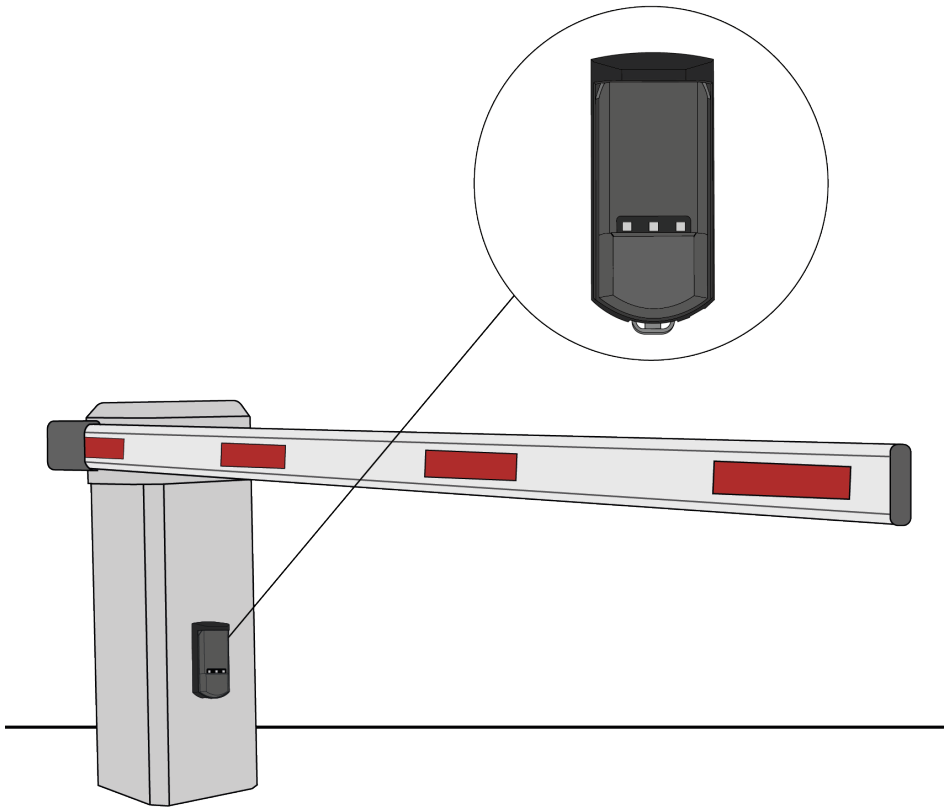




# EVOLOOP

## User's Guide

75.0102.01  
20251016

# TECHNICAL SPECIFICATION

|                                                |                                                                               |
|------------------------------------------------|-------------------------------------------------------------------------------|
| <b>Technology</b>                              | microwave 60 GHz (FMCW)                                                       |
| <b>Radiated frequency</b>                      | 60 GHz                                                                        |
| <b>Max Detection Field</b>                     | up to 7m (23')                                                                |
| <b>Radiated power</b>                          | < 20 dBm EIRP                                                                 |
| <b>Radar Field of view</b>                     | 140° opening field and 40° in elevation                                       |
| <b>Reference body for Safeguarding Level D</b> | Corner reflector with RCS = 0.17m²                                            |
| <b>Antenna angle adjustment</b>                | -20 – 20°                                                                     |
| <b>Supply voltage*</b>                         | 12 – 30 VDC ±10%, 12 – 24 VAC ±10%                                            |
| <b>Max Power consumption</b>                   | < 3 W                                                                         |
| <b>Peak Current at power-on</b>                | 1.3 A                                                                         |
| <b>Cable Length</b>                            | 3m (9.8')                                                                     |
| <b>Response Time</b>                           | Typ. 100 ms (max. 250 ms)                                                     |
| <b>Test input</b>                              | 1 optocoupler (galvanic isolated – polarity free)                             |
| Max. contact voltage                           | 30 VDC (over voltage protected)                                               |
| Voltage Threshold                              | Log. H: > 8 VDC Log. L: < 3 VDC                                               |
| <b>LED</b>                                     | 3 RGB LED and 1 white LED for Bluetooth®                                      |
| <b>Dimensions</b>                              | 2" x 6" x 3" (form factor)                                                    |
| <b>Temperature range</b>                       | -13 – 131 °F **<br>0 – 95% relative humidity, non-condensing                  |
| <b>Degree of protection</b>                    | IP65 (IEC 60529)                                                              |
| <b>Material / Color</b>                        | PC, ASA, Aluminum ADC12 / black                                               |
| <b>Bluetooth®</b>                              | Operating bandwidth: 2402 MHz – 2480 MHz<br>Maximum transmitted power: 12 dBm |
| <b>FCC certification</b>                       | FCC ID: G98-200768, IC: 4680A-200768                                          |
| <b>Conformity</b>                              | EN12453 (type D)                                                              |

