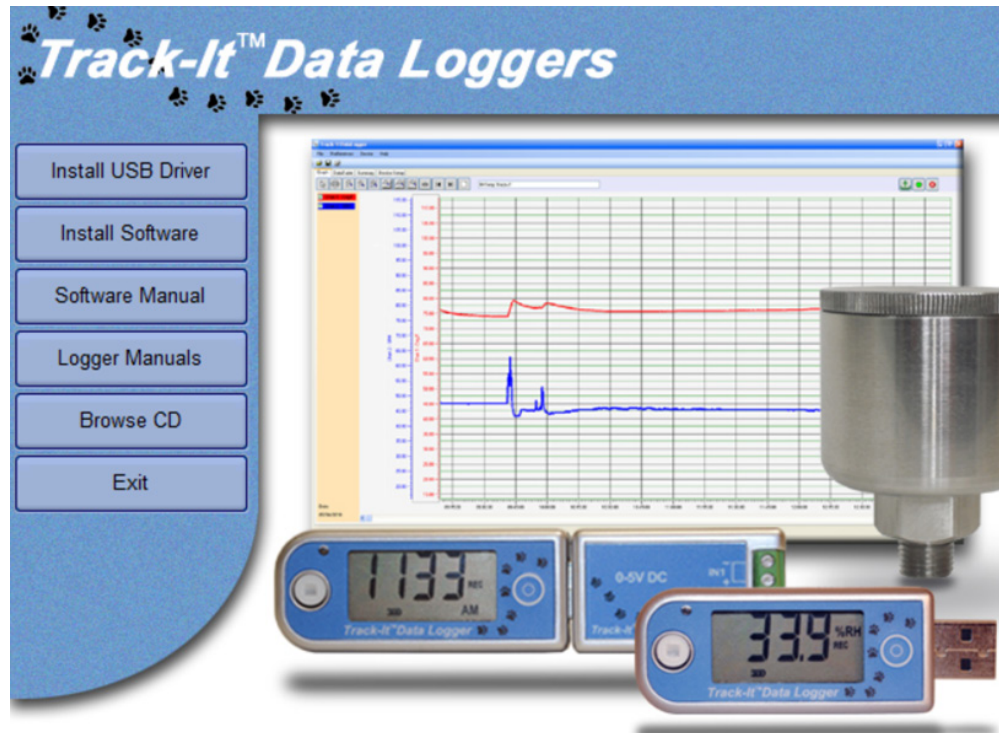




Instruction Manual

***Track-It™* DataLogger Software**



15 Columbia Drive
Amherst, NH 03031 USA
Phone: (603) 883-3390 • 800-999-3390
E-mail: support@monarchinstrument.com
Website: www.monarchinstrument.com



SAFEGUARDS AND PRECAUTIONS



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1.0 INTRODUCTION

This manual applies to Software Rev 1.1.2 or later.

IMPORTANT! Do NOT plug the Track-It™ Data Logger into the USB port until AFTER the USB Drivers and Track-It Software have been installed.

1.1 Download Installation Files

Download Track-It DataLogger Software from:

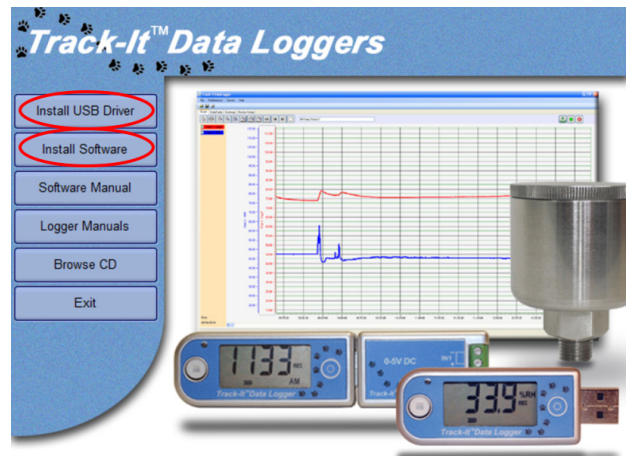
http://www.monarchserver.com/Software/Track-It_Software.zip

Unzip the downloaded file to a local directory on your PC.

Alternatively, a copy of Track-It Data Logger Software is available on CD upon request.

Once the Software is on your PC, double click **CD_Start.exe**. This will launch the Track-It™ DataLogger Software Installation menu screen (shown right).

There are two parts to the software installation – installing the USB Drivers and then installing the main application (Software).



1.2 Install USB Drivers

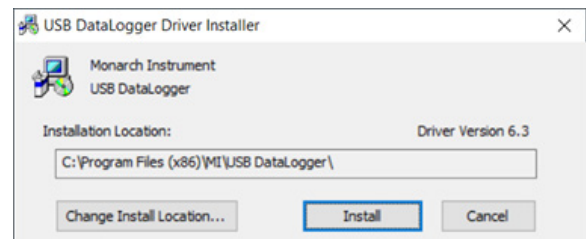
NOTE: Ensure the USB device (logger) is NOT plugged in during this installation. The USB drivers must be installed for the software to run.

To install the USB Drivers, click the *Install USB Driver* button on the Track-It™ Data Loggers menu screen.

You may get an ominous Windows Security Warning message because Windows can't verify the publisher of this software. Click *Run* to proceed, and the FTDI CDM Drivers installation screen will open. Click *Extract* to download the Device Driver Installation Wizard.

Click *Next >* to continue to the License Agreement. To continue, select *"I accept this agreement"* and click *Next >*. Click *Finish* to complete the first step of the USB Drivers installation.

You will then be prompted with the USB DataLogger Driver Installer window (shown right).



The default installation location will be shown. If you wish to change it for any reason, enter the desired installation location. Click the *Install* button to continue.

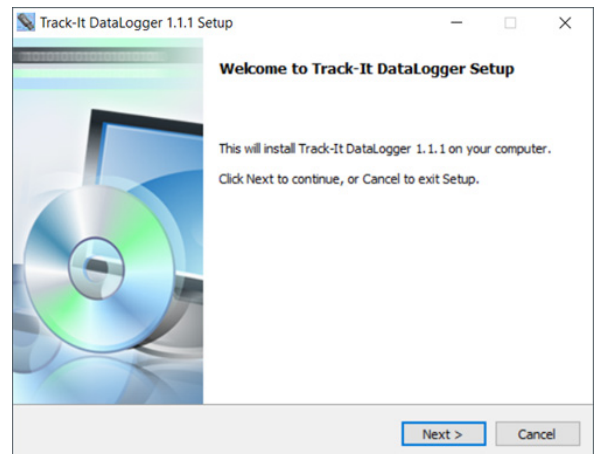
The system will be scanned and then the USB driver will be installed. Follow any prompts as necessary.

1.3 Install Track-It™ DataLogger Software

NOTE: Before reinstalling or upgrading the software, remove existing versions using the Control Panel – Add/Remove Programs.

To install the Track-It DataLogger Software, click the *Install Software* button on the Track-It™ Data Loggers menu screen. This will launch the Track-It Setup Wizard shown below.

Click the *Next >* button to continue to the License Agreement. Check the “I accept the agreement” box and click the *Next >* button to continue.



You will then be asked to specify installation details. Select desired Install Product for: Current user or All users on this computer. The default installation location will be specified. If you wish to change it for any reason, enter the desired installation location. Verify you have enough free space in the installation location and click the *Next >* button.

Select the Additional Tasks as desired and then click on the *Install* button. Click *Finish* to complete the installation.

NOTE: This program requires the DotNet component. If it is not found on the system, it will be installed.

If selected, a shortcut icon will be placed on the desktop.

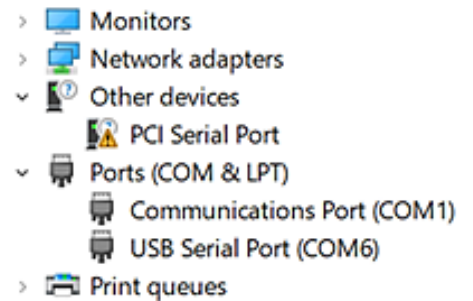


1.4 Inserting the USB Device (Logger)

Connect the Logger to a USB port on your computer either directly or with the provided USB cable. It will be recognized, and depending on the operating system, it will be announced as Found new hardware – Loading Driver or Loading Software.

The device will be installed as a VCP, virtual communication (comm) port. Correct installation can be checked using the Device Manager. In Windows® 10 right click on the Start menu and select Device Manager.

This will bring up the device list shown right. Click on Ports (COM & LPT) and you should see an entry for USB Serial Port (COMx) where x is the comm port number assigned and will depend on what devices are already resident on your PC. In this case, x = 6 so the USB DataLogger will appear as USB Serial Port (COM6).




1.5 Connecting the Device via Bluetooth® LE

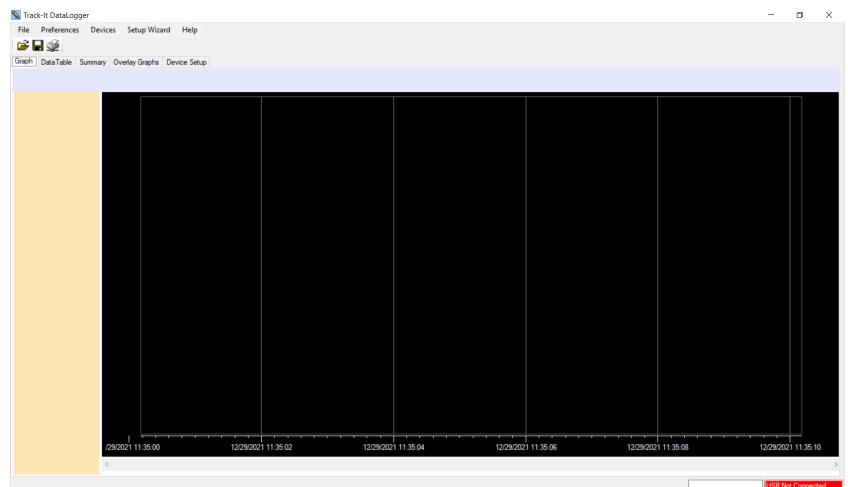
If the device has Bluetooth® LE radio capability, the software can communicate with it by either USB or Bluetooth® LE. See section [3.6.1 Bluetooth® LE](#) for more details.

2.0 GETTING STARTED

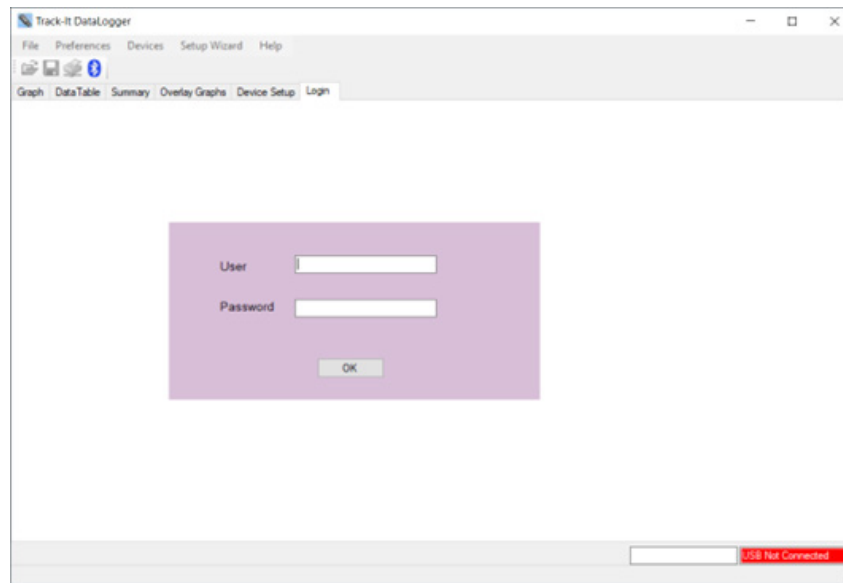
2.1 Start Up

To start the program, double click the Track-It icon  or select the program from the Start menu.

If the security is not enabled, the program start-up window will appear as shown right.



Otherwise, it starts at the Login screen (shown below).



The password option is disabled by default when the software is installed. Therefore, the Login screen is not enabled. If the password option is enabled, the user must log in first. Otherwise, the program cannot do anything.

To enable/disable password security, see [3.2 Preferences](#). Additional users can also be added.

2.2 Software Layout

At the top of the window there are multiple menu options and icons:



 = Open File  = Save File  = Print  = Bluetooth® LE

Below the icons are tabs that change the screen content depending on which tab is selected.



Some of these tabs also have sub-tabs (see [Device Setup](#)).

The bottom right has a status field which will give messages such as *Uploading Data* or filename and a connection field that will indicate if a logger is connected or not.



3.0 MENU OPTIONS AND ICONS

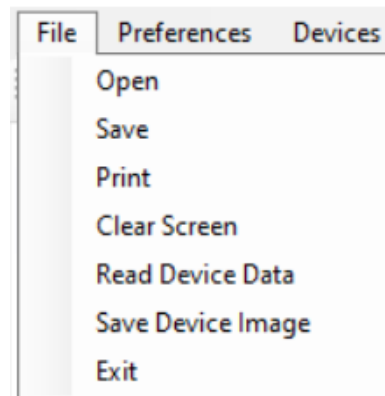
3.1 File

3.1.1 Open



This menu option allows the user to open a saved data file for viewing. There is also an icon below the menu options for quick access.

