ENFORCER®

Retro-Reflective Photoelectric Beam Sensor

E-931-S45RRQ

Installation Manual

The ENFORCER E-931-S45RRQ Retro-Reflective Photoelectric Beam Sensor provides reliable sensing of objects that enter the space between the sensor and reflector, thus breaking the infrared beam. It is suitable for various types of detection such as sensing approaching vehicles to open a garage door or outdoor gate, as an entry notification for stores, to assist in measuring parking distances, or an alarm notification, as well as many other uses.

- Range 45ft (14m)
- Weatherproof (IP66) construction for indoor/outdoor usage
- Pre-wired 6.5ft (2m) cord
- Bracket and mounting hardware included for both sensor and reflector
- Adjustable response time and sensing range
- Compact size

CAUTION

- This sensor was not designed to prevent bodily injury or loss of life.
- This sensor was not designed for use in environments where explosive gases may be present.
- Use of this sensor in certain security applications may be regulated by local laws or codes. SECO-LARM is not responsible for compliance with such laws or codes.
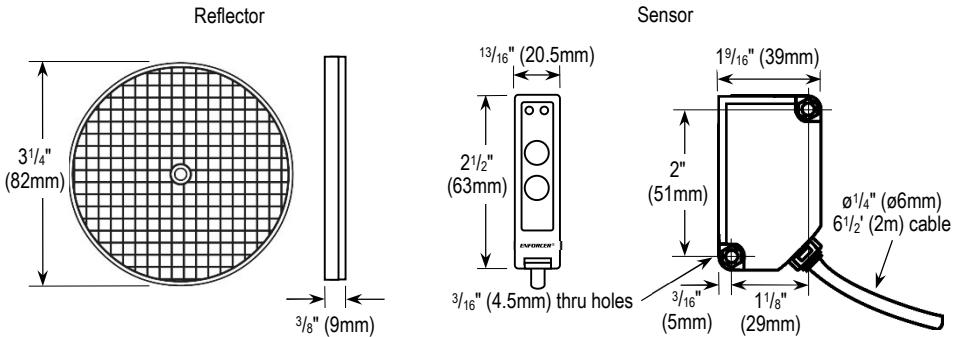
SECO-LARM®

Parts List

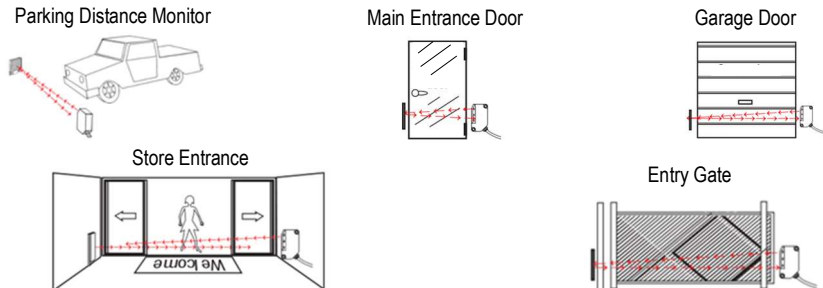|		
1x **Sensor**	1x **Adjustment screwdriver**	4x **$^{13}/_{16}$" Phillips wood screws**
1x **Round reflector**	1x **$^{13}/_{16}$" Phillips/slotted wood screw**	2x **$1^{3}/_{4}$" Phillips machine screws**
1x **Plastic wall anchor**	1x **$^{5}/_{8}$" Phillips/slotted machine screw**	1x **Reflector hood**
2x **Hex nuts**	2x **$^{1}/_{4}$" Phillips/slotted machine screws**	1x **Manual**
1x **E-931ACC-BLS5Q Sensor mounting bracket**	1x **E-931ACC-BLS1Q Sensor mounting bracket**	

Specifications

Type		Retro-reflective
Operating voltage		12~250 VAC/VDC
Sensing range		0.5~45 ft (0.2~14 m)
Current draw	**Active**	70mA@12VDC
	Standby	55mA@12VDC
Response time		5~100 ms, Adjustable
Light source		IR LED
LED indicators		Yellow LED (Alignment), Red LED (Triggered)
Trigger output		SPDT Relay output (NO/NC/COM)
Switching capacity		3A@120VAC / 3A@30VDC
IP Rating		IP66 Weatherproof
Operating temperature		-4~131° F (-20~55° C)
Sensor dimensions		$^{13}/_{16}$"x$2^{1}/_{2}$"x$1^{9}/_{16}$" (20.5x63x39 mm)

Dimensions

Reflector

Sensor

$3^{1}/_{4}$" (82mm)

$^{3}/_{8}$" (9mm)

$^{13}/_{16}$" (20.5mm)

$2^{1}/_{2}$" (63mm)

$^{3}/_{16}$" (4.5mm) thru holes

$1^{9}/_{16}$" (39mm)

2" (51mm)

ø$^{1}/_{4}$" (ø6mm) $6^{1}/_{2}$' (2m) cable

$^{3}/_{16}$" (5mm)

$1^{1}/_{8}$" (29mm)

Sample Installations

Parking Distance Monitor
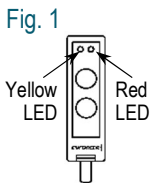
Main Entrance Door

Garage Door

Store Entrance

Entry Gate

Installation and Adjustment

LED Functions

- Red LED – When ON, indicates the sensor is triggered.
- Yellow LED – When ON, indicates the sensor is properly aligned with the reflector, and not triggered.

