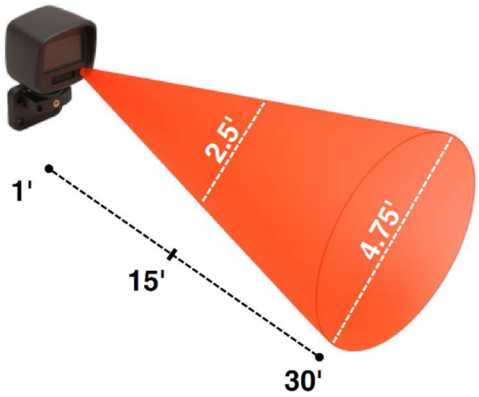
MRD-1P™

Radar Presence Sensor

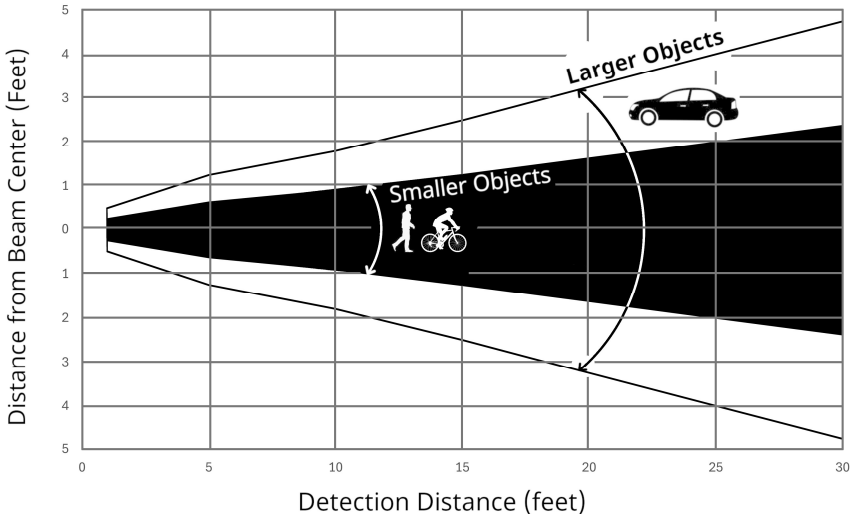
Quickstart Guide

Installation

- Deactivate the barrier arm prior to and during sensor installation.
- **Mounting Location:** Use the figures below to visualize the cone-shaped beam in your installation:



Beam Shape Example



Beam Width vs. Object Size

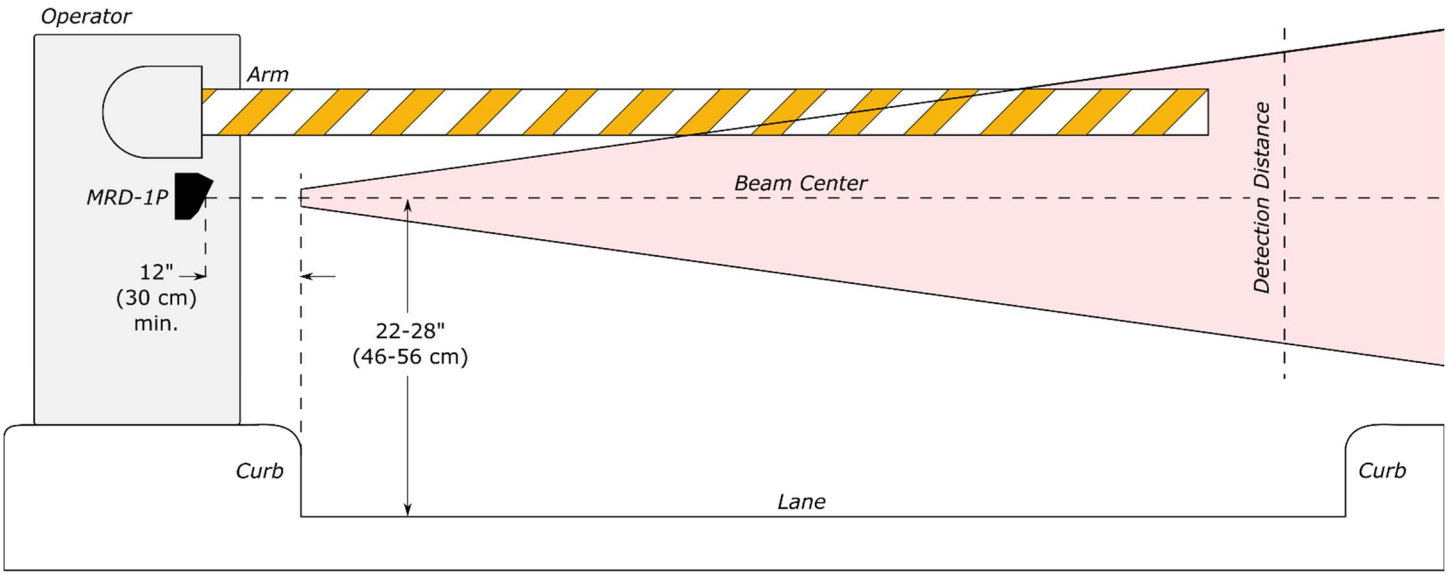
Distance	Beam Width for a Person	Beam Width for a Car
1 ft (0.30 m)	0.5 ft (0.15 m)	1 ft (0.30 m)
5 ft (1.52 m)	1.25 ft (0.38 m)	2.5 ft (0.76 m)
10 ft (3.05 m)	1.8 ft (0.55 m)	3.6 ft (1.10 m)
15 ft (4.57 m)	2.5 ft (0.76 m)	5.0 ft (1.52 m)
20 ft (6.10 m)	3.25 ft (0.99 m)	6.5 ft (1.98 m)
25 ft (7.62 m)	4 ft (1.22 m)	8 ft (2.44 m)
30 ft (9.14 m)	4.75 ft (1.45 m)	9.5 ft (2.90 m)

