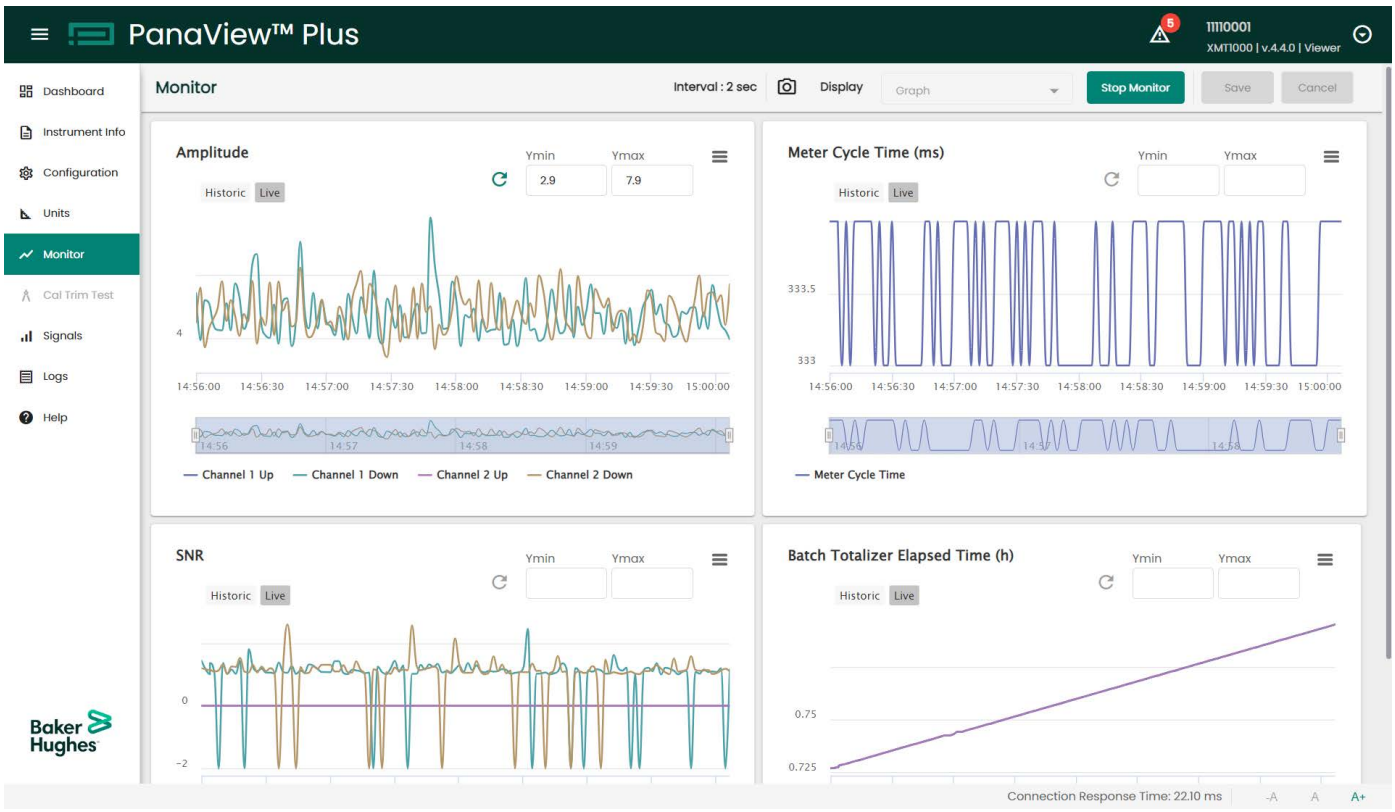
Panametrics
a Baker Hughes business

PanaView™ Plus

Graphical User Interface

User's Manual



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panametrics.com

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Secure Operations Guidelines

Following guidelines can help the user operate PanaView Plus software application securely:

- To use the PanaView Plus Software, a direct hardwired connection between the PC and the flow meter is recommended. Use of any USB to TCP/IP conversion software or devices are NOT recommended.
- When receiving PanaView Plus Software installer, it is always recommended to check the Software Checksum/Hash before installation.
- Install and scan the PC's with well-known Anti-Virus software.
- For any kind of software issues, please write to panametricstechsupport@bakerhughes.com.
- Be vigilant and report back any unusual activity on the device such as:
  - Unknown installed software applications,
  - Change of security configurations without knowledge, and
  - Unknown files.
- Ensure that the files generated using PanaView Plus software application are circulated only amongst the trusted members.

IMPORTANT: It is the users' responsibility to abide to the above recommendations. BAKER HUGHES has no control over the usage environment or misuse of the Software. User assumes all risk and responsibility for the use of the product.

Services

Panametrics provides customers with an experienced staff of customer support personnel ready to respond to technical inquiries, as well as other remote and on-site support needs. To complement our broad portfolio of industry-leading solutions, we offer several types of flexible and scalable support services including: Training, Product Repairs, Service Agreements and more.

Please visit https://www.bakerhughes.com/panametrics/panametrics-services for more details.

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Chapter 1. Introduction

The PanaView™ Plus software application helps the user to configure, calibrate, monitor, and inspect flow meters. The software assists the user in performing the following tasks:

- Configure flow meter,
- Upload/download flow meter configuration and diagnostic files,
- Monitor flow meter measurements in real-time, and
- Calibrate flow meter I/O and flow measurements.

PanaView Plus is recommended for use only with following meters:

1. XMT1000 (Modbus Map version 4.2.9 onwards) and XMT1000 SIL (Modbus Map version 4.5.2 onwards)
2. AT600 (Modbus Map version 1.5.2, 1.6.0).
3. XGF868 (Y4QF.STD, Y4RF.NHV)
4. GF868 (GF3AD.STD, GF3AC.MWI, GF3Z.NHV)
5. XGM (Y4LM.STD, Y4HM.Bwv, Y4JM.ZxG, Y4HM.BIO)
6. XGS (Y4JS.STD, Y4FS.STD)
7. XMO2pro/XMTCpro (firmware version 2.0.0 and above)

This software application extends flow meter measurement and data storage capabilities enabling the user to capture, store measurement and error data in an easily accessible format.

1.1 System Requirement

The minimum system requirements for installing PanaView Plus are as follows:

Component	Windows 10
Processor	1.6 GHz
Memory	4 GB RAM
Storage	1 GB hard disk
Available Ports	USB 1.x/2.x/3.x
Screen Resolution	1280 x 1024

1.2 Accessories

PanaView Plus connects to the flow meter using the MODBUS RTU communication protocol over serial port. USB-RS485 converter must be used as an interface between a Windows PC and the flow meter.

1.3 Language Support

PanaView Plus supports the following languages*:

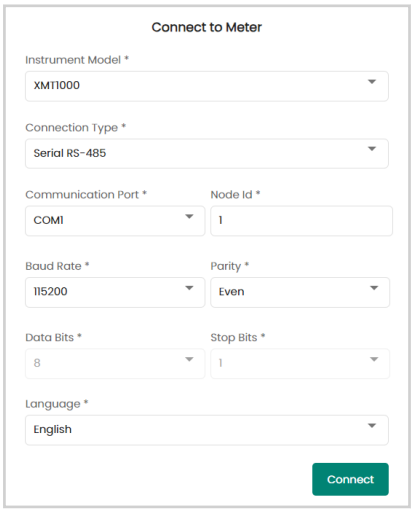
1. English
2. Chinese Simplified
3. German
4. French
5. Italian
6. Japanese

7. Spanish
8. Turkish
9. Swedish
10. Portuguese
11. Russian

* For flowmeters other than 868 series and XMO2pro/XMTCpro.

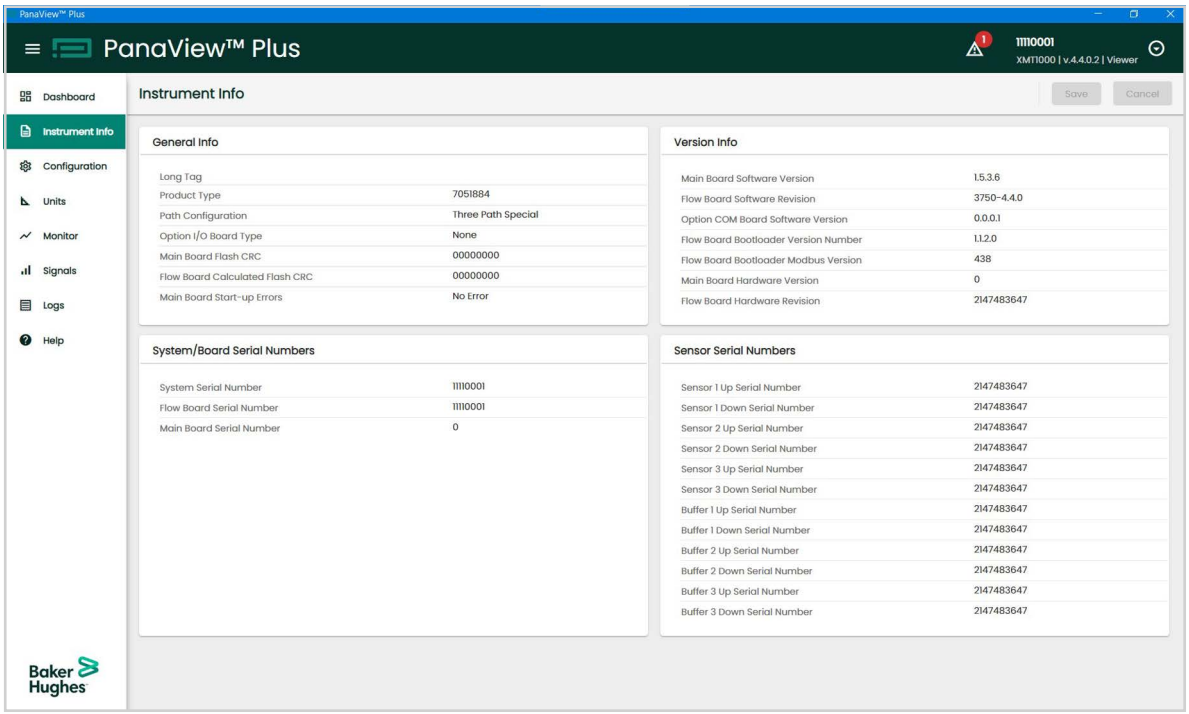
1.4 Connect to Meter

After installation, double-click on the PanaView Plus icon on your desktop to open the **Connect to Meter** window.



PanaView Plus will refer to any connected flow meters as instruments. Select the appropriate flow meter from the drop-down available under **Instrument Models**. Update the remainder of the communication settings appropriately and click the **Connect** button.

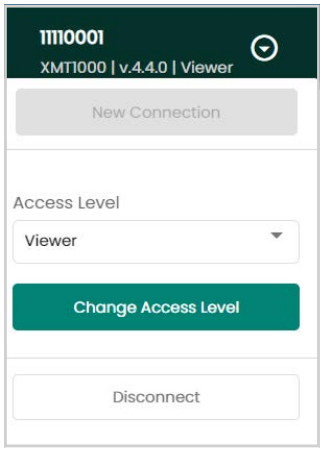
PanaView Plus will display the **Instrument Info** menu upon successful connection. The **Instrument Info** menu will display the General Info, Version Info, System/Board Serial Numbers and Sensor Serial Numbers of the flow meter.



Note: *If flowmeter communication gets disturbed during the PanaView Plus usage, we recommend to disconnect and reconnect with PanaView Plus again.*

1.5 Disconnect

To disconnect the flow meter, click the drop-down button on the top-right corner of the screen and click the **Disconnect** button.



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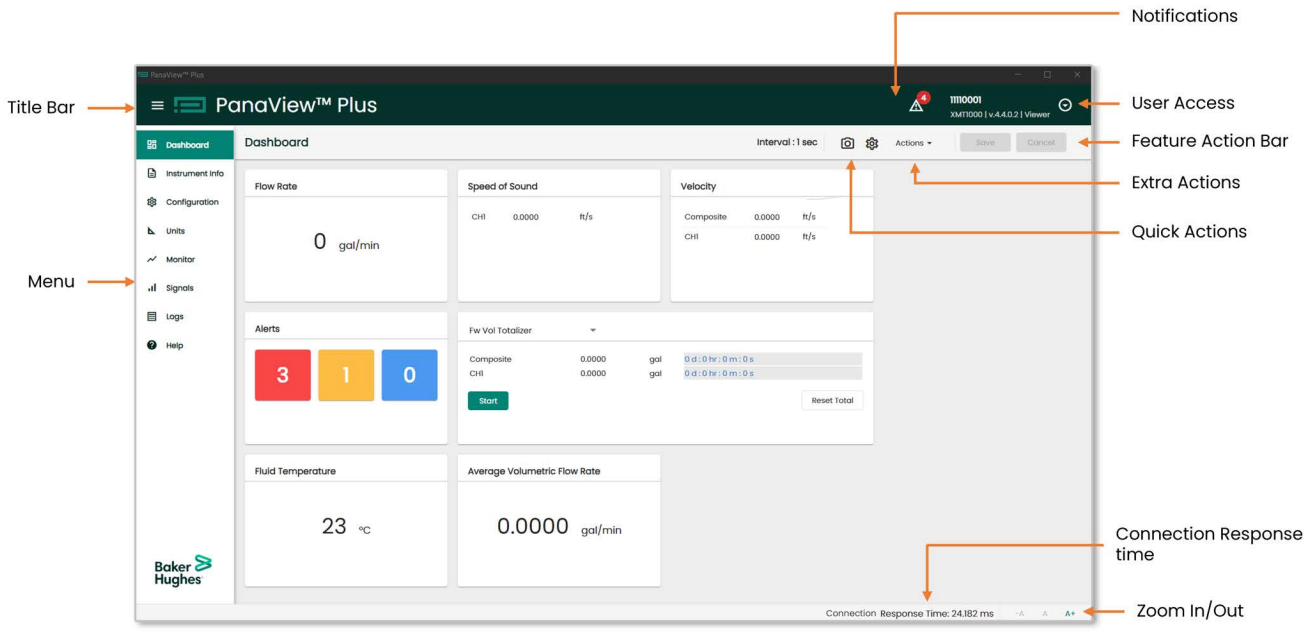
Chapter 2. Getting Started

This section is intended to help the user understand PanaView Plus menu items, screen structure, and navigation.

