MPLAB® MTCH9010 Plugin User Guide

Product Page Links

Introduction

The Microchip MTCH9010 Liquid Detector, featuring both digital and raw data outputs, offers a simple yet flexible solution for detecting liquid presence across various sensors. When paired with the appropriate sensor, the system can operate using either the capacitive or conductive liquid presence detection method.

This document provides step-by-step instructions on how to install and use the MPLAB® MTCH9010 plugin for the MPLAB Data Visualizer with the MTCH9010 Evaluation kit (EV24U22A). This plugin offers the possibility to easily configure the MTCH9010 in the Enhanced Configuration mode using a graphical user interface, allowing the user to modify the MTCH9010 parameters. Additionally, the raw data can be visualized over time as plots in a graph.

Note: The current version of MPLAB MTCH9010 plugin can be used only with a new configuration. The parameters saved at start-up will not be available for visualization in a graph.

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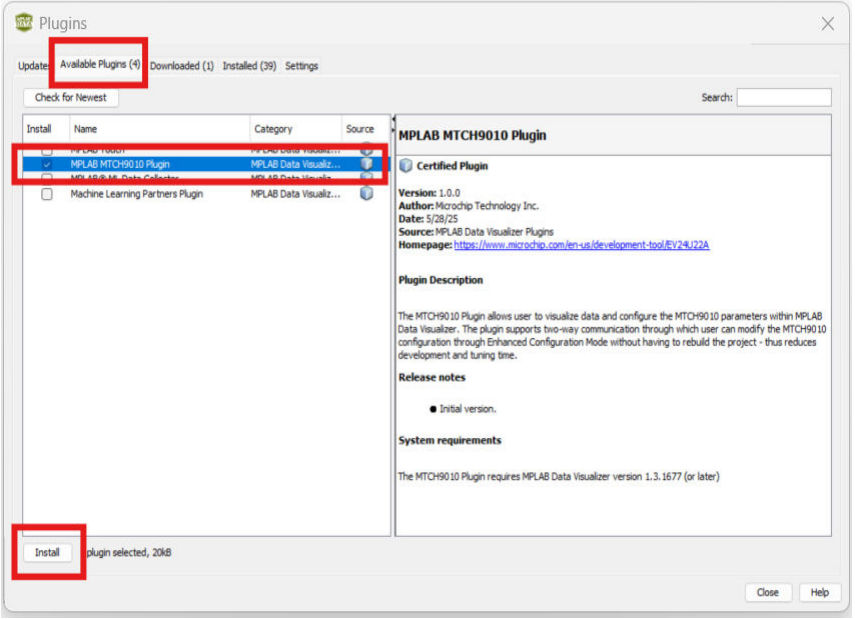
1. MPLAB MTCH9010 Plugin Installation

MPLAB Data Visualizer is a program used to process and visualize data from a running embedded target. The program may be accessed from within the MPLAB X IDE or as a standalone program.

Find the installation procedure for the MPLAB Data Visualizer in the Installation chapter of the MPLAB Data Visualizer User's Guide.

Open MPLAB Data Visualizer. Click and select *Tools>Plugins>Available Plugins*. Click the check box MPLAB MTCH9010 Plugin and then click **Install**.

Figure 1-1. MPLAB MTCH9010 Plugin



In the Plugin Installer window, click **Next** to go to the License Agreement page, where it is required to check the box near the acceptance of terms and conditions and then click **Install**.

Figure 1-2. Plugin Installer

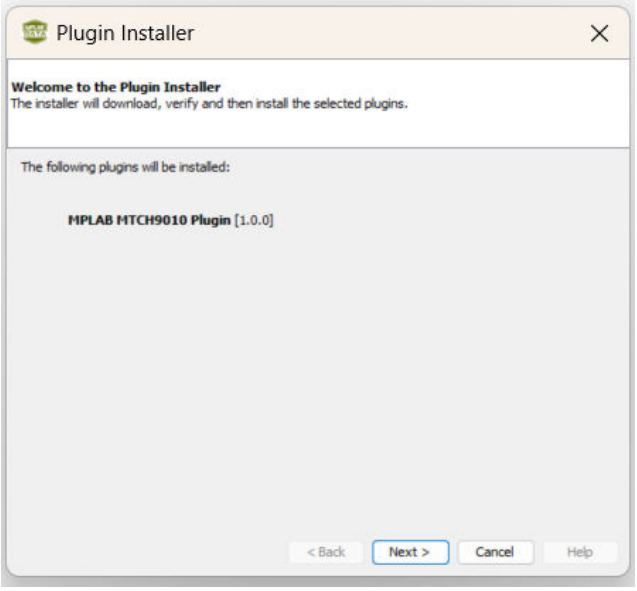
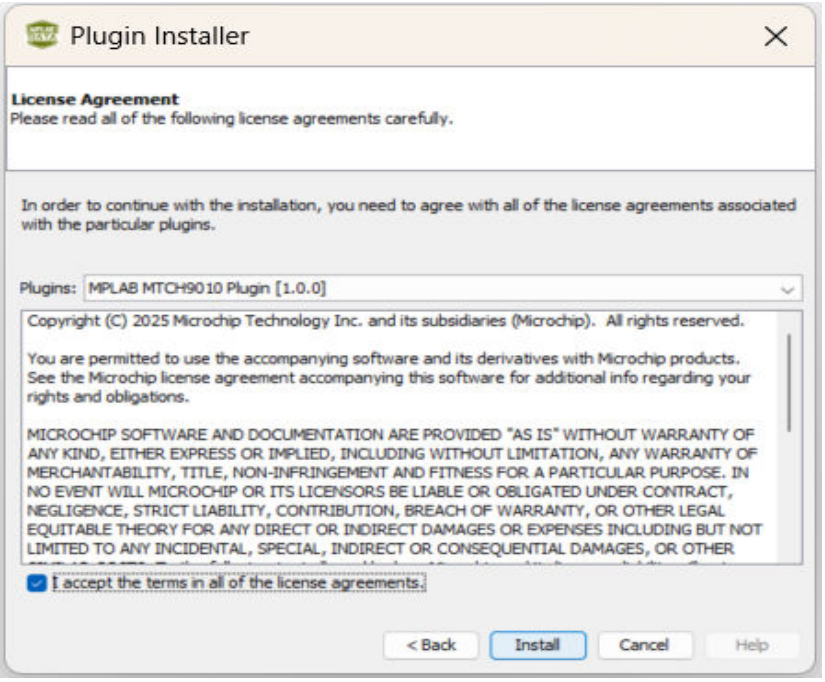


