **A** to **A**, **B** to **B** = 20;  
**A** to **B** = 101.4  
 Hole size in mm: **A** =  $\varnothing$  7.3, **B** = 30.0 x 7.3

Used With

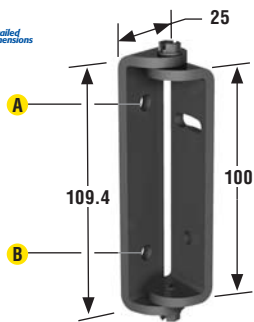
EZ-SCREEN 14 & 30 mm Resolution



**EZA-MBK-3**

Side-swivel bracket kit contains a two-part bracket and hardware. Bracket is made of cold-rolled steel with a black corrosion-resistant zinc chromate finish. Use one kit for the EZ-SCREEN Point and two for the EZ-SCREEN and PICO-GUARD Grid or MINI-SCREEN.

Dimensions



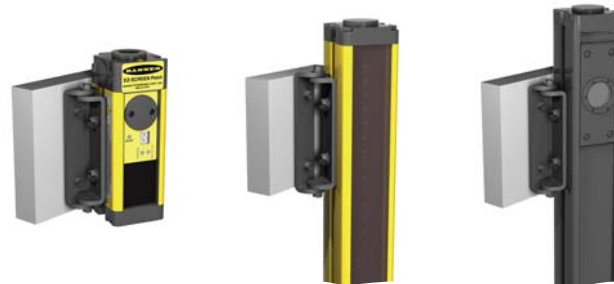
Hole center spacing in mm: **A** to **B** = 65  
 Hole size in mm:  $\varnothing$  7.0  
 Range of rotation: 180°

Used With

EZ-SCREEN Point & Grid

Heavy-Duty MINI-SCREEN

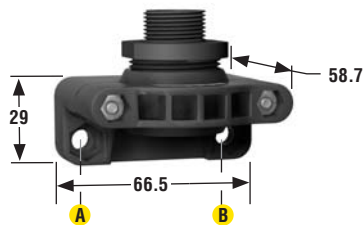
PICO-GUARD Grid



**EZA-MBK-4**

Top-mounting swivel bracket kit allows the sensor to tilt up to 45° in any direction and is made of black reinforced thermoplastic polyester. Kit includes a model SMB30SC swivel bracket and a threaded adapter plate.

Dimensions



Hole center spacing in mm: **A** to **B** = 50.8  
 Hole size in mm:  $\varnothing$  7.0

Used With

EZ-SCREEN Point



CABLES & WIRING

BRACKETS

CORNER MIRRORS

STANDS

HARSH DUTY SOLUTIONS

REPLACEMENT PARTS

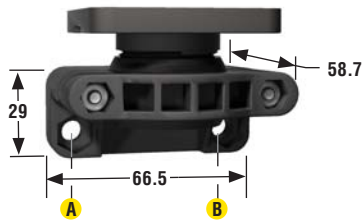
ACCESSORIES

NOTE: All dimensions in millimeters unless otherwise stated.

**EZA-MBK-5**

Bottom-mounting swivel bracket kit allows the sensor to tilt up to 45° in any direction and is made of black reinforced thermoplastic polyester. Kit includes a model SMB30SC swivel bracket and a threaded adapter.

**Dimensions**



Hole center spacing in mm: **A** to **B** = 50.8  
Hole size in mm:  $\phi$  7.0

**Used With**

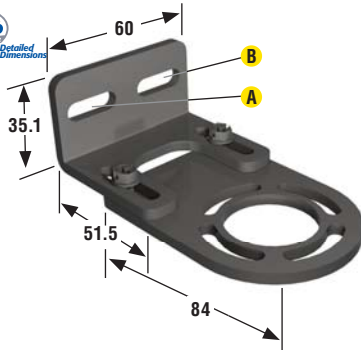
**EZ-SCREEN Point**



**EZA-MBK-9**

Slots in two-bracket kit provide 30 mm range for sensors. Brackets are made of cold-rolled steel with a black corrosion-resistant zinc chromate finish.

**Dimensions**



Hole center spacing in mm: **A** to **B** = 30.8  
Hole size in mm: 21.0 x 7.0

**Used With**

**EZ-SCREEN Grid**  
Flanges Out



Flanges In



**Heavy-Duty MINI-SCREEN**  
Flanges Out



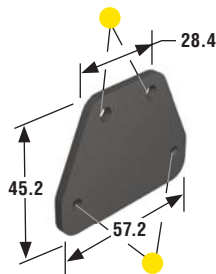
**PICO-GUARD Grid**  
Flanges Out



**MSAMB**

Kit contains two replacement brackets that come with MSA Series stands and includes mounting hardware. Brackets are made of cold-rolled steel with a black corrosion-resistant zinc chromate finish.

**Dimensions**



Hole center spacing in mm:  $\bullet$  to  $\bullet$  = 20,  $\bullet$  to  $\bullet$  = 44.3,  
 $\bullet$  to  $\bullet$  = 28.5  
Hole size in mm:  $\bullet$  =  $\phi$  5.3,  $\bullet$  =  $\phi$  3.9

**Used With**

**MINI-SCREEN**



NOTE: All dimensions in millimeters unless otherwise stated.

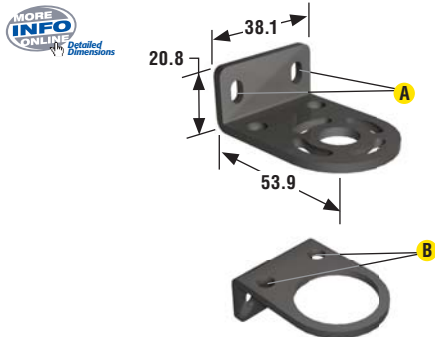
- CABLES & WIRING
- BRACKETS
- CORNER MIRRORS
- STANDS
- HARSH DUTY SOLUTIONS
- REPLACEMENT PARTS



**MSMB-1**

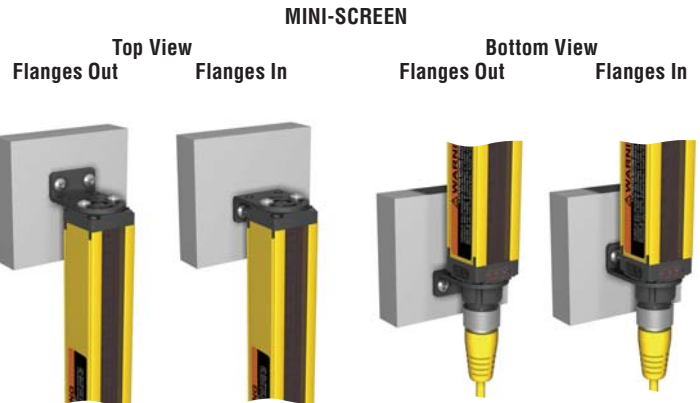
Two-bracket kit anchors top and bottom of sensor; bottom bracket allows connection of QD cable. Brackets are made of cold-rolled steel with a black corrosion-resistant zinc chromate finish.

Dimensions



Hole center spacing in mm: **A** to **A**, **B** to **B** = 25.4  
 Hole size in mm: **A** 5.1 x 4.8, **B** ø 6.8

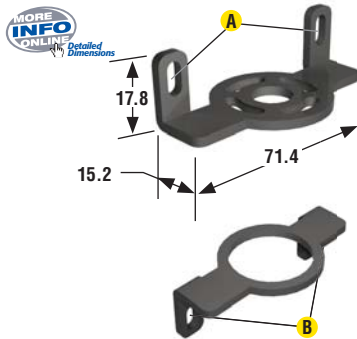
Used With



**MSMB-2**

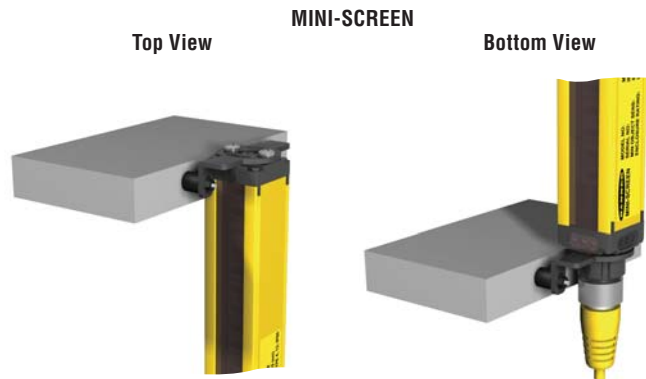
Low-profile two-bracket kit anchors top and bottom of sensor with vibration mounts (MSVM...); bottom bracket allows connection of QD cable. Brackets are made of 11-gauge cold-rolled steel with a black corrosion-resistant zinc chromate finish.

Dimensions



Hole center spacing in mm: **A** to **A** & **B** to **B** = 60.9  
 Hole size in mm: 10.0 x 4.8

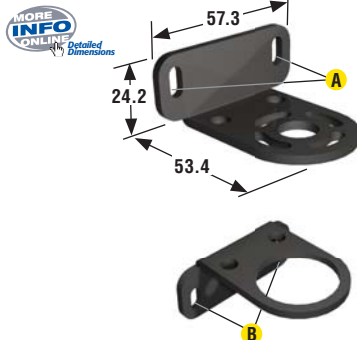
Used With



**MSMB-3**

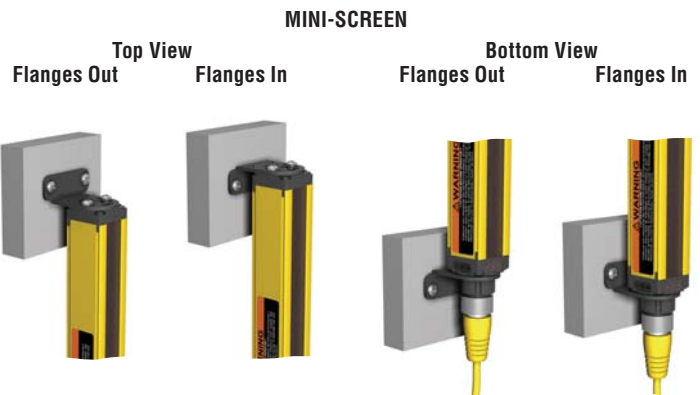
Two-bracket kit contains a replacement for the brackets that come with the emitter/receiver. Brackets are made of 11-gauge cold-rolled steel with a black corrosion-resistant zinc chromate finish and four self-locking nuts.

Dimensions



Hole center spacing in mm: **A** to **A** & **B** to **B** = 44.5  
 Hole size in mm: 10.2 x 4.8

Used With

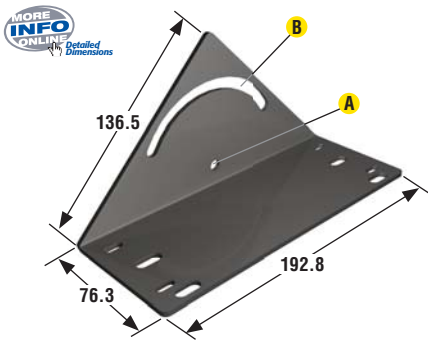


NOTE: All dimensions in millimeters unless otherwise stated.

