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test and measurement software

SENSIT

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Software Overview

SENSIT® expands your sensor platform into an advanced end-to-end test-measurement solution. There are two license options that can be selected to best suit your measurement needs.

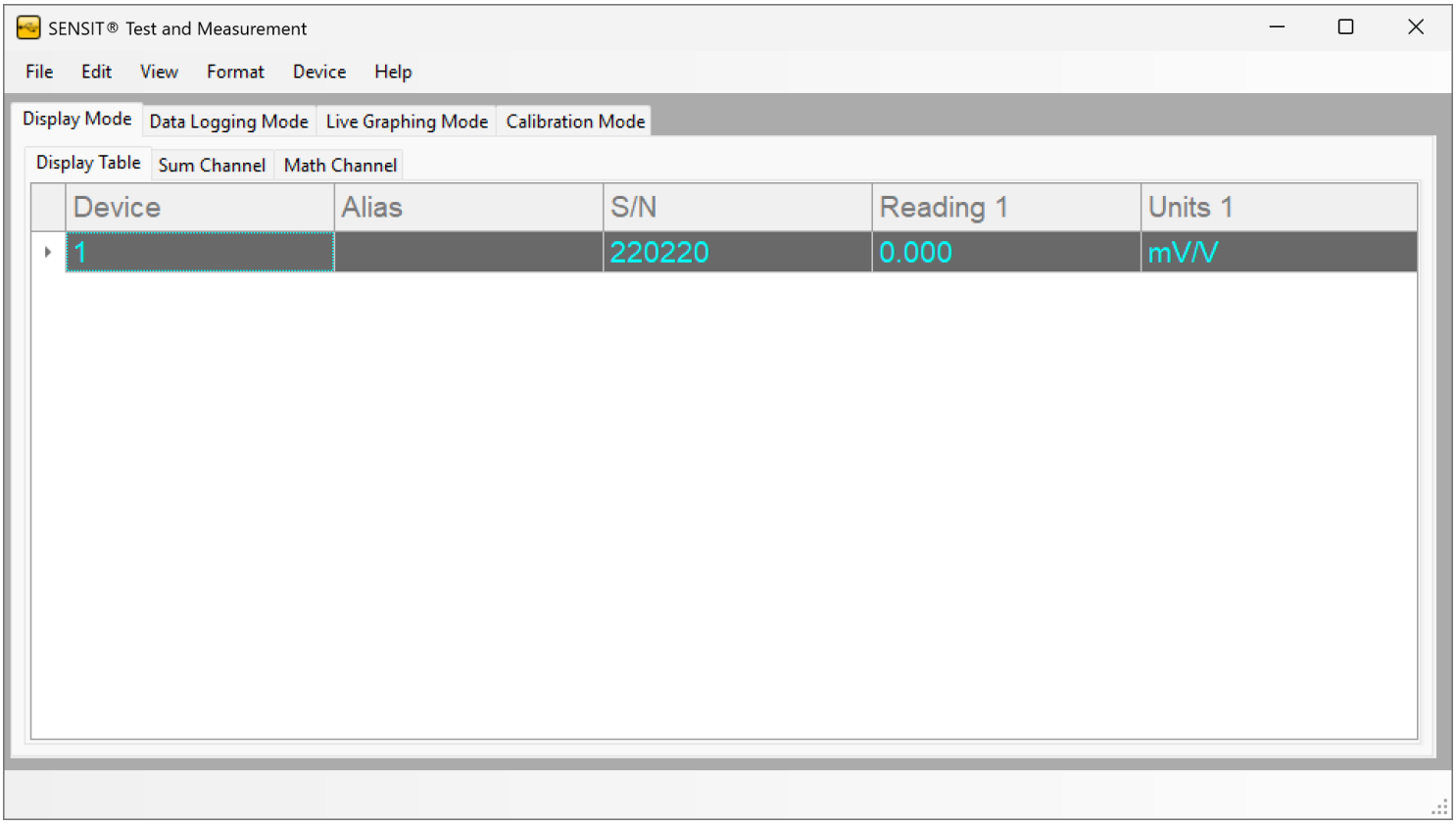
SENSIT® Test & Measurement

A 12-month subscription that expands the capabilities of your measurement platform with live displays, full data logging, and live graphing for 16 channels. This version is tailored for users who need a precise and streamlined end-to-end measurement solution.

SENSIT® Calibration

A 12-month subscription that features all the same capabilities as SENSIT® Test & Measurement and allows you to perform custom calibrations for all FUTEK sensors and electronics. This version is tailored for users who perform professional calibrations.

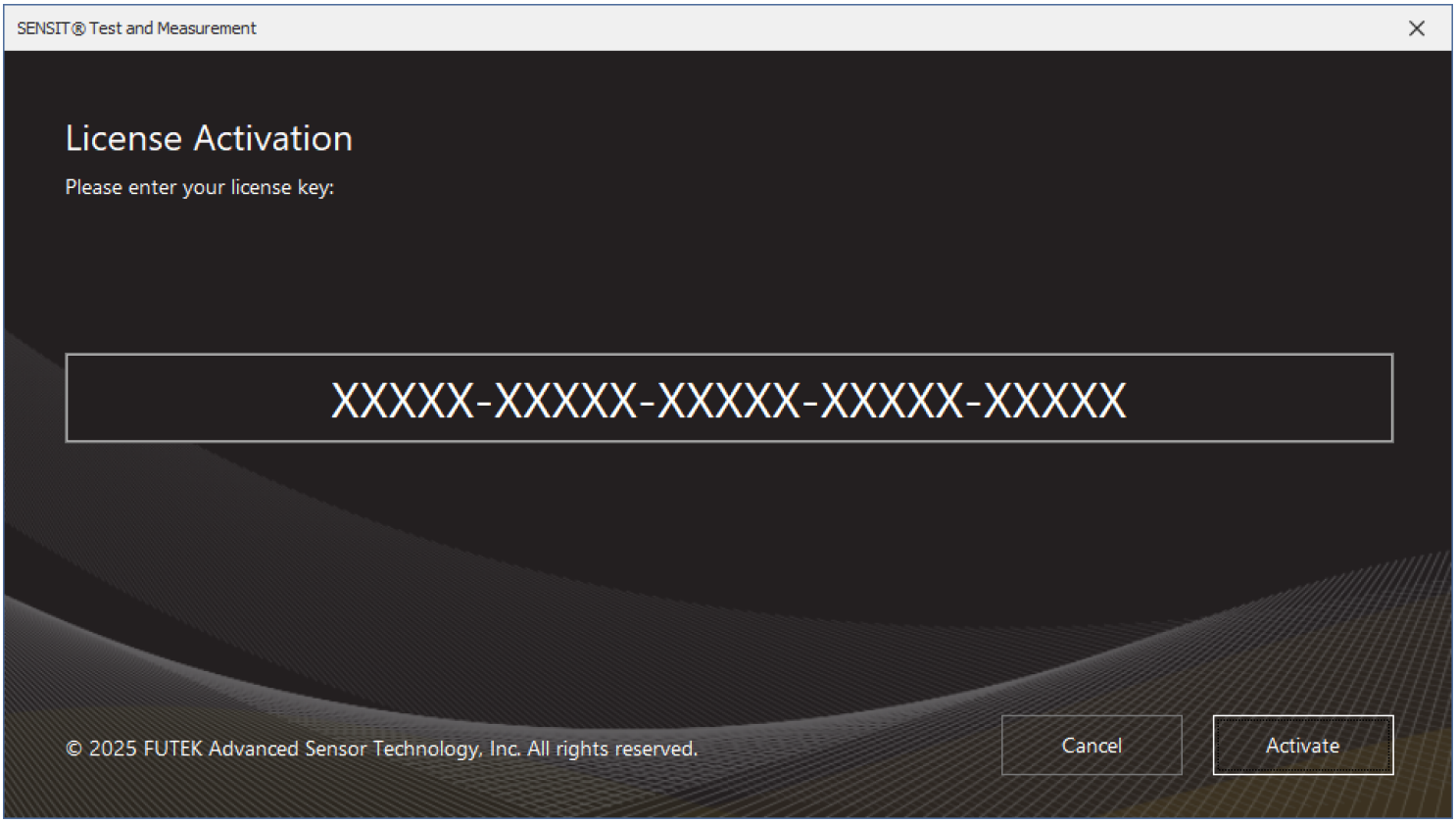
This user guide outlines all the features available in SENSIT® Test and Measurement and SENSIT® Calibration.
This software is for computers running Windows based 32-bit or 64-bit (x86 or x64) operating systems.



License Key

SENSIT® requires a license key to be entered to validate the license that has been purchased. If you do not have a license key, then you may use the trial version of the software for up to 14 days from the time of installation.

The license key has the following format: XXXXX-XXXXX-XXXXX-XXXXX-XXXXX.



Menu



File

Load Default Settings
loads the default display, data logging, live graphing, color, and font settings of the software.

Load Saved Settings
loads the previously saved changes to the display, data logging, live graphing, color, and font settings.

Save Current Settings
saves the current changes to the display, data logging, live graphing, color, and font settings.

Exit
will close the application.



Edit

Display Table
allows the user to change the heading of the columns on the display table.



View

Display Table – Columns
allows the user to select the columns that will be visible on the display table.

Display Table – Rows
allows the user to select the rows that will be visible on the display table.

Display Front Panel – Orientation

allows the user to change the orientation of the display front panel to horizontal or vertical.

Display Front Panel – Zoom

allows the user to change the size of the display front panel between 100% and 300% of actual size.



Format

Culture Information

allows the user to change the number, date, and time format associated with the software based on regional language settings.

Font

allows the user to change the font of the display table.

Background Color

allows the user to change the background colors of the display table and display front panel.

Foreground Color

allows the user to change the foreground (text) colors of the display table and display front panel.



Device

Threshold Settings

Allows the user to set a threshold for high and low values. Once the threshold is crossed an audio file can be selected to play.

Update Device Connections

Allows the user to manually force SENSIT to update the device connections.

Virtual Mode

Allows the user to use SENSIT virtually when no devices are connected.

Device Status

Allows the user to manually enable or disable devices that are connected to the computer.

Firmware Update

Allows the user to update the firmware saved on their device. This feature is only available for devices that have a bootloader installed.



Help

Additional Information

allows the user to view the system properties, sensor properties, unit conversions and unit codes.

Transducer Electronic Data Sheets (TEDS)

allows the user to view the TEDS template data.

User Guide

allows the user to view a .pdf of the user guide that relates to the version of their software.

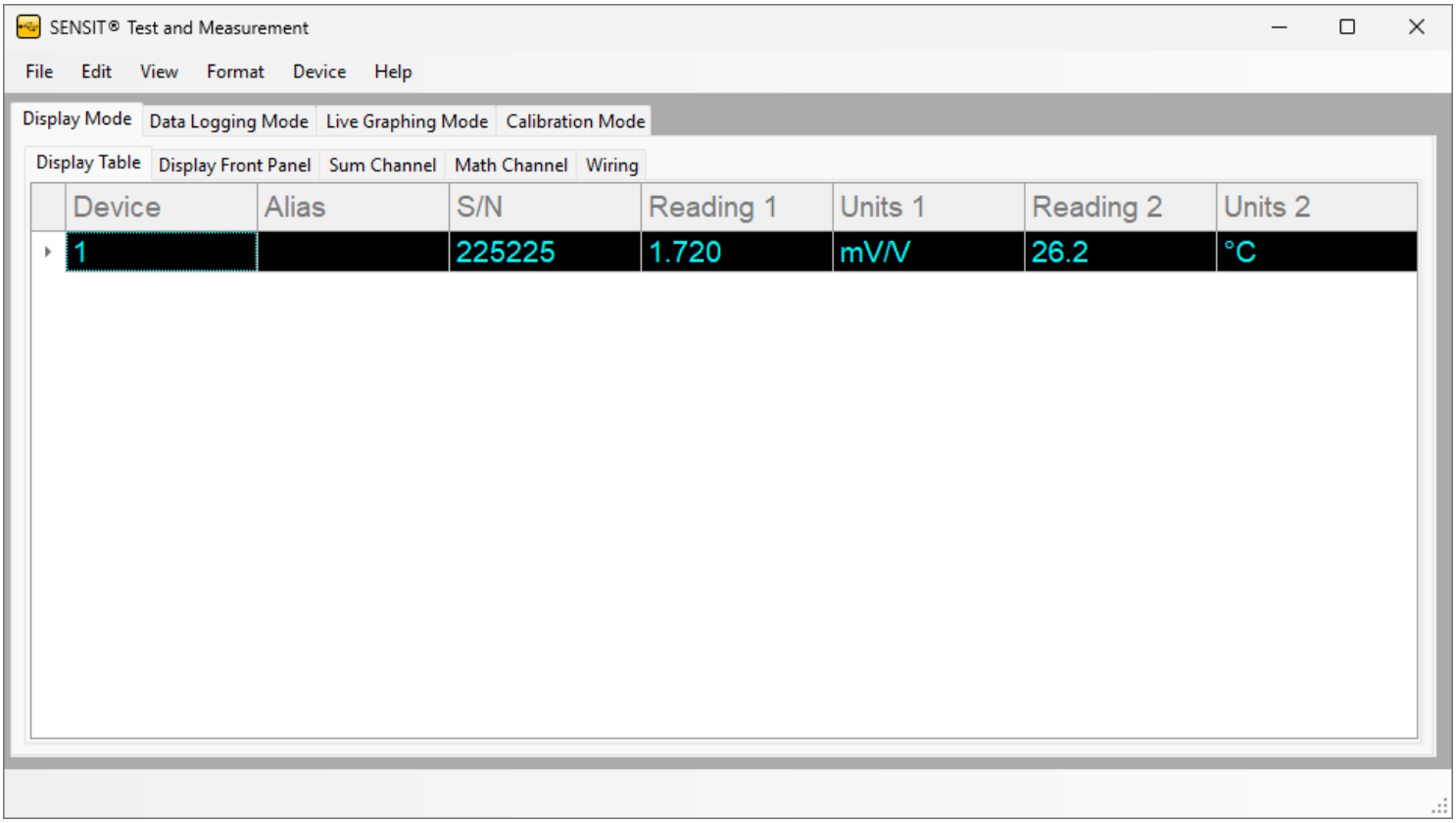
About SENSIT® Test and Measurement

allows the user to view information about the software and the manufacturer.

Display Mode

Display Table

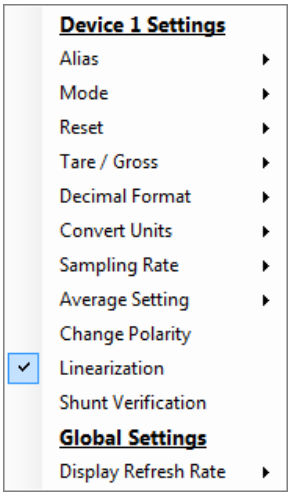
This tab displays all the relevant information that is related to the reading of each device. The settings of each device can be controlled individually using the right click to display the settings menu.

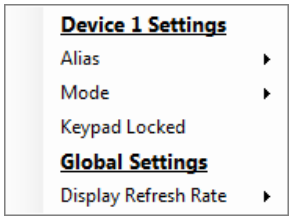


How to Use the Display Settings

1. Click on the device whose settings will be changed, so that the device is highlighted.
2. Right click anywhere on the Display Table and select the desired Display Settings to change for that device.

Display Settings





Device Settings

The device settings allow the user to view/modify settings that relate to a specific device. To view the settings menu, the user needs to right click on the desired device's row in the display table.

Alias

This device setting allows the user to enter a descriptive field for each unique device serial number.

Sensor Profile

This device setting allows the user to select one of the available sensor profiles that are created during calibration. This feature is only available when using the USB520.

Supply Voltage

This device setting allows the user to select one of the available supply voltages that can be used to externally power amplified sensors. This feature is only available when using the USB520.

Mode

This device setting allows the user to select the display mode. This feature is useful when monitoring clockwise and counterclockwise torque values, tension and compression load values, and pressure values. Each mode can be useful depending on the application or type of test being performed. Examples are listed below the description of each mode.

Tracking Mode

allows continuous readings to be displayed on the screen.
For example: This mode would be useful in monitoring a live test.

Peak Mode

allows a peak (high) reading to be displayed on the screen. The peak reading will only change if a reading greater than the current peak reading is registered.

For example: This mode would be useful in measuring the greatest torque or load value in the positive direction.

Valley Mode

allows a valley (low) reading to be displayed on the screen. The valley reading will only change if a reading less than the current valley reading is registered.
For example: This mode would be useful in measuring the greatest torque or load value in the negative direction.

Reset

This device setting allows the user to reset the peak or valley readings.

Peak Reset

allows the max peak value shown to be reset back to zero so further peak values can be observed.

Valley Reset

allows the max valley value shown to be reset back to zero so further valley values can be observed.

Tare / Gross

This device setting allows the user to toggle between the tare and gross readings.

Tare

allows any existing preloads or readings to be zeroed out or nullified on the screen.
For example: This function should be used before performing any tests or calibrations to receive an accurate reading.

Gross

shows the actual value of the display, including the true zero reading.

Decimal Format

This device setting allows the user to select how many digits after the decimal point to display. More digits after the decimal point can be used for measuring lower loads with relatively large units.

Convert Units

This device setting allows the output units to be converted to a desired unit by selecting from the list available in the pull-down menu. A unit can only be converted to another unit of the same type of measurement.
For example: lb to kg, N-m to ft-lb, or psi to bar

Sampling Rate

This device setting allows the user to select the number of samples taken per second. A higher sampling rate would be desired for dynamic applications, whereas a lower sampling rate would be sufficient for static applications. Selecting different values for the sampling rate will affect the number of bits of resolution.

Average Setting

This device setting allows the number of samples taken, before an average is calculated, to be changed. Selecting a higher number of samples will result in a steadier reading.

Disable Average

stops averaging samples and updates the display as the input is read.

Moving Average

is used to smooth out fluctuations in the sensor's output. For each new sample, the oldest sample is discarded, and a new average is calculated.

Mean Average

is used in static applications where the output changes slowly over time. The mean average waits until the number of samples to average has been received before calculating the average.

Change Polarity

This device setting allows the user to reverse the sign that is displayed.

Keypad Locked

This device setting allows the user to lock/unlock the physical keypad on the IHH/IPM.

Linearization

This device setting considers the nonlinearity of the sensor and compensates for it. This function is useful for sensors whose nonlinearity does not meet specifications.

Shunt Verification

This device setting is used to verify the calibration of a sensor. When shunted, the value should be close to the initial shunt value on the calibration certificate. If the value is significantly off, then the sensor would need to be recalibrated.

