Specifications:

Model Number:	E-931-S45RRQ
Type	Retro-Reflective
Sensing Range	0.5' to 45' (0.2 - 14 m)
Voltage Supply	12-250 VDC or VAC
Current Drain	70mA@12VDC
Response Time	5ms~100ms (Adjustable)
Light Source	IR LED
LEDs	Yellow LED (Alignment), Red LED (trigger)
Trigger Output	SPDT Relay output (NO/NC/COM
Switching Capacity	3A@120VAC / 3A@30VDC
Enclosure	IP 66 Weatherproof
Ambient Temperature	$-4^0 \sim 131^0 F$ $(-20^0 \sim 55^0 C)$
Mounting Brackets for Sensor and Reflector	Included

Troubleshooting:

Trouble	Possible Origin(s)	Remedy(s)
Sensor does not detect the object.	• Sensor sensitivity is not properly set. • Object may have a reflective surface which confuses sensor.	• Change the angle of the sensor or readjust the sensitivity setting.
Yellow LED does not turn on.	• Dirty sensor and/or reflector. • Reflector and/or sensor is misaligned.	• 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.	• No continuity between sensor and alarm device.	• Check cable from sensor to alarm device. Test sensor.

Dimensions:

3.23" (82mm)

0.35" (9mm)

0.81" (20.5mm)

1.54" (39mm)

2.48" (63mm)

2" (51mm)

1.14" (29mm)

0.20" (5mm)

Ø 0.24" (6mm) cable 6.5' (2m)

2-Ø 0.18" (4.5mm) thru hole
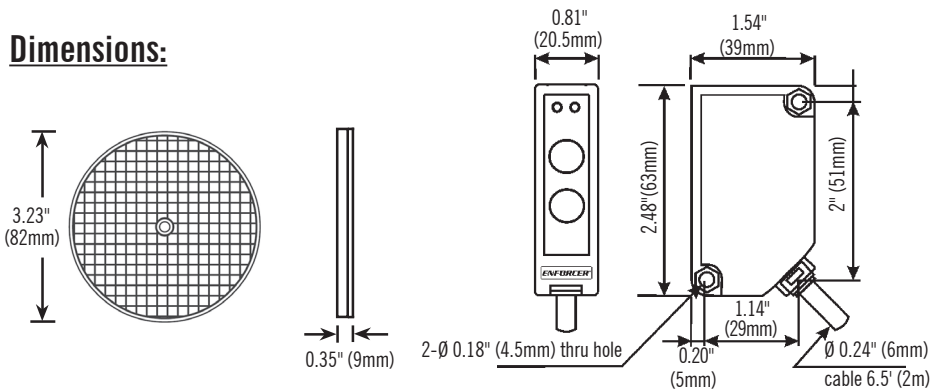
NOTICE: The information and specifications printed in this manual are current at the time of publication. However, the SECO-LARM policy is one of continual development and improvement. For this reason, SECO-LARM reserves the right to change specifications without notice. SECO-LARM is also not responsible for misprints or typographical errors. Copyright © 2011 SECO-LARM U.S.A., Inc. All rights reserved. This material may not be reproduced or copied, in whole or in part, without the written permission of SECO-LARM.

WARRANTY: ENFORCER Photobeam Sensors are warranted against defects in material and workmanship while used in normal service for a period of one (1) year from the date of sale to the original customer. Our obligation is limited to the repair or replacement of any defective part if the unit is returned, transportation pre-paid, to SECO-LARM.

SECO-LARM® U.S.A., Inc., 16842 Millikan Avenue, Irvine, CA 92606 Tel: 800-662-0800 / 949-261-2999 Fax: 949-261-7326 Website: www.seco-larm.com E-mail: sales@seco-larm.com MiE931S45RRQ_1110.pmd PITSW3

ENFORCER®

Retro-Reflective Photoelectric Beam Sensor

E-931-S45RRQ

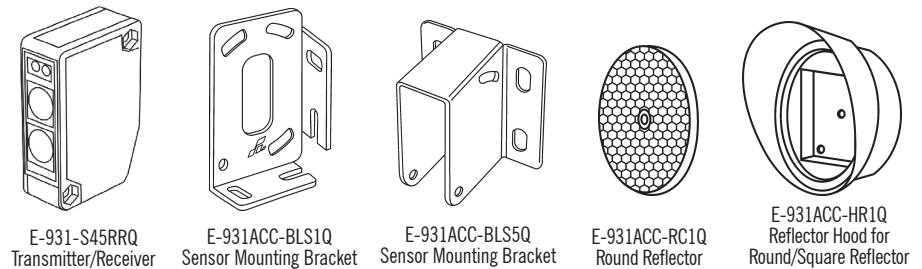### Range: 45ft. (14m)

INSTALLATION MANUAL

Features:

- 12~250 VAC/VDC.
- Weatherproof (IP66) construction for indoor/outdoor usage.
- Pre-wired 6-foot cord.
- Bracket and mounting hardware included for both sensor and reflector.
- Adjustable response time and sensing range.
- Compact size.