|                          |                                         |
|--------------------------|-----------------------------------------|
| <b>Outputs*</b>          |                                         |
| <b>ELECTRONIC RELAYS</b> | 2 - (galvanic isolated – polarity free) |
| Max. switching voltage   | 35 VDC / 24 VAC                         |
| Max. switching current   | 80 mA (resistive)                       |
| Switching Time           | tON= 5 ms / tOFF = 5 ms                 |
| Output Resistance        | Typ. 30 ohms                            |
| Voltage drop on output   | < 0.7V @ 20mA                           |
| Leakage current          | < 10µA                                  |
| <b>RELAY</b>             | 1                                       |
| Max. switching voltage   | 30 VAC / 42 VDC                         |
| Max. switching current   | 1A                                      |
| Max. switching Power     | 30W                                     |

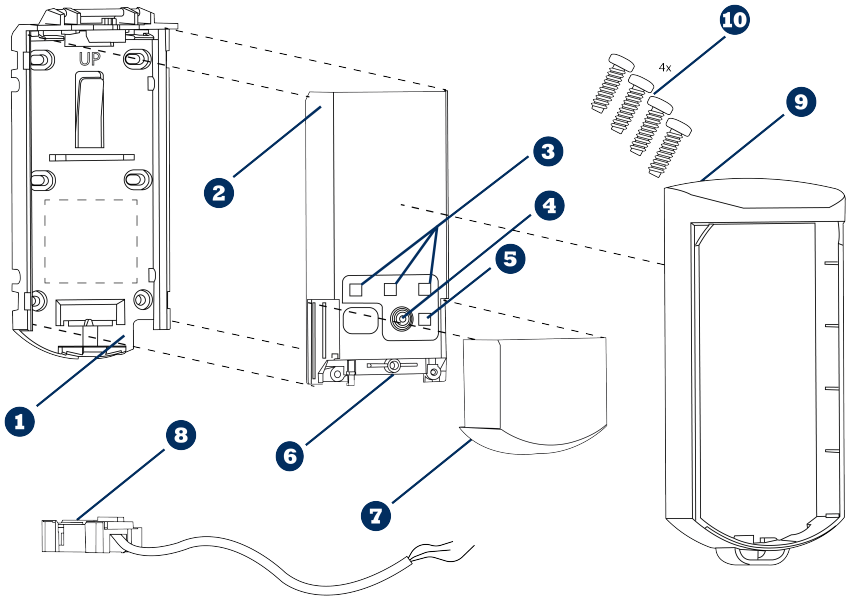


## CAUTION

\* External electrical sources must ensure double insulation from primary voltages.

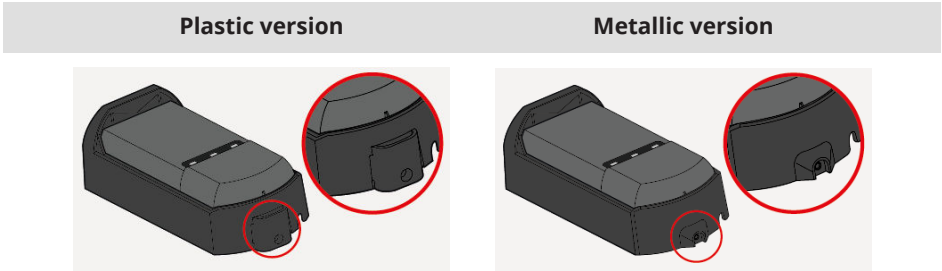
\*\* When using AC supply, the maximum temperature is limited to 122 °F.

