Obi Manual

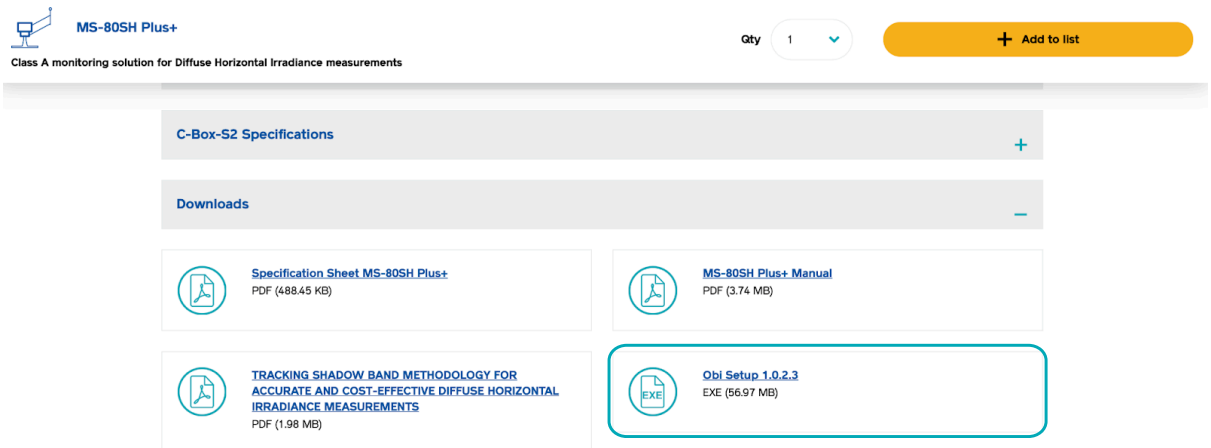
‘Obi’ means ‘belt’ in Japanese, and with this software, users will be able to visualize measurements, set communication parameters, and rapidly troubleshoot any issues using the MS-80SH Plus and MS-90Plus solutions.

This Windows software is available for download on the EKO website (MS-80SH Plus and MS-90 Plus product pages). To connect the instruments to your computer and use the software, we recommend using either our optional USB to RS-485 conversion cable or any generic equivalent.

1. Software Installation

Follow the steps below to install “Obi” configurator software.

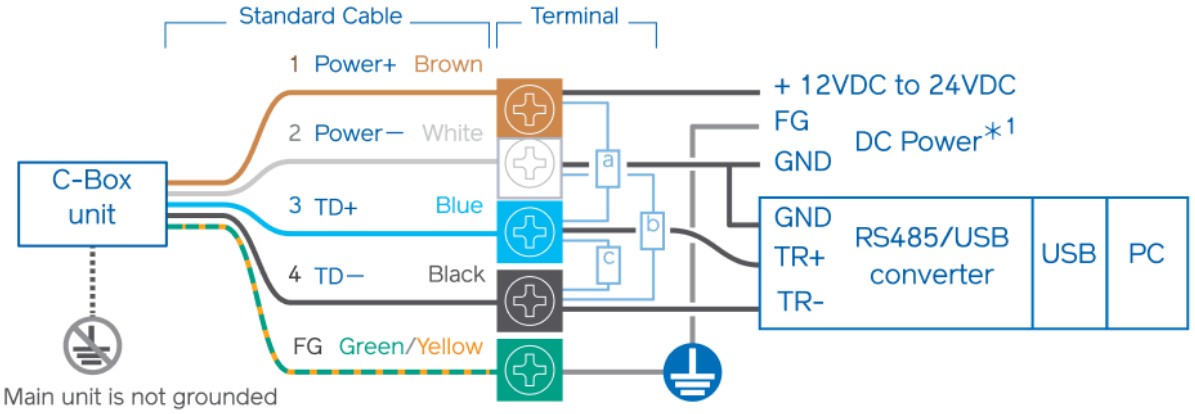
- Download the latest version of the 'Obi.zip' file (Compressed in Zip format) from the MS-80SH Plus+ product page on the EKO website under the “Downloads” section, and then install the Obi software.



2. Hardware Preparation

After the software is installed, connect the C-Box to thePC using an RS-485 to USB cable:.

- Follow the wiring in the diagram below to ensure a successful connection..



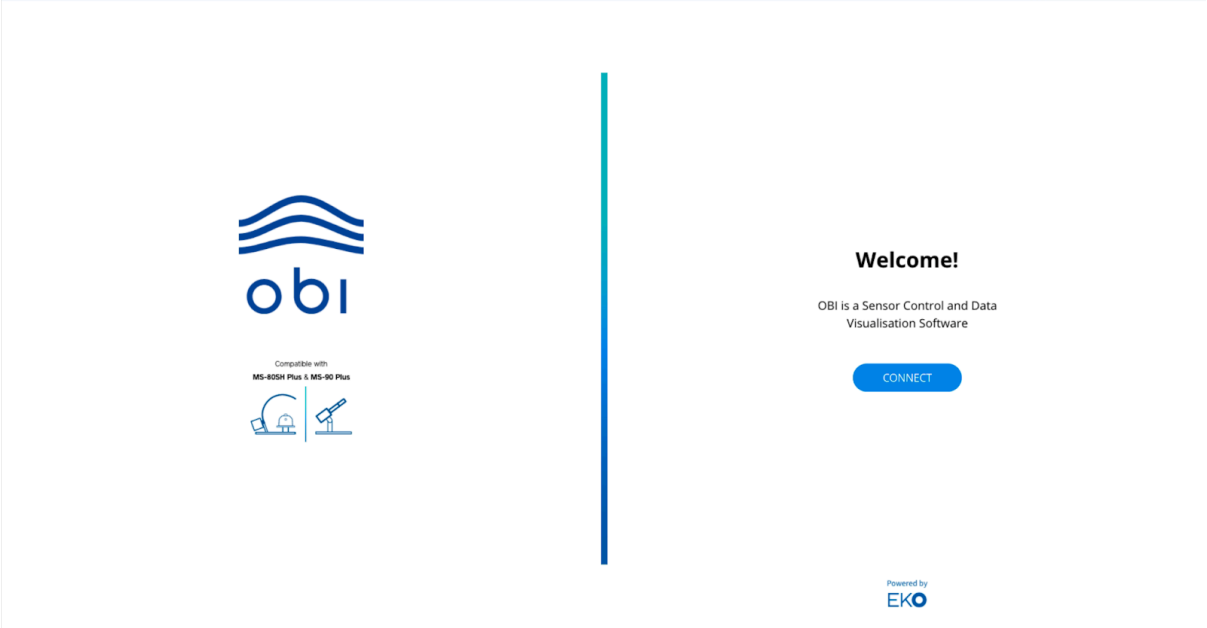
- Attach the signal cable ends of the MS-80SH to the communication terminal of the "RS485/USB converter".

- Connect the power lines of the signal cable to a power supply (from 12VDC to 24VDC).

