



**BANNER®**  
the machine safety specialist

**EZ-SCREEN®**  
Safety Light SCREENs

## EZ-SCREEN®: Machine guarding just got easier. Much easier.

### A simple, two-piece system with no control box.

Now there's a rugged new standard for easy to use, non-contact, machine guarding systems. Choose the new, EZ-SCREEN System for finger, hand and ankle detection, or the EZ-SCREEN Point and Grid Systems allowing one, two, three or four-beam perimeter and access guarding for torso detection. Whichever you choose, you'll get the industry's easiest system to set up, align and operate. Most important, the two-piece EZ-SCREEN System does not require a separate control box, only a self-contained emitter and receiver pair. There's nothing easier!

### Easy alignment and maintenance saves you setup time and troubleshooting.

Thanks to its excellent optical design and finely focused  $\pm 2.5^\circ$  beam, EZ-SCREEN Systems are extremely easy to align and maintain. This new two-piece technology also eliminates the need for a synchronization wire between the emitter and receiver because the system is synchronized optically, making it much easier to install and operate. And with zone and status indicators and detailed diagnostics, you know quickly when alignment is complete and also if there are any problems with your installation. Add to this the wide variety of sizes and resolutions, plus flexible mounting options, and you've got the easiest to use guarding system available.



### High performance that costs you less.

The EZ-SCREEN family is designed to be the lowest cost system of its kind. Yet despite its low cost, the redundant microprocessor-controlled, self-checking design exceeds control reliability requirements and is certified per CE (Type 4/Category 4) and cULus (NIPE, UL61496, UL1998). And with ranges up to 70 m, the system also features plenty of power and range for all types of applications including long range perimeter guarding.

### A smaller footprint. Yet much more rugged.

The EZ-SCREEN is more compact than other systems, yet its rugged, lightweight, extruded aluminum construction is the most durable for its size. It is resistant to impact, twisting and abusive environments. Rugged end caps and acrylic lens covers add dependability even in demanding industrial environments. EZ-SCREEN is rated IEC IP65 and also passes vibration and shock tests according to IEC 61496-1. You can install this system with absolute confidence.

### A complete family of machine guarding products.

EZ-SCREEN 14 mm and 30 mm resolution models feature metal endcaps for durability and secure mounting.

All models feature a rugged housing which resists twisting and withstands abusive environments.

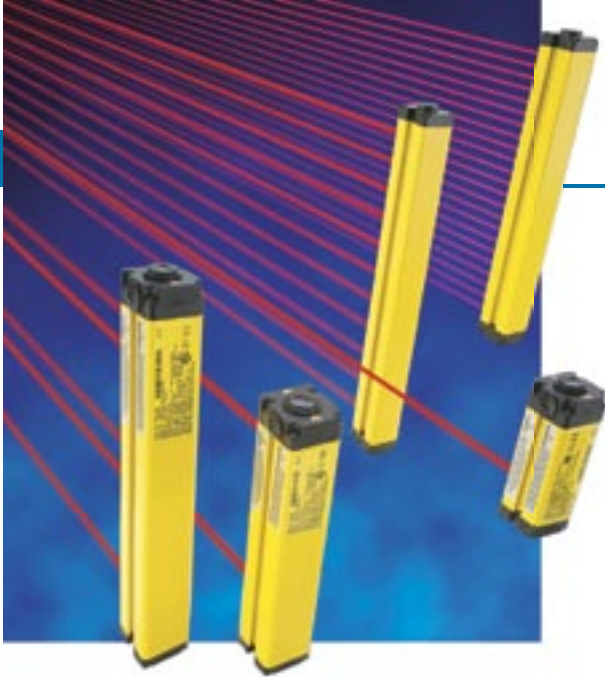


**EZ-SCREEN** Page 4 & 5  
Finger, hand and ankle detection

**EZ-SCREEN Grid and Point** Page 6 & 7  
Torso and body detection with 1, 2, 3 or 4 beams



## A versatile family of guarding solutions.






### Selectable trip or latch output.

EZ-SCREEN® offers a trip output with auto reset, or latch output with manual reset. The trip output automatically resets when a blocked beam is cleared. The latching output requires a “monitored” manual reset from an appropriate location once the hazardous area is cleared of personnel who may have passed through the sensing field.

### Versatile mounting options.

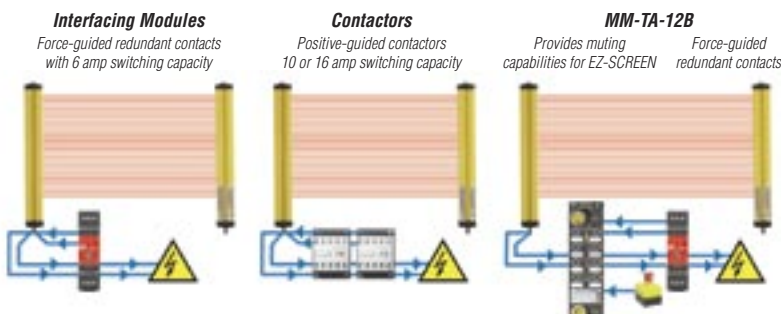
EZ-SCREEN offers dozens of mounting options making application on your equipment the easiest possible. Unlike other systems, brackets mount top and bottom, or facing either side of the unit. Numerous optional brackets are also available to retrofit older competitive systems; see catalog or go to [bannerengineering.com](http://bannerengineering.com).



End cap mounting	Housing side mounting	Center bracket mounting
 <p>End cap mounting allows <math>\pm 30^\circ</math> rotation with standard end cap brackets installed facing outwards (as shown) or inwards.</p>	 <p>Standard end cap brackets mounted to the side of the housing using supplied T-nuts. Mounting slots are on both sides of the housing.</p>	 <p>Optional center brackets provide additional mounting options with <math>\pm 30^\circ</math> rotation.</p>

### Versatile interface options.

The EZ-SCREEN receiver has two solid-state sourcing safety outputs, “Output Signal Switching Device” (OSSD). This adds significant interfacing options to a variety of interconnect configurations.



### Point of operation.

Finger, hand or ankle detection at the point of operation of the machine using 14 mm or 30 mm EZ-SCREEN.

### Area.

Guard around a hazardous area by mounting horizontally without requiring safety mats or an area scanner. Latch output of a 30 mm EZ-SCREEN requires a manual reset when area is cleared.

### Perimeter.

Guard multiple sides around a dangerous area up to 70 m in length with EZ-SCREEN Grid or Point Systems and optional corner mirrors and mounting stands up to 18 m with 30 mm resolution models.

### Long range single sided.

Depending on the resolution required, EZ-SCREEN Grid Systems can be used to provide 2, 3, or 4 beams with beam spacing from 300 to 584 mm.

### Single point access.

The EZ-SCREEN Point System can be used with angled mirrors to simulate a two-beam system. Multiple EZ-SCREEN Point Systems can be used to create a custom beam pattern specific to your application.

### Minimal consequence, Type 2.

An inexpensive solution for lower risk situations where the result of an accident is only a slight injury.



Complete Type 2  
Product Information

### External device monitoring (EDM).

Allows safe interfacing without a controller or third control box, ensuring the fault detection capability required by U.S. Control Reliability and ISO13849-1 Categories 3 and 4. EZ-SCREEN DIP-switch selectable options are One- or Two-Channel Monitoring or No Monitoring.

### Scan codes minimize crosstalk.

Emitters and receivers may be configured to one of two Scan Code positions (1 or 2) allowing the receiver to recognize beams only from an emitter with the same Scan Code setting. This minimizes the effects of crosstalk between multiple emitter/receiver pairs, and allows multiple pairs to operate in close proximity.



