User's Guide
DCM-402-0818 Rev. 2.3
February 2020

DCMlink Software

EMERSON™

Table of Contents

Section 1: Introduction

1.1 What is DCMlink Software? 1
1.2 Purpose of this Guide 2
1.3 DCMlink Compatible Actuators 2

Section 2: Initial Setup

2.1 Before You Begin 3
2.2 Installation Tools and Device Documentation 3
2.3 System Requirements 3
2.4 Supported Operating Systems 4
2.5 Software Requirements 4
2.6 Hardware Requirements 4
2.7 Features 5
2.8 Compatible Devices 5
2.9 Known Limitations 7

Section 3: Installing DCMlink

3.1 Installation Overview 9
3.2 New Installation 9
3.3 Reinstall and Repair 14
3.4 Uninstall 17

Section 4: License Activation Wizard

4.1 License Features 20
4.2 Obtaining Your License 21
4.3 Activating License Key File 24
4.4 Activating Temporary License 27

Section 5: Get Started with DCMlink

5.1 How to Launch DCMlink 30
5.2 Home Screen 31
5.3 Software Information 32
5.4 Network Interface Connection 33
5.5 Connected Device Information 34

Section 6: Configuring Preferences

6.1 Configuring Communications in Modbus 35
6.2 Configuring Communication in XTE RS-232 42
6.3 Configuring Communications in Bluetooth 44
6.4 Configuring Communications in HART 46
6.5 Gauge Type (Analog/Digital) 57
6.6 Raw Value in Position Dial (for MPA only) 58
6.7 Change Network Parameter Settings 59

Section 7: Setting Up DCMlink Networks

7.1 Setup Modbus Network 60
7.2 Modbus TCP/IP Settings 65
7.3 RDM Connection Settings 67
7.4 Setup Bluetooth Network 67
7.5 Setup HART Network 69
7.6 Multiplexer Networks for DCMlink SNAP-ON 82
7.7 AMS SNAP-ON Setup 86
7.8 Setup Foundation™ Fieldbus Network 89
7.9 Troubleshooting Communication Issues 89

Section 8: Scan Device

8.1 Scan for New Devices in Modbus Master Mode 90
8.2 Check Network for Actuators in Modbus RDM Slave Mode 92
8.3 Check Network for Actuators in Modbus TCP/IP Mode 94
8.4 Check Network for Actuators in Bluetooth 96
8.5 Check Network for Actuators in HART 99
8.6 Check Network for Actuators in XTE RS-232 Protocol 101

Section 9: Status Monitor

9.1 Introduction 103
9.2 View Monitor Information 103

Section 10: Detailed Setup

10.1 Introduction 122
10.2 Configure Parameters 127
10.3 General Tab (Specific for HART) 154

Section 11: Valve Control

11.1 Introduction 155
11.2 Configure Parameters 156

Section 12: Diagnostics

12.1 Profile 159
12.2 Modbus Traffic Viewer 173
12.3 XTE3000 RS-232 Communication Viewer 176
12.4 HART Communication Viewer 176
12.5 Event Log 178
12.6 Data Logger 179
12.7 Connection Logger 181
12.8 Card Report 182
12.9 FDI Controls 183
12.10 Bus Information 184
12.11 Encoder Information 185

Section 13: Calibration Procedure

13.1 Introduction 186
13.2 Analog Input & Output Actuator Connection Details 187
13.3 Analog Input Calibration 190
13.4 Analog Output Calibration 191
13.5 MPA Home Port Calibration 194
13.6 EHO Self-Calibration 195

Section 14: Firmware Download

14.1 Firmware Download XTE3000 198

Section 15: Scheduler

15.1 Scheduling A New Task 203

Section 16: Extract Device Info

Section 17: DCMlink HART Features

17.1 Write Protect 208
17.2 Device HART Mode Dialog (AUTO/MANUAL) 209
17.3 Rebuild HART Network There are 2 Rebuild options: 211

Section 18: Database

18.1 Database for Diagnostic Storage 214
18.2 Tag Management for SOLO and SNAP-ON 216
18.3 XTE RS-232 Tag Management 223
18.4 Database Operation (SOLO on SQL CE) 224
18.5 Dataset 225

Section 19: Frequently Asked Questions

19.1 Usage 238
19.2 RS485 Modem and Driver Details 238
19.3 Wiring the Modem and Actuator 239
19.4 Bluetooth Stack Information 241
19.5 Wiring the HART Modem and MUX 243
19.6 Technical Support and Contact Details 244
19.7 Trademarks 244

Section 20: Assembly Numbers

Section 21: Troubleshooting

21.1 Device Scan Troubleshooting 246
21.2 DCMlink Services Error 246

Section 22: Document Revision

Appendix A: Glossary

Index

Section 1: Introduction

1.1 What is DCMlink Software?

One of the biggest challenges faced when controlling electric actuators is control and visibility. When plant personnel operate an entire facility, the ability to operate valves and know equipment status is critical. Generally, electric actuators provide the information needed, but when controlling numerous devices, in different open protocols and brands, using a centralized software to control and monitor the actuators is just not possible as different brands and protocols will not be recognized by a single software.

DCMlink software allows customers to diagnose, configure, and monitor all EIM™ and Bettis™ electric actuators from a central location independent of protocol, actuator, or host system.

This software presents information in a consistent, easy-to-interpret, human-centered design that provides the capability to diagnose, configure, calibrate, and monitor all electric actuators from a central location, independent of the protocol, actuator, or host system.

DCMlink Benefits:

1. Integrates with Emerson's PlantWeb™ solution.
2. Diagnose, configure, calibrate, and monitor all electric actuators from a central location, independent of the protocol, actuator, or host system.
3. Improve maintenance efficiency, and reduce maintenance costs.
4. Unified user interface for all electric actuators including support for TEC2, EHO, TEC2000, M2CP, MPA, HQ Series, and XTE3000.
5. Advanced diagnostics include torque profile curves, valve control and status monitoring.
6. Communicate using Modbus, XTE RS-232, TCP-IP, Bluetooth, and HART protocols.
7. Easy configuration and calibration methods.
8. Integrated management of asset data, profiles, alarm, and event logs.
9. PlantWeb compatible alarms in NE-107 format, alarm log, and event log features.
10. Real time actuator monitoring and control.
11. Easy navigation with simplified tree view and logo view.
12. Easy Firmware Download support for TEC2 & XTE3000.

1.2 Purpose of this Guide

Using DCMlink, an instrument engineer, maintenance technician, or operations supervisor can determine the status of an EIM and Bettis smart electric actuator to detect problems before they impact the process. It provides an easy-to-use environment for diagnosing, configuring, and monitoring of the operating characteristics of any EIM and Bettis smart electric actuators.

DCMlink User's Guide:

1. Provides a comprehensive guide for installing, initializing and utilizing DCMlink.
2. Provides guidance on how to digitally monitor and control valve actuators and valves in a specified network.

NOTE:
User's Guide will be updated when new versions of the software are released.
To ensure you have the latest version and information, go to the Emerson DCMlink download page.

In case there are any questions or inquiries regarding this User's Guide and supporting information, please do not hesitate to contact your Local Business Partner (LBP) or nearest Emerson office.

1.3 DCMlink Compatible Actuators

Figure 1 Emerson Electric Actuators

Section 2: Initial Setup

2.1 Before You Begin

The DCMlink software installation process includes several steps, some of them dependent on the type of personal computer system that will run DCMlink software and its configuration. In order to successfully install and run DCMlink software, it is important that the user follows all of the appropriate steps covered in this installation guide.

Prior to beginning installation, please:

- Verify if personal computer system meets the hardware and software requirements specified in this section.
- Gather the necessary installation tools and documentation.

2.2 Installation Tools and Device Documentation

Before begining the installation procedure, make sure the following items are available:

- DCMlink software installation media (software download link, CD, or USB media).
- Any hand tools (i.e. screwdriver) needed for installing communications hardware.
- Communications hardware such as the RS485 modem, and any necessary wires, cables, or other equipment specified in the device documentation for the RS485 instruments.
- Personal computer with a serial or USB port for connecting to a RS485 modem, HART modem, DeltaV, RS-232 Cable, Multiplexer, wireless gateway.

2.3 System Requirements

DCMlink Software 2.3, has been tested on computers manufactured by Dell, Inc. However, DCMlink software runs on any personal computer or notebook computer equipped with the following software and hardware features:

NOTE:

Actual requirements and product functionality may vary based on system configuration and operating system. DCMlink Software 2.3, has not been tested on a personal computer using the Windows 95 operating system and is not supported on Windows 2003, Windows 98, Windows Me, Windows NT, Windows 2007, or Windows XP operating systems.

2.4 Supported Operating Systems

DCMlink SOLO

- Windows 10 (64 bit)

NOTE:
DCMlink Software is not supported on Windows XP (32, 64 bit), Windows 2007, Windows 7 (32/64 bit), and Windows 2012 server (64 bit).

2.5 Software Requirements

Internet Explorer version 11.0 or later is recommended.

Microsoft Excel for exporting of Event log information is needed.

2.6 Hardware Requirements

- Computer and processor:
  - 1 Gigahertz (GHz) or faster processor needed
- Memory:
  - 2 Gigabyte (GB) RAM (32-bit) or 4 Gigabyte (GB) RAM (64-bit)
- Hard disk:
  - 256 Gigabyte (GB) available storage space
- Drive:
  - CD-ROM Drive
- Display:
  - 1024 X 768 resolution
  - 256 colors
- COM ports:
  - Serial or USB port for connecting to a RS485 modem
- Bluetooth:
  - Microsoft Bluetooth stack or WIDCOMM® stack compatible built-in/external Bluetooth adapter
- RS485 converter:
  - Recommend using USOPTL4, optically isolated product from B&B Electronics

2.7 Features

- Status Monitor
- Detailed Setup
- Valve Control
- Torque Profile
- Pressure Profile
- Analog Calibration
- Port Calibration
- Event Log
- Firmware Download
- Custom Characterization
- Modbus Master
- Modbus Slave
- Modbus TCP-IP
- XTE RS-232
- Bluetooth
- HART

2.8 Compatible Devices

2.8.1 Firmware Compatibility:

NOTE:
DCMlink is tested with the below actuator firmware combinations.

Table 1. Actuator Firmware Compatibility

Actuator	Status/Firmware Date
TEC2000	CCM: 132 dated 2015_MAY_13 or later LDM: 119 dated 2014_AUG_07 or later ACM: 140 dated 2016_MAY_27 or later APD: 114 dated 2013_DEC_05 or later
TEC2	CCM: 110 dated 2019_MAR_18 or later LDM: 110 dated 2019_MAR_11 or later Language File: dated 2015_11_20
M2CP	M2CP_320B_361_2019_02_04.hex or later
MPA	MPA_624_2016_05_09.hex or later
HQ-DCM33	HQ_DCM33_503_2015_05_27.hex or later
HQ-DCM32	HQ_DCM32_403_2014_03_15.hex or later
Smart EHO Modulation	Smart_EHO_Modulation_1.0.15_12-Feb-2019 or later
Smart EHO Motor	Smart EHO On-OFF_2.0.17_8-Mar-2019 or later
Smart EHO Double Acting	Smart_EHO_DoubleActing_3.0.1_12-March-19
XTE3000	Software (H8) rev. 9.02 Software (Pic) rev. 8.0 Logic (Base) board: DE9425

Table 2. Compatibility Number

Actuator	Supported DCMlink Version
1	1.0 1.1 1.2 2.1 2.2 2.3

NOTE:

Please ensure the actuator is configured with the correct compatibility number with the installed version of DCMlink. If it is less than the matching version (as per table above), please upgrade the actuator firmware. If it is greater than the matching version, please upgrade DCMlink software.

2.8.2 CAM Cards

The CAM209 is for TEC2000, and TEC2. While the CAM09 is for M2CP, MPA, HQ DCM33 and EHO (See chapter for Modbus Initial Configuration). HQ DCM32 does not provide the option to connect an additional CAM card.

Table 3. EIM, Bettis CAM Card Actuator Compatibility

Protocol Name	M2CP Family (M2CP, HQ, MPA, and EHO)	TEC Family (TEC2 and TEC2000)
Modbus	CAM05	CAM205
Modbus TCP/IP	CAM09	CAM209
HART	CAM16	CAM216
FOUNDATION fieldbus	CAM28	CAM228

Table 4. XTE3000 Card Actuator Compatibility

Protocol Name	XTE3000
Modbus	Modbus BUS Card 494MOD1200
HART	HART BUS Card 494HRT2000v4

2.9 Known Limitations

2.9.1 Actuators: DCMlink does not support M2CP 320A or non-protocol versions of the M2CP actuator (it supports M2CP 320B).

2.9.2 The installation of DCMlink requires administrator rights.

2.9.3 Multilingual installation is not supported in DCMlink.

2.9.4 The Operating System UAC Level > 1 may result in the display of a message seeking privilege to run DCMlink.

2.9.5 Standard operating system themes are recommended when using DCMlink as this software does not support high contrast themes.

2.9.6 DCMlink is unable to detect TEC2 at 115200 Baud Rate using the Microflex 485 converter.

2.9.7 EHO: Model Operating Pressure (MOP)/Maximum Self Calibration parameters require Setup Mode. Please use Actuator Mode to enter into Setup Mode to modify these parameters.

2.9.8 EHO: Actuator Fully Open Time and Close Time parameters do not show any value on DCMlink.

2.9.9 DCMlink cannot configure "Lost Analog Delay Time" parameter in case of TEC2000 actuator.

2.9.10 DCMlink cannot configure "Speed Control Bandwidth" parameter in case of TEC2000/ TEC2 actuator.

2.9.11 DCMlink Release 2.3 supports only English(US) language, check settings from Control Panel->Region and Language -> Format. When format changed from English (US) to other country format user may face issues in DCMlink.

2.9.12 Scheduler status and execution would misbehave if user starts scheduler execution when any other screens are opened in DCMlink.

2.9.13 Adding same live tag name to second task is not implemented (E.g.: PST is schedule for device 1 tag, and again re-schedule PST in same live tag is not implemented. User has to delete the completed task and need to “Add task.”)

2.9.14 At the same time we can not add the task for multiple device.

2.9.15 Two task at same time is not implemented for same live device tag (E.g.: Extract device info, PST tasks cannot be run at same time. It is implemented in sequence.)

2.9.16 HART modem on DCMlink SOLO is not supported in this R#2.3.

2.9.17 Setup mode need to be manually exit at configuration screen (Actuator mode > Exit setup mode).

2.9.18 Firmware download option is only applicable for TEC2 device in Modbus protocol.

2.9.19 Not enough quota is available to process this command message box appears in DCMlink. Workaround: Close the DCMlink application and launch it again.

2.9.20 DCMlink shows unexpected error "Gregorian date" on status monitor screen. Workaround: Close the DCMlink application and launch it again.

2.9.21 DCMlink gives - Device not found during XTE3000 Firmware read operation. Workaround: Close the Firmware dialog and read the FW again.

Section 3: Installing DCMlink

3.1 Installation Overview

DCMlink Software should be installed on a computer that meets the system requirements. The following steps detail how to uninstall and reinstall. Reinstall if the software is to be removed, updated, or repaired only.

3.2 New Installation

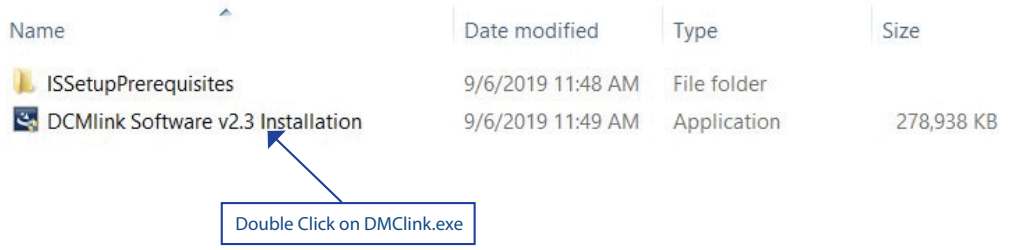
⚠ CAUTION

- If the user has a previous version already installed, please uninstall it first from the **Control Panel >Add Remove Programs**. Next, please delete the DCMlink shortcut from the Desktop.
- If the user has latest version of DCMlink already installed and wants to install Prior build of DCMlink on top of it then recommendation is to uninstall the latest version of DCMlink from Add/Remove programs then only install the prior builds of DCMlink.

3.2.1 Locate and then open the DCMlink.exe located in the installation folder found in the DCMlink installer (sent to customer via web link, CD or USB media).

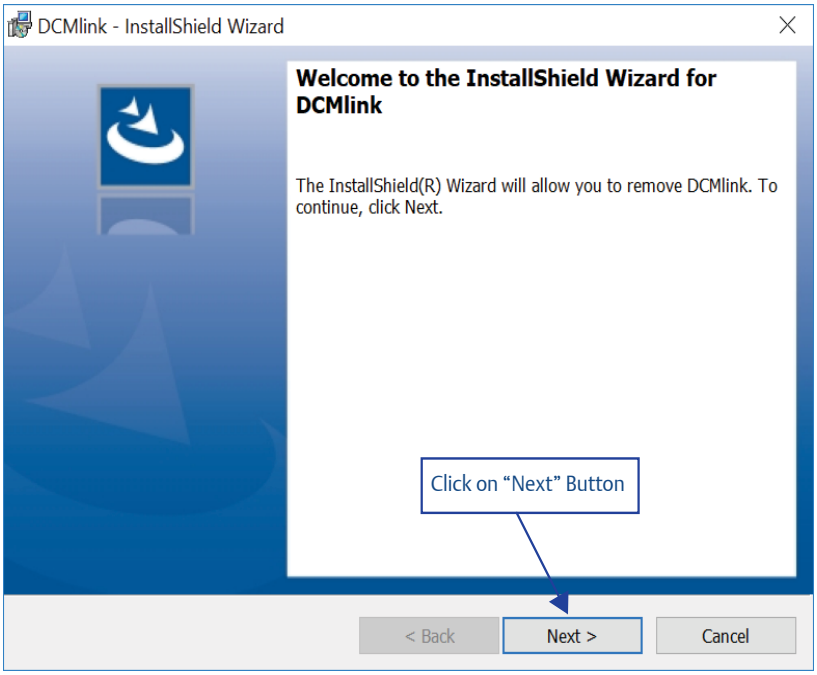
NOTE:
Installation of DCMlink requires administrator privileges.

Figure 2 DCMlink Installer



3.2.2 Click **Next** button.

Figure 3 DCMlink Installation Initialization



3.2.3 There are 2 options for **installation**. Click on one option and then click **Next**.

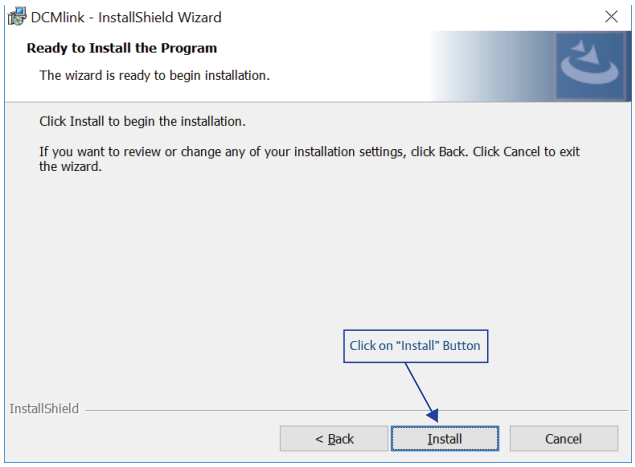
- DCMlink SOLO
- DCMlink SNAP-ON

NOTE:
Both SOLO and SNAP-ON can be installed in one installation by selecting both options.

3.2.4 DCMlink SOLO

NOTE:
Install DCMlink software for stand-alone operation.

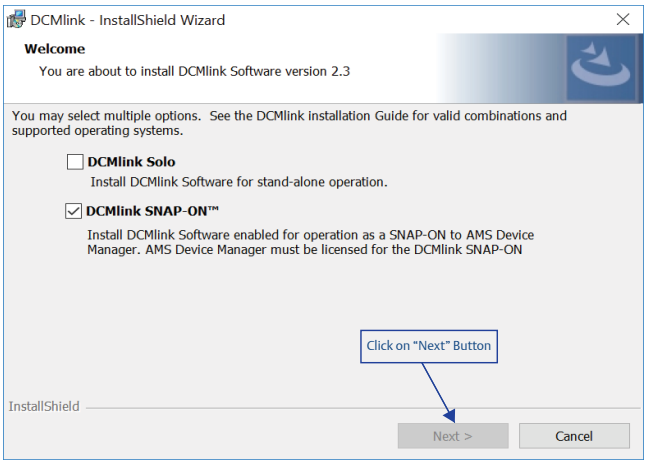
Figure 4 DCMlink SOLO Option



3.2.5 DCMlink SNAP-ON

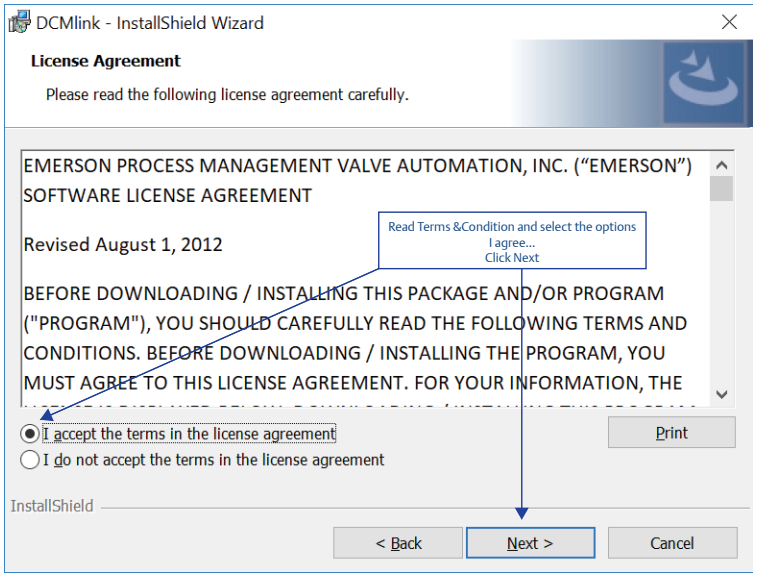
NOTE:
Install DCMlink software enabled for operation as a SNAP-ON to AMS Device Manager. AMS Device Manager must be licensed for the DCMlink SNAP-ON.