Fig. 1

Yellow LED   Red LED

Understanding Sensing Range Adjustment

The *Sensing Range* adjustment determines the strength of the infrared signal emitted by the sensor.

- Min. Setting – Weakest infrared signal
- Max. Setting (default) – Strongest infrared signal

This allows adjusting the infrared signal strength in relation to the distance between sensor and reflector.

NOTE: If the infrared signal is too strong, the sensor may not trigger. If the infrared signal is too weak, the sensor may be susceptible to false alarms.

Understanding Response Time Adjustment

The Response Time adjustment knob sets how long the beam should be interrupted before triggering.

- Min. Setting (default) – Interrupt time is 5ms for high sensitivity, better at detecting fast-moving objects, but more susceptible to false alarms.
- Max. Setting – Interrupt time is 100ms for lower sensitivity, thus reducing false alarms, but fast-moving objects may not trigger the sensor.

The purpose is to allow adjustment to better fit the needs required of a particular application (default, *5ms*).

Installation

1. Mount the reflector and the sensor so they face each other (see *Mounting the Sensor*, pg. 4).
2. Connect power to the sensor (see *Wiring Diagram*, pg. 4). The red LED will probably light, indicating that the sensor and reflector are not yet aligned. If the yellow LED lights (red LED OFF), it indicates that the sensor and reflector are aligned (though it may still be necessary to further adjust the alignment).
3. Turn the sensing range knob to *Max*.
4. To find the best alignment, slowly adjust the angle of the sensor (and/or reflector) up, down, left or right.

NOTES:
- Correct alignment is reached when the red LED is OFF and the yellow LED is ON.
- If both LEDs are OFF, the sensor is at the edge of signal range and may not work properly.

Adjusting Sensing Range and Response Time

After the sensor and the reflector have been properly installed, the next step is to adjust the appropriate setting for the sensing range and response time.

1. Open the top cover of the sensor as shown in Fig. 2.
2. Peel back the tape covering the adjustment access holes, taking care not to soil the tape so it can be easily reapplied.

Fig. 2

Sensing range   Response time

Min   Max   5ms   100ms
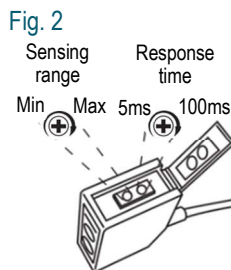
Adjusting the Sensing Range

3. Starting from the *Max*. position, slowly turn the knob counterclockwise until the yellow LED turns OFF, indicating the weakest acceptable signal for this situation. Then turn it clockwise somewhat above that point. The ideal is usually midway between the weakest point and *Max*.

   NOTE: When adjusting, if the weak point is near the *Max*. position, the knob should be set at *Max*.

Adjusting the Response Time

4. Adjust according to the particular situation. Some testing may be required to achieve ideal results and avoid false alarms from things like falling leaves and passing birds.
5. Place the tape back over the sensitivity adjustment access holes and snap the cover back into place, ensuring that the cover is firmly sealed.
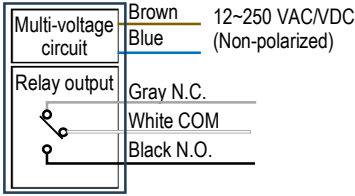
   NOTE: Ensure that the tape is properly reapplied over the sensitivity adjustment access holes, so that water will not enter and cause damage.

Testing

1. Power up the sensor. The yellow LED should be ON and the red LED should be OFF.
2. Pass a typical object to be detected between the sensor and reflector. The red LED should turn ON and the yellow LED OFF indicating successful detection.
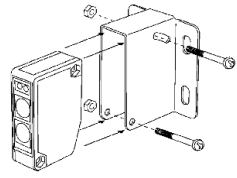
   NOTE: If a shiny object, such as a chrome-plated item or something with reflective tape, is in close proximity to the path of the IR beam, the sensor may not be able to detect the passing object. In this case it may be necessary adjust the sensitivity setting.
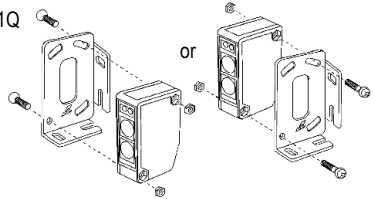
Wiring Diagram

Multi-voltage circuit	Brown	12~250 VAC/VDC
	Blue	(Non-polarized)
Relay output	Gray N.C.	
	White COM	
	Black N.O.	

NOTES

- Can be connected to AC or DC voltage
- Maximum cable extension length is 325ft (100m)

Mounting the Sensor

E-931ACC-BLS5Q
Bracket

E-931ACC-BLS1Q
Bracket

or

Troubleshooting

Sensor does not detect the object	• Change the angle of the sensor or readjust the sensitivity setting
Yellow LED does not turn on	• Clean the sensor and reflector with a damp (not wet) cloth • Adjust the reflector and/or sensor for proper alignment
Red LED lights when object is detected, but no output	• Check cable from sensor to alarm device and test sensor

Accessories

Square Reflector	Round Reflector	Reflector Hood	Reflector Bracket
E-931ACC-R2Q	E-931ACC-RC1Q	E-931ACC-HR1Q	E-931ACC-BLR2Q

Wall Bracket	Door Frame Bracket	Single-Gang Bracket
E-931ACC-BLS7Q	E-931ACC-BLS8Q	E-931ACC-BLS6Q

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