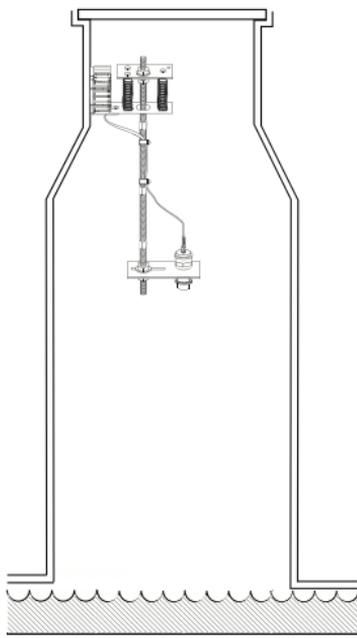


WAVELET ULTRASONIC CSO/SSO KIT

QUICK START

GUIDE





It is important that you read the Quick Start Guide in a controlled environment prior to installation.

Set up, activate, and successfully test the entire system (Wavelet device, sensors, and antenna) indoors, in a controlled environment, before going to the field for installation. It is also good practice to familiarize yourself with how to assemble them mechanical mounting hardware for the ultrasonic sensor.

IMPORTANT



Contact **AYYEKA SUPPORT** for technical support:
support@ayyeka.com
+1 (310) 876-8040 (US)
+31 40 209-1001 (EMEA)



ALWAYS COORDINATE Wavelet Kit installation with the local authority before starting installation. Installation should be completed by trained and authorized personnel. If assistance from Ayyeka Support is needed, schedule a request in advance, and **make sure that you get confirmation before the installation.**



The **WARRANTY** offered by Ayyeka covers only Ayyeka supplied hardware and software for the duration of the warranty period as per the warranty terms and conditions.



AYYEKA IS NOT LIABLE for damage or injury as a result of handling, installation, or maintenance of its supplied systems.



VENT SEWER according to local rules and regulations.



FOR YOUR SAFETY, the Wavelet Ultrasonic CSO Kit is designed to be installed from the top without requiring entrance into the manhole chamber. Ensure that all the field personnel are properly secured per local safety requirements and regulations.



DO NOT THROW AWAY the device because it contains a lithium battery. Dispose of the battery properly according to local laws and regulations.

IMPORTANT



4G (LTE)/3G/2G cellular network signal is required for proper communication.



OPERATING TEMPERATURE RANGE of -40°C to $+80^{\circ}\text{C}$ (-40°F to $+176^{\circ}\text{F}$) for Wavelet V2 and Wavelet 4R, or -40°C to $+68^{\circ}\text{C}$ (-40°F to $+154^{\circ}\text{F}$).



SERVICE THE SENSOR according to manufacturer's instructions.

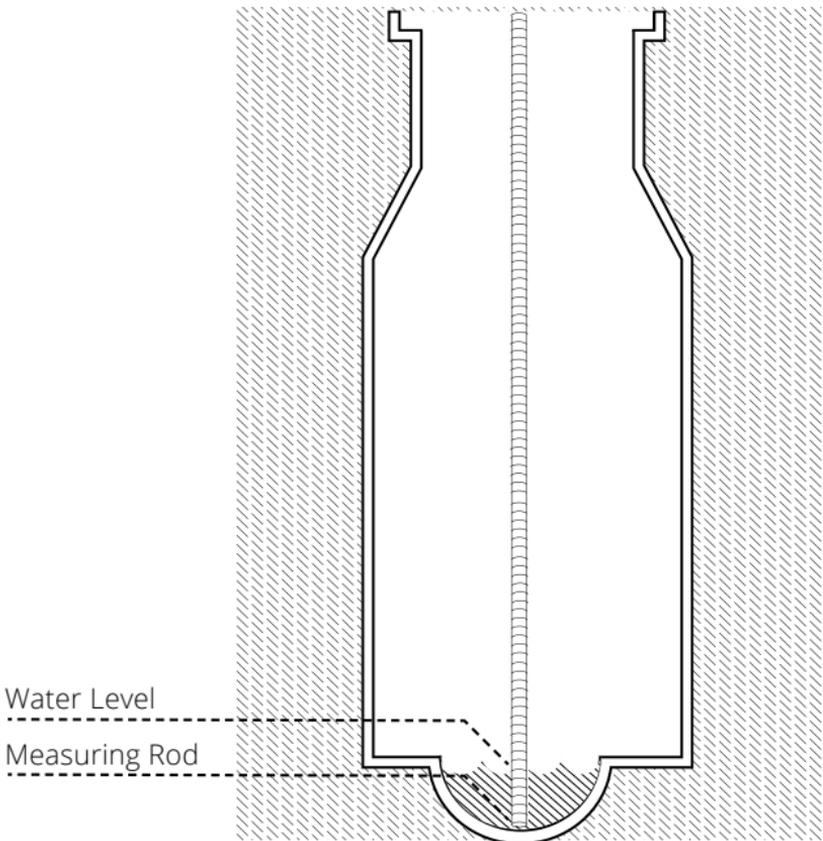
SITE REQUIREMENTS & PREPARATION

A. REQUIRED SITE CONDITIONS:

- Minimum manhole depth of 1.2 meters (4 feet).
- Turbulence or foam will reduce accuracy of the sensor.

B. PREPARATION:

Determine height of the manhole shaft from elevation drawings, or the water level with a rigid measurement rod. When inserted into the shaft, the rod should reach the sewer floor so that the water level can be determined.