Beam Width Table (Approximate, Based on User Settings)

See the Operating Instructions for more details on the beam shape.

The MRD-1P cannot discriminate between a person and a vehicle; it will signal presence regardless of the object.

Side View of Recommended Application (Barrier Arm Safety):



Side View of Ideal Installation (not to scale)

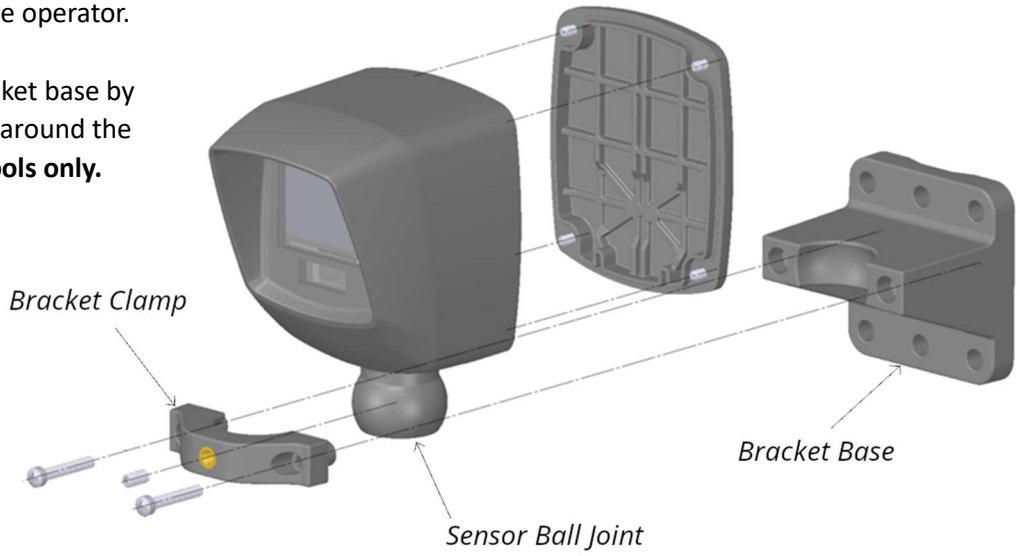
Installation Tips:

1. The MRD-1P does not detect objects closer than 1’ (0.3 m). Objects closer than 1’ may interfere with proper operation.
2. Keep the beam parallel to the arm. Don't angle the sensor upward too much or it may see the arm. Don't angle it downward too much or it may see the ground or a curb.
3. Set the detection distance to just beyond the arm. Don't set it too far or it may see other objects.