**MSMB-MSM-45**

Bracket is a replacement for the bracket that comes with the mirror. Mounting hardware is included.

**Dimensions**



Hole center spacing in mm: **A** to **B** = 50.8  
 Hole size in mm: **A** =  $\varnothing$  7.0, **B** = 87.7 x 7.0

**Used With**

**MSM4A Mirrors**

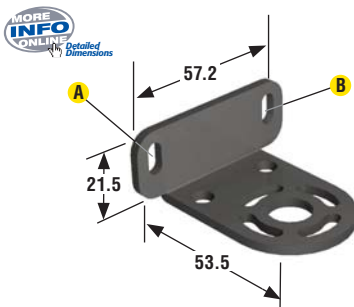


**Note:** For kit containing a bracket and MSM4A mirror, order model number **MSA-MBM-K45**.

**MSMMB**

Two-bracket kit contains a replacement for brackets that come with the MSM mirrors and includes mounting hardware. Brackets are made of cold-rolled steel with a black corrosion-resistant zinc chromate finish.

**Dimensions**



Hole center spacing in mm: **A** to **B** = 45.0  
 Hole size in mm: 10.0 x 4.7

**Used With**

**MSM Mirrors**

**Flanges Out**



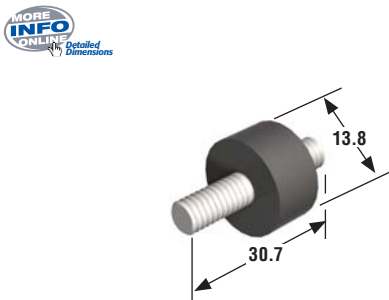
**Flanges In**



**MSVM..**

Rubber spacer reduces vibration when installed between the mounting surface and a bracket. Packet contains two spacers.

**Dimensions**



**Used With**

**MINI-SCREEN**



**MSVM-1** = for one emitter/receiver pair with 4 mm hardware (Qty 4).  
**MSVM10-8** = for two emitter/receiver pairs with 10-32" hardware (Qty 8).

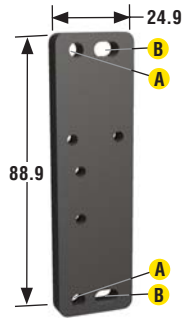
NOTE: All dimensions in millimeters unless otherwise stated.

- CABLES & WIRING
- BRACKETS
- CORNER MIRRORS
- STANDS
- HARSH DUTY SOLUTIONS
- REPLACEMENT PARTS

**SFA-IMB1**

Optional retrofit bracket is designed to replace SI-MAG1.. Magnetic Interlock switches with PICO-GUARD switches. It is made of black reinforced thermoplastic polyester.

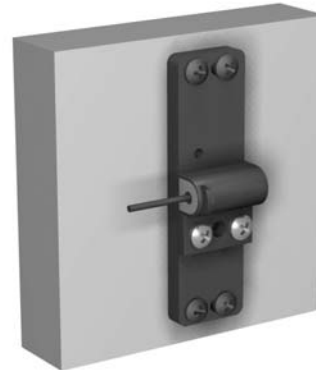
Dimensions



Hole center spacing in mm: A to A, B to B = 78; A to B = 10.0  
 Hole size in mm: A =  $\varnothing$  4.3, B = 8.0 x 4.3

Used With

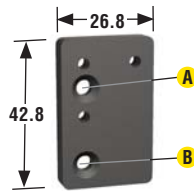
PICO-GUARD Switches



**SFA-IMB2**

Optional retrofit bracket is designed to replace SI-MAG2.. Magnetic Interlock switches with PICO-GUARD switches. It is made of black reinforced thermoplastic polyester.

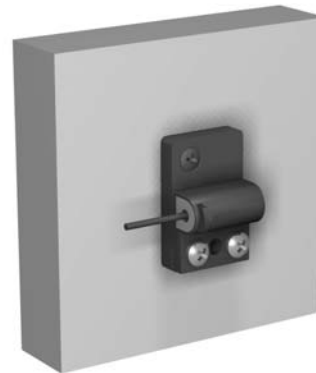
Dimensions



Hole center spacing in mm: A to B = 21.3  
 Hole size in mm:  $\varnothing$  4.3

Used With

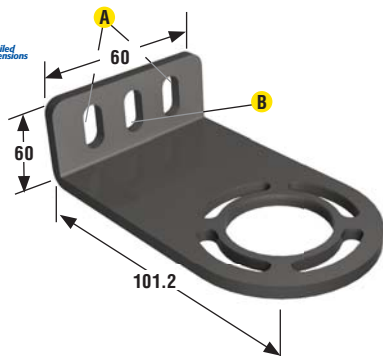
PICO-GUARD Switches



**SMA-MBK-1**

Kit contains two replacement brackets for one SSM Series mirror and mounting hardware. Brackets are made of cold-rolled steel with a black corrosion-resistant zinc chromate finish.

Dimensions



Hole center spacing in mm: A to A = 31.5, A to B = 15.7  
 Hole size in mm: 15.0 x 7.0

Used With

Flanges Out

SSM Mirrors

Flanges In



CABLES & WIRING

BRACKETS

CORNER MIRRORS

STANDS

HARSH DUTY SOLUTIONS

REPLACEMENT PARTS

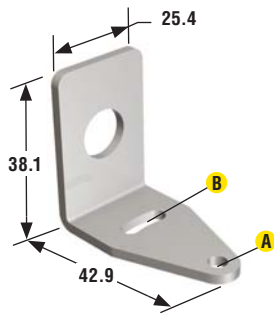
ACCESSORIES

NOTE: All dimensions in millimeters unless otherwise stated.

**SMB12MM**

Twelve-gauge stainless-steel mounting bracket accommodates a 12 mm barrel-style sensor and allows ± 15° of lateral movement.

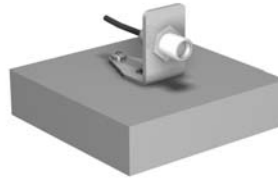
Dimensions



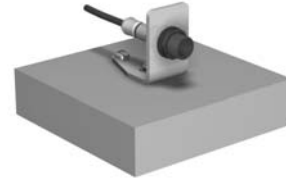
Hole center spacing in mm: **A** to **B** = 40  
 Hole size in mm: **A** = ø 6.3, **B** = 13.1 x 6.3

Used With

PICO-GUARD 12 mm Switches



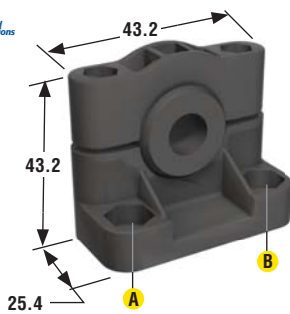
PICO-GUARD 12 mm Points



**SMB1812SF**

Swivel bracket of black reinforced thermoplastic polyester accommodates a 12 mm barrel-style sensor and allows the sensor to tilt up to 45° in any direction. Stainless steel locking hardware is included.

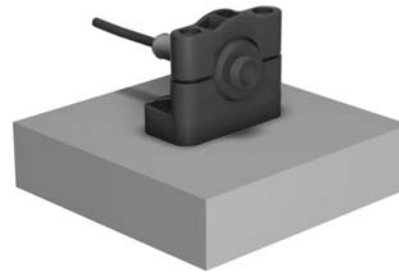
Dimensions



Hole center spacing in mm: **A** to **B** = 36.1  
 Hole size in mm: ø 5.0

Used With

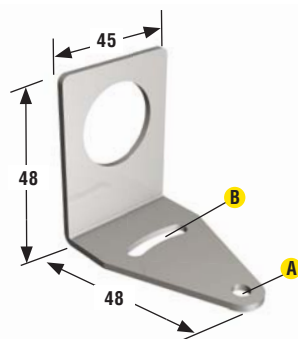
PICO-GUARD 12 mm Points



**SMB30A**

Twelve-gauge stainless-steel mounting bracket accommodates 30 mm barrel-style sensor and allows ± 15° of lateral movement.

Dimensions



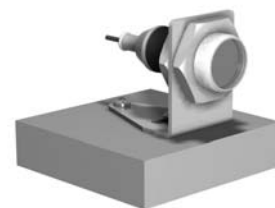
Hole center spacing in mm: **A** to **B** = 40  
 Hole size in mm: **A** = ø 6.3, **B** = 27.3 x 6.3

Used With

STB/OTB



PICO-GUARD 30 mm Points



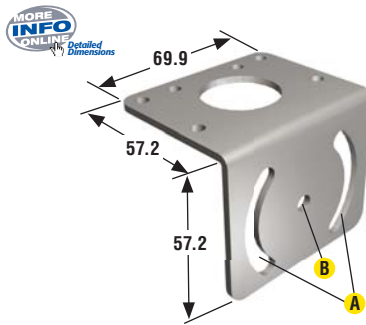
NOTE: All dimensions in millimeters unless otherwise stated.

- CABLES & WIRING
- BRACKETS
- CORNER MIRRORS
- STANDS
- HARSH DUTY SOLUTIONS
- REPLACEMENT PARTS

**SMB30MM**

Twelve-gauge stainless-steel mounting bracket accommodates 30 mm barrel-style sensor and allows up to 90° of lateral movement, depending on spacing of mounting screws.

Dimensions



Hole center spacing in mm: **A** to **A** = 51.0, **A** to **B** = 25.4  
 Hole size in mm: **A** = 42.6 x 7.0, **B** =  $\varnothing$  6.3

Used With

STB/OTB



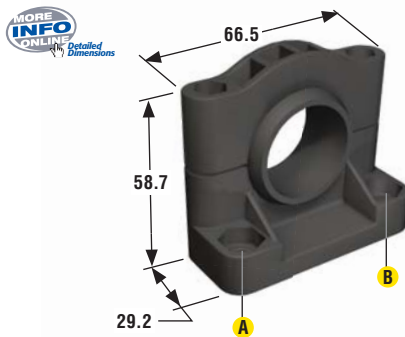
PICO-GUARD 30 mm Points



**SMB30SC**

Swivel bracket of black reinforced thermoplastic polyester accommodates a 30 mm barrel-style sensor and allows the sensor to tilt up to 45° in any direction. Stainless steel locking hardware is included.

