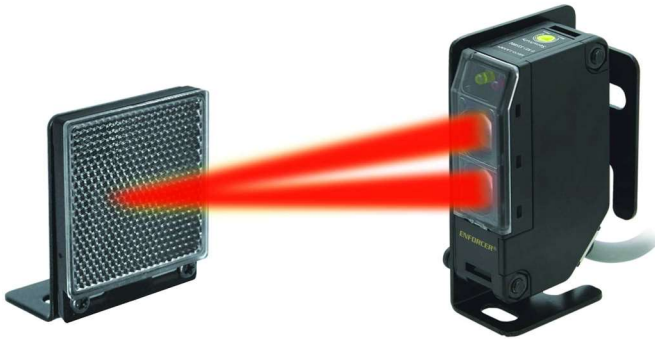# ENFORCER®

Retro-Reflective Photoelectric Beam Sensor

E-931-S35RRQ

Installation Manual

RoHS CE

The ENFORCER E-931-S35RRQ 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, for measuring parking distances, industrial automation, or an alarm notification, as well as many other uses.

- Range 35ft (11m)
- Weatherproof (IP66) construction for indoor/outdoor usage
- Pre-wired 6ft (1.8m) cord
- Bracket and mounting hardware included for both sensor and reflector
- Adjustable 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
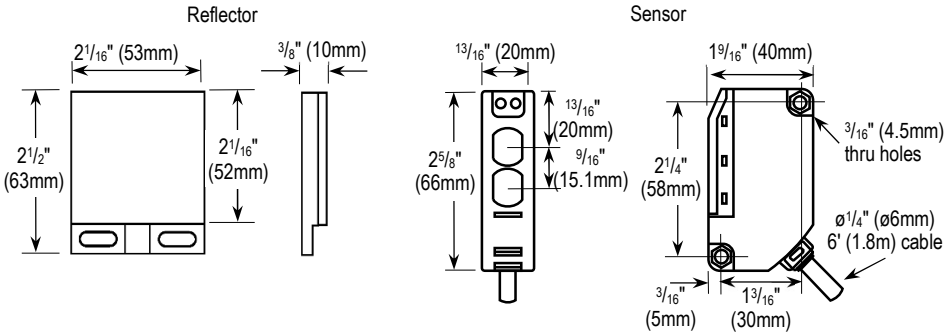
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Parts List

1x **Sensor**
1x **Square reflector**

1x **Sensor mounting bracket**
1x **E-931ACC-BLR2Q Reflector mounting bracket**

All mounting hardware
1x **Manual**

Specifications

Type		Retro-reflective
Operating voltage		24~240 VAC / 12~240VDC
Sensing range		0.5~35 ft (0.2~11 m)
Current draw	**Standby**	25mA@12VDC
	Active	60mA@12VDC
Response time		10ms, (max.)
Light source		IR LED
LED indicators		Yellow LED (Alignment), Red LED (Triggered)
Trigger output		SPDT Relay output (NO/NC/COM)
Switching capacity		1A@250VAC / 2A@30VDC
IP Rating		IP66 Weatherproof
Operating temperature		-4~131° F (-20~55° C)
Sensor dimensions		$13/16$"x$25/8$"x$19/16$" (20x66x40 mm)

Dimensions

Reflector

$21/16$" (53mm) $3/8$" (10mm)

$21/2$" (63mm) $21/16$" (52mm)

Sensor

$13/16$" (20mm) $19/16$" (40mm)

$13/16$" (20mm)
$9/16$" (15.1mm)
$25/8$" (66mm)
$21/4$" (58mm)
$3/16$" (4.5mm) thru holes
ø$1/4$" (ø6mm) 6' (1.8m) cable
$3/16$" (5mm)
$13/16$" (30mm)

