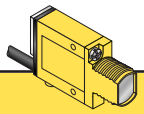
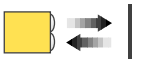
MINI-BEAM® SM2A312D

Self-contained AC-operated Diffuse Mode Sensors

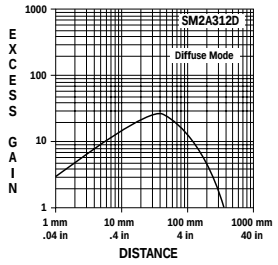
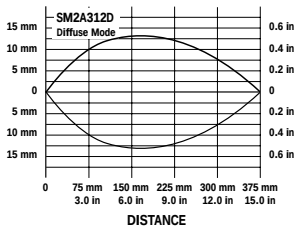
- Compact, modulated, self-contained diffuse proximity mode sensors for 24-240V ac operation
- 2-wire hookup for convenient installation
- Range to 380 mm (15 in) (referenced to 90% reflectance white test card)
- Switch-selectable for light operate or dark operate
- SPST SCR solid-state output switches up to 300mA; low leakage current and saturation voltage
- Rugged, epoxy-encapsulated construction: meets NEMA standards 1, 2, 3, 3S, 4, 4X, 12 and 13; IEC IP67
- Physically and electrically interchangeable with 18 mm barrel-type photoelectrics





Infrared, 880 nm

MINI-BEAM Diffuse Mode

Models	Range	Cable	Supply Voltage	Output Type	Excess Gain	Beam Pattern
					Performance based on 90% reflectance white test card	
SM2A312D **SM2A312DQD**	380 mm (15 in)	2 m (6.5 ft) 3-Pin Micro QD	24-240V ac	SPST Solid-state 2-Wire		

For Standard MINI-BEAMs:

i) 9 m (30 ft) cables are available by adding suffix **"W/30"** to the model number of any cabled sensor (e.g. - **SM2A312D W/30**).

ii) 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. - **SM2A312DQDP**). See page 5 for more information.

iii) A model with a QD connector requires an accessory mating cable. See page 8 for more information.

MINI-BEAM Installation and Alignment

Proper operation of the SM2A312D sensor requires that it be mounted securely and aligned properly. Excessive movement or vibration can result in intermittent or false operation caused by loss of alignment. For best results, final-mount the SM2A312D in an 18mm-hole by its threaded barrel or use a mounting bracket (see page 6).

1) Begin with the sensor at the desired distance from the object to be sensed, and at the approximate position where it will be mounted. The background should be as far behind the object as possible (at least three times the distance of the sensor from the object), and as dark a color as possible compared to the object. Ideally, the object should present its largest reflective surface to the sensor.

2) Switch the sensor to light-operate mode. With the object in the sensing position, apply power to the sensor, and advance the 15-turn GAIN control to maximum (clockwise end of rotation). The GAIN control is clutched at both ends to avoid damage, and will "free-wheel" when either endpoint is reached.

   If the sensor is "seeing" its reflected light, the alignment LED should be "on". Move the sensor up-down-right-left (include angular rotation) to find the center of movement zone within which the LED remains lit. Reducing the GAIN setting (if necessary) will reduce the size of the movement zone and make more precise alignment possible.

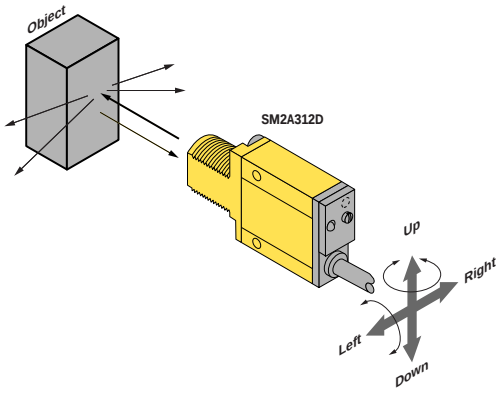
3) Repeat the alignment motions after each GAIN reduction. When you are satisfied that you have obtained optimum alignment, mount the sensor solidly in that position. Increase the GAIN to maximum. Test the system by removing the object from the sensing position. The receiver LED indicator should go "off". If the LED indicator does not go "off", the sensor is reacting to light reflected from a background surface. Reduce the GAIN setting until the alignment indicator goes "off", plus two additional full turns. Again place the object in the sensing position. If the alignment indicator does not come "on", the sensor is receiving as much or more light energy from the background as from the object. Consider the following alternatives:

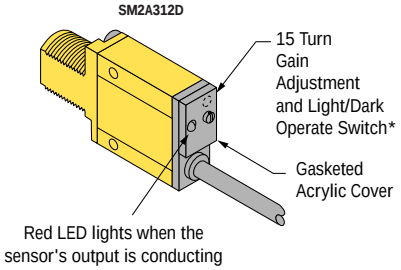
   a) move the sensor closer to the object and reduce the sensitivity (GAIN);

   b) reduce background reflectivity by painting the background with flat-black paint, or by scuffing the background or cutting a hole through it;

   c) tilt the sensor or the background so that the sensing beam is not perpendicular to the background.

Diffuse Mode Alignment





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