The Open Data File window will pop up so the user can select the file (of type .dat) to be loaded into the Graph window for viewing.



3.1.2 Save



This menu option allows the user to save any current data on the graph to a file for viewing later. There is also an icon below the menu options for quick access.

The Save Data File window will pop up so the user can name the file and specify the location to be saved.

3.1.3 Print



This menu option allows the user to print the current tab content. There is also an icon below the menu options for quick access.

The Print window will pop up. The user can select a printer and adjust its Properties.

When printing the Graph tab, the Print Range is used to print just the Current Page or a range of pages (*All* with page selection). If *All* is selected, use the drop-down menu to select the total number of pages to be printed. The margins can be set as desired. The options allow for top, bottom, left, and right margin adjustment. You can also Preview your print options. Click *Close* to exit the Print Preview window.

The Data Table and Summary tabs can also be printed. The Print window is slightly different than when printing a Graph. The Print range allows for *All*, a specific Page range, or a highlighted Selection. You can also select the number of copies to be printed.

3.1.4 Clear Screen

This menu option clears the Graph and Table data..

3.1.5 Read Device Data

This menu option allows the user to retrieve the current recorded data on the device. There is also an icon on the Graph tab and a duplicate menu option under the Devices menu.

If the logger is recording when this option is selected, it will ask if you want to pause recording to continue. Select *Yes* to stop any recording currently in progress on the device to continue or *No* to cancel. If you choose to pause recording or the logger was not recording, then it will ask if you want to Save Data To PC. Select *Yes* or *No*. If the user selects *Yes*, the Save Data File window will pop up so the user can name the file and specify the location to be saved. If the user selects *No*, the software will read the data from the device. If there is no recorded data on the device, you will get a message to that effect.

3.1.6 Save Device Data

This menu option allows the user to save the current configuration of the device to a file. If selected, the Save Data File window will pop up so the user can name the file and specify the location to be saved. The *Data Dump* will not plot the data in the Graph or Data Table.

3.1.7 Exit

This menu option allows the user to close and exit the Track-It™ DataLogger Software program.

3.2 Preferences

There are basic settings that need to be set up by the user if the defaults are not acceptable. Select *Preferences* from the menu at the top of the window. This will pop up the Preferences window shown in 3.2.1.

3.2.1 General Tab

This screen has several settings that affect the way data is displayed.

Date Format: Select the format in which the date is presented. Select your preference from the pull-down menu.

Decimal Places: Select the number of decimal places in which numeric data will display.

Graphic: Check the box to select 24 Hr Format.

Real Time Data Display:

Sample Rate: When sampling and displaying in real time, this selects the real-time sample update rate. Use the pull-down menu to select the desired sample rate in seconds.

Samples per Screen: Use the pull-down menu to select how many samples fill the screen before the graph starts to auto scroll. The user can still choose to compress the data at a later stage.

Data Type: Select whether to show data as:

Instant – each data point is displayed as is

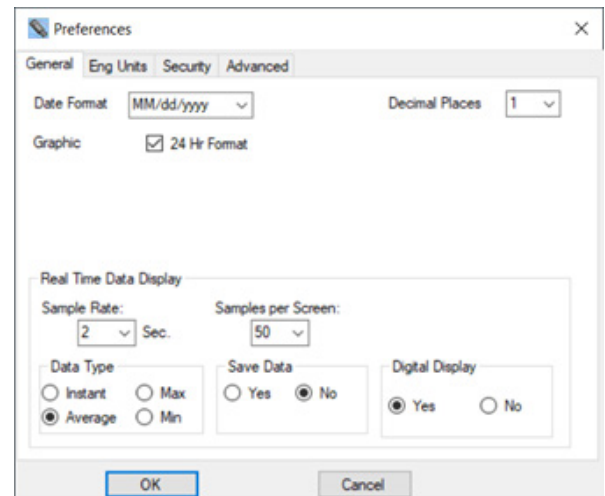
Average – readings will be averaged

Max or Min – will show the peak value high or low

Note that a 2-second sample rate is the maximum sample rate and essentially all points will be instantaneous.

Save Data: Select Yes to record data to your local storage medium. When choosing to display live data in the Graph window, you will be asked to specify a file name and location to save the data to.

Digital Display: If Yes is selected, a digital display is added to the left-hand side of the Graph window during LIVE display.



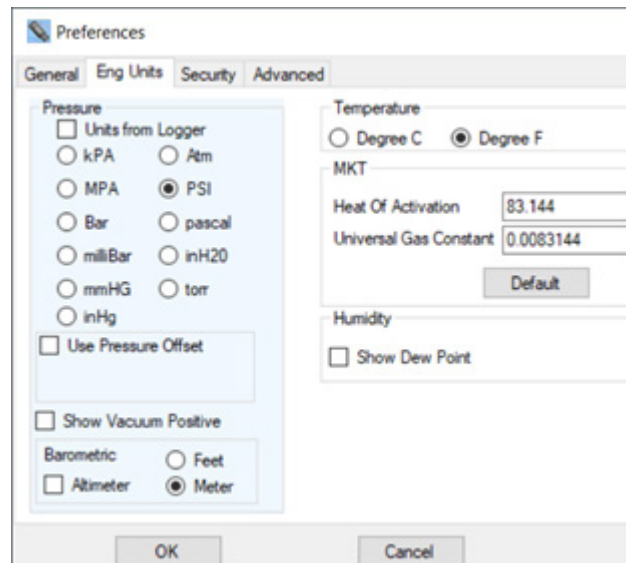
3.2.2 Eng Units Tab

This screen has several settings that control the Engineering Units of the data.

3.2.2.1 Pressure

This section of the Eng Units tab is only applicable for certain loggers, specifically Pressure Loggers.

Select the desired Engineering Units to be used by this program locally to display pressure values. Note that this setting does not affect the logger which always uses its default units (kPa). It also does not affect the Engineering Units on the logger display which are set under *Device Setup, Input, Chan 1, Channel Type*.



The **Units from Logger** checkbox is specific to the Pressure Logger with Display. If it is checked, the software will use the Engineering Unit from the logger and ignore the choice from Preferences.

If the **Use Pressure Offset** checkbox is checked, the scale factor from selected Engineering Units to kPa is shown and may be adjusted by the user.

For Vacuum Loggers, the user can decide to **Show Vacuum Positive** (if checked) or Negative (if not checked).

For **Barometric** Loggers, the user can set the unit as an **Altimeter** and set the measurement as **Feet** or **Meter**. Note that if the Barometric Altimeter (Feet) or Altimeter (Meters) is set, they are also available under the Device Setup/Display tab to be displayed on the LCD if so desired.

3.2.2.2 Temperature and Humidity

Temperature: Select the Temperature units used to display on the logger by clicking **Degree C** or **Degree F**. Note that the logger device always uses °C internally.

MKT: The user can enter the values that are used to calculate Mean Kinetic Temperature. If the values are changed, the default settings can be restored by clicking on the **Default** button.

Humidity: If the **Show Dew Point** checkbox is checked, a new trace will be plotted on the Graph and a new column will be added to the Data Table if both Temperature and Humidity channels are enabled for Temperature/Humidity Loggers.

3.2.3 Security Tab

This tab under Preferences allows the security to be enabled and allows users to be created, privileges assigned, restrictions set, and an audit trail generated. Once security is enabled, only users with administrative privileges can edit this page.

Security must be ENABLED to be active. Check the **Enable** checkbox to enable password

security. If not checked, there will be no user control of the software, and anyone can use it without restriction.

The screenshot shows the 'Preferences' dialog box with the 'Security' tab selected. The 'Enable' checkbox is checked. The 'Log File' field is set to 'C:\Users\Merie\AppData\Roaming'. The 'View Log' button is visible. Below, there is a section for user management with fields for 'First Name', 'Last Name', 'User Name', 'Level', and 'Password'. There are also checkboxes for 'Active' and 'Expires' (set to '08/24/2023 00:00:00'), and a dropdown for 'Retries'. An 'Auto Logout (Minutes)' dropdown is also present. At the bottom, there is a list of users with 'Admin' and 'mkosiorek' listed. To the right of the list are buttons for 'New', 'Add', 'Update', and 'Delete'. At the very bottom are 'OK' and 'Cancel' buttons.

If the **Audit Trails** checkbox is checked, activities including everything related to security and communication to the logger and PC will be encrypted and saved to the file specified in the **Log File** field. Audit Trails (also known as Activity Log) can only be logged if security is enabled. If the logged-in user has administrator privileges, the Activity Log can be accessed by clicking on the **View Log** button in this screen. You can then Save, Print, or Delete the Activity Log.

3.2.3.1 Creating a User

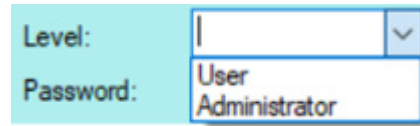
To create a user, the following fields must be specified:

First Name: User's first name

Last Name: User's last name

User Name: User's login name

Level: There are two user levels – User and Administrator

A screenshot of a web form for creating a user. The form has a light blue background. There are two rows of input fields. The first row is labeled 'Level:' and has a dropdown menu. The dropdown menu is open, showing two options: 'User' and 'Administrator'. The second row is labeled 'Password:' and has a text input field.

User: Can read and save data from loggers. Cannot access Preferences or change the logger's configuration. Cannot save the configuration to the PC.

Administrator: Has access to everything

Password: Enter the password to be used when logging in.

Active: If the user is Active (checked box), they can access the program provided their User Name and Password match when logging into the program. If not Active, the user cannot log into the system.

Retries: Set the number of times the user can try to log in before the user login fails.

Expires: The User's login privilege will expire on this date.

Auto Logout: The program will automatically logout the user after this amount of inactivity time (in minutes). DO NOT leave blank.

Once all the options are set, click the **Add** button and the user will be added to the User list box. The list box on the bottom left of the screen shows all users created in addition to Admin which comes as a default.

Once Security has been Enabled, only users with Administrator privileges can add, update, or delete users using the buttons to the right of the Users list.

- New** Clears all fields except the User list box to allow for entry of a new user.
- Add** Adds a user to the User list (see [3.2.3.1 Creating a User](#)).
- Update** Highlight a User Name to change. Once all changes have been made, click the **Update** button to save the modifications.
- Delete** Highlight a User Name to delete. Click the **Delete** button and the user will be deleted from the User list.

3.2.4 Advanced Tab

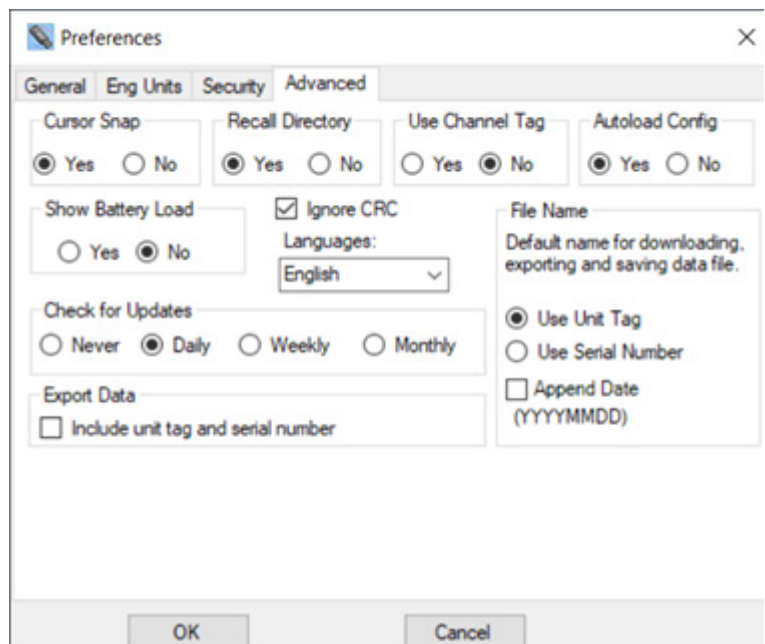
This screen allows the user to set advanced functions of the software.


Cursor Snap: If *Yes* is selected, the cursor will snap (jump) to the actual data point on a line. If *No* is selected, the cursor will move along the extrapolation of the line.

Recall Directory: If *Yes* is selected, the program will remember the last directory used and will default to this at each start up.

Use Channel Tag: If *Yes* is selected, the program uses the user-supplied Channel Tag as set in the *Device Setup, Input* tab. If *No* is selected, the program uses the generic labels Chan 1 or Chan 2.

Autoload Config: If *Yes* is selected, each time the Device Setup tab is selected the program will load the configuration from the logger (provided the logger is connected). If *No* is selected, the user will need to load the configuration manually (either from the device or the PC), and when navigating away from Device Setup and back, the configuration will remain intact as loaded.



Show Battery Load: If *Yes* is selected, the battery **Battery Load**  load will be shown on the Device Setup screen. If *No* is selected, the battery load will not be visible.

Ignore CRC: This only applies to the Track-It™ Extreme Logger which includes a cyclic redundancy check (CRC). If checked and there is a discrepancy, the software will pop up a message asking if the user wants to ignore the CRC and continue. If not checked, the software will automatically check for CRC and if there is a discrepancy the software will stop.

Languages: Select the language in which all dialogs will be presented from the drop down list. This requires a language specific file (language.csv) that is configured for the language required. The default is English.