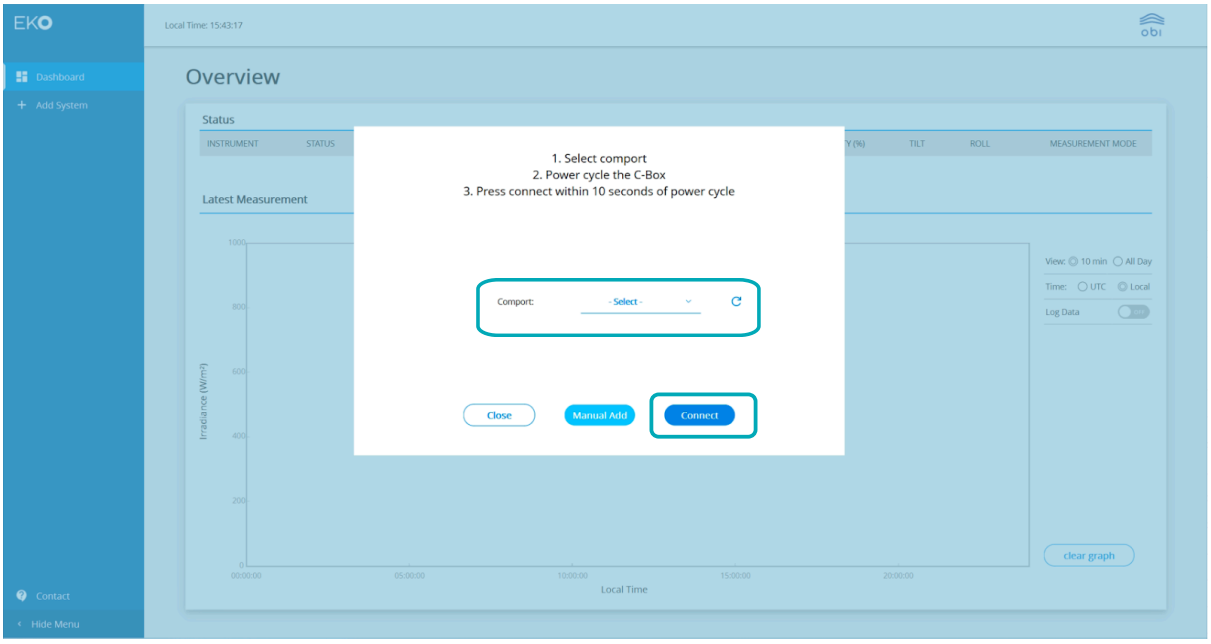
3. Software

Connection

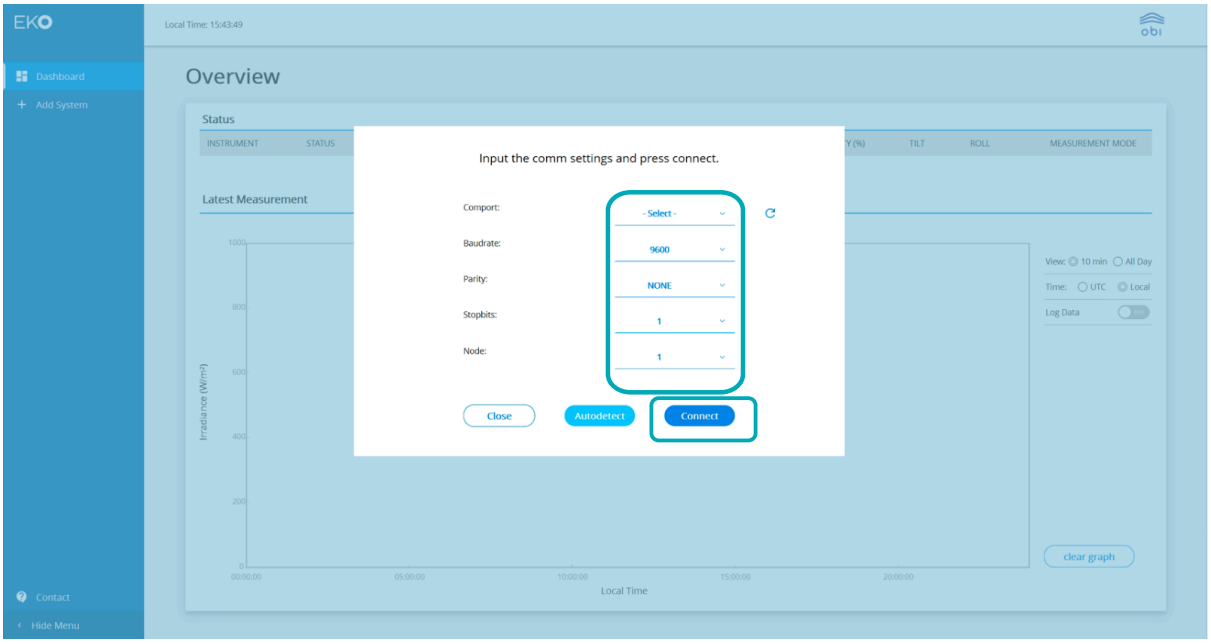
Execute the “Obi” software and start it by clicking on connect.



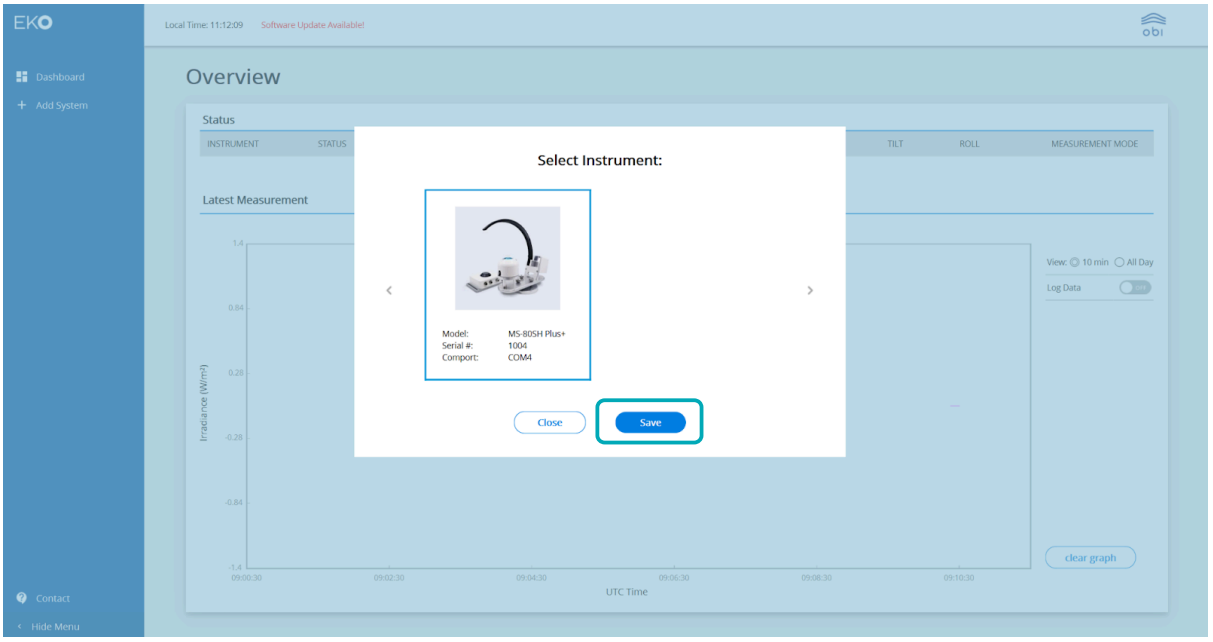
If the system has the factory settings (19200, E, 1, 1), you should be able to view the Instrument Screen by clicking **[Save]**on the Start Screen.
If the device does not have the standard settings, a pop-up will appear prompting you to enter the COM port. To establish the connection, input the correct COM port and perform a power cycle. After this, the instrument should appear on the screen. Then, click **[Connect]**.