Dimensions



Hole center spacing in mm: **A** to **B** = 50.8  
 Hole size in mm:  $\varnothing$  7.0

Used With

STB/OTB



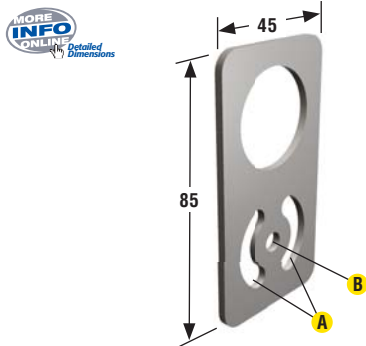
PICO-GUARD 30 mm Points



**SMBAMS30P**

Twelve-gauge stainless-steel mounting bracket allows more than 90° of rotation. Use for mounting a 30 mm sensor on the edge of a surface.

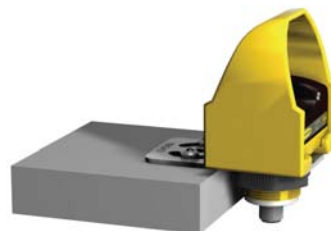
Dimensions



Hole center spacing in mm: **A** to **A** = 26.0, **A** to **B** = 13.0  
 Hole size in mm: **A** = 26.8 x 7.0, **B** =  $\varnothing$  6.3

Used With

STB/OTB



PICO-GUARD 30 mm Points

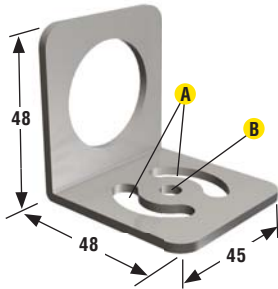


NOTE: All dimensions in millimeters unless otherwise stated.

### SMBAMS30RA

Twelve-gauge stainless-steel right-angle mounting bracket accommodates a 30 mm sensor with QD and allows more than 90° of rotation.

#### Dimensions



Hole center spacing in mm: **A** to **A** = 25.3, **A** to **B** = 12.8  
 Hole size in mm: **A** = 26.8 x 7.0, **B** =  $\varnothing$  6.3

#### Used With

STB/OTB



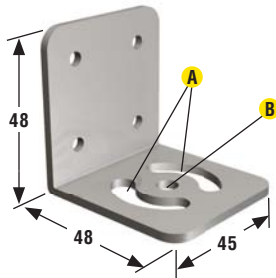
PICO-GUARD 30 mm Points



### SMBAMSBRA

The four holes in this twelve-gauge stainless-steel right-angle base bracket fit the slots in SMBAMS Series brackets. For additional articulation, combine multiple SMBAMS.. brackets.

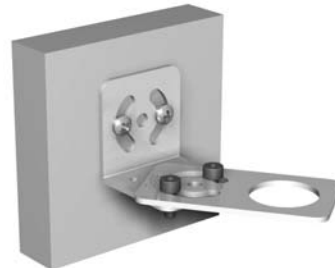
#### Dimensions



Hole center spacing in mm: **A** to **A** = 25.3, **A** to **B** = 12.8  
 Hole size in mm: **A** = 26.8 x 7.0, **B** =  $\varnothing$  6.3

#### Used With

SMBAMS30P Bracket



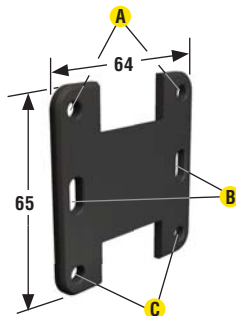
SMBAMS30RA Bracket



### SMBR55F01

Flat-mounting bracket is a replacement for the bracket that comes with a remote display and is made of black reinforced thermoplastic polyester.

#### Dimensions



Hole center spacing in mm: **A** to **A**, **B** to **B**, **C** to **C** = 50.8;  
**A** to **B**, **B** to **C** = 25.3  
 Hole size in mm: **A**, **C** =  $\varnothing$  5.6, **B** = 11.3 x 5.6

#### Used With

PICO-GUARD SFA-RD Remote Display



NOTE: All dimensions in millimeters unless otherwise stated.

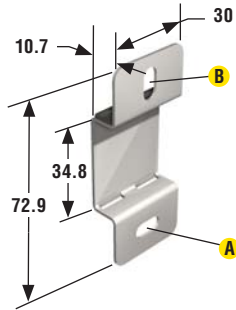
- CABLES & WIRING
- BRACKETS
- CORNER MIRRORS
- STANDS
- HARSH DUTY SOLUTIONS
- REPLACEMENT PARTS

ACCESSORIES

**SMBR55F02**

Bracket mounts to T-slotted or narrow flat surfaces and is made of 19-gauge stainless steel.

Dimensions



Hole center spacing in mm: **A** to **B** = 50.3  
Hole size in mm: 11.2 x 5.6

Used With

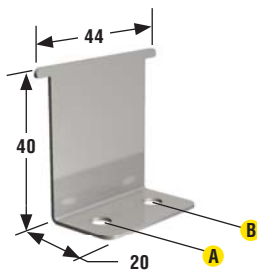
PICO-GUARD SFA-RD Remote Display



**SMBR55FRA**

Bracket attaches to the side of the sensor and is made from 19-gauge stainless steel.

Dimensions



Hole center spacing in mm: **A** to **B** = 20  
Hole size in mm:  $\varnothing$  5.4

Used With

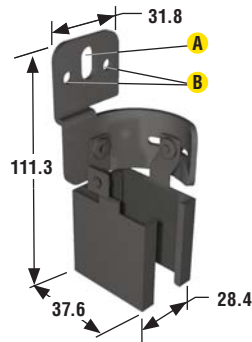
PICO-GUARD SFA-RD Remote Display



**USCMB-..**

Bracket replaces center bracket and is made of cold-rolled steel with a black corrosion-resistant zinc chromate finish. Mounting hardware is included. USCMB-1 fits emitters and receivers up to 900 mm long, and the two-bracket USCMB-2 fits emitters and receivers more than 900 mm long.

Dimensions



Hole center spacing in mm: **A** to **A** = 19.9, **A** to **B** = 10.0  
Hole size in mm: **A** = 12.2 x 7.11, **B** =  $\varnothing$  4.8

Used With

MICRO-SCREEN

EZ-SCREEN Type 2



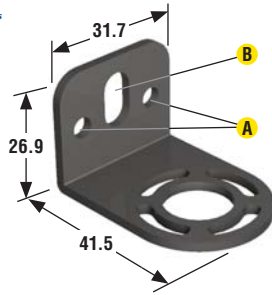
NOTE: All dimensions in millimeters unless otherwise stated.



**USMB-1**

Two-bracket kit contains a replacement for the brackets that come with the emitter/receiver. Brackets are made of cold-rolled steel with a black corrosion-resistant zinc chromate finish.

Dimensions



Hole center spacing in mm: A to A = 20.0, A to B = 10.0  
Hole size in mm: A =  $\varnothing$  4.7, B = 12.7 x 7.0

Used With

MICRO-SCREEN

Flanges Out



Flanges In



EZ-SCREEN Type 2

Flanges Out



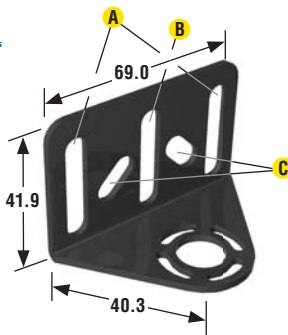
Flanges In



**USMB-6**

Universal-mounting surface kit contains two brackets made of cold-rolled 13-gauge steel with a black corrosion-resistant zinc chromate finish. Use one per emitter or receiver.

Dimensions



Hole center spacing in mm: A to A = 52.1, A to B = 26, C to C = 30.6  
Hole size in mm: A, B = 25.4 x 7.1, C = 15.5 x 7.0

Used With

MICRO-SCREEN

Flanges Out



Flanges In



EZ-SCREEN Type 2

Flanges Out



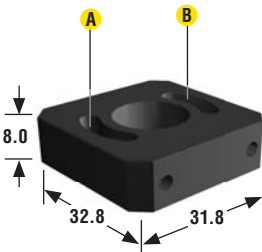
Flanges In



**USMB-8**

Low-profile bracket is made of black anodized aluminum and allows  $\pm 30^\circ$  of movement. Use one per emitter or receiver. Bracket does not include two 2 x M4 screws required for through-hole mounting.

Dimensions



Hole center spacing in mm: A to B = 22.7  
Hole size in mm: 15.0 x 3.5

Used With

MICRO-SCREEN



EZ-SCREEN Type 2



NOTE: All dimensions in millimeters unless otherwise stated.

- CABLES & WIRING
  - BRACKETS
  - CORNER MIRRORS
  - STANDS
  - HARSH DUTY SOLUTIONS
  - REPLACEMENT PARTS
- ACCESSORIES**

# Corner Mirrors for Guarding Applications

- Mirrors expand guarding to multiple sides of an area using one emitter/receiver pair.
- Glass or stainless steel models are available.
- Mirrors mount easily to MSA Series stands or other surfaces, using included brackets and hardware.
- Unique end-cap design allows mirrors to rotate to  $\pm 45^\circ$  after installation.



## LAT-1 Laser Alignment Tool

- Totally self-contained visible-beam laser tool simplifies the critical mechanical and optical alignment of emitters, receivers and mirrors.
- Use to align emitter/receiver pairs, especially in applications that include long distances or corner mirrors.



CABLES & WIRING

BRACKETS

CORNER MIRRORS

STANDS

HARSH DUTY SOLUTIONS

REPLACEMENT PARTS

ACCESSORIES



MSM Glass Models. . . . . Page 205



SSM Stainless Steel Models. . . . . 206

Alignment Tools . . . . . 208

### MSM Corner Mirrors

- Compact for light-duty applications
- Available in 12 lengths
- Decreases range by 8%
- Rated 85% efficiency



**MSM Corner Mirrors**  
(shown with standard brackets and MSAMB\*\* adapter bracket mounted on MSA stand)

MSM Corner Mirrors				
Mirror Models	Reflective Area (Y)	Mounting Height (L1)	Mirror Height (L2)*	Data Sheet
MSM4A	165 mm	221 mm	191 mm	43685
MSM8A	267 mm	323 mm	292 mm	
MSM12A	356 mm	411 mm	381 mm	
MSM16A	457 mm	513 mm	483 mm	
MSM20A	559 mm	615 mm	584 mm	
MSM24A	660 mm	716 mm	686 mm	
MSM28A	762 mm	818 mm	787 mm	
MSM32A	864 mm	919 mm	889 mm	
MSM36A	965 mm	1021 mm	991 mm	
MSM40A	1067 mm	1123 mm	1092 mm	
MSM44A	1168 mm	1224 mm	1194 mm	
MSM48A	1270 mm	1326 mm	1295 mm	

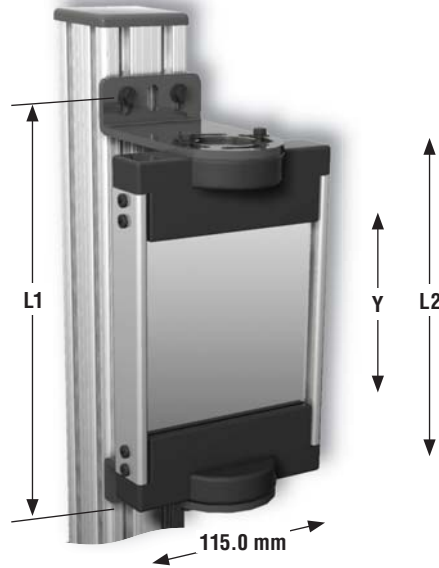
\* The mounting brackets may be inverted from the positions shown (flanges pointing “inward” instead of “outward,” as shown). When this is done, dimension L2 decreases by 66 mm.  
 \*\* MSAMB adapter bracket kit included with each MSA stand.