Figure 1-3. License Agreement



Once the installation is complete, select the Restart Now option and click **Finish**.

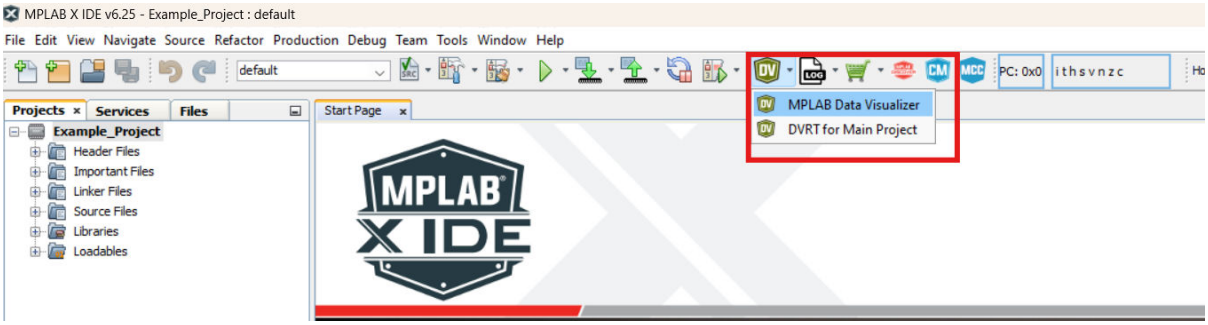
2. Getting Started With the MPLAB MTCH9010 Plugin

The MTCH9010 Evaluation Kit is a complete system designed to help users quickly familiarize themselves with the MTCH9010's capabilities. It includes two sensor boards: one capacitive and one conductive. The evaluation kit is designed to enable users to easily interface and test their custom sensors with MTCH9010, providing a versatile platform for rapid development.

To connect the MTCH9010 Evaluation Kit (EV24U22A) to the MPLAB Data Visualizer, follow these steps:

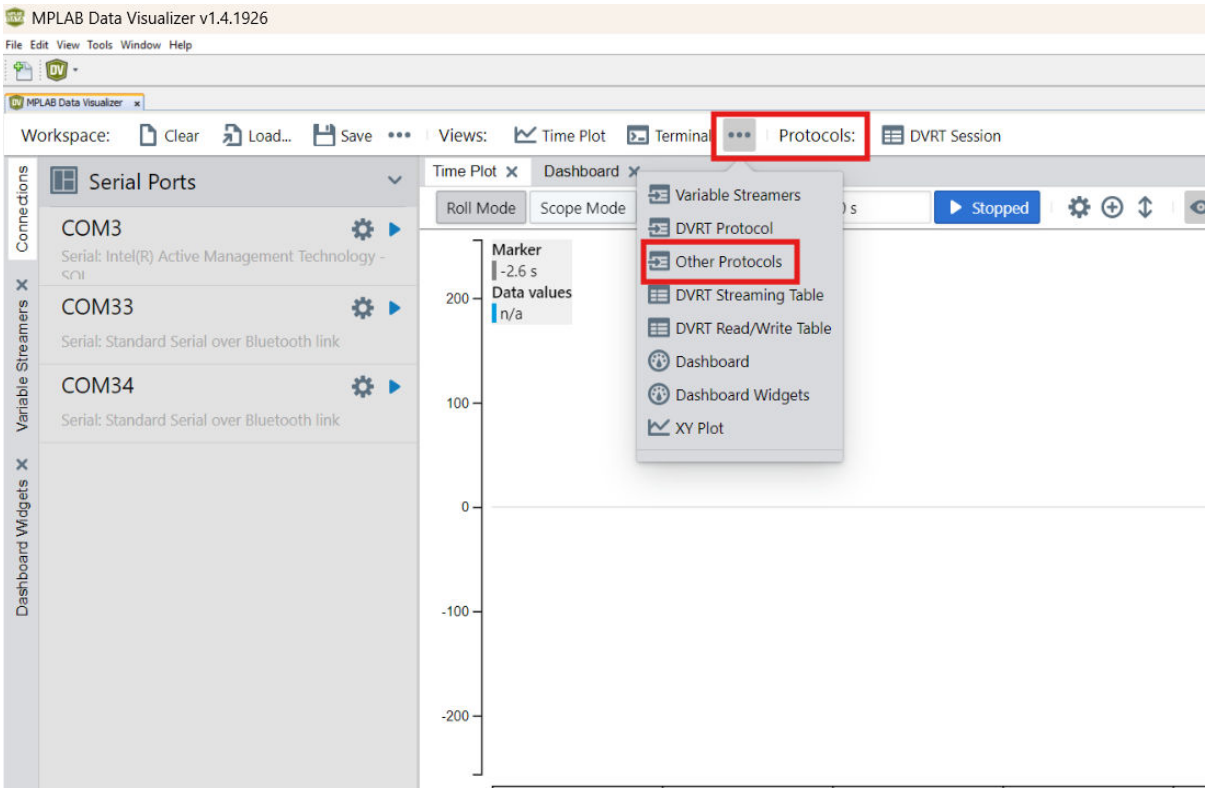
1. Connect the MTCH9010 Evaluation Kit to your PC using a USB Type-C cable.
2. Open the MPLAB Data Visualizer standalone program.
   Note: If using the MPLAB MTCH9010 Plugin within MPLAB X IDE, the MPLAB Data Visualizer can be opened by pressing the **DV** button as shown below.

