

# Operation Instructions

Make your choice...

## M-902 Laser Safety Sensor



Exposed Installation



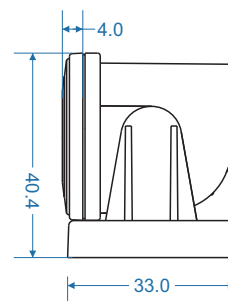
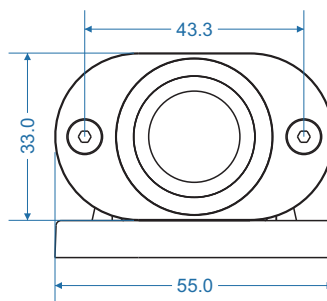
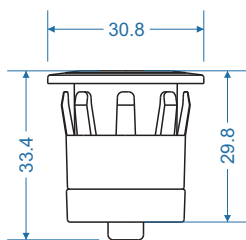
Hidden Installation

### 1 Safety Instructions



Thank you for your purchase, in order to use this product correctly, please read this manual carefully before use.

### 2 Dimensions



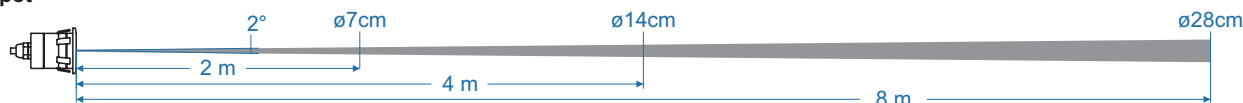
The hole depth of hidden mounting  $\geq 40\text{mm}$ ,  $\varnothing 25\text{mm}$  or 1 inch

### 3 Wiring Diagram



### 4 Installation adjustment

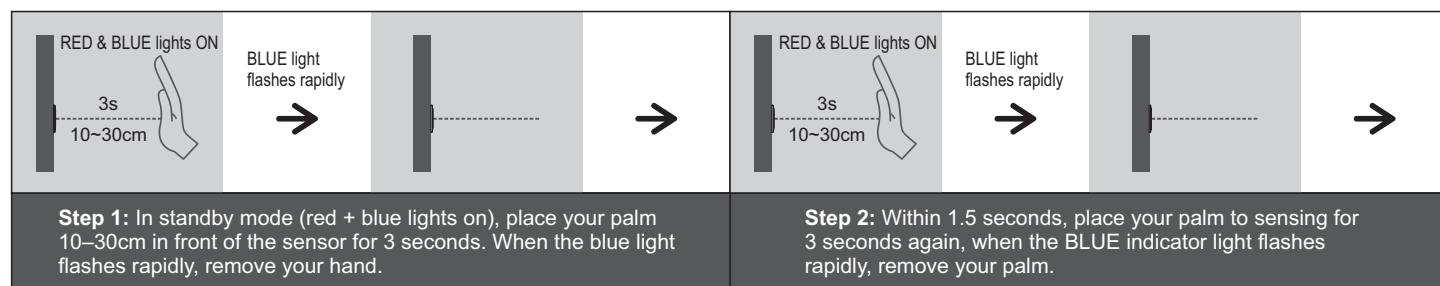
#### Light Spot

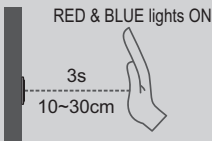
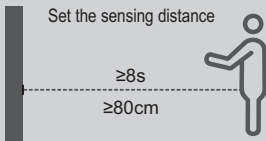


When powered on, sensor's BLUE indicator light flashes, it means that it's in the initial background learning state. When the BLUE indicator light changes from flashing to steady on, learning is completed, the sensor entering into the standby state. In the Normally Open mode, the sensor turns RED when a person or object is detected. In the Normally Close mode, the sensor light is OFF when a person or object is detected.

