

User Guide

Pro-FX[®] Configure v2 Software AxisPro Platform



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Introduction

This guide provides general software usage information for version 2.5.0 of Pro-FX™ Configure v2 for AxisPro.

System Requirements

To successfully run the software, the following environments are supported:

- ✓ Processor –1 gigahertz (GHz) or faster processor
- ✓ RAM – 1 gigabyte (GB)
- ✓ Hard Disk Drive – 16 GB
- ✓ USB port
- ✓ Operating system –Windows 10 or Windows 11
- ✓ Communication Adapters
 - CAN Adapters
 - PCAN
 - VALUECAN
 - CG150
 - KVASER
 - SOFTING
 - Or Ethernet cable

Installation/Uninstallation Procedure

The installation of Pro-FX™ Configure v2 performs the following (NOTE: You will need administrator privileges to install the application):

1. Installation Procedure

1. Launch the “ProFXConfigure_v2.5.0.126.exe”.
2. Click Next from the Welcome screen

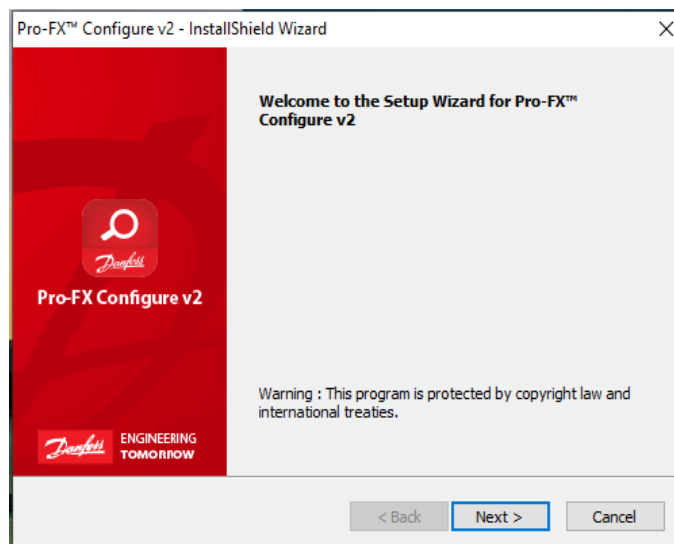


Figure 1 – InstallShield Wizard

3. Agree to the software license and click Next

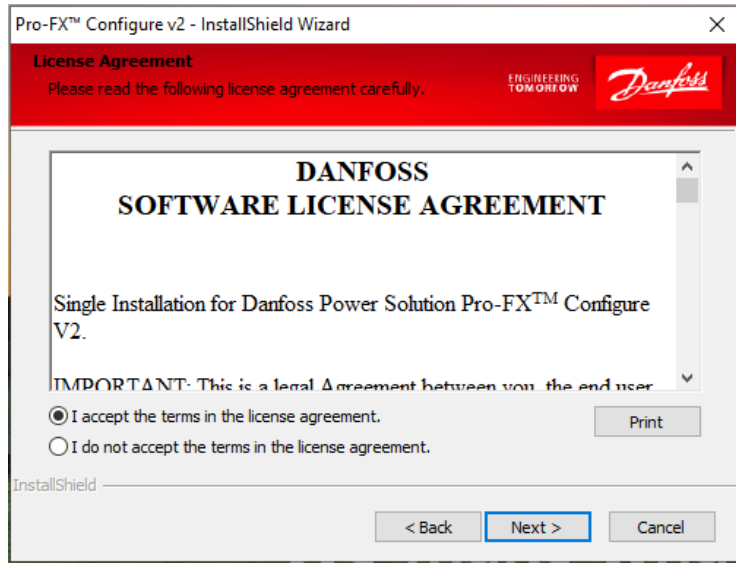


Figure 2 – InstallShield Wizard

4. Choose Packages that you want to install or just click on Next button and all the packages will get installed.

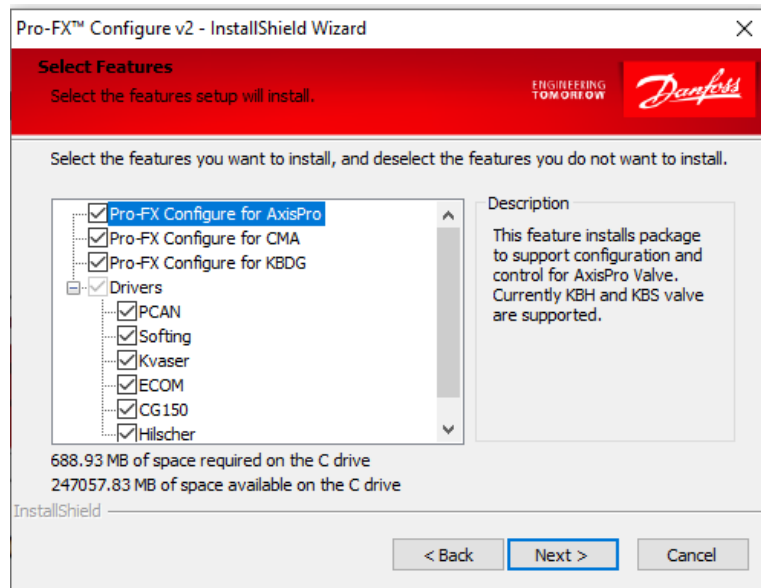


Figure 3 – InstallShield Wizard

5. Click Install from the Ready to Install dialog

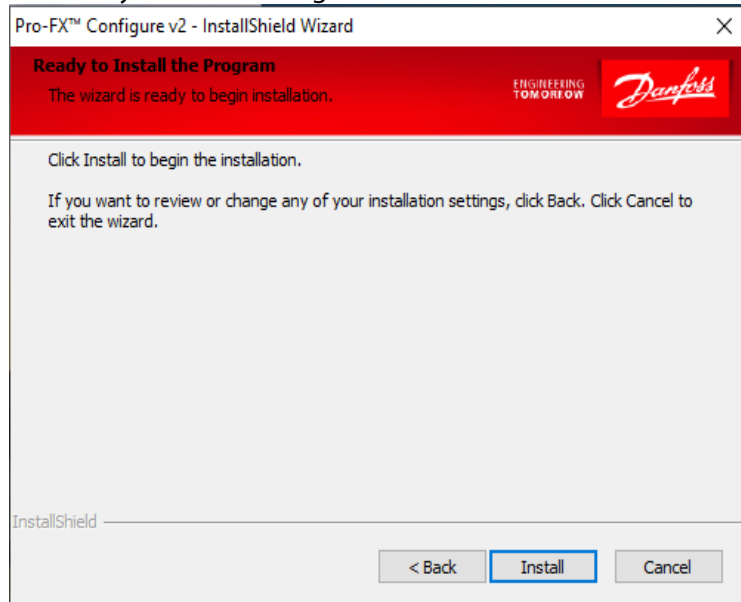


Figure 4 – InstallShield Wizard

Once the installation is complete, desktop shortcuts for the applications will be created as well as Start Menu shortcuts

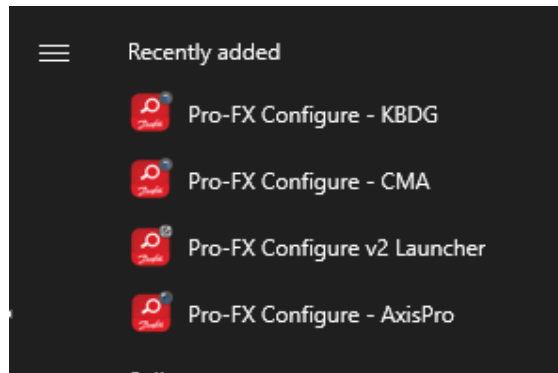


Figure 5 – Start Menu Shortcuts

2. Uninstallation procedure

To uninstall Pro-FX Configure, go to Control Panel -> Programs -> Programs and Features-> select Pro-FX™ Configure 2.0 and click Uninstall.

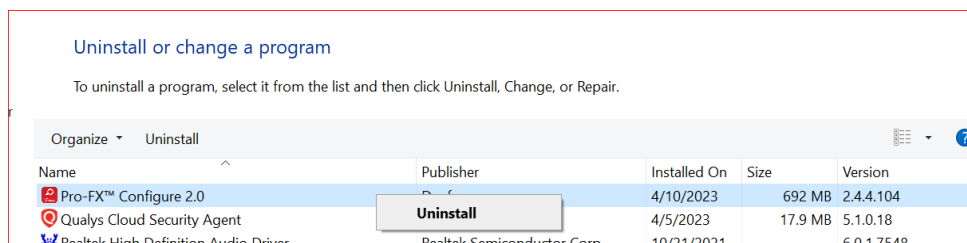


Figure 6 – Control Panel Showing Installed Software

Overview of Pro-FX™ Configure v2 for AxisPro

Pro-FX™ Configure v2 for AxisPro includes options to configure application parameters, monitor parameters, update firmware, and export or import previously calibrated parameters. This application provides variety of features like calibrating a AxisPro device, controlling and monitoring the valve, diagnostics, faults, data plotting. Pro-FX™ Configure v2 tool for AxisPro valves supports different control modes. This tool supports communication with the device using either an ethernet cable or a CAN bus cable. The communication protocols supported by Pro-FX™ Configure v2 are CANopen and Ethernet.

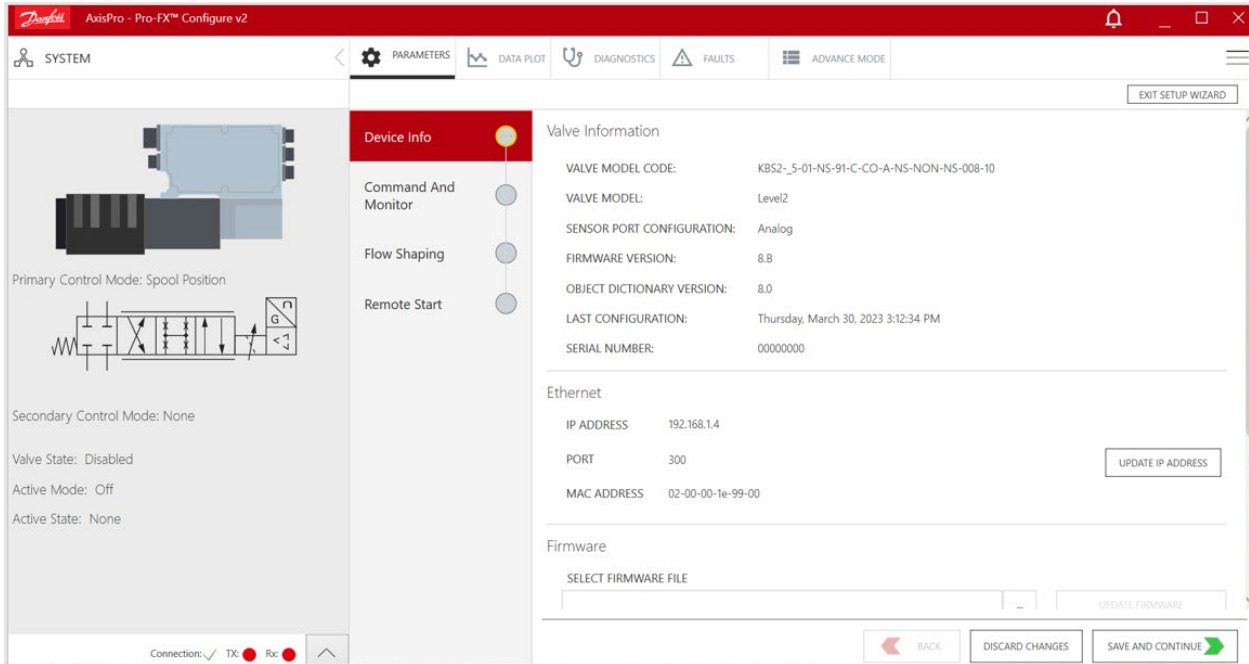


Figure 7 – Pro-FX™ Configure v2

1. Access Levels

'Access levels' are modes which restrict or extend the user's ability to configure and monitor the device. The user can switch access levels via the File menu, found in the top-right corner of the main shell.

There are three access levels:

- **Factory Access** – This access level is password-protected. A factory user can update and modify factory parameters from Advance mode screen and can update firmware.
- **Service Access** – This is the starting/default mode. User can update and modify service parameters. User can also create a customized service password from File Menu.
- **Normal Access** – User can only read and write parameters that are not protected or have read/write any access.