Global Settings

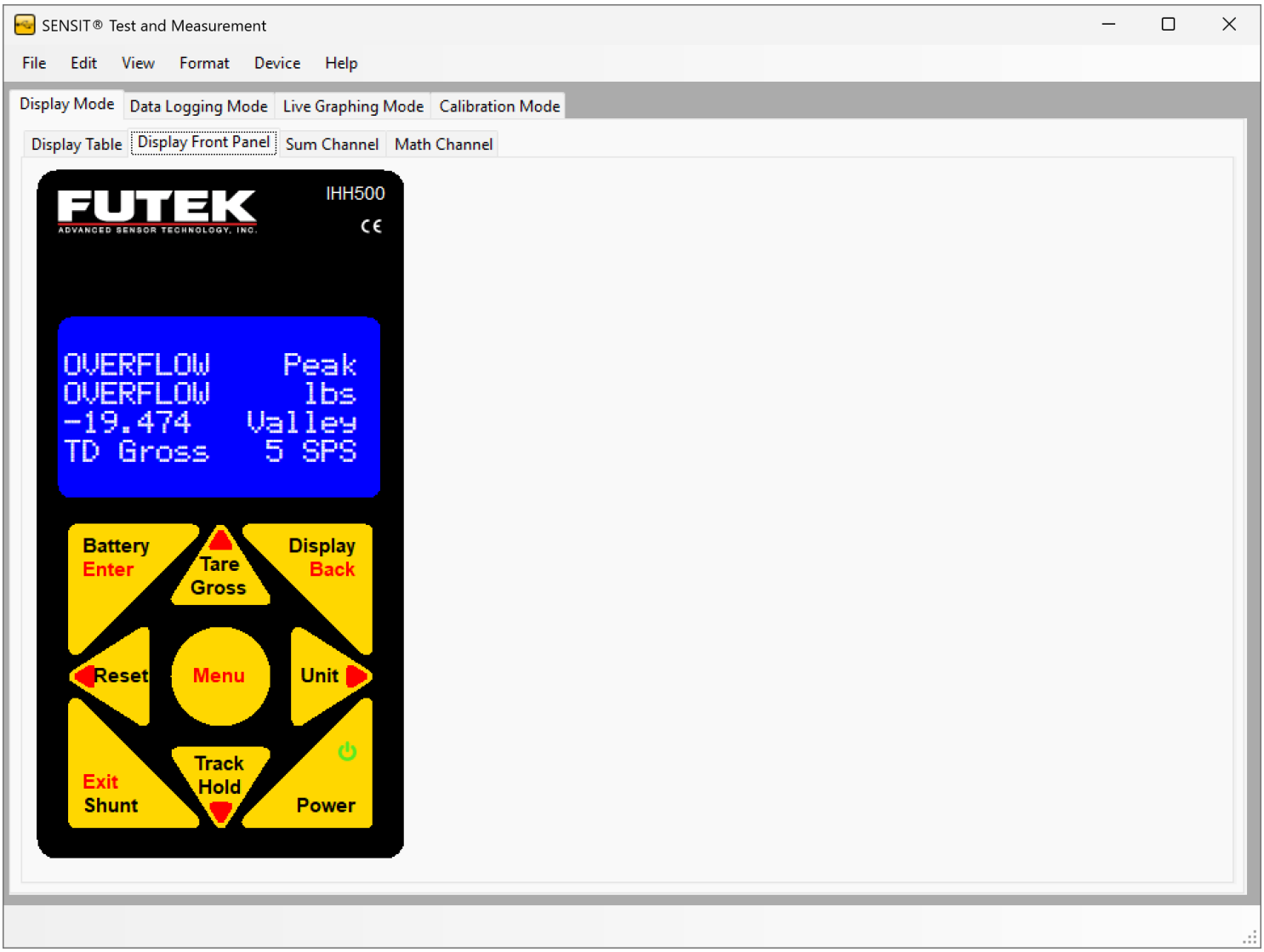
The global settings allow the user to view/modify settings that relate to all devices. To view the settings menu, the user needs to right click on the desired device's row in the display table.

Display Refresh Rate

This setting allows the user to select how fast the readings will update on the display table and display front panel.

Display Front Panel

This tab displays the front panel user interface. The software provides access to all the same functions of the keypad on the IHH/IPM hardware and displays the same messages as the LCD. All functions performed by the software are the same as if they were performed using the hardware except for the Power Key. The Power Key can only be used by the hardware.



Keypad Functions

Battery / Enter Key (IHH only)

This key is used to display the battery life when used in normal mode. This Key is used as an enter key when used in menu mode.

Channel / Enter Key (IPM only)

This key is used to display channel information when used in normal mode. This Key is used as an enter key when used in menu mode.

Tare / Gross Key

This key is used to tare (zero) the current readings or display the gross value of the current readings when used in normal mode. This Key is used as an up arrow when used in menu mode.

Display / Back Key

This key is used to switch between various states on the LCD display when used in normal mode. This Key is used as a back key when used in menu mode.

Reset Key

This key is used to reset the current readings when used in normal mode. This Key is used as a left arrow when used in menu mode.

Menu Key

This key is used to enter the menu mode.

Unit Key

This key is used to switch between various engineering units when used in normal mode. This Key is used as a right arrow when used in menu mode.

Shunt / Exit Key

This key is used to enable the shunt value when used in normal mode. This Key is used to exit when used in menu mode.

Track / Hold Key

This key is used to track the current readings or hold the current displayed values when used in normal mode. This Key is used as a down arrow when used in menu mode.

Power Key

This key has no function in the software. It can only be used directly on the IHH/IPM hardware keypad.

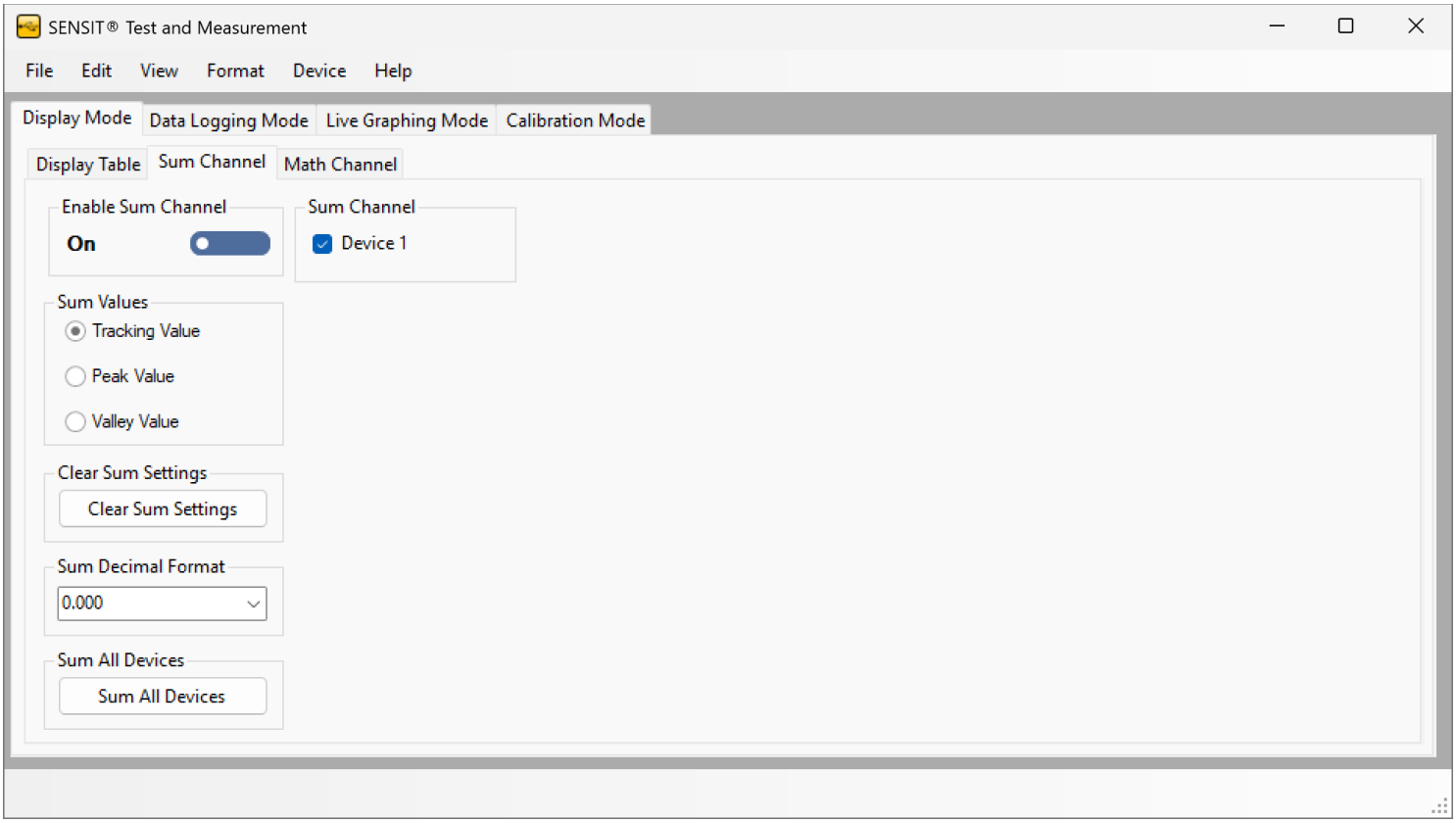
Software Display

Software Display

This is used to replicate the characters displayed on the IHH/IPM LCD.

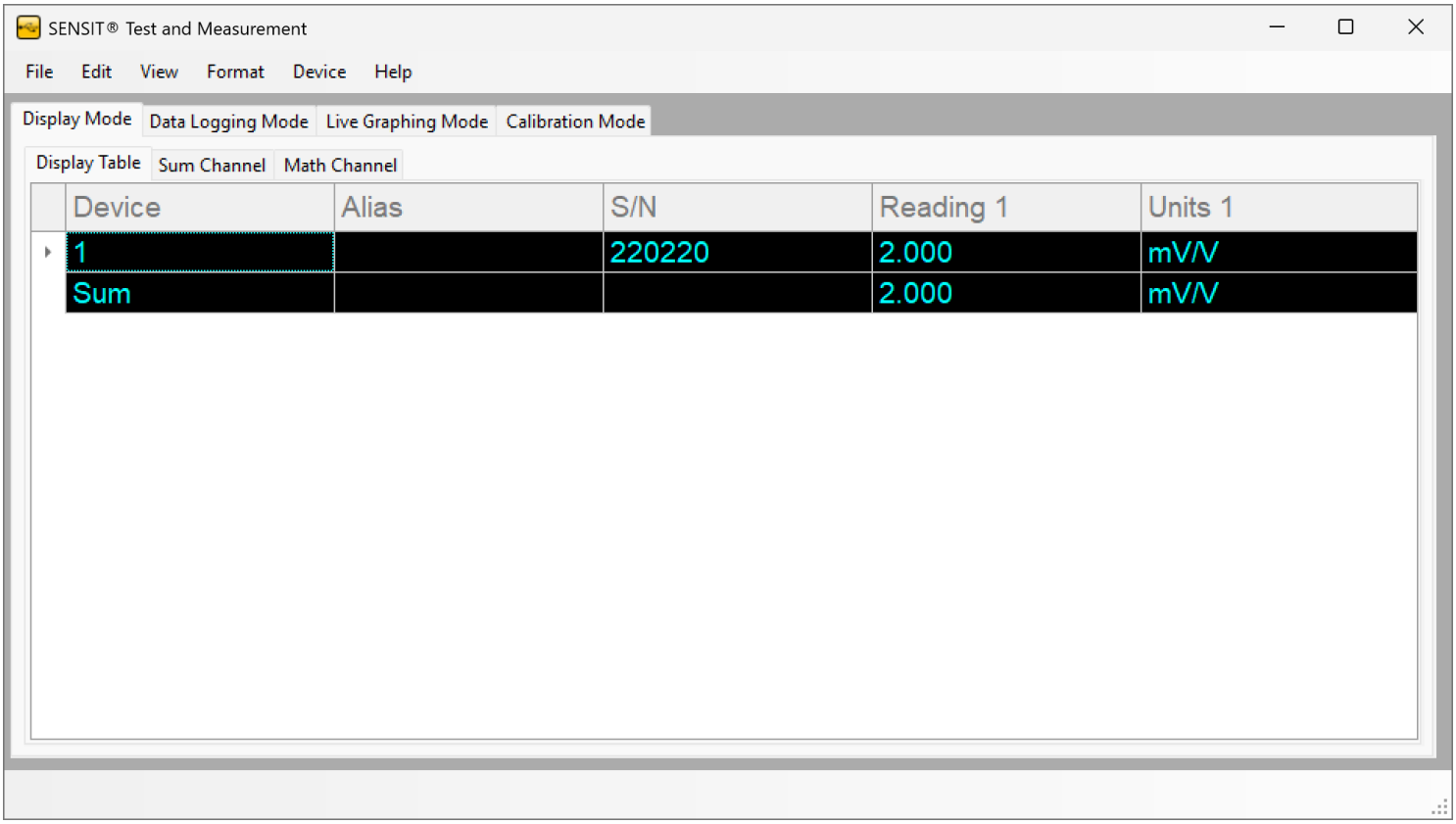
Sum Channel

This feature allows the user to sum the readings from multiple devices into one reading that is shown on the Display Table. For example: It can be used to find the total weight that a scale using multiple sensors is supporting.



How to Use the Sum Channel

1. Click **Enable Sum Channel**.
2. Select the values that will be summed (Tracking Value, Peak Value, or Valley Value).
3. Select the devices that will be added together.
4. Click on the **Display Table** tab. The Sum row will be displayed with the appropriate reading.



Other Sum Channel Features

Clear Sum Settings

clears the sum value and resets all the summing functions to default settings.

Sum Decimal Format

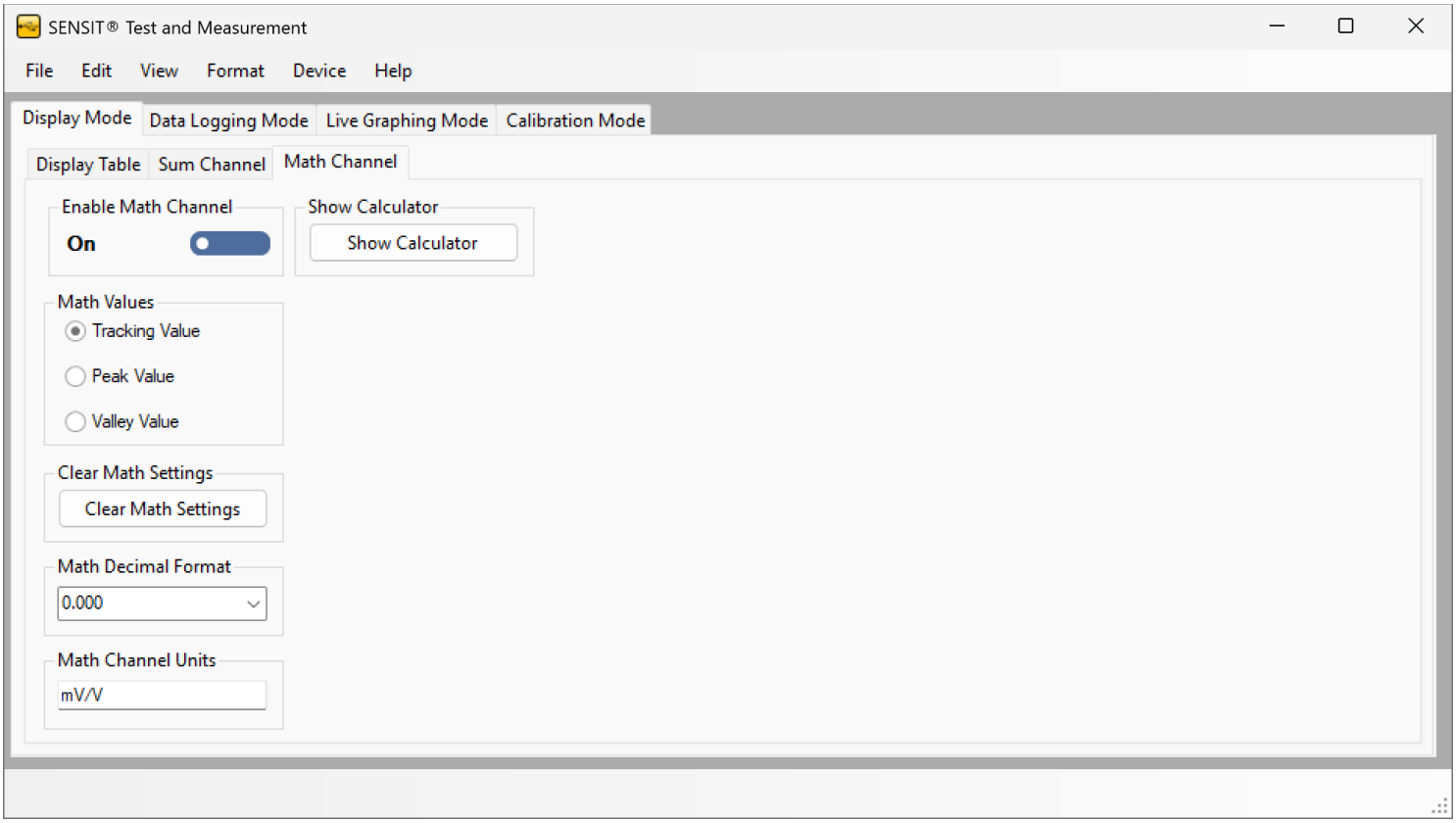
changes the number of digits displayed after the decimal point in the reading.

Sum All Devices

enables the addition of all the devices available.

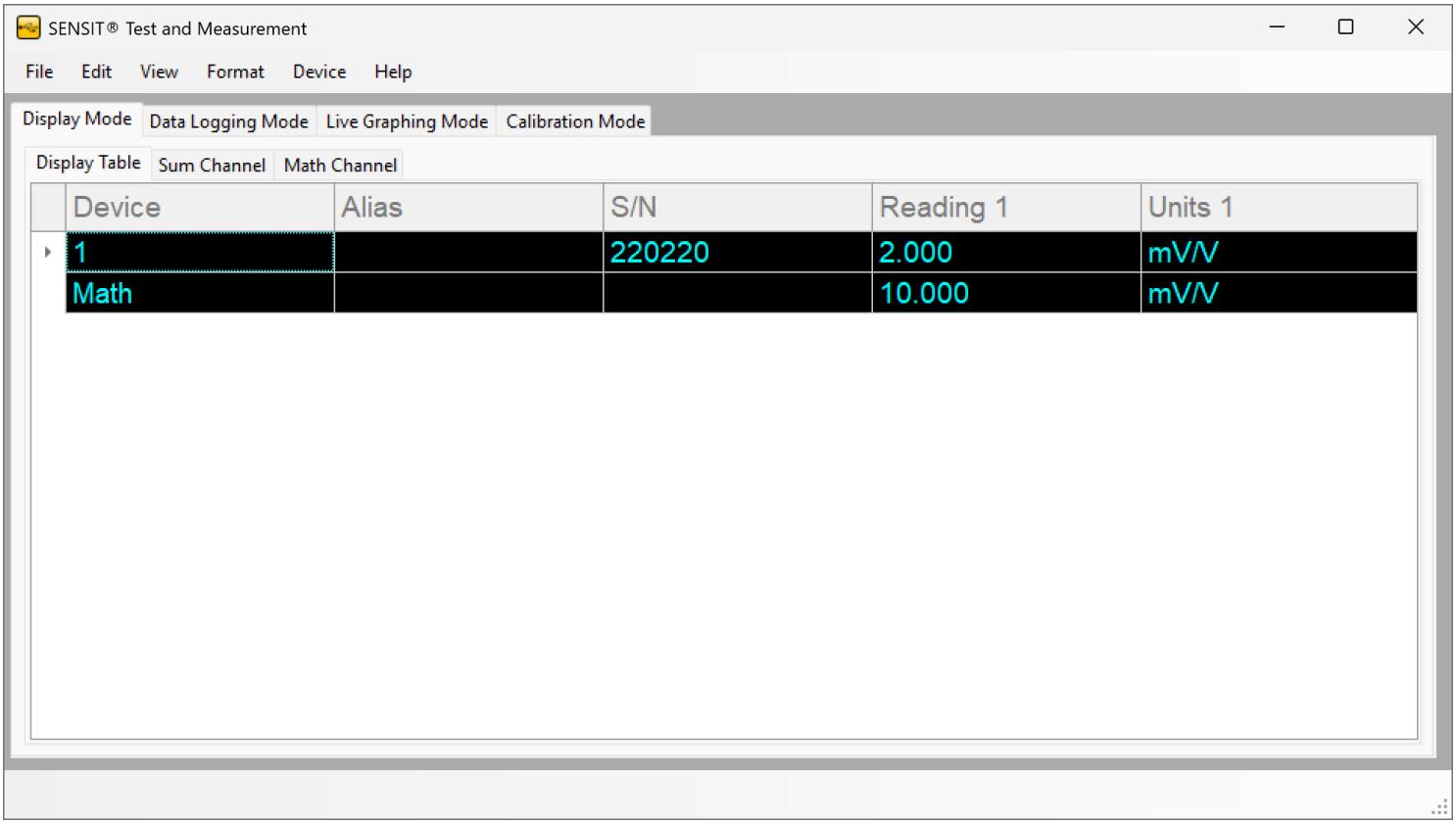
Math Channel

This feature allows the user to perform simple mathematical calculations on the live reading. With the proper scale factor, this feature can be used to convert units of a live reading to a custom unit that is not available on the Display Table.