You can also use the **[Manual Add]** option to establish a connection if you know the communication settings. For the MS-90+, it can only be connected using this option. If the settings are set to default, they will be (9600, N, 1, 1).



To connect, simply input the appropriate communication settings and click **[Connect]**.



Dashboard

As soon as you save the connection, communication with the device will be established, and a tree view screen like the one below will appear. This screen will display "Dashboard" (measurement screen), "MS-80SH Plus+" (device name), and "Add New System" (to add a new connection).

In the “Dashboard” window, you’ll be able to view both the status information and the graph.

Status:

In the first screen you will be able to see:

- Instruments: MS-90 Plus+ or MS-80SH Plus+
- Status: Green (if the connection is successful), Gray (if it’s disconnect)
- Timestamp: in UTC
- GHI (Global Horizontal Irradiance)
- DNI (Direct Normal Irradiance)
- DHI (Diffuse Horizontal Irradiance)
- Temperature
- Humidity
- Tilt
- Roll

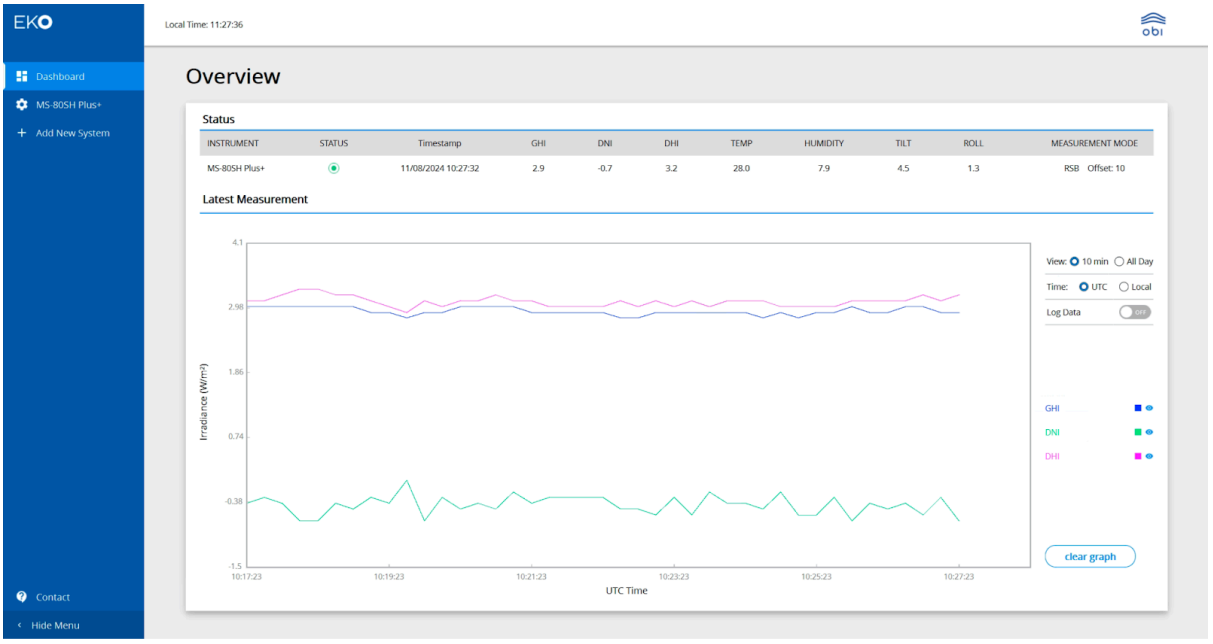
- Measurement mode: RSB (with the offset chosen by the user), TSB or Manual. It also informs if custom GPS is on.

Graph:

In the graph section, you can view the data as it's being displayed. You have the option to display the graph in either a 10-minute interval or an all-day time frame.

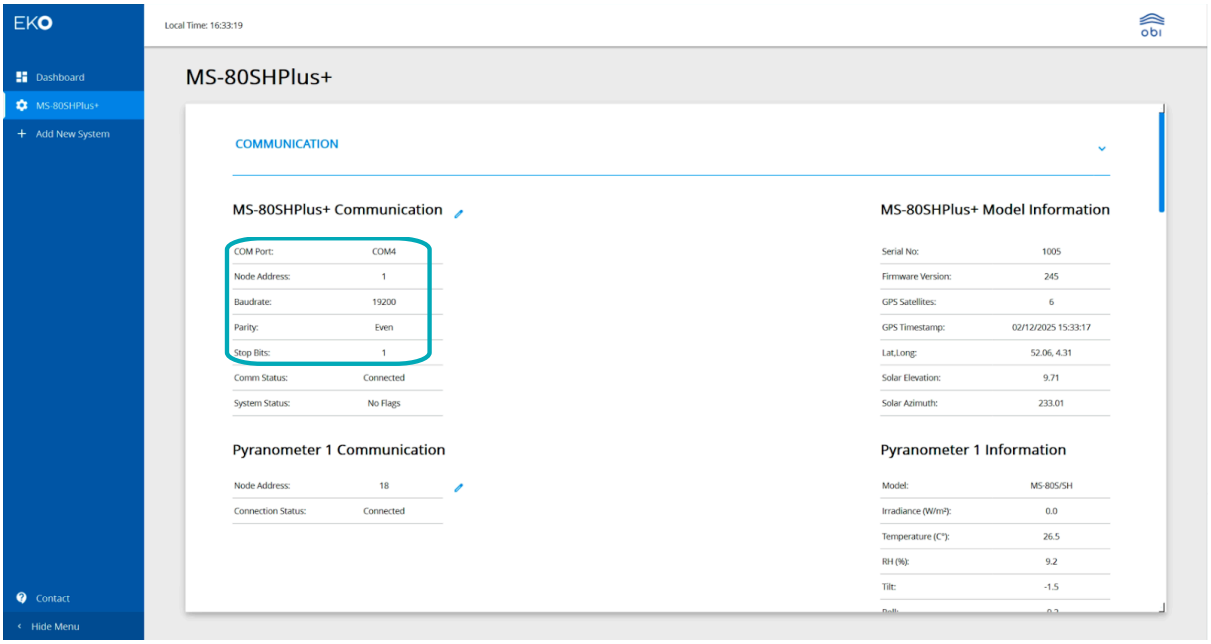
Additionally, you can choose to display the graph in either UTC or local time. By toggling the **(Log Data)** button below, you can choose whether to acquire and save the measurement data in the PC.

