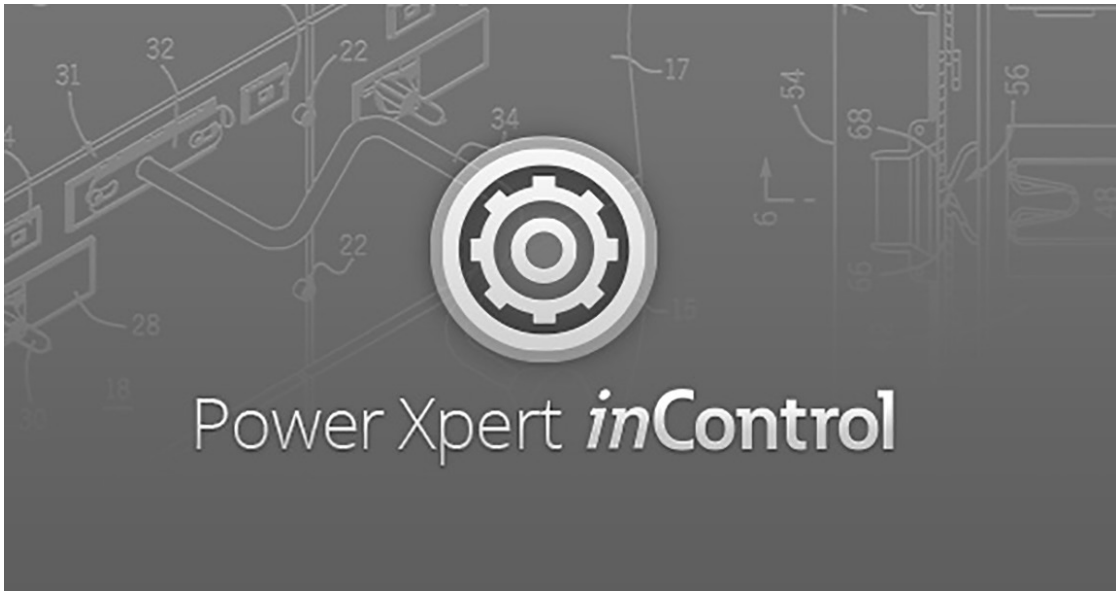
Power Xpert *in*Control

User Manual



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Cover Photo: Power Xpert *in*Control.

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Chapter 1 — Safety

Definitions and symbols

⚠ WARNING

This symbol indicates high voltage. It calls your attention to items or operations that could be dangerous to you and other persons operating this equipment. Read the message and follow the instructions carefully.

⚠

This symbol is the "Safety Alert Symbol." It occurs with either of two signal words: CAUTION or WARNING, as described below.

Note: Indicates a functionality or usability detail which, if not avoided, can result in software or hardware malfunctions or the inability to properly use the PC tool.

⚠ WARNING

Indicates a potentially hazardous situation which, if not avoided, can result in serious injury or death.

⚠ CAUTION

Indicates a potentially hazardous situation which, if not avoided, can result in minor to moderate injury, or serious damage to the product. The situation described in the CAUTION may, if not avoided, lead to serious results. Important safety measures are described in CAUTION (as well as WARNING).

Hazardous high voltage

⚠ WARNING

Motor control equipment and electronic controllers are connected to hazardous line voltages. When servicing drives and electronic controllers, there may be exposed components with housings or protrusions at or above line potential. Extreme care should be taken to protect against shock.

Stand on an insulating pad and make it a habit to use only one hand when checking components. Always work withanother person in case an emergency occurs. Disconnect power before checking controllers or performing maintenance. Be sure equipment is properly grounded. Wear safety glasses whenever working on electronic controllers or rotating machinery.

Power Xpert safety

The following section of this manual outlines the safet precautions that must be observed to insure safe and proper usage of the Power Xpert inControl remote configuration and control PC Tool.

Before using the software tool

Prior to installation and usage of the Power Xpert inControl remote configuration and control PC Tool, users must contact local safety management and network administrators to insure proper procedures and protocols are followed in accordance with the end users standards in safety, network security, or any other related fields. Any violation of these policies is strictly on the user and in no way voices the procedures laid out herein as these are guidelines of how to use the tool itself.

Warnings and cautions

This manual contains clearly marked cautions and warnings which are intended for your personal safety and to avoid any unintentional damage to the product or connected appliances.

Please read the information included in cautions and warnings carefully.

Throughout this manual specific symbols have been added to cue the reader that important safety or functionality information is being covered. Please refer to "Definitions and Symbols" on this page.

Personnel safety

With the use of any remote configuration and control software, users must take appropriate caution as unintentional device activation can occur which increases the risk of personnel and equipment safety issues. All systems should be tested in a controlled environment prior to usage in an active production or service environment as to make the user aware of the tools functionality and control abilities. User roles have been defined within this tool and can be activated to restrict certain user's configuration and control abilities, reducing the risk of those users unintentionally activating devices through the PC Tool.

Chapter 2 — Introduction

Using this manual

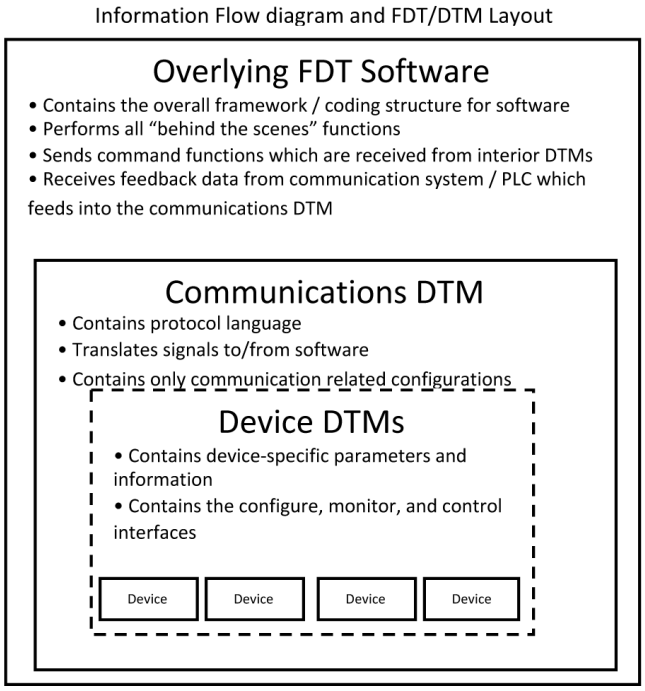
The purpose of this manual is to provide users with information regarding installation, configuration, and execution of Eaton's Power Xpert inControl network configuration software. To assure correct usage of the software tool, follow the instructions, guidelines, warnings, and caution presented in this manual.

The Eaton Power Xpert inControl manual is specific for Eaton PowerXL devices, it does not reflect the general FDT framework abilities. Please refer to the FDT Help menu for framework explanations.

Power Xpert *in*Control system overview

Power Xpert inControl device configuration and control software is a FDT/DTM based software tool used for configuration of networked systems. This tool has been developed to provide a processor-generic, simple interface for configuration, monitoring, troubleshooting, firmware gradation, and logic editing functionality using communication protocols. The software consists of two major parts—the exterior Field Device Tool (FDT) software, which is also known as the "frame application," and the interior Device-Type Managers (DTM). The interior DTM portion is further classified into two categories: Device DTMs which connect to the field devices configurationcomponents, and Communications DTMs (gateway DTMs included for simplicity), which connect to the communications components of the device.

Figure 1. Information flow diagram and FDT/DTM layout



FDT/DTM Explanations

The Frame Device Tool (FDT) contains the run-time environment for field devices to be manipulated by a central open framework independent of host systems. The main function of this frame is to provide a common software environment for accessing device features through independent communications bus in the form of DTMs and. It allows connecting to any device through any host with any protocol.

Device-Type Managers (DTM) contains the application software and a GUI for the associated field device for a manufacturer of devices, similar to printer drivers. All device-specific information is accessed and configured through its associated DTM in an online, offline, data monitor, and diagnostic function. Each Eaton DTM is unique to the device type which it is associated to but general device DTMs could be used for some devices. Similar devices will share the same DTM file, but must be individually added to the network topology and individually configured with its only addressing through the tool.

Communication DTMs contains the application software for the specific communications hardware being used through a communication channel. It contains the language needed to communicate to the active communications protocol in the device and works as a translator between the frame application (which includes the device DTM) and the devices communication related components.

Gateway DTMs are specific to particular devices within a network, and serve as an additional protocol language translator both up and down stream of the nodes location within the network topology. These function similar to communication DTMs but have unique functions specific to a gateway such as translating multiple protocols from multiple devices.

Benefits of FDT/DTM systems

One unique feature of FDT/DTM based configuration tools is the ability to use DTMs across any common FDT framework. This provides network administrators and system integrators flexibility to use a variety of manufacturer's products within their system while using a common configuration tool. A non-Eaton device DTM, for example, can be integrated into a new or existing Power Xpert inControl project file. Conversely, an Eaton PowerXL DG1 drive DTM, can be integrated into CoDeSys 3 rather than Power Xpert inControl or another users FDT framework. This provides the user with a new level of flexibility in regards to using new DTMs in their existing FDT systems, or incorporating previously used DTMs into the Power Xpert inControl FDT system. Additional benefits of using FDT/DTM based configuration software include:

- Standardized configuration interface for streamlined network commissioning or services
- Parameter download and upload abilities allow greater remote control of devices
- Network configuration centralized to single computer or database, allowing quick access to device parameters
- Ability to create customized software for specific application which can interface with the FDT/DTM system
- Remote storage of device configurations serve as backups in case of emergency
- Standard industry technology allows end users to build off of familiar concepts form previous FDT/DTM software

For more information on integration of DTMs into other FDT frameworks, please see the "Device-Specific Application" section of this manual.

Chapter 3 — Installation instructions

Please follow the instructions and requirements provided within this section to properly install the Power Xpert inControl remote configuration and control tool and parent FDT framework application.

Product Description

Eaton's One Installer is used to install / uninstall the following applications of Power Xpert inControl Suite as one package.

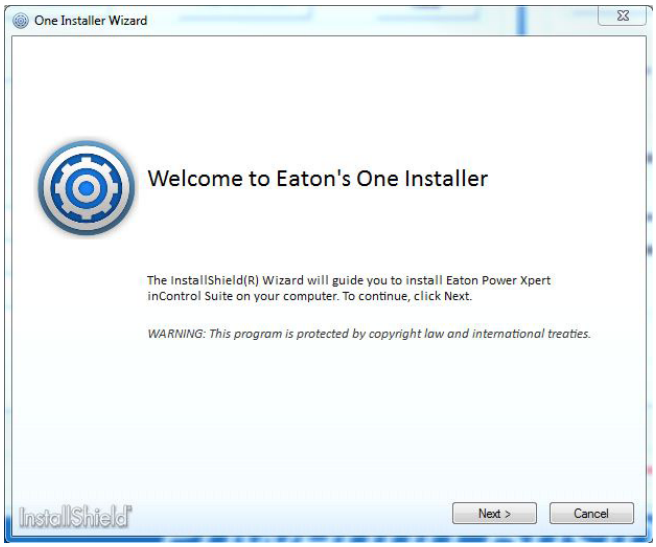
1. Power Xpert inControl
2. Modbus Serial Communication DTM
3. Modbus TCP Communication DTM
4. Eaton BLE Communication DTM
5. Power XL DG1 Device DTM
6. Power XL DH1 Device DTM
7. Power XL DM1 Device DTM
8. Power XL DX1 Device DTM
9. Power Xpert C445 Device DTM
10. Firmware Upgrade Tool
11. Eaton DG1 cable driver
12. Power Xpert InControl Logic Engine

System requirements

The following items are the minimum system requirements

for installing Power Xpert inControl:

- 1.1 GB minimum hard drive space (for 32 bit and 64 bit)
- Operating System Requirements: Must operate on one of the following:
  - Windows 10 (x32/x64)
  - Windows 11 (x32/x64)
- Recommended 32 GB RAM memory or greater
- 1024 x 786 pixel resolution display or greater
- Open PC interface for communication with the device (e.g. USB, Ethernet, RS-485)



Installation Pre-requisites

- To install the One installer applications, log into Windows with Administrator rights
- One Installer automatically downloads .Net Framework from the web if it is not available on the computer. For this internet access needs to be active.

If internet access is not available, then manually install .Net Framework 3.5 SP1 and .Net framework 4.0.

- For installation on Windows 8.1, .Net Framework needs to be installed by enabling .Net Framework option from Windows Features in Control Panel.

Before you install - General

- Close all open frame applications before proceeding with installation or removal of any application.
- Uninstall all previously installed components before installing One Installer. This can be accomplished most efficiently by removing the older version of One Installer using Control Panel-> Add/Remove Programs. This removes all applications, allowing a clean installation of the new One Installer and its applications.

Installing Eaton's one installer

To install Eaton's One installer:

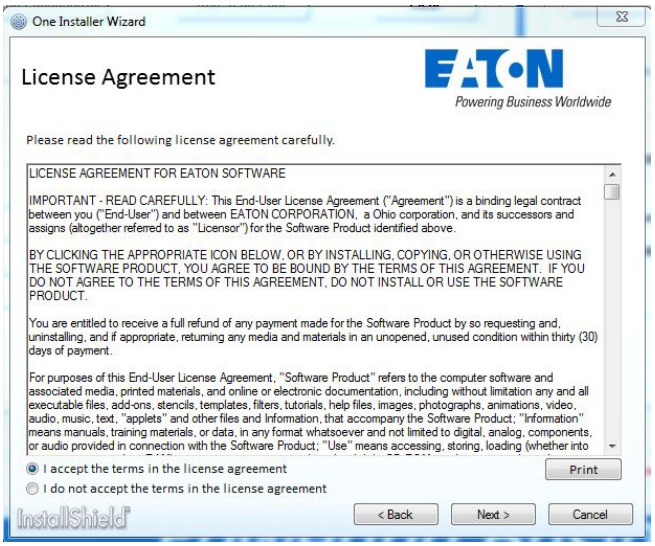
1. Download the One Installer software:
   a. From the C445 website: www.eaton.com/c445, then select "Resources", then find "One Installer V2.28" under the "Software, firmware and applications" category.
   b. From the Drives website: www.eaton.com/drives, then select a drive (DM1, DG1, DH1), then select "Resources", then find "Power Xpert in control installer V2.27" under the "Software, firmware and applications" category.

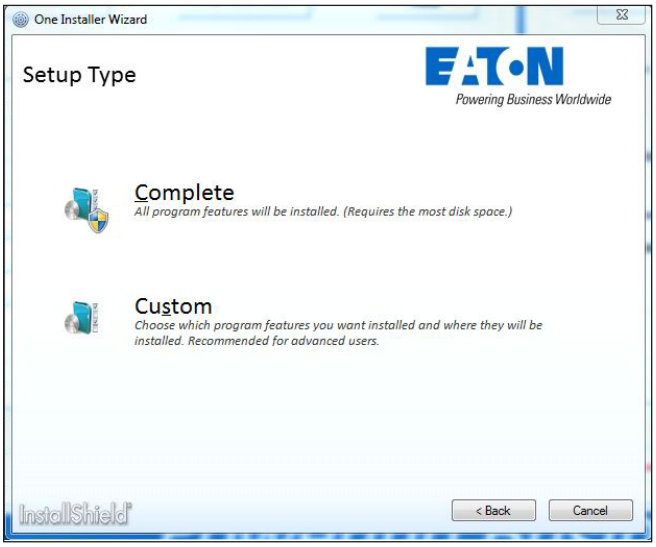
2. Run the Eaton's One Installer.

   a. You must accept the License Agreement

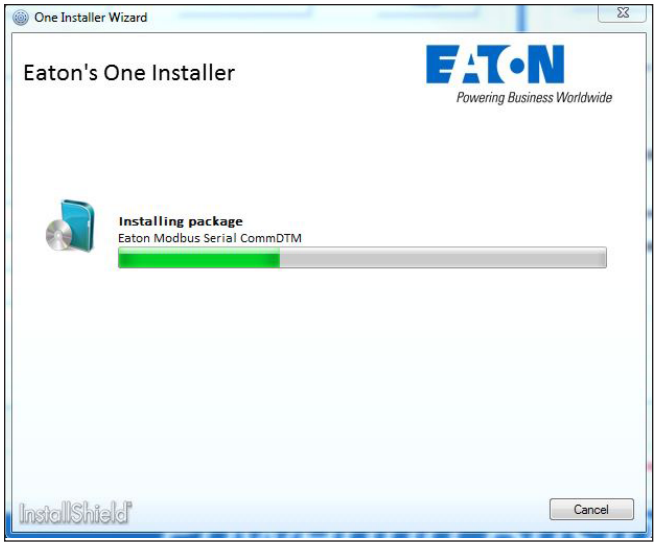
   b. Select Complete (recommended) or Custom installation

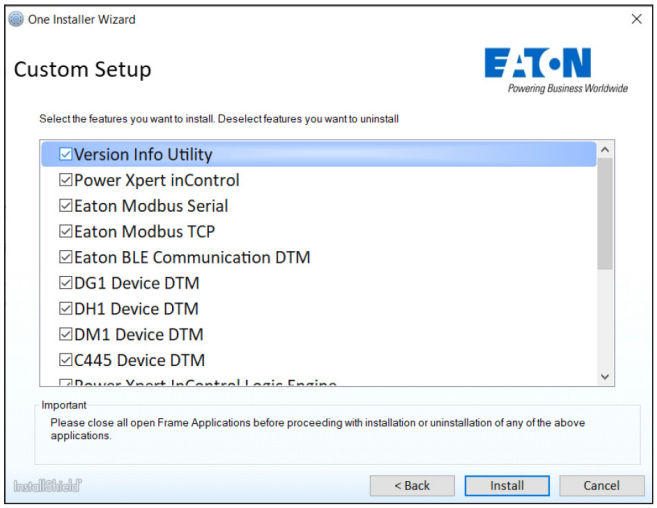
3. On successful installation, Eaton's One Installer is listed in Control Panel along with all applications selected during installation.



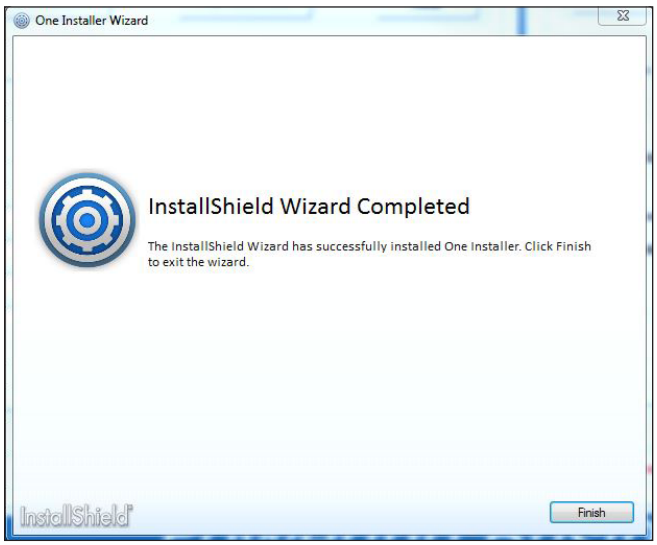


4. Once the "Complete" installation is pressed, the tool will go through and install the PC Tool and DTMs available. Accept the window popup to advance through installation. If "Custom" installation was selected, it gives the ability to select which files to install.





5. After the installation is complete, select the "Finish" button to complete the setup.



Uninstalling Eaton's one Installer

The Power Xpert inControl framework and DTMs can be uninstalled through the Windows Control Panel or by using the installation setup file.

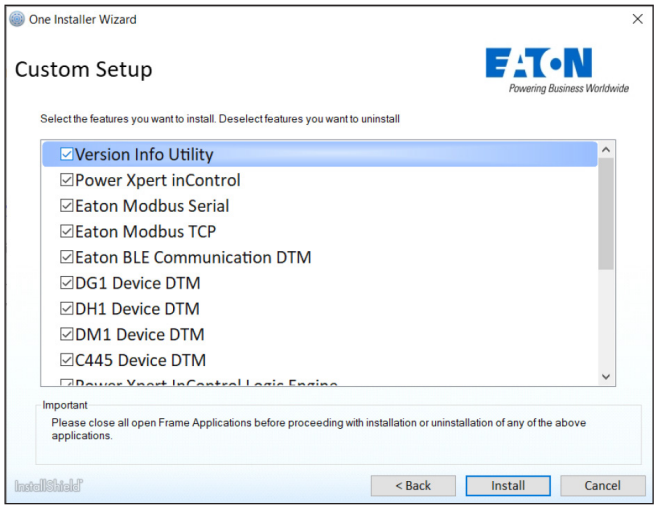
Select **Settings** → **Control Panel** from the **Start** menu.

Double-click **Add or Remove Programs.**

Select **Power Xpert inControl with "One Installer"**.

Click Uninstall and follow the prompts.

When using the setup tool to modify installations, it will provide a list of installed tools and give the ability to deselect the tools to uninstall.



Software update procedure

The current software updating procedure for Eaton-provided DTMs requires the user to uninstall the previous software files as to avoid potential coding conflicts. Please note that you do NOT need to uninstall all DTMs or the FDT program. Only the files which require a software update need to be uninstalled for the update to take effect. For uninstalling the software the user should use the Control panels add/remove program option. Once uninstalled, users must reboot their computer to insure all associated files are cleared before re-installing the new software version. The below general procedure can be used as a guideline for the software update procedure:

1. (If applicable) Save the currently opened project file and close the Power Xpert inControl software.
2. Navigate to the Add/Remove programs section of the control panel (note: will dependent on windows version) Start → Control Panel → Programs and features → Click desired DTM to uninstall and click "uninstall" button
3. Follow procedures outline in the uninstallation
4. Restart the computer once uninstallation of all desired DTMs is complete
5. Activated the executable file provided with the Power Xpert inControl DTM update file and follow the procedures outlined in the installation.

Updates will be available via our website www.eaton.com/software. The Power Xpert inControl tool will provide you with information regarding any updates that have been posted to the site.

Baud rate

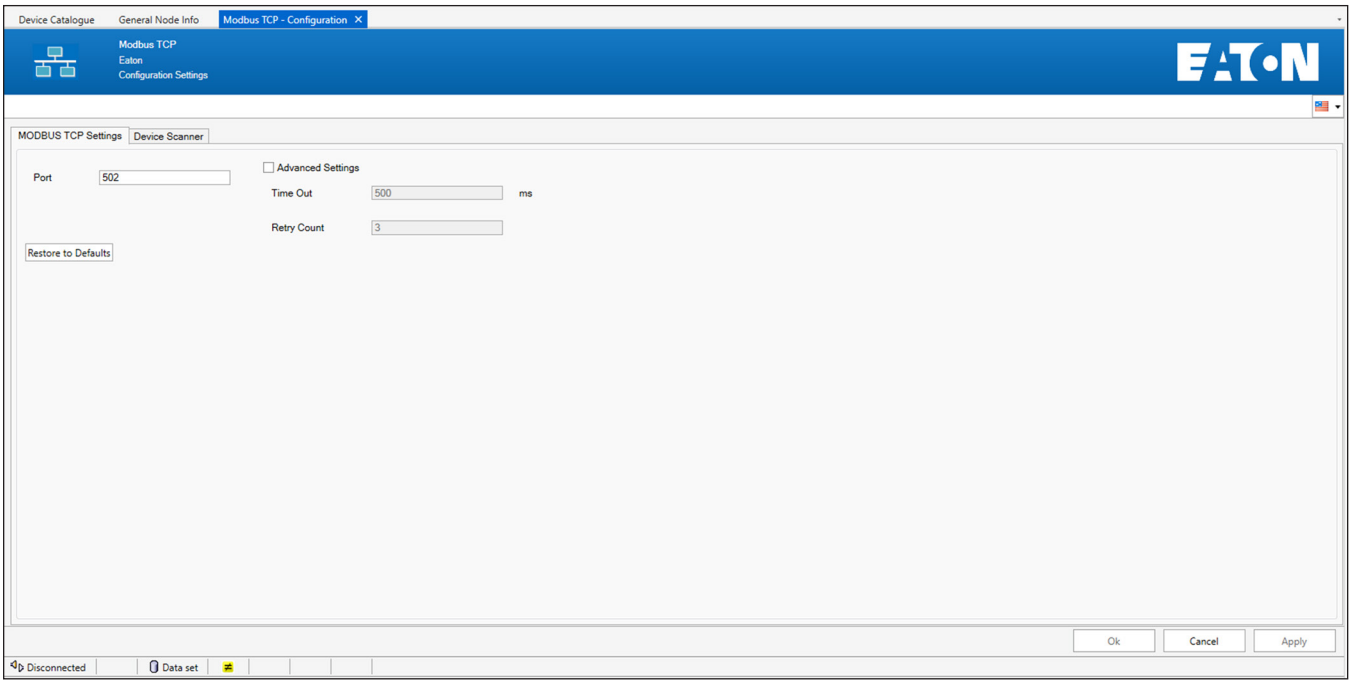
- For C445 it is 19200 (default)
- For drives, RS485 Port – 19200 (default), Keypad Port – 38400 (fixed)

Eaton communication DTMs

Eaton has created two Modbus® communication DTM protocols for use in the Power Xpert inControl system: Modbus Serial and Modbus TCP. These DTMs are used to connect to the Eaton devices through the FDT container, other communication DTMs will be added as device scopes change.

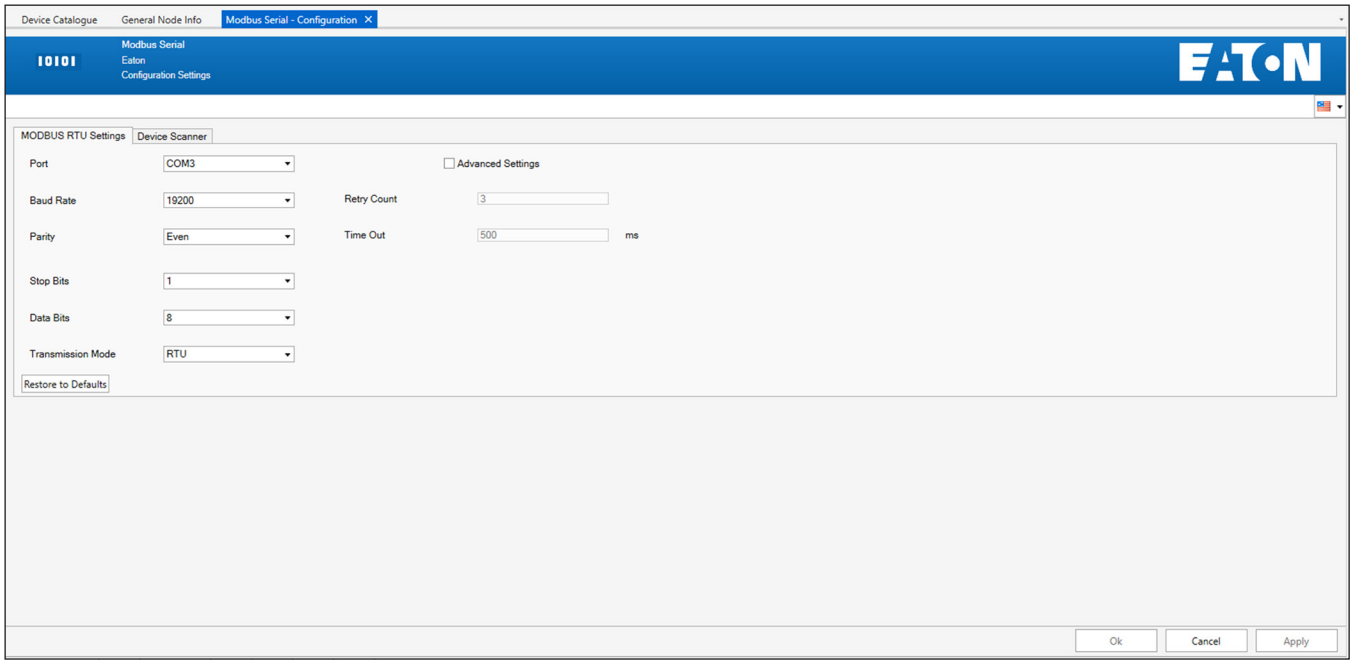
Configuration: Modbus TCP

The Modbus TCP configuration screen can be accessed through the context menu of the device. Double click the node under "Network View" which needs to be configured, or right-click the Modbus TCP DTM node and select the "Configure" option. This will open the configuration window for the Modbus node. Change the default values as needed. Checking the "Advanced Settings" checkbox will unlock the Scan Time, Retry Count, Auto Recover Time, and Time out options, allowing users to set the values as needed. To make changes to the settings it is required to be in an offline mode with the communication DTMs.



Configuration: Modbus serial

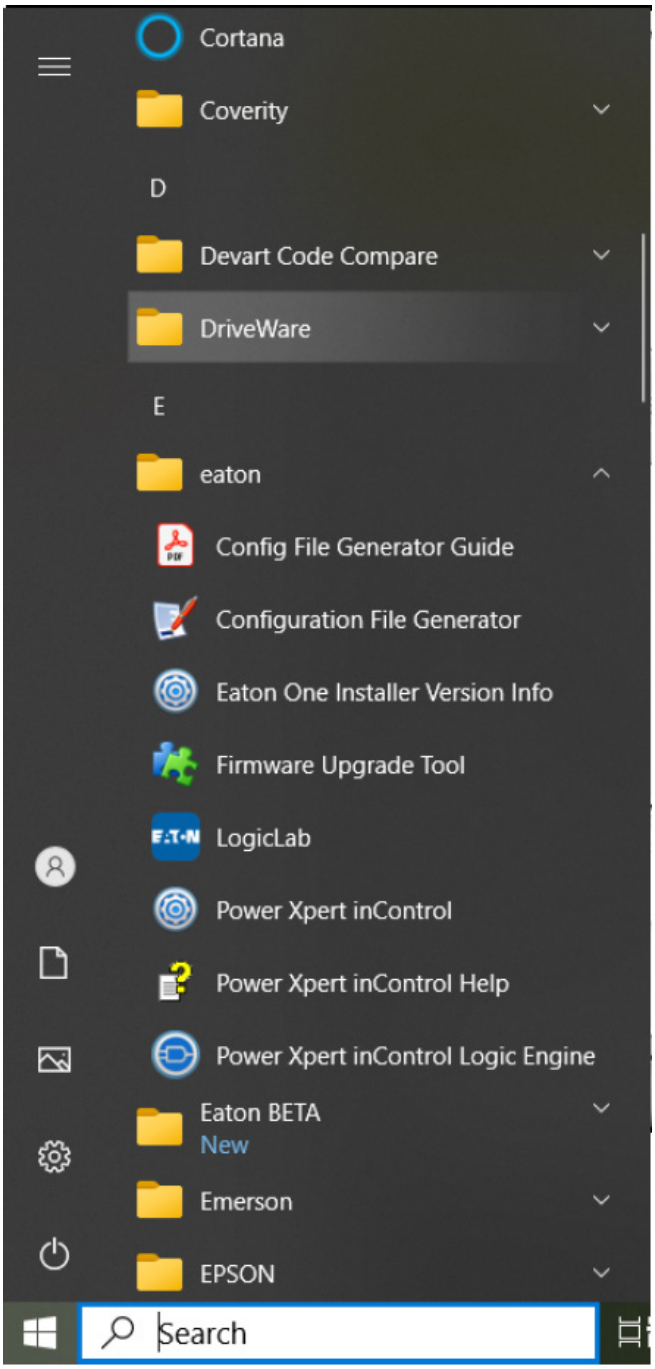
The Modbus Serial configuration screen can be accessed through the context menu of the device. Double click the node under "Network View" which needs to be configured, or right-click the Modbus Serial DTM node and select the "Configure" option. This will open the configuration window for the Modbus node. Change the default values as needed. Checking the "Advanced Settings" checkbox will unlock the Scan Time, Retry Count, Auto Recover Time, and Time out input fields, allowing users to set the values as needed. Press "OK" or "Apply" to save the new values for the DMT, to make changes DTMs have to be in the offline mode.



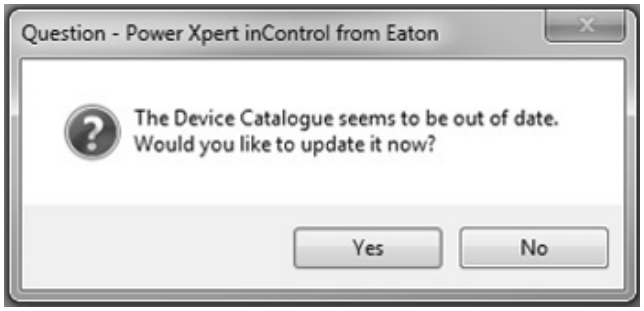
The following sections will cover basic startup and configuration setups for use with the Power Xpert inControl configuration and control tool.

Program start

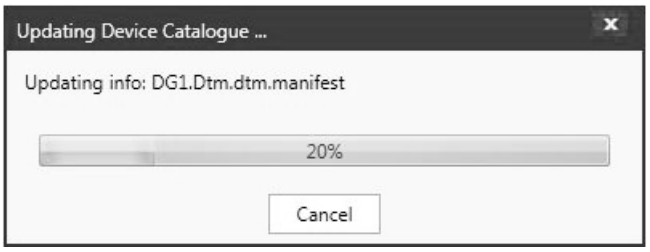
There are multiple ways to open the software, either by clicking the desktop icon or going through the start menu, Programs, under the Eaton folder.