**NOTE: Complete setup within 5 minutes of power-on. If timed out, power off and restart.**

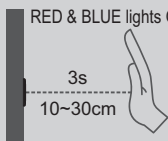
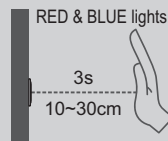
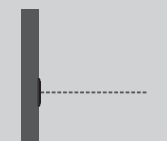
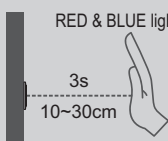
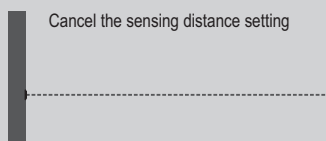
#### 4-1. Set the sensing distance



|                                                                                                                                                                               |                                           |                                                                                                                                                                           |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  <p>RED &amp; BLUE lights ON</p> <p>3s</p> <p>10~30cm</p>                                     | <p>RED light flashes rapidly</p> <p>→</p> |  <p>Set the sensing distance</p> <p>≥8s</p> <p>≥80cm</p>                                |
| <p>Step 3: Within 1.5 seconds, place your palm to sensing for 3 secs again, the RED indicator light flashes rapidly, indicating enter into the set sensing distance mode.</p> |                                           | <p>Step 4: At the desired sensing position, place a flat object or stand a person ≥80cm in front of the sensor for ≥8 seconds to let the sensor learn the background.</p> |

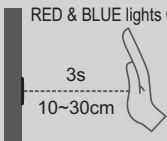
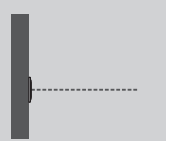
Wait for learning to finish. When the red light stops flashing, sensing distance is set and the sensor enters standby mode.

#### 4-2. Cancel the sensing distance setting

|                                                                                                                                                                                      |                                            |                                                                                                                                                            |                                            |                                                                                                                                              |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
|  <p>RED &amp; BLUE lights ON</p> <p>3s</p> <p>10~30cm</p>                                            | <p>BLUE light flashes rapidly</p> <p>→</p> |  <p>RED &amp; BLUE lights ON</p> <p>3s</p> <p>10~30cm</p>                 | <p>BLUE light flashes rapidly</p> <p>→</p> |  <p>RED &amp; BLUE lights ON</p> <p>3s</p> <p>10~30cm</p> |
| <p><b>Step 1:</b> In standby mode (red + blue lights on), place your palm 10~30cm in front of the sensor for 3 seconds. When the blue light flashes rapidly, remove your hand.</p>   |                                            | <p><b>Step 2:</b> Within 1.5 seconds, place your palm to sensing for 3 seconds again, when the BLUE indicator light flashes rapidly, remove your palm.</p> |                                            |                                                                                                                                              |
|  <p>RED &amp; BLUE lights ON</p> <p>3s</p> <p>10~30cm</p>                                           | <p>RED light flashes rapidly</p> <p>→</p>  |  <p>Cancel the sensing distance setting</p>                              |                                            |                                                                                                                                              |
| <p><b>Step 3:</b> Within 1.5 seconds, place your palm to sensing for 3 secs again, the RED indicator light flashes rapidly, indicating enter into the set sensing distance mode.</p> |                                            | <p><b>Step 4:</b> Don't place any obstruction in front of the sensor.</p>                                                                                  |                                            |                                                                                                                                              |

Wait for the red light to stop flashing, indicating the sensing distance setting is canceled and the sensor enters standby mode.

