

# EZ-SCREEN LS Safety Light Curtain in an IP69K Hygienic Housing



## Datasheet

EZ-SCREEN LS Safety Light Curtain in an IP69K Hygienic Housing for use in washdown environments



- Hygienic design suited for food and beverage applications
- FDA-grade polycarbonate tubing and stainless steel end caps
- Stainless steel mounting components
- Brackets and fasteners sold separately
- Ideal for high-pressure washdown applications
- IP69K
- EZ-SCREEN LS emitters and receivers are factory-installed in the enclosures

The EZLSA-HTE EZ-SCREEN LS Safety Light Curtain in an IP69K hygienic housing is designed specifically for use in hygienic and washdown applications. The enclosures are constructed of FDA-approved rugged polycarbonate tubing with stainless steel end caps. The enclosures are mounted with stainless steel mounting brackets and fasteners.

Using the enclosure affects the sensing range. When used in pairs, the range is reduced by 30%.

Product Family	System Type	Resolution	Defined Area <sup>1</sup>		Termination
EZLSA-HTE	E = Emitter R = Receiver	23 = 23 mm	280	700	Blank = 25 ft., 8-wire, high durometer PVC Cordset  F = Remote Fixed Blanking Receiver model with additional 25 ft. cordset for blanking configuration
			350	770	
			420	840	
			490	910	
			560	980	
			630	1050	

Example model number: EZLSA-HTE-R23-770 for a standard receiver model, 23 mm optical resolution, 770 mm defined area, and a 25 ft cordset.

See the Remote TEACH Fixed Blanking (Wiring) section in the EZ-SCREEN LS Instruction Manual (p/n 179480) for Remote Fixed Blanking wiring instructions.

## Important Information

The EZ-SCREEN LS instruction manual with installation instructions, application requirements and guidelines, EC Declaration of Conformity, and technical specifications can be found on the accompanying CD-ROM or downloaded at [www.bannerengineering.com](http://www.bannerengineering.com) by searching document p/n 179480.

The accompanying CD-ROM contains important warnings and safety instructions that must be observed prior to the installation and operation of the device.

If the CD-ROM cannot be used, download the full Instruction Manual and Checkout Cards (listed in the manual), including warnings and safety instructions, from [www.bannerengineering.com](http://www.bannerengineering.com). To order a printed copy or if there are any questions regarding the application or use of the device, contact Banner Engineering at (763) 544-3164 or at 1-888-3-SENSOR in the United States.



**CAUTION:** Reduced Sensing Range—Sensing range is reduced 30% because of tubular construction.



**WARNING:**

- Maintain Required Safety Distance
- Failure to calculate this distance correctly and to maintain minimum safety distance could result in serious injury or death.
- The light screen produced by the optical safety system sensors must be placed at a minimum safe distance from the dangerous motion of the machine being guarded. This necessary minimum distance is called the safety distance, and is discussed in the instruction manual.

## Adjacent Reflective Surfaces



**WARNING:** Avoid **Installation** Near **Reflective** Surfaces

Avoid locating the sensing field near a reflective surface; it could reflect sensing beam(s) around an object or person within the sensing field, and prevent its detection by the EZ-SCREEN LS. Perform the trip test, as described in the manual, to detect such reflection(s) and the resultant optical short circuit. Failure to prevent **reflection** problems will result in incomplete guarding and could result in serious injury or death.

A reflective surface located adjacent to the defined area may deflect one or more beams around an object in the defined area. In the worst case, an optical short circuit may occur, allowing an object to pass undetected through the defined area.

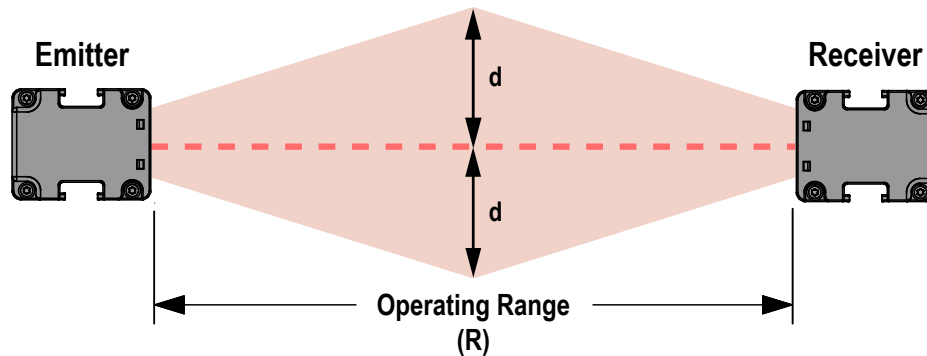
<sup>1</sup> Remote Fixed Blanking model lengths start at 350 mm



