

# HOB

Oconnect® User Guide

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## Getting Started

The HOBObconnect software is designed to work with Bluetooth® Low Energy-enabled HOBOb® MX devices.

HOBObconnect	Supports
Mobile Device or Computer Requirements	Android™ 12, 13, or 14; iOS 15 or later; Windows 10 or later; Bluetooth 4.0 or later. <b>Note:</b> The Windows app requires a native Bluetooth Low Energy adapter or supported Bluetooth Low Energy dongle. For details, see <a href="http://www.onsetcomp.com/products/software/hobobconnect">www.onsetcomp.com/products/software/hobobconnect</a> .
Compatible HOBOb Devices	MX100, MX800 Series, MX1100 Series, MX2001, MX2200 Series, MX2300 Series, MX2501, MX20L, and MX Gateway





For specifications and detailed information about your MX device, refer to the product manual at [www.onsetcomp.com/support/manuals](http://www.onsetcomp.com/support/manuals).

## Where to Download HOBObconnect

- Download the mobile app from the App Store® or Google Play™ to your Apple® or Android or phone or tablet. When installing HOBObconnect, you must allow access to both the phone or tablet's location and to files on your device.
- Download the Windows application from [www.onsetcomp.com/products/software/hobobconnect](http://www.onsetcomp.com/products/software/hobobconnect). When installing HOBObconnect, you must grant permission for it to access your computer's file system.

## Introduction to the Main Icons

You can access all the features of HOBObconnect using the icons below. They are shown in their active state, which is blue. When they are not active, they are gray.

Icon	Function
 Devices	View and connect to loggers and gateways within range of your phone or tablet. Configure loggers, check status, view live data, download logger data, set up gateways, and more.
 Data	View logger data in a graph, export the files, and share them with others.
 Dashboard	Set up a dashboard to quickly see the latest measurements for in-range loggers.
 Settings	Change the app settings and access information about the app.

**Note:** The examples in this guide are from the Android version of the HOBObconnect app. Screens in the iOS/iPadOS and Windows version of the app may vary slightly from the examples shown. In addition, if you are using a Windows computer and it does not have touchscreen capabilities, use your mouse to click an icon instead of tapping it.

## Integrating HOBObconnect and HOBOblink

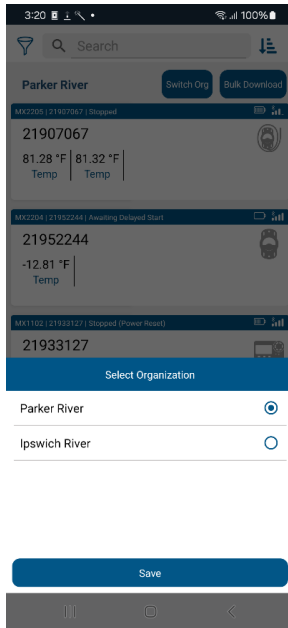
HOBObconnect can share data with HOBOblink. To connect the two applications, you must first perform a few tasks. You must connect HOBObconnect to your HOBOblink account first then add a data plan.

### Connecting HOBObconnect to HOBOblink

To enable the connection between HOBObconnect and HOBOblink:

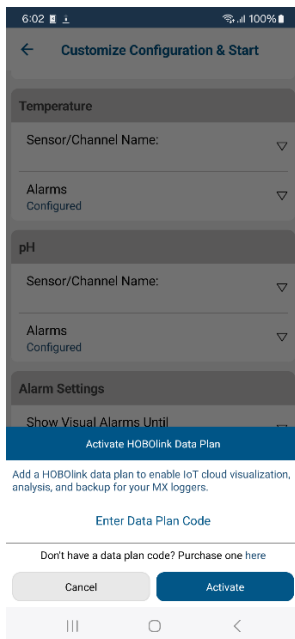
- In HOBObconnect, select Settings.
- In the HOBOblink section of the page, select Connect Account.
- Enter your HOBOblink username and password then click Connect.

4. Select your organization, if you have more than one.



## Adding a Data Plan

1. Purchase a data plan (<https://www.onsetcomp.com/products/software/mx-data-plans>). You must purchase a plan for each logger. When you do, you will be emailed a coupon code that you will enter as part of this process (see below).
2. In HOBObconnect, select Devices then select the logger tile for the device that you have purchased a data plan for.
3. Select Customize Configuration & Start.
4. Select HOBOblink Connection. On the right side of the screen, select to turn HOBOblink connection On. A dialog opens, asking you to enter the data plan code.



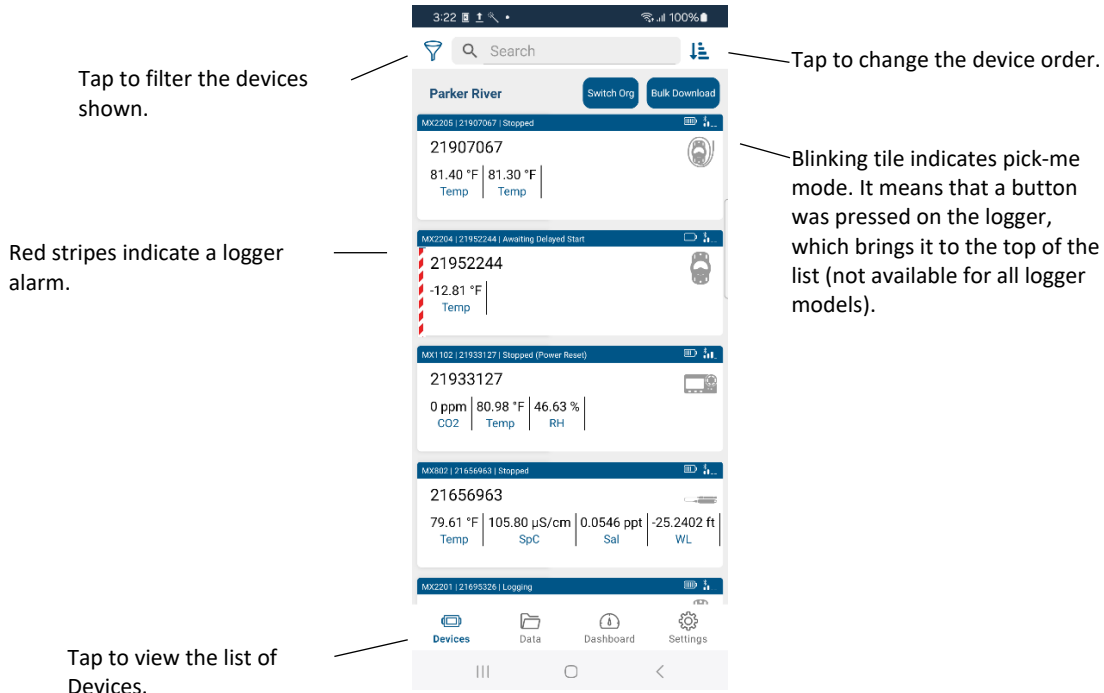
5. Enter the code then click Activate. The plan is added to the organization that you selected above. Once you finish activation, data is automatically uploaded to HOBOblink for this logger.

## Notes:

- After integrating HOBObconnect and HOBOLink, you must choose an organization upon using HOBObconnect if you belong to more than one.
- You cannot upload your MX800 or MX20L logger data to HOBOLink. This feature is planned for the near future.

## Viewing Devices


HOBObconnect uses Bluetooth Low Energy to communicate with all loggers and gateways within range of your phone, tablet, or computer (refer to the device manual for range specifications). Loggers that are awake and gateways advertise or regularly send out a Bluetooth signal for the app to find. Tap Devices to view the devices within range. Information about each logger or gateway is shown in a tile, which can change appearance and may also have a bar on the left side depending on the logger state (see below).



Loggers in alarm state are listed first. If you pressed a button on the logger to wake it up (not available on all logger models), that logger is at the top of the list. By default, all other loggers are listed in ascending order by discovery time.

**Note:** If you are working with an MX800 or MX20L logger, any references to pressing a button means holding the magnetic fob on the WAKE icon.


## Changing the Order of Devices

Tap  at the top right of the Devices screen, select one of the following, then tap OK.

Select This	To Order Devices By
Name	Device name in ascending or alphabetical order. Serial numbers are used if you have not named the device.
Group	Group name in alphabetical order. Devices not assigned to a group are listed after all devices in groups.
Serial #	Device serial number in ascending order. Even if the device was configured with a name, it is still sorted by serial number.
Model	Device model number in ascending order (e.g., MX1101, MX2301, etc.).
Discovery time	The time the app first received a Bluetooth advertisement from a device. The devices are ordered from the first discovered to the last.

**Note:** The order selected can change slightly if a logger alarm trips or if no Bluetooth advertisements have been received.

## Filtering the Devices Shown

Tap  at the top left of the Devices screen, select All or one or more of the following, then tap Ok.

Select This	To Display the Following Devices within Range
All	All loggers and gateways
Gateways	Only gateways
Loggers	Only loggers
Favorites	Loggers that have been marked as favorite (see <a href="#">Additional Logger Info</a> for details on favorites)
My Devices	Loggers and gateways that you have connected to with your phone or tablet. <b>Note:</b> You can clear this list by selecting Clear My Devices List in the app settings.
Ungrouped	All loggers that are not assigned to groups
<Group Name>	Only loggers that have been configured with the selected group name (see <a href="#">Configuring a Logger</a> for details on groups)

## Searching for a Device

Tap the search field at the top of the Devices screen and enter one or more characters. You can search by serial number or model number. The list is automatically refined as you enter each character. Click X in the search field to cancel a search.

## RX Station Manager

The RX Station Manager, available within HOBObconnect, helps you set up your own SIM card for cellular RX stations. For details on that process, visit:

- <https://www.onsetcomp.com/support/manuals/installing-sim-rx3000-station>
- <https://www.onsetcomp.com/support/manuals/23845-installing-micro-sim-rx2100-station>

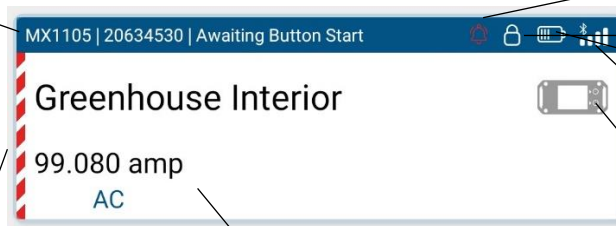
## Checking Device Information

### Loggers

Each tile includes the following information about the logger:

Logger model number, serial number, and logger status along the top bar. The main area of the tile displays the name or the serial number if you have not named it.

An alarm has tripped (see [Viewing Devices](#) for more information on the bar color)



One or more alarms have tripped

Device is locked

Remaining battery power

Bluetooth signal strength

Image of the logger

Current sensor readings (displayed even if the logger is not logging). On some models, these are updated at a rate different from the logging interval and may not match what is currently displayed on the logger LCD (if applicable).

#### Notes:

- **MX1104 and MX1105 loggers:** If the external sensor channel is disabled, the sensor reading is displayed as “- -”. Values from previously connected external sensors may appear until you configure the new sensors and begin logging.
- **MX2001 loggers:** Sensor readings are displayed as “—” when the logger is stopped. Once you begin logging, the readings shown are based on the reference water level and water density you entered.

## Gateways

Each tile includes the following information about the gateway:

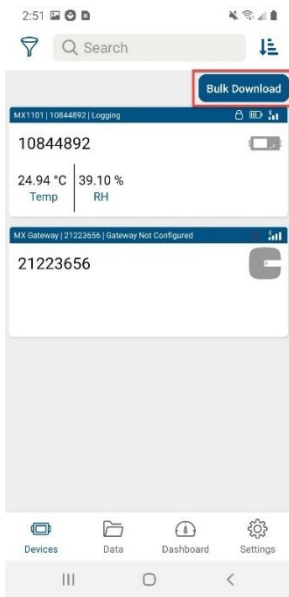


## Using Bulk Download

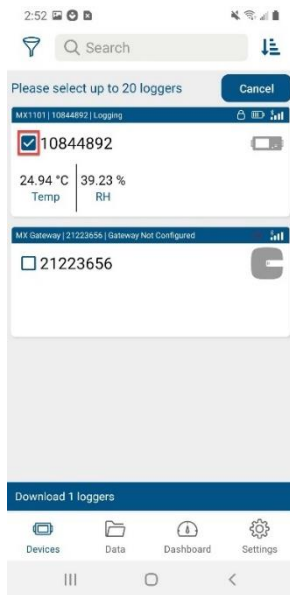
The Bulk Download feature saves you time and allows you to download data easily and efficiently. You can download data from up to 20 loggers at a time without having to connect to each logger.

