

SmartSensor Matrix

QUICK START GUIDE



1 Ensure that all necessary components are available

You will need a number of items in order to install your sensor, including but not limited to the items below:

- Mount bracket and Band-It clamping system
- 6-conductor cable and accessory cables
- Click 650 or preassembled backplate
- Laptop with SmartSensor Manager Matrix (SSMM) downloaded from wavetronix.com
- Bucket truck

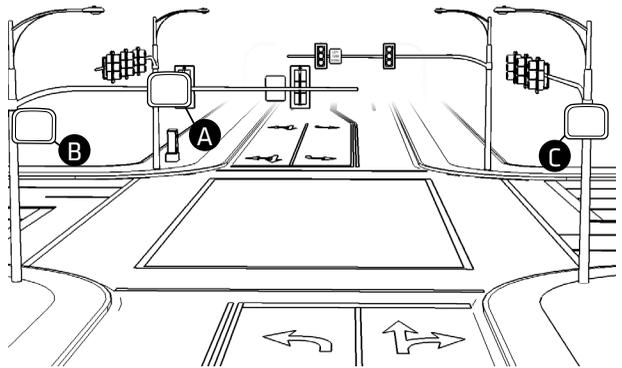
2 Select the mounting location

Manufacturer's recommended mounting locations:

- A** Back side of the mast arm
- B** Pole on the left side of the approach
- C** Pole on the right side of the approach

Use the following guidelines to determine the best mounting location and height:

- At location A, the sensor's 90° footprint must be able to capture both the stop bar and the approach; on occasion it could be required to mount at location B or C in order to monitor the entire approach.
- Wavetronix support should be contacted if a location other than A, B or C is desired.
- There must be at least 6 ft. (1.8 m) lateral separation between the sensor and the first lane of interest.
- The sensor should be placed at a height of roughly 20 ft. (6 m). The farther you install the sensor from the first lane of interest, the higher the sensor should be mounted.
- The sensor's 140-ft. (42.7-m) footprint should cover all areas of interest, with no objects blocking the sensor's view. Placing the sensor higher will result in less occlusion.



3 Attach the sensor and mount bracket to the pole

- 1 Insert the stainless steel straps through the slots in the mount bracket, then position the mount on the pole so the mount head points toward the lanes of interest at roughly a 45° angle. Tighten the strap screws.
- 2 Align the bolts on the sensor's backplate with the holes in the mount bracket. The eight-pin connector receptacle on the bottom of the sensor should be pointing towards the ground.
- 3 Place the lock washers onto the bolts after the bolts are in the mount bracket holes. Thread on the nuts and tighten.

4 Align the sensor to the roadway

- 1 Adjust the side-to-side angle so the front edge of the radar's footprint covers the entire stop bar and beyond so you can detect vehicles that don't stop at or behind the line, as well as vehicles exiting queues.
- 2 Tilt the sensor down to aim it at the center of the lanes of interest.
- 3 If the intersection approach has a significant grade, rotate the sensor so the bottom edge is parallel with the roadway.



5 Attach the 6-conductor cable and ground the sensor

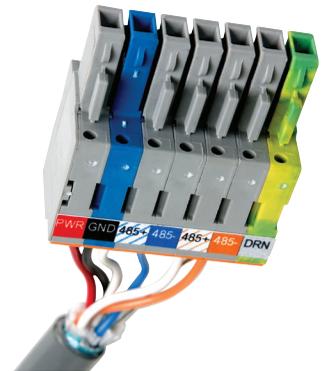
- 1 Squeeze 25% of the silicon dielectric compound into the connector at the base of the sensor; wipe off excess.
- 2 Insert the cable into the connector and twist clockwise until you hear it click into place.
- 3 To avoid undue movement from wind, strap the cable to the pole or run it through a conduit with enough slack to reduce strain.
- 4 Connect a grounding wire to the grounding lug on the bottom of the sensor.
- 5 Connect the other end of the grounding wire to the earth ground for the pole that the sensor is mounted on.
- 6 Route the service end of the cable back to the main traffic cabinet.



6 Terminate cables

Terminate the sensor cable into one of the four ports on the back of the Click 650. For each sensor you want to connect to the Click 650, do the following:

- 1 Remove one of the plugs from the back (they are numbered 1–4; you'll need to keep track of which sensor is plugged into which port).
- 2 Terminate the conductors from the cable into that plug, following the labels on the plug (as shown at right), then reconnect the plug to the Click 650.
- 3 Each sensor port has a corresponding RJ-11 jack, LED, and switch on the faceplate of the Click 650. Make sure the switch is turned on.
- 4 On the faceplate of the device is an SDLC port; connect a cable there to connect the Click 650, and its attached sensors, to the SDLC bus and, via that bus, to the controller.



NOTE. If your cabinet doesn't support SDLC, you can connect from the sensor port RJ-11 jacks to contact closure cards and communicate with the controller that way.