# DESCRIPTION

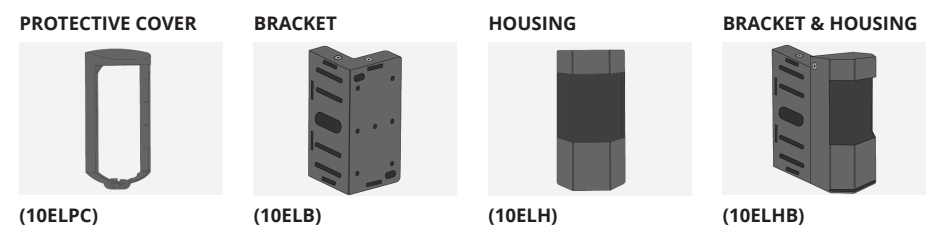


- |          |                        |           |                                                                               |
|----------|------------------------|-----------|-------------------------------------------------------------------------------|
| <b>1</b> | base                   | <b>6</b>  | connector socket                                                              |
| <b>2</b> | sensor                 | <b>7</b>  | sliding cover                                                                 |
| <b>3</b> | LEDs for virtual loops | <b>8</b>  | cable and connector plug                                                      |
| <b>4</b> | push button            | <b>9</b>  | protective cover (plastic)                                                    |
| <b>5</b> | Bluetooth® LED         | <b>10</b> | screw pack (50.5045) - self-drilling, 0.75" length, Philips #2 drive (qty. 4) |