On the Devices tab:

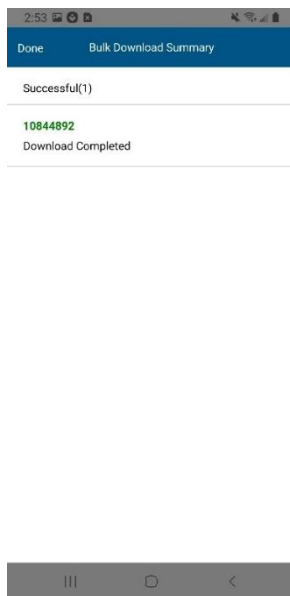
1. Click Bulk Download in the upper right corner of the screen.



2. The screen changes to Bulk Download mode. This changes the way the screen behaves when you tap on a logger tile. Tap on a tile to select it for Bulk Download. You can select up to 20 loggers. Text at the bottom of the page updates to indicate how many loggers are selected.



3. Click on Download X Loggers to begin the download. The downloads begin and run one after another. The screen displays the download queue.
4. Click Cancel to cancel the downloads and return to the Devices screen, not in Bulk Download mode.
5. The screen displays Download Completed when all the loggers are downloaded. It lists Successful downloads and Failed downloads.



**Note:** The Bulk Download feature does not work if you try to download data from a password-protected logger that has not been previously connected. This is because HOBObconnect has not stored the password. After connecting the logger and entering the correct password, the Bulk Download feature can download its data.

## Connecting to a Device

To connect to a device:

1. Tap Devices.
2. Find the logger or gateway to connect to by searching or scrolling through the tiles (wake up the logger first, if applicable).
3. Tap the tile to connect to the logger or gateway. Enter your password if prompted. For MX2501 loggers, you may be prompted to calibrate the logger before configuring it.

### Tips for Connecting to a Device

- Ensure Bluetooth is enabled on the phone, tablet, or computer.
- **MX100, MX1104, MX1105, MX2200, MX2300, or MX2501 loggers:** If the logger is in Bluetooth power saving mode, press the button on the logger to wake it up or remove the MX2203, MX2204, or MX2501 logger from the water if it is configured with Bluetooth Off Water Detect. **MX800 and MX20L loggers:** Wake the logger by holding the magnetic fob on the WAKE icon (the fob attached to the tapered coupler).
- A logger or gateway must be within range of the phone, tablet, or computer to connect to it (refer to the logger or gateway manual for range specifications). Check the signal strength for the logger or gateway if you are having trouble connecting to it. If the signal strength shows only one or two bars, move the phone or tablet closer to the device.
- Check the batteries in the logger. Ensure the batteries are installed properly in new loggers and replace batteries in old loggers if battery voltage is low.
- Change the orientation of the phone, tablet, computer, or computer dongle to ensure the antenna is pointed toward the logger or gateway (refer to the device manual for the antenna location). Obstacles between the antenna in your device and the logger or gateway may result in intermittent connections.
- If the phone, tablet, or computer does not connect to a logger or gateway that appears in the list or if devices are not appearing in the list as expected, close the app and reopen it. If the issue persists, try closing the app then powering down your device to force the Bluetooth connection to reset.
- **MX1102A loggers:** You cannot use HOBObconnect to connect to an MX1102A logger while a live USB session with HOBOWare® is underway. Disconnect the USB cable if you want to use the app to connect to the logger.
- **Gateways:** If the gateway is currently undergoing an automatic firmware update, the phone, tablet, or computer cannot connect to it. The LED on the gateway blinks yellow during a firmware update then resumes normal operation after a few minutes.

## Working with a Connected Logger

When the phone, tablet, or computer is connected to a logger, HOBObconnect displays the following screen. This screen centralizes all available options for the logger. Your logger will show the buttons for its features.

Tap the back arrow to return to the list of devices.

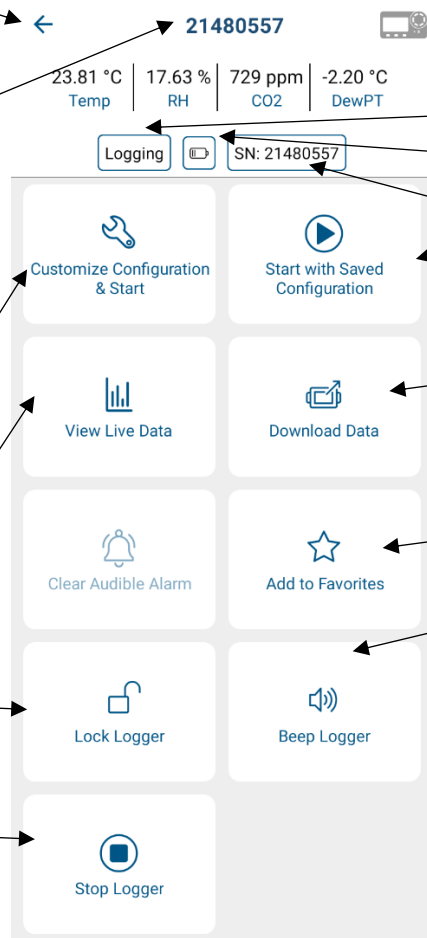
The logger's name or serial number and sensor readings. On some models, current readings are updated at a different rate than the logging interval and may not match what is currently displayed on the logger LCD (if applicable).

Tap to view the configuration settings or configure the logger.

Tap to view a graph of live data updated every 10 seconds.

Tap to lock the logger.

Tap to stop the logger.



Status of the logger

Remaining battery power

Serial number

Tap to start the logger with a saved configuration.

Tap to download data from the logger.

Tap to add the logger to your favorites.

Tap to send an audible beep to the logger. This feature is available only for certain loggers. In addition, each logger may have features such as Illuminate Logger that do not appear for all loggers. Logger-specific features appear at the bottom of this screen.


















**Note for MX2001 loggers:** When the logger is stopped, the water level reading does not reflect any reference water level and water density values you have entered (it reverts to a reference water level of zero and a water density of *Fresh Water adjusted for Temperature*). Once logging begins, the readings are then based on the reference water level and water density you entered.

### Additional Logger Info

At the bottom of the logger page, you can view the following information:

- Deployment No: The number of times the logger has been configured. You cannot edit this.
- Deployment Date: The date and time the logger was last configured. You cannot edit this. If you need to change the time zone for your next deployment, change the settings on your phone or tablet or update it when viewing data. See [Using the Data File Viewer](#).
- Logger model number
- Bluetooth signal strength
- Firmware version number
- Percentage of memory used (if applicable—not available for all loggers)

You can also access the following features:

Tap This Icon	To Do This
	Specify configuration settings and start the logger.
	Start with Saved Configuration (see <a href="#">Start with Saved Configuration</a> ).
	Start or resume logging. This is available if the logger was configured to start logging On Button Push or if the logger was configured to stop logging On Button Push and to Allow Button Restart (see <a href="#">Configuring a Logger</a> ).
	Stop logging.
	Tap to view live data.
	Tap to download data.
	Mark the logger as a favorite. You can then filter the list of devices to show only loggers marked as favorites. Tap this icon to unmark the logger as a favorite.
	Lock the logger. Set a password to prevent unauthorized users from connecting to the logger. Tap the icon, enter a password, and tap Set. Users without the password are not able to connect, configure, download data, or perform any other action with a locked logger. HOBObconnect remembers previously entered passwords, so you only need to enter the password once per logger.
	Manage Password. Use this option to set an updated password or remove the password using the Reset option. This option requires knowing the current logger password. See relevant logger manuals for instructions on how to physically reset the password if it is unknown.
	Conductivity Sensor Calibration. See <a href="#">MX800 Conductivity Sensor Calibration</a> .
	Reset to Factory Conductivity Sensor Calibration.
	Enter the reference water level and water density. For the MX802 logger with a CTD sensor, you must enter the reference water level and water density before you start logging. The sensor must be mounted in position when entering this information. You cannot change them once the logger starts logging or after the data is downloaded. For the MX2001 logger, the logger must be logging when you enter the reference water level and density. The reference water level will be associated with the next logged water level.
	Calibrate DO sensor using 100% <a href="#">DO saturation</a> .
	Calibrate DO sensor using the <a href="#">DO concentration</a> .
	Make the logger beep one time to help you locate it (MX1101, MX1102A, MX1104, and MX1105).
	Illuminate the logger LEDs for several seconds (MX100, MX800, MX20L, MX2200, MX2300, and MX2501).
	Clear an audible alarm on the logger (MX1101, MX1102A, MX1104, and MX1105). See <a href="#">Configuring a Logger</a> for details on the Audible Alarm setting.

**Tap This Icon**      **To Do This**



Update the firmware on the logger (appears only when new firmware is available). A logger readout is completed automatically at the beginning of the firmware update process. If there is a communication failure during the firmware update process, some loggers may revert to the previous firmware. **Note for MX2501 loggers:** You must recalibrate the logger after updating the firmware.

**Important:** Before updating the firmware on the logger, check the remaining battery level and make sure it is no less than 30%. Make sure you have the time to complete the entire update, which requires that your device remains within range of the logger during the update process. Do not switch to another app, turn off Bluetooth, or disturb the logger while the update is underway.

## Configuring a Logger

There are two options for configuring and starting a logger:

- **Customize Configuration & Start:** This option allows you to specify the setup of your logger to match your exact use case. See the [Customize Configuration & Start](#) section for more details.
- **Start with Saved Configuration:** This option applies the saved configuration for the logger family and starts the logger, allowing users to quickly and consistently apply the same configuration across loggers in the same family. When you select this option, you apply the saved configuration and start the logger. See [Start with Saved Configuration](#) section for details.

**Notes:**

- MX2501 loggers must be calibrated. You may be prompted to calibrate the logger automatically or you can tap Calibrate. See [Calibrating an MX2501 pH and Temperature Logger](#) for details.
- You can update the water parameters for an MX2001 logger after you configure it by tapping Calibrate. See [Updating Water Parameters for an MX2001 Water Level Logger](#) for details.


## Customize Configuration & Start

### Logger Name & Group

Setting	Description
Name	Type a name for the logger, which is also the default data file name. If you do not enter a name, the logger serial number is the name.
Group	Assign a logger to a group to help identify it. For example, if you have loggers deployed on three floors of a building, you can create a group for each of the three floors then add each of the loggers to the appropriate group. Tap Group then select an existing group or type a new group and tap Add.  <b>To delete a group:</b> Tap Group, press and hold the group you want to delete then tap . <b>To remove a logger from a group:</b> tap Group then select None.

