Enhancing Geolocation Accuracy

Baseline's Mobile Access Advanced enables users to geo-locate all irrigation devices from any web-enabled mobile device, such as a smartphone or tablet. Using this feature, you can easily add markers for your irrigation devices to the BaseManager map. However, the built-in GPS in your smartphone or tablet may not be sensitive enough to position the markers with the accuracy that you expect.

You can pair an add-on GPS sensor with your mobile device to enhance its geolocation accuracy. While Baseline does not endorse or support any particular make or model, we have done some limited testing with the Garmin GLO™ GLONASS and GPS sensor. In general, we have found this sensor to perform better than the built-in GPS in your mobile device.

The Garmin GLO GLONASS and GPS sensor connects wirelessly to the Apple iPad, iPhone, and other Bluetooth enabled smartphones, tablets, and laptops. GLO can receive position information from both the GPS and GLONASS satellite constellations, allowing it to connect to up to 24 more satellites than devices that rely on GPS alone. This allows GLO to lock on to satellites approximately 20 percent faster and remain connected even at high speed. What's more, GLO updates its position information at 10 times per second — that's up to 10 times more often than the GPS receivers in many mobile devices.

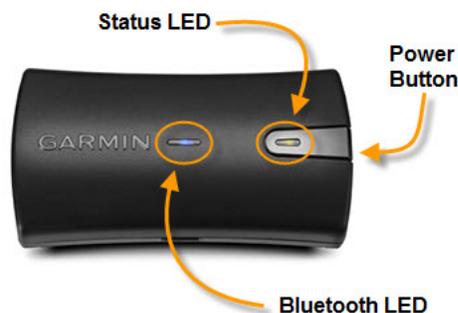| Garmin GLO™ GLONASS and GPS Sensor Tech Specs	
Unit size, WxHxD: .70" x 1.65" x 3.04" (1.78 x 4.19 x 7.72 cm)	**Accuracy:** 3 meters
Weight: 2.12 oz (60.1 g)	**Battery Capacity:** 1100mAh
Receiver Technology: GPS+GLONASS	**Battery Life:** 12 hours
WAAS: Yes	**Hot Start Time:** 3–5s
Update Rate: 10 Hz	**Warm Start Time:** 35s
	Cold Start Time: 60s

Note: The Garmin GLO GLONASS and GPS sensor is not water resistant.

You can purchase the Garmin GLO GLONASS and GPS sensor directly from the Garmin web site, from Amazon, or from other electronics retailers.

Working with the Garmin GLO GLONASS and GPS Sensor

When you get your GPS sensor, you'll need to install the battery and charge it up to full strength. Refer to the instructions that came with the GPS sensor. It takes about 3 hours to charge the battery.

Garmin GLO™ GLONASS and GPS Sensor

Status LED

Power Button

Bluetooth LED

Pairing the Garmin GLO GLONASS and GPS Sensor with an Apple iOS Device

Note: The following instructions are for iOS 8.2. If your device is using another version of the iOS operating system, the steps may be slightly different.

1. On the Garmin GPS, press and hold ⏻ until the Status LED glows.

2. Turn on the Apple iOS device.

3. Tap on **Settings**.

4. Tap on **Bluetooth**.

5. Flip the **On/Off** button to toggle Bluetooth on. When the setting is on, the button looks like the following illustration. 🟢

    The iOS device begins searching for a compatible Bluetooth device. When it finds the Garmin GPS, it will automatically connect and display the confirmation shown in the illustration on the right. Also notice that the Bluetooth LED on the Garmin GPS is solid blue when it is connected to the other device.

6. Make sure **Location Services** is enabled on the iOS device.

    a. On the iOS device, tap **Settings**.

    b. Tap on **Privacy**.

    c. Tap on **Location Services**.
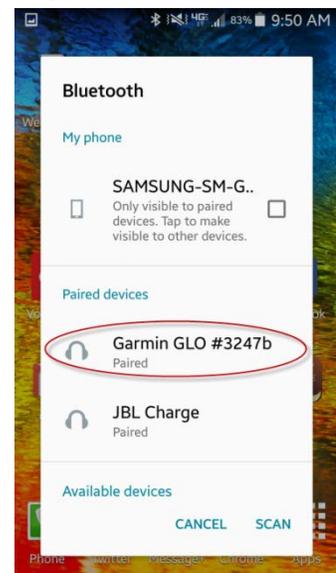
    d. Set Location Services to **On**.

Pairing the Garmin GLO GLONASS and GPS Sensor with an Android Device

Note: The following instructions are for Android 5.0 (Lollipop). If your device is using another version of the Android operating system, the steps may be slightly different.