Figure 5 DCMlink SNAP-ON Option



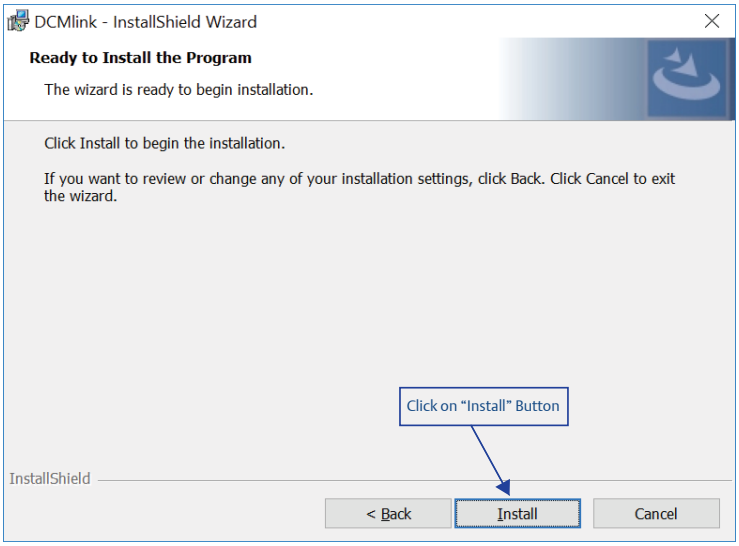
3.2.6 Read Terms and Conditions and select accept and click Next.

Figure 6 Terms of Use



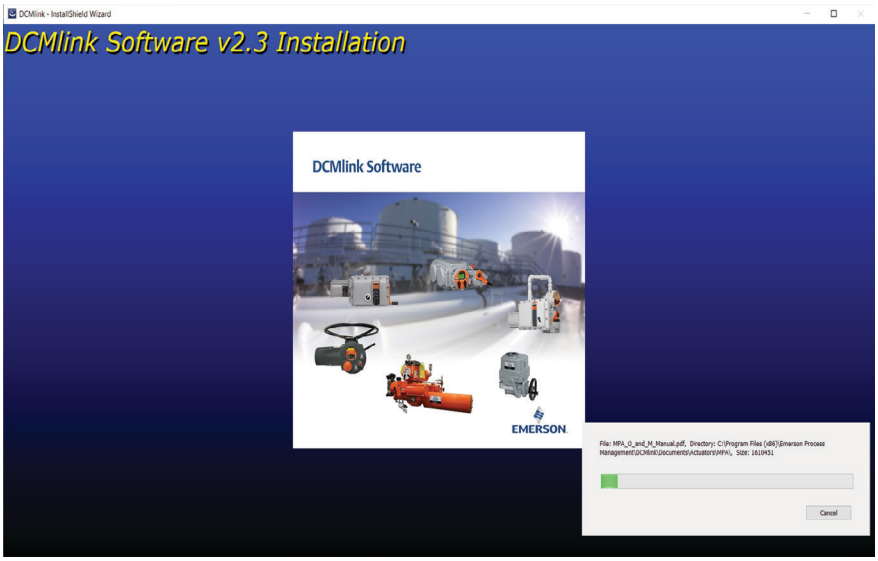
3.2.7 Next, click **Install**.

Figure 7 Install DCMlink



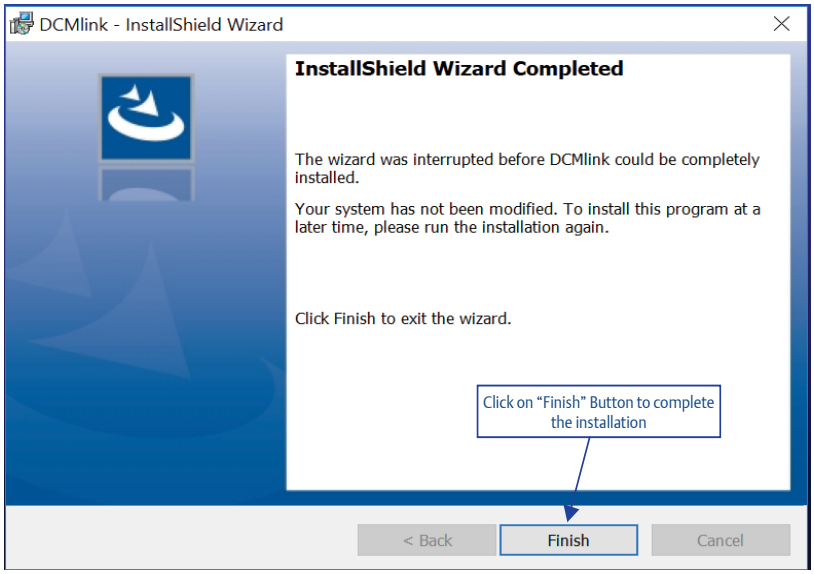
3.2.8 Installation will begin.

Figure 8 Installation Progress Bar



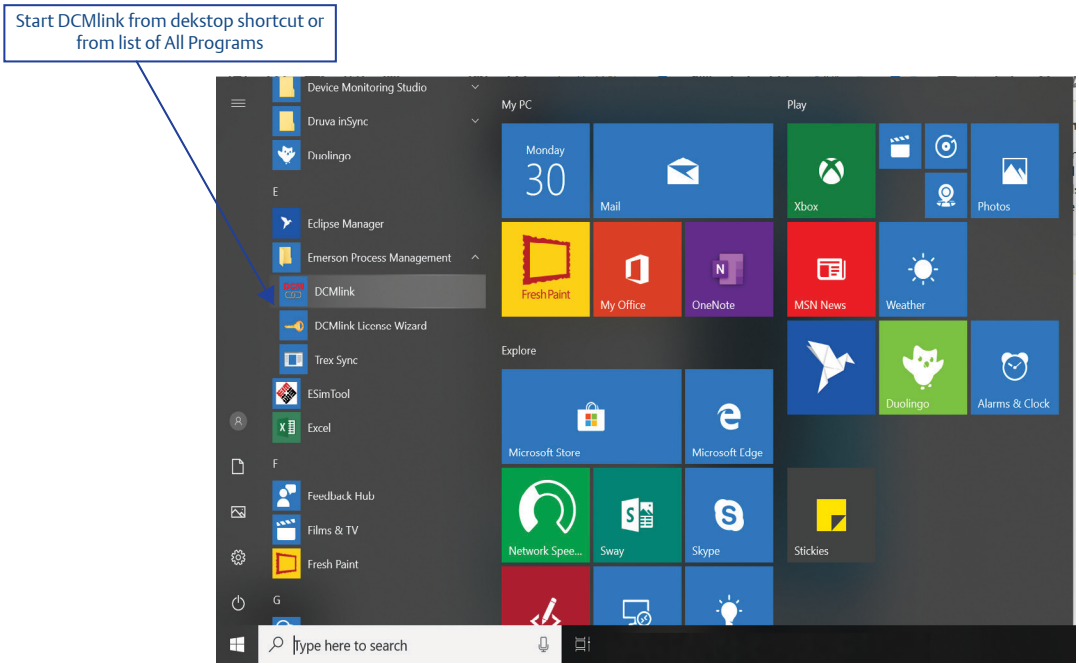
3.2.9 Click **Finish** to complete installation.

Figure 9 Completing the Installation



3.2.10 Start DCMlink application from desktop shortcut or from the list of **All Programs**.

Figure 10 DCMlink Start Menu Shortcut

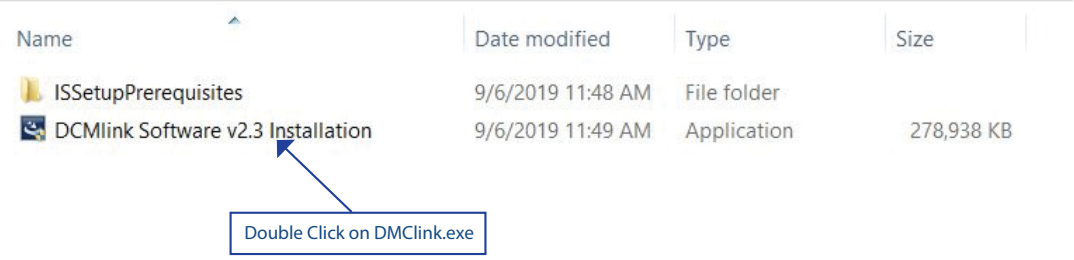


3.3 Reinstall and Repair

DCMlink reinstallation is an option available to repair a DCMlink installation without uninstalling it. Follow below to execute reinstallation:

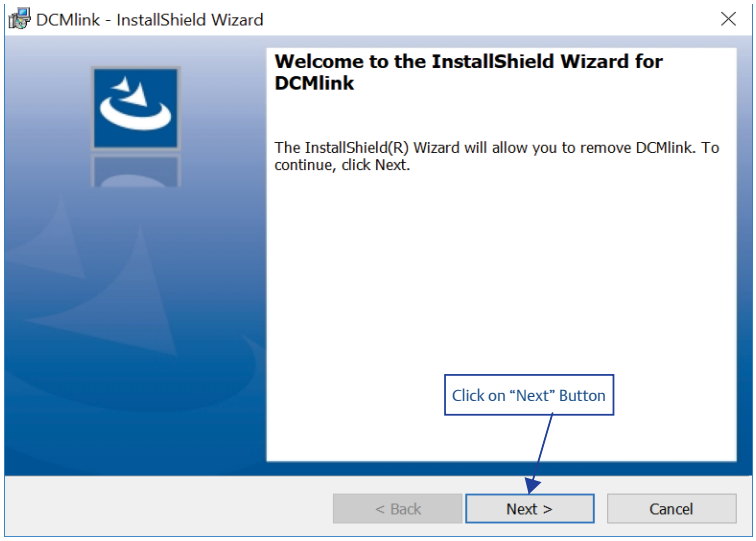
3.3.1 Run DCMlink.exe located in the installation folder.

Figure 11 Initializing Reinstallation



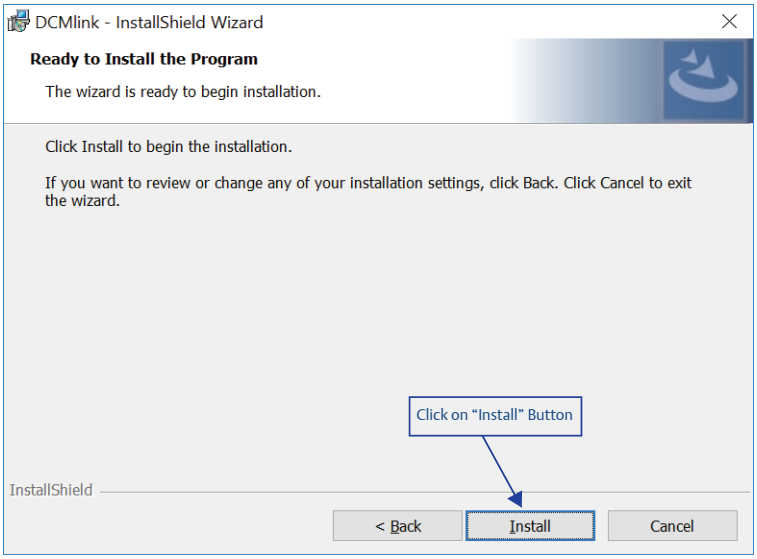
3.3.2 After initializing the InstallShield Wizard, click **Next**.

Figure 12 Ready to Reinstall



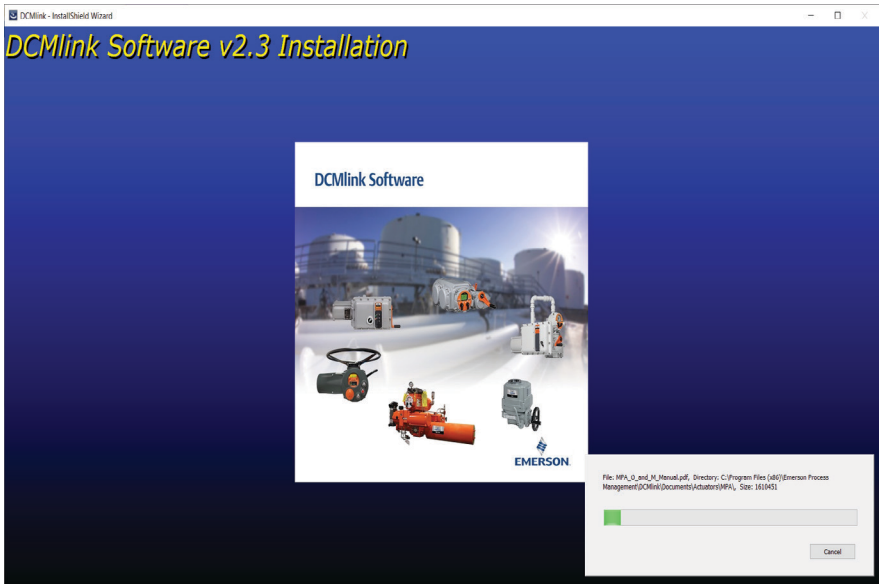
3.3.3 Click **Install** to begin reinstallation.

Figure 13 Begin Reinstallation



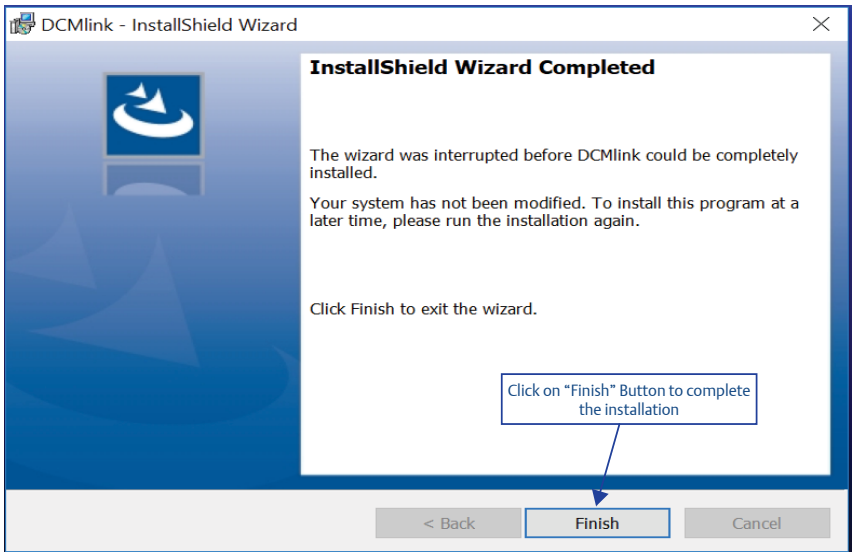
3.3.4 Reinstallation after step 3.3.4.

Figure 14 Reinstallation Progress Bar



3.3.5 Once reinstallation completed, click **Finish**.

Figure 15 Reinstallation

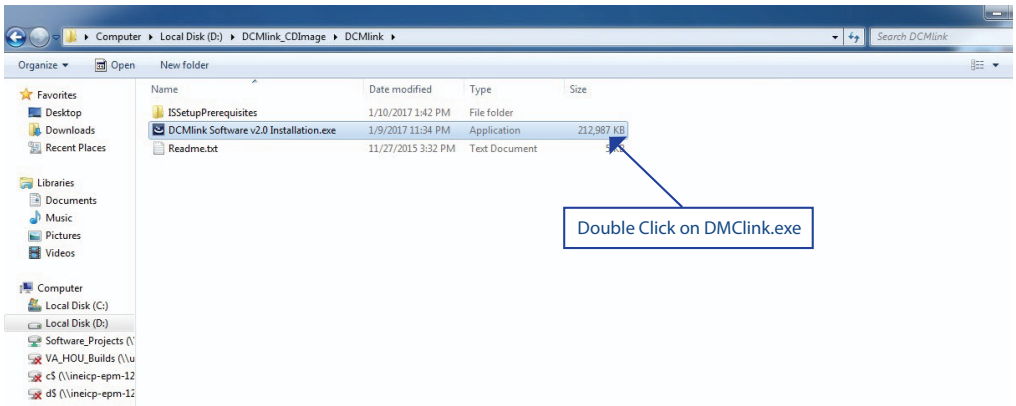


3.4 Uninstall

3.4.1 There are two ways to uninstall the DCMlink software. The first method is performed by launching the DCMlink installer through the steps below:

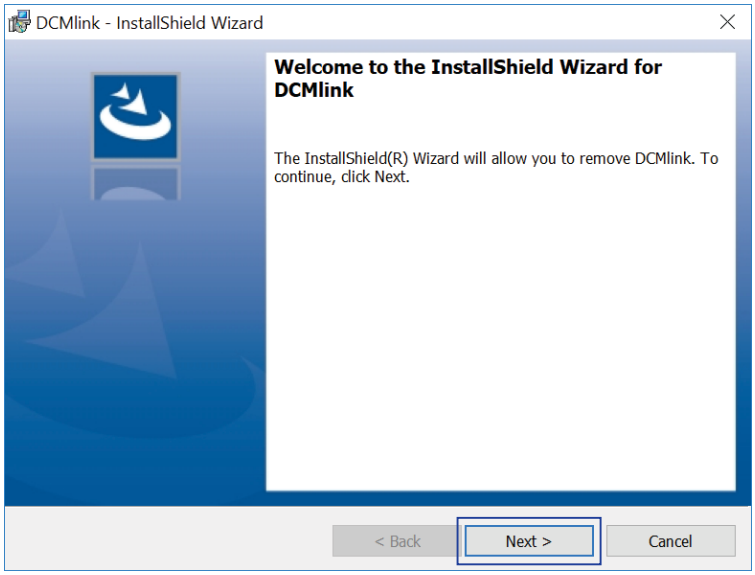
3.4.1.1 Run DCMlink.exe located in installation folder.

Figure 16 Uninstall Using DCMlink Installer



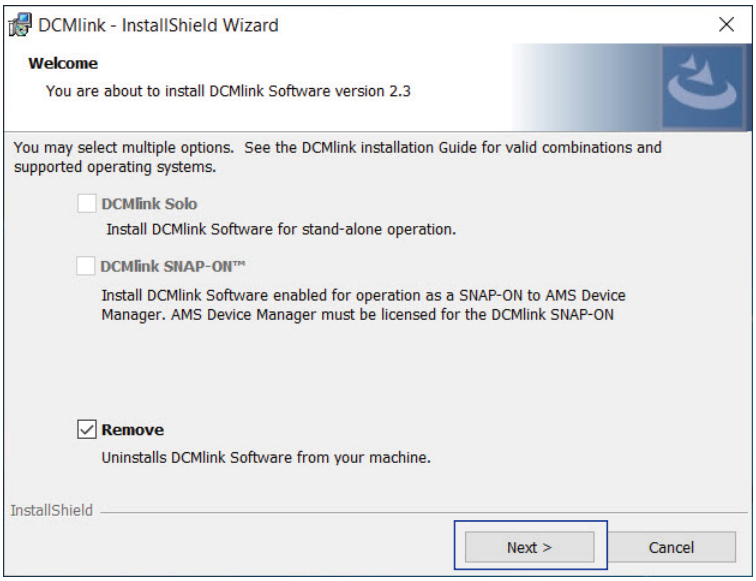
3.4.1.2 After initializing the InstallShield Wizard, click **Next**.

Figure 17 Uninstall Window



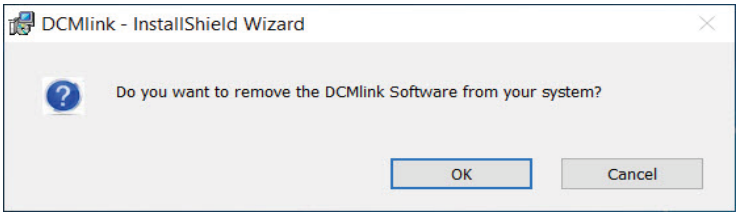
3.4.1.3 Select the **Remove** and click **Next**.

Figure 18 Removing DCMlink



3.4.1.4 Uninstall begins.

Figure 19 Start Uninstallation



3.4.2 The second method to uninstall of DCMlink is through the Control Panel in Windows. It can also be done by running the DCMlink installer. To uninstall via Control Panel, access Programs and Features, select DCMlink and click uninstall.
Follow steps below:

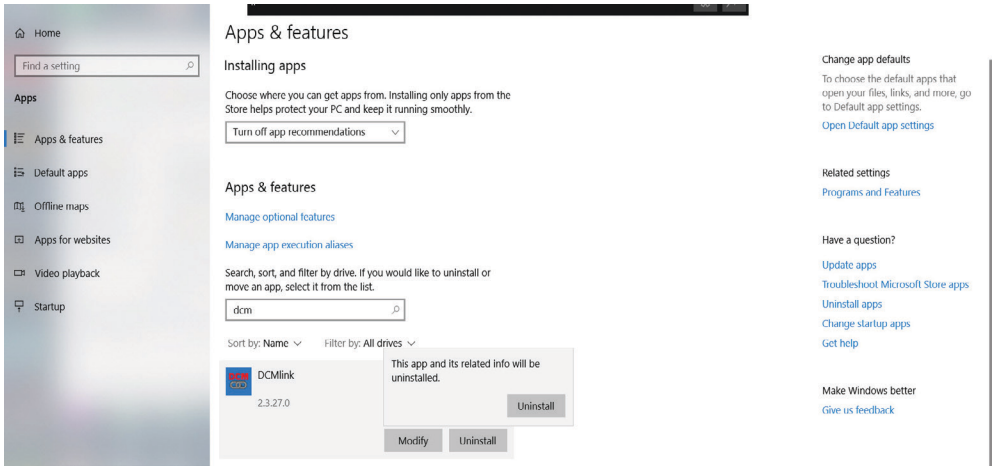
3.4.2.1 Click Windows **Start**.