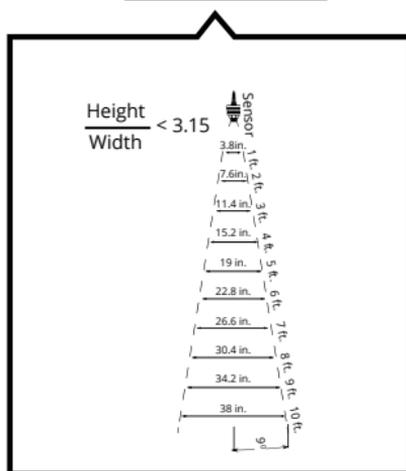
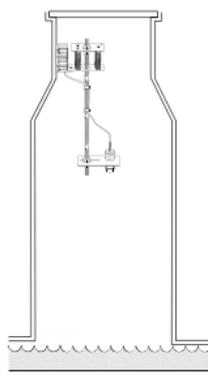


RECOMMENDED USE CASE

A. There is a **MINIMUM WIDTH OF THE WATER STREAM**

based on the corresponding height from the face of the sensor to the surface of the stream, per the following diagram. The height : width ratio must be less than 3.15.

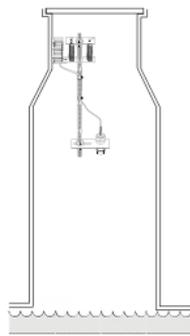
If the ratio is more than 3.15, then the ultrasonic level sensor must either be moved closer to the water surface, or use an alternative level sensor such as a submersible hydrostatic level sensor or radar level sensor.



* Ratio shown above is for Model No. SE00011-SER-xx and SE00169-SER-xx

B. FOR WATER STREAMS WITH **FOAM**,

an ultrasonic level sensor may not be effective. Contact Ayyeka for further information, and consider using either a submersible hydrostatic level sensor or radar level sensor for better results.



* For other sensors, contact Ayyeka for more information.

SITE SCHEMATIC

Manhole Cover

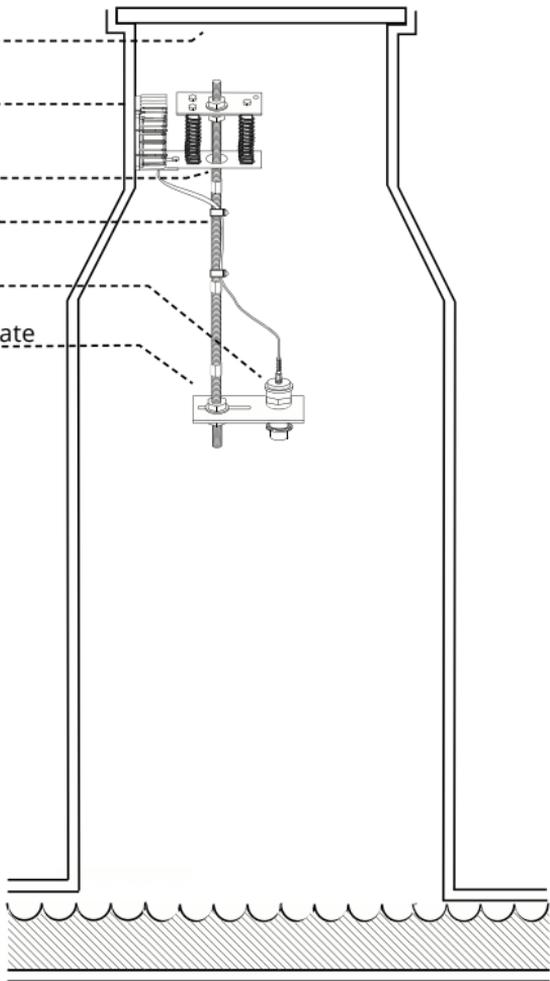
Wavelet

Mounting Plates

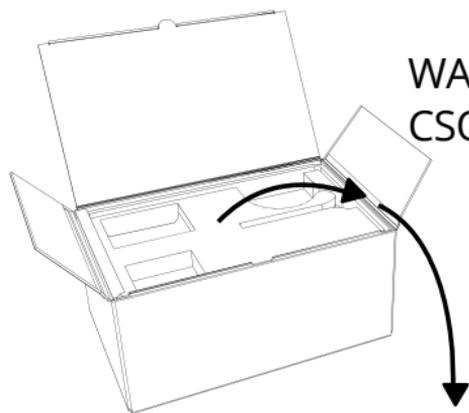
Threaded Rod

Ultrasonic Sensor

Sensor Mounting Plate

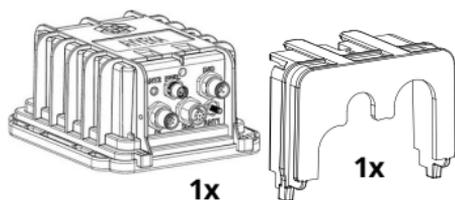


COMPONENTS

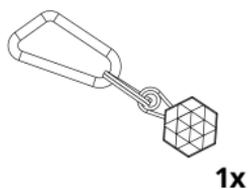


WAVELET ULTRASONIC CSO/SSO KIT

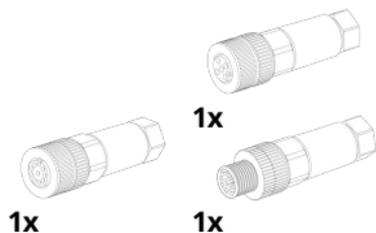
Wavelet Device & Protector



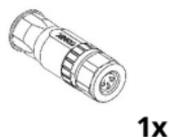
Wavelet Activator



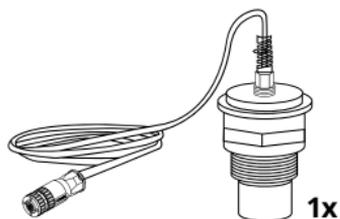
M12 Field Attachable Sensor Connectors
(optional, ordered separately)