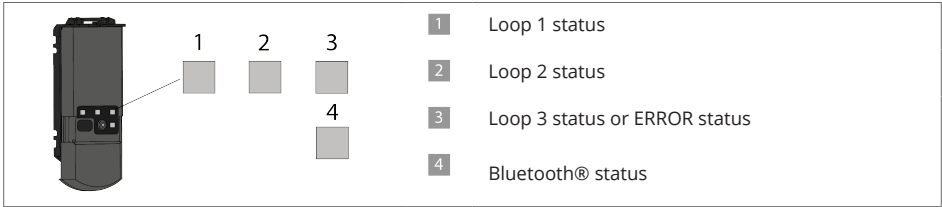
VERSIONS



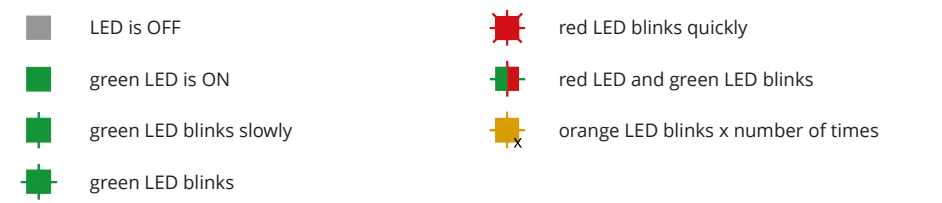
ACCESSORIES



LEDS



LED INDICATIONS

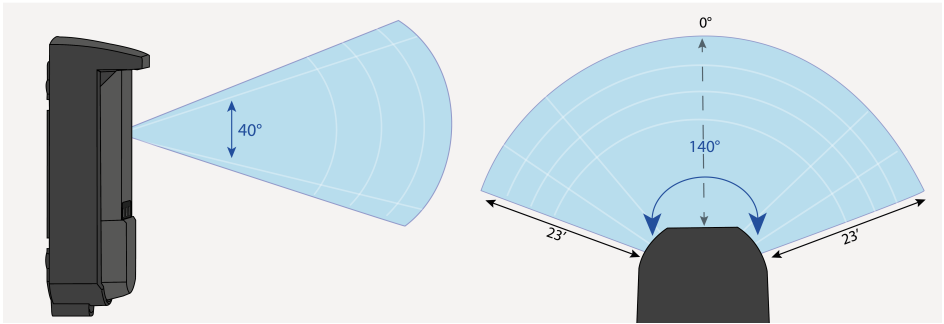


## LOOP TYPE LED COLORS

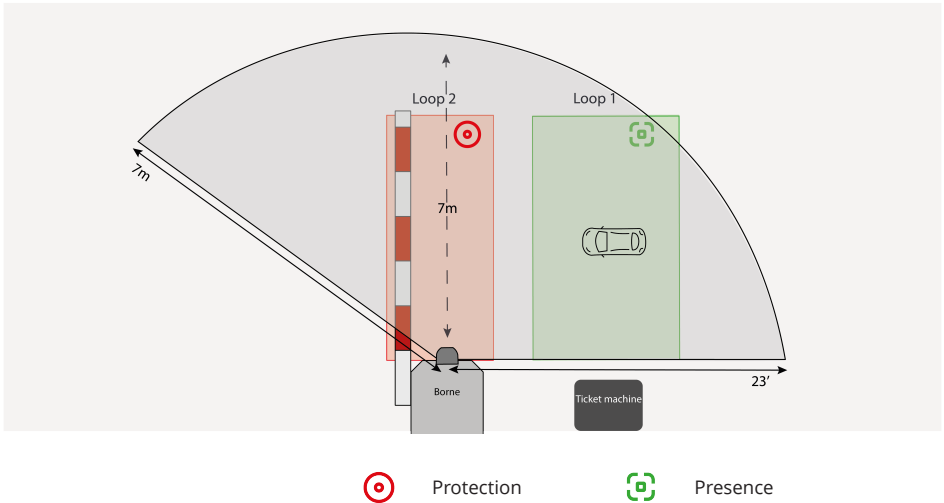
-  **Presence Loop:** triggers output if a target is detected in the loop with selected type and direction
-  **Protection Detection:** triggers output for any object
-  Bluetooth® (only on LED 4)

## DETECTION FIELD

### FIELD OF VIEW



### APPLICATION EXAMPLE: PRESENCE AND PROTECTION CONFIGURATION



# TIPS

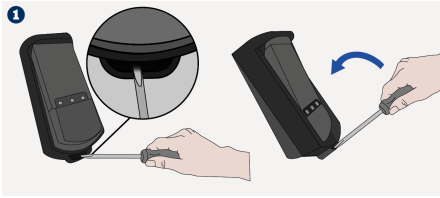
## INSTALLATION TIPS

|                                                                            |                                                                                        |                                                                            |                                         |
|----------------------------------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------|-----------------------------------------|
| ✓                                                                          | ✓                                                                                      | ✓                                                                          | ✓                                       |
| Always test for proper operation before leaving the premises.              | Only trained and qualified personnel are recommended to install and set up the sensor. | Always mount the base perpendicular to the barrier arm or boom.            | Use provided screws to secure the base. |
| ✗                                                                          | ✗                                                                                      | ✗                                                                          |                                         |
| Avoid vibration, condensation, and sudden and extreme temperature changes. | Do not cover the sensor.                                                               | Avoid metal objects near the sensor that may obstruct the detection field. |                                         |

## MAINTENANCE TIPS

|                                                      |                                                                                                  |                                                          |
|------------------------------------------------------|--------------------------------------------------------------------------------------------------|----------------------------------------------------------|
| ✓                                                    |                                                                                                  |                                                          |
| Ensure that the front window of the sensor is clean. |                                                                                                  |                                                          |
| ✗                                                    | ✗                                                                                                | ✗                                                        |
| Avoid direct exposure to high-pressure cleaning.     | The warranty is invalid if unauthorized repairs are made or attempted by unauthorized personnel. | Do not use solvent-based or oily products on the sensor. |

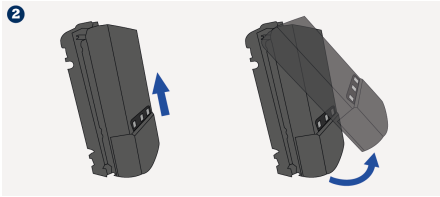
## 1. MOUNTING



1. **Remove the cover.**

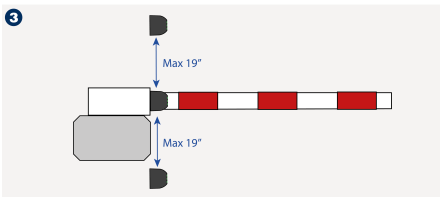
Plastic cover: Insert a screwdriver into the provided notch at the bottom of the sensor. Lift it up to remove the cover from the base.

Metallic cover: Unscrew and remove the cover.

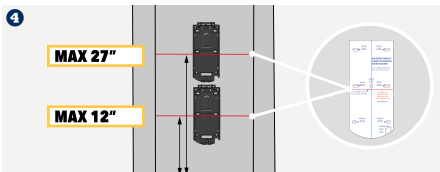


2. **Remove the sensor from the base.**

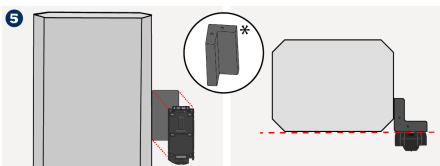
Push the product upwards and separate it from the base.