2.1 Application Layout

PanaView Plus has a user-friendly menu-driven interface that is split into the following sections:



Section	Purpose
Notifications	To display error notifications or a list of running or pending background processes
User Access	To allow the user to view or change their access level and to allow them to disconnect the meter
Feature Action Bar	To view actions related to the selected menu
Extra Actions	To view the additional actions in drop-down list
Quick Actions	To view actions applicable for the selected menu (e.g., screenshot or search function)
Connection Response Time	Average response time for every request software makes to flowmeter
Accessibility Controls	You can use **+** button for increasing font size and **–** to reduce the font size.

2.2 Background Processes

All the time-consuming processes in PanaView Plus will be running in the background while the user can continue to work on other tasks. The ongoing background processes will be indicated on the title bar.

2.2.1 Notifications

The following icons are used by PanaView Plus to display the notification:

 - indicates that a background process is currently running.

 - indicates that there is an instrument error.

2.3 Access Level

The PanaView Plus **Access levels** are based on the user roles supported by the connected flow meter. For further details on supported **Access levels** by the flow meter, refer to the respective flow meter's user manual. The PanaView Plus software application supports the following access levels for the meters:

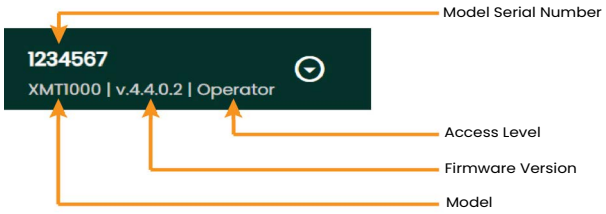
Instrument type	Access Level	Description
XMT1000	Viewer	User can only view current measurements
	Operator	User can configure general settings
	Admin	Administrator/Supervisor access
	Factory	Factory-level access
AT600	Viewer	User can only view configuration settings and measurements
	Operator	User can configure settings
GF/XGF/XGM/XGS 868	Viewer	User can view and configure settings
XMO2pro/XMTCpro	Viewer	User can only view current measurements
	User	User can only view configuration settings and measurements
	Admin	User can configure general settings
	SIL User (Only for SIL Instrument)	User can configure SIL related settings
	Factory/Services	User can edit all configuration

The user with the higher access level has access to all the variables and permission to change the parameter values that are accessible to lower access levels. For example, the user with **Admin** access can change the variables that are accessible by the **Operator/User** and **Viewer**.

Some features and configuration parameters are restricted based on the user access level. User must change the access level to a higher access to gain permission to change the parameters.

Note: *Default password for few access levels can be found in user manuals of the respective instruments.*

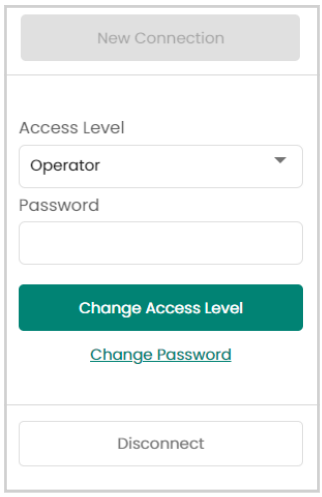
The User Access section displays the current access level, along with the Model Serial Number, Firmware Version, and Model as shown below.



The user can change the access level by using the drop-down button in the User access section. Select the appropriate access level, enter the password, and click the **Change Access Level** button.

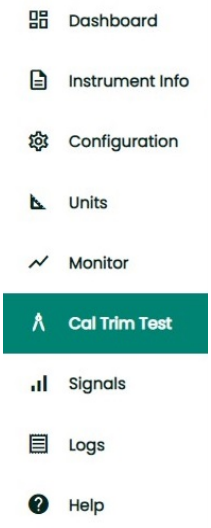
2.4 Change Password

User are advised to change the default password as soon as they receive the meter. Once the user logs in, **Change password** appears below the change access level button. Operator/User role can change its own password while Admin role can change its own as well as Operator/User role's password.



2.5 Menu

The menu located to the left of PanaView Plus can be used to navigate between major sections of the application.



Menu Item	Description
Dashboard	Displays the flow parameters as data cards.
Instrument Info	Displays the general instrument info, version info, system/board serial numbers, and sensor serial numbers.
Configuration	Allows the user to view/edit configuration parameters of the selected flow meter.
Units	Allows the user to view or modify the current measurement units.
Monitor	Allows the user to view and/or log real-time flow meter measurements.
Cal Trim Test	Assists the user in Speed of Sound (SOS) and I/O calibration ***Note:*** *This menu will be displayed only for the user with Operator or above access level.*
Signals	Assists the user in retrieving and saving signal data.
Logs	Assists the user in setting up or retrieving an instrument log.
Help	Provides information on contact, software version and copyright policies.

Chapter 3. Dashboard

A **Dashboard** is a collection of all Key Performance Indicator (KPI) for the connected flow meter. The measured parameters are collected into individual cards. The user can add or remove cards as per the requirement.

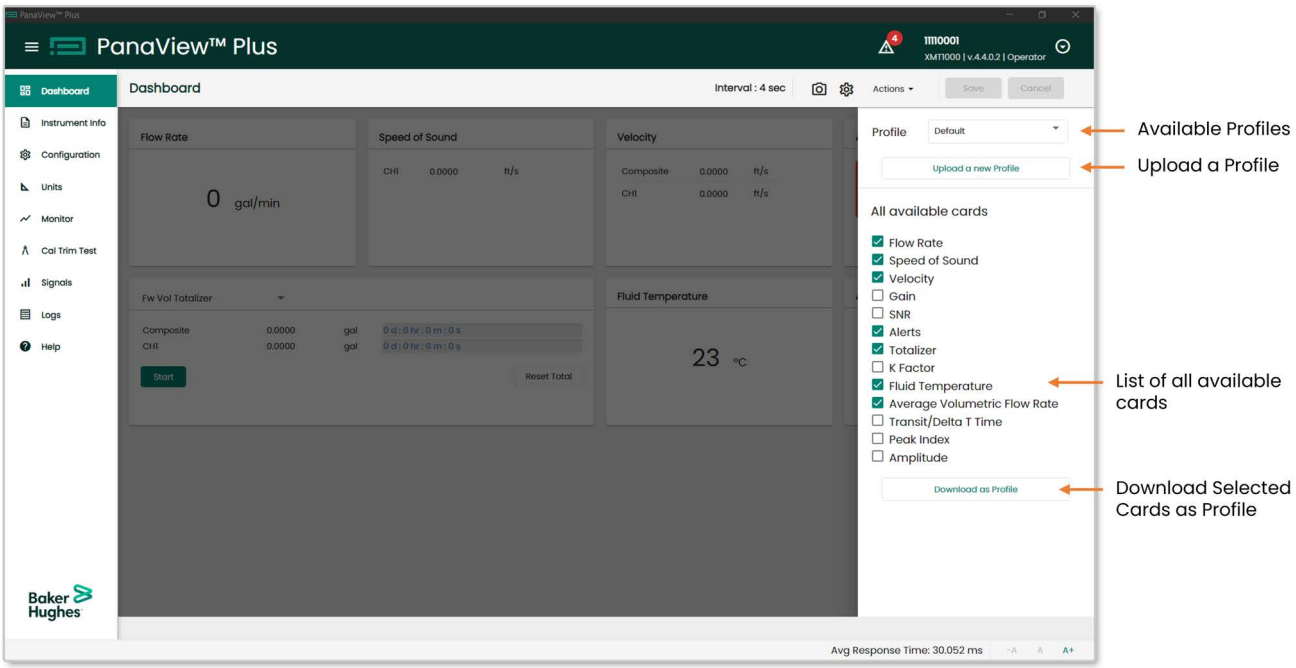
3.1 Adding and Removing Cards

The dashboard can be configured by adding or removing cards. The list of available cards can be opened by clicking the **Dashboard Settings** button. This selection is temporary and lasts only until the software is open. The user can download the dashboard screenshot by clicking the **Screenshot** button.

3.2 Dashboard Profiles

A list of selected cards is called a **Dashboard Profile**. A Dashboard profiles can be used to create pre-defined selection of cards. PanaView Plus has a default dashboard profile which is useful for all users. PanaView Plus also has a **Calibration** dashboard profile, which is a collection of cards used during flow calibration.

The user can download the Dashboard Profile and share it with other users. This downloaded profile can be uploaded to PanaView Plus. The software application will save this uploaded profile as a **Custom profile** and it will appear as an option in the dashboard profiles drop-down. Only one Custom Profile can be uploaded at a time. If a new profile is uploaded, then PanaView Plus will the replace existing profile with the new one.



3.3 Tolerances

Tolerances are used to determine if certain measurements on the dashboard are within the expected range. This range is called the **Tolerance range**. If the measurements are within the Tolerance range, then the text background is changed to “Green”. If it is outside of the expected range, then the text background turns to “Red”. These indications are convenient for monitoring purposes. The user can download current applied Tolerances from **Actions > Save Tolerance File**. These Tolerances can be edited as needed and uploaded back through the **Actions > Load Tolerance File** option.

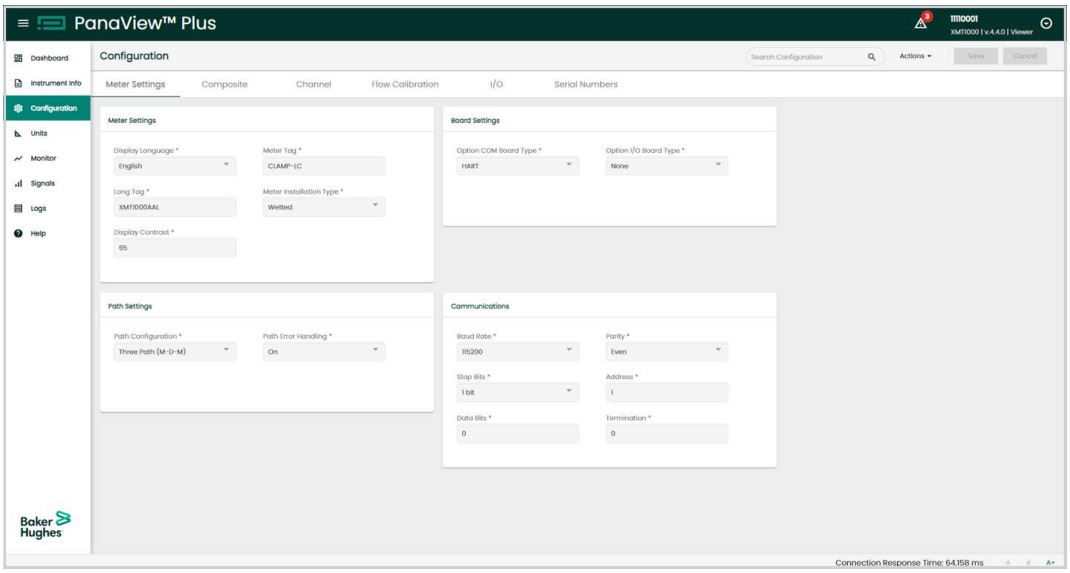
Tolerances are specific to the user role and can be uploaded only after logging in with any access level. If an **Operator** uploads a Tolerance file, then those files can only be applied for the **Operator**.

Tolerances are also specific to installation type (clamp-on or wetted). Currently, Tolerances are available for the parameters listed below:

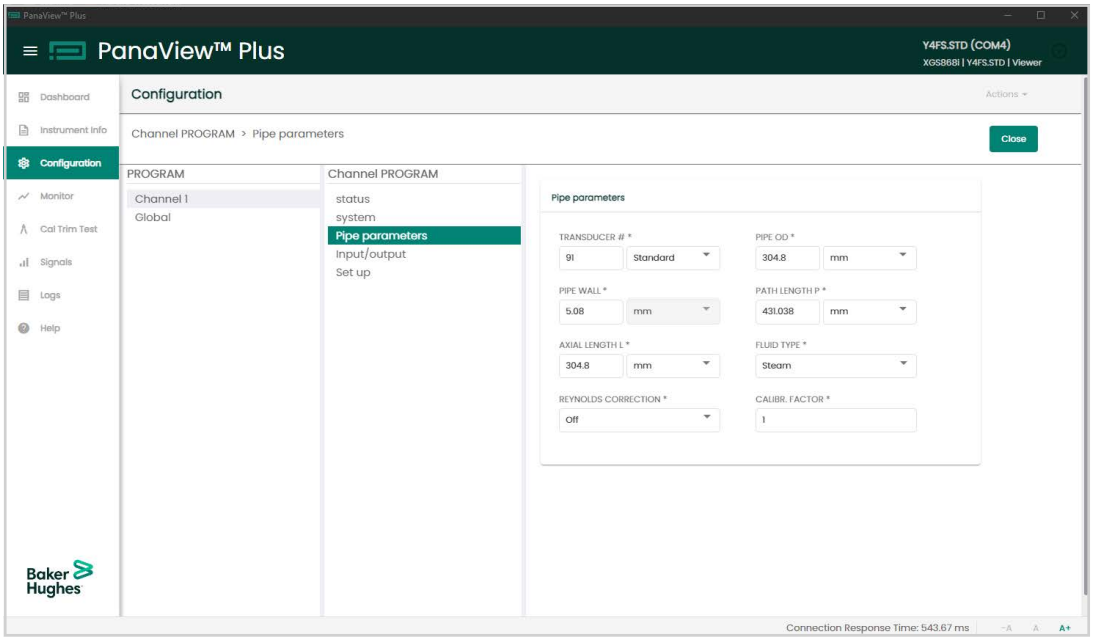
Category	LSL	USL	Units
SPEED_OF_SOUND (Spread between channels)	1.5	NA	ft/s
SNR	1.5	NA	
GAIN	0	35	dB
ACTIVE_TW_UP_DN	78	117	µs
ACTIVE_TW_GAIN	-6	20	dB
ACTIVE_TW_SNR	0	NA	
PEAK_INDEX	400	700	
PEAK_INDEX (For 868s)	100	1000	
AMPLITUDE	14	32	
SIGNAL_QUALITY	-400	400	Should be lesser than -400 or greater than 400
SIGNAL_STRENGTH	55	75	

Chapter 4. Configuration

The **Configuration** menu allows the user to view and edit the configuration parameters of a connected flow meter. Once the user writes configuration to the flow meter, changes are immediately reflected in other menu options (like Monitor, Signal, etc.). The Configuration menu also has other useful tools like Site File download/upload, reset configuration, etc.