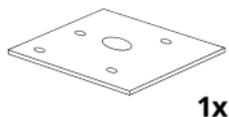
M8 Female Field Attachable Power Connector
(optional, ordered separately)



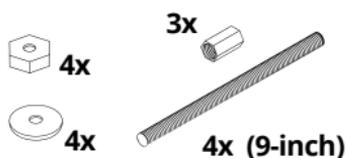
Ultrasonic Level Sensor



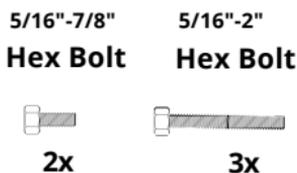
Upper Adjustable Mounting Plate



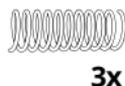
Stainless Steel Threaded Rod Segments, 3 Hex Couplers, 1/2" Hex Nuts, and Washers



Hardware for Adjusting Plates



Spring



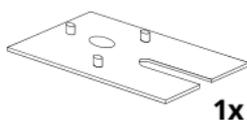
Plastic Threaded Coupler



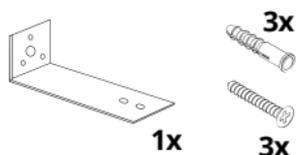
Sensor Mount



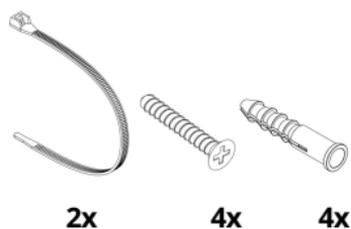
Lower Adjustable Mounting Plate



Wall Mounting Plate and Screws and Anchors

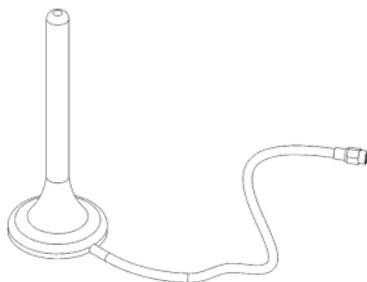


Zip Ties, Screws, and Anchors



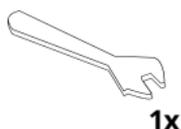
Cellular Antenna

(REQUIRED; ordered separately)

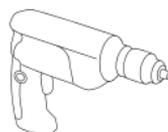


Tools and/or materials required (not included):

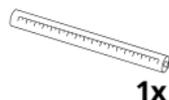
½" Wrench



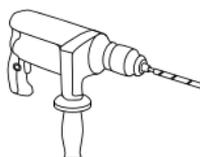
Screwdriver
with Phillips
PH 1 Bit



Measuring
Rod



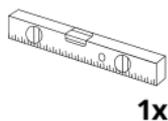
Rotary
Hammer



Measuring
Tape



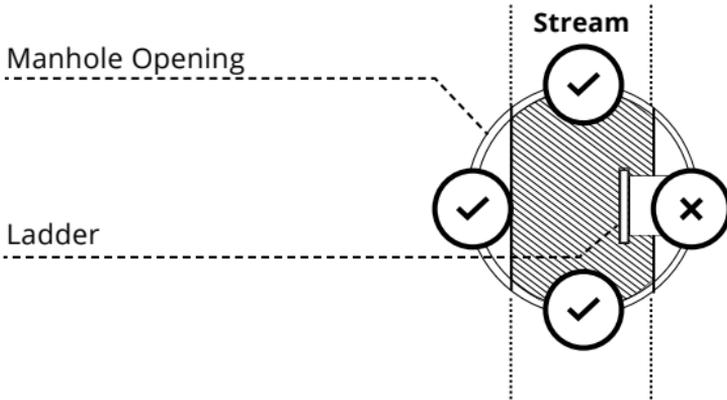
Level



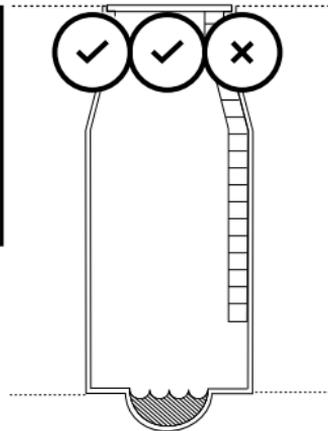
INSTALLATION

1

Choose proper installation location. Mounting hardware needs to be installed in-line with the water stream. Be sure the mounting hardware does not become an obstacle so that there will be adequate clearance after installation to ascend and descend the ladder.