1. On the Garmin GPS, press and hold ⏻ until the Status LED indicator glows.

2. Turn on the Android device.

3. Tap on **Settings**.

4. Tap on **Bluetooth**.

5. Tap the switch to turn Bluetooth on.

    The Android device begins searching for a compatible Bluetooth device. When it finds the Garmin GPS, it will automatically connect and display the confirmation shown in the illustration on the right. Also notice that the Bluetooth LED on the Garmin GPS is solid blue when it is connected to the other device.

6. Make sure location access is enabled on the Android device.

    a. On the Android device, tap **Settings**.

    b. Tap on **Location**.

    c. Depending on your device and the version of the operating system, make sure all options such as **Location, Location services,** and **Location reporting** are enabled.

    d. Set Location Services to **On**.

    Note: The Garmin GLO GLONASS and GPS sensor user manual states that when using the Garmin GLO GLONASS and GPS sensor with an Android device, you may need to use an application to allow the sensor to properly communicate with the Android system over Bluetooth technology. The application will allow the Android system to accept non-system (or mock) GPS/GLONASS signals.

    Garmin's Support site recommends that Android users download and install **Bluetooth GPS** from the Google Play Store. It is unclear what version(s) of the Android operating system this recommendation applies to. Please refer to your phone's user manual or to Garmin Support.

Using the Garmin GPS to Geo-locate an Irrigation Device

1. After you have paired your mobile device to the Garmin GPS with Bluetooth, take both devices to the site where you want to geo-locate irrigation devices.

2. Make sure the Garmin GPS is turned on and the Bluetooth LED is solid blue to indicate that it is connected to the other device.

3. Open the web browser on your mobile device and go to **www.basemanager.net**. The Mobile Access login screen displays.

4. Enter your username and password in the fields, and then tap the **Login** button. The Select Controller screen displays.

5. In Mobile Access, tap the site where you want to geo-locate a device. The Controller Operations screen displays.

6. Walk to the place where the irrigation device that you want to mark is physically located.

7. Place the Garmin GPS where it has a clear view of the sky.

    The Status LED flashes green while searching for satellites and establishing your location. It may take several minutes for the Garmin GPS to acquire the satellite signals. The Status LED changes to solid green when the Garmin GPS has established a fix on your location.

8. When the Status LED on the Garmin GPS is solid green, tap the **Mark Device** option in Mobile Access. If you are prompted to allow your mobile device to use the current location, tap **OK/Allow**.

9. In Mobile Access, tap the type of irrigation device that you want to geo-locate.

10. Tap the **Mark** button. Mobile Access confirms that the coordinates were sent.

11. Repeat steps 6 – 10 for each irrigation device that you want to geo-locate.

12. When you have finished geo-locating your irrigation devices, press and hold ⏻ on the Garmin GPS until the Status LED indicator on the power button glows orange.

    The next time you or your colleagues log into the desktop version of BaseManager and go to the controller map, you will see the icons for the devices that you marked.
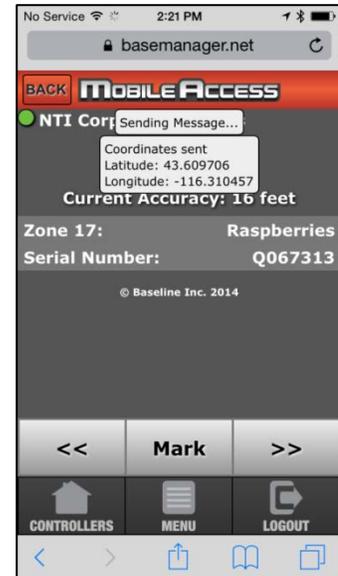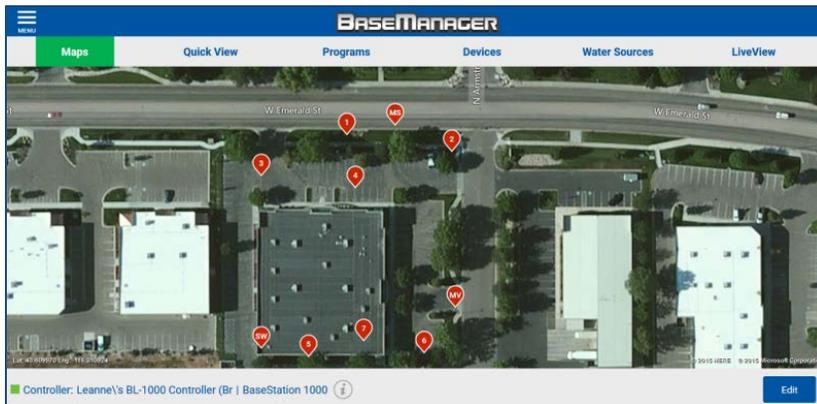
FCC Compliance Information

The Garmin GLO GLONASS and GPS sensor has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.