Typical Applications:

- Safety sensor for garage doors or outdoor gates.
- Overhead door security sensor.
- Industrial automation - Detect small objects on manufacturing line.
- Entry detection for store fronts.
- Assist in measuring parking distance.
- Alarm sensor.

Included:

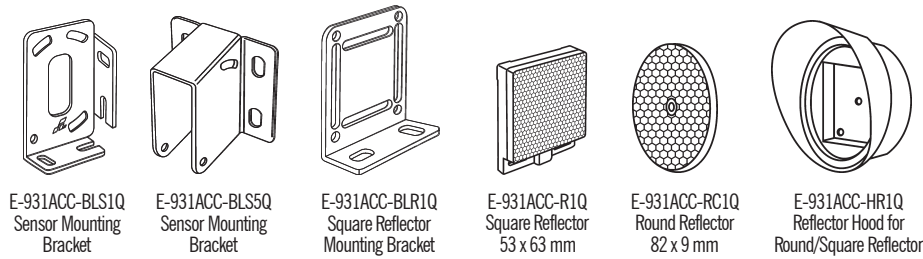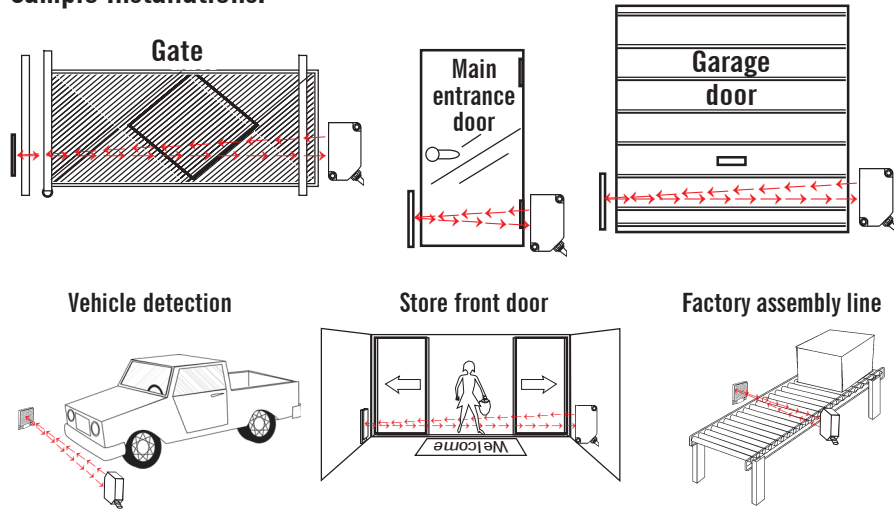| E-931-S45RRQ Transmitter/Receiver | E-931ACC-BLS1Q Sensor Mounting Bracket | E-931ACC-BLS5Q Sensor Mounting Bracket | E-931ACC-RC1Q Round Reflector | E-931ACC-HR1Q Reflector Hood for Round/Square Reflector |

Caution:

- This sensor was not designed to prevent bodily injury or loss of life.
- This sensor was not designed for use in environments where there may be explosive gasses 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.

Note: Products with model numbers that end with "Q" or that have a round green "Q" sticker are RoHS compliant.
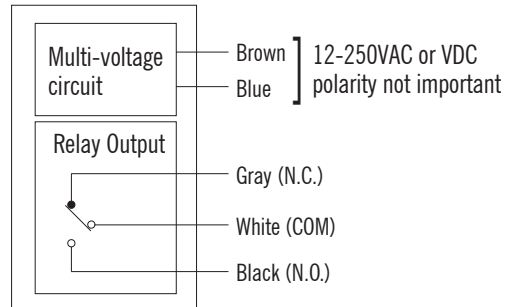
Optional Accessories:

| E-931ACC-BLS1Q Sensor Mounting Bracket | E-931ACC-BLS5Q Sensor Mounting Bracket | E-931ACC-BLR1Q Square Reflector Mounting Bracket | E-931ACC-R1Q Square Reflector 53 x 63 mm | E-931ACC-RC1Q Round Reflector 82 x 9 mm | E-931ACC-HR1Q Reflector Hood for Round/Square Reflector |

Sample Installations:

Gate

Main entrance door

Garage door

Vehicle detection

Store front door

Welcome

Factory assembly line

Wiring:

Connection (5 wires)

Multi-voltage circuit — Brown / Blue] 12-250VAC or VDC polarity not important

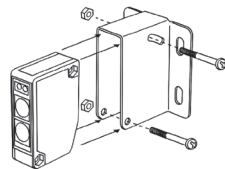Relay Output
- Gray (N.C.)
- White (COM)
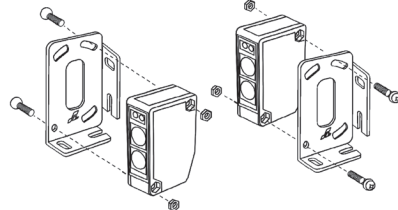- Black (N.O.)