This reflective surface may result from shiny surfaces or glossy paint on the machine, the workpiece, the work surface, the floor, or the walls. Beams deflected by reflective surfaces are discovered by performing the trip test and the periodic checkout procedures. To eliminate problem reflections:

- If possible, relocate the sensors to move the beams away from the reflective surface(s), being careful to maintain adequate separation distance
- Otherwise, if possible, paint, mask, or roughen the shiny surface to reduce its reflectivity
- Where these are not possible (as with a shiny workpiece or machine frame), determine the worst-case resolution resulting from the optical short circuit and use the corresponding depth penetration factor (Dpf or C) in the Safety Distance (Minimum Distance) formula; or mount the sensors in such a way that the receiver's field of view and/or the emitter's spread of light are restricted from the reflective surface
- Repeat the trip test to verify that these changes have eliminated the problem reflection(s). If the workpiece is especially reflective and comes close to the defined area, perform the trip test with the workpiece in place

### Do not position reflective surfaces within the shaded area



For 0.1 to 3 m (4 in to 10 ft) Operating range:  $d = 0.13$  m (5 in)

For Operating range  $> 3$  m ( $> 10$  ft):  $d = 0.0437 \times R$  (m or ft)

Figure 1. Adjacent Reflective Surfaces

## Specifications

See the EZ-SCREEN LS instruction manual, p/n [179480](#) on the accompanying CD-ROM, for the complete set of safety light curtain specifications, installation instructions, application requirements, and guidelines.

### Operating Range

0.1 m to 8.4 m (4 in to 27 ft)

### Resolution

23 mm

### Operating Conditions

-20 °C to +55 °C (-4 °F to +131 °F)

95% maximum relative humidity (non-condensing)

### Output Signal Switching Devices (OSSDs)

Two redundant solid-state 24 V dc, 0.5 A max. sourcing OSSD (Output Signal Switching Device) safety outputs (Use optional interface solutions for ac or larger dc loads)

ON-State voltage:  $> V_{in} - 1.5$  V dc

OFF-State voltage: 0 V dc typical, 1 V dc maximum (no load)

OFF-State, maximum allowed external voltage: 1.5 V dc<sup>2</sup>

Maximum load capacitance: 1.0  $\mu$ F

Maximum cable resistance to load: 5 ohms per wire

Maximum leakage current: 50  $\mu$ A (with open 0 V)

OSSD test pulse width: 200  $\mu$ s typical

OSSD test pulse period: 200 ms typical

Switching current: 0 A minimum; 0.5 A maximum (per OSSD)

### Safety Rating

Type 4 per IEC 61496-1, -2

Category 4 PL e per EN ISO 13849-1

SIL3 per IEC 61508; SIL CL3 per IEC 62061

PFHd:  $3.92 \times 10^{-10}$

### Effective Aperture Angle (EAA)

Meets Type 4 requirements per IEC 61496-2, Section 5.2.9

### Shock and Vibration

Components have passed vibration and shock tests according to IEC 61496-1. This includes vibration (10 cycles) of 10-55 Hz at 0.35 mm (0.014 in) single amplitude (0.70 mm peak-to-peak) and shock of 10 g for 16 milliseconds (6,000 cycles).

### Environmental Rating

IEC IP69K per DIN 40050-9; light curtain also rated IP65/IP67 per IEC 60529

### Certifications



<sup>2</sup> The maximum voltage allowed on the OSSDs in the OFF-state without a lockout occurring. This voltage may occur, for example, from the input structure of a safety relay module connected to the EZ-SCREEN LS OSSDs