2. Launching Pro-FX™ Configure

When first launching Pro-FX™ Configure, the user will be prompted with the Pro-FX™ Configure Launcher. Select the AxisPro Valves icon then click the Launch button. After clicking the launch button the Connection wizard window will open.

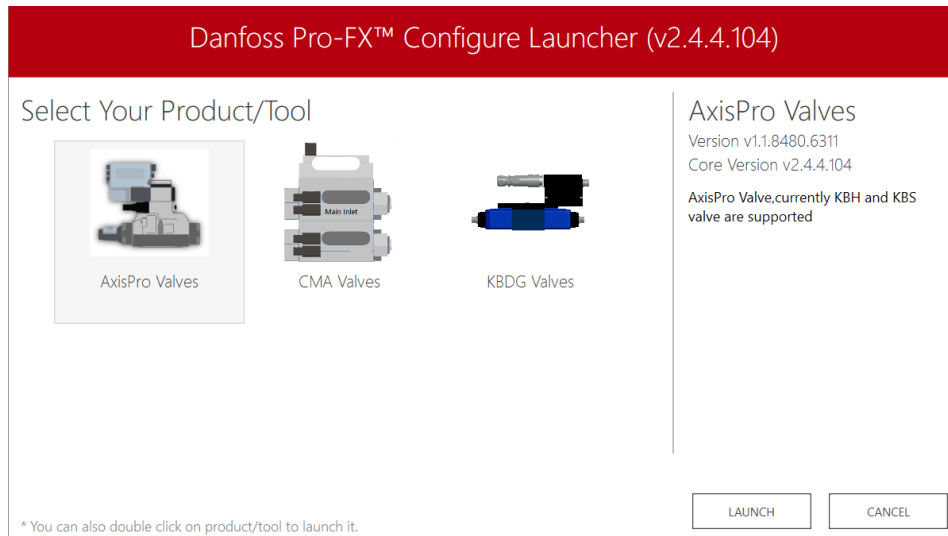


Figure 8 – Pro-FX™ Configure Launcher

NOTE: The following documentation is geared towards configuring AxisPro valves using firmware version 8.x and later. See **Appendix C** for additional information on using Pro-FX™ Configure 2 with legacy (7.x) firmware.

2.1 Connection Wizard

The Connection Wizard allows the user to select the CAN adapter and Node ID when using CANopen communication or IP address and port number for Ethernet.

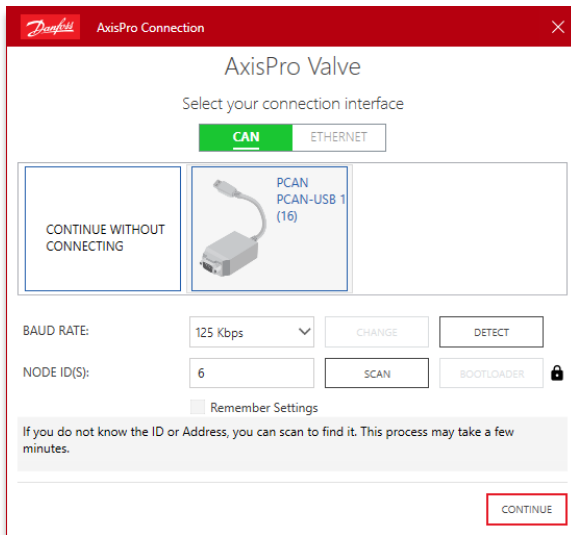


Figure 9.A – CANopen Connection Wizard

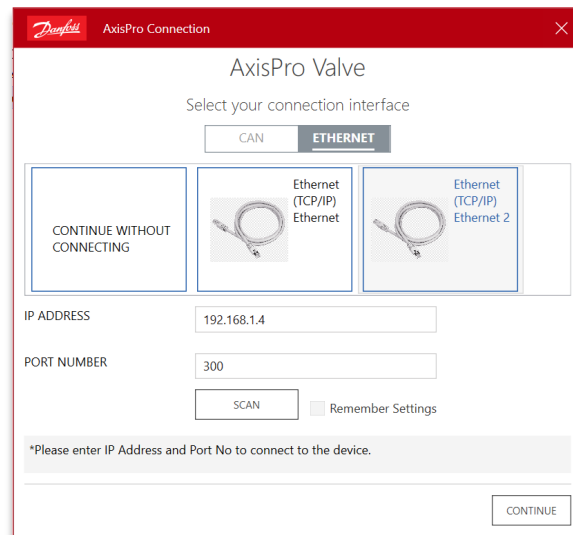


Figure 9.B – Ethernet Connection Wizard

2.1.1 Baud Rate - Detect and Change

Clicking DETECT will initiate the baud rate detection process. To change the baud rate for all devices on the CAN bus select a baud rate other than the detected, then click CHANGE.

2.1.2 Bootloader

If a valve can no longer be detected with CANopen by the scan dialog, at any baud rate, when it's the only device on the network, a user can reload the firmware via the BOOTLOADER button. **This is a potentially dangerous operation**, so the user must use a two-step process to begin loading the firmware.

1. Click the lock icon to enable the BOOTLOADER button.
2. Click the BOOTLOADER button.

After clicking the BOOTLOADER button the user will be presented with the following dialog where they will select the firmware to load. Clicking UPDATE will begin loading the firmware.

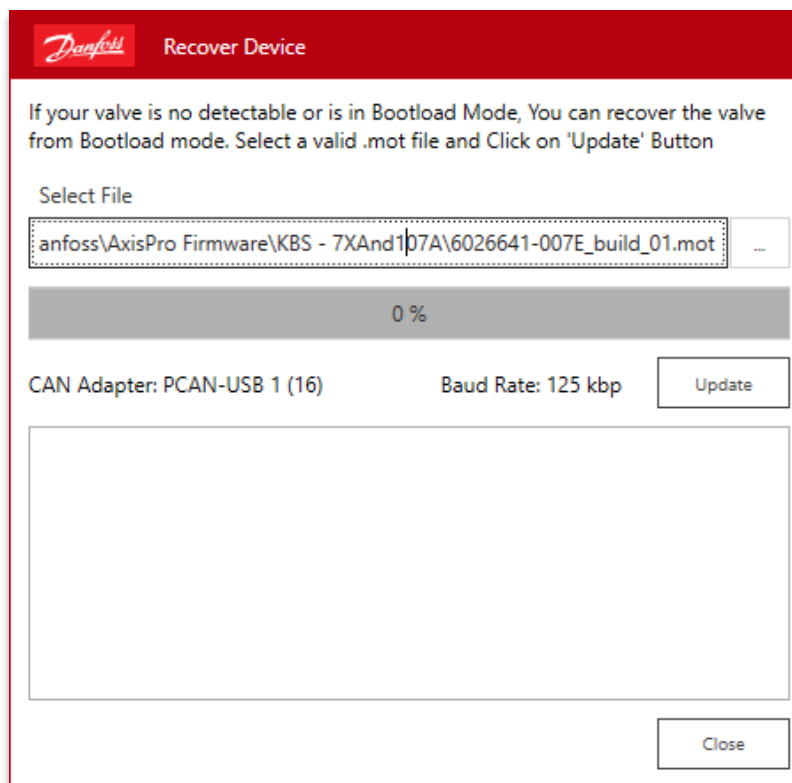


Figure 10 – Bootloader/Recover Device Dialog

NOTES:

1. This process does not preserve parameters. The user will need to reload parameters from a prior DCF export, or manually reconfigure the valve, to restore it to an operational state.
2. It's a good practice to first load the restore.mot file for your firmware version, before loading the desired firmware. This is to ensure the EEPROM memory has been cleaned out.

2.1.3 Continue without connecting

This will allow a user to run Pro-FX™ Configure without being connected to a valve. When Pro-FX™ Configure is running without an AxisPro device connected, a user can view parameters in the Advance mode screen and perform import/export.

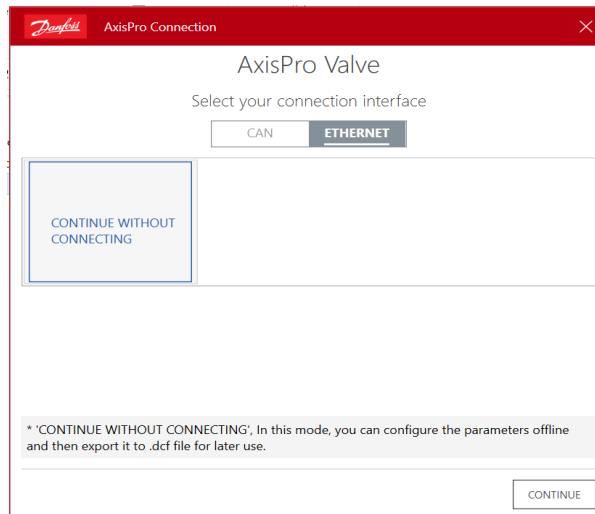


Figure 11.A – Continue without connecting

2.1.4 Scan Dialog

The scan dialog* is launched by clicking the SCAN button and will detect AxisPro valves for the selected CAN adapter. When detected, the following information from the valve is displayed: Valve Model, Address, Firmware Version, and Actions for the detected valve.

* Only available for CANopen.

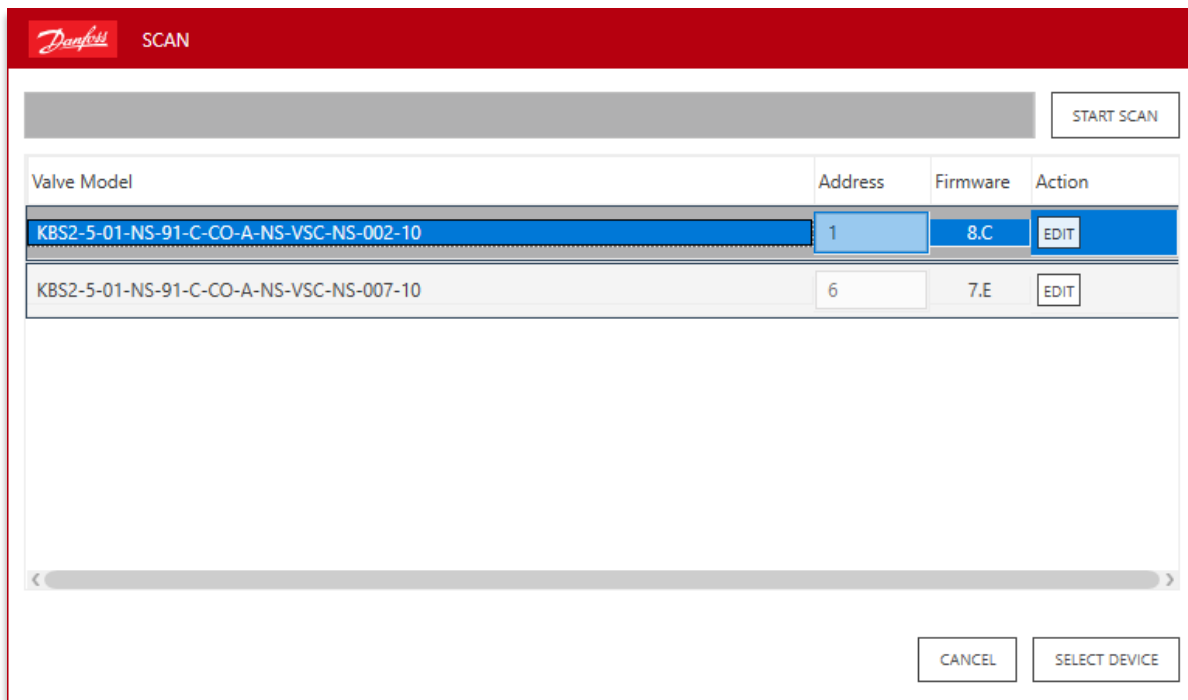


Figure 11.B – Scan Dialog

2.2 Detected AxisPro Valve

This screen displays AxisPro valve image, model code, firmware version and OD version as Pro-FX Configure loads configuration data from the valve.

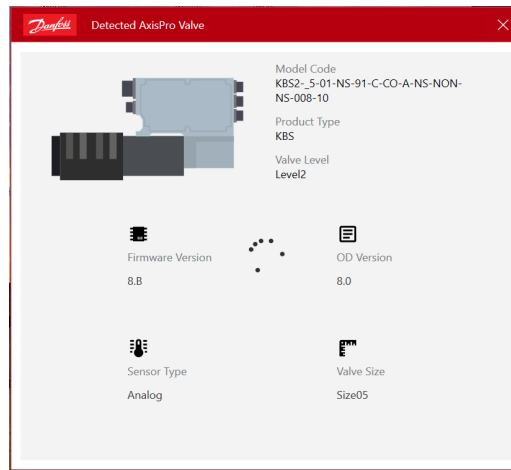


Figure 12 – Detected AxisPro Valve

2.3 Valve Configuration Screen

2.3.2 Startup Mode

The user can change the startup mode from this screen using the toggle button.