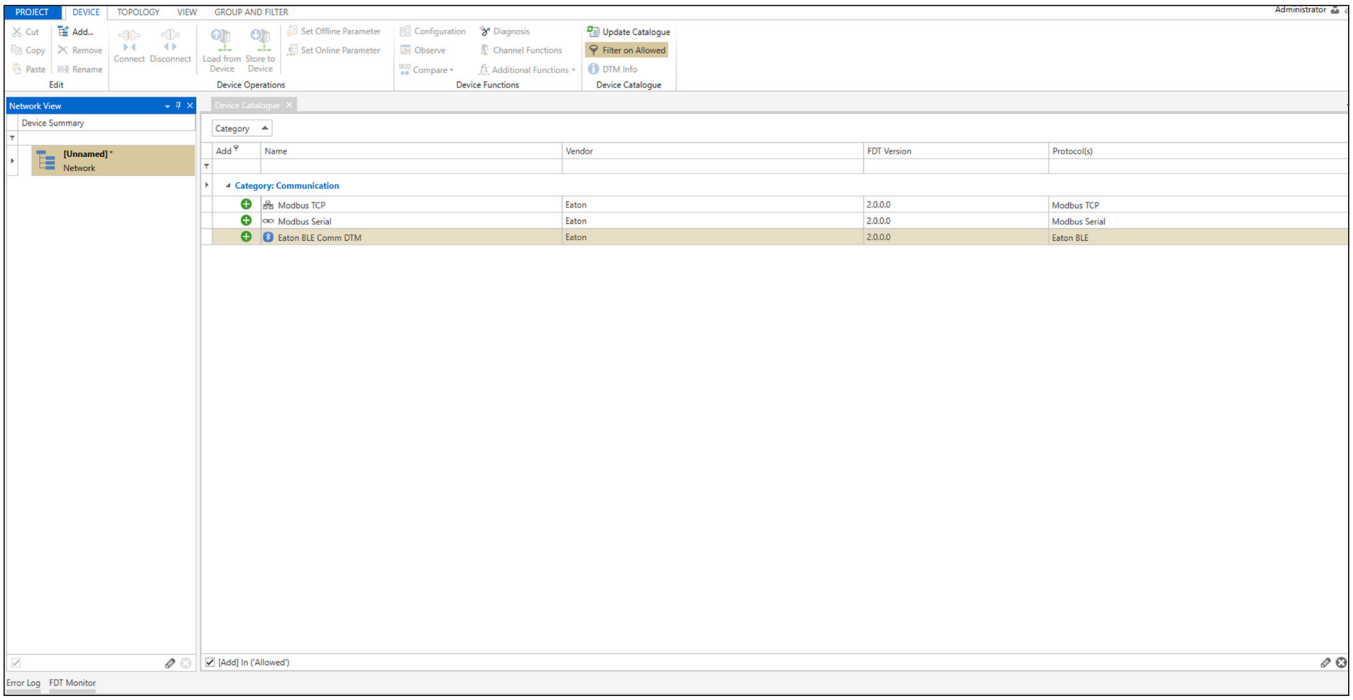
When you run the program for the first time it will ask to upgrade the device Catalog with any updated DTMs that was installed.



Click Yes to update the list of DTMs.



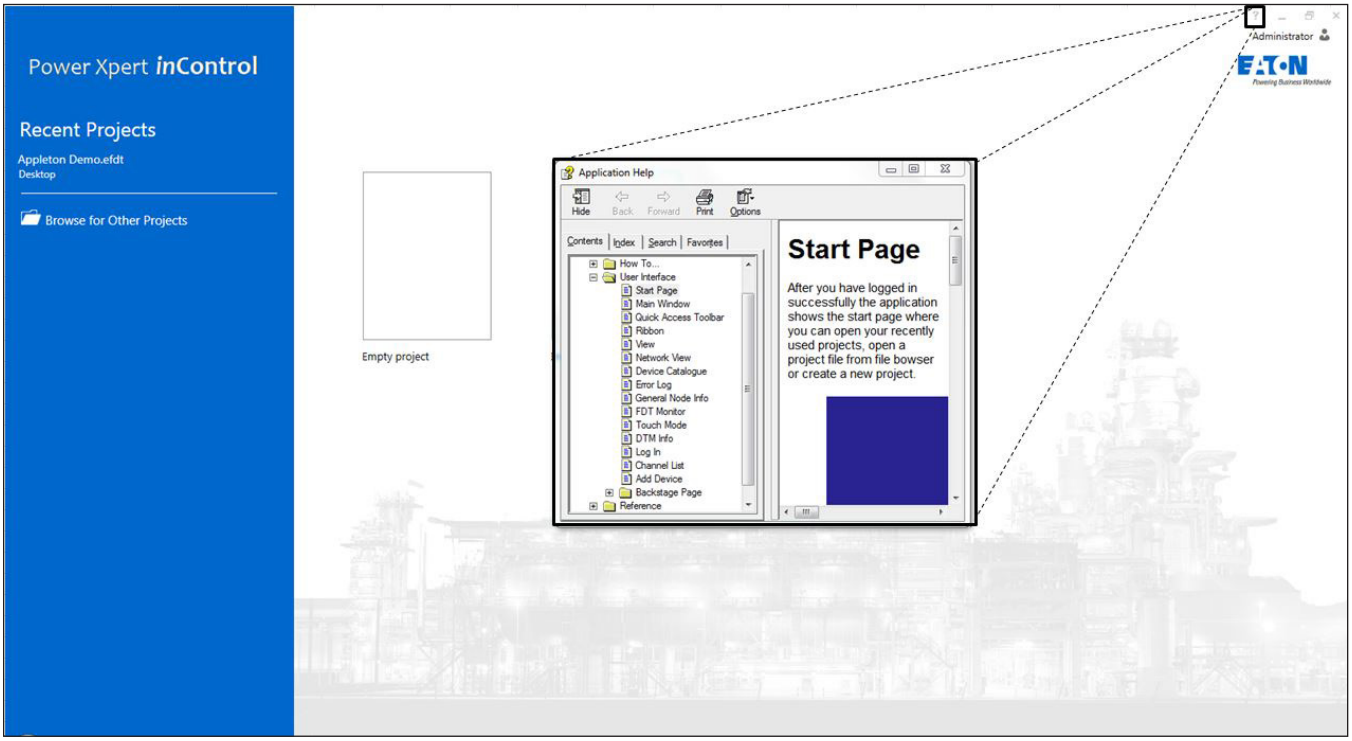
Once the updating is completed the framework will be open showing all the added devices in the Device Catalog.



Chapter 4 — Framework

Framework Help

The framework help can be found by selecting the Help option in the main window. This will provide a detailed instruction on functions inside the Framework. Some of the Framework functions are not available due to the individual Device DTMs handling these functions.



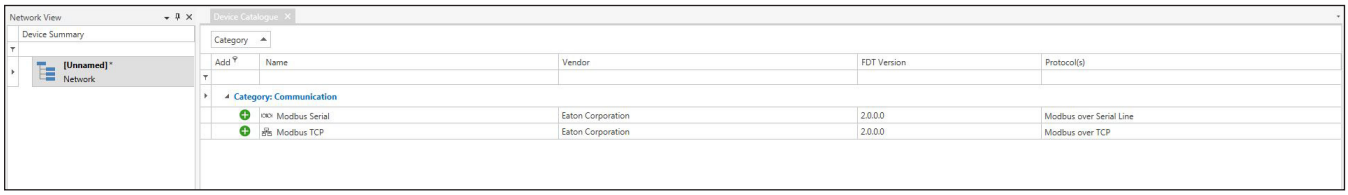
Chapter 5 — PowerXL VFD's (DG1, DH1, DM1, DM1Pro and DX1)

Section 1 — PowerXL VFD connection process

To set up a network it will require a communication DTM supported by the device DTM being connected to. Determine the communication network being used in your system; Eaton currently supports Modbus Serial and Modbus TCP communication protocols for connecting to its devices.

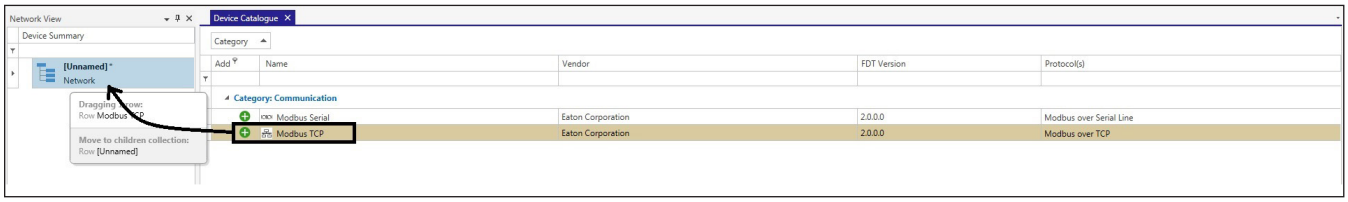
Creating a network

The framework will show the installed communication modules that are installed along with the saved Network name.



Determine what network is being used to connect to the device. To add that network DTM shown in the device catalog there are a few options

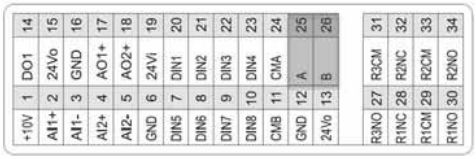
Drag the communication DTM from the Device Catalog to the Network name.

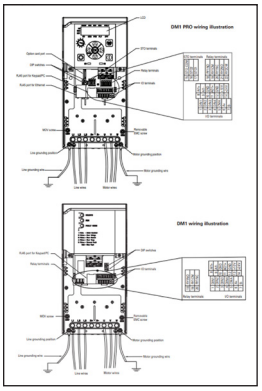
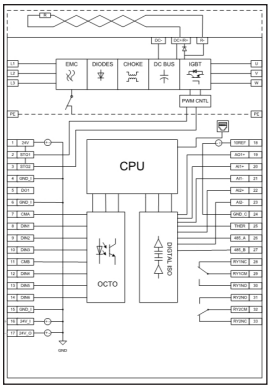


Press the sign in the device catalog

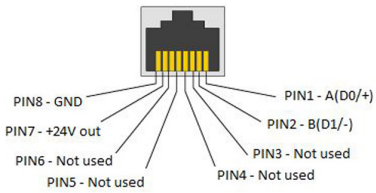
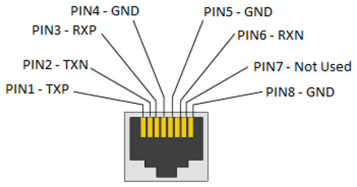
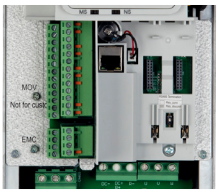
Connection options

Table 1. Connection options

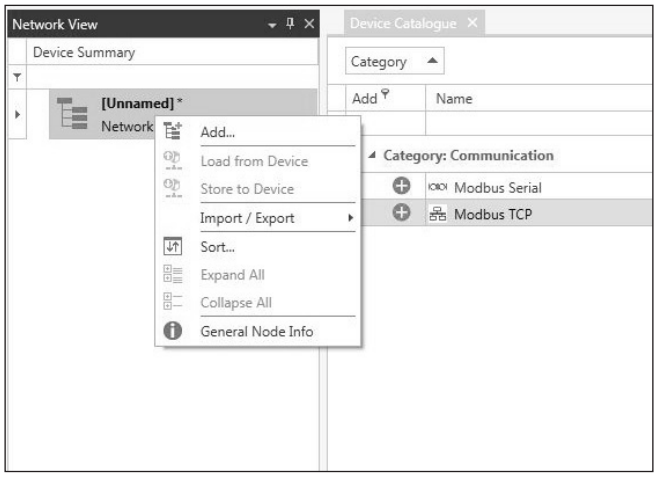
Connection method	Port	Upgrade firmware	Connects to PC tool	Communication settings
RS-485	Modbus Serial Terminals	✓	✓	

	DG1		DH1		DM1		DX1	
	Parameter	**Default**	**Parameter**	**Default**	**Parameter**	**Default**	**Parameter**	**Default**
RS-485 Comm Set:	P20.3.1.1	Modbus RTU	P12.3.1.1	Modbus RTU	P11.1.1	Modbus RTU	P96.4.1	Modbus Rtu
Slave address:	P20.3.2.1	1	P12.3.2.1	1	P11.2.1	1		
Baud Rate:	P20.3.2.2	19200	P12.3.2.2	19200	P11.2.2	19200	P96.9.1	19200
Parity:	P20.3.2.3	Even/stop bit	P12.3.2.3	Even	P11.2.3	Even	P96.9.2	Even/stop bit
								
Data bits:	8 Data bits - Not settable							
Stop Bits:	1 Stop Bit- Not settable							

Note: If RS-485 Comm set is set to BACnet MS/TP, PC Tool will mot communicate

Connection method	Port	Upgrade firmware	Connects to PC tool	Communication settings
	Keypad Port	✓	✓	
				Slave Address: Not settable, set to Modbus ID 18.
				Baud Rate: Not settable, set to 38400 Kbaud
				Parity: Not settable, set to Even
				Data Bits: Not settable, 8 Data Bit
				Stop Bits: Not settable, 1 Stop Bit
Ethernet	Ethernet Port	—	✓	 
				IP Address Mode: Settable in Ethernet Communication parameter group (P20.3.1) (Default DHCP with AutoIP) **Note:** Most facilities require a Static IP. Change the Static IP address before changing. After changing this parameter, a reset or power cycle is required.
				Active IP Address: Set depending on IP address assigned Static or DHCP
				Active Subnet Mask: Set depending on IP address assigned Static or DHCP
				Active Default Gateway: Set depending on IP address assigned Static or DHCP
				Static IP Address: Settable in Ethernet Communication parameters group (P20.3.6) (Default 192.168.1.254)
				Static Subnet Mask: Settable in Ethernet Communication parameters group (P20.3.7) (Default 255.255.255.0)
				Static Default Gateway: Settable in Ethernet Communication parameters group (P20.3.8) (Default 192.168.1.1)

Click on the green "+" next to the communication protocol or right click on the Network Name and select Add. Follow the steps to add the desired Network.



Note: If the Modbus Serial DTM is added an additional window will pop up to set communication protocol settings for the communication adapter.

Connecting to the drive

The PowerXL Series drives can be connected to the Power Xpert inControl configuration tool through either the RS-485 communication terminals A(25) and B(26) or through the keypad port with Eaton's designed USB to RJ45 cable or with the Ethernet port located next to the real-time clock battery. Once the drive has physically been connected to the network, both the drives communication parameter and the PC Tool parameters must be configured. Please refer to the drive specific PowerXL manual for configuring the Modbus MS/TP or Modbus TCP communication parameters.

⚠ WARNING

Please note that not all communication information for the PowerXL series drives will be covered in this manual. For additional information regarding the PowerXL DG1 and DH1 communication abilities please reference the Communications Manual (MN040010EN). For the DM1 and the DM1Pro reference the Communication Manual (MN040051EN). For the DX1 reference Communication Manual (MN040071EN).

⚠ WARNING

DO NOT attempt to connect through the keypad port with Ethernet Communication; it is not for Ethernet use. It can be used to connect up via RS-485 with Eaton's communication cable.

Quick connection

Modbus TCP on-board communication details

To connect the PowerXL DG1 drive to the Power Xpert inControl PC Tool using an Ethernet connection, please follow the below procedure:

1. The PowerXL drives default IP address mode is set to "DHCP with AutoIP" addressing. Change the IP address mode by changing Parameter P20.3.1 to "Static IP". For users using DHCP auto addressing, please skip to step 3.
2. The static IP address for the PowerXL drives defaults to 192.168.001.254. Change the static IP address as needed to follow the site network topology. Example address: 192.168.001.050.
3. Power cycle the drive to activate the new IP address on the drive. If the drive is not power cycled it will remain on the previous IP address mode settings.
4. The Ethernet port on the host computer must also be changed as to match the Subnet mask IP requirements of the drive (default set to 255.255.255.000). Find the Ethernet port which is connected to the network through the computers Network control panel menu (administrative rights to computer are required). Change the IP address as the match first (3) octets of the drives IP address, with a unique address in the last IP octet. Example: 192.168.001.001.

   Note: Network administrators at the user's location may have different subnet mask requirements or restrictions. Contact local IT for support for IP addressing if needed.

5. Open the Power Xpert inControl configuration tool and begin a new project.
6. Begin creating the network topology by adding "Modbus TCP" DTM located on the device catalog. (Please see the "Creating Network Topology" section for a more detailed walkthrough).
7. Configure the Modbus TCP settings to match that of the drive. The default values loaded into the Modbus TCP DTM matches the PowerXL drives default IP address.
8. Add the required device DTM to the network by following the same procedure outlined in step 6. Once added to the network, a prompt will appear requesting an IP address for the device. Enter the same IP address which was set on the device through the keypad in step 2 (Ex: 192.168.001.050), then click "Set".
9. Bring the device online by right-clicking the device node, then select "Go Online", or click the "Go Online" button on the top toolbar.
10. Double-click the required device node to open the drives Online Configuration Screen. The user should now be connected to the drive and have the ability to monitor, configure, and control the device.

Modbus RTU on-board communication details

To connect the drive to the Power Xpert inControl remote configuration and control PC Tool, please follow the below procedure:

1. The PowerXL drives default slave address for the Modbus RTU communication option is "18". It is recommended that the user defines the slave address as to insure a unique address is being assigned to the drive. Change the address as desired by referring to the chart below (range available is 1–247 per Modbus node).

Drive type	Parameter address
DG1	P20.3.1.1
DH1	P12.3.1.1
DM1	P11.2.1
DM1Pro	P11.21.1
DX1	P96.9.4

2. Open the Power Xpert inControl configuration tool and begin a new project.
3. Begin creating the network topology by adding "Modbus Serial" DTM located on the device catalog. (Please see the "Creating Network Topology" section for a more detailed walkthrough).

4. Adjust the port setting values for the connected USB-to-serial adaptor by using the Device Manager Option through the control panel to match the default values of the drive or to the user's preference. Take note of the COM number assigned to the device as it needs to be assigned in the Power Xpert inControl Software.

   Note: If the USB-to-serial adaptor port, Modbus Serial DTM, and the PowerXL drives are not all configured to the same communication settings the devices will not communicate.

5. Assign the Modbus Serial communications DTM port setting to match the communication port number found in the device manager in step 4. Adjust all other values to match the drives default values or to the users preference.

   a. Baud Rate Default: 38400.
   b. Data Bits Default: 8 (for Modbus TCP specifically).
   c. Parity Default: Even.
   d. Stop Bits Default: 1.

6. Add the appropriate device DTM.
7. Assign the same slave address as in step 1 to the drives DTM.
8. This will bring up the Multiframe Setting screen that allows for sizing the drive. This is typically used in creating an offline parameter file. Bring the device online by right-clicking the device node, and then select "Connect" or click the "Connect" button on the top toolbar. The online parameter window will open when once connected.
9. The user should now be connected to the drive and have the ability to monitor, configure, and control the device.

Device

After inserting the communication DTM, the tool will switch to show device DTMs. Select the device you want to connect to and perform the same sets as used to add comm DTM to add the device. Once the device is added, depending on the communication device selected a window will pop up to set slave address or IP address of the device, refer to the device specific DTM for an example of setting the device addresses. Once the correct address is set hit the set button.

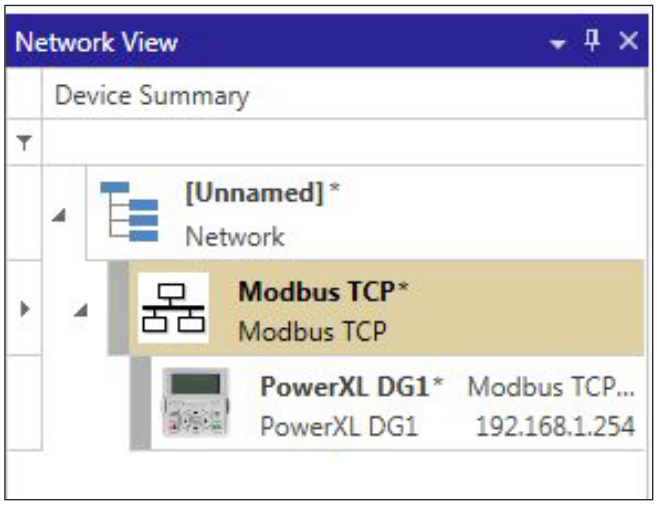
Offline/Online

With the devices added to the Network View, it gives the ability to view an Offline parameter set of the device. By stepping through the multi-frame selection screen, it will size the offline file for the correct drive size or you can connect to the device via the selected communication protocol.

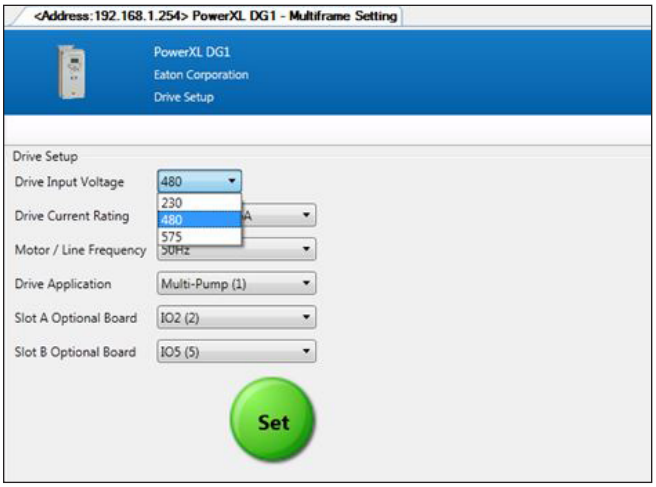
Offline

The offline mode only allows for viewing and setting the parameter without being connect to the device. Once you have the parameters set you can save this configuration and load it to the drive when you are connected to it. To open an offline file after adding the device to the network, it will open the Multiframe Settings Window, set the drop-downs for the required drive information, and hit set. This will then ask to go through the Quick Start Wizard or open parameters. If you click "Yes" for the Start Up Wizard, it will set through parameter settings; once complete, it will open parameter files. If "No" is selected for the Start Up Wizard, it will close the Multiframe and then double clicking on the device will open parameter screen.

DG1 is shown as an example



Multi-Frame Setting Window.

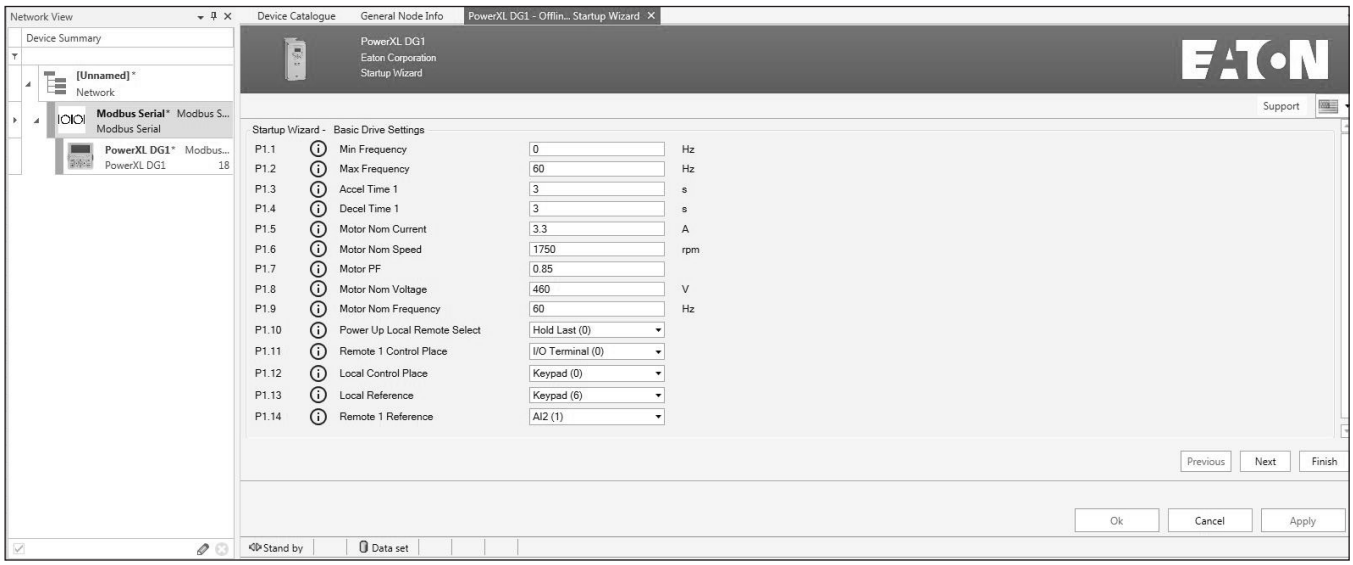


- Drive Voltage would correspond to the voltage rating of the drive it is going to be installed in
- Drive Current Rating would correspond to the current rating of the drive it is going to be installed in
- Motor/Line Frequency will correspond to the line frequency of the facility it is being put into
- Drive Application will select the desired application to be used on the drive depending on the intended use
- If option cards will be used, select the desired option cards and slots they will be inserted in

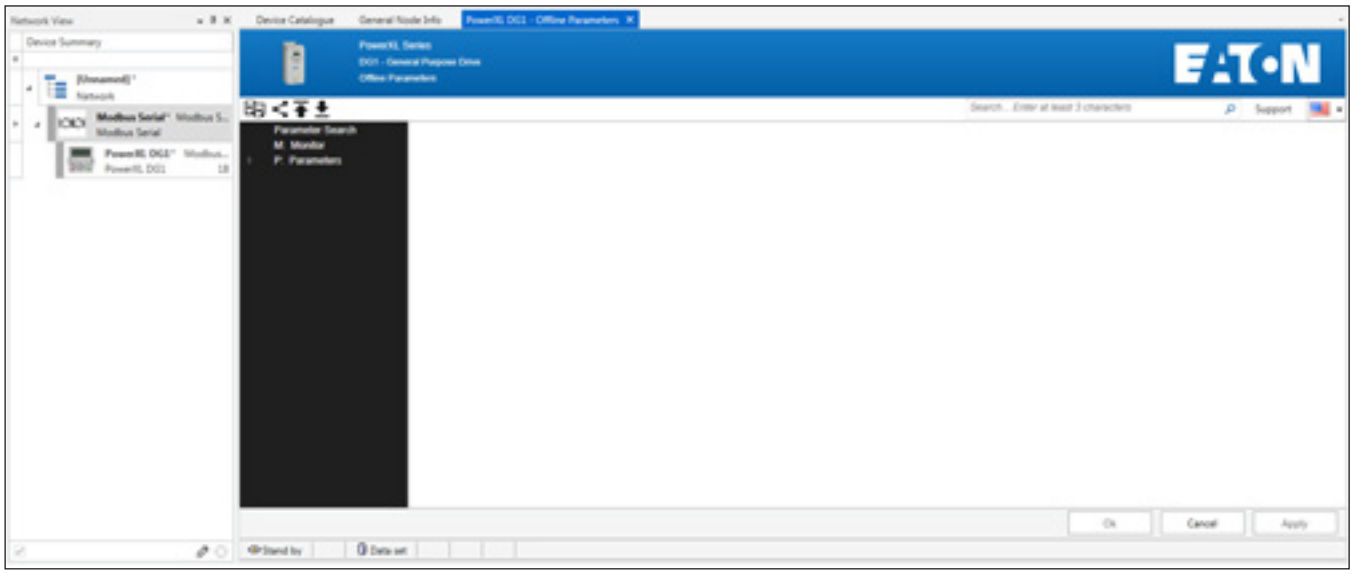
When Set becomes active, it may be pressed to advance to the Startup Wizard screen or can press "No" to close the Multiframe window.

Start-Up wizard

The application selected will depend on how many screens will be available in the Start-Up Wizard. The Start-Up Wizard will walk through the most used parameter required to get the drive programmed and running. As the screens come up, by selecting "Next" it will advance you to the next screen, "Back" will take you back to the previous screen, and "Finish" will open up the parameter screen.



Start-Up Wizard screens



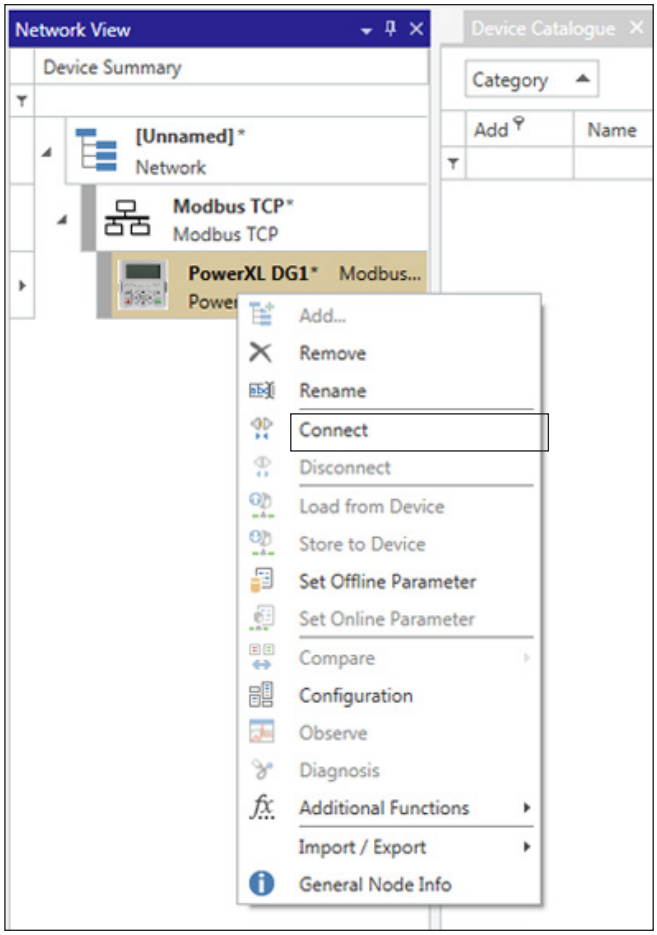
Offline parameter window

The Offline Parameter window gives the ability to compare parameter files, perform a parameter distribution, and Export/Import parameter files that we will discuss in a later section. To find a desired parameter or word in a parameter, the Search box allows for a quick way to look for letter order used in a parameter name or by checking the Long description box, it will also look in the parameter descriptions. If further support is needed, the Support button will provide technical support contacts for the Region required. More details on these buttons are described below.

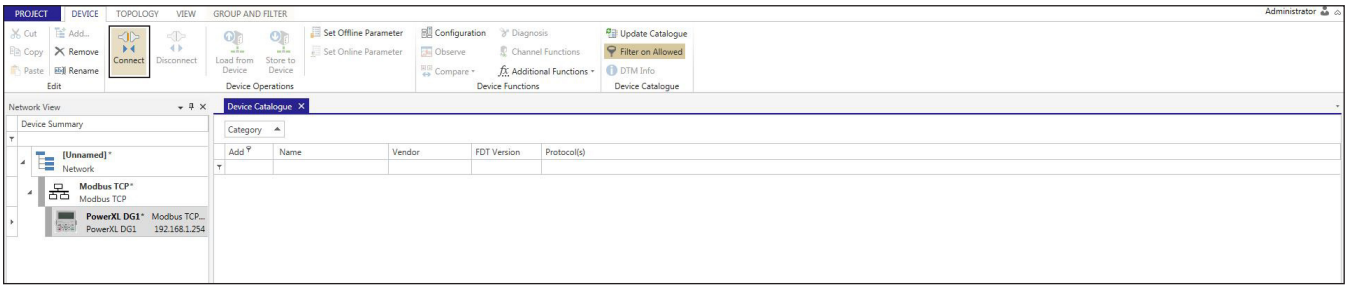
Online

The Online mode is when the tool is connected to the device via the communication protocol. When online, you are able to make changes to the drive and see them change in real time with the drive. It also gives the ability to see fault conditions, monitor device parameters, trend data, and sync real-time clock, compare parameter, device service info, and control the device. To go online with the device, there are a few options.

Right click on the device in the Network View and select Connect.



With a device selected in the Network View, click on the Connect button in the ribbon.

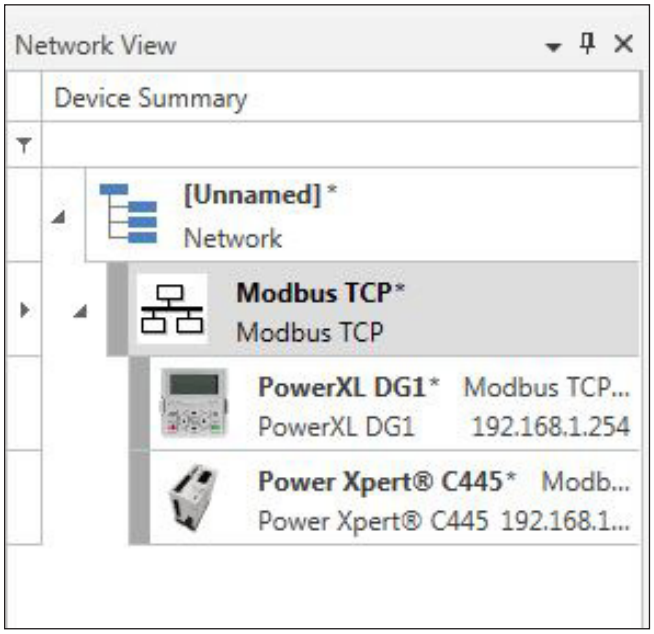


Once connected the Network tree will show a color bar indicating if the devices connection status.

Green — Online

Yellow — Communication set issue, check communication settings

Grey — Offline



Once connected to the device, you can open the application window by double clicking on the device you would like to view and edit. The tab indicator will show that you are in an online window.

To disconnect from a device, there are the same options as there was to connect to the device with either right clicking on the device and selecting Disconnect or through the ribbon when the device is selected.

Edit DTMs

To edit any of the communication or device DTM information, there is a few options, either right click on the device and select configuration or in the Device ribbon select Configuration. Communication DTMs will show communication port settings while Device DTMs will show address settings.

Section 2 — PowerXL VFD's software features

The following sections of this manual will cover all Eaton DTM files available for use.

Common features

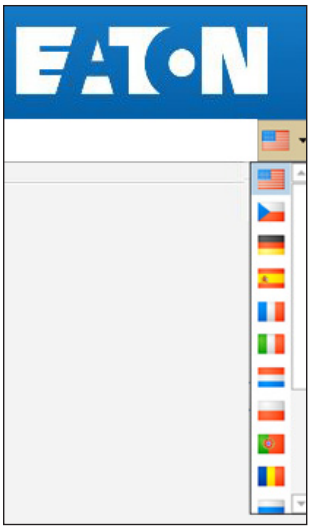
Several features are common within Eaton DTMs that will be covered within the next section. Please note that these are specific to Eaton-provided DTMs and may not apply to DTMs provided by other manufacturers. All of the below noted common features can be found within the "DTM Interface" window of the tool.

Device heading

All Eaton DTMs will indicate the Device series, Device type, and what mode of parameter you are in. Similar to the image below.

Language selection

All Eaton-provided DTMs have a language selection drop-down menu located on any of the DTM interfaces in the upper-right corner of the tab or window. Selecting the symbol for the desired language will change all of the text language within the DTM on the selected tab or window only. The default language for the entire program can be set through the Tools menu option, under "Options," "General Options." The language symbols can be seen in the image below.