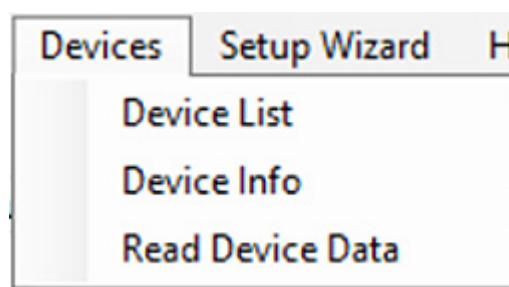
Check for Updates: Automatically checks for software updates according to the setting: Never, Daily, Weekly, or Monthly.

Export Data: If the box is checked, the logger's unit tag and serial number are included in the .csv file with the data points when data is exported.

File Name: Select whether to **Use Unit Tag** or **Use Serial Number** as the default file name when exporting data, downloading data, or saving live display data. If **Append Date** is checked, the current date is appended to the file name. For example: *****_20230724.dat or *****_20230724.csv.

3.3 Devices

The Devices menu option refers to the logger plugged into the USB port on the PC.



3.3.1 Device List

This screen will show the device(s) currently connected or available to the PC.

Check the checkbox next to your desired device and click the **Connect** button. If only a single device is connected, it will connect automatically.

3.3.2 Device Info

This screen will show the information about the currently connected device. It shows memory capacity, device type, the current firmware revision, device serial number, record status, and battery status. Click the **OK** button to clear the window.

3.3.3 Read Device Data

This menu option allows the user to retrieve the current recorded data in the device. If selected, it will ask if you want to Save Data to PC. If Yes is clicked, the Save Data File window pops up to allow the user to specify the file name and location to save the data. Uploading data... will show in the status field at the bottom right. Uploaded Data will be shown once the data upload is complete. During this process any recording currently in progress on the device will be stopped. If there is no recorded data in the device, you will get a message to that effect.

3.4 Setup Wizard

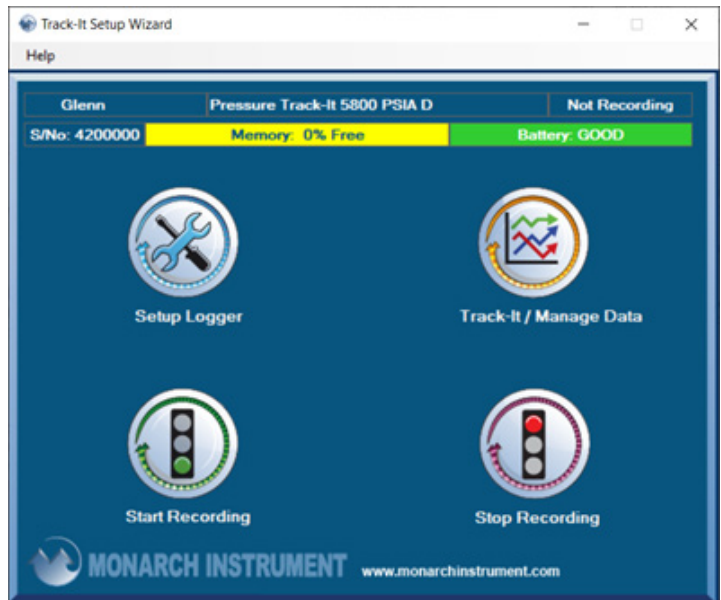
Selecting this menu option will close Track-It™ DataLogger Software and start the Track-It™ Setup Wizard program. Once your logger is detected you can use this program to quickly set up your logger, manage data, or start/stop recording.

Across the top of the Track-It Setup Wizard window you will see the logger Unit Tag, model, recording status, serial number, memory usage, and battery status. There is also a Help menu that will provide basic information about the program.

Setup Logger: Clicking on this option will guide the user through the most common setup options to configure the logger for use.

Track-It/Manager Data: Clicking on this option will reopen Track-It™ DataLogger Software.

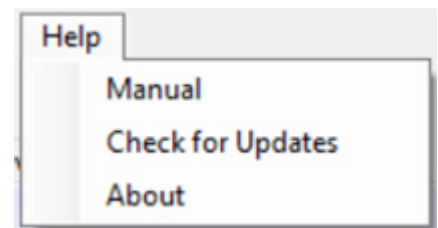
Start Recording: Clicking on this option will allow the user to start recording now, resume recording, or record later.



Stop Recording: Clicking on this option will allow the user to stop recording.

3.5 Help

Selecting this menu option will provide additional information about Track-It™ DataLogger Software.



3.5.1 Manual

Select this menu option to open this software manual.

3.5.2 Check for Updates

Select this menu option to check for any updates to Track-It™ DataLogger Software. If you have the latest version of software, you will receive a message indicating as such. Click *OK* to clear the message window.

3.5.3 About

Select this menu option to get more information about the revision, release, and copyright for this software.

3.6 Icons

Below the Menus is a collection of icons that allow for quick access to those functions





Open File

This icon works the same as using the File, Open menu option. See [3.1.1 Open](#) for more details.



Save File

This icon works the same as using the File, Save menu option. See [3.1.2 Save](#) for more details.



Print

This icon works the same as using the File, Print menu option. See [3.1.3 Print](#) for more details.




Bluetooth® LE

See section 3.6.1 below.

3.6.1 Bluetooth® LE

The Bluetooth® LE icon is only applicable for Bluetooth compatible devices.

Track-It Datalogger Software v1.1.2 and later supports connection via Bluetooth® LE on Windows® 10 and later. When the software is opened, it first looks for USB connection. If a device is connected by USB, **USB Connected** is displayed on the right bottom box.

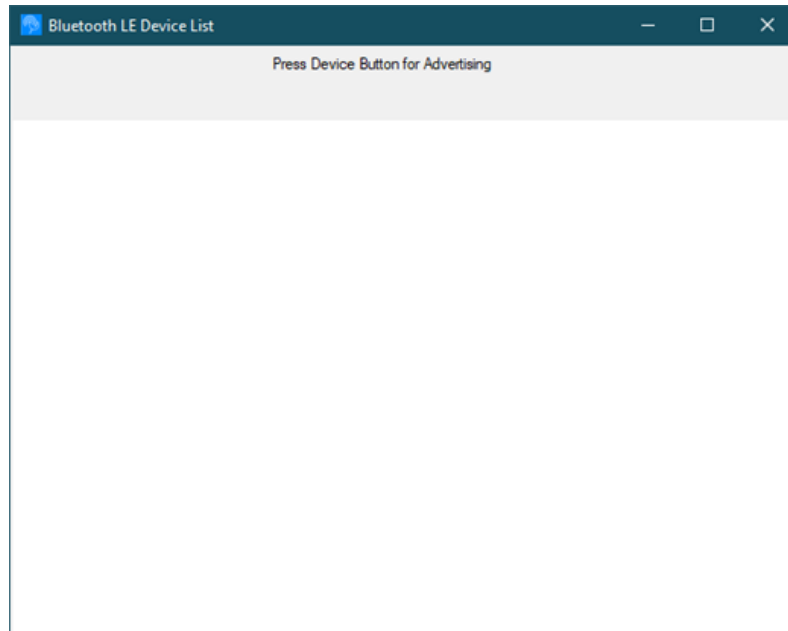


USB Connected

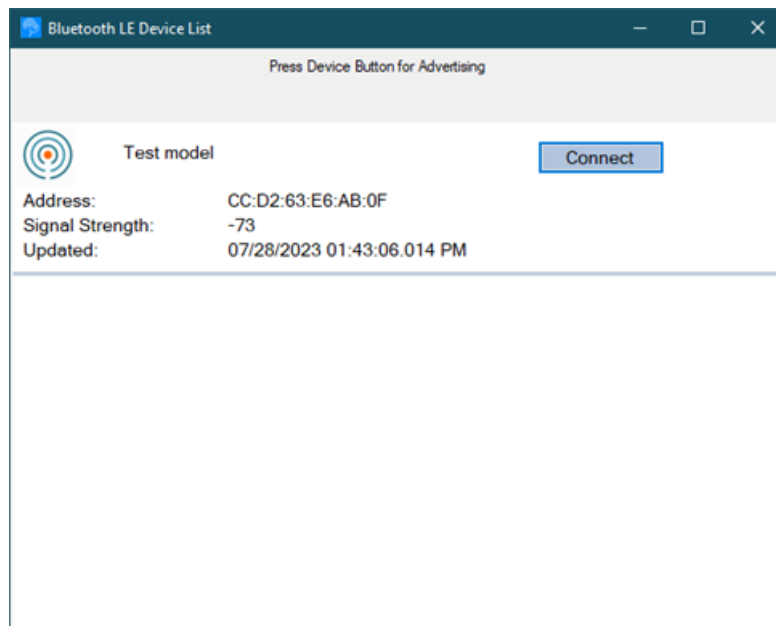
To connect with Bluetooth® LE instead, Bluetooth must be enabled on the PC to connect with the device. If the PC doesn't support Bluetooth (either non-Windows 10 or Bluetooth not enabled on PC), you will get the following message when you click on the Bluetooth® LE icon.



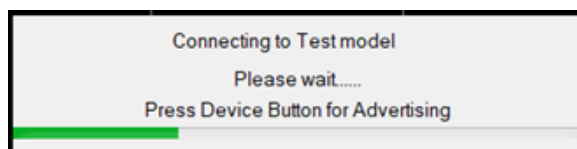
If Bluetooth is enabled on the PC but there is no Bluetooth compatible device advertising when you click on the Bluetooth® LE icon, you will get the following window:



You must activate advertising on the device to be able to connect. Once you do so, the software will detect the device and display the Bluetooth LE Device List as shown below:



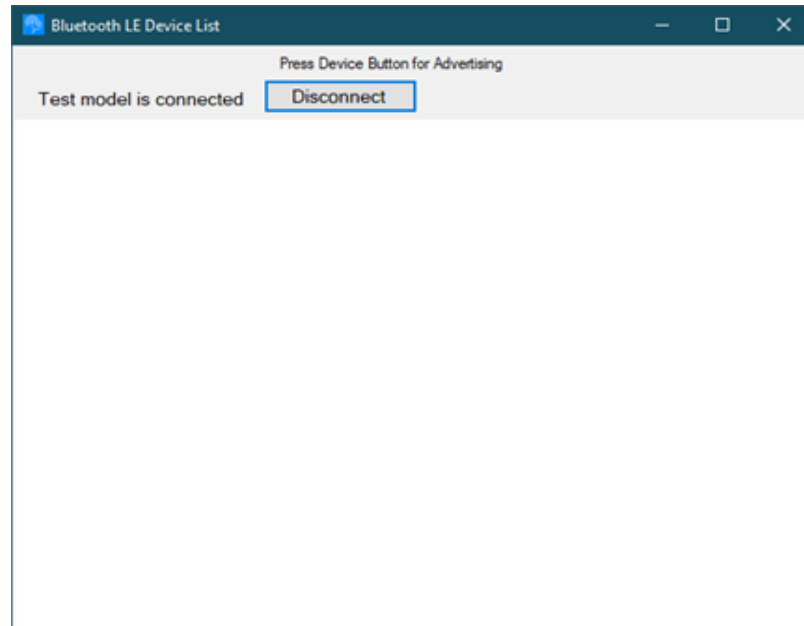
More than one device may be listed. Click the **Connect** button next to the desired device to connect the device to the software via Bluetooth® LE. You will see a window like shown below. Make sure the device continues to advertise to make a connection.



Once the device is successfully connected, you will see **Bluetooth LE Connected** displayed in the right bottom box.

Bluetooth LE Connected

To disconnect a Bluetooth® LE device, click the Bluetooth® LE button again. The Bluetooth LE Device List window appears with an additional **Disconnect** button.



Alternatively, you can change the connected device by clicking the **Connect** button next to a different device; this will disconnect first device and establish connection with the new one.

4.0 CONTENT TABS

4.1 Graph Tab

The Graph tab allows for the visualization of data. It is the default screen when you open or log into the software (if security is enabled). The user must open a saved file, upload data from a connected device, or start live data to see graphed data.

4.1.1 Displaying Data in Graph Format

Data can be loaded from a file, uploaded from a connected device, or viewed in real time (select loggers only).



To open a previously saved file, follow the steps detailed in [3.1.1 Open](#).