2.3.2.1 **Local control:** The valve will go active on power-up without any additional commands.

2.3.2.1 **Remote start:** The valve will require a NMT start message and the Control word needs to be set to go Active.

2.3.1 Configure Modes

AxisPro valves support different control modes. The user can select primary control mode and secondary control mode on the

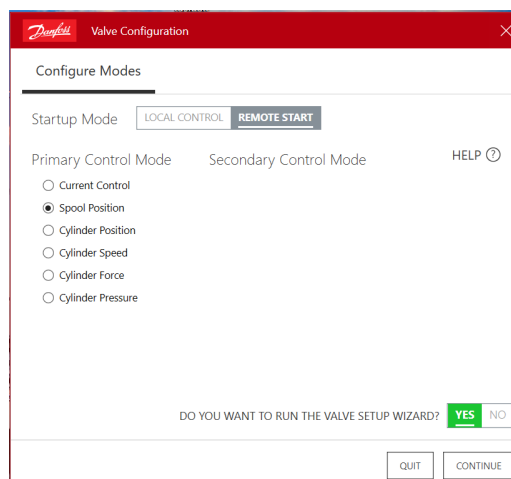


Figure 13 – Valve Configuration Screen

3. Pro-FX™ Configure UI

Once the Setup wizard is complete, the Pro-FX™ Configure UI will be displayed. The Pro-FX™ Configure UI is split into three different Panels:

- System Panel
- Toolbar Panel
- Configuration Panel

Each panel contains unique functionality that allows a user to configure their AxisPro valve.

NOTE: Pro-FX™ Configure works best with a wide screen resolution, such as 1080p.

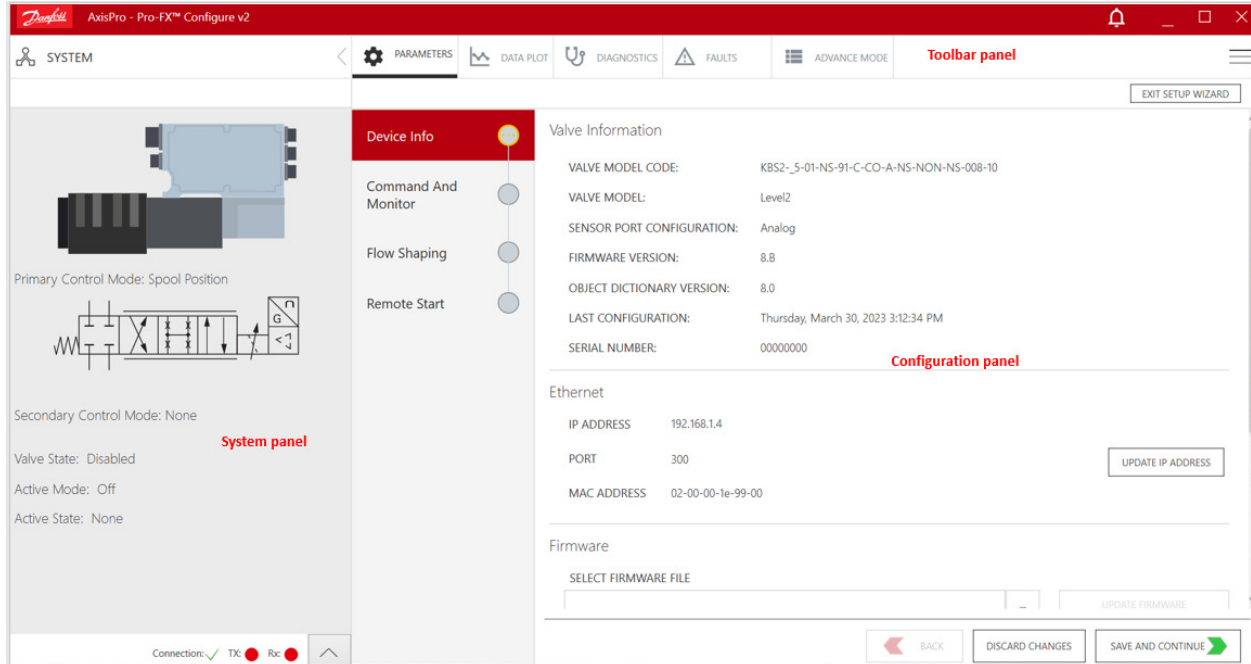


Figure 14 – Pro-FX™ Configure UI

3.1 System Panel

The System Panel will display basic information about the AxisPro valve. The AxisPro graphic will get displayed on it. The System Panel displays the following connection specific information:

Connection – A green checkmark will be displayed if connected to a AxisPro valve. If not connected, a red X will be displayed.

Tx – If flashing green, data is being sent to the AxisPro valve, otherwise red will be displayed.

Rx – If flashing green, data is being received from the AxisPro valve, otherwise red will be displayed.

Adaptor – The connected adaptor is displayed. Offline will be displayed if not connected to AxisPro valve.

Valve State – The valve state is displayed.

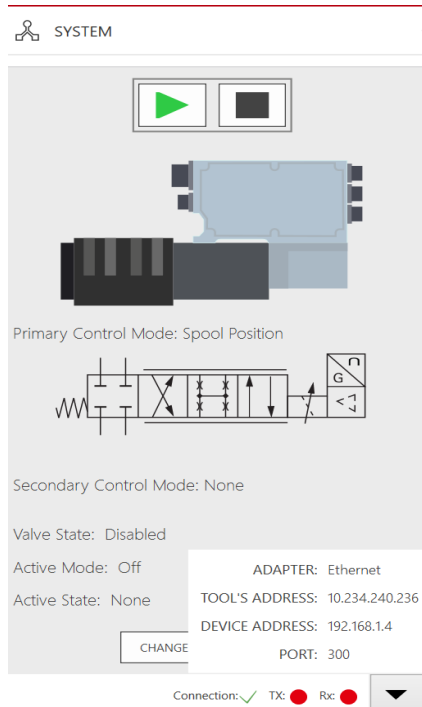


Figure 15 – System Panel

3.1.1 Play/Pause button

If a user clicks on the play button, the valve will go to Active State and clicking on the pause button changes to a Normal state.

3.2 Toolbar Panel

The Toolbar Panel holds the tabs and toggle buttons to display a data plotter, advance mode, diagnostics, and fault information.

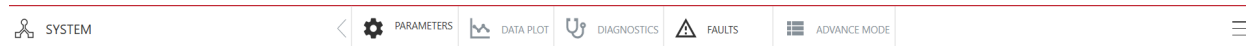


Figure 16 – Toolbar Panel

3.2.1 File Menu

File->Import As .dcf – Used to load calibrated parameters from a configuration file.

File->Export As .dcf – Used to save calibrated parameters to a configuration file.

Login With Factory Password – This is used to change the access level and after successful login, user will be able to modify factory parameters from advance mode screen.

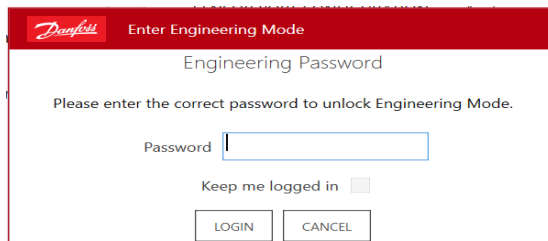


Figure 17 – Enter Factory Password Dialog

Once you log in to engineering mode, data fields for factory write parameters become editable in the Advance Mode screen.

Logout From Factory Password – This is used to logout from factory access. This option is visible in file menu if a user is logged in as a Factory user.

Save To Flash – This is used to save the parameter values to flash. This option is only available for factory users.

Create Service Password – This option is visible when valve is unlocked. It is used to create customized service password.

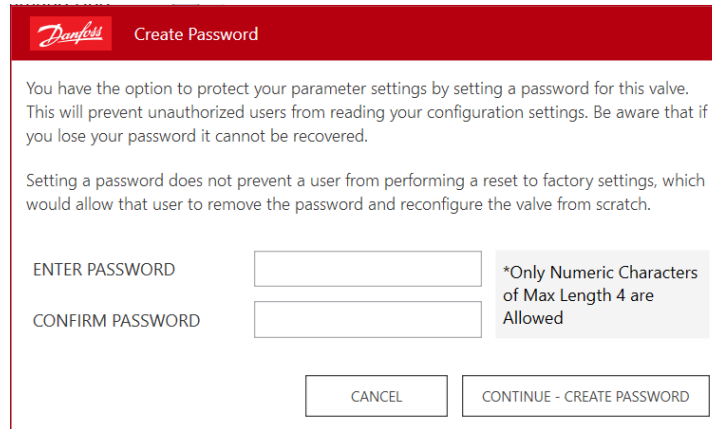


Figure 18 – Create Service Password Dialog

Enter your new password and then confirm password and click on “Continue-Create Password” button. A message box will pop up and ask user to power cycle the valve. After powercycling the valve, click on OK button of the message dialog. After creating a customized service password and configuring the valve, the user should turn off the valve and power supply so that unauthorized user is not able to change the configuration of the valve. If the user loses the password, then restore factory default can be performed from File menu and then user will have to again configure the valve from scratch.

If some unauthorized user tries to turn on the valve and access the configuration, then Pro-FX™ Configure v2 will ask the user to enter correct service password in the Connection wizard as shown below in the image.

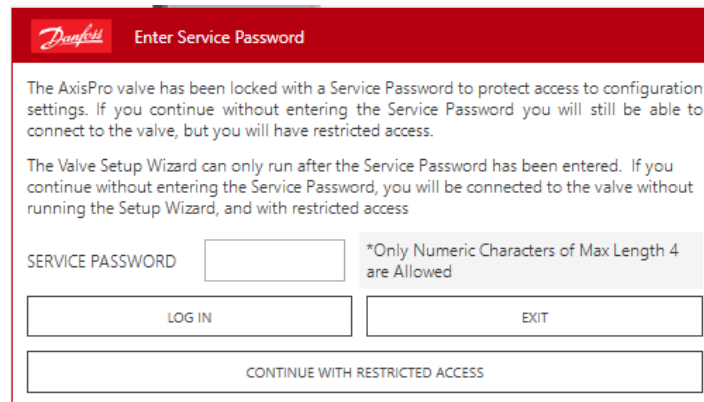


Figure 19 – Enter Service Password Dialog

User can enter correct service password and click on “Log In” button and can configure service parameters. If the user does not know the correct password set on the valve, then user can click on “Continue With Restricted Access” button and log in as a Normal User (can’t change configuration of service parameters). If the user has logged in with restricted access, then in File Menu, “Login With Service Password” option will be visible, and user can enter correct password and login as a service user.

Login With Service Password – It is visible when a user is using Pro-FX™ Configure v2 with restricted access (a normal user) and valve is locked with service password. The enter password dialog opens on clicking on “Login With Service Password”.

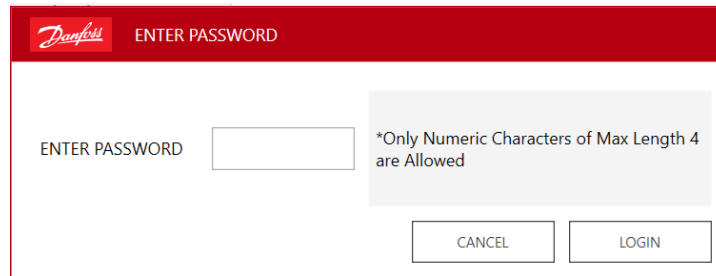


Figure 20 – Enter Password Dialog

Remove Service Password – This option is visible if user has created some customized service password and now wants to remove it from the valve. A message box will pop up and ask user to power cycle the valve. After powercycling the valve, click on OK button of the message dialog

Restore Factory Defaults – It is used to restore factory defaults to the valve.

About – Displays an About box outlining the installed Pro-FX™ Configure version.

Exit – Closes the application.

3.2.2 Parameters

Denotes the user is viewing the application parameters. This will always be toggled on.

