

SAFETY LIGHT SCREEN SELECTION

Type	Model	Catalog Page	Safety Category	Resolution	Supply Voltage	Maximum Range
EZ-SCREEN®	Standard Systems	Page 20	4	14 & 30 mm	24V dc	18 m
	Cascade Systems			14 & 30 mm		18 m
	Grid & Point Systems			300 to 584 mm (beam spacing)		70 m
PICO-GUARD™	Grid Systems	Page 36	4	300 to 584 mm (beam spacing)	24V dc	31 m
	Point Systems			—		
MICRO-SCREEN®	Emitters & Receivers	Page 42	4	19 mm	Supplied by controller	9 m
	Standard Series			32 mm		
	V-Series			N/A	24V dc, 115 or 230V ac	N/A
	Controllers					
	Metal Box Controllers					
	DIN Module Controllers					
MINI-SCREEN®	Emitters & Receivers	Page 58	4	19 & 25 mm	Supplied by controller	18 m
	Standard Series			38 mm		
	Heavy-Duty Series			N/A	24V dc, 115V ac or 230V ac	N/A
	Controllers					
	Metal Box Controllers					
	DIN Module Controllers					
EZ-SCREEN® Type 2	Type 2 Systems	Page 78	2	30 mm	24V dc	15 m

NC = Normally Closed Relay, NO = Normally Open Relay

Safety Output	Blanking	Muting Option	Output Response Time	Housing Material	Environmental Rating	
2 PNP OSSD (Trip /Latch Selectable)	Reduced Resolution (floating) 2-beam & Fixed	Optional Accessory (see page 123)	9 to 56 ms	Aluminum housing with yellow polyester powder finish or nickel-plated ESD	IEC IP65	
			11 to 56 ms			
	—		≤ 24 ms			
2 PNP OSSD (Trip /Latch Selectable) See page 108 for controller	—	Optional Accessory (see page 123)	13 ms	Black aluminum housing, tempered glass window	IEC IP65	
			See page 108 for controller	12 mm threaded barrel: Black polycarbonate plastic housing 30 mm threaded barrel: Stainless steel housing, glass window.	IEC IP67	
—	Reduced Resolution (floating) 1- or 2-beam & Fixed	—	< 38 ms (< 48 ms for muting)	Aluminum housing with yellow polyester powder finish or nickel-plated ESD	IEC IP65	
				Welded steel box with black polyester powder paint finish	IEC IP64	
				Gray polycarbonate	IEC IP20	
2 NO (Trip or Latch)	Reduced Resolution (floating) 1- or 2-beam & Fixed	Yes	< 48 to < 72 ms (< 58 to < 82 ms for muting)	Aluminum housing with black anodized or yellow polyester painted finish	IEC IP65	
Optional Accessory (see page 123)		Welded steel box with black polyester powder paint finish				IEC IP64
Gray polycarbonate		IEC IP20				
2 NO (Trip or Latch)	Reduced Resolution (floating) 1- or 2-beam & Fixed	—	< 48 to < 72 ms (< 58 to < 82 ms for muting)	Aluminum housing with black anodized or yellow polyester painted finish	IEC IP65	
Yes		Welded steel box with black polyester powder paint finish				IEC IP64
Optional Accessory (see page 123)		Gray polycarbonate				IEC IP20
2 PNP OSSD (Trip or Latch)	—	Optional Accessory (see page 123)	11 to 25 ms	Aluminum housing with yellow polyester powder finish	IEC IP65	



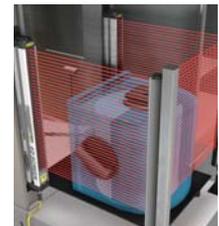
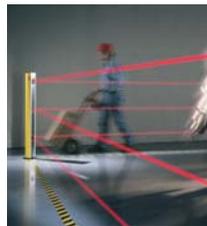
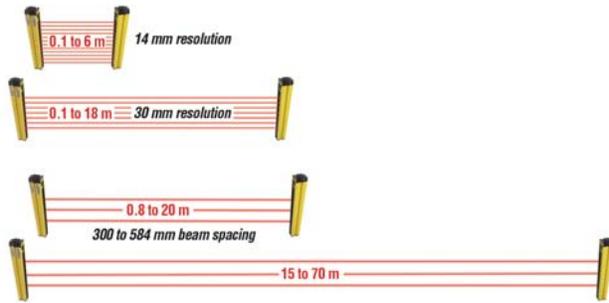
EZ-SCREEN®