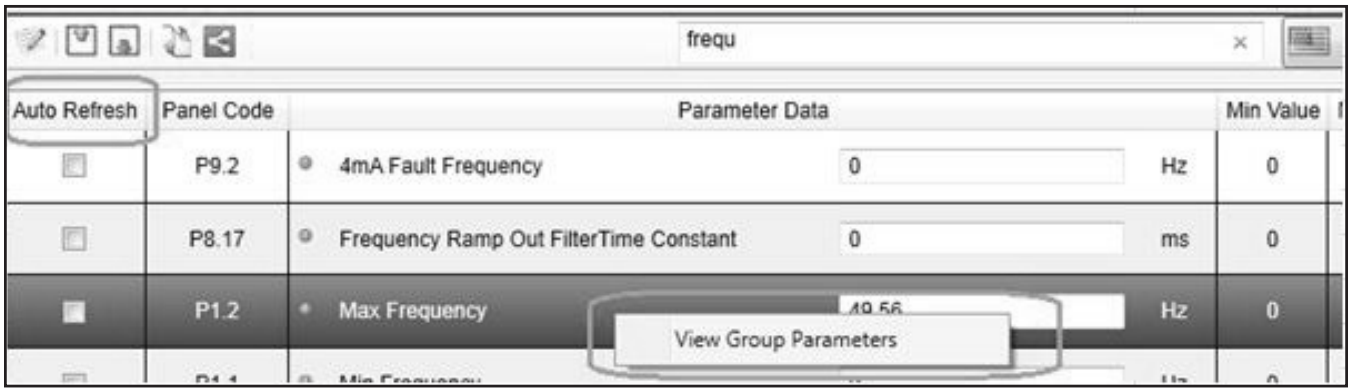


Support tool

All Eaton-provided DTMs will have a support option drop-down that will provide customer support for the desired region. The drop-down will have pullouts for different regions, which will provide a phone number or an email for technical support. By clicking on the email, it will open the installed email client program and allow for sending an email. This is available on the tool bar in the online and offline Parameter windows.

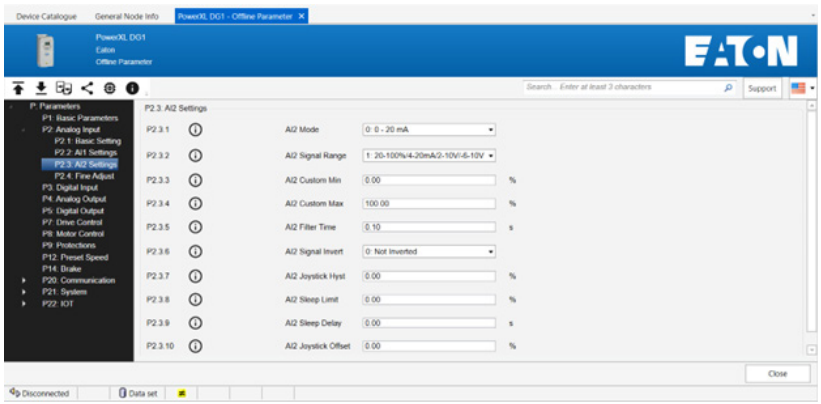
Search tool

All Eaton-provided DTMs will have a Search feature that allows for typing in at least 3 characters to search for in either the Parameter name or the Parameter Long Description if the check box gets checked. It is defaulted that only parameter name will be searched in every group. This is available on the tool bar in the online and offline Parameter windows. When in the online mode, the Auto Refresh check box may be used to view parameters in real time with a maximum of 8 parameters selected at one time. Also by going to the parameter value, the user can right click and select "View Group Parameters."



Status indicators

On the bottom portion of each DTM window is a status bar for communication status, network activity, current parameter data, and device status. Each device status is specific to the device rather than the entire system, meaning one device can be disconnected from the network while the remaining devices are active. Please refer to the image below for symbol definitions.



Status Symbol	Indication
Connecting	Attempting to connect to the device (going online)
Connected	Actively connected to the device (online)
Disconnecting	Attempting to disconnect from the device (going offline)
Disconnected	Disconnected from the device (offline)
Disturbed	Communication to the device has timed out due to one of several possible errors (detected comm.interruption)
Stand by	Waiting for connection command (idle)
	Sending data to or refreshing data from device
Data set	Displayed parameter values are loaded from the instance data set and can be changed and saved
Data set FPO	Displayed values are loaded from the instance data set and cannot be changed (locked)

Status bar

Above the Status Indicators there is a Status bar which appears in every window. This will give you information in regards to the device status.

Control place — Device control location.

Device run direction — Indicates if the device is running in the forward or reverse direction.

Device status — Indicates if device is ready without faults. (Green = Ready, White = Not Ready)

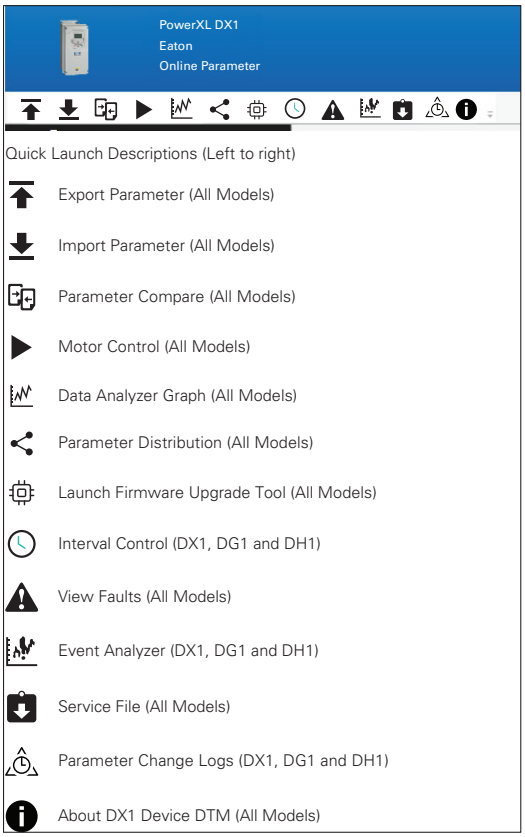
Device run status — Indicates if device is in a run or stop state. (Green = Run, White = Stop)

Fault/Warning status — Indicates if device is in a fault or warning. (Green = No Fault/Warning, Red = Fault/Warning)

Device event log trigger — Indicates the status of the Event Analyzer trigger.

Quick launch toolbar

The Device button bar will have device specified buttons to open other features consistent with the devices along with search for device parameters.



Online parameter set

The online parameter set is the currently active parameter set on the drive, meaning if a user were to physically travel to the drive they would see the exact same parameter values displayed through the drives keypad as are displayed in the Power Xpert inControl interface.

There are several functions that are available within the Online Parameter set which include the Data Analyzer/ Graph, Fault History, and Real-time Clock settings interface. These will be covered in detail over the next 4 sections. Access to these interfaces is available through the quick-launch toolbar within the Online Parameters interface, or through the device node context menu under "Additional Features."

Offline parameter set

The offline parameter set is isolated to the host computer which houses the DTM file for the device. The configuration interface is identical to the Online Parameterization interface, except that the quick-launch bar and associated functions are not available because the parameter set is not associated to a live device in the field. See the previous offline section for explanation of features.

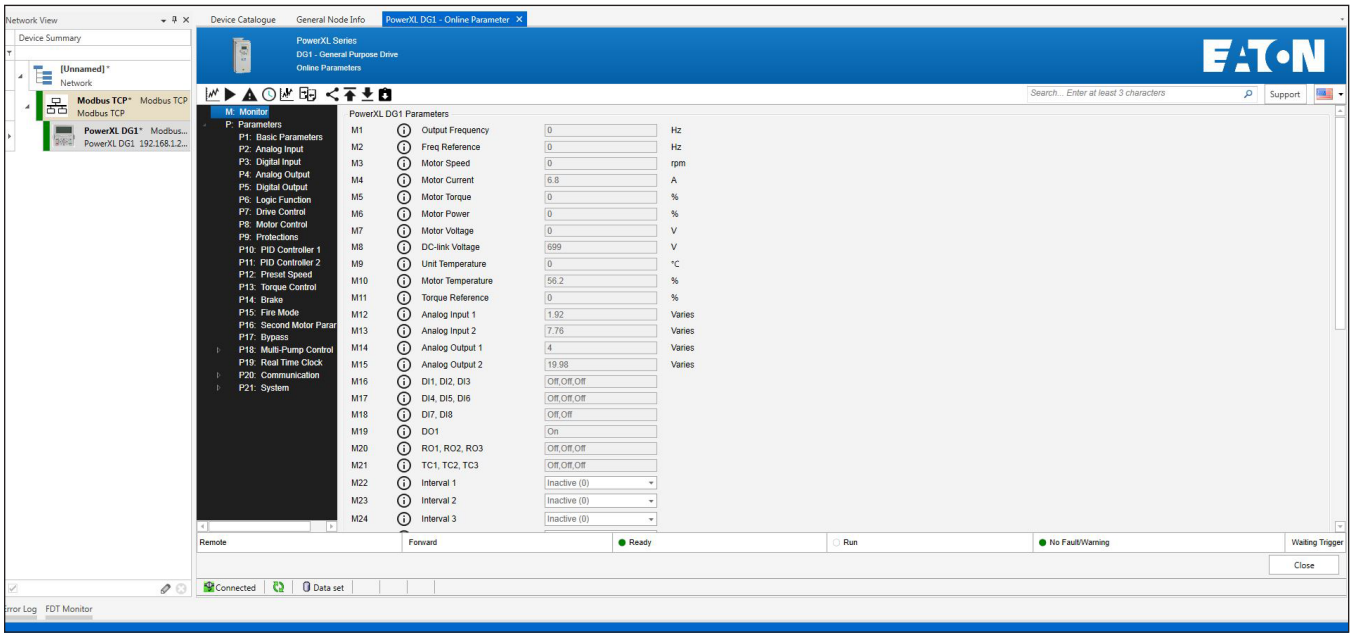
Parameter configuration

The parameter configuration screen can be accessed through the device menu within the Network View window either by right-clicking or double-clicking the desired node. All available parameter menus are displayed within this window, and can be seen on the left-hand side of the DTM interface window. Each menu tree can be expanded to view the individual parameter menus by clicking the (+) symbol next to the menu name. Selecting the desired menu will display the associated parameter values in the center portion of the screen.

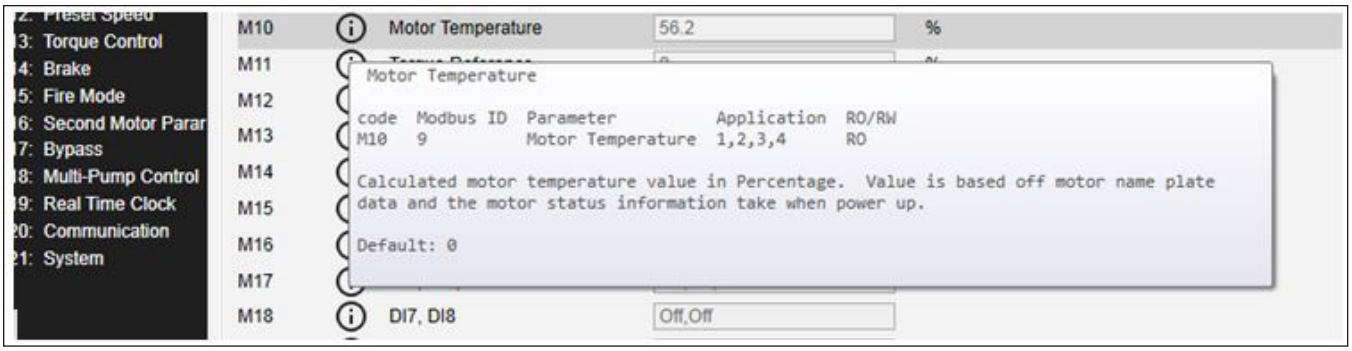
⚠ IMPORTANT

For a detailed breakdown of the PowerXL series drive parameters, please see the appropriate product application manual.

The Power Xpert *in*Control configuration tool has two different parameter datasets, an Online and Offline set. The "Online" parameter set is the currently loaded and active parameter set on the drive itself. The "Offline" parameter set is isolated to the host computer and cannot become active on the drive until it is downloaded using the "Store to Device" function. These two parameter sets can be entirely separate in terms of parameter values, meaning if a user adjusts the offline parameter set it will not change any values within the online parameter set. Certain features are only available within the Online Parameterization interface specifically for displaying real-time data from the drive, although these can be viewed while the drive is offline. These features will be further explained within the next section.



Parameter value information can be displayed when hovering over the "i" indication next to the parameter name. This information will include the parameter code, Modbus ID, Parameter name, Applications it is in, Read/Write ability, a long definition of the parameter, and then its default, min and max values. This is available for all the parameters and monitoring values.



If a parameter requires a change, it can be changed through the setting box to the right of the parameter name. Once a change is made, it sends it down to the drive.

If option boards are installed in the drive, the option card parameters will appear as an additional menu item in the parameter tree on the left of the screen. With no option cards installed this menu does not appear.

Quick tool bar buttons

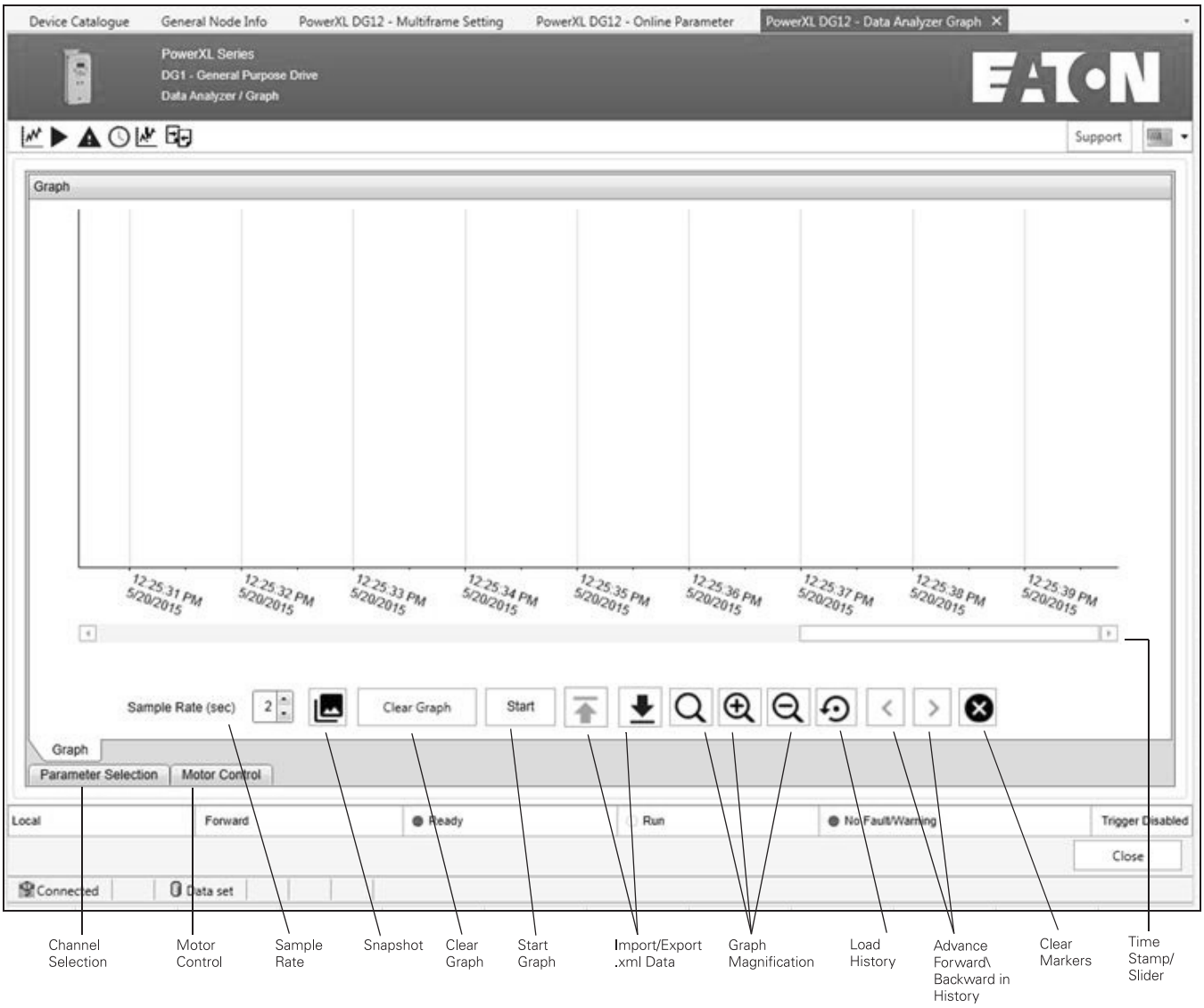
The quick tool bar buttons in each PowerXL DTM's consist of the buttons shown below. Not all Quick Tool Bar Buttons are used in all DTM's. Refer to the Figure below. Each of these buttons will open up a new tab window with features used for monitoring, depending on which window.

Quick Launch Descriptions (Left to right)

- Export Parameter (All Models)
- Import Parameter (All Models)
- Parameter Compare (All Models)
- Motor Control (All Models)
- Data Analyzer Graph (All Models)
- Parameter Distribution (All Models)
- Launch Firmware Upgrade Tool (All Models)
- Interval Control (DX1, DG1 and DH1)
- View Faults (All Models)
- Event Analyzer (DX1, DG1 and DH1)
- Service File (All Models)
- Parameter Change Logs (DX1, DG1 and DH1)
- About DX1 Device DTM (All Models)

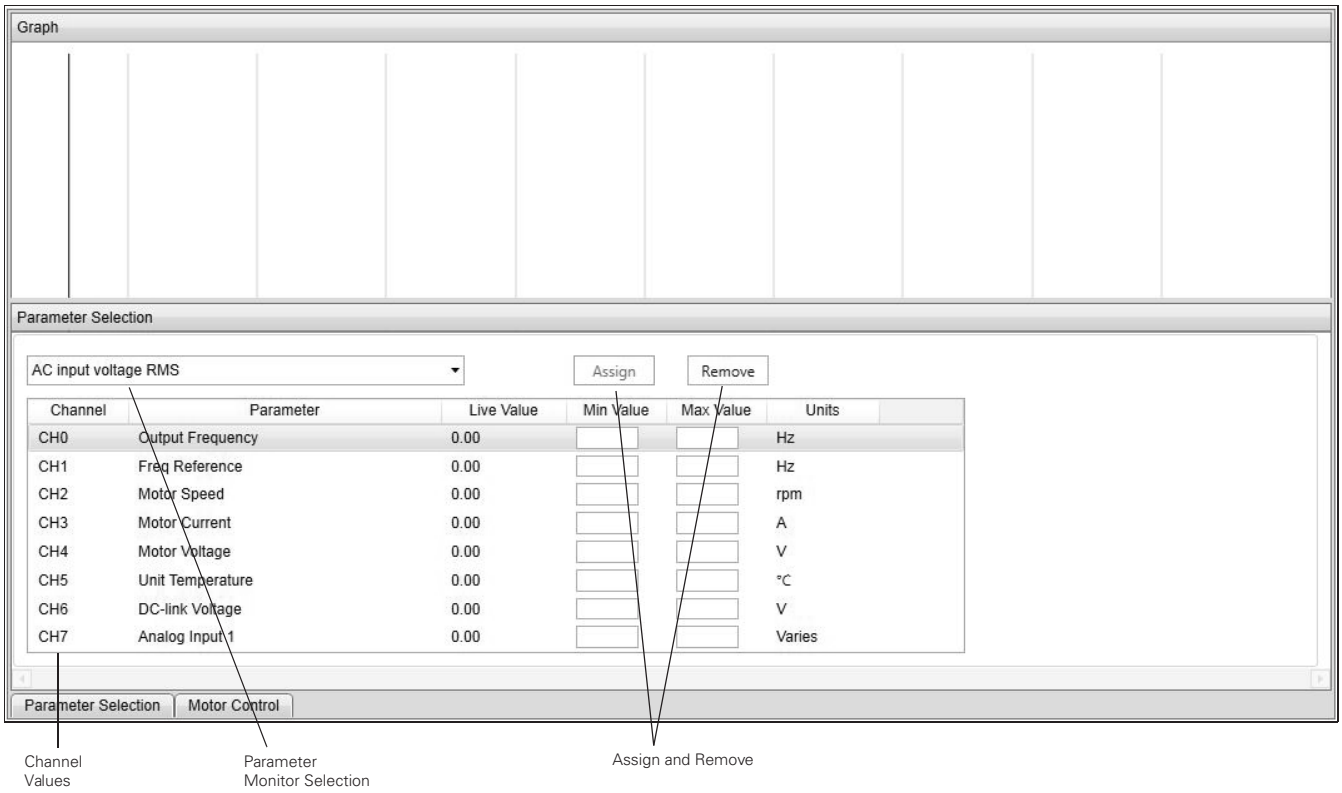
Data Analyzer/Graph

The Data Analyzer provides a live feed of user-selectable data to be monitored and analyzed. Up to 8 channels or axes can be selected to be displayed within the data graph. Each parameter can be selected and assigned channels within the graph through the Parameter Selection drop-down menu. Users can change the sample rates, take snapshots of the graph, or clear the graph data to begin a new set. Users can also import/export graph data to an .xml format which can be used in programs such as Microsoft Excel®.



Sample Rate — Adjust the sample rate of the graphing tool, 2 to 10 second scale.

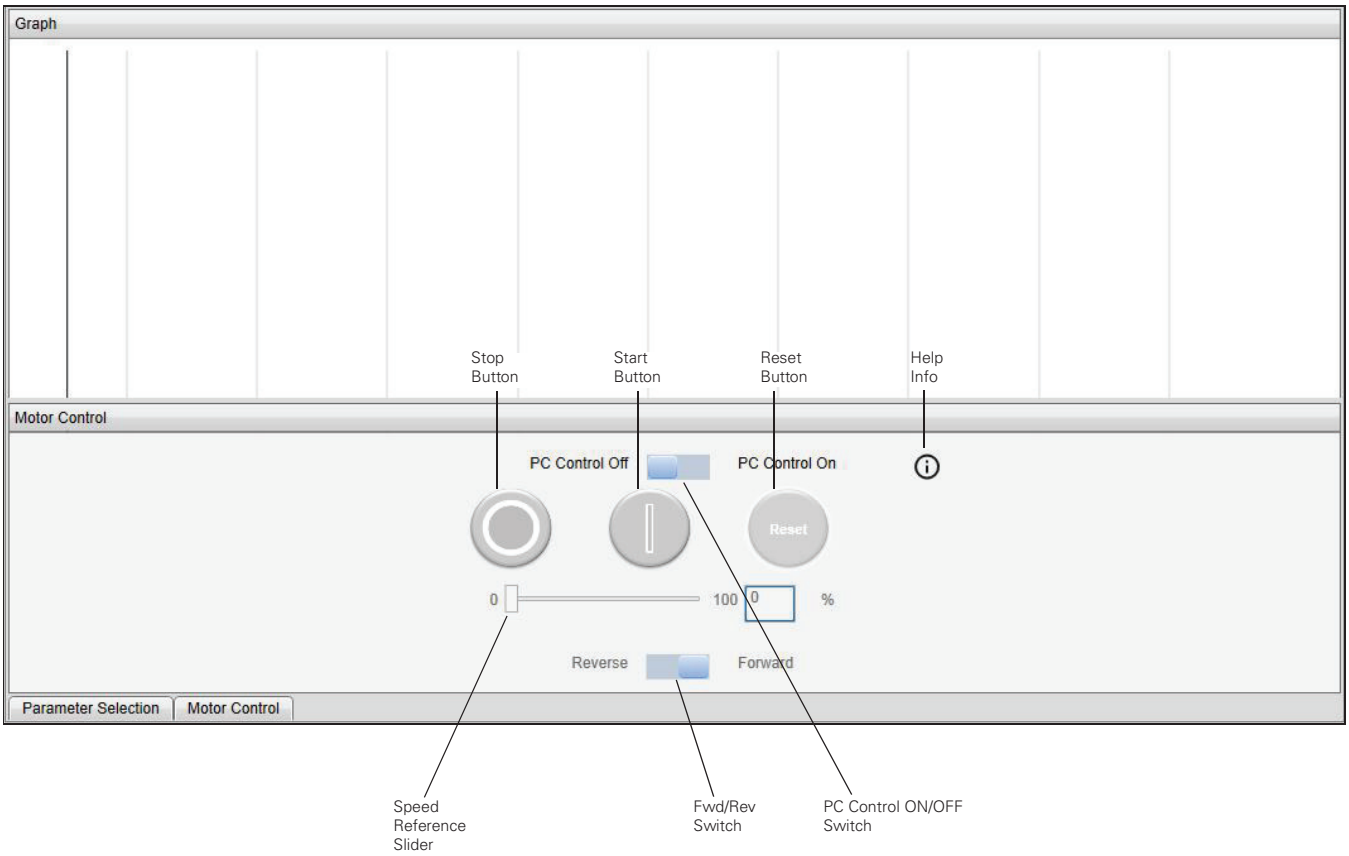
Channel selection — Allows selecting which parameter values you would like to assign to one of the 8 channels. When you click on the tab, it will slide out a window of the parameter assignment along with the 8 channels in a table. There are 8 basic values selected for monitoring but they can be adjusted by using the drop-down box.The table will indicate the parameter name, live value, min value, max value, and units of that value. Once the values are set, the window can slide back as a tab by clicking on the Graphing window above.



To assign a monitoring value to a channel, it requires clicking and highlighting the desired channel and then using the drop-down menu. On the parameter monitoring value selection, you can scroll through and select the desired value. Once the value is selected, click the Assign button to put it to that channel. To remove a channel, it requires the same process of highlighting the channel desired and clicking on Remove. Each channel will have its own y axis scale.

Motor control — This button allows the PC to take over control of the drive by starting/stopping, changing speed and direction.

Note: Remote control place and reference need to be in fieldbus mode for the control menu to function along with the drive being in that control mode. The PC Control Off/On switch will do these transitions. If PC Control is not on, the buttons will be greyed out.



⚠ WARNING

Take all safety procedures required by local management to insure personnel safety. Accidental user activation of the device is possible which increases the potential for safety risks. Please use caution when remotely controlling devices.

Graph snapshot — This button takes a picture snapshot of the graph at that moment in time. The snapshot saves the graph as a jpeg image without any numbers tied to it.

Clear data — This button clears the graphed data along with the channel assignments. The default channel parameters are cleared as well. To get these back, close the Graphing window and reopen.

Import/Export .xml — These 2 buttons allow for importing and export .xml graphing files for viewing and further analysis. Upon clicking on the button, it will open an Open window to save or select the desired .xml file. Export becomes valid when data is recorded and it is graphing is in the stop state.

Start/Stop — This button starts the process of logging data into the graph. Once starting the graph will auto scale the Y axis based off the values shown.

Graph View Manipulating — These 3 buttons allow for changing the view of the graph, allowing to zoom in or out on certain areas of the graph window as well as set it back to default view.

Load history — This allows for loading up to 15 hours of stored data, then by using the Advance Forward and Backward buttons to change the 4 hours displayed in the graph window at a time.

Clear markers — Will clear the markers that can slide out to view values at a specific point in the graph window. The markers are applied by clicking on a desired point on the graph. Two graph points can be pulled up to get comparisons.

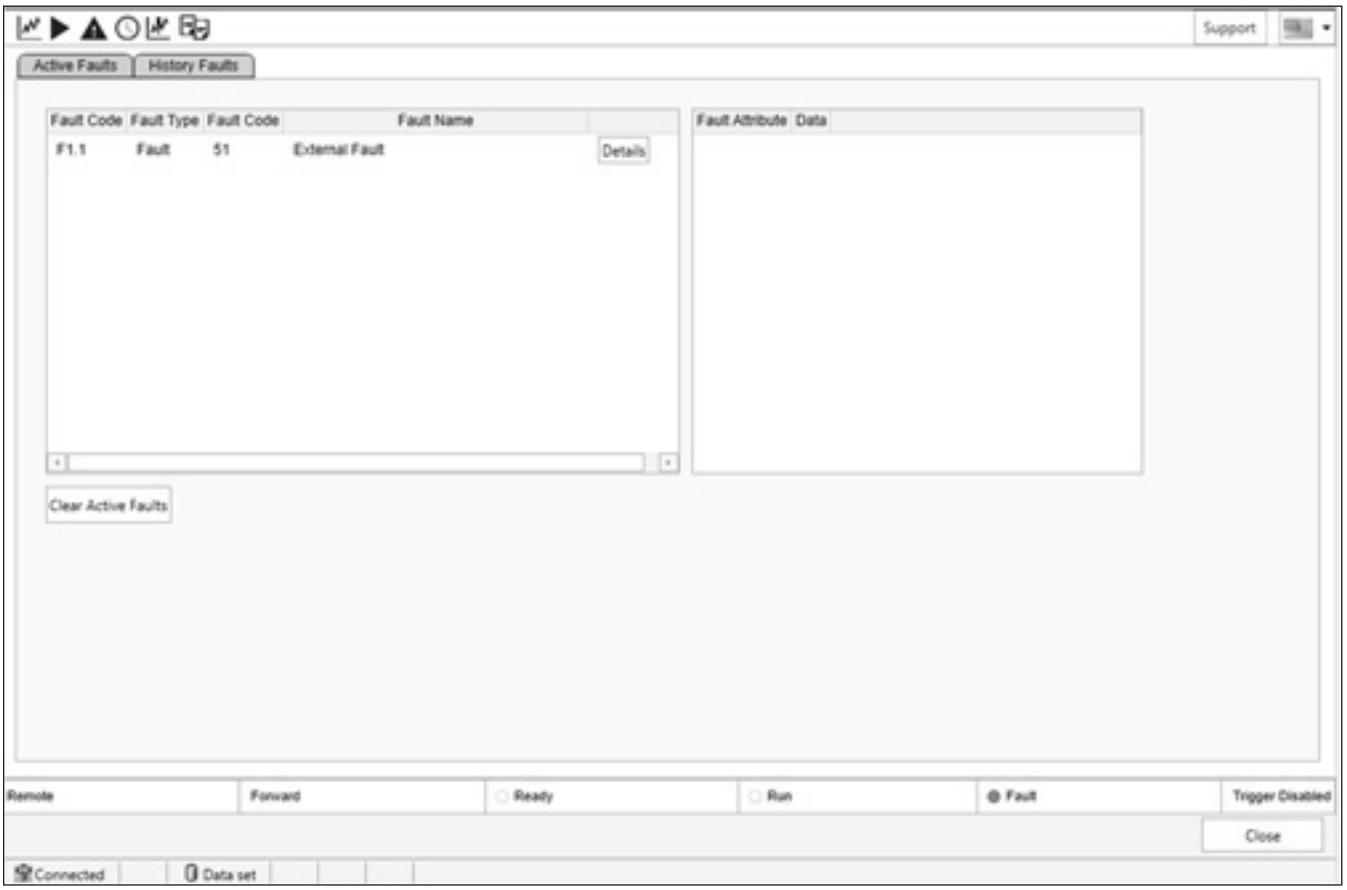
Time stamp/Slider — This area shows the real-time stamp on recorded data from the device. The time is based off the computers real time stamp. The slider allows for going to previous times to view results.

⚠ WARNING

Take all safety procedures required by local management to insure personnel safety. Accidental user activation of the device is possible, which increases the potential for safety risks. Please use caution when remotely controlling devices.

Fault history

The Power Xpert inControl tool displays any faults or warnings/alarms which have occurred on the drive, currently active faults as well as previously cleared faults are viewable within this interface. There are two tabs within the Fault view screen.



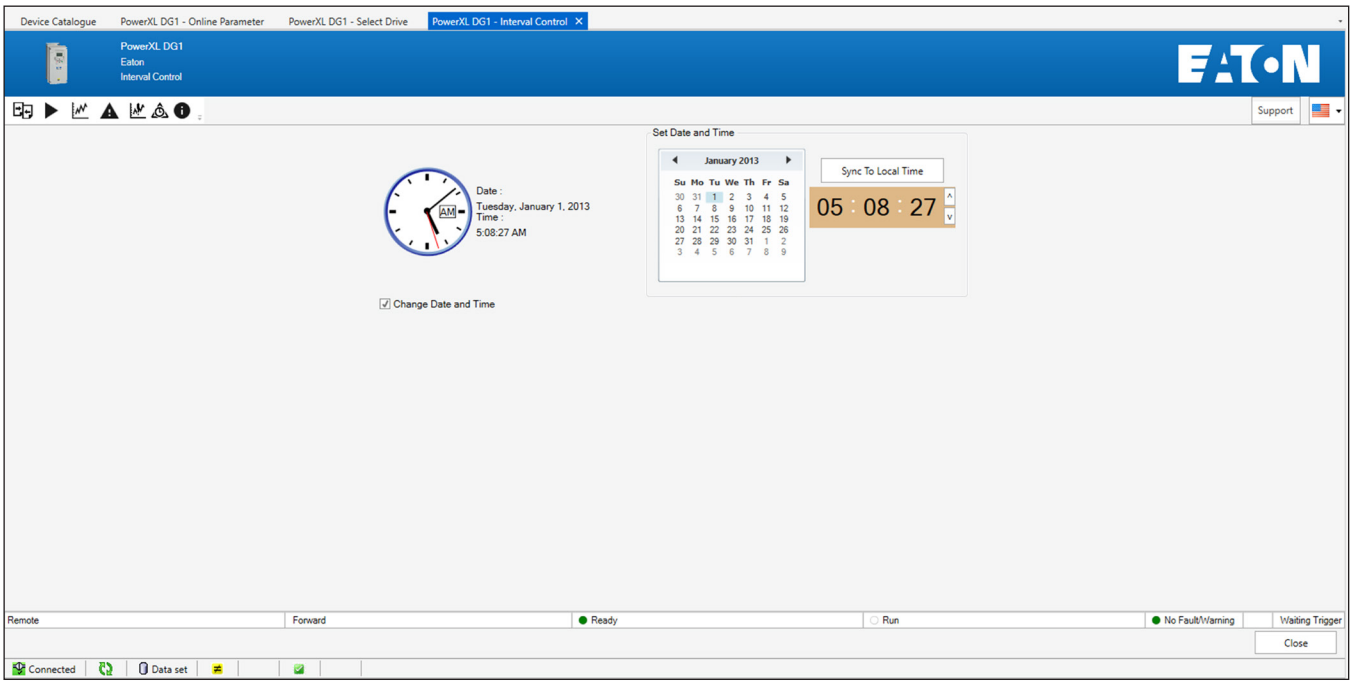
Active faults — Any currently active faults or alarms will be displayed within the "Active Faults" tab. Users can clear any active faults once the fault condition has been resolved to restore the drives functionality. Faults must be cleared through this screen by clicking the "Clear Faults" button on the "Active Faults" window, the rest button available on the drive control panel, or through local I/O or keypad options (Back/Reset button, fault clear DI, etc.) to restore use of the configuration tools ability to adjust and control the drives parameters and functionality.