- CABLES & WIRING
- BRACKETS
- CORNER MIRRORS**
- STANDS
- HARSH DUTY SOLUTIONS
- REPLACEMENT PARTS

ACCESSORIES

### SSM 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



**SSM and SSM-S Corner Mirrors**  
(shown with standard brackets and EZA-MBK-2\*\* adapter bracket mounted on MSA stand)

### SSM Glass Corner Mirrors



Mirror Models	Reflective Area (Y)	Mounting Height (L1)	Mirror Height (L2)*	Data Sheet
SSM-100	100 mm	211 mm	178 mm	61934
SSM-150	150 mm	261 mm	228 mm	
SSM-200	200 mm	311 mm	278 mm	
SSM-250	250 mm	361 mm	328 mm	
SSM-375	375 mm	486 mm	453 mm	
SSM-475	475 mm	586 mm	553 mm	
SSM-550	550 mm	661 mm	628 mm	
SSM-675	675 mm	786 mm	753 mm	
SSM-825	825 mm	936 mm	903 mm	
SSM-875	875 mm	986 mm	953 mm	
SSM-975	975 mm	1086 mm	1053 mm	
SSM-1100	1100 mm	1211 mm	1178 mm	
SSM-1175	1175 mm	1286 mm	1253 mm	
SSM-1275	1275 mm	1386 mm	1353 mm	
SSM-1400	1400 mm	1511 mm	1478 mm	
SSM-1475	1475 mm	1586 mm	1553 mm	
SSM-1550	1550 mm	1661 mm	1628 mm	
SSM-1675	1675 mm	1786 mm	1753 mm	
SSM-1750	1750 mm	1861 mm	1828 mm	
SSM-1900	1900 mm	2011 mm	1978 mm	

\* The mounting brackets may be inverted from the positions shown (flanges pointing "inward" instead of "outward," as shown). When this is done, dimension L2 decreases by 66 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.

CABLES & WIRING

BRACKETS

CORNER MIRRORS

STANDS

HARSH DUTY SOLUTIONS

REPLACEMENT PARTS

ACCESSORIES

## SSM-S Stainless Steel Corner Mirrors



Mirror Model	Reflective Area (Y)	Mounting Height (L1)	Mirror Height (L2)*	Data Sheet
SSM-100-S	100 mm	211 mm	178 mm	67200
SSM-150-S	150 mm	261 mm	228 mm	
SSM-200-S	200 mm	311 mm	278 mm	
SSM-250-S	250 mm	361 mm	328 mm	
SSM-375-S	375 mm	486 mm	453 mm	
SSM-475-S	475 mm	586 mm	553 mm	
SSM-550-S	550 mm	661 mm	628 mm	
SSM-675-S	675 mm	786 mm	753 mm	
SSM-825-S	825 mm	936 mm	903 mm	
SSM-875-S	875 mm	986 mm	953 mm	
SSM-975-S	975 mm	1086 mm	1053 mm	
SSM-1100-S	1100 mm	1211 mm	1178 mm	
SSM-1175-S	1175 mm	1286 mm	1253 mm	
SSM-1275-S	1275 mm	1386 mm	1353 mm	
SSM-1400-S	1400 mm	1511 mm	1478 mm	
SSM-1475-S	1475 mm	1586 mm	1553 mm	
SSM-1550-S	1550 mm	1661 mm	1628 mm	
SSM-1675-S	1675 mm	1786 mm	1753 mm	
SSM-1750-S	1750 mm	1861 mm	1828 mm	
SSM-1900-S	1900 mm	2011 mm	1978 mm	

\* The mounting brackets may be inverted from the positions shown (flanges pointing "inward" instead of "outward," as shown). When this is done, dimension L2 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 30% per mirror.

CABLES &amp; WIRING

BRACKETS

CORNER MIRRORS

STANDS

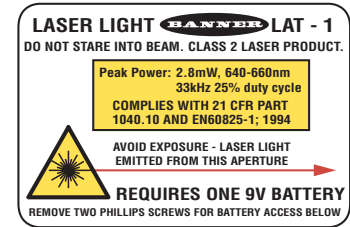
HARSH DUTY SOLUTIONS

REPLACEMENT PARTS

ACCESSORIES

## Laser Alignment Tools

- Simplifies the alignment of any emitter/receiver pair
- Available for EZ-SCREEN, PICO-GUARD, MICRO-SCREEN and MINI-SCREEN
- Includes a built-in bubble level
- Uses one 9-volt battery, which is included



LAT-1 Laser Alignment Tool (shown without clip)

### LAT-1 Laser Alignment Tools



Safety Light Screen Housing	LAT-1 with Clip Kit	Clip w/Target	Data Sheet
MINI-SCREEN®	LAT-1-MS	MSA-LAT-1	54599
MICRO-SCREEN®	LAT-1-US	USA-LAT-1	
Heavy-Duty MINI-SCREEN®, EZ-SCREEN® Grid or Points, PICO-GUARD™ Grids	LAT-1-HD	EZA-LAT-1	
EZ-SCREEN® 14 & 30 mm Resolution	LAT-1-SS	EZA-LAT-2	
EZ-SCREEN® Type 2	LAT-1-LS	LSA-LAT-1	
All of the Above	LAT-1	-	
PICO-GUARD® SFP12 Safety Points	LAT-1-SFP12	SFA-LAT-12	
PICO-GUARD® SFP30 Safety Points	LAT-1-SFP30	SFA-LAT-30	

### LAT-1 Laser Alignment Tool Specifications

<b>Supply Voltage and Current</b>	One standard 9V battery, included (replaceable); approximately 20 hours of continuous operation	
<b>Sensing Beam</b>	Class 2 laser, 640-660 nm visible red IEC <b>Pulse Width:</b> 7 microseconds <b>Rep rate:</b> 30 microseconds <b>Peak output power:</b> 2.8 mW, 33kHz, 25% duty cycle	
<b>Beam Size at Aperture</b>	Approximately 2 mm diameter	
<b>Beam Divergence</b>	± 1.0 milliradian within specified temperature range ± 0.5 milliradians at room temperature	
<b>Beam Placement</b>	Within ± 4 milliradians (approximately ±0.25 degrees) of parallel to front, back, top and bottom of housing	
<b>Construction</b>	Aluminum housing; black anodized finish Black polypropylene cover with flexible hinge for battery access	
<b>Environmental Rating</b>	NEMA 1; IEC IP50	
<b>Operating Conditions</b>	<b>Temperature:</b> 0° to +40° C	<b>Relative humidity:</b> 90% @ +50° C (non-condensing)
<b>Laser Classification</b>	U.S. Safety Standards 21 CFR 1040.10 European Standards EN 60825-1:1994	

CABLES & WIRING

BRACKETS

CORNER MIRRORS

STANDS

HARSH DUTY SOLUTIONS

REPLACEMENT PARTS

ACCESSORIES



# Stands

## For Optical Safety System Sensors or Corner Mirrors

- Free-standing supports for Banner optical safety system emitters, receivers, and corner mirrors.
- Strong and lightweight, the stand's square poles have dual channels to make it easy to adjust height accurately.
- The stand base is welded steel for maximum stability.



*MSA Stand shown with MSM corner mirror (sold on page 205).*

### Protective Mounting Stands

- Each stand shields two adjacent sides of an emitter or receiver; combine two stands to surround the entire sensor.
- Stand protects the sensor from impact and deflects flying material such as weld splatter.



*USA Protective Mounting Stands come with mounting base*

MSA Stands ..... Page 210  
 USA Protective Mounting Stands ..... 211  
 MSA Protective Mounting Stands ..... 211



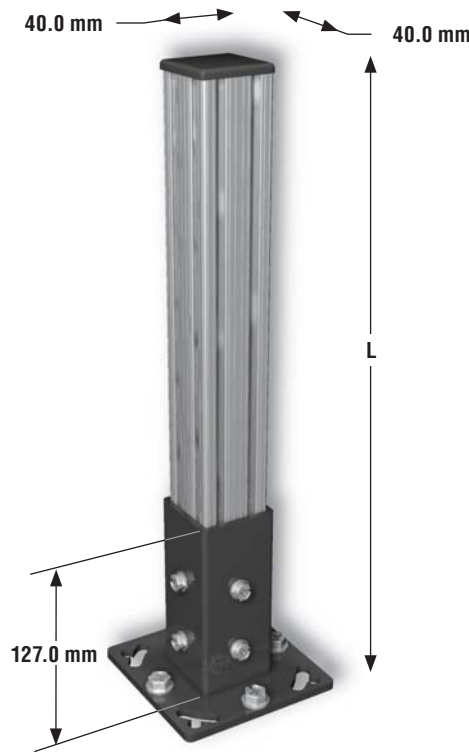
CABLES & WIRING  
 BRACKETS  
 CORNER MIRRORS  
**STANDS**  
 HARSH DUTY SOLUTIONS  
 REPLACEMENT PARTS

**ACCESSORIES**



### MSA Stands

- Supports emitter, receiver or corner mirror.
- Available without stand base, for attaching to a surface.
- Available in four heights.
- Assembles easily.
- Includes mounting hardware.
- Accepts attachment of USA Series protective mounting stands.



MSA Stand



### MSA Series Stands



Model*	Used With**	Stand Height (L)	Useable Stand Height	Data Sheet
MSA-S24-1	EZ-SCREEN®, MICRO-SCREEN®, MINI-SCREEN® and Mirrors.	610 mm	483 mm	43687
MSA-S42-1		1067 mm	940 mm	
MSA-S66-1		1676 mm	1549 mm	
MSA-S84-1		2132 mm	2006 mm	
SPKA-AG12-1	SFP12 Safety Points	1067 mm	940 mm	
SPKA-AG30-1	SFP30 Safety Points	1067 mm	940 mm	

\* 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.

