

# PanaView™ Plus

## Graphical User Interface

### User's Manual





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### **User's Manual**

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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](mailto: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.

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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 XMT1000 (V4.2.9, V4.3.8, V4.4.0) & AT600 (V1.5.2, V1.6.0) flow meter. It 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

## 1.4 Connect to Meter

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

**Connect to Meter**

Instrument Model \*

Connection Type \*

Communication Port \*

Node Id \*

Baud Rate \*

Parity \*

Data Bits \*

Stop Bits \*

Language \*

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.

**Instrument Info** [Save] [Cancel]

| General Info                    |                    |
|---------------------------------|--------------------|
| Long Tag                        |                    |
| Product Type                    | 705884             |
| Path Configuration              | Three Path Special |
| Option I/O Board Type           | None               |
| Main Board Flash CRC            | 00000000           |
| Flow Board Calculated Flash CRC | 00000000           |
| Main Board Start-up Errors      | No Error           |

| Version Info                         |            |
|--------------------------------------|------------|
| Main Board Software Version          | 15.3.6     |
| Flow Board Software Revision         | 3750-4.4.0 |
| Option COM Board Software Version    | 0.0.1      |
| Flow Board Bootloader Version Number | 112.0      |
| Flow Board Bootloader Modbus Version | 438        |
| Main Board Hardware Version          | 0          |
| Flow Board Hardware Revision         | 2147483647 |

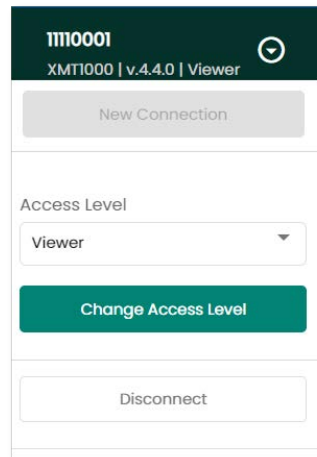
| System/Board Serial Numbers |         |
|-----------------------------|---------|
| System Serial Number        | 1110001 |
| Flow Board Serial Number    | 1110001 |
| Main Board Serial Number    | 0       |

| Sensor Serial Numbers       |            |
|-----------------------------|------------|
| Sensor 1 Up Serial Number   | 2147483647 |
| Sensor 1 Down Serial Number | 2147483647 |
| Sensor 2 Up Serial Number   | 2147483647 |
| Sensor 2 Down Serial Number | 2147483647 |
| Sensor 3 Up Serial Number   | 2147483647 |
| Sensor 3 Down Serial Number | 2147483647 |
| Buffer 1 Up Serial Number   | 2147483647 |
| Buffer 1 Down Serial Number | 2147483647 |
| Buffer 2 Up Serial Number   | 2147483647 |
| Buffer 2 Down Serial Number | 2147483647 |
| Buffer 3 Up Serial Number   | 2147483647 |
| Buffer 3 Down Serial Number | 2147483647 |

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## 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.



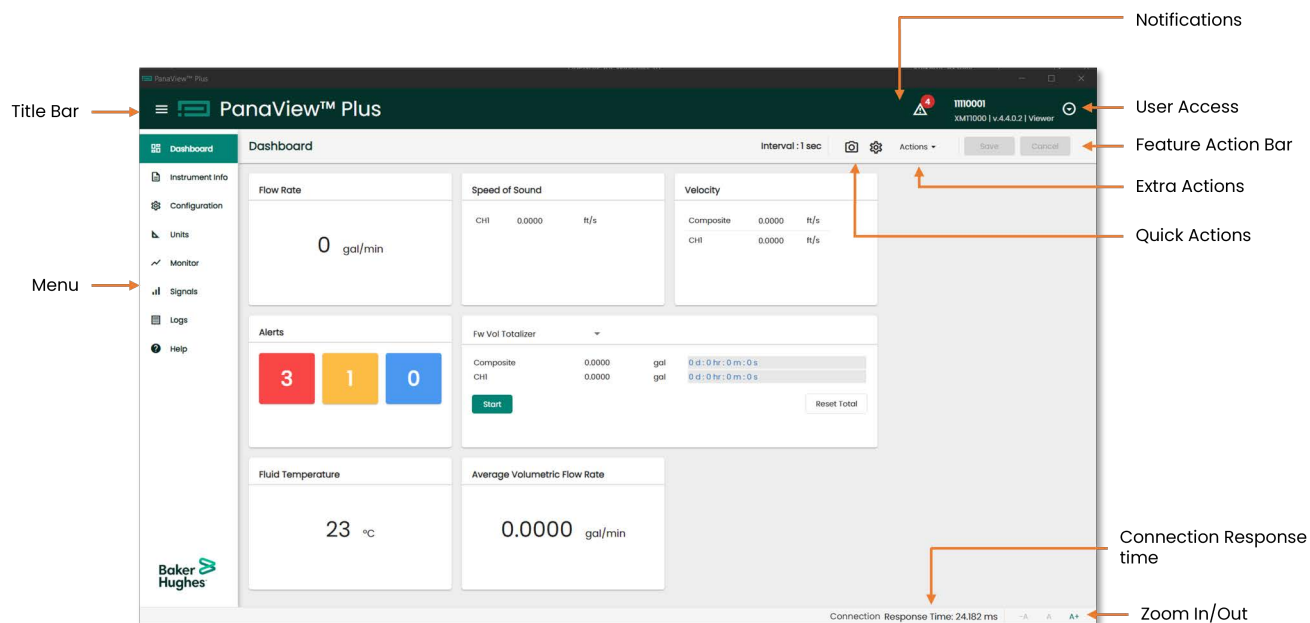
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## Chapter 2. Getting Started

