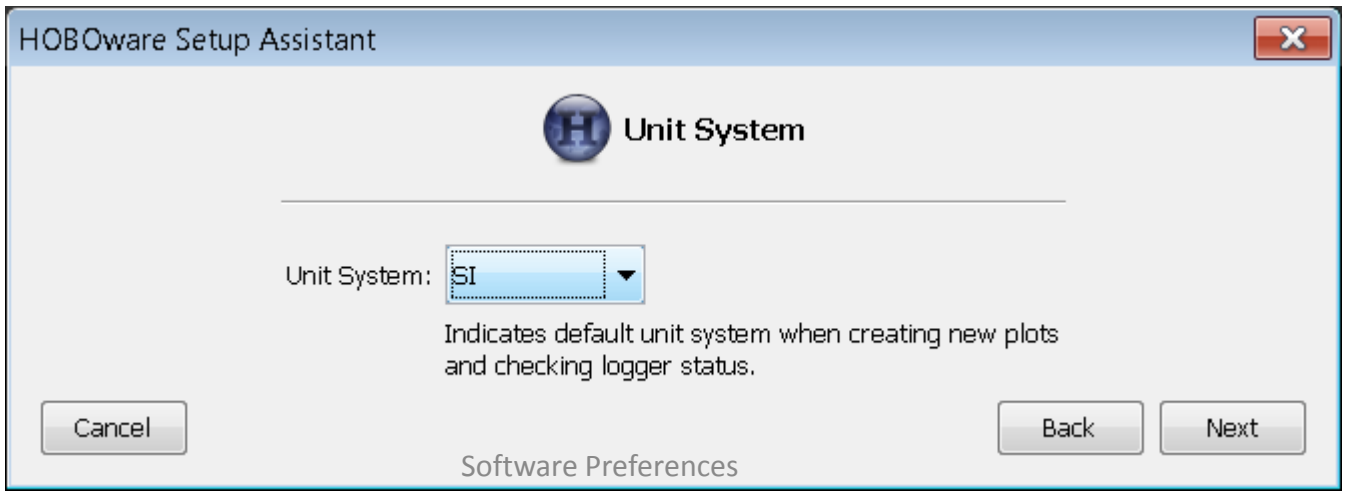
HOBO Datalogger Setup

Hobo Software Preferences

HOBOware - Initial Startup (OPTIONAL) Part 1

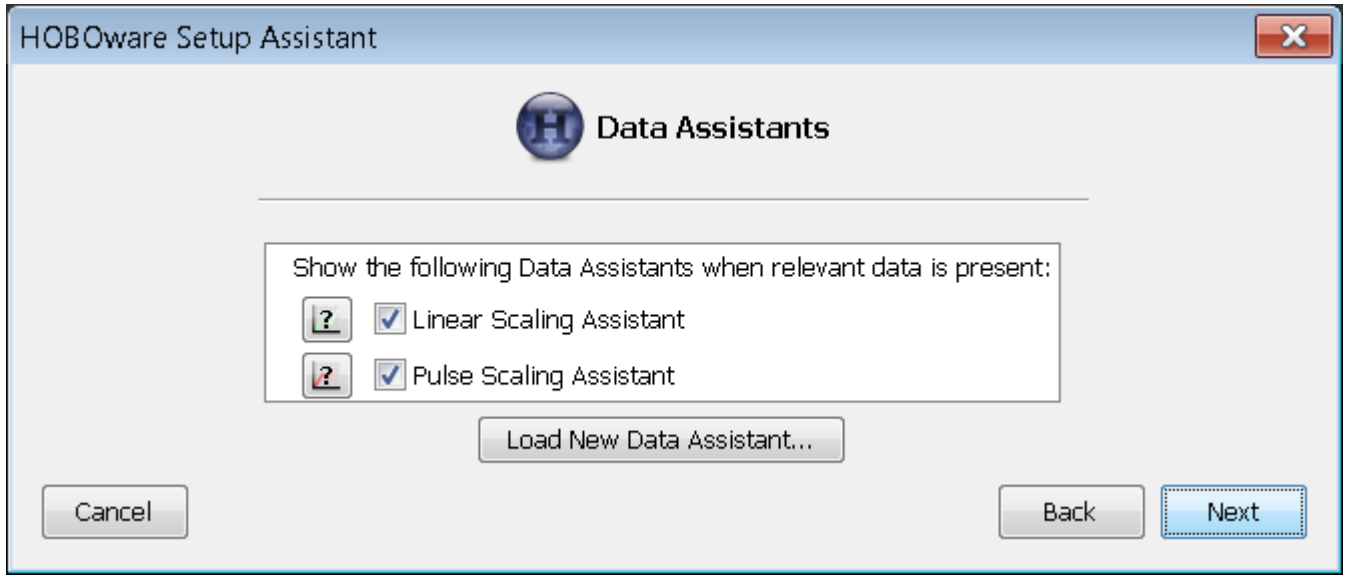
If these windows pop up when you first start HOBOware, please select these options →

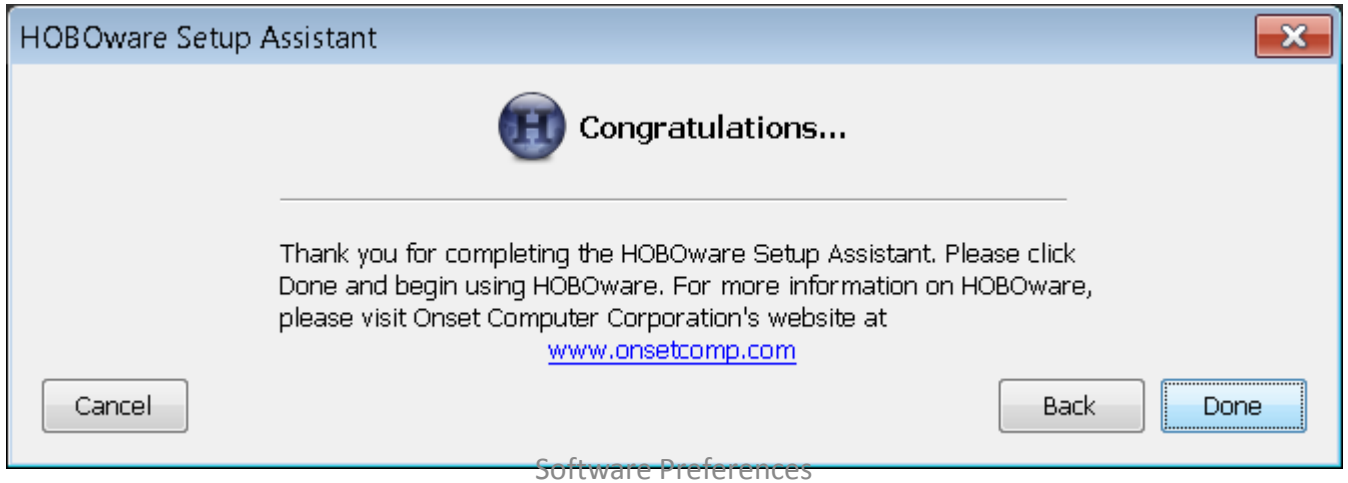




HOBOware - Initial Startup (OPTIONAL) Part 2

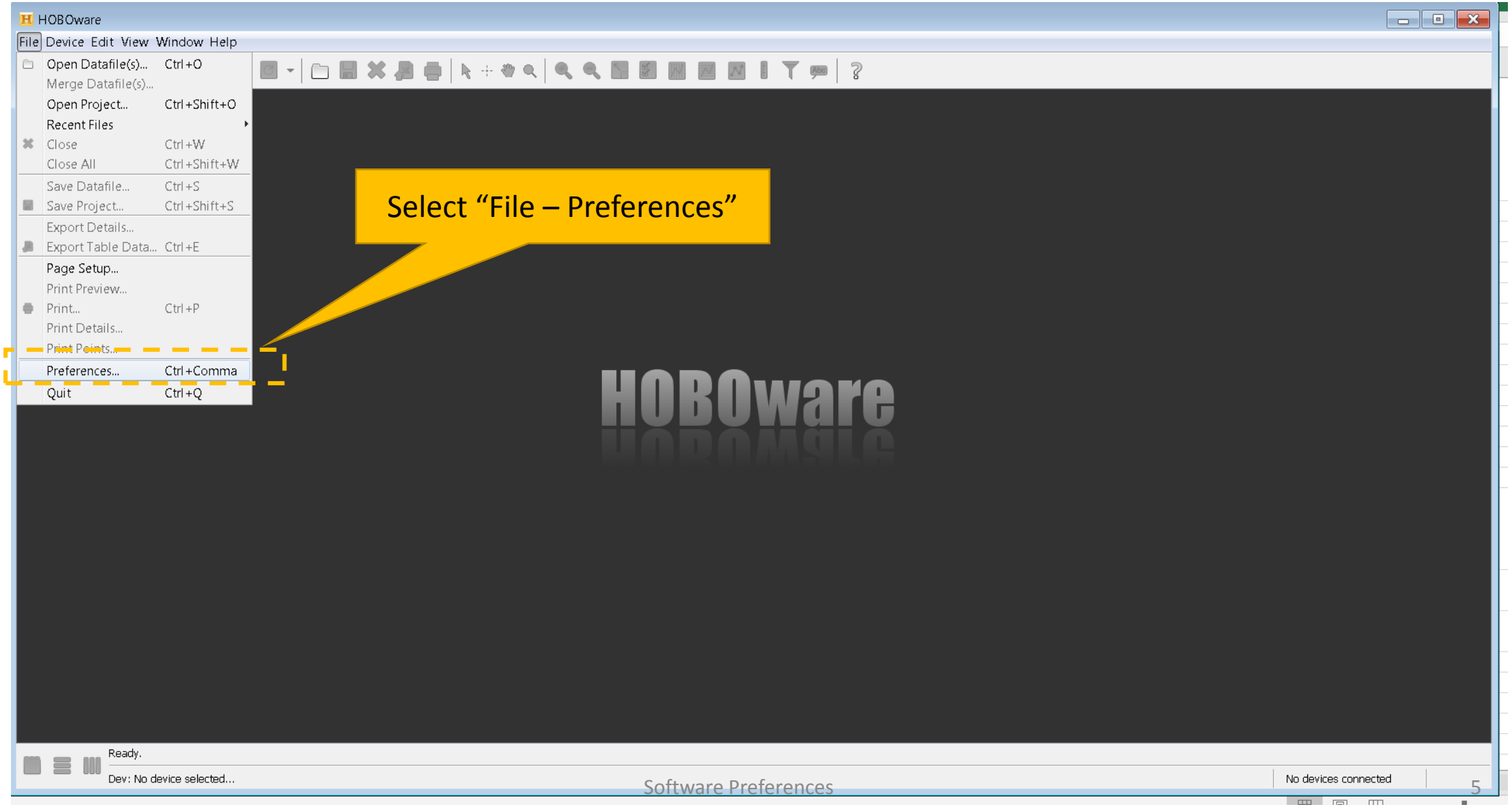
If these windows pop up when you first start HOBOware, please select these options →



