

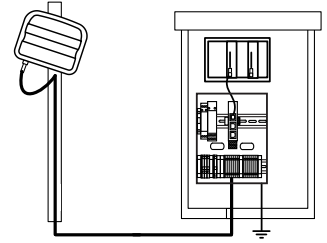
SmartSensor Advance

INSTALLER QUICK-REFERENCE GUIDE



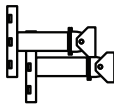
Introduction

Complete steps 1–9 to integrate the Wavetronix Advance detection system into a signalized intersection. If you need technical support or have questions, please contact Wavetronix Technical Services at (801) 734-7200. For more information, see the *SmartSensor Advance User Guide*.



1 Ensure that all necessary components are available

The components below, all of which can be ordered from Wavetronix, may be needed to install your sensor; for more information on any of these, see the Wavetronix product catalog.



Mount brackets



Sensors



Sensor cables



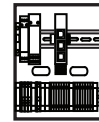
Homerun cable



Patch cords

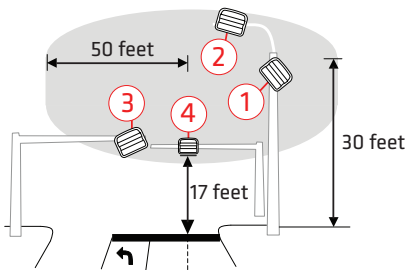


Rack cards



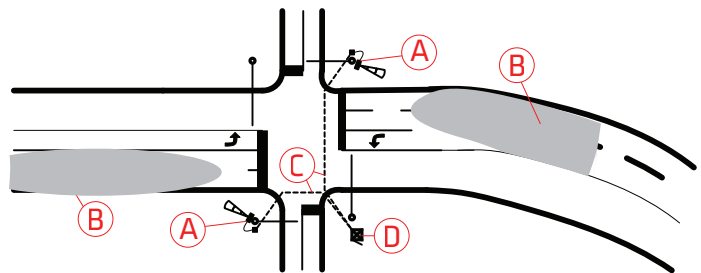
Preassembled backplate

2 Identify sensor's location and pull homerun cable through conduit



Suggested mounting locations:

- 1 Near-side vertical pole
- 2 Near-side luminaire
- 3 Back-side opposing mast arm
- 4 Front-side mast arm



Sensor detection coverage:

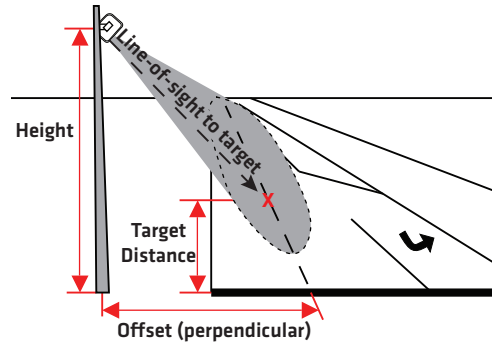
- A SmartSensor Advance
- B Detection coverage
- C Homerun cable
- D Traffic cabinet

3 Select the mounting height, attach and point at target

- Determine the mounting height (between 17 and 40 feet is recommended; typical mounting height is about 25 feet).

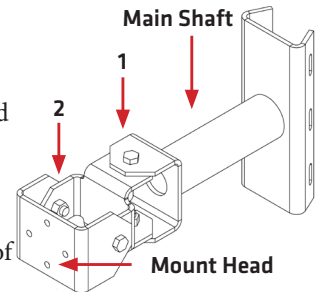
Offset (ft / m)	Height (ft / m)				
	17 / 5.2	20 / 6.1	25 / 7.6	30 / 9.1	40 / 12.2
0 / 0	40 / 12.2	45 / 13.7	55 / 16.8	60 / 18.3	75 / 22.9
5 / 1.5	45 / 13.7	45 / 13.7	60 / 18.3	65 / 19.8	80 / 24.4
10 / 3	50 / 15.2	50 / 15.2	60 / 18.3	65 / 19.8	80 / 24.4
15 / 4.6	50 / 15.2	55 / 16.8	65 / 19.8	70 / 21.3	80 / 24.4
20 / 6.1	55 / 16.8	55 / 16.8	65 / 19.8	75 / 22.9	90 / 27.4
25 / 7.6	60 / 18.3	65 / 19.8	65 / 19.8	75 / 22.9	90 / 27.4
30 / 9.1	65 / 19.8	70 / 21.3	75 / 22.9	80 / 24.4	95 / 28.9
35 / 10.7	70 / 21.3	75 / 22.9	85 / 25.9	85 / 25.9	95 / 28.9
40 / 12.2	80 / 24.4	90 / 27.4	90 / 27.4	95 / 28.9	100 / 30.4
45 / 13.7	95 / 28.9	100 / 30.4	100 / 30.4	100 / 30.4	105 / 32
50 / 15.2	100 / 30.4	100 / 30.4	105 / 32	110 / 33.5	120 / 36.6