## EZ-SCREEN®: Exceptional diagnostics make it the easiest system to use.

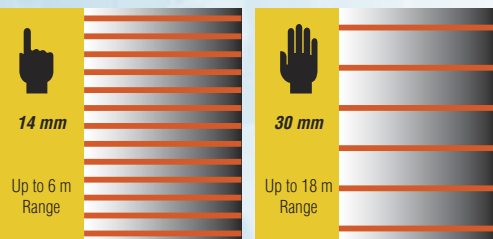
### EZ-SCREEN gives you more information you need.

Exceptional diagnostics aid and simplify EZ-SCREEN setup, operation and maintenance. Both emitter and receiver feature highly visible diagnostic displays to provide continuous feedback of operating status, configuration and error conditions. DIP-switch selectable functions enable reduced resolution (floating blanking), fixed blanking, trip or latch output, and 1-CH, 2-CH, or no external device monitoring (EDM). Two scan code settings allow multiple systems to operate in close proximity minimizing crosstalk interference.



### Choice of ranges and resolutions.

You can choose the resolution and range that fits your application, 14 mm for finger, hand and ankle applications or 30 mm for hand and ankle detection.



### An exact readout of number of beams blocked.

Banner's unique system gives you an easy-to-read seven-segment, three-digit display on the receiver to indicate the exact number of beams interrupted or blocked. No other system keeps you more informed.

- Displays the exact number of blocked or misaligned beams for easy setup.
- In fault conditions, displays a numeric error code for quick troubleshooting.
- Flashing decimal point is a "pre-warning" noise indicator.
- On Power-up, indicates Scan Code "C1" or "C2" setting.
- In RUN Mode, Trip Output displays "-", Latch Output displays "L".

### Unique LED zone indicators.

Indicators on the receiver show when sections of the light screen are aligned or clear, or which areas are misaligned or blocked. Each LED represents 1/8th of the light screen height.

Green: Clear and Aligned  
Red: Blocked or Misaligned  
Flashing Green: RUN Mode, Fixed Blanking enabled.



### Error codes make troubleshooting easy.

Flashing numeric error codes tell you the exact status of the system if the system goes into lockout mode. This allows you to reset the system quickly and effectively.

- |  |  |
|--|--|
| 1 Output error                           | 63 Excessive noise error/EDM interface |
| 2 Reset input error                      | 7 DIP switch configuration error       |
| 3 EDM input error                        | 8 EDM 1 error                          |
| 4 Receiver error                         | 9 EDM 2 error                          |
| 62 Excessive noise error/reset interface |  |

### DIP switch configuration

- Selects Scan Code 1 (SC1) or 2 (SC2) operation to minimize crosstalk of adjacent units.
- Trip (T) or Latch (L) Output\*.
- Standard or Reduced Resolution (RR)\*.
- External Device Monitoring: 1-Channel (E1), 2-Channel (E2) or No Monitoring.
- Fixed Blanking.

### Invert display button

Push the button and replace the access cover (provided) when the sensor is mounted with the QD up.

### Reset indicator

Flashing Yellow: Reset needed  
Solid Yellow: RUN Mode

### Bi-color status indicator

Green: RUN Mode, OSSD outputs ON  
Red: RUN Mode, OSSD outputs OFF  
Flashing Red: Lockout condition and outputs OFF  
Flashing Green: RUN Mode, Reduced Resolution enabled and outputs ON

\*Requires redundant configuration



## Versatility to meet your control system requirements.

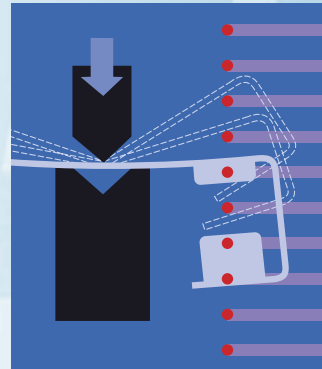
### Easy security.

To prevent tampering, the EZ-SCREEN® features a lift up access cover that opens with a special tool. All emitter and receiver settings are configured behind the removable cover. A security plate provides additional protection. EZ-SCREEN also functions with the cover open allowing quick configuration and troubleshooting.



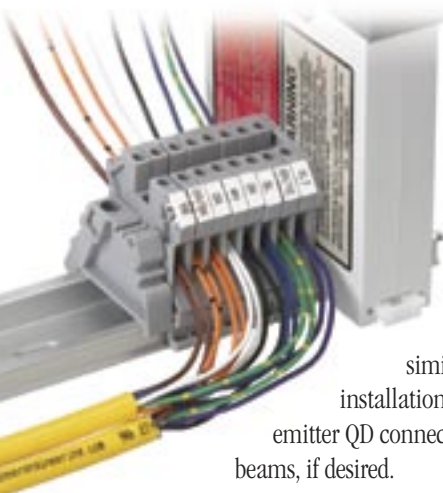
### Reduced resolution (multiple point floating blanking).

Through simple DIP switch settings, the EZ-SCREEN can be set for reduced resolution, allowing any two consecutive beams to be blocked without causing a trip condition. As the example shows, the part can move through the light screen without tripping the system.



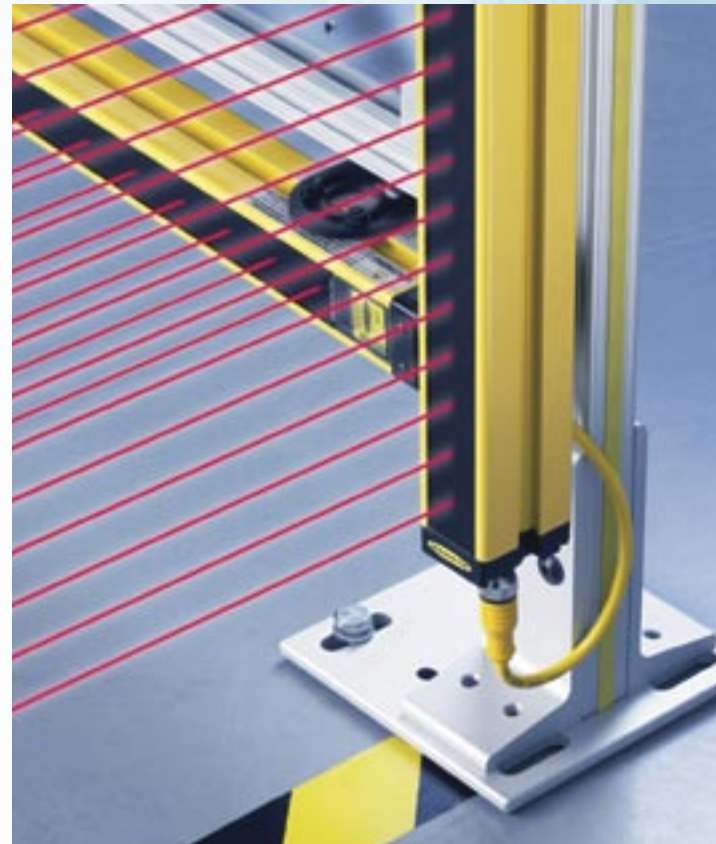
### Flexible cascading.

EZ-SCREEN's unique cascading option allows up to four systems of any length and resolution to be wired together to form a single safety device without significantly increasing the overall response time of the system. Each additional system in the cascade adds a maximum of only 2 ms to the overall system response time, or a specific response time can be calculated for each system pair depending on length. Extremely flexible interconnection allows up to 53 m (175') of cabling between sensors, dependent on the number of receivers and the length of the machine interface/power cable. E-stop buttons, safety switches, or safety module output contacts can be interfaced at the end receiver to provide even greater flexibility in the machine safeguarding solution.



### QD connections allow "swapability".

EZ-SCREEN 14 mm and 30 mm systems come standard with an 8-pin M12 quick disconnect (without emitter test function). This allows for an optional hookup that provides for sensor interchangeability (or "swapability"); the ability to install either sensor at either QD connection. CSB series splitter cables allow easy emitter and receiver hookup and provide a single "homerun" cable. Besides providing similar cabling, this hookup is advantageous during installation, wiring, and troubleshooting. An optional 5-pin emitter QD connection allows a test function to simulate blocked beams, if desired.