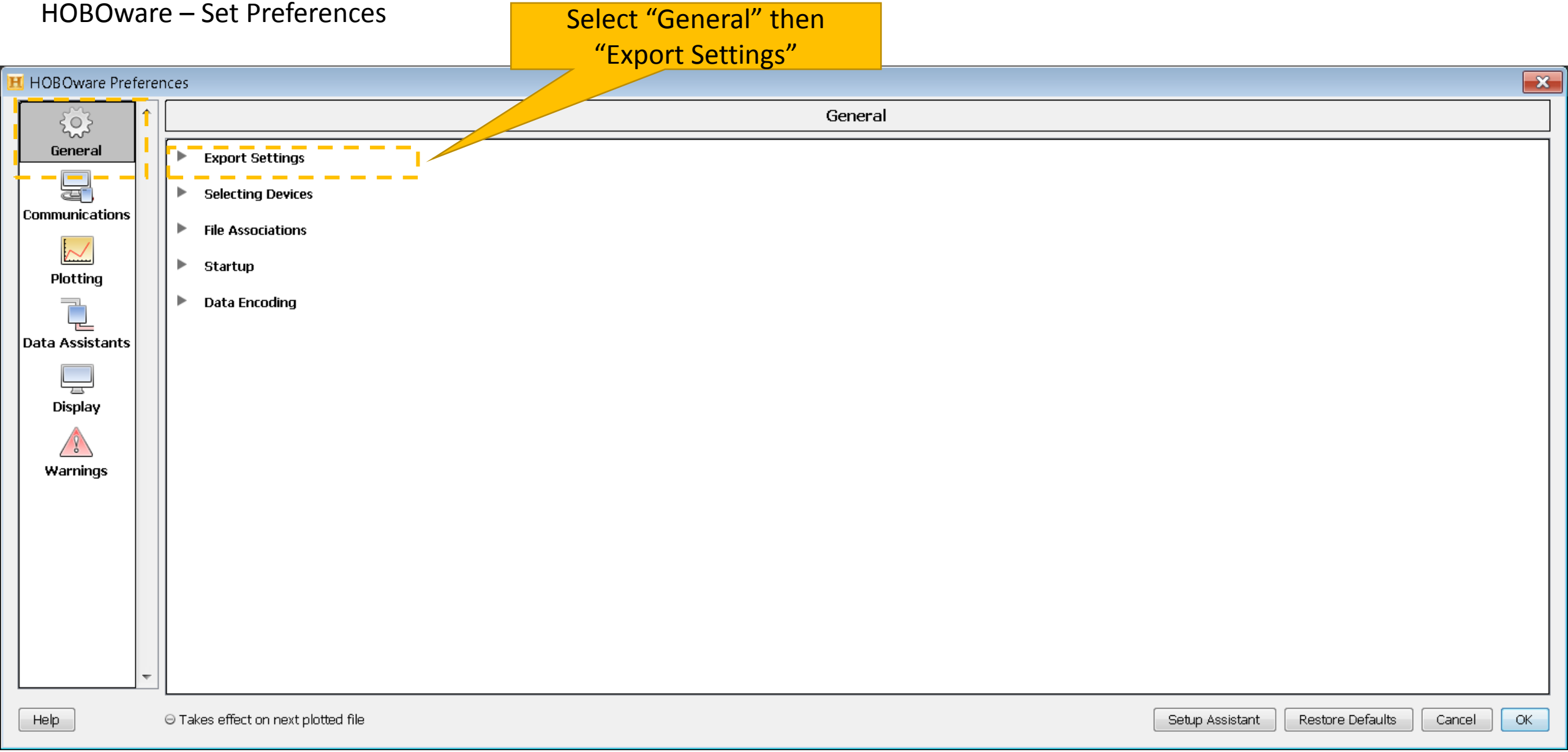


HOBOware – Set Preferences

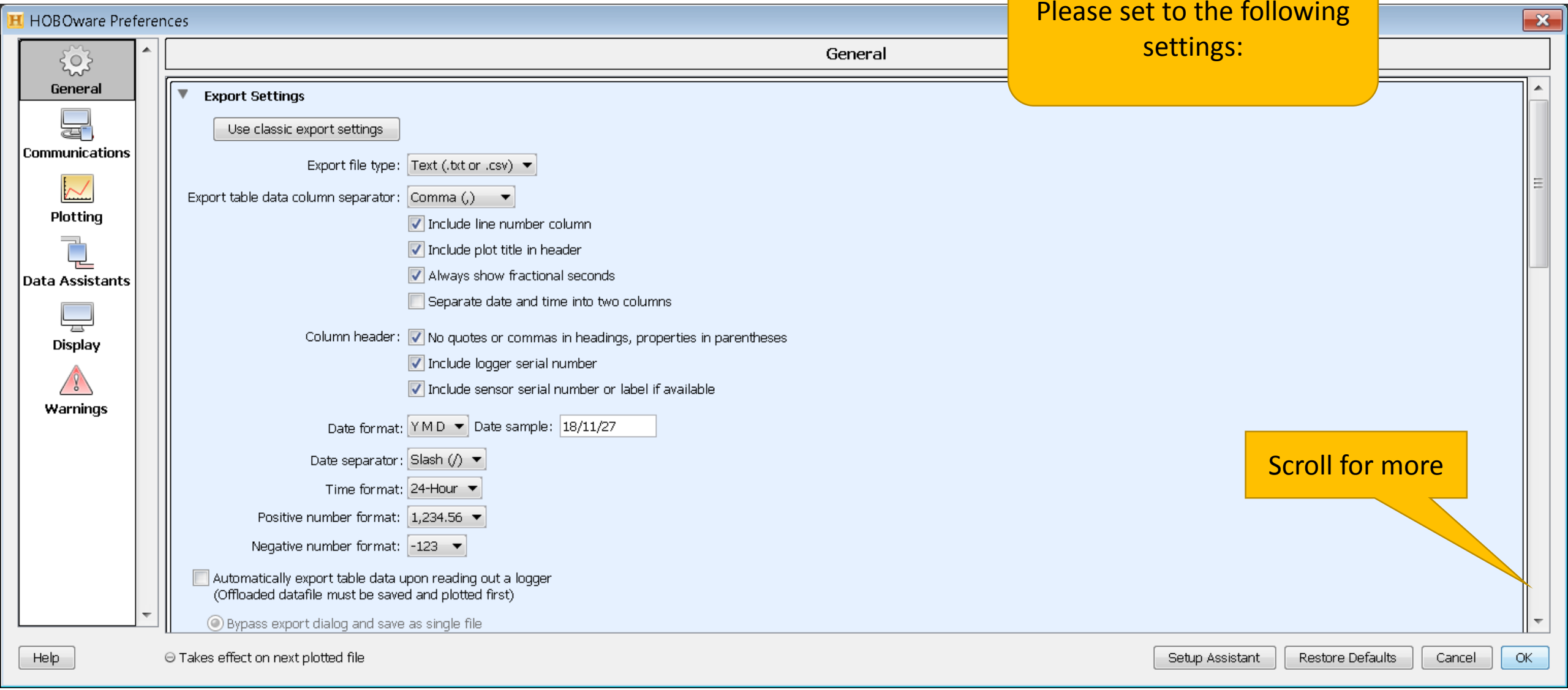
Before using HOBOware, please set the user preferences.



HOBOware – Set Preferences



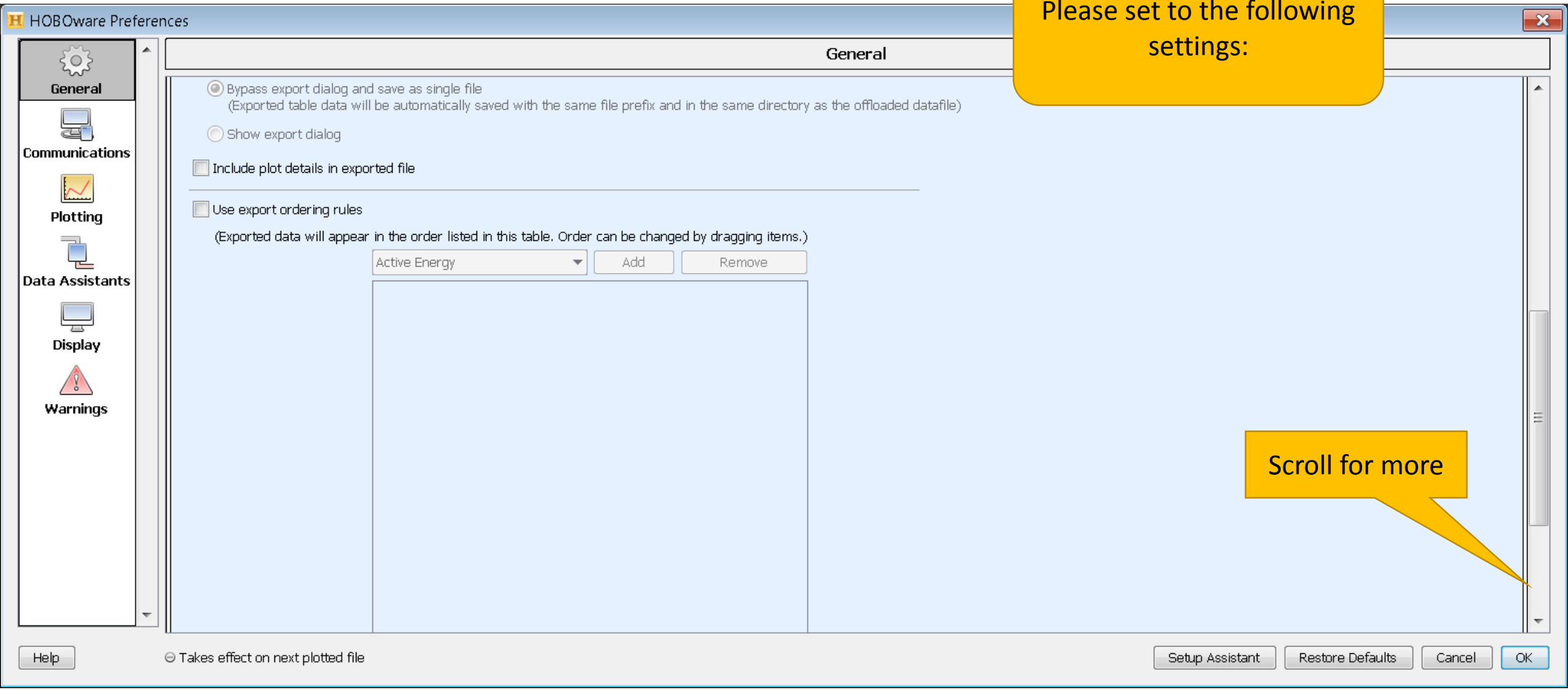
HOBOware – Set Preferences
General 1/3



Please set to the following settings:

Scroll for more

HOBOware – Set Preferences
General 2/3

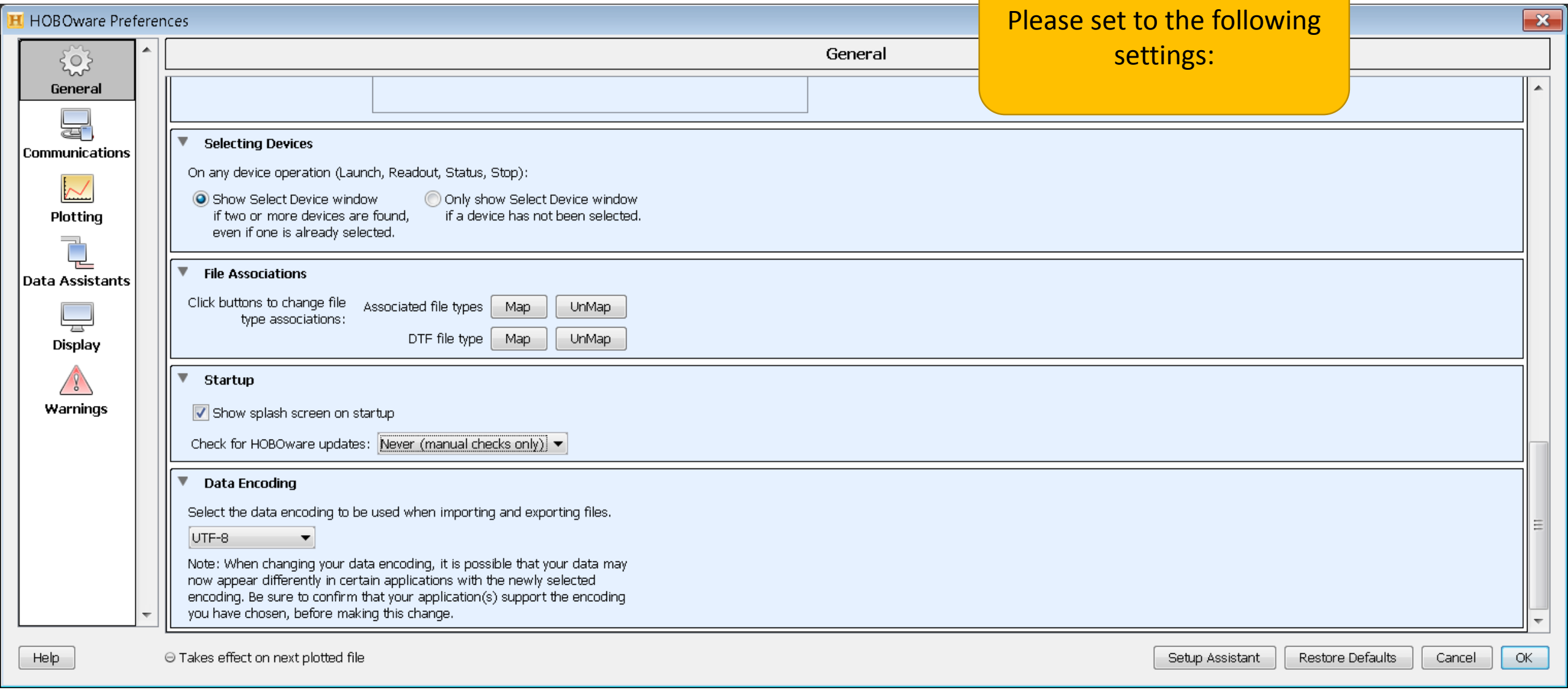


Please set to the following settings:

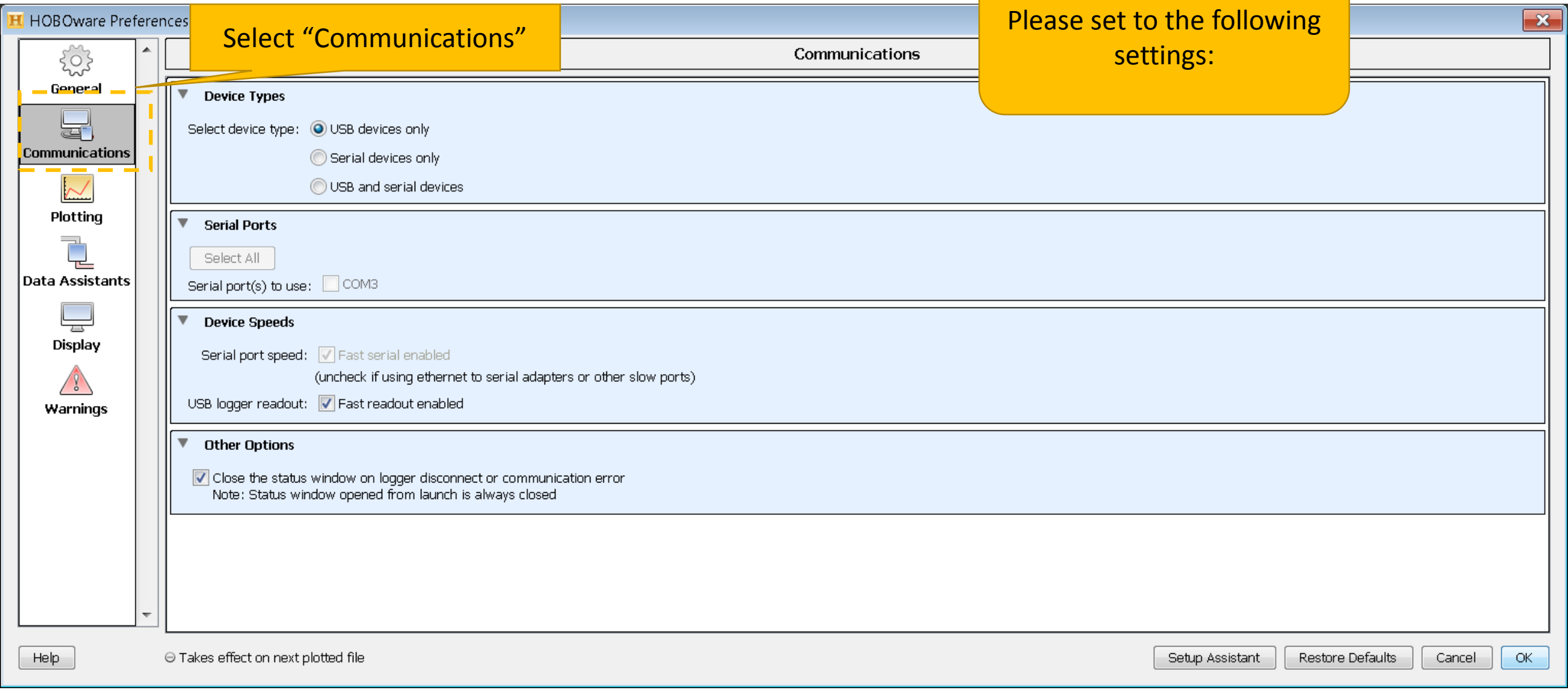
Scroll for more

HOBOware – Set Preferences
General 3/3

Please set to the following settings:



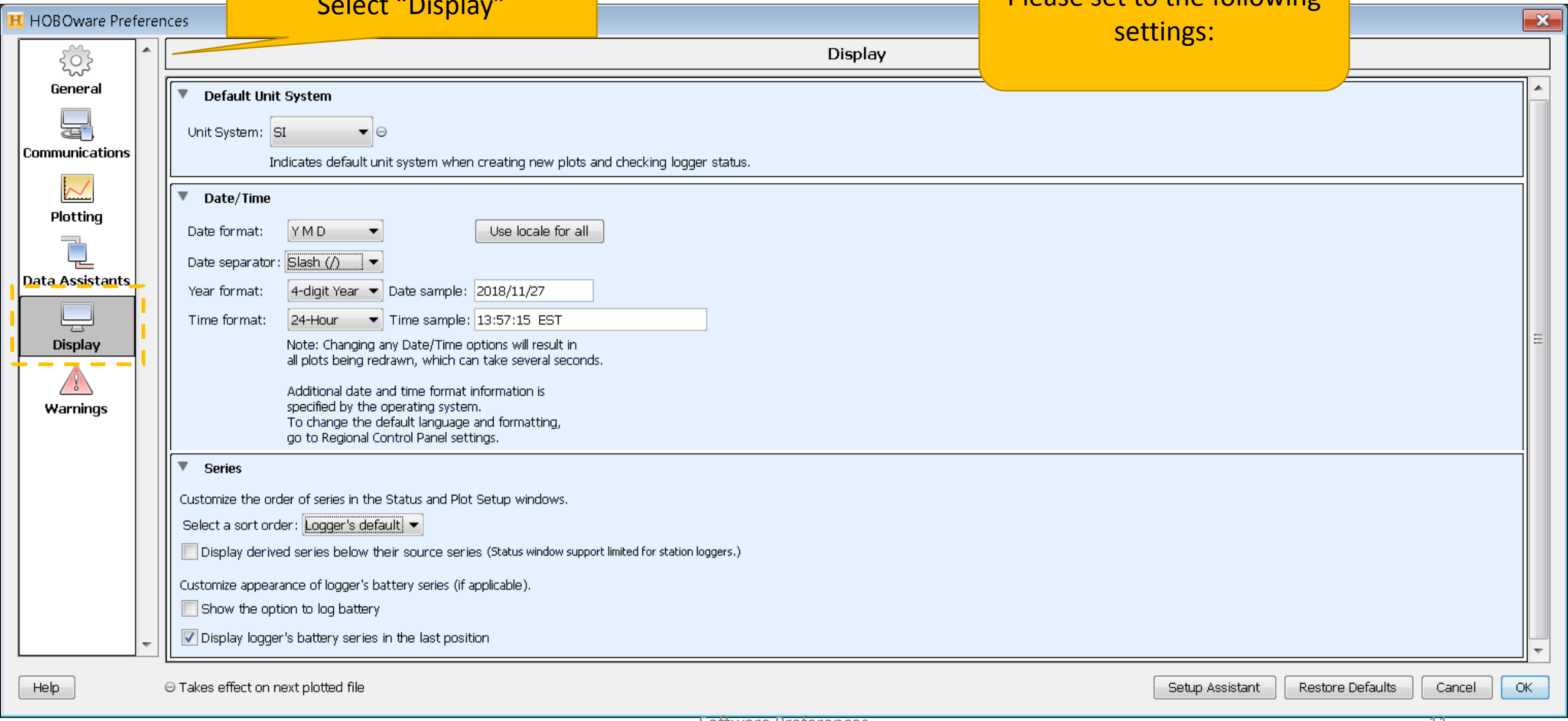
HOBOware – Set Preferences Communications



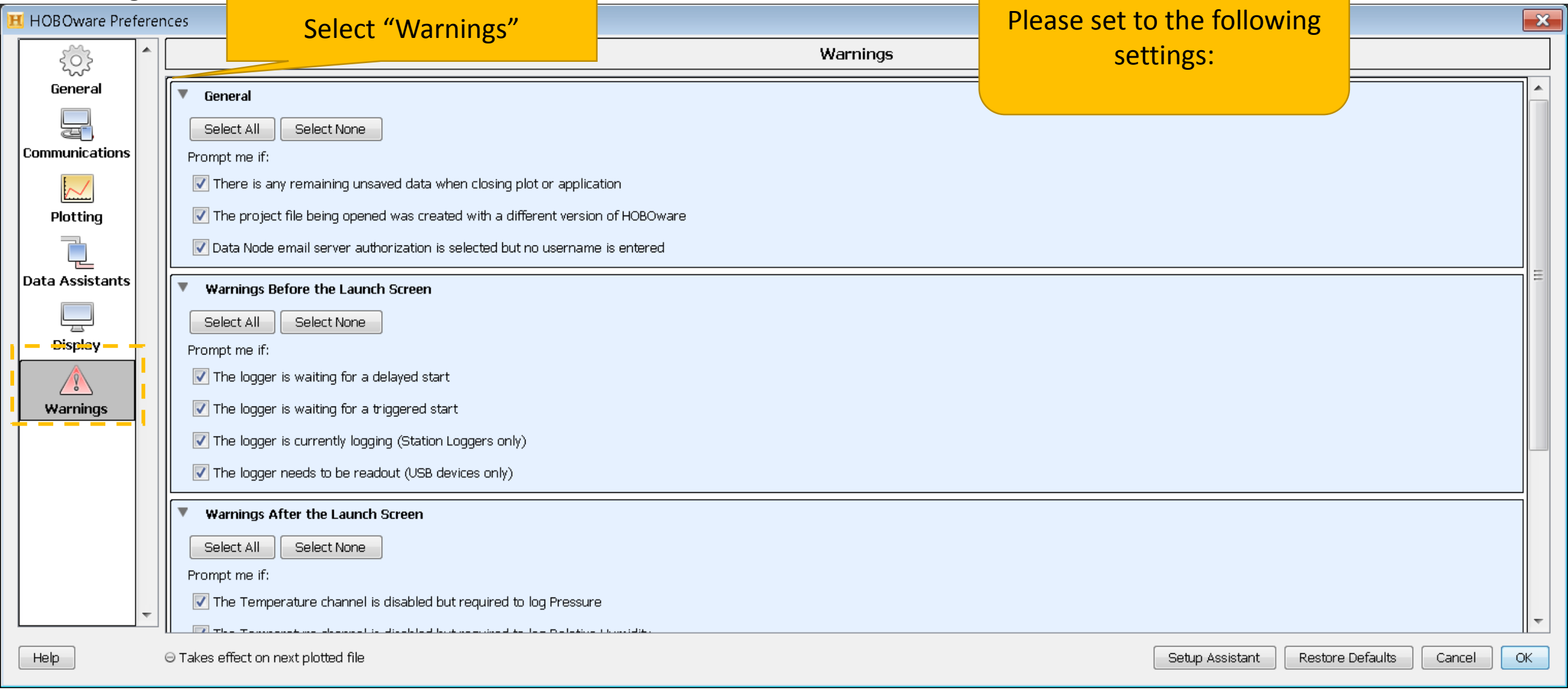
HOBOware – Set Preferences
Display

Select “Display”