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 & - 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

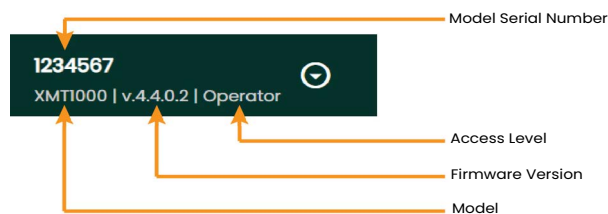
The PanaView Plus **Access levels** are based on the user roles supported by the connected flow meter. For further details on supported **Access levels** by the flow meter, refer to the respective flow meter's user manual. The PanaView Plus software application supports the following access levels for the XMT1000 meter:

| 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 & measurements |
|                 | Operator     | User can configure settings                     |

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** 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.

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 Role can change its own password while Admin role can change its own as well as Operator 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.

|  |                 |
|--|-----------------|
|  | Dashboard       |
|  | Instrument Info |
|  | Configuration   |
|  | Units           |
|  | Monitor         |
|  | Cal Trim Test   |
|  | Signals         |
|  | Logs            |



| 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<br><b>Note:</b> 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.                                                                                       |

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## 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.

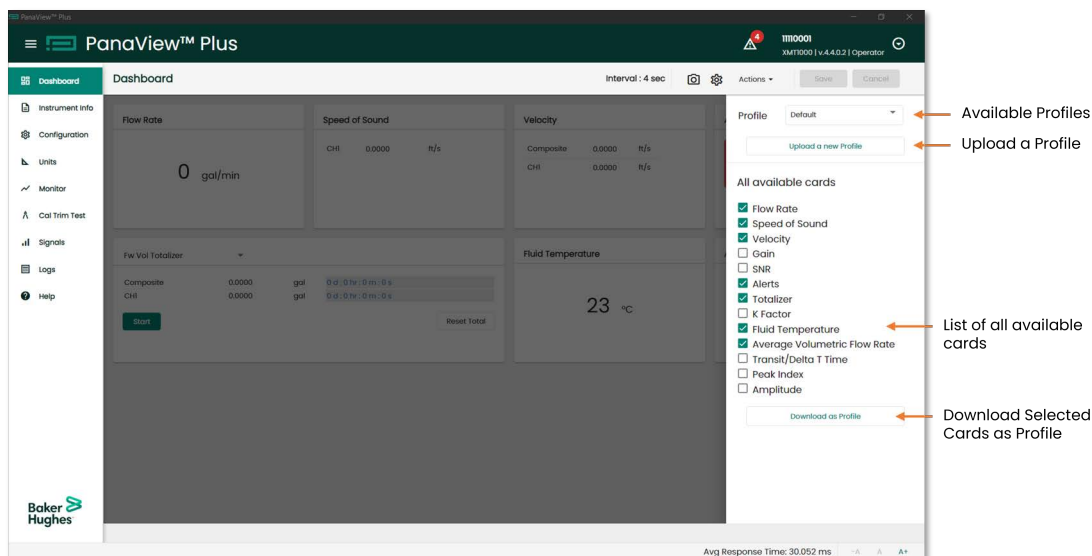
### 3.1 Adding and Removing cards

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.

| Gain                    |      |                  |       |    |
|-------------------------|------|------------------|-------|----|
|                         | CH1  | CH2              | CH3   |    |
| UP                      | 1.23 | 12.00            | -0.40 | dB |
| DN                      | 0.45 | -2.50            | -1.40 | dB |
| txVoltage : Low Voltage |      | Attenuator : Off |       |    |

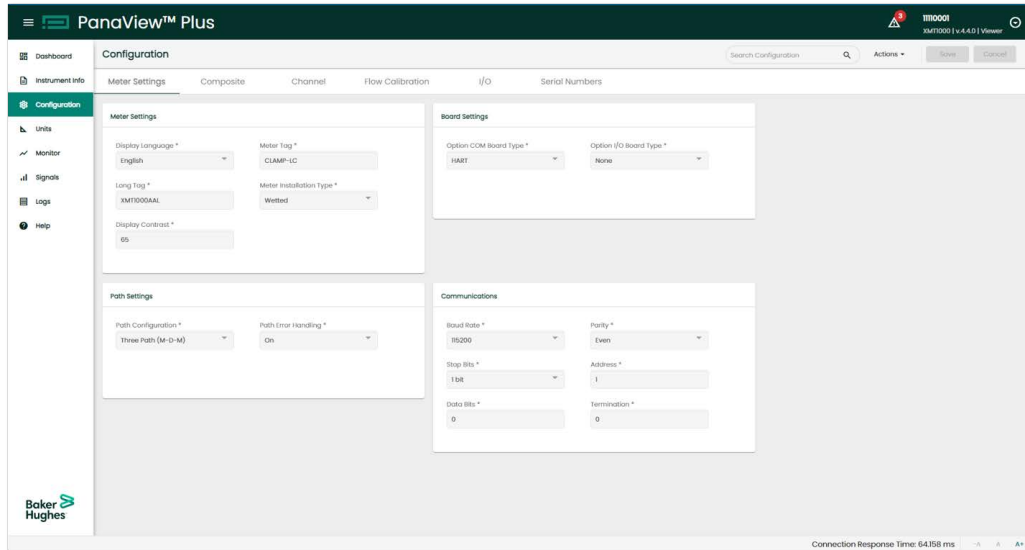
Tolerances are specific to the user role and can be uploaded only after logging in with any access level. If an **Operator** uploads a Tolerance file, then those files can only be applied for the **Operator**.