### Fixed blanking.

EZ-SCREEN fixed blanking allows for stationary objects, such as tooling or a constant inflow of material, to be ignored while positioned in the defined area. A flashing green zone indicator denotes the area of fixed blanking. If the object is removed, the system goes into a lockout mode to ensure a hole in the sensing field is not created. Fixed blanking is easily programmed with four DIP-switches, by simply entering program mode (cycling the reset or power), putting the object in place, and exiting program mode by re-configuring the DIP-switches, cycling the reset or power.



## EZ-SCREEN® Grid System: Economical, long-range perimeter or access guarding.

### **An affordable, non-contact safety device.**

Access and long-range perimeter guarding no longer requires expensive systems with separate control boxes. Banner's EZ-SCREEN Grid System is an economical, self-contained system that requires only an emitter and a receiver pair. The system features exceptional performance with a finely-focused  $\pm 2.5^\circ$  beam that is easy to align, even at full range.

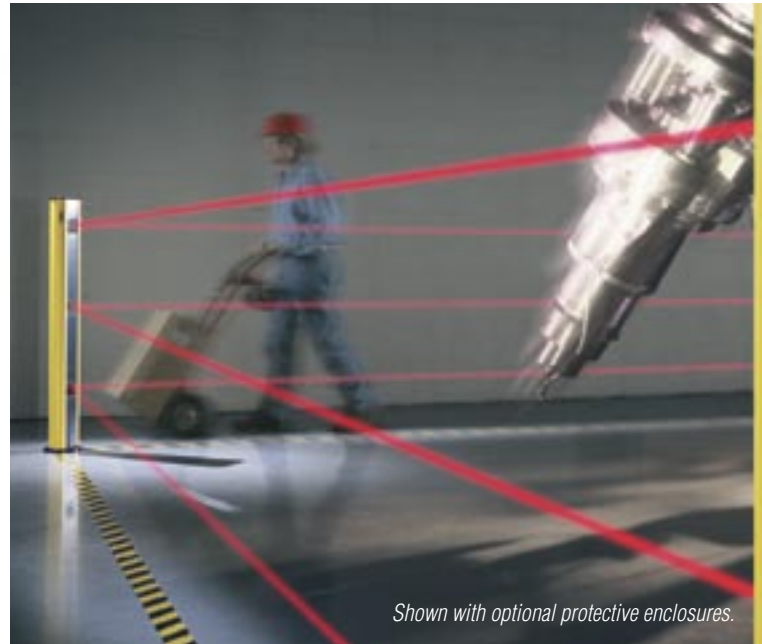
### **Protect your workers from dangerous machinery.**

The EZ-SCREEN Grid System's low price, combined with its exceptional ambient light immunity, makes it an excellent alternative for guarding dangerous machinery, including:

- Assembly stations
- Material handling areas
- Packaging equipment
- Palletizers
- Automated production equipment
- Roll formers
- Robotic work cells

### **Perimeter guarding applications.**

Guarding the perimeters of large work cells, in-line production machines and other large machines often require long-range 2-, 3- and 4-beam safety light grids. In these large-area applications, personnel pass through the light grid, at which point the hazardous motion stops; then they may safely continue into the guarded area.



*Shown with optional protective enclosures.*

## **EZ-SCREEN Grid and Point**

### **Long and short-range models.**

These systems can also operate over extremely long ranges, with a choice of emitters with an operating range of either 0.8 m to 20 m or 15 m to 70 m. Models are available with one, two, three or four beams, with beam spacing from 300 to 584 mm (Grid models).

### **Dual microcontrollers with redundant, self-checking design.**

EZ-SCREEN Grid and Point are redundant, microcontroller-based, opposed-mode, photoelectric beams. The self-checking, control reliable circuit is designed to meet Type 4 requirements per IEC 61469-1 and -2. The system consists of an emitter and a receiver pair that are optically synchronized, eliminating the need for an external controller or sync wire.

### **Flexible wiring options.**

EZ-SCREEN Grids and Points come standard with field-wireable terminal chamber or MINI-style quick disconnect connectors.





## EZ-SCREEN® Point System: A versatile, single-beam solution for safety applications.

### Exceptional perimeter and access guarding with single beam Point Systems.

Like the EZ-SCREEN Grid System, the EZ-SCREEN Point System is a self-contained system capable of guarding up to a 70 m span. The difference is that EZ-SCREEN Point has a single beam. The EZ-SCREEN Point is a versatile solution for specialized personnel safety applications where standard grid configurations don't fit the application.

### Create a two-beam or custom beam pattern.

EZ-SCREEN Point can be also used with angled mirrors to simulate a two-beam system. Multiple EZ-SCREEN Point Systems can be used together to create custom grid patterns.



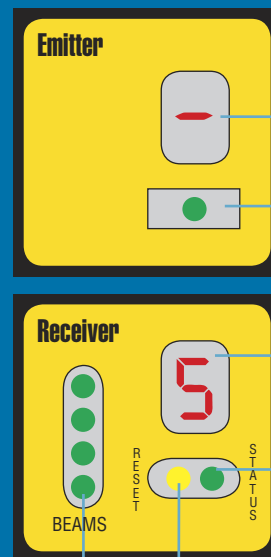
### Safety outputs.

The receivers have two diverse, redundant, solid-state safety outputs capable of switching 24V dc loads up to 0.5 amps. Optional relay interface modules are available for ac loads or loads requiring higher currents. Discrete mechanically linked, forced-guided relays may also be driven directly and monitored without the need for additional interface modules.



### Visible status indicators keep you better informed.

The EZ-SCREEN Point and EZ-SCREEN Grid status indicators are clearly visible on the front of each sensor, keeping operators constantly informed of system conditions and operating status. The emitter and receiver each have a seven-segment LED diagnostic display that indicates specific problems or configuration conditions.



#### Diagnostics

Dash: System is OK  
20-29: System Fault codes



#### System Status

Green: RUN mode  
Flashing Green: TEST mode  
Flashing Red: Lockout  
OFF: No power to sensor

#### Diagnostics

Dash: System is OK (Trip output)  
L: System is OK (Latch output)  
0-9: System Fault codes

#### System Status

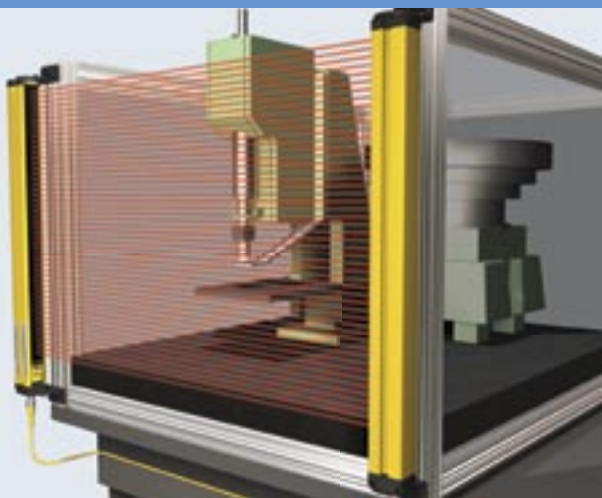
Green: RUN mode OSSD output(s) ON  
Red: RUN mode, OSSD output(s) OFF  
Flashing Red: Lockout condition, output(s) OFF

#### System Reset Status

ON steady: RUN mode  
Double flashing: Waiting for manual power-up reset  
Single flashing: Waiting for manual latch reset  
OFF: No power; or system is not ready for operation

#### Beam Status

Green: Clear beam, strong signal  
Flashing Green: Clear beam, weak signal  
Red: Beam blocked  
OFF: No power or system not synchronized

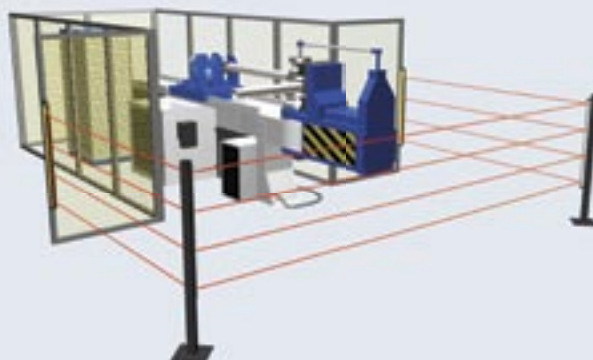


### POINT-OF-OPERATION

**Objective:** Protect operators' hands when using a small, table-top press.

**Sensor Model:** 450 mm EZ-SCREEN pair, 14 mm resolution, set for Trip Output operation.

**Operation:** Due to the continual detection, the press is prevented from cycling when the operator's hands are in the hazardous area. The EZ-SCREEN resets automatically when the protected area becomes clear, allowing the operator to restart the process by normal initiation means.