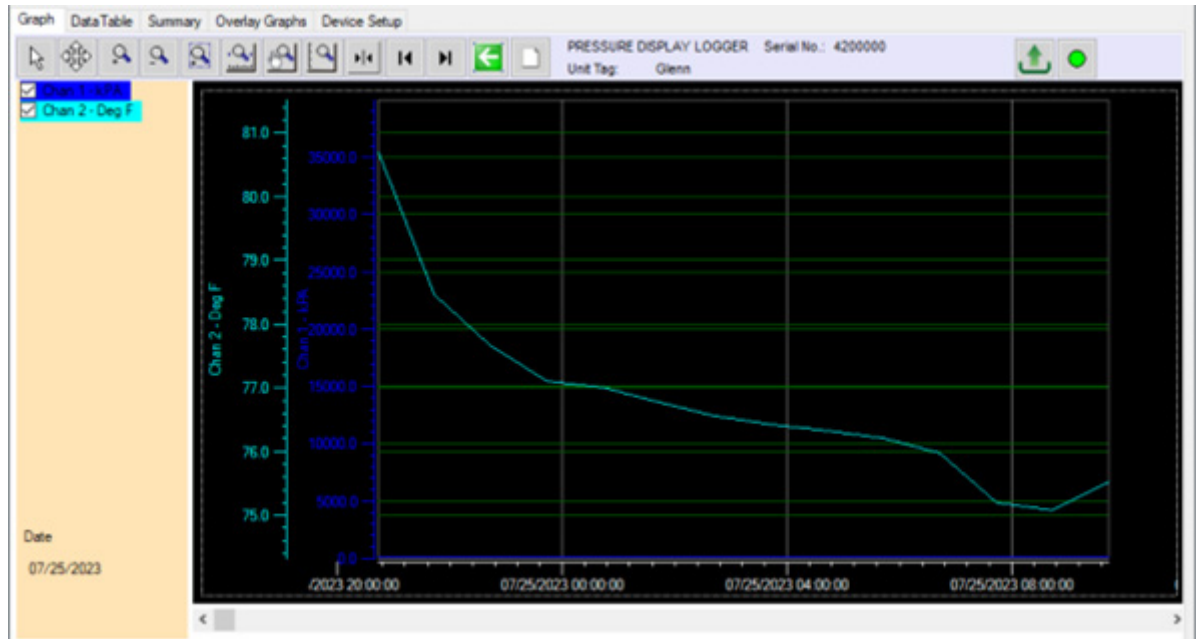


To upload recorded data from a connected device, follow the steps detailed in [3.1.5 Read Device Data](#).



To display live data, click on the **Start Live Data** icon.

Once data is displayed on the graph, additional tools become available to manipulate what is visible on the graph. Use the icons above the graph to navigate around. Use the Zoom X-Axis to Fit icon to see an overall trend. A typical graph is shown below.



4.1.2 Graph Icons

The graphic area is fully interactive. Data can be zoomed and scrolled. The interaction is controlled by the icons above the graph.



Hover over the icons for a brief description of their function. More detail about each icon is provided below:



Pan

This is the default cursor. It is used to scroll the trends horizontally and vertically by simply clicking in the graphics area. Traces can be scrolled individually by clicking and dragging the individual vertical scales or together by clicking and dragging in the graphics area.



Expand/Compress

Click this button to expand (zoom) or compress the graph along the x-axes (time) and y-axis (scale). Traces can be zoomed individually by clicking and dragging the individual vertical scales or together by clicking and dragging in the graphics area.



Zoom In

Click this button to zoom in the graph.



Zoom Out

Click this button to zoom out the graph.



Zoom Box

Click this button to zoom to a user-defined window. When clicked, the cursor will turn into a draw window tool. Draw a window around the area of interest by holding the right mouse button and dragging the window. On release, the window area will fill the graphics screen.



Zoom X-Axis to Fit

Click this button to fit all data onto one screen.



Manual Zoom

Click this button to manually zoom the vertical Y-Axis. This will open the Manual Zoom window. Enter the minimum and maximum vertical Axis scale values and check which channel to apply it to, then press the OK button to execute or Cancel to exit.



Zoom Scale

Click this button to zoom the vertical Y-Axis to the defaults. This will open the Zoom Scales window. Check which channel to apply it to, then press the OK button to execute or Cancel to exit. The vertical scales will zoom to the default extremes.

**Cursor**

Click this button to enable the cursor. There are several cursor options to enable in-depth examination of the data on the graph. See [4.1.6 Using the Cursor](#) for details.

**To the Beginning**

Click this button to jump to the start of the data.

**To the End**

Click this button to jump to the end of the data.

**Original Scale**

Click this button to convert the graph back to the original scale.

**Clear Screen**

Click this button to clear the graph and return to the start-up state.

**Read Device Data**

This allows the user to retrieve the current recorded data in the device. If the logger is recording when this icon is clicked, it will ask if you want to pause recording to continue. Select *Yes* to stop any recording currently in progress on the device to continue or *No* to cancel. If you choose to pause recording or the logger was not recording, then it will ask if you want to Save Data To PC. Select *Yes* or *No*. If the user selects *Yes*, the Save Data File window will pop up so the user can name the file and specify the location to be saved. If the user selects *No*, the software will read the data from the device. If there is no recorded data on the device, you will get a message to that effect. A device must be connected in order to perform this task.

**Start Live Data**

This allows the display of real-time data from the connected device. Data will plot on the graph and show on the Digital Indicators if these are enabled under Preferences (see [3.2.1 General Tab](#)).



Stop Live Data

This allows the display of live data to be stopped.



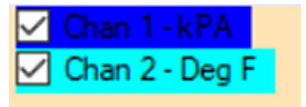
Pause/Play Live Data

This icon is only visible during Live Data display. If running, the Pause icon will be visible and is used to pause live data display. Note that data continues to be acquired and when the Play icon is pressed the graph will “catch up” to real time. No data is lost. If paused, the Play icon will show.

Information about the connected logger is displayed between the interactive graph icons. By default, this will contain the model, Serial Number, and Unit Tag. It is helpful to create a unique Unit Tag as it is printed if the graph is printed, and it can also be included with exported data (if set in Preferences).

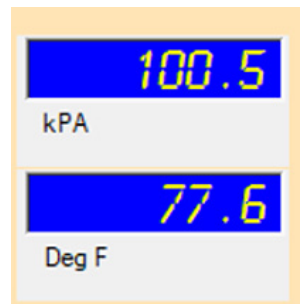
4.1.3 Trend Identifiers

On the left-hand side of the graph are the Trend Identifiers. These identify each channel by trend color. By unchecking the boxes, you can shut off the corresponding trace. The vertical scales for each channel will be in the corresponding color of the trace for easy identification as is the background of the digital display (if shown).

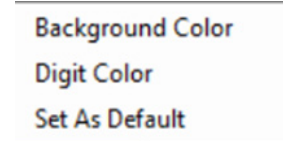


4.1.4 Digital Display Widgets

On the left-hand side of the graph below the trend identifiers are the Digital Display widgets (like digital panel meters), which are only visible when viewing LIVE data (if set to Yes in Preferences) or when the Cursor is turned on (see [4.1.6 Using the Cursor](#)).



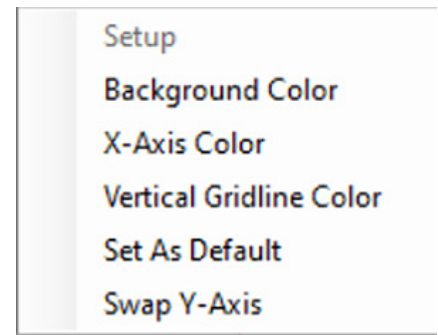
To change the look of the Digital Display widgets, right click on either of the digital display values to access the Digital Display Setup window (shown right). The user can change the Background Color or Digit Color and then Set As Default, which will be remembered each time the software is used. The display background typically follows the selected trace color.



4.1.5 Graph Setup

If you move the cursor anywhere on the graph and right-click the mouse, you will bring up a menu (shown right) that allows the user to modify the look of the graph and data.

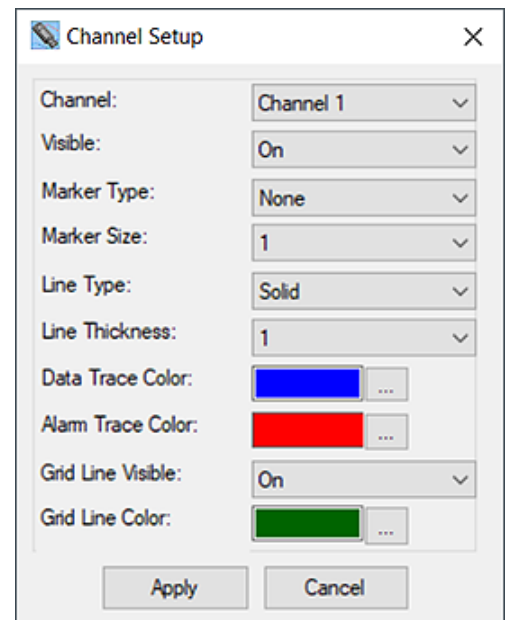
Note: When changing colors, make sure to select contradicting colors to prevent accidentally hiding information.



There are multiple menu options:

4.1.5.1 Setup (Channel Setup)

The Channel Setup dialog window allows the user to modify the properties of each channel. Select from the drop-down list or click the 3 dots next to the color sample to open the color selection window.



Channel: Select a channel to adjust

Visible: Turns the trace On or Off for the selected channel

Marker Type: Identifies the actual points recorded. The trace is extrapolated between these points. The points can be marked by a square, circle, or diamond. The user can also select *None* for no marker.

Marker Size: Adjusts the size of the marker on the points

Line Type: Identifies the trace type; it can be solid, dashed, or dotted

Line Thickness: Adjusts the thickness of the trace

Data Trace Color: Changes the trace color for the selected channel

Alarm Trace Color: Changes the alarm trace color for the selected channel

Grid Line Visible: Turns the grid lines On or Off for the selected channel

Grid Line Color: Changes the grid line color for the selected channel

4.1.5.2 Background Color

This menu option allows the user to change the background color of the graph.

4.1.5.3 X-Axis Color

This menu option allows the user to change the graph X-Axis color.

4.1.5.4 Vertical Gridline Color

This menu option allows the user to change the vertical grid line color.

4.1.5.5 Set As Default

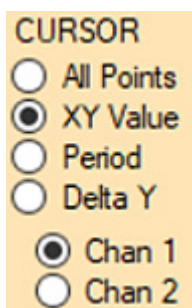
This menu option saves the current settings as the default, which will be remembered each time the software is used.

4.1.5.6 Swap Y-Axis

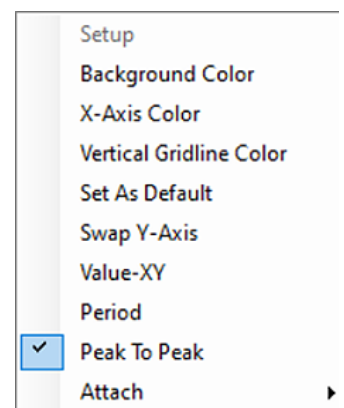
This menu option allows the user to swap the position of the vertical scales on the Y-Axis.

4.1.6 Using the Cursor

The cursor is turned on using the Cursor icon. 



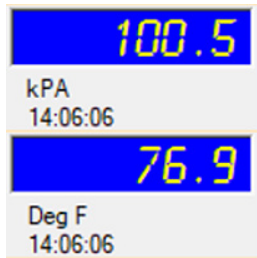
When the cursor is on, a number of options appear on the left-hand side of the window (shown left). Except for the All Points option, these cursor choices can also be selected and adjusted by right-clicking directly on the graph, which brings up the graph setup menu with additional options specifically for the cursor (shown right).



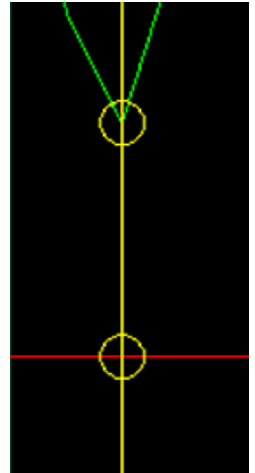
The cursor modes are described below:

4.1.6.1 All Points

This is the default option when the cursor is turned on; it brings up the cursor with circular targets around all traces at a particular date/time as shown right.



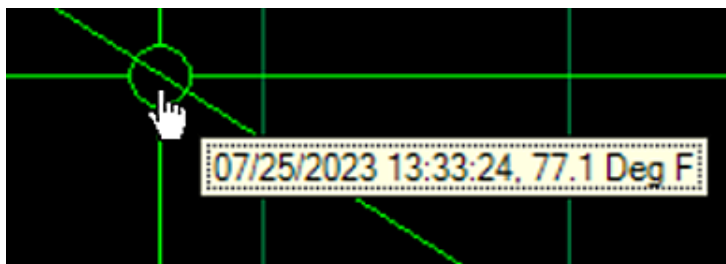
The values of the data within the target circles are shown on the left side of the window in the Digital Displays (like digital panel meters, shown left). The time stamp of the data point is below the digital displays and the date stamp is at the bottom left of the window.



When the mouse is moved over the cursor line, the pointer will turn into a pointing finger. If you hold the left mouse button down at this time, you can drag the cursor line left or right and the data in the digital displays will update accordingly.

4.1.6.2 XY Value or Value-XY

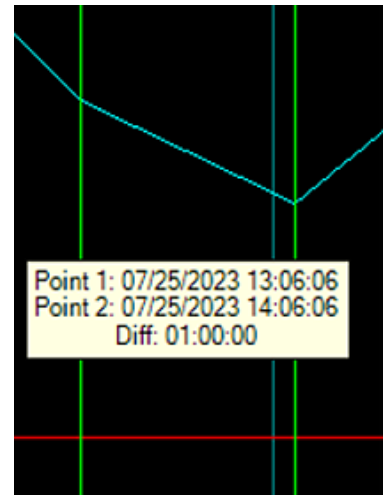
This option uses a single cursor to identify a point on the trace where the X- and Y-Axes meet. When the mouse is moved over the cursor line, the pointer will turn into a pointing finger as shown below.



If you hold down the left mouse button at this time, you can drag the cursor line left or right; the data in the traveling window will update the date/time and value of the point in the target circle. You can attach the cursor to the other trace by using the Chan 1 or Chan 2 radio buttons on the left side of the window or using the Attach ► option from the graph setup menu.