7 Connect SmartSensor Manager Matrix to the sensor

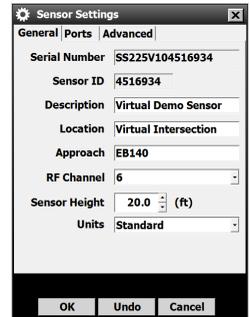
- 1 Make a physical connection to the sensor; generally you do this via a Click 650 or other Click device that has a communication connection with the sensor—for instance, you could connect to an Ethernet device on the same T-bus as the Click 222 surge protector the sensor is connected to.
- 2 Download SmartSensor Manager Matrix from www.wavetronix.com/support.
- 3 Launch SSMM and click **Communication** on the main menu. Based on the kind of connection you're making, go to the **Serial** or **Internet** tab.
- 4 Change any necessary settings, such as port, timeout or network address, and click **Search**.
- 5 Select the sensor you want to connect to and then click **Connect**.



8 Enter the sensor settings

From the SSMM main menu, click on **Settings** to configure settings for this sensor.

- **Description/Location/Approach** - (**General** tab) Add text here to help you identify the sensor later.
- **RF Channel** - (**General** tab) Set sensors to different channels to prevent radars from interfering with each other.
- **Source** - (**Ports** tab) Ensure this is set to **Antenna**.



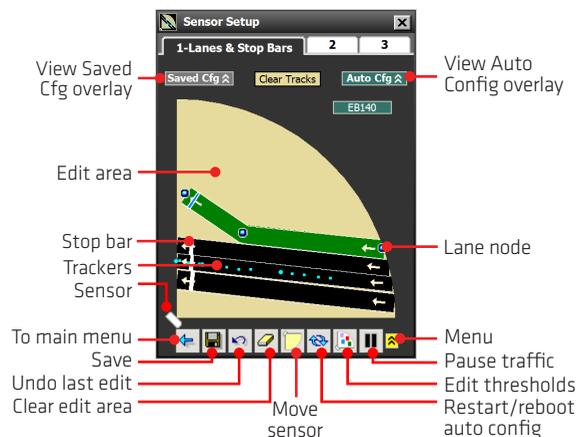
9 Configure lanes with auto config and manual adjustments

- 1 Select **Sensor Setup** from SSMM's main menu.
- 2 Start automatic lane configuration by clicking the **Restart/Reboot** Auto Config button. Allow the intersection to cycle at least twice before proceeding. (To see your auto configured lanes, you must have your display set to view Auto Cfg overlay.)
- 3 Once the automatically configured lanes have appeared, click once on any lane to highlight it, and again to bring up the Capture Lane window. Select **Capture Lane** or **Capture All**. Stop bars in the lanes will be captured as well.

Note. You can also manually add a lane by clicking anywhere in the edit area and selecting Add Lane.

Then you can manually position that lane over the visible lane trackers.

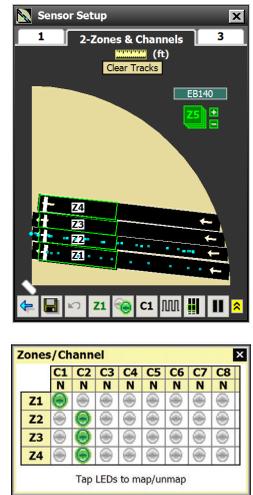
- 4 Make other manual adjustments by clicking on the area you'd like to adjust. You can add, delete, or adjust the following parameters: lanes, stop bars, lane nodes (used to change the trajectory, curve, or width of a lane).



10 Map zones to channels

- 1 Click on tab 2 for the Zones & Channels screen. Select **Apply** to have zones automatically placed at the stop bar in each lane. A zone is a section of the roadway where the sensor is looking for detections.
 - **To add or delete a zone** – Drag zones in or out of the edit area.
 - **To edit a zone** – Select it and click **Z1** for the Edit Zone window. Also, in the edit area you can click and drag the zone, or adjust its size.
- 2 Zones must be mapped to channels; the channel output is what gets sent to the rack cards. The first 4 zones are mapped to C1–C4, respectively. You can also manually map zones to channels using the **C1** button.
- 3 To see all channels and zones, select .

Note. For a two-phase configuration (e.g. left-turn phase and through phase), the recommended mapping is one channel for the first phase (left-turn) and one channel for the second phase (through), as shown in the screenshot to the right.



11 Create a backup

- 1 Go to **Tools > Backup/Restore > Backup File** and specify where you want the backup file to be stored, then click **Back-up Sensor Setup**.
- 2 To use a backup file, use the **Restore Sensor Setup** option on the same screen.

12 Set up sensors on the Click 650

Before connecting the Click 650 to your network, you need to set the static IP address, subnet mask and default gateway (these numbers may be assigned by your IT personnel). You will set these using the OLED menu on the faceplate.

- 1 Navigate down to Network Setup and push the **Accept** (green check mark) button to open the networking screen (shown right).
- 2 Set your desired IP address by following these steps: use the left and right arrow keys to highlight a number, then use the up and down arrow keys to change that number. Then move to the next number. Repeat until all the numbers are changed.
- 3 Press the right key one last time to navigate down to the subnet mask line. Repeat steps 2 and 3 for the subnet mask and default gateway. When you're done with all three, push the green check mark button to confirm your changes.
- 4 Connect an Ethernet cable to the RJ-45 jack on the faceplate of the device to connect your Click 650 to your network.
- 5 Connect to the web interface to configure the Click 650. Using the web interface, you'll be able to map sensor channels to detector channels and monitor sensor connections.