Safety Light Screens

- Simple, two-piece integrated system has no control box.
- High-resolution 14 and 30 mm EZ-SCREEN® point-of-operation systems provide finger, hand and ankle detection.
- EZ-SCREEN Point and Grid systems allow one-, two-, three- or four-beam perimeter and access guarding.
- Superior optical design and finely focused $\pm 2.5^\circ$ beam make systems extremely easy to align and maintain.
- Status indicators and diagnostics show when alignment is complete and if there are problems with the installation.
- Redundant microprocessor-controlled, self-checking design exceeds control reliability requirements and is certified per CE (Type 4/Category 4) and cULus (NIPF, UL 61496, UL 1998).
- Unique cascading models (patent-pending) allow up to four systems of any length and resolution to be wired together to form a single safety device.
- Systems have ranges up to 70 m, with power and range for all types of applications including long-range perimeter guarding.



A complete family of machine guarding products.



Point of operation.

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

Area.

- Mount horizontally to eliminate safety mats and area scanners.
- Manually reset Latch output when area is clear.

Perimeter.

- Guard multiple sides of a dangerous area up to 70 m long.
- Expand guarding with optional corner mirrors and mounting stands.

Long-range single sided.

- EZ-SCREEN Grid systems provide 2, 3 or 4 beams.
- Beam spacing is from 300 to 584 mm.

Single point access.

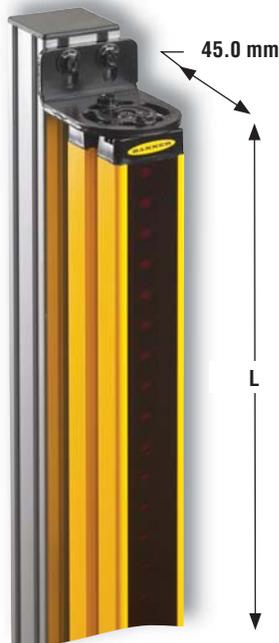
- Use with angled mirrors to simulate a 2-beam system.
- Use multiple units for custom beam patterns.

ESD applications.

- Dissipate electrostatic discharges.
- Ideal for microelectronic applications.

EZ-SCREEN® Systems

- 7-segment diagnostic display
- Blocked beam zone indicators
- System status and system reset status
- Integral or pigtail Euro-style QD connection
- Durable aluminum housing to resist twisting
- Metal end caps for added durability
- User configurable trip or latch outputs and Scan Code 1 or 2
- Fixed or 2-beam reduced resolution (floating) blanking
- EDM input and optional TEST** function



EZ-SCREEN Systems

Full View of Available Finishes



Yellow Painted Aluminum

Nickel-Plated ESD

SAFETY LIGHT SCREENS

EZ-SCREEN®

PICO-GUARD®

MICRO-SCREEN®

MINI-SCREEN®

EZ-SCREEN® TYPE 2

EZ-SCREEN® Systems, 14 mm Resolution

Models*	Resolution	Range	Defined Area	Housing Length (L)	Supply Voltage	Safety Outputs	Response Time	Connec-tion**	Data Sheet
SLSP14-150Q88† SLSE14-150Q8 SLSR14-150Q8	 14 mm Resolution	0.1 to 6 m	150 mm	262 mm	24V dc	2 PNP OSSD	≤ 11 ms	8-pin Euro QD	112852
SLSP14-300Q88† SLSE14-300Q8 SLSR14-300Q8			300 mm	372 mm			≤ 15 ms		
SLSP14-450Q88† SLSE14-450Q8 SLSR14-450Q8			450 mm	522 mm			≤ 19 ms		
SLSP14-600Q88† SLSE14-600Q8 SLSR14-600Q8			600 mm	671 mm			≤ 23 ms		
SLSP14-750Q88† SLSE14-750Q8 SLSR14-750Q8			750 mm	821 mm			≤ 27 ms		
SLSP14-900Q88† SLSE14-900Q8 SLSR14-900Q8			900 mm	971 mm			≤ 32 ms		
SLSP14-1050Q88† SLSE14-1050Q8 SLSR14-1050Q8			1050 mm	1120 mm			≤ 36 ms		

14 mm Resolution

* Nickel-plated emitters and receivers used for ESD safe applications are available by adding "N" in the model number (example, **SLSE14-150NQ8**).

