



## HOBO MX100 Temp Logger

### Required Items:

- HOBOconnect app
- Mobile device with Bluetooth and iOS, iPadOS®, or Android™, or a Windows computer with a native BLE adapter or supported BLE dongle

The HOBO MX100 Temp logger measures temperature in indoor environments. With an IP67 environmental rating, the logger can be deployed indoors where moisture may form. This Bluetooth® Low Energy (BLE)-enabled logger is designed for wireless communication with a phone, tablet, or computer. Using the HOBOconnect® app, you can easily configure the logger and then download logged data to view or export it for further analysis. The logger has a built-in alarm you can configure to trip at thresholds you specify. Designed with a non-replaceable lithium battery, this logger also has a power-saving mode that allows you to use the Bluetooth signal only when needed to maximize battery life. **Note:** This logger is not supported by the HOBO MX Gateway. Contact Onset Technical Support for questions on MX100 logger compatibility with the gateway.

## Specifications

### Temperature Sensor

|                      |                                                                                                                                                                  |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Range</b>         | -30° to 70°C (-22° to 158°F)                                                                                                                                     |
| <b>Accuracy</b>      | ±1.0°C from -30° to -5°C (±1.8°F from -22° to 23°F)<br>±0.5°C from -5° to 50°C (±0.9°F from 23° to 122°F)<br>±1.0°C from 50° to 70°C (±1.8°F from 122° to 158°F) |
| <b>Resolution</b>    | 0.04°C (0.072°F)                                                                                                                                                 |
| <b>Drift</b>         | <0.01°C (0.018°F) per year                                                                                                                                       |
| <b>Response Time</b> | 6 minutes typical to 90% in open air moving 1 m/s, unmounted                                                                                                     |

### Logger

|                                  |                                                                                                                                                                                                                                                                                              |
|----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Logger Operating Range</b>    | -30° to 70°C (-22° to 158°F)                                                                                                                                                                                                                                                                 |
| <b>Radio Power</b>               | 1 mW (0 dBm)                                                                                                                                                                                                                                                                                 |
| <b>Transmission Range</b>        | Approximately 30.5 m (100 ft) line-of-sight                                                                                                                                                                                                                                                  |
| <b>Wireless Data Standard</b>    | Bluetooth Low Energy (Bluetooth Smart)                                                                                                                                                                                                                                                       |
| <b>Logging Rate</b>              | 1 second to 18 hours                                                                                                                                                                                                                                                                         |
| <b>Time Accuracy</b>             | ±1 minute per month at 25°C (77°F)                                                                                                                                                                                                                                                           |
| <b>Battery</b>                   | CR2450 3V lithium, not replaceable                                                                                                                                                                                                                                                           |
| <b>Battery Life</b>              | 1 year, typical with logging interval of 1 minute and Bluetooth Always On enabled; 2 years, typical with logging interval of 1 minute and Bluetooth Always On disabled. Faster logging intervals, remaining connected with the app, excessive downloads, and paging may impact battery life. |
| <b>Memory</b>                    | 30,000 measurements                                                                                                                                                                                                                                                                          |
| <b>Full Memory Download Time</b> | Approximately 30 seconds; may take longer the farther the device is from the logger                                                                                                                                                                                                          |
| <b>Dimensions</b>                | 6.9 x 4.5 x 1.1 cm (2.71 x 1.76 x 0.42 inches)                                                                                                                                                                                                                                               |
| <b>Weight</b>                    | 25.5 g (0.90 oz)                                                                                                                                                                                                                                                                             |
| <b>Environmental Rating</b>      | IP67                                                                                                                                                                                                                                                                                         |



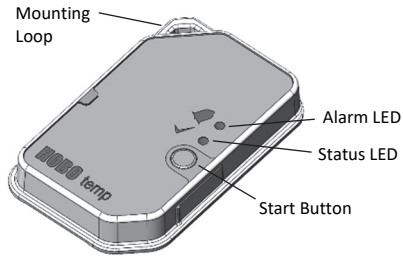
The CE Marking identifies this product as complying with all relevant directives in the European Union (EU).