Figure 2-1. MPLAB Data Visualizer Button



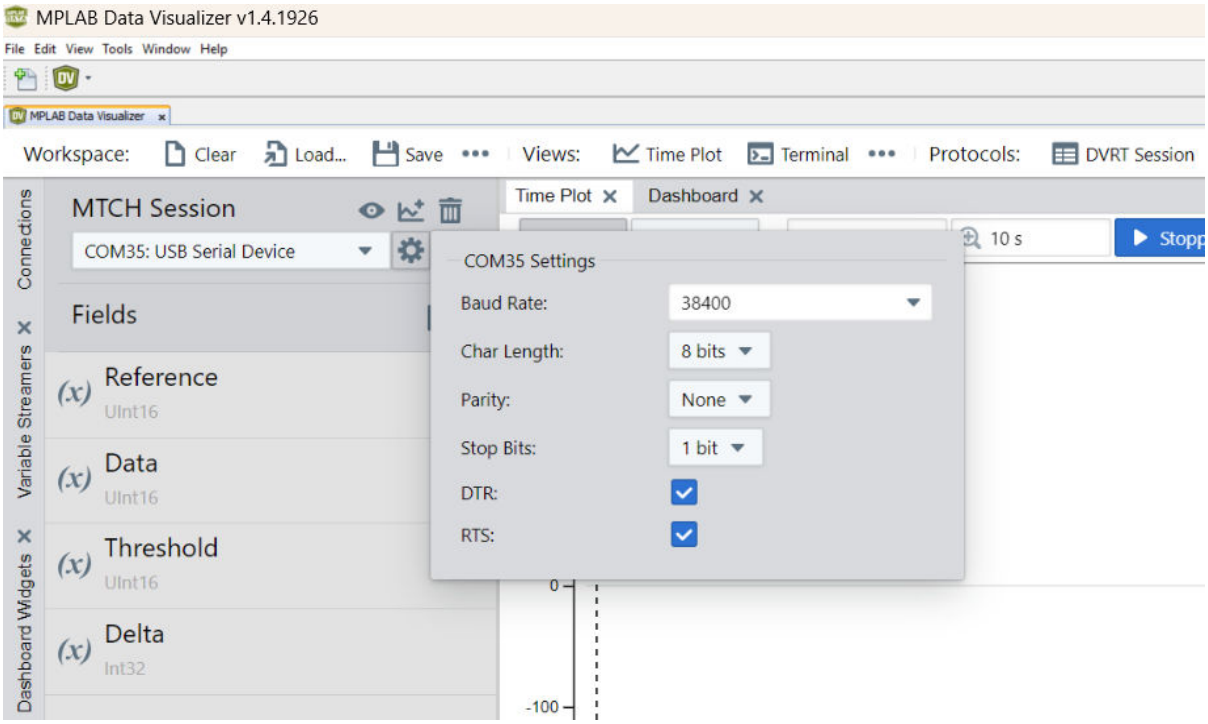
3. From **Protocols**, select **Other Protocols**.

Figure 2-2. Other Protocols



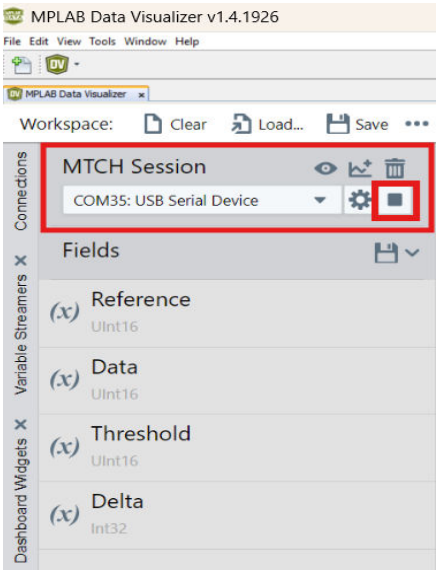
4. Identify the MTCH9010 COM port and set the baud rate to 38400.