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 |       |
| AMPLITUDE                                | 14  | 32  |       |

## 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.



### 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.

**Pipe**

|                                         |                                         |
|-----------------------------------------|-----------------------------------------|
| Outer Diameter (OD) *                   | Inner Diameter (ID) *                   |
| <input type="text" value="17.7165"/> in | <input type="text" value="16.2992"/> in |
| Wall Thickness *                        |                                         |
| <input type="text" value="0.7087"/> in  |                                         |

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.

## 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.

| Variable                    | Description        | Value      | Unit               | Firmware Variable          | Category          |
|-----------------------------|--------------------|------------|--------------------|----------------------------|-------------------|
| 7 Display Language          | English            | 0          |                    | eDisplay_Language          | Meter Settings    |
| 8 Meter Tag                 |                    | CLAMP-LC   |                    | eSystem_TagShort           | Meter Settings    |
| 9 Long Tag                  |                    | XMT1000AAL |                    | eSystem_TagLong            | Meter Settings    |
| 10 Meter Installation Type  | Wetted             | 0          |                    | epMeter_Install_Type_E     | Meter Settings    |
| 11 Display Contrast         |                    | 65         |                    | eDisplay_Contrast          | Meter Settings    |
| 12 Option COM Board Type    | HART               | 1          |                    | eSystem_ComType            | Meter Settings    |
| 13 Option I/O Board Type    | None               | 0          |                    | eSystem_OptType            | Meter Settings    |
| 14 Path Configuration       | Three Path (M-D-M) | 3          |                    | epPathConfiguration_E      | Meter Settings    |
| 15 Path Error Handling      | On                 | 1          |                    | epPath_Error_Handling_E    | Meter Settings    |
| 16 Baud Rate                | 115200             | 6          |                    | epCModbus_Baudrate         | Meter Settings    |
| 17 Parity                   | Even               | 2          |                    | epCModbus_Parity           | Meter Settings    |
| 18 Stop Bits                | 1 bit              | 0          |                    | epCModbus_Stop             | Meter Settings    |
| 19 Address                  |                    | 1          |                    | epCModbus_Address          | Meter Settings    |
| 20 Data Bits                |                    | 0          |                    | epCModbus_Bits             | Meter Settings    |
| 21 Termination              |                    | 0          |                    | epCModbus_Termination      | Meter Settings    |
| 22 Pipe Outer Diameter (OD) |                    | 17.717     | in                 | epPipe_OD_R                | Composite - Pipe  |
| 23 Pipe Inner Diameter (ID) |                    | 16.299     | in                 | epPipe_ID_R                | Composite - Pipe  |
| 24 Pipe Wall Thickness      |                    | 0.709      | in                 | epPipe_Wall_Thickness_R    | Composite - Pipe  |
| 25 Reference Density        |                    | 62.428     | lb/ft <sup>3</sup> | epReference_Density_R      | Composite - Fluid |
| 26 Static Density           |                    | 62.428     | lb/ft <sup>3</sup> | epCompositeStaticDensity_R | Composite - Fluid |
| 27 Kinematic Viscosity      |                    | 0          | ft <sup>2</sup> /s | epKinematic_Viscosity_R    | Composite - Fluid |

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.

### 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.

| Variable | Description              | Value              | Unit | Firmware Variable          | Partial Upload | Category         |
|----------|--------------------------|--------------------|------|----------------------------|----------------|------------------|
| 7        | Display Language         | English            |      | eDisplay_Language          | FALSE          | Meter Settings   |
| 8        | Meter Tag                | CLAMP-IC           |      | eSystem_TagShort           | FALSE          | Meter Settings   |
| 9        | Long Tag                 | XMT1000AAL         |      | eSystem_TagLong            | FALSE          | Meter Settings   |
| 10       | Meter Installation Type  | Wetted             |      | epMeter_Install_Type_E     | FALSE          | Meter Settings   |
| 11       | Display Contrast         | 60                 |      | eDisplay_Contrast          | FALSE          | Meter Settings   |
| 12       | Option COM Board Type    | HART               |      | eSystem_ComType            | FALSE          | Meter Settings   |
| 13       | Option I/O Board Type    | None               |      | eSystem_OptType            | FALSE          | Meter Settings   |
| 14       | Path Configuration       | Three Path (M-D-M) |      | epPathConfiguration_E      | FALSE          | Meter Settings   |
| 15       | Path Error Handling      | On                 |      | epath_Error_Handling_E     | FALSE          | Meter Settings   |
| 16       | Baud Rate                | 115200             |      | ePCModbus_Baudrate         | FALSE          | Meter Settings   |
| 17       | Parity                   | Even               |      | ePCModbus_Parity           | FALSE          | Meter Settings   |
| 18       | Stop Bits                | 1 bit              |      | ePCModbus_Stop             | FALSE          | Meter Settings   |
| 19       | Address                  | 1                  |      | ePCModbus_Address          | FALSE          | Meter Settings   |
| 20       | Data Bits                | 8                  |      | ePCModbus_Bits             | FALSE          | Meter Settings   |
| 21       | Termination              | 0                  |      | ePCModbus_Termination      | FALSE          | Meter Settings   |
| 22       | Pipe Outer Diameter (OD) | 1.717              | in   | epPipe_OD_R                | FALSE          | Composite - Pipe |
| 23       | Pipe Inner Diameter (ID) | 1.6299             | in   | epPipe_ID_R                | FALSE          | Composite - Pipe |
| 24       | Pipe Wall Thickness      | 0.709              | in   | epPipe_Wall_Thickness_R    | FALSE          | Composite - Pipe |
| 25       | Pipe Material            | Carbon Steel       |      | epPipe_Material_Select_E   | FALSE          | Composite - Pipe |
| 26       | Pipe SoundSpeed          | 10236.221          | ft/s | epPipe_SoundSpeed_R        | FALSE          | Composite - Pipe |
| 27       | Lining Material          | None               |      | epLining_Material_Select_E | FALSE          | Composite - Pipe |