Finally, you can customize the graph line's colors or clear it by clicking on **[Clear Graph]**.

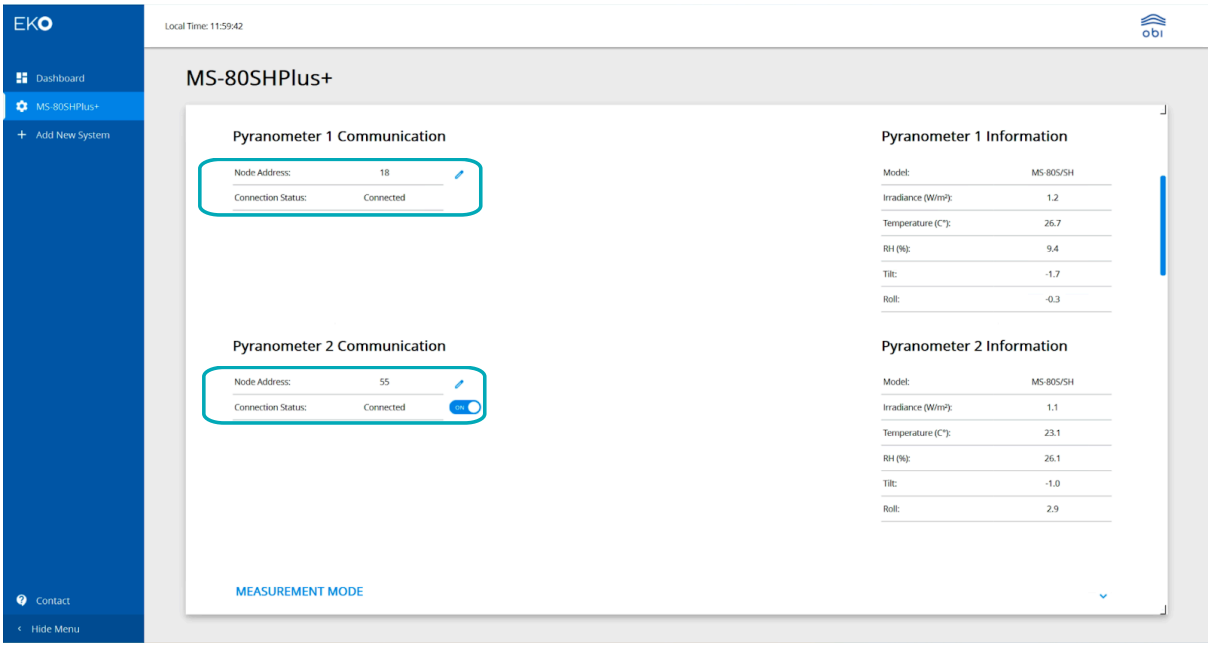


Settings

Communication:



In this section, you can modify the instrument's communication settings. To enable editing, click the pencil icon. The text color of the modifiable parameters—**(COM Port)**, **(Node Address)**, **(Baudrate)**, **(Parity)**, and **(Stop Bits)**—will change to blue, indicating that they can be adjusted. After making the necessary changes, click the green checkmark to save the settings.

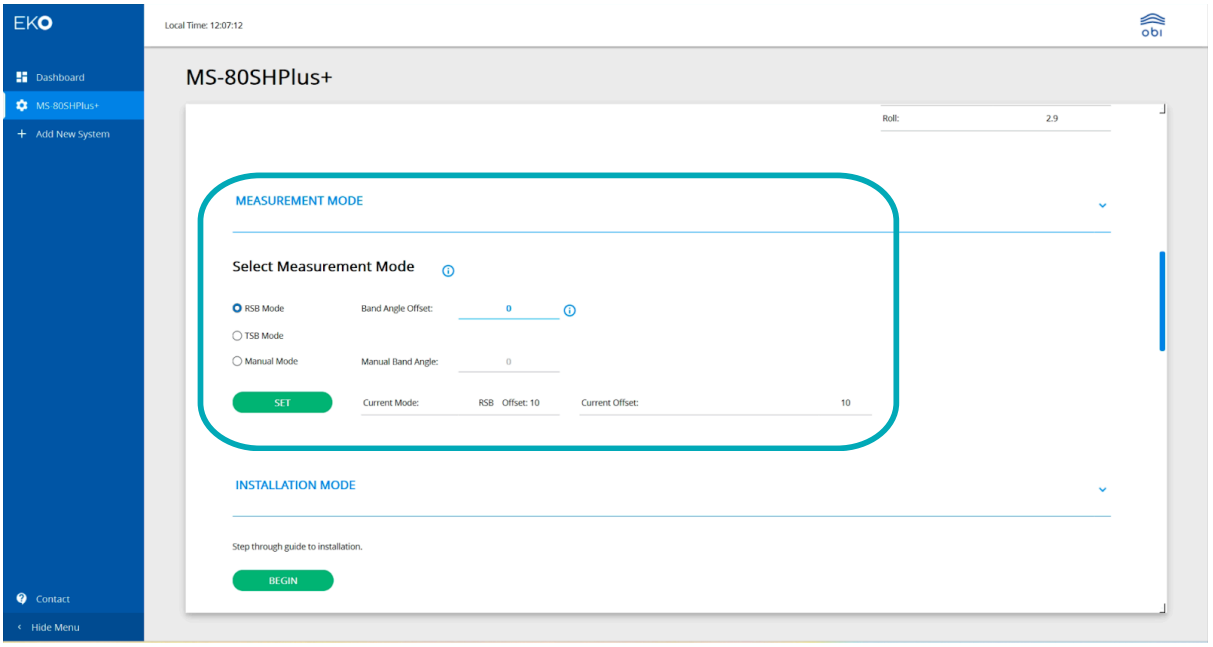


In this area, you can enter the **(Node Address)** for the connected MS-80SH pyranometer. Please note that if the proper node address is not set on the C-Box, the

system will not get any readings from the pyranometer modbus signal. To connect a second pyranometer, enter its **(Node Address)** and toggle the **(Connection Status)** to **[ON]** to activate the connection.

Measurement Modes

Change to Measurement Mode. The parameters that can be depending on the selected mode.



Rotating Shadow Band (RSB) Mode

By selecting the first option under Measurement Mode, the equipment will operate in RSB mode. This mode intermittently shades the pyranometer, allowing a single pyranometer to measure **Global Horizontal Irradiance (GHI)**and **Diffuse Horizontal Irradiance (DHI)**, then calculate **Direct Normal Irradiance (DNI)**.