CABLES & WIRING

BRACKETS

CORNER MIRRORS

STANDS

HARSH DUTY SOLUTIONS

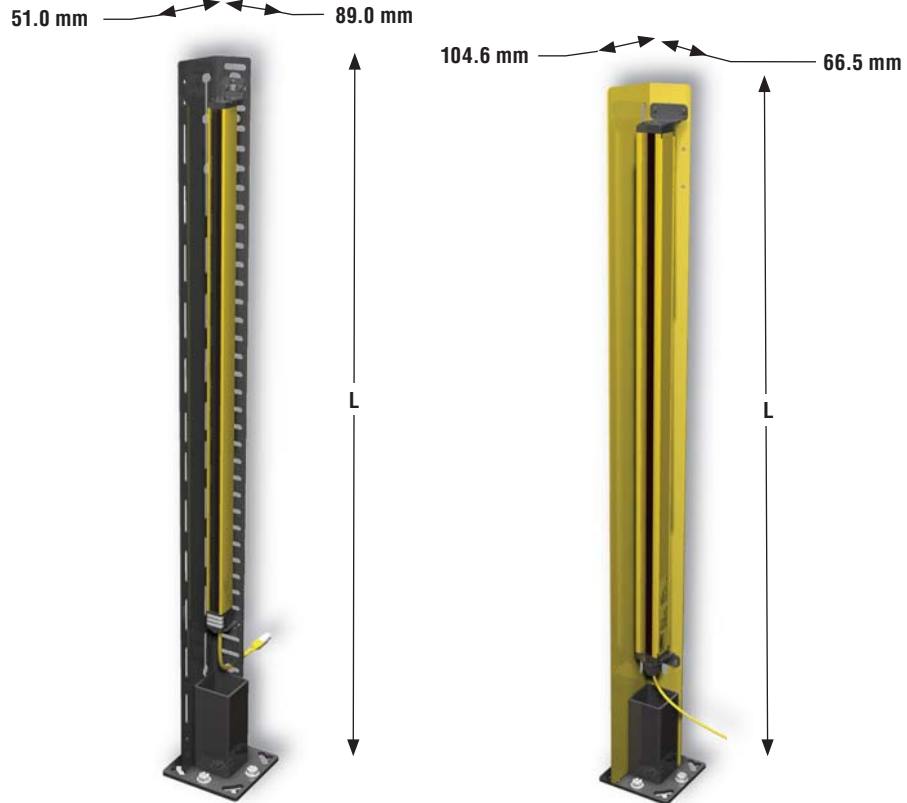
REPLACEMENT PARTS

ACCESSORIES



## Protective Mounting Stands

- Mounts easily to wall, post, or machine frame.
- Available for MINI-SCREEN and MICRO-SCREEN
- Available in five heights



USA Protective Mounting Stand

MSA Protective Mounting Stand

### USA Series Protective Mounting Stands



Model*	Used With*		Mounting Stand Height (L)	Data Sheet
	Model Family	Emitter/Receiver Defined Area		
USA-PMS-40	MICRO-SCREEN®	102 to 914 mm	1016 mm	57119
USA-PMS-62	MICRO-SCREEN®	102 to 1422 mm	1651 mm	

\* USA Series stands are compatible with MINI-SCREEN emitters/receivers using special brackets (see data sheet).

### MSA Series Protective Mounting Stands



Model*	Used With		Mounting Stand Height (L)	Data Sheet
	Model Family	Emitter/Receiver Defined Area		
MSA-PMS-30	MINI-SCREEN®	305 to 610 mm	760 mm	64715
MSA-PMS-42		711 to 914 mm	1067 mm	
MSA-PMS-54		1016 to 1219 mm	1372 mm	

\* Order base model MSA-SB-1 separately.  
NOTE: Mounting hardware ordered separately.

CABLES & WIRING

BRACKETS

CORNER MIRRORS

STANDS

HARSH DUTY SOLUTIONS

REPLACEMENT PARTS

ACCESSORIES

# Harsh Duty Lens Shields and Enclosures

- Replaceable lens shields protect sensor lenses from damage.
- Tubular enclosures guard entire sensor in washdown environments.
- Protective enclosures provide rugged protection for sensors and mirrors.
- Explosion-proof enclosures protect sensors in environments with flammable gases, liquids or dust.



CABLES & WIRING

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ACCESSORIES

<i>EZ-SCREEN Lens Shields</i> . . . . .	<i>Page 213</i>
<i>MICRO-SCREEN Lens Shields</i> . . . . .	<i>214</i>
<i>MINI-SCREEN Lens Shields</i> . . . . .	<i>214</i>
<i>Heavy-Duty MINI-SCREEN Lens Shields</i> . . . . .	<i>215</i>
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## Lens Shields

- Covers the lens of an emitter or receiver to prevent damage.
- Available for

all sizes of EZ-SCREEN, MICRO-SCREEN, MINI-SCREEN emitters and receivers.



## Lens Shields

- Made of thin, strong polycarbonate
- Attaches easily to sensor with an adhesive-backed neoprene foam gasket
- Reduces range by approximately 10% per shield (20% per pair)



Lens Shield



EZ-SCREEN® Lens Shields						
Model	Used With				Lens Shield Length (L)	Data Sheet
	Model Family	Emitter/Receiver Model	Emitter/Receiver Defined Area	Emitter/Receiver Protected Height		
EZS-149	EZ-SCREEN Point	SP..1	—	—	149 mm	61960
EZS-684	EZ-SCREEN Grid	SG..2-500	—	500 mm	684 mm	
EZS-768		SG..2-584		584 mm	768 mm	
EZS-984		SG..3-400		800 mm	984 mm	
EZS-1251		SG..3-533		900 mm	1251 mm	
EZS-1084		SG..4-300		1066 mm	1084 mm	
EZS-150		EZ-SCREEN 14 & 30 mm Resolution		SLS..150	150 mm	
EZS-300	SLS..300		300 mm	—	368 mm	
EZS-450	SLS..450		450 mm	—	518 mm	
EZS-600	SLS..600		600 mm	—	667 mm	
EZS-750	SLS..750		750 mm	—	817 mm	
EZS-900	SLS..900		900 mm	—	967 mm	
EZS-1050	SLS..1050		1050 mm	—	1116 mm	
EZS-1200	SLS..1200		1200 mm	—	1266 mm	
EZS-1350	SLS..1350		1350 mm	—	1416 mm	
EZS-1500	SLS..1500		1500 mm	—	1565 mm	
EZS-1650	SLS..1650		1650 mm	—	1715 mm	
EZS-1800	SLS..1800		1800 mm	—	1865 mm	

NOTE: When shields are installed on both the emitter and receiver, maximum operating range is reduced by 20%.

- CABLES & WIRING
- BRACKETS
- CORNER MIRRORS
- STANDS
- HARSH DUTY SOLUTIONS
- REPLACEMENT PARTS

ACCESSORIES

**MICRO-SCREEN® Lens Shields**



Model	Used With		Lens Shield Length (L)	Data Sheet
	Emitter/Receiver Model	Emitter/Receiver Defined Area		
USS4	USE4../USR4..	102 mm	112 mm	55131
USS8	USE8../USR8..	203 mm	214 mm	
USS12	USE12../USR12..	305 mm	315 mm	
USS16	USE16../USR16..	406 mm	417 mm	
USS20	USE20../USR20..	508 mm	519 mm	
USS24	USE24../USR24..	610 mm	620 mm	
USS28	USE28../USR28..	711 mm	722 mm	
USS32	USE32../USR32..	813 mm	823 mm	
USS36	USE36../USR36..	914 mm	925 mm	
USS40	USE40../USR40..	1016 mm	1027 mm	
USS44	USE44../USR44..	1118 mm	1128 mm	
USS48	USE48../USR48..	1219 mm	1230 mm	
USS56	USE56../USR56..	1422 mm	1433 mm	
USS64	USE64../USR64..	1626 mm	1636 mm	
USS72	USE72../USR72..	1829 mm	1829 mm	

NOTE: When shields are installed on both the emitter and receiver, maximum operating range is reduced by 20%.

**MINI-SCREEN® Lens Shields**



Model	Used With		Lens Shield Length (L)	Data Sheet
	Emitter/Receiver Model	Emitter/Receiver Defined Area		
MSS4	MS(XL)E4../MS(XL)R4..	114 mm	138 mm	44418
MSS8	MS(XL)E8../MS(XL)R8..	215 mm	239 mm	
MSS12	MS(XL)E12../MS(XL)R12..	305 mm	341 mm	
MSS16	MS(XL)E16../MS(XL)R16..	406 mm	442 mm	
MSS20	MS(XL)E20../MS(XL)R20..	508 mm	544 mm	
MSS24	MS(XL)E24../MS(XL)R24..	610 mm	643 mm	
MSS28	MS(XL)E28../MS(XL)R28..	711 mm	745 mm	
MSS32	MS(XL)E32../MS(XL)R32..	813 mm	846 mm	
MSS36	MS(XL)E36../MS(XL)R36..	914 mm	948 mm	
MSS40	MS(XL)E40../MS(XL)R40..	1016 mm	1050 mm	
MSS44	MS(XL)E44../MS(XL)R44..	1118 mm	1151mm	
MSS48	MS(XL)E48../MS(XL)R48..	1219 mm	1253 mm	

NOTE: When shields are installed on both the emitter and receiver, maximum operating range is reduced by 20%.

CABLES & WIRING

BRACKETS

CORNER MIRRORS

STANDS

HARSH DUTY SOLUTIONS

REPLACEMENT PARTS

**ACCESSORIES**

### Heavy-Duty MINI-SCREEN® Lens Shields



Model	Used With		Lens Shield Length (L)	Data Sheet
	Emitter/Receiver Model	Emitter/Receiver Defined Area		
MSHDS24	MSXLHDE24../MSXLHDR24..	610 mm	661 mm	108622
MSHDS32	MSXLHDE32../MSXLHDR32..	813 mm	864 mm	
MSHDS40	MSXLHDE40../MSXLHDR40..	1016 mm	1067 mm	
MSHDS48	MSXLHDE48../MSXLHDR48..	1219 mm	1270 mm	
MSHDS56	MSXLHDE56../MSXLHDR56..	1422 mm	1474 mm	
MSHDS64	MSXLHDE64../MSXLHDR64..	1626 mm	1677 mm	
MSHDS72	MSXLHDE72../MSXLHDR72..	1829 mm	1880 mm	

NOTE: When shields are installed on both the emitter and receiver, maximum operating range is reduced by 20%.

### EZ-SCREEN® Type 2 Lens Shields



Model	Used With		Lens Shield Length (L)	Data Sheet
	Emitter/Receiver Model	Emitter/Receiver Defined Area		
LSS-150	LS2..30-150	150 mm	210 mm	121366
LSS-300	LS2..30-300	300 mm	360 mm	
LSS-450	LS2..30-450	450 mm	510 mm	
LSS-600	LS2..30-600	600 mm	660 mm	
LSS-750	LS2..30-750	750 mm	810 mm	
LSS-900	LS2..30-900	900 mm	959 mm	
LSS-1050	LS2..30-1050	1050 mm	1109 mm	
LSS-1200	LS2..30-1200	1200 mm	1558 mm	
LSS-1350	LS2..30-1350	1350 mm	1708 mm	
LSS-1500	LS2..30-1500	1500 mm	1858 mm	

NOTE: When shields are installed on both the emitter and receiver, maximum operating range is reduced by 20%.