- Strap the mount to the pole with the mount's main shaft pointed in the general direction of the target. Target location is determined by target distance table.



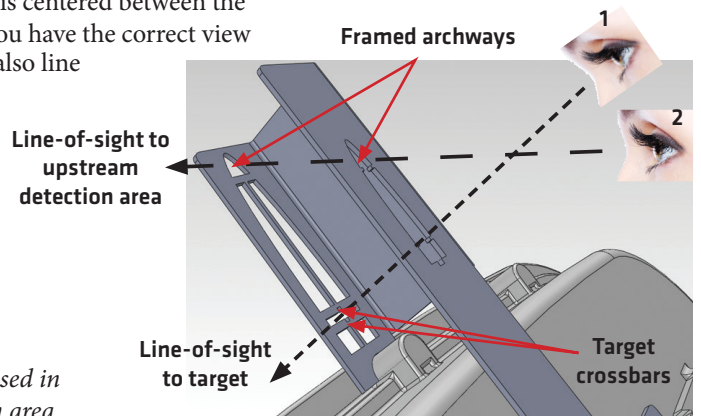
4 Point sensor at target

- Pan and tilt the mount (using swivel joints 1 and 2) so that the mount head points to the target location in the center of the lanes of interest.
- Attach the sensor to the mount making sure the sensor can still roll with respect to the mount head.
- Attach the viewfinder by centering the arched notch over the top-middle of the sensor and inserting it into position.
- With your eyes about one foot from the viewfinder (viewpoint 1), use the visual cue tabs to look directly through the target crossbars. Tilt the sensor until the target location lines up between the target crossbars.
- Pan the sensor until the target location is centered between the notches in the target crossbar. When you have the correct view angle, the bottom center notch should also line up with the bottom part of the long, narrow alignment bar.



Note. For a better view, close one eye and move closer to the viewfinder. If there is not enough headroom, you can use a digital camera directly behind the viewfinder.

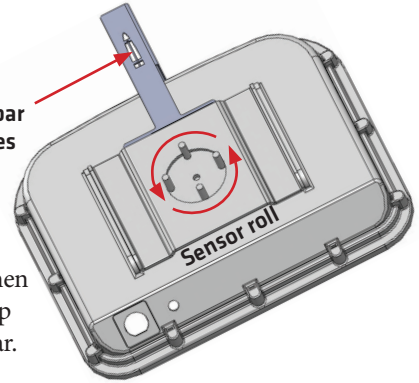
The framed archways (viewpoint 2) will be used in the next step to verify the upstream detection area.



5 Align sensor to roadway

- 1 Roll the sensor until the long, narrow bar is parallel with the center of the lanes of interest on the roadway. Vehicle paths should be parallel to the long, narrow bar.
- 2 To verify your alignment within the upstream detection area, move your head down so you can see the top crossbar and the archway, then make sure the archways overlap and the top tabs line up with the top crossbar. Vehicle paths should still be parallel to the long, narrow bar.
- 3 Tighten down the pan and tilt bolts, then tighten down the four bolts on the backplate.

Align long, narrow bar with middle of lanes of interest



6 Attach the SmartSensor 6-conductor cable and ground the sensor

- 1 Squeeze about 25% of the silicon dielectric compound into the connector at the base of the sensor. Wipe off any excess compound.
- 2 Insert the cable into the connector and twist clockwise until it clicks into place.
- 3 To avoid movement, strap the cable to the pole or run it through a conduit, leaving a little slack at the top of the cable to reduce strain.