Please set to the following settings:

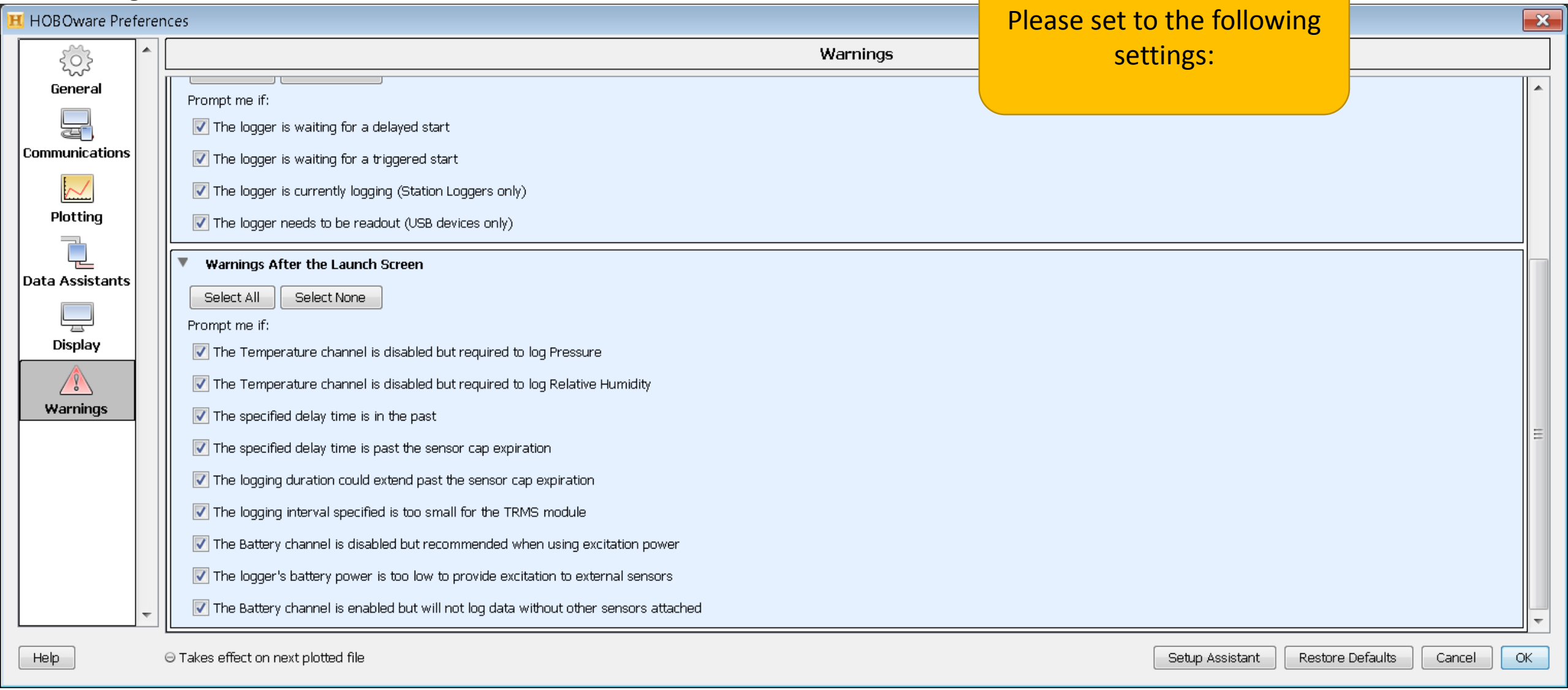


HOBOware – Set Preferences
Warnings 1/2



HOBOware – Set Preferences
Warnings 2/2

Please set to the following settings:

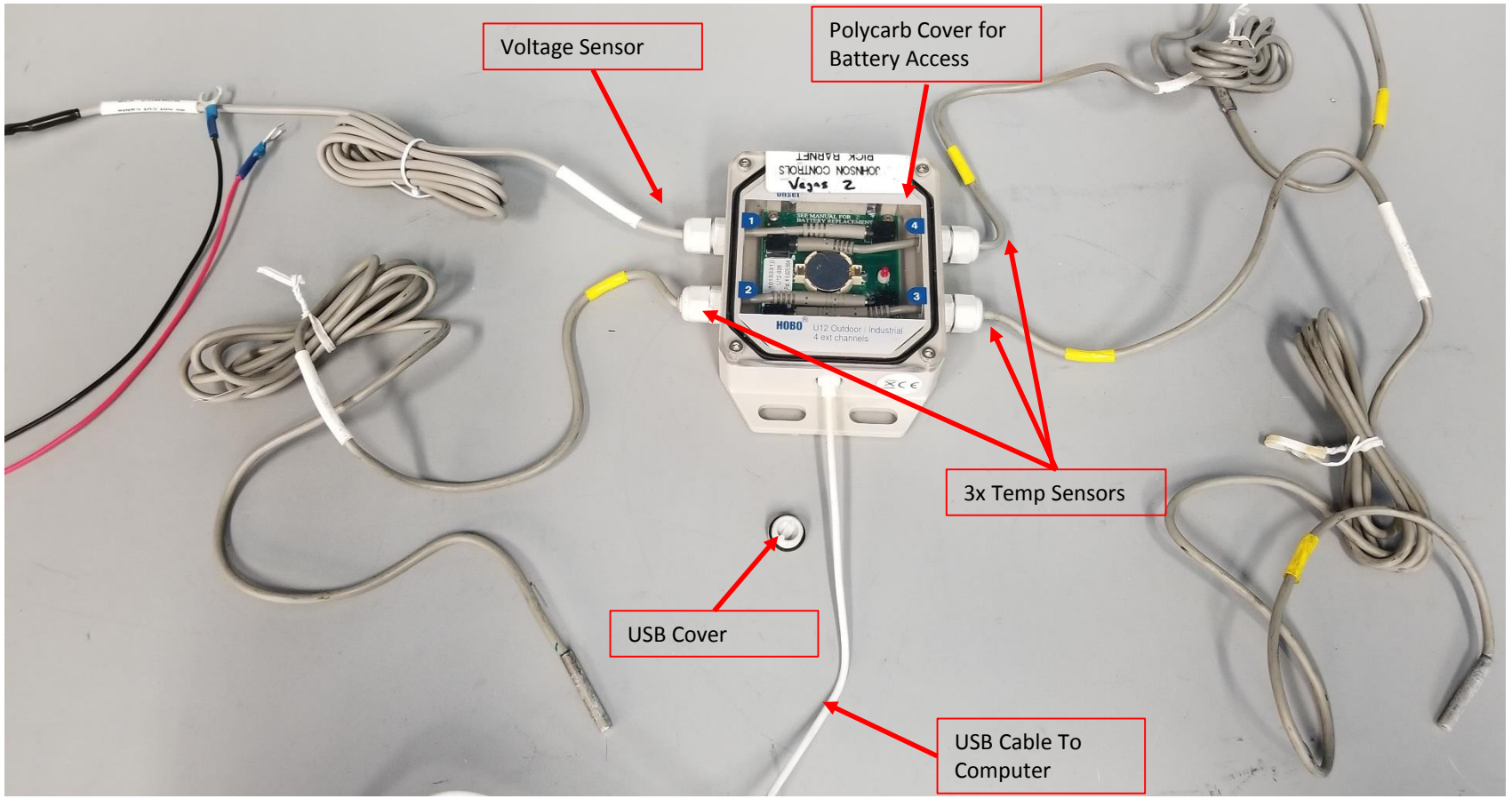


Sensor Setup

HOBO Logger – Device Overview

Nick Tippet

- HOBO Logger Sensors:
- 1x Voltage Sensor on channel #1
- 3x Temperature Sensors on channels #2-4.



HOBO Logger – Channel Assignment & Location

Nick Tippet

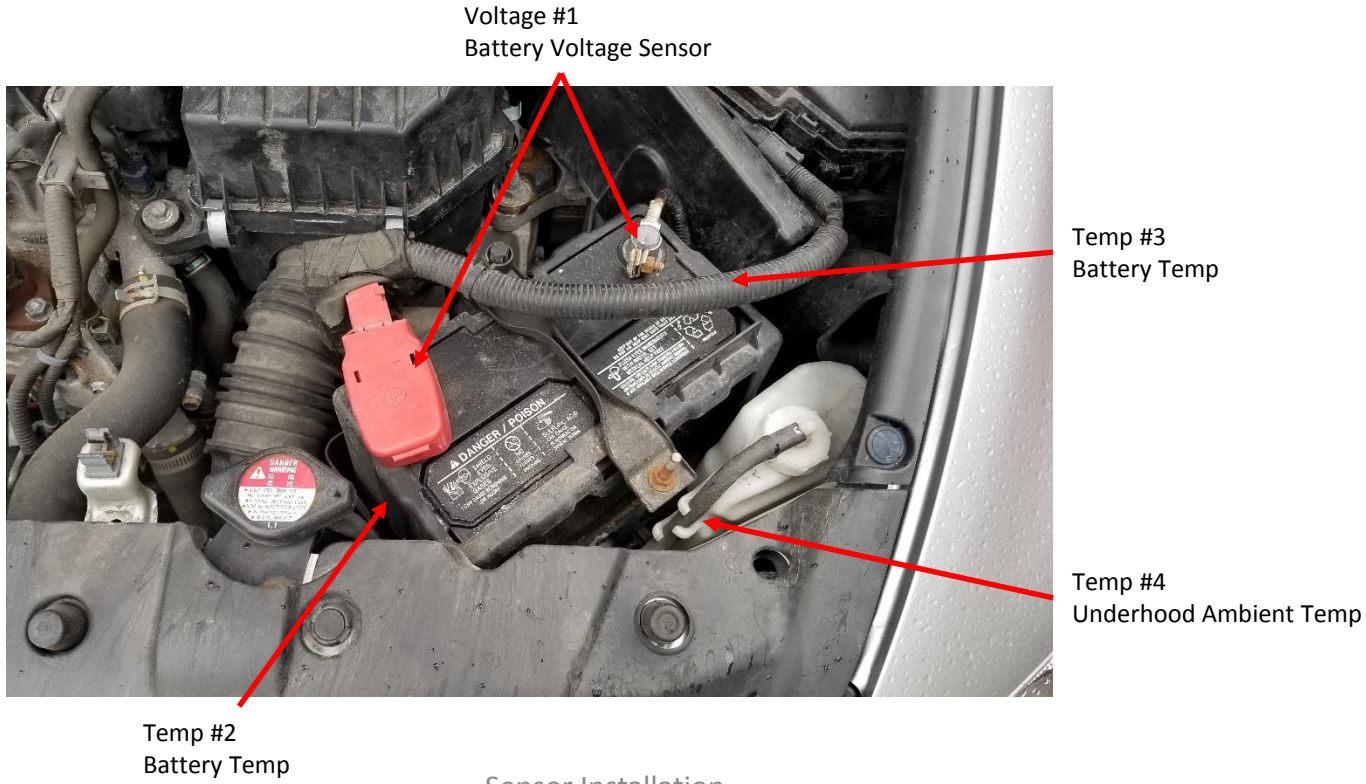
Voltage Channel #1: Battery Voltage Terminals