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## Logger Components and Operation



**Mounting Loop:** Use this when deploying the logger by tying it to an object.

**Alarm LED:** This LED blinks red every 4 seconds when an alarm is tripped (unless Show LED is disabled as described in *Configuring the Logger*). Both this LED and the status LED blink once when you press the start button to wake up the logger before configuring it. If you blink the logger LED with the app, both LEDs illuminate for 4 seconds.

**Status LED:** This LED blinks green every 4 seconds when the logger is logging (unless Show LED is disabled as described in *Configuring the Logger*). If the logger is waiting to start logging because it was configured to start On Button Push or with a delayed start, it blinks green every 8 seconds.

**Start Button:** Press this button for 1 second to wake up the logger; both the alarm and status LEDs blink. Once the logger is awake, press this button for 1 second to move it to the top of the loggers list in the app. Press this button for 4 seconds to start or stop the logger when it is configured to start or stop On Button Push (see *Configuring the Logger*). Both LEDs blink four times when you press the button to start or stop logging. Press this button for 10 seconds to reset a password.

## Downloading the App and Connecting to a Logger

Install the HOBObconnect app to connect to and work with the logger.

1. Download HOBObconnect to a phone or tablet from the App Store® or Google Play™.  
Download the app to a Windows computer from [www.onsetcomp.com/products/software/hobobconnect](http://www.onsetcomp.com/products/software/hobobconnect).
2. Open the app and enable Bluetooth in the device settings if prompted.
3. Press the button on the logger to wake it up.
4. Tap Devices and then tap the logger tile in the app to connect to the logger.

If the logger does not appear or if it is having trouble connecting, follow these tips.

- Make sure the logger is awake by pressing the start button. The alarm and status LEDs blink once when the logger wakes up. You can also press the button a second time to bring it to the top of the list in the app if you are working with multiple loggers.
- Make sure the logger is within range of your mobile device or computer. The range for successful wireless communication is approximately 30.5 m (100 ft) with full line-of-sight.

- If your device can connect to the logger intermittently or loses its connection, move closer to the logger, within sight if possible.
- If the logger appears in the app, but you cannot connect to it, close the app and then power down your device to force the previous Bluetooth connection to close.

Once the logger is connected, you can:

| Tap this: | To do this:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|           | Specify logger settings and save them to the logger to start logging. See <i>Configuring the Logger</i> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|           | Tap to view live data.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|           | Illuminate the logger LEDs for several seconds (MX100, MX2200, MX2300, and MX2501).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|           | Lock the logger. Set a password for the logger so that it is not mistakenly stopped or reconfigured. Tap the icon, enter a password, and then tap Set. Once a password is entered on a phone or tablet, that mobile device is the only one to remember it. This means you can connect to the logger without entering a password on that mobile device, but you must enter a password on all other mobile devices. For example, if you set the password for the logger with your tablet and then try to connect to the device later with your phone, you must enter the password on the phone but not with your tablet. Similarly, if others attempt to connect to the logger with different devices, they are also required to enter the password.<br>To reset a password: <ul style="list-style-type: none"> <li>• Press the Start/Stop button for 10 seconds, or</li> <li>• Tap Manage Password and then tap Reset.</li> </ul> |
|           | Manage Password. Reset your existing password or set a new password for the logger.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|           | Stop logging data (this overrides any Stop Logging settings described in <i>Configuring the Logger</i> ).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|           | Start logging if the logger was configured to start with a button push. See <i>Configuring the Logger</i> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|           | Download logger data. See <i>Downloading Data From the Logger</i> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|           | Mark the logger as a favorite. You can then filter the list of devices to show only loggers marked as favorites.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|           | Update the firmware on the logger. A logger readout is completed automatically at the beginning of the firmware update process.<br><b>Important:</b> Before updating the firmware on the logger, check the remaining battery level and make sure it is no less than 30%. Make sure you                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

| Tap this: | To do this:                                                                                                                             |
|-----------|-----------------------------------------------------------------------------------------------------------------------------------------|
|           | have the time to complete the entire update process, which requires that the logger remains connected to the device during the upgrade. |

## Configuring the Logger

Use the HOBOnnect app to set up the logger, including setting alarms, selecting the options to start and stop logging, and choosing a logging mode. These steps provide an overview of setting up the logger. For complete details, see the HOBOnnect User Guide.

