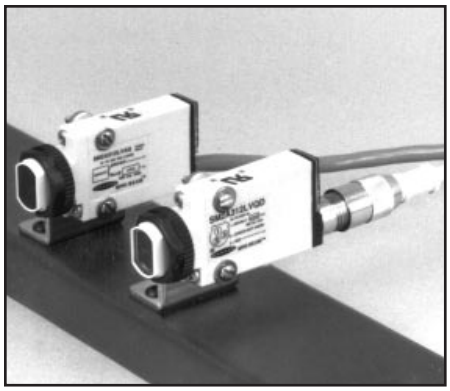
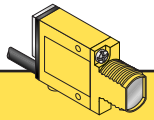
MINI-BEAM® SM2A312LV, SM2A312LVAG and SM2A312LP

Self-contained AC-operated Retroreflective Mode Sensors



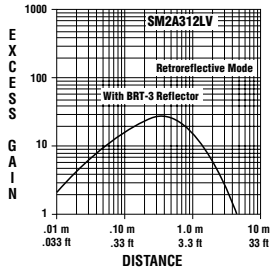
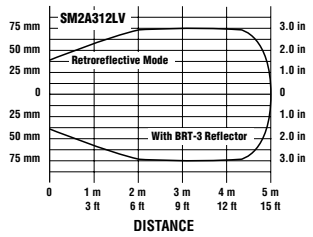
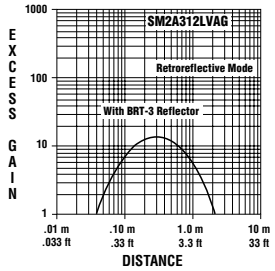
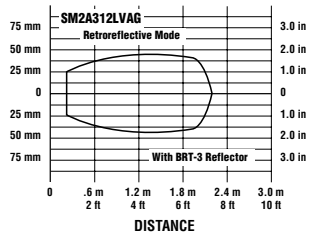
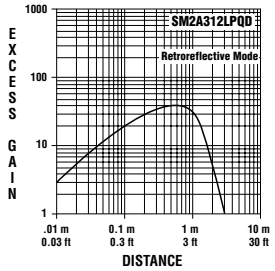
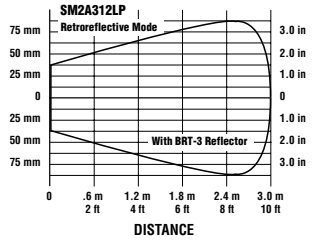
- Compact, modulated, self-contained retroreflective sensors for 24-240V ac operation
- Choose standard visible model for highest excess gain and greatest range, or polarized models for detection of shiny objects
- Switch-selectable for light-operate or dark operate
- highly repeatable; 4 millisecond response
- SPST SCR solid-state output switches up to 300 mA; low leakage current and saturation voltage
- Physically and electrically interchangeable with 18 mm barrel-type photoelectrics



Visible red, 650 nm

Non-Polarized *Polarized*

AC MINI-BEAM Retroreflective Mode

Models	Range	Cable	Supply Voltage	Output Type	Excess Gain	Beam Pattern
Non-Polarized						
SM2A312LV **SM2A312LVQD**	5 m (15 ft)	2 m (6.5 ft) 3-Pin Micro QD	24-240V ac	SPST Solid-state 2-Wire		
Polarized						
SM2A312LVAG **SM2A312LVAGQD**	50 mm to 2 m (2 in to 7 ft)	2 m (6.5 ft) 3-Pin Micro QD	24-240V ac	SPST Solid-state 2-Wire		
Extended Range Polarized*						
SM2A312LP **SM2A312LPQD**	10 mm to 3 m (0.4 in to 10 ft)	2 m (6.5 ft) 3-Pin Micro QD	24-240V ac	SPST Solid-state 2-Wire		

Note: May not perform with some non-Banner retroreflective targets.

MINI-BEAM Installation and Alignment

Proper operation of these sensors requires that they be mounted securely and aligned properly. For best results, final-mount these sensors in an 18 mm hole by their threaded barrel or use one of the available mounting brackets, (see pages 6 - 7).

1) Begin with the sensor at the desired distance from the retro target and at the approximate position where it will be mounted. An object at the sensing position should pass through the "core" of the sensor's light beam.

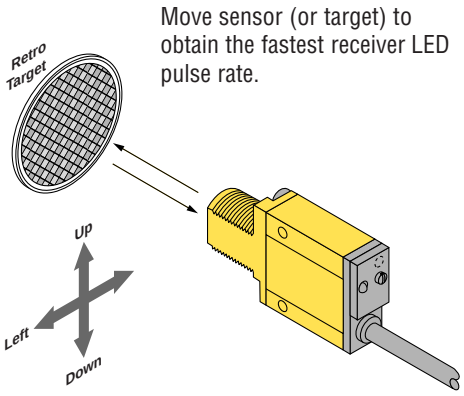
2) *Switch the sensor to light-operate mode (see Note, below).* Apply power to the sensor, and advance the sensor's 15-turn GAIN control to maximum (clockwise end of rotation). If the sensor is "seeing" the reflected light beam, the alignment LED should be "on". Move the sensor up-down-right-left to find the center of the movement zone within which the LED indicator remains lit. (Alternatively, the retro target may be moved.) Reducing the GAIN setting (if necessary) will reduce the size of the movement zone and make more precise alignment possible.

3) Repeat the alignment motions after each GAIN reduction. When you are satisfied that you have obtained optimum alignment, mount the sensor (or reflector) solidly in that position. Increase the receiver GAIN to maximum. Test the system by placing the object to be detected into the sensing position. The LED indicator should go "off". (If it does, alignment is complete, and you may now switch the sensor to dark-operate if the application requires it.) If the LED of an "LV" model sensor does not go "off", the sensor is reacting to light reflected from the object (called "proxing").

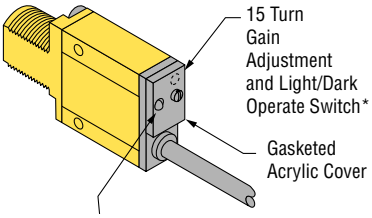
   If proxing occurs, reduce the GAIN setting until the alignment indicator goes "off", plus two additional full turns. Remove the object from the sensing position and check that the alignment indicator LED comes "on." Confirm that the LED goes "off" when the object is replaced.

   Proxing can be avoided by mounting the sensor so that it's light beam is not perpendicular to any flat reflective surface on the object to be detected (an angle of 10 to 15 degrees is usually sufficient). Also, at distances of a few feet or more, using more than one reflector may increase sensing contrast between object-present and object-absent.

Retroreflective Mode Alignment



Move sensor (or target) to obtain the fastest receiver LED pulse rate.



Alignment indicator LED lights when the sensor's output is conducting.

*** Note regarding Light/Dark operate switch:**
- Turn switch *fully* clockwise for light operate (sensor outputs conduct when object is absent)
- Turn switch *fully* counterclockwise for dark operate (sensor outputs conduct when object is present)