### PERIMETER GUARDING AND SSM MIRRORS

**Objective:** Safeguard the tube bending workcell while allowing easy access on three sides.

**Sensor Models:** EZ-SCREEN 4-beam Grid pair for Latch Output operation. SSM Corner Mirrors.

**Operation:** EZ-SCREEN Grid is configured with mirrors to create a three-sided optical fence. As an operator passes through the safety light screen, the hazardous motion is stopped. The EZ-SCREEN Grid must be reset manually from outside the perimeter, after the hazardous area is clear, before operation can resume.



### AREA GUARDING

**Objective:** Safeguard an inspection station of a robot cell.

**Sensor Models:** 1200 mm EZ-SCREEN pair, with 30 mm resolution, set for Latch Output operation.

**Operation:** Safety light screens allow the monitoring of an area without the use of a safety mat or area scanner. As an operator initiates an inspection cycle, the robot presents the work piece. The operator steps into the station, at which time hazardous motion is prevented. After exiting the station, the operator resets the EZ-SCREEN and restarts the operation.



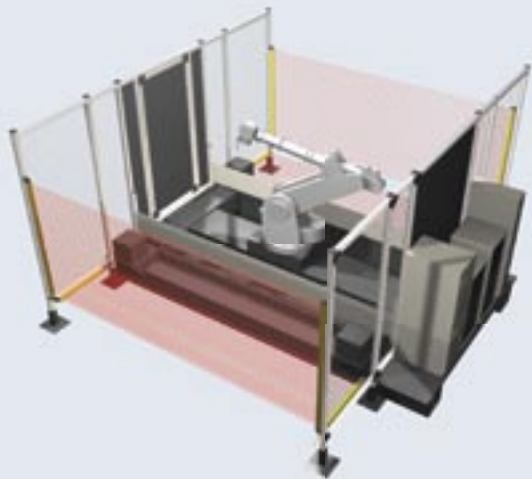
### REDUCED RESOLUTION & FIXED BLANKING

**Objective:** Protect personnel from hazards of a box-filling machine.

**Sensor Model:** 900 mm EZ-SCREEN pair, 14 mm resolution, configured for Reduced Resolution, Trip Output operation, Inverted Display and programmed Fixed Blanking.

**Operation:** The EZ-SCREEN has been programmed to ignore the empty boxes entering the machine by enabling Fixed Blanking and teaching the system the height of the boxes. Reduced Resolution allows variations in the height of the boxes to also be ignored. If the feed mechanism empties of boxes such that the Fixed Blanked beam become clear, the EZ-SCREEN will lock out, sending a stop signal.





## ROBOTIC ONE-SIDED AND TWO-SIDED WELDING CELLS

**Objective:** Safeguard a robotic welding cell.

**Sensor Model:** Four systems of the cascade EZ-SCREEN SLSCP30-1800Q88

**Operation:** Two or four systems of EZ-SCREEN are cascaded (daisy-chained) to form "L" shaped sensing field(s). This configuration minimizes separation (safety) distance and pass-through hazards by providing continual sensing as an area guard. All four systems can be cascaded together, or separated for individual muting applications. E-stop buttons can be incorporated at the end of the chain if muting is not incorporated.



## ACCESS GUARDING AND MUTING

**Objective:** Safeguard the access point of a workcell while allowing material to enter or exit, but preventing exposure to hazards by personnel.

**Sensor Model:** SGP4-300Q83 EZ-SCREEN Grid, set for Trip Output, interfaced with a MM-TA-12B IP67 Muting Module, Q45 sensors used as muting inputs, set for Latch Output.

**Operation:** The EZ-SCREEN Grid is configured to allow material to pass through the sensing field without having to be manually reset. The MM-TA-12B evaluates signals from the EZ-SCREEN Grid and mute sensors to determine whether to send a stop signal to the machine control or not. If something or someone is inappropriately entering the workcell, the hazardous motion is stopped. The MM-TA-12B must be manually reset before operation can resume.



## SEMICONDUCTOR WAFER MANUFACTURING CELL

**Objective:** Totally safeguard a manufacturing cell, including E-stop buttons, interlocked guarding, and a safety light screen.

**Sensor Model:** An SFCDT-4A1C PICO-GUARD™ controller is interfaced with an SLSP14-900Q88 EZ-SCREEN, set for Trip Output, and a string of E-stop buttons.

**Operation:** The PICO-GUARD controller is optically monitoring all interlocked guards to a Category 4 safety level. The PICO-GUARD is also monitoring safety signals from an E-stop string and the EZ-SCREEN. The EZ-SCREEN is configured for automatic reset, while recovering from an emergency stop situation must be manually reset before operation can resume.



## POINT-OF-OPERATION WITH THC & MUTING

**Objective:** Protect the operator and other factory personnel near a large press that uses Two-Hand Control for cycle initiation and muting of the Safety Light SCREEN.

**Sensor Model:** 1800 mm EZ-SCREEN pair, 30 mm resolution (set for Trip Output operation) interfaced with STBVR81 Self-checking Optical Touch Buttons and an AT-GM-11KM Two-Hand Control safety module with muting.

**Operation:** The EZ-SCREEN is angled to prevent a pass-through hazard and maintain separation (safety) distance. The EZ-SCREEN solid-state safety outputs supply power to the STBVR81 touch buttons, such that if the light screen is interrupted the Two-Hand Control can not be actuated. Once the sensing field is clear, the STBs become functional, which allows the operator to begin the cycle. Once the die closes, both the EZ-SCREEN and the STB Two-Hand Control are muted, allowing the operator to accomplish other tasks while the machine cycle is completed. (Call factory for further information.)

# EZ-SCREEN® Systems Model Selection.

## EZ-SCREEN Systems

Components may be purchased individually, in pairs, or in kits (see below, page 11 and page 12). EZ-SCREEN 14 mm and 30 mm Systems with 8-pin M12 (Euro-style) QD connectors are listed below. **If an emitter with the TEST function is required**, replace Q8 with a Q5 on emitter model numbers, and replace Q88 with Q85 on pair model numbers.