### Logger Settings

Setting	Description
Logging Interval	Select the rate at which the logger takes measurements. Note that the faster the logging interval, the greater the effect on battery life and the shorter the logging duration. <b>Note:</b> If the logger is in burst logging mode, the logger takes measurements at the burst logging interval (described later in this section).  <div style="border: 1px solid black; padding: 5px; margin: 5px 0;"> <p><b>Important note for MX1102A loggers:</b> Battery life for MX1102A loggers is less than 6 months when logging CO<sub>2</sub> and selecting a logging or sampling interval faster than 5 minutes. Select logging and sampling intervals of 5 minutes or slower when the carbon dioxide sensor is enabled to prolong battery life. If you select intervals faster than 5 minutes, you must replace the batteries more often.</p> </div> <p><b>MX1104, MX1105, MX2200, MX2300, and MX2501 loggers:</b> If you configure an alarm, the logger uses the logging interval you selected as the rate to check for alarm conditions. If burst logging is on,</p>

Setting	Description
Logging Capacity	<p>however, the logger uses the burst logging interval as the rate to check for burst trigger conditions instead of the logging interval.</p> <p><b>MX2001 loggers only:</b> You can set a total of 8 logging intervals. Tap Logging Interval, tap Customize, enter a rate in hours, minutes, and seconds for Interval 1. Tap Add to set up additional logging intervals. For each interval, enter the rate and select the number of samples that will be recorded for the selected rate. <b>Note:</b> You cannot change the number of samples if you are using only one logging interval. Tap  to delete a logging interval.</p> <p><b>MX800 and MX20L loggers:</b> You can set up to 8 logging intervals with the option to pause logging for an interval and the option to repeat all intervals.</p>
Start Logging	<p>Tap Start Logging and choose one of the following:</p> <ul style="list-style-type: none"> <li>• <b>On Save.</b> Logging begins immediately after you save the configuration settings.</li> <li>• <b>On Next Interval.</b> Logging begins at the next whole interval as determined by the selected logging interval. This is useful if you want the logger to start and then subsequently log data on logical intervals. For example, if the logging interval is set to 5 minutes and it is currently 11:10 am, the logger starts at 11:15 am.</li> <li>• <b>On Button Push.</b> Logging begins when you tap Start in the app or you press the button on the logger (if applicable). <b>MX800 and MX20L loggers:</b> Start the logger by holding the magnetic fob on the WAKE icon.</li> <li>• <b>On Date/Time.</b> Logging begins on the date and time you specify. Select the date and time. Note that if you need to change the selected time zone, you must change your phone, tablet, or computer time zone settings and restart the app.</li> </ul>
Stop Logging	<p>Tap Stop Logging and choose from the options. <b>Note:</b> Regardless of the options you select, you can stop the logger at any time by connecting to it and tapping Stop Logging.</p> <p><b>Time Options</b></p> <ul style="list-style-type: none"> <li>• <b>Never Stop (Overwrites Old Data).</b> The logger does not stop at any predetermined time frame.</li> <li>• <b>On Date/Time.</b> Allows you to set the date and time you want the logger to stop logging. Note that if you need to change the selected time zone, you must change your phone or tablet's time zone settings and restart the app.</li> <li>• <b>After.</b> Allows you to set how long the logger should continue logging once it starts in days, hours, minutes, and/or seconds. For example, select 30 days if you want the logger to stop logging after 30 days.</li> <li>• <b>Stop When Memory Fills.</b> The logger continues recording data until the memory fills.</li> </ul>
Pause Options	<ul style="list-style-type: none"> <li>• <b>Pause on Button Push.</b> Allows you to stop logging by pressing the Start button on the logger for 3 or 4 seconds (not available for MX2001 and MX20L loggers).</li> <li>• <b>Allow Button Resume.</b> Allows you to pause and resume logging by pushing the Start/Stop button on the MX1101 logger or the top button on the MX1104 or MX1105 logger for 3 seconds. For the MX800 loggers, use the fob for Pause and Resume.</li> </ul>
Logging Mode	<p>Tap Logging Mode, select Fixed or Burst Logging Mode and choose any applicable setting (all models except MX100). <b>MX800, MX20L, and MX2001 loggers:</b> You cannot change the logging mode if you have multiple logging intervals configured.</p> <p><b>Fixed Logging Mode</b></p> <p>The logger records data for enabled sensors and selected statistics at the logging interval selected. Any selected statistics are calculated at a sampling rate you specify with the results recorded at each logging interval.</p> <ol style="list-style-type: none"> <li>1. Select the statistics you want the logger to record for all enabled sensors at each logging interval: <ul style="list-style-type: none"> <li>• Maximum, the highest value from the sampling period</li> </ul> </li> </ol>

Setting	Description
	<ul style="list-style-type: none"> <li>• Minimum, the lowest value from the sampling period</li> <li>• Average, the mean of all values during the sampling period</li> <li>• Standard deviation from the average for all sampled values (requires average).</li> </ul> <p><b>Note:</b> Sensor values are automatically recorded in fixed logging mode; in addition, you can log any additional statistics that you may require.</p> <p>2. Set the Statistics Sampling Interval, which is the rate used for calculating statistics and must be a factor of the logging interval. For example, if the logging interval is 1 minute and you select 5 seconds for the sampling rate, the logger takes 12 sample readings between each logging interval (one sample every 5 seconds for a minute) and uses the 12 samples to record the resulting statistics at each 1-minute logging interval. Note that the more frequent the sampling rate, the greater the impact on battery life.</p>
	<p><b>Important note for MX1102A loggers:</b> Battery life for MX1102A loggers is less than 6 months when logging CO<sub>2</sub> and selecting a logging or sampling interval faster than 5 minutes. Select logging and sampling intervals of 5 minutes or slower when the carbon dioxide sensor is enabled to prolong battery life. If you select intervals faster than 5 minutes, you must replace the batteries more often.</p>
	<p><b>Burst Logging Mode</b></p> <p>The logger records data for enabled sensors at the fixed logging interval until the readings rise above or fall below specific limits, at which time the logger switches to a faster burst logging rate until the readings return to normal. For example, the logger is configured with a logging interval of 5 minutes and burst logging is configured to log every 30 seconds when the temperature rises above 85°F (the high limit) or falls below 32°F (the low limit). This means the logger records data every 5 minutes if the temperature remains between 32°F and 85°F. Once the temperature rises above 85°F, for example, the logger switches to the faster logging rate and records data every 30 seconds until the temperature falls back to 85°F. At that time, logging then resumes every minute at the fixed logging interval. Similarly, if the temperature falls below 32°F, for example, the logger switches to burst logging mode again and records data every 30 seconds. Once the temperature rises back to 32°F, the logger returns to fixed mode, logging every 5 minutes.</p> <ol style="list-style-type: none"> <li>1. Select the burst logging interval, which must be faster than the logging interval.</li> <li>2. Select Low and/or High for each sensor and either type or drag the slider to set the low and/or high values.</li> </ol> <p>Notes:</p> <ul style="list-style-type: none"> <li>• Sensor alarms, statistics, and the Stop Logging option Never Stop (Overwrites Old Data) are not available in burst logging mode.</li> <li>• The actual values for the high and low burst limits are set to the closest value supported by the logger.</li> <li>• <b>MX1101, MX1102A, and MX2001 loggers:</b> Once the logger is configured, the high and low burst logging limits are checked only once every 15 seconds. If you set the logging interval to less than 15 seconds and the sensor reading falls outside the limits, then burst logging does not begin until the next 15-second cycle.</li> <li>• <b>MX800, MX1104, MX1105, MX20L, MX2200, MX2300, and MX2501 loggers:</b> The high and low burst limits are checked at the burst logging interval rate whether the logger is in fixed or burst mode. For example, if the logging interval is set to 1 hour and the burst logging interval is set to 10 minutes, the logger always checks for burst limits every 10 minutes.</li> <li>• Once the high or low condition clears, the logging interval time is calculated using the last recorded data point in burst logging mode, not the last data point recorded in fixed mode. For example, a logger has a 10-minute logging interval and logged a data point at 9:05. Then, the high level was surpassed and burst logging began at 9:06. Burst logging then continued until 9:12 when the sensor reading fell back below the high level. Now back in fixed mode, the next logging interval is 10 minutes from the last burst logging point, or 9:22 in this case. If burst logging had not occurred, then the next data point would have been at 9:15.</li> <li>• If you stop the logger with a button push while in burst logging mode, a New Interval event is automatically logged and the burst condition is cleared, even if the actual high or low condition has not cleared. The logger checks the high and low conditions when logging resumes (if the</li> </ul>

Setting	Description
	logger was configured with Allow Button Resume selected; MX800, MX1101, MX1104, and MX1105 loggers only).
Show LCD	Tap the toggle to control whether the LCD on the logger remains illuminated during logging (MX1101, MX1102A, MX1104, and MX1105 loggers). When Show LCD is set to off, the LCD on the logger does not show the current reading, status, or other information during logging. You can temporarily turn the LCD screen on by pressing the button on the logger for 1 second. The LCD remains on for 10 minutes. In addition, you can view the status of any in-range logger on your phone or tablet regardless of the logger's LCD setting.
Show LED	Tap the toggle to control whether the LEDs on the logger are visible during logging (MX100, MX800, MX20L, MX2200, MX2300, and MX2501 models). When Show LED is set to off, the alarm and status LEDs on the logger are not illuminated during logging (the alarm LED does not blink if an alarm trips). You can temporarily turn on LEDs by pressing the button on the logger for 1 second (or use the magnetic fob).
Bluetooth Always On	Tap the toggle to control whether the logger advertises or regularly sends out a Bluetooth signal for the app to receive (MX100, MX1104, MX1105, MX2201, MX2202, and MX2300 loggers). When Bluetooth Always On is set to off, the logger advertises only when you press the button on the logger or use the magnetic fob (MX800 and MX20L loggers) to wake it up, thereby preserving as much logger battery power as possible. <b>Note:</b> If you are using an MX Gateway, Bluetooth is automatically enabled to ensure regular gateway uploads can occur.
Power Saving Mode	Select one of the following options (MX2203, MX2204, and MX2501 models): <ul style="list-style-type: none"> <li>• <b>Bluetooth Always Off.</b> The logger advertises or regularly sends out a Bluetooth signal for the app to receive only when you press the HOBObutton on the protective logger boot (MX2203 and MX2204 loggers), press the switch (MX2501), or use the magnetic fob (MX800 and MX20L loggers) to wake it up. This option uses the least logger battery power.</li> <li>• <b>Bluetooth Always On.</b> The logger always advertises. This option uses the most battery power.</li> </ul>
Soil Type	<b>MX2306/2307 loggers only:</b> Select one of the following options: <ul style="list-style-type: none"> <li>• <b>Mineral.</b> For common soils, with EC values up to 8 dS/m.</li> <li>• <b>Soilless.</b> For potting soils, perlite, and peat moss with EC values up to 8 dS/m.</li> <li>• <b>Apparent Dielectric Permittivity.</b> Raw measurements that can be used in published equations such as the Topp equation to derive soil moisture data.</li> </ul>
Enable Percent of Field Capacity	<b>MX2306/2307 loggers only:</b> Select Enable to see soil moisture as the percent of field capacity. Enter the Field Capacity for the soil at the site in Volumetric Water Content on a scale of 0.01 to 1.00. Note that the Percent of Field Capacity values reported is limited to the range of 0% to 200%. If you select Apparent Dielectric Permittivity as your soil type, the option for Percent of Field Capacity is disabled.
Reference Water Level and Water Density	<b>MX802 and MX2001 loggers:</b> The current reference water level and water density are shown for information only. For the MX802 with CTD sensor, set these before you start logging. For MX2001 loggers, you can update these values during the deployment as needed (see <a href="#">Updating Water Parameters for an MX2001 Water Level Logger</a> ) or in the HOBObfile (see <a href="#">Using the Data File Viewer</a> ).
pH Calibration	<b>MX2501 loggers only:</b> This shows the slope, offset, calibration points, and calibration time in place after calibrating the logger. See <a href="#">Calibrating an MX2501 pH and Temperature Logger</a> for details.
Upload Data via	Select how logger data is uploaded to HOBOblink. Uploading to HOBOblink is optional. You can use HOBObconnect to download logger data without creating a HOBOblink account. Select only one of the following: <ul style="list-style-type: none"> <li>• <b>Gateway.</b> The gateway automatically uploads data from the logger to HOBOblink on a regular basis (see <a href="#">Configuring a Gateway</a> for details on setting up a gateway). <b>Note:</b> MX100, MX800, and MX20L series loggers are not supported by the gateway.</li> <li>• <b>HOBObconnect.</b> Upload data from any device running the HOBObconnect app. The data is stored on the device. You can configure HOBObconnect to automatically upload the data to HOBOblink every time you read out the logger with the app (see <a href="#">HOBObconnect Settings</a>), or you can share the data</li> </ul>

Setting	Description
	using email or messaging apps. MX800 and MX20L loggers do not currently support this automatic data upload to HOBOblink.
	<b>Note:</b> If Upload Data via is dimmed, you have not yet added a HOBOblink account. See <a href="#">HOBObconnect Settings</a> for details.