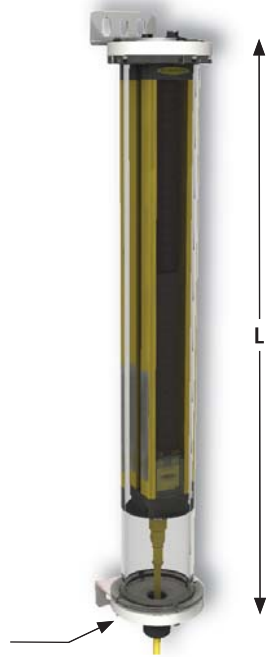
- CABLES & WIRING
- BRACKETS
- CORNER MIRRORS
- STANDS
- HARSH DUTY SOLUTIONS
- REPLACEMENT PARTS

ACCESSORIES



## Tubular Enclosures

- Available for EZ-SCREEN or MINI-SCREEN
- Ideal for high-power 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 models: 86.4 mm  
 MSA-TE models: 86.4 mm  
 MSHDTA-TE models: 122.4 mm

**Tubular Enclosure  
 (EZA-TE model shown)**

### EZA-TE EZ-SCREEN® Series Tubular Enclosures



Model	Used With		Enclosure Height (L)	Data Sheet
	Emitter/Receiver Model	Emitter/Receiver Defined Area		
EZA-TE-150	SLS..-150	150 mm	439 mm	117107
EZA-TE-300	SLS..-300	300 mm	541 mm	
EZA-TE-450	SLS..-450	450 mm	744 mm	
EZA-TE-600	SLS..-600	600 mm	846 mm	
EZA-TE-750	SLS..-750	750 mm	1024 mm	
EZA-TE-900	SLS..-900	900 mm	1151 mm	
EZA-TE-1050	SLS..-1050	1050 mm	1354 mm	
EZA-TE-1200	SLS..-1200	1200 mm	1455 mm	
EZA-TE-1350	SLS..-1350	1350 mm	1608 mm	
EZA-TE-1500	SLS..-1500	1500 mm	1760 mm	
EZA-TE-1650	SLS..-1650	1650 mm	1913 mm	
EZA-TE-1800	SLS..-1800	1800 mm	2065 mm	

NOTE: Use of the enclosure affects the sensing range of the emitter/receiver used: when used in pairs, range can be reduced by 50%.

CABLES & WIRING

BRACKETS

CORNER MIRRORS

STANDS

HARSH DUTY SOLUTIONS

REPLACEMENT PARTS

**ACCESSORIES**



**MSA-TE MINI-SCREEN® Series Tubular Enclosures**



Model	Used With		Enclosure Height (L)	Data Sheet
	Emitter/Receiver Model	Emitter/Receiver Defined Area		
MSA-TE-4	MSXLE4../MSXLR4..	114 mm	338 mm	109307
MSA-TE-8	MSXLE8../MSXLR8..	215 mm	439 mm	
MSA-TE-12	MSXLE12../MSXLR12..	305 mm	541 mm	
MSA-TE-16	MSXLE16../MSXLR16..	406 mm	643 mm	
MSA-TE-20	MSXLE20../MSXLR20..	508 mm	744 mm	
MSA-TE-24	MSXLE24../MSXLR24..	610 mm	846 mm	
MSA-TE-28	MSXLE28../MSXLR28..	711 mm	947 mm	
MSA-TE-32	MSXLE32../MSXLR32..	813 mm	1049 mm	
MSA-TE-36	MSXLE36../MSXLR36..	914 mm	1151 mm	
MSA-TE-40	MSXLE40../MSXLR40..	1016 mm	1252 mm	
MSA-TE-44	MSXLE44../MSXLR44..	1118 mm	1354 mm	
MSA-TE-48	MSXLE48../MSXLR48..	1219 mm	1455 mm	

NOTE: Use of the enclosure affects the sensing range of the sensor used: when used in pairs, range can be reduced by 50%.

**MSHDA-TE Heavy-Duty MINI-SCREEN® & EZ-SCREEN® Point and Grid Series Tubular Enclosures**



Model	Used With				Enclosure Height (L)	Data Sheet
	Model Family	Emitter/Receiver Model	Emitter/Receiver Defined Area	Emitter/Receiver Protected Height		
MSHDA-TE-6	EZ-SCREEN Point	SP.1	—	—	389 mm	117106
MSHDA-TE-24	MINI-SCREEN	MSXLHDE24../MSXLHDR24..	610 mm	—	846 mm	
MSHDA-TE-32	MINI-SCREEN	MSXLHDE32../MSXLHDR32..	813 mm	—	1049 mm	
	EZ-SCREEN Grid	SG..2-500 SG..2-584	—	500 mm 584 mm		
MSHDA-TE-40	MINI-SCREEN	MSXLHDE40../MSXLHDR40..	1016 mm	—	1252 mm	
	EZ-SCREEN Grid	SG..3-400	—	800 mm		
MSHDA-TE-48	MINI-SCREEN	MSXLHDE48../MSXLHDR48..	1219 mm	—	1455 mm	
	EZ-SCREEN Grid	SG..3-533 SG..4-300	—	1066 mm 900 mm		
MSHDA-TE-56	MINI-SCREEN	MSXLHDE56../MSXLHDR56..	1422 mm	—	1659 mm	
MSHDA-TE-64	MINI-SCREEN	MSXLHDE64../MSXLHDR64..	1626 mm	—	1862 mm	
MSHDA-TE-72	MINI-SCREEN	MSXLHDE72../MSXLHDR72..	1829 mm	—	2065 mm	

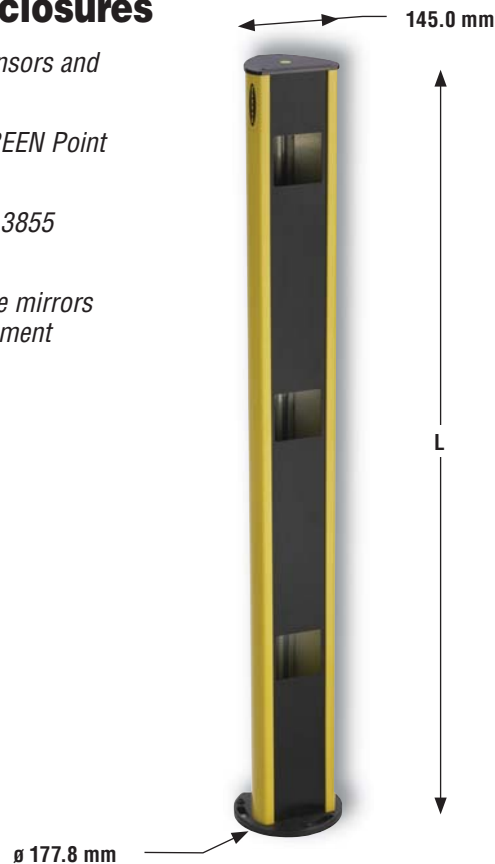
NOTE: Use of the enclosure affects the sensing range of the sensor used: when used in pairs, range can be reduced by 50%.

- CABLES & WIRING
- BRACKETS
- CORNER MIRRORS
- STANDS
- HARSH DUTY SOLUTIONS
- REPLACEMENT PARTS

ACCESSORIES

## 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 Protective Enclosure**



CABLES & WIRING

BRACKETS

CORNER MIRRORS

STANDS

HARSH DUTY SOLUTIONS

REPLACEMENT PARTS

**ACCESSORIES**

## EZA-S EZ-SCREEN® Protective Enclosures



Model*	Used With			No. of Openings	Application Standard	Data Sheet
	Emitter/Receiver Model	Emitter/Receiver Protected Area	Enclosure Height (L)			
EZA-S300	SG..4-300	900 mm	1543 mm	4	ANSI/RIA R15.06 ISO 13855	109308
EZA-S300-M						
EZA-S400	SG..3-400	800 mm	1238 mm	3	ANSI/RIA R15.06 ISO 13855	
EZA-S400-M						
EZA-S500	SG..2-500	500 mm	1035 mm	2	ISO 13855	
EZA-S500-M						
EZA-S500-M45						
EZA-S533	SG..3-533	1066 mm	1543 mm	3	ANSI/RIA R15.06	
EZA-S533-M						
EZA-S584	SG..2-584	584 mm	1238.2 mm	2	ANSI/RIA R15.06	
EZA-S584-M						
EZA-S584-M45						

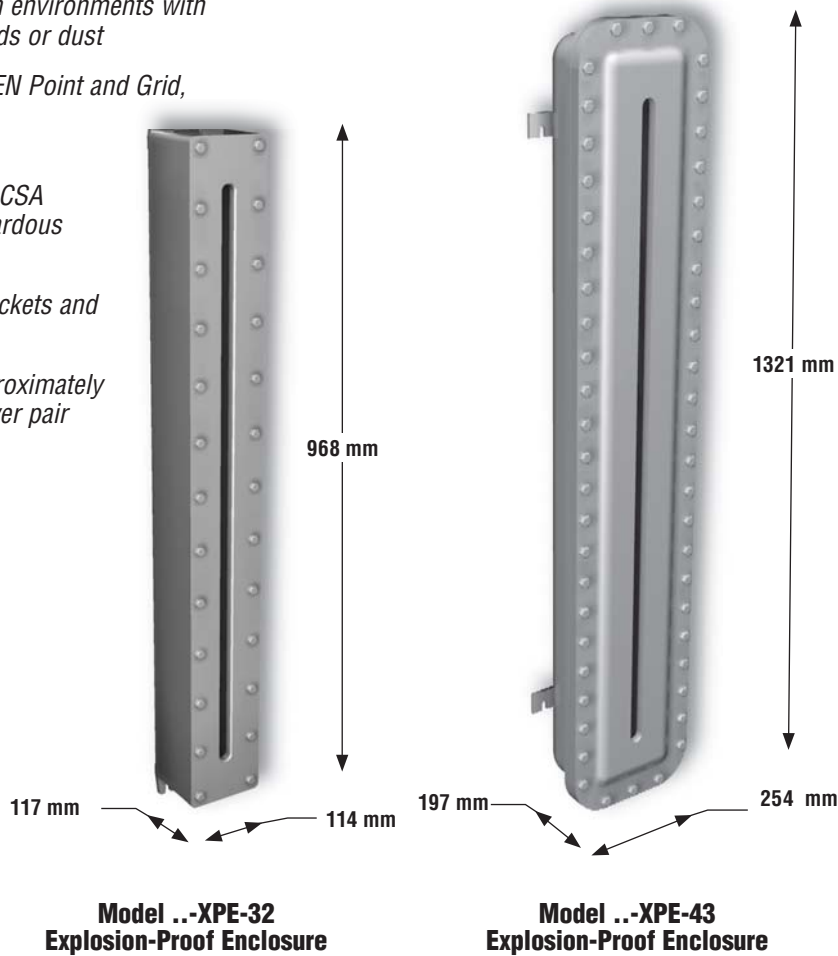
\* Model numbers with suffix "M" include vertical mirrors for perimeter-guarding applications.