Defined Area Height	14 mm Resolution Models 0.1 m to 6 m (4" to 20') range				30 mm Resolution Models 0.1 m to 18 m (4" to 60') range			
	Model		Number of Beams	Response Time	Model		Number of Beams	Response Time
150 mm (5.9")	SLSE14-150Q8 SLSR14-150Q8 SLSP14-150Q88	Emitter Receiver Pair	20	11 ms	SLSE30-150Q8 SLSR30-150Q8 SLSP30-150Q88	Emitter Receiver Pair	10	9 ms
300 mm (11.8")	SLSE14-300Q8 SLSR14-300Q8 SLSP14-300Q88	Emitter Receiver Pair	40	15 ms	SLSE30-300Q8 SLSR30-300Q8 SLSP30-300Q88	Emitter Receiver Pair	20	11 ms
450 mm (17.7")	SLSE14-450Q8 SLSR14-450Q8 SLSP14-450Q88	Emitter Receiver Pair	60	19 ms	SLSE30-450Q8 SLSR30-450Q8 SLSP30-450Q88	Emitter Receiver Pair	30	13 ms
600 mm (23.6")	SLSE14-600Q8 SLSR14-600Q8 SLSP14-600Q88	Emitter Receiver Pair	80	23 ms	SLSE30-600Q8 SLSR30-600Q8 SLSP30-600Q88	Emitter Receiver Pair	40	15 ms
750 mm (29.5")	SLSE14-750Q8 SLSR14-750Q8 SLSP14-750Q88	Emitter Receiver Pair	100	27 ms	SLSE30-750Q8 SLSR30-750Q8 SLSP30-750Q88	Emitter Receiver Pair	50	17 ms
900 mm (35.4")	SLSE14-900Q8 SLSR14-900Q8 SLSP14-900Q88	Emitter Receiver Pair	120	32 ms	SLSE30-900Q8 SLSR30-900Q8 SLSP30-900Q88	Emitter Receiver Pair	60	19 ms
1050 mm (41.3")	SLSE14-1050Q8 SLSR14-1050Q8 SLSP14-1050Q88	Emitter Receiver Pair	140	36 ms	SLSE30-1050Q8 SLSR30-1050Q8 SLSP30-1050Q88	Emitter Receiver Pair	70	21 ms
1200 mm (47.2")	SLSE14-1200Q8 SLSR14-1200Q8 SLSP14-1200Q88	Emitter Receiver Pair	160	40 ms	SLSE30-1200Q8 SLSR30-1200Q8 SLSP30-1200Q88	Emitter Receiver Pair	80	23 ms
1350 mm (53.1")	SLSE14-1350Q8 SLSR14-1350Q8 SLSP14-1350Q88	Emitter Receiver Pair	180	43 ms	SLSE30-1350Q8 SLSR30-1350Q8 SLSP30-1350Q88	Emitter Receiver Pair	90	25 ms
1500 mm (59")	SLSE14-1500Q8 SLSR14-1500Q8 SLSP14-1500Q88	Emitter Receiver Pair	200	48 ms	SLSE30-1500Q8 SLSR30-1500Q8 SLSP30-1500Q88	Emitter Receiver Pair	100	27 ms
1650 mm (65")	SLSE14-1650Q8 SLSR14-1650Q8 SLSP14-1650Q88	Emitter Receiver Pair	220	52 ms	SLSE30-1650Q8 SLSR30-1650Q8 SLSP30-1650Q88	Emitter Receiver Pair	110	30 ms
1800 mm (70.9")	SLSE14-1800Q8 SLSR14-1800Q8 SLSP14-1800Q88	Emitter Receiver Pair	240	56 ms	SLSE30-1800Q8 SLSR30-1800Q8 SLSP30-1800Q88	Emitter Receiver Pair	120	32 ms

## EZ-SCREEN Cables

Two M12 Euro-style cables are required, either two each QDE-8xxD or one QDE-8xxD and one QDE-5xxD (for emitters with TEST function available). User supplied cables can be used\*. Call factory for information on CSB series splitter cables, and QDE2R4-8xxD E-Stop/Safety Stop cables (Cascading Systems.)

Models	Length	Wire	Termination	Banner Cable Pinout/Color Code			European M12 Specification*			Connector (female face view)
<b>For Receiver and Emitters with 8-pin QDs</b>				<b>Pin</b>	<b>Color</b>	<b>Function</b>	<b>Pin</b>	<b>Color</b>	<b>Function</b>	
QDE-815D	5 m (15')	22 gauge	8-pin Euro-style female connector on one end; cut to length	1	Bn	+24V dc	1	Wh	+24V dc	
QDE-825D	8 m (25')			2	Or/Bk	EDM #2	2	Bn	EDM #2	
QDE-850D	15 m (50')			3	Or	EDM #1	3	Gn	EDM #1	
QDE-875D	23 m (75')			4	Wh	OSSD #2	4	Ye	OSSD #2	
QDE-8100D	30 m (100')			5	Bk	OSSD #1	5	Gy	OSSD #1	
				6	Bu	OV dc	6	Pk	OV dc	
				7	Gn/Ye	Gnd/Chassis	7	Bu	Gnd/Chassis	
				8	Vi	Reset	8	Rd	Reset	
<b>For Emitters with 5-pin QD and TEST available</b>				<b>Pin</b>	<b>Color</b>	<b>Function</b>	<b>Pin</b>	<b>Color</b>	<b>Function</b>	
QDE-515D	5 m (15')	22 gauge	5-pin Euro-style female connector on one end; cut to length	1	Bn	+24V dc	1	Bn	+24Vdc	
QDE-525D	8 m (25')			2	Wh	Test #2	2	Wh	Test #2	
QDE-550D	15 m (50')			3	Bu	OV dc	3	Bu	OV dc	
QDE-575D	23 m (75')			4	Bk	Test #1	4	Bk	Test #1	
QDE-5100D	30 m (100')			5	Gn/Ye	Gnd/Chassis	5	Shield	Gnd/Chassis	

\* The European M12 Specification pin assignment and color codes are listed as a customer courtesy. The user must verify suitability of these cables for each application.



# Cascading EZ-SCREEN® Cables & Family Model Numbering Scheme.

## Cascading EZ-SCREENs

The SLSCx14-xxxxxx and SLSCx30-xxxxxx models are capable of interconnecting four pairs of EZ-SCREEN systems regardless of resolution, number of beams, or size of the defined area.

Maximum system response time can be easily calculated by adding 2 ms for each additional (cascaded) system to the greatest individual response time in the series (e.g.  $T_r = 40 \text{ ms} + 2 \text{ ms} + 2 \text{ ms} + 2 \text{ ms} = 46 \text{ ms}$  for a system that includes four SLSCP14-1200 pairs). Or, the response time can be calculated individually by adding 2 ms for each position in the cascade.

## Cascade Ordering Information

See EZ-SCREEN model numbers on page 10. Select model with required defined area and resolution, replace “SLS” with “SLSC”. Call factory for information on possible kits.

**Cables:** See table to the right for cable model numbers. The interconnect cable lengths are dependent on the number of receivers in the cascade and the length of the machine interface/power cable. **Refer to the EZ-SCREEN manual or call the factory for maximum cable lengths and combinations.**

NOTE: SLSCxx 14-150xx and SLSCxx 30-150xx not available.

## Cascade Double-ended Cables

For use with Cascade EZ-SCREEN models. Use two double-ended DEE2R-xxxD cables for each sensor pair to be cascaded, and two standard QDE-xxxD cables per cascaded system (see page 10). Example: for a cascaded system comprising of SLSCP30-450Q88 and an SLSCP14-1200Q88, cabling could include: two DEE2R-81D between the systems and two QDE-825D to return to the machine control panel.

## EZ-SCREEN Double-ended Cables 8-pin Emitter and Receivers\*

Model*	Length	Wire	Termination*
DEE2R-81D	0.3 m (1')	22 AWG	8-pin Double-ended cables, female to male (rotateable)
DEE2R-83D	1 m (3')		
DEE2R-88D	2.5 m (8')		
DEE2R-815D	5 m (15')		
DEE2R-825D	8 m (25')		
DEE2R-850D	15 m (50')		
DEE2R-875D	23 m (75')		
DEE2R-8100D	30 m (100')		

\*For 5-pin Emitter cable allowing test function, replace “8” in model number with “5”.

## EZ-SCREEN® kit model numbering scheme.



### Family model style

SP = single point
SPXL = single point long range
SG = safety grid
SGXL = safety grid long range
SLS = safety light screen
SLSC = cascade SLS

K = Kit

### SP & SG

1 = one beam
2 = two beams
3 = three beams
4 = four beams

### SLS resolution

14 = 14 mm
30 = 30 mm

### Beam spacing

SP	SG*	SLS & SLSC
Blank	300 mm	150 mm
	400 mm	300 mm
	500 mm	450 mm
	533 mm	600 mm
	584 mm	750 mm
		900 mm
		1050 mm
		1200 mm
		1350 mm
		1500 mm
		1650 mm
		1800 mm

\*See page 12 for available configurations.