Response and Recovery Times

Emitter	Receiver	Defined Area	Response Time, Tr (ms)	Recovery Time (typical), OSSDs Off to On (ms)	
				Non-sync beam blocked	All beams blocked
EZLSA-HTE-E23-280	EZLSA-HTE-R23-280	280 mm	8.2	32	110
EZLSA-HTE-E23-350	EZLSA-HTE-R23-350	350 mm	9.1	36	124
EZLSA-HTE-E23-420	EZLSA-HTE-R23-420	420 mm	9.9	40	135
EZLSA-HTE-E23-490	EZLSA-HTE-R23-490	490 mm	10.8	44	148
EZLSA-HTE-E23-560	EZLSA-HTE-R23-560	560 mm	11.6	47	160
EZLSA-HTE-E23-630	EZLSA-HTE-R23-630	630 mm	12.5	51	175
EZLSA-HTE-E23-700	EZLSA-HTE-R23-700	700 mm	13.3	55	186
EZLSA-HTE-E23-770	EZLSA-HTE-R23-770	770 mm	14.2	59	199
EZLSA-HTE-E23-840	EZLSA-HTE-R23-840	840 mm	15.0	63	211
EZLSA-HTE-E23-910	EZLSA-HTE-R23-910	910 mm	15.9	67	225
EZLSA-HTE-E23-980	EZLSA-HTE-R23-980	980 mm	16.7	69	237
EZLSA-HTE-E23-1050	EZLSA-HTE-R23-1050	1050 mm	17.5	74	249

