

LX Series Part-Sensing Light Screen



Datasheet

For Sensing Small or Flat Parts at High Speeds



- Emitter and receiver pair produce a strobed web of modulated light beams, in 8 lengths, 2 sensing ranges
- Simple, economical and highly reliable means of sensing small parts or flat items which pass anywhere through the light screen
- Fast response, output includes a 5-millisecond pulse stretcher for interfacing reliability
- Simple wiring configuration; emitter and receiver do not need a synchronization wire
- Rugged, self-contained and compact construction; rated IEC IP65
- Bipolar design offers both NPN (current sinking) and PNP (current sourcing) solid-state outputs



WARNING: Not To Be Used for Personnel Protection

Never use this device as a sensing device for personnel **protection**. Doing so could lead to serious injury or death. This device does not include the self-checking redundant circuitry necessary to allow its use in personnel safety applications. A sensor failure or malfunction can cause either an energized or de-energized sensor output condition.

Models

Short-Range Models ¹ 75 mm to 200 mm (3 in to 8 in) 5.6 mm dia. Minimum Object Detection Size	Standard-Range Models 150 mm to 2 m (6 in to 6.5 ft) 9.5 mm dia. Minimum Object Detection Size	Sensing Array Length	Cable ²	Supply Voltage	Output Type
LX3ESR Emitter LX3RSR Receiver	LX3E Emitter LX3R Receiver	67 mm (2.6 in)	2 m (6.5 ft) 5-wire Integral cable	10 to 30 V dc	Bipolar NPN/PNP
LX6ESR Emitter LX6RSR Receiver	LX6E Emitter LX6R Receiver	143 mm (5.6 in)			
—	LX9E Emitter LX9R Receiver	218 mm (8.6 in)			
LX12ESR Emitter LX12RSR Receiver	LX12E Emitter LX12R Receiver	295 mm (11.6 in)			
—	LX15E Emitter LX15R Receiver	371 mm (14.6 in)			
—	LX18E Emitter LX18R Receiver	447 mm (17.6 in)			
—	LX21E Emitter LX21R Receiver	523 mm (20.6 in)			
—	LX24E Emitter LX24R Receiver	599 mm (23.6 in)			

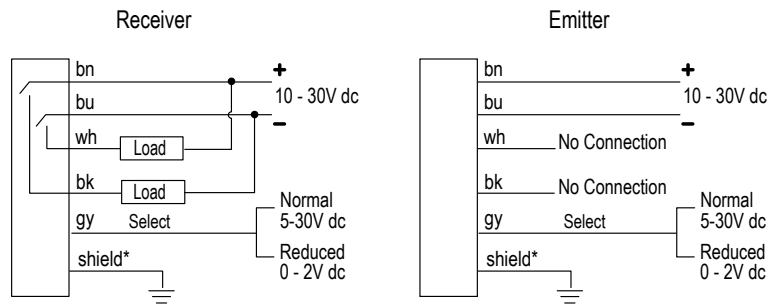
¹ Additional sizes available on request; contact Banner Engineering.

² Integral cable models are listed.

- To order the 5-pin M12/Euro-style 150 mm (6 in) cable model, add suffix "Q" to model number (for example, LX3EQ).
- Models with a quick disconnect require a mating cordset.



Wiring Diagrams



*It is recommended that the shield wire be connected to earth ground or DC common.



Note: Wiring for cabled and quick disconnect (QD) models is functionally identical.

Specifications

Supply Voltage and Power

10 to 30 V dc (10% maximum ripple) at less than 1 watt each for emitter and receiver (exclusive of load)

Supply Protection Circuitry

Protected against reverse polarity and transient voltages

Sensing Range

	Normal (see hookups)	Reduced
Short-Range Models	100 to 200 mm (4 in to 8 in)	75 to 150 mm (3 in to 6 in)
Standard-Range Models	300 mm to 2 m (1 ft to 6.5 ft)	150 mm to 600 mm (6 in to 24 in)

Output Configuration

Bipolar: One current sourcing (PNP) and one current sinking (NPN) open-collector transistor

Output Rating

125 mA maximum each output

Off-state leakage current: less than 5 microamps

Output **saturation** voltage (PNP output): < 1 volt at 10 mA and < 1.5 volts at 100 mA

Output **saturation** voltage (NPN output): < 0.5 volts at 10 mA and < 0.6 volts at 100 mA

Output Protection Circuitry

Protected against false pulse on power-up and continuous overload or short circuit of outputs

Output Response Time

LX3: 0.8 ms ON-time; 6 ms OFF-time (5 ms OFF-delay)

LX6: 1.6 ms ON-time; 7 ms OFF-time (5 ms OFF-delay)

LX9: 2.4 ms ON-time; 7.5 ms OFF-time (5 ms OFF-delay)

LX12: 3.2 ms ON-time; 8.5 ms OFF-time (5 ms OFF-delay)

LX15: 4.0 ms ON-time; 9 ms OFF-time (5 ms OFF-delay)

LX18: 4.8 ms ON-time; 10 ms OFF-time (5 ms OFF-delay)

LX21: 5.6 ms ON-time; 11 ms OFF-time (5 ms OFF-delay)

LX24: 6.4 ms ON-time; 11.5 ms OFF-time (5 ms OFF-delay)

Required Overcurrent Protection



WARNING: Electrical connections must be made by qualified personnel in accordance with local and national electrical codes and regulations.

Overcurrent protection is required to be provided by end product application per the supplied table.

Overcurrent protection may be provided with external fusing or via Current Limiting, Class 2 Power Supply.

Supply wiring leads < 24 AWG shall not be spliced.

For additional product support, go to www.bannerengineering.com.