Temperature Channel #2: Short Side of Battery Facing Engine

Temperature Channel #3: Short Side of Battery Opposite Engine

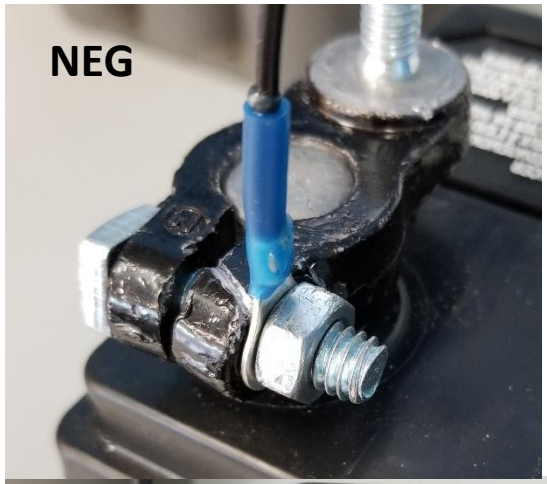
Temperature Channel #4: Underhood Ambient Temperature Near Battery

NOTE: * Example of 1 vehicle setup *



HOBO Logger – Voltage Sensor Hookup (Channel 1)

Nick Tippet



- Black Cable to Negative Post
- Red Cable to Positive Post
- Ring terminals are installed to cable.
- They can be slotted as shown below or changed to another connector type as needed depending on the vehicle.



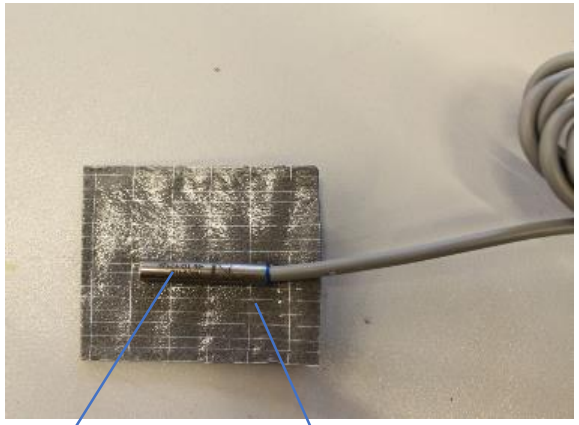


Sensor Installation

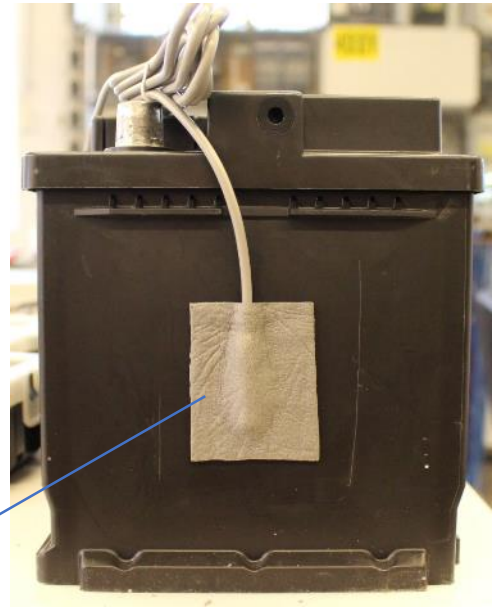
HOBO Logger – Battery Temperature Sensor Hookup (Channels 2 & 3)

Nick Tippet

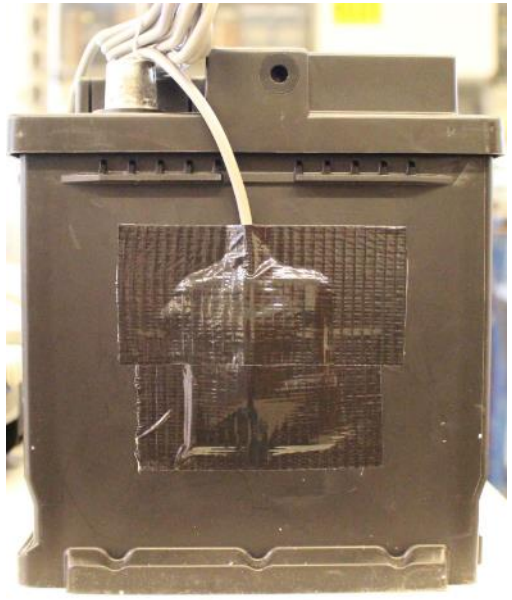
Step 1
Put temp sensor on foam tape position as shown in the photo



Step 2
Put temp sensor with foam tape on the battery position as shown in the photo



Step 3
Put fiber tape on top of the foam tape



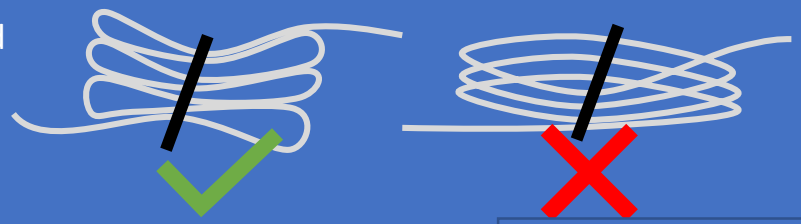
Repeat these steps for the 2 temperature sensors affixed to the battery.

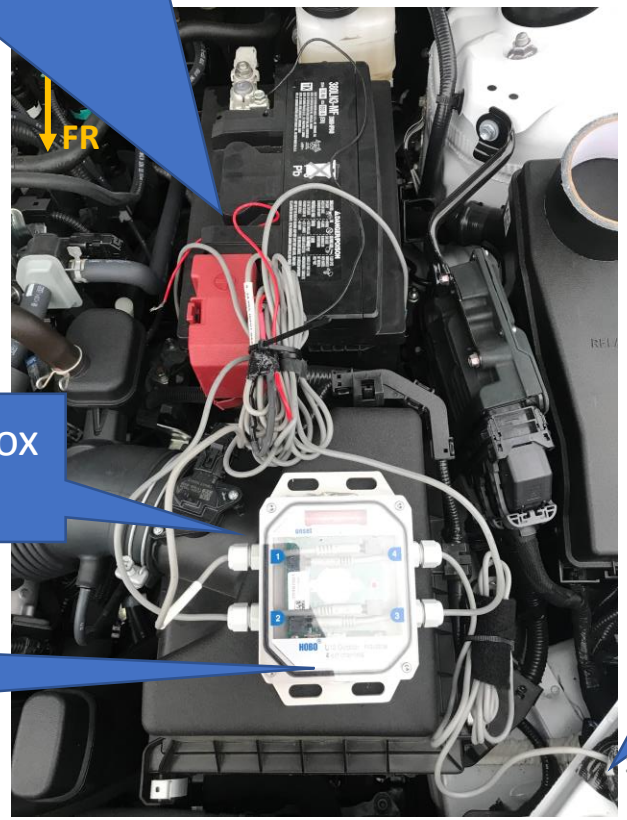
HOBO Logger – Ambient Temperature Sensor Hookup (Channel 4)

- Ambient Engine Room Temperature Sensor installation is different by vehicle.
- Please refer to the setup that applies to the correct vehicle in the coming pages

Hobo Data Logger Installation - Camry

Gather excess cable by looping backward then forward (alternating), not round and round (circular).
Fix Cable to battery bracket using cable ties





Fix HOBO Logger to Airbox using Velcro.

Ensure USB Cover is installed

Step 1- Tape sides of hole to protect sensor from burrs



Fix Ambient Temp. Sensor (#4) through this hole using Tape.

Step 2 – Pass Sensor through hole. Ensure it isn't touching anything.



Step 3 – Fix sensor in position with tape

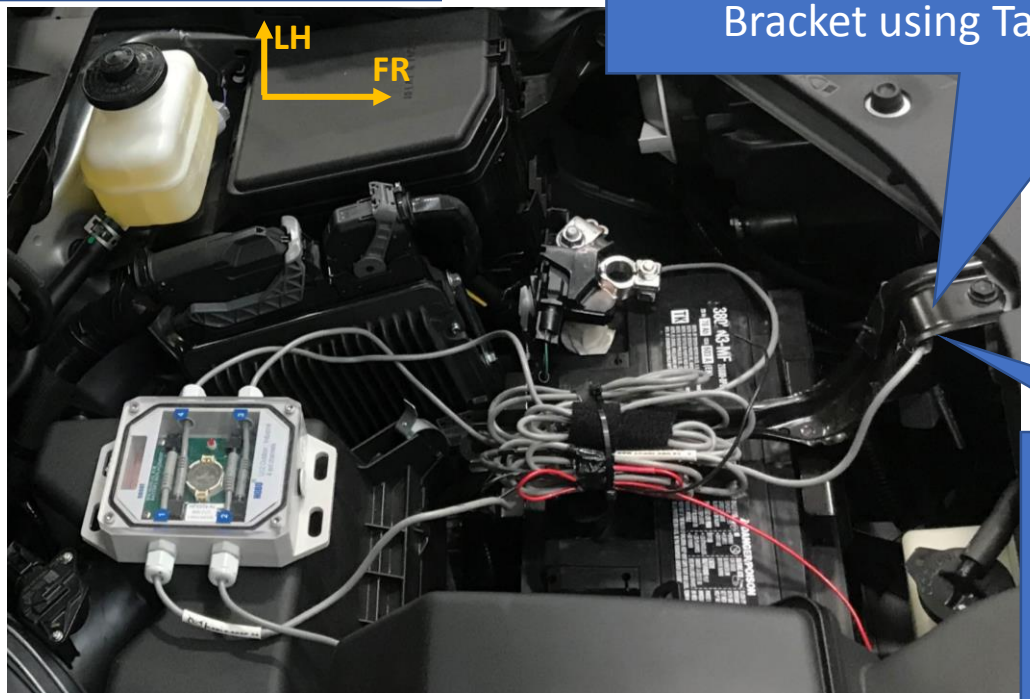


Hobo Data Logger Installation - Highlander



Fix HOBO Logger to Airbox using Velcro.

Ensure USB Cover is installed



Fix Ambient Temp. Sensor (#4) to underside of Battery Bracket using Tape.