How to Use the Math Channel

1. Click Enable Math Channel.
2. Select the values used in the calculation (Tracking Value, Peak Value, or Valley Value).
3. Click **Show Calculator** and perform the appropriate calculation to the desired channel.
4. Close the Math Channel Calculator and click the **Display Table** tab. The Math row will be displayed with the appropriate calculations.



Other Math Channel Features

Clear Math Settings

clears the calculation and resets the math channel functions to default settings.

Math Decimal Format

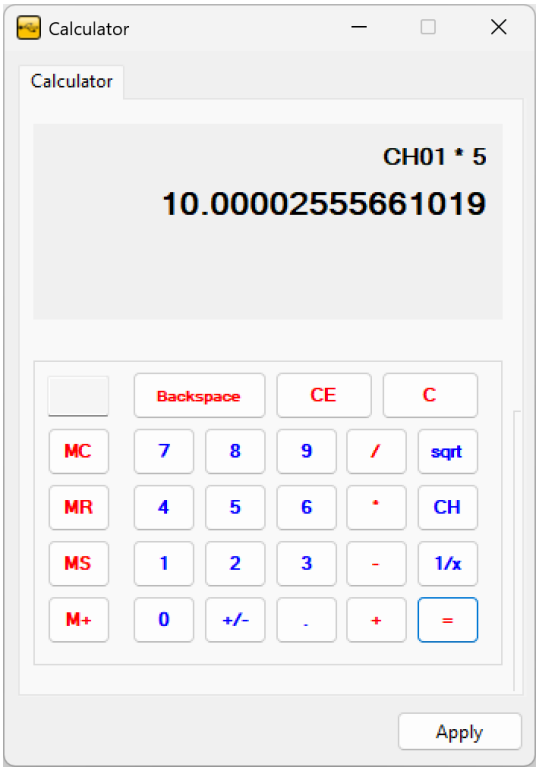
changes the number of digits displayed after the decimal point in the reading.

Math Channel Units

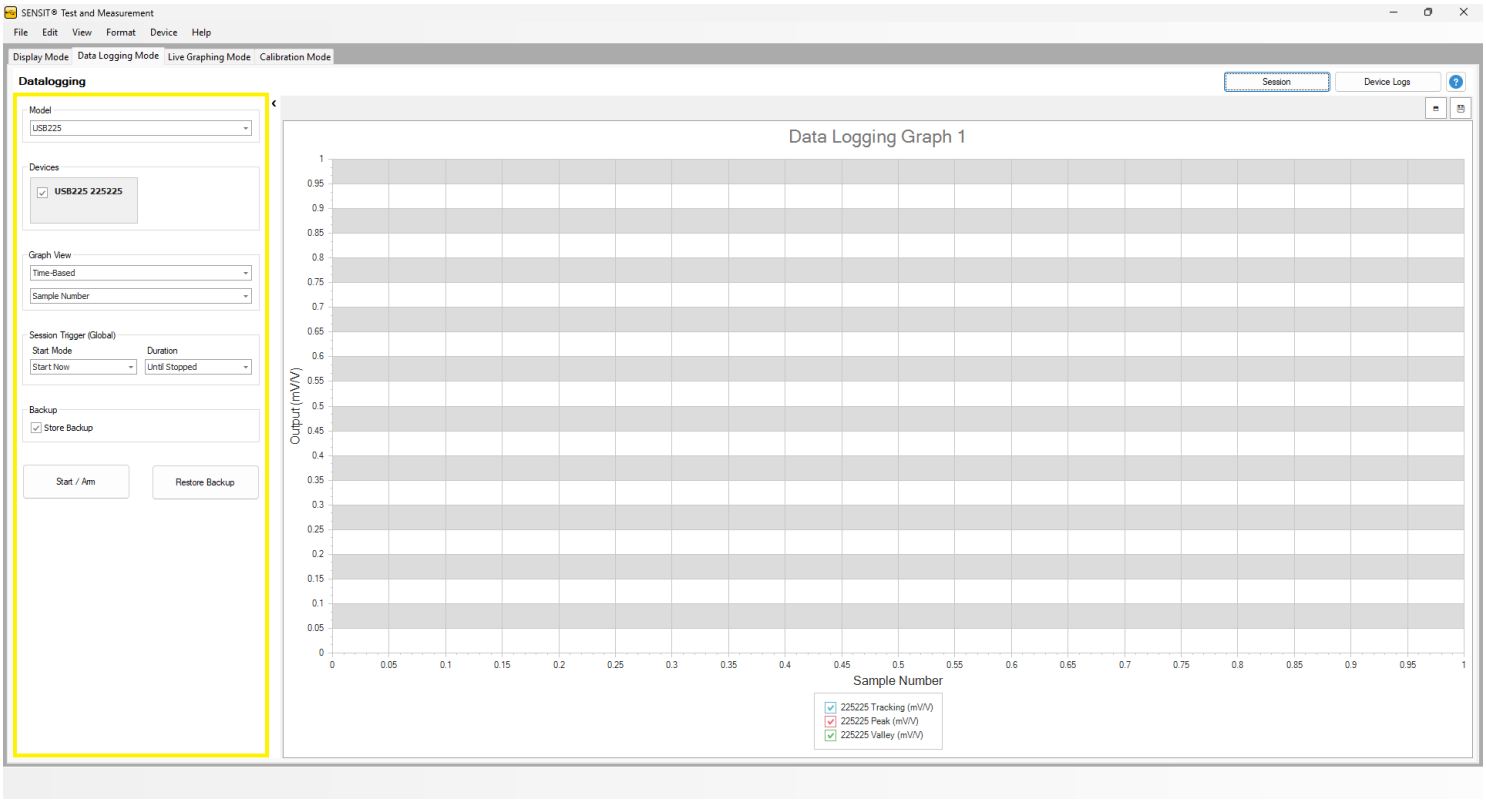
The units entered here will be shown on the Display Table tab for the Math row.

Math Channel Calculator

This feature allows the user to perform simple mathematical calculations. It performs all the functions found on a standard calculator such as multiplication (*), division (/), addition (+), and subtraction (-). There are several memory functions including: memory clear (MC), memory recall (MR), memory store (MS) and memory plus (M+). The calculator also includes functions for finding the square root (sqrt) and inverse (1/x) of a number. One feature that is unique to the math channel calculator is the CH key which should be used when applying a calculation to one of the channels. The user should press the CH key followed by the number of the channel.



Data Logging Mode (Session)



Model

Narrow the device list to the models you want to work with. Select a device model from the list to filter the displayed devices and show only matching results.

Devices

Select the devices that should have their data included in the logging session. Only selected devices will be recorded. Check the box next to each device you want to log. The selected devices will be added to the data collection configuration.

Graph View

Choose the graph type that best matches the analysis you want to perform.

Time-Based

Select Time-Based to plot reading values over time, using **Sample Number**, **Time**, or **Time Elapsed** on the X-axis.

Correlation

Select Correlation to compare one measurement against another and identify relationships between readings. Correlation graphs are available only for encoder enabled devices with the encoder update rate set to sync. Compare two

measurements to understand how they relate to each other. Unlike a Time-Based graph, the axes are defined by the selected measurements rather than time. Choose Correlation when you want to analyze relationships between readings. Correlation graphs are available only for devices with synchronous encoders. Use correlation graphs to identify trends between measurements such as torque, angle, RPM, and power.

Correlation Type

Choose which measurements to compare on the graph. The selected correlation determines the X-axis and Y-axis automatically. Select Torque vs Angle, Torque vs RPM, Power vs RPM, or Torque and Power vs RPM to generate the corresponding comparison. Select the correlation that best matches the relationship you want to investigate.

Chart Style

Choose how correlation data is displayed on the graph. Select Smooth Line Chart to highlight overall trends between measurements, or Scatter Chart to view individual data points and their distribution. Scatter charts are useful for identifying outliers, while smooth line charts make patterns easier to follow.

Session Trigger

Choose when data logging starts and how long it runs. Select a start mode and duration that match your test requirements.

Start Mode

Control when data logging begins. Select **Start Now** to begin collecting data immediately, or **On Threshold** to wait until a defined condition is met before logging starts. Threshold-based starts are useful when you only want to capture data during a specific event.

Duration

Define when data logging should stop.

Until Stopped

Select **Until Stopped** to keep logging until you manually stop the test.

Fixed Duration

Select **Fixed Duration** to automatically stop after a set time. Enter a duration and choose whether it is measured in seconds, minutes, or hours. Logging stops automatically when the period expires. Use shorter durations for quick validation tests and longer durations for extended monitoring.

Threshold Settings

Trigger device

Choose which device controls the start condition. When multiple devices are connected, select the device whose readings should be monitored for the trigger event. Select the device that measures the signal most relevant to your test objective.

Channel

Choose the measurement used to evaluate the trigger condition. Select the reading that should be monitored, such as **Tracking**, **Peak**, or **Valley**, depending on the type of event you want to detect. **Tracking** is the most commonly used option for real-time measurements.

Condition

Define what must happen before data logging starts. Select **Immediately** to start after the first reading is received, **Above Threshold** to start when a value exceeds the threshold, or **Below Threshold** to start when it falls below the threshold.

Threshold

Set the value that activates the trigger. Enter the measurement limit that must be crossed before the test begins. Choose a value high enough to avoid unintended starts from normal signal fluctuations.

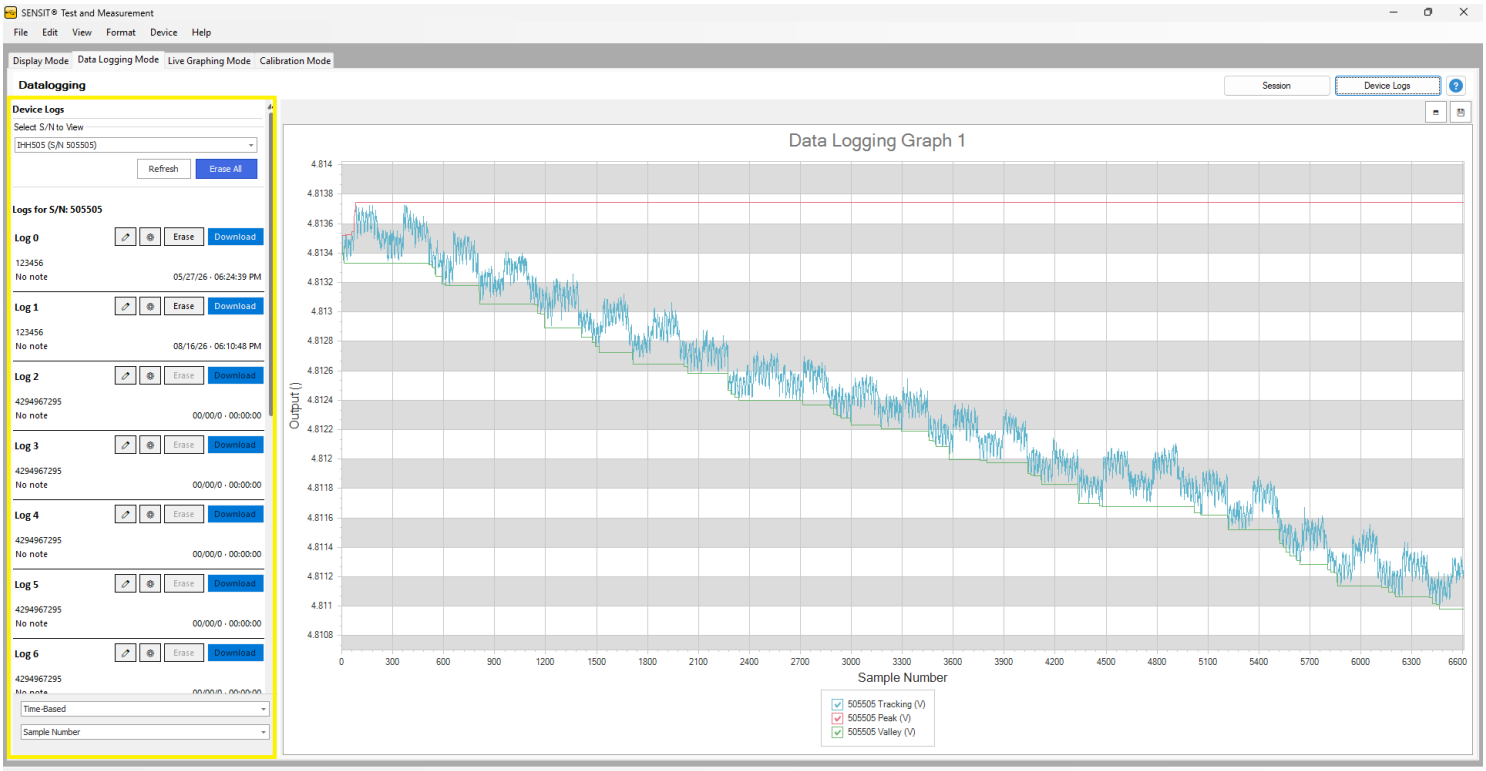
Backup

Keeps the most recent test available for recovery if the software closes unexpectedly, is accidentally closed, or test results are reset. Enable Store Backup to save the latest test results for restoration. Running a new test automatically replaces the existing backup. Keep this option enabled to avoid losing access to your most recent test data.

Actions

Manage the data logging session throughout its lifecycle. Available actions change automatically based on the current test state. When setup is complete, select **Start / Arm** to begin a new run or **Restore Backup** to continue from previously saved data. While a test is active, select **Stop / Disarm** to end the run. After completion, select **Reset** to clear the session and prepare for a new test. The available buttons indicate the next valid action for the current stage of the workflow.

Data Logging Mode (Device Logs)



Devices List

Select a connected device to view or manage its stored logs. Choose a device from the list to load its available log data. **Only IHH505 model devices are compatible with this feature.** If the expected device is not listed, refresh the device list to detect newly connected hardware.

Refresh

Update the device list to detect newly connected devices. Select **Refresh** when a connected device does not appear in the list.

Erase All

Clear all stored logs from the selected device to start with a clean log history. Select **Erase All** to permanently remove the device's current logs.

Logs List

Find and manage logs stored on the selected device. Each entry shows the log number, device serial number, log type, notes, and timestamp to help you identify the correct dataset before downloading, editing, or erasing it. Use notes and timestamps to quickly locate specific tests or recordings.

Log Types

Determine whether a log contains ADC data only or a correlated ADC and Encoder recording. Logs showing Log Link: X next to device's serial number are correlated recordings. The linked entry displays Encoder Sync and represents the associated Encoder data. Correlated recordings use two log slots. Download and erase both datasets from the ADC log that shows the Log Link reference.

Edit Notes

Record test conditions, observations, or results so you can quickly identify logs later. Select the edit icon to add or update notes for the selected log.

Log Options

Access advanced actions and additional information for the selected log. Select the gear icon to view available log-specific settings and maintenance options.

Erase

Remove logs that are no longer needed and free storage space on the device. Select Erase to permanently delete the selected log. When erasing a correlated recording, both linked log entries are removed together.

Download

Load log data for detailed review and chart analysis. Select Download to retrieve the selected log and open its chart. For correlated recordings, both ADC and Encoder data are loaded for comparison. Use the Chart Toggle control to switch between the available charts after loading correlated data.

Additional Considerations

- Only one serial number can be loaded at a time.
- Logs must be downloaded individually before export.
- USB communication must remain active for the duration of the download and export process.
- Logs marked as erased on the IHH505 cannot be recovered.

Ending a Session

Properly ending a session is required to prevent incomplete transfers, corruption of log or calibration data, and system warnings on the IHH505.

Recommended Disconnection Procedure

1. Complete all actions in SENSIT® (log download, calibration upload, configuration, firmware update).
2. Close the application.
3. Wait for the IHH505 to exit software-controlled mode and return to the home screen.
4. Disconnect the USB cable.

Improper Disconnect Risks

- Interrupting log export data may result in partial or unreadable files.
- Unplugging the IHH505 during firmware updates or calibration uploads may cause system faults or require a hard reset.

- The IHH505 may remain in a locked “External Control Enabled” screen until power cycled.

Improper Disconnect Recovery

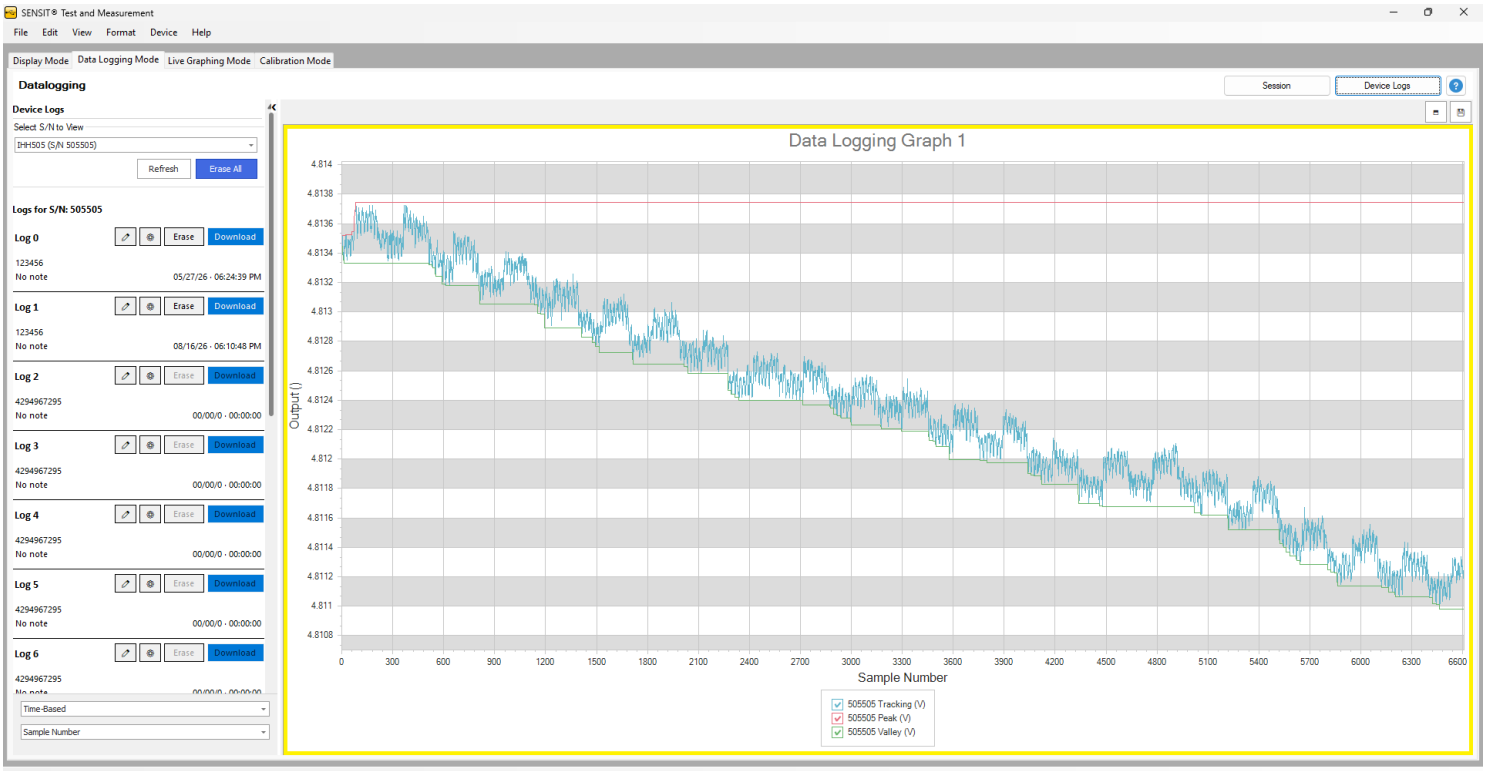
If the IHH505 remains locked after improper disconnection:

- Reconnect the device and restart SENSIT® to re-establish communication.
- If unresponsive, perform a controlled power cycle.
- If issues persist, contact FUTEK Technical Support.