4.1.6.3 Period

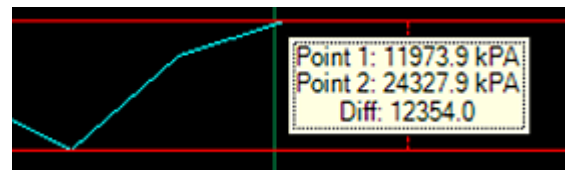
Selecting the Period Cursor option will bring up two vertical cursors (shown in green) which move along the X-axis (Date/Time) with a data window box between them that shows the point in time of each cursor (Point 1 and Point 2) and the difference between them (see example shown right). The data box can be dragged up or down as desired. This cursor option enables easy measurement of time between events or duration of events.



When this cursor option is selected, additional information is shown on the left side of the window. There is a summary of the data between the cursors which includes the minimum, maximum, and average of all points between the cursors for each trace. There are also Summary and Save buttons. The Summary button will open the Summary Tab screen which has additional information of the data points between the cursors. The Save button will open the Save Data File window so the user can give a file name and location where to save the data.

4.1.6.4 Delta Y or Peak To Peak


Selecting the Delta Y or Peak To Peak Cursor option will bring up two horizontal cursors (shown in red) which move along the Y-Axis (amplitude) with a data window box between them that shows the value of each cursor (Point 1 and Point 2) and the difference between them (see example shown right). The data box can be dragged left or right. This cursor option enables easy measurement of amplitude related events (spikes).




You can attach the cursor to the other trace by using the Chan 1 or Chan 2 radio buttons on the left side of the window or using the Attach ► option from the graph setup menu.



4.1.7 Live Data

The Graph can be used to display live data from certain devices. The data can also be saved to the local PC storage medium if selected. This and other options are set up in the Real-Time Data Display section under Preferences (see [3.2.1 General Tab](#)).

To display real-time data, make sure the device is connected and press the **Start Live Data** button. 

Data will plot on the graph and show on the Digital Display widgets if these are enabled under [Preferences](#).

To stop displaying/recording live data, press the **Stop Live Data**  button.

The Pause/Play Live Data buttons   are only visible during Live Data display. If running, the Pause icon will be visible and is used to pause Live Data display; note that data continues to be acquired and when the Play icon is pressed, the graph will “catch up” to real time. No data is lost. If paused, the Play icon will show.


The Graph Icons and Setup options are available during Live Data but can only be accessed when the graph is paused.

The Graph in Live Data/Record mode is similar to the display of recorded data from a file but has the added feature that Digital Display widgets can be enabled in the Preferences menu. The Digital Display widgets will appear on the left side of the graph window. To customize the look of Digital Display widgets, see [4.1.4 Digital Display Widgets](#).

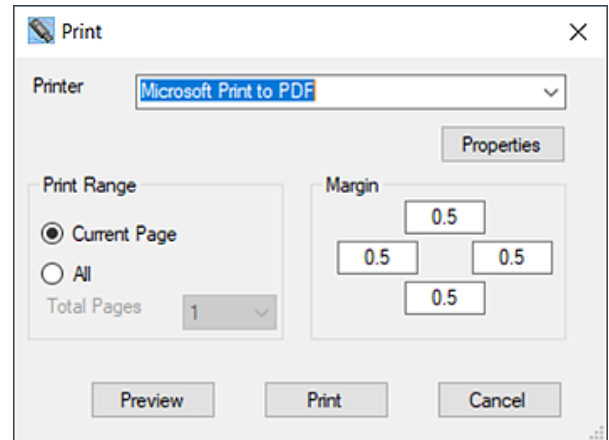
If the Live Data runs long, only the newest 10,240 samples will be displayed in the Graph and Data Table. However, all samples are recorded in the data file if saving live data is chosen.

Note that certain functions in other tabs are not available when viewing live data. If you open the data file that was recorded during Live Data display, these functions become available again.

4.1.8 Printing Graph Data

To print the Graph data currently displayed, click the Print icon  or select Print from the File menu.

This will bring up the Print dialog window (shown right). Select an available printer from the drop-down menu and set its Properties as required.



Select the desired **Print Range** as *Current Page* or a range of pages (*All* with Total Page selection). If *All* is selected, use the drop-down menu to select the total number of pages to be printed.

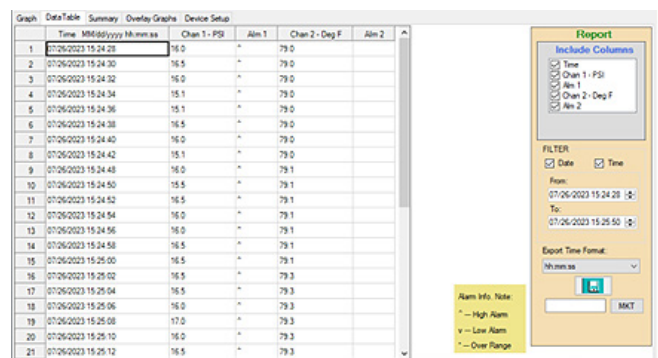
Set the margins as desired. The options allow for top, bottom, left, and right margin adjustment.

Click the **Print** button to print the Graph.

You can also Preview your print options by clicking on the **Preview** button. Click *Close* to exit the Print Preview window. You can print the Graph from the Print Preview window.

4.2 Data Table Tab

The Data Table tab (shown right) displays the graphic data in tabular format with the time and date stamp of the samples along with the actual data recorded. The Alarm information in the Alm 1 and Alm 2 columns indicate whether the data point is in alarm – indicated by “^” for high alarm or “v” for low alarm. The Data Table will show a maximum of 10,240 samples. The user can use the scroll bar to see all the data. For Temperature channels, the Mean Kinetic Temperature (MKT) calculation can be viewed for 2 or more points. The data can also be printed or exported to a CSV file by using the Report section on the right.



4.2.1 MKT (Temperature Loggers ONLY)

For loggers that measure temperature, the Mean Kinetic Temperature (MKT) calculation can be viewed for 2 or more points. This function only works from data uploaded from a saved file and is disabled for Live Data.

To compare 2 or more nonconsecutive points, click on the first point, hold down the Ctrl key on the keyboard, and then click on any additional points. Then click the MKT button and the calculation will be shown next to the button.

To compare a range of points, click on the first point, hold down the Shift key on the keyboard, and then click on the last point to highlight the range. Then click the MKT button and the calculation will be shown next to the button.

To compare all temperature points in the Data Table, click on the Temperature channel column heading to highlight the entire column. Then click the MKT button and the calculation will be shown next to the button.

4.2.2 Exporting Data


Data can be saved to PC media as a comma-separated values (.CSV) file which can then be viewed in compatible spreadsheet programs. The data transfer is controlled in the Report box on the right side of the Data Table tab. The user can select the data to be exported as follows:

Included Columns – select which columns in the table to export; any column checked will be exported.


Filter – check the range of data to be exported; the range can be dictated by Date, Time, or both. Once checked, update the From and To date/times accordingly.

Note: If any point or range is selected in the table, the Filter options will be ignored.

Export Time Format – select hours, minutes, and seconds (hh:mm:ss) or hours and minutes (hh:mm)

Press the **Export** icon . The Save As dialog window will open to allow the user to define a file name and location where to save the data. Click the Save button to export the data to that file.

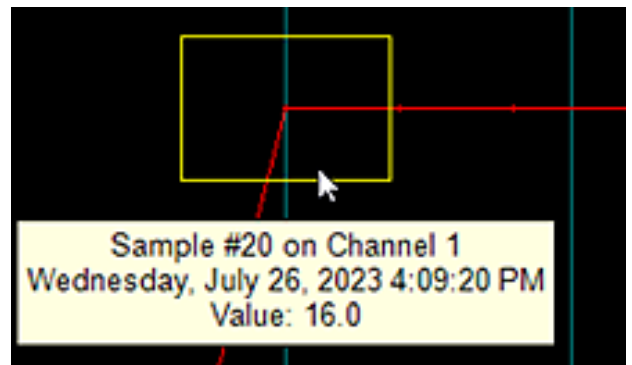
4.2.3 Printing Table Data

Use the Report section on the Data Table tab to select the range of data and options to be printed and click the Print icon  or select Print from the File menu. Select your desired printer and click the OK button to print the desired Table data.

4.2.4 Synchronizing Data

The synchronizing option allows a user to identify points on the Graph using the Data Table and vice versa. This function only works from data uploaded from a saved file and is disabled for Live Data.

To jump from the Data Table to the corresponding point on the Graph, double click the value of interest in the data table. This will open the Graph tab with a box around the point of interest as shown right. Place your mouse arrow in the box to see details of the point. Note that in order to see the detail and select points on the graph, you should set the marker type and size in the Setup option and zoom the graph accordingly.



To jump from a point on the Graph to the corresponding value in the Data Table, move the cursor over the point on the trace; the cursor will change to a pointing hand. Double click the point and it will jump to the Data Table.

4.3 Summary Tab

The Summary tab provides a quick overview of the data loaded on the Graph. The exact format depends on the actual data, user programming, and device type. Selecting the Summary tab displays two additional tabs: Channel Summary and Alarm Summary.

4.3.1 Channel Summary

This tab shows a summary of all data points and indicates start and stop times, the total number of samples, and the maximum, minimum, and average values of the recording (see example below).

Channel Summary		Alarm Summary								
Chan	Chan Tag	Chan Type	Eng Units	Max	Min	Total Samples	Average	MKT	Start Time	Stop Time
Chan 1	Chan 1	Pressure	PSI	16.0	14.1	23	15.2		07/26/2023 16:08:42	07/26/2023 16:09:26
Chan 2	Chan 2	Temperature	Deg F	81.2	78.0	23	79.3	79.4	07/26/2023 16:08:42	07/26/2023 16:09:26

If the Period cursors are activated, additional information will be displayed in the Channel Summary tab pertaining to the data between the cursors (as shown below).


CURSOR PERIOD SUMMARY										
Chan	Chan Tag	Chan Type	Eng Units	Max	Min	Samples	Average	Start Time	Stop Time	
Chan 1	Chan 1	Pressure	PSI	16.0	15.5	3	15.9	07/26/2023 16:09:17	07/26/2023 16:09:22	
Chan 2	Chan 2	Temperature	Deg F	81.2	81.0	3	81.1	07/26/2023 16:09:17	07/26/2023 16:09:22	

4.3.2 Alarm Summary

This tab shows a summary of all alarms that occurred.


Channel Summary		Alarm Summary								
Chan	Set	Type	Max Value	Time	Duration					
Chan 1	14.6 PSI	HI	16.0 PSI	07/26/2023 16:08:42	0 Hr 0 Min 44 Sec					

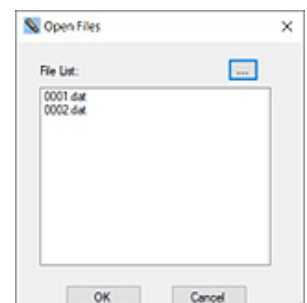
4.3.3 Printing Summary Data

Click on the specific Summary tab you want to print (Channel or Alarm). Then click the Print icon  or select Print from the File menu. Select your desired printer and click the OK button to print the desired Summary data.

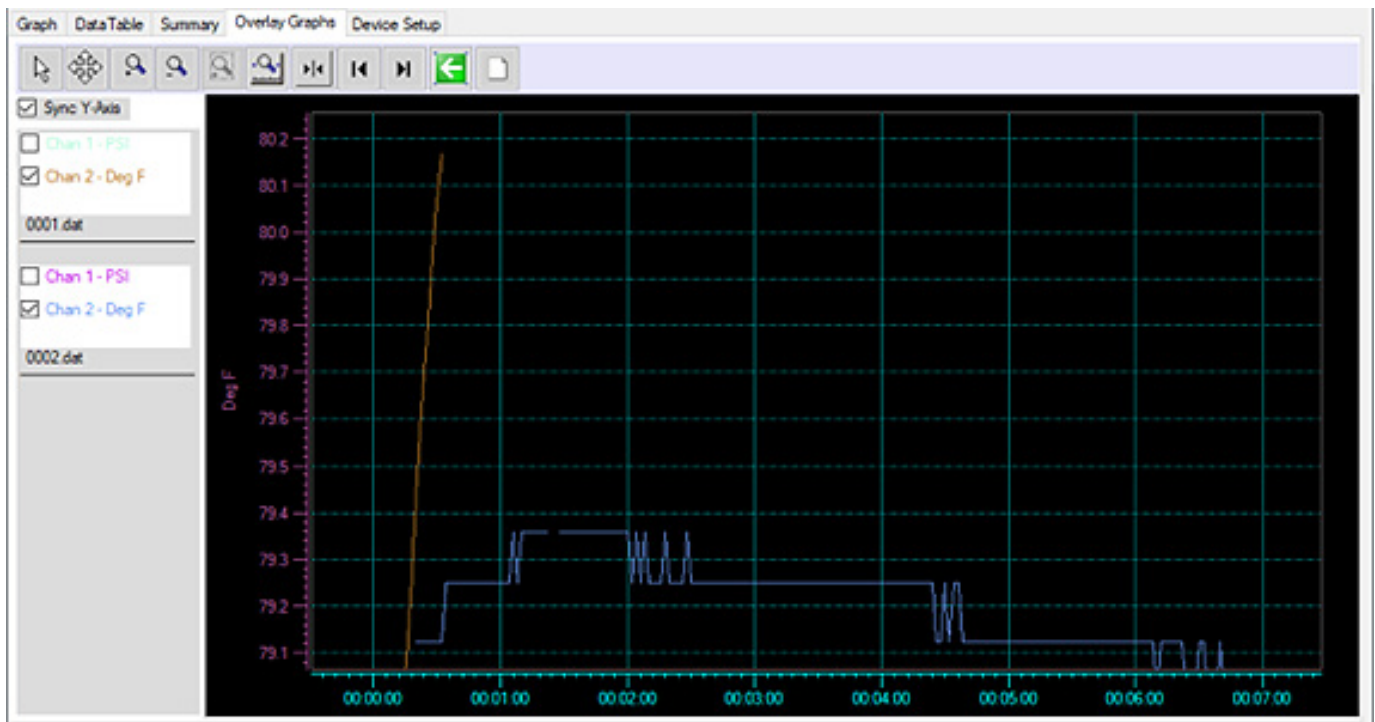
4.4 Overlay Graphs Tab

The Overlay Graphs tab allows for the visualization of data from multiple data files. The maximum number of files that can be opened is six.