- Press the button on the logger to wake it up.
- In the app, tap Devices. If you are working with multiple loggers, press the button on the logger a second time to bring it to the top of the list. Tap the logger tile in the app to connect to the logger.
- Tap Configure & Start to configure the logger.
- Tap Name and type a name for the logger (optional). If you do not enter a name, the app uses logger serial number as the name.
- Tap Group to add the logger to a group (optional).
- Tap Logging Interval and choose how frequently the logger will record data unless operating in burst logging mode (see *Burst Logging*).
- Tap Start Logging and select when logging begins:
  - On Save.** Logging begins immediately after configuration settings are saved.
  - On Next Interval.** Logging begins at the next even interval as determined by the selected logging interval.
  - On Button Push.** Logging begins when you press either the Start/Stop logging button on the logger for 3 seconds or start logging with the app.
  - On Date/Time.** Logging begins at a date and time you specify. Select the Date and Time.
- Tap Stop Logging and specify when logging ends.
  - Never Stop (Overwrites Old Data).** The logger does not stop at any predetermined time. The logger continues recording data indefinitely, with newest data overwriting the oldest.
  - On Date/Time.** The logger stops logging on a specific date and time that you specify.
  - After.** Select this if you want to control how long the logger should continue logging once it starts. Choose the amount of time you want the logger to log data. For example, select 30 days if you want the logger to log data for 30 days after logging begins.
  - Stop When Memory Fills.** The logger continues recording data until the memory is full.
- Tap Pause Options, then select Pause On Button Push to specify that you can pause the logger by pressing its button for 3 seconds. Select Allow Button Resume to specify that you can press the Start/Stop button on the logger to resume logging.
- Enable or disable Show LED. If Show LED is disabled, the alarm and status LEDs on the logger are not illuminated while logging (the alarm LED does not blink if an alarm trips). You can temporarily turn on LEDs when Show LED is disabled by pressing the button on the logger for 1 second.
- Enable or disable Bluetooth Always On. If Bluetooth Always On is enabled, the logger advertises or regularly sends out a Bluetooth signal for the phone or tablet to find via the app while it is logging, which uses battery power. When Bluetooth Always On is disabled, the logger advertises only during logging when you press the button on the logger to wake it up, thereby preserving as much battery power as possible.
- Tap Alarms to open that area of the screen.
- Select Low if you want an alarm to trip when the sensor reading falls below the low alarm value. Enter a value to set the low alarm value.
- Select High if you want an alarm to trip when the sensor reading rises above the high alarm value. Enter a value to set the high alarm value.
- For the Duration, select how much time should elapse before the alarm trips and select one of the following:
  - Cumulative Samples.** 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, the alarm trips once the sensor readings have been above 85°F for a total of 30 minutes since the logger was configured.
  - Consecutive Samples.** The alarm trips once the sensor reading is out of the acceptable range continuously for the selected duration. For example, the high alarm is set to 85°F and the duration is set to 30 minutes, the alarm trips only if all sensor readings are 85°F or above for a continuous 30-minute period.
- Tap Start to save the configuration settings.

Logging begins based on the settings you selected. Press the start button on the logger if you set it up to start logging with a button push. See *Mounting the Logger* for details on mounting and see *Downloading Data From the Logger* for details on downloading.

If the logger is configured with alarm settings, an alarm trips when the temperature reading is outside the range specified in the logger configuration. 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 logged. Even if the temperature reading returns to a normal range, the alarm indicator does not clear in the app and the alarm LED continues to blink.

## Setting a Password

You can create an encrypted password for the logger that is required if another device attempts to connect to it. This is recommended to ensure that a deployed logger is not mistakenly stopped or purposely altered by others. This password uses a proprietary encryption algorithm that changes with every connection.