** For an emitter with TEST function, replace Q8 with Q5 on emitter model numbers (example, **SLSE14-150Q5**) and Q88 with Q85 on pair model numbers (example, **SLSP14-150Q85**). For a 300 mm Euro pigtail QD, replace "Q" with "P" in models numbers (example, **SLSP14-150P88**). A model with a QD requires a mating cable (see page 176).

† A pair includes an emitter and receiver (example, **SLSP14-150Q88**). Emitters (example, **SLSE14-150Q8**) and receivers (example, **SLSR14-150Q8**) are also sold separately.

SAFETY LIGHT SCREENS

EZ-SCREEN® Systems

SAFETY LIGHT SCREENS

EZ-SCREEN®

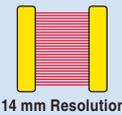
PICO-GUARD®

MICRO-SCREEN®

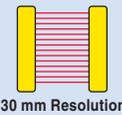
MINI-SCREEN®

EZ-SCREEN
TYPE 2

EZ-SCREEN® Systems, 14 mm Resolution (cont'd)

Models*	Resolution	Range	Defined Area	Housing Length (L)	Supply Voltage	Safety Outputs	Response Time	Connection**	Data Sheet
SLSP14-1200Q88† SLSE14-1200Q8 SLSR14-1200Q8	 14 mm Resolution	0.1 to 6 m	1200 mm	1270 mm	24V dc	2 PNP OSSD	≤ 40 ms	8-pin Euro QD	112852
SLSP14-1350Q88† SLSE14-1350Q8 SLSR14-1350Q8			1350 mm	1420 mm			≤ 43 ms		
SLSP14-1500Q88† SLSE14-1500Q8 SLSR14-1500Q8			1500 mm	1569 mm			≤ 48 ms		
SLSP14-1650Q88† SLSE14-1650Q8 SLSR14-1650Q8			1650 mm	1719 mm			≤ 52 ms		
SLSP14-1800Q88† SLSE14-1800Q8 SLSR14-1800Q8			1800 mm	1869 mm			≤ 56 ms		

EZ-SCREEN® Systems, 30 mm Resolution

Models*	Resolution	Range	Defined Area	Housing Length (L)	Supply Voltage	Safety Outputs	Response Time	Connection**	Data Sheet
SLSP30-150Q88† SLSE30-150Q8 SLSR30-150Q8	 30 mm Resolution	0.1 to 18 m	150 mm	262 mm	24V dc	2 PNP OSSD	≤ 9 ms	8-pin Euro QD	112852
SLSP30-300Q88† SLSE30-300Q8 SLSR30-300Q8			300 mm	372 mm			≤ 11 ms		
SLSP30-450Q88† SLSE30-450Q8 SLSR30-450Q8			450 mm	522 mm			≤ 13 ms		
SLSP30-600Q88† SLSE30-600Q8 SLSR30-600Q8			600 mm	671 mm			≤ 15 ms		
SLSP30-750Q88† SLSE30-750Q8 SLSR30-750Q8			750 mm	821 mm			≤ 17 ms		



14 mm Resolution



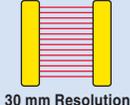
30 mm Resolution

* Nickel-plated emitters and receivers used for ESD safe applications are available by adding "N" in the model number (example, **SLSE14-1200NQ8**).

