

BEAM-ARRAY™ Systems BMLV Series

Retroreflective Parts Counting Light Curtains

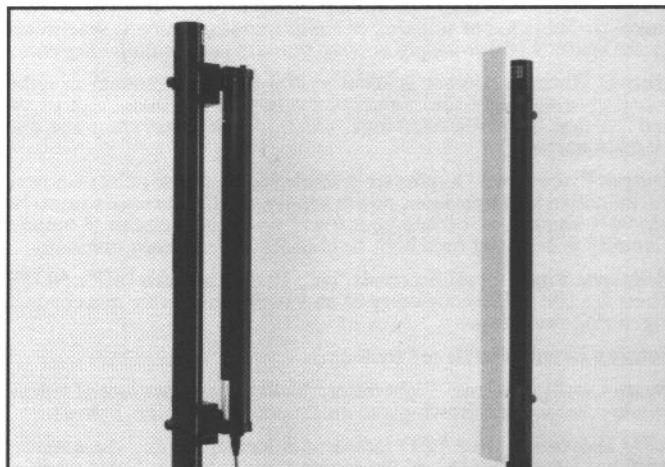


BEAM-ARRAY™ BMLV Series Retroreflective Parts Counting Light Screen systems consist of a BMLV sensor and a suitable retroreflective target. These are not measuring light curtain systems (instead see BME/BMR Series, data sheet 03526). They do not use external controllers or control modules. BMLV systems are designed for object detection in applications such as large-parts counting and parts ejection verification. A typical use is the automated laundry application shown in the drawing (below).

The sensor-to-reflector separation distance may be up to 10 feet when used with BRT-THG-3 retroreflective tape. The minimum object size (minimum object width for reliable detection) depends upon the sensing range (the distance from the sensor to the object being detected) and the type of retroreflector used. See the chart below. For best sensing results, use 3" wide high-grade retroreflective tape (Banner BRT-THG-3). (Whatever reflector is used, the reflector must be 6" longer than the sensor it is used with.)

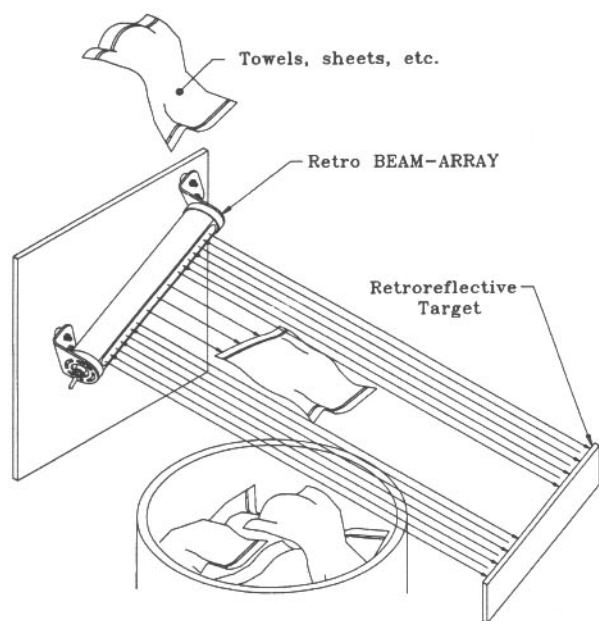
As shown in the chart, minimum object size decreases at shorter sensing ranges and when smaller reflectors are used. For example, using a 3-inch wide retro tape reflector, minimum object size is 2 inches at a distance of 2 feet, and 5 inches at a distance of 7 feet. Applications that require sensing small objects must be evaluated with this in mind.

BMLV Series sensors have a solid-state Bi-Modal™ output (US patent no. 4982107) capable of switching loads of up to 200 mA dc (continuous). The output is activated whenever one or more of the sensing beams is blocked. Four output hookups are possible: NPN sinking/light operate, NPN sinking/dark operate, PNP sourcing/light operate, and PNP sourcing/dark operate. The output type is determined by the sensor's hookup to the dc power supply (see hookup diagrams, next page). **Four sensor models are available:** **BMLV18C** (1 foot high sensing window, 8 sensing beams); **BMLV28C** (2 foot window, 16 beams); **BMLV38C** (3 foot window, 24 beams); and **BMLV48C** (4 foot window, 32 beams). See the dimension information at the bottom of the next page.