3.4.2.2 Click **Control Panel**.

3.4.2.3 Click **Programs and Features**.

3.4.2.4 Select **DCMlink** (published by Emerson).

Figure 20 Uninstall from Windows Control Panel



3.4.3 Click **Uninstall**.

3.4.4 Next click **Yes.**

NOTE:
If the Windows Administrator window pops up, click **Yes** to proceed with the removal of DCMlink.

3.4.5 After windows completes the uninstallation, any shortcuts to DCMlink will automatically be deleted.

Section 4: License Activation Wizard

4.1 License Features

Table 5. DCMlink License Features

Feature	Product Name		
	SOLO		SNAP ON
	SOLO Standard Unlimited	SOLO Advanced (Under Development)	SNAP-ON Unlimited
Modbus Master	✓	✓	Not Applicable
Modbus Slave	✓	✓	Not Applicable
Modbus TCP-IP	✓	✓	Not Applicable
Bluetooth	✓	✓	Not Applicable
HART Modem	Not Supporting	✓	✓
HART Multiplexer	✓	✓	✓
Standard Diagnostics (Torque Profile, Step Response)	✓	✓	✓
Standard Diagnostics (Partial Stoke Test)	✓	✓	✓
Status Monitor	✓	✓	✓
Configuration	✓	✓	✓
Calibration	✓	✓	✓
Database With # of Tags	Unlimited	Unlimited	Unlimited

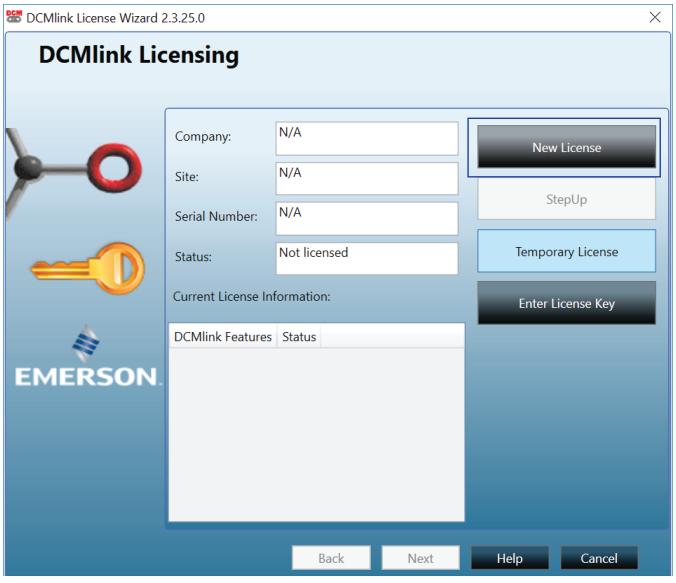
4.2 Obtaining Your License

4.2.1 Double click DCMlink icon. The user will be prompted to run the License Wizard and click **Yes**.

Figure 21 Running License Wizard

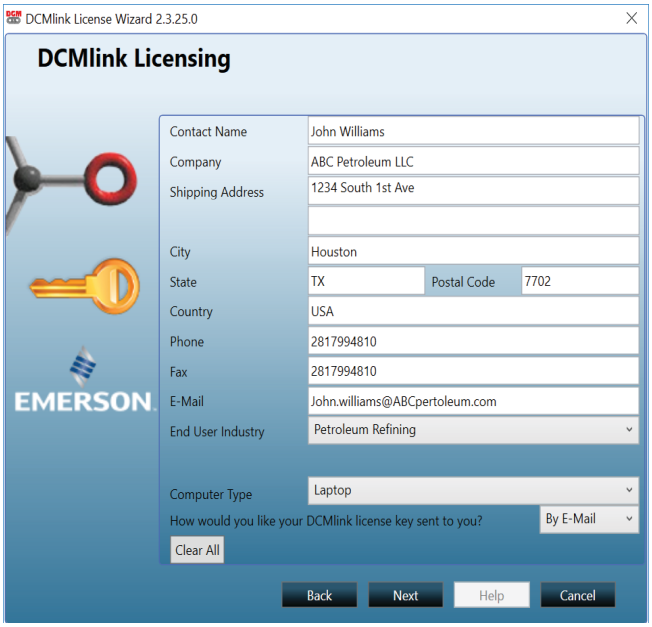
4.2.2 Next click **New License**.

Figure 22 Request New License



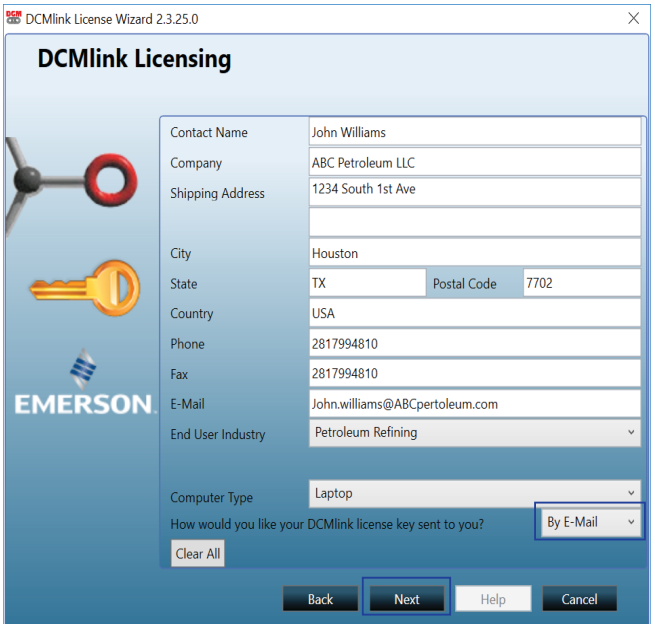
4.2.3 Enter the contact details. All fields are required. If the user does not have a fax number, please enter telephone number. This information will be used to request a license key.

Figure 23 Input License Information



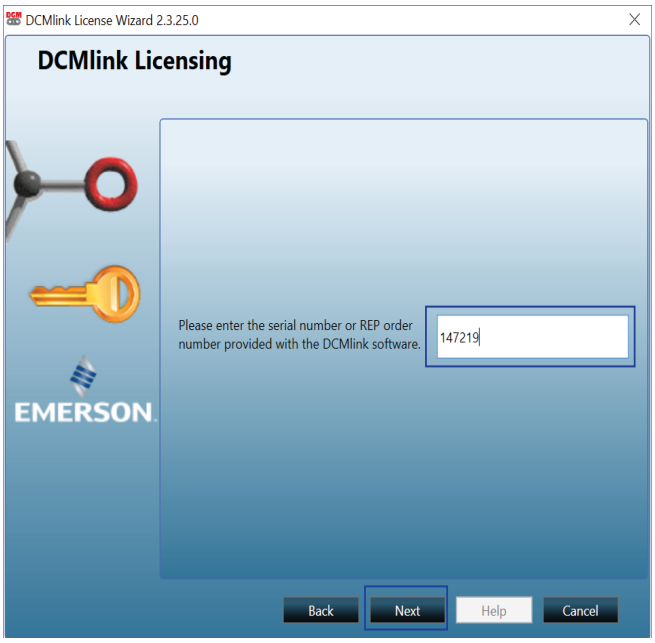
4.2.4 Select delivery method, and click **Next**.

Figure 24 Review License Information



4.2.5 Provide the serial number and REP order number (e.g. DEMO).

Figure 25 Input Serial Number / REP Order Number



4.2.6 After the registration form is completed, the information can be saved and/or printed. Click **Save** to generate a license key request file. Once complete, click **Next**.

Figure 26 Input Received License Key

4.2.7 The license request has now been sent to the DCMlink Registration Center. Click **Finish**.

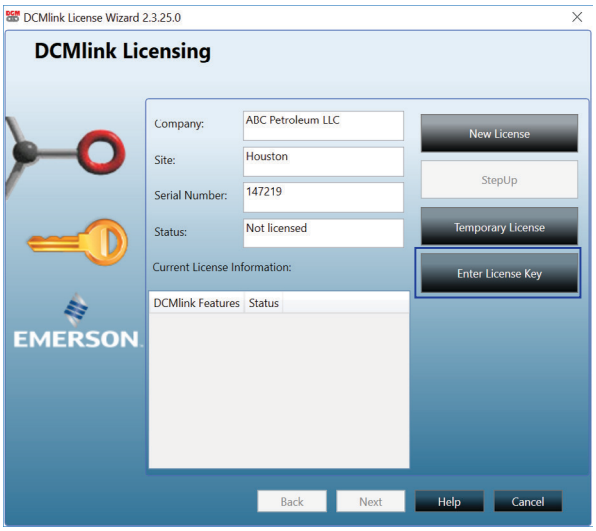
Figure 27 Finishing the License Key Request

4.2.8 To obtain license, send license registration file to the email address mentioned in the above screen. User can also send a scanned copy of the printed registration form. Or call the number shown above to obtain the license key (please have the registration code/file ready).

4.3 Activating License Key File

4.3.1 After the user receives the license key file, please re-run the License Wizard by double-clicking on DCMlink icon and, click **Enter License Key**.

Figure 28 Entering the License Key File

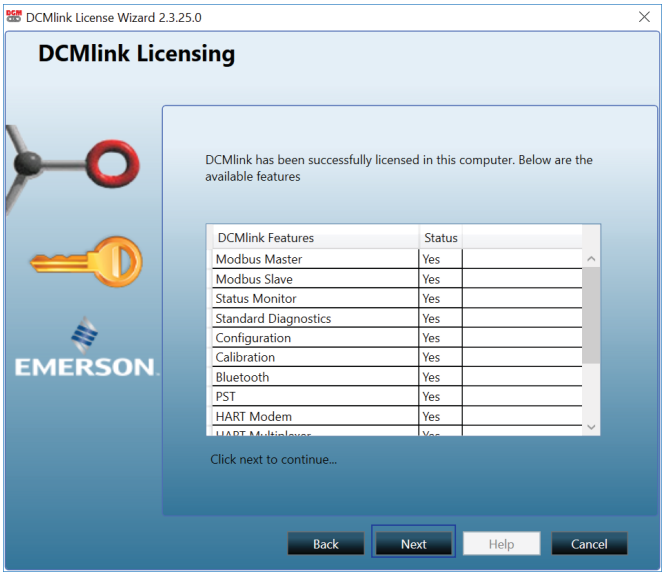


4.3.2 Click **Import from File** and select the license key file with the .lic extension. This is the license key file the user received via the DCMlink registration. Once loaded, click **Next**.

Figure 29 Import Existing License Key File

4.3.3 Once the license key has been imported, the installed DCMlink features will be shown on this window. Click **Next**.

Figure 30 Available Features Review

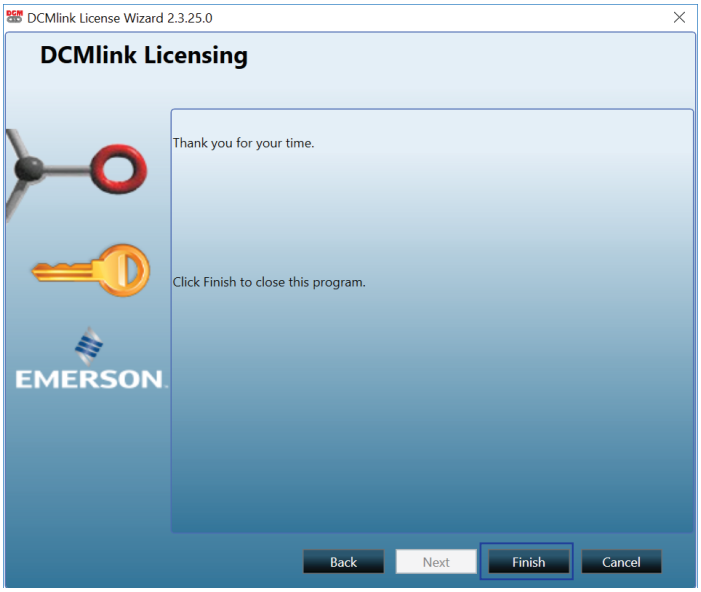


4.3.4 The following user information window will appear. If needed, the user may update the details. Click **Next**.

Figure 31 Registration Information

4.3.5 DCMlink is now successfully licensed. Click **Finish**.

Figure 32 Complete License



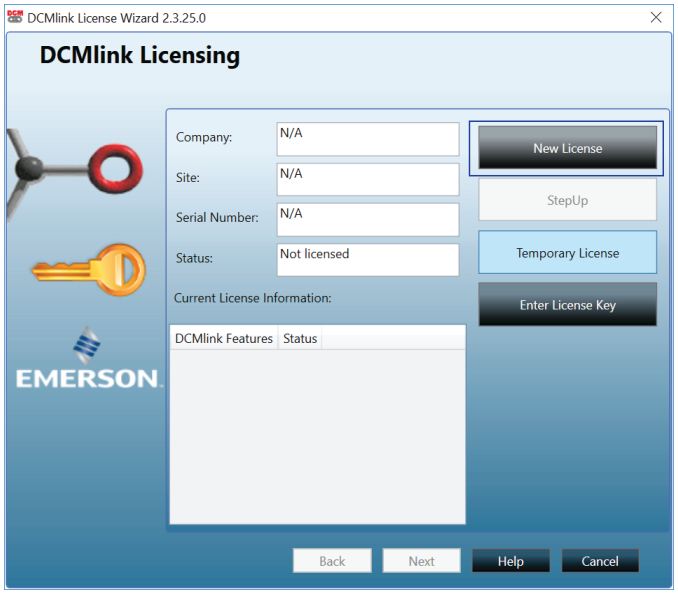
4.4 Activating Temporary License

DCMlink allows the use of a time-limited or temporary license that permits the use of certain software features for the duration of the license. Consult the following steps to activate this temporary license.

NOTE:
By default, DCMlink Standard provides unlimited and SNAP-ON for 90 days trial. After the 90 days trial period, the user needs to request a permanent license for SNAP ON.

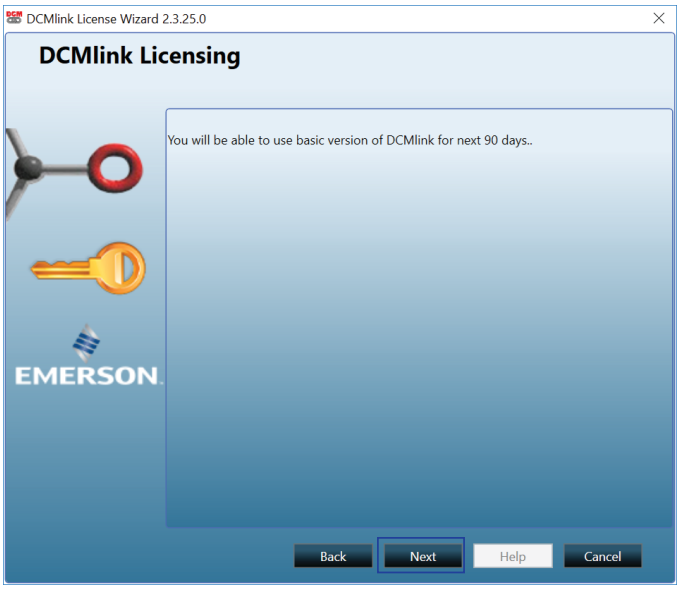
4.4.1 Locate the license directory in the provided window and click **Next**.

Figure 33 Browse for License File



4.4.2 Loading the temporary license provides the message below. Click **Next**.

Figure 34 Temporary License Loaded

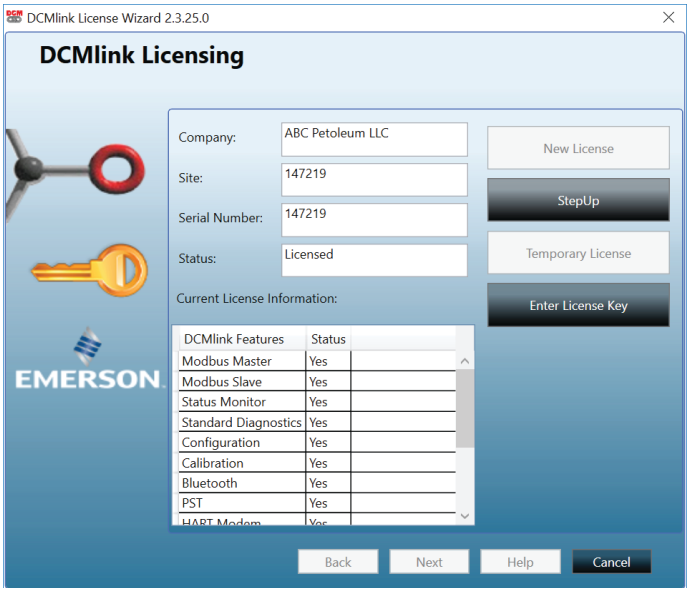


4.4.3 Click **Finish** after the process is completed.

Figure 35 Temporary License is Complete

4.4.4 Activated software features are shown in the window below:

Figure 36 Software Features Listing



Section 5: Get Started with DCMlink

5.1 How to Launch DCMlink

After successfully installing DCMlink, the program may be started by following the steps below:

5.1.1 Click (Windows) **Start**.

5.1.2 Click **All Programs.**

5.1.3 Click **Emerson Process Management.**

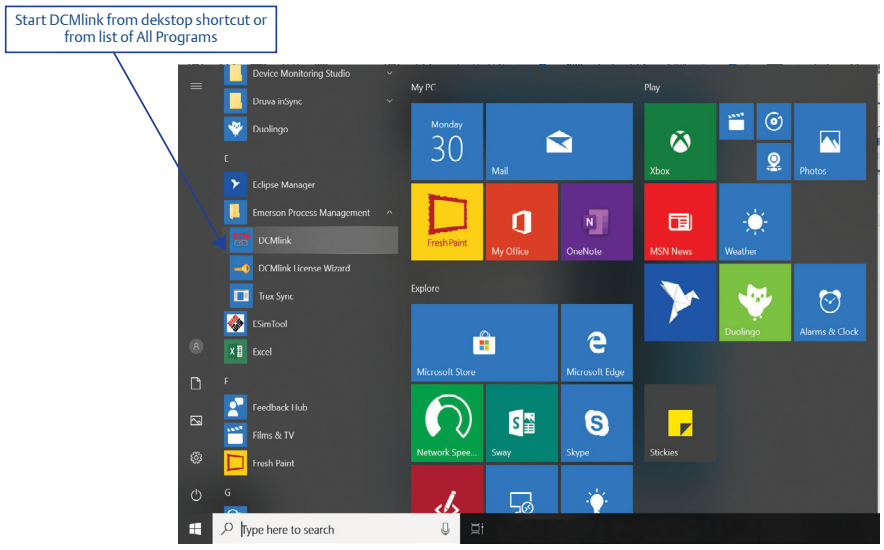
5.1.4 Click **DCMlink** folder.

5.1.5 Click **DCMlink** icon.

NOTE:
Alternatively, DCMlink can be started by just double-clicking the desktop icon during the installation.