### 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.

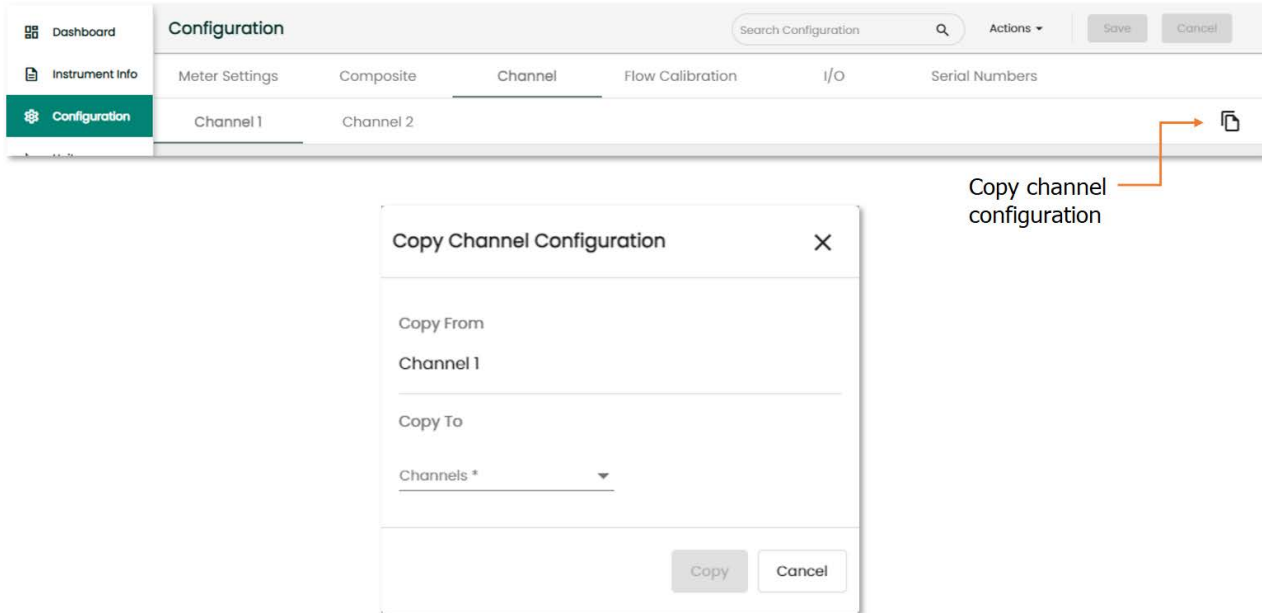
### 4.4 Search Configuration

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:

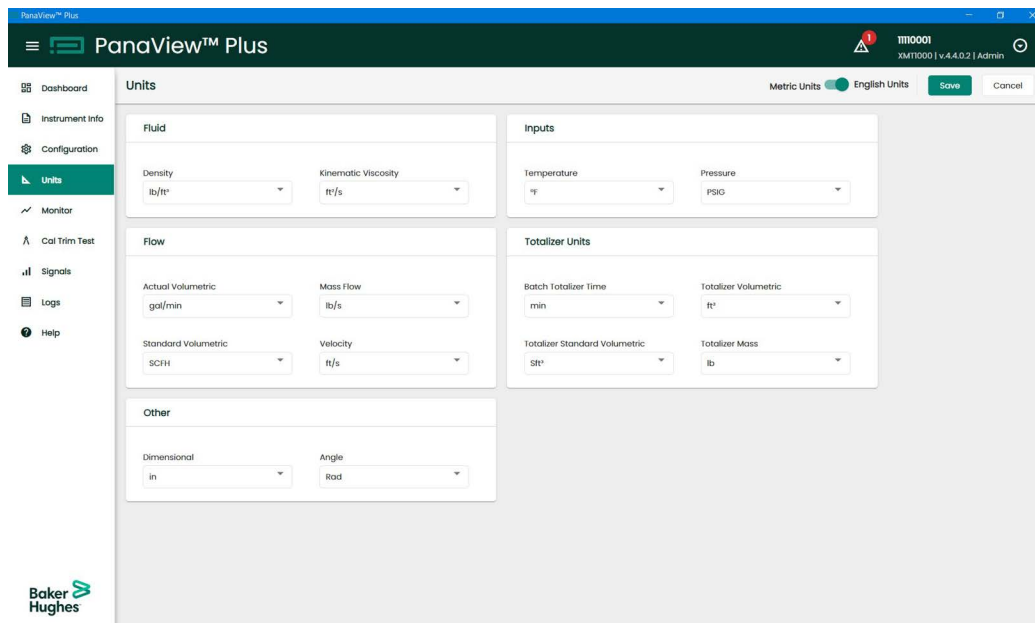
- Reset Commission settings will restore the last settings done via an **Admin** account.
- Reset Factory settings will restore the last settings done via **Factory** settings.