Figure 2-3. MTCH9010 COM Port



5. Click the **Start** button for the MTCH Session.

Figure 2-4. Start Session Button



Note: Apply a reset to start configuring the MTCH9010.

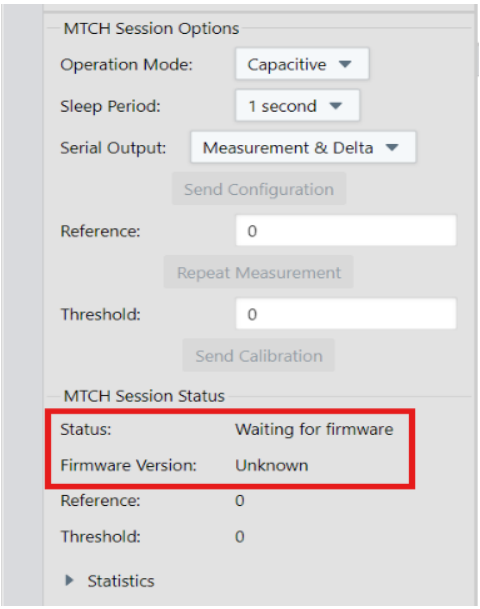
2.1. Waiting for Firmware

Before starting the session, the device must be configured in Enhanced Configuration mode through the corresponding slide switch. The following configuration must be made on the device:

- **ECFG:** Configured to ON
- **LOCK:** Configured to OFF

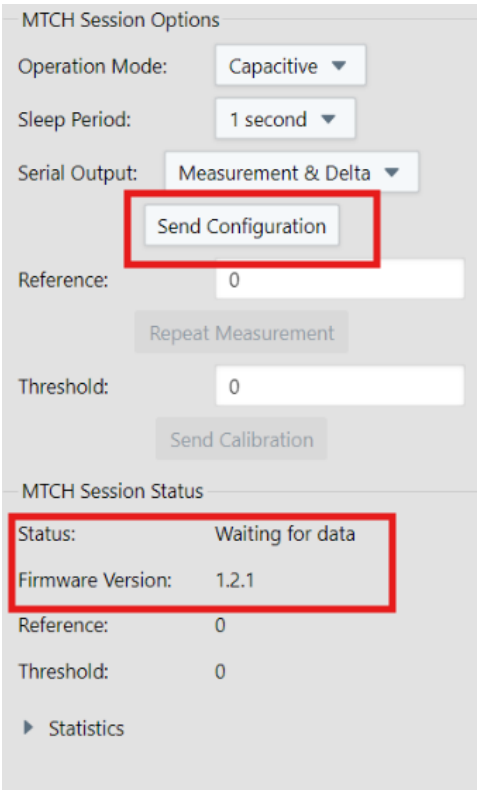
Initially, the device status is *Waiting for Firmware*. To receive the firmware version and start configuring, a reset is needed. Reset the board by pressing the **RESET** button.

Figure 2-5. Waiting for Firmware Status



Once the reset is received by the MTCH9010, the firmware version will appear in the MTCH Session Status section. At this step, the **Send Configuration** button becomes active, and the configuration set is ready to be transmitted.

Figure 2-6. Send Configuration Button



2.2. Configuration

Before sending the configuration, the user must select the following options from the available drop-down menu:

- Operation Mode
- Sleep Period
- Serial Output Format

The following table outlines the available configuration of each option from the drop-down menu.

Table 2-1. Drop-Down Options

Parameter	Configuration
Operation mode	Capacitive
	Conductive
Sleep Period	Wake on Request
	1 second
	2 seconds
	4 seconds
	8 seconds
	16 seconds
	32 seconds
	64 seconds
	128 seconds
	256 seconds

Table 2-1. Drop-Down Options (continued)

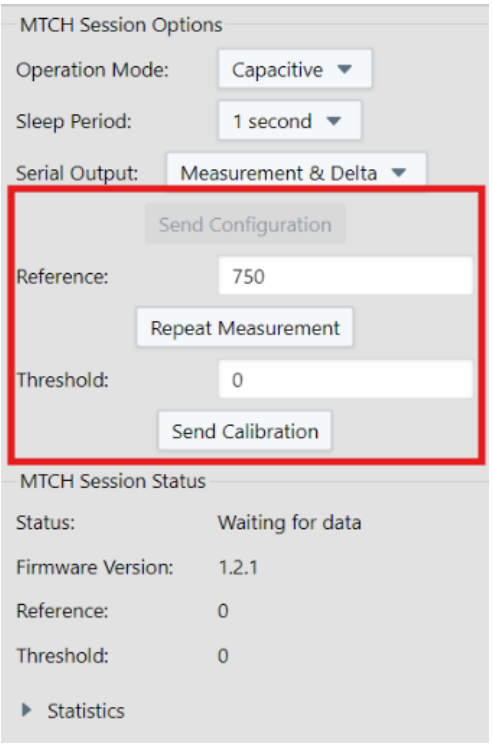
Parameter	Configuration
Serial Output Format	Disabled
	Delta
	Measurement
	Measurement and Delta
	Data Visualizer Protocol

Once these three options are set, click the **Send Configuration** button to transmit the configuration settings.