## Sensors and Alarm Setup

Sensors & Alarm Setup Setting	Description
	<p>Follow these steps for general sensor and alarm setup. See the sections on MX1102A and MX1104/MX1105 sensor setup for additional instructions for those models.</p> <ol style="list-style-type: none"> <li>1. Tap the toggle to Enable Logging (if necessary).</li> <li>2. Enter a name for the sensor or channel.</li> <li>3. To set an alarm for the sensor, set the low and/or high values.</li> <li>4. Under Duration, select how many hours and/or minutes you want to elapse before the alarm is tripped then select one of the following: <ul style="list-style-type: none"> <li>• Cumulative. The alarm trips once the sensor reading is out of the acceptable range for the selected duration any time during logging. For example, if the high alarm is set to 85°F and the duration is set to 30 minutes, then the alarm trips once the sensor readings have been above 85°F for a total of 30 minutes since the logger was configured.</li> <li>• Consecutive. The alarm trips once the sensor reading is out of the acceptable range continuously for the selected duration. For example, if the high alarm is set to 85°F and the duration is set to 30 minutes, then the alarm trips only if all sensor readings are 85°F or above for a continuous 30-minute period.</li> </ul> </li> <li>5. Repeat the steps for another sensor if applicable.</li> </ol> <p>Notes:</p> <ul style="list-style-type: none"> <li>• If you are logging Temperature and RH measurements, a dew point series is also calculated and available in the data file upon readout or when viewing live data.</li> <li>• <b>MX2001:</b> Differential pressure must be enabled to calculate water level. Temperature must be enabled to log absolute pressure. Temperature must also be enabled if you selected the water density option “Fresh Water adjusted for Temp.”</li> <li>• The actual values for the high and low alarm limits are set to the closest value supported by the logger.</li> <li>• MX1101, MX2001, and MX1102A loggers powered by USB: check alarm limits every 15 seconds. MX1102A loggers powered by batteries: check CO<sub>2</sub> alarm limits every 5 minutes (still check temperature and RH alarm limits every 15 seconds). If you are configuring a CO<sub>2</sub> sensor alarm for a battery-powered logger, we recommend that the duration you select is divisible by 5 and a minimum of 5 minutes.</li> <li>• MX800, MX20L, MX1104, MX1105, MX2200, MX2300, and MX2501 loggers: check alarm limits at each logging interval. If burst logging is configured, however, the logger uses the burst logging interval as the rate to check for burst trigger conditions instead of the logging interval.</li> <li>• The alarm icon is illuminated on the logger LCD (if applicable) when the alarm trips. You can also press the Alarms/Stats button (MX1101), Clear/Next button (MX1102A), or the bottom button (MX1104 and MX1105) on the logger to view the value that triggered the alarm. The LCD (if applicable) displays the farthest out-of-range sample during the deployment.</li> <li>• For Specific Conductivity with MX800 W-CT or W-CTD sensors, you must enter the temperature compensation method to use for the water where you plan to deploy the logger. This will typically be different from the temperature compensation coefficient of the calibration solution.</li> </ul>

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### ***MX1102A Sensor Setup***

When configuring the CO<sub>2</sub> sensor for the MX1102A logger, these settings are also available:

- **Altitude Compensation.** If the logger is deployed at a location above or below 305 meters (1,000 feet), select Enable Altitude Compensation. Enter the altitude above sea level in meters or feet. **Note:** In normal use, the CO<sub>2</sub> measurement varies by approximately 0.135% of the reading for each mbar change in barometric pressure (the sensor is calibrated at 1,013 mbar). Use altitude compensation when deploying the logger for the best CO<sub>2</sub> accuracy possible.
- **Manual Calibration.** Manual calibration is the best way to calibrate your logger. Use this option if you want to manually calibrate the logger to 400 ppm using the Calibrate button on the logger. This requires taking the logger outside in fresh air on a dry day or to an indoor location that is unoccupied and has no connection to a ventilation system for five minutes on a regular basis. This is recommended if the logger is deployed in a building that is always occupied, if you want the logger to be calibrated more frequently than every eight days (the normal auto calibration schedule), or if you want to calibrate the logger immediately after logging begins. **Note:** Every time the logger is started, auto calibration occurs after 24 hours and then again after eight days unless a manual calibration is performed first.
- **Auto Calibration.** Tap Automatic if you want the logger to automatically calibrate within the first 24 hours after logging begins and then every eight days thereafter. The logger will be calibrated based on the average of the three CO<sub>2</sub> measurements that follow the lowest CO<sub>2</sub> value identified during the 24-hour or 8-day time period as applicable.

**Important:** Accurate auto calibration requires the building or location where the logger is deployed to be empty at least once during the eight-day period (for example, an empty office building during the weekend or overnight will typically have background CO<sub>2</sub> levels of 400 to 450 ppm).

If the logger is deployed in an area where the CO<sub>2</sub> level does not go down to 400 ppm during the eight-day time period, then manual calibration should be performed regularly instead. Otherwise, inaccurate CO<sub>2</sub> readings will be reported. If you plan on using auto calibration but the building will be occupied during the first day after logging begins, then you can use the manual calibration option as well. You can manually calibrate the logger immediately after logging begins and use auto calibration thereafter. **Note:** Once a manual calibration is performed, the 24-hour auto calibration is canceled, and an auto calibration will be performed eight days from the time the manual calibration occurred. (Restarting the logger resets the 24-hour/8-day auto calibration routine).

Refer to the manual [www.onsetcomp.com/support/manuals/22504-mx1102a-manual](http://www.onsetcomp.com/support/manuals/22504-mx1102a-manual) for additional details on calibrating the logger.

### ***MX1104/MX1105 Sensor Setup***

When configuring external sensors for the MX1104 and MX1105 loggers, follow the instructions and guidelines in this section.

- **For self-describing sensors:** The sensor type is automatically detected when you plug it in (i.e., 200 Amp CT as shown in the following example).

**Sensors & Alarm Setup Setting**      **Description**

Self-describing sensor. Status shows Connected. The app automatically detects the Sensor Type, which is 200 Amp CT.

Tap to toggle Enable Logging for this sensor.

Tap Alarms, then set alarms for the sensor.

- **For other external sensors:** The app detects that you have plugged in a sensor, but it does not detect the sensor type. You must select the correct sensor or cable type as shown in the following example.

External sensor (not self-describing) plugged in and listed as Connected.

Tap this arrow to open the Sensor list.

Scroll through the list, select the sensor or cable, and click OK.

**Notes on all external sensors:**

- If custom scaling is available, enter the Series Name, Unit, and values for High and Low under the selected sensor.
- For MX1104 loggers, the external sensor is channel 1. For MX1105 loggers, the sensor channel number is listed above the analog sensor port where the external sensor is connected.
- The app displays Connected in green text if the sensor is plugged in correctly and Disconnected in red text if a sensor has been unplugged. If Sensor Error in red text is displayed, make sure the sensor or cable is fully seated and installed properly in the logger analog sensor port.
- If you plug in a self-describing sensor in a port that was previously configured for a different sensor, Connected: <sensor type> appears in orange text until you reconfigure that channel for the new sensor.
- Make sure you select the correct sensor type in the app if you are not using self-describing sensors. If you select the wrong type, incorrect data is logged. In addition, if you unplug a sensor, the app still displays the last selected sensor type for that channel. If you plug in an

Sensors & Alarm Setup Setting	Description
	<p>external sensor other than a self-describing sensor, the previously selected sensor type is still selected. Be sure to choose the correct sensor type for the new sensor that you plugged in.</p> <ul style="list-style-type: none"> <li>• If you disconnect a sensor or if it is not fully inserted into the analog sensor port while the logger is logging, a warning icon appears on the LCD for that channel and the logger beeps once. Use the top button on the logger to view the channel with the warning, which also displays dashes instead of a valid current reading. Erroneous readings are displayed in the app and logged depending on the logging interval while the sensor is disconnected (e.g., if a sensor is disconnected for 5 minutes and the logging interval is set to 1 minute, then there will be 5 erroneous data points while the sensor was disconnected). When the sensor is reconnected, the warning icon clears, the correct value replaces the dashes for the channel on the LCD, and the correct readings are logged.</li> <li>• Be sure to disable logging for any channels without external sensors installed. If logging is enabled for a channel without a sensor, a warning icon appears on the LCD for that channel and the logger beeps once.</li> <li>• Do not swap out sensors or move sensors to empty ports while the logger is logging. Stop the logger before making any physical changes to the sensors.</li> <li>• Refer to the product manual at <a href="http://www.onsetcomp.com/support/manuals/23968-mx1104-and-mx1105-manual">www.onsetcomp.com/support/manuals/23968-mx1104-and-mx1105-manual</a> for additional details on installing external sensors.</li> </ul>

## Alarm Settings

Setting	Description
Audible Alarm	<p>Tap the toggle to turn the audible alarm for the logger off or on (MX1101, MX1102A, MX1104, and MX1105 loggers only). If the audible alarm is on, the logger beeps once every 30 seconds when an alarm trips until one of the following happens (whichever occurs first):</p> <ul style="list-style-type: none"> <li>• You clear the alarm in the app.</li> <li>• You press one of the buttons on the logger.</li> <li>• Seven days have passed.</li> </ul> <p>Notes:</p> <ul style="list-style-type: none"> <li>• Once cleared, an audible alarm starts beeping again if the sensor values go out of the normal range. Even if an audible alarm is cleared, a visual alarm may remain on the logger LCD and in the app depending on the settings selected for maintaining visual alarms or because the alarm condition may still be in effect. In addition, an audible alarm continues beeping when the sensor values have returned to the normal range until it is cleared.</li> </ul> <p>We recommend that you enable this feature only if you have regular access to the logger so that you can easily turn off the beeping. Note that battery life is slightly reduced each time the audible alarm sounds.</p>
Show Visual Alarms Until	<p>Select one of the following options to determine how long the alarm icon remains visible in the app (and illuminated on the logger LCD screen if applicable) after an alarm trips:</p> <ul style="list-style-type: none"> <li>• <b>Logger Reconfigured (all models except MX100 and MX2001).</b> The alarm icon remains visible until the next time the logger is reconfigured.</li> <li>• <b>Sensor in Limits (all models except MX100).</b> The alarm icon remains visible until the sensor reading returns to the normal range between any configured high and low alarm limits.</li> <li>• <b>Alarm Button Pressed (MX1101, MX1102A, MX1104, and MX1105 loggers).</b> The alarm icon remains visible until you press the Alarm/Stats button (MX1101), the Clear/Next button (MX1102A), or the bottom button (MX1104 and MX1105) on the logger.</li> </ul> <p>Notes:</p> <ul style="list-style-type: none"> <li>• <b>MX100 loggers:</b> The Maintain Visual Alarms Until setting is selected automatically when an alarm is configured. When an alarm trips, the logger alarm LED blinks every 4 seconds (unless Show LED is disabled), an alarm icon appears in the app, and an Alarm Out of Range event is</li> </ul>

Setting	Description
	<p>logged. Even if the temperature reading returns to a normal range, the alarm indicator will not clear in the app and the alarm LED will continue to blink.</p> <ul style="list-style-type: none"> <li>• <b>MX1101, MX1102A, MX1104, and MX1105 loggers:</b> Although an audible alarm and a visual alarm can occur at the same time when a sensor alarm is tripped, they are cleared in different ways. The audible alarm can be cleared as described under the Audible Alarms section. Meanwhile, a visual alarm is cleared as determined by the three settings above. You may clear a beeping audible alarm, but the visual alarm remains on the LCD (if applicable) and in the app until the logger is reconfigured, the sensor is in limits, or the button is pressed (if applicable) -- whichever setting you selected. If the logger was configured to stop logging with a button push, any tripped alarms will be cleared automatically when logging is stopped and no Alarm Cleared event will be logged in the data file. This ensures that the logger will start checking for alarm conditions when logging resumes (if the logger was configured with Allow Button Restart selected; MX1101, MX1104, and MX1105 loggers only).</li> </ul>

## Start with Saved Configuration

This option allows you to apply the same configuration quickly and consistently across loggers within the same family. A saved configuration is specific to the installation of HOBObconnect and cannot be shared across devices. This feature is not available for MX800 and MX20L loggers.


- **Default Saved Configuration:** If you have not configured a logger within a logger family, HOBObconnect will apply a default configuration based on the most common configuration selections. Open the Customize Configuration & Start option to review the default selections.
- **Custom Saved Configuration:** To update the saved configuration, configure a logger with your desired setup using the Customize Configuration & Start option. When you select Start, you will be asked whether you want to update the saved configuration for this logger family. Select Yes to update and then use the Start with Saved Configuration options for other loggers within this family to apply the updated Saved Configuration.

Logger Name, Group, and analog inputs are excluded from the Saved Configuration. Use the Customize Configuration & Start option to set those options.

## Updating Water Parameters for an MX2001 Water Level Logger

To update the reference water level and water density for an MX2001 water level logger while the logger is logging:

1. Tap Devices.
2. Find the logger by searching or scrolling through the tiles and tap the tile to connect to the logger.
3. Tap Calibrate.
4. Enter a new reference water level and select the unit type.
5. Select a different water density if needed or enter your own next to Manual Input.
6. Tap Save. Changes will take effect immediately. This will also result in reference water level and water density events in the HOBOb file.

**Note:** You can also edit the water parameters after the logger is downloaded by tapping  when viewing a data file. See [Using the Data File Viewer](#) for details.