- The measured value is updated every **15 seconds**.
- **Pyranometer 1**: Measures **GHI, DHI**, and calculates **DNI**.
- **Pyranometer 2 (optional)**: Measures **Reflected Horizontal Irradiance (RHI)** and determines **albedo** (Reflected light / Incident light).

In this mode, you can adjust the **Band Angle Offset** to **10, 15, or 0**. Click **[Set]** once the settings are completed.

Tracking Shadow Band (TSB) Mode

By selecting the second option under **Measurement Mode**, the equipment will operate in **TSB mode**. This mode continuously shades the pyranometer by tracking the movement of the sun, providing **Diffuse Horizontal Irradiance (DHI) measurements**.

- The measured value is updated every **second**.
- **Pyranometer 1**: Measures **DHI**.
- **Pyranometer 2 (optional)**: Measures **GHI** and calculates **DNI**.

Once the option is selected, click **[Set]** to confirm the setting.

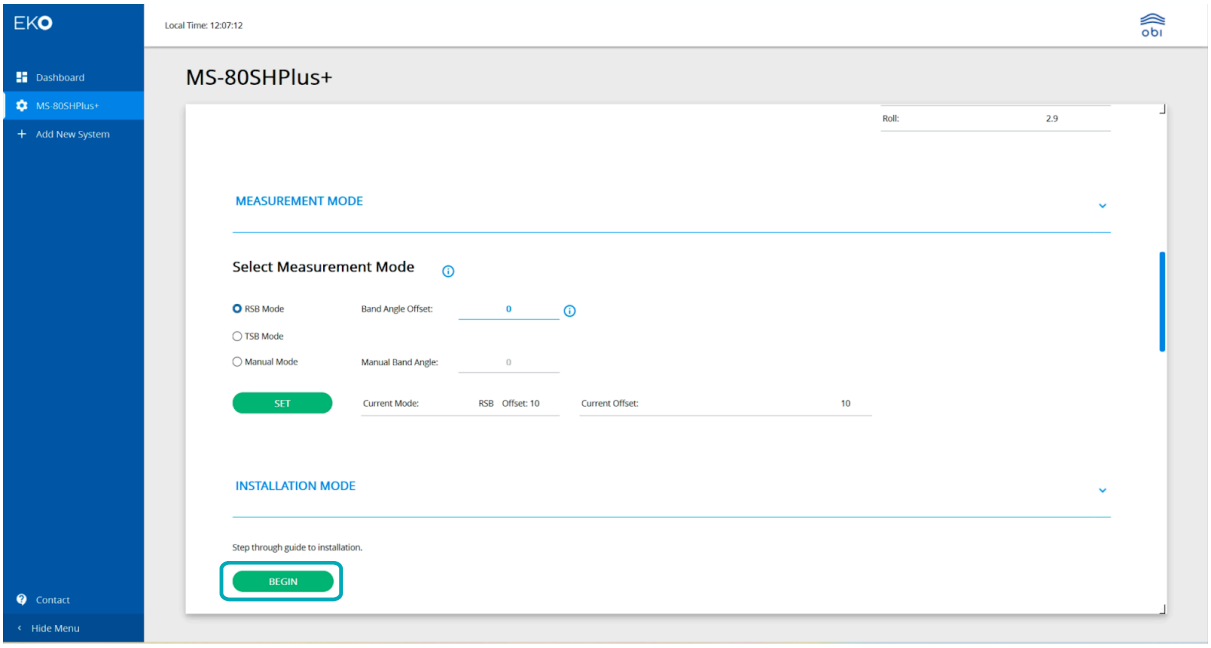
Manual Mode

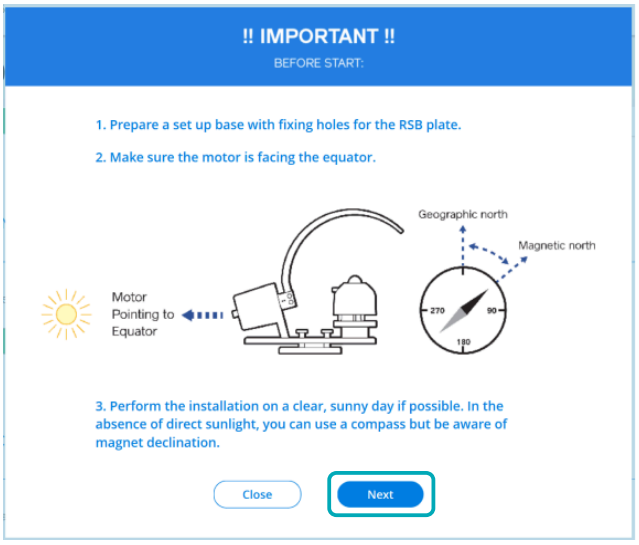
The last option under **Measurement Mode** allows you to set the band at any angle between **0 and 180 degrees**, which should be entered in the **Manual Band Angle** field. The value you input will be displayed in the **Current Offset** field to confirm the setting.

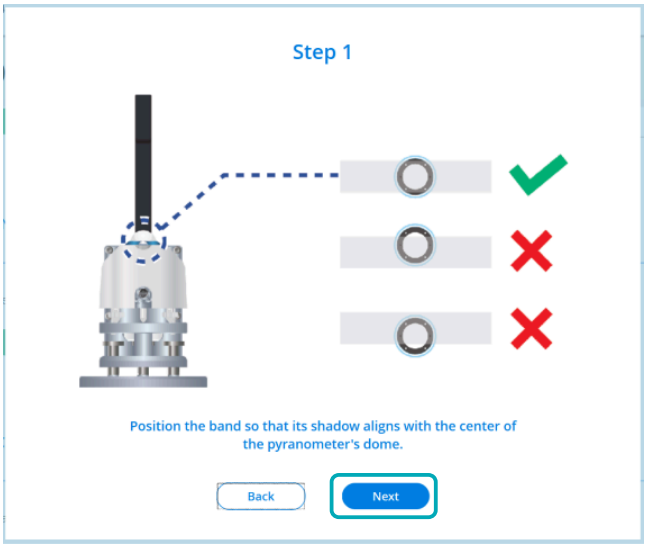
For all modes, the **Current Mode** field will display the updated mode along with any relevant details. You can also view the current working mode on the dashboard under "Measurement Mode.