Faults — When looking at faults, they will provide the fault code number and fault description. When hovering over that fault, it will give a pop-out window to provide fault cause and possible remedies for that fault. If additional info is needed, the Details button can be pressed to get 16 parameter values that were stored when the fault occurred.

History faults — Any previous faults that occurred to the device are logged within this tab. Up to 10 faults can be stored within the DG1 drive, all of which will be shown on this screen if saved. With each fault, there will be a group of parameters that get stored and can be viewed to provide analysis along with a description of what the fault is and how to rectify it.

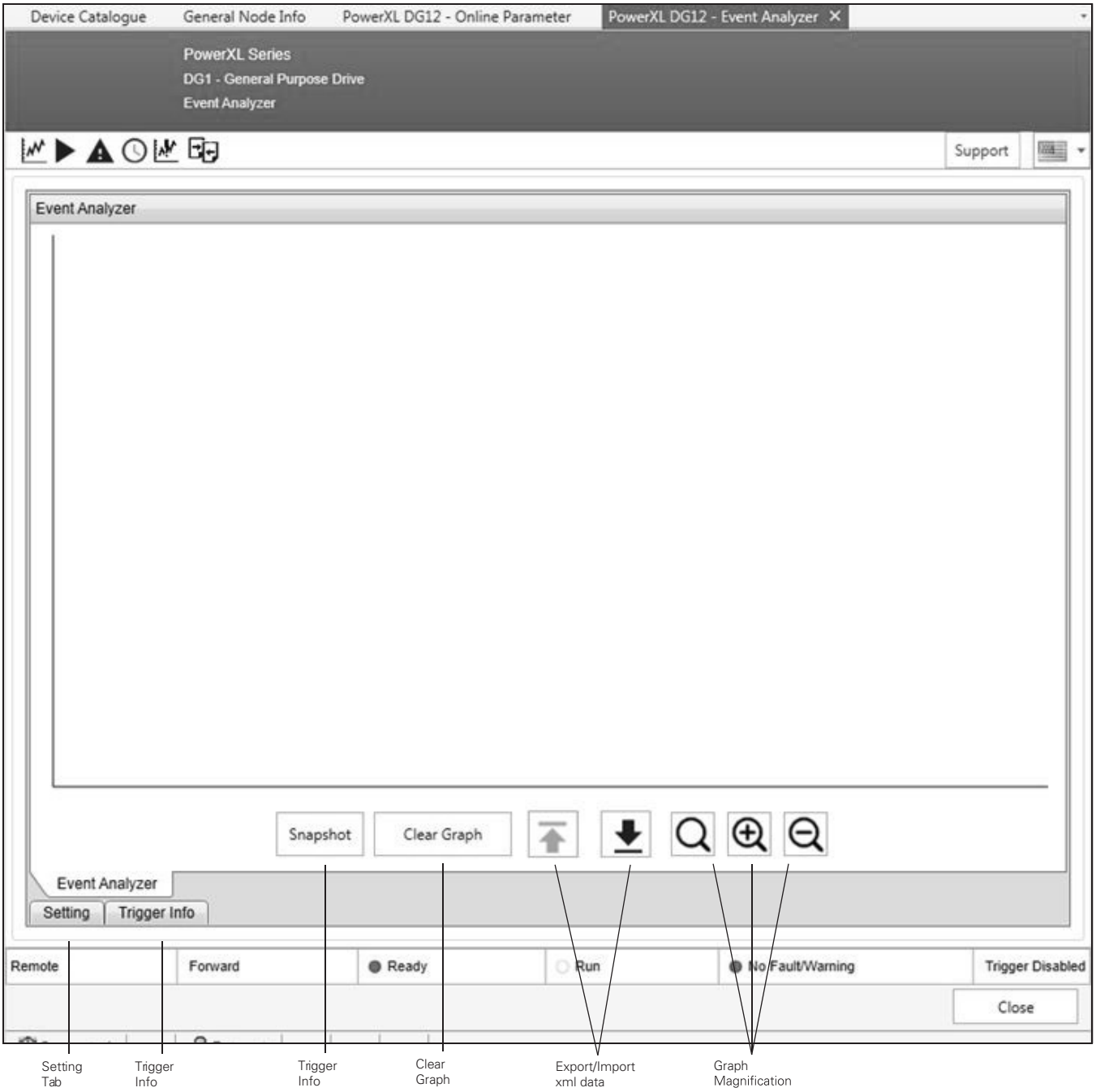
Interval control

The DG1 drives real-time clock (RTC) settings can be monitored or adjusted through the Power Xpert *in*Control configuration tool. The date and time values can be edited individually or synced with the host computers. The below functions can be performed with their associated button.



Event analyzer

The event analyzer is very similar to the graphing tool but it actually uses the drives control board to record different trigger points in the control board that can then be pulled out via the PC Tool to look at the desired channel info. This is looking at data at the 10 msec refresh rate in the control board.



Setting tab — The setting tab is used to set the control board up with channels and trigger point value. This will also allow for pulling the events out of the drive.

Trigger info — This tab provides the info on the event log being displayed in the graph window.

Snapshot — This will allow for taking a snapshot of the graph window to allow for sending the picture.

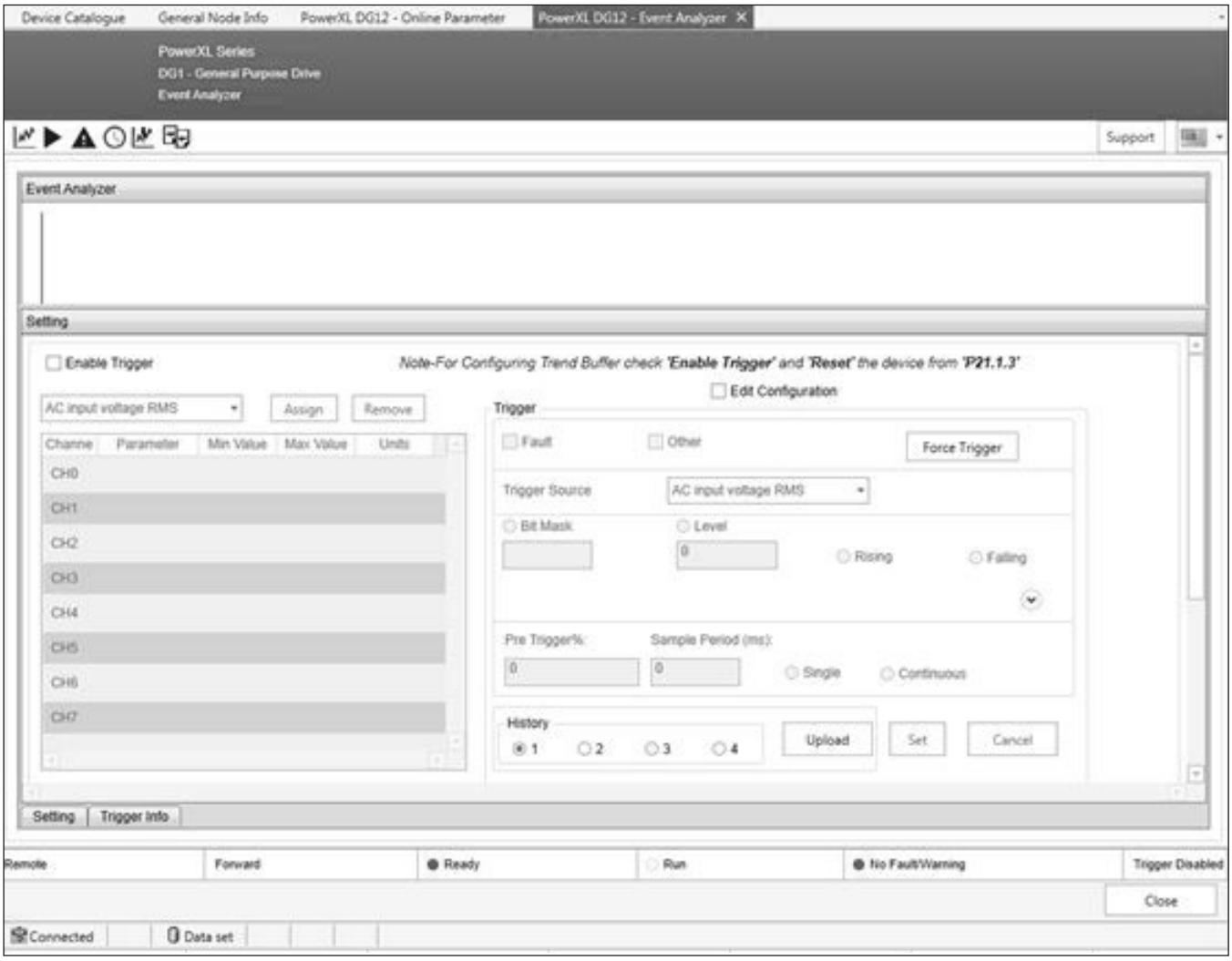
Clear graph — This button will clear the viewed graph screen.

Export/Import data — Will allow for saving the data to an xml file, which will allow sending it or putting it into a spread sheet.

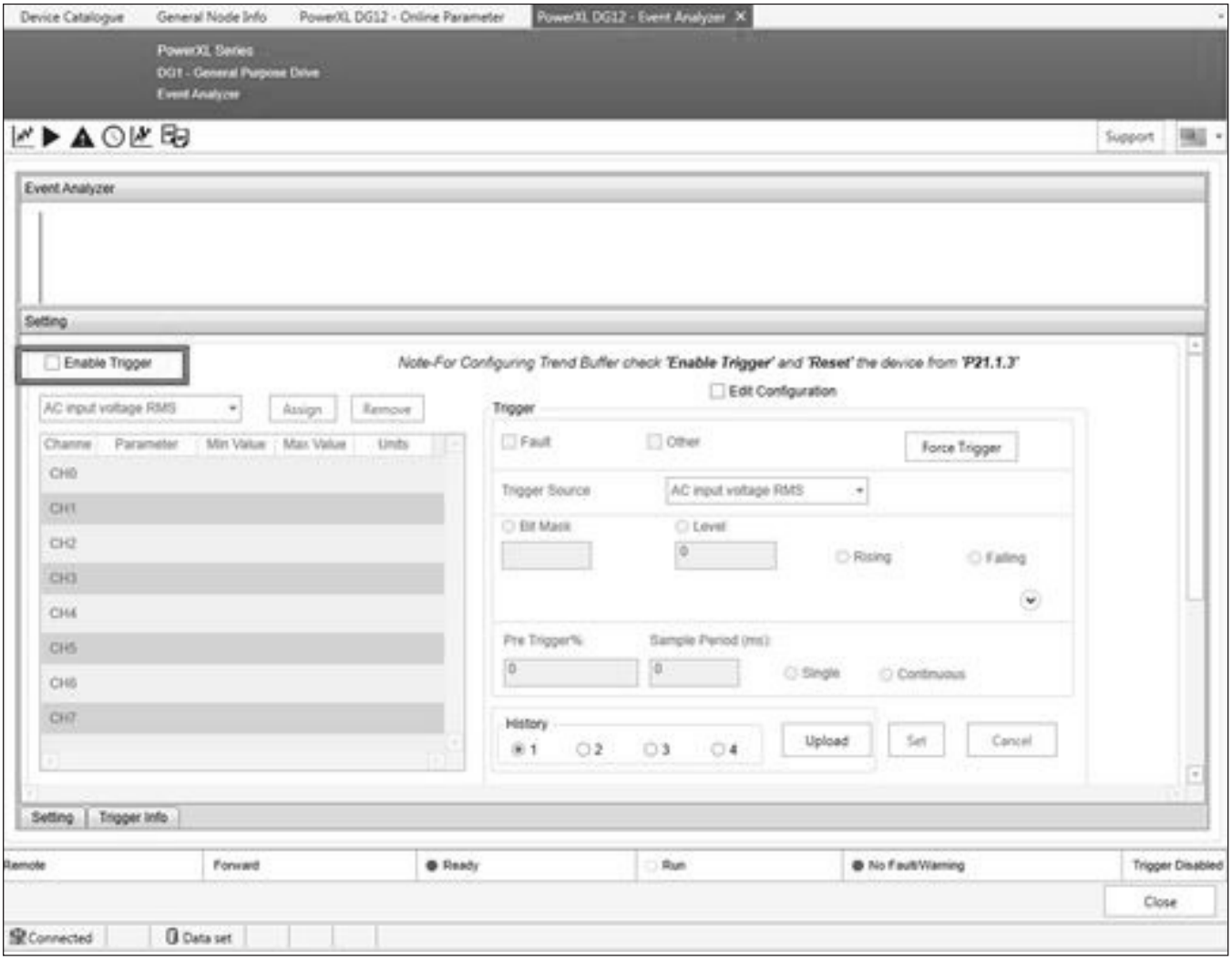
Graph magnification — These buttons allow for zooming in and out in the graph along with resetting back to defaults window.

To Set up a Trigger.

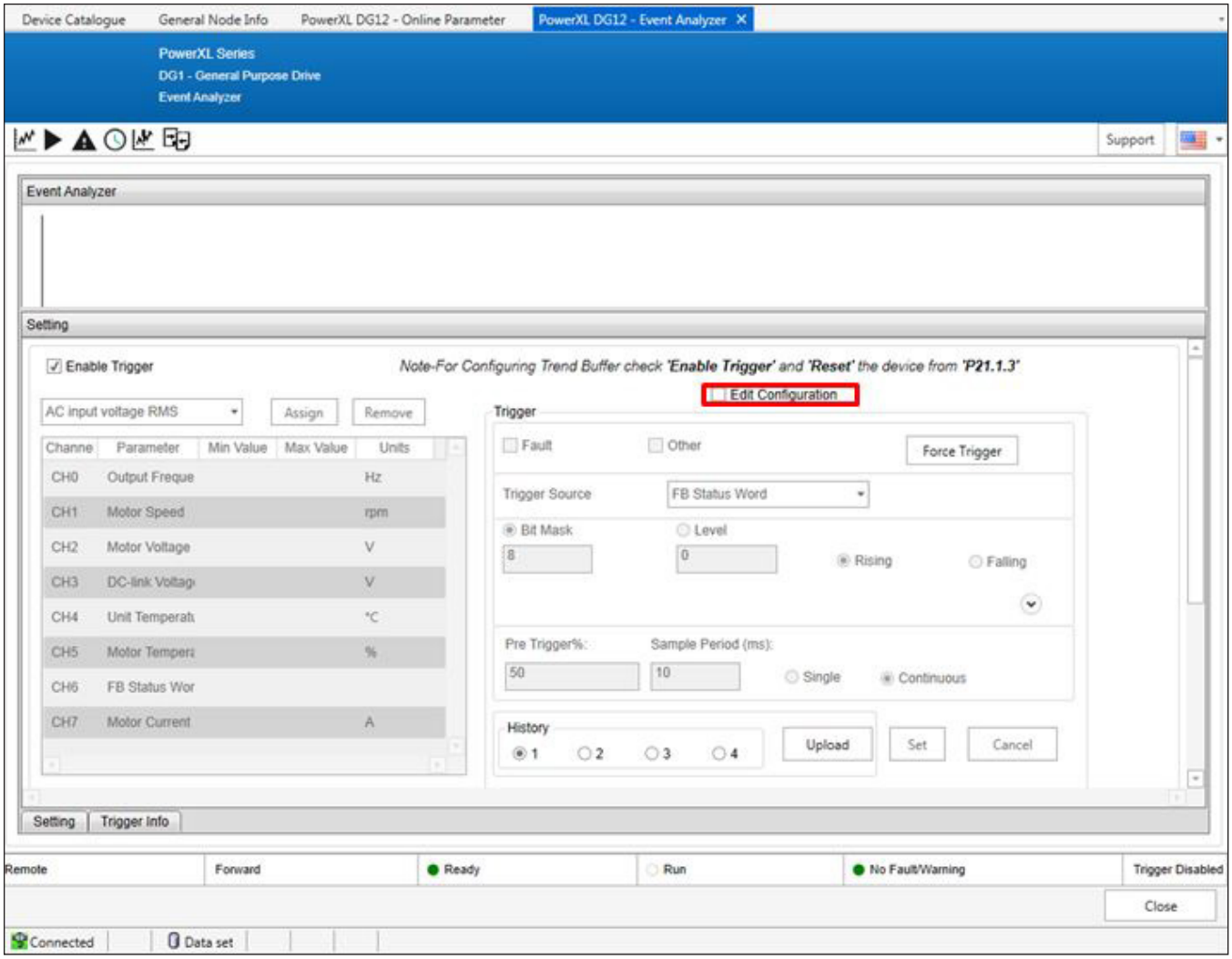
1. Click on the Setting Tab



2. Check the Enable Trigger box. You will then see the note that asks to set P21.1.3 to Reset to power cycle the control board or you can perform a manual power cycle.

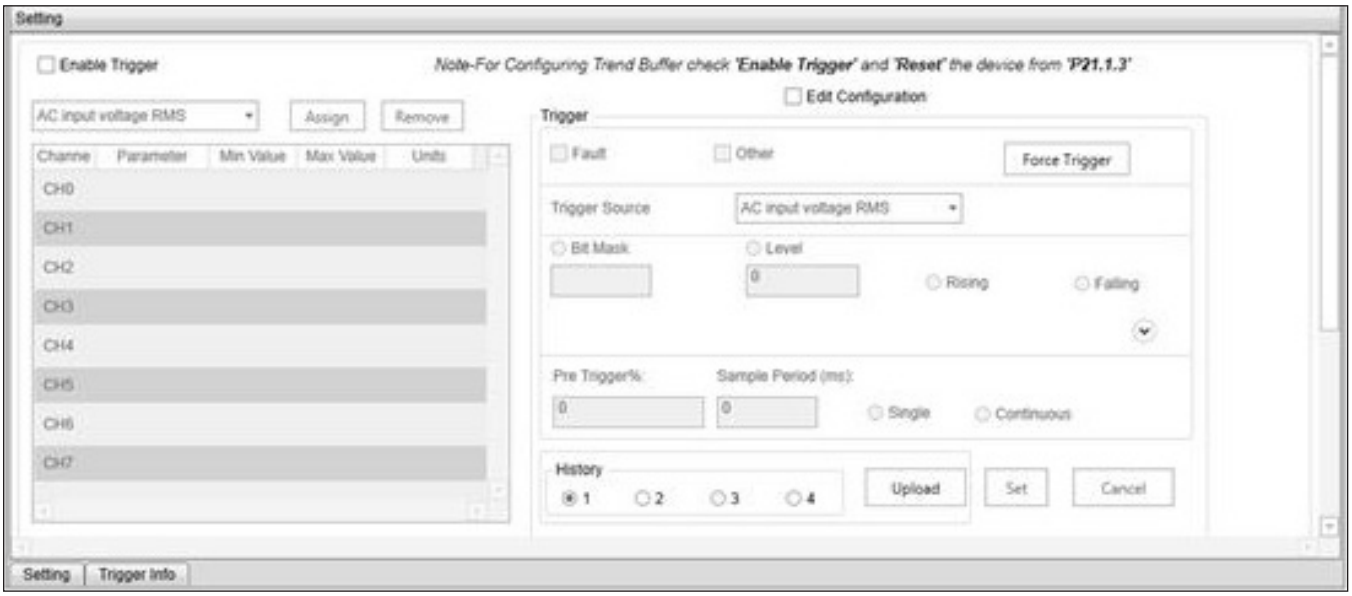


3. Close the Event Analyzer window and reopen after the Reset. From there check the Edit Configuration tab to set up the channels and trigger.



4. There are a set of default values listed in the table but these can be selected by the drop-down window and then assigned to a channel.
5. With the channels selected, select the trigger method as a Fault or Other. Other would correspond to a parameter that can be bit masked to trigger off a level.
6. Select the Pre Trigger %. This is the amount of time before the trigger event that will be stored. Set the Sampling period and if it is a signal shot or continuous. Signal is a single trigger and it is done, Continuous would allow for multiple storage points up to 4, as new ones come in, the oldest is removed.
7. Click the Set button to send settings down to the drive.

From there you can disconnect and let the drive perform. Then when reconnecting, the 4 history boxes can be checked to pull the last 4 items out.



To view plot

When the trigger condition occurs, the trigger status is changed to '**Triggered**.' User can then upload the trend plot for the set parameters. The latest plot is always available in **History** slot#1. When next 'Triggered' condition occurs, the data from Slot#1 is shifted to Slot#2 and latest data is stored again in Slot#1.

User can take **snapshots** of the trend plot or export the trend file (.xml) that can be imported for viewing in the future.

The Trigger Information of the displayed plot is available in '**Trigger Info**' tab of Event Analyzer.

User can also do a 'Force Trigger' that will trigger immediately.

Parameter compare

Parameter Compare enables the user to:

- Compare the parameter values between 2 exported configuration files (.exml)

OR

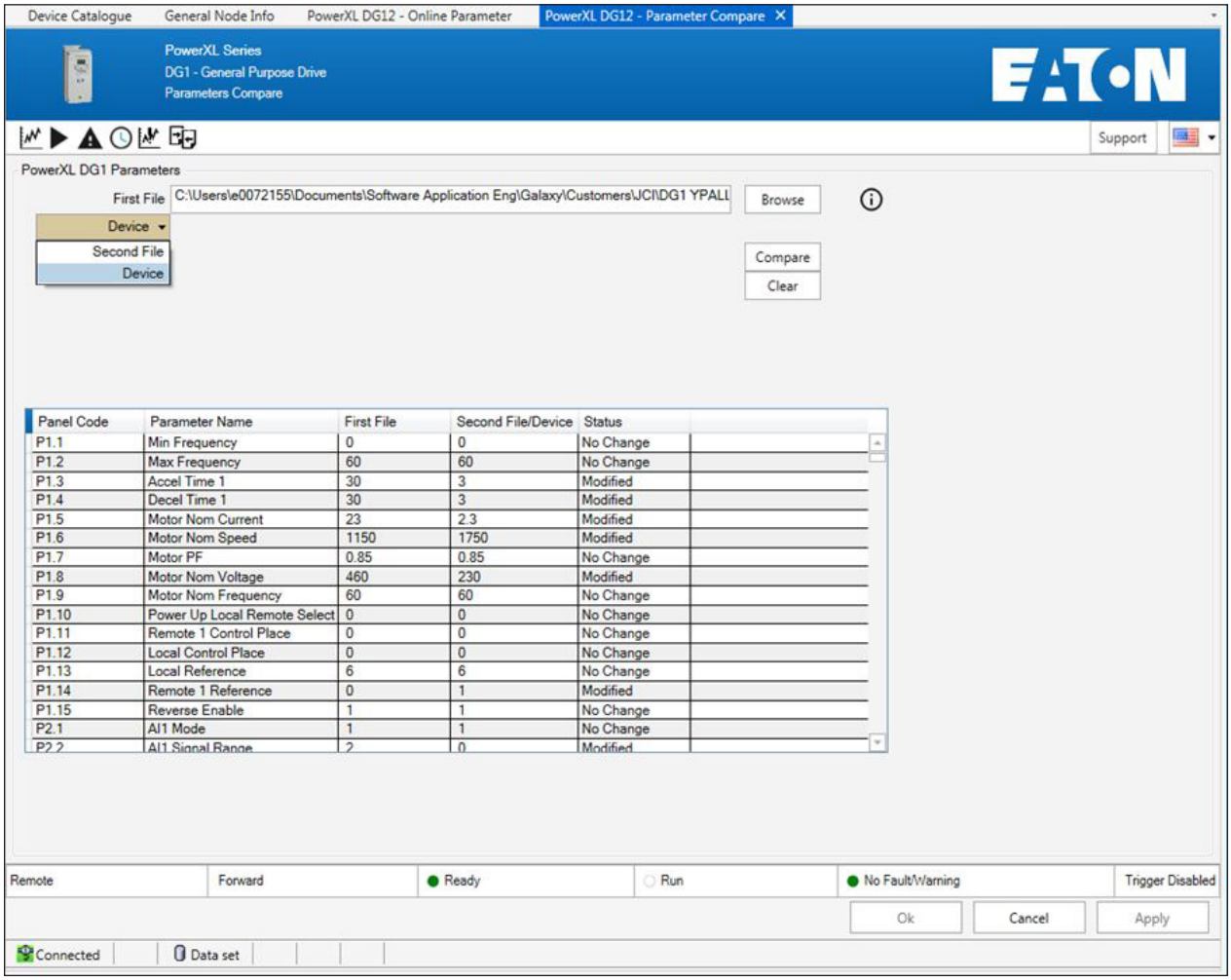
- Compare the parameter values between a configuration file stored in the computer and the device (when the DG1 DTM is Online)

The user can also compare the parameter values between a configuration file and offline parameters (when the DG1 DTM is offline).

This option is available as a shortcut on the toolbar of Online & Offline Parameters window.

Also, 'Parameter Compare' can be launched by right clickingon **DG1 DTM > Additional Functions > Parameter Compare.** DG1 DTM shown as an example. This can be used for all drives.

The option to compare 2 files or a file and device is available on the Compare window.



Panel Code	Parameter Name	First File	Second File/Device	Status
P1.1	Min Frequency	0	0	No Change
P1.2	Max Frequency	60	60	No Change
P1.3	Accel Time 1	30	3	Modified
P1.4	Decel Time 1	30	3	Modified
P1.5	Motor Nom Current	23	2.3	Modified
P1.6	Motor Nom Speed	1150	1750	Modified
P1.7	Motor PF	0.85	0.85	No Change
P1.8	Motor Nom Voltage	460	230	Modified
P1.9	Motor Nom Frequency	60	60	No Change
P1.10	Power Up Local Remote Select	0	0	No Change
P1.11	Remote 1 Control Place	0	0	No Change
P1.12	Local Control Place	0	0	No Change
P1.13	Local Reference	6	6	No Change
P1.14	Remote 1 Reference	0	1	Modified
P1.15	Reverse Enable	1	1	No Change
P2.1	AI1 Mode	1	1	No Change
P2.2	AI1 Signal Range	2	0	Modified

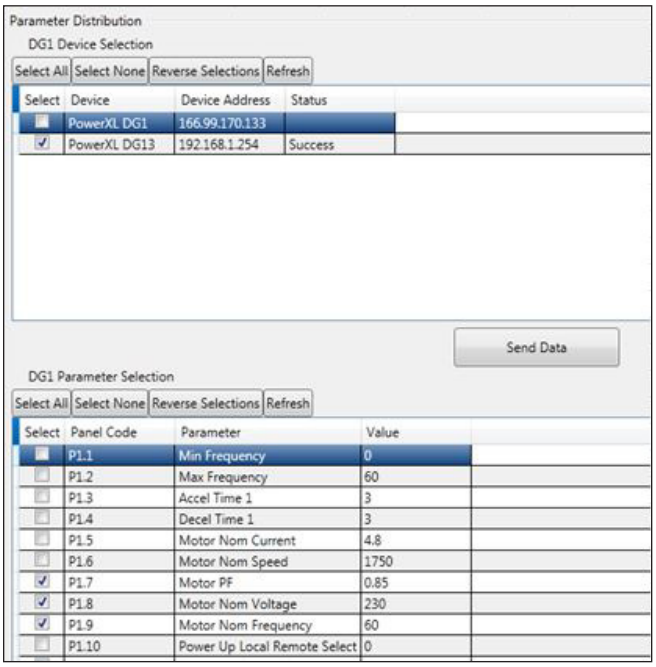
Parameter distribution

Parameter Distribution feature allows the user to copy selected parameters from one DTM to multiple DTMs. This is an offline operation and is applicable to Offline parameters. Both the source and the destination DTMs need to have the same setup configuration (i.e., Input Voltage rating and Drive current ratings) to perform Parameter Distribution.

Parameter Distribution can be launched from the toolbar icon in Online Parameters page.

Alternatively, Parameter Distribution can be launched by right clicking on **DG1 DTM > Additional Functions > Parameter Distribution.** DG1 DTM shown as an example. This can be used for all drives.

The 'DG1 Parameter Selection' table will display all the offline parameters of Source DG1.



Note: Source DG1 is the DTM from which the Parameter Distribution is launched.

Under '**DG1 Parameter Selection**', when 'Send Data' button is enabled, clicking it shall copy the selected parameter values to respective Offline parameters of all DTMs selected in '**DG1 Device Selection**' section. DG1 Parameter Selection shown as an example. This can be used for all drives.

Import/Export parameter (Configuration replicator)

PC Tool enables the user to export PowerXL VFD device configurations to a file (.exml) that can be later imported to VFD devices or Offline parameters.

The Export / Import shortcuts are available on the toolbar of Online and Offline Parameters window.

Exporting offline configuration

For creating an offline parameter set, user first needs to set up the drive from the Multi-Frame window and then export it using the **Export** icon from the toolbar of Offline Parameters window.

Exporting online configuration

Online / Device configuration file can be created by using the **Export** icon from the toolbar of Online Parameters window. It will export all the parameters from the device to the exported file.

Import

Using the Import option will import the previously exported configuration file to the VFD Offline / Online Parameters. If a configuration file is imported in Online Parameters, all the parameters from the file are written to device.

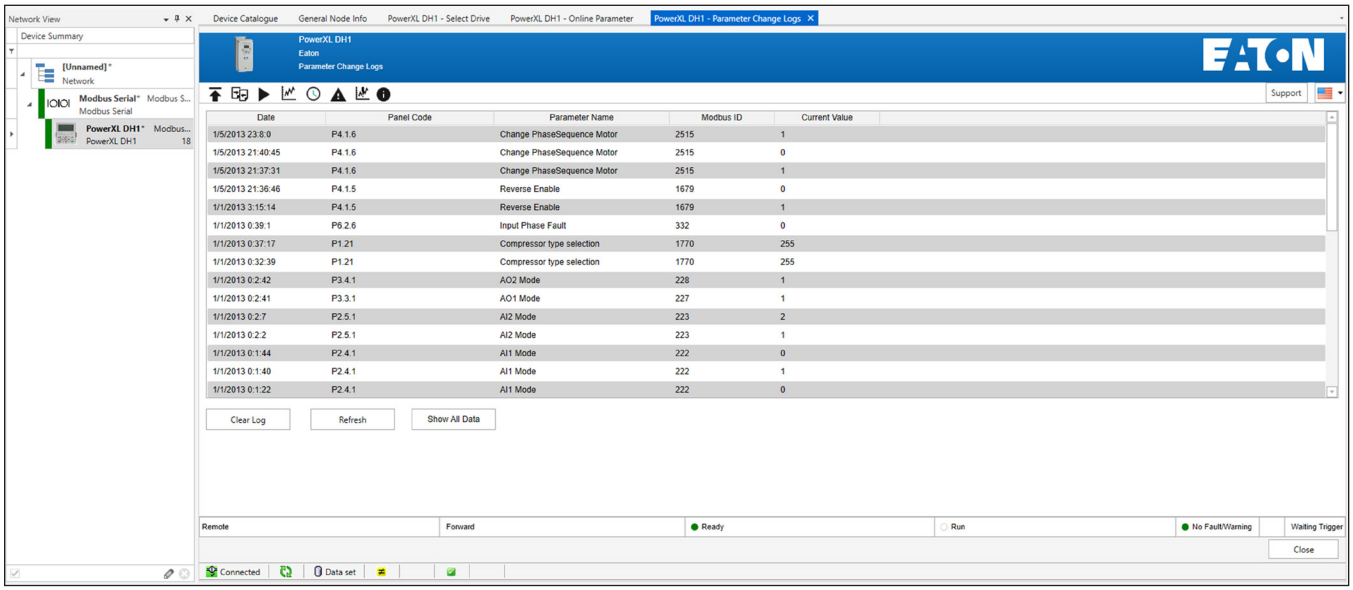
Service file

User can print some useful information of VFD parameters using **Service File Information**. This feature will read the parameter values from the VFD with **Drive Information** and **History Fault Information**, and show them in a HTML file. User can then print the contents of this window, or save it to a file. This feature is available only in Online mode.

Service File Information can be launched from the toolbar icon in Online Parameters page. After saving the file as an HTML, it will open up an Internet browser and display the parameter file page.

Parameter change log

The Parameter Change Log provides a list of Parameters that have been changed in the VFD. The list is displayed in chronological order with the Panel Code, Parameter name, Modbus ID and the Current Value. There are 3 additional selection options available with the list. Clear Log will clear the Parameter Change Log. **Refresh** will update the change log data. The final selection gives the user the ability to **Show All Data** or **Hide Data**.

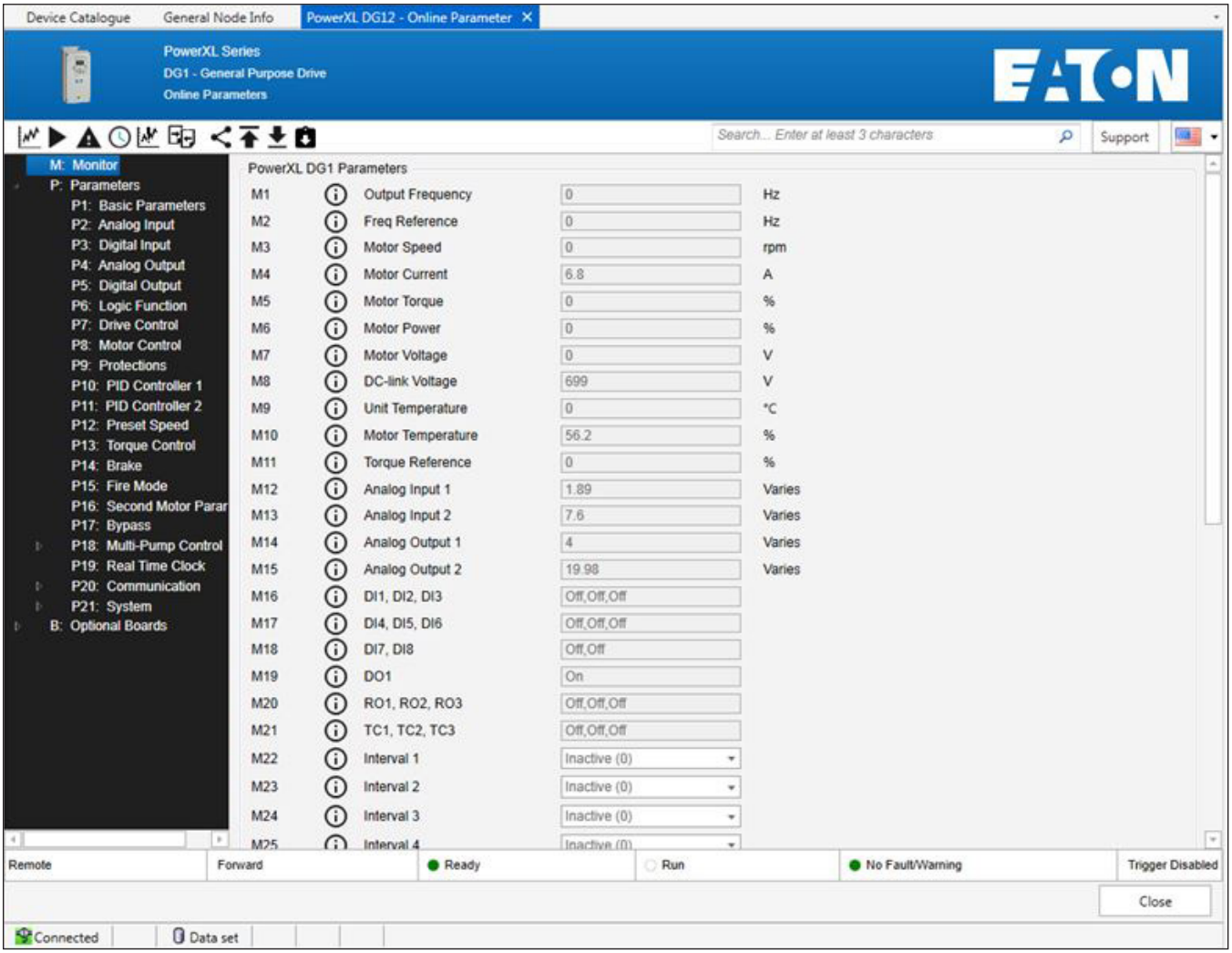


Launch firmware upgrade tool

The Power Xpert inControl tool launches the Eaton Power Xpert inControl- Firmware Upgrade tool. The firmware upgrade tool is a separate program that must be loaded on the same computer that inControl is loaded on. The Upgrade tool will allow the user to upgrade the firmware on the connected VFD. Refer to Chapter 5, Section 3 of this manual for further instructions on the firmware upgrade process.