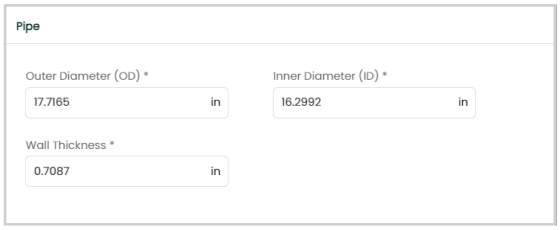
For 868 meters, the configuration appearance is different. The menu hierarchy is displayed in a form of a chain in columns and parameters are displayed together for ease of use.



4.1 Reading and Writing Configuration Values

Configuration parameters are categorized under different groups and sections according to their context for easy navigation. This grouping might be different as compared to the groups on the flow meter Graphical User Interface (GUI).

When a parameter is edited, it is immediately written ("committed") to the meter. If the value is successfully written to the meter, the parameter will be highlighted in yellow to indicate that the value has been changed successfully. The user must **save** the configuration change to reflect the change permanently in the flow meter.



The **Save** and **Cancel** buttons on the feature tool bar are only enabled if the configuration parameters are changed by the user. The user must **save** changed configurations to the flow meter to reflect those changes permanently. If the meter is disconnected without saving the changes, the changes will be canceled.

In 868s, once user starts editing configuration, flowmeter internally starts a configuration session. PanaView Plus restricts the access to other features till the session is alive. A **Close** button on the feature tool bar ends the session. Whenever user makes changes to values, they are sent to the flowmeter, but the flowmeter saves these values when the session is closed. If user changes configuration values, the title of the button is changed to **Save & Close** to indicate change of values.

For GF868 flowmeter, new values of the parameters are saved into working profile. User is also presented with choice of a profile in which changes can be saved additionally.

4.2 Configuration Site File

Site File is a collection of all the configuration parameters compiled into a single file. The user can download the Site File in the Microsoft Excel format for ease of view.

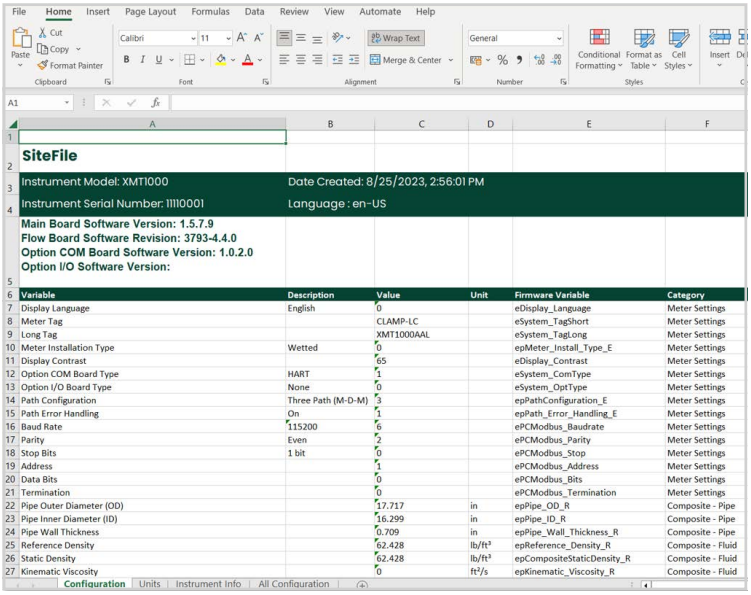
4.3 Download and Upload Site File

To download the existing configuration as a Site File, go to **Actions > Save Site File**.

IMPORTANT: The user must **save** changed configuration before downloading the Site File.

Site Files are very useful to capture a state of flow meter configuration. These captured states can be restored if needed by uploading these Site Files. To upload a Site File, go to **Actions > Load Site File**. The user must be logged-in to upload a site file. Only the parameters accessible to the user are loaded from the Site File and written into the flow meter.

In 868 flowmeters, site files can be downloaded in two different formats, SIT format & PRT (printable/readable). But only SIT format files are allowed for upload.



SiteFile

Instrument Model: XMT1000	Date Created: 8/25/2023, 2:56:01 PM
Instrument Serial Number: 11110001	Language : en-US

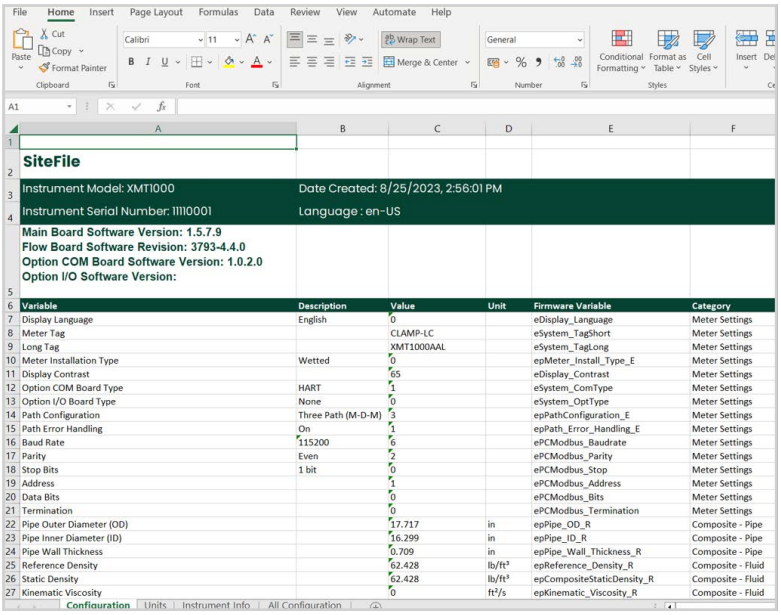
Main Board Software Version: 1.5.7.9
Flow Board Software Revision: 3793-4.4.0
Option COM Board Software Version: 1.0.2.0
Option I/O Software Version:

Variable	Description	Value	Unit	Firmware Variable	Category
Display Language	English	0		eDisplay_Language	Meter Settings
Meter Tag		CLAMP-LC		eSystem_TagShort	Meter Settings
Long Tag		XMT1000AAL		eSystem_TagLong	Meter Settings
Meter Installation Type	Wetted	0		epMeter_Install_Type_E	Meter Settings
Display Contrast		65		eDisplay_Contrast	Meter Settings
Option COM Board Type	HART	1		eSystem_ComType	Meter Settings
Option I/O Board Type	None	0		eSystem_OptType	Meter Settings
Path Configuration	Three Path (M-D-M)	3		epPathConfiguration_E	Meter Settings
Path Error Handling	On	1		epPath_Error_Handling_E	Meter Settings
Baud Rate	115200	6		ePCModbus_Baudrate	Meter Settings
Parity	Even	2		ePCModbus_Parity	Meter Settings
Stop Bits	1 bit	0		ePCModbus_Stop	Meter Settings
Address		1		ePCModbus_Address	Meter Settings
Data Bits		0		ePCModbus_Bits	Meter Settings
Termination		0		ePCModbus_Termination	Meter Settings
Pipe Outer Diameter (OD)		17.717	in	epPipe_OD_R	Composite - Pipe
Pipe Inner Diameter (ID)		16.299	in	epPipe_ID_R	Composite - Pipe
Pipe Wall Thickness		0.709	in	epPipe_Wall_Thickness_R	Composite - Pipe
Reference Density		62.428	lb/ft³	epReference_Density_R	Composite - Fluid
Static Density		62.428	lb/ft³	epCompositeStaticDensity_R	Composite - Fluid
Kinematic Viscosity		0	ft²/s	epKinematic_Viscosity_R	Composite - Fluid

4.3.1 Partial Site File Upload

If required, the user can upload few parameters from the Site File instead of changing all parameters. To do a partial upload, open the “All configuration” sheet in a downloaded Site File and change the value of the “Partial Upload” column cell to “TRUE” against the desired parameters. If Partial Upload parameters exist, then PanaView Plus will only upload the partial parameters.

Note: *Files generated in local languages can be only uploaded with PanaView Plus running with same language. For example, a site file generated when user was operating in French language (a Site File in French), can be uploaded only when user opens up PanaView Plus in French language. Similarly, a Site file in Chinese Simplified can not be uploaded while using PanaView Plus in French Language. Only English Site Files can be uploaded when user is using PanaView plus in any language.*



SiteFile

Instrument Model: XMT1000	Date Created: 8/25/2023, 2:56:01 PM
Instrument Serial Number: 11110001	Language : en-US

Main Board Software Version: 1.5.7.9
Flow Board Software Revision: 3793-4.4.0
Option COM Board Software Version: 1.0.2.0
Option I/O Software Version:

Variable	Description	Value	Unit	Firmware Variable	Category
Display Language	English	0		eDisplay_Language	Meter Settings
Meter Tag		CLAMP-LC		eSystem_TagShort	Meter Settings
Long Tag		XMT1000AAL		eSystem_TagLong	Meter Settings
Meter Installation Type	Wetted	0		epMeter_Install_Type_E	Meter Settings
Display Contrast		65		eDisplay_Contrast	Meter Settings
Option COM Board Type	HART	1		eSystem_ComType	Meter Settings
Option I/O Board Type	None	0		eSystem_OptType	Meter Settings
Path Configuration	Three Path (M-D-M)	3		epPathConfiguration_E	Meter Settings
Path Error Handling	On	1		epPath_Error_Handling_E	Meter Settings
Baud Rate	115200	6		ePCModbus_Baudrate	Meter Settings
Parity	Even	2		ePCModbus_Parity	Meter Settings
Stop Bits	1 bit	0		ePCModbus_Stop	Meter Settings
Address		1		ePCModbus_Address	Meter Settings
Data Bits		0		ePCModbus_Bits	Meter Settings
Termination		0		ePCModbus_Termination	Meter Settings
Pipe Outer Diameter (OD)		17.717	in	epPipe_OD_R	Composite - Pipe
Pipe Inner Diameter (ID)		16.299	in	epPipe_ID_R	Composite - Pipe
Pipe Wall Thickness		0.709	in	epPipe_Wall_Thickness_R	Composite - Pipe
Reference Density		62.428	lb/ft³	epReference_Density_R	Composite - Fluid
Static Density		62.428	lb/ft³	epCompositeStaticDensity_R	Composite - Fluid
Kinematic Viscosity		0	ft²/s	epKinematic_Viscosity_R	Composite - Fluid

4.3.2 Dependent Parameters

A flow meter is a complex device, and a large number of parameters exist for configuration that can have an effect on flow measurements. To avoid the possibilities of mistakes in the configuration of parameters, PanaView Plus automatically presents only relevant parameters to the user based on certain parameter (parent parameter) choices.

For example, for the XMT1000 flow meter, when Tracking Mode is OFF on **Composite > Fluid Tab**, flow meter can work with several fluids. But if the **Tracking Mode** is **ON**, then the flow meter only supports a few types of fluids. The same will be reflected on the drop-down menu to select fluids.

Many such inter-dependent relationship exists on PanaView Plus to help avoid mistakes during configuration.