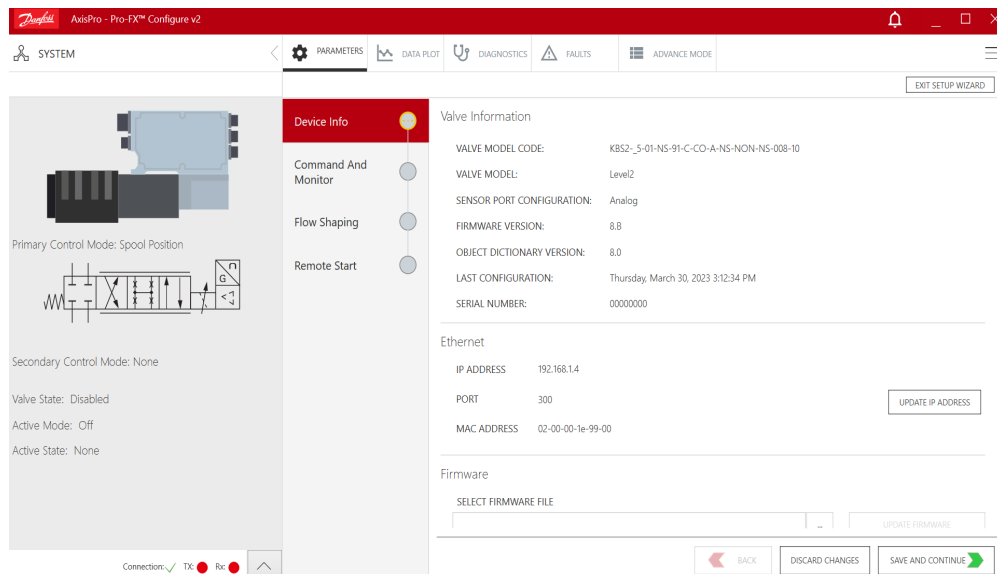


Figure 21 – Parameters view

3.2.3 Data Plot

Displays the Data Plot dialog. Using the data plot dialog, users can plot parameters.

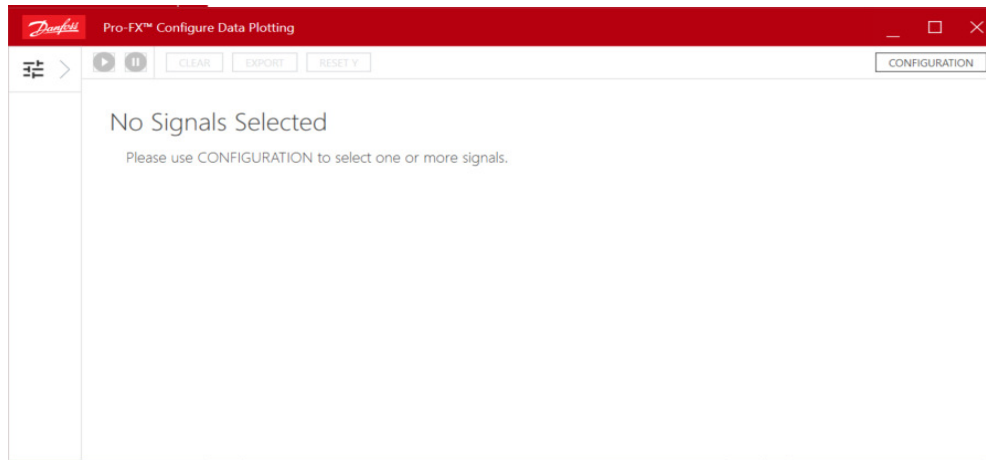


Figure 22 – Data Plot Dialog

3.2.3.1 Configuration dialog

To plot data, you need to first configure the parameters to display. Once the Data Plot dialog is displayed, click the Configuration button to display the Configuration dialog. You can configure up to ten different parameters to plot. (See Figure 23)

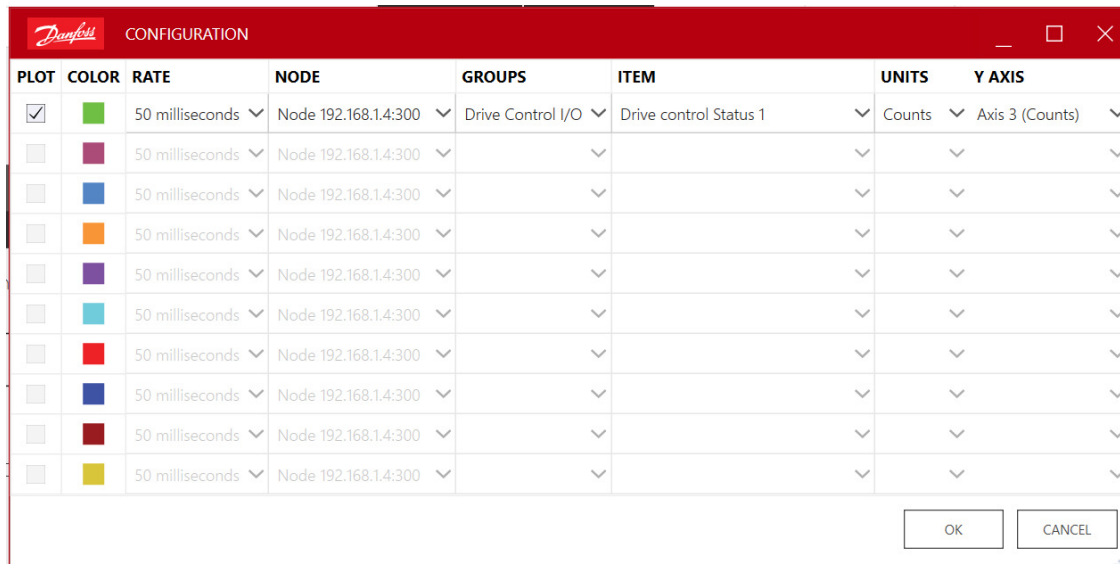


Figure 23 – Data Plot Configuration Window

The Configuration dialog contains the following options:

Plot – Checkbox that denotes if a parameter will be plotted.

Color – The line color that will be used when the parameter is plotted.

Rate – The polling interval used to request the data. For ethernet this is a dropdown on each signal, and for CANopen it's a single field at the bottom of the dialog.

NOTE: The rate period is an approximation only. For example: For ethernet when a read request is issued to the device, it has a 50-millisecond timeout. This timeout, coupled with the processing time of the application, may show longer data intervals.

Node – Displays the device type of the connected device, so will always be the currently attached AxisPro device.

Groups – A dropdown list that allows you to select a group.

Item – A dropdown list that displays the parameters that can be plotted. Use the Item dropdown to select the parameter you want to plot.

Units – The unit in which the parameter will be plotted.

Y-Axis – Allows you to plot different parameters on different axes. You can use up to six different axes.

Once you have finished configuring parameters, click OK from the dialog. The Data Plot dialog is now ready to plot data. Simply press the 'Play' button to start plotting. The parameters will plot along their Y axes and the X axis denotes time. Each parameter's color and line pattern are displayed along the bottom of the data plot. This allows users to easily differentiate between the parameters.

3.2.3.2 Data Plot features

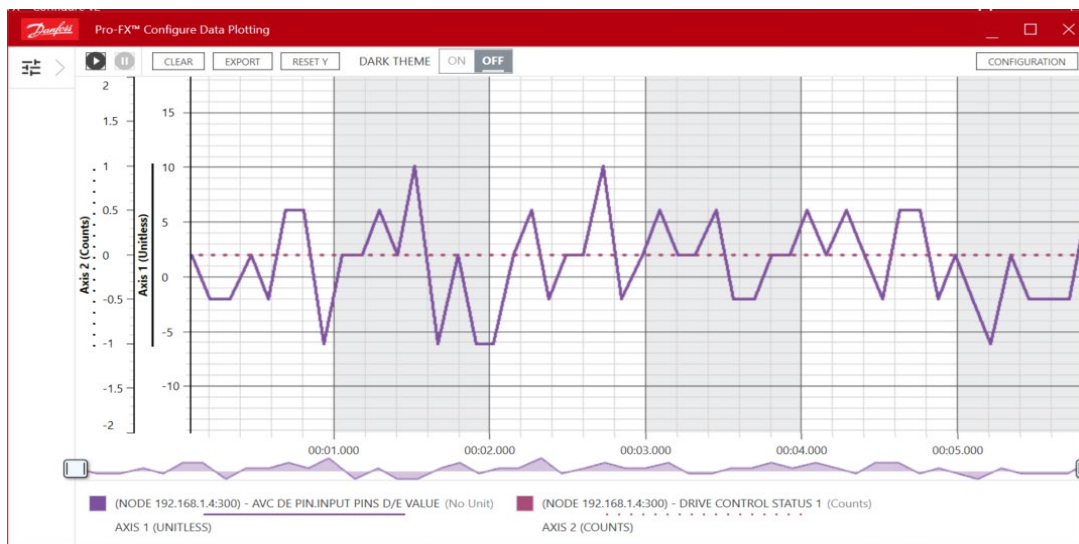


Figure 24 – Data Plotting

The Data Plot contains the following features:

Play/Pause

Allows a user to stop and start the data plotting at any time

Clear

Resets the plot to its initial state. This will reset the Y axes but will keep the X axes current time sequence.

Export

When the Data Plot is paused, an export of the data can be performed. This will export the parameters data and time interval to a .csv file. This .csv file can be imported into other tools to further diagnose the data.

Reset Y

Resets the Y axis.

Follow

When enabled, the plot will follow the data as it progresses over time. When toggled off, the graph will still plot data, but the viewable section will be frozen in time. This allows a user to view data at a specific point in time.

Inspect

Shows a blue vertical line on the plot and allows a user to have a quick glance of a parameters value at different points in time.

Show/hide parameters

Once parameters have been configured, their visibility can be toggled on or off by clicking on the parameter name located at the bottom of the Data Plot dialog.

Zoom in

You can zoom into the data plot by holding the left mouse button and 'drawing' a rectangular area. The Data Plot will zoom into the range specified by the rectangle. This allows users to display and focus on specific regions of plotted parameters.

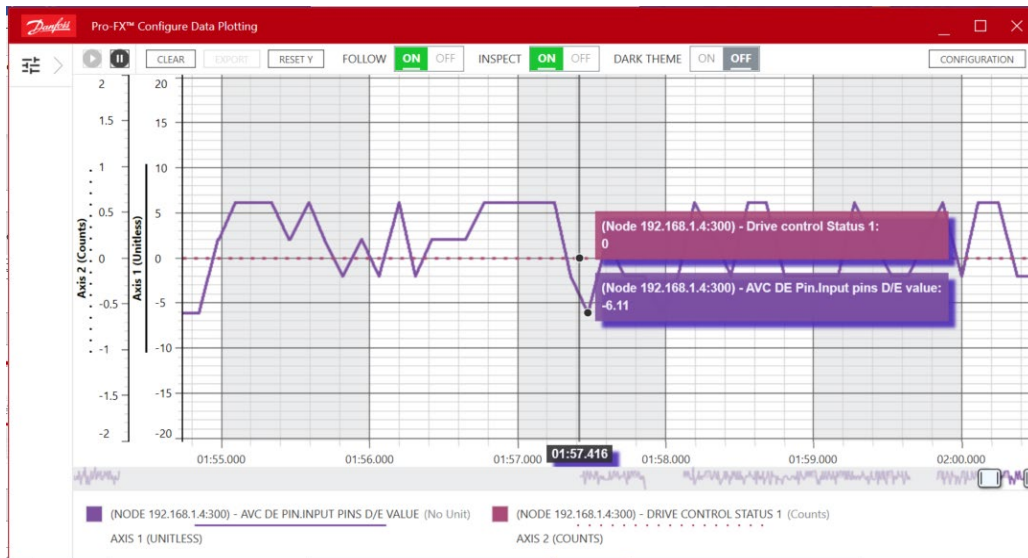


Figure 25 – Data Plotting – Inspect set to ON

3.2.3.3 Controls Toggle in Data Plot

A setpoint slider, manual entry box, and waveform options are available in Controls toggle in data plot. Click on signal generator and then send setpoint using slider or manually entering the value in the text box or using the waveform section. User can monitor the Feedback value from the Control tab of Diagnostics (in Toolbar panel).