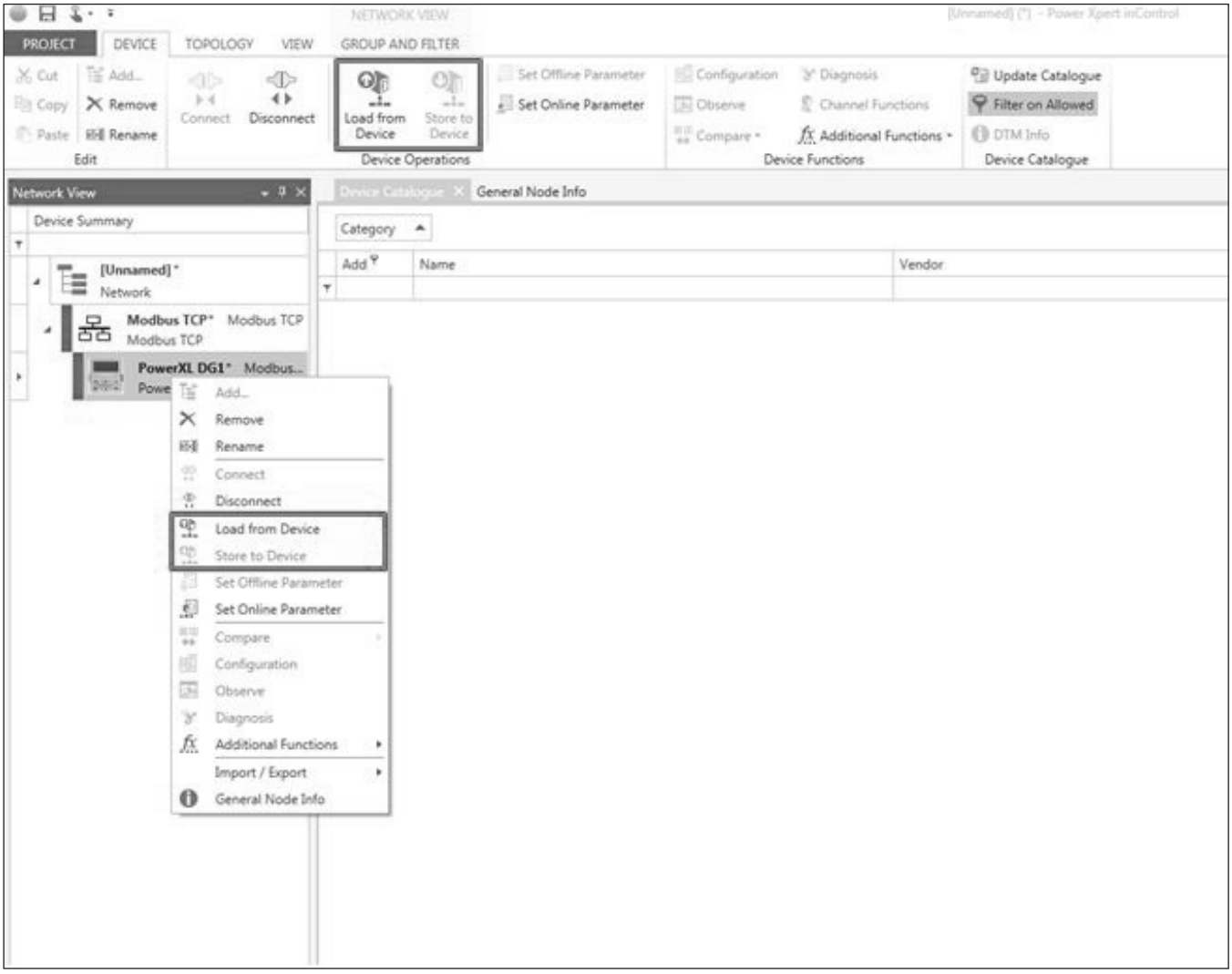
Device monitoring

Device monitoring is available through two mediums of the Power Xpert inControl tool. The Data Analyzer/Graph is available for user-defined parameter monitoring (please see "Data Analyzer/Graph" section for more detail). The Monitoring menu is also available which displays all available monitoring parameters and their current value on the drive.



Upload parameters (Load from Device to PC)

The software tool can upload parameters that are currently active on the drive to the Offline parameter set within the device DTM. Uploading parameters will overwrite all values within the Offline Parameter set and replace them with those from the drive. The device must be online in order to upload parameters.



Download parameters (Load from PC to Device)

The software tool can download parameter values to the drive from the Offline Parameter set loaded into the device DTM. The drive must not be receiving a "RUN" signal in order to download parameters. Downloading parameters will overwrite all currently loaded parameter values within the drive. The device must be online in order to download parameters to the drive. It is recommended that users save a copy of the parameters they wish to replace by uploading the parameters on the drive to a back-up DTM file. This will help in future trouble-shooting and record keeping if needed.

WARNING

Currently, the PowerXL DG1 series offline parameter set has not been configured to load base parameters based on the frame size of the drive. This means that the default values loaded in the offline parameter set are incorrect and must be uploaded from the drive to reflect the specific frame size installed the field. Before downloading parameters to the drive users need to upload parameters from the drive as to ensure that the current values are entered for the particular frame size in use.

Section 3 — Firmware upgrade process

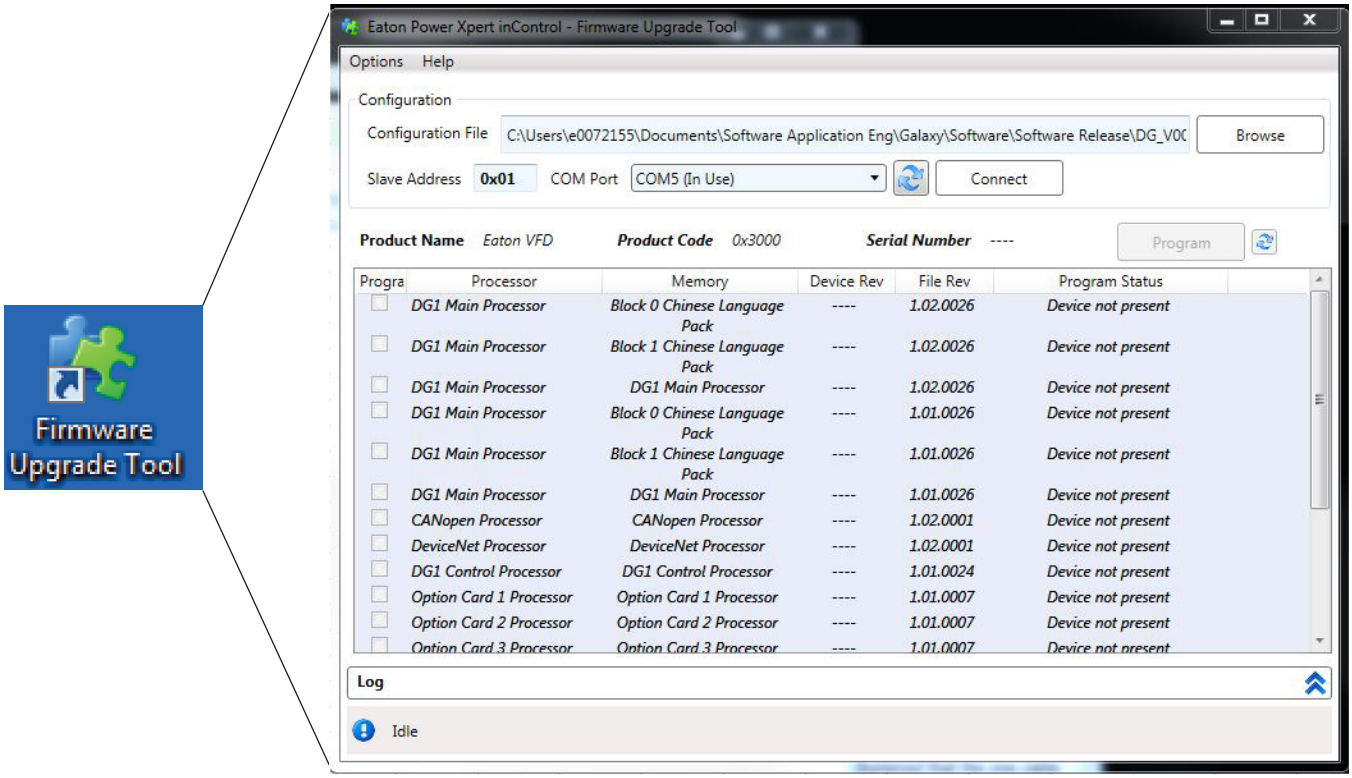
Application summary

The PowerXL Series adjustable frequency drive has the ability to upgrade firmware through a PC Firmware Upgrade Tool. It can be used to load a single packaged firmware file to the MCU, DSP, Keypad and Option boards.

How to load firmware

1. Download and open the firmware upgrade tool by clicking on the Firmware Upgrade Tool Icon seen in **Figure 2**.

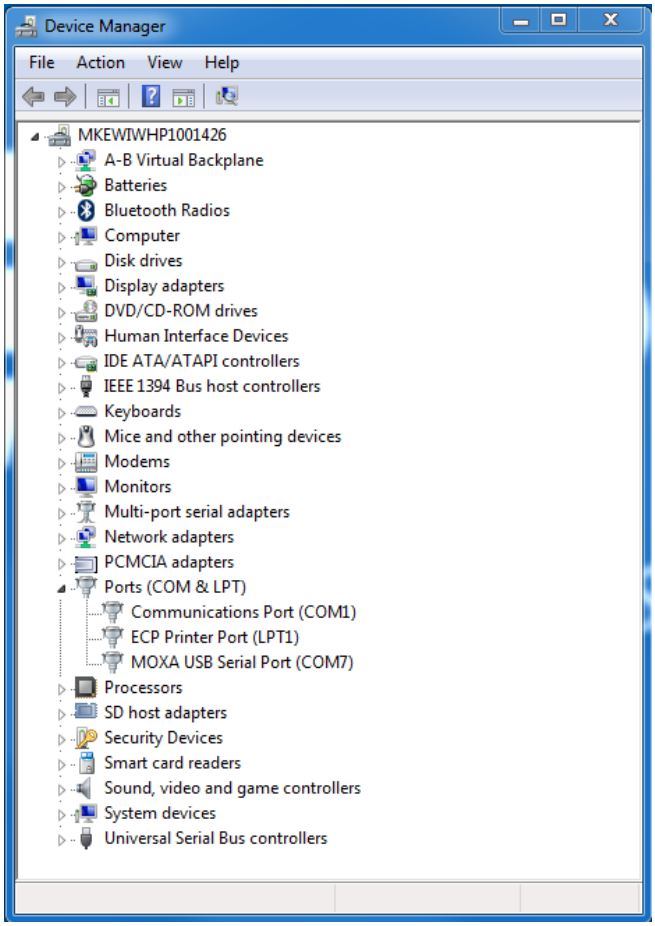
Figure 2. Eaton Power Xpert inControl — firmware upgrade tool



2. Ensure that the correct communication port is selected, loading firmware requires a USB to RS-485 converter that can be connected to either terminals A and B on the drive terminals or to the Key-pad RJ45 port (this is not an Ethernet port).

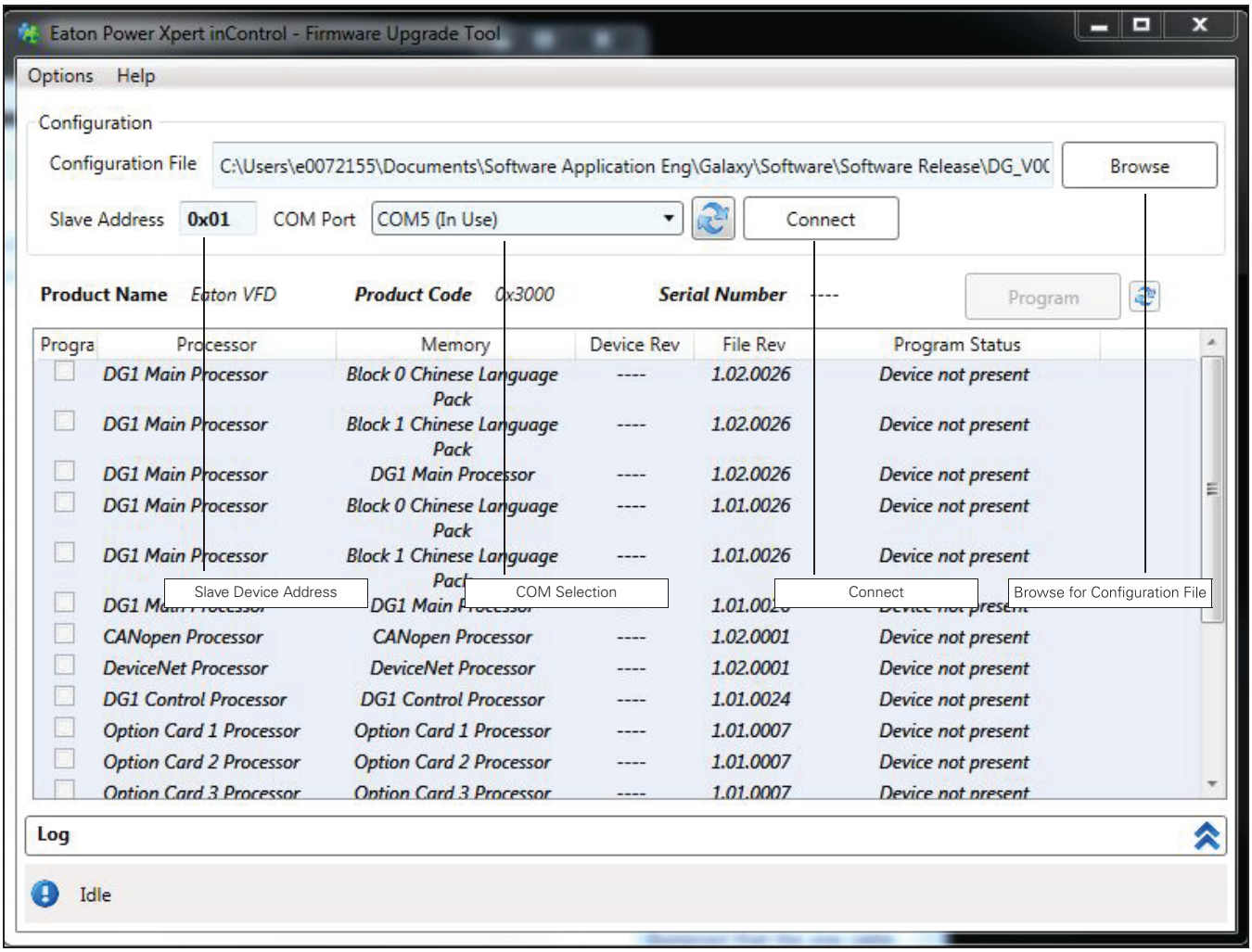
   a. Using Windows 7/XP, go to Start Menu.
   b. Select "Control Panel".
   c. Select the "System and Security" Icon.
   d. Under the "System", select the link for "Device Manager".
   e. In the Device Manger window scroll down to Ports, expand the Ports tree, and check the com port setting of your communication device.

Figure 3. Device properties



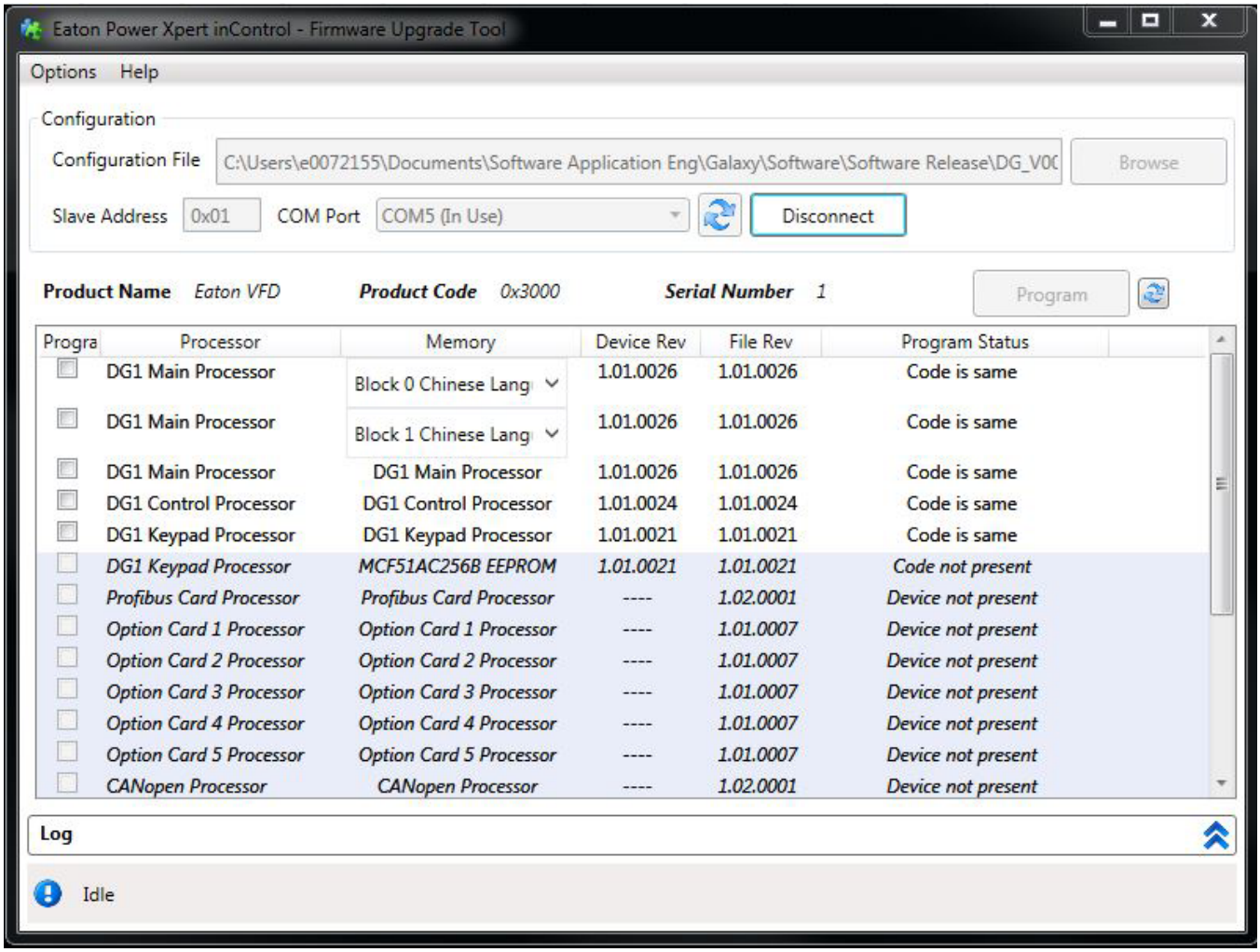
3. Click the **Browse** button, select the configuration file that your Eaton Representative sent you, and click the **Connect** button.

Figure 4. Tool buttons



4. The drive initially will go into a bootloader mode and next the software will go out to scan the drive for the processors that are available for upgrade. It will then compare the processor firmware versions on the drive to the firmware update package file.

Figure 5. Firmware files

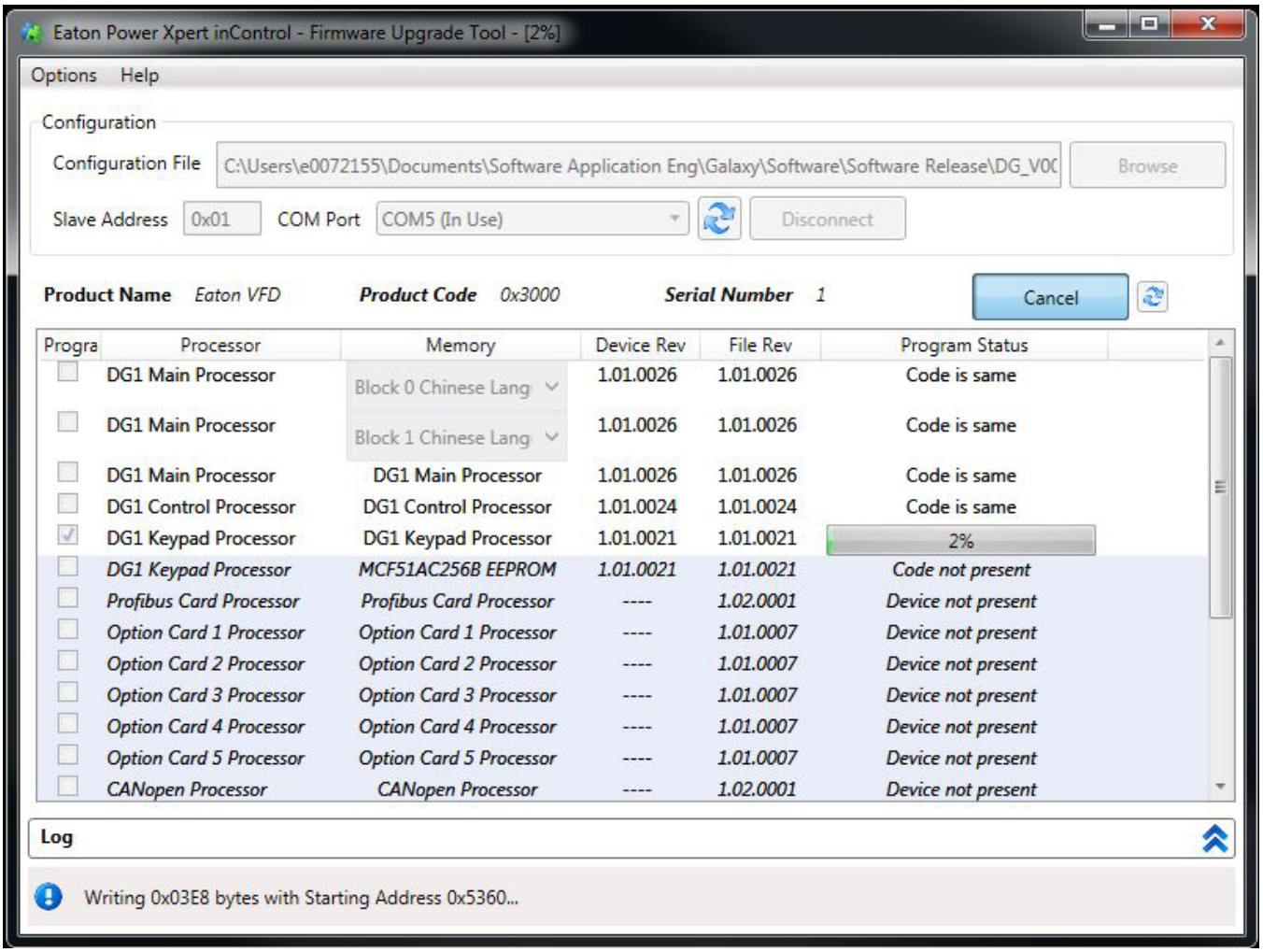


Language blocks — will pop up with drop-downs to select the desired language in addition to English.

If option cards are installed, they will show up allowing for upgrading. The Program Status will indicate if the code in the drive vs. the file are the same.

5. The **Program Status** row will show you the status of the firmware on the drive and the revisions available in the firmware update package file. If you would like to load software to the drive, select the **Program** check box. With that box selected, the Program button will become active; pressing it will start the download process.

Figure 6. Firmware upgrade status



6. Upon completion of the firmware download, the drive will come out of bootloader mode by either disconnecting or closing the Firmware Upgrade Tool. After the reset occurs, the drive keypad will then go through the process of uploading the new firmware automatically (while this is occurring there will be a status indication on the keypad).
7. The drive should then be powered down and back on, completing the firmware upgrade process. If the drive firmware update fails, please contact your local Eaton Technical Resource Center.

Chapter 6: Power Xpert C445 Motor Management Relay

Opening the inControl software and Creating a Project

Double click the Power Xpert inControl icon (shown below) that was placed on the desktop when the One Installer software was installed.

The following screen will open:

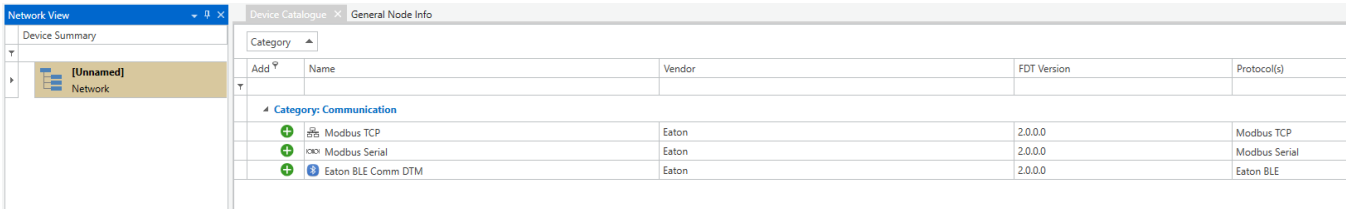
There are 3 actions that can be taken from this screen:

1. Create a new project (Empty project)
2. Browse for projects previously saved (Browse for other projects)
3. Import projects previously exported (Import from XML)

Selections 2 and 3 above are covered later in this chapter under the Save As /Open and Import/Export sections.

It is recommended to use the Empty project selection. If a copy of the configuration is desired, using the Parameter Export tool is the best way. This will be described later in this chapter under the Row of Icons section.

Select Empty project and the following screen will open.



This is where a communication driver is selected. This must be done at this time, even if you will not be connecting to a C445. The two selections for the C445 are:

1. Modbus TCP – this is used if you have an Ethernet module in the C445 and will be connecting via Ethernet.
2. Modbus Serial – this is used if you are connecting via a USB/Micro USB cable to either the Base Control Module (BCM) or the User Interface (UI). This is also used if you are connecting to the RS485 port on the BCM with a USB/RS485 cable. Part numbers for these cables are shown below:

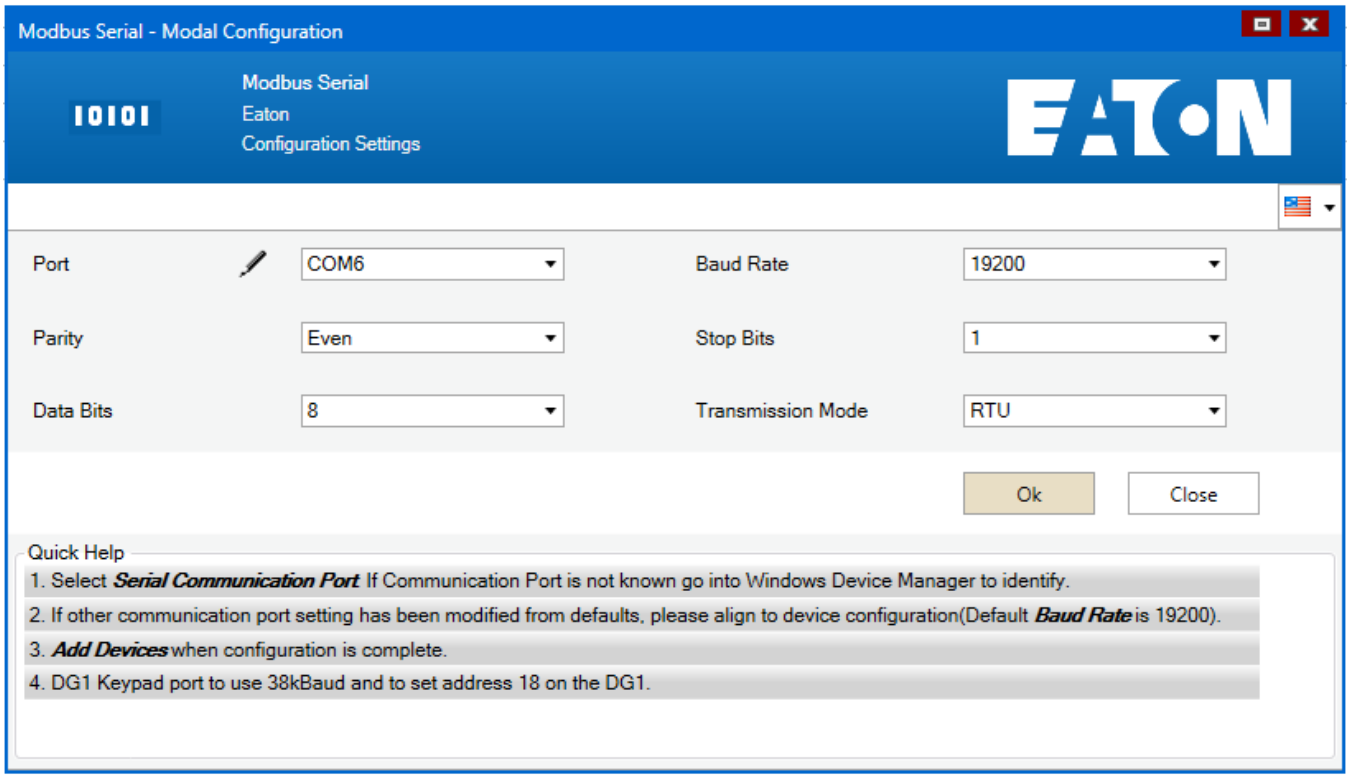
USB/Micro USB cable: C445XS-USBMICRO

USB/RS485 cable: C445XS-USBLEADS

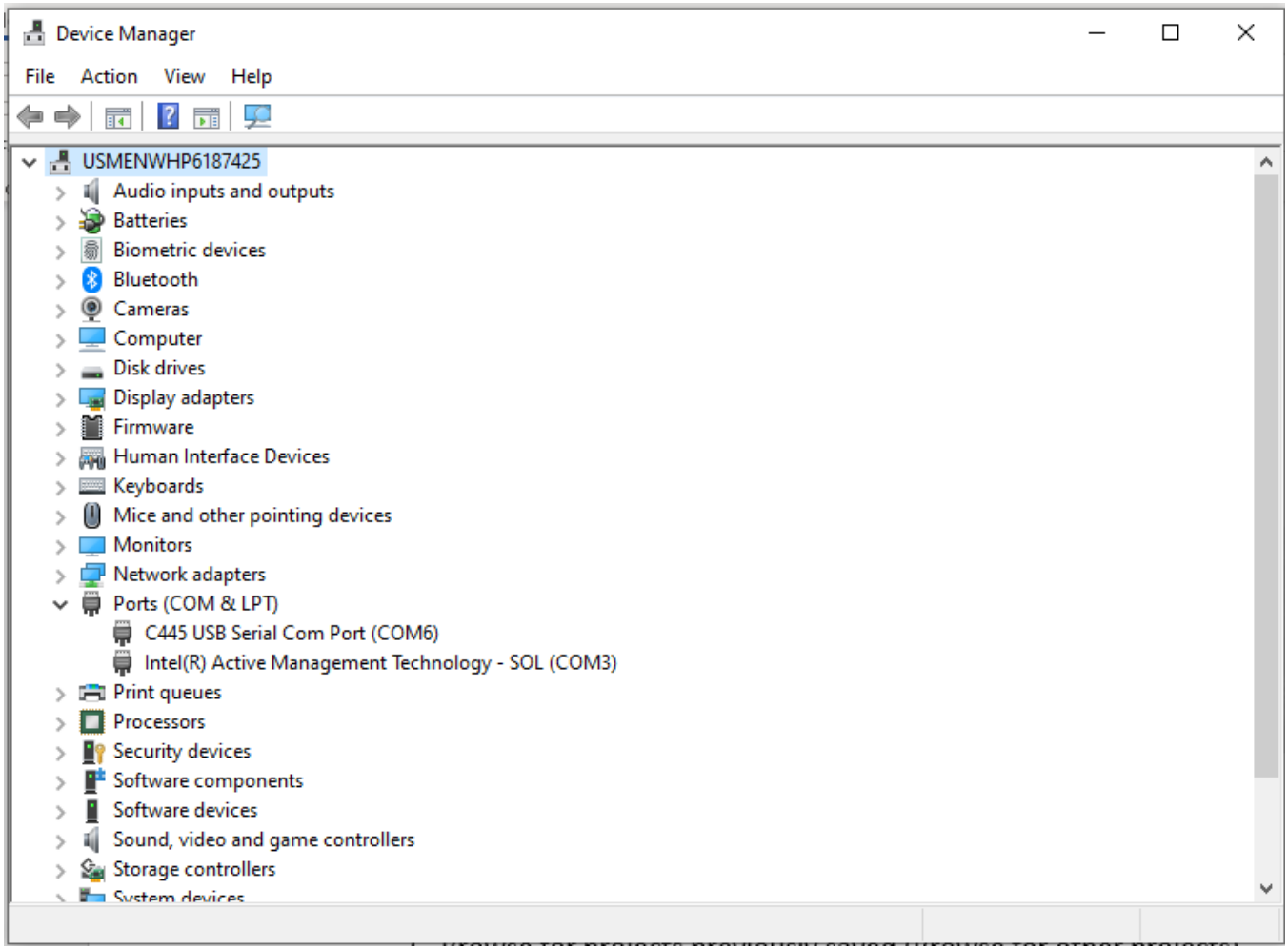
For this example, we will select the Modbus Serial driver.