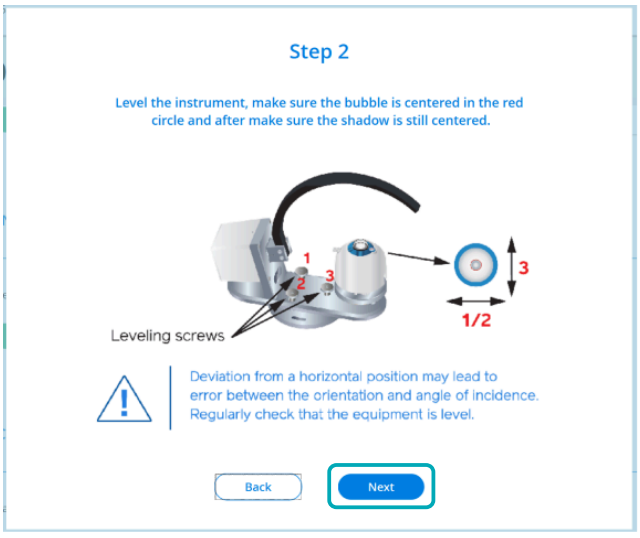
Installation Mode

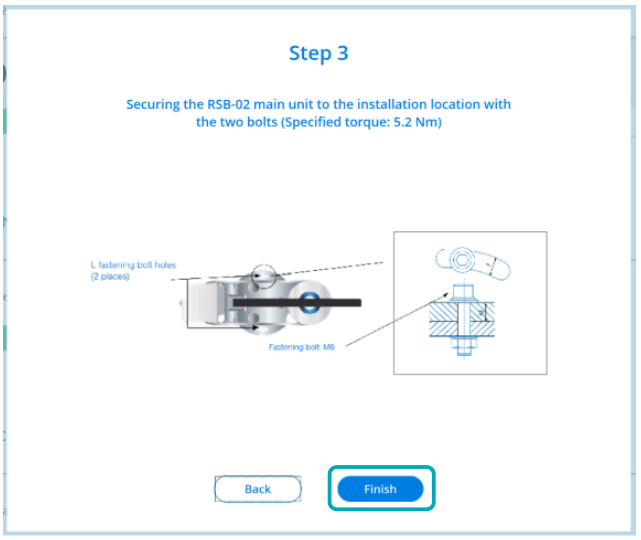
Installation Mode is designed to provide a guided experience for properly installing the equipment.
To start the guide and open the pop-ups, click **[Begin]**. Then, click **[Next]** to proceed with the instructions.


EKO
Local Time: 12:07:12
Dashboard
MS-80SHPlus+
Add New System
Contact
Hide Menu
MS-80SHPlus+
Roll: 2.9
MEASUREMENT MODE
Select Measurement Mode
RSB Mode
Band Angle Offset: 0
TSB Mode
Manual Mode
Manual Band Angle: 0
SET
Current Mode: RSB Offset: 10
Current Offset: 10
INSTALLATION MODE
Step through guide to installation.
BEGIN



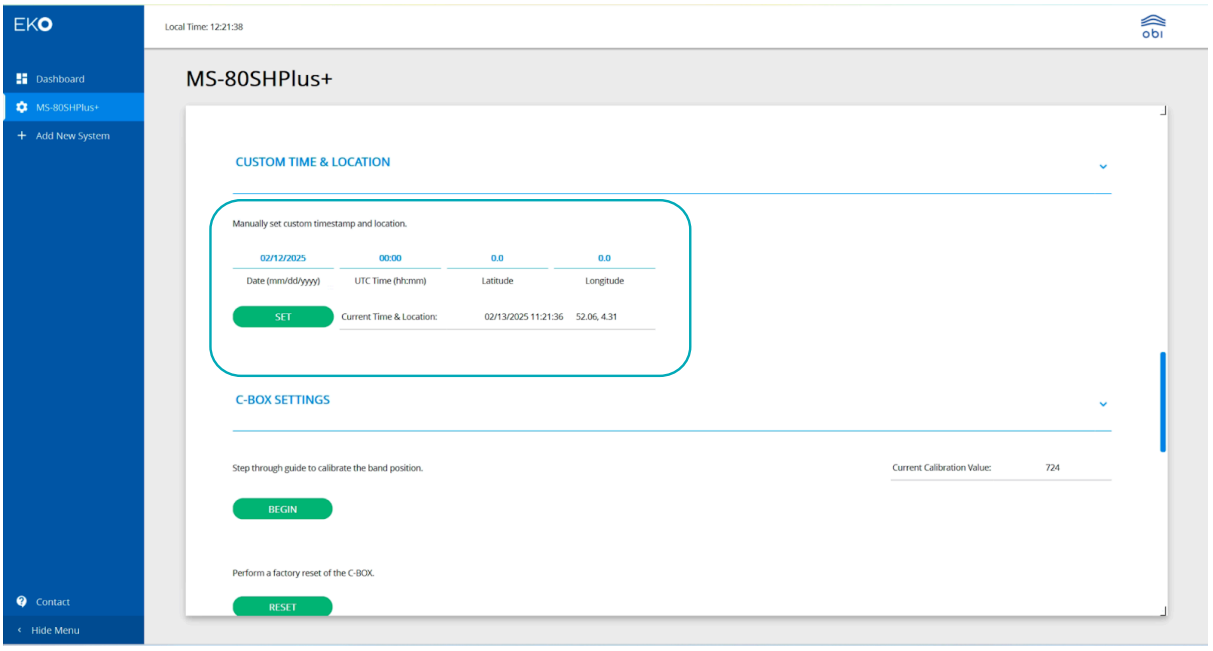






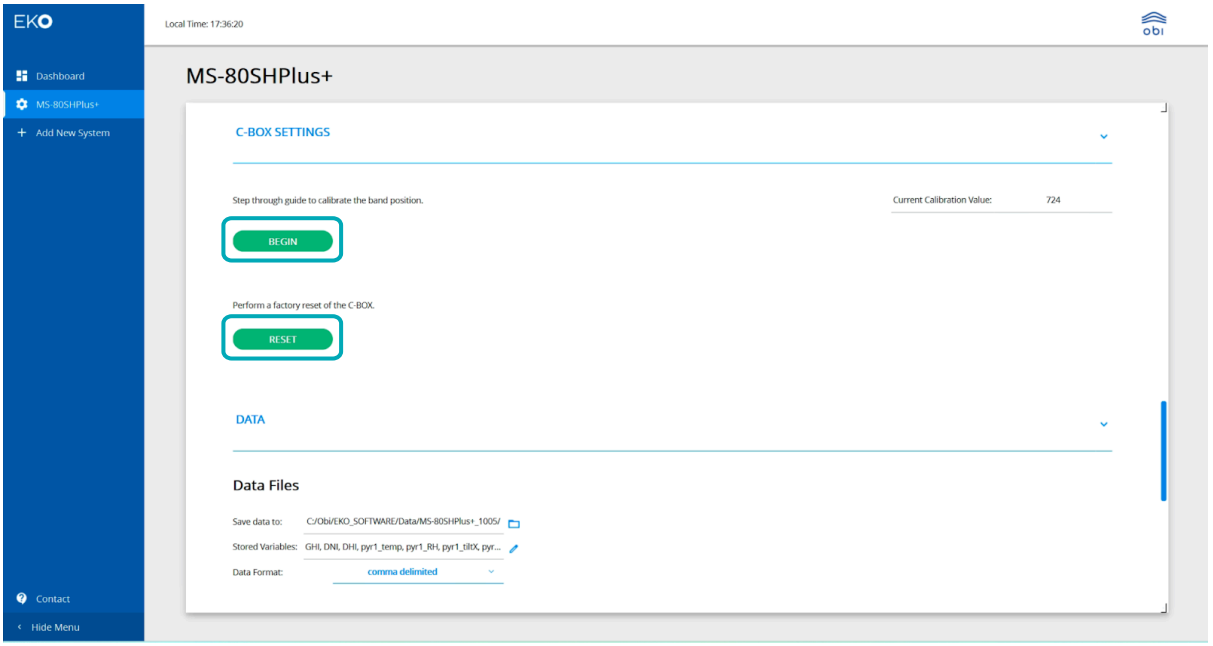
Custom Time & Location

To use separate GPS information (location information), instead of the GPS data in the C-box, define the on-board time information and location manually.
Enter the setting values for (**Date**), (**Time**), (**Latitude**), and (**Longitude**), then click **[Begin]** to start measurements with the configured Custom GPS information.