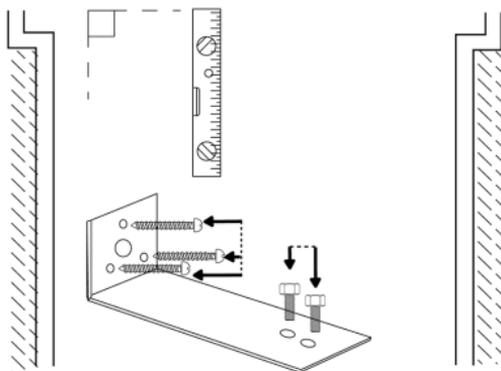


CAUTION: To avoid damage during manhole cover removal, place top of mounting bracket a few inches below the cover.

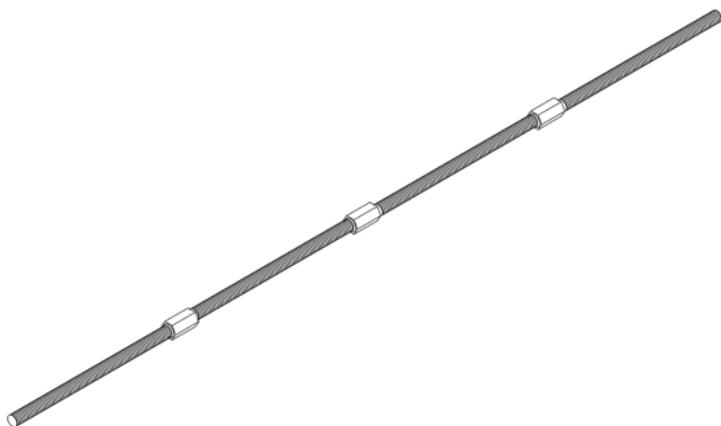


2

Loosely thread the two (2) 5/16" - 7/8" hex bolts into the wall mounting plate. Then, install the wall mounting plate with three (3) screws and ensure it is level vertically.

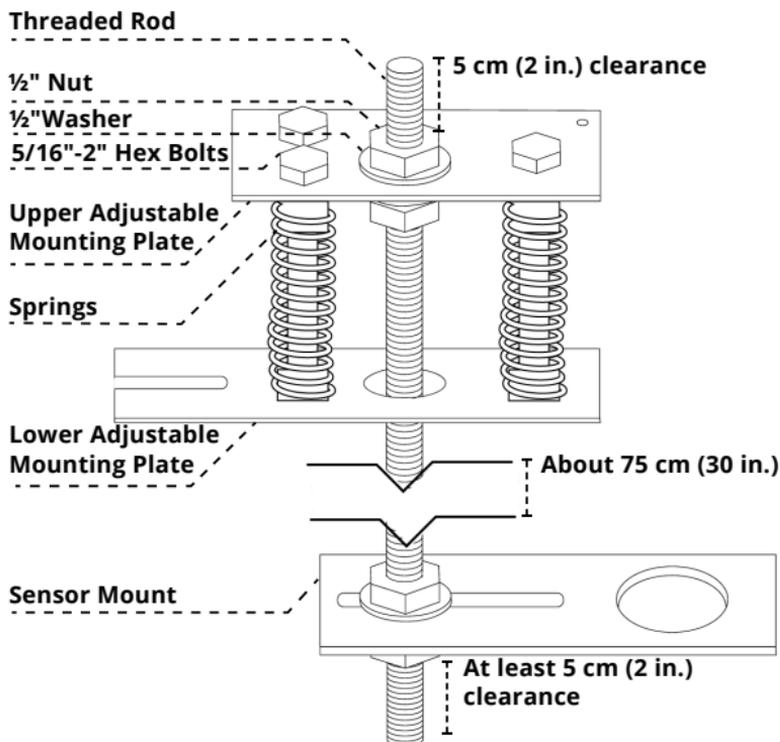
**3**

Each of the four (4) rod sections are 23 cm (9 in.) lengths and can be assembled to fit the custom application in lengths up to 1 m (3 ft). Use the provided hex couplers to assemble the rod sections.



4

Prepare the threaded rod according to the following assembly diagram.



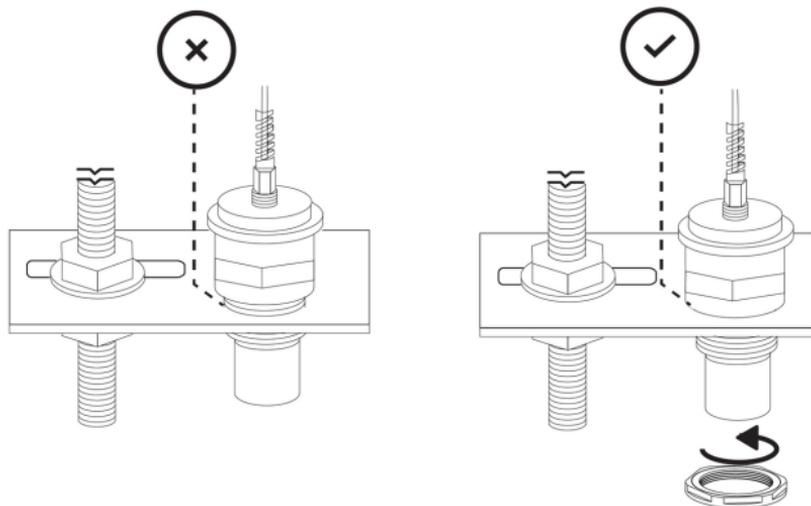
*Note: Drawings not to scale.

5

Place the sensor into the large hole in the sensor mount. Screw on the female threaded coupler to the sensor on the underside of the sensor mount.