** For an emitter with TEST function, replace Q8 with Q5 on emitter model numbers (example, **SLSE14-1200Q5**) and Q88 with Q85 on pair model numbers (example, **SLSP14-1200Q85**). For a 300 mm Euro pigtail QD, replace "Q" with "P" in models numbers (example, **SLSP14-1200P88**). A model with a QD requires a mating cable (see page 176).

† A pair includes an emitter and receiver (example, **SLSP14-1200Q88**). Emitters (example, **SLSE14-1200Q8**) and receivers (example, **SLSR14-1200Q8**) are also sold separately.

EZ-SCREEN® Systems, 30 mm Resolution (cont'd)

Models*	Resolution	Range	Defined Area	Housing Length (L)	Supply Voltage	Safety Outputs	Response Time	Connec-tion**	Data Sheet
SLSP30-900Q88† SLSE30-900Q8 SLSR30-900Q8	 30 mm Resolution	0.1 to 18 m	900 mm	971 mm	24V dc	2 PNP OSSD	≤ 19 ms	8-pin Euro QD	112852
SLSP30-1050Q88† SLSE30-1050Q8 SLSR30-1050Q8			1050 mm	1120 mm			≤ 21 ms		
SLSP30-1200Q88† SLSE30-1200Q8 SLSR30-1200Q8			1200 mm	1270 mm			≤ 23 ms		
SLSP30-1350Q88† SLSE30-1350Q8 SLSR30-1350Q8			1350 mm	1420 mm			≤ 25 ms		
SLSP30-1500Q88† SLSE30-1500Q8 SLSR30-1500Q8			1500 mm	1569 mm			≤ 27 ms		
SLSP30-1650Q88† SLSE30-1650Q8 SLSR30-1650Q8			1650 mm	1719 mm			≤ 30 ms		
SLSP30-1800Q88† SLSE30-1800Q8 SLSR30-1800Q8			1800 mm	1869 mm			≤ 32 ms		

 30 mm Resolution

* Nickel-plated emitters and receivers used for ESD safe applications are available by adding "N" in the model number (example, **SLSE30-900NQ8**).

** For an emitter with TEST function, replace Q8 with Q5 on emitter model numbers (example, **SLSE30-900Q5**) and Q88 with Q85 on pair model numbers (example, **SLSP30-900Q85**). For a 300 mm Euro pigtail QD, replace "Q" with "P" in models numbers (example, **SLSP30-900P88**). A model with a QD requires a mating cable (see page 176).

† A pair includes an emitter and receiver (example, **SLSP30-900Q88**). Emitters (example, **SLSE30-900Q8**) and receivers (example, **SLSR14-900Q8**) are also sold separately.