Figure 37 DCMlink Icon

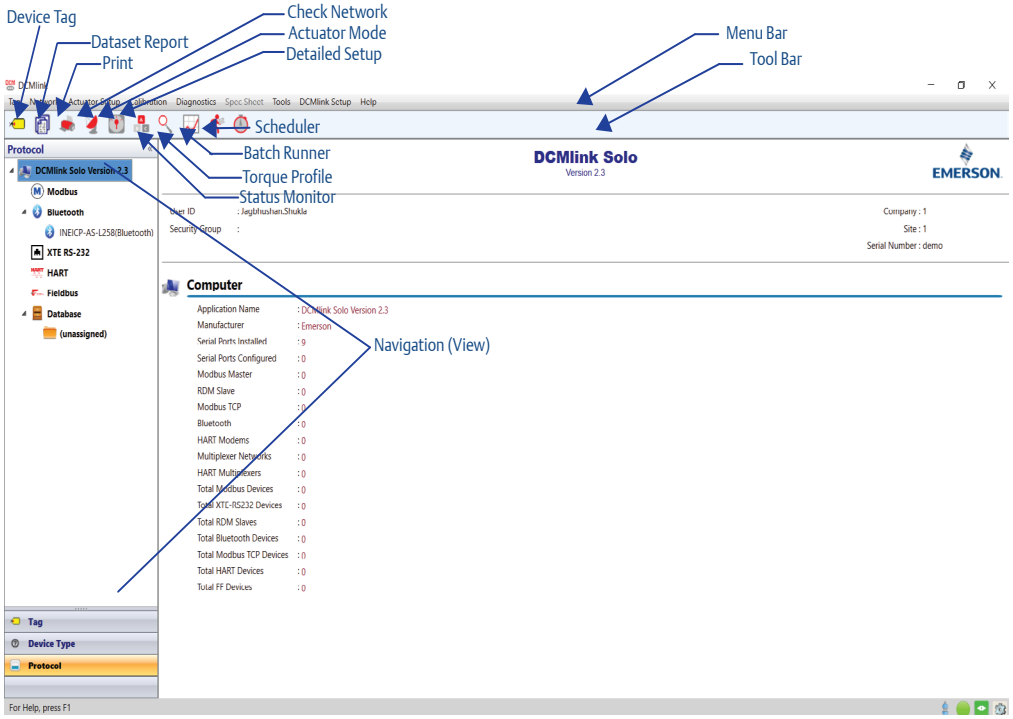
Figure 38 Starting DCMlink



5.2 Home Screen

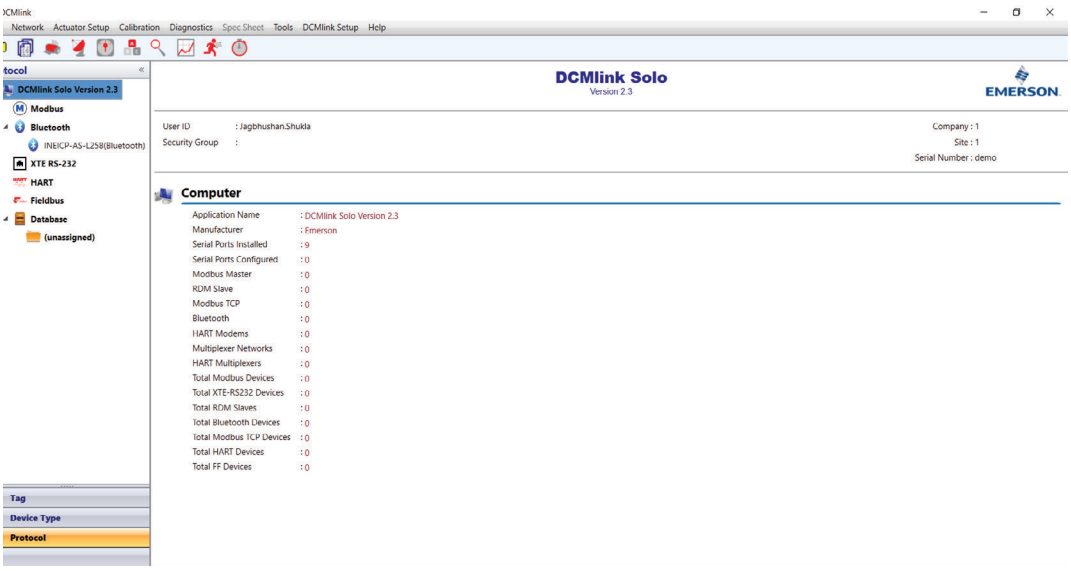
Once DCMlink is launched, the screen shown below is displayed. In this example, the tool bar items have been labelled.

Figure 39 DCMlink Starting Window (User Interface Legend)



5.3 Software Information

Figure 40 DCMlink Start Screen

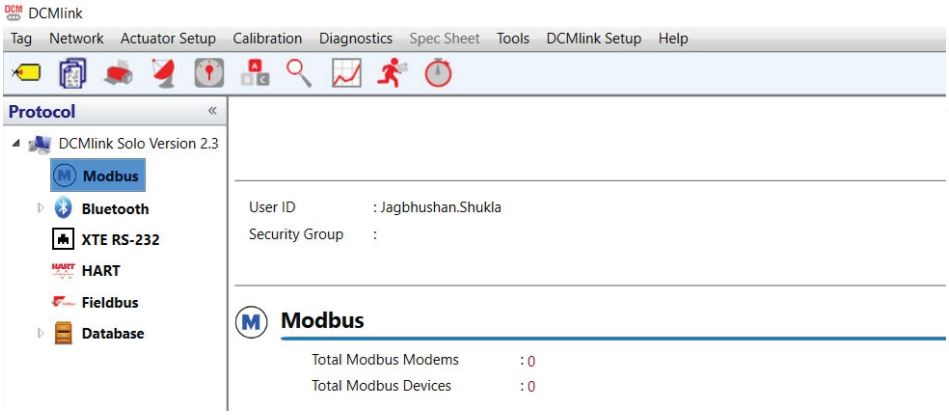


- **Application Name:** Lists the software name and version.
- **Manufacturer:** Shows the company that developed and published the DCMlink.
- **Serial Ports Installed:** Lists the number of detected serial ports.
- **Serial Ports Configured:** Lists the number of ports added in DCMlink.
- **Modbus Master:** Lists the number of ports added in Modbus Master.
- **RDM Slave:** Lists the number of devices configured for RDM Slave.
- **Modbus TCP:** List the number of detected Modbus TCP.
- **Bluetooth:** Lists the number of Bluetooth devices.
- **HART Modems:** Lists the number of detected HART modems.
- **HART Multiplexers:** Lists the number of detected HART multiplexers.
- **Total Modbus Devices:** Lists the number of detected Modbus multiplexers.
- **Total XTE RS-232 Devices:** List the total number of devices connected over XTE RS-232.
- **Total RDM Slaves:** Lists the number of total RDM slaves.
- **Total Bluetooth Devices:** Lists the total number of detected Bluetooth devices.
- **Total HART Devices:** Lists the total number of detected HART devices.
- **Total Fieldbus Devices:** Lists the total number of FOUNDATION™ fieldbus devices.

5.4 Network Interface Connection

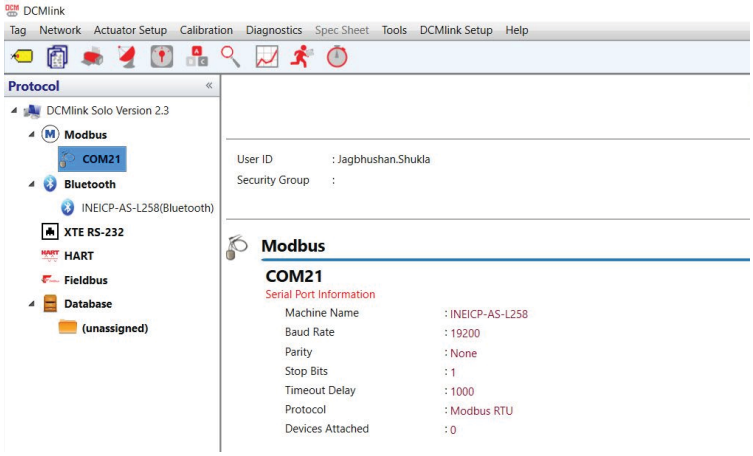
5.4.1 The network interface screen shows the selected protocol's starting display.

Figure 41 Modbus Network Start Screen



5.4.2 For serial port Information, select the configured COM Port in the navigation bar. This shows information related to the host computer and connected devices.

Figure 42 Serial Port Information

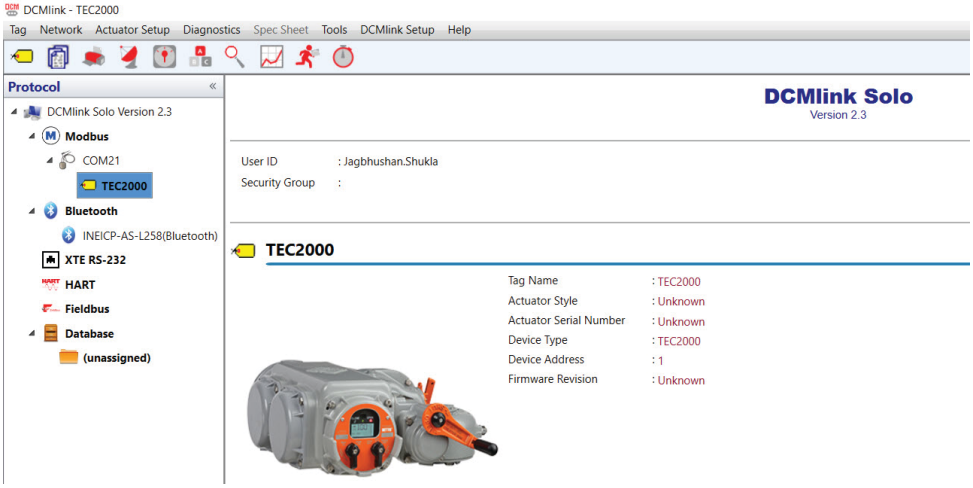


- **Machine Name:** Lists the name of the computer running DCMlink.
- **Baud Rate:** Shows the baud rate configured during the creation of the port.
- **Parity:** Shows the parity (if any).
- **Stop Bits:** Lists the stop bits configured during the creation of the port.
- **Timeout Delay:** Shows the delay set in communication before a timeout is recorded.
- **Protocol:** Shows the chosen protocol for the created port.
- **Devices Attached:** Lists the number of devices detected in the port.

5.5 Connected Device Information

5.5.1 Device information display shows all the information from a detected actuator tag.

Figure 43 Device Information



- **Tag Name:** Lists the tag name of the selected actuator tag.
- **Actuator Style:** Shows the type of actuator detected.
- **Actuator Serial Number:** Displays the actuator serial number.
- **Device Type:** Indicates the model of the selected actuator.
- **Device Address:** Lists the port address of the selected actuator.
- **Firmware Revision:** Shows the firmware revision of the selected actuator.

Section 6: Configuring Preferences

6.1 Configuring Communications in Modbus

There are 3 different sections for **Modbus Protocol**:

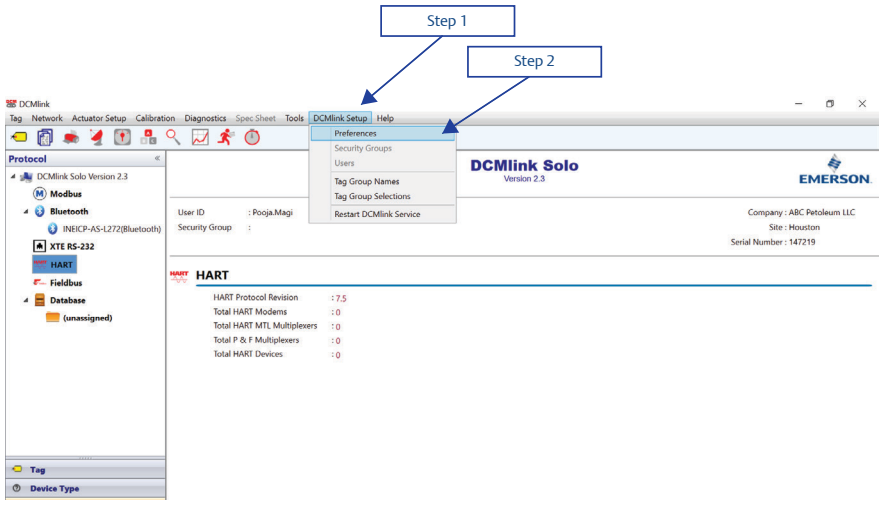
- Modbus Master
- RDM Slave
- TCP

6.1.1 Configuring Communications in Modbus Master

6.1.1.1 From the menu bar, click **DCMlink Setup.**

6.1.1.2 Click **Preferences.**

Figure 44 Preferences in Menu Bar



6.1.1.3 On **Preferences** window, click **Communication tab**.

6.1.1.4 Click preferred protocol and click **Add**.

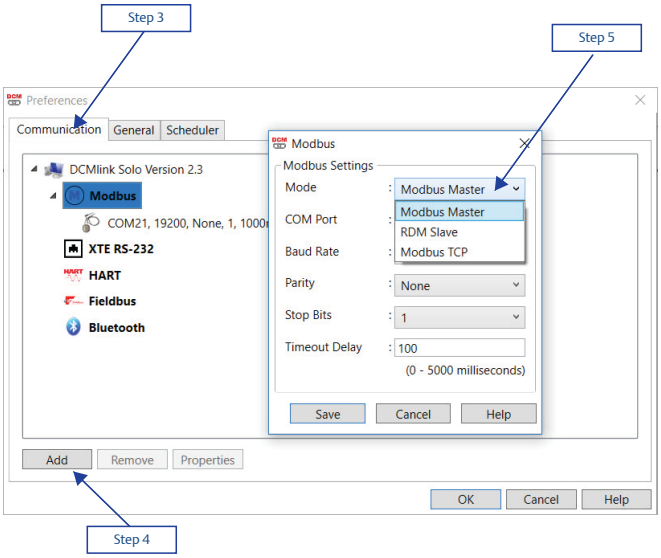
6.1.1.5 Click **Mode.**

— There are three different sections for Modbus Master/RDM Slave/TCP.

NOTE:

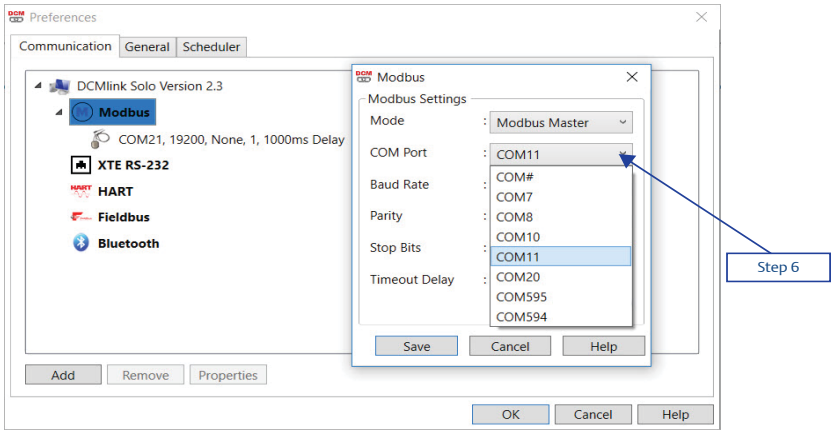
Modbus TCP is based on the DCMlink license that user has.

Figure 45 Steps 3, 4, and 5



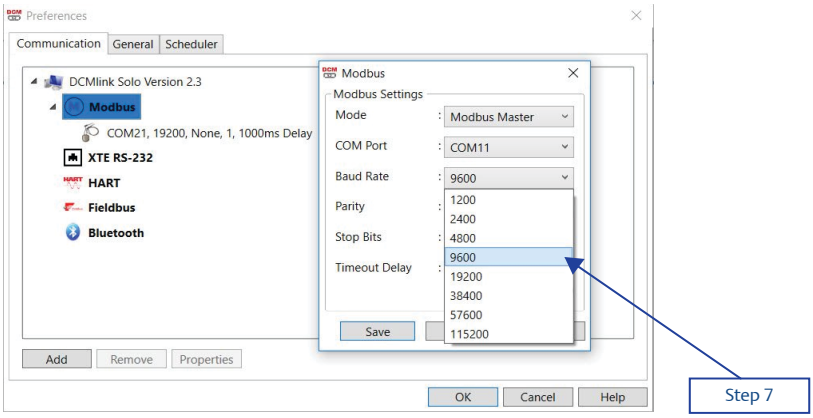
6.1.1.6 Select **COM Port** connected to the actuator(s).

Figure 46 COM Port Selection



6.1.1.7 Select **Baud Rate.**

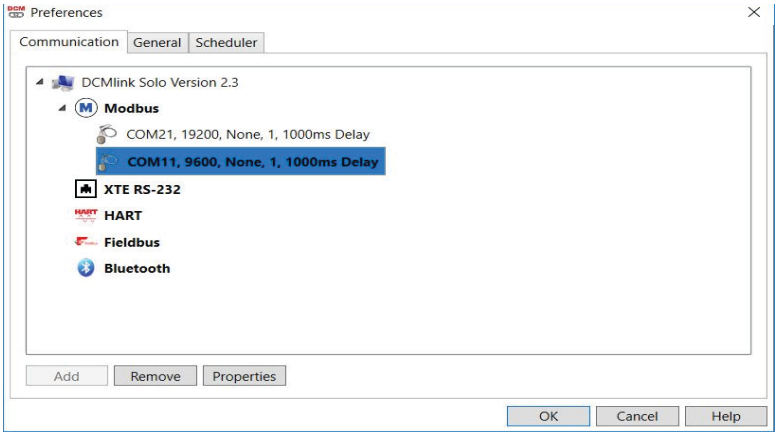
Figure 47 Baud Rate Selection



DCMlink supports following Baud Rates: 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200.

6.1.1.8 Click **Save (**if there are no other preferred settings).

Figure 48 COM Port is Now Saved



6.1.1.9 On Protocol Selection View (navigation pane), right-click on the newly created **COM#** Port.

6.1.1.10 Click on **Scan For New Devices.** Details on Network Scan can be found in Section 8.1.

NOTE:

- COM port settings shall match with device(s)
  - The Baud rate, parity, Stopbits shall match.
  - All devices connected to the same COM port shall use the same settings.
  - Use multiple COM ports incase if different settings are required.

6.1.2 Configuring Communications in RDM Mode

The DCMlink fully supports the RDM slave mode connection with TEC2000 actuator.

6.1.2.1 For this, select the serial COM port number and select timeout delay as per actuator COM port settings.

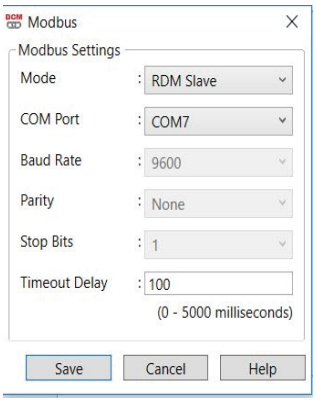
NOTE:

RDM Slave Mode is only available in TEC2000 actuator. DCMlink works with below settings in order to connect with TEC2000 in RDM mode.

- Baud Rate: 9600
- Parity: None
- Stop Bits: 1

These parameters are fixed and cannot be modified by the user.

Figure 49 Modbus RDM Slave



6.1.2.2 Live Communication Viewer details are covered in Section 12.2.

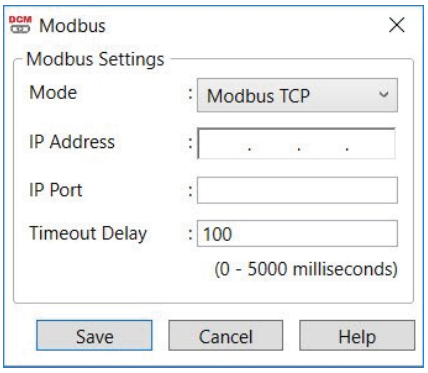
NOTE:

Once DCMlink is connected to TEC2000 in RDM Slave Mode it keeps polling even if the user closes status monitor/detailed setup, etc. DCMlink offers a provision for the user to enable or disable RDM polling in the background.

6.1.3 Configuring Communications in Modbus TCP/IP

In Preference Settings, select the mode as Modbus TCP and enter the IP address and port number, timeout delay as per actuator port setting.

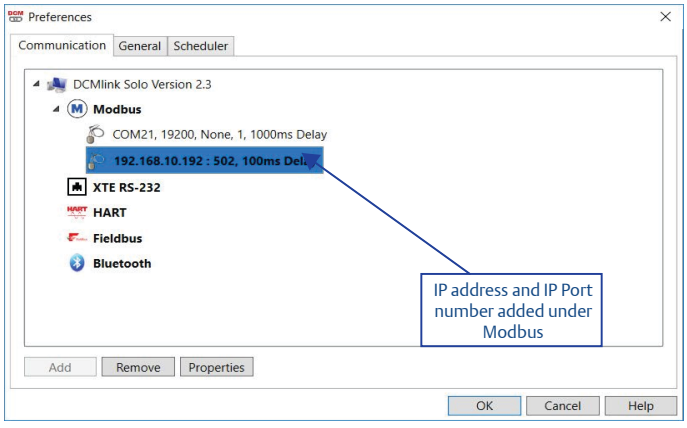
Figure 50 Modbus TCP



DCMlink will work with below settings in order to connect with Modbus TCP mode:

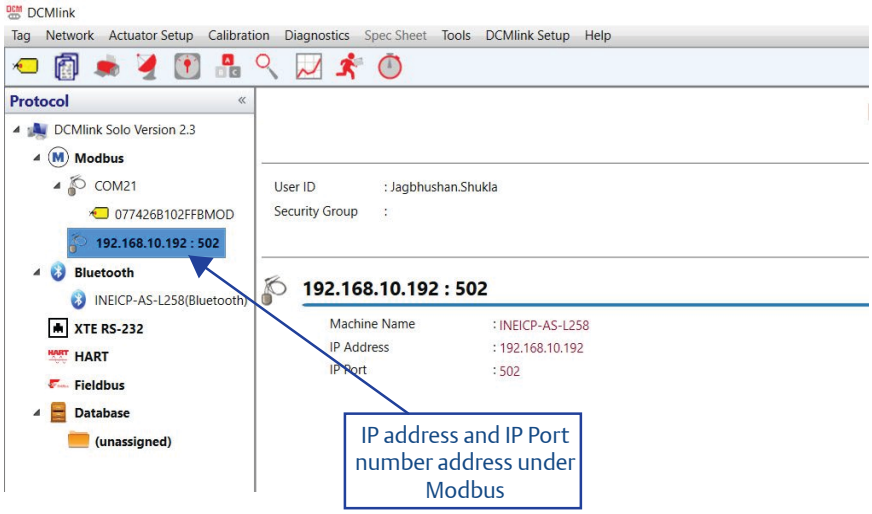
- IP Address-Standard IP address format
- IP Port- Standard IP port number format
- Timeout Delay (Text Box)- 0-5000 (default: 100)

Figure 51 Address Indication



6.1.3.1 After the IP address and IP Port number added under Modbus in **Navigation Pane** will be displayed.

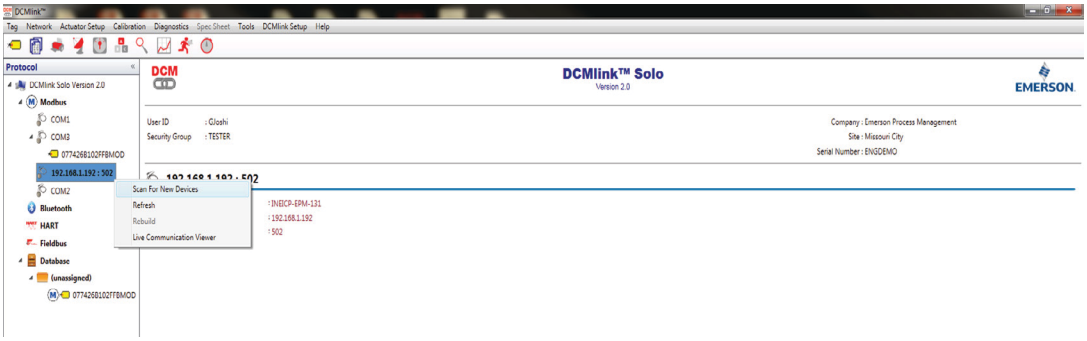
Figure 52 Address Indication (2)



6.1.4 To scan and identify a device connected to the Modbus TCP/IP, go through following steps:

6.1.4.1 Right-click on IP port address and select **Scan for New Devices**.

Figure 53 Scan for New Devices



6.1.4.2 On the **Modbus Network Scan** window, observe the start IP address, End IP address, and Port number which is similar to configured IP address under Modbus Tag in **Navigation Pane**.