## Calibrating an MX2501 pH and Temperature Logger

The MX2501 pH and temperature logger must be calibrated for accurate pH readings using pH 7, 4 and/or 10 buffers. To calibrate the logger, you will need:

- Deionized or distilled water and a squirt bottle to rinse the pH sensor.
- The logger with the pH electrode installed and the copper guard removed.
- Calibration solution (also called buffer solution) poured into beakers. You must calibrate the logger using two solutions: pH 7 and either 4 or 10. You can also calibrate using all three.

## Notes before starting calibration:

- pH values of calibration buffers and samples vary depending on their temperature. It is important that the logger is calibrated in buffers that have the same temperature as that of the sample. Refer to the chart on the calibration buffer bottles or in the logger manual for the effect of temperature on the buffer pH values.
- When placing the logger in a buffer solution, make sure the sensor end cap, temperature sensor, and closure cap are submerged in the solution.
- This section provides an overview on calibrating the logger. For additional details, refer to the product manual at [www.onsetcomp.com/support/manuals/22511-mx2501-manual](http://www.onsetcomp.com/support/manuals/22511-mx2501-manual).

## To calibrate the MX2501 logger:

1. Tap Devices. Push the button on the mounting end of the logger to wake it up (if necessary). Find the logger by searching or scrolling through the tiles.
2. Tap the tile to connect to the logger. You may be automatically prompted to calibrate the logger if pH electrode has never been calibrated, if the last calibration is more than seven days old, or if the firmware was updated. If you are not automatically prompted, then tap Calibrate.
3. Use a squirt bottle to rinse the pH sensor with deionized or distilled water.
4. Place the sensor end of the logger in the pH 7 solution and tap Start.
5. Once the pH reading is stable, tap Confirm.
6. Rinse the pH sensor with deionized or distilled water.
7. If you are using the pH 4 buffer, place the sensor end in the pH 4 solution and tap Start. If you are not using the pH 4 buffer, tap Skip and go to step 9.
8. Once the pH reading is stable, tap Confirm. Rinse the pH sensor with deionized or distilled water.
9. If you are using the 10 buffer, place the sensor end in the pH 10 solution and then tap Start. Once the pH reading is stable, tap Confirm. If you are not using the pH 10 buffer, tap Skip.
10. Verify that the slope and offset are acceptable, and tap Save. If the slope and offset are not acceptable, then tap the back arrow and repeat the calibration steps in this section as needed.

**Important:** After the calibration is complete, be sure to rinse the pH sensor with deionized or distilled water. Select any configuration settings as described in [Configuring a Logger](#). **If you will not be deploying the logger within the next 10 minutes, attach the logger to the storage solution.**

## Notes:

- The date of the last calibration, the slope and offset values, and the buffers used for the calibration are listed under the Deployment Information in the Configuration screen for reference.
- If the status message during calibration indicates the reading is invalid or it never stabilizes, try the following:
  - Make sure the sensor is in the correct buffer solution or try rinsing the sensor and restarting the calibration.
  - Remove the sensor from the calibration solution and clean it (refer to the product manual at [www.onsetcomp.com/support/manuals/22511-mx2501-manual](http://www.onsetcomp.com/support/manuals/22511-mx2501-manual) for details). Restart the entire calibration process.
  - Inspect the sensor to make sure it is not damaged. **Note:** There could be microcracks on the glass bulb of the electrode that may not be visible to the human eye.
  - Replace the pH electrode if it is older than 6 months. A pH electrode has a 6-month expected life and will produce unstable readings if it is older than 6 months.
- If the reading reported in the app is acceptable for your deployment even though it is reported as unstable, you can tap Stop and then Confirm and proceed with the calibration.
- You can calibrate the logger while it is logging. After the calibration is saved, any new data logged will use the new calibration. Data logged before the new calibration was saved will use the old calibration data. If you do not want data in a single file to be based on more than one calibration, then stop the logger and read it out. You can then calibrate it and reconfigure it.

## MX800 Conductivity Sensor Calibration

**Note:** Calibrate the conductivity sensor before the logger starts logging. If the logger is already logging, stop it to recalibrate it and then restart it.

To perform the conductivity calibration, you need the temperature coefficient for the calibration solution you are using. If you are using a potassium chloride solution, 1.91%/C is a good coefficient to use. For the most precise temperature compensation, see [Calculating a More Accurate Temperature Coefficient](#).

### Preparation

Follow these steps for the most accurate calibration.

We recommend soaking the sensor for 24 hours before calibrating it.

- The sensor connectors are not waterproof when disconnected; attach the sensor to an MX800 logger or sensor cable before putting it in the water, to avoid the chance of any water in the connection.
- If you are calibrating at 1,413  $\mu\text{S}/\text{cm}$  or less, use distilled or deionized (DI) water. For higher value calibration solutions, use tap water for the pre-soak.
- Rinse the sensor in tap water before putting it into the pre-soak water.
- Pre-soak in the space that will be used for calibration so that the sensors will have reached temperature equilibrium before the calibration. This space should be between 15° and 30°C, and the closer to 25°C the better.
- We recommend calibrating the sensor without the anti-fouling guard on. However, if you want to calibrate with the anti-fouling guard on, ensure it is not trapping any air bubbles.

Choose your calibration solutions as follows:

- We recommend using Potassium Chloride (KCl) conductivity standards such as the ones sold by Onset (COND-CAL-x)
- We recommend using two calibration solutions that span your expected measurement range, one at the low end and one at the high end of the range.
- You can use up to 8 calibration points.
- You will need beakers for each calibration solution and rinse solutions of the same value.
- You will need beakers that allow the sensor to be submerged at least 2".
- Place all calibration solutions, rinse solutions and loggers with sensors in the area where you will be doing the calibration. Do this in advance of the calibration so that they have time to reach the room temperature.

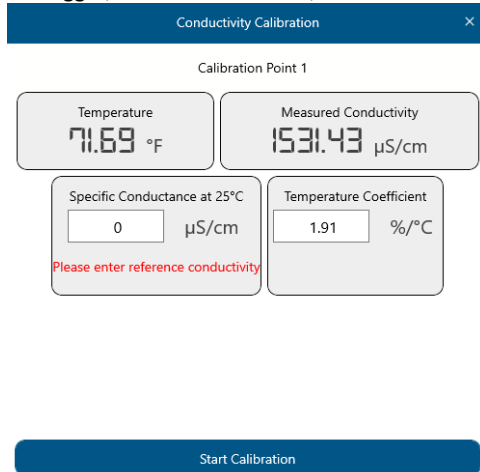
### Calibrating the Sensor

**Note:** Start with the lowest conductivity and go up to higher conductivity.

When calibrating, for each calibration point:

1. Thoroughly rinse in deionized (DI) or distilled water. For calibration points higher than 1,413  $\mu\text{S}/\text{cm}$ , you can rinse it in tap water.
2. Submerge and rinse the sensor in a beaker with the pre-rinse calibration solution (that has the same value as reference solution). Submerge the sensor to at least 2" and tap the sensor and gently stir it to remove air bubbles.
3. Remove the sensor from the pre-rinse and gently shake off excess rinse solution.
4. Place the sensor in a second beaker with fresh reference calibration solution. Submerge the sensor to at least 2" and tap the sensor and gently stir it to remove air bubbles.
5. Enter the calibration screen in HOBObconnect (if you're not already there). To do so, hold the magnetic fob onto the WAKE icon on the logger. When you see the logger tile appear in HOBObconnect, click that tile. If HOBObconnect prompts you to calibrate

the logger, click Yes. Otherwise, click Conductivity Calibration. The following window opens.



6. Enter the Specific Conductance and the Temperature Coefficient of the reference calibration solution into the calibration screen. 1.91%/°C is the standard Temperature Coefficient for Potassium Chloride reference solutions. For even greater accuracy, calculate a temperature-specific temperature coefficient as described in Calculating a More Accurate Temperature Coefficient.
7. Tap Start Calibration. Once the sensor has been in the calibration solution for at least two minutes, and the app indicates the reading is stable, tap Confirm.
8. To add another calibration point, repeat the above steps, staying in the HOBOnet calibration loop.
9. Once you have entered the desired number of calibration points, save your calibration.
10. When done, rinse the sensor with tap and DI water (deionized water) to prevent salt from hardening on the electrodes.

**Notes:**

- If you become disconnected from your logger during the calibration process it is possible to resume the calibration. You must use the same device used for the initial calibration points.
- For the best accuracy, if you are going to use your logger again soon, store the sensor in tap water after calibration until it is deployed.
- For longer term storage, it is ok to store the sensor dry.
- You can do this calibration in the field, but it will not be as accurate.
- As an alternative to lab calibration solutions, you may use seawater from the site in combination with a calibrated conductivity meter that can provide the specific conductance values to enter in HOBOnet. Remember, this may not be as accurate.

**Calculating a More Accurate Temperature Coefficient**

If the temperature in the space where you are performing your calibration is within a couple of degrees of 25°C and you are using a potassium chloride reference solution, use the default temperature coefficient of 1.91%/°C.

For temperatures that are significantly higher or lower than 25°C, look for a table on the calibration solution bottle that shows the conductivity at a range of temperatures such as the one below.

The calibration solution label shows the electrical conductivity (EC) values at multiple temperatures. Find the EC at the temperature closest to the current temperature. To calculate the temperature coefficient, use the following formula:

$$\text{Temperature Coefficient} = ((\text{SC} - \text{ECt}) / \text{SC}) / (25 - \text{T})$$

Where This	Means This
SC	Rated specific conductivity of the calibration solution at 25°C.
T	The closest temperature on the label to the current temperature.
ECt	Electrical conductivity at T

**Example:**

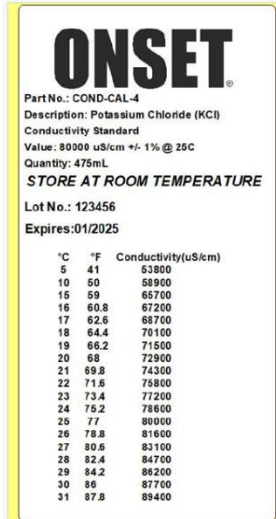
The current temperature is 20.3°C for the 80,000 µS/cm reference calibration solution with the label below.

Temperature Coefficient =  $((80,000 - 72,900) / 80,000) / (25 - 20)$

= 8.875% / 5°C

= 1.78%/°C

The result is that the temperature coefficient is 1.78%/°C.



## MX800 DO Sensor Calibration

For the best accuracy, we recommend calibrating the DO sensor when you install a new DO sensor cap or before a new deployment.

There are two calibration options:

- DO Percent Saturation Calibration, which is the most common method.
  - Can use the calibration boot supplied with the sensor or 100% DO saturated fresh water using a bubbler.
  - Requires barometric pressure: If you calibrate it with an MX802 logger, the calibration software uses the barometric pressure reading from that logger. If you calibrate it with an MX801 you will need a source for the current barometric pressure reading.
- DO Concentration Calibration
  - This method requires an accurate way to measure the salinity-adjusted DO concentration in mg/L, such as a meter or a Winkler titration.
  - This method works with either fresh or saltwater reference solutions.
  - You will also need to enter the salinity of the water.

Both methods allow for either a 1-pt or 2-pt calibration, with the second point being a zero-point calibration. In most cases, a 1-pt calibration is enough to achieve full accuracy. In most cases the sensor's factory zero point calibration meets the accuracy specification without requiring you to do a zero-point calibration. The zero-point calibration will only make a difference for waters with DO levels of 4 mg/L or less. Furthermore, if you do a 0-point calibration in sodium sulfite solution, you must be very careful not to leave any residue on the sensor since it can affect the accuracy of your measurements.

**Important:** Calibration affects data only in future deployments; any data already logged is based on previous calibration values.

### DO Percent Saturation Calibration

To complete these steps, you need fresh water, the calibration boot and sponge supplied with the logger, and a source for current barometric pressure at your current location. If you are calibrating to 0% saturation, you also need an accurate 0% DO calibration solution such as sodium sulfite solution and a beaker that can hold 5 cm (2") of calibration solution.

The fresh water, logger, and sodium sulfite (if applicable) should be left out in the lab where the calibration is being done long enough so that they are at room temperature. If the logger was deployed previously, make sure the sensor is clean and dry (see Maintain the Logger and Sensors for more details).