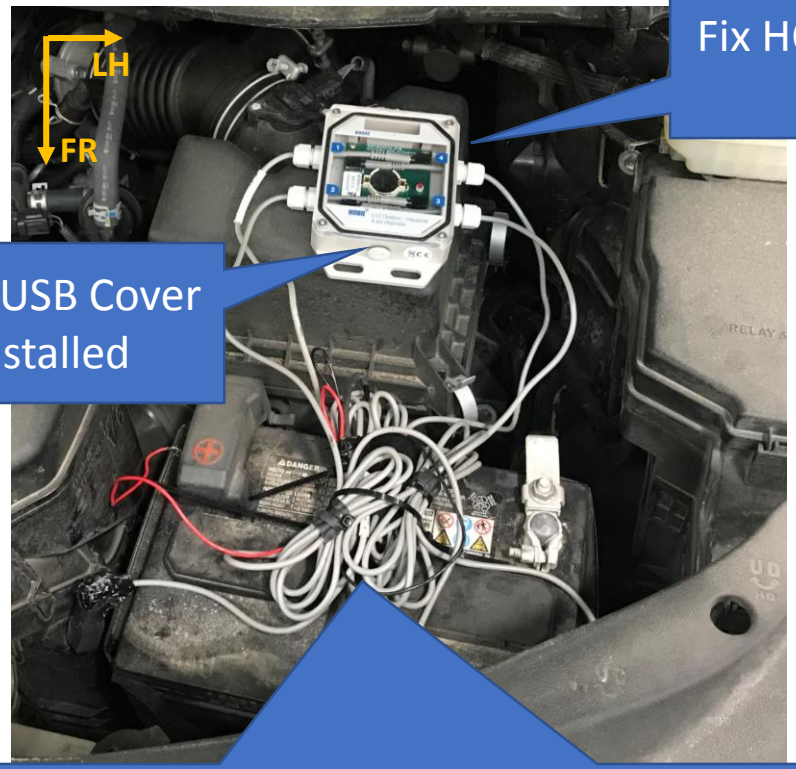


Sensor should hang below bracket and not touch anything

Gather excess cable by looping backward then forward (alternating), not round and round (circular).
Fix Cable to battery bracket using cable ties

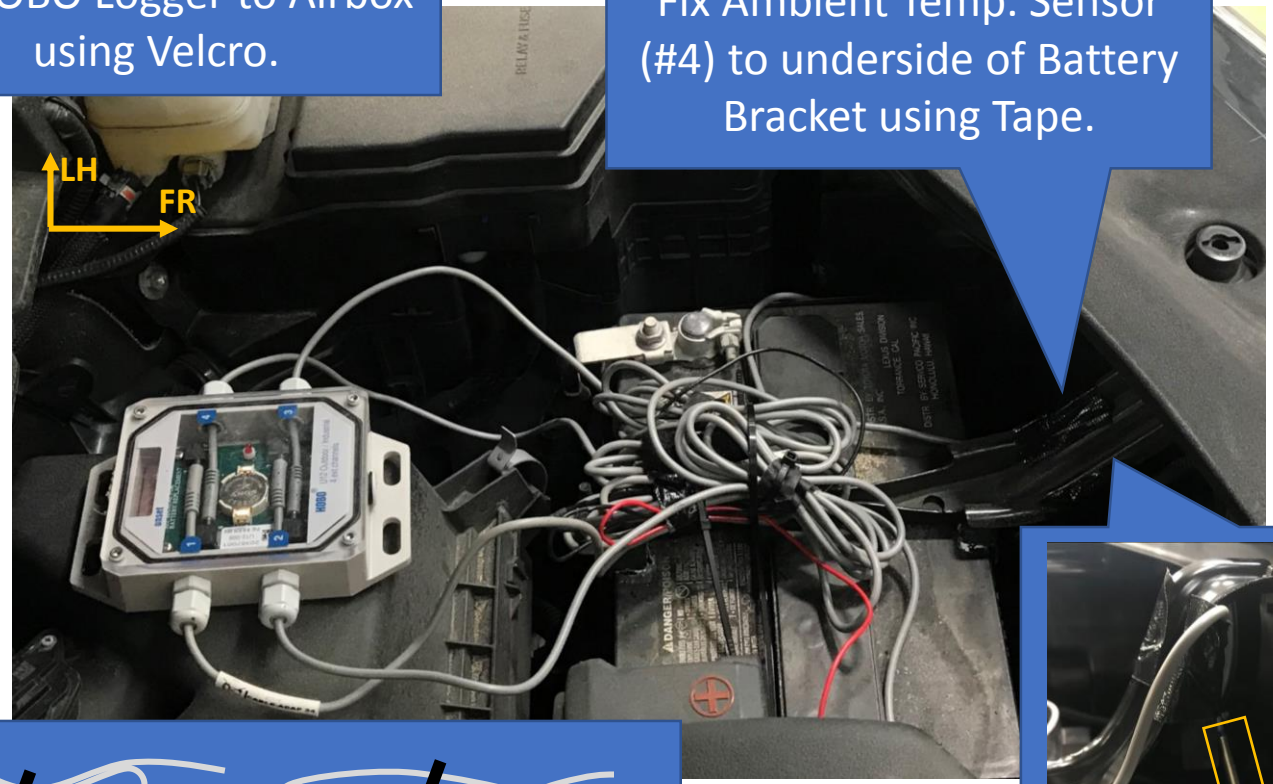


Hobo Data Logger Installation - RX



Fix HOBO Logger to Airbox using Velcro.

Ensure USB Cover is installed



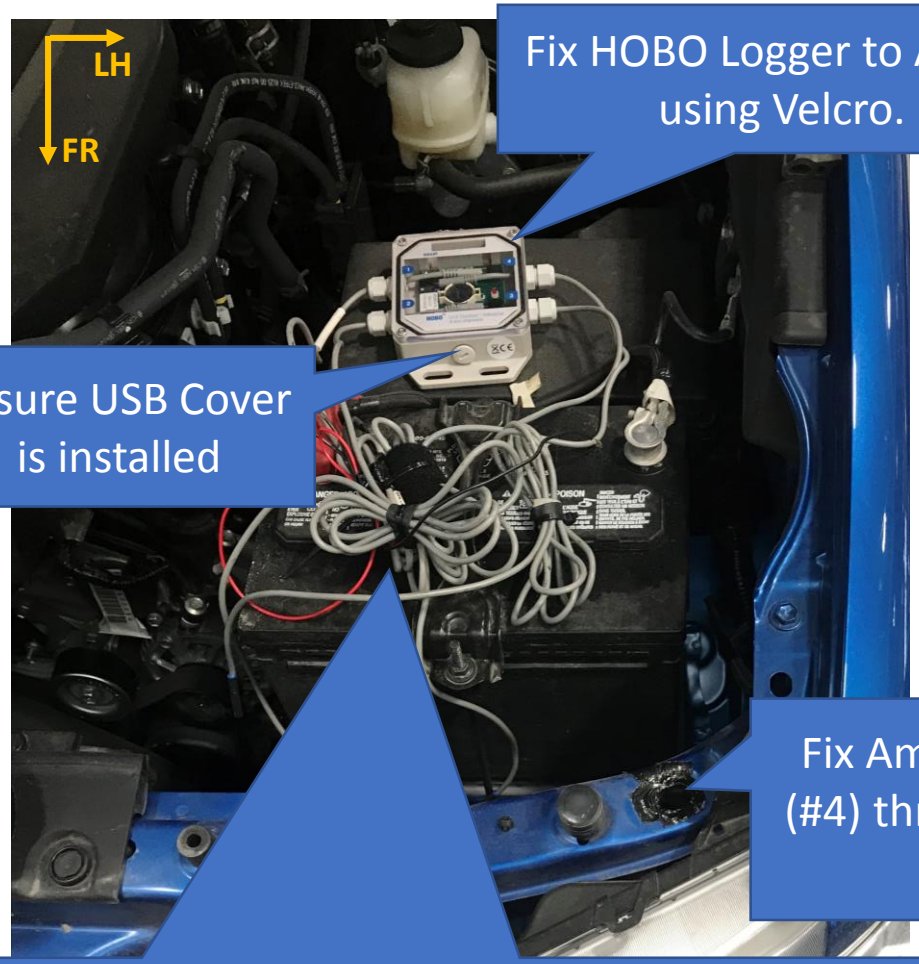
Fix Ambient Temp. Sensor (#4) to underside of Battery Bracket using Tape.

Gather excess cable by looping backward then forward (alternating), not round and round (circular).
Fix Cable to battery bracket using cable ties



Sensor should hang below bracket and not touch anything

Hobo Data Logger Installation - Tacoma



Fix HOBO Logger to Airbox using Velcro.

Ensure USB Cover is installed

Fix Ambient Temp. Sensor (#4) through this hole using Tape.

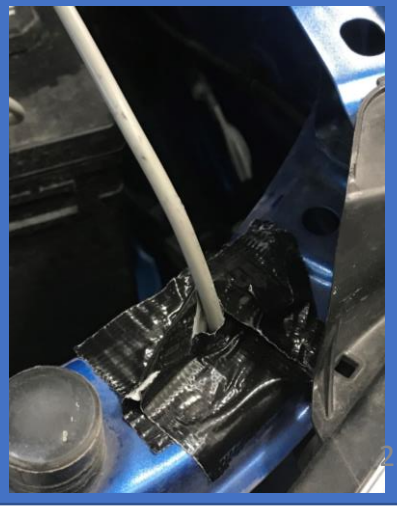
Step 1- Tape sides of hole to protect sensor from burrs



Step 2 – Pass Sensor through hole. Ensure it isn't touching anything.



Step 3 – Fix sensor in position with tape



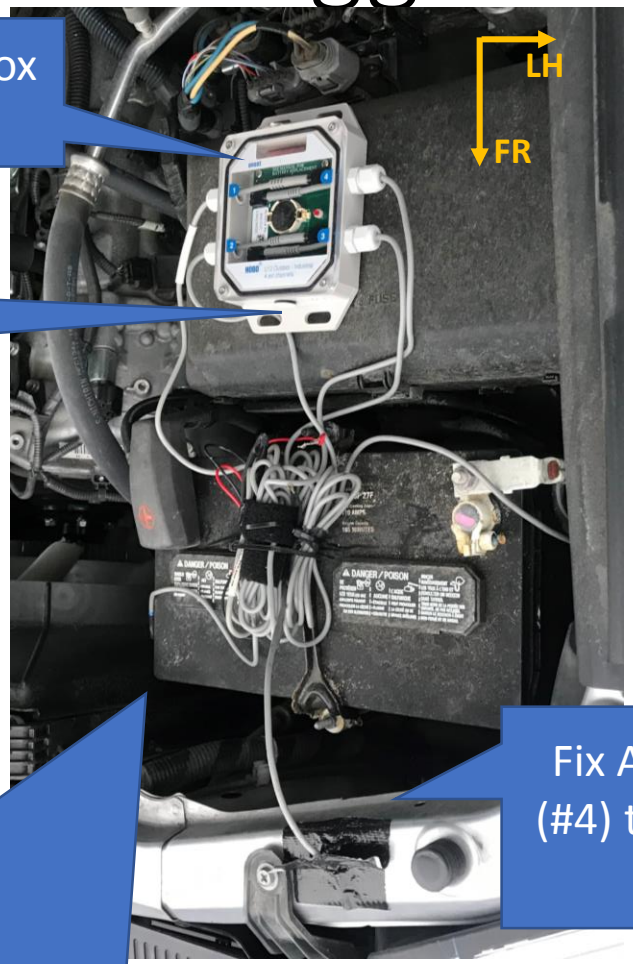
Gather excess cable by looping backward then forward (alternating), not round and round (circular).
Fix Cable to battery bracket using cable ties



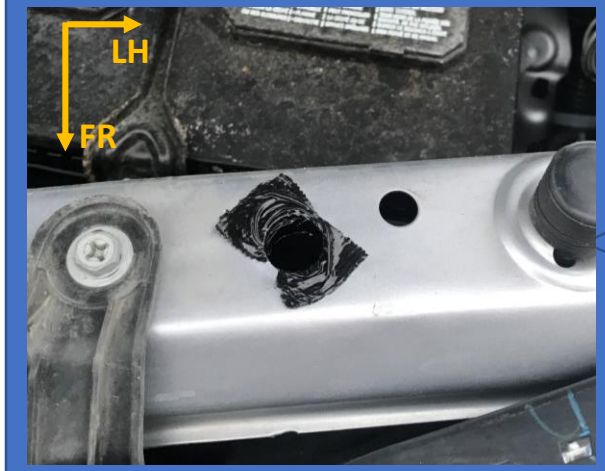
Hobo Data Logger Installation - Tundra

Fix HOBO Logger to Airbox using Velcro.