To overlay graphs from multiple data files, click the Open icon  or select Open from the File menu. The Open Files dialog window will appear (shown right). Click on the button with 3 dots to browse for the desired files.



Once all desired files have been selected, click the OK button. The files will be loaded onto the same graph using the time/date stamp to synchronize.



Once the data files are opened in the graph, information about each file and their respective channels will appear on the left-hand side of the graph. The color of the channel identifier matches the channel trace on the graph. The channel is visible if the box next to the channel is checked; otherwise, it is not shown on the graph.

The Sync Y-Axis checkbox is checked by default. All channels with the same type share the same Y-axis. If the Sync Y-Axis checkbox is unchecked, all channels have an independent Y-axis.

The Graph may be manipulated as described in section [4.1.5 Graph Setup](#). Certain options may not be available.

The Cursor can also be used as described in [4.1.6 Using the Cursor](#).

If files are opened in the Overlay Graphs tab, the Data Table and Summary tabs will be disabled.

Click the Clear Screen icon to close the open data files. 

4.4.1 Printing the Overlay Graphs Data

To print the displayed Overlay Graphs data, follow the same steps as detailed in [4.1.8 Printing Graph Data](#).

4.5 Device Setup Tab

The Device Setup tab is used to configure a connected logger. Options under this tab depend on the type of device attached to the PC USB port. Not all tabs may be present, and the options shown may differ from those discussed here. The basic concept is the same for all devices and you can check the documentation that came with your specific logger for more information. There are also several sub tabs under the Device Setup tab as shown below.

The screenshot shows the 'General' sub-tab of the 'Device Setup' window for a 'PRESSURE DISPLAY LOGGER A'. The interface includes the following elements:

- Navigation Tabs:** General, Input, Trigger, Alarm, Display, Menu.
- Unit Information:** Unit Tag: Test Model; Serial No.: 4103984.
- Time Settings:** Time: 05/21/2024 13:22:11; Use PC System Time (checked); Set Time button.
- Sampling and Recording:** Sample Rate: 01:00:00 @ 0; 24 hrs checkbox; Cyclic Mode Enable checkbox; Record Time: 2730 Days 16h00m00s; View Setup button.
- Start Recording Section:**
 - On Send (Now) (selected), Synch Time checkbox.
 - Button Press radio button.
 - Start Time: 05/21/2024 13:22:11; Set Start Time button.
 - Advanced ---- Setup button.
- Input Section:** Input Setup button; CH 1 Pressure PSI (checked, Enable); CH 2 Temperature °F (checked, Enable); Free Memory: 100%.
- Device Controls:** Read Config, Send Config, Resume Recording, Stop Recording, Turn On Bluetooth LE, Send Factory Config.
- PC Controls:** Load Config, Save Config, Connect button (highlighted in green).

4.5.1 General Sub-Tab

The General sub-tab is a quick setup window for a connected logger. This screen contains information on how the unit is currently configured. Some information displayed is for information only and cannot be changed here; you need to use the other tabs to change the settings. There are advanced setups for those users who wish to record specific events at specific times. For the most part however, this page allows a quick setup turnaround for logger devices.

To set up a device, it must be connected. If the device is connected (plugged into the USB port) when entering this tab, the data will automatically be read if the Autoload Config option is set to *Yes* in the [Preferences/Advanced](#) menu. If a unit is not shown as connected, use the *Connect* button to select and connect to the desired device, then use the *Read Config* button along the bottom under Device to read the current configuration from the device.

Once a logger is connected, the current configuration will be displayed in several sections as detailed below:

4.5.1.1 Logger Information

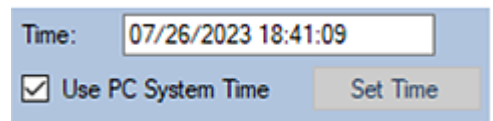
The top left section of the General tab shows the basic information about the connected logger. The software will automatically detect the logger model and Serial Number.

In this section the user can enter a unique **Unit Tag** to identify the logger. This is an identifying name that can be entered by the user and saved into the device. Up to 20 characters may be entered. This Unit Tag will also appear at the top of the Graph when data is loaded.

4.5.1.2 Time

To the right is the Time window. This shows the time as loaded from the device and it updates in real time. Checking the

Use PC System Time will do just that; use the PC time to send to the device if the configuration is changed. Alternatively, if you uncheck Use PC System Time and press the **Set Time** button you can set the time and date to any time you want. Note that when you send a configuration to the device and the time varies from the PC system time by more than 3 minutes you will get a warning which you may choose to ignore.

The screenshot shows a software window titled "Time:". It contains a text input field displaying "07/26/2023 18:41:09". Below the input field, there is a checkbox labeled "Use PC System Time" which is currently checked. To the right of the checkbox is a button labeled "Set Time".

4.5.1.3 Sample Rate

Sample Rate: 00:00:02 0 ☐ 24 hrs ☐ Cyclic Mode Enable Record Time: 1 Days 12h24m32s

The **Sample Rate** is the rate at which the device will take and store readings (in simple mode). Samples can be taken and stored from once every 2 seconds to once every 24 hours. The Sample Rate time window can be used to set the time from 2 seconds to 23 hours 59 minutes and 58 seconds in 2-second increments.

If you require a once a day or 24-hour sample period, check the **24 hrs** box.

Cyclic Mode Enable essentially allows the device to record forever – or at least until the battery dies. If checked, it allows the device to overwrite old data when the memory fills up. When the device gets to the end of memory, it cycles around and starts at the beginning again, overwriting data. You will always have the latest samples in memory. If this box is not checked, the device will stop recording when memory is full.

The actual total sample time is shown to the right – 1 day, 12 hours, 24 minutes, and 32 seconds in the example above. As you change the sample time, this value will recalculate.

4.5.1.4 View Setup

Click on the View Setup button to open a text file containing all the settings for the connected logger.

4.5.1.5 Start Recording

This section allows the user to set the method for starting recording. The options are:

On Send (Now) – As soon as you send the configuration to the device, it will start recording. It can only be stopped by plugging it into the USB port and using

Start Recording

☐ On Send (Now) ☐ Synch Time

☐ Button Press

☐ Start Time: 07/26/2023 18:28:30

☒ Advanced

the software. There is an additional check box associated with this option - **Synch Time**. If unchecked, recording will start as soon as the configuration is loaded to the device. If checked, recording will start when the time is an exact multiple of the sample time. For example if the sample rate is set to 00:10:00, the unit will not start recording until the current time is an even multiple of 10 minutes; so if it's 09:21am, the unit will wait until the time is 09:30am. Therefore, if Synch Time is checked, it could be almost a whole sample period before the unit starts recording.

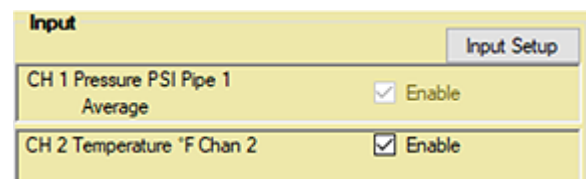
Button Press – The recording can be stopped and started using the button on the device. Read the device instructions for actual button operation.

Start Time – The device will start recording at some future date and time as specified. Use the up/down arrows to the right of the Date/Time field or **Set Start Time** button to set the desired start date and time. Once the configuration is sent to the device, the device will sleep in ultra-low power mode until the start time is reached and then it will commence recording at the sample rate. This feature uses Trigger 1; you will see that the Trigger indication on the Trigger sub-tab reflects this.

Advanced – This option needs to be specified by the user. Click on the **Setup** button to jump to the **Trigger sub-tab**. See [4.5.3 Trigger Sub-Tab](#) for more details.

4.5.1.6 Input

This section is an indication of how the input channels are set up in the device. It will indicate the Channel Type (Pressure PSI and Temperature °F), Channel Tag (Pipe 1 and Chan 2) and sample mode (if other than Instantaneous). The channels can be disabled by unchecking the **Enable** box (if applicable) or can be set up using the **Input Setup** button.



Input		Input Setup
CH 1 Pressure PSI Pipe 1	Average	<input checked="" type="checkbox"/> Enable
CH 2 Temperature °F Chan 2		<input checked="" type="checkbox"/> Enable

4.5.1.7 Trigger

If Start Recording is set to Advanced, you will see the Trigger status window as shown below. The Triggers are what affect the way the device records. See [4.5.3 Trigger Sub-Tab](#) for more details

The screenshot shows two trigger configuration panels. Each panel has a title (Trigger 1 and Trigger 2), an 'Enabled' status set to 'No', and a 'Trigger Source' dropdown menu. Both dropdown menus are open, showing 'Alarm 1' and 'Alarm 2' as options.

4.5.1.8 Connect, Config, and Recording Buttons

Along the bottom of the General sub-tab are several buttons that allow the user to connect a logger, upload/download configurations, and control recording.

The screenshot shows a row of buttons organized into two main sections: 'Device' and 'PC'. The 'Device' section contains buttons for 'Read Config', 'Send Config', 'Resume Recording', 'Stop Recording', 'Turn On Bluetooth LE', and 'Send Factory Config'. The 'PC' section contains buttons for 'Load Config' and 'Save Config'. A 'Connect' button is located to the right of the 'PC' section and is highlighted with a green border.

Under Device the user has the following button options:

Read Config — Use this button to read and display the current configuration from the connected device.

Send Config — Use this button to send the currently displayed configuration to the connected logger.

Resume Recording — Click this button to resume recording on the connected logger.

Stop Recording — Click this button to stop recording on the connected logger.

Turn On/Off Bluetooth LE — This toggle button is only available for Track-It Pressure/Temp-Vacuum/Temp Dataloggers with Display with Firmware Revision 3.0 and greater that are connected by USB. Click this button to turn on the device's Bluetooth LE. The button will be toggled to *Turn Off Bluetooth LE*; click again to turn off the Bluetooth LE. The visibility of the **Bluetooth LE sub-tab** within Track-It Software depends on whether Bluetooth LE is available on the device.

Send Factory Config — Use this button to send the factory configuration to the connected logger.

Under **PC** the user has 2 button options:

Load Config — Use this button to load and display a previously saved configuration from a file on the PC.

Save Config — Use this button to save the displayed configuration to the PC.

The **Connect** button opens the Device List to allow the user to select a logger to connect

4.5.1.9 Other Data

For most loggers, **BATTERY** indicates the general condition of the battery. Note that with certain batteries, anything other than GOOD should be an indication to change the battery. Check the device instruction sheet.

Free Memory shows the device capacity indicated as a percent of the amount of unused memory.

NOTE: Memory will always be cleared when configuration is sent to the device if the configuration has changed from what was already in the device. You will have the option to save the memory contents before the configuration is uploaded.

4.5.2 Input Sub-Tab

This tab allows the user to configure the inputs of the device. The content of this sub-tab is device specific but is similar in concept across all loggers. Some devices have fixed inputs (channel types) which cannot be changed; others like a USB Temperature Logger, have the ability to record *Internal* (fixed) sensors AND/OR *External* analog signals using plug in adapter modules (milliamps and Volts) as shown below.

General Input Trigger Alarm Display

Chan 1 Chan 2

☒ Enabled

Channel Tag: Chan 1

Channel Type:

☒ Internal

Temperature

☒ °F

☐ °C

☐ Hi Resolution

☐ External

500mV

Full Scale: 500.0

Zero Scale: 0.0

Dec. Point: 1

Eng Units Units

Icons

Sample Mode:

☒ Instantaneous

☐ Average

☐ Hi Peak

☐ Lo Peak

There are 2 sub-tabs, one for each channel input. Click on the channel you want to set up.

Below is a list of setup options for channel inputs (what is displayed may vary depending on your device):

4.5.2.1 Enabled

If the Enabled checkbox is checked, this input is active. If unchecked, it is disabled. If a channel cannot be disabled, this option will be grayed out or not visible.

4.5.2.2 Channel Tag

Up to 9 characters may be entered to describe the channel input. This information is saved in the device and is displayed in the Digital Display widgets on the Graph tab and channel column headings on the Data Table tab if *Use Channel Tag* is set to *Yes* in [Preferences/Advanced](#).