6.1.4.3 Click **Start**.

6.1.4.4 Once the device is found, click **Stop**, followed by **Close**.

Figure 54 Device Tag

6.1.4.5 Notice that the device tag appears on the Navigation Pane.

6.1.4.6 Live Communication Viewer details are covered in Section 12.2.

NOTE:

In order to use Modbus TCP/IP, the user must have a CAM209/09 card.
Default IP Address for CAM Card is: 192.168.1.192 and IP Port is: 502.

6.2 Configuring Communication in XTE RS-232

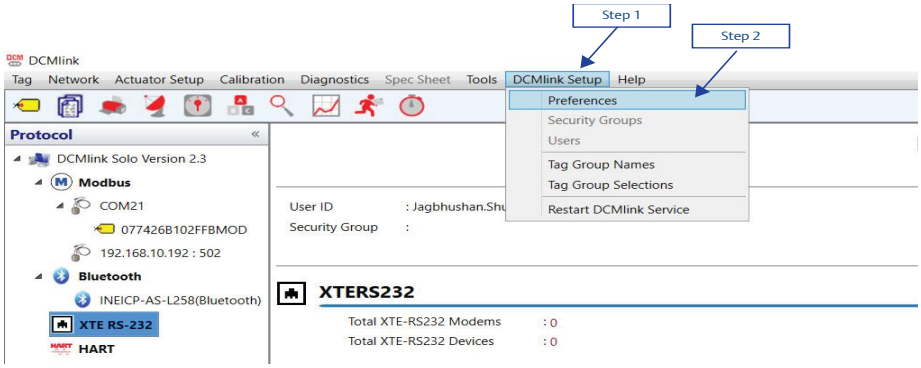
This configuration is used in connecting XTE3000 over RS-232 protocol.

6.2.1 Configuring Communications in XTE RS-232.

6.2.1.1 From the menu bar, click **DCMlink Setup**.

6.2.1.2 Click **Preferences**.

Figure 55



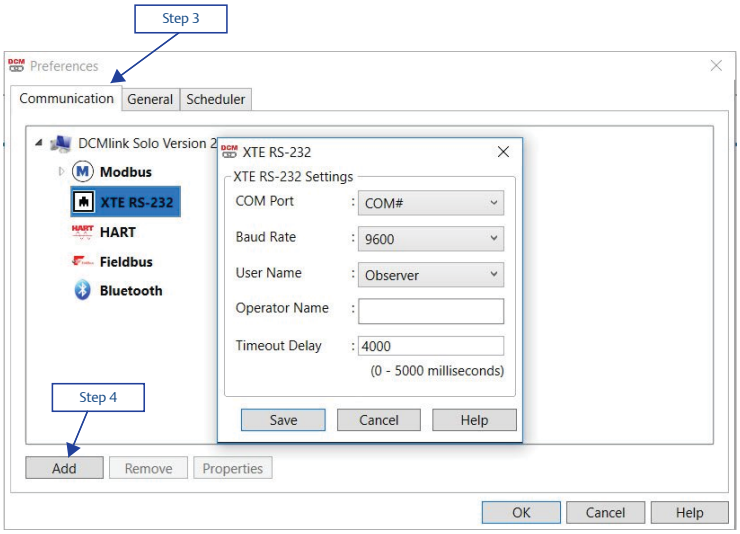
6.2.1.3 On Preferences window, click **Communication tab**.

6.2.1.4 Click preferred protocol and click **Add**.

NOTE:

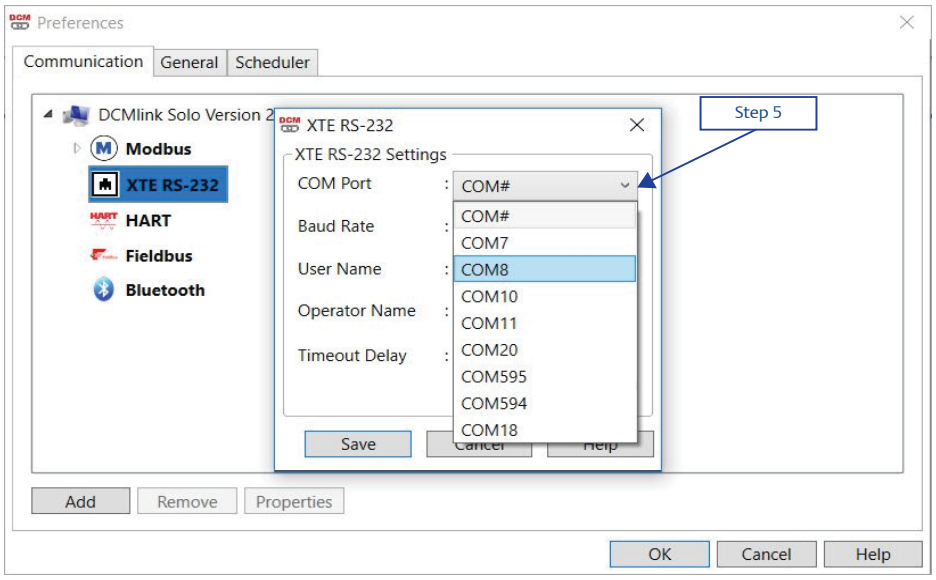
XTE RS-232 is based on the DCMlink license that user has.

Figure 56 Steps 3 and 4



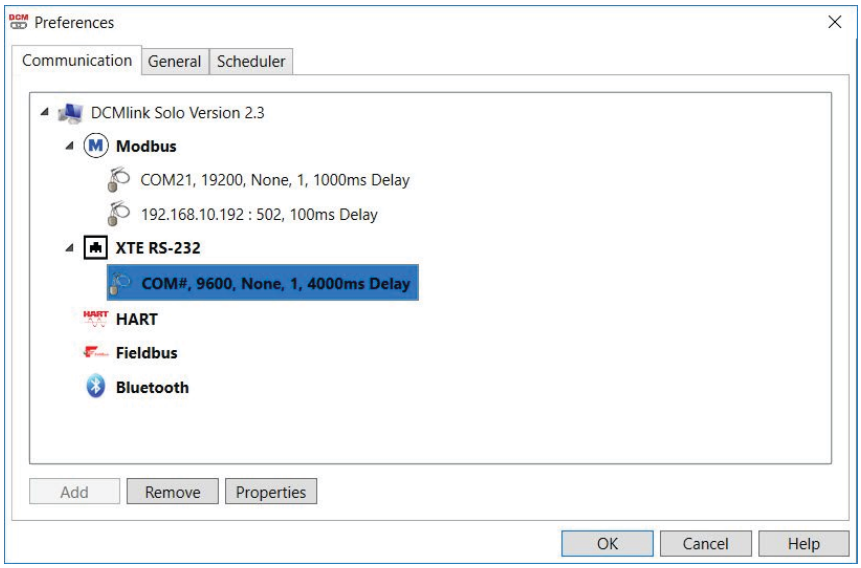
6.2.1.5 Select **COM Port** connected to the actuator(s).

Figure 57



6.2.1.6 Select **Baud Rate**.

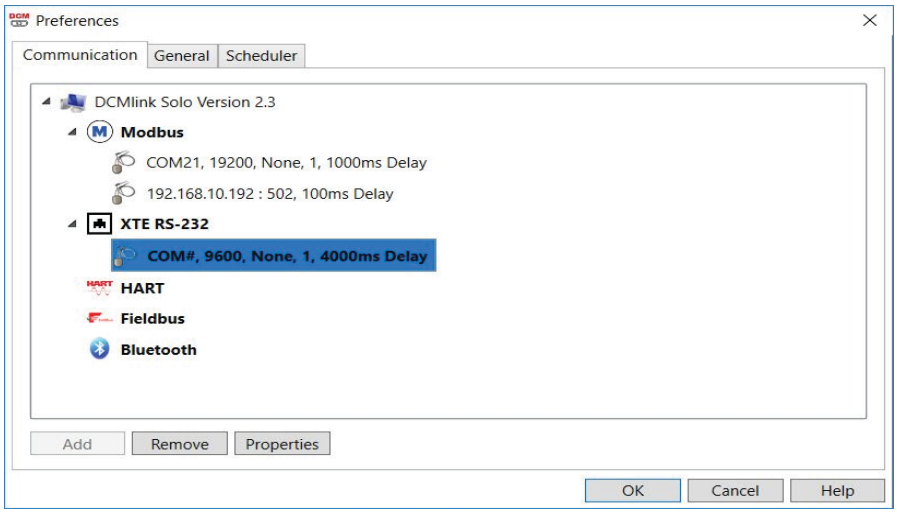
Figure 58 Baud Rate Selection



DCMlink supports following Baud Rates: 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200.

6.2.1.7 Click **Save** (if there are no other preferred settings).

Figure 59 COM Port is Now Saved



6.2.1.8 On Protocol Selection View (navigation pane), right-click on the newly created **COM#** Port.

6.2.1.9 Click on **Scan for New Devices**. Details on Network Scan can be found in Section 8.1.

6.3 Configuring Communications in Bluetooth

DCMlink allows the detection and configuration of devices connected via Bluetooth. Using the Bluetooth device scanner in the navigation bar, the user can perform a device scan by following the steps and screenshots shown below.

NOTE:

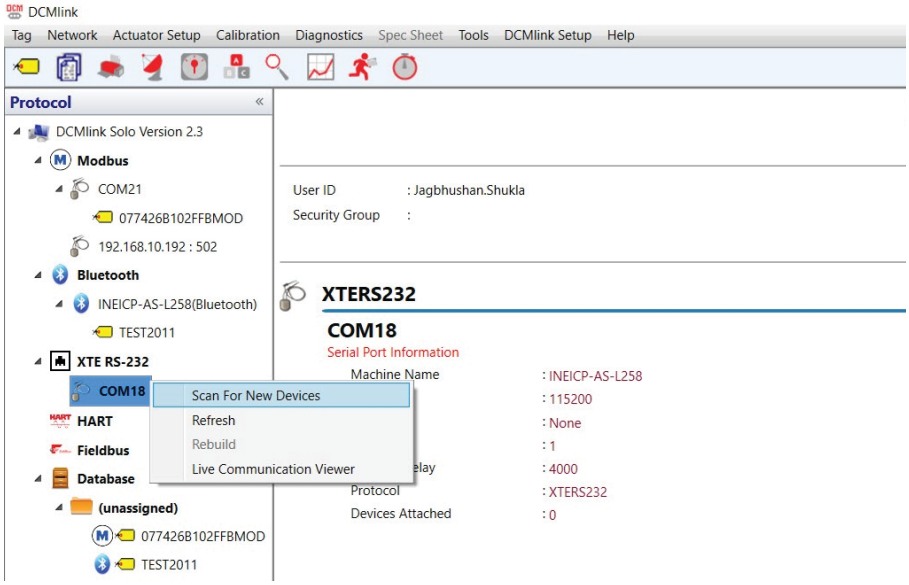
- There is no setting required for Bluetooth, under preferences.
- The user needs to have Bluetooth enabled on their computer to allow the use of this function.
- The user can check if their computer has Bluetooth function enabled or not. If the bluetooth function is not present, please consult your system administrator or IT.

6.3.1 On the Navigation pane, click **Scan For New Devices**. Details on this can be found in Section 8.1.

NOTE:

- COM port settings shall match with device(s).
  - The Baud rate shall match. Only in case of XTE3000 if selected Baud rate does not match then it automatically try with next Baud rate.
  - User Name & Operator Name should be selected.
  - All devices connected to the same COM port shall use the same settings.

Figure 60 Scan for New Devices



6.3.1.1 On the **XTE RS-232 Network Scan** window, observe the Port number which is similar to configured COM Port under XTE RS-232 Tag in **Navigation Pane**.

6.3.1.2 Click **Start**.

6.3.1.3 Once the device is found, click **Stop**, followed by **Close**.

6.3.1.4 Notice that the device tag appears on the Navigation Pane.

6.3.1.5 Live Communication Viewer details are covered in Section 12.2.

6.4 Configuring Communications in HART

There are 4 different sections for **HART Protocol**:

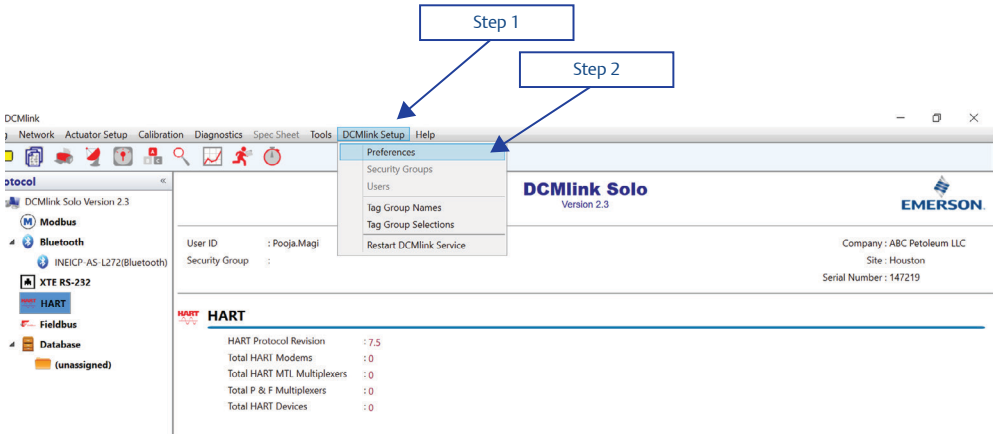
- HART Modem
- HART MUX (Multiplexer)
- Wireless Network
- DeltaV Network

6.4.1 HART Modem

6.4.1.1 From the menu bar, click **DCMlink Setup**.

6.4.1.2 Click **Preferences**.

Figure 61 Preferences in Menu Bar

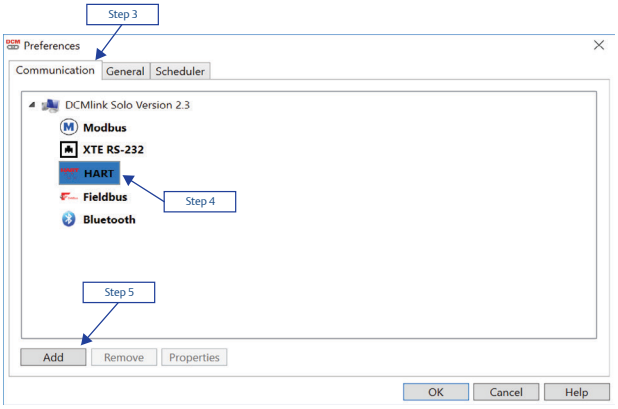


6.4.1.3 On the **Preferences** window, click **Communication tab**.

6.4.1.4 Click **HART**.

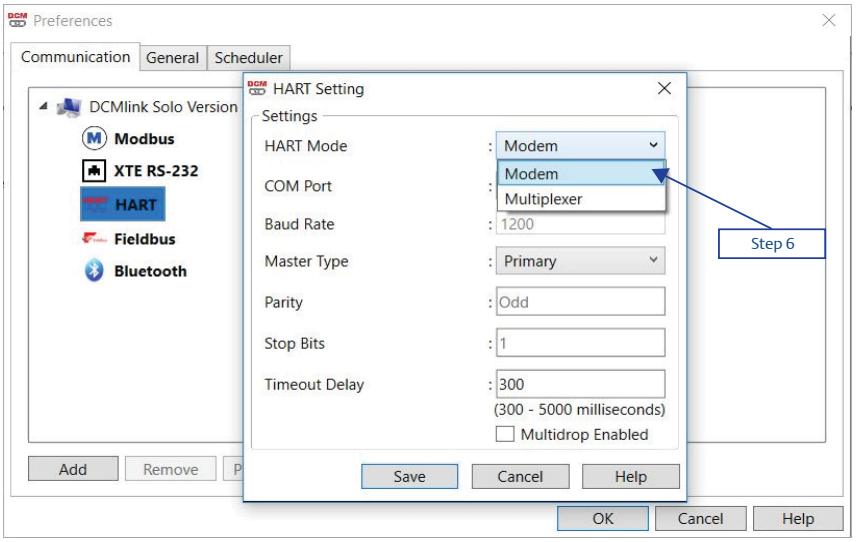
6.4.1.5 Click **Add**.

Figure 62 Communication with HART Mode



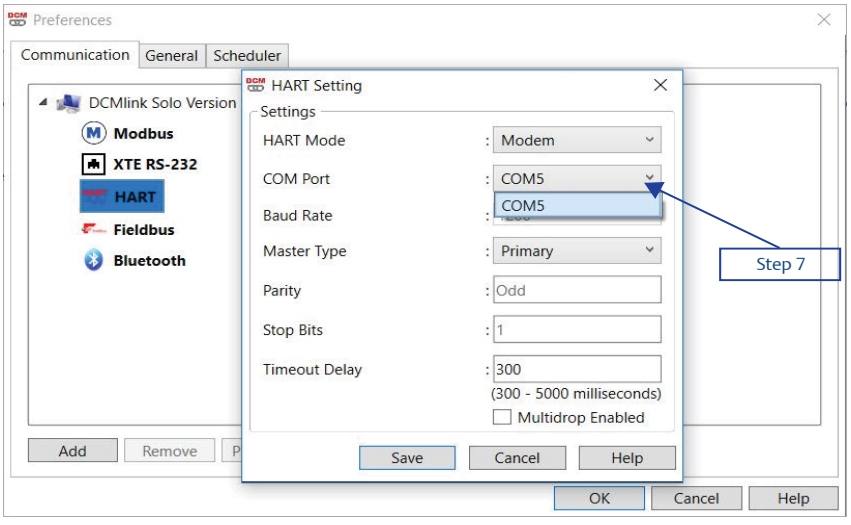
6.4.1.6 Click on **HART Mode** and select option **Modem.**

Figure 63 Configuring HART Port through Modem



6.4.1.7 Select **COM Port** connected to the actuator.
COM port listed will be only the HART Modems connected to computer.

Figure 64 COM Port Selection

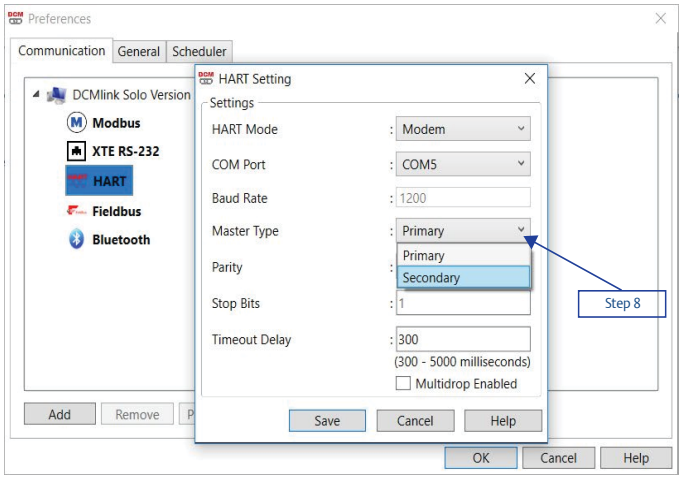


6.4.1.8 Baud rate is fixed at 1200.

6.4.1.9 **Select Master Type**:

- **Primary:** Primary master is communicating device, such as HART capable control system permanently wired to field instrument.
- **Secondary:** Secondary master is not permanently wired to field instrument. A hand-held communicator or a HART modem attached to computer running DCMlink software typically communicates as secondary.