Dimensions

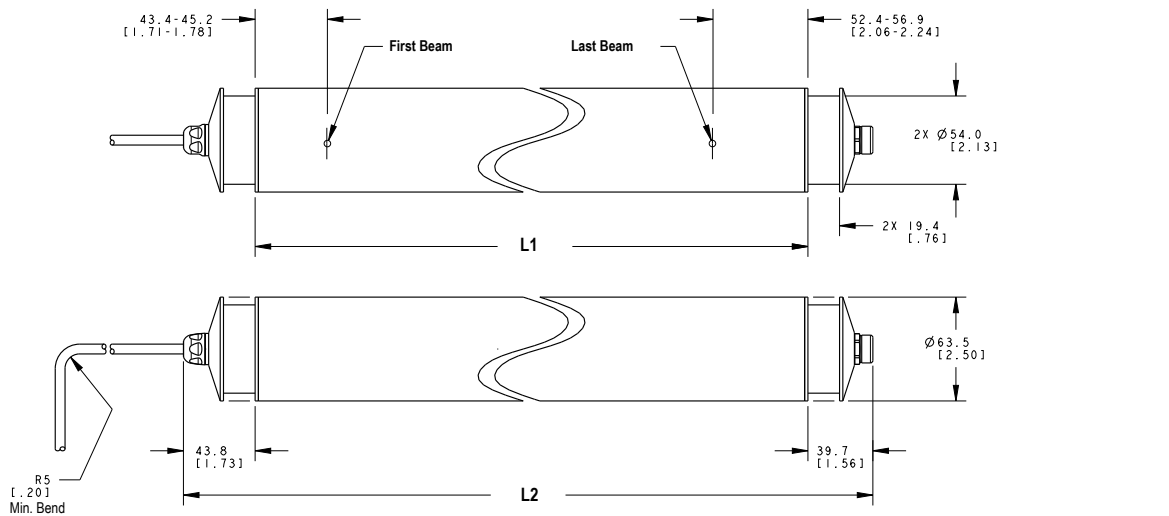


Figure 2. EZLSA-HTE without brackets

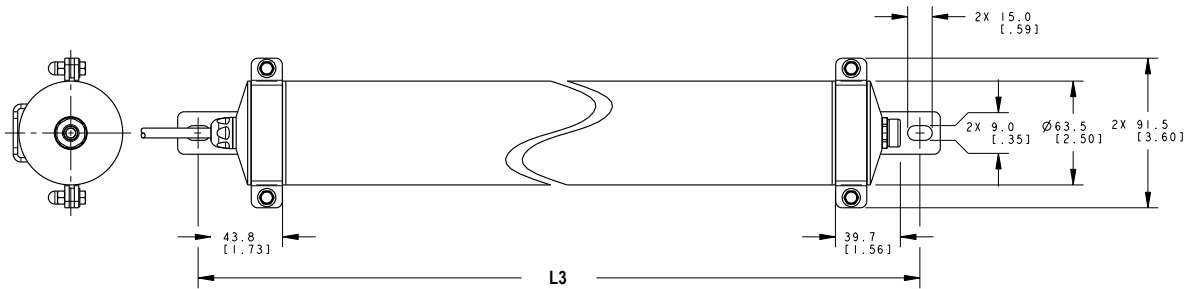


Figure 3. EZLSA-HTE with EZLSA-MBK-HTE-1 bracket

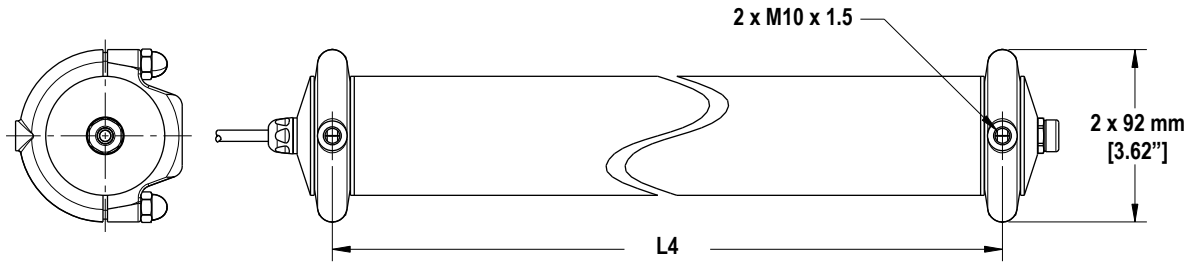


Figure 4. EZLSA-HTE with EZLSA-MBK-HTE-2 bracket

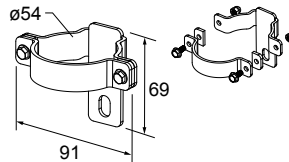
All measurements are listed in millimeters [inches], unless noted otherwise.

Enclosure Model	Defined Area (mm)	L1 (mm)	L2 (mm) (1 Cable)	L2 (mm) (2 Cables) (RFB Models)	L3 (mm)	L4 (mm)
EZLSA-HTE-280	280	360 (14.2")	443 (17.4")	441 (17.4")	463 (18.2")	379 (14.9")
EZLSA-HTE-350	350	429 (16.9")	513 (20.2")	511 (20.1")	533 (21")	449 (17.7")
EZLSA-HTE-420	420	499 (19.7")	583 (22.9")	581 (22.9")	603 (23.7")	519 (20.4")
EZLSA-HTE-490	490	569 (22.4")	653 (25.7")	651 (25.6")	673 (26.5")	589 (23.2")
EZLSA-HTE-560	560	639 (25.2")	723 (28.4")	721 (28.4")	742 (29.2")	658 (25.9")
EZLSA-HTE-630	630	709 (27.9")	792 (31.2")	791 (31.1")	812 (32")	728 (28.7")
EZLSA-HTE-700	700	779 (30.7")	862 (33.9")	861 (33.9")	882 (34.7")	798 (31.4")
EZLSA-HTE-770	770	849 (33.4")	932 (36.7")	930 (36.6")	952 (37.5")	868 (34.2")
EZLSA-HTE-840	840	918 (36.2")	1002 (39.4")	1000 (39.4")	1022 (40.2")	938 (36.9")
EZLSA-HTE-910	910	988 (38.9")	1072 (42.2")	1070 (42.1")	1092 (43")	1008 (39.7")
EZLSA-HTE-980	980	1058 (41.7")	1142 (44.9")	1140 (44.9")	1161 (45.7")	1077 (42.4")
EZLSA-HTE-1050	1050	1128 (44.4")	1211 (47.7")	1210 (47.6")	1231 (48.5")	1147 (45.2")

## Brackets

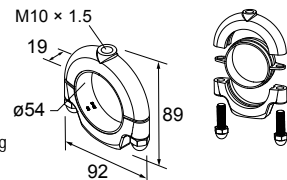
### EZLSA-MBK-HTE-1

- Stamped, hygienic swivel bracket
- 304 stainless steel
- Non-metallic FDA compliant gaskets
- Two brackets included per kit
- M5 screws (8 mm socket); 65 in-lbs



### EZLSA-MBK-HTE-2

- Cast, hygienic swivel bracket
- Polished 316 stainless steel with rounded edges for cleanliness in demanding environments
- Non-metallic FDA compliant bushing
- M10 mount on opposite side of clamping nuts
- Two brackets included per kit
- 5/16 inch - 18 UNC screws (9/16 inch socket); 65 in-lbs



All measurements are listed in millimeters, unless noted otherwise.

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