When using the Modbus TCP Ethernet driver, you will be prompted for the IP Address of the C445. The out-of-box default IP Address for a C445 is 192.168.1.254.

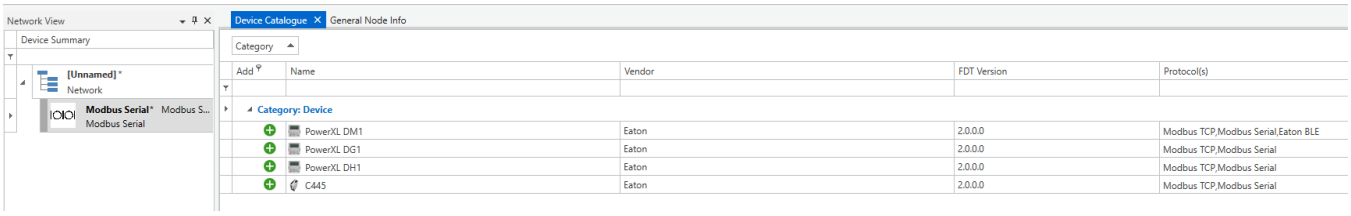
Select the plus sign in the green circle to the left of the Modbus Serial driver and the following window will open:



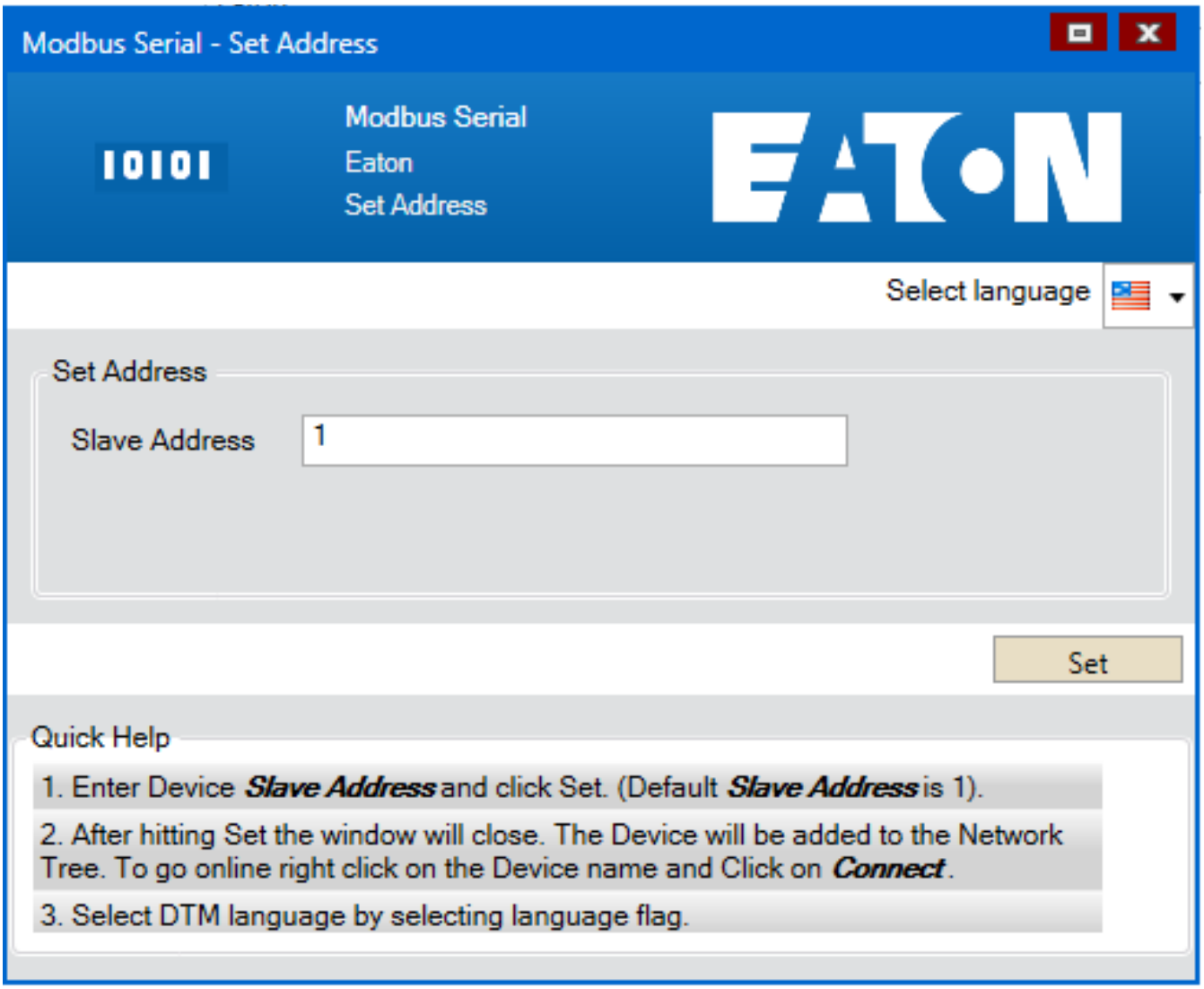
Select the virtual COM port assigned for the USB cable. If you are unsure of the COM port assigned, verify with Device Manager, per below.



Do not change any of the other parameters, such as baud rate, parity and so on. Leave them at their defaults. Then select OK and the devices will be displayed, per below.



Select the plus sign to the left of the C445 and the following window will open:

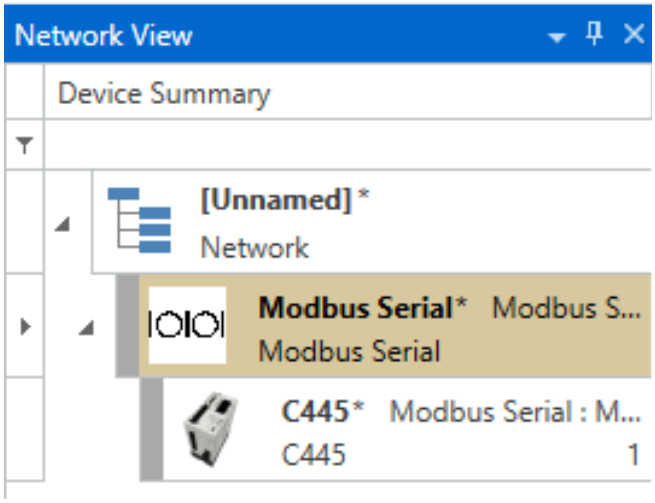


For the USB/Micro USB cable, the address is always 1.

For the USB/RS485 cable, the default is also 1. But, if someone changed the C445 Modbus address to something else, that address must be entered here. The address can be confirmed using the User interface per below:

PRG / 9. Communications / 1 Modbus / 2. Modbus Address

Then select Set and the C445 will be displayed on the tree on the left side of the screen under the Modbus Serial driver as shown below.



Opening an Offline C445 DTM

The software can be used to configure a C445 when the C445 is not present, by configuring an Offline C445 DTM. And a copy of the complete configuration of each C445 can then be Exported to an .exml file. These exported files can then be imported to each C445 when the hardware is present.

The advantage of configuring C445s using the Offline DTM is when the C445s are not present. This allows the user to commission/configure each C445 in the system before traveling to the jobsite, or before the C445 MCC arrives. Then, when the C445s are present, the Offline DTMs can be easily downloaded to each C445. There are 2 methods for downloading an offline C445 DTM to the actual device.

1. Parameter Export / Parameter Import Clone (Recommended)
2. Load from Device / Store to Device

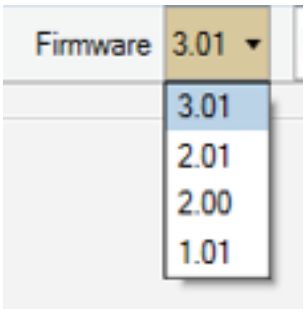
These methods are both fully explained later in this chapter. Parameter Export and Parameter Import Clone can be found in the Row of icons section and the Load from Device and Store to Device are in their own category.

Double click the C445 in the tree to open its Offline Parameters. The Set-Up Wizard will be displayed. Refer to the Set-Up Wizard section below. After either using or bypassing the Set-Up Wizard, the "C445 – Offline Parameters" tab is displayed at the top of the parameters screen. There is also a "Device Catalogue" and a "General Node Info" tab displayed at this point.

1. Select the "Device catalogue tab" along with the Modbus Serial driver in the tree on the left. The devices will be displayed, allowing additional devices to be added to the network.
2. Select the "General Node Info" tab to view the device information for the device selected in the tree on the left.

Select the "C445 – Offline Parameters tab" and the parameter categories will be displayed. Click the arrow to the left of "PRG" to display all the categories.

To select the firmware version of the C445, there is a "Firmware" drop down menu in the upper right corner of the Offline Parameters screen (see below). The default is the latest Firmware for the C445 Base Control Module. But this software is backward compatible to previous versions as well. The correct version must be selected when using the Offline DTM. This information can be found using the User Interface: PRG / 10. System View / 1. Base Control Module / 5. Firmware Ver. Or by using the software by connecting and opening the Online parameters. The System View category contains the firmware version for all C445 modules, including the Base Control Module (BCM).



Refer to the Parameter Categories and Parameters section later in this document for a complete description of configuring a C445 using an Offline DTM.

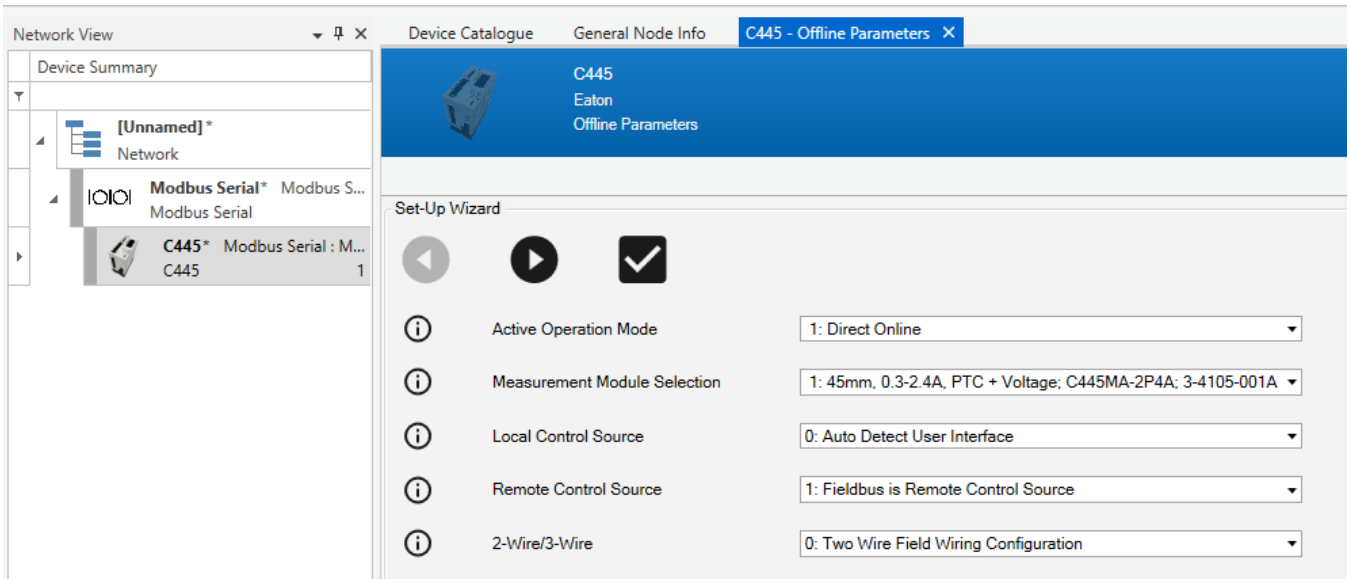
Opening an Online C445 DTM

If the C445 is present and the software can be connected to it, it is recommended to commission/configure each C445 via its Online DTM. Any configuration parameters modified in the online DTM are immediately saved into non-volatile memory in the C445. And a copy of the complete configuration of each C445 can then be Exported to an .exml file. This exported file can then be imported to a new C445 Base Control Module (BCM) at a later time, if the BCM needs to be replaced. This is described in more detail later in this chapter in the "Row of Icons" section.

Note, in the Online C445 Parameters screen, the firmware version of the Connected C445 is displayed in the bottom right corner of the screen.

Set-Up Wizard

As shown below, before the parameters for an Offline or Online C445 DTM are displayed, the Set-Up Wizard is displayed as shown below.



Note: Hover the curser over the circle i to the left of any parameter to view a description of that parameter along with Min/Max/Default values where they apply.

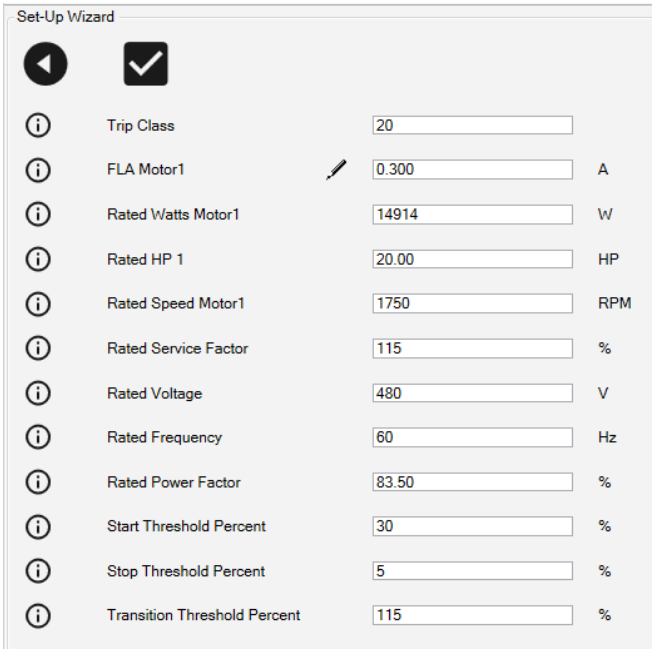
An Admin Password prompt is displayed prior to the Set-Up Wizard when Connected and accessing the C445 in the Online mode (Online DTM). This allows creating an Admin password for the C445 at this point. Choose the check mark to create an Admin password for the connected C445 or the circle X to bypass setting an Admin password at this time. Passwords can also be set at a later time using the Security category. This Admin password prompt is not displayed when opening the Offline C445 DTM.

The screen shown above is the first page of the Set-Up Wizard. This can be used to configure the basic parameters that are typically required to be configured for most applications. These parameters are also available to be configured if you bypass the Wizard. To bypass the Wizard and view all parameter categories and parameters, select the check mark.

If you wish to configure the parameters in the Wizard, make your selections on this screen, then select the right arrow to go the next page of parameters. It is very critical to select the proper Measurement Module (MM) when configuring a C445 in an Offline DTM. The Measurement Module selection determines the current ranges, particularly the FLA setting range. This MM selection can also be done in the "Motor Configuration" category if you bypass the Wizard or if you need to change your MM selection later.

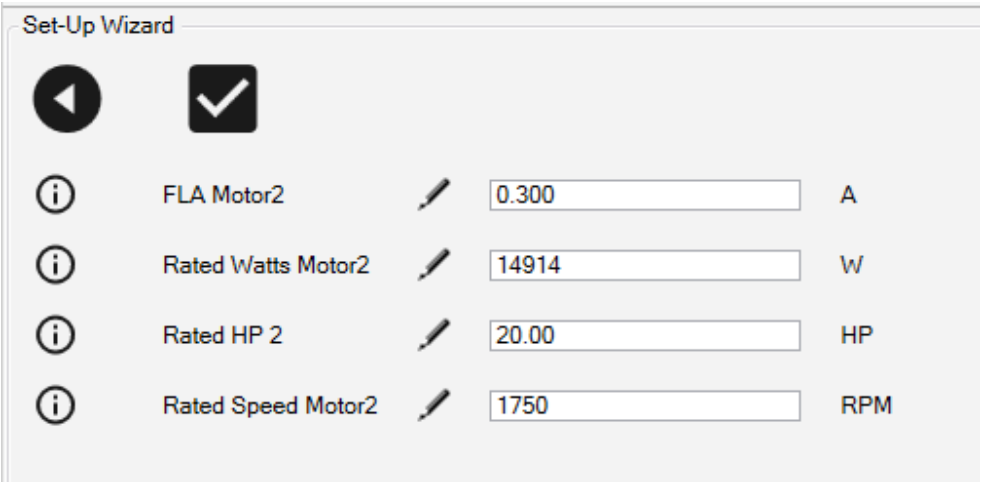
Note: Operation Modes are fully described in the C445 User Manual, publication MN042003EN, in Chapter 5.

To continue using the Wizard, select the right arrow and the following window will be displayed.

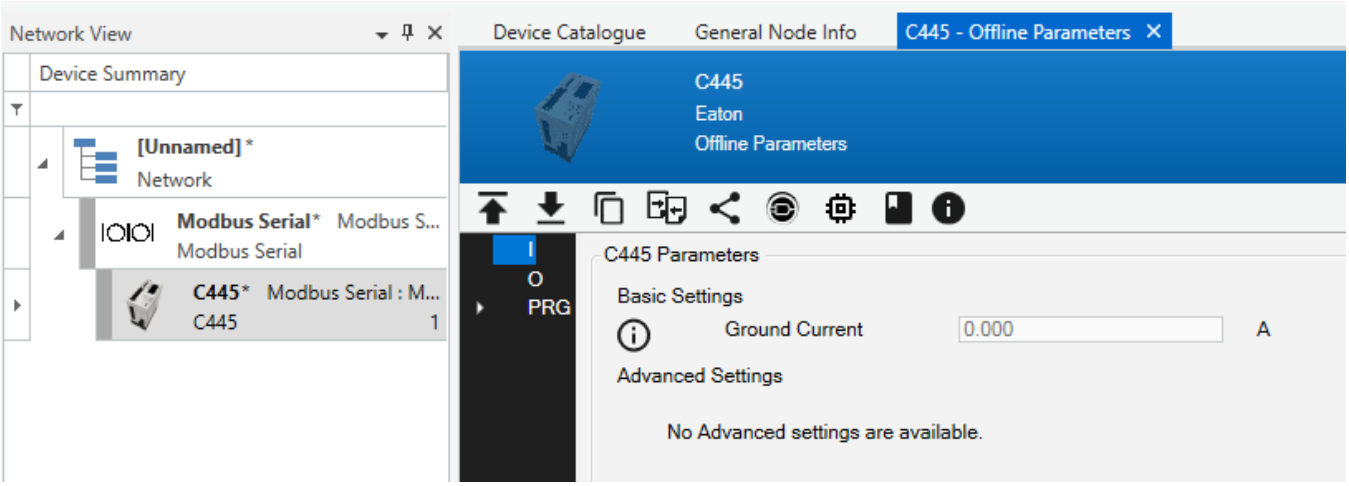


Above are the motor nameplate settings. Enter these settings, then select the check mark. The settings you entered into the Wizard will be written to these parameters in the Offline DTM. But they can still be modified in the Offline DTM if necessary.

If the Operation Mode selected was one that uses 2 motors or a motor with 2-windings such as 2-Speed Poll Changing or 2-Speed Dahlander, there will be a third Wizard page where a second FLA, Watts and so on can be entered for the second motor or winding. An example of this page is shown below.

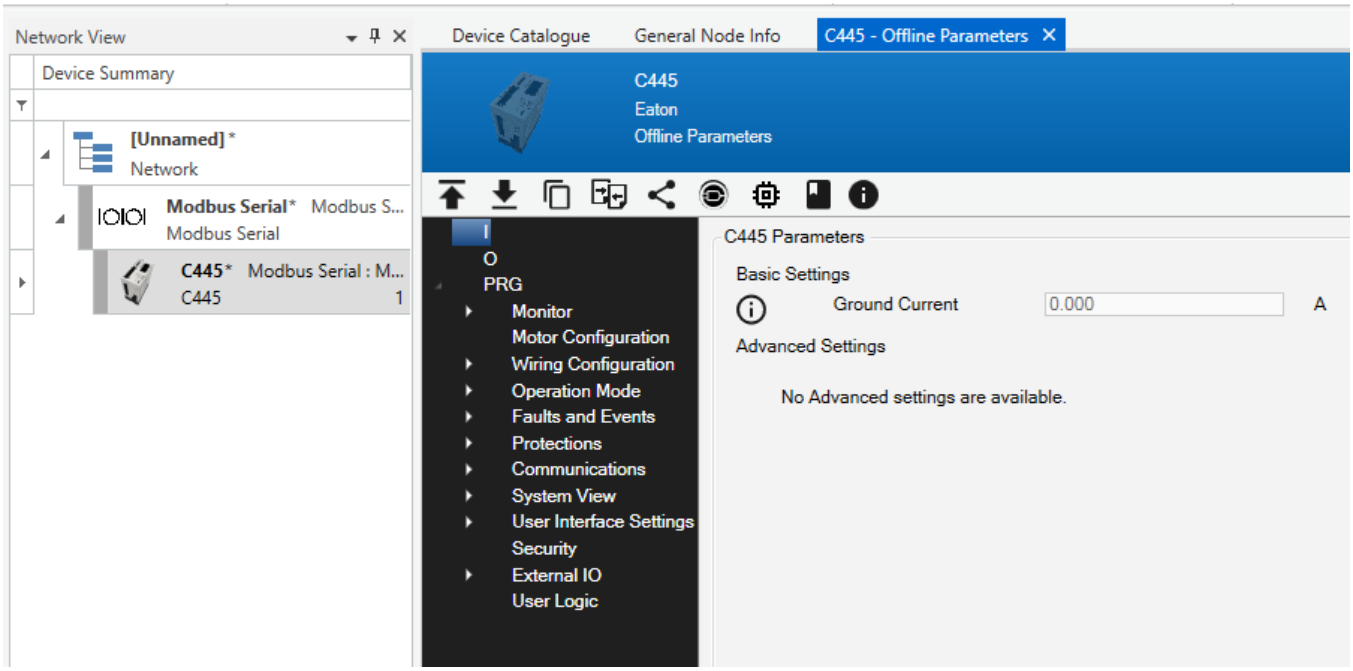


After selecting the check mark, the Offline parameters will be displayed as follows:



Note: Note the "C445 – Offline Parameters" tab displayed along the top of the page. It's highlighted to indicate that this is what is being displayed. If the "General Node Info" tab is selected, information about the C445 DTM will be displayed. To close a tab for any reason, select the x associated with the tab.

Per the screen shot above, to open the parameters, select the arrow to the left of "PRG" and the screen will look like the following.



The "I" and "O" categories have no real use in the Offline DTM. That's also the case for the "Monitor" category under PRG. These are useful when online with the C445.

The rest of the categories are very useful for configuring a specific C445.

Notes:

1. Hover the curser over the circle i to the left of any parameter to view a description of that parameter along with Min/Max/Default values where they apply.
2. When a parameter in an offline DTM is changed, a "pencil" will appear for that parameter. To save the change, select Apply in the lower right portion of the screen and the pencil will disappear.
3. If an exclamation point appears for any parameter, that means the value entered for that parameter is out-of-range and cannot be saved.

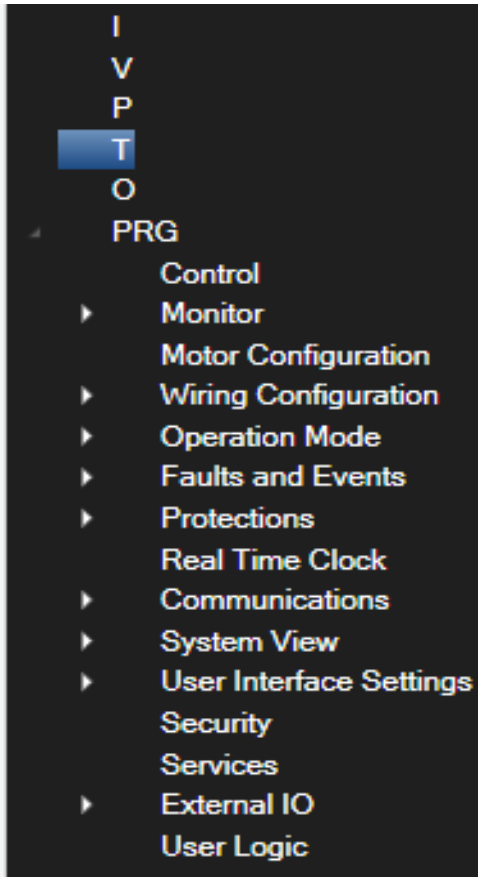
The Parameter Categories and Parameters

For additional information on any of the C445 configuration parameters, refer to the C445 User Manual, publication MN042003EN.

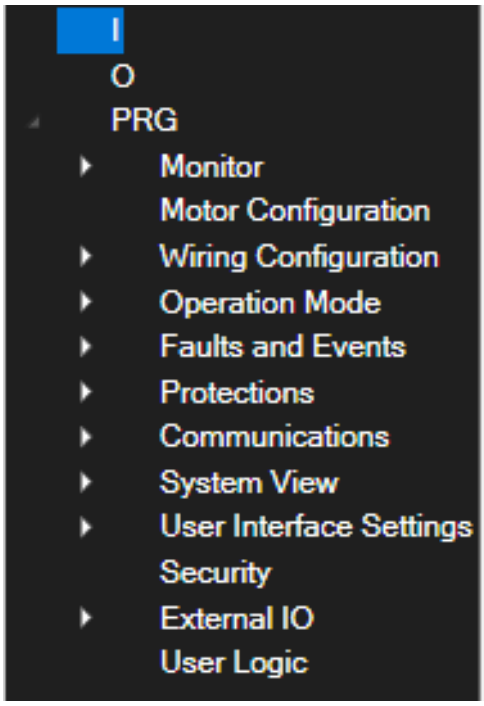
The parameter categories are slightly different in the Offline C445 DTM and the Online C445 DTM. Some categories that are in the Online DTM would not make sense in the Offline DTM.

When a parameter is modified in the Online DTM while the software is connected to a C445, the change is immediately downloaded. You may see a pencil appear next to the changed parameter very briefly while the change is being downloaded. All changes made to the C445 while connected and online are saved in the C445 in non-volatile memory.

Online C445 Parameter Categories:



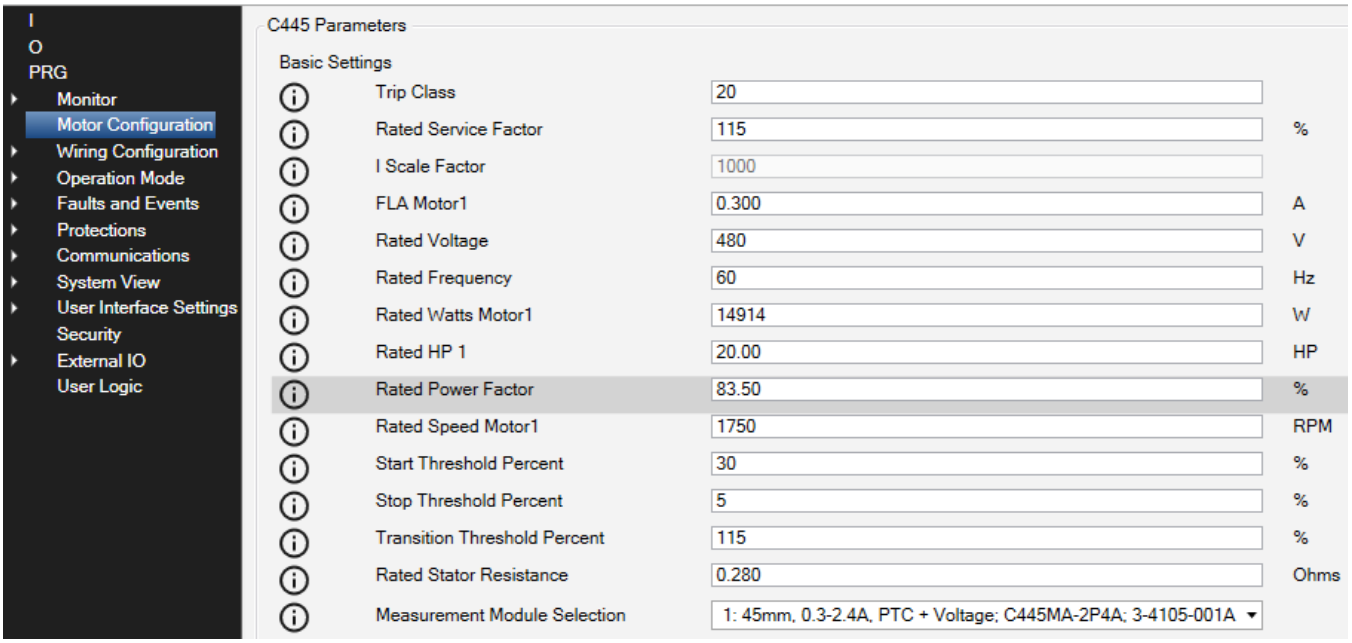
Offline C445 Parameter categories:



The categories

The I, V, P, T, O and Monitor categories are for monitoring currents, voltages, Power, Thermal Capacity, Operating hours and more. The Control category is available for controlling the outputs on the C445 Base Control Module. These categories are only useful when connected and online with a C445.

1. Motor Configuration – used to configure the motor nameplate parameters. If the Wizard was used to configure some of these parameters, they can also be viewed, verified and modified by selecting this category.



Note that the Measurement Module (MM) selection along with all motor parameters are displayed and can be modified here in the Offline C445 DTM. In the Online C445 DTM, this is a read only parameter since the software reads the actual MM connected to the Base Control module.

1. Wiring Configuration

There are 2 subcategories under this category.

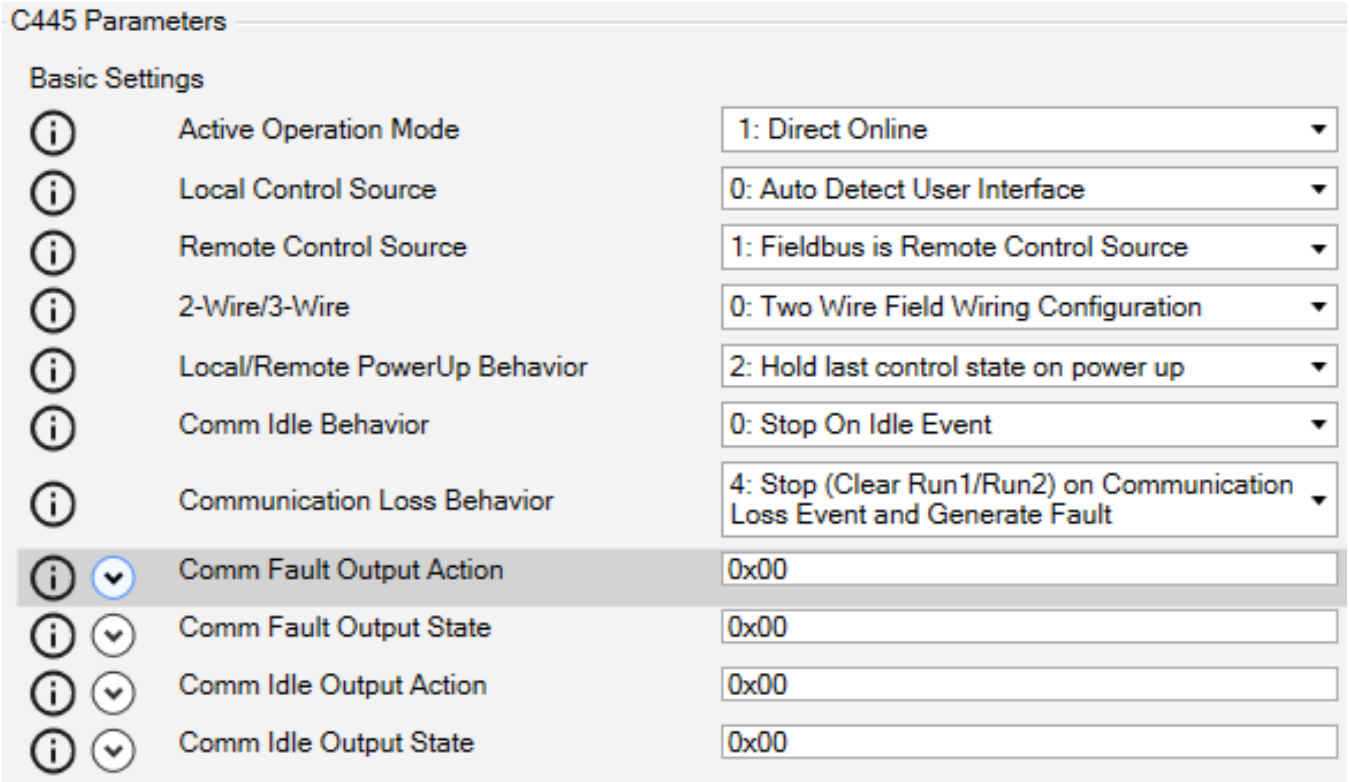
a. Measurement Module Wiring cfg:
The C445 supports both 3-phase and single-phase motors. The default is 3-phase. This is also where potential transformer and external current transformer ratios are entered if used.

b. Ground Fault Module Wiring cfg:
If an optional GF module with zero sequence CT is used, this is where the ratio and multiplier is entered for the CT.