On-Device Warning Screen

During SENSIT® communication, the IHH505 will display the following:
“External Control Enabled”
This screen remains active until SENSIT® is closed and the device returns to standalone mode.

Data Logging Mode (Chart)



Chart

Review test results after a test completes. Compare measurements, identify trends, and quickly spot peaks, valleys, drift, or unexpected behavior. In Data Logging mode, charts are generated after the test finishes to ensure optimal performance with large datasets.

Chart Features

Data Point Information

Hover anywhere on the chart to view the sample number and values for all visible series at that position. Use this feature to quickly compare measurements and verify exact results.

Legend

The legend identifies each measurement series by color, making it easier to compare Tracking, Peak, and Valley results. Select or clear a legend item to show or hide its corresponding series and focus on the data that matters most.

Zoom

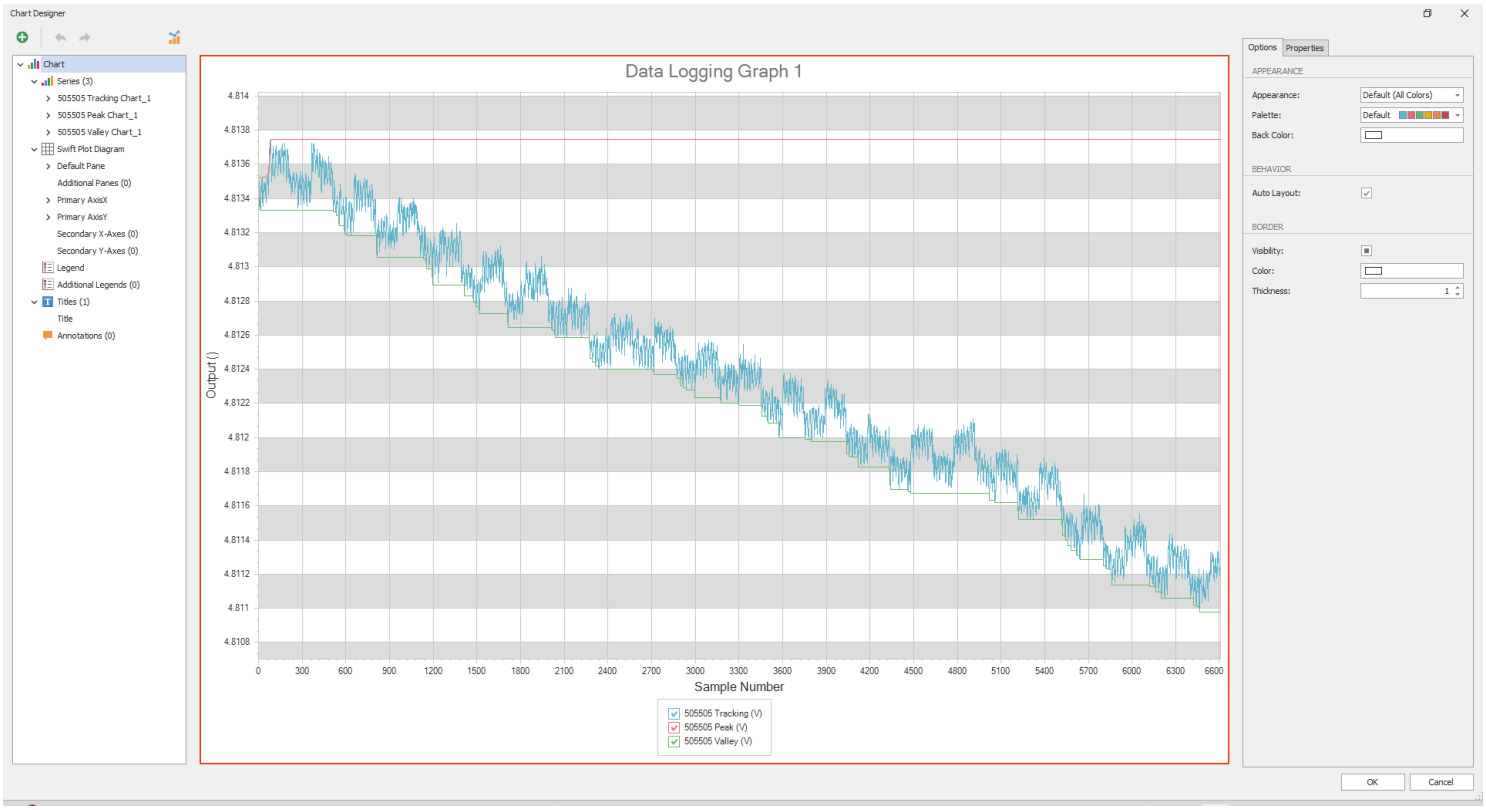
Zoom in to inspect specific regions of the data and zoom out for a broader view of test results. Use the mouse wheel or a trackpad pinch gesture to adjust the zoom level. Zooming can help isolate short-duration events that may be difficult to see in the full dataset.

Chart Context Menu

Access additional display and analysis options without leaving the chart view. Right-click anywhere on the chart to open the context menu.

Graph Options

Customize the chart to improve readability and focus on the information most relevant to your analysis. Adjust series styles, colors, legend placement, and other display settings to tailor the chart to your preferences.



Data Logging Mode (Quick Actions)

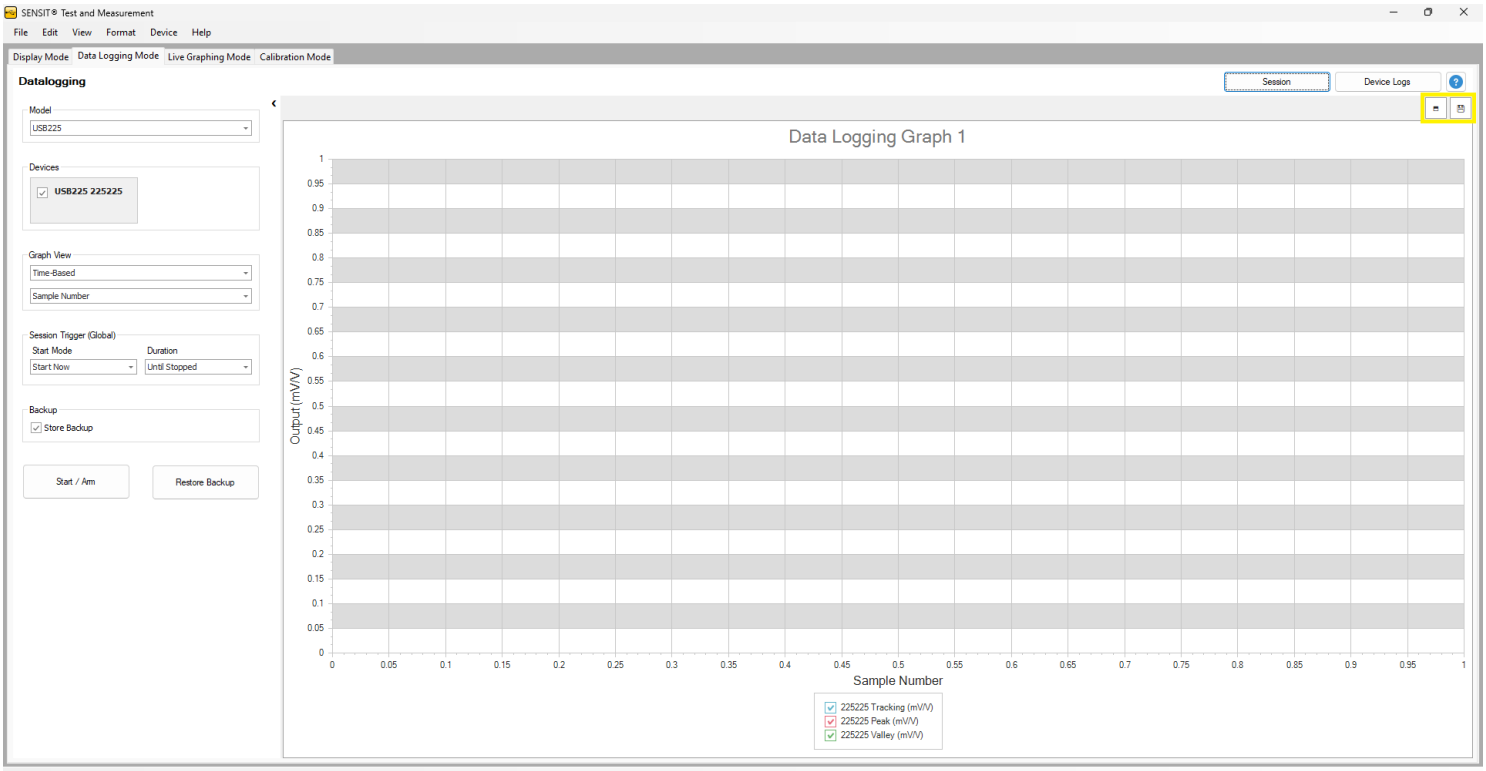


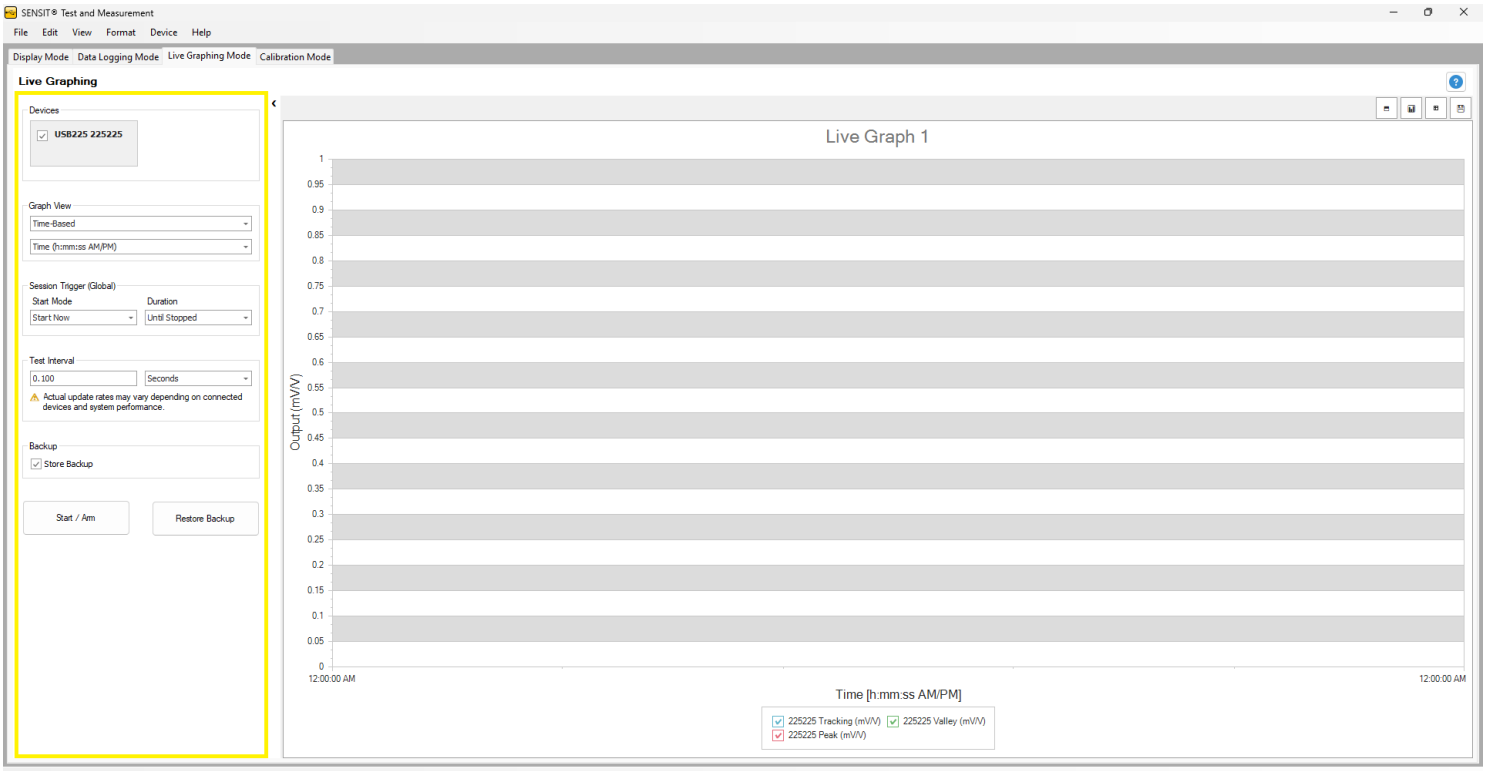
Chart View Toggle

Switch between available chart views to focus on the data that matters most during async recording. Click to cycle through the display options: **ADC Values**, **Encoder Data**, or **Both Charts** with ADC values shown above encoder data. Use Both Charts when you need to compare ADC and encoder data side by side.

Export Graph

Create an Excel report that includes logged test data, device information, and the current chart for analysis, sharing, or record keeping. Click Export Graph, then choose a save location or cancel the export. The report is generated using the data currently displayed. Export results after completing a test to preserve both the raw data and chart visualization in a single file.

Live Graphing Mode (Session)



Devices

Select the devices that should have their data included in the logging session. Only selected devices will be recorded. Check the box next to each device you want to log. The selected devices will be added to the data collection configuration.

Graph View

Choose the graph type that best matches the analysis you want to perform.

Time-Based

Select Time-Based to plot reading values over time, using **Sample Number**, **Time**, or **Time Elapsed** on the X-axis.

Correlation

Select Correlation to compare one measurement against another and identify relationships between readings. Correlation graphs are available only for encoder enabled devices with the encoder update rate set to sync. Compare two measurements to understand how they relate to each other. Unlike a Time-Based graph, the axes are defined by the selected measurements rather than time. Choose Correlation when you want to analyze relationships between readings. Correlation graphs are available only for devices with synchronous encoders. Use correlation graphs to identify trends between measurements such as torque, angle, RPM, and power.

Correlation Type

Choose which measurements to compare on the graph. The selected correlation determines the X-axis and Y-axis automatically. Select Torque vs Angle, Torque vs RPM, Power vs RPM, or Torque and Power vs RPM to generate the corresponding comparison. Select the correlation that best matches the relationship you want to investigate.

Chart Style

Choose how correlation data is displayed on the graph. Select Smooth Line Chart to highlight overall trends between measurements, or Scatter Chart to view individual data points and their distribution. Scatter charts are useful for identifying outliers, while smooth line charts make patterns easier to follow.

Session Trigger

Choose when data logging starts and how long it runs. Select a start mode and duration that match your test requirements.

Start Mode

Control when data logging begins. Select **Start Now** to begin collecting data immediately, or **On Threshold** to wait until a defined condition is met before logging starts. Threshold-based starts are useful when you only want to capture data during a specific event.

Duration

Define when data logging should stop.

Until Stopped

Select **Until Stopped** to keep logging until you manually stop the test.

Fixed Duration

Select **Fixed Duration** to automatically stop after a set time. Enter a duration and choose whether it is measured in seconds, minutes, or hours. Logging stops automatically when the period expires. Use shorter durations for quick validation tests and longer durations for extended monitoring.

Threshold Settings

Trigger device

Choose which device controls the start condition. When multiple devices are connected, select the device whose readings should be monitored for the trigger event. Select the device that measures the signal most relevant to your test objective.

Channel

Choose the measurement used to evaluate the trigger condition. Select the reading that should be monitored, such as **Tracking**, **Peak**, or **Valley**, depending on the type of event you want to detect. **Tracking** is the most commonly used option for real-time measurements.

Condition

Define what must happen before data logging starts. Select **Immediately** to start after the first reading is received, **Above Threshold** to start when a value exceeds the threshold, or **Below Threshold** to start when it falls below the threshold.

Threshold

Set the value that activates the trigger. Enter the measurement limit that must be crossed before the test begins. Choose a value high enough to avoid unintended starts from normal signal fluctuations.

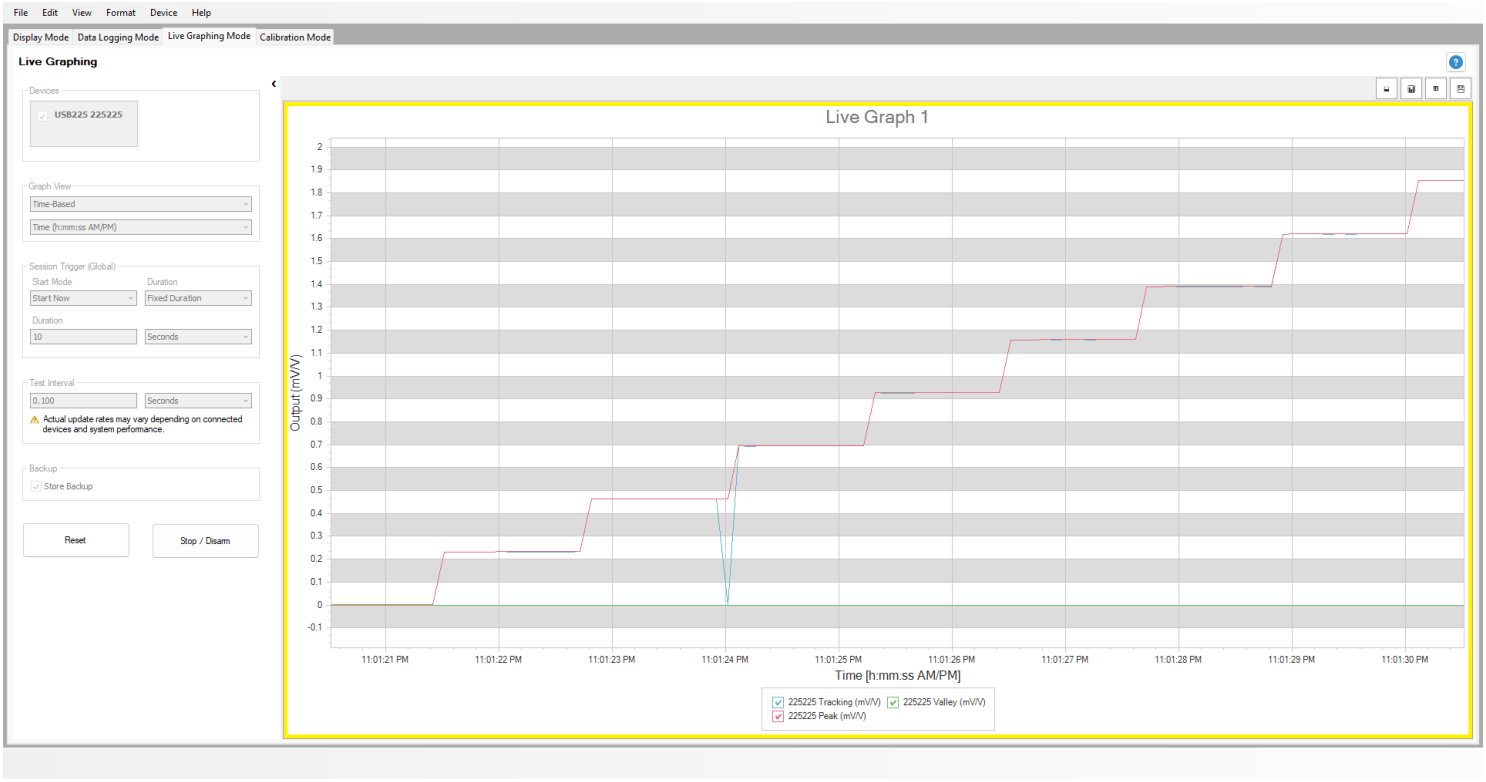
Backup

Keeps the most recent test available for recovery if the software closes unexpectedly, is accidentally closed, or test results are reset. Enable Store Backup to save the latest test results for restoration. Running a new test automatically replaces the existing backup. Keep this option enabled to avoid losing access to your most recent test data.