Ensure USB Cover is installed



Step 1- Tape sides of hole to protect sensor from burrs



Step 2 – Pass Sensor through hole. Ensure it isn't touching anything.



Fix Ambient Temp. Sensor (#4) through this hole using Tape.

Step 3 – Fix sensor in position with tape



Gather excess cable by looping backward then forward (alternating), not round and round (circular).
Fix Cable to battery bracket using cable ties



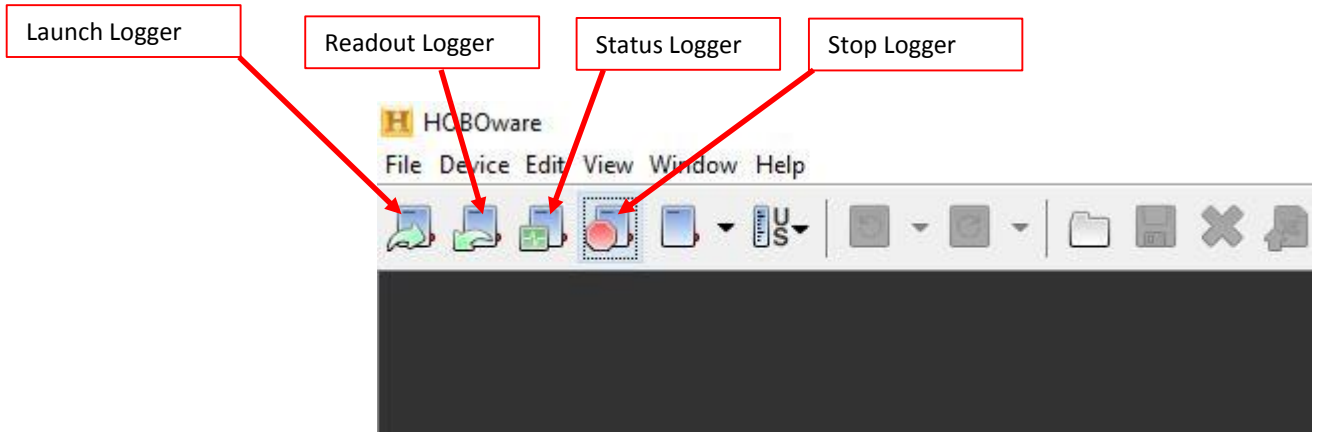
Data File Setup

HOBO Logger – Software Setup Instructions

Nick Tippet

- Download HOBOware software to computer.
- Run Software
- Set Preferences
- Plug in USB adapter to computer
- Verify sensors are attached to battery.
- Reference and record which logging device is on which vehicle.

4 Main Functions of Software



Setup & Launch / Start Logging

- Proceed once all sensors are attached and software is running.
- Select Launch Device option in the software.
- Dialogue box will appear.

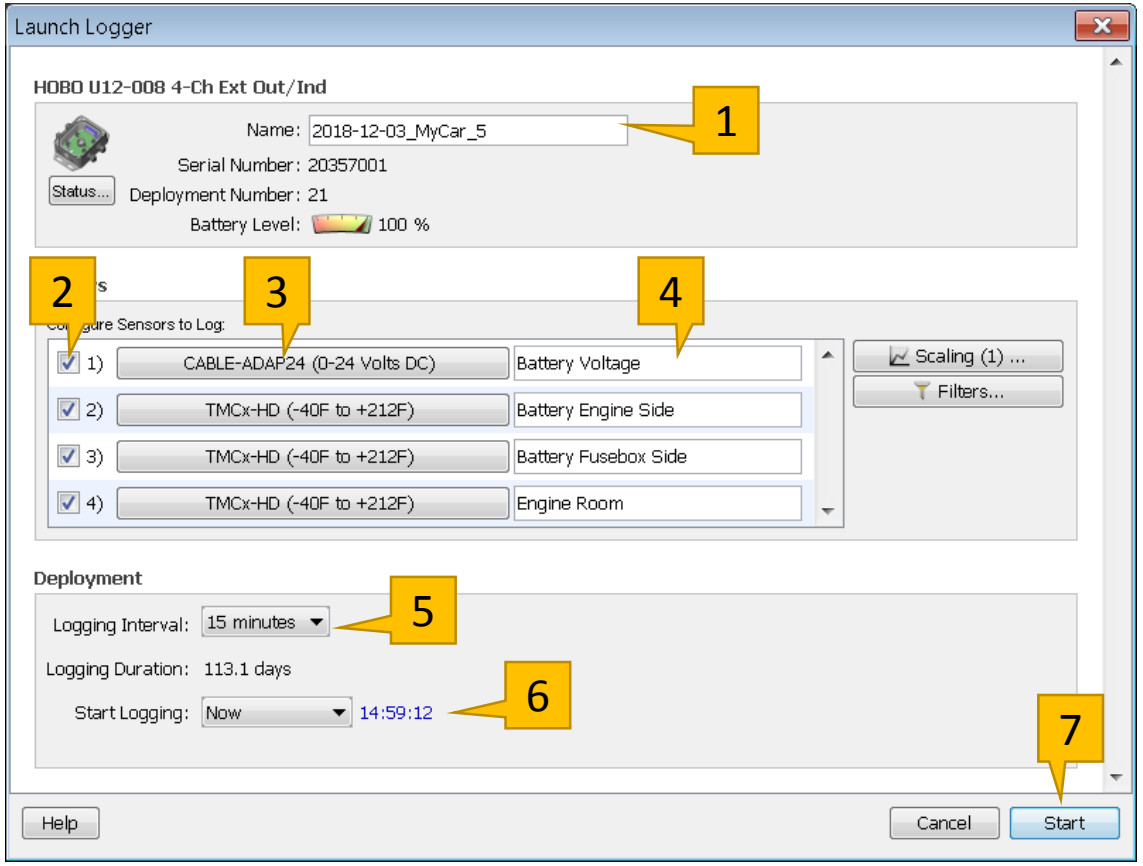
- 1- Enter the Data File Name:
  "Date" (YYYY-mm-dd) "_" "Vehicle Name" "_" "Increment" (1,2,3)
  example: 2018-10-30_Corolla_2
- 2- Verify each sensor is enabled (Check mark)
- 3- Verify sensor types are correct:
  - Channel 1:
  - Sensor Type -> **CABLE-ADAP24 (0-24 V DC)**
  - Channels 2-4:
  - Sensor Type -> **TMCx HD (-40F to +212F)**
- 4- Set Labels for each Channel:
  - 1) **Battery Voltage**
  - 2) **Battery Engine Side**
  - 3) **Battery Fusebox Side**
  - 4) **Engine Room**
- 5- Set Logging Interval = **15 minutes**
- 6- Set Start Logging Start Time = **Now**
- 7- Click **Start**
- Logger is now collecting data.

- Repeat this for each additional HOBO device

These Labels can be "Cut&Pasted" from the file: Channel Labels.txt

Launch





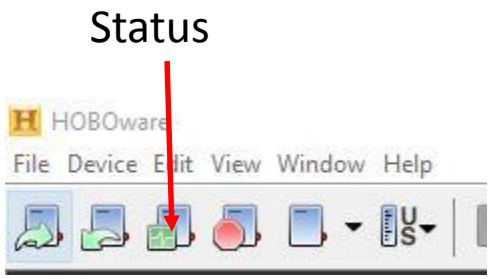
Data File Naming Convention (Reference Page):

"Date" (YYYY-mm-dd) "_" "Vehicle Name" "_" "Increment" (1,2,3)

example: 2018-10-30_Corolla_2

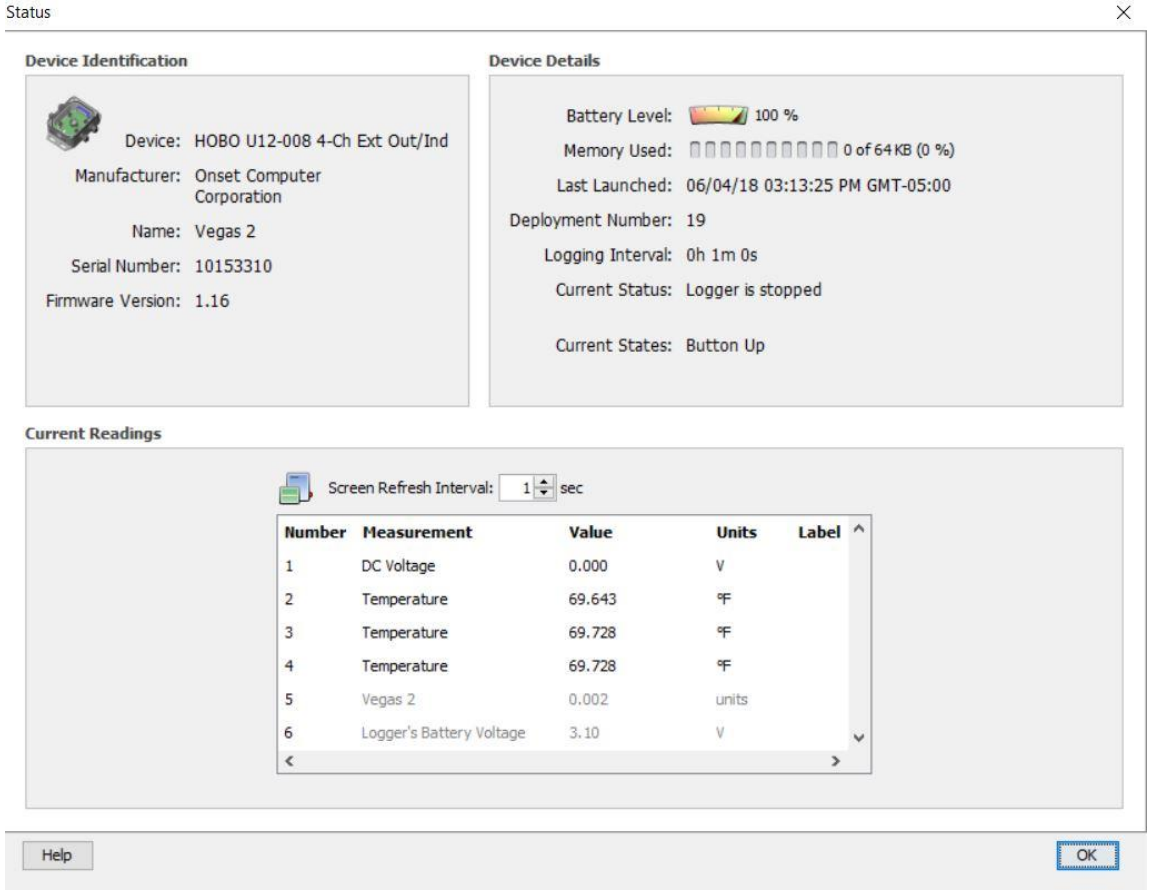
Channel Number:	1	2	3	4
Channel Name:	Battery Voltage	Battery Engine Side	Battery Fusebox Side	Engine Room
Sensor Location:	Battery Voltage Terminals	Short Side of Battery Facing Engine	Short Side of Battery Opposite Engine	Underhood Ambient Temperature Near Battery (Location Varies by vehicle)
Units:	Volts, DC	Degrees, Celcius	Degrees, Celcius	Degrees, Celcius

Device Status



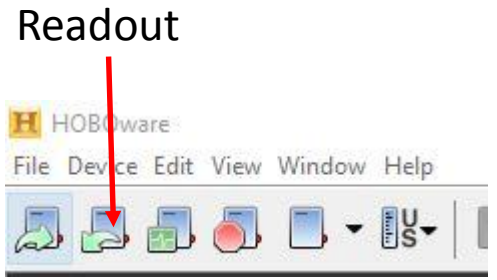
- Current Status of the device can be observed at any time.
- Even during logging.
- Use this function to verify all sensors are connected and reading as expected.
- Select Status option in the software.