### **Step 1: 100% Saturation Calibration**

1. Make sure the sensor is attached to a HOBOb MX800 series logger and that a DO sensor cap is on the sensor, held in place with the guard that came with the DO sensor (not the anti-fouling guard).
2. Wet the small sponge with fresh water. Squeeze out any excess water.
3. Place the sponge in the end of the calibration boot, being sure to press it all the way to the end with the hole.
4. Insert the sensor in the calibration boot to the line marked “calibration boot”. This ensures there is enough space between the end of the sensor and the sponge (the logger should not be pressed up tightly against the sponge).
5. Connect to the logger using HOBObconnect. Stop the logger if it is currently logging.
6. Select DO Percent Saturation Calibration.
7. Use the countdown timer to know when the sensor has been in the boot long enough to reach temperature equilibrium. Once the sensor has been in the boot for 10 to 15 minutes, click Proceed to Calibration.
8. The screen shows the current temperature and DO that the sensor is reading. The DO reading shown is based on the most recent calibration. If the DO sensor is connected to an MX802 logger, the screen shows its current barometric pressure reading. If the sensor is connected to an MX801 logger, enter the current barometric pressure from a nearby meter or MX802 logger in the space.
9. Start the calibration. The software will take a series of readings and notify you when the readings are stable.
10. Once the readings are stable, tap confirm to accept the calibration point.  
**Note:** If you decide you do not need to change the calibration, click “X” to cancel the calibration and revert back to the last saved calibration values.
11. This calibration summary screen shows the temperature, measured uncalibrated DO value, and the barometric pressure for this calibration point. (Note that the measured uncalibrated DO value may be different than the DO value shown on the previous screen, which was the value measured using the previous calibration.)
12. If you are doing just a 1-point calibration, tap Finish Calibration and the calibration will be saved to the sensor.

### **Step 2: 0% Saturation Calibration (optional)**

1. Pour enough sodium sulfite into the beaker so that the DO sensor is at least 2” submerged.
2. Place the sensor into the solution and gently tap the sensor while holding it at a slight angle to release any bubbles on the sensor face. Once there are no more bubbles you can allow the sensor to rest on the bottom of the beaker. Make sure the logger is supported so that it does not tip over the beaker.
3. Wait for approximately 15 minutes until the sensor reaches temperature equilibrium. If you want to exit the 0% calibration and keep only the first calibration point, tap Discard.
4. Once it has reached equilibrium tap Start Calibration.
5. Once the readings are stable, tap Confirm.
6. This screen shows the temperature, measured uncalibrated DO value, and the barometric pressure for this 0% calibration. (Note that the measured uncalibrated DO value may be different from the DO value shown on the previous screen, which was the value measured using the previous calibration.)
7. When you are satisfied with the results tap Finish Calibration.
8. The calibration values are stored as part of the data file.
9. Remove the sensor from the solution and thoroughly rinse it with fresh water to remove any excess sodium sulfite. Then soak it for an hour in fresh water and rinse it again to ensure all residue is removed.

### **DO Concentration Calibration**

This method requires an accurate way to measure the salinity-adjusted DO concentration in mg/L, such as a meter or a Winkler titration to measure the actual DO next to the DO sensor. You may also want to have a bucket to pull up a sample of water from the site. This

method works with either fresh or salt water, however if you are using saltwater, you will need a meter that can read the salinity-adjusted DO. If you are doing a zero-point calibration, you will also need an accurate 0% DO calibration solution such as sodium sulfite solution and a beaker that can hold 5 cm (2") of calibration solution.

As much as possible, the sensor should be at the same temperature as the water and sodium sulfite (if applicable). If the logger was deployed previously, make sure the sensor is clean and dry.

### **Step 1: Calibrate in solution with a known DO concentration**

1. Make sure the sensor is attached to a HOBOb MX800 series logger and that a DO sensor cap is on the sensor, held in place with the guard that came with the DO sensor or the antifouling guard.
2. If you are using a meter:
  - a. Put the sensor and the meter's sensor in the water next to each other and at the same depth.
  - b. Gently stir or tap the sensors to make sure there are no bubbles trapped on the sensor face.
  - c. Allow them both to reach temperature equilibrium. (Step 6)
3. If you are using a Winkler titration or other water sampling method:
  - a. Place the DO sensor in the water you are using as your calibration reference.
  - b. Gently stir or tap the sensors to make sure there are no bubbles trapped on the sensor face and allow it to reach temperature equilibrium.
  - c. Allow the sensor time to reach temperature equilibrium. (Step 6)
  - d. Take a sample of water from next to the sensor at the same depth as the DO sensor surface. Use a Winkler titration or other method to determine the DO concentration of the sample.
4. Connect to the logger using HOBObconnect. Stop the logger if it is currently logging.
5. Select DO Concentration Calibration.
6. Use the countdown timer to know when the sensor has been in the water long enough to reach temperature equilibrium. Once the sensor has been in the water for 10 to 15 minutes, click Proceed to Calibration.
7. The screen shows the current temperature and salinity-adjusted DO that the sensor is reading (based on the salinity measured by a CT or CTD sensor connected to the same logger or the salinity that you enter.) The DO reading shown is based on the most recent calibration.
8. Enter the salinity-adjusted DO from your meter or titration.
9. Start the calibration. The software will take a series of readings and notify you when the readings are stable.
10. Once the readings are stable, tap Confirm to accept the calibration point.
 

**Note:** If you decide you do not need to change the calibration, click "X" to cancel the calibration and revert back to the last saved calibration values.
11. This screen shows the reference reading and salinity and the measured temperature and uncalibrated salinity-adjusted DO value and the calculated slope for this calibration point. (Note that the measured uncalibrated DO value may be different from the DO value shown on the previous screen, which was the value measured using the previous calibration.)
12. If you are doing just a 1-point calibration, tap Finish Calibration and the calibration will be saved to the sensor.

### **Step 2: 0% Saturation Calibration (optional)**

1. Pour enough sodium sulfite into the beaker so that the DO sensor is at least 2" submerged.
2. Place the sensor into the solution and gently tap the sensor while holding it at a slight angle to release any bubbles on the sensor face. Once there are no more bubbles you can allow the sensor to rest on the bottom of the beaker.
3. Wait for approximately 15 minutes until the sensor reaches temperature equilibrium. If you want to exit the Zero-point calibration and only keep the first calibration point, tap Discard.
4. Once it has reached equilibrium, tap Start Calibration.
5. Once the readings are stable, tap Confirm.

6. This screen shows the reference reading as zero mg/L and the measured temperature and measured uncalibrated DO. (Note that the measured uncalibrated DO value may be different than the DO value shown on the previous screen which was the value measured using the previous calibration.)
7. When you are satisfied with the results, tap Finish Calibration. Otherwise, tap “X” to exit the calibration without saving the new calibration.
8. The calibration values are stored as part of the data file.
9. Remove the sensor from the sodium sulfite solution and thoroughly rinse it with fresh water to remove any excess sodium sulfite. Then soak it for an hour in fresh water and rinse it again to be sure all residue is removed.

## Configuring a Gateway

**Note:** These instructions require that the gateway is powered, completely booted up, and an Ethernet cable is already plugged in (if applicable). See the product manual at [www.onsetcomp.com/support/manuals/23470-mxgtw1-gateway-manual](http://www.onsetcomp.com/support/manuals/23470-mxgtw1-gateway-manual) for details on initial gateway setup.

To configure a gateway:

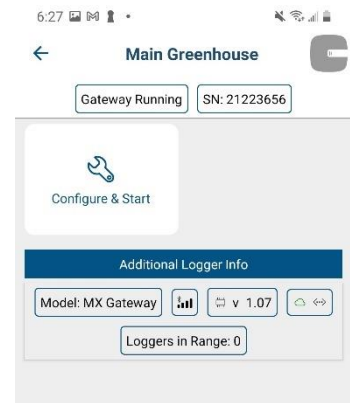
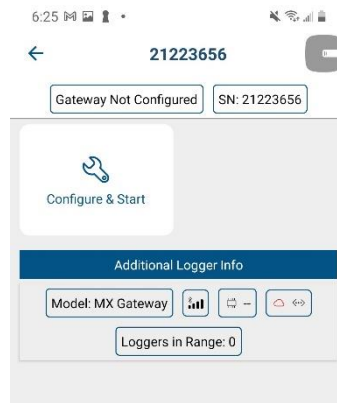
1. Tap Devices.
2. Find the gateway by searching or scrolling through the tiles.
3. Tap the tile to connect to the gateway.

The gateway screen displays the following information at the top:

- Gateway serial number or the name of the gateway, if you have named it
- Gateway Not Configured or Gateway Running
- Gateway serial number

It displays the following information under Additional Logger Info:

- Gateway model name
- Bluetooth connection strength
- Firmware version
- Status of its connection (see the table below for a list of possible icons)
- Number of Loggers in Range



The following table lists the possible connection icons and their meanings:

This Icon	Indicates
	Connected via Ethernet.
	Connected via Wi-Fi.
	The network status is unknown.
	The gateway is running.
	The gateway is not configured.
	There is a problem with the gateway; check the gateway settings.
	The signal strength from the gateway to the phone, tablet, or computer.

4. Tap Configure & Start.
5. Tap the down arrow next to Name and enter a name for the gateway. If you do not enter a name, the name is the gateway serial number.

6. Set up your network connection:
  - If you are using an Ethernet connection and it is using DHCP (dynamic IP addresses), skip to step 7.
  - To set up an Ethernet connection with static IP addresses, ensure that Ethernet is selected next to Network Settings. Tap Ethernet Configuration to open that area of the screen. Tap DHCP to disable DHCP. Complete the networking fields with help from your Network Administrator if necessary.
  - To set up Wi-Fi, tap the down arrow in the Network Settings field and select Wi-Fi. In the Wi-Fi Configuration area of the screen, tap the down arrow. Type the network name and enter the password for the network.
7. Tap Start to save the new configuration settings to the gateway.

The gateway regularly checks for loggers within range and uploads data to HOBOblink (requires an active HOBOblink account; see [HOBObconnect Settings](#)). Loggers must be configured to upload data via the gateway (see [Configuring a Logger](#)). **Note:** MX800, MX20L and MX100 series loggers are not supported by the gateway. Contact Onset Technical Support for questions on MX100 logger compatibility with the gateway.

## Downloading Data from a Logger

To download the data from a logger to a phone, tablet, or computer:

1. Tap Devices and then tap a tile with the logger to connect to it (wake up the logger if necessary or remove it from the water if applicable).
2. Once the logger is connected, tap Download Data. Wait until the download completes.
3. Tap Export & Share to export the data (see [Using the Data File Viewer](#)).

Once the readout is complete, the data is uploaded to HOBOblink automatically if the logger was configured to upload data via HOBObconnect (requires an active HOBOblink account; see [HOBObconnect Settings](#)). If the logger was configured to upload data via a gateway instead, then the gateway will continue uploading data regularly independently of this readout.

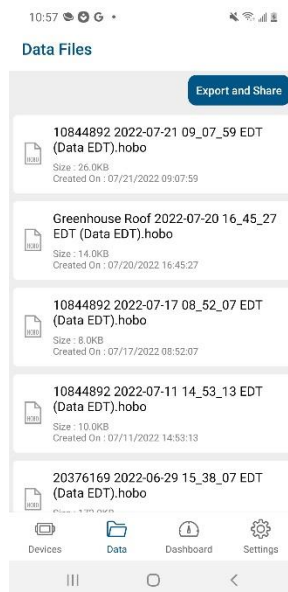
## Processing, Viewing, and Sharing Data

The Data area contains features that allow you to export and share data files and view graphs of your data.

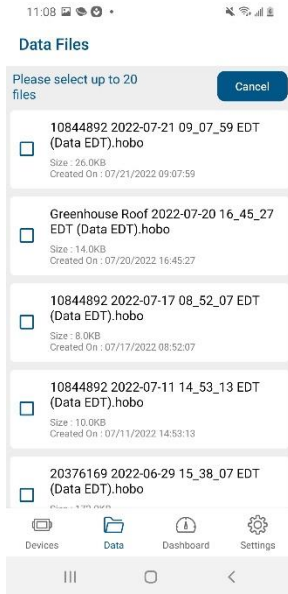
### Exporting and Sharing Data Files

You can use the Data Files area to export and share one or more files at a time.

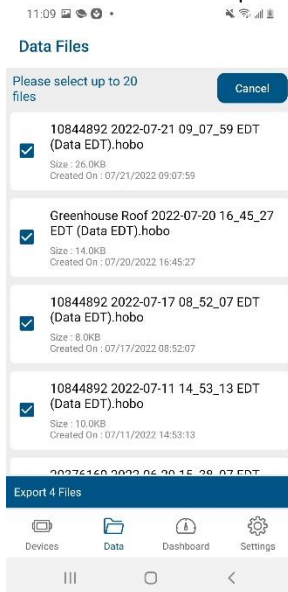
1. Select Data. You'll see a list of the files available.