### Protected height

The EZ-SCREEN Optical Safety System (SCREENs, Grids, or Points) may be ordered individually, as pairs, or as kits containing sensors of equal length and resolution or beam spacing, with or without an interfacing solution or quick disconnect cables. The example below is a Safety Light SCREEN Kit including 14 mm resolution, 1200 mm protect height sensors with integral 8-pin QDs, an IM-T-9A Interface Module, a 15' receiver cable and a 25' emitter cable.

SLS

K

14

1200

Q88

1

R15E25

### Interfacing options

Blank	None
1	IM-T-9A, 1 each
2	IM-T-11A, 1 each
3	11-BG00-31-D-024 contactors (10A), 2 each
4	11-BF16C01-024 contactors (16A), 2 each

### Receiver & Emitter QD options:

Mini-style on SP and SG, M12/EURO-style on SLS

Blank	SP & SG = terminal chamber (customer supplied wiring, no QD cabling)
Q83	Integral QD receiver/emitter without TEST
Q85	Integral QD receiver/emitter with TEST
Q88	Integral QD receiver/emitter without TEST

See page 10 and 12 for model number of individual sensors and for pairs. Not all kits are available. Call factory for further information.

### QD cabling length options (see QD options for number of pins and connector style)

R = Receiver	E = Emitter	D = Double-ended Cable
Blank	None	
RE15	3 m (15'), 2 each	
RE25	8 m (25'), 2 each	
R15E25	5 m (15') Receiver & 8 m (25') Emitter	
R25E15	8 m (25') Receiver & 5 m (15') Emitter	
RE50	15 m (50'), 2 each	
R15E50	5 m (15') Receiver & 15 m (50') Emitter	
R50E15	15 m (50') Receiver & 5 m (15') Emitter	
R25E50	8 m (25') Receiver & 15 m (50') Emitter	
R50E25	15 m (50') Receiver & 8 m (25') Emitter	
RE75	23 m (75'), 2 each	
RE100	30 m (100'), 2 each	

Other lengths and combinations possible. See cables listed on page 10, 11, and 12, or call factory for further information.

EZ-SCREEN Grid and Point models ONLY

EZ-SCREEN Safety Light SCREEN 14 mm & 30 mm models ONLY

All EZ-SCREEN models

# EZ-SCREEN® Point & Grid Systems Model Selection.

NOTE: See page 11 for kit ordering information.

	Protected Height	Short-Range Models (0.8 m - 20 m)	Long-Range Models (0.8 m - 20 m)	Termination	Number of Beams	Beam Spacing
Point Systems	N.A.	SPE1 SPR1 SPP1 SPE1Q3 SPE1Q5 SPR1Q8 SPP1Q83 SPP1Q85	SPXLE1 SPR1 SPXLP1 SPXLE1Q3 SPXLE1Q5 SPXLR1Q8 SPXLP1Q83 SPXLP1Q85	Emitter, Terminal Chamber Receiver, Terminal Chamber Pair, Terminal Chamber Emitter, 3-pin Mini-style QD Emitter, 5-pin Mini-style QD w/TEST Receiver, 8-pin Mini-style QD Pair, 8-pin Receiver & 3-pin Emitter Pair, 8-pin Receiver & 5-pin Emitter	1	N.A.
Grid Systems	500 mm (19.7")	SGE2-500 SGR2-500 SGP2-500 SGE2-500Q3 SGE2-500Q5 SGR2-500Q8 SGP2-500Q83 SGP2-500Q85	SGXLE2-500 SGR2-500 SGXLP2-500 SGXLE2-500Q3 SGXLE2-500Q5 SGR2-500Q8 SGXLP2-500Q83 SGXLP2-500Q85	Emitter, Terminal Chamber Receiver, Terminal Chamber Pair, Terminal Chamber Emitter, 3-pin Mini-style QD Emitter, 5-pin Mini-style QD w/TEST Receiver, 8-pin Mini-style QD Pair, 8-pin Receiver & 3-pin Emitter Pair, 8-pin Receiver & 5-pin Emitter	2	500 mm (19.7")
Grid Systems	584 mm (23")	SGE2-584 SGR2-584 SGP2-584 SGE2-584Q3 SGE2-584Q5 SGR2-584Q8 SGP2-584Q83 SGP2-584Q85	SGXLE2-584 SGR2-584 SGXLP2-584 SGXLE2-584Q3 SGXLE2-584Q5 SGR2-584Q8 SGXLP2-584Q83 SGXLP2-584Q85	Emitter, Terminal Chamber Receiver, Terminal Chamber Pair, Terminal Chamber Emitter, 3-pin Mini-style QD Emitter, 5-pin Mini-style QD w/TEST Receiver, 8-pin Mini-style QD Pair, 8-pin Receiver & 3-pin Emitter Pair, 8-pin Receiver & 5-pin Emitter	2	584 mm (23")
Grid Systems	800 mm (31.5")	SGE3-400 SGR3-400 SGP3-400 SGE3-400Q3 SGE3-400Q5 SGR3-400Q8 SGP3-400Q83 SGP3-400Q85	SGXLE3-400 SGR3-400 SGXLP3-400 SGXLE3-400Q3 SGXLE3-400Q5 SGR3-400Q8 SGXLP3-400Q83 SGXLP3-400Q85	Emitter, Terminal Chamber Receiver, Terminal Chamber Pair, Terminal Chamber Emitter, 3-pin Mini-style QD Emitter, 5-pin Mini-style QD w/TEST Receiver, 8-pin Mini-style QD Pair, 8-pin Receiver & 3-pin Emitter Pair, 8-pin Receiver & 5-pin Emitter	3	400 mm (15.7")
Grid Systems	900 mm (35.4")	SGE4-300 SGR4-300 SGP4-300 SGE4-300Q3 SGE4-300Q5 SGR4-300Q8 SGP4-300Q83 SGP4-300Q85	SGXLE4-300 SGR4-300 SGXLP4-300 SGXLE4-300Q3 SGXLE4-300Q5 SGR4-300Q8 SGXLP4-300Q83 SGXLP4-300Q85	Emitter, Terminal Chamber Receiver, Terminal Chamber Pair, Terminal Chamber Emitter, 3-pin Mini-style QD Emitter, 5-pin Mini-style QD w/TEST Receiver, 8-pin Mini-style QD Pair, 8-pin Receiver & 3-pin Emitter Pair, 8-pin Receiver & 5-pin Emitter	4	300 mm (11.8")
Grid Systems	1066 mm (42")	SGE3-533 SGR3-533 SGP3-533 SGE3-533Q3 SGE3-533Q5 SGR3-533Q8 SGP3-533Q83 SGP3-533Q85	SGXLE3-533 SGR3-533 SGXLP3-533 SGXLE3-533Q3 SGXLE3-533Q5 SGR3-533Q8 SGXLP3-533Q83 SGXLP3-533Q85	Emitter, Terminal Chamber Receiver, Terminal Chamber Pair, Terminal Chamber Emitter, 3-pin Mini-style QD Emitter, 5-pin Mini-style QD w/TEST Receiver, 8-pin Mini-style QD Pair, 8-pin Receiver & 3-pin Emitter Pair, 8-pin Receiver & 5-pin Emitter	3	533 mm (21")

## EZ-SCREEN® Point & Grid QD cables

Two Mini-style cables are required for sensors with QDs, one QDS-8xxC for the receiver, and one QDS-3xxC for emitters without TEST function, or one QDS-5xxC for emitters with TEST function available. User supplied cables can be used\*\*.