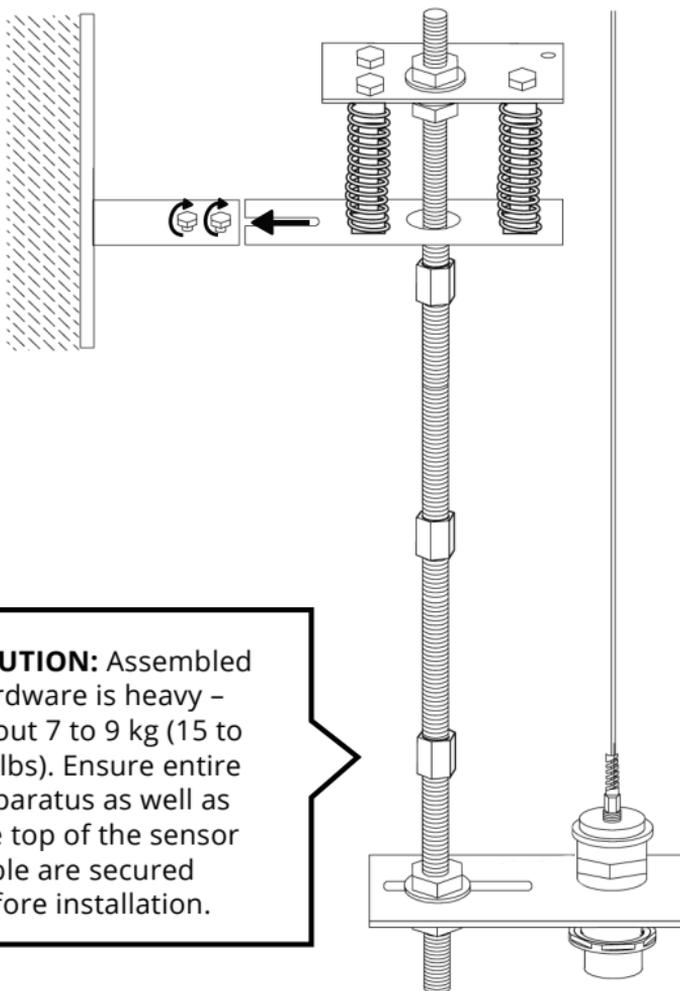


CAUTION: No threading should be visible above the plate.



6

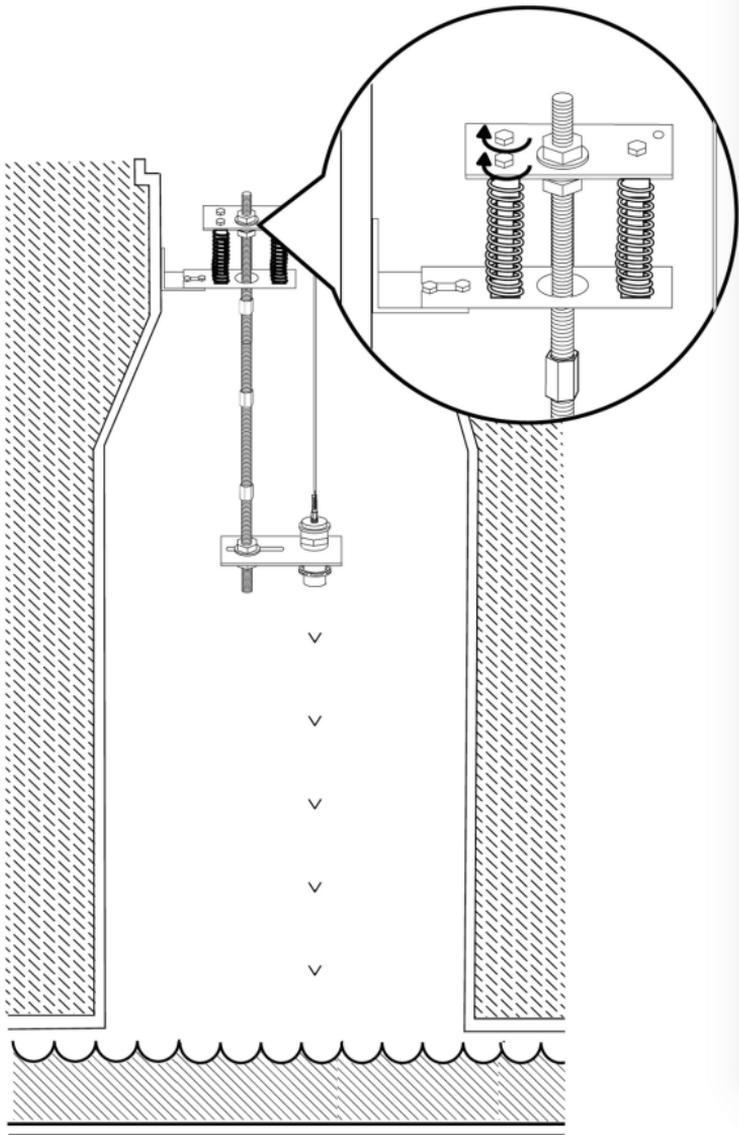
Carefully lift the entire assembled apparatus and slide the slot of the lower adjustable mounting plate onto the loose bolts of the secured wall mounting plate. Tighten the two (2) bolts of the wall mounting plate.