3. **If the sensor is used to detect, to reduce risk of collision, or as a protection device,** it is recommended to position the product at a maximum distance of 50cm (19.7") from the boom.

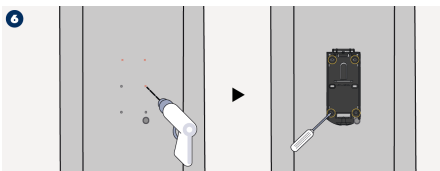


4. **Position the mounting template on the control box as low as possible,** between 30cm (11.8") and 70cm (27.6") from the ground.

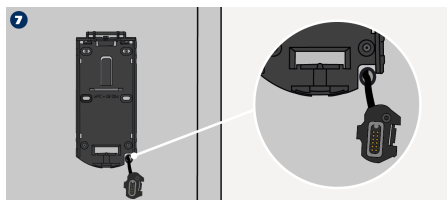


5. **Mount the base to the control box or use the bracket accessory (sold separately).**

If using the bracket accessory, make sure that the sensor is aligned with the control box to avoid obstruction of the detection field.

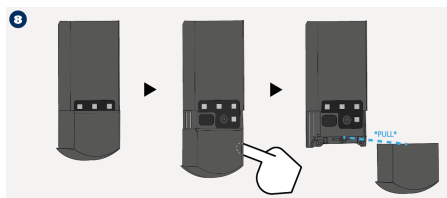


6. **Secure the base according to your preference.**



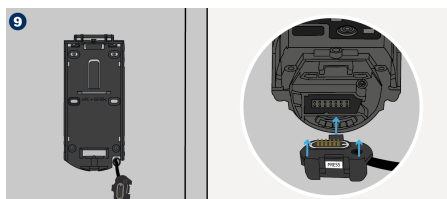
**7. Prepare the cable.**

Pass the cable through the hole, with the connector plug hanging down 10cm (4").



**8. Remove the sliding cover.**

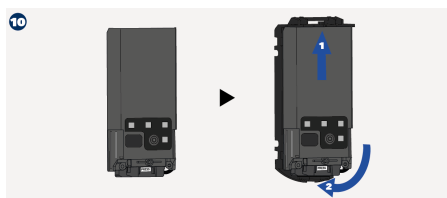
Lower the sliding cover. Then, place your finger behind the cover and pull to remove.



**9. Connect the plug to the sensor.**

Use a provided screw to secure, if needed.

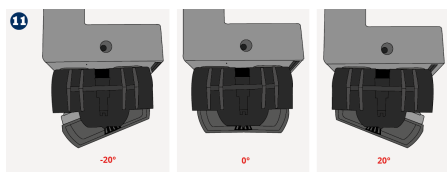
NOTE: To avoid damage to the cable, when removing the plug, be sure to pinch the sides to release.



**10. Place the sensor on the base.**

Insert the top and then the bottom of the sensor.

Ensure that the sensor is secure to the base.

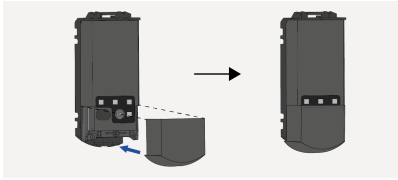


**11. Adjust the sensor angle.**

If necessary for the application, rotate the sensor to adjust the field angle.

To do so, lift the sensor up and turn it accordingly.

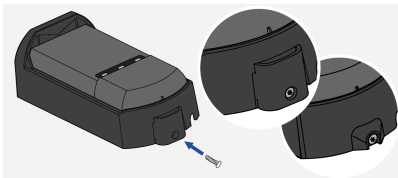
## CLOSE AND LOCK THE SENSOR



1) Replace the sliding cover.