C-Box Settings

This section allows you to both calibrate the band and perform a reset on the C-Box.

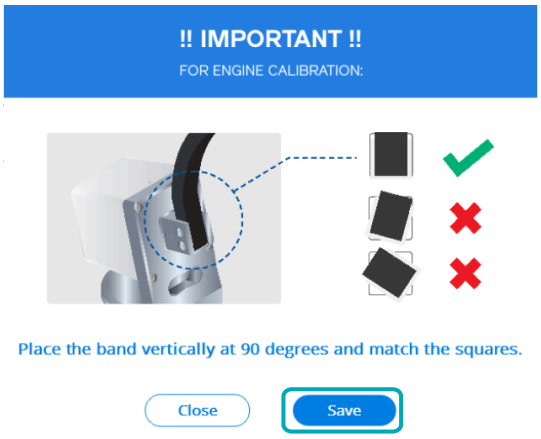


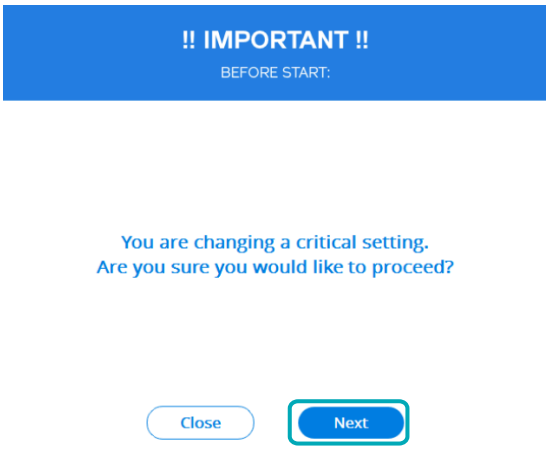
Calibration mode

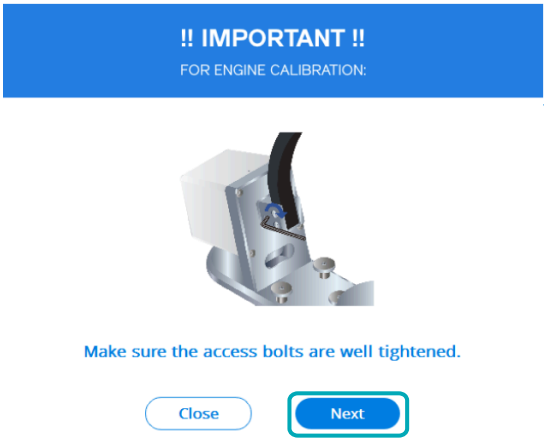
This feature will allow the calibration of the motor encoder's absolute position through guided steps.

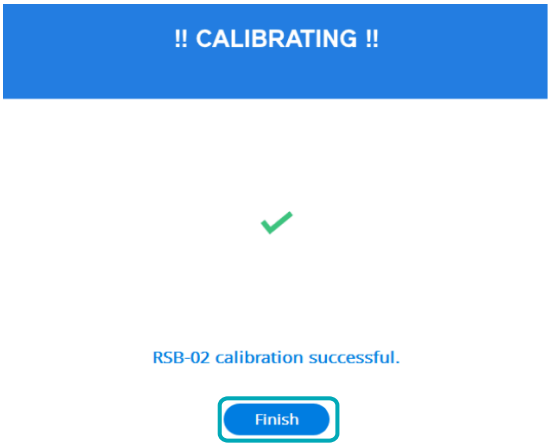
By clicking on **[Begin]** under **(Step through guide to calibrate band position)**, a step-by-step pop-up will appear to guide you through the calibration process. Click

[Next] and follow the instructions. Make sure the band is positioned at a 90º angle for proper adjustment. Click on **[Save]** then on **[Finish]** to conclude the process.







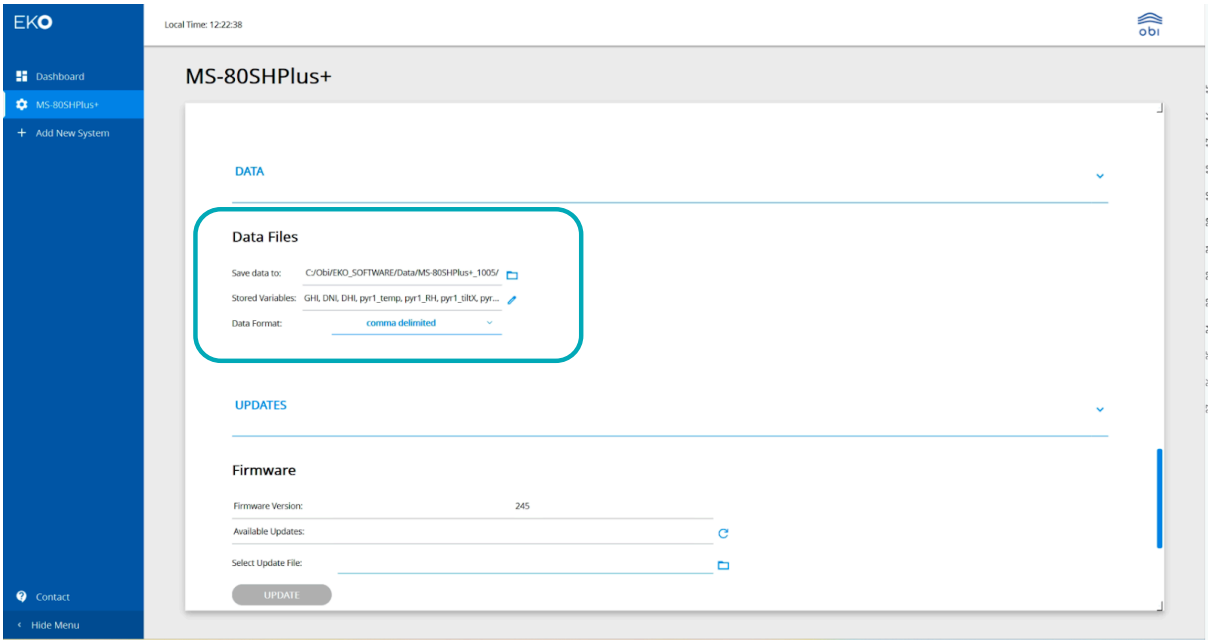


C-Box Reset:

This feature allows the C-Box to reset its communication parameters to factory settings and set the pyranometer node addresses to their default values. By clicking on **[Begin]** under **(Perform a factory reset of the C-BOX)**, a pop-up will appear asking if you want to proceed with the reset. Click on **[Reset]** to complete the process.