To set a password:

- Tap Devices. Press the Start/Stop button **on the logger** to wake it up, if necessary. Tap the logger tile in the app to connect to it.

2. Tap Lock Logger.
3. Type a password and then tap Set.

Only the device used to set the password can then connect to the logger without entering a password; all other devices are required to enter the password. For example, if you set the password for the logger with your tablet and then try to connect to the logger later with your phone, you must enter the password on the phone but not with your tablet. Similarly, if others attempt to connect to the logger with different devices, they are also required to enter the password. To reset a password, press the button on the logger for 10 seconds or connect to the logger and tap Manage Password and tap Reset.

## Downloading Data From the Logger

To download data from the logger:

1. Tap Devices. Press the button **on the logger** to wake it up, if necessary. Tap the logger tile in the app to connect to the logger.
2. Tap Download Data. The logger downloads data to the phone, tablet, or computer.
3. Once the download is complete, tap Done to return to the previous page or tap Export and Share to save the file in the specified format.
4. When the export file has successfully been created, tap Done to return to the previous page or tap Share to use your device's usual modes of sharing.

You can also upload data automatically to HOBOLink, Onset's web-based software, using the app or the MX gateway. For details, see the HOBOLink User Guide and see the HOBOLink help for details on working with data in HOBOLink.

## Logger Events

The logger records the following events to track logger operation and status. You can view events in exported files or plot events in the app.

1. To plot events, tap HOBO Files and select a file to open.
2. Tap  (if applicable) and then tap . Select the events you want to plot and tap OK.

| Event Name                  | Definition                                                                                                             |
|-----------------------------|------------------------------------------------------------------------------------------------------------------------|
| Host Connect                | The logger was connected to a mobile device.                                                                           |
| Started                     | The logger started logging.                                                                                            |
| Stopped                     | The logger stopped logging.                                                                                            |
| Alarm Out of Range/In Range | An alarm has occurred because the reading was outside the alarm limits or back within range. <b>Note:</b> Although the |

| Event Name    | Definition                                                                                                                                                 |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
|               | reading may return to a normal range, the alarm indicator does not clear in the app and the alarm LED continues to blink until you reconfigure the logger. |
| Safe Shutdown | The battery level dropped below a safe operating voltage and performed a safe shutdown.                                                                    |

## Mounting the Logger

You can mount the logger using tape or the mounting loop.

- On the back of the logger, remove the backing on the tape that is adhered to the top and bottom of the logger and then mount it on a flat surface.
- Use the mounting loop to tie the logger to another object.

The logger can be placed in indoor locations that experience condensation. Although the logger can withstand incidental splashing with water, do not deploy it in a permanently wet location.

## Protecting the Logger

**Note: Static electricity may cause the logger to stop logging.**

The logger has been tested to 8 KV, but avoid electrostatic discharge by grounding yourself to protect the logger. For more information, search for static discharge on the Onset website: [www.onsetcomp.com](http://www.onsetcomp.com).

## Battery Information

The logger uses one CR2450 non-replaceable lithium battery. Battery life is 1 year, typical with a logging interval of 1 minute, but may be extended to 2 years when the logger is configured with Bluetooth Always On disabled. Expected battery life varies based on the ambient temperature where the logger is deployed and the frequency of connections, downloads, and paging. Deployments in extremely cold or hot temperatures or a logging interval faster than 1 minute can affect battery life. Estimates are not guaranteed due to uncertainties in initial battery conditions and operating environment.

**⚠ WARNING:** Do not cut open, incinerate, heat above 85°C (185°F), or recharge the lithium battery. The battery may explode if the logger is exposed to extreme heat or conditions that could damage or destroy the battery case. Do not dispose of the logger or battery in fire. Do not expose the contents of the battery to water. Dispose of the battery according to local regulations for lithium batteries.

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**Federal Communication Commission Interference Statement**

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

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

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

**FCC Caution:** Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

**Industry Canada Statements**

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

**Avis de conformité pour l'Industrie Canada**

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

To comply with FCC and Industry Canada RF radiation exposure limits for general population, the logger must be installed to provide a separation distance of at least 20cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.