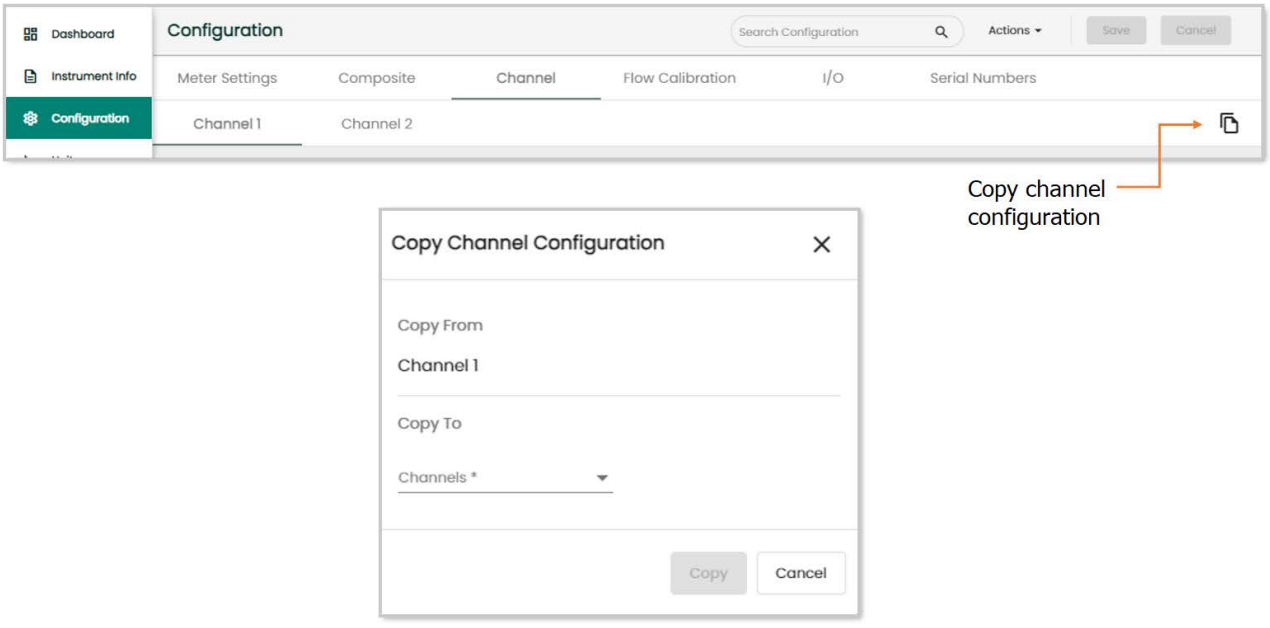
4.4 Search Configuration

The Search Configuration functionality is used to find the location of a parameter in the hierarchy of all available parameters. The user can start typing the name or description of the parameter in search box provided on the feature tool bar, and a list of probable parameters will be presented. If the user selects a parameter from that list, PanaView Plus will automatically take them to the tab where the selected parameter exists.

Note: *During a search if the selected parameter is not visible after* PanaView Plus *navigates to a tab, it might have been hidden due to parent parameter inter-dependency. See Chapter 4.3.2, Dependent Parameters.*

4.5 Copy Channel Configuration

Since there are many parameters to configure for a channel, PanaView Plus has a **Copy Channel Configuration** option to replicate the settings of one channel to another.



The **Copy Channel Configuration** option is only available if the user is logged in (with access level Operator or above) and is currently on the Channel Tabs.

4.6 Reset Commission and Reset Factory Configuration

The flow meter can be reset to its original configurations using these options:

- Reset Commission settings will restore the last settings done via an **Admin** account.
- Reset Factory settings will restore the last settings done via **Factory** settings.

After the reset, all changed parameters will be highlighted in yellow for easy identification.

Note: *Search, Copy Channels and Reset features not supported for 868 flowmeters.*

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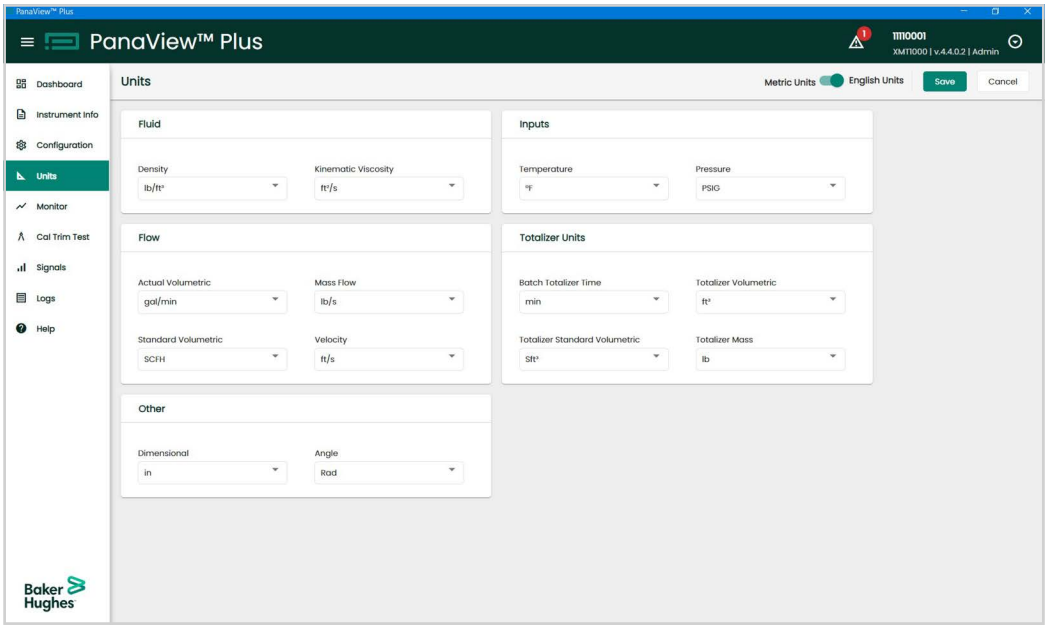
Chapter 5. Units

The **Units** menu allows the user to view or modify the currently selected/configured parameters units. The user must have appropriate access level (Operator or above) to modify any measurement units.



PanaView Plus supports both **Metrics Units** and **English Units**. The user can change each unit individually or change the whole unit system using the toggle switch.

Supported units in the software application are the units that are supported by the connected flow meter. For the list of supported units, please refer to the corresponding flow meter's user manual.

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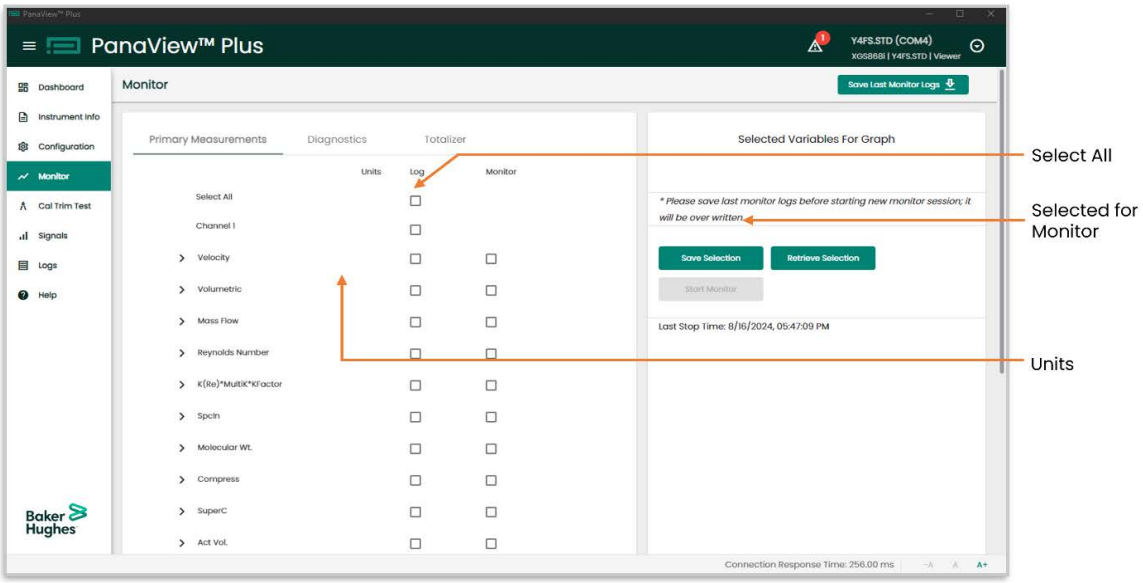
Chapter 6. Monitor

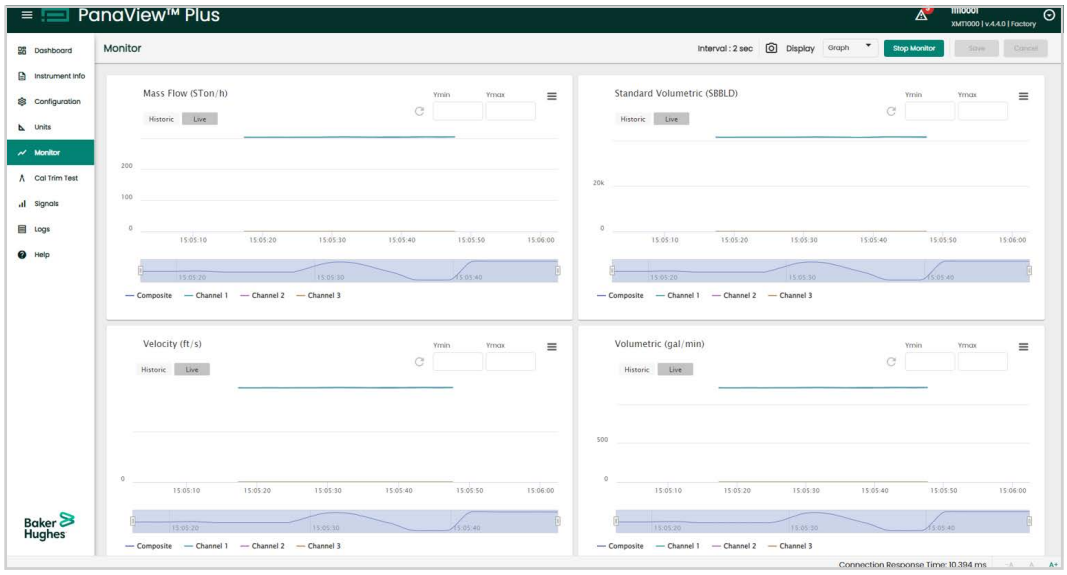
The **Monitor** menu allows the user to view and/or log real-time flow meter measurements. The flow meter parameters are categorized/grouped by their types so that the user can choose the variables for graphing and/or logging. The log parameters will be captured into a .csv file, whereas the monitor parameters will be displayed on the graph. All parameter values are updated once a request for fetching data is fulfilled. Fastest possible data fetch interval is 2 Seconds. Current fetch interval shall be displayed on the title bar. A maximum of **3 days** of data will be stored as a log or displayed on graph under monitor menu. The older data will be replaced with the new data after 3 days.



Note: *The user can select up to four groups to be monitored. Monitoring multiple items may take longer than the selected interval as it depends on the communications baud rate.*

6.1 Graph

The selected groups will be displayed in a separate graph while monitoring.



6.1.1 Live Data

Live Data captures the last 10 minutes of selected monitor parameters after the monitor is started. The data on the graph will be updated by replacing the older data.

6.1.2 Historic Data

Historic Data captures the data from when the monitor is started to the current timestamp; a maximum of the last 3 days of data will be shown.

6.1.3 Switch View

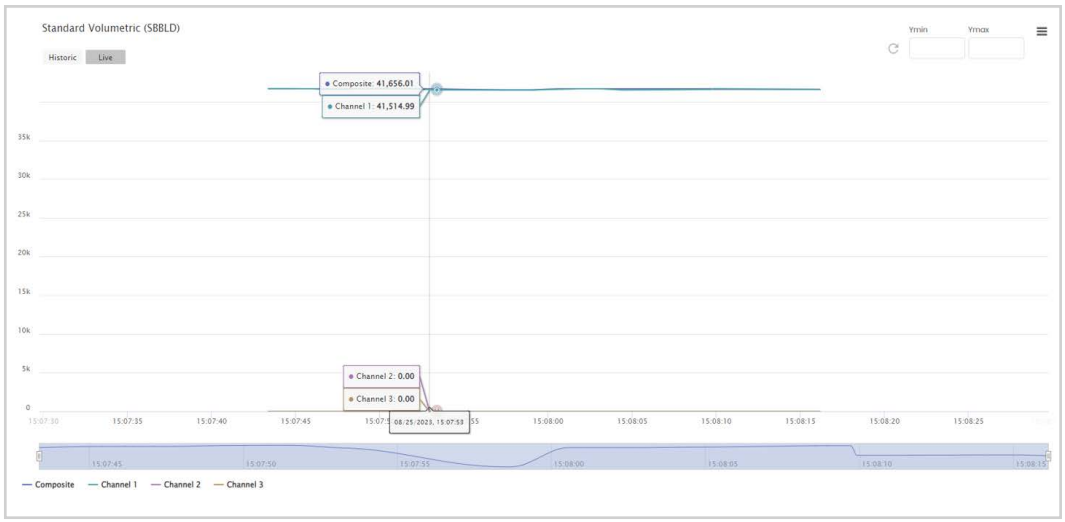
Switch View is a drop-down menu that helps the user to switch between graph and log view.

6.1.4 Graph Menu

A **Graph Menu** has the functionality to display a single graph in full-screen mode. To exit from full-screen mode, the user must press **Esc** button or by clicking the exit option in the menu.

6.1.5 Zoom/Pan Navigator

PanaView Plus allows the user to zoom in by clicking on the center line of the graph and drag it to specify the time limit. The user can zoom out by clicking **Reset Zoom** button. In historic section, zooming in with drag will only display from selected section. PAN after drag zoom, will not have desired effect.



To pan the graph, click and drag the button on the x-axis.

6.1.6 Y-Min and Y-Max Settings

User can also set y-range of the chart by entering desired values for y-min and y-max.

6.1.7 Legends

Legends represent each parameter displayed on the chart. The user can click on a Legend to show or hide chart line of the parameter.

6.2 Log

Selected Log parameters values with timestamps are displayed in tabular format on the Log view. After stopping the monitor session, all these logs captured into a zipped .csv file. To download the file, go to **Actions > Save Last Monitor Logs**.

IMPORTANT: Once the new monitor session starts, the old logs will be replaced with new one.

IMPORTANT: Please note that while monitor session is in progress, changes in configuration will significantly affect the monitor logs.