Mounting the Sensor:

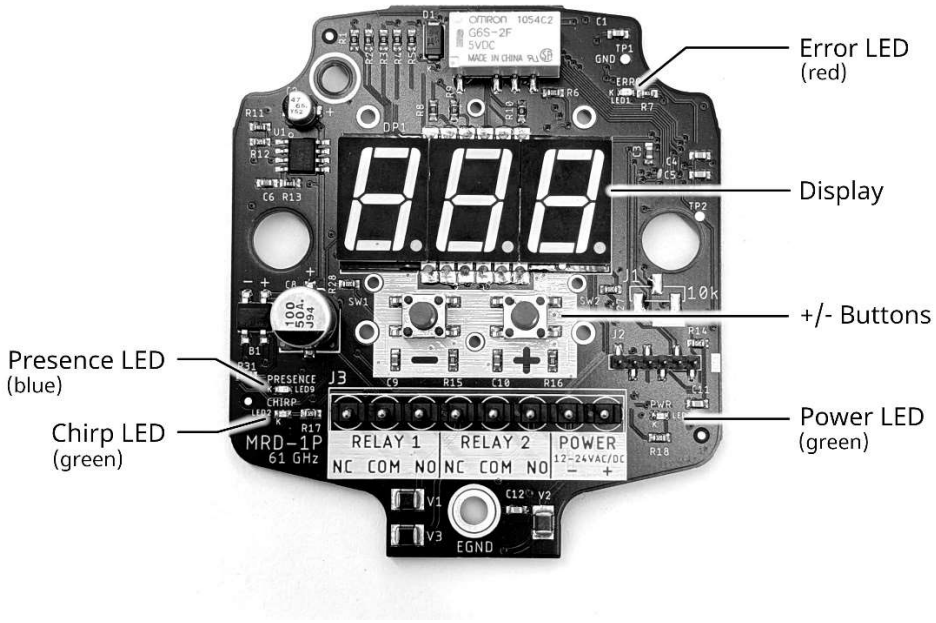
1. Mount the bracket base to the operator.

2. Secure the sensor to the bracket base by tightening the bracket clamp around the sensor ball joint. **Use hand tools only.**



Wiring and Configuring the Sensor

A diagram of the circuit board and a table of the terminal block connections are shown below:



Terminal Block Connection	Description
Relay 1 NC	Presence relay normally closed contact (in Fail Open mode)
Relay 1 COM	Presence relay common contact
Relay 1 NO	Presence relay normally open contact (in Fail Open mode)
Relay 2 NC	Pulse relay normally closed contact
Relay 2 COM	Pulse relay common contact
Relay 2 NO	Pulse relay normally open contact
Power -	12-24 VAC/DC power supply, V-
Power +	12-24 VAC/DC power supply, V+

EGND	Earth Ground. This optional wire-to-screw connection may help mitigate EMI issues.

To wire and configure the sensor:

1. Lock the arm in the up position.

2. Wire the appropriate Relay 1 connections to the operator.

3. Wire power to the sensor. Move clear of the arm and apply power.

4. Use the +/- buttons to set the detection distance to just beyond the reach of the barrier arm in its lowered position.

5. The blue Presence LED lights when an object is detected (this LED is also on the front of the sensor).

6. Unlock the arm and test for correct operation. Arm should stop or reverse when Presence is signaled.

Additional Configuration

For additional configuration settings, see the Operating Instructions.

Factory Reset

To restore the sensor to its default settings:

1. Make sure the detection distance is displayed. If not, cycle power to the sensor.
2. Press and hold both +/- buttons for 10 seconds. During this time you will see the following:
   a. After 3 seconds "Ht" is displayed.
   b. After 3 more seconds, the display will begin flashing “dEF”.
   c. After 3 more seconds, the default detection distance ("10.0") will be displayed.
3. Release the buttons. The factory reset has been completed and all settings have been restored to their default values. These settings take effect immediately.

Note: Releasing the buttons at any time before the Factory Reset completes will abort the procedure.

Troubleshooting

If blue Presence LED is "stuck" on:

- Ensure detection distance is not set further than needed.
- Ensure sensor is not angled down and/or move sensor higher off the ground.
- Ensure no columns, bollards, curbs, or other structures are in the sensor’s detection zone.

If sensor sees the arm, causing a false Presence signal:

- If sensor is angled upward, angle it slightly more downward. The beam should be parallel to the ground.
- Ensure nothing is mounted to the arm that might reflect back to the sensor (no perpendicular surfaces).
- Mount sensor lower if possible.
- Try increasing the Threshold setting. See the Operating Instructions for details.

If Presence is signaled but operator does not respond:

- Verify correct wiring to operator.
- Verify correct sensor configuration. Refer to your specific operator’s manual for requirements.

If display shows "E1":

This is the "Invalid data" error code. It may be cleared by performing a factory reset or changing User Settings. See the Operating Instructions for details.

If display shows "E2":

This is an internal error code that may be cleared by pressing the + or – buttons. If the error persists, contact EMX technical support.

For all other problems, see the Operating Instructions.