- This will show the following:
- **Logger Name**
- **Battery Level**
- **Memory Level**
- **Current Recording Status**
- **Current Sensor Readings - Live**



Data Download

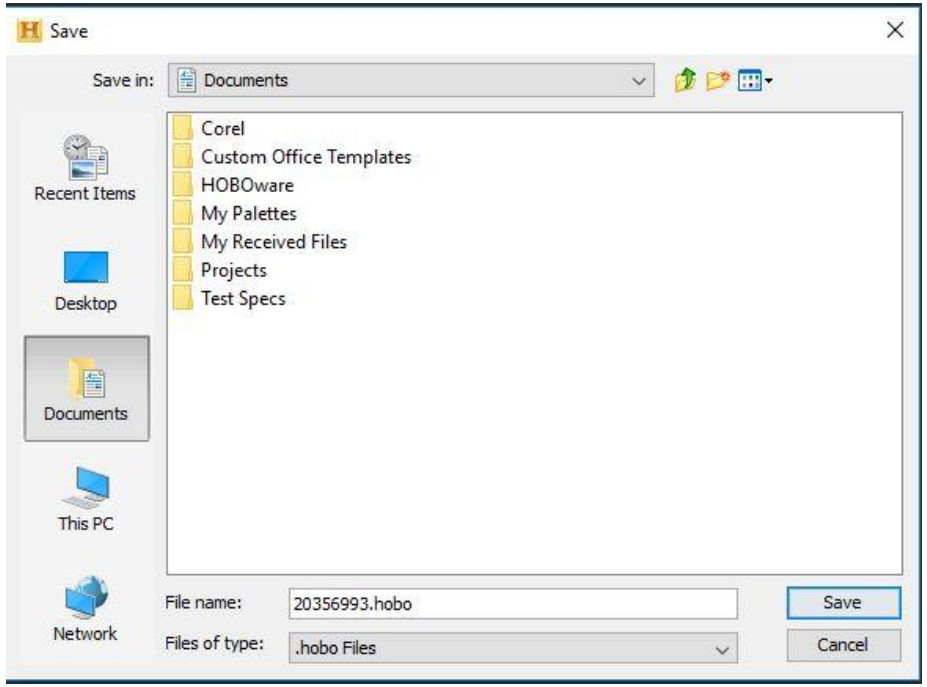
Readout / Download Data



- This function will download the recorded data from the device.
- Perform this once all data collection is complete as it will also stop the logging.
- Select Readout option in the software.

- Filetype saved is extension .hobo
- Appropriately name file to location on computer.
- Data can be immediately plot in software
- Or opened later as time allows

- Once the data is plot in Hoboware it can also be exported as excel .csv file.

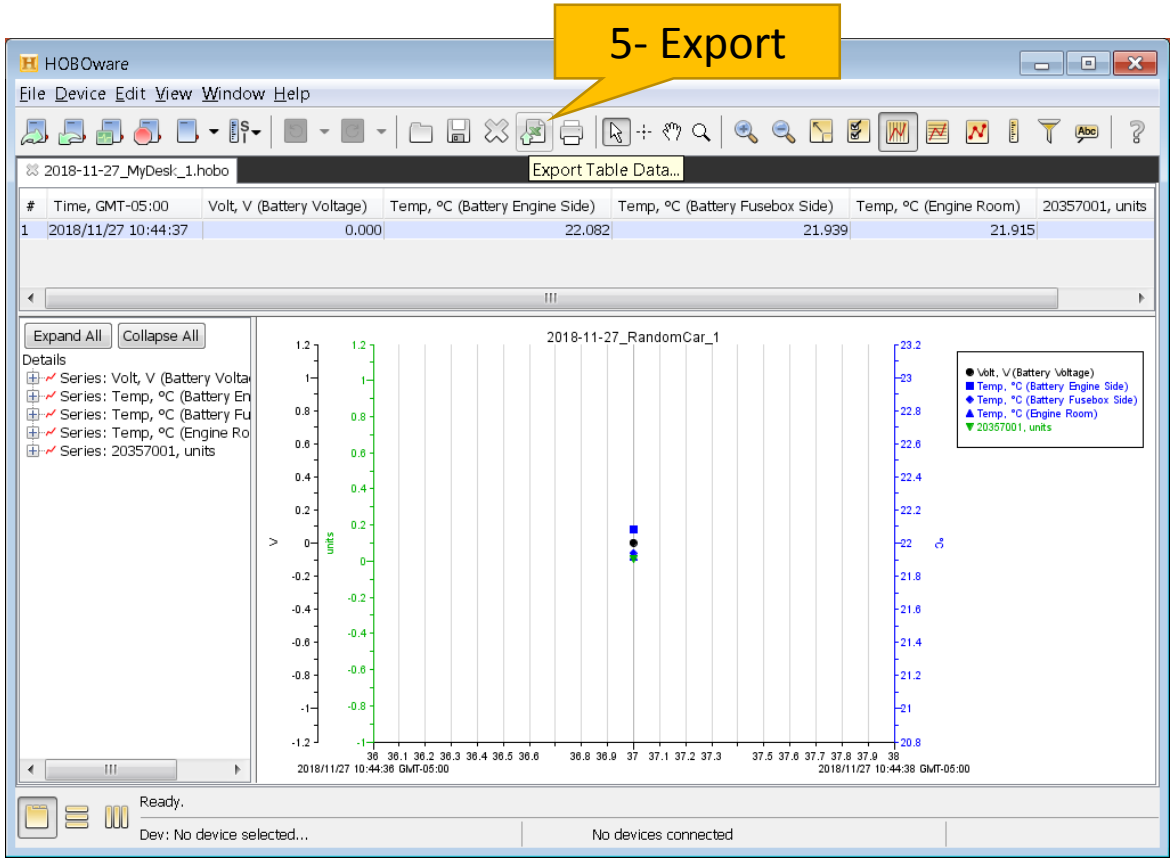


NOTE:
Each log must be saved before restarting. All data will be overwritten on next log start.

Data Validation

Data Validation 1/2

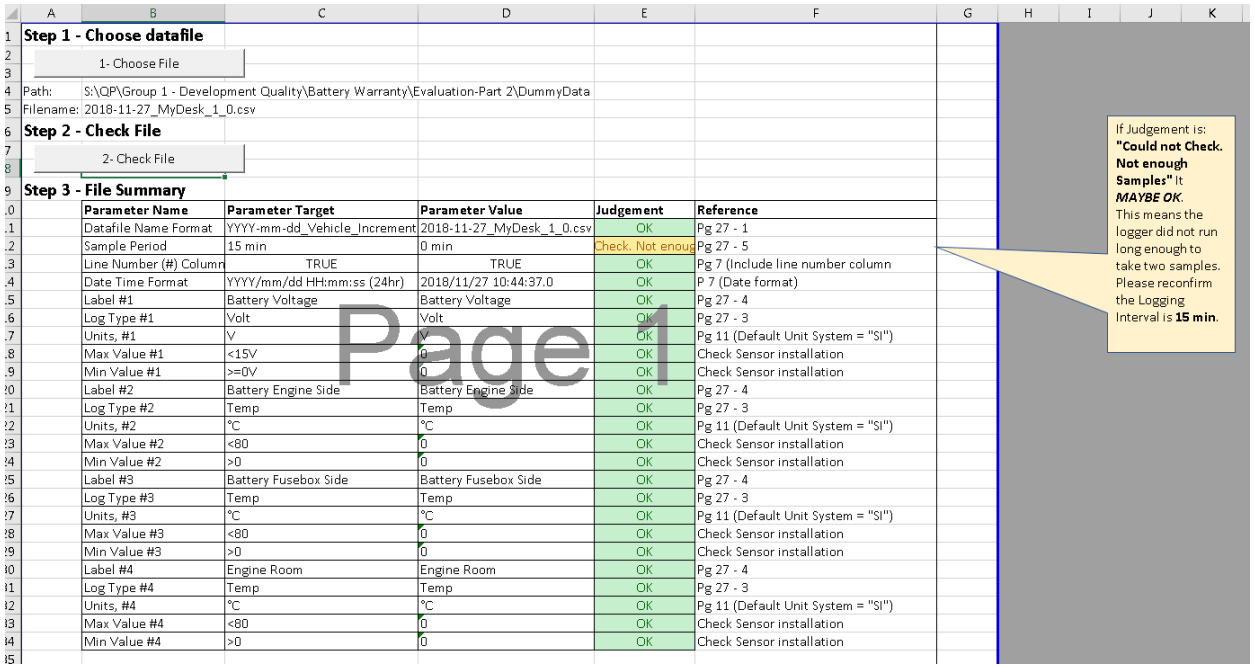
- To validate logger setup:
- 1- Set Preferences in HOBOware
- 2- Complete Sensor Installation
- 3- Start Logger for a brief period
- 4- Download file from Logger
- 5- Export file to .csv



Data Validation – 2/2

- 6- Open the “DataFileParameterValidator” tool
- 7- Click “Choose File” and select the datafile
- 8- Click “Check File”
- 9- A summary will show if the setup was judged OK

Note: The Sample period may show “Could not check. Not enough samples” this just means the set-up test was less than 30min. Just make sure the Logging Interval is correctly set to 30 min.



Step 1 - Choose datafile

1- Choose File

Path: S:\QP\Group 1 - Development Quality\Battery Warranty\Evaluation-Part 2\DummyData

Filename: 2018-11-27_MyDesk_1_0.csv

Step 2 - Check File

2- Check File

Step 3 - File Summary

Parameter Name	Parameter Target	Parameter Value	Judgement	Reference
Datafile Name Format	YYYY-mm-dd_Vehicle_Increment	2018-11-27_MyDesk_1_0.csv	OK	Pg 27 - 1
Sample Period	15 min	0 min	Check. Not enoug	Pg 27 - 5
Line Number (#) Column	TRUE	TRUE	OK	Pg 7 (Include line number column
Date Time Format	YYYY/mm/dd HH:mm:ss (24hr)	2018/11/27 10:44:37.0	OK	P 7 (Date format)
Label #1	Battery Voltage	Battery Voltage	OK	Pg 27 - 4
Log Type #1	Volt	Volt	OK	Pg 27 - 3
Units, #1	V	V	OK	Pg 11 (Default Unit System = "SI")
Max Value #1	<15V	0	OK	Check Sensor installation
Min Value #1	>=0V	0	OK	Check Sensor installation
Label #2	Battery Engine Side	Battery Engine Side	OK	Pg 27 - 4
Log Type #2	Temp	Temp	OK	Pg 27 - 3
Units, #2	°C	°C	OK	Pg 11 (Default Unit System = "SI")
Max Value #2	<80	0	OK	Check Sensor installation
Min Value #2	>0	0	OK	Check Sensor installation
Label #3	Battery Fusebox Side	Battery Fusebox Side	OK	Pg 27 - 4
Log Type #3	Temp	Temp	OK	Pg 27 - 3
Units, #3	°C	°C	OK	Pg 11 (Default Unit System = "SI")
Max Value #3	<80	0	OK	Check Sensor installation
Min Value #3	>0	0	OK	Check Sensor installation
Label #4	Engine Room	Engine Room	OK	Pg 27 - 4
Log Type #4	Temp	Temp	OK	Pg 27 - 3
Units, #4	°C	°C	OK	Pg 11 (Default Unit System = "SI")
Max Value #4	<80	0	OK	Check Sensor installation
Min Value #4	>0	0	OK	Check Sensor installation

Page 1

If Judgement is: **"Could not Check. Not enough Samples"** It ***MAYBE OK***. This means the logger did not run long enough to take two samples. Please reconfirm the Logging Interval is **15 min**.