CAUTION: Assembled hardware is heavy - about 7 to 9 kg (15 to 20 lbs). Ensure entire apparatus as well as the top of the sensor cable are secured before installation.

7

The sensor must point down directly to the water surface. Calibrate the x and y-axis by adjusting the bolts on the top of the upper adjustable mounting plate. Use the level to shift the rod angle as needed, and secure it back into place.

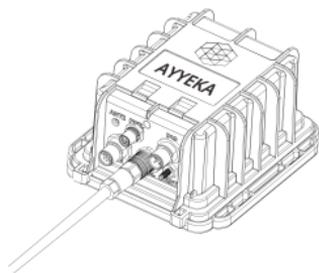


SENSOR CONNECTION

8

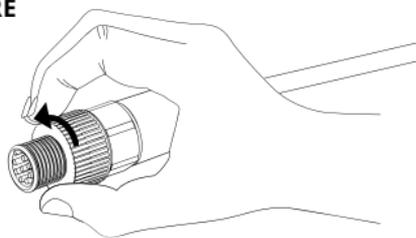
Connect the sensor cable with the field attachable connector to the Wavelet. Turn the adjustable black plastic or silver end piece to secure the sensor connector to the Wavelet.

Note: the number of sensor ports and gender of the M12 panel connectors may vary from one Wavelet device variant to another (e.g. M12 8-pin female vs. M12 8-pin male). Images below are for illustrative purposes.

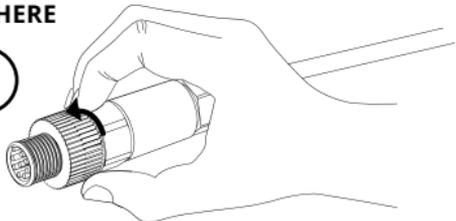


CAUTION: Do not turn the black plastic hood of the connector. Turning the black hood may cause the wires to disconnect, break, and/or damage the connector pins.

TURN HERE



**DO NOT
TURN HERE**



EXTERNAL ANTENNA CONNECTION

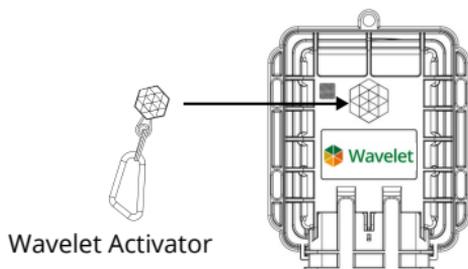
9 Connect the cellular antenna to the antenna port (ANT1).



The antenna must remain connected after it is properly secured to the appropriate panel connectors.

Place the magnetic Wavelet Activator on the embossed Wavelet logo on the front of the Wavelet enclosure.

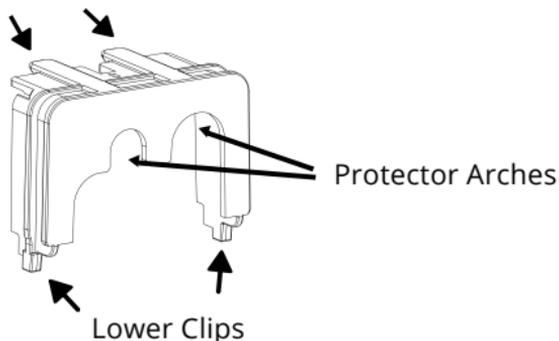
The Wavelet will initiate a 15-minute test mode of sampling and send a few transmissions of data. The device will then return to its default configuration.



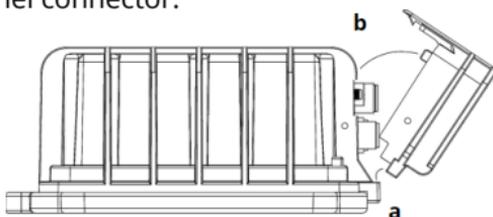
WAVELET PROTECTOR

- 10 After connecting sensors and antenna, place the Wavelet protector above the connector ports and secure the Wavelet protector into the Wavelet enclosure.

Upper Clips



- Insert the two lower clips into the two lower holes of the Wavelet enclosure.
- Snap the upper clips into place in the two grooves above the panel connector.



CAUTION: The protector is provided to shield the connector from tampering or over-exposure that could result in disconnected wiring.

If you need to remove the protector, grasp it at the protector arches and pull up. The protector will snap off.

WAVELET ACTIVATION

The LED light on the back cover of the Wavelet indicates the device status.

Note: not all models of the Wavelet have an LED light. See further instructions below on use of the AyyekaGo mobile app.

Function	Description
All LEDs are off	Not connected to network. The LED lights do not blink when the device is sampling. Note: Wavelet may be powered down (power switch is in the OFF position), in Hibernate mode, or have insufficient battery strength.
Green-Red-Blue-Red-Green LEDs blink sequentially 5x	Wavelet is activated using the Magnetic Activator.
Green LED is blinking	Attempting to connect to GSM network.
Green LED remains on	Transmission of data is in progress via GSM. The LED will turn off when the transmission is complete.
Green-Red LEDs blink 5x	GSM communication error. The device failed to transmit.

Access the Ayyeka user interface at <https://home.ayyeka.com> by using your log-in credentials. Expect data to appear 5–10 minutes after the test mode is initiated.



WAVELET ACTIVATION

The screen display should resemble the following:



If the Wavelet is transmitting properly, you have completed the installation successfully and can begin collecting and viewing your data!



If data does not transmit properly, change the installation location and activate again.