Actions

Manage the data logging session throughout its lifecycle. Available actions change automatically based on the current test state. When setup is complete, select **Start / Arm** to begin a new run or **Restore Backup** to continue from previously saved data. While a test is active, select **Stop / Disarm** to end the run. After completion, select **Reset** to clear the session and prepare for a new test. The available buttons indicate the next valid action for the current stage of the workflow.

Live Graphing Mode (Chart)



Chart

Review test results after a test completes. Compare measurements, identify trends, and quickly spot peaks, valleys, drift, or unexpected behavior. In Data Logging mode, charts are generated after the test finishes to ensure optimal performance with large datasets.

Chart Features

Data Point Information

Hover anywhere on the chart to view the sample number and values for all visible series at that position. Use this feature to quickly compare measurements and verify exact results.

Legend

The legend identifies each measurement series by color, making it easier to compare Tracking, Peak, and Valley results. Select or clear a legend item to show or hide its corresponding series and focus on the data that matters most.

Zoom

Zoom in to inspect specific regions of the data and zoom out for a broader view of test results. Use the mouse wheel or a trackpad pinch gesture to adjust the zoom level. Zooming can help isolate short-duration events that may be difficult to see in the full dataset.

Chart Context Menu

Access additional display and analysis options without leaving the chart view. Right-click anywhere on the chart to open the context menu.

Graph Options

Customize the chart to improve readability and focus on the information most relevant to your analysis. Adjust series styles, colors, legend placement, and other display settings to tailor the chart to your preferences.

Live Graphing Mode (Quick Actions)

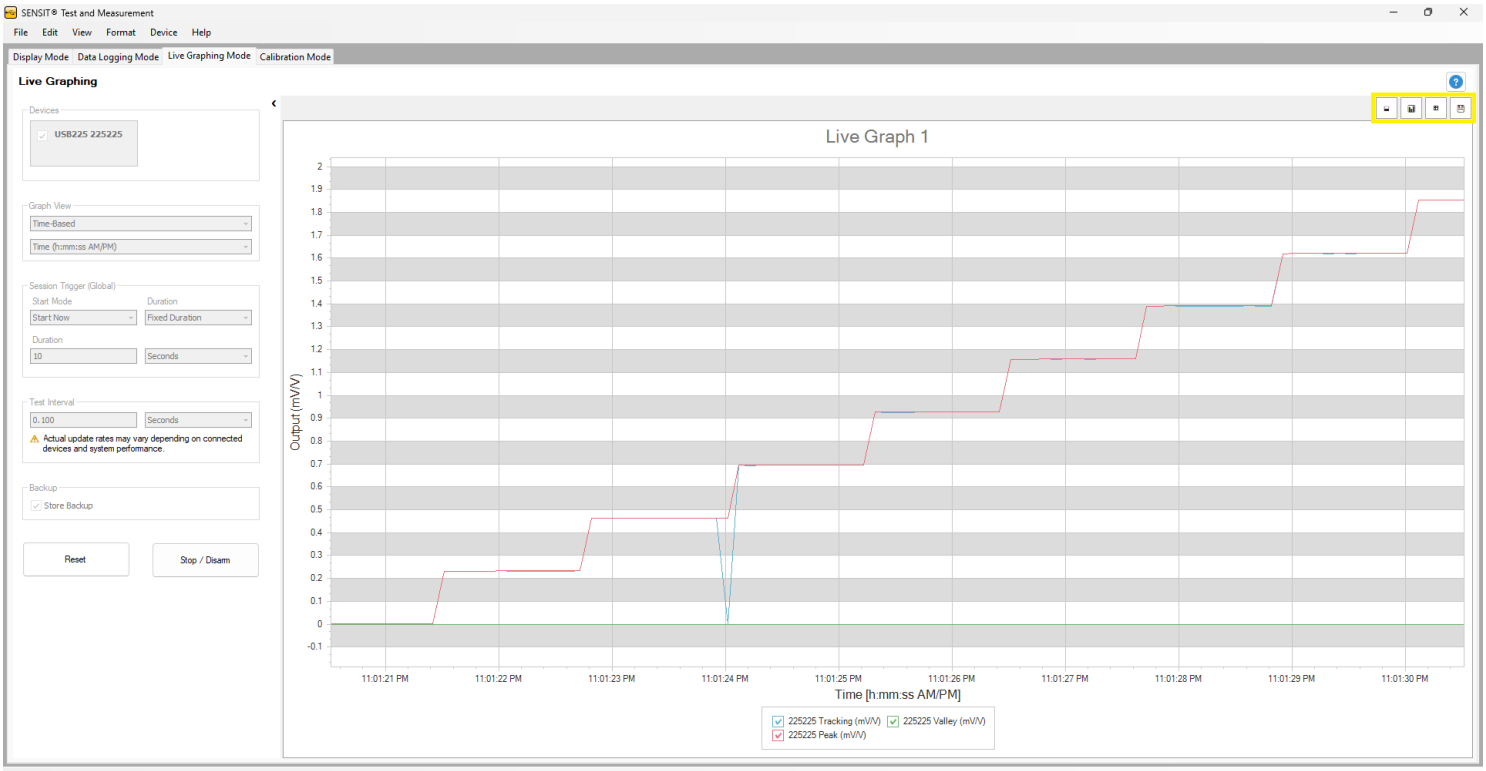


Chart View Toggle

Switch between available chart views to focus on the data that matters most during async recording. Click to cycle through the display options: **ADC Values**, **Encoder Data**, or **Both Charts** with ADC values shown above encoder data. Use Both Charts when you need to compare ADC and encoder data side by side.

Live Readout Overlay

Monitor current measurements without leaving the graph. Display the Live Readout as an overlay to view the latest **Tracking**, **Peak**, and **Valley** measurements while keeping the chart area maximized. Choose the overlay view when screen space is limited and you want the largest possible view of the graph.

Live Readout Side Panel

Monitor current measurements while keeping chart data fully visible. Display the Live Readout in a dedicated panel beside the graph to view the latest **Tracking**, **Peak**, and **Valley** measurements without covering plotted data. Choose the docked view when you need to monitor live values continuously while analyzing chart activity.

Export Graph

Create an Excel report that includes logged test data, device information, and the current chart for analysis, sharing, or record keeping. Click Export Graph, then choose a save location or cancel the export. The report is generated using the data currently displayed. Export results after completing a test to preserve both the raw data and chart visualization in a single file.

Calibration Mode

SENSIT® Calibration

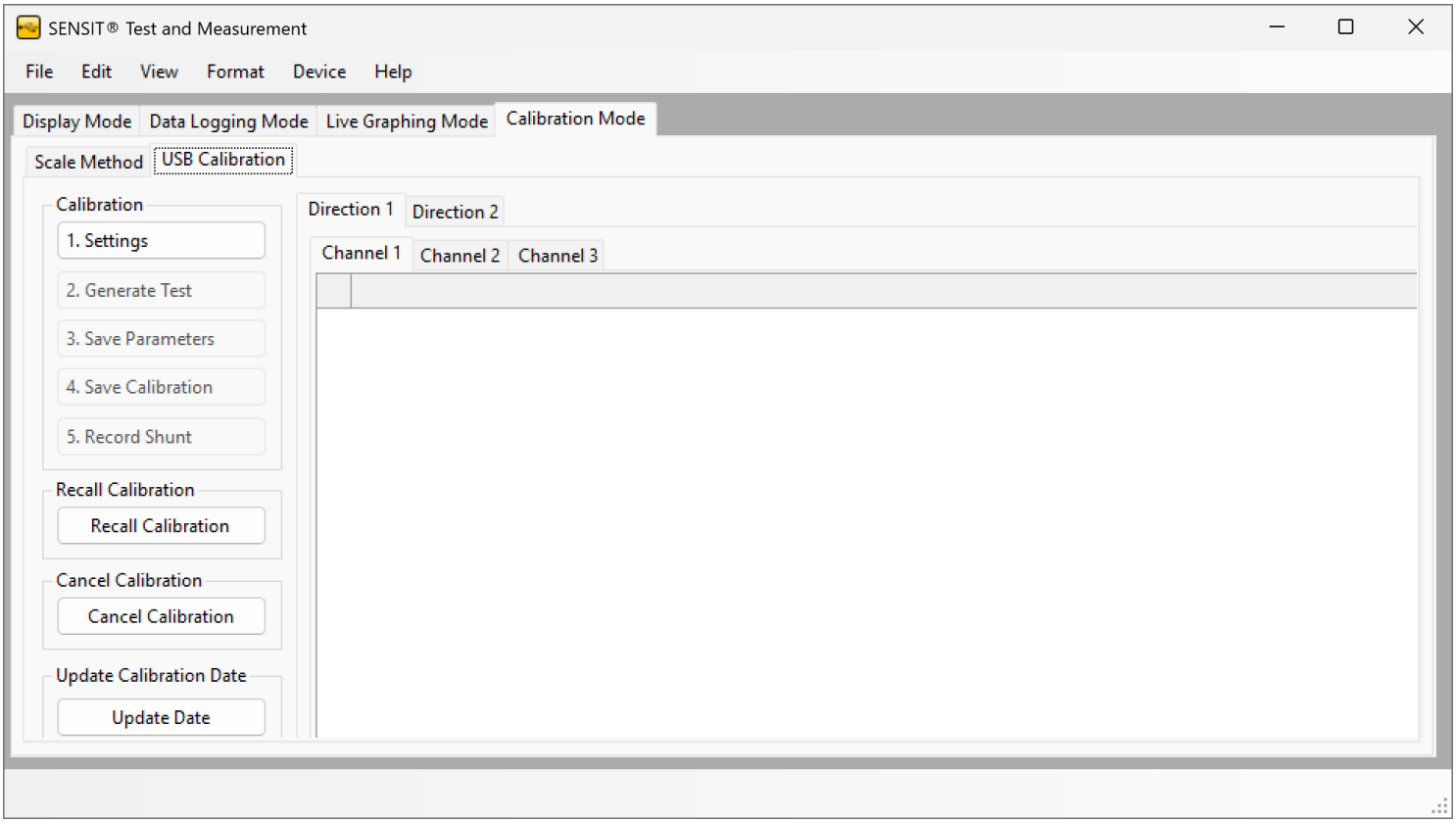
A 12-month subscription that features all the same capabilities as SENSIT® Test & Measurement and allows you to perform custom calibrations for all FUTEK sensors and electronics. This version is tailored for users who perform professional calibrations.

Warning

⚠ The use of the calibration mode can affect the factory calibration of the device. This feature provides a wide range of capabilities most of which can directly write to the memory (EEPROM) of the device. Once the memory is overwritten, it will be lost forever. Please read this section carefully. If you are unsure how to use the calibration mode or if you are unsure of its effects on memory, please feel free to contact us.

Calibration

This tab allows the user to set all the necessary parameters to perform a live Calibration.



How to Setup and Start a Live Calibration

1. Click **Settings** to modify the Calibration Settings.
2. Click **Generate Test** to create the Calibration Direction Table(s).
3. Click **Save Parameters** to save the settings to the memory (EEPROM) of the device.
4. Click **Save Calibration** to save the loading points to the memory (EEPROM) of the device.
5. Click **Record Shunt** to save a calibration shunt value to the memory (EEPROM) of the device.

Other Calibration Features

Recall Calibration

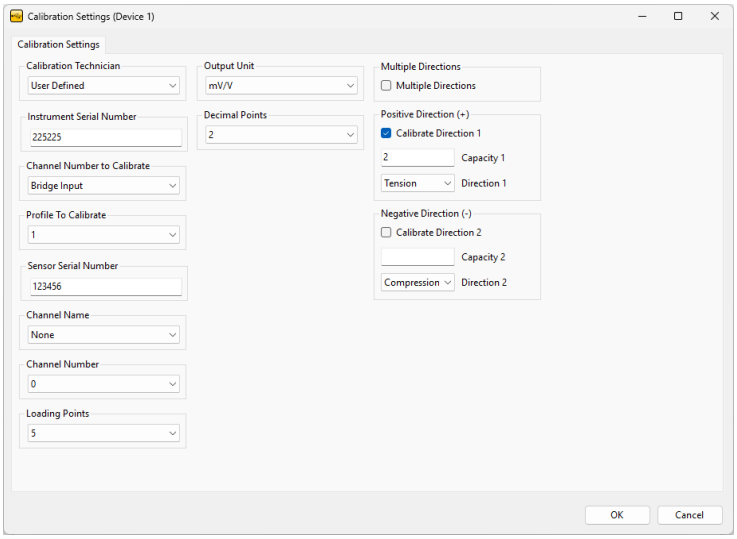
This feature allows the user to retrieve the existing calibration settings and values.

Cancel Calibration

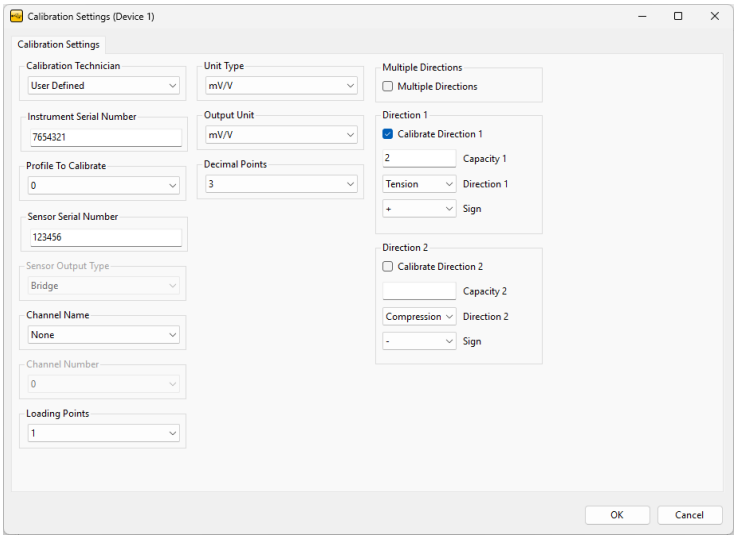
This feature can be used to stop the calibration that is in progress, please refer to the Warning because some values may have already been written to memory.

Calibration Settings

Here are some examples of calibration settings for different devices.



Calibration Settings for the USB225



Calibration Settings for the IHH505

Calibration Technician

The calibration technician's name is for use by FUTEK personnel only. This field will automatically be set to User Defined.

Instrument Serial Number

The user must enter the serial number of the instrument.

Channel Number to Calibrate

The user must select the channel number to calibrate.

Profile to Calibrate

The user must select the profile to calibrate.

Sensor Serial Number

The user must enter the serial number of the sensor.

Channel Name

The user must select the channel name that is going to be calibrated.

Channel Number

The user must select the channel number that is going to be calibrated.

Loading Points

The user must select the number of loading points.

Output Unit

The user must select the desired output unit.

Decimal Points

The user must select the number of digits to display after the decimal point.

Multiple Directions

If the device is going to be calibrated in two directions, then the multiple directions checkbox should be checked.

Please Note: When performing multiple direction calibrations, the user should always complete calibration direction 1 and then calibration direction 2.

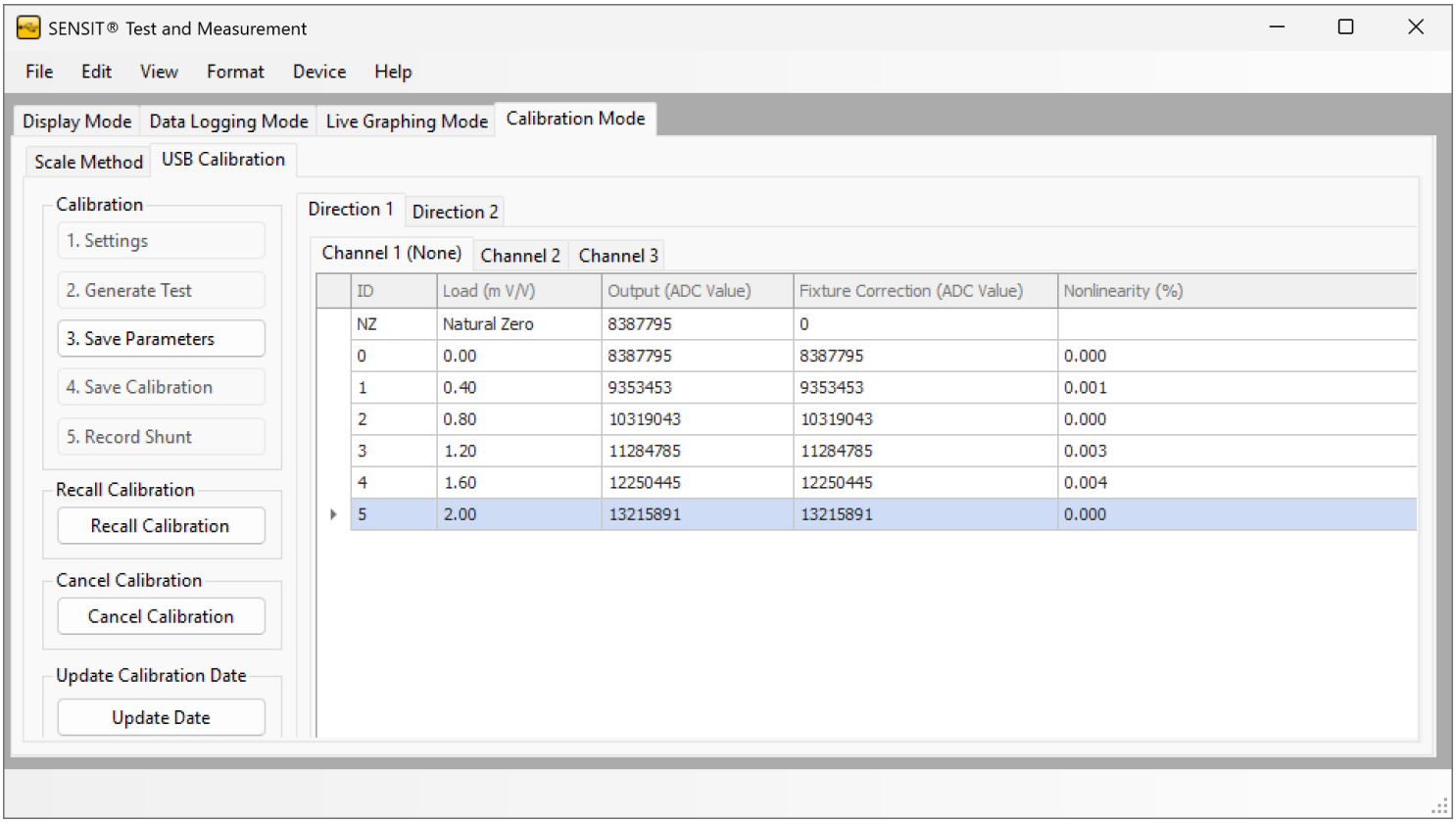
Positive Direction (+)

The user must enter the capacity and select the direction associated with the device. Direction 1 should always be used as the positive direction.

Negative Direction (-)

The user must enter the capacity and select the direction associated with the device. Direction 2 should always be used as the negative direction.

Calibration Direction Table(s)



Calibration Direction 1

Calibration Direction 1 should always be used as the positive direction. After generating the test, the user must capture the readings for each of the loading points.