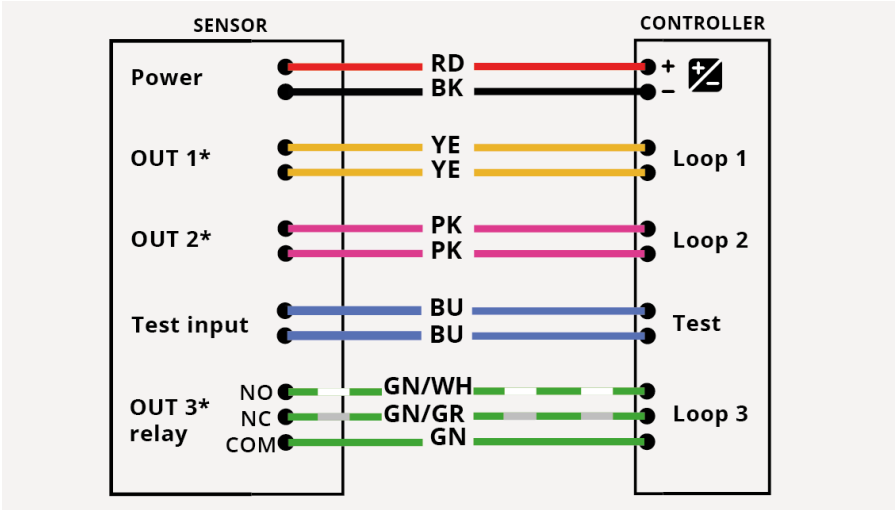


2) Replace the protective cover. If needed, use a screw to secure the cover.

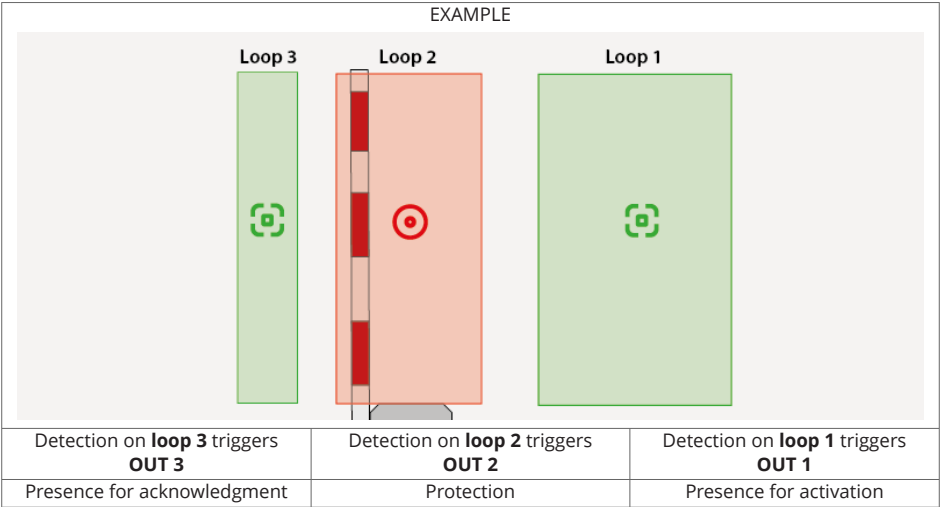


3) The provided screws (TORX 10) can be used on both the plastic and metallic versions.

2. WIRING



\* Always check output logic factory values.



## PAIRING THE SENSOR AND APP

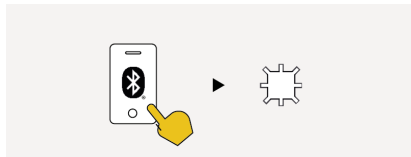
Scan the QR code or click on the app store logo open the following link to download the mobile app and install it.

**NOTE:** First-time pairing code is 456789.

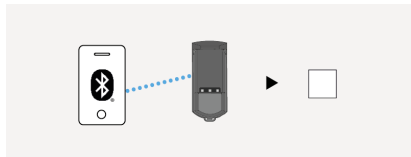


1) At power ON or after a power cycle, the Bluetooth® keeps activated 30 minutes after last use and then turns off automatically. BT stays active for 30 minutes after power-on (or a power cycle).