Figure 65 Master Type Selection

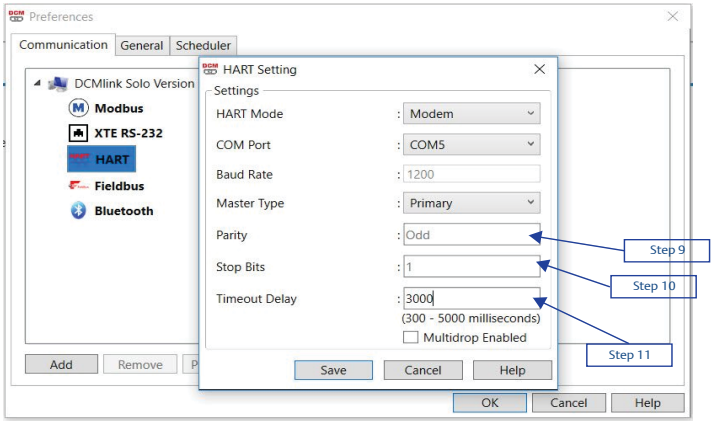


6.4.1.10 Parity is fixed at **Odd**.

6.4.1.11 Stop Bits is fixed at **1**.

6.4.1.12 **Timeout delay**: Should be user editable text box the default value should be **300 ms** and the range should be **300 - 5000 ms.**

Figure 66

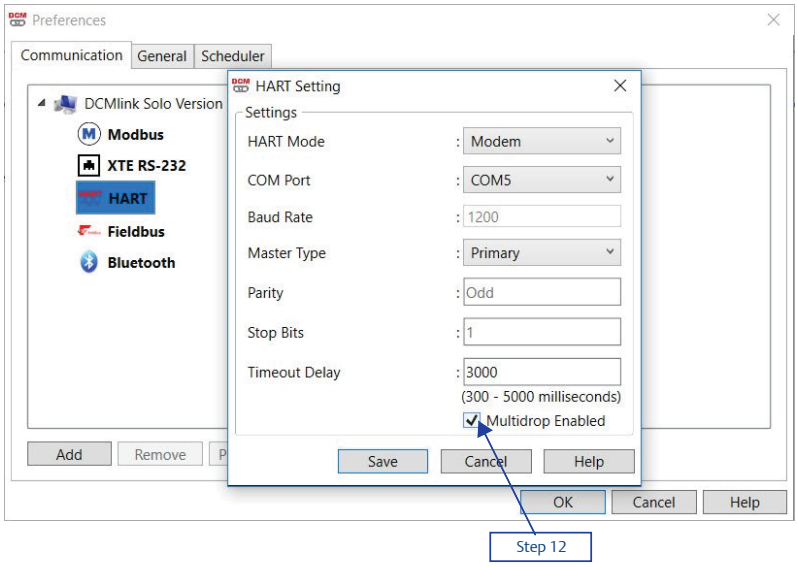


6.4.1.13 **Multidrop Enabled**: If selected should enable Multidrop otherwise it should be point to point communication with the address range of 0 to 63.

NOTE:

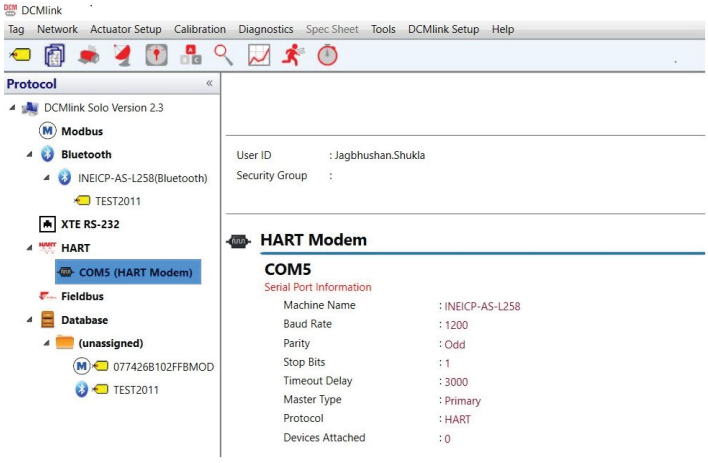
In Multidrop Mode, current is fixed at 4 mA.

Figure 67



6.4.1.14 Click **Save**.

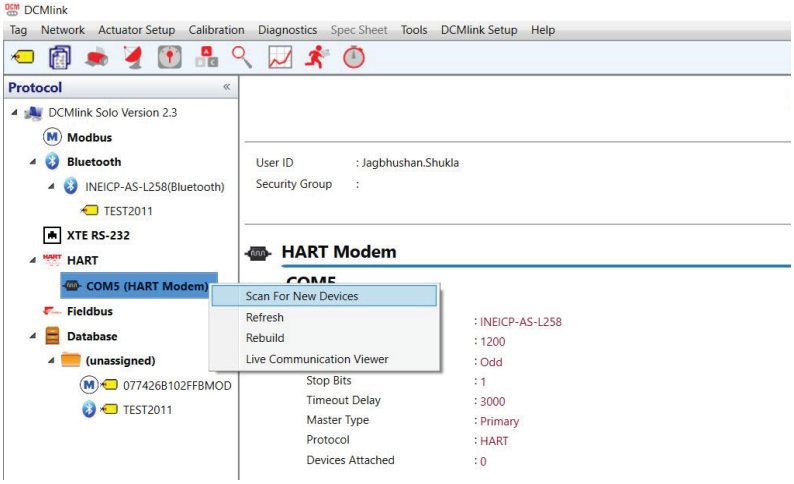
Figure 68 COM Port is Now Saved



6.4.1.15 On **Protocol Selection View** (navigation pane), right-click on the newly created **COM#** Port.

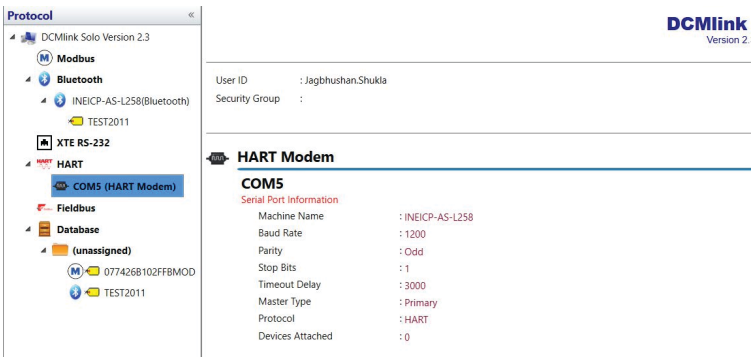
6.4.1.16 Click **Scan For New Devices.**

Figure 69 Scan for New Devices



6.4.1.17 View after HART Modem configuration. Details on Network Scan can be found in Section 7.5.

Figure 70 View after HART Modem configuration.

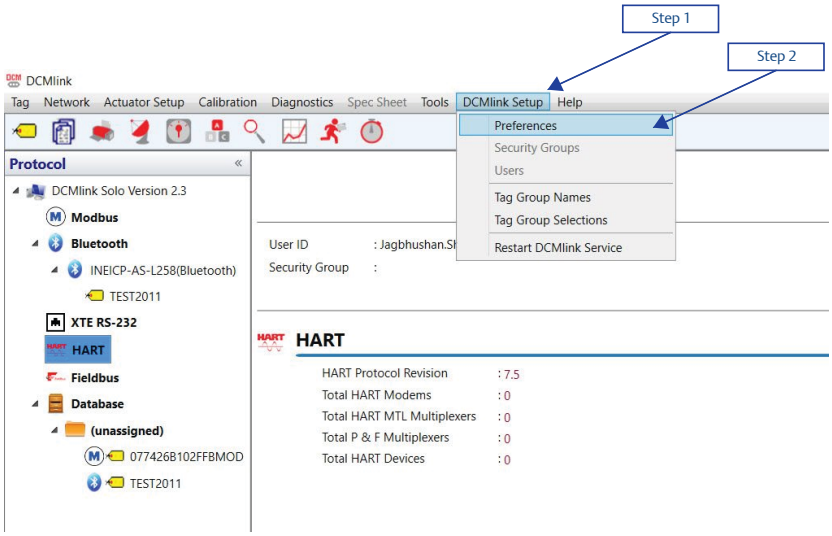


6.4.2 **HART MUX** (Multiplexer) Setting

6.4.2.1 From the menu bar, click **DCMlink Setup.**

6.4.2.2 Click **Preferences.**

Figure 71 Preferences in Menu Bar

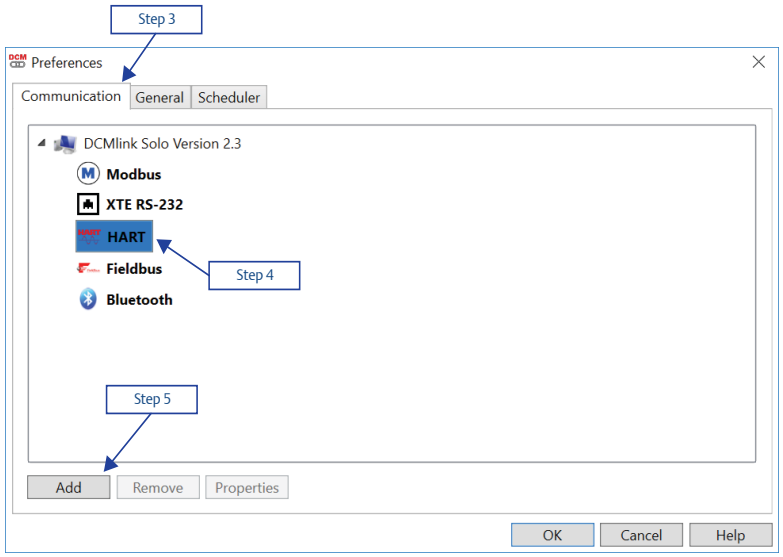


6.4.2.3 On **Preferences** window, click **Communication tab**.

6.4.2.4 Click on the **HART** protocol.

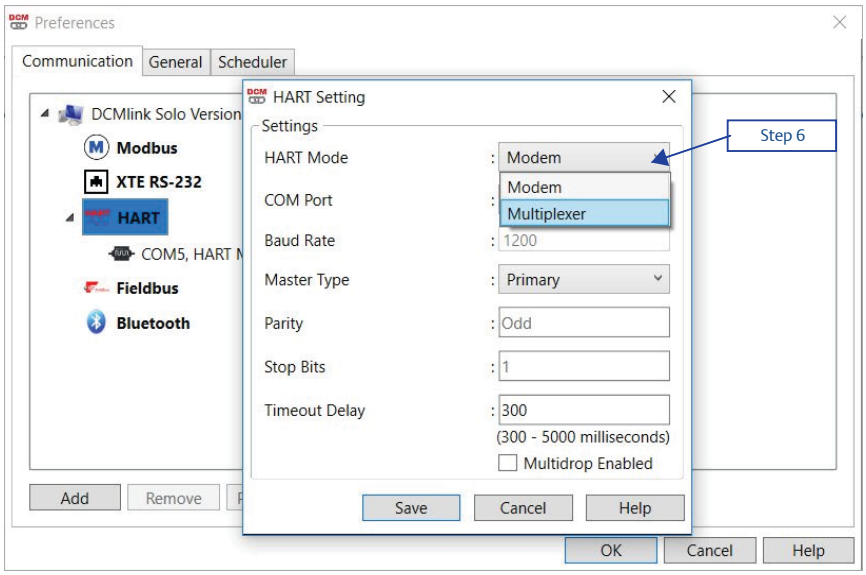
6.4.2.5 Click **Add**.

Figure 72 Communication with HART Mode



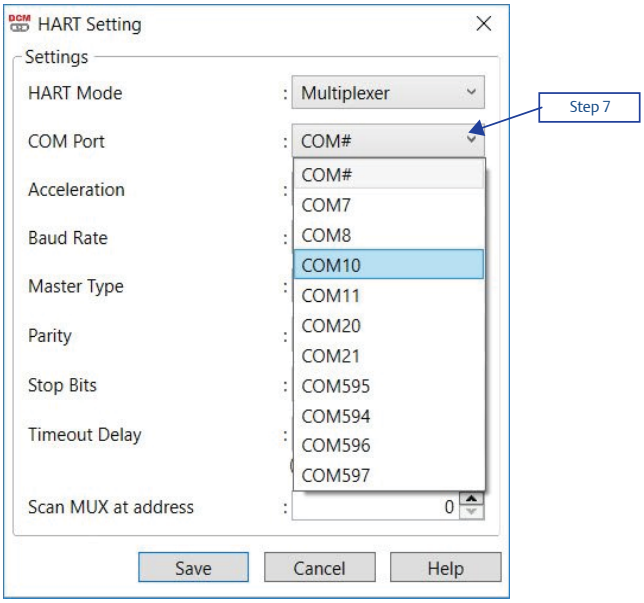
6.4.2.6 Click **HART Mode** and select option **Multiplexer.**

Figure 73 Configuring HART Port through Multiplexer



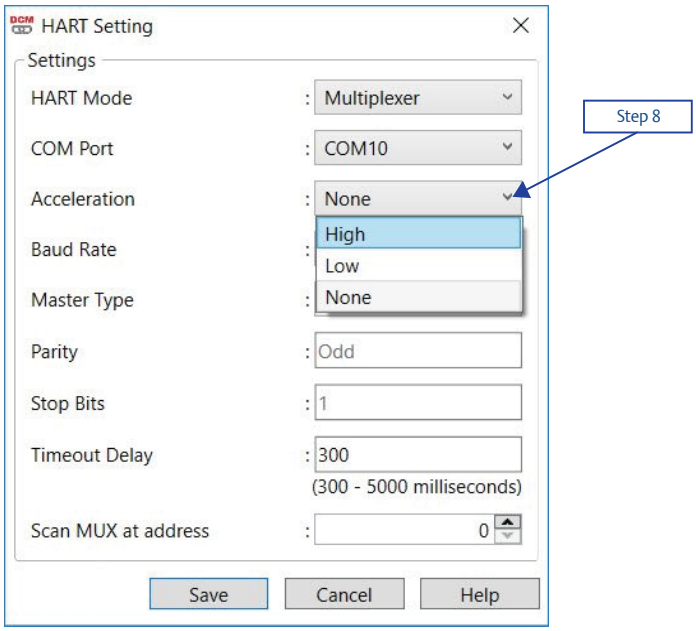
6.4.2.7 Select **COM Port** connected to the actuator.
COM Port is generated because of RS485 Modem.

Figure 74 COM Port selection



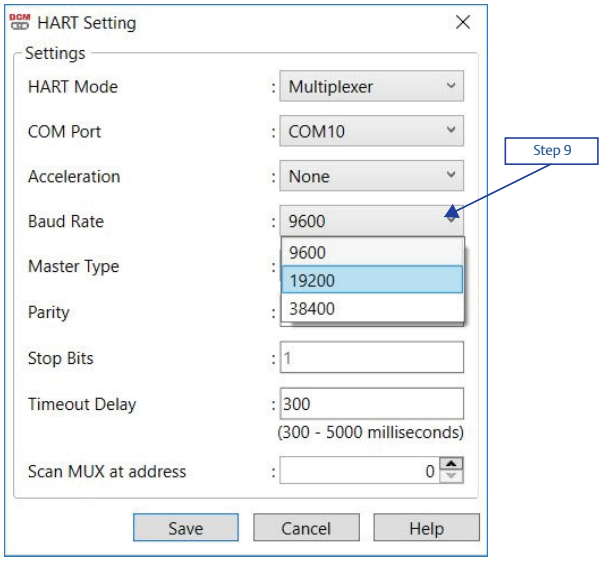
6.4.2.8 Select **Acceleration.**
High, Low, None

Figure 75 Acceleration selection



6.4.2.9 **Baud rate**:
Available Baud rate is 9600, 19200, or 38400.

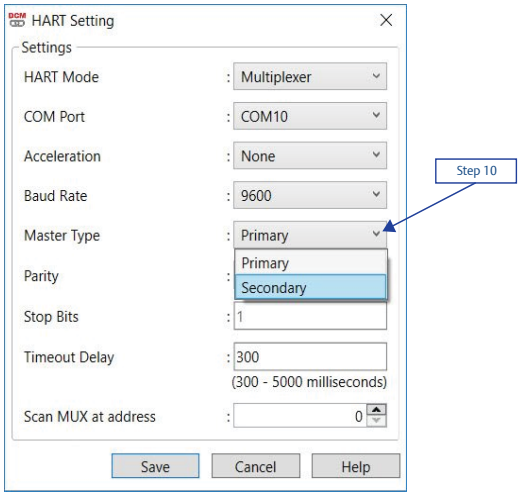
Figure 76 Baud Rate selection



6.4.2.10 Select Master Type:

- **Primary:** Primary master is communicating device, such as HART capable control system permanently wired to field instrument.
- **Secondary:** Secondary master is not permanently wired to field instrument. A hand-held communicator or a HART modem attached to computer running DCMlink software typically communicates as secondary.

Figure 77 Master Type selection

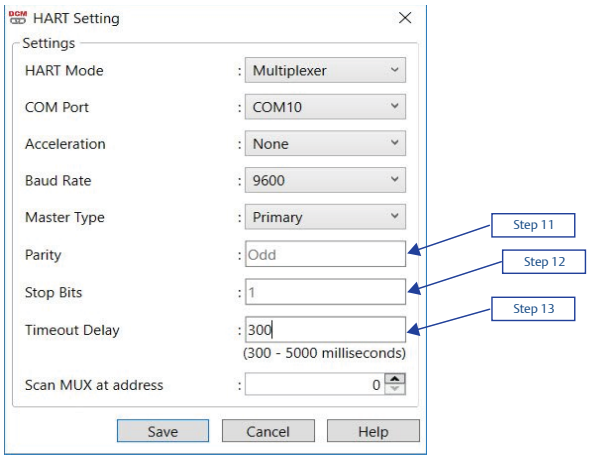


6.4.2.11 Parity is fixed at **Odd**.

6.4.2.12 Stop Bits is fixed at 1.

6.4.2.13 Should be user editable text box the default value should be **300 ms** and the range should be **300 - 5000 ms.**

Figure 78

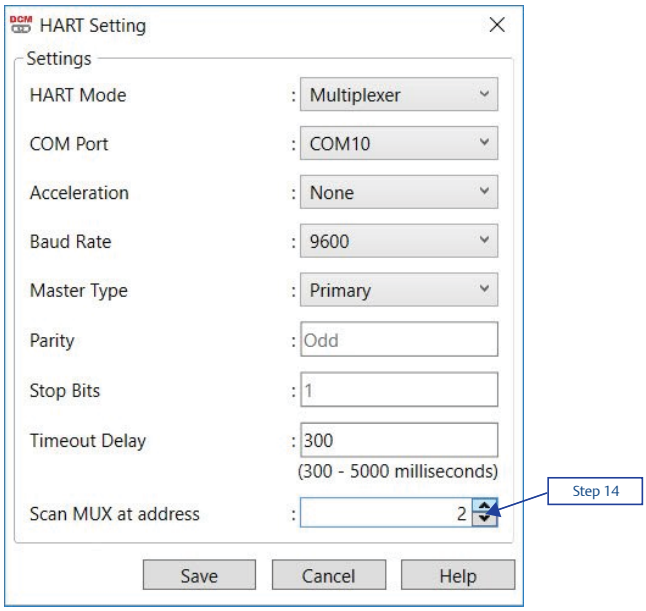


6.4.2.14 Scan for Multiplexer at address range. Add address range from 0 to 63.

NOTE:

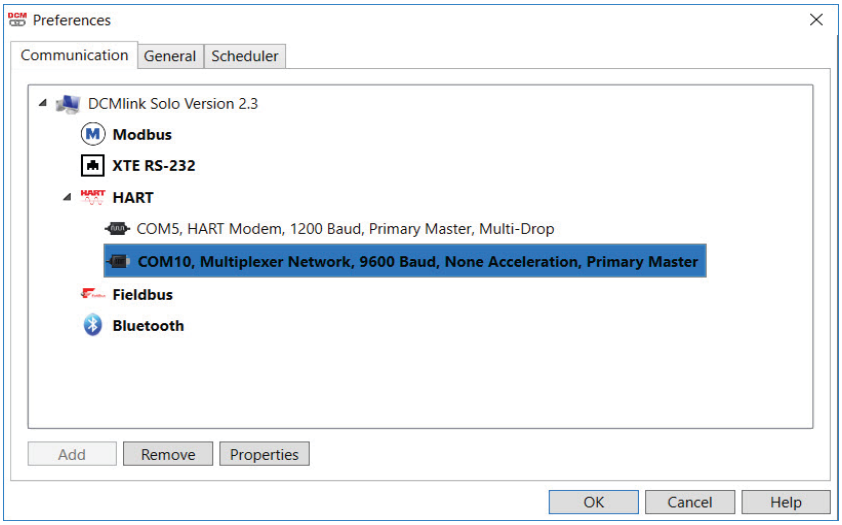
The Multiplexer address is used by DCMlink internally while detecting the connected Multiplexer in Network.

Figure 79



6.4.2.15 Click **Save**.

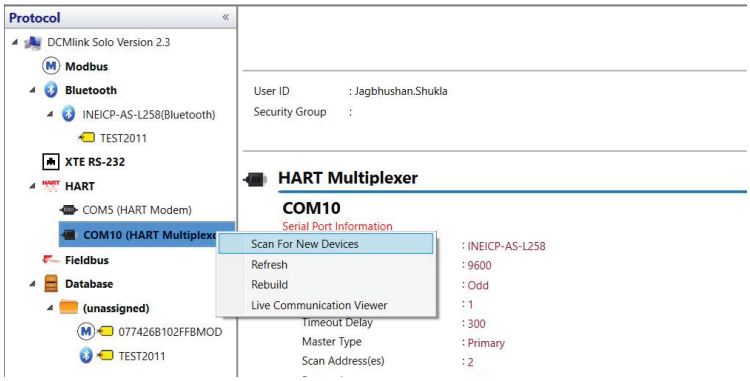
Figure 80 COM Port saved



6.4.2.16 On **Protocol Selection View** (navigation pane), right-click on the newly created **COM# Port.**

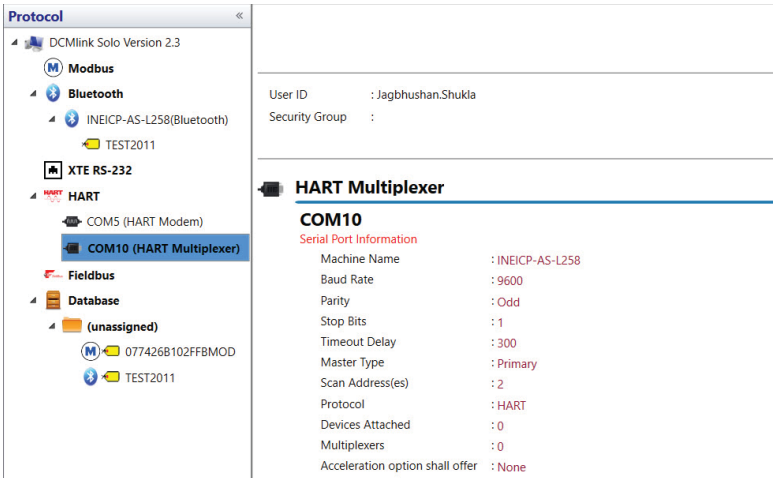
6.4.2.17 Click **Scan For New Devices.**

Figure 81 Scan for New Devices



6.4.2.18 View after HART MUX is configured. Details on Network Scan can be found in Section 7.5.

Figure 82 View after HART MUX configuration



6.4.3 **Wireless Network**: This can be used in SNAP-ON mode only. For AMS SNAP-ON user launches DCMlink from AMS. No configuration is required in DCMlink preference. Make sure DCMlink SNAP-ON is installed on PC, please refer to Section 7.5.3.