EZ-SCREEN® 14 & 30 mm Resolution Specifications

Supply Voltage at the Device*	24V dc $\pm 15\%$ (SELV), $\pm 10\%$ max. ripple
Supply Current	Emitter: 100 mA max. Receiver: 275 mA max., exclusive of OSSD1 and OSSD2 loads (up to an additional 0.5A each)
Response Time	9 to 56 milliseconds Cascade Safety Stop Interface (CSSI): 40 milliseconds max.
Remote Test Input (Optional – available only on model SLSE...Q5 emitters)	Test Mode is activated either by applying a low signal (less than 3V dc) to emitter TEST #1 terminal for a minimum of 50 milliseconds, or by opening a switch connected between TEST #1 and TEST #2 for a minimum of 50 milliseconds. Beam scanning stops to simulate a blocked condition. A high signal at TEST #1 deactivates Test Mode. (See p/n 112852 for more information.) High signal: 10 to 30V dc Low signal: 0 to 3V dc Input current: 35 mA inrush, 10 mA max.
Wavelength of Emitter Elements	Infrared LEDs, 950 nm at peak emission
EDM Input	+24V dc signals from external device contacts can be monitored (one-channel, two-channel or no monitoring) via EDM1 and EDM2 terminals in the receiver. Monitored devices must respond within 200 milliseconds of an output change. High signal: 10 to 30V dc at 30 mA typical Low signal: 0 to 3V dc Dropout time: 200 milliseconds max.
Reset Input	The Reset input must be high for 0.25 to 2 seconds and then low to reset the receiver. High signal: 10 to 30V dc at 30 mA typical Low signal: 0 to 3V dc Closed switch time: 0.25 to 2 seconds
Safety Outputs	Two redundant solid-state 24V dc, 0.5 A max. sourcing OSSD (Output Signal Switching Device) safety outputs. (Use optional interface modules for ac or larger dc loads.) Capable of the Banner “Safety Handshake”. ON-State voltage: $\geq V_{in} - 1.5V$ dc OFF-State voltage: 1.2V dc max. (0-1.2V dc) Max. load capacitance: 1.0 μ F Max. load inductance: 10 H Leakage current: 0.50 mA maximum Cable resistance: 10 Ω maximum OSSD test pulse width: 100 to 300 microseconds OSSD test pulse period: 5 to 27 milliseconds (varies with number of beams) Switching current: 0-0.5 A
Controls and Adjustments	Emitter: Scan Code selection: 2-position switch (code 1 or 2). Factory default position is code 1. Receiver: Scan Code selection: 2-position switch (code 1 or 2). Factory default position is code 1. Trip/Latch Output selection: Redundant switches. Factory default position is T (Trip). EDM/MPCE monitor selection: 2-position switch selects between 1- or 2-channel monitoring. Factory default position is 2. Reduced Resolution (2-beam Floating Blanking): Redundant switches to enable. Factory default is OFF.
Short Circuit Protection	All inputs and outputs are protected from short circuits to +24V dc or dc common*
Electrical Safety Class (IEC 61140: 1997)	III
Safety Rating	Type 4 per IEC 61496-1, -2; Category 4 per ISO 13849-1 (EN 954-1)
Operating Range	14 mm models: 0.1 m to 6 m 30 mm models: 0.1 m to 18 m Range decreases with use of mirrors and/or lens shields: Lens shields – approximately 10% less range per shield. Glass-surface mirrors – approximately 8% less range per mirror. See Accessory section for more information on a specific mirror, page 204.
Ambient Light Immunity	> 10,000 lux at 5° angle of incidence
Effective Aperture Angle (EAA)	Meets Type 4 requirements per IEC 61496-2, $\pm 2.5^\circ$ @ 3 m

*The external voltage supply must be capable of buffering brief mains interruptions of 20 milliseconds, as specified in IEC/EN 60204-1.

EZ-SCREEN® 14 & 30 mm Resolution Specifications (cont'd)

Enclosure	<p>Materials: Extruded aluminum housing with yellow polyester powder or nickel-plated finish and well-sealed, rugged die-cast zinc end caps, acrylic lens cover, copolyester access cover</p> <p>Rating: IEC IP65</p>
Operating Conditions	<p>Temperature: 0° to +55° C Relative humidity: 95% (non-condensing)</p>
Status Indicators	<p>Emitter: One Bi-color (Red/Green) Status Indicator – indicates operating mode, Lockout or power OFF condition 7-segment Diagnostic Indicator (1 digit) – indicates proper operation, scan code or error code</p> <p>Receiver: Yellow Reset Indicator – indicates whether system is ready for operation or requires a reset Bi-Color (Red/Green) Status Indicator – indicates general system and output status Bi-Color (Red/Green) Zone Status Indicators – indicates condition (clear or blocked beam) of a defined group of beams 7-Segment Diagnostic Indicator (3-digit) – indicates proper operation, scan code or error code, total number of blocked beams</p>
Mounting Hardware	Emitter and receiver each are supplied with a pair of swivel end-mounting brackets. Models longer than 900 mm also include a swivel center-mount bracket. Mounting brackets are 8-gauge cold-rolled steel, black zinc finish.
Shock and Vibration	EZ-SCREEN systems have passed vibration and shock tests according to IEC 61496-1. This includes vibration (10 cycles) of 10-55 Hz at 0.35 mm single amplitude (0.70 mm peak-to-peak) and shock of 10 g for 16 milliseconds (6,000 cycles).
Certifications	For a list of certifications see page 236.
Wiring Diagrams	WD001, WD002, WD003, WD004, WD009, WD010, WD011, WD012, WD013, WD014, WD015, WD016 (pp. 246-254)