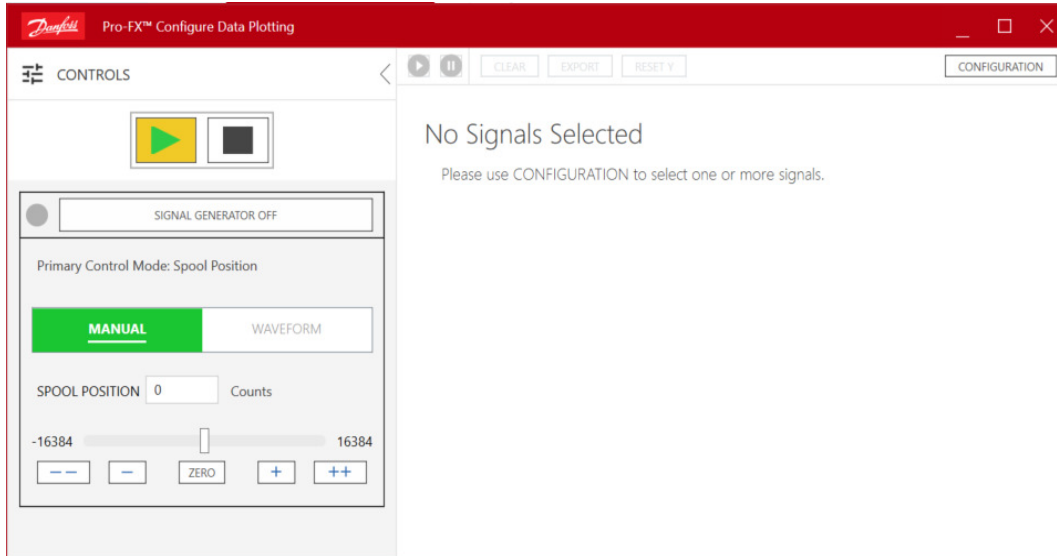


Figure 26 – Controls Toggle in Data Plot

3.2.4 Faults

Displays the faults dialog. The faults dialog will show any active or historic faults and gives the user an opportunity to clear the faults. If any faults become active when Pro-FX™ Configure v2 is running, a red circle will flash over the Faults toggle button. The red circle will contain the number of current faults.

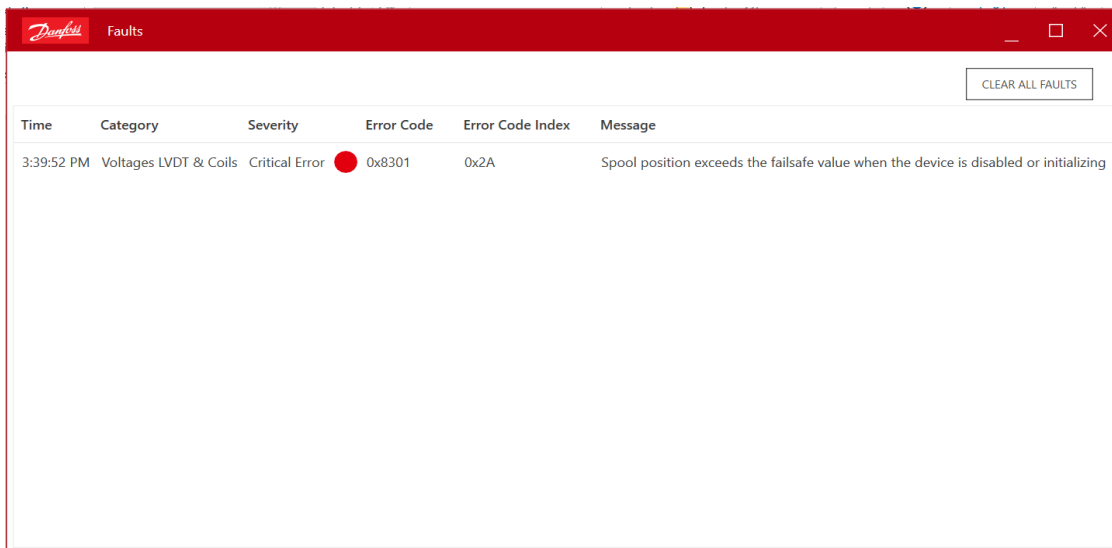


Figure 27 – Faults Dialog

Time – The time at which the fault has occurred. It will show historic for historic faults.

Category – This shows type of fault.

Severity – This shows if a fault is a warning/critical/information.

Error Code – Error code is displayed.

Error Code Index – Error Code Index is displayed.

Message – Fault Message is displayed.

Clicking the CLEAR ALL FAULTS button will clear the currently displayed faults.

NOTE: Please refer Appendix A for more information about faults.

3.2.5 Advance Mode

Opens Advance Mode dialog (see Figure 28). The entire object dictionary is read when the user opens the advance mode for the first time to refresh the values on the UI. The complete listing of available object dictionary parameters is organized, retrieved, and can be edited by Advance Mode. The Advance Mode is the means in which Pro-FX™ Configure v2 presents the object dictionary information found in the standardized electronic datasheet (.EDS) for the AxisPro valve. Parameters are grouped as per their functionality such as Diagnostic parameters, Calibration parameters, Admin parameters etc.

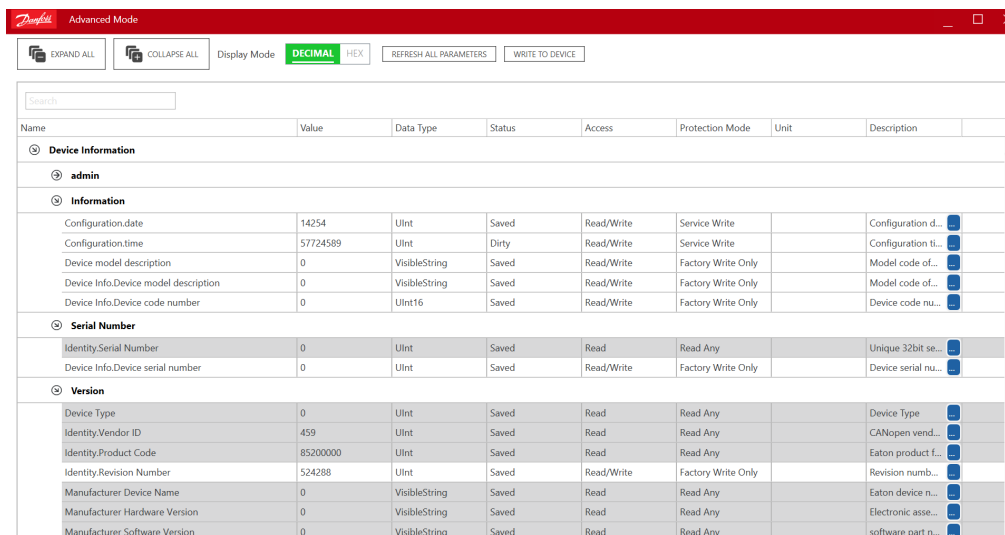


Figure 28 – Advance Mode Dialog

Expand All – It will expand all the groups and all the parameters will be visible.

Collapse All – It will collapse all the groups.

Display Mode – The Advance Mode data field can be displayed in decimal or hexadecimal. If Hex is selected, then integer parameter values are displayed in hexadecimal format, otherwise in decimal format.

Refresh All Parameters – All parameters are read from device and user can see the value that is saved in the device. The advance mode screen is refreshed with new values, if any.

Write to Device – All the dirty parameters are written to the valve.

The user can also expand just one group by clicking on it. The advance mode shows Name, Value, Status, Access, Protection Mode, Unit, Description of each parameter. User can change value of the

parameters based on the protection mode (Read/Write, Read Only or Write only) and Access (service or factory parameter). Editable parameters have an editable field in the Screen. Only parameters with write access (read/write [R/W] or write-only [WO]) may be edited and updated in the detected valve. To change a parameter, enter the desired value into the column. The status column for the entry changes to "Dirty". At this point, the data has not been sent to the valve.

Click on WRITE TO DEVICE to save the edited parameters to the valve. The status column will indicate if the value was written successfully to the valve or not. Multiple parameters can be edited before clicking the WRITE TO DEVICE button.

If writing or reading a parameter is unsuccessful (It is represented as --- on UI), try collapsing and again expanding that sub-group so that the user can see the Saved value for that parameter, or right-clicking on the name of the parameter and selecting "Read From Device" context menu item.

NOTE: For 7.x firmware some parameters will show as "---" until the user has logged in in Engineering Mode.

3.2.6 Diagnostics

Opens Diagnostics dialog where user can monitor the health of a few critical diagnostic parameters. There are three tabs: Status, I/O, and Control.

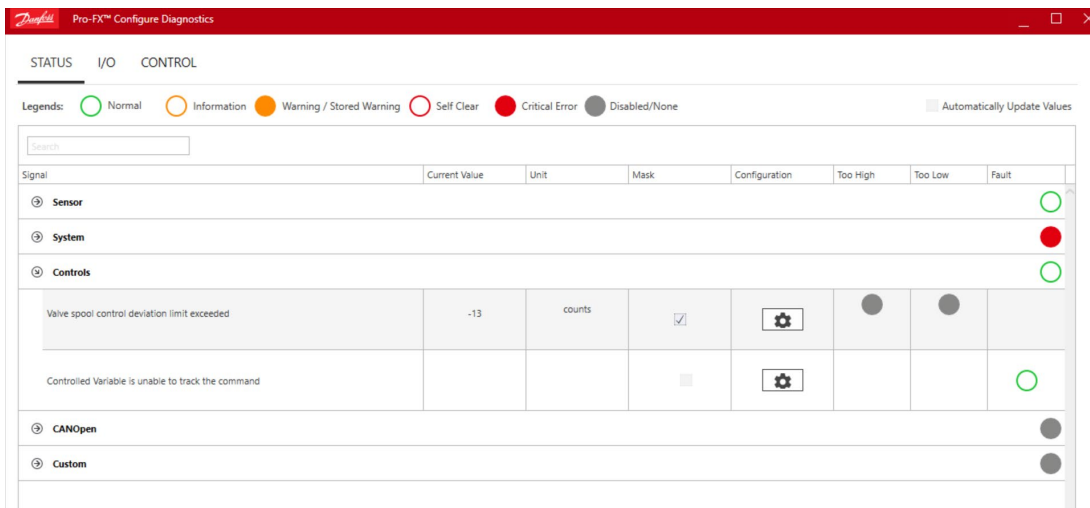


Figure 29 – Diagnostics Dialog

Status – The device health can be monitored and reacted-to using configurable diagnostics for valve behaviors. The Status tab organizes the related object dictionary parameters for easy configuration and monitoring. Each diagnostic has a high and low limit configuration. Status for each parameter (in range/out of range) is displayed.

Update Values Automatically – If the user checks this option, then user can continuously see updated values of these parameters from the valve.

Configuration – Clicking on it opens a Fault Configuration window. User can edit the high and low limit value (if an authorized user) by entering the value in Threshold column and click on OK button to save the changes.

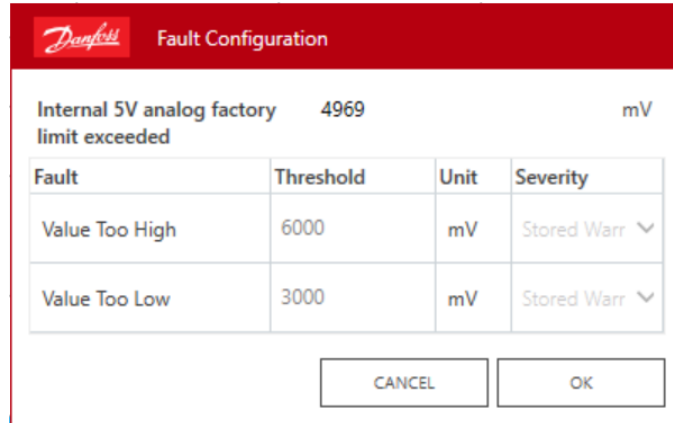


Figure 30 – Fault Configuration Dialog

I/O – This tab displays images to help user with pins and their descriptions.

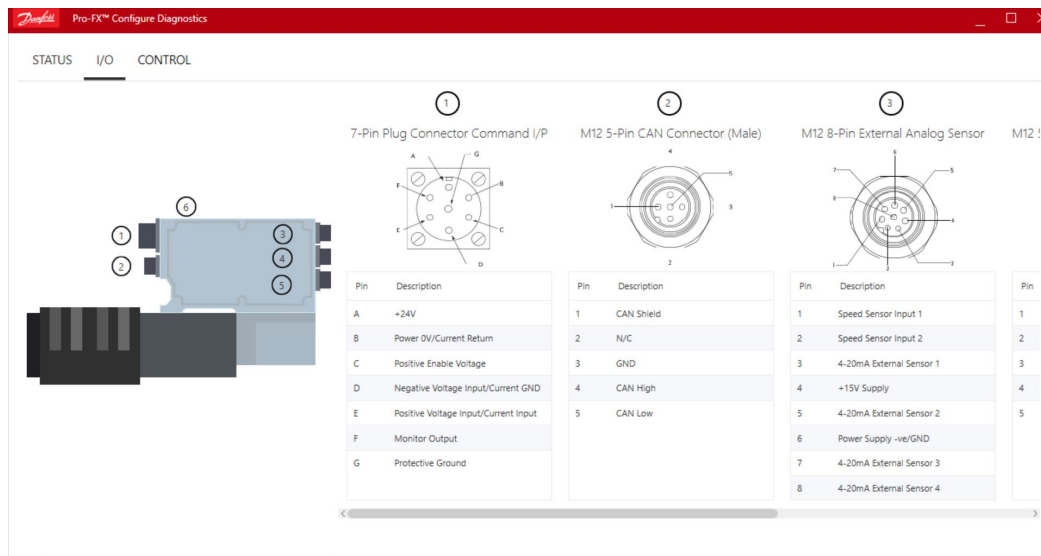


Figure 31 – Diagnostics I/O Tab

Controls – If user has given some command to the valve (or as per the configuration done from Command and Monitor tab), then from this tab you can monitor feedback value for the current control mode continuously.