6.3 Save and Retrieve Selection

The user can download a selection of parameters by clicking the **Save Selection** button. This downloaded selection can be shared with other users and uploaded back to PanaView Plus by clicking the **Retrieve Selection** button.

[no content intended for this page]

Chapter 7. Calibration (Cal Trim Test)

The Cal Trim Test menu helps the user to calibrate inputs and outputs (including HART and optional I/O boards) of the flow meter. This menu shall appear only for the user with Operator or above access level. In addition, PanaView Plus also supports Speed of Sound (SOS) calibration for the flow meters.

The Cal Trim Test screen shows and hides calibration options based on the values of I/O parameters saved in the connected flow meter.

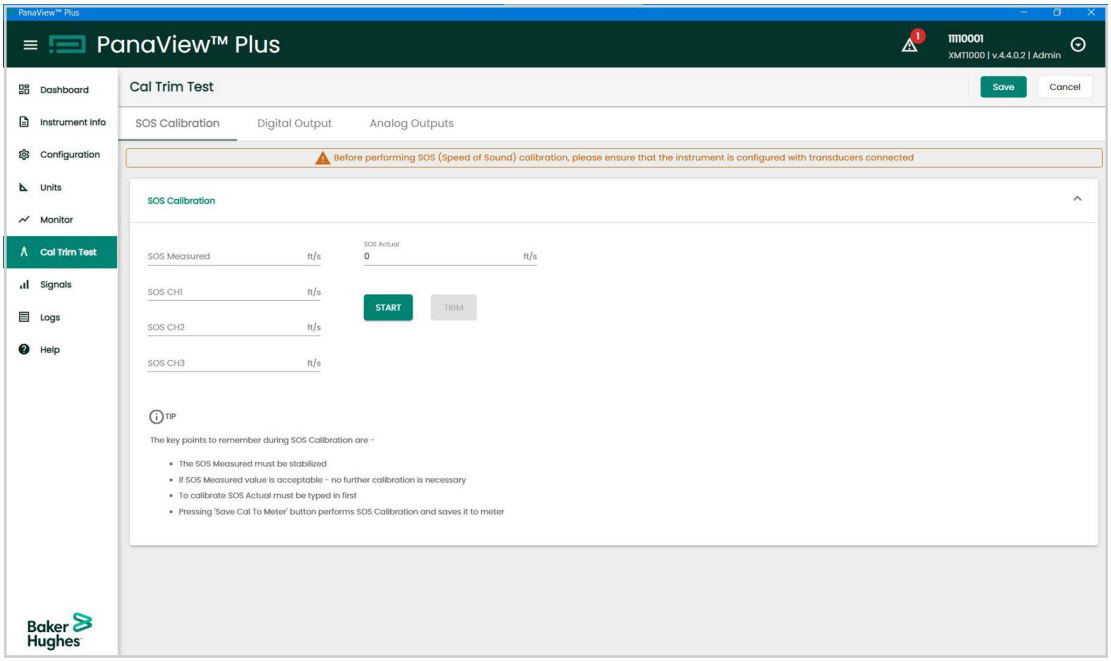
For 868s, please refer to *Section 7.4* onwards.

7.1 Speed of Sound (SOS) Calibration

Performing SOS calibration is a straightforward process.

Clicking the **Start** button, the screen will display the live value of SOS measured for all the composite and active channels. After all the measured values of SOS are displayed and stabilized, the user can enter the actual value of SOS for the configured fluid and click the **TRIM** button. PanaView Plus will actively suggest the acceptable values based on current configuration.

If the measured value of SOS is accepted by the flow meter, then no further calibration is necessary.



IMPORTANT: Once trimmed, each calibration needs to be saved in the flow meter. Ensure to **save** changes after calibration.

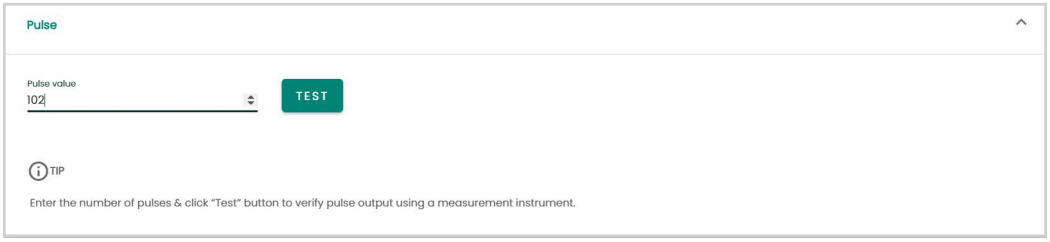
7.2 Digital Output

The Digital Output allows the user to a perform Digital Output test (i.e., to test pulse, frequency and alarm). To view/check the output values, external devices such as an oscilloscope, frequency meters are needed. It is assumed that before these tests are run, the user has gone through the user manuals of connected meters and made all the proper connections.

It is important to ensure that the source is connected to input before conducting a Digital Output test. The PanaView Plus Cal Trim Test screen displays these important steps.

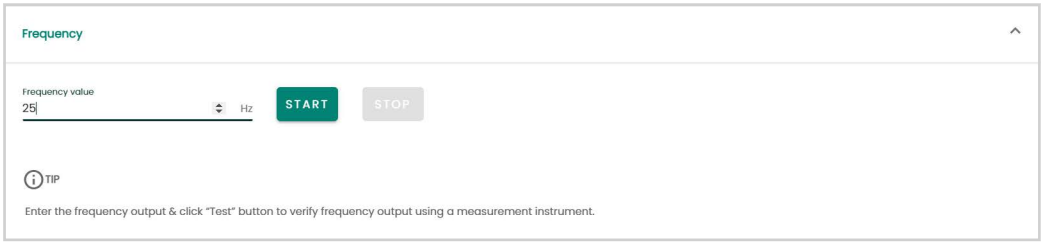
7.2.1 Pulse

To perform a test on the pulse output, enter a value of pulse between 0 to 10,000 and click the **TEST** button



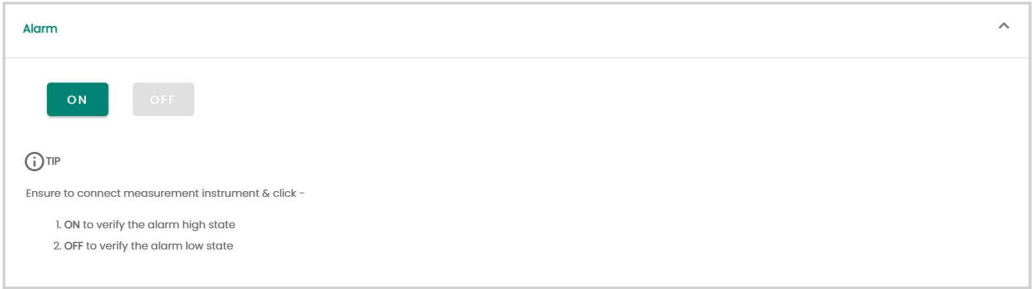
7.2.2 Frequency

To perform a test on the frequency output, enter the value of frequency and click the **START** button. To stop the frequency test, click the **STOP** button.



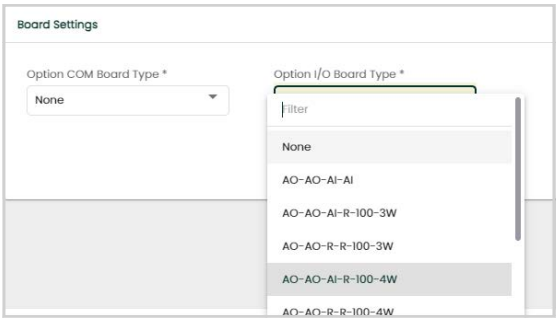
7.2.3 Alarm

To perform a test on alarm, set the alarm **ON** or **OFF**.

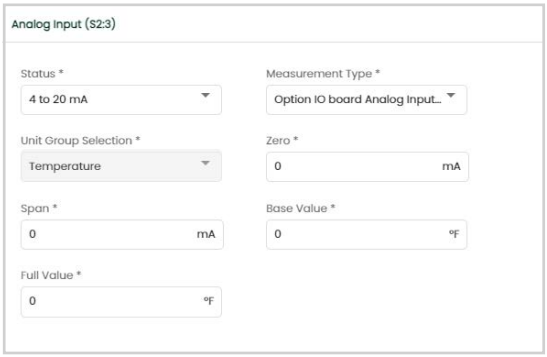


7.2.4 Analog Input Calibration

All **Analog Input Calibration** will appear under this tab. This tab will only be displayed if connected flow meter is configured to have an analog input. This tab will also display analog inputs on an optional I/O board.

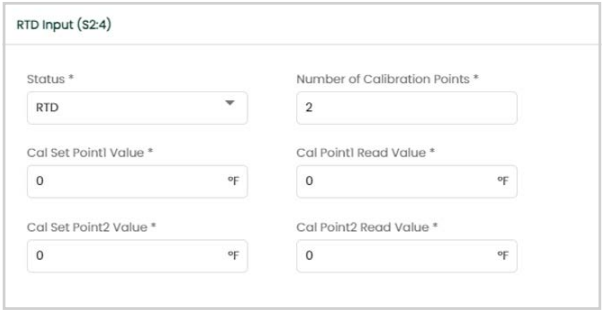


On each 4 mA or 20 mA card, the user needs to start calibration so that PanaView Plus can check what the meter is reading from the connected input source. When the input reading stabilizes, the user can trim the reading and PanaView Plus will communicate that to the flow meter.

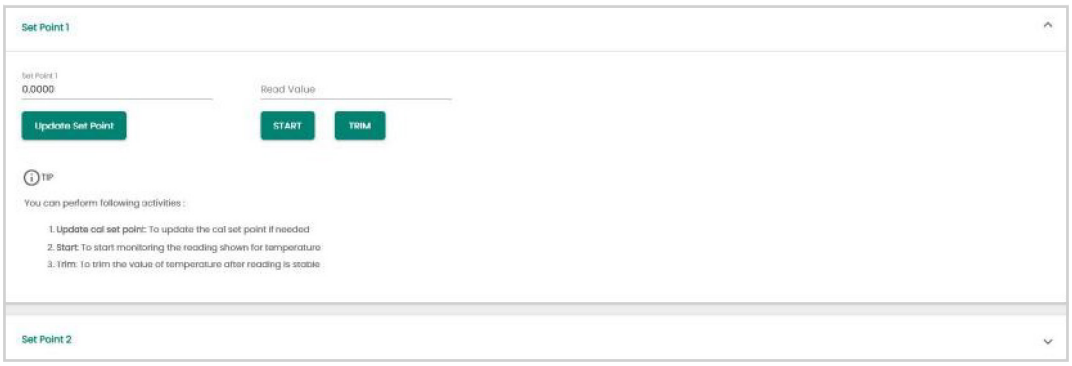


RTD input calibration can be performed if the optional I/O board value is set to the option that has the letter R indicating that RTD option board. The option board should also be physically installed into the flow meter. The screen for RTD calibration will be set based on the total number of Set Points from the configuration functionality.

The Number of **Calibration Points** is set as 2.

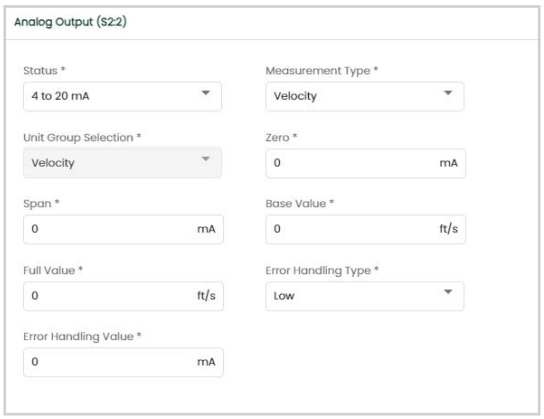


The user will see the 2 set point screen sections in the RTD calibration capability.



7.3 Analog Output Calibration

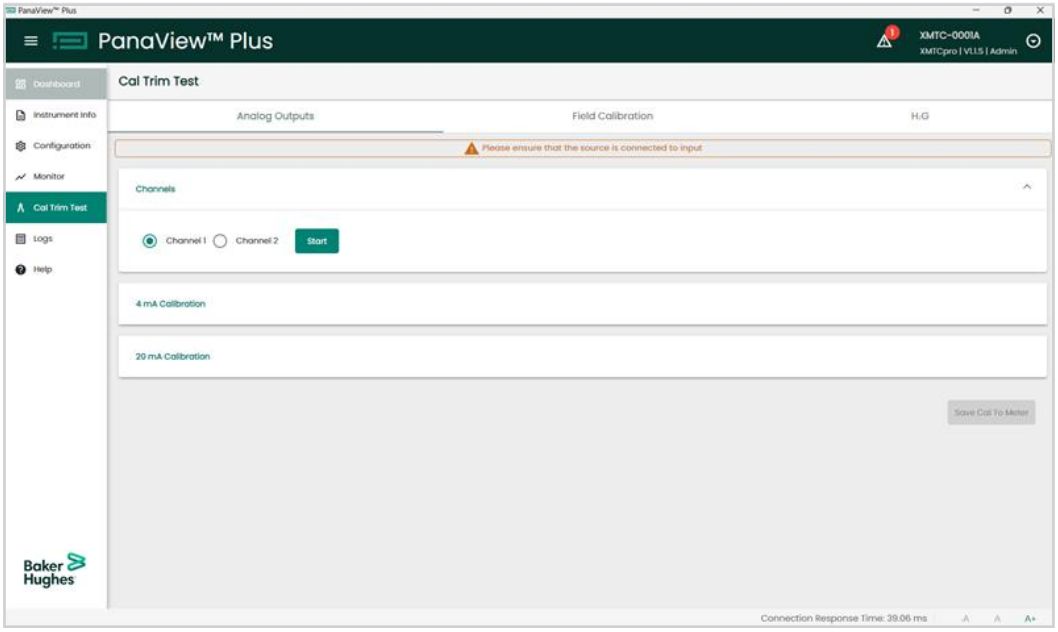
All **Analog Output Calibration** will appear under this tab, including HART analog output and optional analog outputs.