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



## 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.



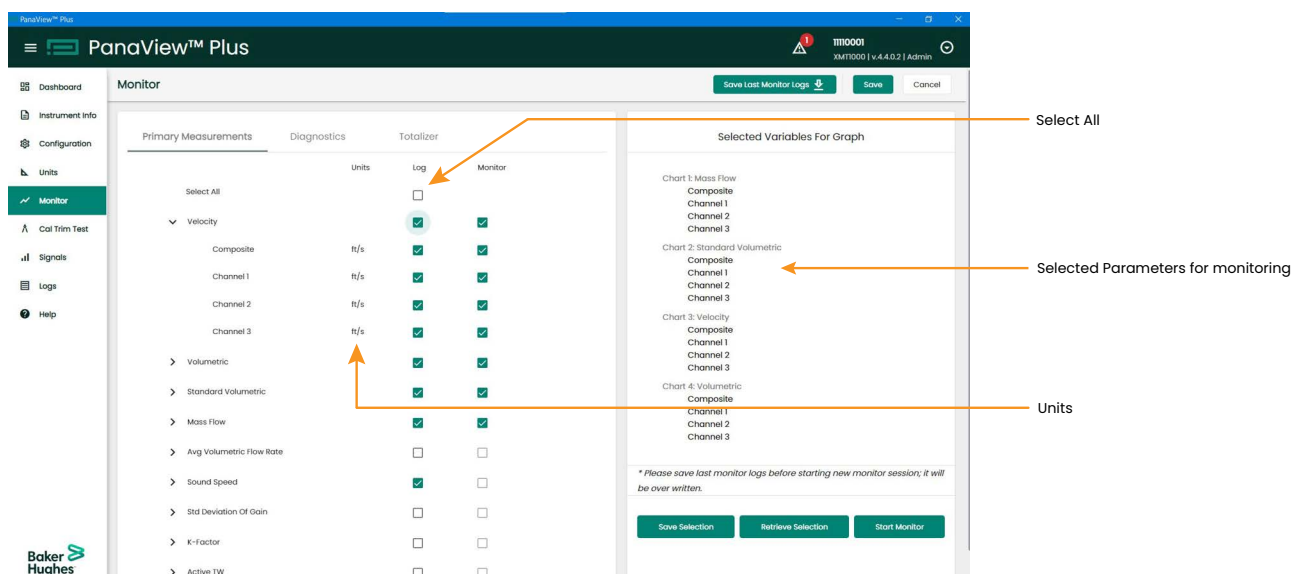
PanaView Plus supports both **Metrics Units** and **English Units**. The user can change each unit individually or change the whole unit system using the toggle switch.

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

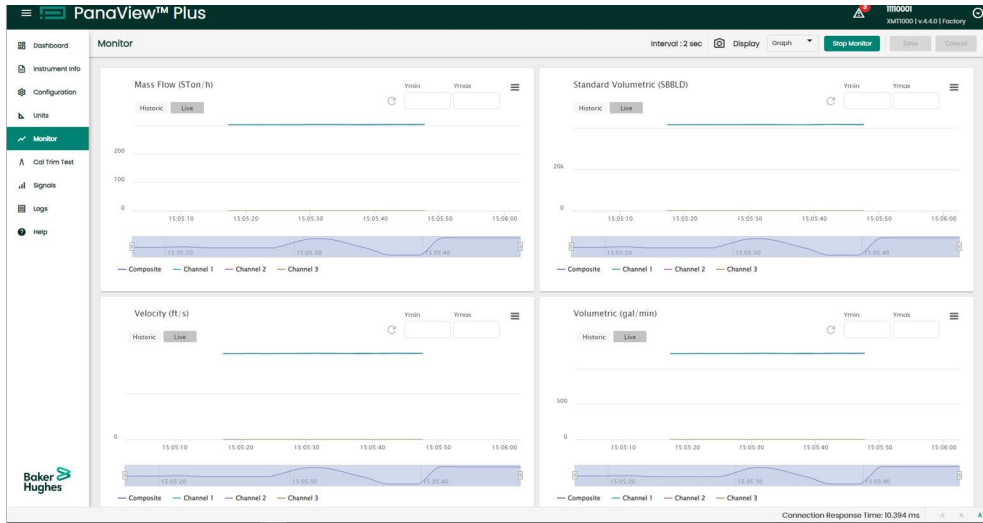
The **Monitor** menu allows the user to view and/or log real-time flow meter measurements. The flow meter parameters are categorized/grouped by their types so that the user can choose the variables for graphing and/or logging. The log parameters will be captured into a .csv file, whereas the monitor 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