Models	Length	Wire	Termination	Banner Cable Pinout/Color Code			SAE H1738-2** Pinout/Color Code			Connector (female face view)
				Pin	Color	Function	Pin	Color*	Function	
QDS-315C QDS-325C QDS-350C QDS-375C QDS-3100C	5 m (15') 8 m (25') 15 m (50') 23 m (75') 30 m (100')	20 gauge	3-pin Mini-style female connector on one end; cut to length	1	Gn/Ye	Gnd/PE	1	Gn	Gnd/PE	
				2	Bn	+24V dc	2	Rd/Bk	+24Vdc	
				3	Bl	OV dc	3	Rd/Wh	OV dc	
QDS-515C QDS-525C QDS-550C	5 m (15') 8 m (25') 15 m (50')	20 gauge	5-pin Mini-style female connector on one end; cut to length	1	Bk	Test #1	1	Wh	Test #1	
				2	Bl	OV dc	2	Rd	OV dc	
				3	Gn/Ye	Gnd/PE	3	Gn	Gnd/PE	
				4	Br	+24V dc	4	Or	+24V dc	
				5	Wh	Test #2	5	Bk	Test #2	
QDS-815C QDS-825C QDS-850C QDS-875C	5 m (15') 8 m (25') 15 m (50') 23 m (75')	20 gauge	8-pin Mini-style female connector on one end; cut to length	1	Bn	+24V dc	1	Or	+24V dc	
				2	Or/Bk	EDM #2	2	Bu	EDM #2	
				3	Or	EDM #1	3	Wh/BK	EDM #1	
				4	Wh	OSSD #2	4	Bk	OSSD #2	
				5	Bk	OSSD #1	5	Wh	OSSD #1	
				6	Bu	OV dc	6	Rd	OV dc	
				7	Gn/Ye	Gnd/Chassis	7	Gn	Gnd/PE	
				8	Vi	Reset	8	Rd/Bk	Reset	

\* The 3-pin and th

\*\* The SAE H1738-2 pin assignment and color codes are listed as customer courtesy. The user must verify suitability of these cables for each application.



## EZ-SCREEN® Muting Module monitors entry/exit points.

### Allows parts to access guarded work cells without stopping machinery.

The EZ-SCREEN Muting Module is a redundant microcontroller-based logic module designed to control when a system can safely mute safety light screen outputs. This function is necessary for certain production processes to run smoothly. The short-range EZ-SCREEN Grid, when used with the EZ-SCREEN Muting Module, provides the complete package for guarding entry/exit points anywhere work-in-process needs to flow freely into and out of hazardous work cells. It monitors inputs from sensors to determine when a car body, pallet or other work piece needs to pass through an access point into a guarded work cell without causing the machinery to stop. The Muting Module uses inputs from switches or sensors, such as photoelectrics, and from the EZ-SCREEN receiver to help determine if the light screen obstruction is a verified work piece or not. If a person is detected trying to pass through the EZ-SCREEN Grid, the pass system control does not mute the output from the EZ-SCREEN and causes the dangerous machinery to stop.



### Rugged IP65 machine mountable module or DIN-rail mountable version.

IP65 ruggedized version can be mounted near the guarded area without requiring an enclosure, and all connections are made using standard quick-disconnect cables. Cost-effective DIN-rail mountable version allows for wiring inside a control box. Removable terminal blocks make wiring and replacement easier.

See Banner manual p/n 63517 for further information.

DIN-rail Muting module (2 OSSD outputs, 2 or 4 muting inputs, USSI, override input)	<b>MMD-TA-12B</b>
DIN-rail Muting module (Relay outputs, 2 or 4 muting inputs, USSI, override input)	<b>MMD-TA-11B</b>
IP65 Muting module (2 OSSD outputs, 2 or 4 muting inputs, USSI, override input)	<b>MM-TA-12B</b>
Cable to interface EZ-SCREEN 14 mm & 30 mm Receiver with MM-TA-12B Muting Module: 22 Ga, 8-pin Euro-style (M12) female connector to 7-pin Mini-style male connector; double-ended.	2.5 m (8')
	5 m (15')
	8 m (25')
Cable to interface EZ-SCREEN Grid and Point (QD models) with MM-TA-12B muting module 20 Ga, 8-pin Mini-style female connector to 7-pin Mini-style connector; double-ended.	2.5 m (8')
	5 m (15')
	8 m (25')
	<b>DESE4-508D</b>
	<b>DESE4-515D</b>
	<b>DESE4-525D</b>
	<b>DES4-508C</b>
	<b>DES4-515C</b>
	<b>DES4-525C</b>



## Corner mirrors and stands.

With Banner MSM or SSM Series corner mirrors (shown), you can guard more than one side of an area, using only one emitter/receiver pair.

- Rear-surface glass mirrors rated at 85% efficiency (approximately 8% less range per mirror).
- Available in 15 lengths from 100 mm to 1900 mm reflective area height.
- MSM Series for light industrial environments.
- SSM Series feature rugged aluminum housings for abusive environments.
- SSM-S models feature stainless steel reflectors for impact resistance and FDA compliance. *See Banner data sheet p/n 67200.*
- MSA Series stands include base.

## Polycarbonate lens shields.

Rugged EZS Series shields protect EZ-SCREEN® lenses from weld slag and other contaminants attach easily with their self-adhesive foam backing. They are available for all EZ-SCREEN emitters and receivers. Order one per emitter or receiver (Approximately 10% per lens shield, 20% per pair reduction in range).



Mirror Model	For EZ-SCREEN Models	Mirror Model	For EZ-SCREEN Models	For EZ-SCREEN Point & Grid Models
<b>MSM8A</b>	SLS.-150	<b>SSM-100</b>		SP.1 (Point)
<b>MSM12A</b>	SLS.-300	<b>SSM-200</b>	SLS.-150	
<b>MSM20A</b>	SLS.-450	<b>SSM-375</b>	SLS.-300	
<b>MSM24A</b>	SLS.-600	<b>SSM-550</b>	SLS.-450	SG..2-500
<b>MSM32A</b>	SLS.-750	<b>SSM-675</b>	SLS.-600	SG..2-584
<b>MSM36A</b>	SLS.-900	<b>SSM-825</b>	SLS.-750	
<b>MSM44A</b>	SLS.-1050	<b>SSM-975</b>	SLS.-900	SG..3-400, SG..4-300
<b>MSM48A</b>	SLS.-1200	<b>SSM-1100</b>	SLS.-1050	
<b>Stand Model</b>	<b>Stand Height</b>	<b>SSM-1175</b>		SG..3-533
<b>MSA-S24-1</b>	24"	<b>SSM-1275</b>	SLS.-1200	
<b>MSA-S42-1</b>	42"	<b>SSM-1400</b>	SLS.-1350	
<b>MSA-S66-1</b>	66"	<b>SSM-1550</b>	SLS.-1500	
<b>MSA-S84-1</b>	84"	<b>SSM-1750</b>	SLS.-1650	
		<b>SSM-1900</b>	SLS.-1800	

NOTE: SSM, SSM-S, SP and SG require one EZA-MBK-2 adaptor bracket.

NOTE: The total sensing range decreases by approximately 8% per mirror.

## Protective Enclosures.

Choose from three enclosure systems depending on your application. Models for 14 mm and 30 mm resolution EZ-SCREEN systems are FDA-grade tubular polycarbonate with Delrin® end caps and stainless steel mounting components. Models for Grid and Point systems are powder coated, yellow extruded aluminum with anodized aluminum top and base plates.