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 Point and Grid, MINI-SCREEN, and MICRO-SCREEN
- 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



### Explosion-Proof Enclosures



Model	Used With		Enclosure Height	Data Sheet
	Model Family	Emitter/Receiver Defined Area		
SS-XPE-32	EZ-SCREEN	450 to 600 mm	968 mm	63443
US-XPE-32	MICRO-SCREEN	508 to 711 mm		
MS-XPE-32	MINI-SCREEN			
SS-XPE-43	EZ-SCREEN	750 to 1050 mm	1321 mm	64216
US-XPE-43	MICRO-SCREEN	813 to 1016 mm		
MS-XPE-43	MINI-SCREEN			

NOTE: Use of enclosure affects the sensing range of emitter/receiver used: when used in pairs, range can be reduced by 25%.

- CABLES & WIRING
- BRACKETS
- CORNER MIRRORS
- STANDS
- HARSH DUTY SOLUTIONS
- REPLACEMENT PARTS

ACCESSORIES

**PICO-GUARD® Replacement Parts**

Model	Part Number	Description
EZA-LAT-1	66027	Replacement adapter hardware for Grid.
MGA-KS0-1	30140	SPST key reset switch, no wires (includes key)
SFA-CMH	69769	PICO-GUARD controller mounting hardware
SFA-CTB1	02638	PICO-GUARD controller 4-position terminal block
SFA-CTB2	02639	PICO-GUARD controller 9-position terminal block
SFA-CTB3	02640	PICO-GUARD controller 18-position terminal block
SFA-CTB4	75264	PICO-GUARD controller 5-position terminal block
SFA-IAG	02618	Interlock alignment guide
SFA-LAT-12	73000	Replacement adapter hardware for SPF12
SFA-LAT-30	73001	Replacement adapter hardware for SPF30
SFA-W-1	75158	Replacement window for Grid
STP-3	43958	Specified test piece, 45 mm dia. for Grid

**EZ-SCREEN® Replacement Parts**

Model	Part Number	Description
EZA-ADE-1	71447	Copolyester access cover with label for 14 or 30 mm resolution emitters
EZA-ADE-2	72929	Copolyester access cover with inverted label for 14 or 30 mm resolution emitters
EZA-ADR-1	71448	Copolyester access cover with label for 14 or 30 mm resolution receiver
EZA-ADR-2	72930	Copolyester access cover with inverted label for 14 or 30 mm resolution receiver
EZA-AP-1	62859	Access port plug with o-ring for Grid and Point
EZA-CP-13	62860	Pg13.5 plug with o-ring for Grid and Point
EZA-ECE-1	62858	Emitter wiring chamber end cap (with gasket, captive screws, 3 plugs with o-rings, terminal block) for Grid and Point
EZA-ECR-1	62857	Receiver wiring chamber end cap (with gasket, captive screws, 3 plugs with o-rings, terminal block) for Grid and Point
EZA-SW-1	62863	Spanner wrench for Grid and Point
EZA-TBE-1	62861	Emitter terminal block for Grid and Point
EZA-TBR-1	62862	Receiver terminal block for Grid and Point
EZA-MBK-1	60630	Center bracket kit (includes 1 bracket and hardware to mount to MSA Series stands) for 14 or 30 mm resolution EZ-SCREEN
EZA-MBK-11	71470	Standard bracket kit with hardware (includes 2 end brackets and hardware to mount to MSA Series stands) for 14 or 30 mm resolution EZ-SCREEN
EZA-TP-1	71449	Access cover security plate (includes 2 screws, wrench) for 14 or 30 mm resolution EZ-SCREEN
MGA-K-1	28513	Replacement key for switch MGA-KS0-1
MGA-KS0-1	30140	Keyed reset switch (same as that included in kits)
SMA-MBK-1	61933	SSM Series Mirror Bracket Kit
STP-3	43958	Specified test piece, 45 mm dia.
STP-13	71929	14 mm test piece (for 14 mm resolution systems)
STP-14	71930	30 mm test piece (for 14 mm resolution systems with 2-beam Reduced Resolution and for 30 mm resolution systems)
STP-15	71931	60 mm test piece (for 30 mm resolution systems with 2-beam Reduced Resolution)

CABLES & WIRING

BRACKETS

CORNER MIRRORS

STANDS

HARSH DUTY SOLUTIONS

REPLACEMENT PARTS

ACCESSORIES

## MICRO-SCREEN® Replacement Parts

Model	Part Number	Description
MGA-GS-1	27850	Ground strap for control box door
MGA-K-1	28513	Replacement key for MGA-KS-1 key switch
MGA-KS-1	28509	Key switch, pre-wired (includes key)
MGA-KSO-1	30140	SPST key reset switch, no wires (includes key)
MSA-MH-1	39024	Control box mounting hardware
MSA-PSD-1	61499	Power supply/relay board (115/230V ac) for models without fixed blanking
MSA-PSD-2	47377	Power supply/relay board (115/230V ac) for models with fixed blanking
MSA-PST-2	47376	Power supply/relay board (24V dc)
MSA-RM-1	39025	Relay module
MSA-RM-2	59689	Relay module with an additional complementary normally closed output and 6 amp FSDs
MSMA-PSC-2	62867	Power supply
MUSA-TA-1	43834	Transformer
STP-2	43957	Specified test piece, 19 mm dia.
STP-4	43836	Specified test piece, 32 mm dia.
STP-5	43837	Specified test piece, 58 mm dia.
STP-9	50694	Specified test piece, 83 mm dia.
USAB-1	51885	Controller board (light screen)
USAB-2	51886	Controller board (light screen)
USA-MH-2	60110	Control box mounting hardware
USA-PTB-1	55676	Terminal block, 20 position, emitter/receiver
USA-PTB-2	55677	Terminal block, 15 position, emitter/receiver
USA-PTB-3	55678	Terminal block, 5 position, DeviceNet
USA-PTB-4	55679	Terminal block, 20 position, output/E-stop/power hookup
USA-PTB-5	55680	Terminal block for 5 position, FSD
USCMB-1	51651	Mounting hardware kit for one emitter/receiver, 711 to 914 mm defined area
USCMB-2	54976	Mounting hardware kit for one emitter/receiver, 1016 to 1829 mm defined area
USDAB-1	50002	Controller board, no Fixed Blanking, Trip output
USDAB-1D	52245	Controller board for DeviceNet, no Fixed Blanking, Trip output
USDAB-1E	62092	Controller board for models with External Device Monitoring (EDM)
USDAB-2	50003	Controller board with Fixed Blanking, Trip output
USDAB-2D	52246	Controller board for DeviceNet with Fixed Blanking, Trip output
USDAL-1	55624	Controller board, no Fixed Blanking, Latch output
USDAL-1D	55625	Controller board for DeviceNet, no Fixed Blanking, Latch output
USDAL-2	55626	Controller board with Fixed Blanking, Latch output
USDAL-2D	55627	Controller board for DeviceNet with Fixed Blanking, Latch output
USDA-RM-1	50001	Power supply/relay board, 2 FSDs
USDA-RM-2	55707	Power supply/relay board, 4 FSDs
USMAB-1	64734	Controller board for Muting, Trip output
USMAL-1	60643	Controller board for Muting, Latch output
USMA-PSC-1	60642	Power supply
USMB-1	50000	Mounting hardware kit for one emitter/receiver, 102 to 610 mm defined area

CABLES &  
WIRING

BRACKETS

CORNER  
MIRRORS

STANDS

HARSH DUTY  
SOLUTIONSREPLACEMENT  
PARTS

ACCESSORIES

## MINI-SCREEN® Replacement Parts

Model	Part Number	Description
BA2MB	40091	Mounting hardware kit for one emitter/receiver
MDSA-PTB-1	61083	Terminal block, positions 1-26
MDSA-PTB-2	61084	Terminal block, positions 27-52
MDSDAL-1	65785	Controller board, Latch output
MSDA-RM-1	48225	Power supply/relay board (24V dc)
MGA-GS-1	27850	Ground strap for control box door
MGA-GST-1	28511	Ground strap for transformer
MGA-K-1	28513	SPST key reset switch, no wires (includes key)
MGA-KS-1	28509	Key switch, pre-wired (includes key)
MGA-KSO-1	30140	SPST key reset switch, no wires (includes key)
MSAB-1	39029	Controller module, Trip output, without fixed blanking
MSAB-2	47381	Controller module (light screen), Trip output, with fixed blanking
MSAL-1	55695	Controller module, Latch output
MSA-MH-1	39024	Control box mounting hardware
MSA-PSD-2	47377	Power supply/relay board (115/230V ac) for metal boxes with fixed blanking
MSA-RM-1	39025	Relay module
MSA-RM-2	59689	Relay module with an additional complementary normally closed output and 6 amp FSDs
MSA-PSA-1	39027	Power supply board (115V ac) for metal boxes with Trip output
MSA-PSA-2	55694	Power supply board (115V ac) for metal boxes with Latch output
MSA-PSB-1	39028	Power supply board (230V ac) for metal boxes with Trip output
MSA-PSB-2	62006	Power supply board (230V ac) for metal boxes with Latch output
MSA-PST-1	43738	Power supply board (24V dc) for metal boxes without fixed blanking
MSA-PST-2	47376	Power supply board (24V dc) for metal boxes with fixed blanking
MSA-PTB-1	61077	Terminal block, positions 1-17
MSA-PTB-2	61078	Terminal block, positions 18-34
MSDAB-1	45281	Controller board, Trip output
MSDAL-1	48450	Controller board, Latch output
MSDA-RM-1	45280	Power supply/relay board (24V dc)
MSMA-PSC-2	62867	Power supply
MUSAB-1	43833	Controller module
MUSA-MH-1	43831	Control box mounting hardware
MUSA-PS-1	43832	Power supply board
MUSA-TA-1	43834	Transformer
STP-1	43835	Specified test piece, 38 mm dia.
STP-10	62026	Specified test piece, 89 mm dia.
STP-2	43957	Specified test piece, 19 mm dia.
STP-3	39911	Specified test piece, 45 mm dia.
STP-4	43836	Specified test piece, 32 mm dia.
STP-5	43837	Specified test piece, 58 mm dia.
STP-6	43838	Specified test piece, 76 mm dia.
STP-7	48981	Specified test piece, 26 mm dia.