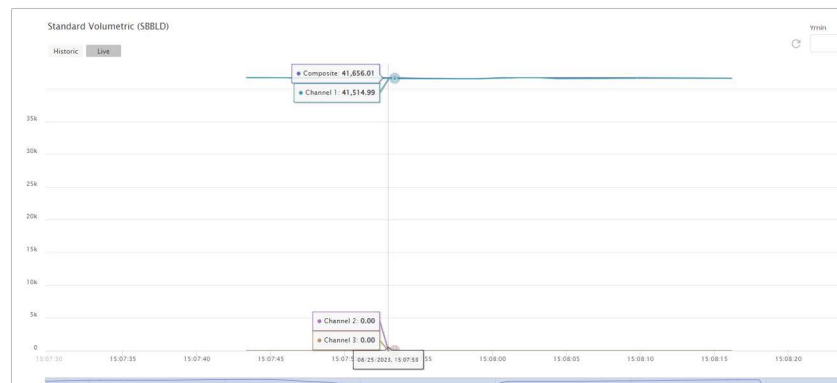
**Switch View** is a drop-down menu that helps the user to switch between graph and log view.

### 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 & Y-Max Settings

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

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## 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.

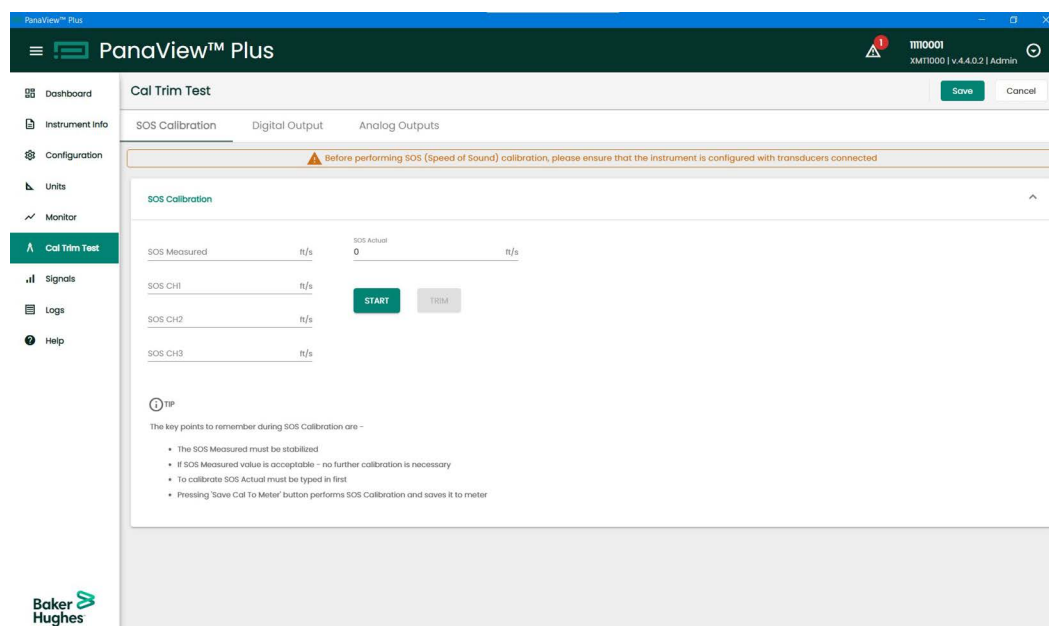
The Cal Trim Test screen shows and hides calibration options based on the values of I/O parameters saved in the connected flow meter.

### 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.

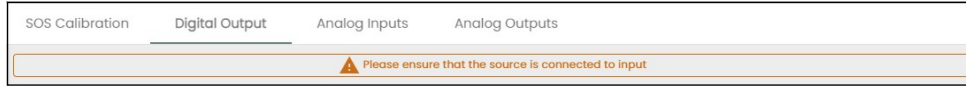


**IMPORTANT:** Once trimmed, each calibration needs to be saved in the flow meter. Ensure to **save** changes after calibration.

### 7.2 Digital Output

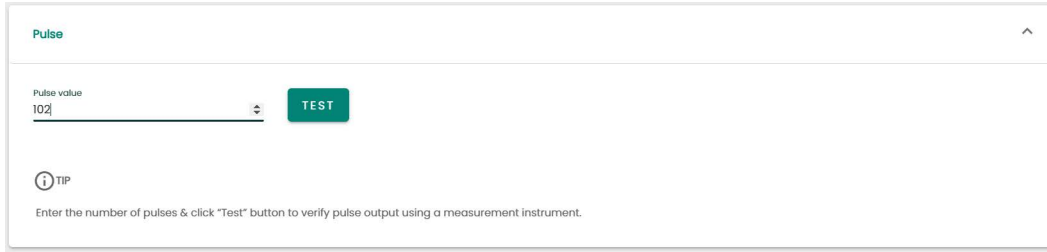
The Digital Output allows the user to perform Digital Output test (i.e., to test pulse, frequency and alarm). To view/check the output values, external devices such as an oscilloscope, frequency meters are needed. It is assumed that before these tests are run, the user has gone through the user manuals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