3.3 Configuration Panel

The Configuration panel displays and allows editing of the most often used control parameters for setup and tuning purposes as an alternate to editing the Object Dictionary directly via the Advance mode. The tabs in this panel are visible according to the selected control mode. User can also use “Read Entire OD” button to refresh the parameter values from the valve and WRITE TO DEVICE button to write dirty values to the valve. It contains views that allow the user to configure some parameters and update the firmware on the AxisPro valve.

3.3.1 Device Info View

This view contains information about the AxisPro device and the ability to update the firmware.

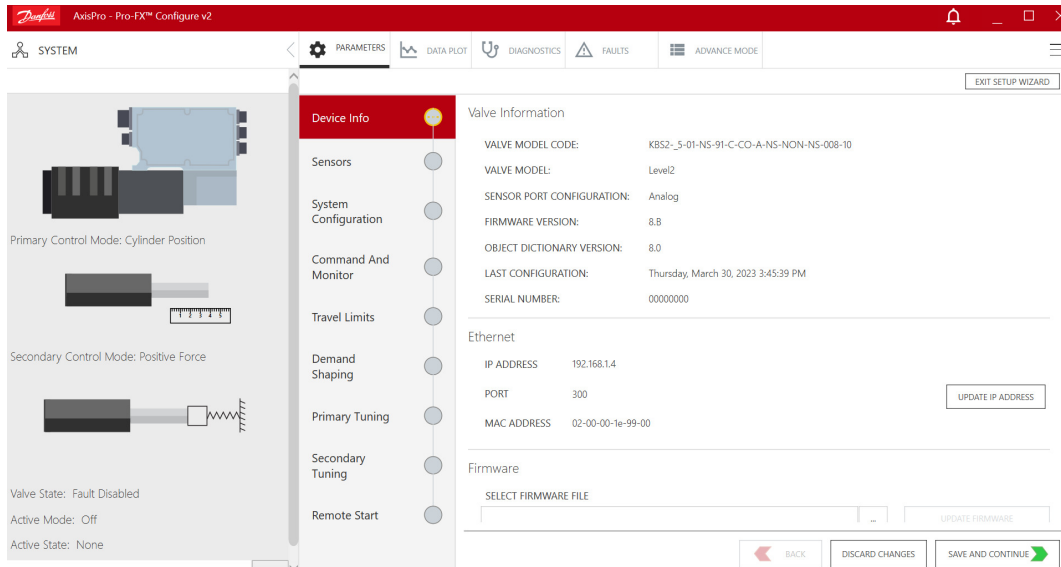


Figure 32 – Device Info Tab

3.3.1.1 Valve Information

Contains general information about the AxisPro valve like model code, firmware version, OD version.

3.3.1.2 Firmware

User can update firmware (only factory users) from the file menu. First, use the file menu to login as a factory user. To update, browse for a file and click Update. The progress bar will grow as the update is in progress. During an update, the rest of Pro-FX™ Configure will not be useable. Once the update is complete and user clicks on Close button, the progress bar dialog will close, and the application will relaunch.

NOTES:

1. Don't send any other messages to the valve while updating the firmware as it may corrupt the firmware.
2. For CANopen valves you must have only one valve connected when updating firmware. Doing otherwise may corrupt firmware on one or more valves on the CAN bus.

3.3.2 Sensor

All data in this section View should be entered directly from the sensor spec sheet. If the system does not utilize the entire range, do not adjust the maximum stroke in this section. This will be addressed in the upcoming Travel Limits section.

NOTE: for more help, click on the help button in the top right corner.

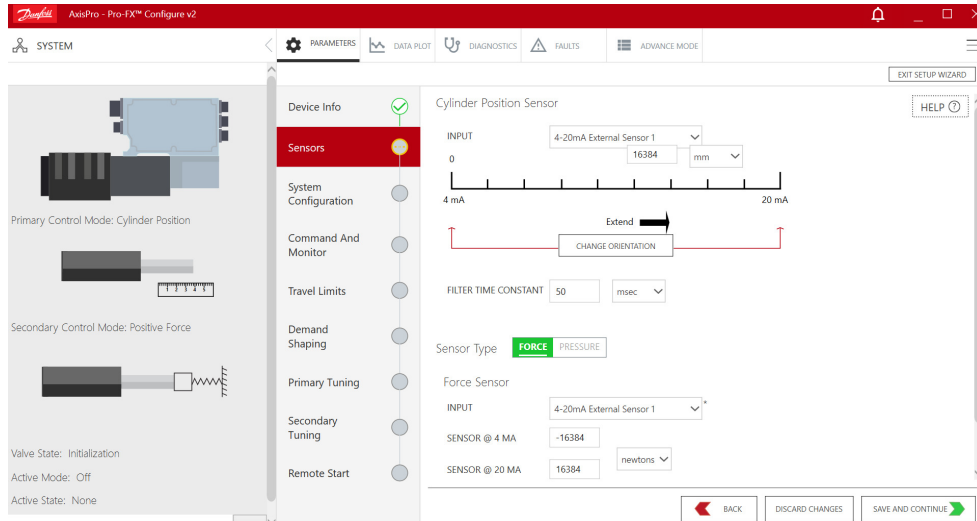


Figure 33 – Sensor Tab

3.3.2.1 Filter Time Constant

This parameter is adjusting the time constant of a 1st order low-pass filter applied to the input signal. Setting the time constant to 0 disables the filter. The frequency (Hz) at which the filter attenuates the signal by 3db (Fc) is found via $F_c = 1/(2 \cdot \pi \cdot \text{time constant})$. This is also known as the corner frequency, or the break frequency.

3.3.3 Command And Monitor

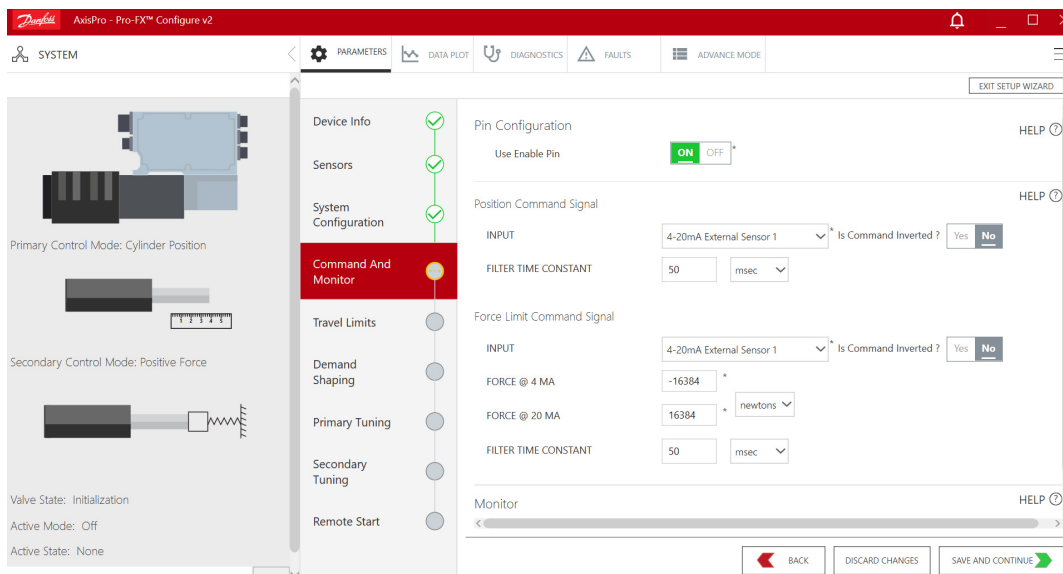


Figure 34 – Command And Monitor Tab

3.3.3.1 Pin Configuration

When this is turned to "ON" pin C of the 7-pin connector needs to be above the threshold voltage in order for the valve to become active.

3.3.3.2 Spool Position Command Signal

The user can select the options from the drop down to choose the desired device mode and then click on WRITE TO DEVICE button to save changes to the valve.

NOTE: for more help, click on the help button in the top right corner.

3.3.4 Travel Limits

Travel limits is used to restrict cylinder travel to the actual travel range of a system. It is not always possible to fully retract or extend a cylinder. The Travel limits page sets soft limits to prevent running into system hard-stops.

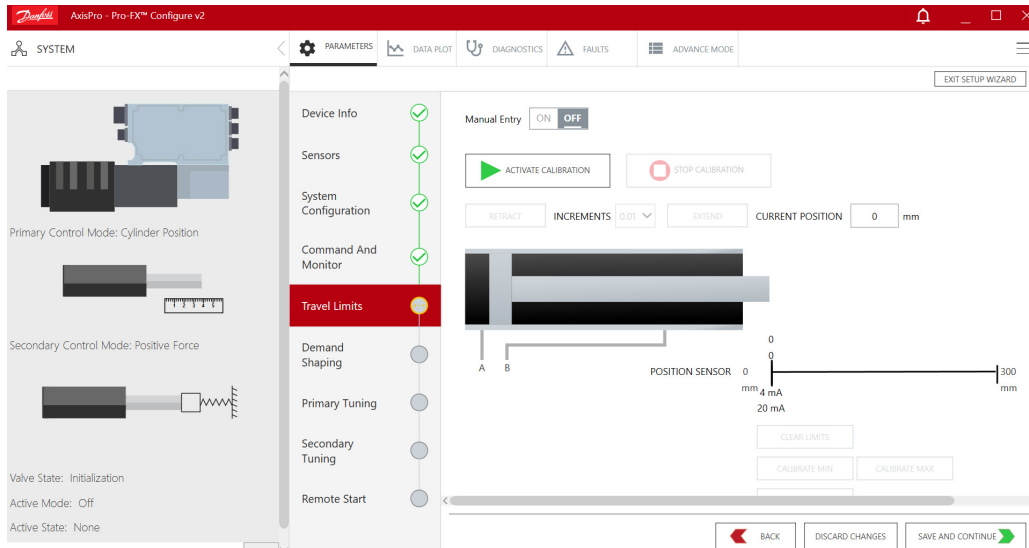


Figure 35 – Travel Limit Tab

Example: Travel limits is used to restrict cylinder travel to the actual travel range of a system. It is not always possible to fully retract or extend a cylinder. The Travel limits page sets soft limits to prevent running into system hardtops. A 254mm cylinder is restricted by hard-stops between 10mm to 200mm. By using travel limits, a +/- 10 volt command signal will be mapped so that -10V = 10mm and +10V = 200mm.

NOTE: For more help, click on the help button in the top right corner.

3.3.5 Demand Shaping

Demand Shaping lets the user configure the demand parameters for the selected control mode. The exact fields presented will vary based on primary and secondary control mode. See the HELP text for details on filling in data for the selected primary and secondary control modes. This can be displayed by clicking the HELP button on the upper right of the parameters panel.

The example in Figure 36 below is for a valve being configured with a Primary Control Mode of Cylinder Position and secondary control mode of Positive Force.