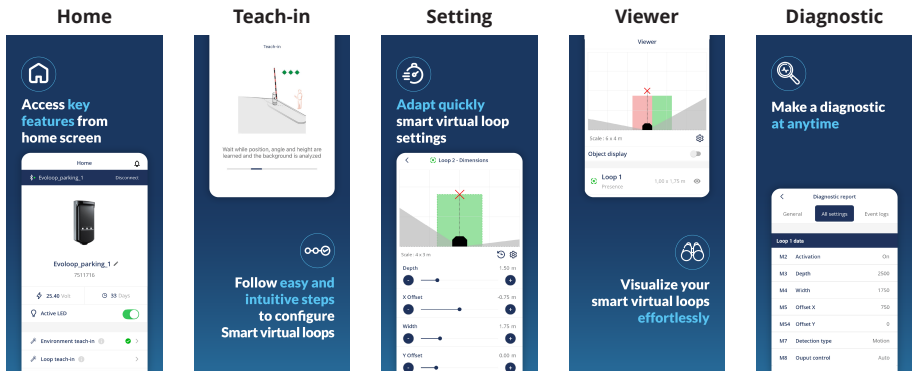
*The white Bluetooth® LED blinks (1Hz) while Bluetooth® is active.*



2) Open the EVOLOOP mobile app and connect it to the sensor. During pairing, the Bluetooth® LED blinks quickly.

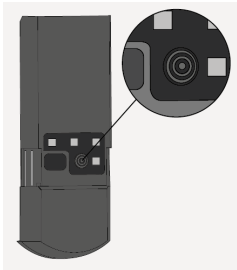


3) Once paired, the white Bluetooth® LED will be solid.



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## USING THE PUSH BUTTON



**Push 1x** - Wake up from idle mode - Bluetooth® is activated (white blinking)

**Push 1x** - Launch full teach-in, when sensor is awake (red/green blinking)

**Push 2x** - Launch loop teach-in, when sensor is awake (alternating green blinks)

**Push and hold for 3 s** - Service mode activation/deactivation

## 3. TEACH-IN



### CAUTION

You must follow the installation steps in order to correctly program the sensor and ensure the proper operation of the barrier.

1. Sensor is mounted correctly.
2. Sensor is correctly wired.
3. Barrier arm is up.
4. Sensor is paired with app (if performing teach-in via app).



### NOTE

If performing the environment teach-in via app, follow the prompts in the app to understand the step transitions.

If performing an environment teach-in via push button, observe the LED patterns to understand the step transitions.

### Factory State

*The orange LEDs blink and outputs are activated upon initial power-up (out-of-the-box) or after a factory reset.*

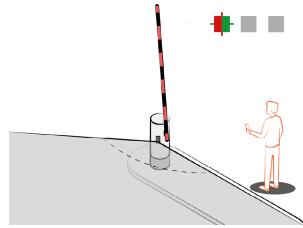


## Environment teach-in

*Before launching the teach-in, make sure the environment is clear of any objects, including yourself.*

Launch the teach-in using the app or press the button 1x.

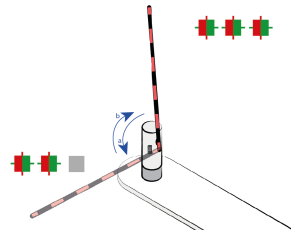
LED 1 will start blinking red-green.



## Boom teach-ins (required for protection)

The sensor will automatically perform boom-opening and -closing teach-ins after the environment teach-in is complete. Observe LEDs and/or app prompts to follow the process.

- CLOSING: The sensor deactivates its outputs for 20 seconds to signal the boom's closing. (2 LEDs red/green.)
- OPENING: The sensor reactivates its outputs for 20 seconds to signal the boom's opening. (3 LEDs red/green.)

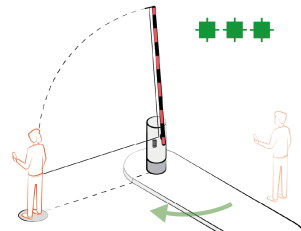


## Edge teach-in

Once the boom teach-in is complete, the sensor will wait for you to indicate the length of the boom.

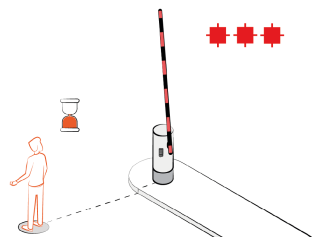
Stand in front of the sensor at a distance equal to the boom length or the road width.

The green LEDs will blink while learning.



## Finish

Stand still until the LEDs blink red, indicating that the sensor has locked your position and the process is completed successfully.



## 4. DEFINING LOOPS



### CAUTION

You must follow the installation steps in order to correctly program the sensor and ensure the proper operation of the barrier.