2.3. Calibration

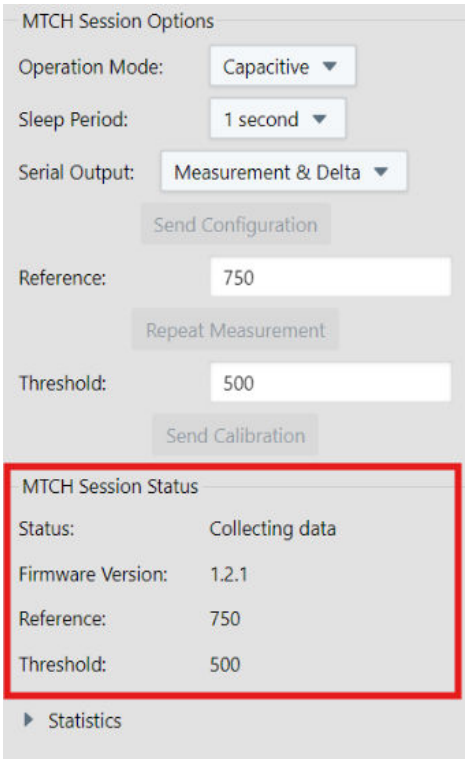
The next step is calibration. After completing the configuration step, the **Send Configuration** button becomes grayed out, while the **Repeat Measurement** and **Send Calibration** buttons are enabled. MTCH9010 sends the first reference value to the plugin (displayed in the Reference field). The user may accept this value, repeat the measurement, or set a custom reference value. The user must enter the desired detection threshold value in the Threshold field. Once the user completes the specified fields, the values are transmitted by clicking the **Send Calibration** button.

Figure 2-7. Send Calibration Button



Once the configuration is complete, the device's status updates to *Collecting data*, and both the reference value and the threshold are displayed in the MTCH Session Status section. This status information is provided as part of the plugin interface, and does not represent data transmitted by the MTCH9010.

Figure 2-8. Collecting Data



To reconfigure the device with some other parameters, the MTCH Session must be stopped and restart from the **Play** button. This action will restart the plugin status to Waiting for firmware, allowing the user to configure new parameters.

Note: Apply a reset to the MTCH9010 to configure new parameters.

3. Graphics

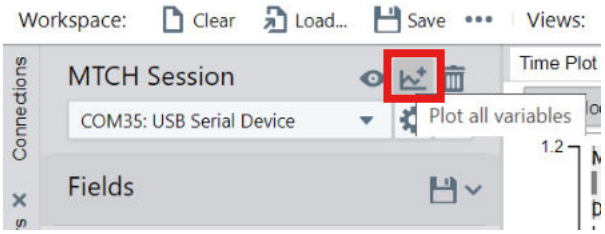
MPLAB MTCH9010 Plugin allows the user to visualize the data through a graphical interface in the Time Plot window. The plugin facilitates the graphical representation of all four values:

- Reference: The value measured with a completely dry sensor or an initial desired sensor state
- Data: The standard value measured on the sensor
- Threshold: The set value at which liquid detection is triggered
- Delta: The value obtained by subtracting the reference value from the standard measurement value

The user can select the values to be plotted in three different methods.

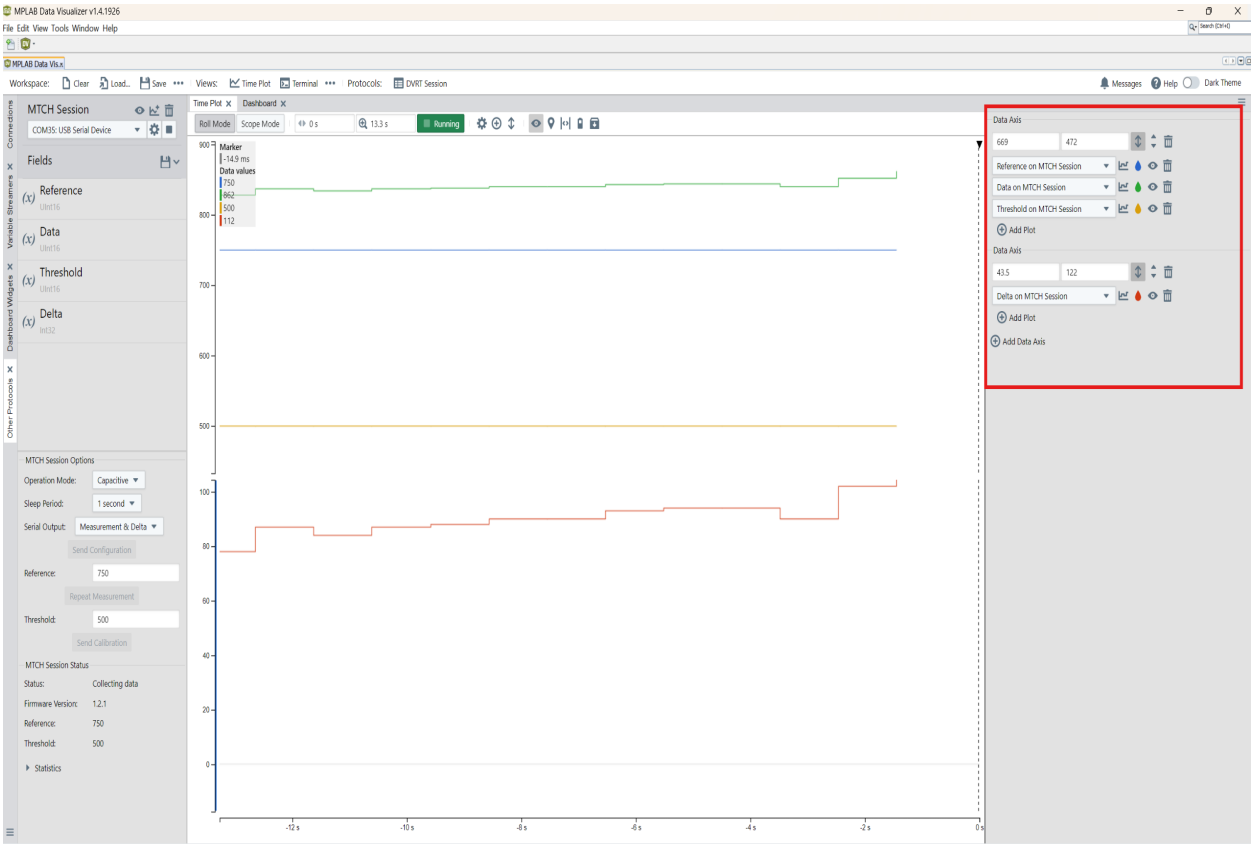
The first method is to select the **Plot All Variables** button, located next to the MTCH Session.