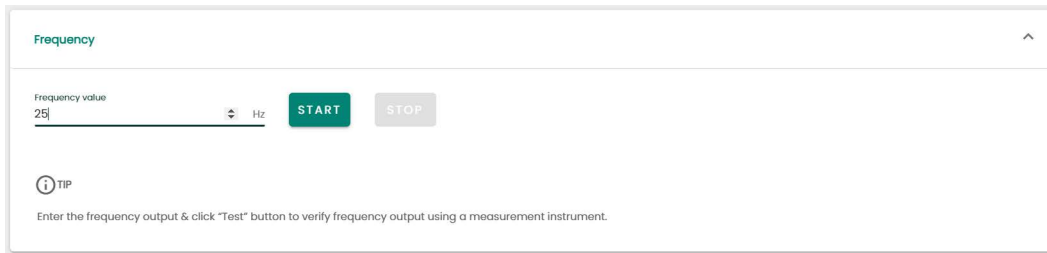
### 7.2.1 Pulse

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



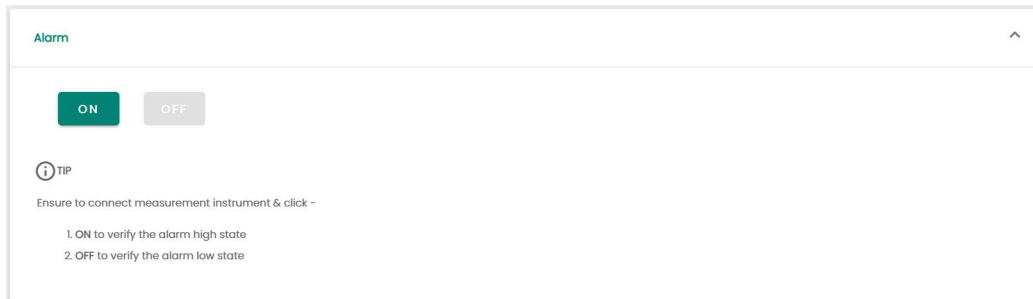
### 7.2.2 Frequency

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

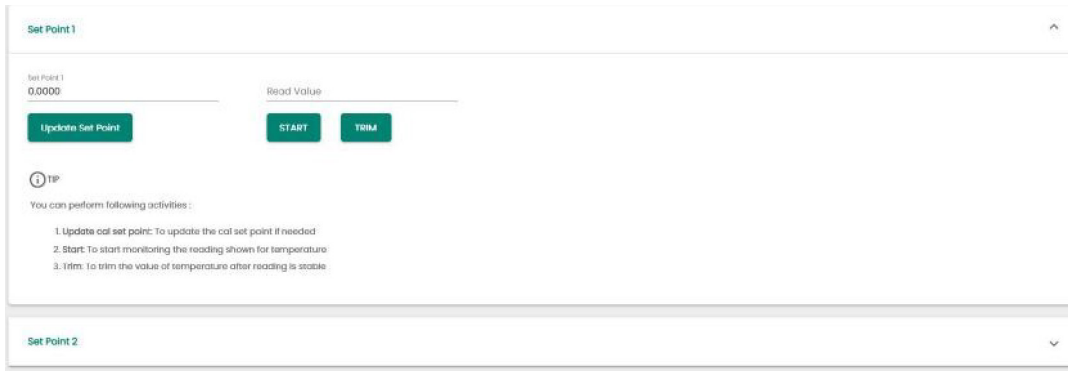
All **Analog Input Calibration** will appear under this tab. This tab will only be displayed if connected flow meter is configured to have an analog input. This tab will also display analog inputs on an optional I/O board.

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.

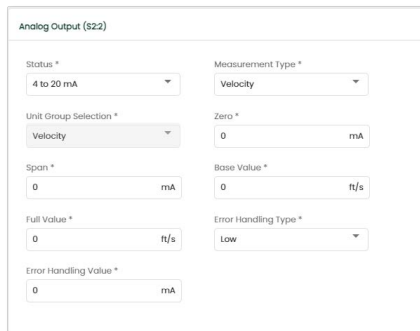
The Number of **Calibration Points** is set as 2.