### NOTE

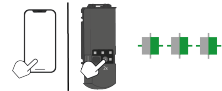
Loops 1 and 2 are pre-configured.

### Loop Selector

MOBILE APP: Select "loop teach-in" to start the process and then select the teach-in style (i.e. static, walk, manual).

PUSH BUTTON: Select the loop you want to configure by static Teach-In

- To learn Loop 1, press the push button when LED 1 is ON.
- To learn Loop 2, press the push button when LED 2 is ON.
- To learn Loop 3, press the push button when LED 3 is ON.

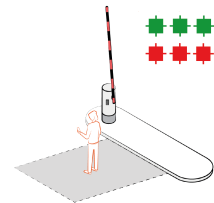


### Static Teach-In

MOBILE APP: Follow the prompts in the app.

PUSH BUTTON: Observe the LED behavior. When the LEDs start slowly blinking green, move to the center of the loop and stand still. The loop teach-in is complete when the LEDs are blinking red.

By default loop's depth is set to 1.5m (5') and loop width is set to the distance that was learned during the edge teach-in.

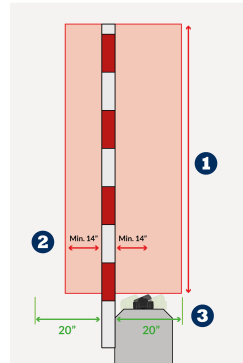


*Repeat the app/button process as desired for the remaining loops.*

## Protection Loop

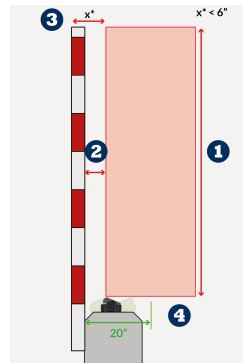
### PROTECTION ON BOTH SIDES

- 1) Set the protection loop width to cover the whole length of the boom.
- 2) Set the protection loop depth to include the EVOLOOP and also extend at least 35 cm (14") behind the opposite face of the boom.
- 3) Always rotate the sensor so that the EVOLOOP is facing the protection loop.



### PROTECTION ON ONE SIDE

- 1) Set the protection loop width to cover the whole length of the boom.
- 2) Set the protection loop offset to include the EVOLOOP and to get as close as possible to the boom face.
- 3) This type of installation can be used if the distance between the protection loop and the opposite face of the boom is less than 150 mm (6").
- 4) Always rotate the sensor so that the EVOLOOP is facing the protection loop.



# TROUBLESHOOTING



## TIP

The mobile app provides an installation report and event log that can be extremely helpful during troubleshooting.

| LED                                                                               | Status                               | Explanation/Solution                                                                                                                                                                                                                                                                                                                                                 |
|-----------------------------------------------------------------------------------|--------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | Error LED (3) is on permanently      | <b>The sensor encounters a memory problem.</b><br>Replace the sensor.                                                                                                                                                                                                                                                                                                |
|  | LEDs 1, 2, and 3 are blinking orange | <b>The sensor is in factory state.</b><br>Initiate an environment teach-in (via mobile app or push button) to program the sensor.                                                                                                                                                                                                                                    |
|  | Error LED (3) blinks 1x              | <b>The sensor signals an internal fault.</b><br>Cycle power. If the LED blinks again, replace the sensor.                                                                                                                                                                                                                                                            |
|  | Error LED (3) blinks 2x              | <b>Power supply is out of spec.</b><br><ol style="list-style-type: none"><li>1. Check the power supply.</li><li>2. Reduce the cable length or change the cable.</li></ol> <b>Internal temperature is too high.</b><br>Protect the sensor from any heat source (sun, hot air, etc).                                                                                   |
|  | Error LED (3) blinks 3x              | <b>Internal communication error.</b><br>Cycle power. If the LED blinks again, replace the sensor.                                                                                                                                                                                                                                                                    |
|  | Error LED (3) blinks 4x              | <b>Masking error.</b><br>Something close to the sensor is masking part of the detection field.<br><ol style="list-style-type: none"><li>1. Remove all masking elements (very close metallic elements).</li><li>2. Check to see if the front face is dirty. If necessary, clean carefully.</li><li>3. Switch antimasking setting to OFF via the mobile app.</li></ol> |