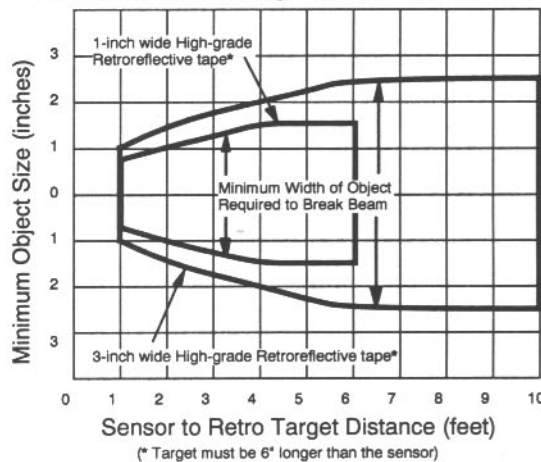


BMLV Series Sensor (left) and retroreflector (right), both mounted on Banner model MGA-S72-1 Free-standing Stand Poles. Retroreflective material and stand poles must be purchased separately from sensors.

Typical Application: Towels are detected in an automated laundry.



Resolution versus Range - Retro BEAM-ARRAY**



**See explanation and example in text, above



WARNING: BMLV Series Parts Counting Light Curtains are **not suitable for use in personnel safety applications**. See instead Banner MACHINE-GUARD Systems and PERIMETER-GUARD Systems.

Specifications

BMLV Series Retroreflective BEAM-ARRAYs

Power Requirements: +10 to 30V dc at 85mA per foot of array length (exclusive of load). 10% maximum ripple. Power supply model PSBA-120 is recommended.

Output Configuration: Bi-modal™ output (PNP sourcing or NPN sinking). Selection of sourcing or sinking configuration is determined by the sensor's power supply hookup polarity (see hookup diagrams).

Output Rating: Output is rated at 200 mA (continuous) in either sourcing or sinking mode. *Saturation voltage* is less than 1V at 10 mA and less than 2V at full rated load. *Output leakage current* is less than 10 microamps.

Output Protection: Outputs are protected against false pulse on power-up, inductive load transients, power supply polarity reversal (due to Bi-Modal™ design), and continuous overload or short-circuit of outputs. Circuitry is designed for a high level of RFI interference immunity.

Response Time: 20 milliseconds "on", 10 milliseconds "off". NOTE: There is a 100 millisecond delay on power-up (outputs are non conducting during this time).

Sensing Beam: Visible red (650 nm).

Beam Configuration: Eight retroreflective beams per foot of sensing window height (see drawing and dimension information, below).

LED Indicator: Red LED indicator is located behind the scanning window at the cable end of the sensor. The indicator lights when all beams are established (i.e. when all receivers "see" the light from their associated emitters returned from the retroreflective target), and goes "off" when one or more beams are blocked.

Range: 10 feet to target of BRT-THG-3 high-grade retroreflective tape (3 inches wide; length must be the length of the sensor plus 6 inches).

Resolution (minimum width of object required to break beam): 2 inches (see plot of Resolution vs. Range, page 1).

Housing: Black anodized aluminum, NEMA 4.

Lens: Red acrylic.

Hardware Supplied: Brackets are 11-gauge cold-rolled black zinc-chromate finished steel. Brackets and fasteners are provided. Mounting posts (shown in the photograph) are not included. Sensor mounting dimensions are given in the drawing below.

Temperature Range: 0 to +50 degrees C (32 to +122 degrees F).

Cable: 4-pin *minifast*™ Quick Disconnect (QD) connector is standard. Use 4-conductor SJT-type *minifast*™ cable, model MBCC-412 (cable is 12 feet long; order separately).