Supply Wiring (AWG)	Required Overcurrent Protection (Amps)
20	5.0
22	3.0
24	2.0
26	1.0
28	0.8
30	0.5

Minimum Object Detection Size (M.O.D.S.)

Smallest diameter rod that can be detected in sensing range:

Short-Range: 5.6 mm (0.22 in)

Standard-Range: 9.5 mm (0.38 in)

Indicators

Emitter:

- LED1 (green)
 - ON: Power ON, good sensor
 - OFF: Reduced Range
 - ON: Power ON, good sensor
- LED2 (red)
 - ON: Reduced range
 - OFF: Normal range
 - Flashing: Emitter hardware failure

Receiver

- LED1 (yellow)
 - ON: Output conducting
 - OFF: Output not conducting
- LED2 (bicolor green/red)
 - Green: Normal range
 - Red: Reduced range
 - Flashing Red: Receiver hardware failure

Construction

Aluminum housing, die cast zinc with black e-coat painted endcaps, acrylic lens window

Environmental Rating

Meets IEC IP65

Connections

2 meter (6.5 ft) 5-conductor (with drain) pvc-jacketed attached cable or 5-pin Euro-style 150 mm (6 in) QD pigtail, depending on model

Operating Conditions

Temperature: -20 °C to +70 °C (-4 °F to +158 °F)

90% at +50 °C maximum relative humidity (non-condensing)

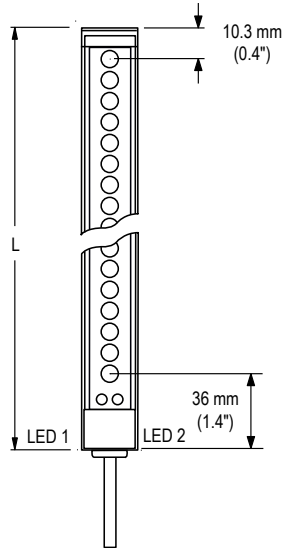
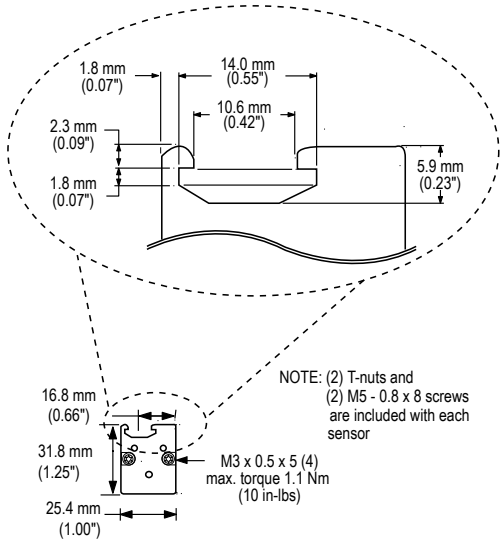
Application Notes

1. The best sensing resolution occurs within the center 80% of the sensing range ([Figure 1](#) on page 2).
2. Low-profile packages can be reliably detected.
3. Outputs are active while the light screen is interrupted.
4. For reliable detection, successive parts must be spaced up to the total of ON-time plus OFF-time apart. (that is, 12 milliseconds for the LX12)

Certifications



Dimensions



Model	Length (L)
LX3	113.4 mm (4.46 in)
LX6	189.6 mm (7.46 in)
LX9	265.8 mm (10.46 in)
LX12	342.0 mm (13.46 in)
LX15	418.2 mm (16.46 in)
LX18	494.4 mm (19.46 in)
LX21	570.6 mm (22.46 in)
LX24	646.8 mm (25.46 in)

Accessories

Quick-Disconnect (QD) Cables

5-Pin Threaded M12/Euro-Style Cordsets—with Shield				
Model	Length	Style	Dimensions	Pinout (Female)
MQDEC2-506	1.83 m (6 ft)	Straight		<p>1 = Brown 2 = White 3 = Blue 4 = Black 5 = Gray</p>
MQDEC2-515	4.57 m (15 ft)			
MQDEC2-530	9.14 m (30 ft)			
MQDEC2-550	15.2 m (50 ft)			
MQDEC2-506RA	1.83 m (6 ft)	Right-Angle		
MQDEC2-515RA	4.57 m (15 ft)			
MQDEC2-530RA	9.14 m (30 ft)			
MQDEC2-550RA	15.2 m (50 ft)			

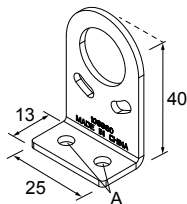
Mounting Brackets

SMBLX

- End-cap brackets; set of 2
- Zinc-plated cold rolled steel
- Hardware included for mounting brackets to sensor

Hole center spacing: A = 12.7

Hole size: A = ø 4.3

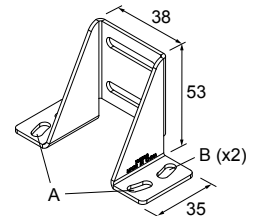


SMBLXR

- Back-mount bracket for secure one-end mounting
- Zinc-plated cold rolled steel
- Hardware included for mounting bracket to sensor

Hole center spacing: A, B = 63.5, A to B = 10.2

Hole size: A, B = 5.2 x 11.6



LX Series Lens Shields

Lens Shield Model Number	Fits LX Series Sensor Model	
LXS3	LX3	Self-adhesive polycarbonate lens shields protect sensor lens window from impact or weld flash. When shields are installed on both emitter and receiver, excess gain is reduced by 36% (maximum operating range reduces by 20%).
LXS6	LX6	
LXS9	LX9	
LXS12	LX12	
LXS15	LX15	
LXS18	LX18	
LXS21	LX21	
LXS24	LX24	

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