3. Operation Mode

The Operation Mode category has two subcategories:

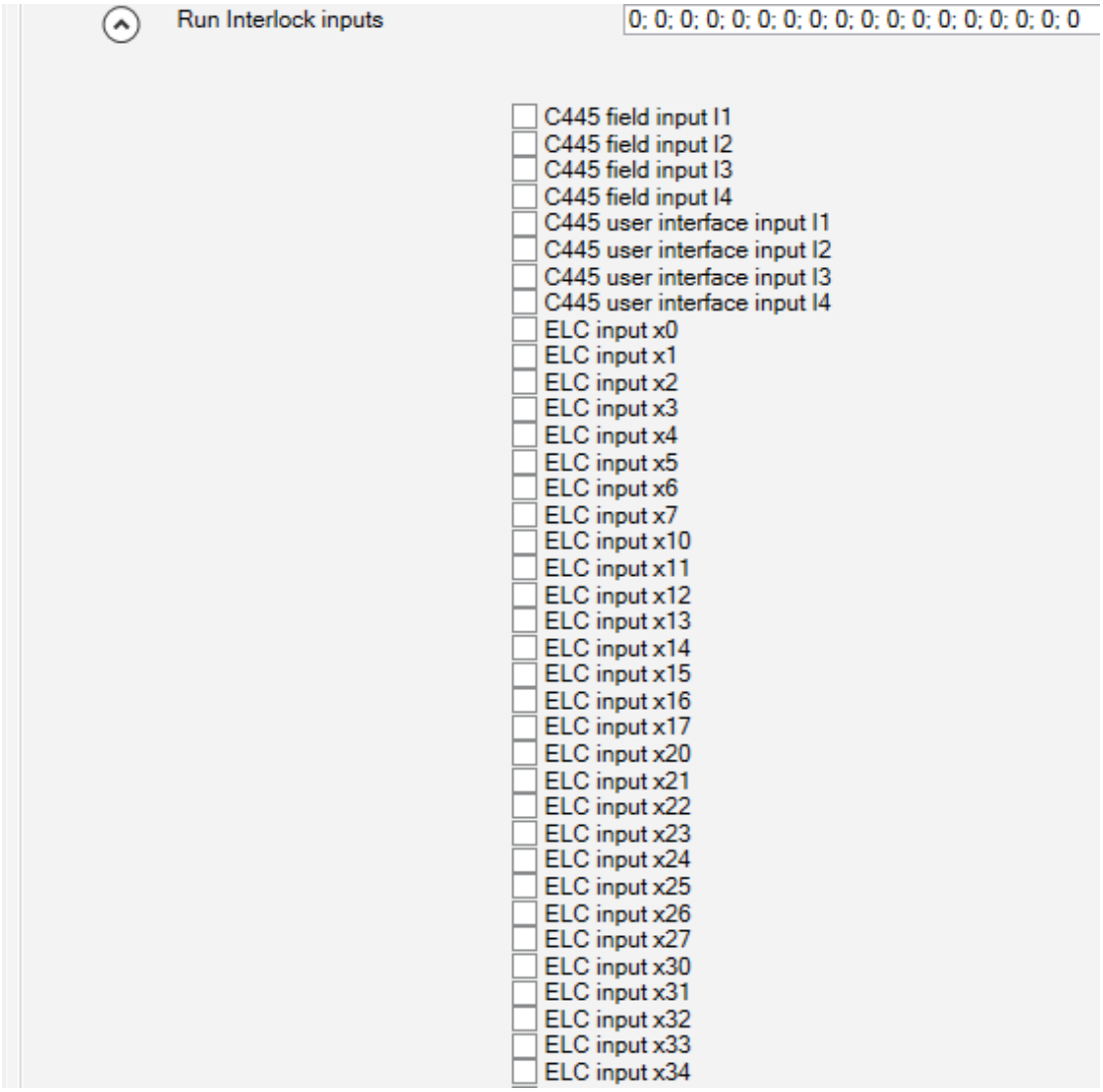
a. Basic (Op Mode) – this is where the Active Operation Mode and Local and Remote control sources are selected. Refer to Chapter 5 in the C445 User Manual for information on the Operation Modes. These parameters are very critical to the operation of the C445. All parameters in this category are shown below:



a. Advanced (Op Mode)

Many of the parameters in this category relate to specific Operation Modes. The most commonly configured parameters in this category are:

1. Run Lock Override – this is disabled by default. Check the box to enable it. When disable, critical parameters are not allowed to be configured when the motor is running, such as motor parameters. Choosing to check the box means that all parameters may be modified even if the motor is running. This only applies when the software is connected and the Online DTM is accessed. But it also applies to other ways of configuring the C445, such as web pages and even writing Modbus commands to these specific configuration parameters.
2. Output (Q1, Q2, Q3) Function Select – The Operation Modes use specific outputs that may not be used for any other purpose. The Overload Only and Direct Operation modes use Q1, so it will be displayed as "Reserved" when connected to a C445 and viewing its Online Parameters. Q1 and Q2 will be Reserved when using the Reverser or 2-Speed Operation Modes. Chapter 5 in the C445 User manual provides more information. Any outputs not used by the Operation Mode, may be configured for any of the large list of functions shown in the drop-down list for them. By default, they are configured as bits in the control register 601 for Modbus. These also relate to bits in Output Assemblies for Ethernet/IP and the Control Word for Profibus. This allows a system controller to use them for any purpose needed by the application.
3. Remote Switch from fieldbus – When enabled, this allows the Remote Control source, when configured for fieldbus to control which source is active at any given time (0 = Local, 1= Remote). This bit in the network control word operates on a false-to-true transition, so as not to conflict with the AUTO button on the User Interface if it's the Local Control source or firldwire input (I3) if fieldwire is the Local Control source. This option is disabled by default. By default, if this feature is not enabled, only the local control source can determine which control source is active at any given time.
4. Run Interlock Inputs – select the down arrow to the left of this parameter to open a list of all possible inputs. Note, if fieldwire is selected as either the local or remote control source, the 4 inputs on the Base Control Module are reserved for controlling the C445 and may not be assigned any other function. See Chapter 5 in the C445 User manual for additional information on this for the operation mode being used. If fieldwire is not a control source, the 4 inputs on the C445 may be assigned as general-purpose inputs or used as Run Interlock Inputs. If any of these inputs are checked under the Run Interlock Inputs parameter, a normally closed contact needs to be wired to those inputs and if the contact opens, the motor will stop immediately. Each input selected for this function must have power applied to it to run the motor. These inputs are considered fail-safe inputs and have many safety applications. If Expansion I/O is connected to the BCM, these inputs can also be used as Run Interlock Inputs. These are the inputs designated with an x as shown below. The User Interface inputs do not apply if the Monitoring User Interface with the LCD screen is used.



1. Faults and Events
   This category is not relevant in the offline DTM. When connected and online with a C445, see the Row of Icons section later in this chapter and use the Fault Logs icon (▲). This provides all fault related data in a single, easy to read window.

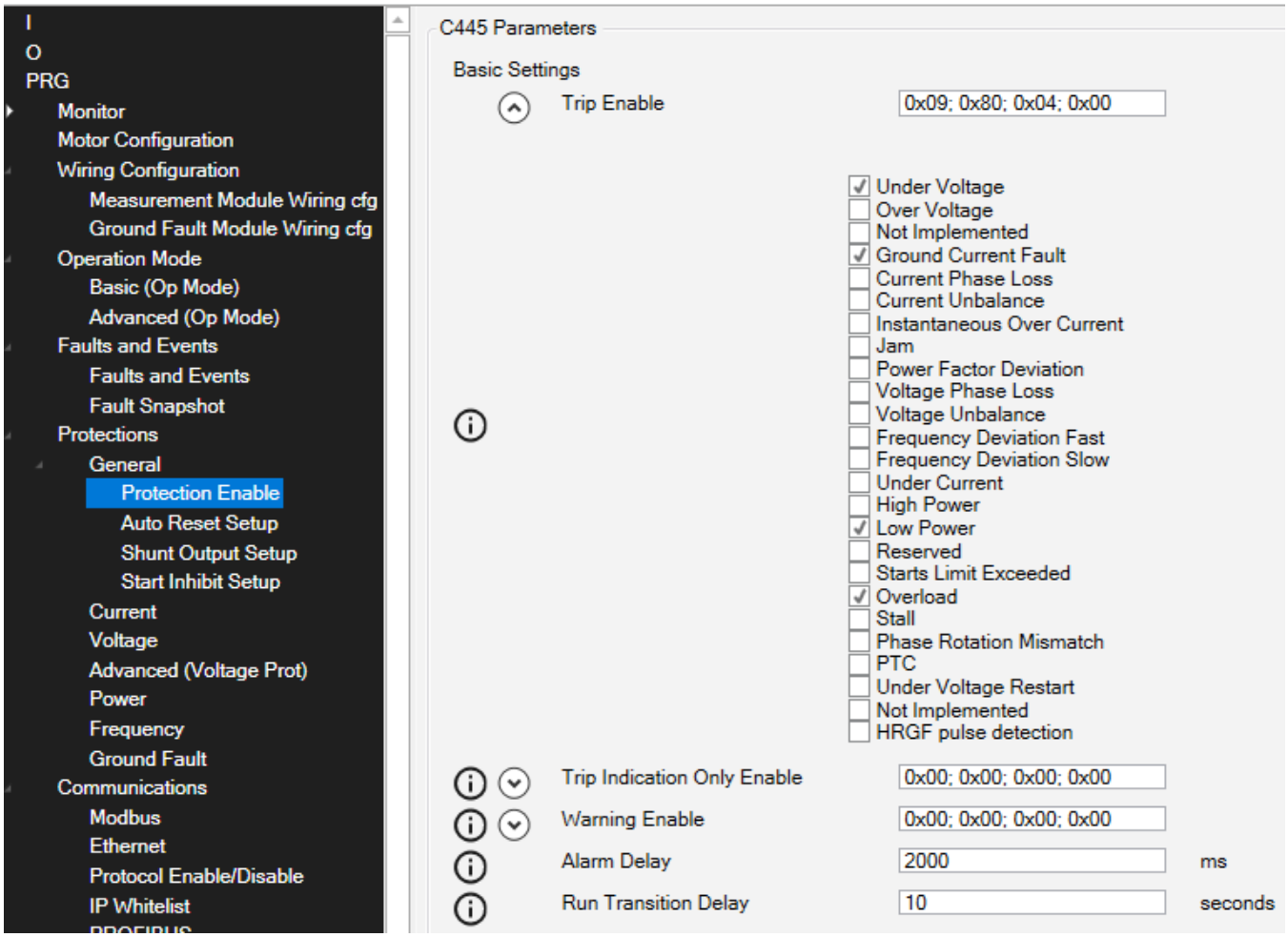
2. Protections
   The "General/Protection enable" category is very important. This is the category where various motor protections are enabled. All protections are listed and can be enabled under each of 3 categories:

   a. Trip Enable

   b. Trip Indication Only

   c. Warning

Note: Each protection type should only be enabled in one of these 3 categories. Enable a protection by simply checking the box for it, as shown below.



For a complete description of each of the categories above and information on each protection type, refer to Chapter 6 in the C445 User Manual, publication MN042003EN.

The other subcategories under Protections/General are also described in the C445 user Manual.

The Current, Voltage, Power, Frequency and Ground Fault categories contain parameters that allow the user to modify trip levels and trip delays for the various protections. In most cases, these parameters don't need to be modified, in that the defaults work for most applications. But they are available to be modified if needed. These parameters are fully described in Chapter 6 of the C445 User Manual.

The Advanced (voltage prot) category concerns the Voltage Loss Restart feature. This feature is also fully described in Chapter 6 of the C445 User manual.

7. Communication
   This category contains subcategories for the various communication protocols supported by the C445.

a. Modbus – this is to configure the interface parameters for the optional RS485 Modbus port located on the bottom of the C445 Base Control Module (BCM).

   If there is no optional communication card installed in the BCM, then the dip switches on the BCM are used to configure the RS485 Modbus port as follows:

Figure 54. Base control Module DIP Switches with Built-In Modbus

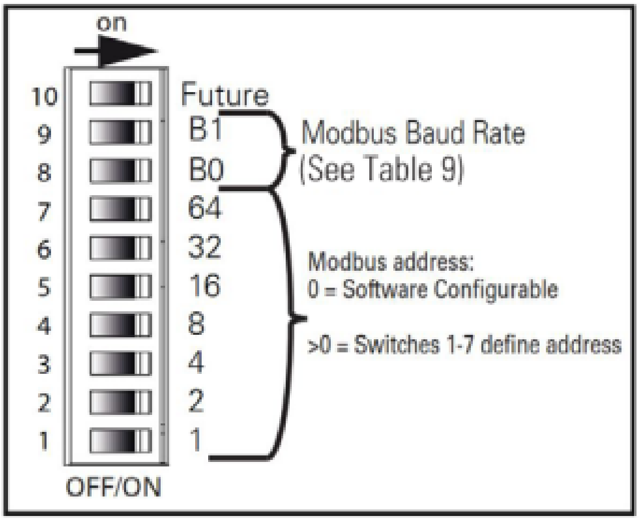
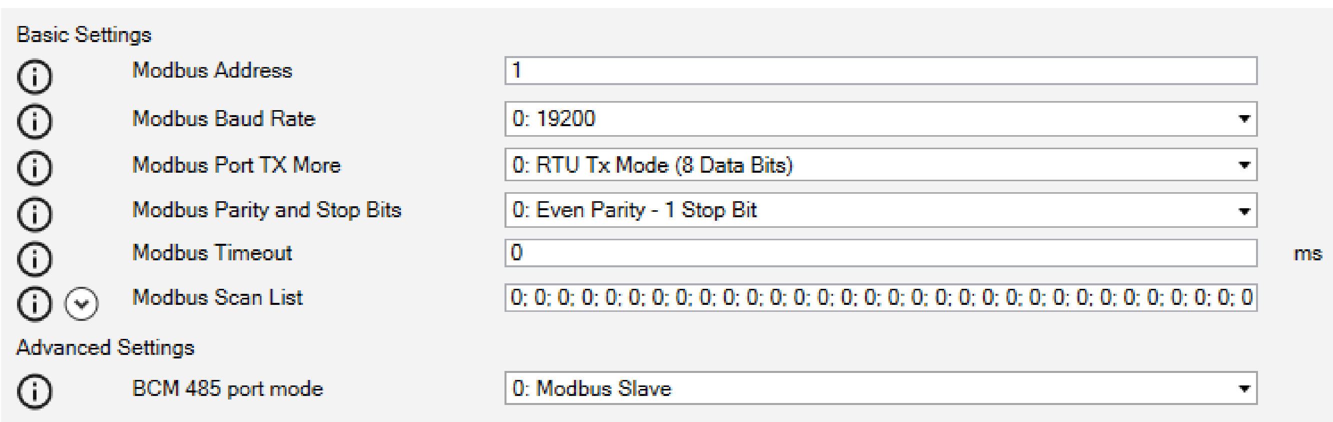


Table 9

B1	B0	Rate
0	0	Software Configurable
0	1	9600
1	0	115200
1	1	19200

If an optional Ethernet card is installed in the C445 BCM, the dip switches are used for the IP Address and the RS485 port parameters must be configured using the parameters in the Modbus category shown below.



Note: The BCM 485 port mode selections are:

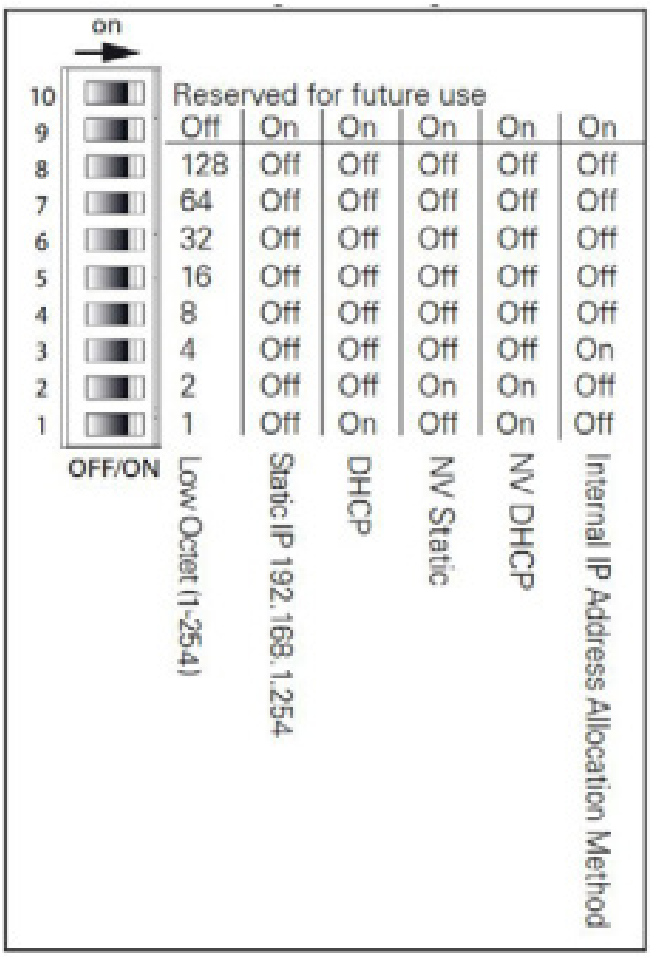
1. Modbus Slave – when used on a serial Modbus network with a Modbus Master (default).
2. ELC IO – when the optional expansion ELC I/O is used, which connects to the RS485 Modbus port on the BCM. This port is then dedicated to the I/O and cannot be used for any other purpose.
3. Generic Master – The only way to use this port in this mode is when using the optional, built-in Logic Engine in the C445. There are "MBUS_DATA_IN" (read) and "MBUS_DATA_OUT" (write) function blocks in the Logic Engine.

b. Ethernet

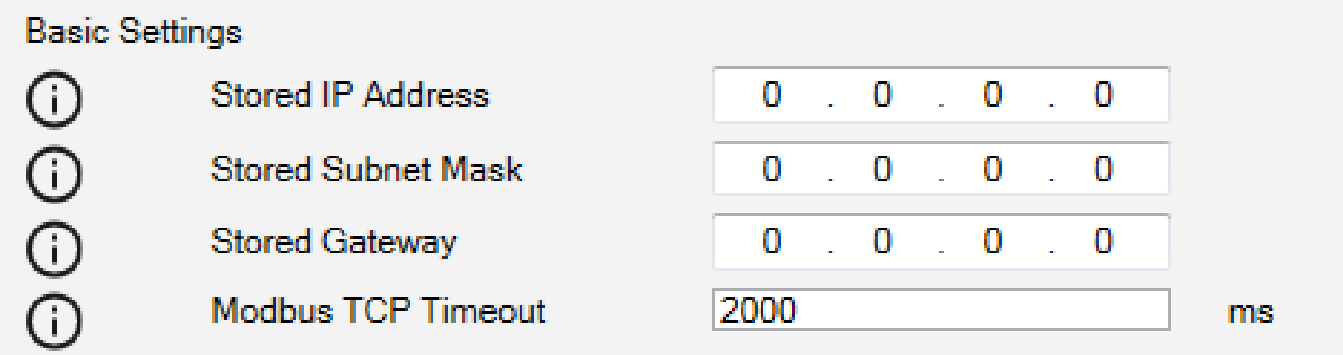
The C445 Ethernet module supports both Ethernet/IP and Modbus TCP, simultaneously. It auto detects the protocol. It also supports up to 4 simultaneous Ethernet Connections.

The dip switches determine where the IP Address comes from, per below.

Figure 56. Base control Module DIP Switches with Ethernet Card



Note: Note: If a mode is used where a specific IP Address, Subnet Mask and Gateway address are used, these must be entered under the "Stored" parameters in the Ethernet category, per below.

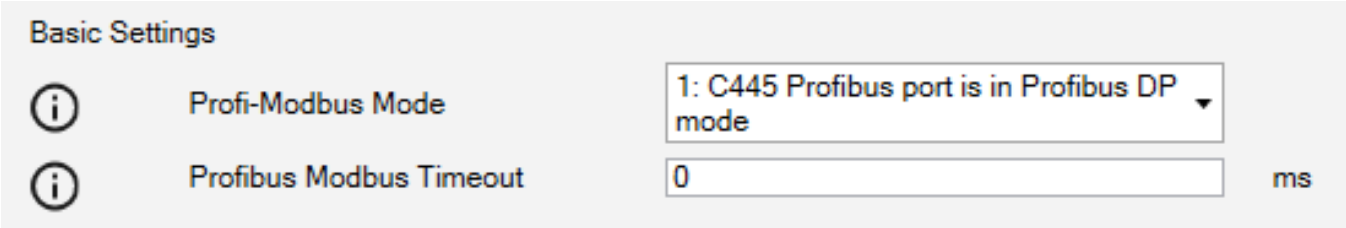


This is also where the Modbus TCP communication timeout is entered. A value of 0 represents no timeout.

The communication timeout for Ethernet/IP is determined by the protocol and by the Ethernet/IP scanner as 4 times the RPI (Requested Packet Interval) time for each device. This timeout is relayed to each device by the Ethernet/IP scanner each time the connections are established with each device.

The EDS file for the C445 can be found on the C445 Website. There are also Add On Instructions (AOIs) for various I/O assembly pairs on the C445 Website. These AOIs can be imported into Rockwell's Studio5000 (RSLogix5000) software and are only used when a Rockwell PLC is the Ethernet/IP scanner. These AOIs generate all descriptive I/O tags for specific I/O assembly pairs and handle all scaled parameters such as motor currents. Complete instructions are provided with each AOI.

c. PROFIBUS
The PROFIBUS category only contains the 2 parameters shown below.

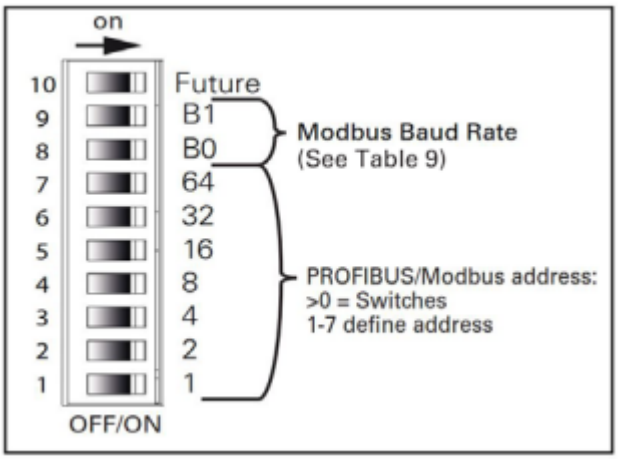


Be sure to configure the port as shown above when using PROFIBUS. A timeout may also be entered here. A value of 0 represents no timeout.

The PROFIBUS node address for the C445 is configured via the dip switches on the BCM as shown below. The data rate is determined by the PROFIBUS master and is auto detected by the C445.

All other configuration relative to the C445 on a PROFIBUS network is accomplished in the PROFIBUS master software using the GSD file for the C445. The GSD file can be found on the C445 website.

Figure 55. Base control Module DIP Switches with PROFIBUS Card



8. System View

This category is only relevant when connected and online with the C445. In that case, various information such as hardware and firmware versions and more is provided for each module in the C445 system.

9. User Interface Settings

This category contains two subcategories as shown below.

a. Basic (UI Settings)

b. Advanced (UI Settings)

Information on these settings can be found in the C445 User Manual, chapter 8.

10. Security

Various passwords for the C445 can be set in this category. Refer to the beginning of chapter 6 in the C445 user manual for more information on these passwords.

11. External IO

There are 2 subcategories in this category in the offline C445 DTM and 3 in the Online C445 DTM, shown below. The "ELC IO Status" is only in the Online DTM.

a. ELC IO Status

b. Ext IO Comm Config

c. ELC IO Setup Config

The "ELC IO Status" category provides status for the ELC I/O and allows Update Intervals to be configured for the analog and digital I/O. These are generally left at defaults, but they can be modified to specify specific update times. By default, they are updated as fast as possible.

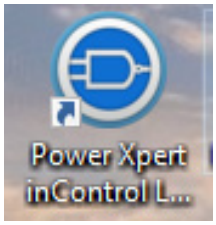
When using the ELC External IO, the RS485 Modbus port on the bottom of the C445 Base Control Module is used to connect the ELC Modbus adapter (ELC-CARS485) to the C445. The interface parameters for this communication are shown in the "Ext IO Comm Config" category. These parameters should not be changed. Refer to chapter 9 in the C445 User manual for additional information on connecting

ELC Expansion I/O to a C445. The information on connecting the I/O to the C445 begins after the description of the Function Blocks in chapter 9.

The best way to configure the ELC Expansion I/O module system layout, is to use the Power Xpert inControl Logic Engine software installed with the One Installer. An icon is placed on the desktop for this software. It can also be accessed from this software via the icon shown below, which is in the Row of Icons above the parameters. Refer to the Row of Icons section later in this chapter. The "ELC IO Setup Config" category can also be used, but the Logic Engine software is a much better tool. The Logic Engine software also allows analog cards to be configured for voltage or current as well, while this category does not have that capability.

The icon in the inControl software:

The icon on the desktop:



d. User Logic

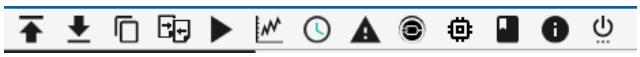
This category provides Run/Stop control and provides status for the internal Logic Engine in the C445. If using the Logic Engine in the C445, use the Logic Engine software referenced in number 11 above. Chapter 9 in the C445 User Manual provides information on the Logic Engine function block programming as well as the optional ELC expansion I/O.

The Row of Icons

There is a row of icons shown above the parameters for both the Offline and Online C445 DTMs. These icons provide additional functions and features for configuring and operating the C445, as well as accesses to other applications.

1. The row of icons for the Offline DTM

2. The row of icons for the Online DTM



Each icon shown for the Offline and Online Row of Icons will be described below. There are more of these features when connected and Online with a C445.

Parameter Export ( )

Saves the configuration for each individual C445. This can be done for Offline parameters or Online parameters.

1. Double click each C445 in the tree on the left, one at a time to open its Offline or Online Parameters. If you are connected to the C445, Online parameters will open. If not, Offline parameters will open.
2. Select the Parameter Export icon on the far left of the row of icons above the parameters.
3. Browse for the folder to save the .exml file.
4. The default filename provided includes the date and time the file is being created. This could be used for revision control. This default filename may be modified or replaced completely with any filename that works for each C445. It's very important that the filename uniquely and precisely identifies with each C445 for later recall.

Parameter Import Copy ( )

This feature is only used if a general purpose C445 configuration file was developed and exported from an Offline C445 DTM. This configuration file would only include parameters configured that are common to all C445s in the system. This Import Copy feature does not copy all parameters, those that are typically unique to each C445 in a system, such as FLA Setting, IP Address (if Ethernet is used), Modbus serial address (if it is used) and so on.

Parameter Import Clone ( )

This feature is typically used to download an entire C445 configuration file previously Exported to an .exml file with the Parameter Export feature. This file can be imported using this feature to an Offline C445 DTM. It is most commonly used to import the entire configuration to a C445 when Online to a Base Control Module (BCM) that has been replaced. This is a fast, easy way to completely configure a replacement BCM.

Connect to and go Online with the replacement BCM. While viewing the Online Parameters, select the Parameter Import Clone icon and browse for the folder where the previously exported file for this C445 was saved. Select the file and Open. The replacement C445 BCM will be fully configured just like the replaced unit and will be ready to operate.

Local Parameter Compare ( )

This feature compares all parameters between 2 open offline C445 DTMs, or an offline and online DTM, including a connected C445. This is a way to verify any differences between 2 C445 DTMs or between a file and an actual connected device.

Parameter Distribution ( )

This feature is only for Offline DTMs. And at least 2 C445 Offline DTMs must exist in the Tree on the left. It allows the user to select all parameters, or selected parameters from one offline DTM and write them to another Offline DTM.

Motor Control ( )

This feature is only available when connected to an Online C445. Select this icon to open a Motor Control page. This page displays critical motor data, fault and warning information as well as the states of the outputs and inputs on the BCM. It also allows Run/Stop control of the connected C445. Caution should be used when the C445 and the motor it's controlling and protecting is in operation. Under that situation, this feature should not be used for control. This feature is most useful to test a network connection during commissioning.

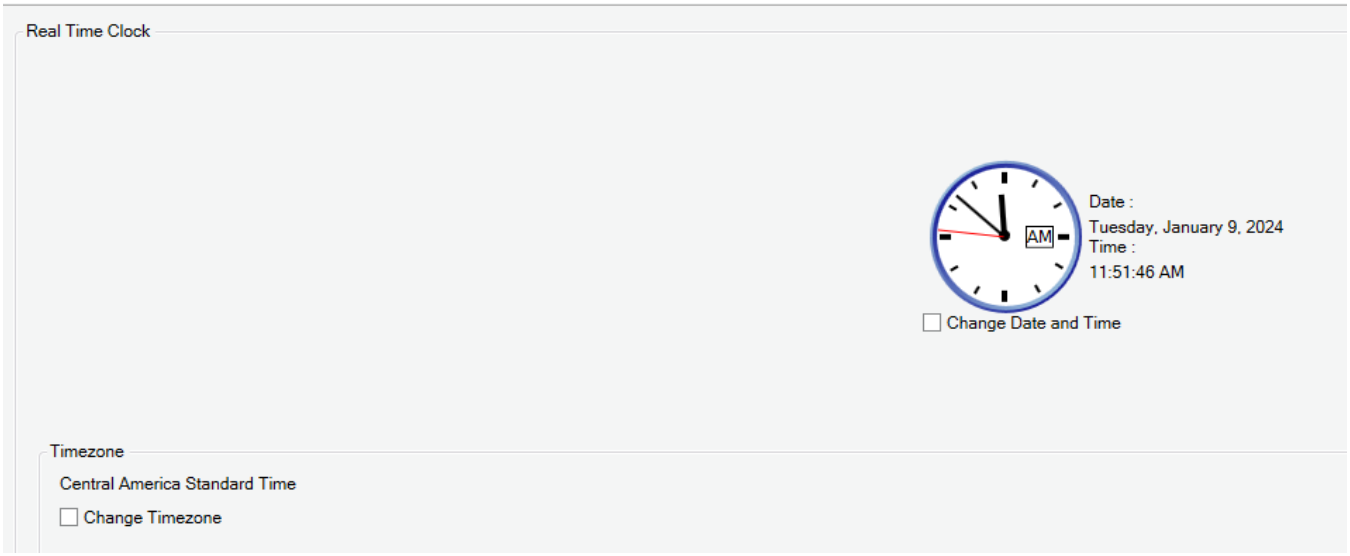
Parameter Watch List ( )

This feature allows selected parameters to be plotted on a graph. This feature is only available when connected and in an Online C445 DTM.

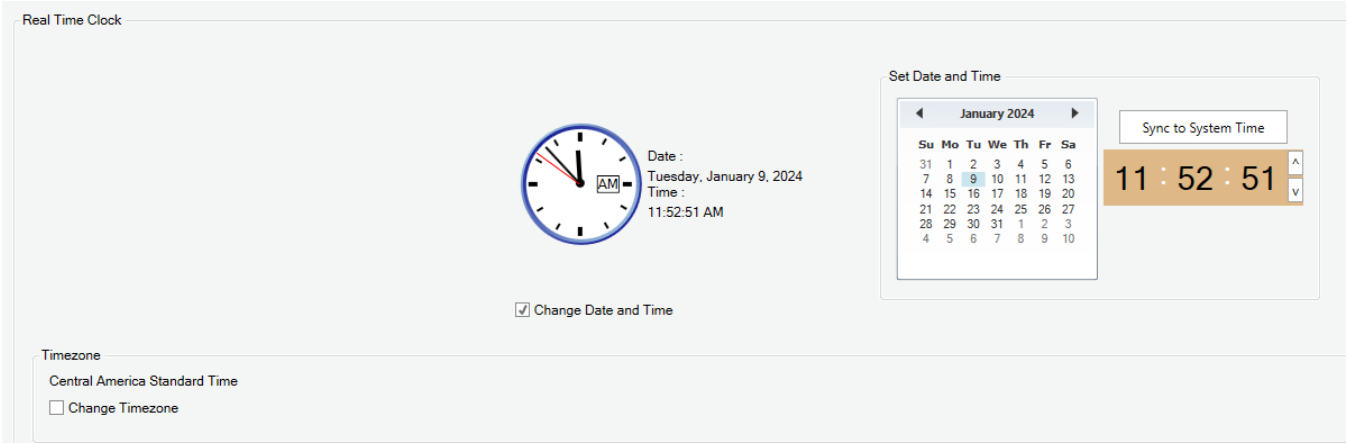
Real Time Clock ( )

This feature is only available when connected and viewing an Online C445 DTM. This icon is the best way to synchronize a C445 clock with the clock on the computer. This can be used when the C445 has an optional Real Time Clock (RTC) /Memory Module installed or not. When it is used with the RTC/Memory Module, the RTC is battery backed. When the RTC/Memory Module is not installed in the C445, the clock is reset each time power is removed from the C445 and will need to be re-synchronized.

Per below, to synchronize the clock with the computer, select the box for "Change date and Time".



The screen will change to the following:



Click the "Sync to System Time" button and the clock in the C445 will be synchronized to the computer date/time.

The latest hardware and firmware C445 Base Control Module (version 3.01 or later) supports SNTP (Simple Network Time Protocol). It supports this feature with and without the RTC/Memory Module. This feature can only be enabled using the New Web Pages. For additional information on the RTC/Memory Module, SNTP or the New Web Pages, refer to the C445 User Manual, publication MN042003EN, dated May, 2023 or later.

Fault Logs ( )

There is a Faults and Events category, but this feature is a much better way to view Active Faults, Warning and Inhibits as well as the 10-deep fault queue and the fault Snap-shot data. The Fault queue can also be cleared from this page.

Launch Logic Engine ( )

The Logic Engine software can be accessed using this icon.

Firmware Upgrade Tool ( )

The Firmware Upgrade tool can be accessed using this icon. Refer to the C445 User Manual, Appendix E for information on the available firmware upgrade processes for the C445.

User Manual ( )

This allows access to the C445 User Manual.

About C445 Device DTM ( )

This provides information about the C445 DTM, included version information.

System Services ( )

This provides access to the System Services, including the following:

1. Re-Pair External Modules
2. Factory Reset
3. Soft Reset
4. Fault rest
5. Test Trip

The C445 User Manual provides information about each of these services. This feature is only available in the Online C445 DTM.

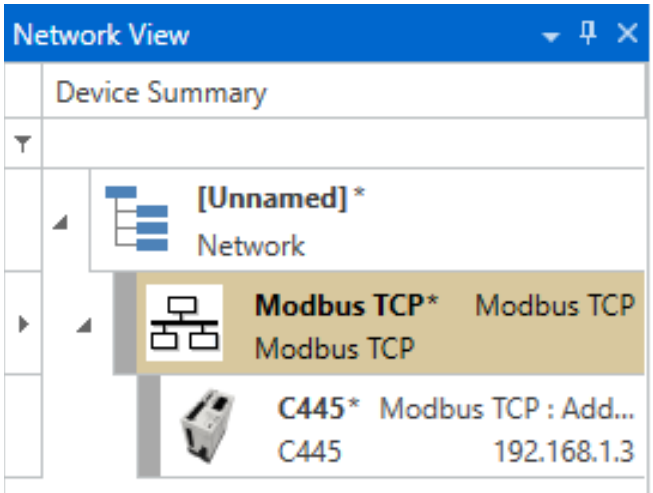
Load from Device / Store to Device

These selections can be found at the top of the software, under the Device tab.

The purpose of these selections are to copy an Offline DTM to an Online DTM (Store to Device) or to copy an Online DTM to an Offline DTM (Load from Device).

To use these features, the C445 in the Network View tree must be Connected to a C445 with the Online Parameters open and the Offline parameters must also be open.