Figure 3-1. Plot All Variables Button



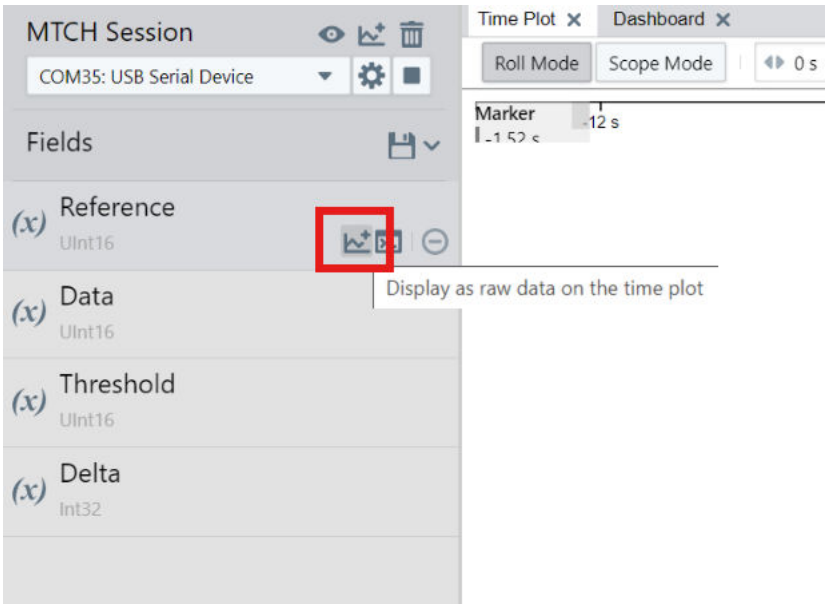
All four values are represented in the Time Plot window. On the right side of the Time Plot window is the Visualization Control Panel, used to control the graphing of streaming data. The Reference, Data and Threshold are plotted on the same axis and the Delta is plotted on a different axis.