#### 4-3. NO/NC output switching

|                                                                                                                                             |                                            |                                                                                                                                              |                                            |                                                                                                                                              |                                            |                                                                                                                                                |
|---------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
|  <p>RED &amp; BLUE lights ON</p> <p>3s</p> <p>10~30cm</p> | <p>BLUE light flashes rapidly</p> <p>→</p> |  <p>RED &amp; BLUE lights ON</p> <p>3s</p> <p>10~30cm</p> | <p>BLUE light flashes rapidly</p> <p>→</p> |  <p>RED &amp; BLUE lights ON</p> <p>3s</p> <p>10~30cm</p> | <p>BLUE light flashes rapidly</p> <p>→</p> |  <p>RED &amp; BLUE lights ON</p> <p>3s</p> <p>10~30cm</p> |
| <p>Step 1: In the standby state, place your palm 10~30cm directly in front of the sensor to sensing for 3 seconds.</p>                      |                                            | <p>Step 2: When the blue light flashes rapidly, remove your palm. Within 5 seconds, trigger sensing twice quickly.</p>                       |                                            | <p>Step 3: And then place your palm to sensing for 3 seconds again.</p>                                                                      |                                            |                                                                                                                                                |

Red & blue lights flash rapidly alternately for 3s: NO mode. Standby: blue on; sensing: red on.  
Red & blue lights flash slowly alternately for 3s: NC mode. Standby: blue on; sensing: all off.

#### 4-4. Set / cancel the invalid zone distance

**Invalid Zone Diagram**

Step 1: In standby mode, place your palm 10~30cm in front of the sensor for 3 seconds. When the blue light flashes rapidly, remove your palm and trigger sensing again.

Step 2: Keep your palm in place for 3s until blue light flashes rapidly. Keep palm until blue flashes again, then remove. Red and blue lights flash rapidly, invalid zone setting mode is activated.

**Set invalid zone distance:** Have a person stand at the target position for 8 seconds. When red and blue lights stop flashing, the invalid zone is set.

**Cancel invalid zone:** Keep the sensor front clear. Wait for red and blue lights to stop flashing to cancel the invalid zone (invalid zone  $\geq 150\text{cm}$  is regarded as canceled).

## 5 Trouble shooting

| Symbol                                                                               | Cause                                               | Method                                           |
|--------------------------------------------------------------------------------------|-----------------------------------------------------|--------------------------------------------------|
| Indicator light don't work                                                           | Unconnect the power                                 | Check the power supply and wiring                |
| Blue light on, no sensing response                                                   | The invalid zone is too far                         | Set the invalid zone distance again or cancel it |
| Power on, the indicator light changes from ON to OFF, door is normally open          | Sensing distance is set farther than the background | Set the sensing distance again                   |
| Power on with normal indicator, door is normally open, sensing triggers door closing | NO/NC settings incorrectly                          | Switching the NO/NC settings                     |

## 6 Technical Parameters

|                                       |                                                                                                                     |
|---------------------------------------|---------------------------------------------------------------------------------------------------------------------|
| Sensor's LED indicator:               | power on(auto background mode)- BLUE LED flashes, standby-BLUE LED steady ON, sensing - RED LED is ON(NO) / OFF(NC) |
| Background learning time:             | about 8 seconds                                                                                                     |
| Working voltage:                      | AC/DC 12-24V                                                                                                        |
| Standby current:                      | 10mA(12V power)                                                                                                     |
| Action current:                       | 14mA(12V power)                                                                                                     |
| Sensing distance:                     | 30-800cm adjustable (10% Reflectivity)                                                                              |
| Distance tolerance:                   | 1%                                                                                                                  |
| Resistance to environmental light:    | 100K lux                                                                                                            |
| Light source:                         | VCSEL                                                                                                               |
| Light source center wavelength:       | 940 nm                                                                                                              |
| Launching angle:                      | 2°                                                                                                                  |
| Laser category:                       | Class I eye-safe laser                                                                                              |
| Working temperature:                  | -25°C~55°C                                                                                                          |
| Exposed mounting angle:               | pitch angle 0-90° adjustable                                                                                        |
| Installation distance from door edge: | ≥5cm                                                                                                                |

## 7 Packing List

| NO. | PART                     | QUANTITY | REMARK |
|-----|--------------------------|----------|--------|
| 1   | Sensor                   | 1        |        |
| 2   | Exposed mounting bracket | 1        |        |
| 3   | Hidden mounting bracket  | 1        |        |
| 4   | Screw pack               | 1        |        |
| 5   | Manual                   | 1        |        |