CABLES &  
WIRING

BRACKETS

CORNER  
MIRRORS

STANDS

HARSH DUTY  
SOLUTIONSREPLACEMENT  
PARTS

ACCESSORIES

**MINI-SCREEN® Replacement Parts (cont'd)**

Model	Part Number	Description
STP-8	49126	Specified test piece, 51 mm dia.
USA-MH-2	60110	Control box mounting hardware
USMAB-1	64734	Muting system controller, Trip output
USMAL-1	60643	Muting system controller, Latch output

**Safety Interlock Switches Replacement Parts**

Model*	Part Number	Description	Used In
SI-LM40KHD	49474	Individual Interlock (without actuator)	SI-LM40MKH..D kits
SI-LM40KHE	49475		SI-LM40MKH..E kits
SI-LM40KHF	49476		SI-LM40MKH..F kits
SI-LM40KVD	49478		SI-LM40MKVD kit
SI-LM40KVE	49479		SI-LM40MKVE kit
SI-LS42DSG	47871		SI-LS42MSG.. kits
SI-LS42USG	47872		SI-LS42UMSG.. kits
SI-LS42DSH	47875		SI-LS42DMSH.. kits
SI-LS42USH	47876		SI-LS42UMSH.. kits
SI-LS42DSI	47879		SI-LS42DMSI.. kits
SI-LS42USI	47880		SI-LS42UMSI.. kits
SI-LS42DSJ	47883		SI-LS42DMSJ.. kits
SI-LS42DMG	47873		SI-LS42DMMG.. kits
SI-LS42UMG	47874		SI-LS42UMMG.. kits
SI-LS42DMH	47877		SI-LS42DMMH.. kits
SI-LS42UMH	47878		SI-LS42UMMH.. kits
SI-LS42DMI	47881		SI-LS42DMMI.. kits
SI-LS42UMI	47882		SI-LS42UMMI.. kits
SI-LS42DMJ	47884		SI-LS42DMMJ.. kits
SI-LS100F	49480		SI-LS100.. kits
SI-LS83D	49481		SI-LS83.. kits
SI-LS83E	49482		SI-LS83..E kits
SI-QM100DSG	49460		SI-QM100DMSG kit
SI-QM100ASG	49461		SI-QM100AMSG kit
SI-QM100DMG	49463		SI-QM100DMMG kit
SI-QM100AMG	49464		SI-QM100AMMG kit
SI-QS75C	49472		SI-QS75..C kits
SI-QS75CHF	49473		SI-QS75MCHF kit
SI-QS90D	49466		SI-QS90..D kits
SI-QS90DHF	49467		SI-QS90MDHF kit
SI-QS90E	49468		SI-QS90..E kits
SI-QS90EHF	49469		SI-QS90MEHF kit
SI-QS90F	49470		SI-QS90..F kits
SI-QS90FHF	49471	SI-QS90MFHF kit	

\* Kits with one safety interlock switch and an actuator are available (see pages 148-160).

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**Replacement Actuators for Safety Interlock Switches**

Model	Part Number	Description	Used With
 <b>SI-QM-90A</b>	48556	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.	<ul style="list-style-type: none"> <li>• SI-LM40MKV models</li> </ul>
 <b>SI-QM-SB</b>	47895	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.	<ul style="list-style-type: none"> <li>• SI-LM40MKH models</li> <li>• SI-LS42 models</li> <li>• SI-QM100 models</li> </ul>
 <b>SI-QM-SMFA</b>	48562	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.	<ul style="list-style-type: none"> <li>• SI-LM40MKH models</li> <li>• SI-LS42 models</li> <li>• SI-QM100 models</li> </ul>
 <b>SI-QM-SSA</b>	48555	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.	<ul style="list-style-type: none"> <li>• SI-LM40MKH models</li> <li>• SI-LS42 models</li> <li>• SI-QM100 models</li> </ul>
 <b>SI-QS-100</b>	48561	High-extraction-force actuator for particularly heavy or large doors. Adjustable from 50 to 100 Newtons (force). Used only for switches with in-line actuator SI-QS-SSA.	<ul style="list-style-type: none"> <li>• SI-QS75 models</li> <li>• SI-QS90 models</li> </ul>
 <b>SI-QS-SSA</b>	48551	Rigid in-line metal (die-cast steel) actuator for doors or covers with a radius of 150 mm or greater.	<ul style="list-style-type: none"> <li>• SI-QS75 (high-force) models</li> <li>• SI-QS90 (high-force) models</li> </ul>
 <b>SI-QS-SSA-2</b>	58855	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.	<ul style="list-style-type: none"> <li>• SI-LS83 models</li> <li>• SI-LS100 models</li> </ul>
 <b>SI-QS-SSA-3</b>	58856	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.	<ul style="list-style-type: none"> <li>• SI-LS83 models</li> <li>• SI-LS100 models</li> </ul>
 <b>SI-QS-SSA-4</b>	47896	Rigid in-line metal (stamped stainless steel) actuator for doors or covers with a radius of 150 mm or greater.	<ul style="list-style-type: none"> <li>• SI-QS75 models</li> <li>• SI-QS90 models</li> </ul>
 <b>SI-QS-SSU</b>	46996	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.	<ul style="list-style-type: none"> <li>• SI-LS83 models</li> <li>• SI-LS100 models</li> <li>• SI-QS75 models</li> <li>• SI-QS90 models</li> </ul>

**Safety Interlock Switch Replacement Parts**

Model	Part Number	Description	Used With
<b>SI-LS42-COVER</b>	46995	Replacement terminal cover	SI-LS42 models

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### Components for Wire Rope Assembly

	Models	Part Number	Package Quantity	Description	Used With	
Wire Ropes		RPA-C1-10	62074	10 m	2 mm steel wire rope with 0.5 mm red PVC jacket (unterminated)	• RP-LM40 models
		RPA-C1-20	62075	20 m		
		RPA-C1-100	69799	100 m		
		RPA-C2-10	62076	10 m	3 mm steel wire rope with 0.5 mm red PVC jacket (unterminated)	• RP-LS42 models • RP-QM72/QMT72 models
		RPA-C2-20	62077	20 m		
		RPA-C2-50	46694	50 m		
		RPA-C2-80	46695	80 m		
		RPA-C3-20	62078	20 m	4 mm steel wire rope with 0.5 mm red PVC jacket (unterminated)	• RP-QM90 models
		RPA-C3-100	62079	100 m		
Thimbles		RPA-T1-4	62065	4 pcs	Thimble for 2 mm wire rope	• RP-LM40 models
		RPA-T2-4	62066	4 pcs	Thimble for 3 mm wire rope	• RP-LS42 models • RP-QM72/QMT72 models
		RPA-T3-4	62067	4 pcs	Thimble for 4 mm wire rope	• RP-QM90 models
Clamps		RPA-CC1-4	62068	4 pcs	Clamp for 2 mm wire rope	• RP-LM40 models
		RPA-CC2-4	62069	4 pcs	Clamp for 3 mm wire rope	• RP-LS42 models • RP-QM72/QMT72 models
		RPA-CC3-4	62070	4 pcs	Clamp for 4 mm wire rope	• RP-QM90 models
Turnbuckles		RPA-TA1-1	62071	1 pc	#4 Turnbuckle	• RP-LM40 models • RP-LS42 models • RP-QM72/QMT72 models
		RPA-TA2-1	62072	1 pc	#5 Turnbuckle	• RP-QM90 models
Eye Bolts		RPA-EB1-1	62080	1 pc	1/4" - 20 Eye bolt	• RP-LM40 models • RP-LS42 models • RP-QM72/QMT72 models
		RPA-EB2-1	65039	1 pc	5/16" - 20 Eye bolt	• RP-QM90 models
Pulleys		RPA-P1-1	62081	1 pc	Pulley	• RP-LM40 models • RP-LS42 models • RP-QM72/QMT72 models
Tensioning Springs		RPA-S1-1	62073	1 pc	Tensioning Spring #1	• RP-QM90 models
		RPA-S2-1	62089	1 pc	Tensioning Spring #2	• RP-QM90 models
		RPA-S3-1	46693	1 pc	Tensioning Spring #3	• RP-LS42 models
		RPA-S4-1	46994	1 pc	Tensioning Spring #4	• RP-LS42 models

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### Rope Pull Replacement Parts

Model	Part Number	Description	Used With
SI-LS42-COVER	46995	Replacement terminal cover	RP-LS42 models

# EZ-LIGHT™

## Versatile, Smart Indicator Lights for Industrial Applications.\*



### Features

- ▶ Designed to be compact, unobtrusive and functional.
- ▶ Replaces cumbersome post and stack lights or soldered panel indicators and oil-tight lights.
- ▶ Can be positioned conveniently near the operator.
- ▶ IP67 sealed, water- and oil-tight housing for direct machine mounting.
- ▶ Includes applications and indications such as GOOD PART, BAD PART, RUN, STOP, RESET, ALERT, READY, WARNING, HIGH, LOW, EMPTY, PICK-TO-LIGHT and more...
- ▶ Uses 10-30V dc supply voltage compatible with PLC or other logic-level control outputs.
- ▶ Has Euro-style QD connection; has no soldering or moisture problems, and installs without certified personnel.

### Three Housing Styles

- ▶ Each light contains two or three colors, depending on model. Red, yellow and green are standard; optional colors available.
- ▶ Rugged, solid-state design eliminates bulb replacement.
- ▶ Models include nickel-plated brass 18 mm barrels or thermoplastic 18 and 30 mm T-style right-angle models.



[bannerengineering.com](http://bannerengineering.com)

\* Patents pending

## Numerous EZ-LIGHT Configurations.

### General Purpose EZ-LIGHT

- ▶ Single housing displays multiple colors.
- ▶ Red, yellow and green steady display is standard; custom colors available.
- ▶ NPN or PNP models are available.



### 7-Function EZ-LIGHT

- ▶ Lights illuminate in multiple colors and preconfigured flashing sequences.
- ▶ Preconfigured functions include red, yellow, green glowing steady or flashing, and red-yellow-green flash cycle.
- ▶ Custom colors and configurations are available.

### EZ-LIGHT for Sensors

- ▶ Two-color, remote indicator shows sensor status where sensor visibility is obscured or limited.
- ▶ Green light indicates POWER ON; yellow indicates OUTPUT ENERGIZED.
- ▶ Simple, seamless installation; uses a 4-pin Euro-style "Y" splitter cable at the sensor; no programming required.
- ▶ It accepts NPN or PNP outputs directly from the sensor.



### EZ-LIGHT for EZ-SCREEN™

- ▶ Provides a large, remotely located red/green indicator for use with EZ-SCREEN safety light screens.
- ▶ Displays Indications directly from EZ-SCREEN:
  - GREEN: RUN mode, OSSD outputs ON
  - RED: OSSD outputs OFF
- ▶ Interfaces easily and directly with existing EZ-SCREEN systems using an 8-pin Euro-style "Y" splitter cable.



1.866.816.5187

**BANNER®**

more sensors, more solutions