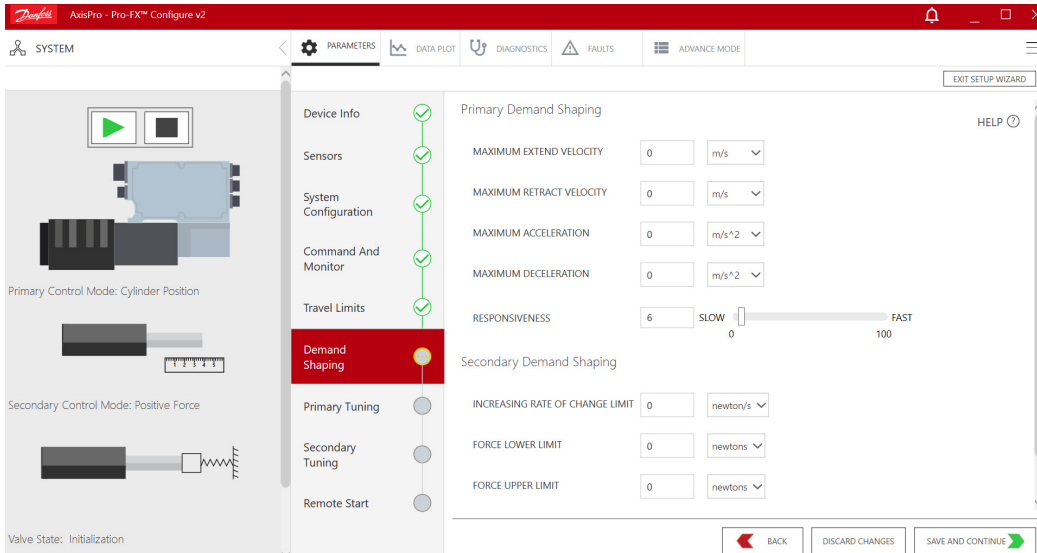


Figure 36 – Demand Shaping Tab

3.3.6 Tuning

If the Controller options is available, the spool/sleeve is supported by the parameter tuned controller. This is the recommend setting for supported spools. The manual PI controller option is available for all spool/sleeve sets.

NOTE: for more help, click on the help button in the top right corner.

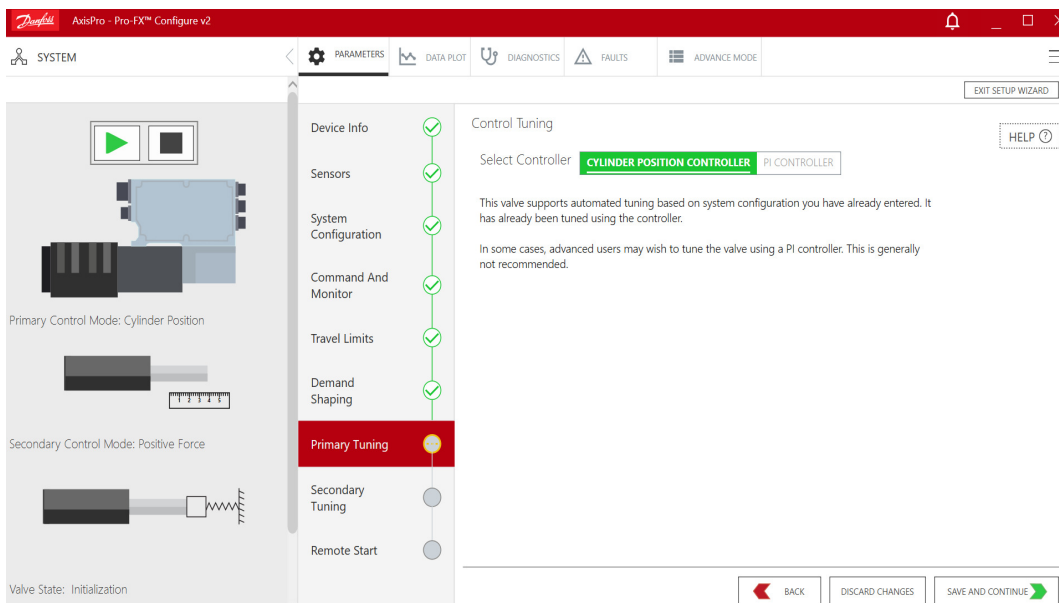


Figure 37 – Tuning Tab

3.3.7 Flow Shaping view

User can use the toggle button to enable/disable flow shaping and click on WRITE TO DEVICE button to save the changes to the valve. The user can view the graph between the command and the spool position. Also, the x-axis (Command) can be changed.

For example- If the user selects 4-20mA in command and monitor tab, then the x-axis(command) in flow shaping will be same. So, the user can choose device mode from Command and Monitor tab and that will be the command(x-axis) in flow shaping view. User can edit the spool position (%) by changing the values in the text boxes under the spool position column for the corresponding Command value and then clicking on the WRITE TO DEVICE button.

NOTE: for more help, click on the help button in the top right corner.

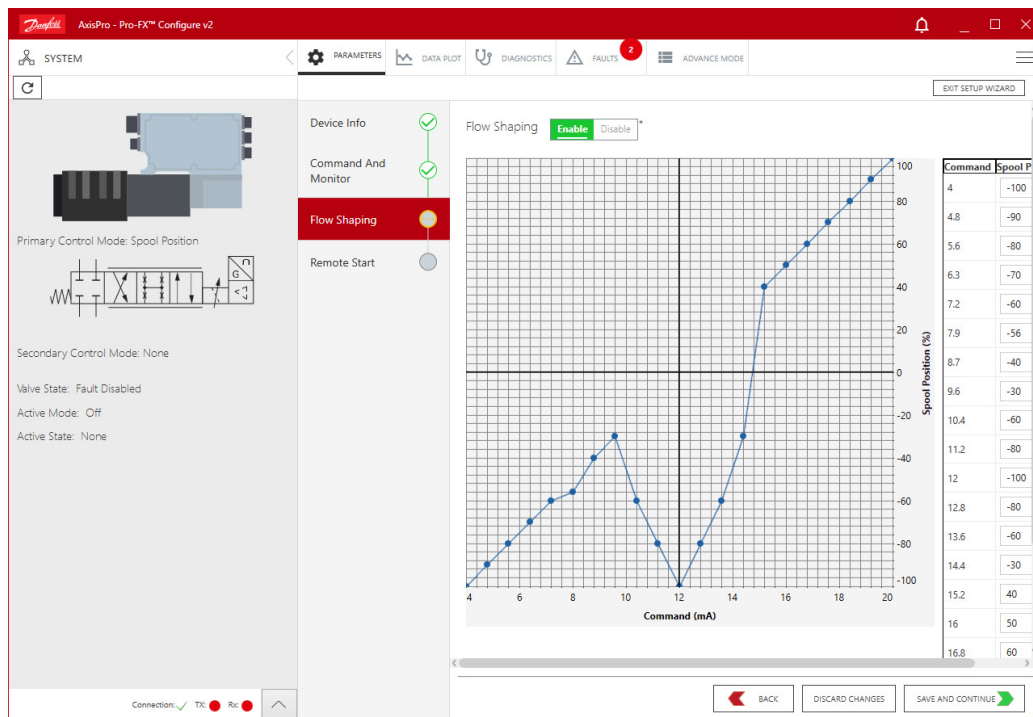


Figure 38 – Flow Shaping View

Abort Codes

The Device sends the abort code if TCP/IP protocol violated or due to device internal state has not allowed accessing the objects.

Abort Code	Description
0503 0000h	Toggle bit not alternated.
0504 0001h	Client/server command specifier not valid or unknown.
0601 0000h	Unsupported access to an object.
0601 0001h	Attempt to read a write only object.
0601 0002h	Attempt to write a read only object.
0602 0000h	Object does not exist in the object dictionary.
0604 0043h	General parameter incompatibility reason.
0604 0047h	General internal incompatibility in the device.
0607 0010h	Data type does not match, length of service parameter does not match
0607 0013L	Data length is less than parameter length.
0609 0011h	Sub-index does not exist.
0609 0030h	Value range of parameter exceeded (only for write access).
0609 0031h	Value of parameter written too high.
0609 0032h	Value of parameter written too low.
0609 0036h	Maximum value is less than minimum value.
0800 0000h	General error
0800 0020h	Data cannot be transferred or stored to the application.
0800 0021h	Data cannot be transferred or stored to the application because of local control. Parameters are Factory protected can't read or write.
0800 0022h	Data cannot be transferred or stored to the application because of the present device state.
0800 0024L	Data is not available to read

Object Dictionary

While configuring a device, the user shall only set values in the range specified by the Object Dictionary table. The available Object Dictionary table entries will vary depending on the firmware version that's installed and are accessibly from the Advance Mode screen within Pro-FX Configure.

The Object Dictionary is also provided as an Electronic Data Sheet (.eds) file along with the firmware when you acquire it from Danfoss.

Appendix A – Emergency Messages/Faults

The following table documents the emergency messages/faults that an AxisPro valve can emit:

Error Code	Error Code Index	Fault Description
0x0000	0x00	Error Reset or No Error
0x6100	0x01	Error Parameter Not Supported
0x5530	0x02	EEPROM checksum fault
0x8220	0x03	PDO mapping length exceeded
0x5210	0x04	Measurement Circuits
0x8150	0x05	CAN baud rate is not valid
0x8150	0x06	CAN node ID is not valid
0x5510	0x07	RAM data bus fault
0x8100	0x08	CAN Bit1 Error
0x8140	0x09	CAN transmit bus is not active
0x8120	0x0A	CAN transmit bus is in passive mode
0x8100	0x0B	CAN CRC Error
0x8110	0x0C	CAN Tx Overflow
0x8200	0x0D	TPDO is outside SYNC window
0x8200	0x0E	SSI sensor data was not received
0x8210	0x0F	RPDO message length is not valid
0x8200	0x10	SDO or NMT message length is not valid
0x8200	0x11	NMT command is not valid
0x8200	0x12	Message received during inhibit time
0x8100	0x13	CAN frame error
0x8200	0x14	SYNC Early
0x8130	0x15	CAN lifeguard error
0x6010	0x16	Watchdog timer reset
0x5520	0x17	1 ms thread overrun
0x3411	0x20	24V supply voltage factory upper limit exceeded
0x3412	0x21	24V supply voltage factory lower limit exceeded
0x3210	0x22	Internal 5V digital factory upper limit exceeded
0x3220	0x23	Internal 5V digital factory lower limit exceeded
0x3211	0x24	Internal 1.5V factory upper limit exceeded
0x3221	0x25	Internal 1.5V factory lower limit exceeded
0x3212	0x26	Internal 2.5V factory upper limit exceeded
0x3222	0x27	Internal 2.5V factory lower limit exceeded
0x3213	0x28	Internal 5V analog factory upper limit exceeded
0x3223	0x29	Internal 5V analog factory lower limit exceeded
0x8301	0x2A	Spool position exceeds the failsafe value when the device is disabled or initializing
0x8301	0x2B	LVDT primary is disconnected
0x8301	0x2C	Spool position factory upper limit exceeded
0x8301	0x2D	Spool position factory lower limit exceeded

0x2310	0x2E	Solenoid coil A current factory upper limit exceeded
0x2320	0x2F	Solenoid coil A current factory lower limit exceeded
0x2310	0x30	Solenoid coil B current factory upper limit exceeded
0x2320	0x31	Solenoid coil B current factory lower limit exceeded
0x5231	0x40	External current sensor 1 factory upper limit exceeded
0x5241	0x41	External current sensor 1 factory lower limit exceeded
0x5232	0x42	External current sensor 2 factory upper limit exceeded
0x5242	0x43	External current sensor 2 factory lower limit exceeded
0x5233	0x44	External current sensor 3 factory upper limit exceeded
0x5243	0x45	External current sensor 3 factory lower limit exceeded
0x5234	0x46	External current sensor 4 factory upper limit exceeded
0x5244	0x47	External current sensor 4 factory lower limit exceeded
0x7310	0x48	Port A pressure sensor factory upper limit exceeded
0x7311	0x49	Port A pressure sensor factory lower limit exceeded
0x7312	0x4A	Port B pressure sensor factory upper limit exceeded
0x7313	0x4B	Port B pressure sensor factory lower limit exceeded
0x7314	0x4C	Port P pressure sensor factory upper limit exceeded
0x7315	0x4D	Port P pressure sensor factory lower limit exceeded
0x7316	0x4E	Port T pressure sensor factory upper limit exceeded
0x7317	0x4F	Port T pressure sensor factory lower limit exceeded
0x4221	0x50	Port T temperature sensor factory upper limit exceeded
0x4222	0x51	Port T temperature sensor factory lower limit exceeded
0x4211	0x52	PCB temperature factory upper limit exceeded
0x4212	0x53	PCB temperature factory lower limit exceeded
0x8130	0x60	Heartbeat error for Consumer 1
0x8130	0x61	Heartbeat error for Consumer 2
0x8130	0x62	Heartbeat error for Consumer 3
0x8130	0x63	Heartbeat error for Consumer 4
0x8130	0x64	Heartbeat error for Consumer 5
0x8130	0x65	Heartbeat error for Consumer 6
0x730C	0x68	External SSI sensor custom upper limit exceeded
0x730D	0x69	External SSI sensor custom lower limit exceeded
0x730E	0x6A	External CAN sensor 1 custom upper limit exceeded
0x730F	0x6B	External CAN sensor 1 custom lower limit exceeded
0x7318	0x6C	External CAN sensor 2 custom upper limit exceeded
0x7319	0x6D	External CAN sensor 2 custom lower limit exceeded
0x731A	0x6E	External motor speed sensor 1 custom upper limit exceeded
0x731B	0x6F	External motor speed sensor 1 custom lower limit exceeded
0x731C	0x70	External motor speed sensor 2 custom upper limit exceeded
0x731D	0x71	External motor speed sensor 2 custom lower limit exceeded
0x8310	0x72	Valve spool control deviation custom upper limit exceeded
0x8311	0x73	Valve spool control deviation custom lower limit exceeded