To perform the **Analog Output Calibration**, the flow meter needs to be configured for analog output and outputs need to be switched **ON** for 4-20 mA output.

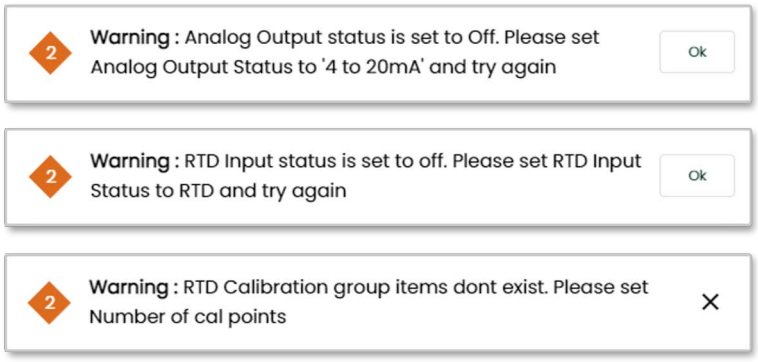
If the above conditions match, then this tab will allow the user to perform 4-20 mA calibration and conduct the percentage test.

For XMO2pro/XMTCpro, user needs to choose the channel before starting Analog output calibration.



IMPORTANT: To start the calibration, the section should be enabled from the Configuration menu. PanaView Plus will notify the user if any section is not enabled. Following are some sample notifications:

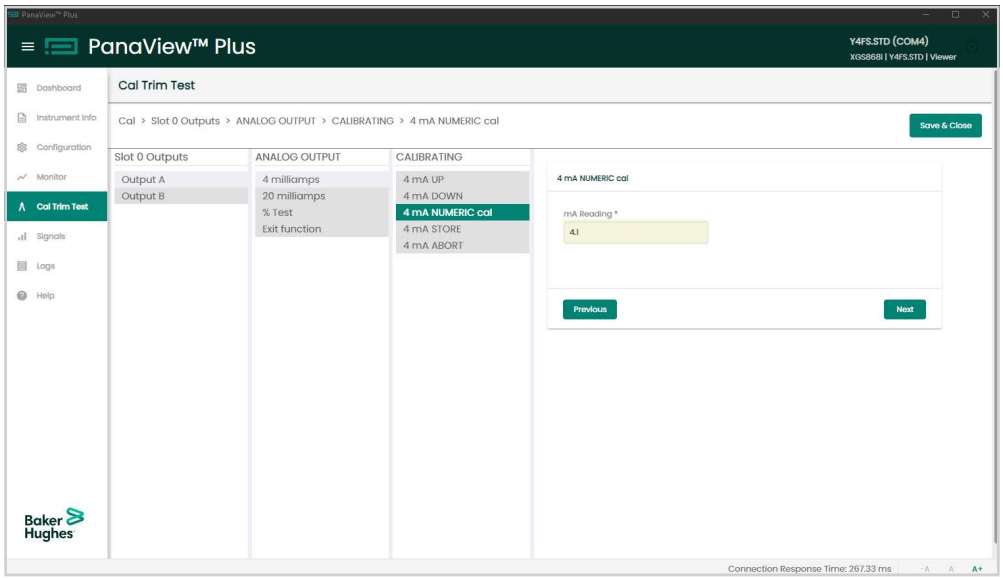
Understanding these important notification messages is easy if they are read carefully.



It is very important to click the **Save** button for the flow meter to calibrate successfully. To cancel the current state of calibration, click the **Cancel** button.

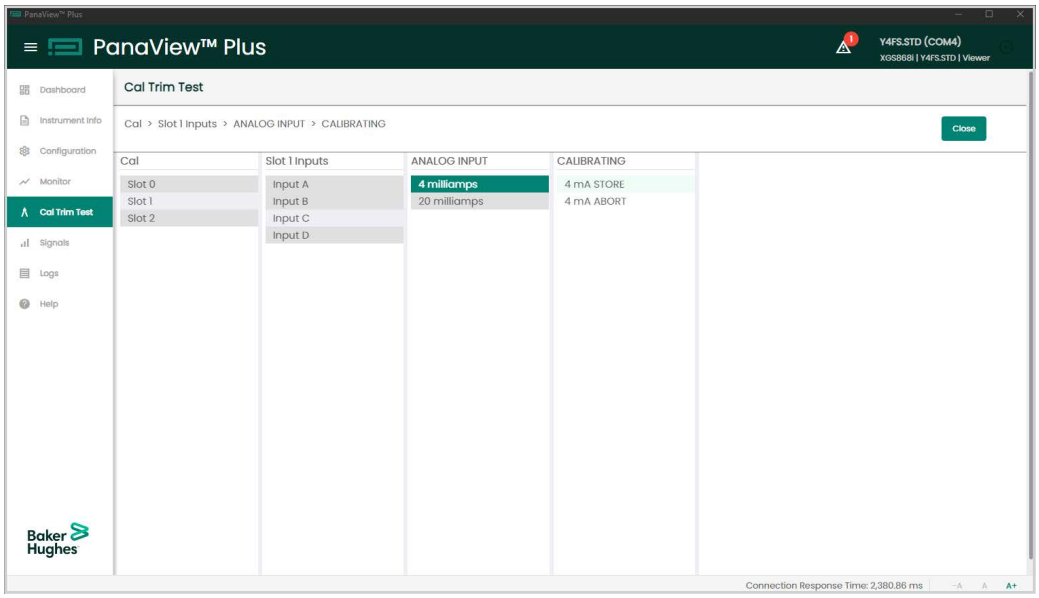
7.4 Analog Output Calibration for 868s

For 868s, calibration section is also displayed in hierarchical format. User needs to navigate to corresponding **calibration section**. User can increase or decrease the current output using 4 mA up and 4 mA down respectively. User can also calibrate output by adding exact measured output in **4 mA Numeric cal**. Once the calibration is done, user needs to press **4 mA Store** to store and exit, or **4 mA Abort** to cancel and exit.



7.5 Analog Input Calibration for 868s

To calibrate the analog inputs user needs to ensure that correct configured I/O card is installed in the flowmeter. Connect the current source to input pins on flowmeter. In **calibration section**, navigate to the **Analog Input section**. Once 4 mA current from current source is started, press **4 mA Store** and it will calibrate the 4mA input. Repeat the same process for 20mA input as well.

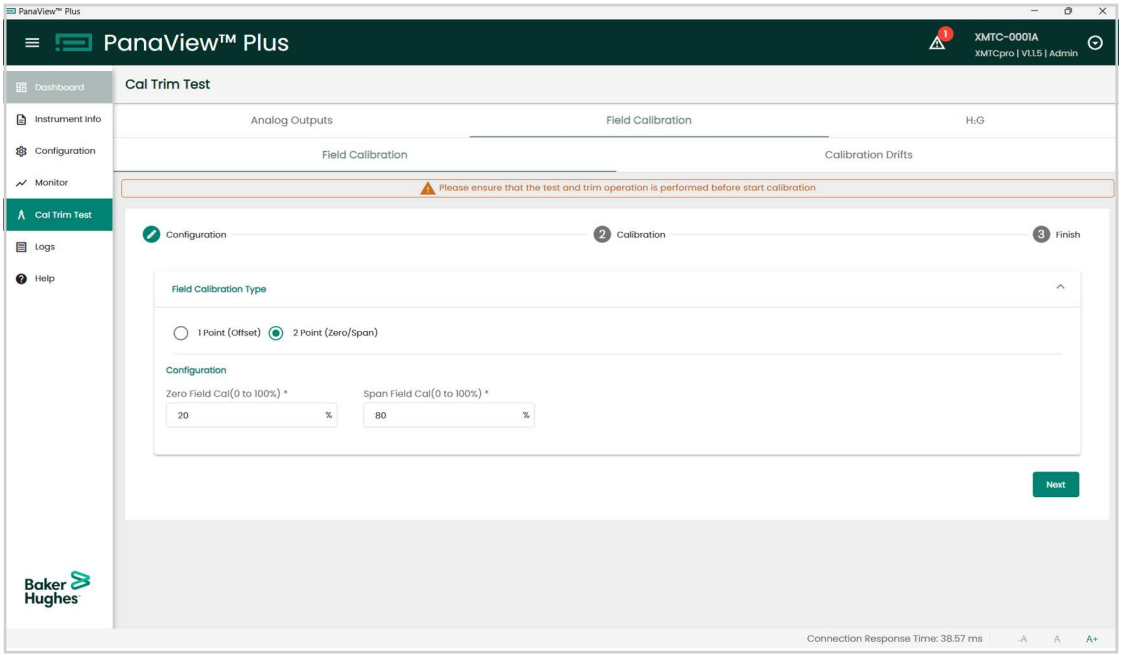


Note: *While calibrating 868s, ensure that calibration session is closed after calibration procedure is aborted or completed.*

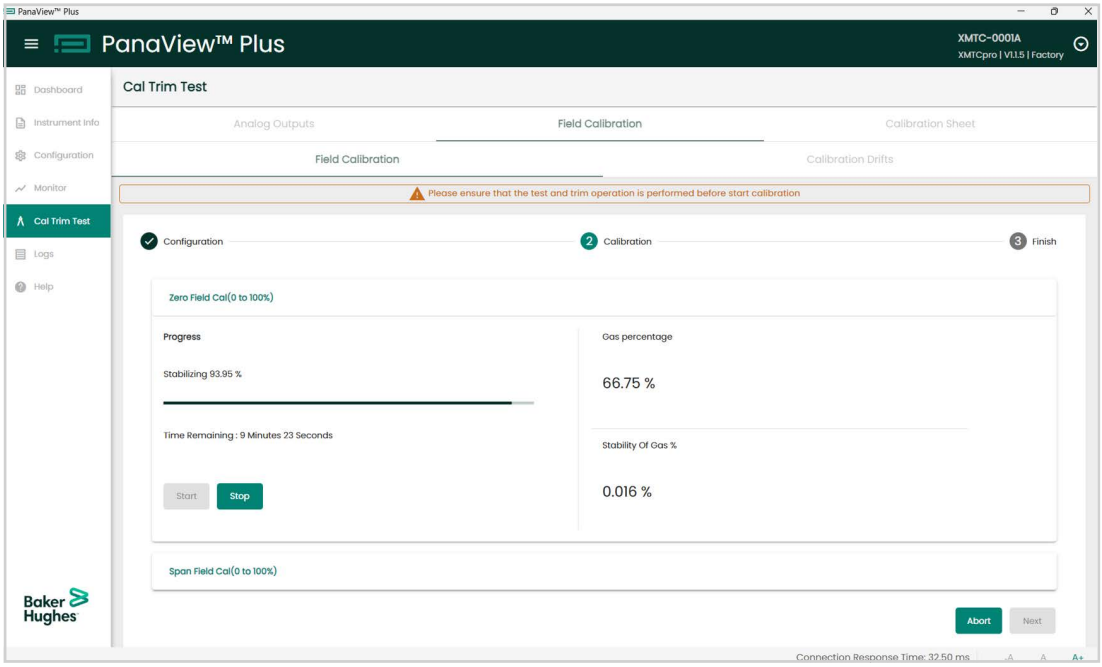
7.6 Field Calibration for XMO2pro/XMTCpro Instruments

Field calibration for XMO2/XMTC devices can be carried out with following steps:

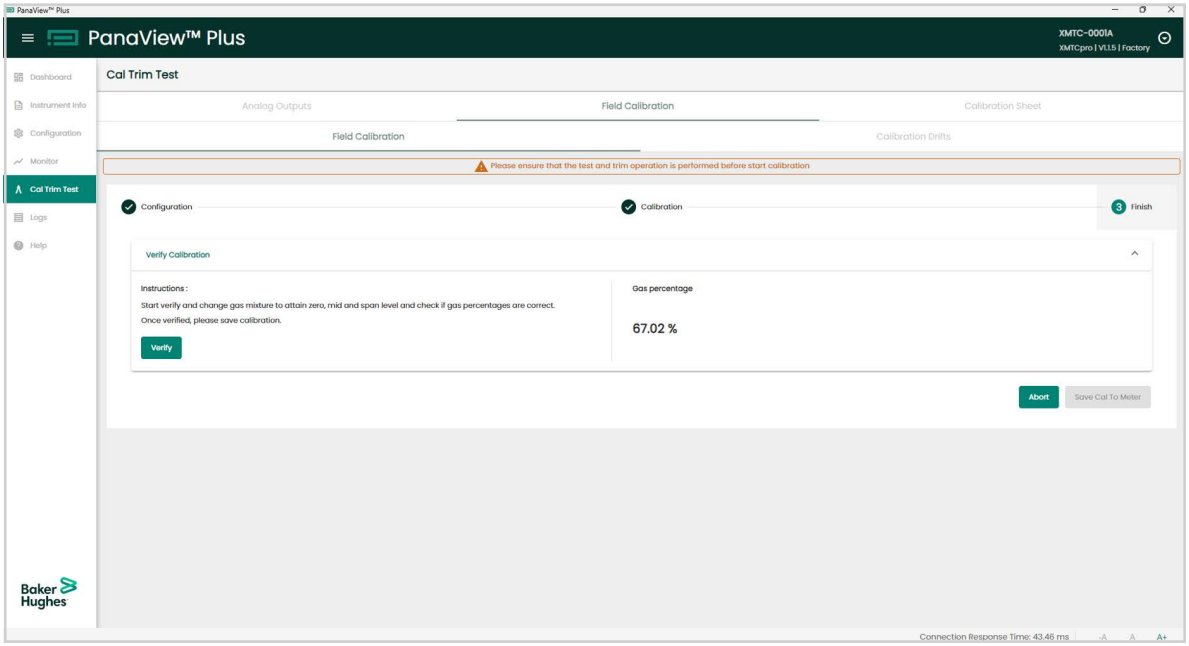
1. Choose calibration type (**1 point/zero cal** or **2 point/zero-span cal**).
2. Enter the value expected zero/zero and span points (expected range).