6.4.4 **DeltaV Network**: This can be used in SNAP-ON mode only. For AMS SNAP-ON user launches DCMlink from AMS. No configuration is required in DCMlink preference. Make sure DCMlink SNAP-ON is installed on PC, please refer to Section 7.5.4.

6.5 Gauge Type (Analog/Digital)

DCMlink features two viewing options for gauges: Analog and Digital. The two viewing options will show the user the required information using a conventional gauge style for the analog and a seven-segment style display for the digital format. To change the default setting (analog) to digital, use following steps:

6.5.1 On the menu bar, click **DCMlink Setup.**

6.5.2 Click **General** tab.

6.5.3 Put a check mark on **Digital Indicator** (uncheck if desired display is analog).

6.5.4 Click **OK.**

6.5.5 While viewing the Tag indicators, click **Close Tag** on the bottom right.

6.5.6 Reselect the actuator **Tag** from the navigation pane and double-click.

6.5.7 The display shown on the indicators will now be of the selected format.

Figure 83 Analog Display

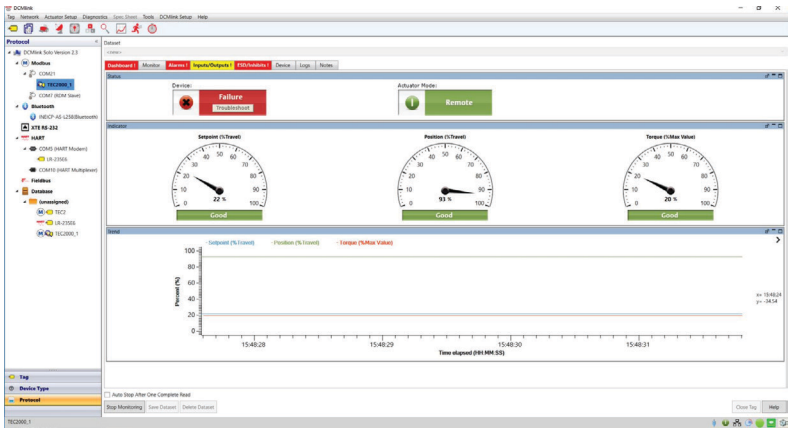
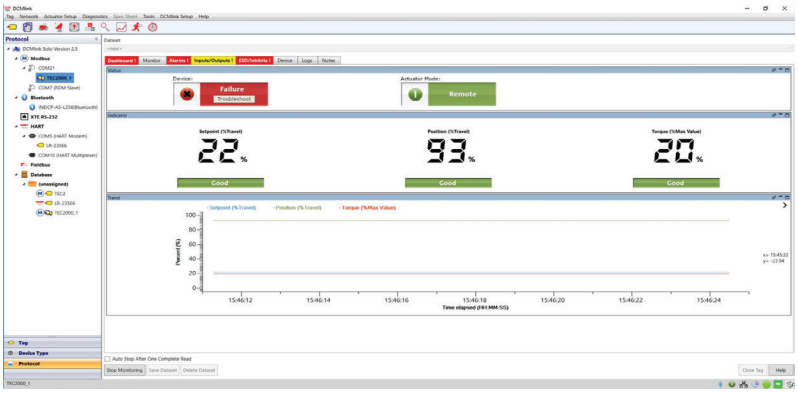


Figure 84 Digital Display



6.6 Raw Value in Position Dial (for MPA only)

Option **Preference** for showing percentage (%) or raw value in Dial (MPA). This is applicable to the MPA only, and only for the Position Dial. By default, this check box shall be unselected (shown as %). User can opt to see Position in Raw Value format in Dial.

Figure 85 Raw Value in Position Dial (for MPA only)

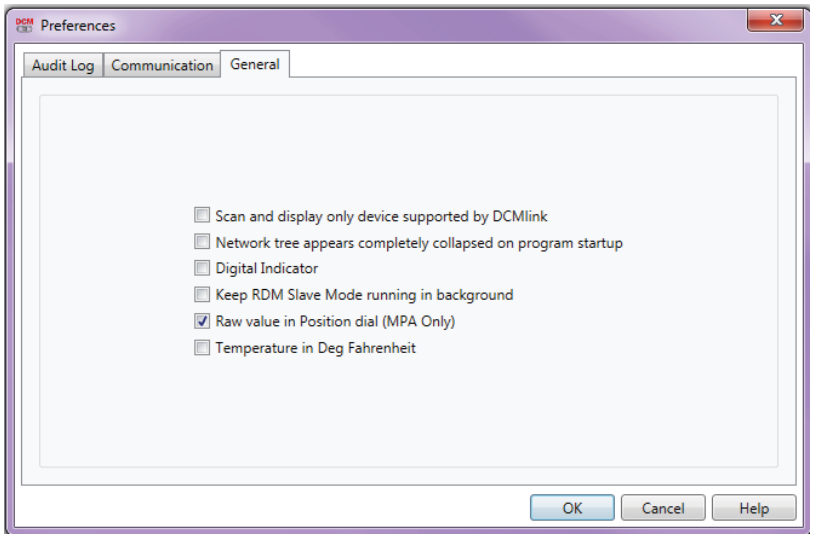
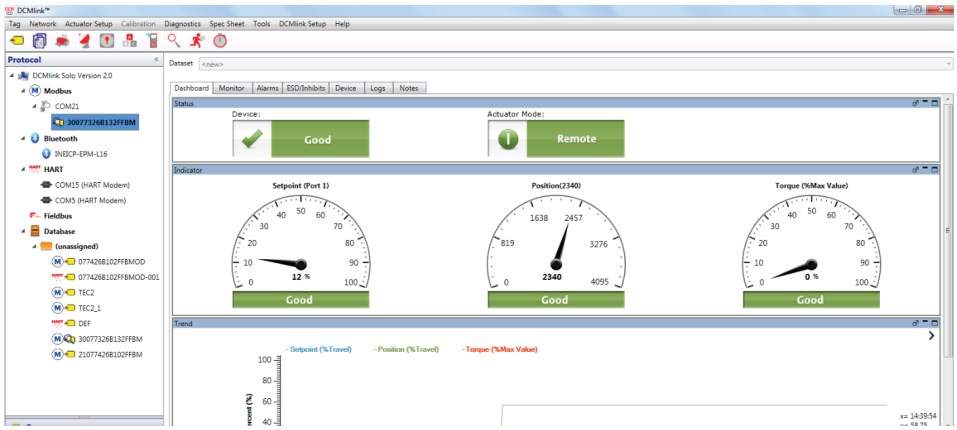


Figure 86 Raw Value Gauge Display



6.7 Change Network Parameter Settings

DCMlink allows the modification of communication settings. To change network parameters.

6.7.1 Use following steps:

6.7.1.1 From Menu Option **DCMlink Setup**.

6.7.1.2 Select Menu Option **Preferences**.

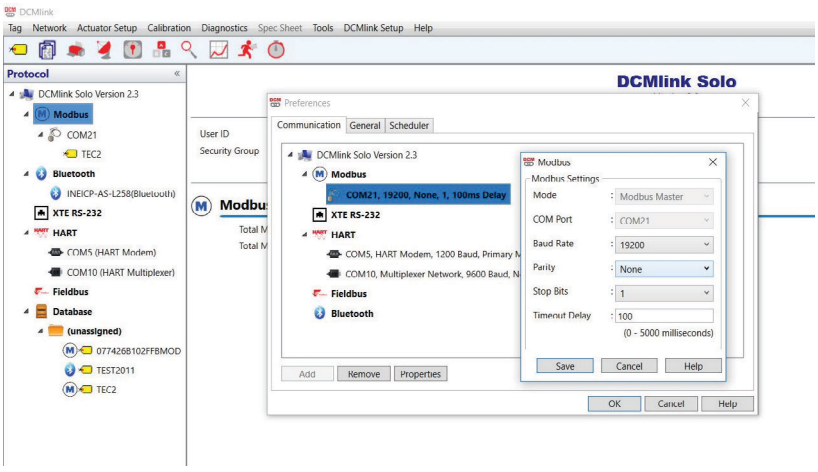
6.7.1.3 On Preferences window, select **Communication Tab**.

6.7.1.4 Select the **Network Port**.

6.7.1.5 Click on **Property button**.

6.7.1.6 Accordingly modify the **parameters**.

Figure 87 Changing Network Parameters



Section 7: Setting Up DCMlink Networks

7.1 Setup Modbus Network

NOTE:

For Modbus, there are three types of connections available. First is the Modbus Master, second is RDM slave mode (only for TEC2000) and third one is TCP/IP (user needs CAM09/209 card). Refer to the following wiring connection to connect DCMlink to the respective actuator.

⚠ CAUTION: TURN OFF POWER BEFORE WIRING

Before working on the wiring connections, power down the actuator.

1. **For TEC2000**
   a. Separate Terminal Chamber (STC) contains terminal block for wiring connection.
   b. Pinch bar to rotate the STC cover in a counter-clockwise direction, this will open the STC cover and the user will see the terminal block in STC.

Figure 88 TEC2000 Terminal Chamber

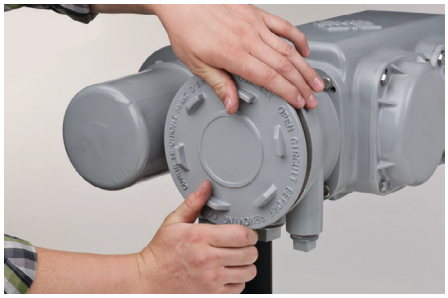
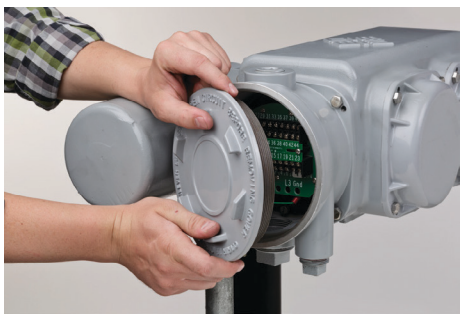
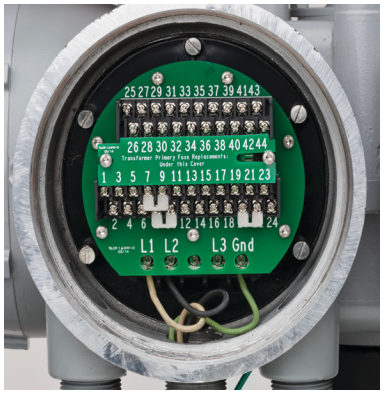


Figure 89 Opening TEC2000 Terminal Chamber



c. STC – With Terminal Block Numbering

Figure 90 Opened TEC2000 Terminal Chamber



2. **For TEC2**
Please refer to the following for different wiring connections:

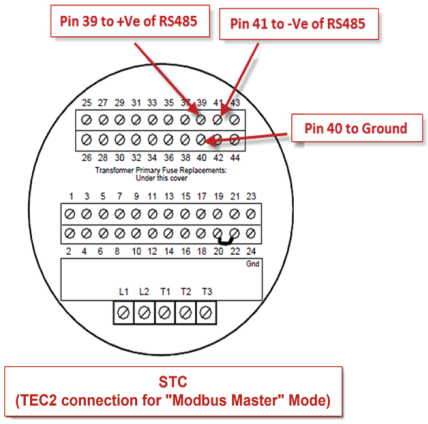
a. For **Modbus Master** Mode:

- Pin 39 to +Ve of RS485
- Pin 41 to -Ve of RS485
- Pin 40 to Ground of RS485 [Optional]

NOTE:

The pins above should be used only for the CAM205 or CAM228.
For the TEC2, the recommended connection is the dedicated **DCMlink port**.
For more information on the pin layout, consult the TEC2 Instruction and Operation Manual.

Figure 91 Modbus Connection on STC



b. For **Modbus Master** Mode (Using DCMlink dedicated pins).
Another way to connect DCMlink with TEC2 is by using DCMlink dedicated pins (36, 37, and 38). The following are the dedicated pin details:

- Pin 36 to +Ve of RS485
- Pin 38 to -Ve of RS485
- Pin 37 to Ground of RS485 [Optional]

NOTE:
For this section "b" only, connection baud rate is 115200.

c. For **Modbus Master** Mode on HART CAM216:

- Pin 39 to +Ve of RS485
- Pin 40 to -Ve of RS485

7.1.1 After wiring the connections with the actuator, check the serial port number on PC. For this, right-click on **My Computer** and go to "**Manage-> Computer Management -> System Tools -> Device Manager-> Ports -> Communication Port (Port Number)**."

3. **For MPA**

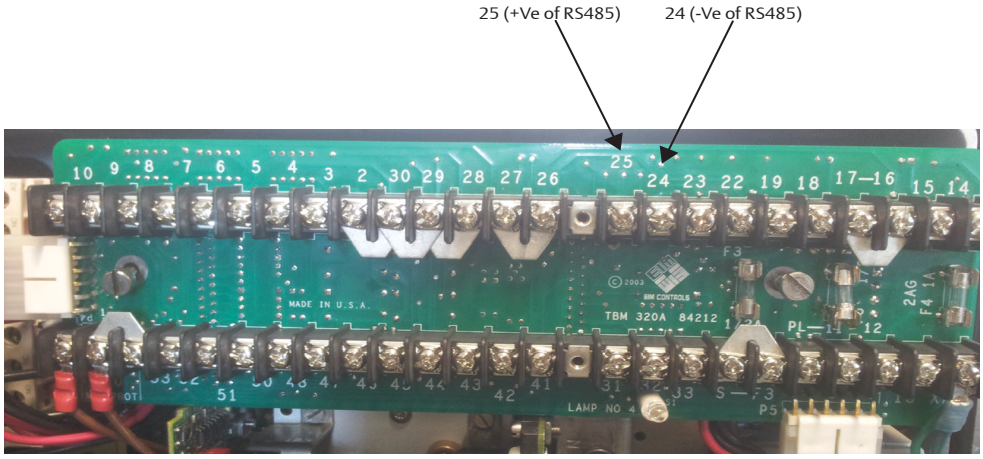
Table 6. CAM Card Pin Configuration

Without CAM05, or any other protocol CAM card	With CAM05, or any other protocol CAM card
Pin 19 is +Ve of RS485 Modem	Pin 25 is +Ve of RS485 Modem
Pin 18 is -Ve of RS485 Modem	Pin 24 is -Ve of RS485 Modem

Figure 92 MPA Modbus Connection

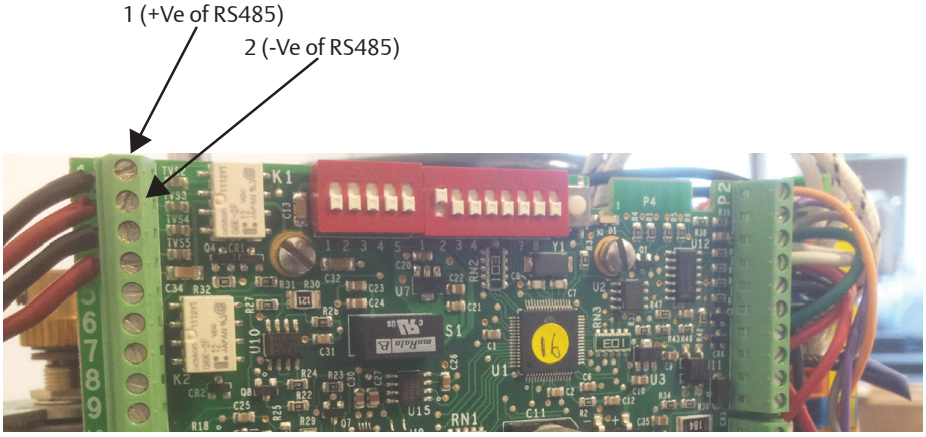
4. **For M2CP**
   - Pin 25 is +Ve of RS485 Modem
   - Pin 24 is -Ve of RS485 Modem

Figure 93 M2CP Modbus Connection



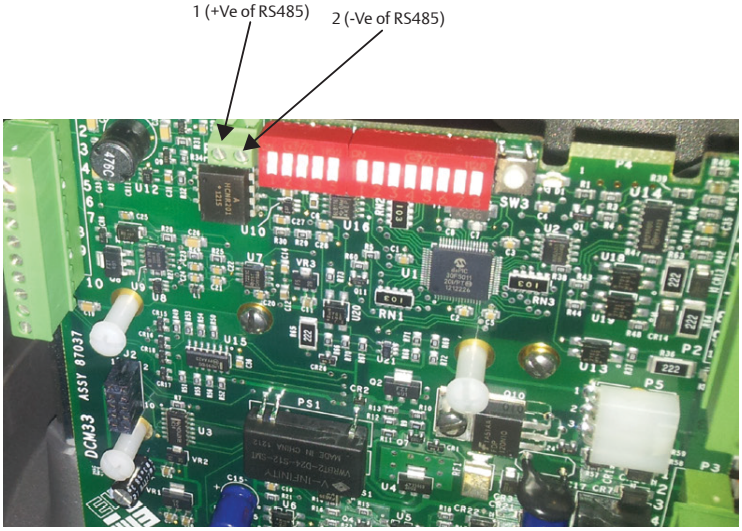
5. **For HQ Series**
   - Pin 1 is -Ve of RS485 Modem
   - Pin 2 is +Ve of RS485 Modem

Figure 94 HQ DCM32 Modbus Connection (1)



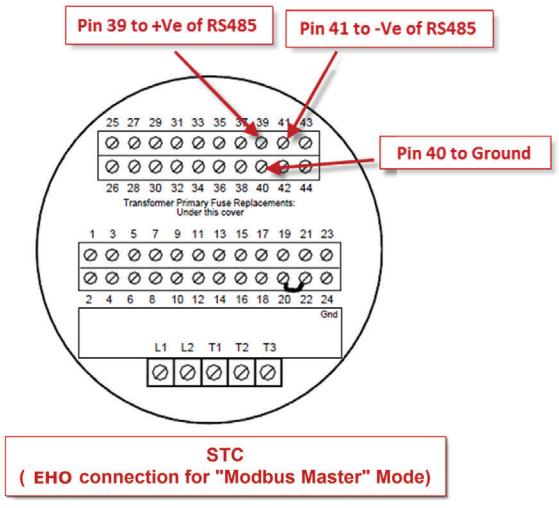
   - Pin 1 is +Ve of RS485 Modem
   - Pin 2 is -Ve of RS485 Modem

Figure 95 HQ DCM33 Modbus Connection (2)



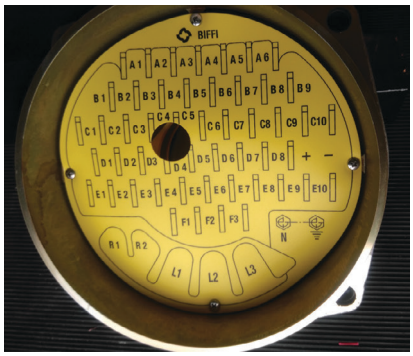
6. **For EHO**
   - Pin 39 to +Ve of RS485
   - Pin 41 to -Ve of RS485
   - Pin 40 to ground of RS485 [Optional]

Figure 96 EHO Modbus Connection



7. **For XTE3000**
   - Pin: A1+, A2- OR
   - Pin: A5+, A6-

Figure 97 XTE3000 Modbus Connection



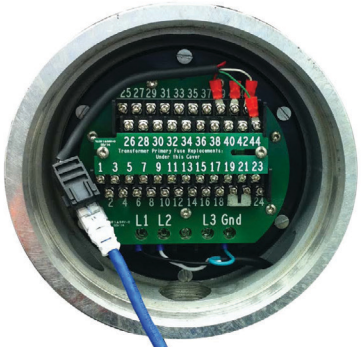
NOTE:
For XTE3000, the user will need the Modbus Bus Card.