1. Start a project and add a C445 to the Network tree per below.



2. Double click the C445 in the tree to open its Offline parameters.
3. With the C445 in the tree selected, right click on it and choose Connect.
4. Double click the C445 again to open its Online Parameters.
5. Both the Offline and Online tabs should be displayed above the parameters.
6. The Setup Wizard will open before the parameters are displayed. See the Setup Wizard section earlier in this chapter.
7. To copy the Online Parameters to the Offline Parameters, select Load from Device.
8. To copy Offline Parameters to the Online C445, select Store to Device. In this case, default values will be sent to the C445. This feature should be used after opening a previously configured Offline DTM. This allows the saved Offline configuration to be downloaded to the C445.

Import / Export

This feature should not be confused with the Parameter Import/ Parameter Export features described above in the Row of Icons section. The import portion of this feature can only be used when the software is not connected to a C445. This feature is useful when configuring multiple C445s in the Offline mode where most of the parameters are the same for all C445s.

1. Add one C445 to the project. Configure all parameters that are common to all C445s that will be in the system. Such as Trip Class, Voltage, Protection Types, Operation Mode, Local and Remote Control Sources and so on. Then Export To XML. This can be done in one of two ways.

a. Right click on the C445 DTM in the tree on the left and select Import/Export, then Export to XML. Provide a filename and Save.

b. Click to highlight the C445 in the tree on the left. Select the Topology tab at the very top of the window. Export to XML will be displayed below the Topology tab. Select it, then provide a filename and Save.

There is now a copy of the common settings for a C445 saved. Next, select the communication driver in the tree on the left (Modbus TCP or Modbus serial). Per one of the 2 methods described above, select "Import from XML" and select the file previously exported. Each time you perform this, another C445 will be added to the tree on the left under the communication driver. Each C445 will be configured identically, like the one that was originally exported since that same file is being imported each time. When adding each C445, you will be prompted for an IP Address or Modbus node address, depending on the Communication driver used.

Now, each C445 can be uniquely configured for the application. In other words, the parameters that are unique to each C445 can be entered, such as FLA setting, IP Address (if Ethernet is used), Modbus serial address (if this is used) and so on.

At this point, there are two ways to save the configuration. As a project or individual files for each C445. The latter approach is recommended because it is more useful over time to have individual backup configuration files saved for each C445, with a unique easily identifiable filename for each. This approach is described earlier in this chapter under the Row of Icons / Parameter Export and Parameter Import Clone sections. The Export approach for saving the entire project is described below.

Save the entire Project with the Export utility.

1. Select the Project tab at the top left of the software window.
2. Select "Export"
3. Under Computer, select Browse.
4. Browse for the folder for saving the project in and provide a filename and Save.

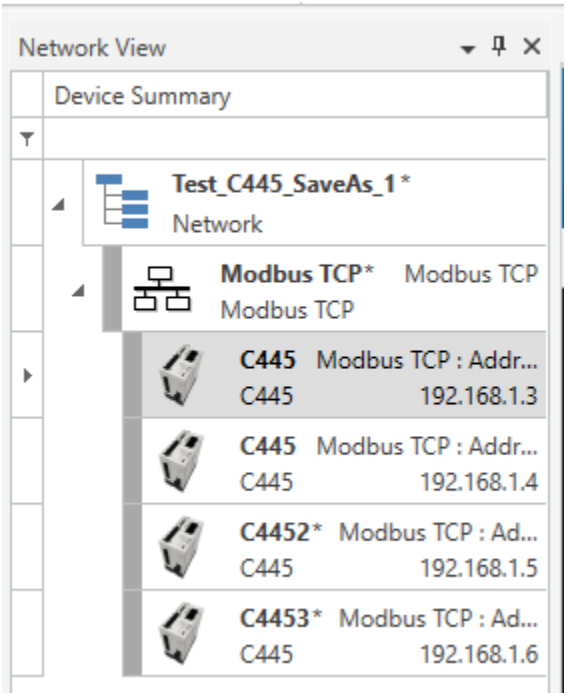
Later, when the C445s are present, Import the project previously Exported. This can only be accomplished when the software is started.

1. Select "Import from XML" on the start-up page.
2. Browse for the folder the project was exported to.
3. Find the XML file and select Open.
4. The project that was exported previously will open.

Double click each C445 in the tree to open the Offline project for each of them. Then Connect to each individual C445 one at a time and double click the C445 in the tree to open its Online DTM. Then, perform a "Store to Device" to download the C445 Offline DTM to the actual C445 (Online DTM). Do this one at a time for each C445 in the system. Each C445 will then be configured per its respective Offline DTM which was previously configured and exported to the XML file. Each C445 will store the configuration in non-volatile memory.

Save As / Open

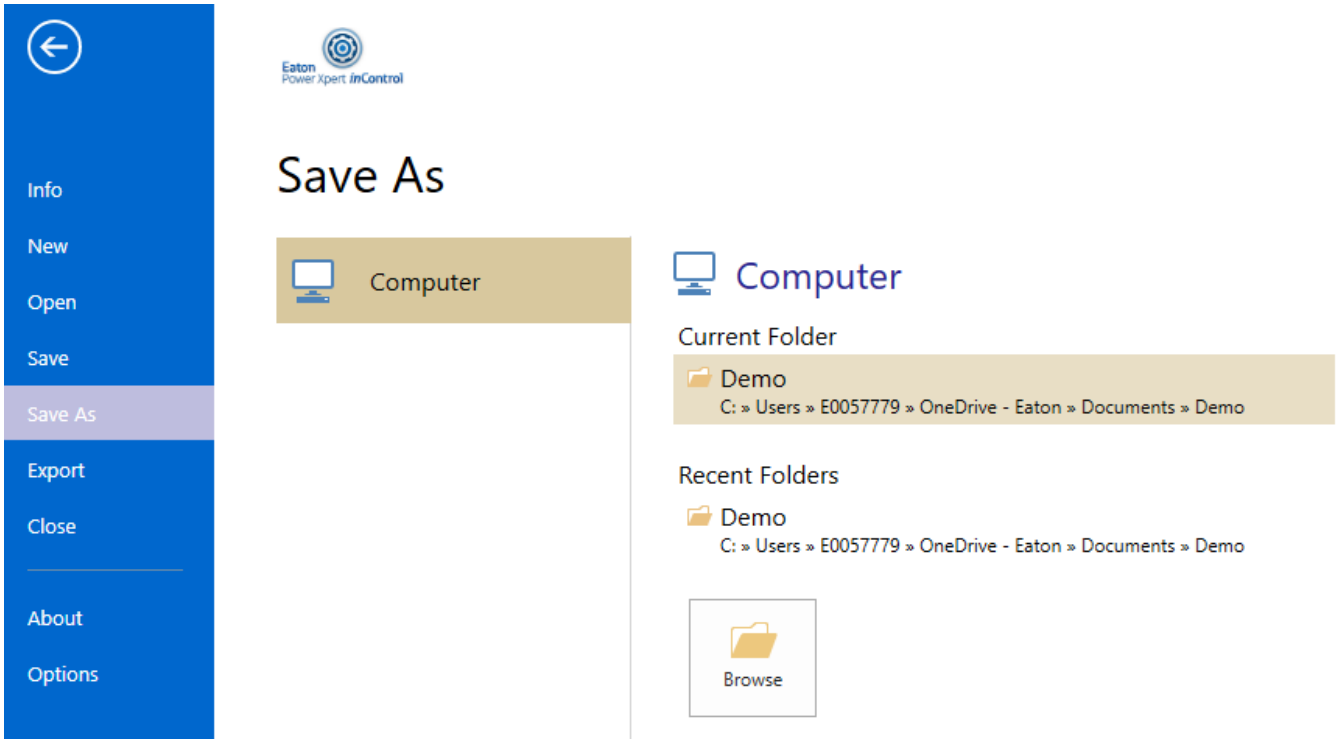
Projects can also be saved and opened using "Save As" and "Open". Once a project has been created such as the one shown below, it can be saved as a .efdt file via Save As. Save As can be found under the Project tab.



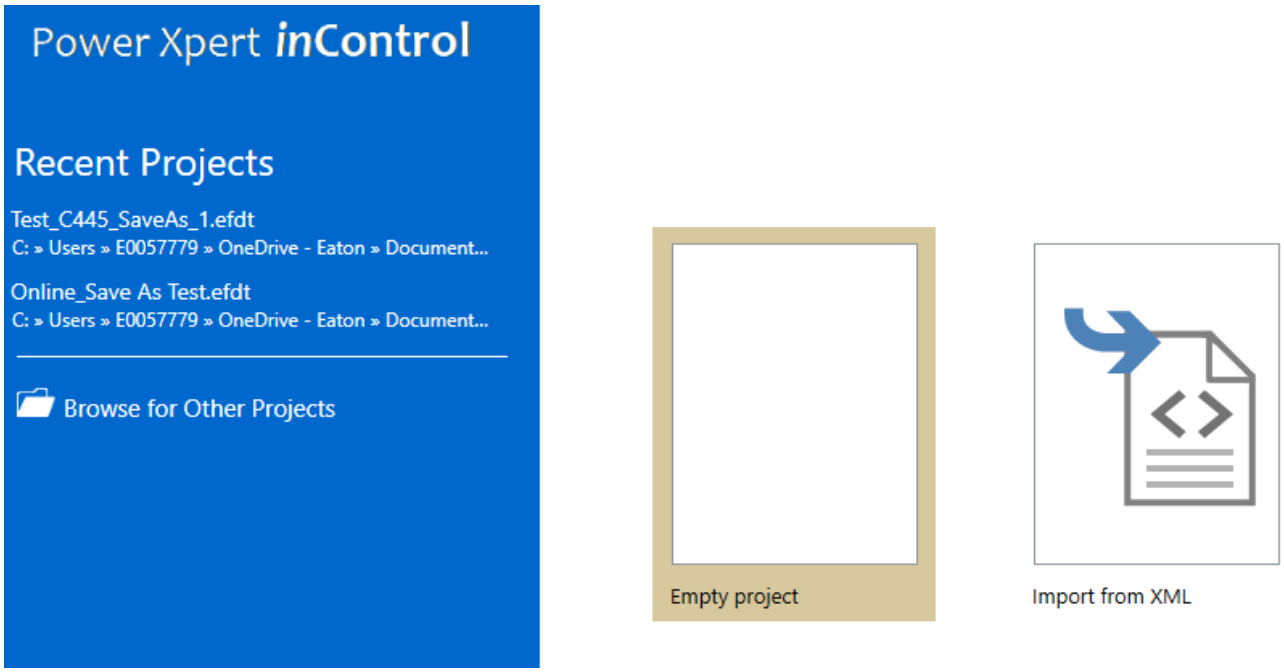
Any project created offline, where the offline C445 DTMs have been configured, can be saved with this option.

If the C445s have been configured while connected to each C445 with the online DTM, an offline DTM needs to be opened for each C445 and the Load from Device function must be used for each C445 to copy the configuration in each C445 to the offline DTM before using the Save As feature to save the project.

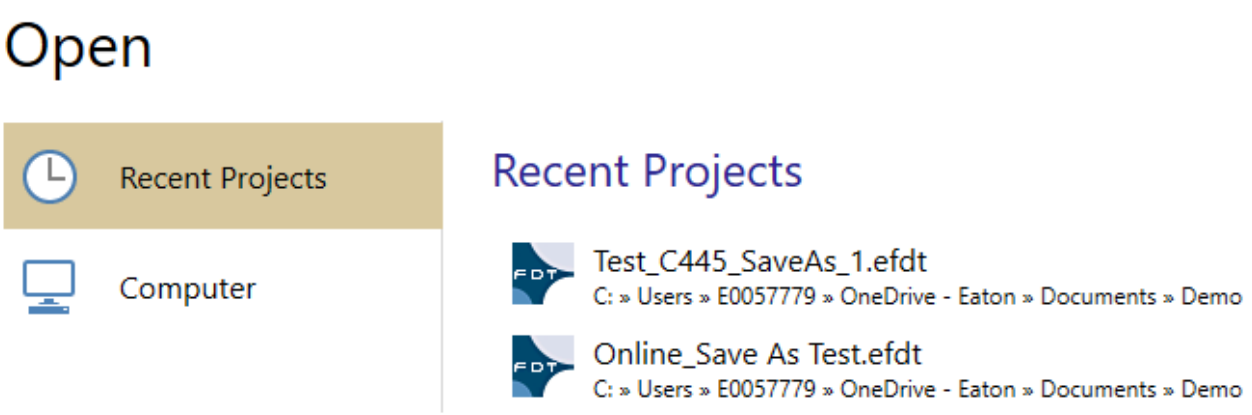
Per below, select Save As, Browse for a folder to save the project. Provide a filename and save.



Opening an .efdt project that was saved using the Save As feature can only be accomplished when the Power Xpert inControl software is started. When the software is started, the following initial window will be displayed.



Select Browse for Other Projects and the following will be displayed.



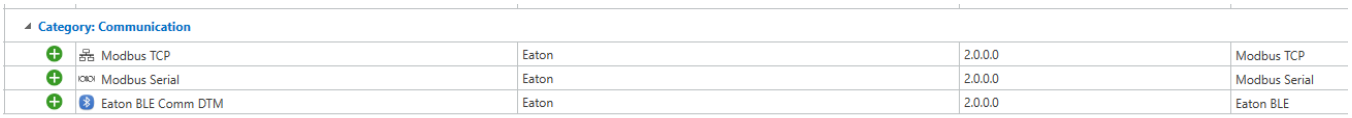
If the project to open is shown under "Recent Projects", select the file at the right and it will open. Or, select "Computer" to browse for a specific folder containing the project to be opened.

The Network Scan Feature

To connect to a network of C445s the Network Scan feature can be very useful to populate all C445s on the network. This feature can only be used when the software is connected to the C445 network via a communication DTM (Modbus serial or Modbus TCP).

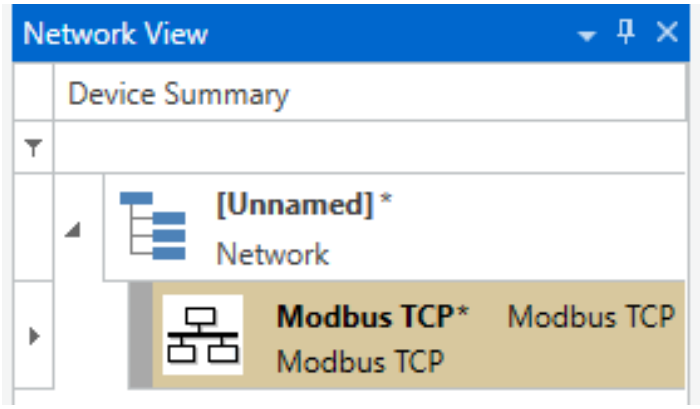
When connecting via Modbus TCP Ethernet

1. Start the Power Xpert InControl software.
2. Select the "Empty Project" to create a project.
3. Select Modbus TCP from the communication driver list shown below, by selecting the + sign in the green circle.

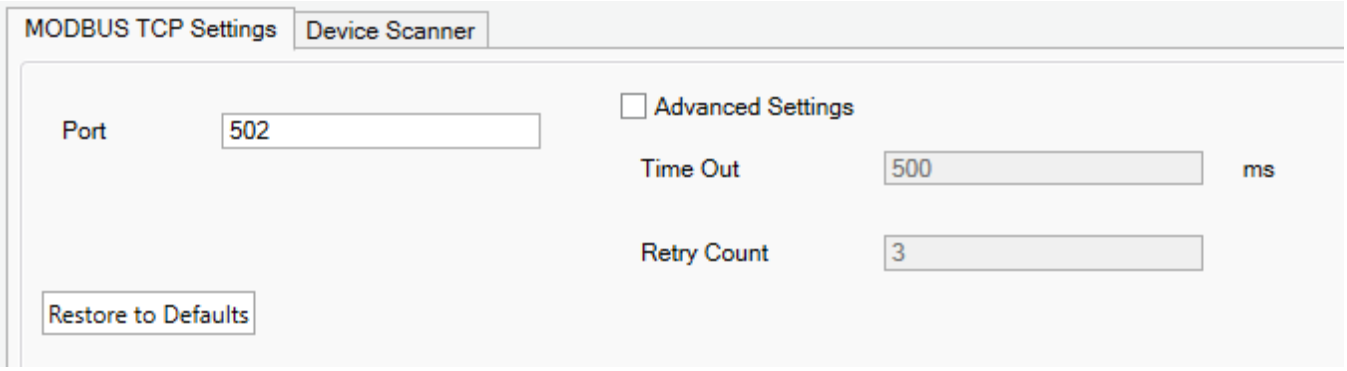


Category: Communication			
Modbus TCP	Eaton	2.0.0.0	Modbus TCP
Modbus Serial	Eaton	2.0.0.0	Modbus Serial
Eaton BLE Comm DTM	Eaton	2.0.0.0	Eaton BLE

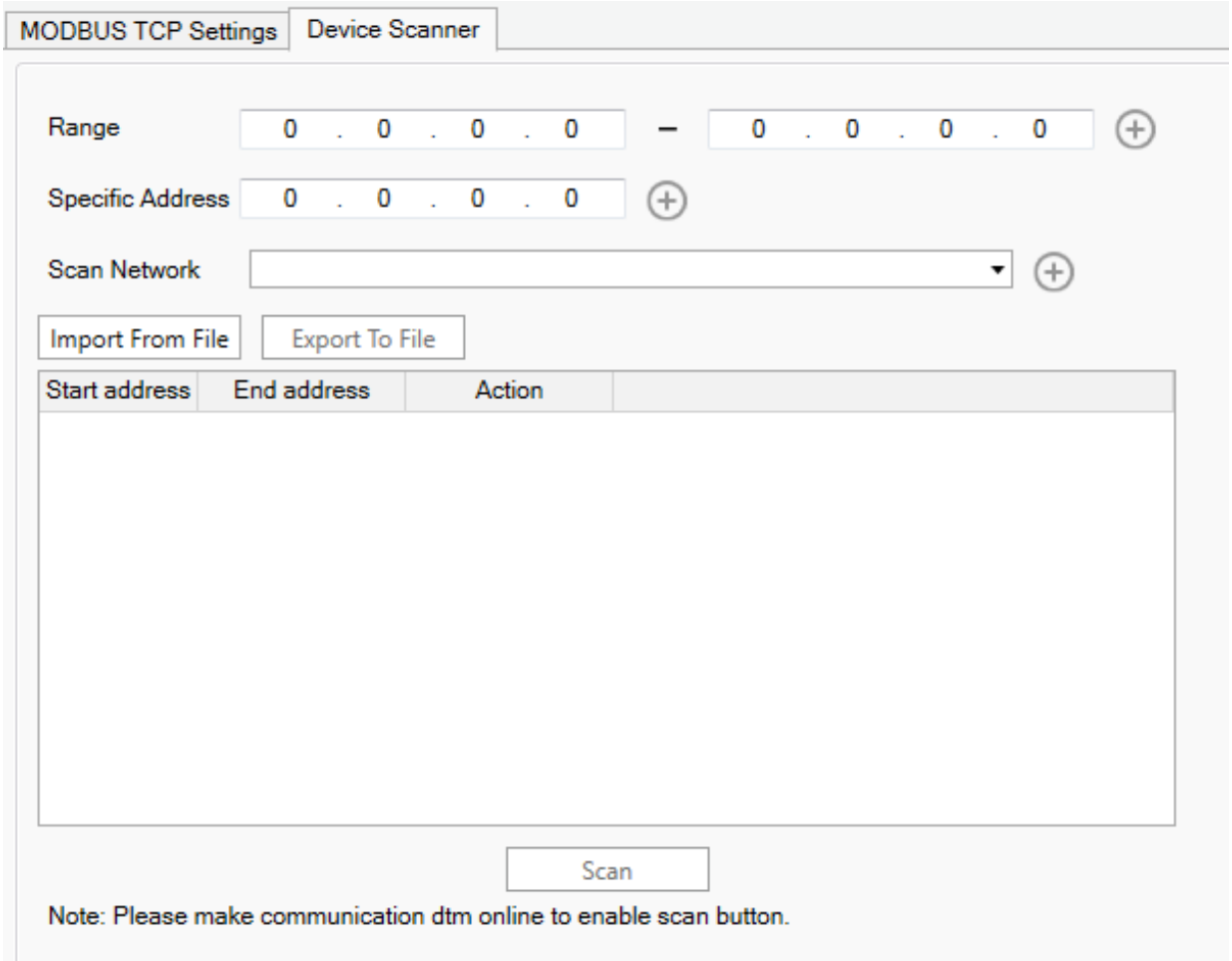
4. The Modbus TCP driver will now be displayed in the Network View tree on the left of the screen as shown below.



1. Right click on the Modbus TCP driver and select "Configuration". The following window will open.



2. The parameters on the Modbus TCP Settings tab should be correct.
3. Select the Device Scanner tab and the following will be displayed.

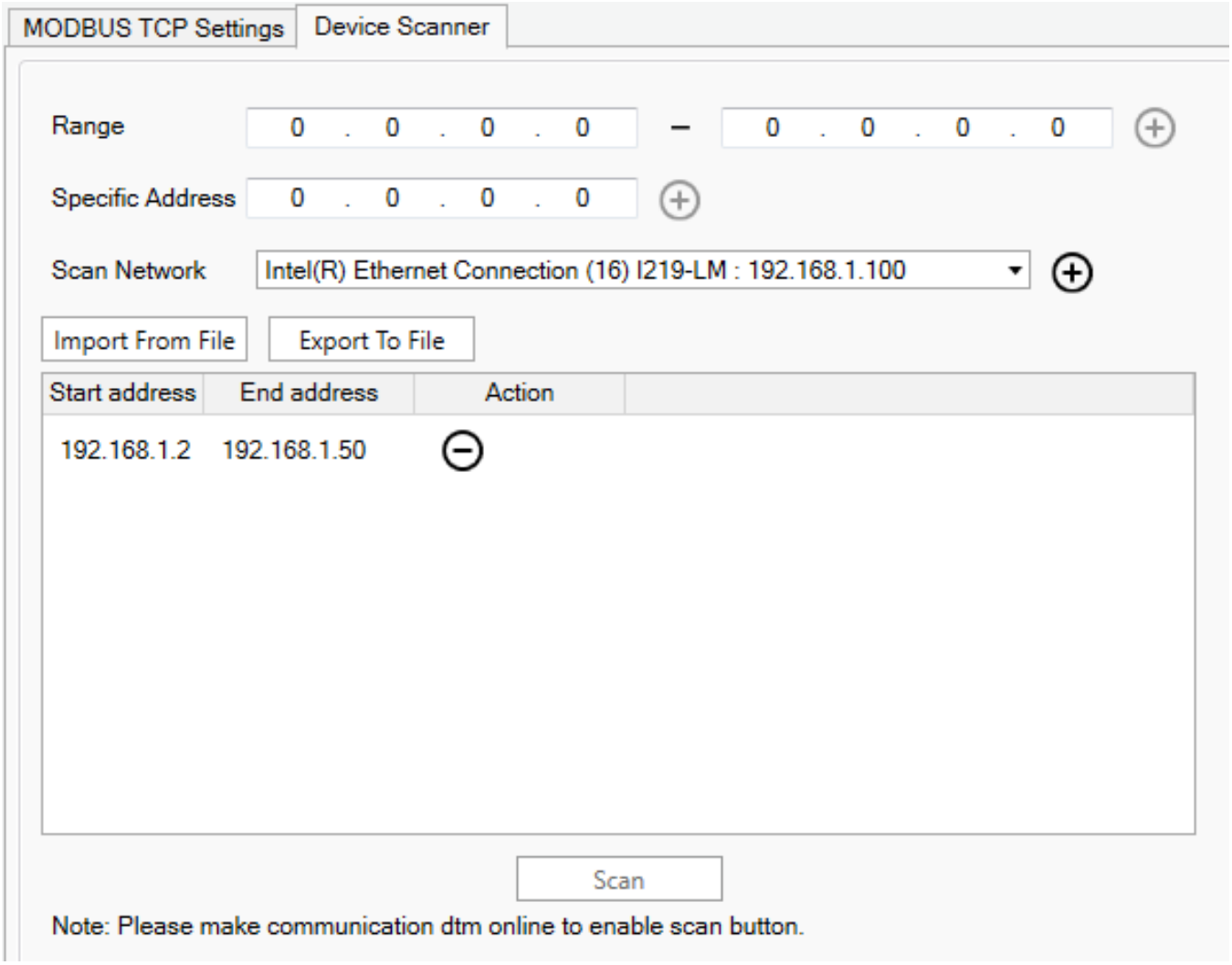


1. A Specific IP Address can be entered, but this feature is generally used to access a network of C445s. If the range of IP Addresses the C445s are configured for is known, enter that range and click the plus sign to add it to the window lower on the screen, as shown below.

2. The range can be removed from the window by selecting the minus sign for it.

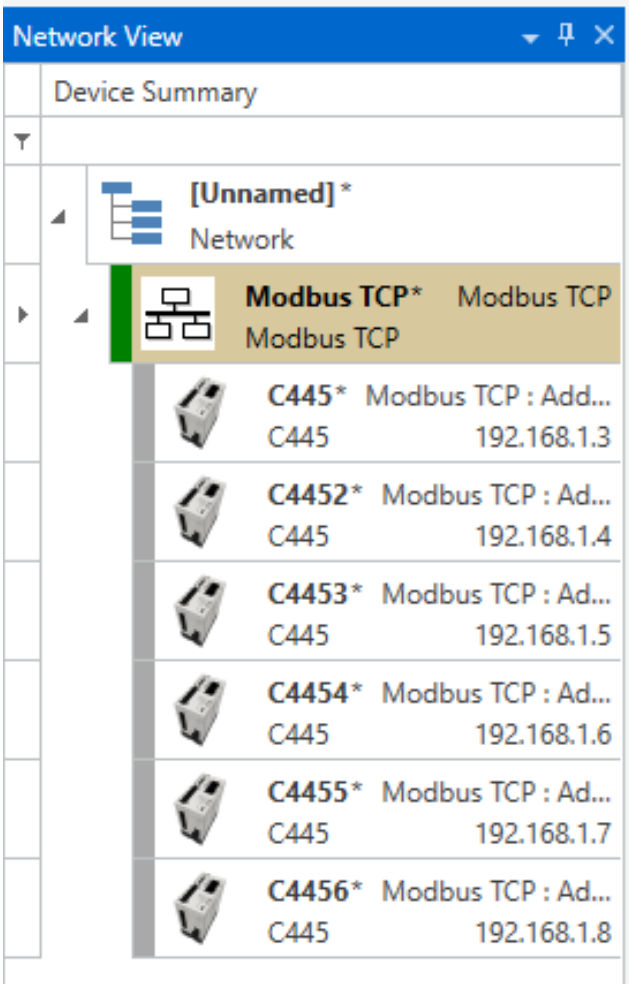
3. The selected range can be saved by selecting the Export To File button. It can then be imported at a later time.

1. Click the down arrow for the Scan Network parameter and select the computer's Ethernet port being used to connect to the C445 network. Note, this feature can be used to populate all devices connected to the network that are supported by this software. This includes DG1, DM1 and DH1 drives as well as C445 Motor Management Relays.



2. Select the Scan button and the software will begin the scan. If the Scan Button is not highlighted, the Communication DTM (Modbus TCP in this case) is not Connected.

1. All connected devices in the selected range will then be populated in the Network View tree on the left as shown below.



2. Each device can then be accessed one at a time by selecting it in the tree, right clicking on it and select Connect.
3. Once connected, double click the device to open it's online parameters. Note that the password prompt followed by the Set-Up Wizard will be displayed before the parameter categories and parameters screen will be displayed. Refer to the Set-Up Wizard section earlier in this chapter for information on it.

When Connecting via Modbus Serial.

Scanning for all devices on a Modbus Serial network is very similar to connecting via Modbus TCP Ethernet. The only differences are:

1. Select the virtual COM port for the USB port the USB/RS485 cable is connected to.
2. Enter the node address range to scan rather than an IP Address range.
3. Refer to the "When Connecting via Modbus TCP Ethernet" section above and follow the same procedure with steps 1 and 2 in mind.

Creating a PDF Report for each C445

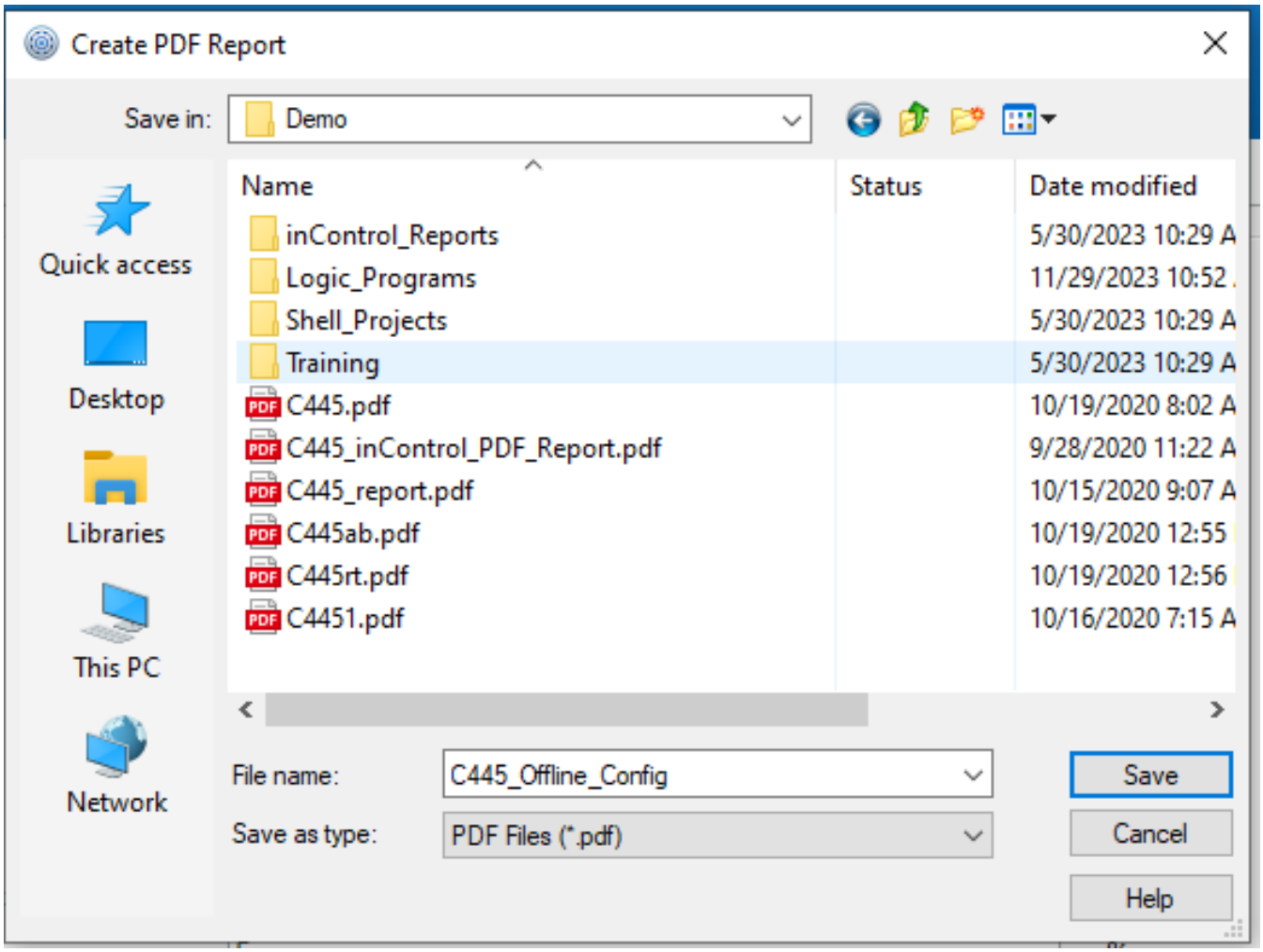
This PDF file can be generated for:

1. An Offline C445 configuration file.
2. An Online C445 Configuration file
3. Both the Online and Offline Configuration file.

1. To create a PDF report for an Offline Configuration file:

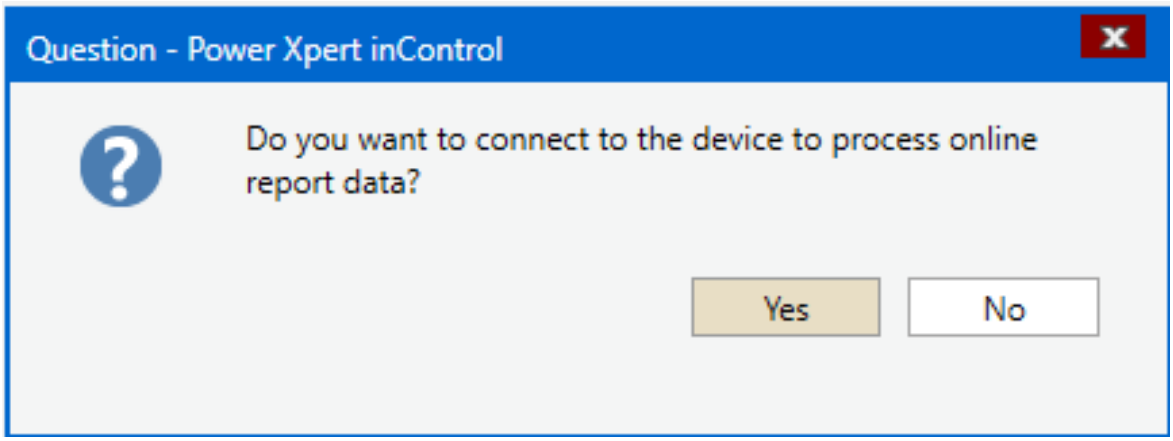
a. After configuring an Offline C445 DTM, right click on it in the Network View tree and choose "Import / Export", followed by "Create PDF Report".

b. The following will be displayed.



c. Select a folder and provide a filename and click Save.

d. The following window will be displayed.



e. If you are not or cannot connect to the C445, select No and a PDF report of the Offline C445 DTM will be generated.

f. If you are physically connected to the C445, but have not actually connected to it with the software, by selecting Yes to the prompt above the software will connect to the c445 and generate a PDF report that includes both the Offline Configuration that was open and the actual configuration directly from the C445.

This same process can be followed if both an Online and Offline DTM are open and the software is connected to the C445. The PDF report will include both the Offline and Online configuration.

If the software is connected to a C445 with the Online parameters open, but not the Offline parameters, generating a PDF report will include the actual Online parameters configuration, along with an Offline parameters configuration that contains all default values.

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