Figure 3-2. Control Panel



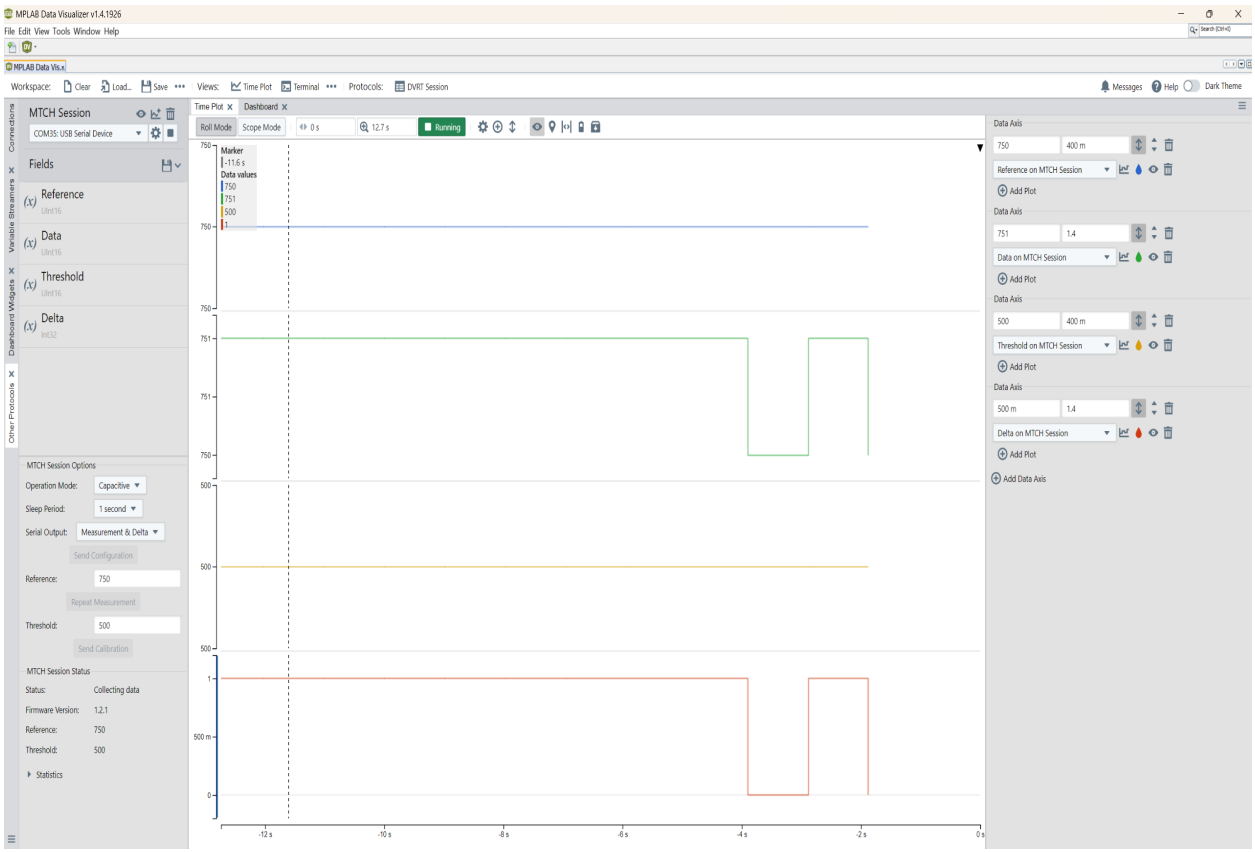
The second method is to select each value from the Fields section. For each parameter, select the  button to display and plot the raw source data.

Figure 3-3. Fields Selections



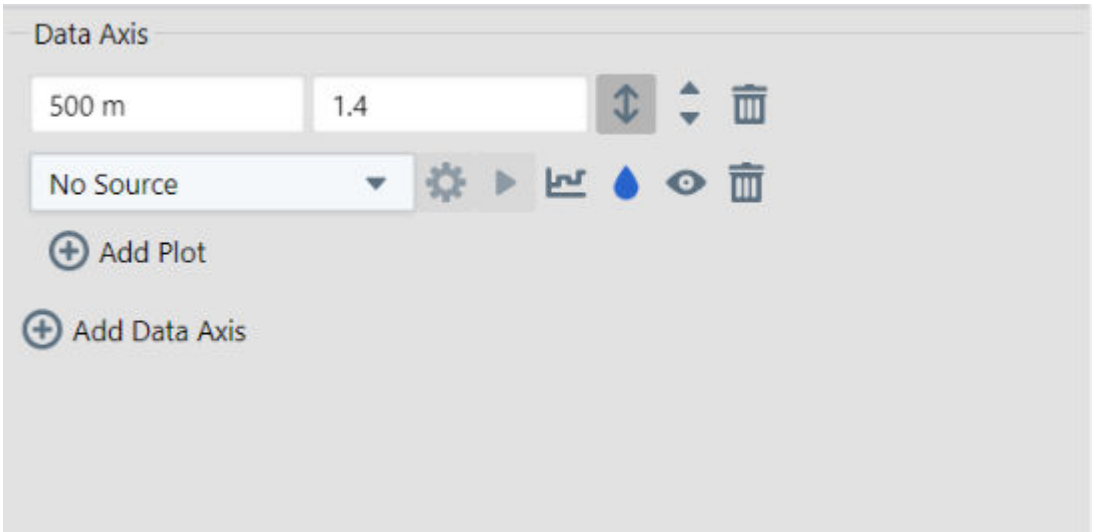
As is shown in the Visualization Control Panel, there are four different axes, each corresponding to one of the four values. This setup allows users to visualize and compare these values simultaneously or individually.

Figure 3-4. Plotted Parameters



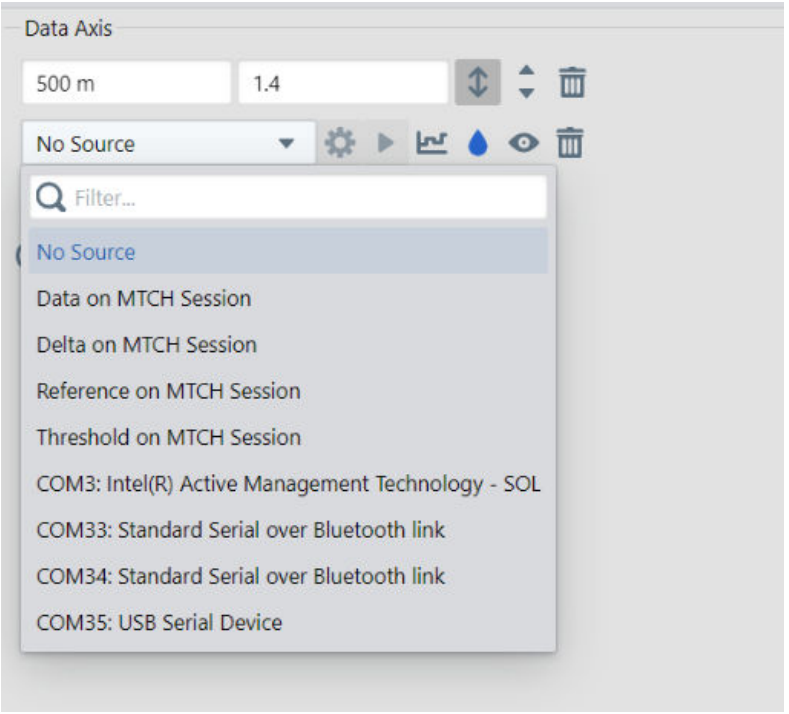
The third method is to select the values from the Visualization Control Panel. Initially, no source is selected for data plotting.