2. Tap Export and Share. When you do, you can select the files you want to export.

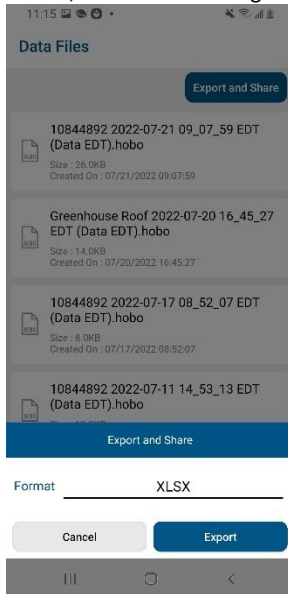


3. Select the files to export by tapping the check box for each file. You can select up to 20 files. As you select files, a bar at the bottom of the screen reports how many files you have selected.

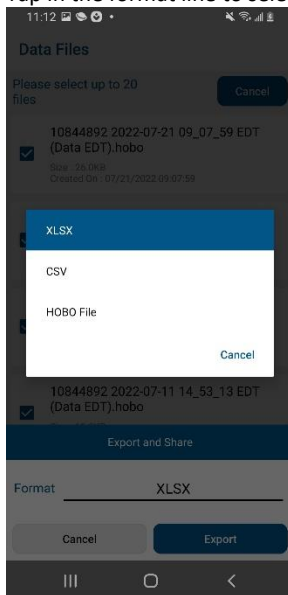


4. Tap the bar that reports how many files you have selected.

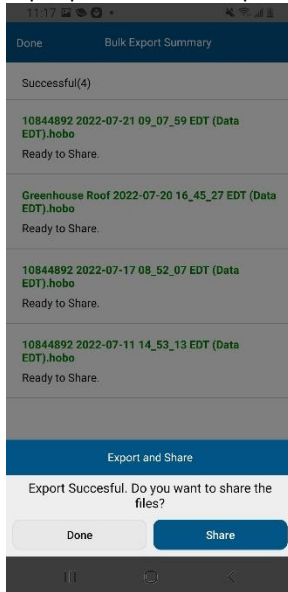
5. A popup opens presenting the default format. (To update the default, select Settings, and then make your selection, either XLSX or CSV, in the User Settings area of the page.)



6. Tap in the format line to select a different format. Tap the desired format.



7. Tap **Export**. The file is exported. When the export is done, the following message appears.



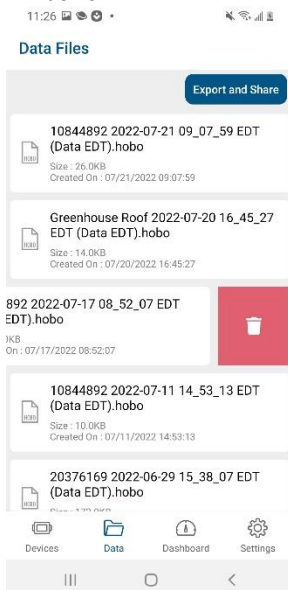
8. To share the file, tap **Share**. You can share the file using the usual sharing function of your device.

## Deleting Data Files

You can delete data files as a way to clean up the list of files and remove files that you have already exported and shared.

To delete data files:

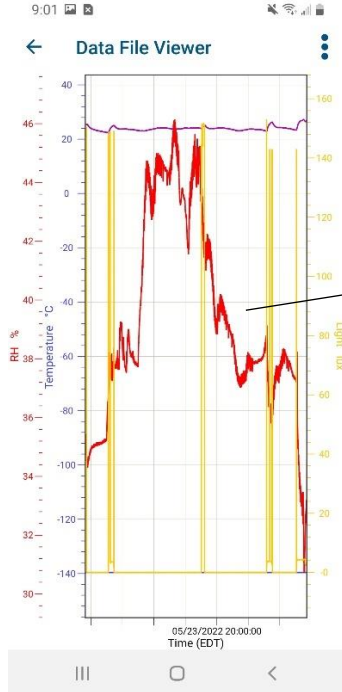
1. Select **Data**. You'll see a list of the files available.
2. Locate the file you want to delete, and swipe left on the file if you're using a mobile device. The delete icon always appears in **Windows**.



3. Tap the trash can icon to delete the file. A popup asks you to confirm the deletion.
4. Tap **Delete**.

## Using the Data File Viewer

Use the Data File Viewer to view and export data that has been downloaded from the logger. Tap Data and select a file to open.




On iPhones, iPads, or Android devices, tap to change the time zone, export the file, hide or show series, and view details about the configuration (see [Additional Logger Info](#)). **Note:** These









To work with the graph:

- On iPhones, iPads, or Android devices, press and hold anywhere within the axes to view specific points.
- Swipe (or press and hold the mouse button) up and down to scroll along the Y axis.
- Swipe (or press and hold the mouse button) left and right to scroll along the X axis.
- Pinch or stretch the graph (or spin the mouse wheel) to zoom in or out.
- Press and hold anywhere on the graph (or press and hold the mouse button and drag the red vertical line) to view

## Data File Viewer and Actions

The following options are available when working with the Data File Viewer (tap the three-dot icon  in the upper right corner first if applicable):

Tap This Icon	To Do This
	This is the time zone setting in place on the phone, tablet, or computer when the logger was configured. Tap the time zone, select a different one, and tap Save to change the time zone that is displayed on the graph and used when exporting the data to XLSX or CSV. Note that a change to the time zone applies only while the file is open in the Data Viewer. If you close the file and reopen it, it reverts to the original time zone used when the logger was configured.
	<p>Tap to export and share the file that is currently open in the Data File Viewer. Select one of the following:</p> <ul style="list-style-type: none"> <li>• <b>XLSX.</b> This generates an Excel® file with data points from all series on one tab and logged events on a second tab and deployment details on a third tab.</li> <li>• <b>CSV.</b> This generates a comma-separated values file with data points from all series and logged events on one spreadsheet.</li> <li>• <b>HOBO.</b> Share the .hobo file that you have opened in the Data File Viewer. You can open these files in HOBOconnect on other Windows or iOS devices. For some HOBO loggers, you can also open these files in HOBOware.</li> <li>• <b>PNG.</b> This generates an image of the graph as it currently appears in the Data File Viewer. Note that if you export to PNG more than once from the same data file, the existing .png file is overwritten with the latest one. To save multiple views of the graph (e.g., one default view and one zoomed in view), make sure you share the first PNG you export before exporting another.</li> </ul> <p>You can use export and share on Windows, Apple®, and Android devices.</p> <p>On Apple devices, exported files are saved to the phone or tablet regardless of whether you share them immediately upon export. To access the files, navigate to the HOBOconnect folder. Any exported XLSX, CSV, and PNG (image) files are stored in subfolders.</p> <p>On Windows computers, select one of the Export options described above to save a file in the selected format to the computer at a location that you choose. You can then email or share that file as needed using your preferred method.</p> <p>On Android devices, you must use export and share; external file access is prohibited by Android policy.</p>
	Tap here to show or hide sensors, channels, and logger events and tap OK. By default, logger events (such as Alarm Tripped or Alarm Cleared), derived series (such as dew point), and statistics are not displayed on the graph.
	Tap here to view the configuration settings selected for the logger. <b>For MX2001 loggers only:</b> You can also edit the reference water level, water density, and reference time when tapping this icon. Under Deployment Information, tap Reference Water Level or Water Density to edit those settings in the Water Parameters screen. In the same Water Parameters screen, tap Reference Time and select a time associated with a logged data point and tap Save. Tap Save in the Water Parameter screen to apply these new settings to the data file.
	Tap here to open the Water Level Assistant.
	Tap here to open the Dissolved Oxygen Assistant.

## Using the Water Level Assistant

Use the Water Level Assistant to obtain water level data by entering the water density, reference water level, and linking a barometric pressure data file.

1. Select the Data tab.
2. Open the data file that you want to work with.

To derive water level, follow steps 3-9.

3. Click the Reference Water Level icon at the top right of the page.



The Water Level Assistant opens.

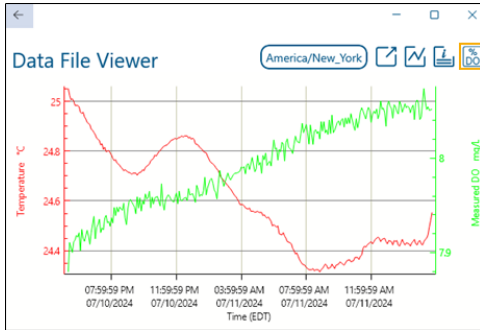
4. Select one of the Water Densities that is listed or enter one manually.
5. Select the Use Reference Water Level check box and enter the Reference Water Level that you recorded earlier when you deployed the logger.
6. Select the time closest to that of the Reference Water Level. Typically, this will be from the beginning of the deployment.
7. Select the file you are using with the barometric pressure data (or enter a fixed pressure). The barometric pressure file can be from an MX802 logger, MX20L logger, MX2001 logger, or from a CSV file. See [CSV File Format for Data Assistant](#) for details. In most cases, you should use a barometric pressure data file to compensate for barometric pressure changes during your deployment. Normal barometric pressure changes can otherwise result in 6" or more of error. For short deployments of less than a day with no major weather fronts coming through, it may be OK to use a constant barometric pressure. It is ok if the timestamps on the imported data do not align exactly with the water pressure data, because HOBObconnect will interpolate between the readings to determine the barometric pressure to use.
8. Once you have entered the information on the screen, click Proceed. HOBObconnect will calculate the water level data channel. To save this water level data and the barometric pressure data used, you must export the data file.

### Notes:

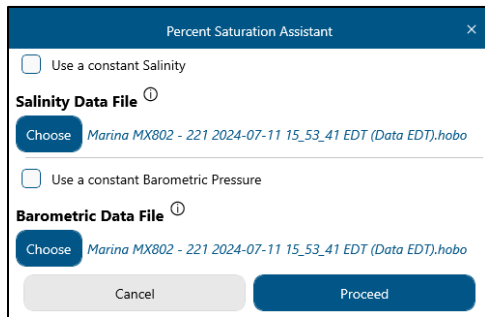
- Note that the HOBObfile exported here is not compatible with HOBObware.
- You can choose to export and share the file. Share is available only on the mobile app. On Windows, the data files are stored in folder \Documents\HOBObconnect; you can copy or move the files from there.
- After you process the data, you may need to tap on the parameter icon (the one that looks like a line graph) to see the water level on the graph.

## Using the DO Percent Saturation Assistant

The DO Percent Saturation Assistant is for MX801 logger files that include measured DO data. When you open one of these files in HOBObconnect, you will see the %DO button in the upper right corner of the window.



Tap the button to open the Percent Saturation Assistant.



1. Select:
  - Use a constant Salinity, or  
Tap Choose to link a salinity file from a nearby MX800 logger or select a CSV file from another source. See [CSV File Format for Data Assistant](#) for details.
2. Select:
  - Use a constant Barometric Pressure, or
  - Tap Choose to link a barometric pressure file from a nearby MX802 logger, MX2001 or select a CSV file from another source. See [CSV File Format for Data Assistant](#) for details.

The assistant creates a DO Percent Saturation data series. You must export the data to save it. You may need to tap on the parameter icon (the one that looks like a line graph) to see the new series. The exported data also includes the barometric pressure and salinity data series that you used.

**Note:** If there are two DO sensors connected to the logger, the assistant first asks you which DO sensor you want to calculate the Percent DO for.

### CSV File Format for Data Assistants

HOBObconnect can directly use a CSV file that was created by HOBObconnect or HOBOWare. However, if you have a CSV file from any other source, you will need to format it so that HOBObconnect can use it. The first row in the file (header line) must be in the following format.

- "#","Date-Time","channel\_1","channel\_2"...and so on
- or
- #,Date-Time, channel\_1, channel\_2...and so on

The CSV data rows should immediately follow the header line. The final CSV file should look something like:

1st line <column headers>

2nd line onwards <comma separated data>

The column heading for barometric data and salinity should be "Barometric Pressure" and "Salinity", but you can have other headings because HOBOnnect allows you to select the correct columns as you work.

Barometric pressure data can be in kPa or psi. You need to select the units. Based on your selection, HOBOnnect will perform the calculations. Salinity data must be in PSU. In the app, we have US units for salinity as PPT, which are the same as the values in PSU.