If the problem persists, contact Ayyeka for assistance.

support@ayyeka.com
+1 (310) 876-8040 (US)
+31 40 209-1001 (EMEA)
+972 2 624-3732 (IL)

AyyekaGo MOBILE APP

11

If you haven't already done so, download the AyyekaGo mobile app for iOS or for Android. Search the App Store or Google Play for "AyyekaGo" or use the QR codes below.

There are two ways to pair your phone with your Wavelet:

1. Select "Get Key Via Web". This will direct you to enter your log-in credentials for the StreamView user interface.
2. Select "Enter Key Manually". The Mobile Pair Key is found in the Stream View user interface in the Devices tab.

Once connected to your Wavelet device, there are multiple display screens for different functionality.

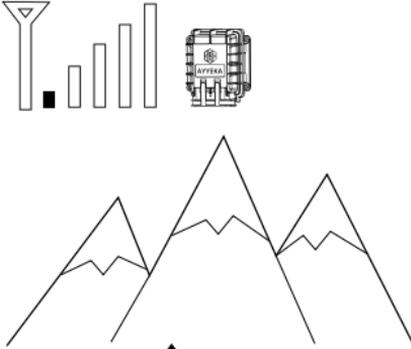
The first screen provides essential information, including, but not limited to:

- Signal strength
- Cellular carrier
- Confirmation of successful transmission and connection to the server



SPECIAL INSTALLATION LOCATIONS

WEAK SIGNAL LOCATIONS

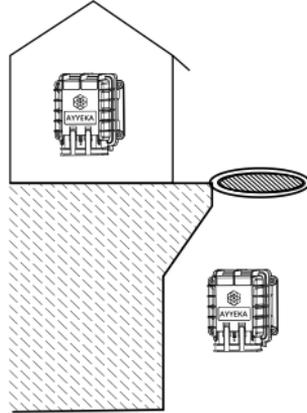


If the Wavelet is installed in an area with weak cellular signal, activate the Wavelet by using the magnetic activator.

Use the AyyekaGo mobile app to pair with the device and confirm transmission. You can also log in to the StreamView user interface using your credentials to validate that the device is transmitting.

Wait for at least 15 minutes, then log in to the StreamView user interface at <https://home.ayyeka.com> to confirm successful transmission.

INDOOR/UNDERGROUND LOCATIONS



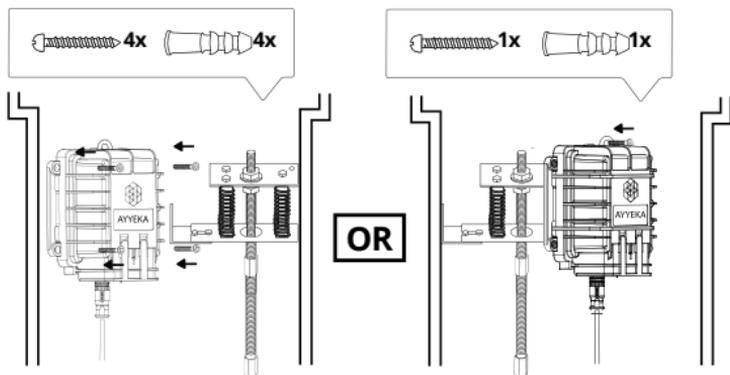
If the Wavelet is installed in an area with weak cellular signal, activate the Wavelet and place in the intended installation location with closed doors/access hatch.

Wait for at least 15 minutes, then log in to the user interface at <https://home.ayyeka.com> to confirm the updated location on the map. Before installation, initiate the GPS by activating the Wavelet.

WAVELET MOUNTING

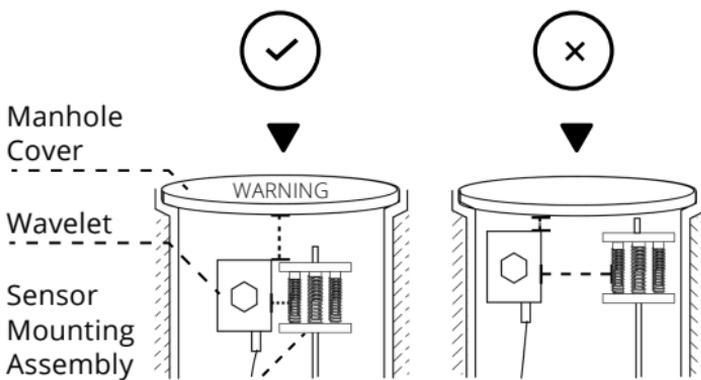
12

Secure the Wavelet by screwing it in with four (4) screws as close to the wall mounting plate as possible. The Wavelet can also be secured by the top mounted hanger to the hole in the corner of the upper adjustable mounting plate using a zip tie.

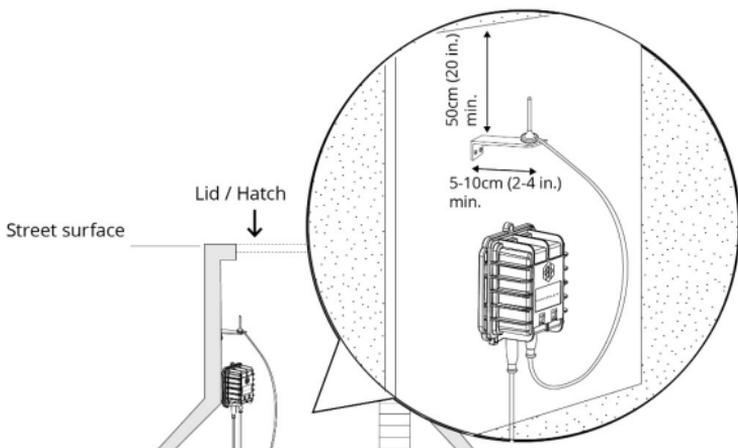


CAUTION: Be cautious not to install the Wavelet too close to the collar of the manhole cover so that upon removing the cover, it does not damage the Wavelet.