Natural Zero

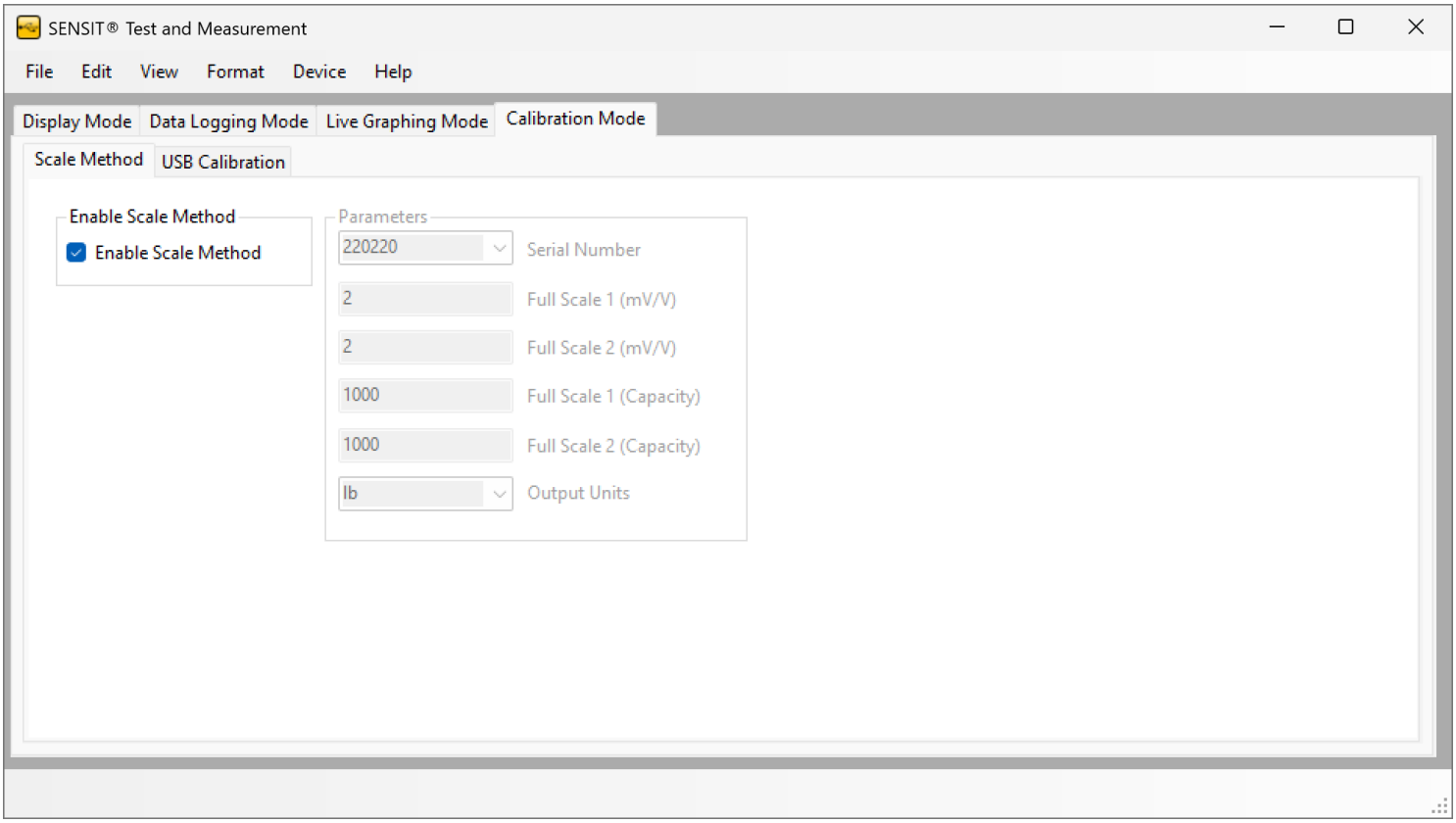
Natural Zero (NZ) refers to the output of the sensor when there is no fixture attached or applied. The difference between the values recorded for the Natural Zero and the zero-loading point will be subtracted from each subsequent loading point when saving the calibration data. This will allow the software to display zero when there is no fixture attached or applied. When a fixture is attached or applied, the software has a tare/gross option to zero the reading.

Loading Points

To capture the ADC Value from the device, simply apply the appropriate load and when ready press the **Enter** key on your keyboard. Once you have captured all the loading points, the **Save Parameters** button will become available. Please refer to How to Setup and Start a Live Calibration to continue.

Scale Method

This tab allows the user to set all the necessary parameters related to the Scaled Method of Calibration.



How to Use the Scale Method

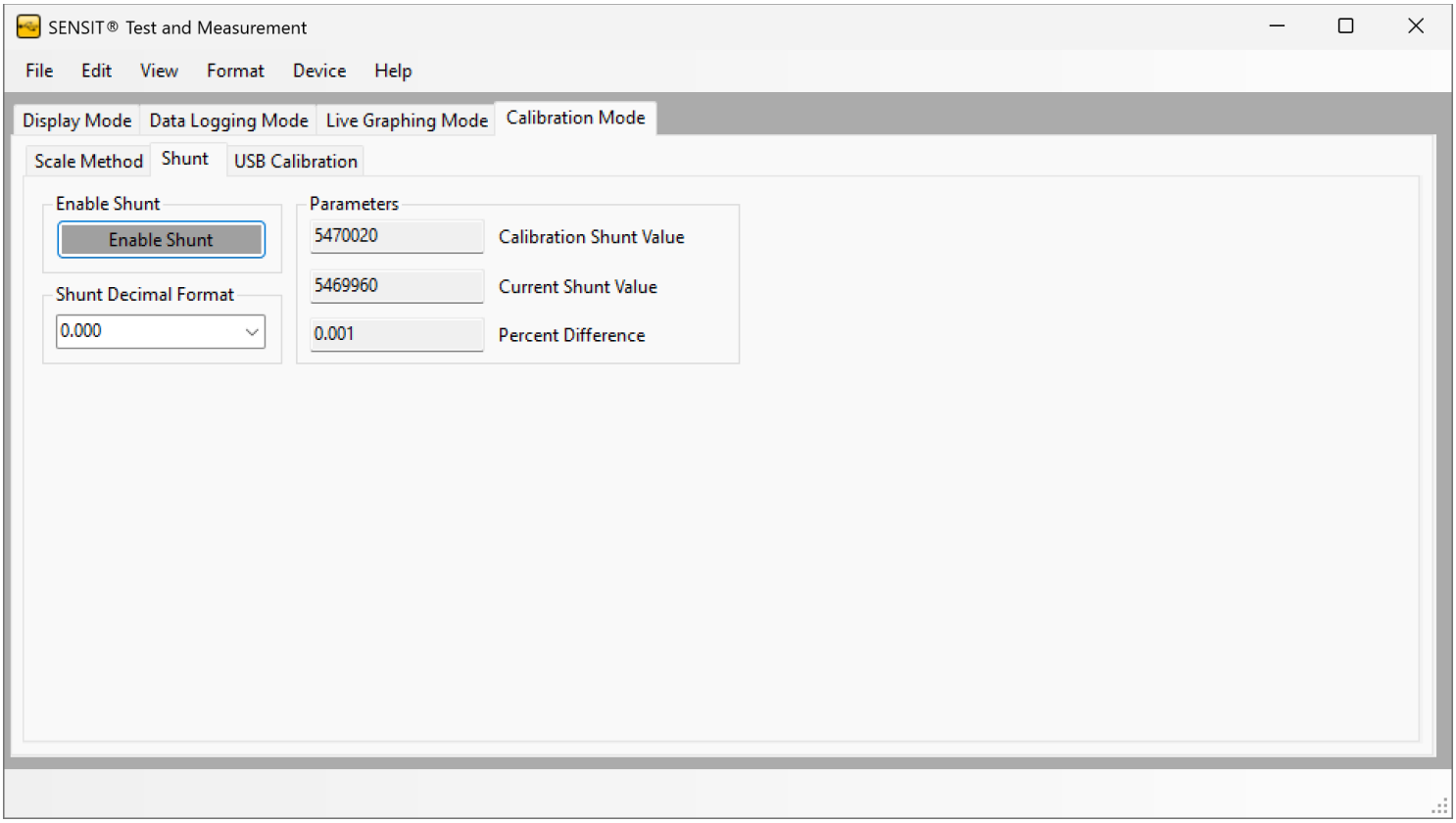
Click Enable Scale Method.
Click **Settings** to enter the Scale Method Parameters.

1. Set the Full Scale (mV/V)*, Full Scale (Capacity), and Output Units.
    a. **Serial Number –** The serial number to apply the scaling to.
    b. **Full Scale 1 (mV/V)* –** The positive full-scale value expressed in mV/V.
    c. **Full Scale 2 (mV/V)* –** The negative full-scale value expressed in mV/V.
    d. **Full Scale 1 (Capacity) –** The positive full-scale value in engineering units.
    e. **Full Scale 2 (Capacity) –** The negative full-scale value in engineering units.
    f. **Output Units –** The engineering units that will be applied when scaling.
2. Click **Set Parameters** to lock the settings.
3. Click **Save Parameters** to save the scale method settings for future use.

***** The units should be expressed in the same base units that the original calibration was performed in. If the calibration was performed using mV/V, then the Full Scale 1 and Full Scale 2 should be expressed in mV/V.

Shunt

This tab allows the user to compare the calibrated shunt value with the current shunt value. It can be used as a means of verification.



How to Use the Shunt

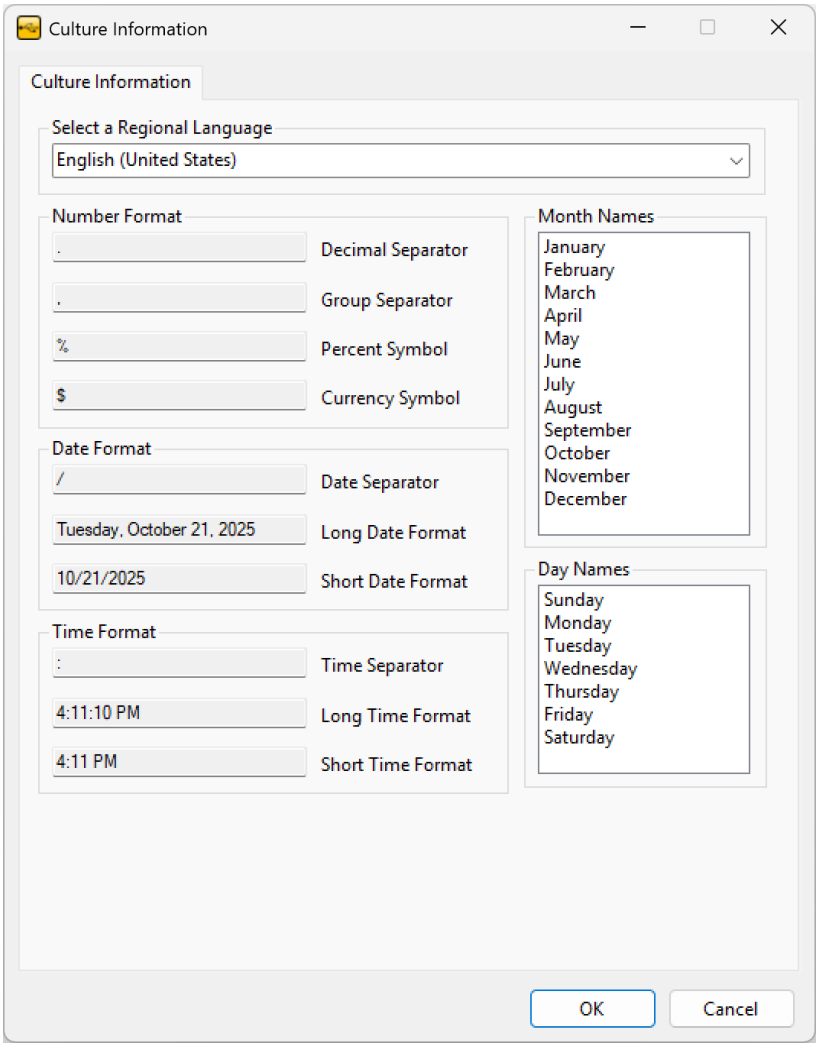
Click **Enable Shunt**. If the shunt value was recorded during calibration, then the current value will be compared to it, and the percentage difference will be calculated.

Please Note: All loads applied to the sensor including any fixtures should be removed.

Culture Information

Culture Information

The culture information displays the Number, Date, and Time Format based on the selected regional language. Once the settings have been applied, the formatting will be used throughout the software.



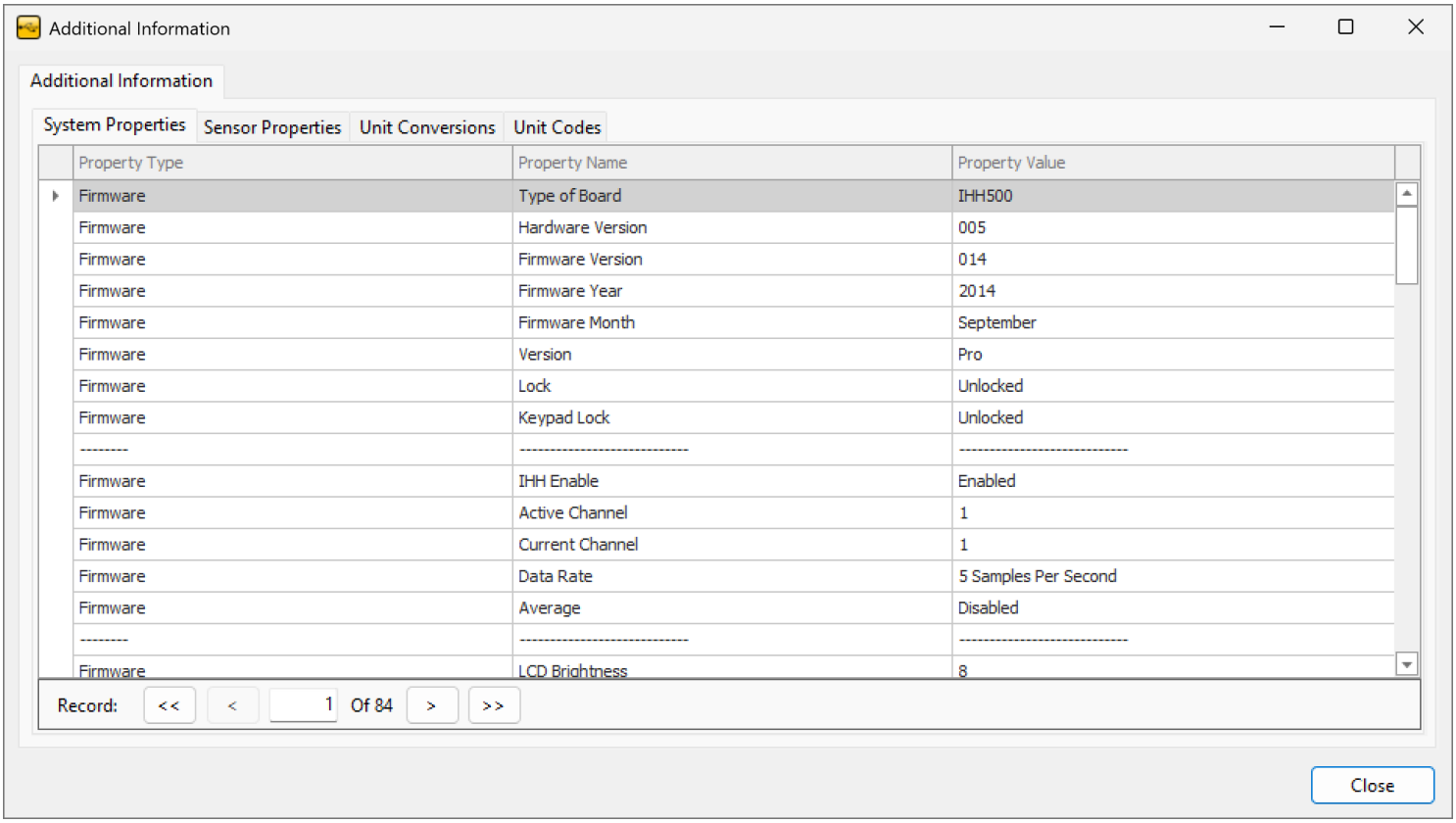
How to Use Culture Information

1. Select the Regional Language from the drop-down list.
2. Click **Apply Settings**.

Additional Information

System Properties

This tab allows the user to view the current System Properties for each device. The table displays information related to the Firmware settings.



Other System Properties Features



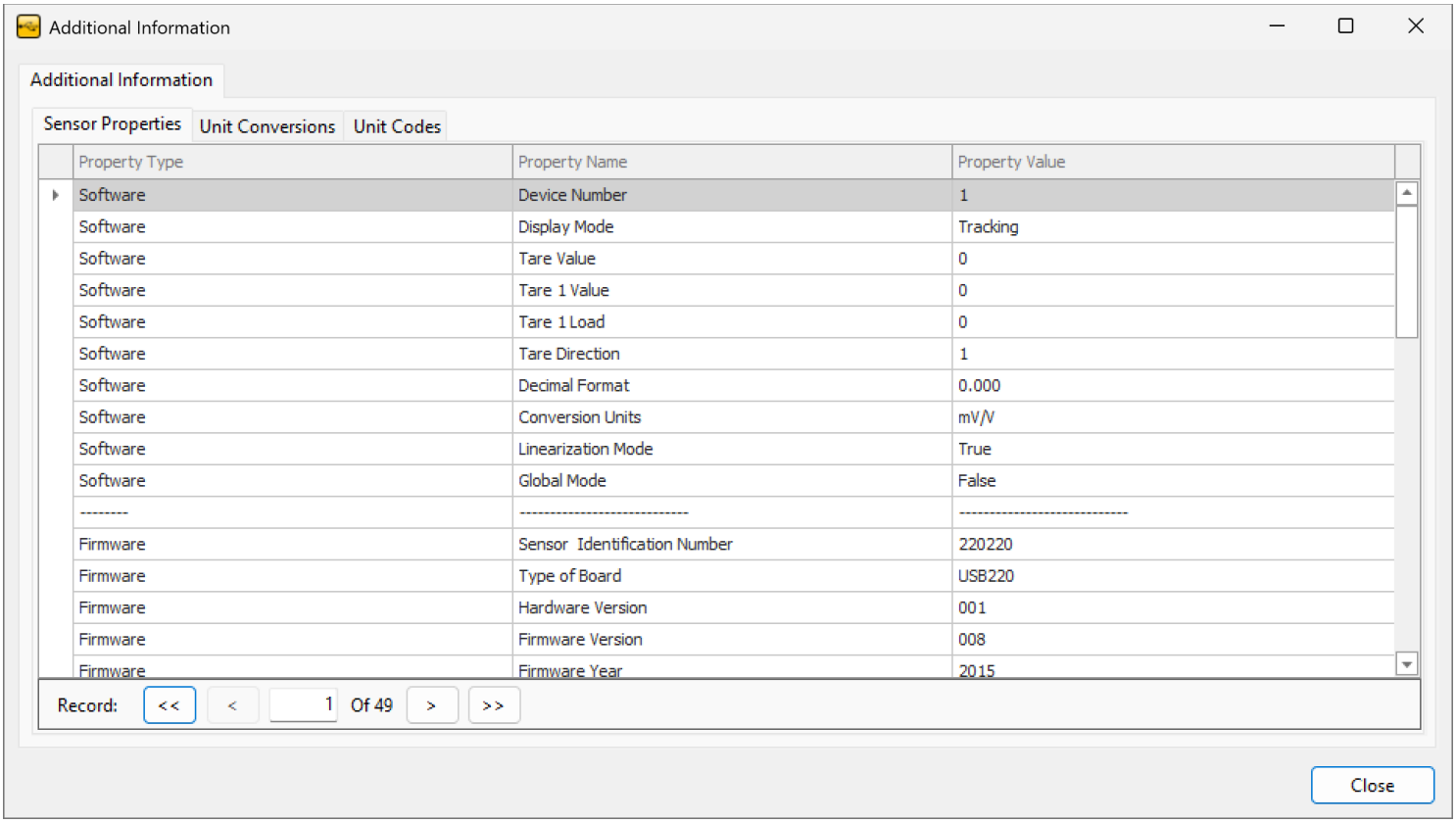
How to Change the System Properties Device

Right click on the system properties table and select a device and profile from the drop-down list. The system properties table and the sensor properties table will be updated with the information for the device and profile that are selected.

