

# SmartSensor Matrix Rail

## INSTALLATION QUICK START GUIDE



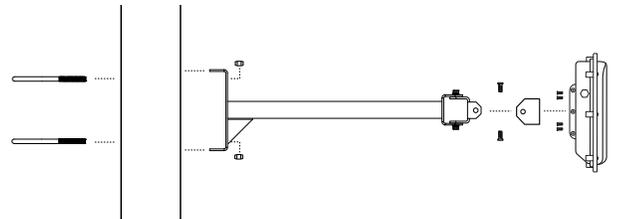
### 1 Choose a mounting location and height

You can choose to mount the sensor on either the crossing entrance gates, the exit gates, or on the dedicated poles near the exit gates. Make sure each sensor has a clear view of the entire crossing island. Pay particular attention to signs, poles, gates, and trees.

The sensor should be mounted 18–22 ft. above the surface of the roadway.

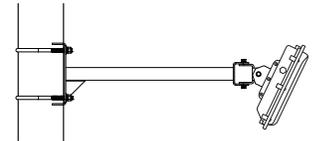
### 2 Prepare the mounting bracket

- 1 Remove the large bolts holding the end knuckle to the mount.
- 2 Position the mounting bracket on the side of the pole that is closest to the crossing island.
- 3 Insert the U-bolts so that they wrap around the pole and their ends come through the holes on the mounting bracket.
- 4 Thread nuts onto U-bolts and tighten securely to prevent any movement of the U-bolts or mounting bracket.
- 5 Use the four small bolts and lock washers to attach the mounting bracket knuckles to the sensor backplates.
- 6 Attach the knuckle and sensor to the mount using the large bolts you removed earlier (the cable connector should be pointed down). Don't tighten completely yet, as you still need to align the sensor to the roadway.



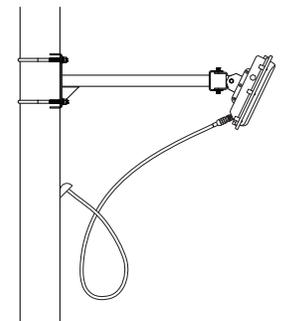
### 3 Aim the sensor

- 1 Tilt the sensor down so it is aimed at the center of the crossing island.
- 2 Adjust the side-to-side angle so that the sensor's 90° field of view covers the approach.
- 3 Tighten any remaining loose bolts.



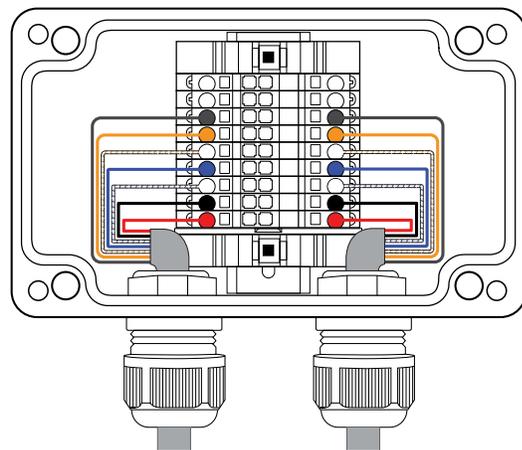
### 4 Connect the sensor cables

- 1 Tear the tab off the tube of silicon dielectric compound that came with the sensor.
- 2 Squeeze about a quarter of the compound on the connector at the base of the sensor.
- 3 Insert the cable connector into the sensor connector. Be aware that it is a keyed connector.
- 4 Twist the cable connector clockwise until you hear it click into place.
- 5 Strap the cable to the pole or run it through a conduit. Leave a small amount of slack at the top; this reduces strain, allows you to create a drip loop, and gives you something to work with should you need to move the sensor's position in the future.
- 6 If there's excess cable, don't cut it, as you may need it in the future; leave it in the pole.
- 7 Make sure the sensor is grounded.



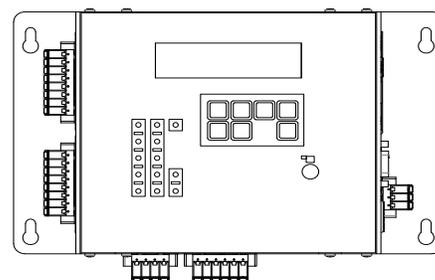
## 5 Wiring the junction box

- 1 After all sensors are installed, insert the sensor cable (the pigtail cable coming from each sensor) through the rightmost cable grip of the junction box. Twist the cable grip to tighten.
- 2 Land the conductors and drain in the terminal blocks inside the box: Insert each conductor into the round hole on the plug portion of the terminal block (do not strip the insulation). Insert a small screwdriver into the square hole above the terminal, and rock upwards to secure the conductor in place.
- 3 Insert one end of the homerun cable (the cable that runs to the traffic cabinet) into the leftmost cable grip. Twist the cable grip to tighten.
- 4 Follow the instructions in step 2 to land each conductor and drain into the correct spots in the terminal block.
- 5 Repeat the process for each junction box in your application.



## 6 Mounting the VDR24 controller

- 1 Mount the VDR24 to a wall or backplane surface using the four keyhole flanges on the left and right sides of the device.
- 2 Mount the device at eye-level in a location where cables and pluggable connectors can be conveniently routed to each side.
- 3 Insert the power wires into the + and - terminals.
- 4 Insert the earth ground wire into the earth ground terminal.
- 5 After wires are properly connected to the terminal, reinsert the terminal into the VDR24.



## 7 Connecting the VDR24 sensor cables

- 1 Insert the seven-conductor cable from one of the sensors into one of the terminals labeled Radar Connections. (This terminal is on the bottom-left side of the VDR24.) Match the color coding of the sensor cable to the wire labels on each of the terminals.
- 2 Repeat for the second sensor.

## 8 Connecting zone detection and health outputs for the VDR24

- 1 For zone detection outputs, find the zone outputs on the left side of the VDR24.
- 2 Connect the + and - zone outputs to the contact relay and ground (Battery-) for low-side switching. For high-side switching, connect to the relay and Battery+.
- 3 For health outputs, find the health outputs on the bottom right of the VDR24 when it's in mounted position. They are labeled R1, R2, and SYS.
- 4 Connect each health output's + and - terminals to the appropriate health relay coil and ground (Battery -) for low-side switching or to the Battery+ and health relay coil for high-side switching.
- 5 Connect the sensor via SmartSensor Manager Rail.

**Note.** For more information, see the *Dual Radar Vehicle Detection System User Guide*.