Sample Installations

Parking Distance Monitor

Main Entrance Door

Garage Door

Store Entrance

Assembly Line

Entry Gate
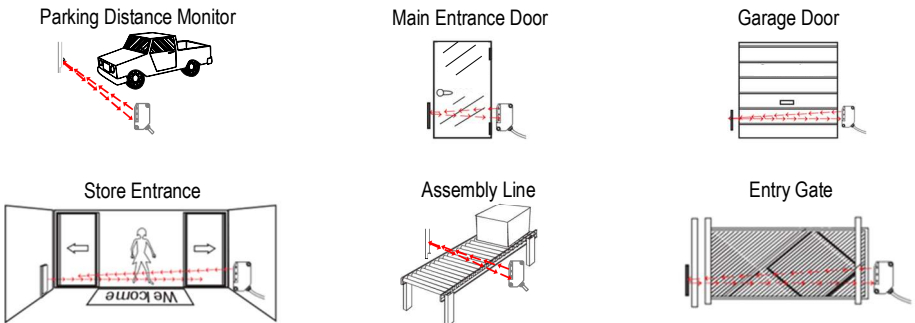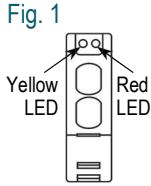
Installation and Adjustment

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 – sensor easily be triggered by small objects but more susceptible to false alarms
- Max. Setting (default) – Strongest infrared signal – sensor less likely to be susceptible to false alarms

Installation

1. Mount the reflector and the sensor so they face each other (see *Mounting the Reflector*, below and *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

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

1. Starting from the *Min*. position, slowly turn the sensing range adjustment (see Fig. 2) clockwise until the yellow LED turns ON Mark this as position A.

   Fig. 2

   Sensing range

   Min   Max

   NOTE: If the yellow LED is on at the *Min*. setting, consider this as position A.
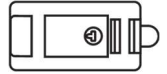
2. Place an object similar to what you desire to detect between the sensor and reflector at the point where you would normally want it to be detected. The yellow LED should turn off and the red LED should turn on.
3. Slowly turn the sensing range adjustment clockwise until the yellow LED turns on again. Mark this as position B.

   NOTE: If the yellow LED does not turn on even at the *Max*. position, then consider *Max.* as position B.

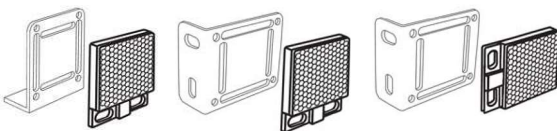4. Turn the sensing range adjustment counterclockwise to a point approximately midway between points A and B.

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 one with reflective tape, comes in close proximity to the IR beam, the sensor may not be able to detect accurately. If so, you may need to adjust the sensing range counterclockwise until the desired results are obtained.
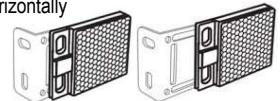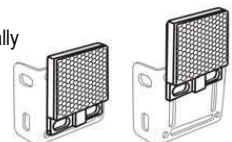
Mounting the Reflector
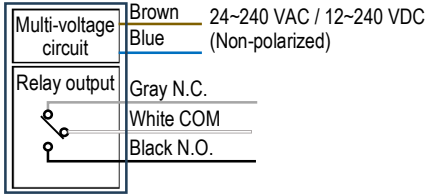
Sample fixed mounting

Adjusting the reflector

Horizontally

Vertically

Wiring Diagram

Multi-voltage circuit	Brown	24~240 VAC / 12~240 VDC
	Blue	(Non-polarized)
Relay output	Gray N.C.	
	White COM	
	Black N.O.	
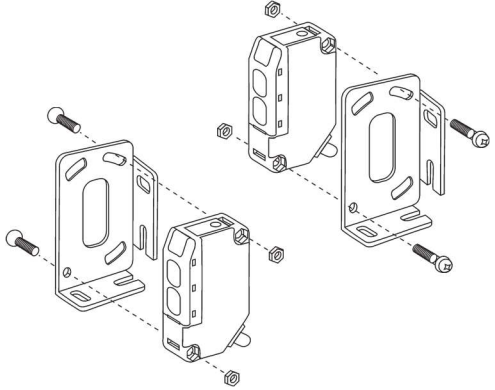
NOTES

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

Mounting the Sensor

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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