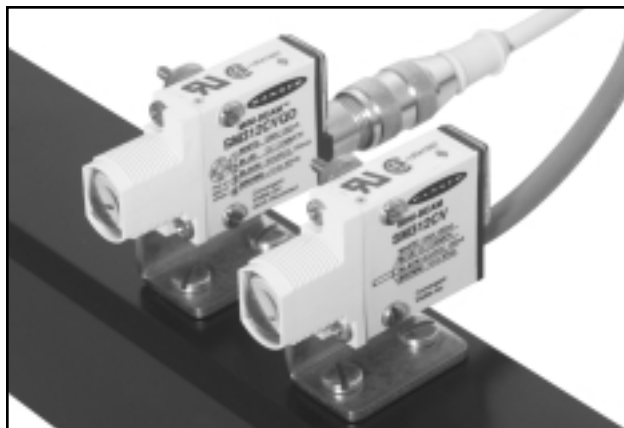




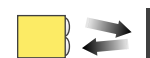
# MINI-BEAM® SM312CV and SM312CV2

Self-contained DC-operated Convergent Mode Sensors

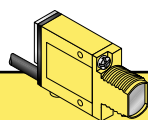


- Compact, modulated, self-contained convergent mode sensors for 10-30V dc operation
- Produces a precise 1.3 mm (0.05") diameter sensing spot at a focus point 16 mm (0.65") from the lens surface (model SM312CV) or a 3.0 mm (0.12") sensing spot at 43 mm (1.70") focus (model SM312CV2)
- Switch-selectable for light operate or dark operate
- Includes Banner's exclusive AID™ alignment system\*
- Highly repeatable 1 millisecond response
- Both sourcing and sinking outputs (150 mA max. each); continuous overload and short-circuit protected
- Rugged, epoxy-encapsulated construction: meets NEMA standards 1, 2, 3, 3S, 4, 4X, 6, 12 and 13; IEC IP67
- Physically and electrically interchangeable with 18 mm barrel-type photoelectrics

\*US patent number 4356393



Visible red, 650 nm



## MINI-BEAM Convergent Mode Models

Models	Range	Cable	Supply Voltage	Output Type	Excess Gain	Beam Pattern
					Performance based on 90% reflectance white test card	
SM312CV SM312CVQD	16 mm (0.65 in)  Spot Size at Focus: 1.3 mm (0.05 in)	2 m (6.5 ft) 4-Pin Euro QD	10-30V dc	Bipolar NPN/PNP		
SM312CV2 SM312CV2QD	43 mm (1.7 in)  Spot Size at Focus: 3.0 mm (0.12 in)	2 m (6.5 ft) 4-Pin Euro QD	10-30V dc	Bipolar NPN/PNP		

### For Standard MINI-BEAMS:

- 9 m (30 ft) cables are available by adding suffix "W/30" to the model number of any cabled sensor (e.g. - SM312CV W/30).
- A 150 mm (6 in.) long pigtail cable with attached QD connector is available by adding suffix "QDP" to the model number of any MINI-BEAM sensor (e.g. - SM312CVQDP). See page 5 for more information.
- A model with a QD connector requires an accessory mating cable. See page 8 for more information.
- May be ordered with 0.3 millisecond on/off response by adding suffix "MHS" to the model numbers (e.g. - SM312CVMHS). This modification reduces sensing range (and excess gain).

## MINI-BEAM Installation and Alignment

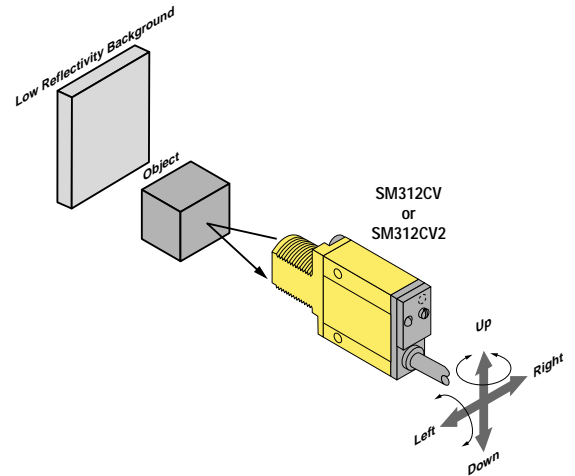
Proper operation of the SM312CV or SM312CV2 sensor requires that it be mounted securely and aligned properly. In some applications, excessive movement or vibration can result in intermittent or false operation caused by loss of alignment. For best results, final-mount the sensor in an 18mm-hole by its threaded barrel or use a mounting bracket (see page 6).

Begin with the sensor at the approximate position where it will be mounted. With power applied to the circuit and with the sensor set for "light operate", direct the sensor's visible red spot at the object approximately 16 mm (0.65 in) (for model SM312CV) or 43 mm (1.7 in) (for model SM312CV2) directly in front of the lens. Move the sensor very slightly toward or away from the object while observing the red LED indicator on the back of the sensor. Note the near and far points at which sensing occurs (the range of distance over which the LED remains lit). Mount the sensor at a point approximately midway in the range. This should correspond to the point at which the red sensing spot on the object appears most sharply defined on the object surface. Mount the sensor at this position and distance.

**\* Note regarding Light/Dark operate switch:**

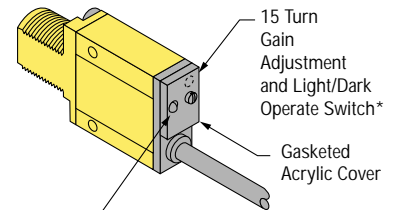
- Turn switch *fully* clockwise for light operate (sensor outputs conduct when sensing light is received)
- Turn switch *fully* counterclockwise for dark operate (sensor outputs conduct when sensing light is not received)

### CONVERGENT MODE ALIGNMENT



**Distance from Sensor lens to object:**

- 16 mm (0.65 in) for SM312CV
- 43 mm (1.7 in) for SM312CV2



"AID" Indicator LED Lights when the sensor sees its own modulated light and pulses at a rate proportional to the strength of the received light signal.