The cable should run straight to the main traffic cabinet. In areas with an abundant amount of electrical surges, it is recommended that you use a pole-mount box with surge protection at the base of the pole. It is necessary, however, to ground the sensor:

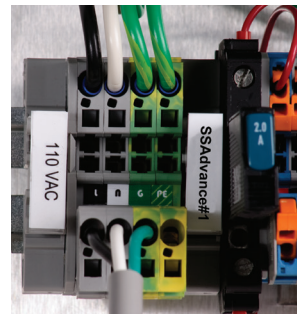
- 1 Connect a grounding wire to the grounding lug on the bottom of the sensor.
- 2 Connect the other end of the grounding wire to the earth ground for the pole that the sensor is mounted on. Do not attempt to run the grounding wire back to the main traffic cabinet.
- 3 In the main traffic cabinet use a volt meter to verify no electrical potential difference between sensor ground and cabinet ground. Volt meter probes between the 6-conductor black GND/DC- wire and cabinet ground.

7 Mount the backplate in the main traffic cabinet and wire power

Once installation of the sensor is complete, the intersection preassembled backplate must be installed in the main traffic cabinet. To do so, locate the area planned for mounting the backplate—usually on the side panel of a NEMA-style cabinet. Then attach the backplate with the U-channel mounting screws.

Connect power to the AC terminal block on the bottom DIN rail:

- 1 Connect a line wire (black) to the bottom of the “L” terminal block.
- 2 Connect a neutral wire (white) to the bottom of the “N” terminal block.
- 3 Connect a ground wire (green) to the bottom of the “G” terminal block.



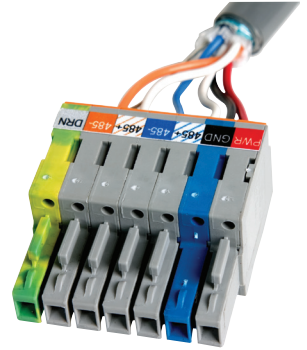
Continued on next page

- 4 Turn on AC mains power.
- 5 Press the circuit breaker switch on the left side of the top DIN rail to switch power to the backplate.
- 6 Verify power is regulated by verifying that the DC OK LEDs are illuminated on the Click 201/202/204.

8 Terminate the SmartSensor 6-conductor cable

To land the 6-conductor cable into the terminal block section:

- 1 After routing your SmartSensor 6-conductor cable into the cabinet, strip back the cable jacket and shielding on the service end of the cable.
- 2 Open the insulation displacement connectors on the plug by inserting a small screwdriver into each square slot and rocking it back.
- 3 Insert the wire leads into the bottom side of the plug-in terminal according to the colors of the wires and the labels on the plug. Make sure the wires are completely inserted in the terminal.
- 4 Close the insulation displacement connector by reinserting the screwdriver into the square slot and rocking it forward. The plug-in terminals will automatically complete the electrical connection. There is no need to manually strip the insulation on the end of each wire.
- 5 If you removed the plug to wire it, insert it back into the terminal block section.



9 Complete wiring

The Click 222 has three RJ-11 jacks on the faceplate:

- **RS-485 A (yellow)** – Connects the data bus from sensor 1 to the rack cards.
- **RS-485 B (orange)** – Connects the data bus from sensor 2 to the rack cards.
- **RS-485 Bridge (blue)** – Connects the configuration buses from sensors 1 and 2 to the control bridge, to the detector rack cards, and to the T-bus. This jack combines the input from ports C and D.

To connect and autobaud to the detector rack cards:

- 1 Connect from the Click 222 RS-485 A port to a bus 1 port on the appropriate rack card. Connect from the Click 222 RS-485 B port to a bus 1 port on another rack card.
- 2 If you are using Click 112 cards, use a patch cord to share bus 1 between cards dedicated to the same sensor. If you have more than two sensors in your system, repeat steps 1–3 to connect bus 1 for all remaining rack cards.
- 3 Connect from a Click 222 bridge port to bus 2 of the rack cards.
- 4 Daisy-chain between the bus 2 ports of all of the rack cards for device configuration.
- 5 The Click 112/114 should begin to receive data from the sensor.