Please Note: System Properties and Select Profile are only available for the IHH/IPM models.

Sensor Properties

This tab allows the user to view the current Sensor Properties for each device. The table displays information related to the Software and Firmware settings.



Other Sensor Properties Features



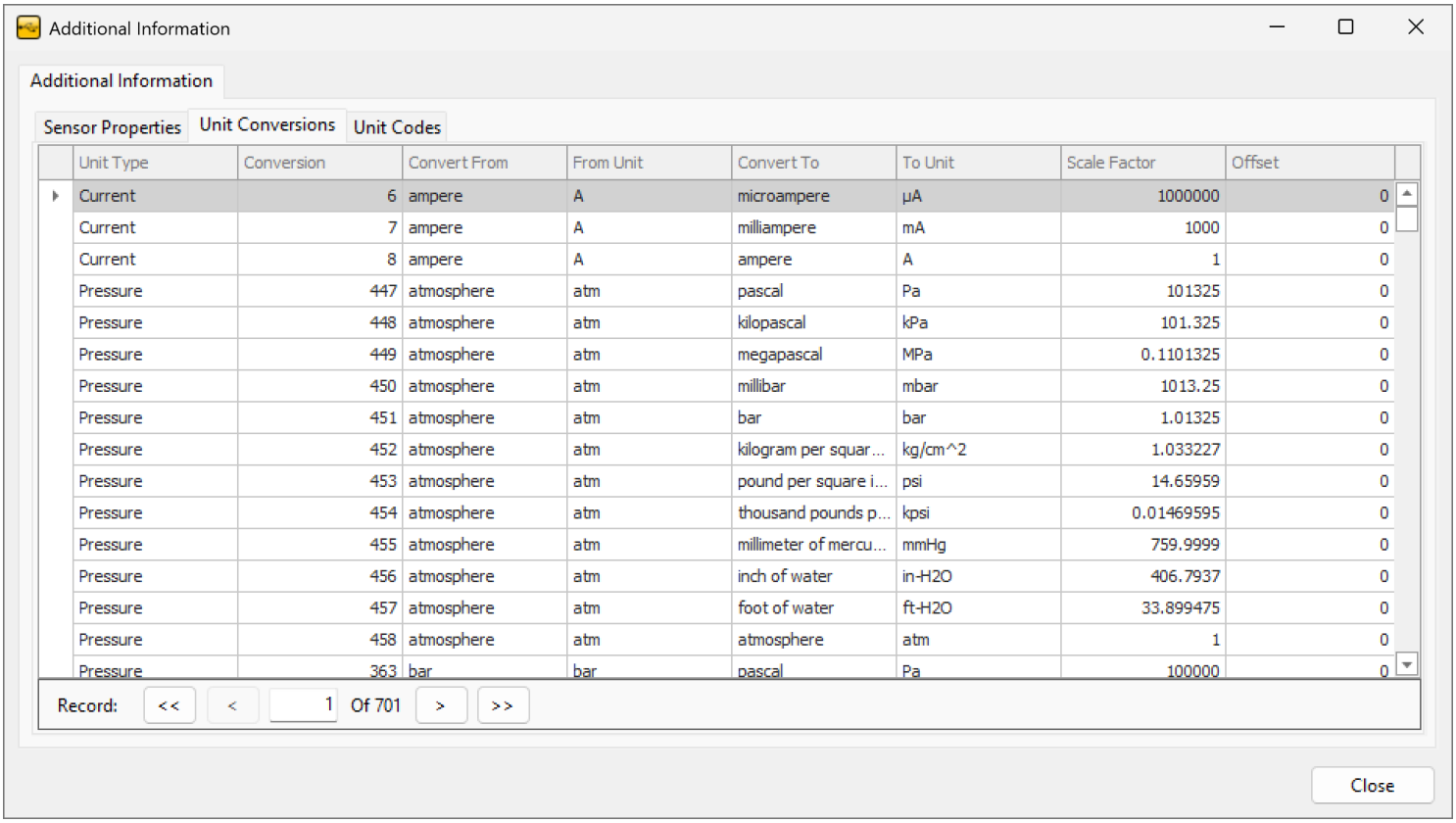
How to Change the Sensor Properties Device

Right click on the sensor properties table and select a device and profile from the drop-down list. The system properties table and the sensor properties table will be updated with the information for the device and profile that are selected.

Please Note: System Properties and Select Profile are only available for the IHH/IPM models.

Unit Conversions

This tab allows the user to view all the available unit conversions.

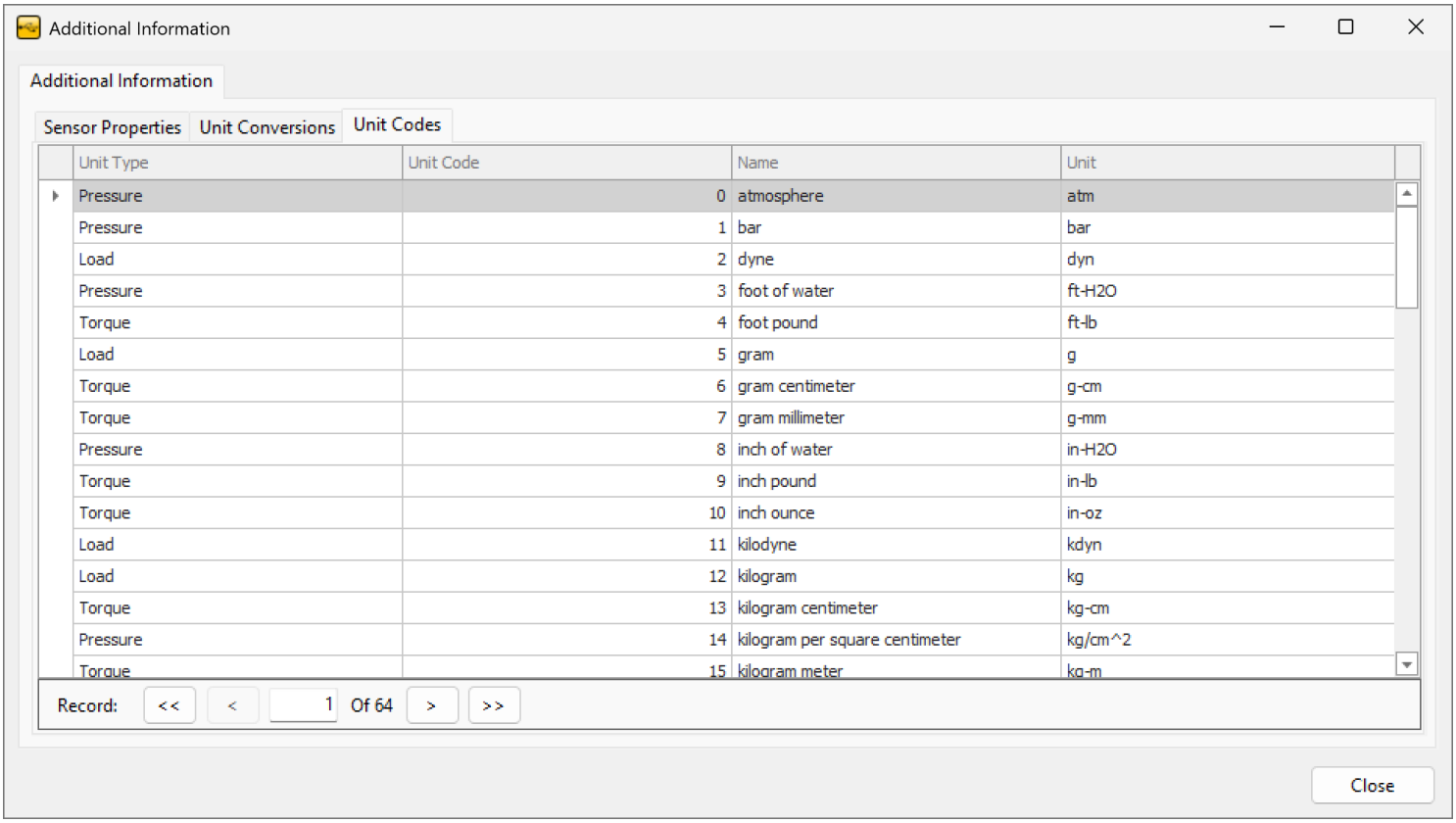


Unit Type	Conversion	Convert From	From Unit	Convert To	To Unit	Scale Factor	Offset
Current	6	ampere	A	microampere	µA	1000000	0
Current	7	ampere	A	milliampere	mA	1000	0
Current	8	ampere	A	ampere	A	1	0
Pressure	447	atmosphere	atm	pascal	Pa	101325	0
Pressure	448	atmosphere	atm	kilopascal	kPa	101.325	0
Pressure	449	atmosphere	atm	megapascal	MPa	0.1101325	0
Pressure	450	atmosphere	atm	millibar	mbar	1013.25	0
Pressure	451	atmosphere	atm	bar	bar	1.01325	0
Pressure	452	atmosphere	atm	kilogram per squar...	kg/cm^2	1.033227	0
Pressure	453	atmosphere	atm	pound per square i...	psi	14.65959	0
Pressure	454	atmosphere	atm	thousand pounds p...	kpsi	0.01469595	0
Pressure	455	atmosphere	atm	millimeter of mercu...	mmHg	759.9999	0
Pressure	456	atmosphere	atm	inch of water	in-H2O	406.7937	0
Pressure	457	atmosphere	atm	foot of water	ft-H2O	33.899475	0
Pressure	458	atmosphere	atm	atmosphere	atm	1	0
Pressure	363	bar	bar	pascal	Pa	100000	0

There are several unit types including: Current, Displacement, Force, Pressure, Temperature, Torque and Voltage. The table includes the unit to convert from and the unit to convert to as well as the scale factor and offset values.

Unit Codes

This tab allows the user to view all the available unit codes.

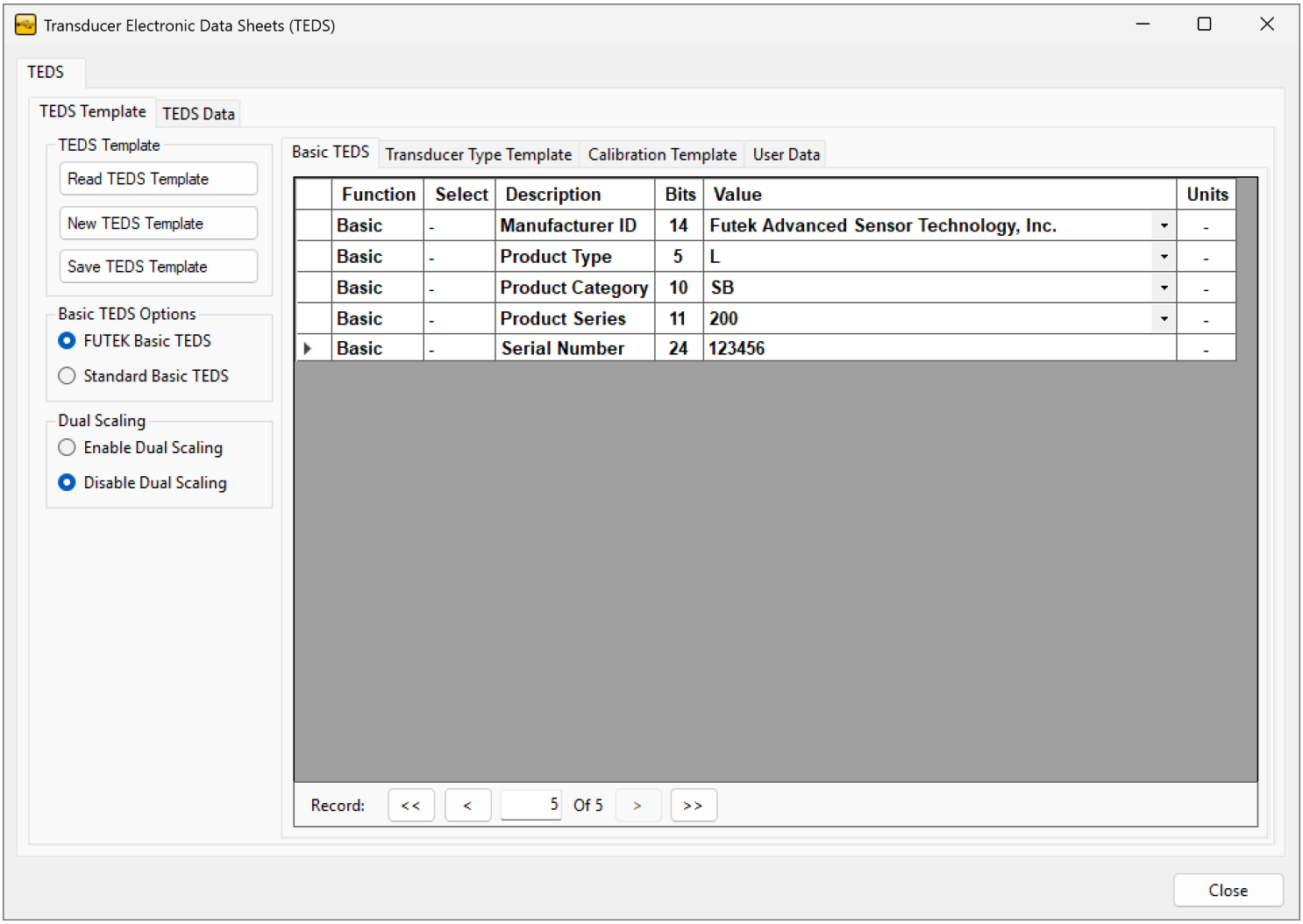


There are several unit types including: Current, Displacement, Force, Pressure, Temperature, Torque and Voltage. The table includes the unit code, name, and abbreviation.

Transducer Electronic Data Sheets (TEDS)

TEDS Template

This tab allows the user to read and write to a TEDS Chip. The table displays information related to Basic TEDS Information and the TEDS Template Information.



How to Read TEDS Template Information

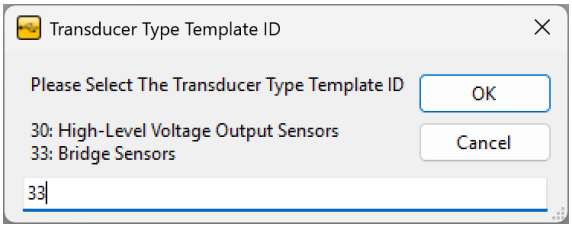
Click **Read TEDS Template**.

Basic TEDS Options

Specify if you would like to use the FUTEK Basic TEDS or Standard Basic TEDS.

How to Create New TEDS Template Information

Click **New TEDS Template** and specify the Template ID number in the input box below.



A new template with default values will be created.

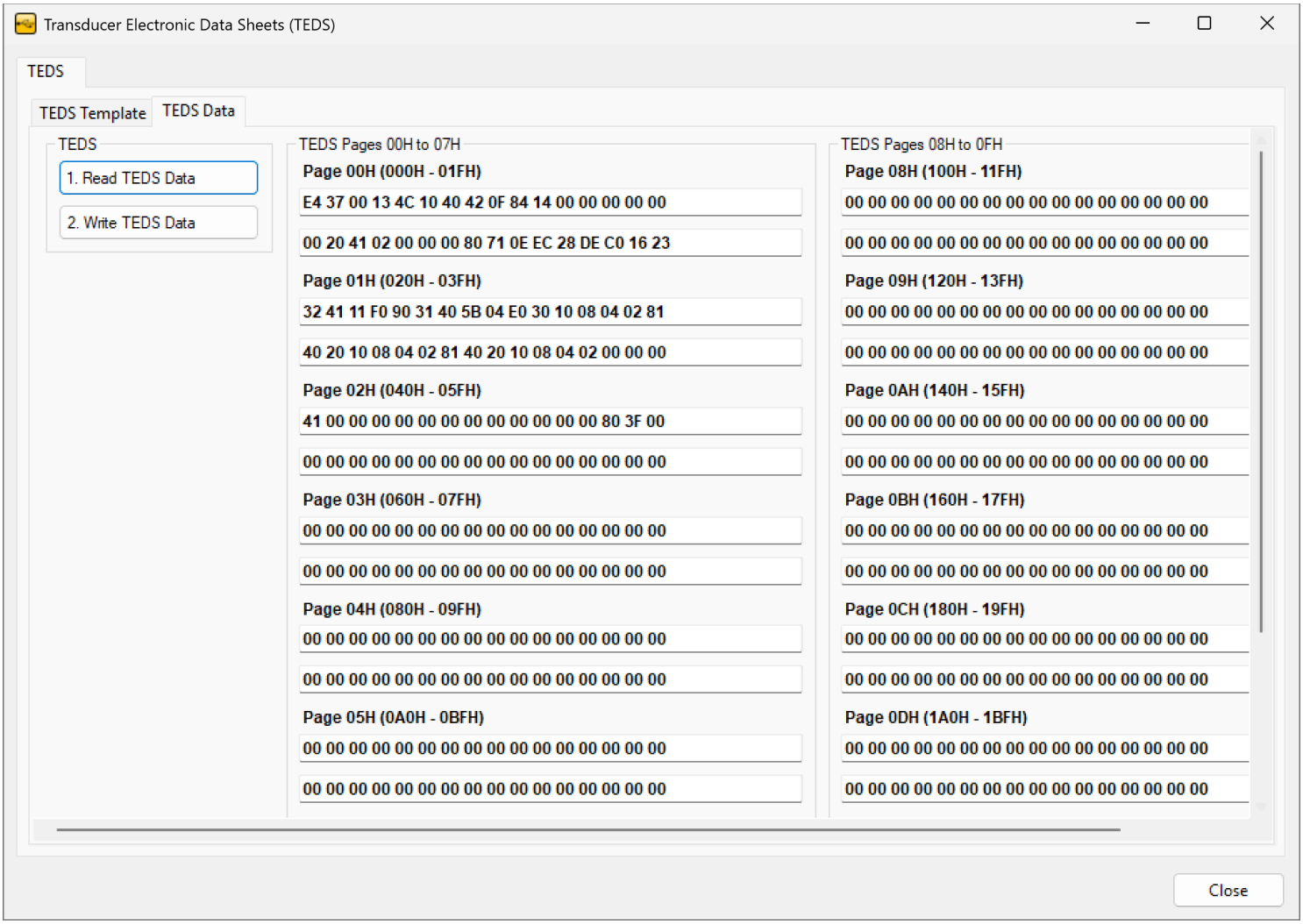
How to Save TEDS Template Information

After you have filled in all the required Basic TEDS Information and TEDS Template Information, click **Save TEDS Template**.

Please Note: When writing to the TEDS Chip, the data will be overwritten. Please be cautious as there is no way to retrieve the information once it has been overwritten.

TEDS Data

This tab allows the user to read and write to a TEDS Chip. The information is displayed in hexadecimal format and is separated into 32-byte pages.



How to Read TEDS Data

Click **Read TEDS Data**.