3. Press **Next** for calibration, adjust the gas composition to achieve the zero point and **Start** the calibration. PanaView Plus will wait for 10 minutes so that the gas mixture can settle down.
4. Once the wait time is over, PanaView Plus will calibrate the zero-calibration point.

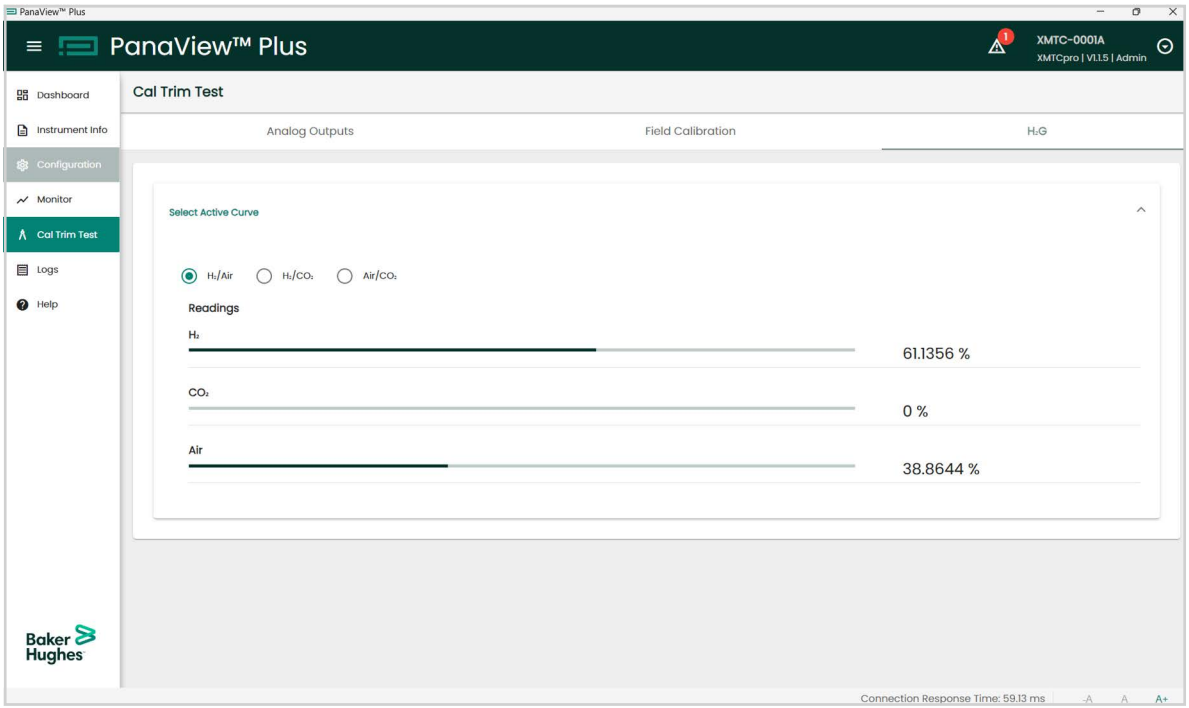


5. For Span calibration, repeat the steps 3 and 4 in **Span calibration** section.
6. Press **Next** for verifying the newly calibrated range of the device.
7. Press **Verify** to start the verification process. Change the gas mixture to attain zero, mid and span level and check if gas percentages are correct. Once verified, please **Save Calibration**.
8. During the field calibration **Abort** will cancel the whole calibration process.



7.7 XMTCpro - H2G Active Curves

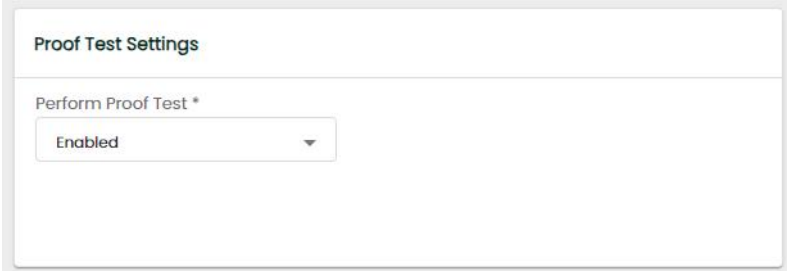
H2G active curves can be viewed live by choosing the gas compositions.



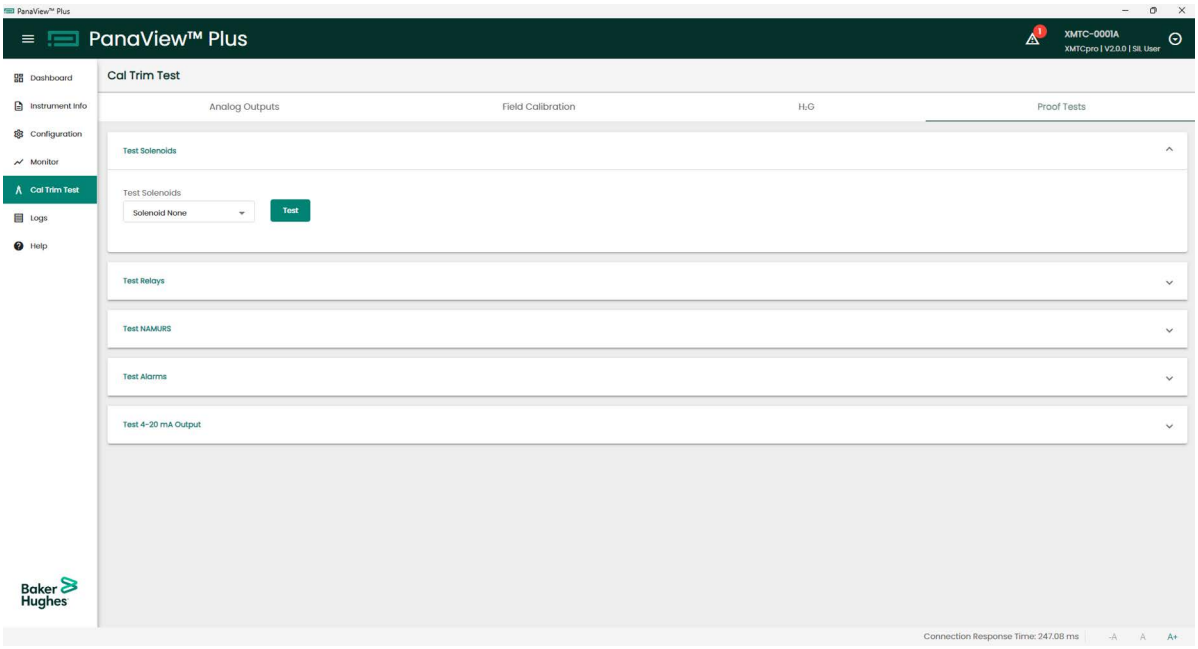
7.8 XMO2pro/XMTCpro - SIL Proof Tests

For XMO2pro or XMTCpro SIL device proof tests can be performed in **Cal Trim Test > Proof Test** section.

1. First login as a **SIL User**.
2. Go to **Configuration > I/O > Perform Proof Test**. Switch to **Enable**.



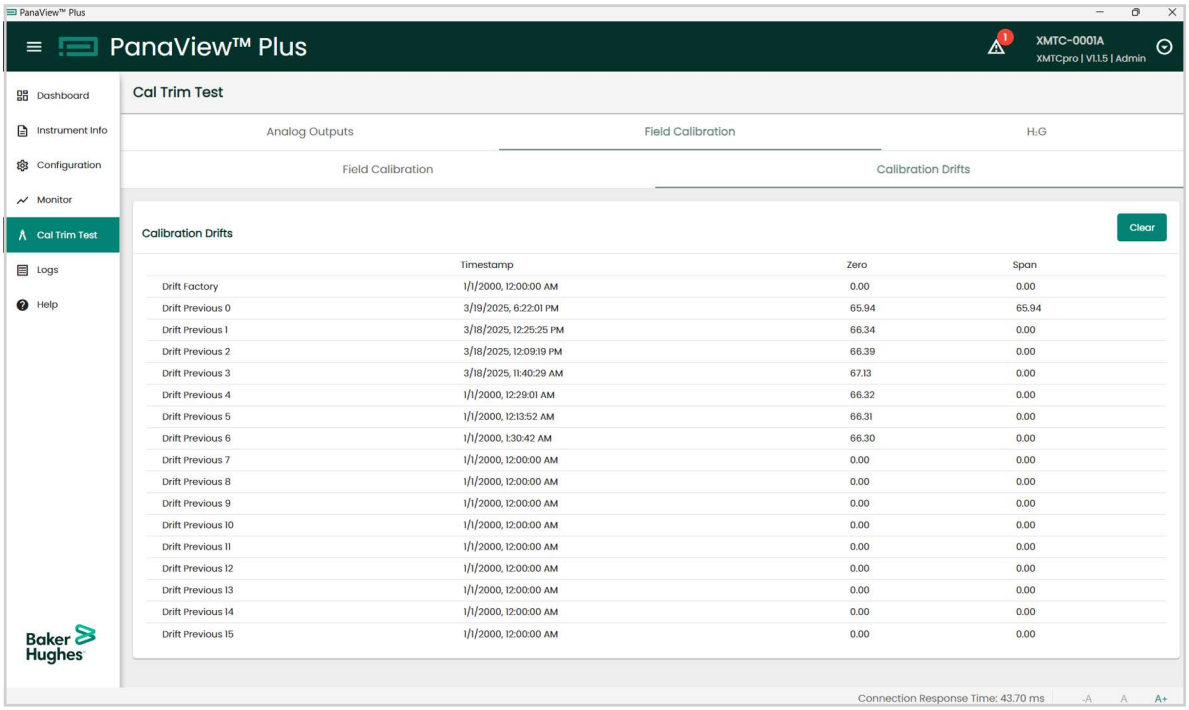
3. Once the above setting is enabled, Proof tests are made available in **Cal Trim Test**.
4. To execute each of the tests,

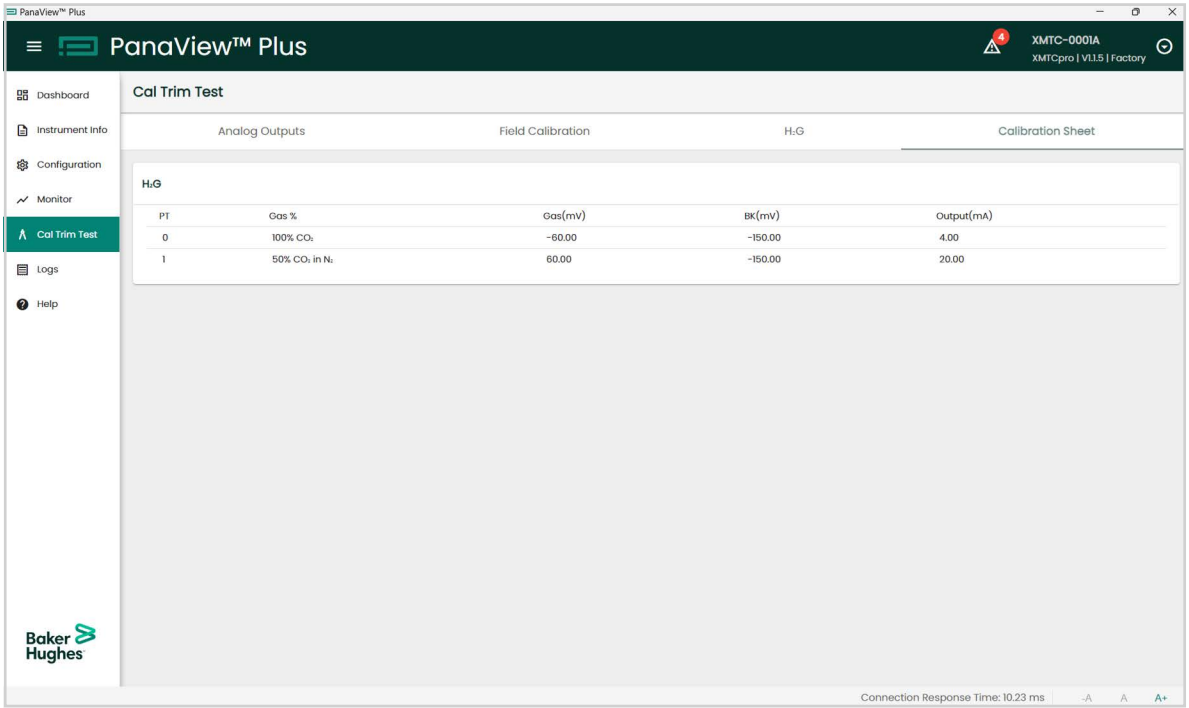


go to each test section and select the specific **Alarm**, **Solenoid** or **Analog Output** and measure the output with a multimeter.