Note:
1. Can be connected to AC or DC voltage.
2. Maximum cable extension length is 325 feet (100m).

Mounting the Sensor:

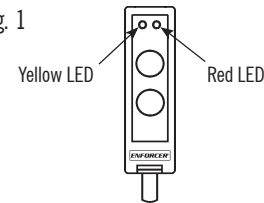a. For E-931ACC-BLS5Q bracket

b. For E-931ACC-BLS1Q bracket

Installation and Adjustment:

LED Functions:

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

Fig. 1

Yellow LED   Red LED

Sensing Range Adjustment Functions:

The Sensing Range adjustment knob sets how powerful the infrared signal emitted by the sensor is.

- Min. Setting –- The infrared power signal emitted by the sensor is at its minimum or weakest.
- Max. Setting — The infrared power signal emitted by the sensor is at its maximum or strongest.

The objective of this function is to set the appropriate power of the infrared signal corresponding to the distance between the sensor and the reflector of a particular application.
The factory default setting is set at "Max.".

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.

Response Time Adjustment Functions:

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

- Min. Setting –- The interrupt time is set at 5ms (high sensitivity) and is suitable for detecting fast moving objects, but is more susceptible to false alarms.
- Max. Setting — The interrupt time is set at 100ms (low sensitivity) and will reduce false alarms, but fast moving objects may not trigger the sensor.

The objective of this function is to set the appropriate interrupt time of the sensor corresponding to the sensitivity required of a particular application.
The factory default setting is set at "5ms".

Fig. 2

Sensing Range   Response Time
Min (+) Max   5ms (+) 100ms
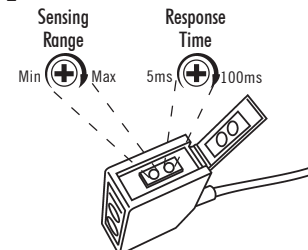
Installation:

1. Mount the reflector and the sensor so they face each other.
2. Connect power to the sensor. Typically the red LED will turn ON indicating that the sensor and reflector are not yet properly aligned. If the yellow LED is ON (red LED OFF), it indicates that the sensor and reflector are aligned (although it still may be necessary to slightly adjust the alignment).
3. Turn the sensing range knob to Max.
4. To find the correct alignment, slowly adjust the angles of the sensor (and/or reflector) up, down, left or right.

Note: Correct alignment is reached when the red LED turns OFF and the yellow LED turns ON.

Note: If both LEDs are OFF, the sensor is at the edge of sensing the signal, and may not work properly.

Adjusting the Sensing Range and Response Time:

After the sensor and the reflector have been properly installed, the next step is to adjust the approriate setting for the sensing range and response time. Open the top cover of the sensor as shown in Fig. 2.

Adjusting the Sensing Range :

Starting from the Max. position, slowly turn the knob counter-clockwise until the red LED turns ON. This position represents the weakest point of the infrared signal for this particular application. The setting of the sensing range must be a little higher than this point, so turn the knob clockwise to have a little distance from the weakest point. The ideal setting is midpoint between the weakest point and Max.

Note: When turning the knob counter-clockwise from the Max. position, if the weak point is near the Max. position then the knob should be set at the Max. position.

Adjusting the Response Time :

Adjust the knob according to the requirements of each application, this may require an interruption test to achieve the ideal result. For example, to avoid false alarms from falling leaves and passing birds, adjust the knob to a level wherein the sensor will not trigger from these interruptions.

Note: After the sensing range and response time have been adjusted, make sure to close the top cover securely to prevent water from entering the sensor.

Testing:

1. Power up the sensor. The yellow LED should be ON; the red LED should be OFF.
2. Pass the object to be detected between the sensor and reflector. The red LED should turn ON and the yellow LED should turn OFF. This indicates that the object has been detected.

Note: If a shiny object, such as a chrome-plated item or something with reflective tape, is within close proximity of the path of the IR beam the sensor may not be able to detect the passing object. In this case it may be necessary to turn the sensitivity knob counter-clockwise until the desired sensitivity setting is obtained.