Figure 3-5. Visualization Control Panel



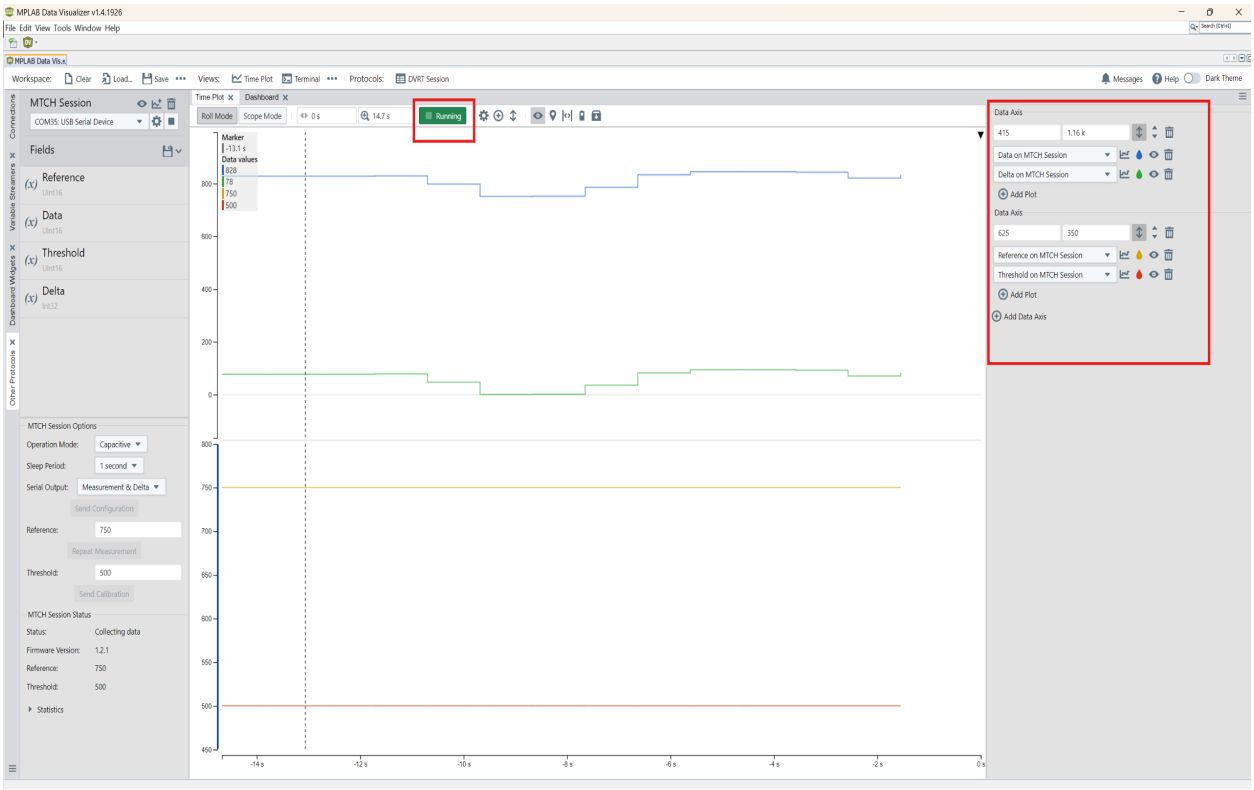
To add a value to the graph, select from the Data Source field the desired parameter. For visualizing multiple parameters on the same axis, select Add Plot. For adding another data axis to the graph under current axes, select Add Data Axis and then select which parameters to plot.

Figure 3-6. Add Data Axis



After selecting all parameters, data might not be visible. Click the **Run Mode** button to start plot scrolling. Once selected, the button changes to **Running** and the data will be visible. Re-click the **Running** button to stop the plot scrolling.

Figure 3-7. Start Plot Scrolling



Note:
Refer to the *MPLAB Data Visualizer User's Guide* for more information about viewing data in the Time Plot.

4. Additional Resources

- MTCH9010 Data Sheet: MTCH9010 Data Sheet
- Evaluation Kit User Guide: User Guide
- Getting Started with the MTCH9010 Evaluation Kit: Getting Started with the MTCH9010 Evaluation Kit

5. Document Revision History

Doc. Rev.	Date	Comments
A	07/2025	Initial document release

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