Special explosion proof models fit 450 mm to 1050 mm 14 and 30 mm resolution emitters and receivers. *For more details, see catalog or go to [bannerengineering.com](http://bannerengineering.com)*



	Lens Shield Model Number	Fits EZ-SCREEN Models	Tubular Enclosure Model	EZ-SCREEN Models	Mounting Enclosure Model	EZ-SCREEN Point & Grid Models	Tubular Enclosure Model
EZ-SCREEN Point	<b>EZS-149</b>	SP.1	<b>EZA-TE-150</b>	SLS.-150	<b>EZA-S300</b>		
	<b>EZS-684</b>	SG..2-500	<b>EZA-TE-300</b>	SLS.-300	<b>EZA-S300-M*</b>	SG(XL)P4-300	<b>MSHDA-TE-48</b>
	<b>EZS-768</b>	SG..2-584	<b>EZA-TE-450</b>	SLS.-450	<b>EZA-S400</b>		
EZ-SCREEN Grid	<b>EZS-984</b>	SG..3-400	<b>EZA-TE-600</b>	SLS.-600	<b>EZA-S400-M*</b>	SG(XL)P3-400	<b>MSHDA-TE-40</b>
	<b>EZS-1251</b>	SG..3-533	<b>EZA-TE-750</b>	SLS.-750	<b>EZA-S500</b>		
	<b>EZS-1084</b>	SG..4-300	<b>EZA-TE-900</b>	SLS.-900	<b>EZA-S500-M*</b>	SG(XL)P2-500	<b>MSHDA-TE-32</b>
EZ-SCREEN	<b>EZS-150</b>	SLS.-150	<b>EZA-TE-1050</b>	SLS.-1050	<b>EZA-S500-M45*</b>	SG(XL)P1 and EZA-S500	<b>MSHDA-TE-6</b>
	<b>EZS-300</b>	SLS.-300	<b>EZA-TE-1200</b>	SLS.-1200	<b>EZA-S533</b>		
	<b>EZS-450</b>	SLS.-450	<b>EZA-TE-1350</b>	SLS.-1350	<b>EZA-S533-M*</b>	SG(XL)P3-533	<b>MSHDA-TE-48</b>
	<b>EZS-600</b>	SLS.-600	<b>EZA-TE-1500</b>	SLS.-1500	<b>EZA-S584</b>		
	<b>EZS-750</b>	SLS.-750	<b>EZA-TE-1650</b>	SLS.-1650	<b>EZA-S584-M*</b>	SG(XL)P2-584	<b>MSHDA-TE-32</b>
	<b>EZS-900</b>	SLS.-900	<b>EZA-TE-1800</b>	SLS.-1800	<b>EZA-S584-M45*</b>	SP (XL) P1 and EZA-S584	<b>MSHDA-TE-6</b>
	<b>EZS-1050</b>	SLS.-1050					
	<b>EZS-1200</b>	SLS.-1200					
	<b>EZS-1350</b>	SLS.-1350					
	<b>EZS-1500</b>	SLS.-1500					
	<b>EZS-1650</b>	SLS.-1650					
	<b>EZS-1800</b>	SLS.-1800					

NOTE: EZA-MBK-2 adapter bracket is required, if used with MSA Series stand.

\*Corner mirror models with integral adjustable mirrors. See data sheet p/n 109308.

## Explosion-Proof Model

Model	For EZ-SCREEN Models
<b>SS-XPE-32</b>	SLS.-450, SLS.-600, SLS.-750
<b>SS-XPE-43</b>	SLS.-900, SLS.-1050



## Installation & application accessories advance system capabilities.

### Interface modules and contactors.

Interface modules provide forced-guided relay outputs that are rated at 6A. Connected to the EZ-SCREEN® solid-state OSSD outputs, the IM-T modules can be monitored by the EZ-SCREEN via its external device monitoring (EDM) capability. Included are convenient plug-in terminal blocks on a 22.5 mm (0.9") DIN-rail-mountable housing.

Contactors, when used in pairs, can be used to create safety stop circuits (two N/O contacts in series, one from each contactor). Due to the forced-guided, mechanically linked design, the circuit can also be monitored by the EZ-SCREEN.

#### Interface Modules

<b>IM-T-9A</b>	Interface module (3 N/O redundant-output 6 amp contacts)
<b>IM-T-11A</b>	Interface module (2 N/O redundant-output 6 amp contacts, plus 1 N/C auxiliary)

#### Contactors

If used, two contactors (+24 Vdc) are required. See specific manual for hookup information.

<b>11-BG00-31-D-024</b>	10 amp positive-guided contactor 3N/O&1N/C
<b>11-BF16C01-024</b>	16 amp positive-guided contactor 3N/O&1N/C



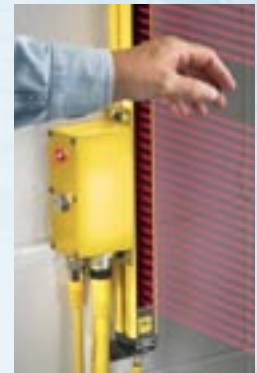
### Laser alignment tool.



Self-contained visible-beam laser tool for aiding in alignment of any EZ-SCREEN emitter/receiver pair. It is particularly useful with applications involving mirrors. Used for setup only.

<b>LAT-1-HD</b>	EZ-SCREEN Point and Grid alignment tool only
<b>EZA-LAT-1</b>	Clip-on retroreflective target for EZ-SCREEN Point and Grid
<b>LAT-1-SS</b>	EZ-SCREEN 14 mm & 30 mm alignment tool only
<b>EZA-LAT-2</b>	Clip-on retroreflective target for 14 mm & 30 mm EZ-SCREEN

### AC interface solutions.

Easily connect EZ-SCREEN systems to AC power with these versatile power supplies. Separate models for emitter and receiver; receiver model includes an 8 amp mechanical output relays. Third model combines both emitter and receiver power supplies into one unit. For complete emitter (standard & cascade), receiver and paired (emitter & receiver), AC interface availability, call the factory or go to [bannerengineering.com](http://bannerengineering.com).



Specifications	EZ-SCREEN		EZ-SCREEN Grid	EZ-SCREEN Point
Supply Voltage (V in)*	24V dc+ 15%, 10% maximum ripple			
	Emitter: 100 mA max. Receiver: 275 mA max.		Emitter: 150 mA max. Receiver: 500 mA max.	Emitter: 100 mA max. Receiver: 500 mA max.
Response Time	9 ms to 56 ms (dependent on number of beams)		24 ms	
Safety Rating	Type 4 per IEC 61496-1, -2; Category 4 per ISO 13849-1 (EN 954-1)			
EDM Input	+24V dc signals			
Reset Input	receiver. Monitored devices must respond within 200 milliseconds of an output change.			
Remote Test Input	Monitored Manual Reset function: open-closed-open action of a normally open switch connected to +24V dc.			
	TEST mode is active			
Outputs	to emitter TEST #1 terminal. Beam scanning stops to simulate a Blocked condition.			
	Two diverse redundant solid-state 24V dc, 0.5 A max. sourcing OSSD (Output Signal Switching Device) safety outputs.			
	Capable of the Banner "Safety Handshake" (see Manual Section 1).			
	ON-State voltage: = Von-1.5V dc, OFF-State voltage: = 1.2V dc max., Max. load resistance: 1000 ohm, Max. load capacitance: 0.1 µF			
Emitter/Receiver Operating Range	14 mm models: 0.1 m to 6 m (4" to 20') 30 mm models: 0.1 m to 18 m (4" to 60')		Short-range models: 0.8 m to 20 m (2.6' to 65') Long-range models: 15 m to 70 m (49' to 230')	
Manuals	p/n 112852		p/n 68410	p/n 68413
Effective Aperture Angle (EAA)	Meets Type 4 requirements per IEC 61496-2, Section 5.2.9; ± 2.5° @ 3 m		Meets Type 4 requirements per IEC 61496-2, Section 5.2.9 Short-range models: ± 2.5° @ 3 m Long-range models: ± 2.5° @ 15 m	
Enclosure	IEC IP65			
Certifications	 IEC61496-1, -2: Type 4 ISO13849-1(EN954-1): Cat4		 NIPF (7) UL1998, UL61496	

\*Exclusive of load

ed in IEC/EN 60204-1.

## Product Information



## Literature & Resources



## Applications & Tutorials



more sensors, more solutions

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