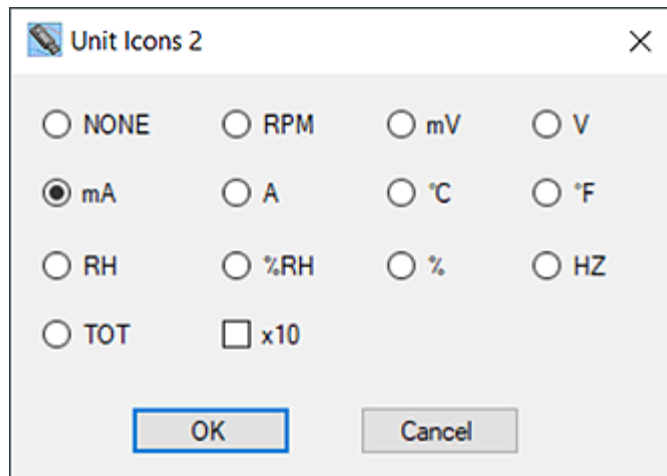
4.5.2.3 Channel Type

The Channel Type is device specific. Most of the time the Channel Type is as simple as selecting the desired engineering units for that channel (if applicable).

For devices that have the ability to record *Internal* (fixed) sensors AND/OR *External* analog signals using plug in adapter modules, select *Internal* or *External*.

Select *Internal* to use the device built-in sensor, then select the desired engineering units (temperature only). Some temperature devices may also have a *Hi Resolution* checkbox. If checked the logger will take longer to calculate the temperature value for higher accuracy. Please note that checking this box will increase battery consumption.

Select *External* to program the analog input. Select the voltage or milliamp value that corresponds to the analog module you will be using from the drop-down menu box - for example 4-20mA. The default scaling can be changed. For example, the Full Scale value can be set to 100 (as opposed to 20) and the Zero Scale value can be set to 0 (as opposed to 4) if 4-20mA was selected. You can also set the number of decimal points; note that the device can only display 4 digits (assuming it has a display). You can also enter 5 characters for engineering units. This is used by the local PC software and is not displayed on the device. Use the *Icons* button to select from the available icons which will be shown on the device display as listed below.



4.5.2.4 Sample Mode

The standard Sample Mode is *Instantaneous*. In this mode, the device takes a single sample at the sample rate and stores it in the memory. By checking one of the other Sample Modes, the device will sample at the maximum sample rate (2 seconds) and will save the result – *Average*, *High Peak*, or *Low Peak* at the user set sample rate. Therefore, if the sample rate is 10 minutes, the device will take a sample every two seconds then every 10 minutes it will save the average or peak of the last 10 minutes depending on the sample mode selection. While this may cut down on memory use, it maximizes the battery load.

4.5.3 Trigger Sub-Tab

The Trigger sub-tab enables the user to set up the device to record at predetermined times. A number of parameters are interdependent, and the user should be aware of this when setting up advanced options.

There are two Triggers (1 and 2), and they operate independently but their effect is combined to control the record times. These two triggers can operate independently or together with Alarms and the device Button (see [4.5.3.5 Trigger Logic](#)).

The screenshot shows the 'Trigger' sub-tab configuration window. It has tabs for 'General', 'Input', 'Trigger', 'Alarm', and 'Display'. The 'Trigger' tab is active, showing 'Trigger 1' and 'Trigger 2' sub-tabs. The 'Trigger 1' sub-tab is selected. The configuration includes: a checked 'Enabled' checkbox; a 'Start Time' field set to '07/27/2023 16:38:24'; an unchecked 'Cyclic Mode Enable' checkbox; a 'Set Stop Time' field set to '10/31/2023 05:00:00'; 'Set Time' and 'Apply' buttons; an 'Enable' checkbox; a 'Number Of Samples' field set to '2293'; an unchecked 'Fill Memory' checkbox; a 'Record Trigger Source' section with checkboxes for 'Trigger 1' (checked), 'Alarm 1', 'Trigger 2', 'Alarm 2', and 'Button Press', each with a 'Setup' button; and a 'Trigger Mode' section with 'On These Days' checkboxes for 'Sunday' through 'Saturday' (all unchecked), and 'Set All' and 'Clear All' buttons.

The triggers are used to start (and stop) the recording at user settable times. First and foremost, a Trigger needs to be enabled to function. The recorded data is determined by the start time, the stop time, and the sample rate. The user can select a start time and stop time which will determine the number of samples recorded, or the number of samples can be set which will determine the stop time. These are affected by the sample rate. If the device is set to record on alarm, the alarm check can be set to be continuous or to be gated by the trigger time.

The Trigger can be set to record on specific days of the week (if Stop Time is enabled) by checking the corresponding boxes. For example, if start and stop times are set and Monday, Wednesday and Friday are checked, the unit will record at the start time and end at the stop time on each of the days checked. In addition, the button can be set to stop and start recording provided the triggers are not active; if the device is

recording because of a trigger being active, the button cannot stop that recording even though it is enabled.

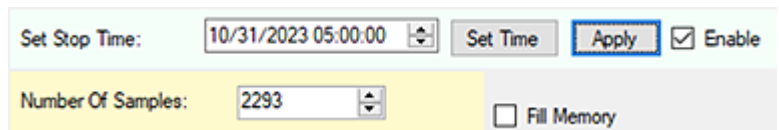
There are two other things to consider. **Cyclic Mode Enable** essentially allows the device to record forever – or at least until the battery dies. It allows the device to overwrite old data when the memory fills up. When the device gets to the end of memory, it cycles around and starts at the beginning again, overwriting data. You will always have the latest samples in memory. If this box is not checked, the device will stop recording when memory is full. **Fill Memory** (if checked) will force the device to record until memory is full. Basically, it disables the stop time limitation and forces the number of samples to the maximum.

4.5.3.1 Start Time

Set to be the time the recording will start. If Stop Time is not enabled, the device will record until memory is filled or if Cyclic Mode is enabled it will record until stopped by the user (or the battery dies).

4.5.3.2 Stop Time

This needs to be enabled to be active. The user needs to set a

A screenshot of a software interface for configuring recording parameters. It features a 'Set Stop Time' label next to a date and time picker showing '10/31/2023 05:00:00'. To the right are 'Set Time' and 'Apply' buttons, with an 'Enable' checkbox that is checked. Below this, a 'Number Of Samples' label is next to a numeric input field containing '2293'. To the right of the input field is a 'Fill Memory' checkbox that is unchecked.

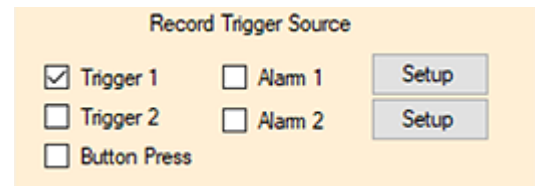
Stop Time which is greater than the Start Time. Set the Stop Time for a specific date and time and click the **Apply** button. The software will calculate how many samples this will record based on this Stop Time. Alternatively, the user can set the number of samples to be recorded and the software will calculate the Stop Time.

4.5.3.3 On These Days

The unit will record on each of the days checked. If no days are checked, the unit will record once based on the Start and Stop Times as described above.

4.5.3.4 Record Trigger Source

This is a summary of the current triggers that will affect the recording. The check boxes can also be used to enable or disable triggers. Note that



Record Trigger Source

☒ Trigger 1 ☐ Alarm 1 Setup

☐ Trigger 2 ☐ Alarm 2 Setup

☐ Button Press

triggers are cumulative – if for example Alarm 1 is checked and no other Trigger is checked, the device will record whenever the Alarm condition is true. If Alarm 1 AND Trigger 1 are checked, the device will only record if the Trigger 1 time is active and there is an Alarm during this period. If only Trigger 1 is checked, the device will record based on the Trigger 1 settings – Start Time (and Stop Time, if enabled). The Setup buttons take you to the Alarm sub-tab. If Button Press is checked, the device's button will also initiate a recording. However, the button will not override other settings.

4.5.3.5 Trigger Logic

The following logic is used to determine how the device will record. Note that the setup on the General tab will override the Trigger settings unless Advanced is selected.

Boxes Checked	Trigger Mode
<input checked="" type="checkbox"/> Trigger 1 (Cyclic Mode and Stop Time not Enabled)	Unit will record when Start Time reached and record until memory is filled.
<input checked="" type="checkbox"/> Trigger 1 AND <input checked="" type="checkbox"/> Cyclic Model Enabled (Stop Time not Enabled)	Unit will record when Start Time reached and record continuously until battery dies.
<input checked="" type="checkbox"/> Trigger 1 AND <input checked="" type="checkbox"/> Set Stop Time Enabled	Unit will record when Start Time reached and record until Stop Time is reached.
<input checked="" type="checkbox"/> Trigger 2 AND <input checked="" type="checkbox"/> Set Stop Time Enabled	
<input checked="" type="checkbox"/> Trigger 1 AND <input checked="" type="checkbox"/> Trigger 2 AND <input checked="" type="checkbox"/> Set Stop Time Enabled	Unit will record between Trigger 1 Start and Stop Times and then again between Trigger 2 Start and Stop Times.
<input checked="" type="checkbox"/> Alarm 1	Unit will record whenever Alarm condition is true. Refer to Alarm Setup.
<input checked="" type="checkbox"/> Alarm 2	
<input checked="" type="checkbox"/> Alarm 1 AND <input checked="" type="checkbox"/> Alarm 2	Unit will record when Alarm condition is true DURING time set by Trigger 1
<input checked="" type="checkbox"/> Alarm 1 AND <input checked="" type="checkbox"/> Trigger 1 AND <input checked="" type="checkbox"/> Trigger 2	Unit will record when Alarm condition is true DURING time set by Trigger 1 and Trigger 2

4.5.4 Alarm Sub-Tab

The logger can be programmed to simply show an Alarm condition or can be set to record on an Alarm condition. The method of showing an Alarm varies by device but the Graph can be set up so that points in Alarm are a different color to normal conditions (see [4.1.5.1 Setup](#)). For devices with a display, the Alarm enabled icon is a bell and there are icons to show whether high or low Alarms are active. See device user manual for details.

The Alarm sub-tab enables the user to set up the Alarm conditions and actions.

There are two Alarms - 1 and 2. Each has its own sub-tab. The Alarms operate independently but their effect is cumulative

The screenshot shows the 'Alarm' sub-tab for 'Alarm 1' in a software interface. At the top, there are tabs for 'General', 'Input', 'Trigger', 'Alarm', and 'Display'. Below these, there are sub-tabs for 'Alarm 1' and 'Alarm 2'. The 'Alarm 1' sub-tab is active. It contains the following controls:

- ☒ Alarm Enable
- Channel selection: ☒ Channel 1 and ☐ Channel 2.
- Setpoint: A numeric input field showing '-36.4' with a unit of '°F'.
- Reset Point: A numeric input field showing '-46.0' with a unit of '°F'.
- Alarm Type: ☒ High and ☐ Low.
- ☐ Lockout

On the right side, there is a yellow box labeled 'Input' with a 'Setup' button. It contains the following text:

- CH 1 Temperature °F Chan 1
- CH 2 Humidity %RH Chan 2

At the bottom, there is a yellow bar titled 'RECORD ON ALARM 1' containing three options:

- ☐ Recording Enable
- ☐ Continuous Record After Alarm
- ☒ Record For Alarm Duration

For any Alarm action to occur, the **Alarm Enable** checkbox must be checked. The user must select the channel to which the Alarm will apply - click the radio button for Channel 1 or 2. The channel input settings are shown on the right to help with your selection. You can also click the *Setup* button to jump to the *Input* sub-tab.

4.5.4.1 Setpoint

The Setpoint is in the units of the channel selected. This is the point at which the Alarm will activate. If Alarm Type is High, the Alarm will activate when the input exceeds the Setpoint. If the Alarm is Low, the Alarm will activate when the input goes below the Setpoint.

4.5.4.2 Reset Point

This is the point at which the Alarm will Reset or cancel. The difference between Setpoint and Reset Point is the hysteresis. Note that the Reset Point cannot exceed the Setpoint for a High Alarm or be set lower than the Setpoint for a Low Alarm.

4.5.4.3 Alarm Type

The Alarm Type can be High (active when actual point value exceeds the Setpoint) or Low (active when actual point value is less than the Setpoint).

4.5.4.4 Lockout

This forces the Alarm to wait until the startup condition is not true before activating. For example, if you have set a Low Alarm at 50 and when you download the configuration the current value is 40, if Lockout is checked, this will not trigger an Alarm. The current value must exceed the Setpoint of 50 to activate the Alarm. At that time, anytime the current value goes below the Setpoint it will activate an Alarm.

4.5.4.5 Record On Alarm

The section controls recording function when an Alarm Setpoint is met.

Recording Enable: If checked, this will cause the device to record whenever there is an Alarm (subject to other trigger conditions). There are two additional options associated with Recording Enable:

Continuous Record After Alarm – once triggered, the device will continue recording.

Record For Alarm Duration – once triggered, the device will record for the duration of the Alarm then stop when there is no longer an Alarm.

4.5.5 Display Sub-Tab

The Display sub-tab is only applicable for devices that have a display. If the connected device does not have a display, you will not see this tab. The content of the Display tab may vary according to the device attached. The Display sub-tab for a Temperature/Humidity device is shown below.

