

## Installation and Alignment

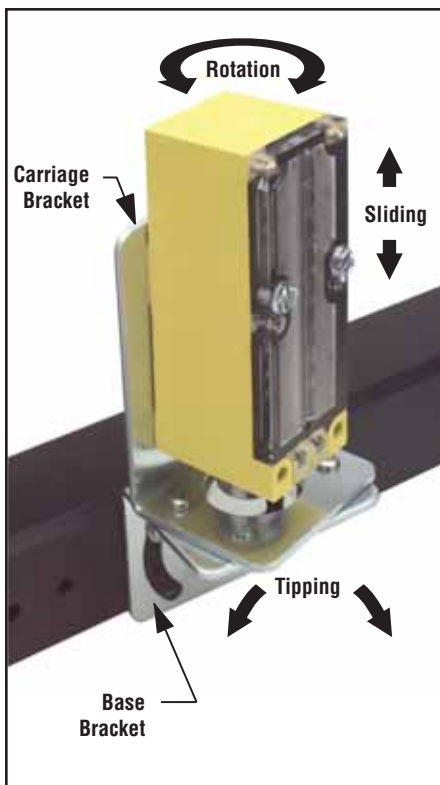
The reliable performance of light screen systems requires careful alignment and secure mounting. The 2-part, 3-axis mounting brackets on page 5 are highly recommended. Mounting locations should be as free from vibration as possible. If vibration is unavoidable, mount the emitter and receiver to vibrate together; no high-amplitude differential vibration is allowed.

Mount the emitter and receiver at their operating locations with their front panels exactly parallel and opposite each other. (The row of transmitter LEDs should be exactly parallel with and opposite to the row of receiver phototransistors.) This constitutes optimal mechanical alignment.

Optimal mechanical alignment does not always result in perfect optical alignment, and perfect optical alignment is absolutely necessary. When optical alignment is satisfactory, and emitter/receiver vibration is at moderate or lower levels, the receiver Alignment status indicator (see Figure 1) will be OFF and remain OFF whenever the light screen is unobstructed.

### Adjusting Optical Alignment

Beginning with perfect mechanical alignment, adjust optical alignment as described in steps #1 through #5. The procedure assumes use of the SMBLS mounting bracket shown in Figure 2. Only the position of the emitter will be adjusted.



**Figure 2. Achieving perfect optical alignment with the LS10; bracket SMBLS shown.**

- 1) Loosen the two bolts holding the two parts of the bracket together just enough to allow the upper (“carriage”) bracket, along with the emitter, to be rotated. Also, slightly loosen the mounting bolts in the curved slots of the “base” bracket, which will allow the bracket to be tipped from side to side.
- 2) With power applied to both the emitter and receiver, “tip” the entire bracket (including the emitter) slightly from side to side. Find the extremes of movement between which the receiver’s red Alignment LED remains OFF. Secure the base bracket at the point midway between the extremes.
- 3) Rotate the carriage bracket (to which the emitter is attached) slightly in both directions, as shown in Figure 2. Find the extremes of rotation between which the receiver’s red Alignment indicator LED remains OFF. Secure the emitter midway between the extremes by tightening the two bolts that lock the two parts of the bracket together.
- 4) Loosen the two mounting bolts that hold the emitter to the carriage bracket. Slide the emitter up and down vertically in the bracket, noting the extremes between which the receiver’s Alignment LED indicator remains OFF. Tighten the bolts to secure the emitter midway between the extremes. (NOTE: If the initial mechanical alignment was inadequate, it may be necessary to repeatedly alternate tipping, rotating, and sliding movements to attain perfect optical alignment.)
- 5) Check for proper alignment by moving a pencil (or a similar object) along the 3.5” dimension of the sensing window. The receiver Alignment indicator LED and outputs should come ON while the pencil is anywhere within the sensing window. When this is true, tighten all mounting hardware securely in position.

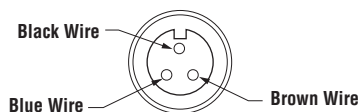
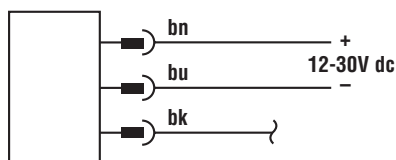
# MULTI-BEAM® LS10 Light Screen System

## LS10 Series Specifications

|                                    |                                                                                                                                                                                                                                                                                     |
|------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Supply Voltage and Current</b>  | 12 to 30V dc (10% maximum ripple) at less than 70 mA (emitter) or 45 mA (receiver – exclusive of load)                                                                                                                                                                              |
| <b>Supply Protection Circuitry</b> | Protected against reverse polarity                                                                                                                                                                                                                                                  |
| <b>Output Configuration</b>        | Bipolar: One current sourcing (PNP) and one current sinking (NPN) open-collector transistor                                                                                                                                                                                         |
| <b>Output Rating</b>               | 125 mA maximum each output<br><b>Off-state leakage current:</b> less than 1 microamp<br><b>Output saturation voltage (PNP output):</b> < 1 volt at 10 mA and < 2 volts at 150 mA<br><b>Output saturation voltage (NPN output):</b> < 200 millivolts at 10 mA and < 1 volt at 150 mA |
| <b>Output Protection Circuitry</b> | Protected against false pulse on power-up and continuous overload or short circuit of outputs                                                                                                                                                                                       |
| <b>Output Response Time</b>        | Receiver will respond to a “dark” signal of 1 millisecond or longer duration; a 5-millisecond pulse stretcher (OFF Delay) is included to improve interfacing reliability; successive parts must have at least 10 millisecond separation                                             |
| <b>Repeatability</b>               | 30 microseconds (light-to-dark)                                                                                                                                                                                                                                                     |
| <b>Resolution</b>                  | 5.6 mm (0.22") or 7.6 mm (0.30"), depending on model                                                                                                                                                                                                                                |
| <b>Indicators</b>                  | <b>Power (emitter only):</b> lights whenever power is applied<br><b>Alignment (receiver only):</b> lights whenever light screen is interrupted                                                                                                                                      |
| <b>Construction</b>                | Reinforced thermoplastic polyester housing, acrylic lenses, and stainless steel hardware                                                                                                                                                                                            |
| <b>Environmental Rating</b>        | Meets NEMA standards 1, 2, 3, 12, and 13; IEC IP54                                                                                                                                                                                                                                  |
| <b>Connections</b>                 | See product selection tables                                                                                                                                                                                                                                                        |
| <b>Operating Conditions</b>        | <b>Temperature:</b> 0° to +50°C (+32° to 122°F)<br><b>Maximum relative humidity:</b> 90% at 50°C (non-condensing)                                                                                                                                                                   |
| <b>Application Notes</b>           | i) The best sensing resolution occurs near the center of the sensing area, midway between the emitter and receiver.<br>ii) Outputs are energized continuously while the light screen is interrupted.                                                                                |
| <b>Certifications</b>              | CE                                                                                                                                                                                                                                                                                  |

## LS10 Series Hookups

### LS10 Emitters with Quick-Disconnect (3-Pin Mini-Style)



### LS10 Receivers with Quick-Disconnect (4-Pin Mini-Style)