The values in the # column are the sequence numbers for each line of data: 1, 2, 3, etc.

The date-time must be in one of the following formats:

- MM/dd/yyyy HH:mm:ss
- MM/dd/yy hh:mm:ss tt

Where:

- MM is a double-digit month, including leading 0.
- HH is Hours, 00-23 including leading 0.
- hh is Hours, 01-12 including leading 0.
- tt is am/pm designator, lower case.

## Working with a Dashboard

Set up a dashboard to quickly view the latest readings from loggers within range of the phone or tablet without having to connect to them. This requires the logger to be awake with Bluetooth enabled (see [Configuring a Logger](#)).

To set up a dashboard:

1. Tap Dashboard.
2. Tap the plus sign in the upper right corner or in the middle of the screen.
3. Set up the widget to add to your dashboard:

Select the type of widget: line graph (left button) or odometer (right button).

Select the channels to display in the widget.

Tap to edit the widget type or channel.

Tap Next to change the default channel name or tap Done.

Edit the name to change what appears on the dashboard for any of the channels and then tap Done.

Tap to add a widget.

Tap to delete a widget.

Example of line graph widget

Example of odometer widget

Measurements are updated every second when the logger is within range. Note that measurements displayed on the dashboard may differ from logged data points, which are recorded at the logging interval selected when configuring the logger. When a logger is out of range, the graph widget will not display any measurements, and the odometer widget will display the most recent measurement from when the logger last communicated with the phone, tablet, or computer.

## HOBObconnect Settings

Tap Settings to change the following settings in HOBObconnect:

Setting	Description
HOBOblink	<p>Connect a HOBOblink account to the app so that logged data can be automatically uploaded to <a href="http://www.hoboblink.com">www.hoboblink.com</a>, where you can further analyze the data, set up dashboards, and more.</p> <p>Tap Connect Account. Enter your HOBOblink username and password and tap Connect. (If you don't have a HOBOblink account, tap Create New Account first).</p> <p>Once your account is connected, the following additional options are available:</p> <ul style="list-style-type: none"> <li>• Tap Log Out if you want to disconnect your HOBOblink account from the app. You can then connect to another account or reconnect to the same one.</li> <li>• Tap the Upload Data toggle to enable or disable the ability to automatically upload logged data from the gateway or the app. When this option is disabled, then the option to upload data will be grayed out when configuring the logger. When this option is enabled, then you can select whether to upload the data via the gateway or HOBObconnect when configuring the logger.</li> <li>• Tap the Wi-Fi Only toggle to enable or disable whether the app uses Wi-Fi only to upload data. If Wi-Fi Only is enabled, then the app will only upload data when a Wi-Fi connection is available. If Wi-Fi Only is disabled, then the app will use a cellular connection to upload data when a Wi-Fi connection is unavailable.</li> <li>• Readout Queue Status indicates whether there are any HOBOb files that were read out from loggers waiting to be uploaded to HOBOblink (i.e. the app was unable to connect to the internet and will try again later). Tap the status to see a list of current and pending file uploads.</li> <li>• HOBObconnect does not currently support data upload to HOBOblink for MX800 and MX20L loggers.</li> </ul>
User Settings	<ul style="list-style-type: none"> <li>• Select either US or SI units. Any changes to units will take effect immediately throughout the app. The units displayed on the logger LCD (if applicable) will be updated the next time the logger is configured.</li> <li>• Tap to enable or disable Dark Mode, which changes the app color scheme. When Dark Mode is enabled, the app displays bright text on a black background. When Dark Mode is disabled, the app displays dark text on a white background.</li> <li>• Tap to enable Password Protect Configuration as a configuration option for all loggers. This allows you to add a password locking the configuration to prevent any unintentional changes. Note: This is an advanced feature. Thoroughly read the section called <i>Password Protect Configuration</i> before using this feature.</li> <li>• Tap to select the Default Export Format: XLSX or CSV.</li> </ul>
Devices	<p>Clear My Devices List works in conjunction with the My Devices filter (see <a href="#">Viewing Devices</a>) in which only the devices that your phone or tablet has connected to are shown in the Devices screen. Tap Clear My Devices List if you want to remove all the devices that you have connected to from the My Devices filtered view. You will then need to switch to a different filter to view any devices within range.</p> <p>Migrate HOBOb Files - For Android 11+ users only: Due to a change in Android policy, you must migrate any files that you downloaded prior to upgrading to Android 11 to continue seeing those files within the app. Use this option to migrate any existing files. Files downloaded after the Android 11 upgrade are not affected by the policy change.</p>
Diagnostics & Troubleshooting	<p>These settings control the information that is gathered and shared with Onset.</p> <ul style="list-style-type: none"> <li>• Tap the Share Diagnostics with Onset toggle to enable or disabled sharing of information about the software for troubleshooting and for future enhancements.</li> <li>• Tap the Enable Logging toggle and enable this setting only when directed by Onset Technical Support. When you enable this setting, the Share Logs with Onset option appears. Use this as directed by Onset Technical Support.</li> </ul>
Release Notes	<p>The Settings icon displays a small exclamation point (!) when software release notes are ready.</p> <ul style="list-style-type: none"> <li>• Tap the Settings icon, then tap Release Notes to view a list of available release notes.</li> </ul>

Setting	Description
	<ul style="list-style-type: none"> <li>The release notes notification appears only when new release notes are available. It disappears when you have viewed the release notes.</li> </ul>

## Password Protect Configuration

This is an advanced feature that allows you to protect against unintentional changes to the logger configuration. Be careful using this feature and setting the password as there is no way to reset it if you forget it: that would introduce a security issue.

- To enable this feature, toggle the Password Protect Configuration option to Yes in Settings/User Settings. A new Password Protect Configuration option appears for all loggers at the bottom of the Customize Configuration and Start screen.
- To add a configuration password to a logger:
  - Connect to a logger and select Customize Configuration & Start.
  - Toggle the Password Protect Configuration to On. Enter your desired password and confirm the password. The password is added on Start.
- To update a configuration password:
  - Connect to logger and select Customize Configuration & Start. Enter the existing password.
  - Toggle the Password Protect Configuration to On. Enter the new password and confirm the new password. The password is updated on Start.
- To remove a configuration password:
  - Connect to logger and select Customize Configuration & Start. Enter the existing password.
  - Toggle the Password Protect Configuration to Off. The password is removed on Start.
- Once you have applied a configuration password to a logger, all users must enter the password each time they select Customize Configuration & Start, no matter the status of the Password Protect Configuration toggle in Settings.

### Notes:

- Contact Onset technical support if you forget the configuration password for any logger. There is no way for customers to reset this password.
- HOBObconnect does not save the configuration password. Users must enter the password every time they access the logger configuration.
- You can apply this password separately or in addition to the Lock Logger password.

## Frequently Asked Questions

The following questions can help with troubleshooting issues with the app. For additional help, tap About HOBObconnect in settings to view a list of resources, or contact Onset Technical Support at 1-800-LOGGERS, 508-759-9500, or [www.onsetcomp.com/support/contact](http://www.onsetcomp.com/support/contact).

### Why isn't my logger appearing in the list of devices?

- The logger may need new batteries (if applicable). Symbols appear on the logger LCD (if applicable) if the batteries have enough voltage remaining and are installed properly.
- The logger is not within range of the phone, tablet, computer, or computer dongle or something is obstructing communication. Move closer to the logger. The range for successful wireless communication is approximately 30.5 m (100 ft) with full line-of-sight.
- The MX100, MX800, MX20L, MX1104, MX1105, MX2200, MX2300, or MX2501 logger may be asleep. Press the button on the logger or use the magnetic fob (MX800 and MX20L loggers) to wake it up.
- Remove the MX2203, MX2204, or MX2501 logger from the water if it was configured with Bluetooth Off Water Detect.
- Make sure Bluetooth is enabled in your phone, tablet, or computer settings.
- Check the filter settings to make sure the logger isn't being filtered out of view.

### Why isn't my gateway appearing in the list of devices?

- The gateway may not be finished powering up. When plugged in for the first time, the gateway will not be ready to configure—and will not appear in the app—for several minutes.

- The gateway is not within range of the phone, tablet, computer, or computer dongle, or something is obstructing the communication. Move closer to the gateway. The range for successful wireless communication is approximately 30.5 m (100 ft) with full line-of-sight.
- Make sure Bluetooth is enabled in your phone, tablet, or computer settings.
- Check the filter settings to make sure the gateway isn't being filtered out of view.

**I see my logger in the list of devices, but I can't connect to it. What can I do?**

- Close the app and then reopen it.
- Power down the phone, tablet, or computer, and try connecting again once it powers back up.

**I was configuring my logger and then lost the connection. Will my configuration settings be saved?**

If you did not tap Start before the connection was lost, then the configuration settings were not saved to the logger. Connect to the logger again and re-enter your settings.

**How do I lock my logger so that no one else can configure it?**

Connect to the logger, tap Lock Logger. Enter a password and tap Set. The password is now required any time another device attempts to connect to the logger. The device that configured the logger, however, automatically retains the password so you do not have to type in a password each time that device connects to the logger.

**How do I reset the password on a logger?**

Connect to the logger, tap Manage Password, and tap Reset. You can also simultaneously press both the Start/Stop button and the Alarm/Stats button (MX1101) or Next/Clear button (MX1102A) on the top of the logger, or both the top and bottom button (MX1104 and MX1105) for 3 seconds. Press the button on the MX100, MX2200, MX2300, or MX2501 for 10 seconds or press the reset button between the batteries on the MX2001 logger.

**Note:** For the MX800 and MX20L loggers, hold the magnetic fob on the WAKE icon for 10 seconds.

**An alarm was tripped on the logger. How do I clear it?**

Visual alarms on the logger LCD (if applicable) and within the app (all models except MX100 and MX2001) are cleared based on the settings selected under "Maintain Visual Alarms Until" when configuring the logger. This means the visual alarm will clear when the logger is reconfigured, when the sensor is back within limits, or when the button on the logger is pressed (if applicable) depending on which option you selected. MX100 alarm indicators are only cleared when you reconfigure the logger.

If an audible alarm is sounding, press the button on the logger to stop it or connect to the logger and tap Clear Audible Alarm (if applicable).

**How do I download data from my logger?**

Connect to the logger and tap Download Data. Once the download is complete, tap Data to view or export the downloaded data.



**It takes more than a minute to download data from my logger. Is this normal?**

It should take a minute or less to download data from a logger with a full memory (all models except the MX1104, MX1105, MX20L and MX800). If the download is taking longer than a minute, move the mobile device closer to the logger, within a few feet if possible. The further away the mobile device is from the logger, the longer the download can take. MX1104, MX1105, MX20L and MX800 loggers have a larger memory capacity than other models so it may take a few minutes. The download time is proportional to the amount of data logged.



**I zoomed in on a graph in the Data File Viewer. How do I return it to the original view?**

Double-tap the graph to return to the original view.

**How do I view the individual data points in a list instead of a graph?**

Export the file from the Data File Viewer. Tap  in the top right corner (if applicable) and then tap . Select either XLSX or CSV, which creates a spreadsheet with all the data points.

**How do I add or remove series or events from the graph?**

In the Data File Viewer, tap  in the top right corner (if applicable) and tap . Select or deselect the sensors, statistics, and events you wish to show or hide on the graph and tap OK.

**Is there a way to copy all my data files to my computer?**

Android devices only: You no longer have access to data files outside of HOBObconnect due to a Google Play Store policy. Use the Export and Share feature to have access to files outside of HOBObconnect.

For Apple devices, use Files to copy the files from the HOBObconnect folder to iCloud, which you can access from your computer. You can also use the File Sharing feature in iTunes on Windows® or Finder to transfer files to a Mac®.

For Windows computers, files are stored in your Documents folder under HOBObconnect. Copy the files to another folder.

**My device shows too many loggers. How can I view my devices only?**

Tap the Filter button at the top left of the screen and select My Devices. Only the devices that your logger connected to are shown in the list.

**If my logger is configured to upload data to HOBOblink from a gateway, then will it also upload data to HOBOblink if I read it out with the app?**

No. Data can only be uploaded to HOBOblink either by a gateway or by the app, not both. When you read out a logger that was configured to upload data from a gateway, then the file will be available in the app only and not uploaded to HOBOblink. The gateway will continue to monitor the logger and upload data regularly to HOBOblink regardless of when you read out the logger with app.