Data Files

This section allows you to edit the variables and the folder in which you want to save your data as well as the appropriate format.



Save data to:

Here, you can select the folder where you would like to save your data file, in case the default location created by the application doesn't meet your needs. To change the folder, click on the **Folder** icon and choose the desired folder. The data collection may be activated by setting *ON* the data log on the main dashboard window.

Data Format:

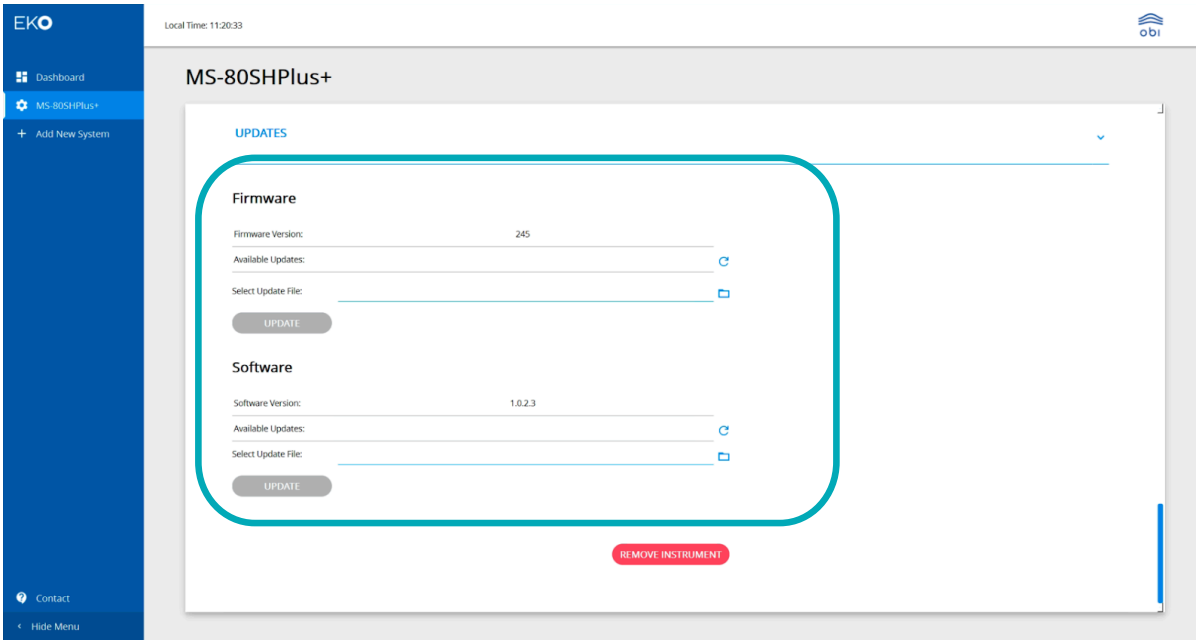
By clicking on the **Arrow** icon, you can select whether to save the data in a tab-delimited or comma-delimited format. Simply click on your preferred format on the pull-down menu to change it.

Stored Variable:

Here you can find a wide range of variables to add to your data file. Click on the **Pencil** icon to open a pop-up with all the options. Check the boxes next to the variables you want to include (or uncheck the ones you want to exclude), then click **[Save]** to confirm your selections.

Updates

If needed, update the firmware on the C-BOX or Obi software. Before proceeding, please ensure that you have downloaded the latest update file from our website.



Firmware update:

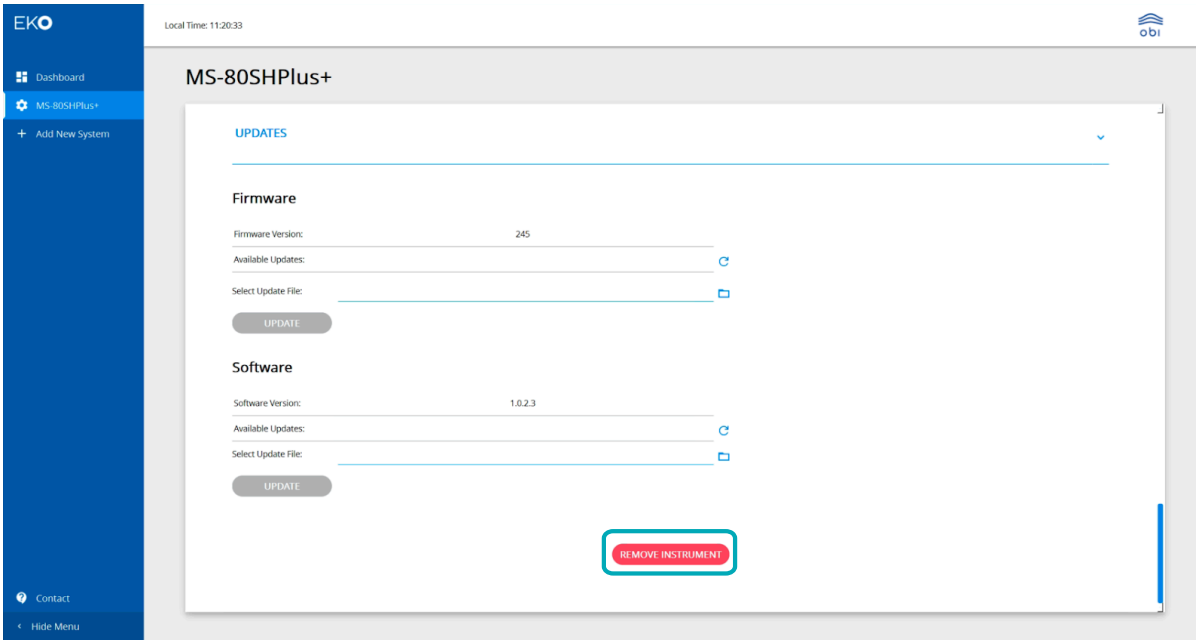
This section allows you to update the firmware of your C-Box. Simply click on the **File** icon to select the correct firmware file. Then, click **[Update]** to begin the process. Once the update is complete, remember to perform a power cycle.

Software update:

In this section, you can update the software version you're using. Click on the **File** icon to select the correct version, then click **[Update]** to begin. Once the process is complete, make sure to restart the software.

Remove Instruments:

This option allows you to disconnect the instrument from Obi.



To disconnect the instrument from Obi, click on **[Remove Instrument]**, then click **[Remove]** on the pop-up that appears.

If you have any further questions, please don't hesitate to get in touch with our customer support team. We're here to help!

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