It is recommended to put a label on the visible surface of the manhole cover warning of sensitive electrical equipment within.



ANTENNA MOUNTING



DOs

- ✓ Ensure the antenna connector is secured tightly to the panel connector.
- ✓ Mount antenna under the open sky or at least 50cm (20in.) beneath any object.
- ✓ Mount antenna at least 5 to 10cm (2 to 4in.) away from wall.
- ✓ Mount antenna at least 5cm (2in.) away from the device.
- ✓ Finalize the antenna setup to the exact physical conditions. For example, close the lid, close the door, etc.
- ✓ Make sure you have a signal and a successful data transmission by using the mobile app.
- ✓ If needed during installation, use the **Transmit Now** command in the mobile app or the magnetic activator key to initiate more rapid transmissions.

DON'Ts

- ☒ Do not attach the antenna to the Wavelet.
- ☒ Do not wrap cables, zip ties, or other items around the antenna.

IMPORTANT NOTE: There are a few-minutes of delay between a successful transmission and the use of either of these methods for initiating data transmission. Repeating the use of either method will not expedite data transmission.

WARNING: If installing in a highly corrosive environment such as a sewer, apply technical grease to the antenna and sensor field attachable connectors after securing them to the panel connectors. Ayyeka recommends using Dow Corning Molykote 55 O-Ring Grease, though similar products can be effective.

ANTENNA MOUNTING - TROUBLESHOOTING

If the Wavelet does not transmit, move the antenna to a different position.

If the Wavelet still does not transmit after multiple attempts at repositioning the antenna, consider using an alternative solution, such as an in-road antenna.

Note: Ayyeka supplies antenna wall mounting hardware and various antennas, including in-road antennas — contact Support for details.

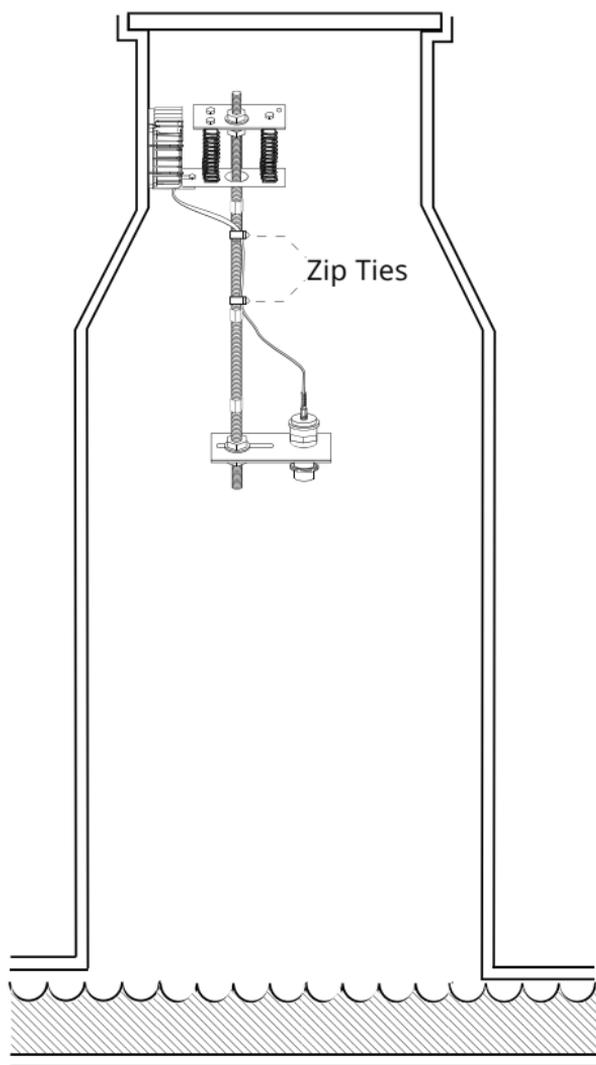
USING YOUR OWN ANTENNA

If you intend to use your own antenna, verify that the antenna uses an SMA male connector. Your antenna ideally supports all of the following frequencies (make note of the model number suffix of your Wavelet device – for example “-US”):

Technology	-US, -SA	-EU
2G	850, 900, 1800, 1900 MHz	900, 1800 MHz
3G	850, 1700, 1900 MHz	900, 1800, 2100 MHz
4G (LTE)	700, 850, 1700, 1900 MHz	800, 900, 1800, 2100, 2600 MHz

13

Secure the sensor cable to the threaded rod with zip ties.



YOUR WAVELET ULTRASONIC
CSO/SSO KIT IS NOW
SUCCESSFULLY INSTALLED!





QUESTIONS?

www.ayyeka.com
support@ayyeka.com
+1 (310) 876-8040 (US)
+31 40 209-1001 (EMEA)
+972-2-624-3732 (IL)