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



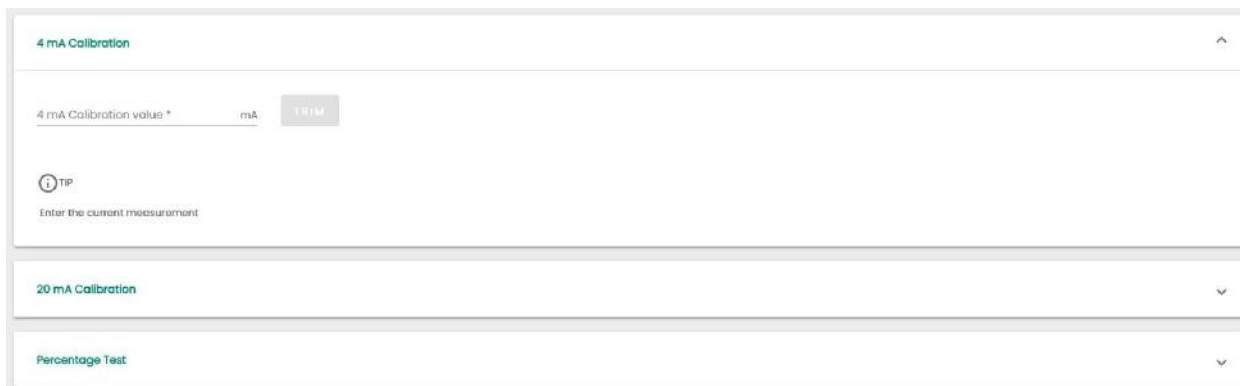
### 7.3 Analog Output Calibration

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



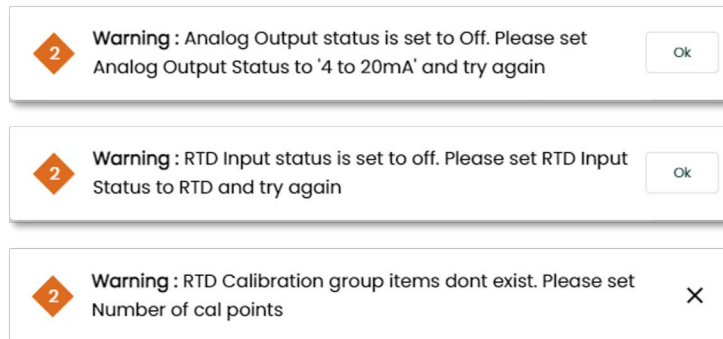
To perform the **Analog Output Calibration**, the flow meter needs to be configured for analog output and outputs need to be switched **ON** for 4–20 mA output.

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



**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.



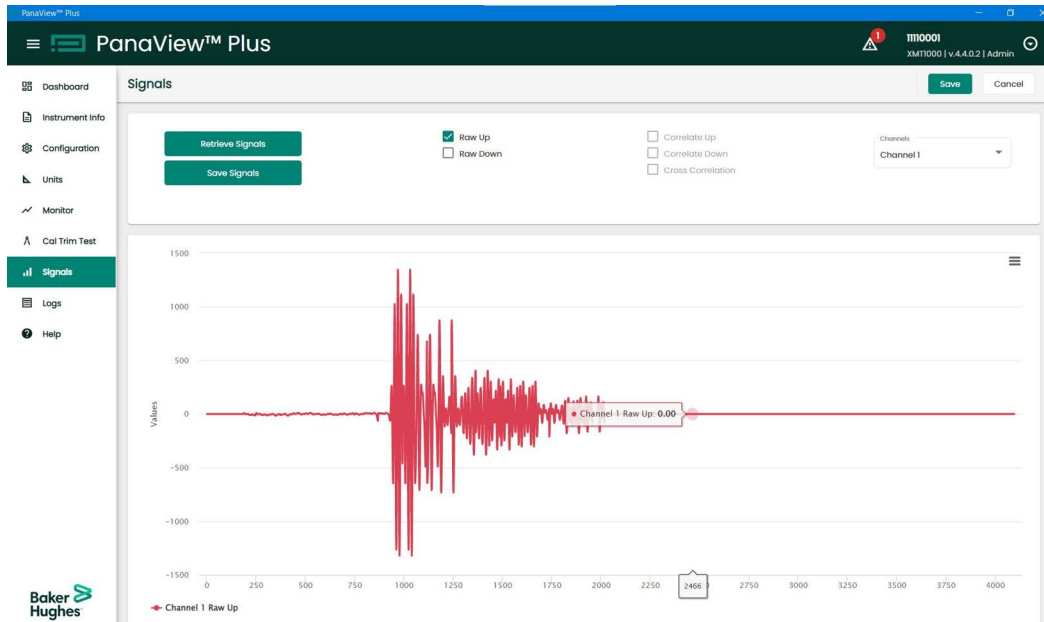
It is very important to click the **Save** button for the flow meter to calibrate successfully. To cancel the current state of calibration, click the **Cancel** button.

[no content intended for this page]

## 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.

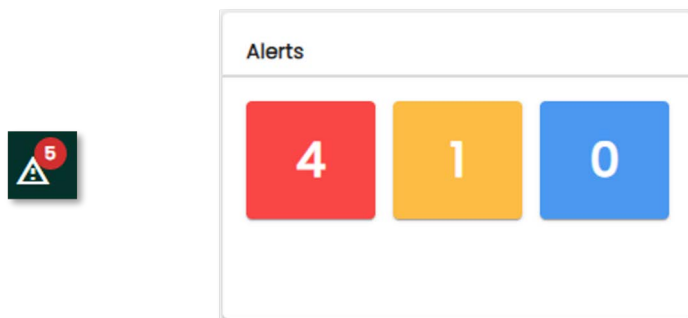
### 9.1 Error logs

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).

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.

#### 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).*

### 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.





## Customer Support Centers

### U.S.A.

The Boston Center  
1100 Technology Park Drive  
Billerica, MA 01821

U.S.A.

Tel: 800 833 9438 (toll-free)  
978 437 1000

E-mail: [panametricstechsupport@bakerhughes.com](mailto:panametricstechsupport@bakerhughes.com)

### Ireland

Sensing House  
Shannon Free Zone East  
Shannon, County Clare  
Ireland

Tel: +353 (0)61 470291

E-mail: [panametricstechsupport@bakerhughes.com](mailto:panametricstechsupport@bakerhughes.com)

Scan here for Panametrics  
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