7.9 XMO2pro/XMTCpro - Calibration Details

PanaView Plus displays the calibration drifts of XMO2pro/XMTCpro in **Calibration Drift** section and factory calibration in **Calibration Sheet** section in Cal Trim Test menu.

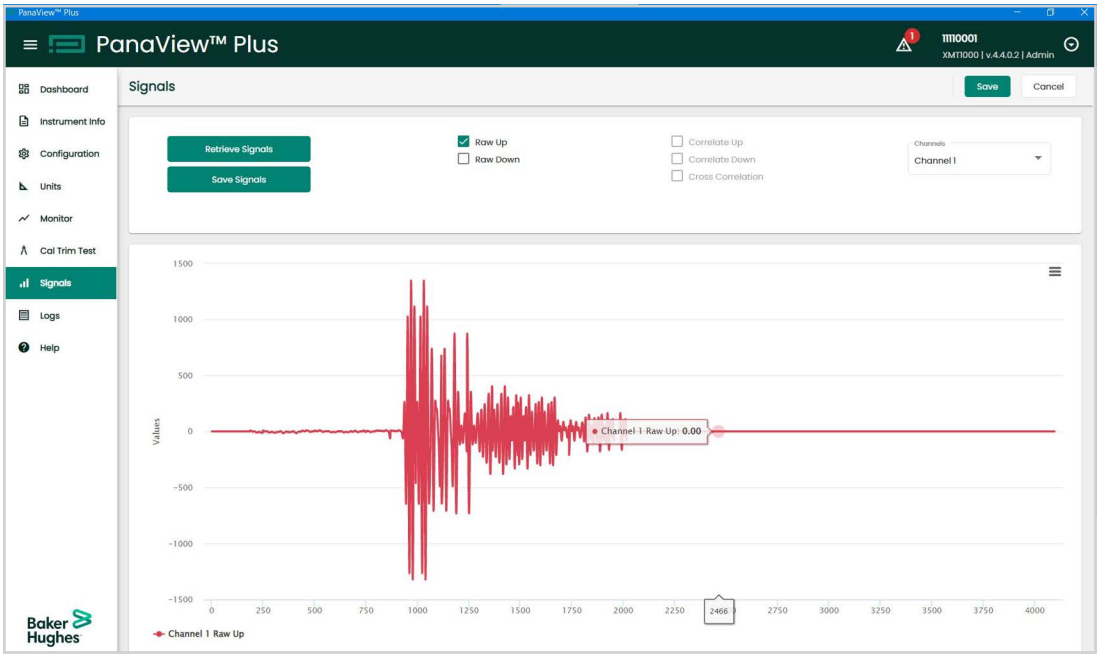




Chapter 8. Signals

PanaView Plus can display pulses sent and received between transducer ends. The **Signals** menu helps user in retrieving and saving signal data. The software application automatically retrieves the data from the flow meter when the signals menu is first opened. The user can also manually retrieve the data by clicking **Retrieve Signals** button. The retrieved data will be displayed on the graph. This helps the user to analyze and/or compare signal shapes to know the transducer efficiency of send and receive signals.

PanaView Plus only allows one signal type group to be enabled, and the rest will be disabled. For example, If Raw Up/Down is checked, then the correlate signal type group will be disabled and vice versa.



To save the signal data, click the **Save Signals** button, and select the desired file location. The signal data will be saved as a Microsoft Excel document.

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Chapter 9. Logs

The **Logs** feature in PanaView Plus has two sections: Error Logs and Internal Logs.

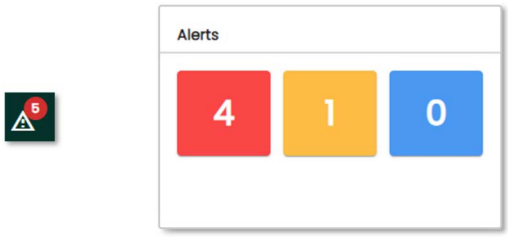
9.1 Error Logs

Errors encountered in the flow meter are continuously retrieved by PanaView Plus. These errors are shown in Error Logs. **Meter Health** shows all errors instantaneously. The errors are time stamped, and color coded as follows:

- **Red** – critical error
- **Yellow** – warning/moderate error
- **Blue** – informational/expected state

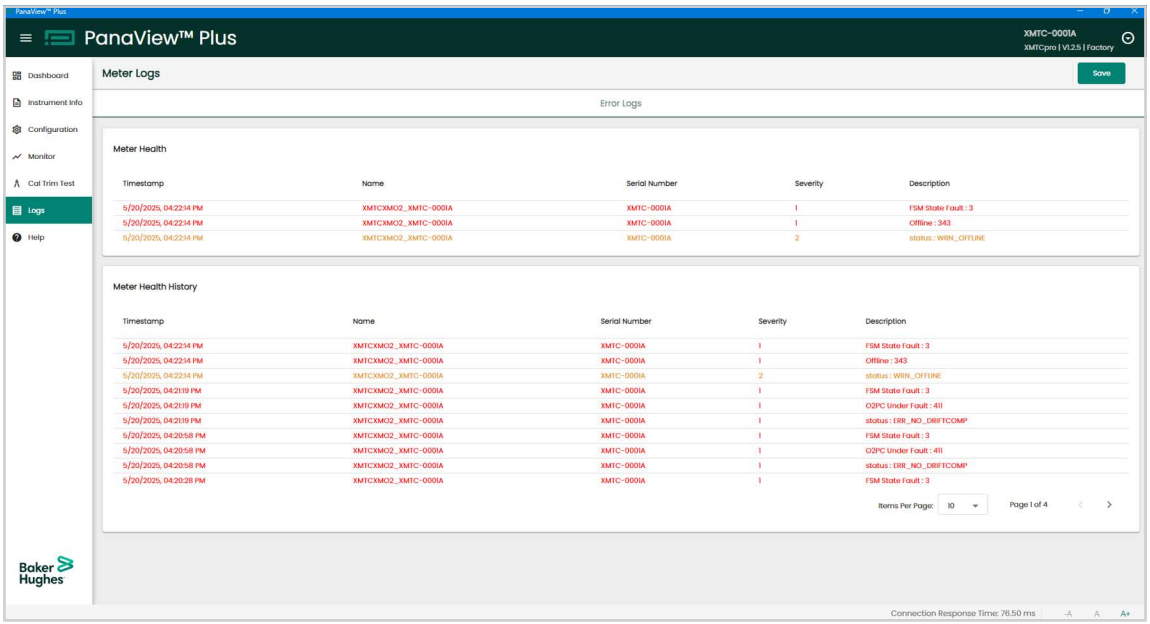
Whenever a parameter is written into a flow meter, PanaView Plus checks to see if the flow meter has encountered any error because of the configuration changes. If an error exists, then it is retrieved and displayed on the notification panel.

On the Dashboard, an **Alerts** card shows the existing error count and messages in the flow meter. The notification on the title bar and **Alerts** card on the Dashboard directs the user to Error Logs when clicked.



IMPORTANT: Always check the errors encountered by the flow meter after any configuration changes (e.g., saving the configuration values, calibration activity or changing the units, etc).

As shown in the window below, the Meter Health history section lists all the errors encountered previously in ongoing PanaView Plus session.

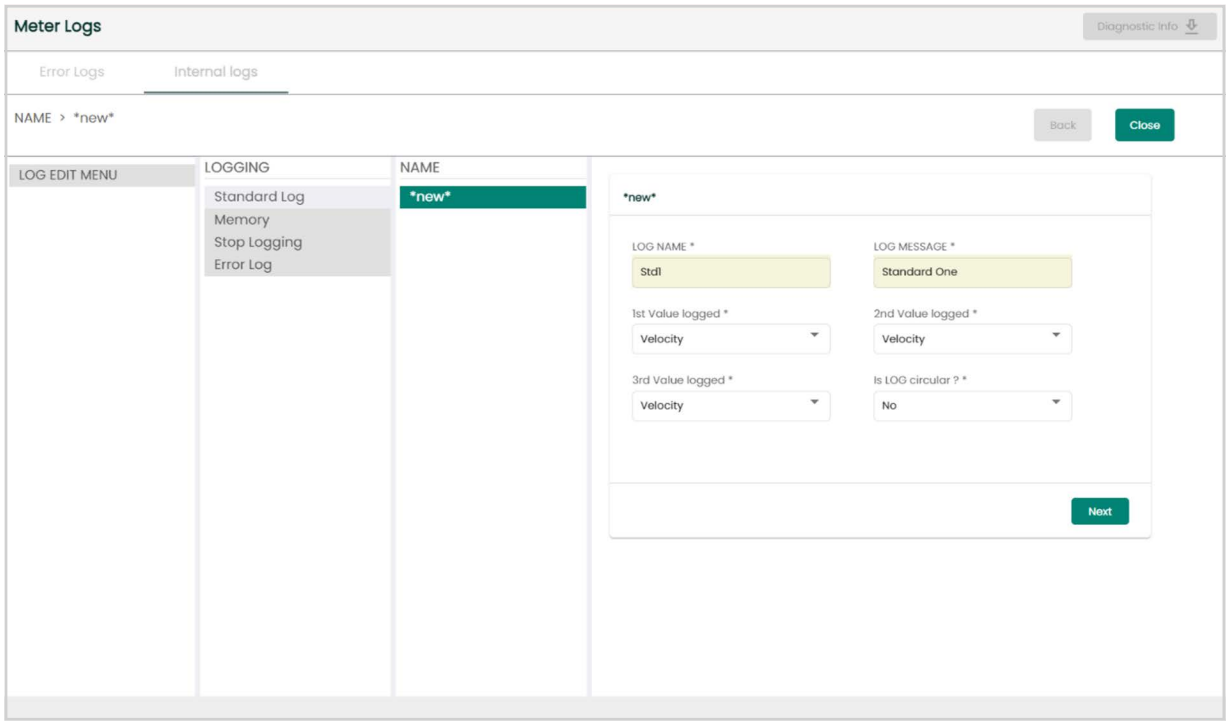


9.2 Internal Logs

PanaView Plus can configure and start or stop a flow meter's Internal Logs. These logs indicate if there are any ongoing internal logging session in the flow meter.

9.2.1 Log Parameter Selection

Similar to the monitor menu, log parameters are grouped based on measurement parameter context. If a log is “In Progress” (currently running), then the default selections that appear on the selection page are the parameters selected for the current running log. The parameter selection is disabled if a log session is in progress. At a given time, the user is allowed to select a maximum of 25 parameters for logging. XGF flowmeter does not support internal logs (logs on meter). For GF, user can set up standard internal logs in 'Internal logs' section as shown in the following window.



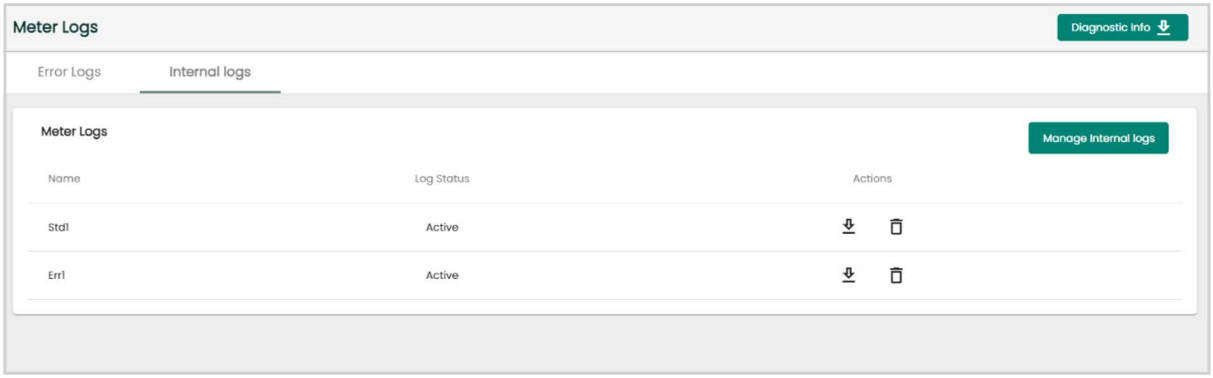
9.2.2 Saving Internal Logs

The user can always save the last internal logging session by clicking the **Save** button. For the ongoing log operation, when the log operation stops, the log file becomes available for download/save on a local PC.

Always **save** logs before starting a new session, as the flow meter will erase the previous logs. The saved log includes a monitoring log sheet and an Error Log sheet. The Error Log contains up to 30 errors recorded by the instrument and multiple diagnostics variables based on the flow meter type.

Note: *The number of records maintained in the saved file is limited due to MODBUS specification restrictions. Maximum records = 5000 / (2 + Number of Variables selected for logging).*

For GF868, all available logs shall be displayed in a list with their current state. User can download completed logs by pressing download (⬇) button.



9.2.3 Save and Retrieve Selection

PanaView Plus allows the user to save the log parameters for future use. The user can download a selection of parameters by clicking the **Save Selection** button. This downloaded selection can be shared with other users and uploaded back to PanaView Plus by clicking the **Retrieve Selection** button.

9.3 Diagnostic Info Download - One Click Download

Download Diagnostic Info is one snapshot of all the diagnostic information needed for analyzing meter's current state. The diagnostic info download button compiles the following files into a zip file.

1. Flow meter Site File
2. Transducer Signals
3. Internal Logs (If available)
4. Monitor Logs (if available)
5. Error Logs (last 10 minutes)

Collecting the diagnostic information can take a long time. Once started, it will be listed under the background processes. Once finished, the window will open a dialog box to save the file at a desired location in the system.

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