The screenshot shows the 'Display' sub-tab of a configuration interface. At the top, there are tabs for 'General', 'Input', 'Trigger', 'Alarm', and 'Display'. The 'Display' tab is active. The main area is divided into two sections: 'LCD Display Function' and 'LED Function'. The 'LCD Display Function' section contains a 'Display List' on the left with 'Memory Used %' listed. In the center are four buttons: '>>', '<<', '>', and '<'. On the right is the 'LCD Display' section showing 'Relative Humidity', 'Temperature', and 'Time'. Below this is a 'Time' selector with radio buttons for '12hr' (selected) and '24hr'. At the bottom left is an 'LCD Time Out' dropdown set to '30 Sec'. The 'LED Function' section on the right has checkboxes for 'Off' (checked), 'Blink On Alarm', 'Blink When Recording', and 'Blink When armed'. Below these is an 'LED Blink Rate' dropdown set to '10' with the unit 'Secs'.

4.5.5.1 LCD Display Function

The LCD Display Function section allows the user to set what is displayed on the device's display. The options listed are device dependent.

There is a Display List on the left that shows the various options that can be displayed on the device display. The LCD Display listing on the right shows the actual data that will be displayed. There needs to be at least one item in the LCD Display list. To add an item, select it in the Display List and use the Add button ">" to add it to the LCD Display side. To remove an item from the LCD Display, select it and use the Remove button "<" to remove it from the LCD Display. The Add All ">>" or Remove All "<<" buttons can be used to add or remove all items in the lists. Items shown in red cannot be removed from the LCD Display listing.

Decimal Places: Some devices will have the option to set the number of decimal places on the device display.

LCD Time Out: This setting allows the user to determine the amount of time the device display stays on. Select *Never* to keep the display on all the time. Otherwise select an LCD Time Out option to have the display turn off after the preset number of seconds. Note that setting the display to be on all the time does impact battery load.

Time: Select whether the device will display time in 12-hour or 24-hour format.

Date: Some devices have the option to select whether the date is shown as month:day (mm:dd) or day:month (dd:mm).

4.5.5.2 LED Function

Some devices have a programmable LED which can be set by the user. The options are device dependent. Note that turning the LED On can have a significant impact on battery life.

Choices for LED indication can include:

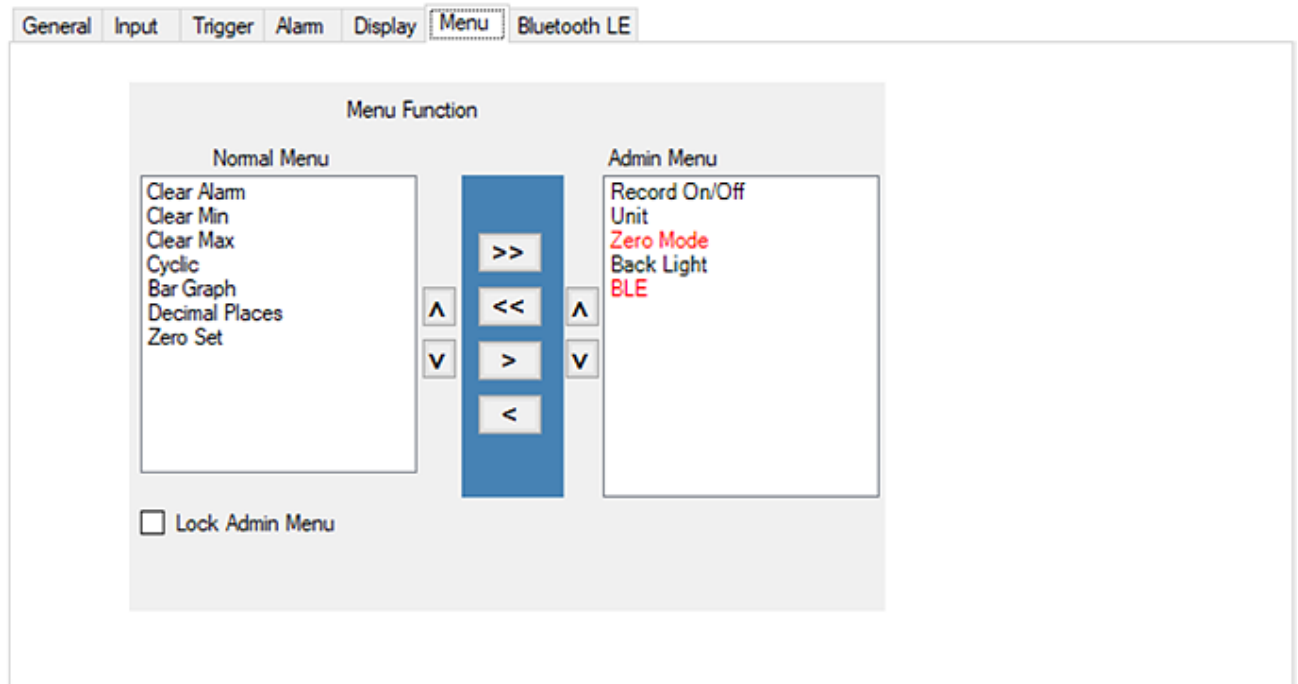
Off	LED is disabled and will not operate on the device
Blink On Alarm*	LED will blink if there has been an alarm condition
Blink When Recording*	LED will blink when the device is actively recording
Blink When armed*	LED will blink while the device is armed to record but is not actually recording

*** Any of these LED blink options can be selected together.**

LED Blink Rate: Selects the time interval between blinks in seconds; the shorter the time interval, the higher the battery load.

4.5.6 Menu Sub-Tab

The Menu sub-tab is only applicable for devices that have a menu. The Menu Function section allows the user to set what menu options are displayed in the **Normal Menu** versus the **Admin Menu**. The options listed are device dependent. An example of the Menu sub-tab is shown below.

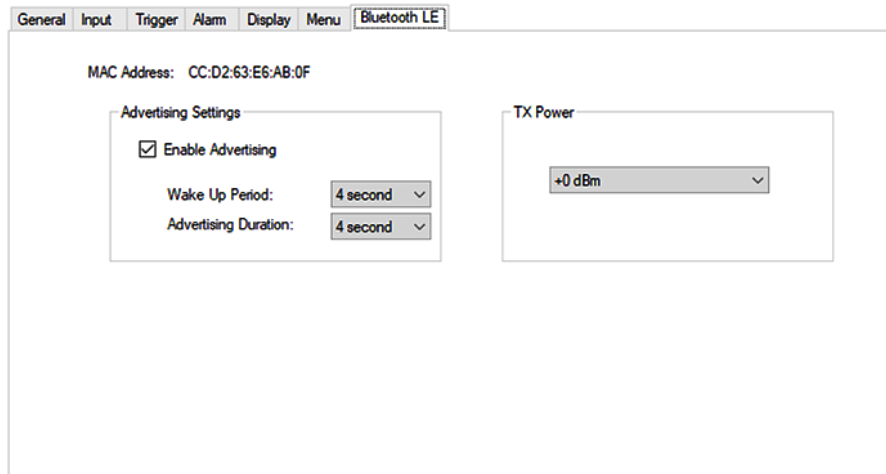


Menu items will appear in the device menus in the order of top to bottom in the lists. By highlighting a menu item (clicking on it) the user can manipulate its position using the arrow buttons. The **Zero Mode** and **BLE** (Bluetooth LE) menu items cannot be moved from the Admin menu.

Lock Admin Menu: If the *Lock Admin Menu* box is checked, the user will not be able to access the Admin Menu features at the device, and the *Zero Set* menu option (display offset) will not be available in the Normal Menu.

4.5.7 Bluetooth LE Sub-Tab

If your device has Bluetooth® LE functionality, the Bluetooth LE sub-tab will be visible as shown below.



The screenshot shows a configuration window for Bluetooth LE. At the top, there is a tab bar with 'General', 'Input', 'Trigger', 'Alarm', 'Display', 'Menu', and 'Bluetooth LE'. The 'Bluetooth LE' tab is selected. Below the tab bar, the 'MAC Address' is displayed as 'CC:D2:63:E6:AB:0F'. There are two main sections: 'Advertising Settings' and 'TX Power'. In the 'Advertising Settings' section, the 'Enable Advertising' checkbox is checked. Below it, 'Wake Up Period' is set to '4 second' and 'Advertising Duration' is set to '4 second'. In the 'TX Power' section, the power level is set to '+0 dBm'.

A Bluetooth device must be advertising to make a connection with another compatible Bluetooth device.

Enable Advertising: If this checkbox is checked, the device will actively advertise based on the Wake Up Period and Duration settings. If this checkbox is not checked, the device will not advertise unless activated manually.

Wake Up Period: How often the device wakes up and starts advertising

Advertising Duration: How long the device advertises in each wake up period

Example: Wake Up Period = 10 seconds
Advertising Duration = 4 seconds

Every 10 seconds, the logger starts advertising for 4 seconds, then goes to sleep for 6 seconds then wakes up and repeats. If the wake-up period and advertising duration have the same value, the device always advertises. However, this will consume more battery life.

Transmit (Tx) Power: This setting specifies the strength of the advertising signal; the bigger the number, the stronger the signal is, and the more battery is consumed. It is recommended that when commissioning a logger, set the Tx Power at the lowest level that allows for reliable connection but minimizes battery life.

5.0 SPECIAL INPUT TYPES

5.1 Event Logger

The Event Logger is used to measure the state of the inputs (2), whether they are High or Low. External modules must be used to interface to the logger. The logger has a user-settable internal bias voltage which applies a weak pull-up to the inputs (high state) which is the normal idle state in this case. The external modules then pull the inputs low when there is an event. Note that isolated modules add an inversion state - when active (energized) the modules pull the logger inputs low. The Event Logger can also measure temperature using the internal sensor. Specific set up for the Event Logger is handled in the *Device Setup, Input* tab as shown below:

The screenshot shows the 'Input' tab of a configuration window. At the top, there are tabs for 'General', 'Input', 'Trigger', 'Alarm', and 'Display'. Below these, there are tabs for 'Chan 1' and 'Chan 2'. The 'Chan 1' tab is active. Inside the 'Chan 1' configuration area, there is a checkbox labeled 'Enabled' which is checked. To the right of this is a 'Channel Tag' field with the value 'Chan 1'. Below the 'Enabled' checkbox, there are two main sections. The left section, titled 'External Event/State', is selected with a radio button. It contains a 'Device LCD Display' section with two dropdown menus: 'In High:' set to '1 on' and 'In Low:' set to '1oFF'. Below these is a 'Eng Units' field set to '°C'. The right section, titled 'Internal', is unselected. It contains a 'Temperature °F' label, a 'Sample Mode' section with three radio buttons: 'Instantaneous' (selected), 'Average', and 'Hi Peak'. Below these are two more radio buttons: 'Lo Peak' and 'Hi Peak'.

The user has the option to select Channel 1 as **Internal** Temperature or **External Event/State**.

NOTE: Channel 1 cannot be disabled.

If Channel 1 is set for **External Event/State**, there are a few parameters that can be configured.

Device LCD Display: This sets a short message that is displayed on the logger display (and on the graph) when the inputs are High or Low. These will be set to **High: 1 on, Low 1oFF** if Channel 1 is set to External Event/State or **High: 2 on, Low 2oFF** if Channel 2 is set to External Event/State.

Channel Tag and **Eng** (Engineering) **Units** can be used to add description to the input.

Channel 2 is set the same way as Channel 1. However, Channel 2 can only be enabled if Channel 1 is set to **Internal**.

There are two modes of sampling and storing data depending on the setup of Channel 1. If Channel 1 is set as **Internal**, the device will be in **Sample Mode** and Channel 2 setup will indicate - **External Event/State (Sampled)**. If Channel 1 is set to **External Event/State**, the device will be in Event Mode and Channel 2 setup will indicate **External Event/State**.

Sample Mode: If Channel 1 is selected to measure temperature, the logger will take readings at the [Sample Rate](#) set by the user. This Sample Rate will also apply to the Event/State input of Channel 2. Thus, the state of the input of Channel 2 will be measured only when the temperature on Channel 1 is measured.

Event Mode: If Channel 1 is selected to be **External State/Event**, the logger will only save a sample if the state of the input changes - High to Low or Low to High. This is independent of the Sample Rate which will be disabled. This will now also apply to Channel 2 - a sample will be taken on a change of state. A change of state on either input will cause a sample to be saved. In Event Mode, the user will be unable to change the Sample Rate and the resolution of the event timestamp will be 2 seconds. (Events less than 2 seconds may not be seen.)

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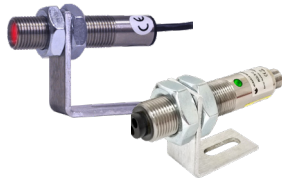
*Fixed Mounted
Strobes*



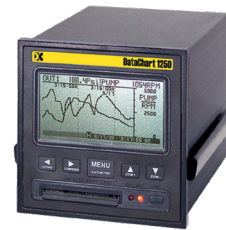
Portable Strobes



*Frequency
Converters*



Speed Sensors



*DataChart™ Paperless
Recorders*



MONARCH
I N S T R U M E N T

15 Columbia Drive, Amherst NH 03031 USA

Tel.: (603) 883-3390 // 800-999-3390

Email: support@monarchinstrument.com

Website: www.monarchinstrument.com