Dimensions BEAM-ARRAY BMLV Series

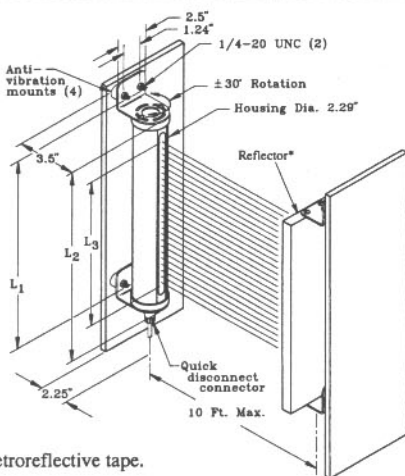
$L_1 =$

15.5" (BMLV18C, 8 beams)
27.5" (BMLV28C, 16 beams)
39.5" (BMLV38C, 24 beams)
51.6" (BMLV48C, 32 beams)

$L_2 = L_3 + 3.4$ inches

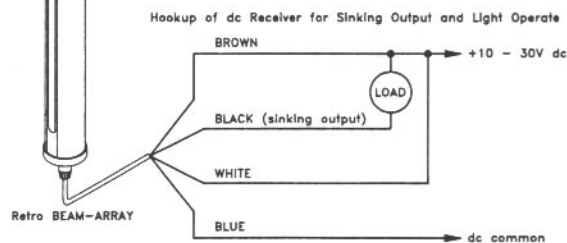
$L_3 =$ window height
(1, 2, 3, or 4 feet)

*For optimum performance, all sensors should be used with model BRT-THG-3 high-grade retroreflective tape.

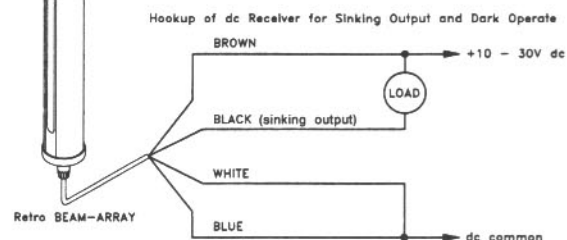


Hookup Information*

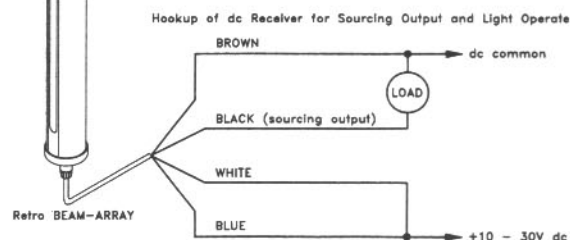
Sinking output, light operate



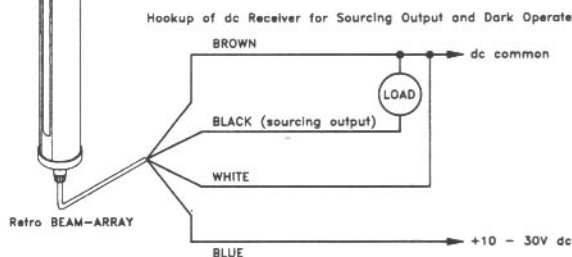
Sinking output, dark operate



Sourcing output, light operate



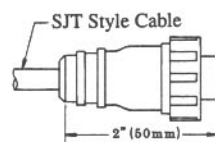
Sourcing output, dark operate



*Contact the factory for information on interfacing to TTL circuitry.

4-pin Quick-disconnect Connector (cable MBCC-412) Order cable separately from sensors.

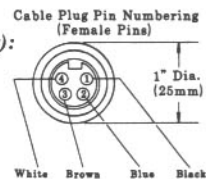
Side view:



Front view

(female contacts):

Length of cable is 12 feet



WARRANTY: Banner Engineering Corporation warrants its products to be free from defects for one year. Banner Engineering Corporation will repair or replace, free of charge, any product of its manufacture found to be defective at the time it is returned to the factory during the warranty period. This warranty does not cover damage or liability for the improper application of Banner products. This warranty is in lieu of any other warranty either expressed or implied.