0x5236	0x74	External voltage sensor 1 custom upper limit exceeded
0x5236	0x75	External voltage sensor 1 custom lower limit exceeded
0x5237	0x76	External voltage sensor 2 custom upper limit exceeded
0x5237	0x77	External voltage sensor 2 custom lower limit exceeded
0x7330	0x78	External CAN sensor 3 custom upper limit exceeded
0x7331	0x79	External CAN sensor 3 custom lower limit exceeded
0x7332	0x7A	External CAN sensor 4 custom upper limit exceeded
0x7333	0x7B	External CAN sensor 4 custom lower limit exceeded
0x7302	0x80	External current sensor 1 custom upper limit exceeded
0x7303	0x81	External current sensor 1 custom lower limit exceeded
0x7304	0x82	External current sensor 2 custom upper limit exceeded
0x7305	0x83	External current sensor 2 custom lower limit exceeded
0x7306	0x84	External current sensor 3 custom upper limit exceeded
0x7307	0x85	External current sensor 3 custom lower limit exceeded
0x7308	0x86	External current sensor 4 custom upper limit exceeded
0x7309	0x87	External current sensor 4 custom lower limit exceeded
0x731E	0x88	Port A pressure sensor custom upper limit exceeded
0x731F	0x89	Port A pressure sensor custom lower limit exceeded
0x7324	0x96	Port B pressure sensor custom upper limit exceeded
0x7325	0x97	Port B pressure sensor custom lower limit exceeded
0x7322	0x98	Port P pressure sensor custom upper limit exceeded
0x7323	0x99	Port P pressure sensor custom lower limit exceeded
0x7320	0x9A	Port T pressure sensor custom upper limit exceeded
0x7321	0x8F	Port T pressure sensor custom lower limit exceeded
0x7328	0x9C	Port T temperature sensor custom upper limit exceeded
0x7329	0x9D	Port T temperature sensor custom lower limit exceeded
0x7326	0x92	PCB temperature sensor custom upper limit exceeded
0x7327	0x93	PCB temperature sensor custom lower limit exceeded
0x7300	0x94	Input pins D/E custom upper limit exceeded
0x7301	0x95	Input pins D/E custom lower limit exceeded
0x730A	0x96	External enable custom upper limit exceeded
0x730B	0x97	External enable custom lower limit exceeded
0x8001	0x8C	User specified OD Index 1 custom upper limit exceeded
0x8002	0x8D	User specified OD Index 1 custom lower limit exceeded
0x8003	0x8E	User specified OD Index 2 custom upper limit exceeded
0x8004	0x8F	User specified OD Index 2 custom lower limit exceeded
0x8005	0x90	User specified OD Index 3 custom upper limit exceeded
0x8006	0x91	User specified OD Index 3 custom lower limit exceeded
0x8007	0x92	User specified OD Index 4 custom upper limit exceeded
0x8008	0x93	User specified OD Index 4 custom lower limit exceeded
0x8312	0xA0	Incorrect Positive Rate Limit in Demand Shaping
0x8313	0xA1	Incorrect Negative Rate Limit in Demand Shaping

0x8314	0xA2	Incorrect Acceleration Limit in Demand Shaping
0x8315	0xA3	Incorrect Deceleration Limit in Demand Shaping
0x8316	0xA4	Incorrect Shaper Cut-off Frequency
0x8317	0xA5	Incorrect Shaper Cut-off Frequency for Acceleration
0x8318	0xA6	Incorrect Shaper Cut-off Frequency for Deceleration
0x8319	0xA7	Incorrect upper limit in demand shaper
0x831A	0xA8	Incorrect lower limit in demand shaper
0x831B	0xA9	Incorrect Rate of Change Limit in Demand Shaping
0x8330	0xC0	Cylinder Area on Port A side cannot be zero
0x8331	0xC1	Cylinder Area on Port B side cannot be zero
0x8332	0xC2	Tank Pressure is higher than Supply Pressure
0x8333	0xC3	RESERVED
0x8334	0xC4	Load is too big
0x8335	0xC5	Valve Cylinder Plumbing is unspecified
0x8336	0xC6	Sensor Direction is unspecified
0x8337	0xC7	User Frame Direction is unspecified
0x8338	0xC8	Zero Motor Displacement Error
0x8339	0xC9	Conveyance Volume cannot be zero
0x8350	0xCA	Integration Positive Limit is negative
0x8351	0xCB	Integration Negative Limit is positive
0x8358	0xCD	Command is not mapped
0x8359	0xCE	Cylinder Position feedback is not mapped
0x835A	0xCF	Valid Tuning Mode not selected
0x835B	0xD0	Pressure is not mapped
0x835C	0xD1	Force is not mapped
0x835D	0xD2	Torque is not mapped
0x835E	0xD3	Motor Speed is not mapped
0x835F	0xD4	Cylinder Length cannot be zero
0x8368	0xD5	Invalid Control Mode selected by State Machine
0x8360	0xE0	Controlled Variable is unable to track the command

Appendix B – KBS Legacy Firmware Support (7.x)

As of the v2.5.0 release of Pro-FX Configure 2, Danfoss has added basic support for connecting to and configuring KBS valves* running any 7.x version of the firmware. The application will display only Device Info and All Parameters (Advanced Mode as a tab).

Additionally, Control Mode Selection, Current Control Mode, Data Plot, Diagnostics, Faults, and PDO editors are not currently available for legacy firmware.

* 7.x only supports CANopen.

1. System Panel

The system panel has limited information and functionality compared to Firmware versions 8.x and beyond. The only available information and actions are as follows:

1. Activate/Stop valve.
2. Reset Valve.
3. Change the CAN bus baud rate.
4. Valve State (Initialization, Active, Disabled)
5. Connection Status Bar.

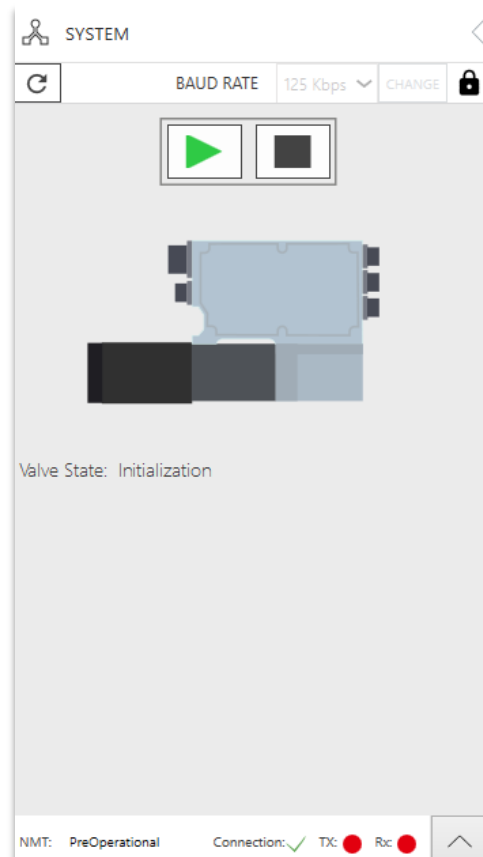


Figure 39 – KBS 7.x Firmware System Panel

2. File Menu

For legacy firmware, the file menu supports the following actions:

- File->Import As .dcf
- File->Export As .dcf
- Reset Valve
- Restore Factory Defaults
- Login With Factory Password
- Logout From Factory Password
- About
- Exit

All menu items function as described in the main File Menu section above, with a minor difference for Factory Reset: at the end of the process the app will restart and the valve will need its node ID set from the Scan Dialog.

3. All Parameters

The All Parameters screen (Advanced Mode as a tab) is where users will input configuration data for valves running legacy firmware. All values which are writeable for the current Access Level can be set from this view.

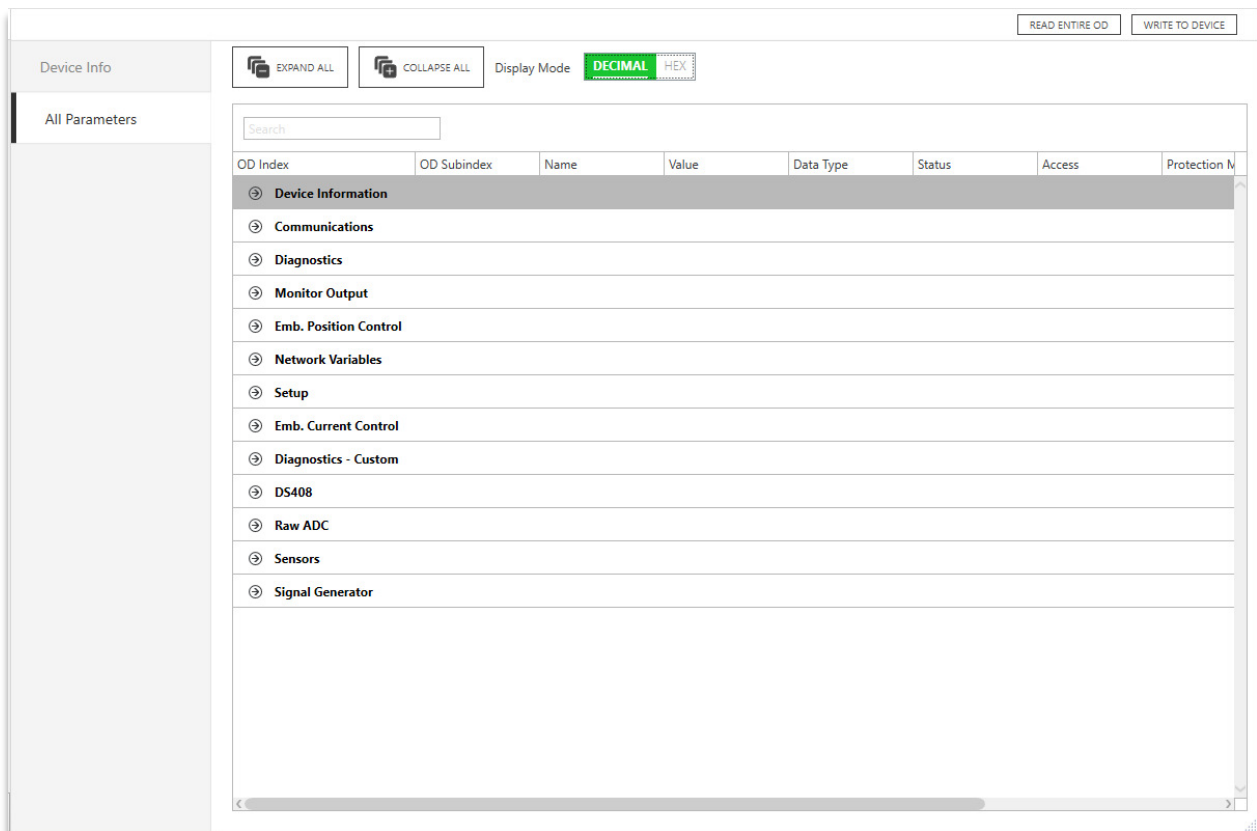


Figure 40 – All Parameters Tab

4. A Note About Access Levels and v7.x Firmware

As of firmware version 8.A and beyond all parameters can be read, and displayed, regardless of Access Level. However, version 7.x firmware requires Factory Access to be attained before the certain parameter values can be displayed. The *Protection Mode* column will show “Factory Read” and “Factory Read/Write” for these parameters. After logging in, *Factory Read* parameters will display their values and will be read only. *Factory Read/Write* parameters will display their values and be editable.

Revision History

Rev	Description	By	CHK	Date	CR/CO
A	Updated for v2.5.0	Jason Daniels	Gaurav Singh	2023-10	

Strategic Owner:
??? ???

Content owner/Contact:
Jason Daniels

Approved by