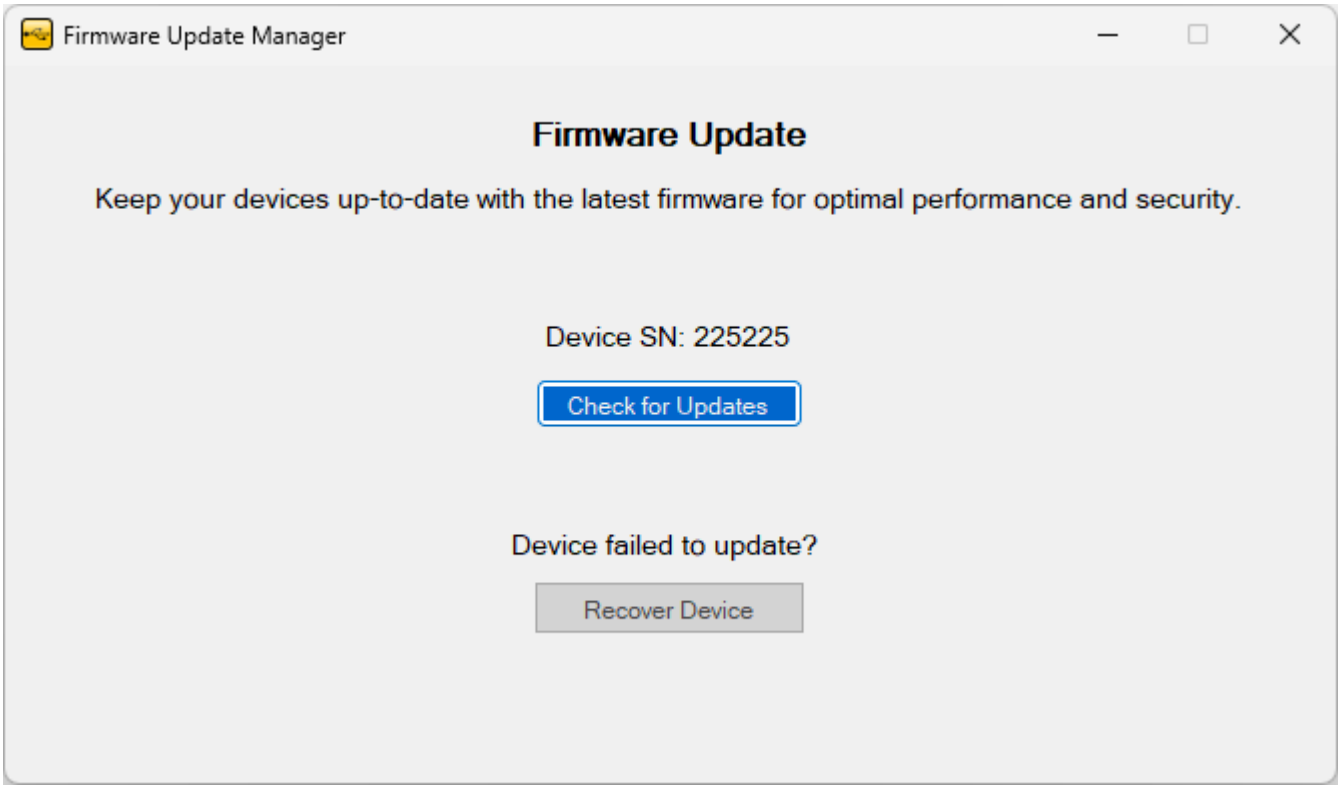
How to Write TEDS Data

Click **Write TEDS Data**.

Please Note: When writing to the TEDS Chip, the data will be overwritten. Please be cautious as there is no way to retrieve the information once it has been overwritten.

Firmware Update

Allows users to keep supported FUTEK instruments up to date with the latest firmware for optimal performance.



Check for Updates (What it does)

Allows SENSIT to check for and apply the latest firmware to the connected instrument. Only one device can be connected to SENSIT at a time when doing a firmware update.

Recover Device (When to use it)

If a firmware update does not complete successfully, supported instruments may have Recover Device available to help restore the instrument to a usable state so a firmware update can be attempted again.

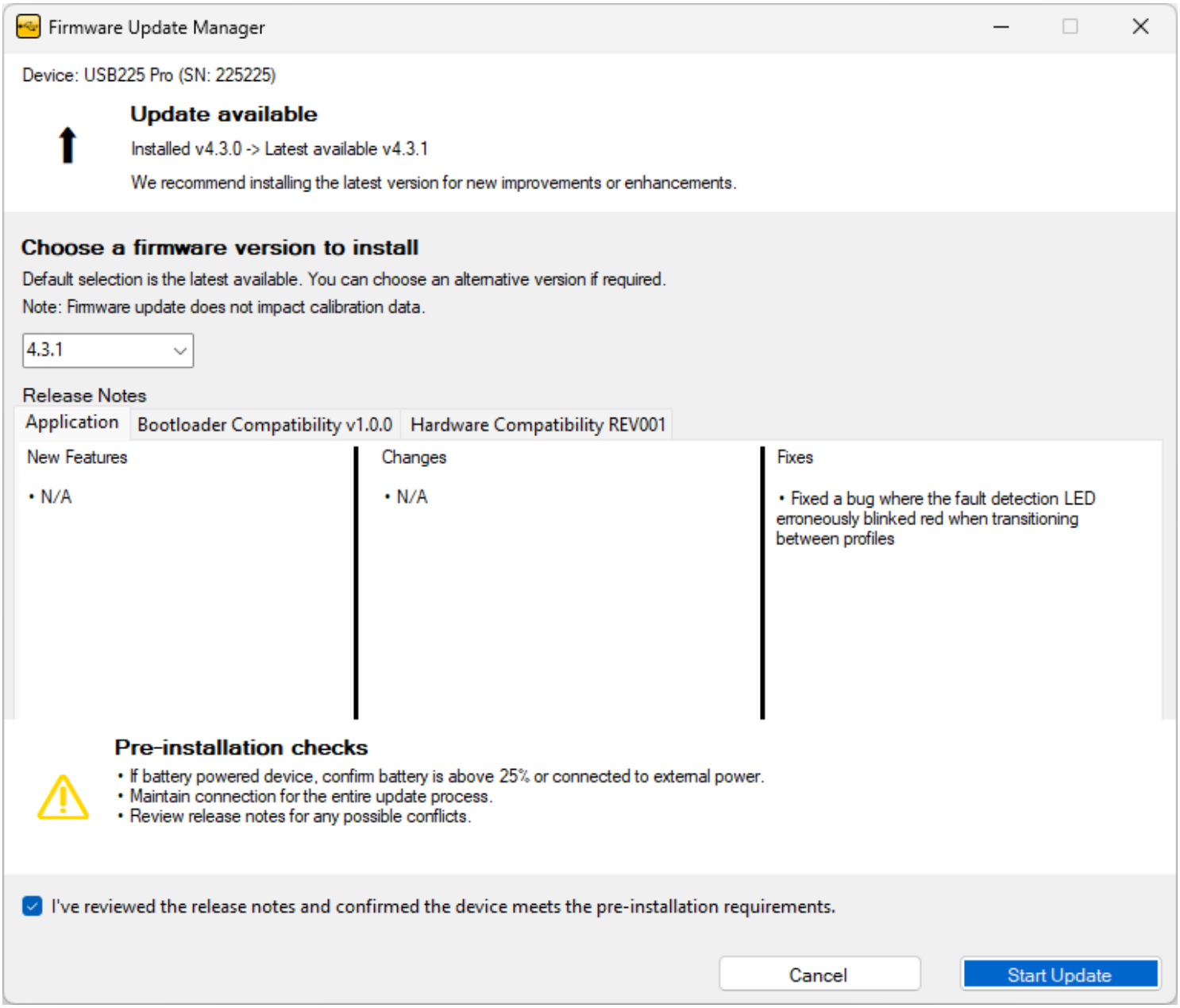
If recovery is not available (Button is not enabled)

- The device does not require recovery and is functional.
- Recovery is not supported by the device and the user must contact FUTEK Technical Support for further support.

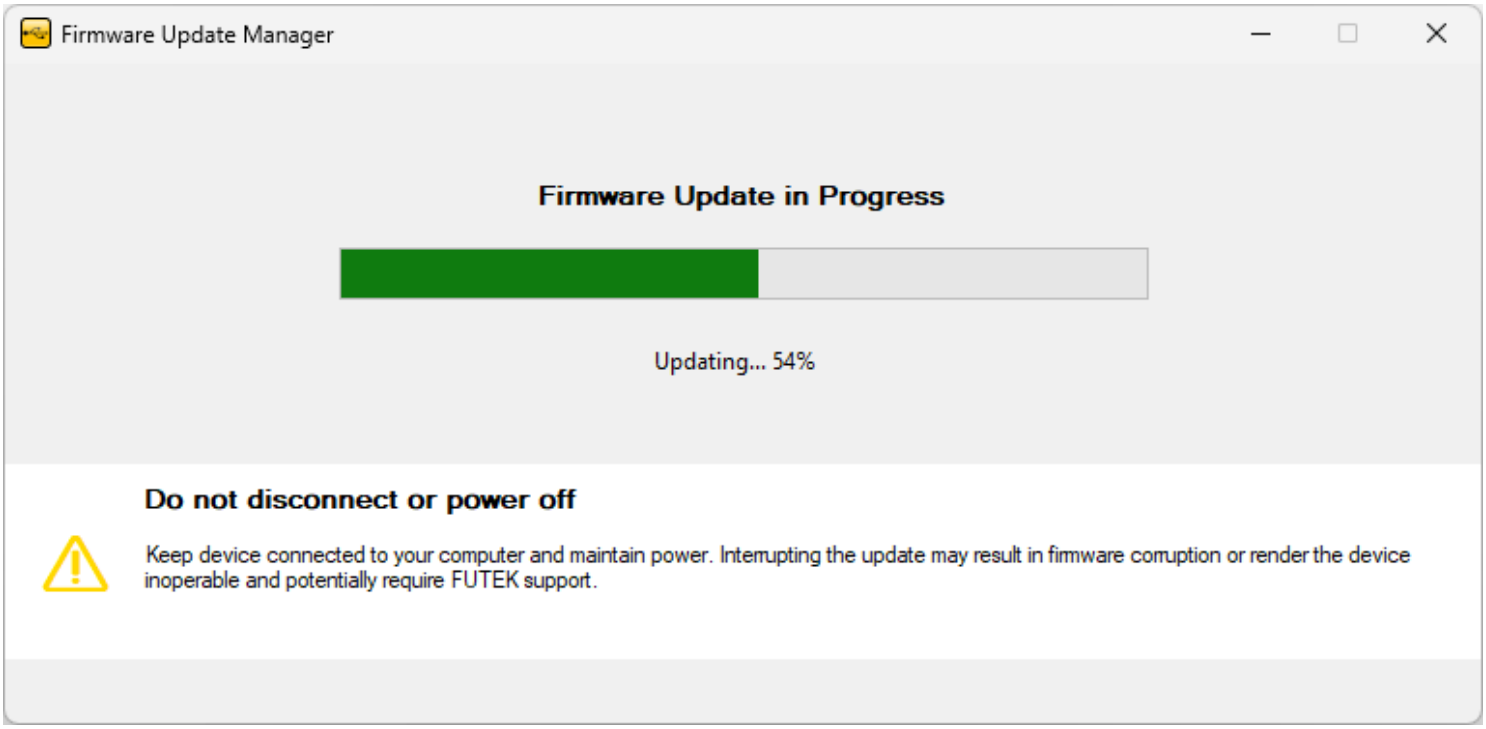
Update Available

If a firmware update is available, then you can select the firmware version to install.
You must check the box indicating that you have reviewed the release notes and confirmed the device meets the pre-installation requirements.

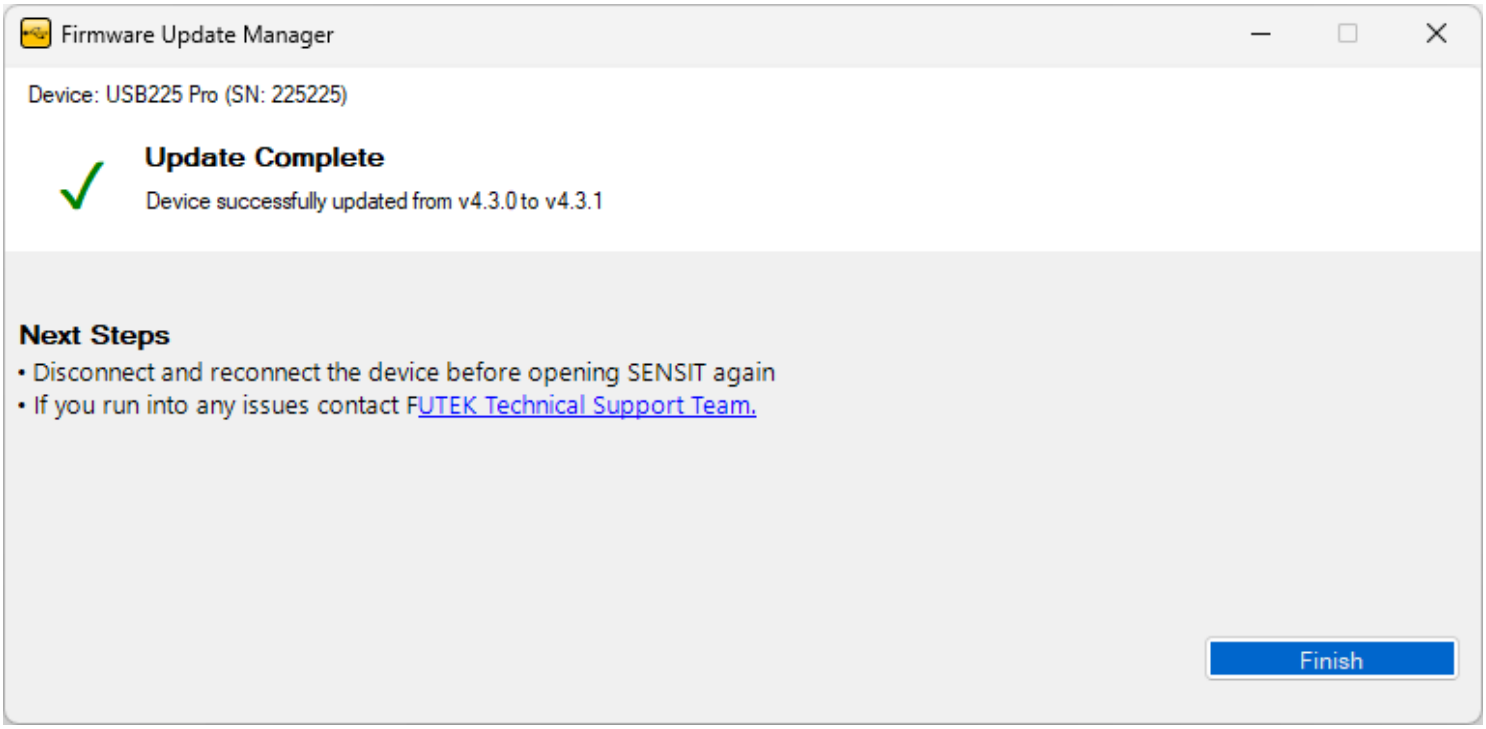
Click Start Update and wait for the firmware update to complete.



Update in Progress



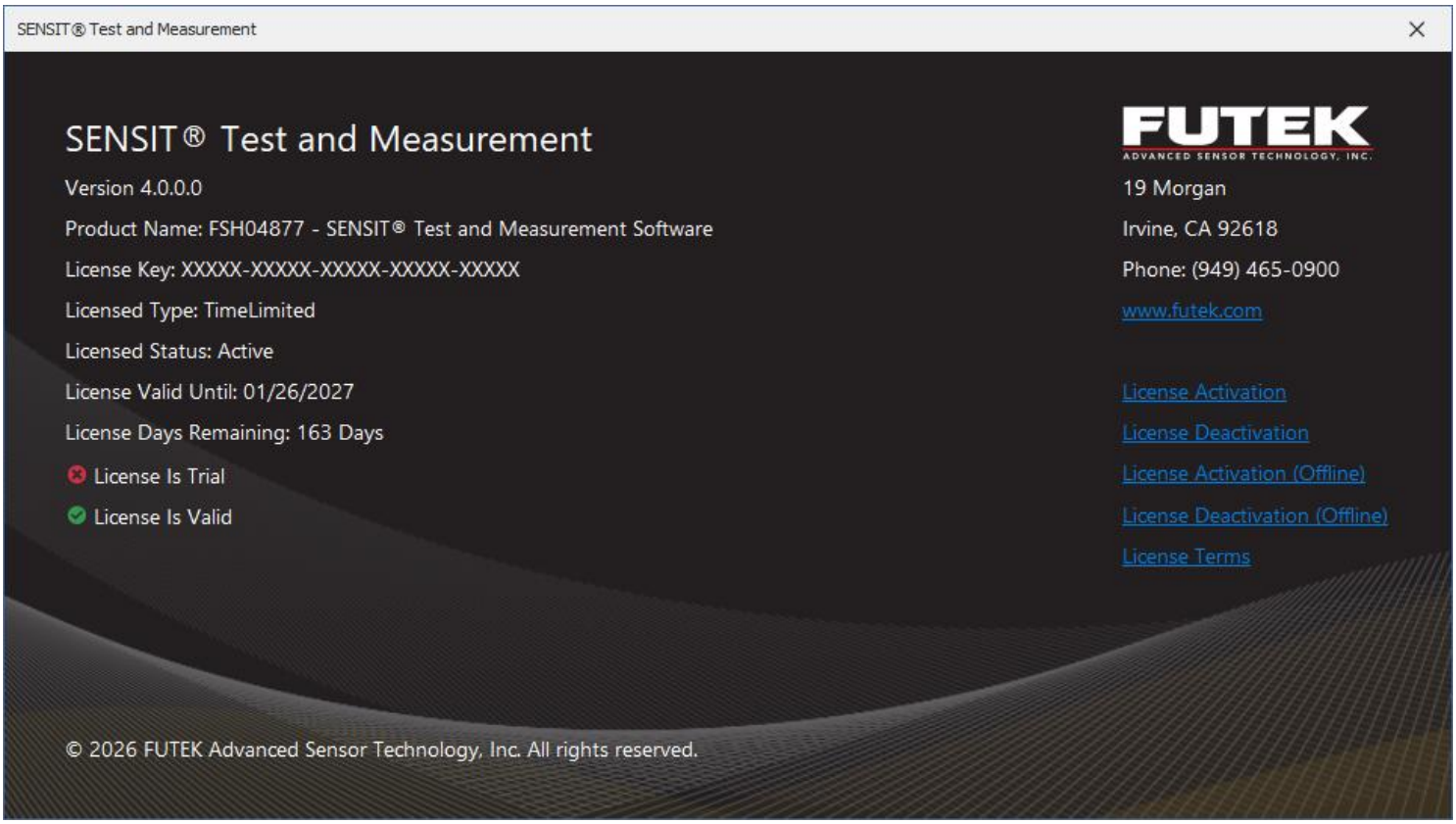
Update Complete



About

About SENSIT® Test and Measurement

This form allows the user to view all the information about the software license and the manufacturer.



System Requirements

System Requirements

SENSIT® is designed to run on Windows 11 and will have the same system requirements as defined by Microsoft. You can review the complete list of system requirements here: Windows 11 System Requirements.

System Requirements	
Hardware	
Processor	1 gigahertz (GHz) or faster with 2 or more cores on a compatible 64-bit processor
RAM	4 gigabytes (GB)
Storage	64 GB or larger storage device
Graphics Card	Compatible with DirectX 12 or later with WDDM 2.0 driver
Display	High definition (720p) display that is greater than 9” diagonally, 8 bits per color channel
Software	
Operating System	Microsoft Windows 11
Microsoft Office	2021 or higher
Microsoft .NET	10.0 or higher
FTDI D2XX Driver	2.12.36.20 or higher

Release Information

SENSIT® 4.0 User Guide – Released August 2026

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