7.2 Modbus TCP/IP Settings

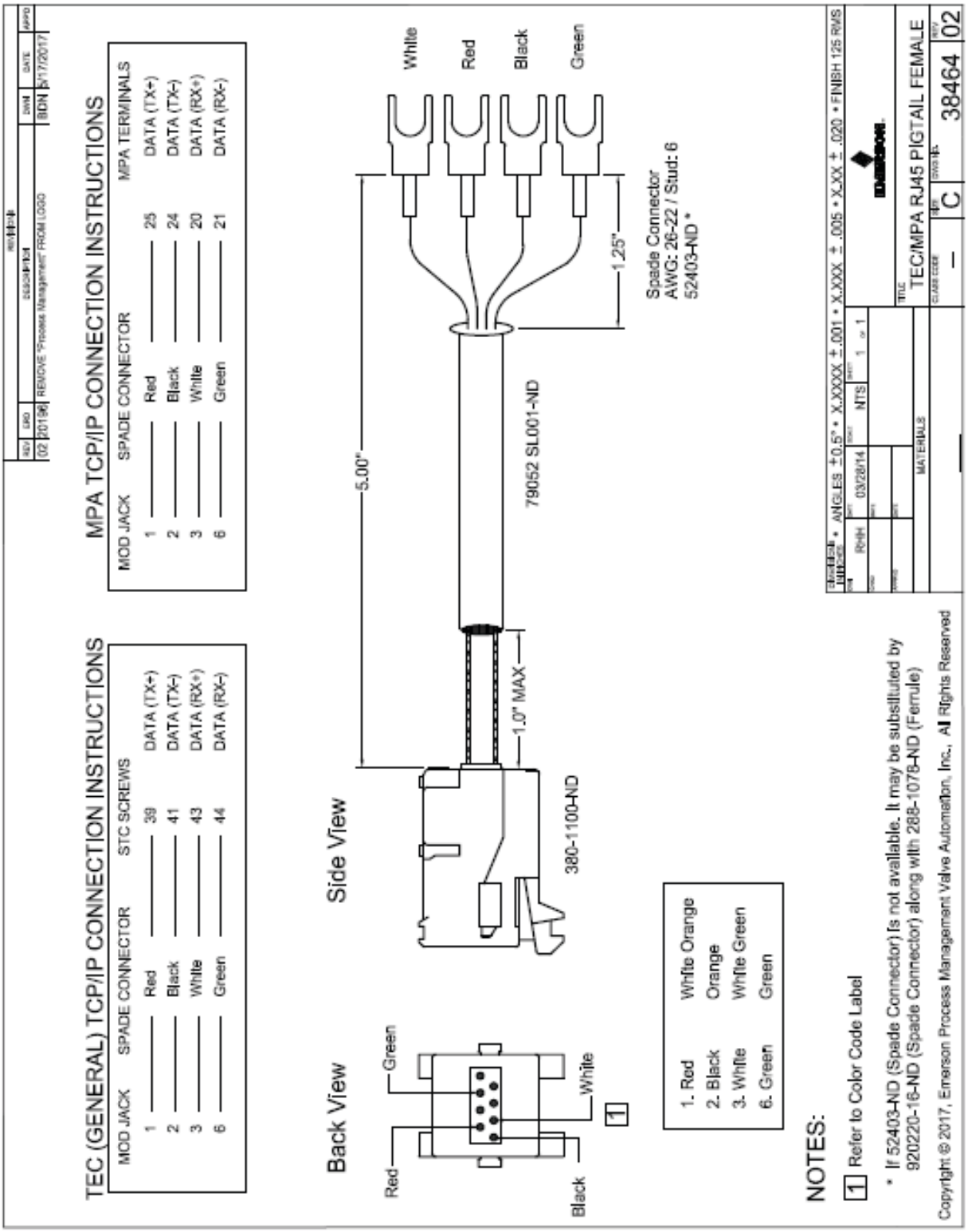
7.2.1 The user needs to use Modbus TCP/IP CAM card to utilize this feature.

NOTE:
For TEC2000 and TEC2 the user will need to use a CAM209 Card.
For M2CP, MPA, EHO and HQ, the user will need a CAM09 Card.

Figure 98 CAM209 Connected to TEC2000 Actuator



NOTE:
Details on the configuration of CAM09/209 is found on the document.


MPA TCP/IP CONNECTION INSTRUCTIONS
MOD JACK SPADE CONNECTOR MPA TERMINALS
1 Red 25 DATA (TX+)
2 Black 24 DATA (TX-)
3 White 20 DATA (RX+)
6 Green 21 DATA (RX-)
TEC (GENERAL) TCP/IP CONNECTION INSTRUCTIONS
MOD JACK SPADE CONNECTOR STC SCREWS
1 Red 39 DATA (TX+)
2 Black 41 DATA (TX-)
3 White 43 DATA (RX+)
6 Green 44 DATA (RX-)
Back View
Red
Green
White
Black
1
Side View
5.00"
1.0" MAX
380-1100-ND
79052 SL001-ND
1.25"
White
Red
Black
Green
Spade Connector
AWG: 26-22 / Stud: 6
52403-ND *
1. Red White Orange
2. Black Orange
3. White White Green
6. Green Green
NOTES:
1 Refer to Color Code Label
* If 52403-ND (Spade Connector) is not available, it may be substituted by 920220-16-ND (Spade Connector) along with 288-1078-ND (Ferrule)
Copyright © 2017, Emerson Process Management Valve Automation, Inc., All Rights Reserved
TEC/MPA RJ45 PIGTAIL FEMALE
38464 02

7.3 RDM Connection Settings

The DCMlink fully supports the RDM mode connection with TEC2000 actuator.

7.3.1 For this, select serial COM Port number and select timeout delay as per actuator COM Port settings.

NOTE:
RDM Slave Mode is only available for the TEC2000 actuator.

7.3.2 DCMlink works with below settings to connect with TEC2000 in RDM mode:
STC pin numbers:

- Pin 21 to +Ve of RDM Slave Mode
- Pin 23 to -Ve of RDM Slave Mode
- Baud Rate: 9600
- Parity: None
- Stop Bits: 1

These parameters are not allowed to be modified.

7.4 Setup Bluetooth Network

DCMlink allows the detection and configuration of devices connected via Bluetooth. Using the Bluetooth device scanner in the navigation bar, the user can perform a device scan by following the steps and screenshots shown.

NOTE:
The user needs to have Bluetooth enabled on computer to allow the use of this function. User can check if computer has Bluetooth function enabled or not. If the bluetooth function is not present, please consult the system administrator or IT.

7.4.1.1 On the navigation bar, the Bluetooth node will be populated. The name of the Bluetooth node in DCMlink will be the same as the name of the Bluetooth at the operating system level. The user cannot change the name of the Bluetooth name from the DCMlink, but it is possible to change this from the operating system.

Figure 99 DCMlink Home Screen with Bluetooth

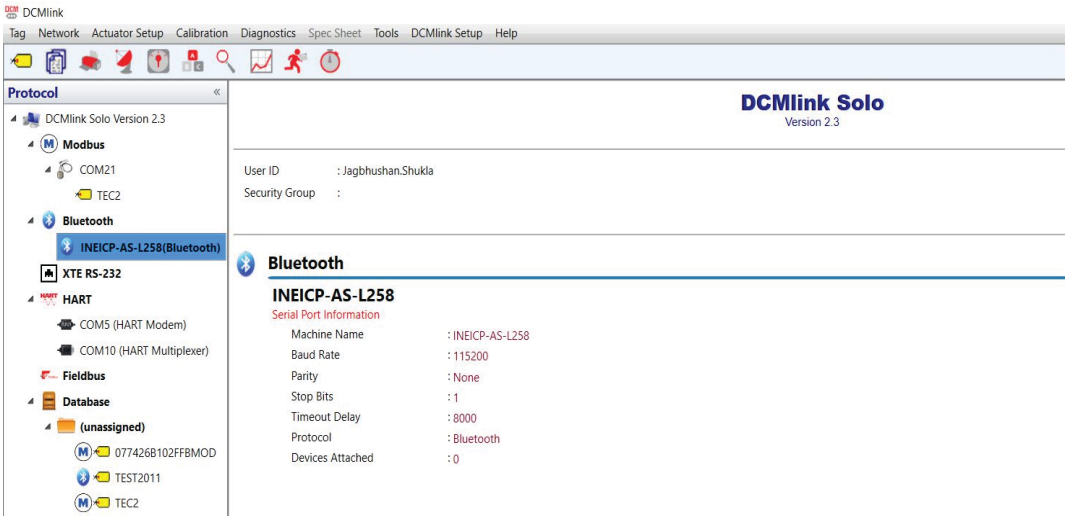
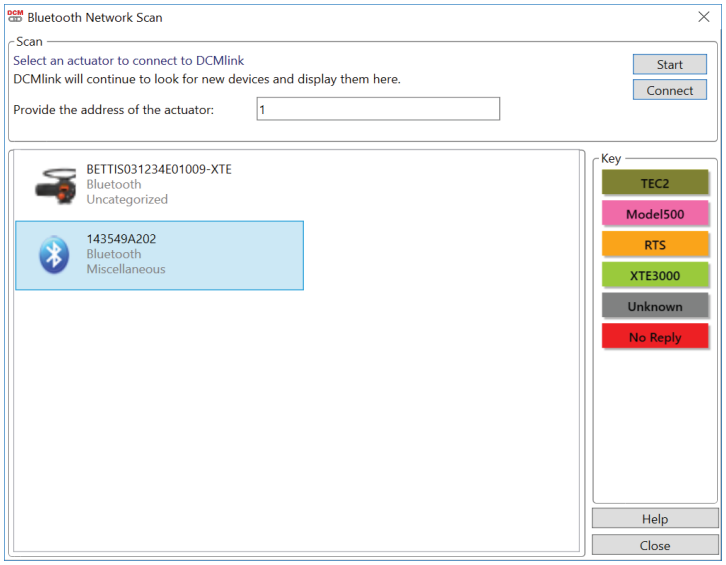


Figure 100 Scanning the Bluetooth Network



NOTE:

After closing Tag or exiting from Setup mode & reopening the same tag, user needs to wait for couple of minutes to establish proper communication with Bluetooth device.

7.5 Setup HART Network

7.5.1 Attaching HART Modem

A HART modem is a communication device that allows DCMlink to communicate with the actuator. The following section provides necessary information for attaching the HART modem to the computer and actuator.

NOTE:
HART modem drivers, needed for the HART modem to work, are installed during DCMlink installation.

7.5.1.1 HART Modem Installation for DCMlink SOLO

HART modem attaches to USB port usually found on the back of the computer or the serial port.

- Locate the serial port or USB port where modem will be connected.
- Make note of the port where HART modem is attached.
- Attach HART modem directly to the serial port, USB port, or to a cable connected to serial port or USB port.
- Use the modem cable assembly to connect HART modem to the actuator or to signal wiring.
- To communicate with actuator, locate the signal wires or the terminals of the actuator.
- Clip cable assembly to wires or terminals.
- Refer to document **HART IOM** for more information on using the HART modem.

7.5.1.2 HART Modem Installation for DCMlink SNAP-ON

The HART modem attaches to USB port usually found on the back of the computer or the serial port.

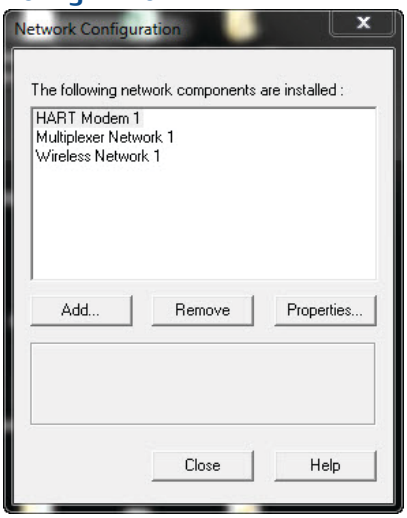
- Locate serial port or USB port where modem will be connected.
- To configure HART modem, refer to AMS manual.

Steps for installing stand-alone AMS:

Before adding DD to AMS, HART Modem on AMS needs to be configured. (Ensure that HART Modem drivers are already installed before configuring Modems on AMS). Follow steps below:

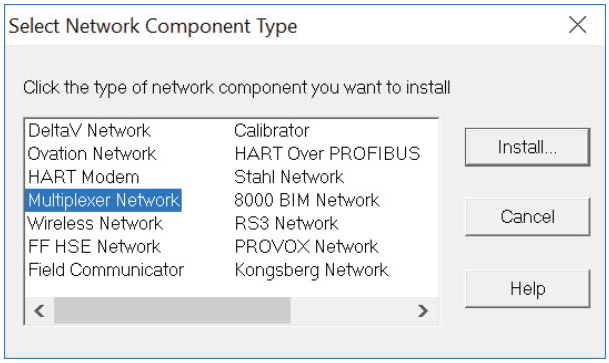
- Network Configuration:
  - Open **Start Menu**.
  - Click **Programs**.
  - Click **AMS Device Manager**.
  - Click **Network Configuration**.

Figure 101 Network Configuration



  - Select **Network Component Type** and click **Add**.
  - For HART device: **HART Modem**.

Figure 102 Select Network Component Type



  - Click **Install** and follow screen instructions.

Figure 103 Add HART Modem Wizard-Start

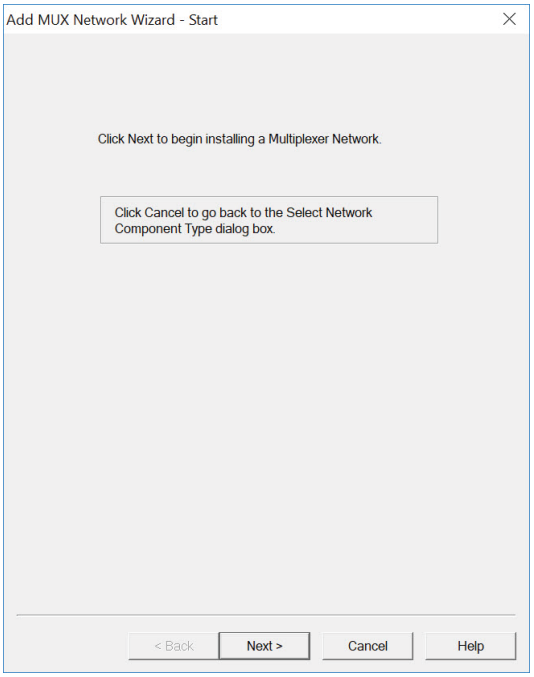


Figure 104 Add HART Modem Wizard-Modem Name

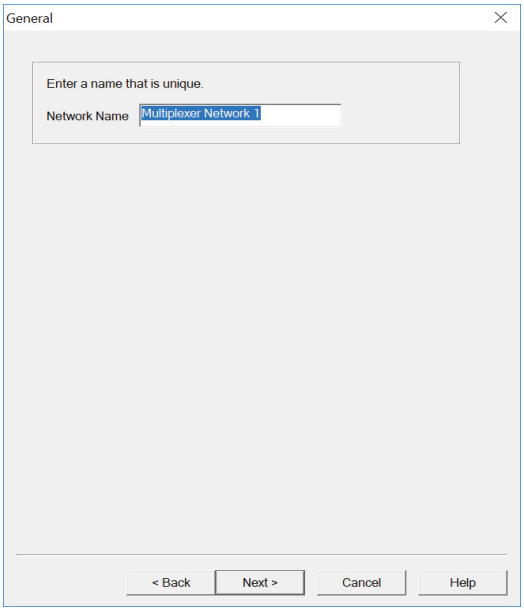
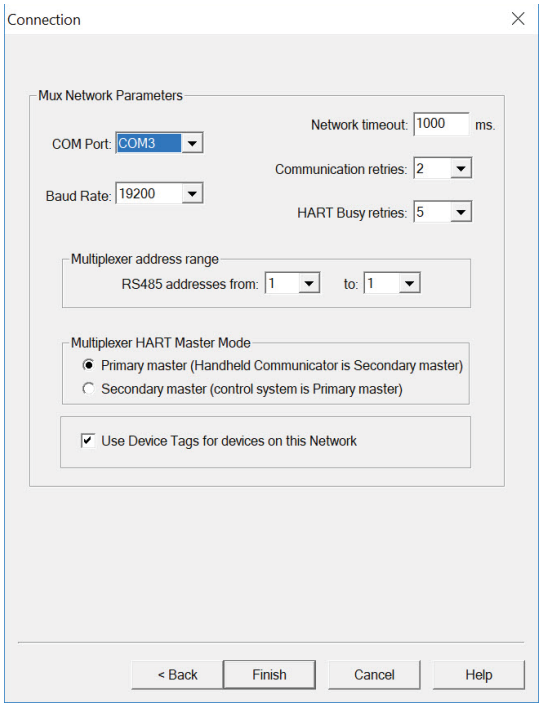


Figure 105 Add HART Modem Wizard-Network Controller



— Select one **COM Port** from the list.

Figure 106 Add HART Modem Wizard-Connection

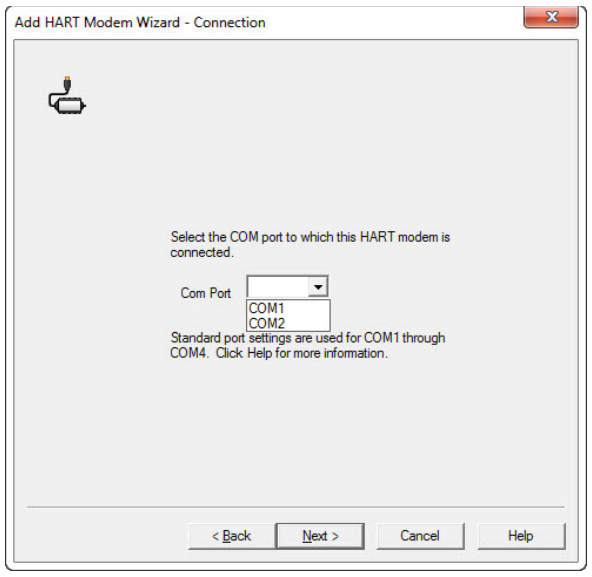
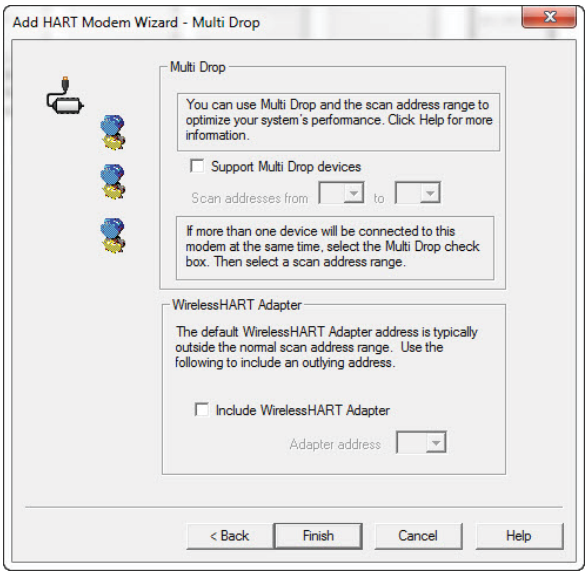
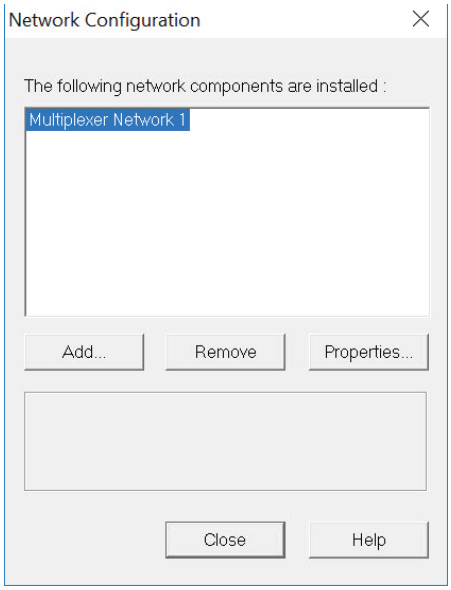


Figure 107 Add HART Modem Wizard-Multi Drop



— When finished **HART Modem** will be shown on the **Network Configuration Screen**.

Figure 108 Network Configuration



7.5.2 Multiplexer Networks for DCMlink SOLO

7.5.2.1 Setting Up **Multiplexer Network**

DCMlink uses an RS485 Modem to communicate with different actuators through HART multiplexers. Depending upon the multiplexer, DCMlink can support up to 256 individual loop channels per multiplexer. Refer to Table 7 to determine the number of multiplexers and actuators that may be connected to a network.

Table 7. Maximum Number of Multiplexers and HART Devices per Network

Multiplexer Type	Maximum Number of Multiplexers Per Network	Maximum Number of Loops Per Multiplexer
MTL4841 Communications Module	31	256
Pepperl+Fuchs	32	255
Each MTL4841 module receives digital data from a maximum of 16 MTL4842 HART Interface Modules. In turn, each MTL4842 module accesses data from a maximum of 16 HART devices.		

The following procedure to set up a multiplexer network:

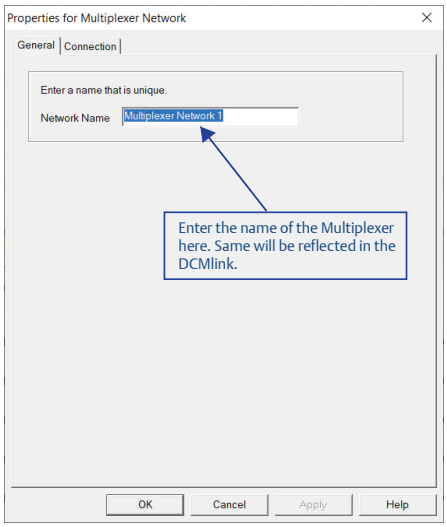
- Connect physical equipment. Set all multiplexers and the RS485 converter to the same baud rate.

NOTE:
For details about wiring and connecting equipment, refer to the appropriate instruction guide.

- Apply power to the RS485 converter, multiplexers and actuators.
- To configure DCMlink refer to Section 6.4.2 HART MUX (Multiplexer) setting.

7.5.2.2 Changing the Multiplexer Tag and Descriptor

Figure 109 Changing the Multiplexer Tag and Descriptor



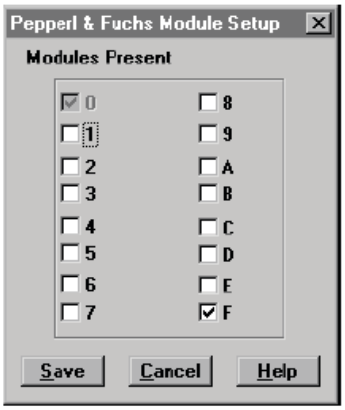
7.5.2.3 Setting Up Pepperl+Fuchs Multiplexer

When adding or removing a submodule from a Pepperl+Fuchs multiplexer, user must reconfigure the multiplexer to indicate the changes. Multiplexer configuration changes are made from the Pepperl+Fuchs Module Setup screen, Figure 110.

To setup Pepperl+Fuchs Multiplexer:

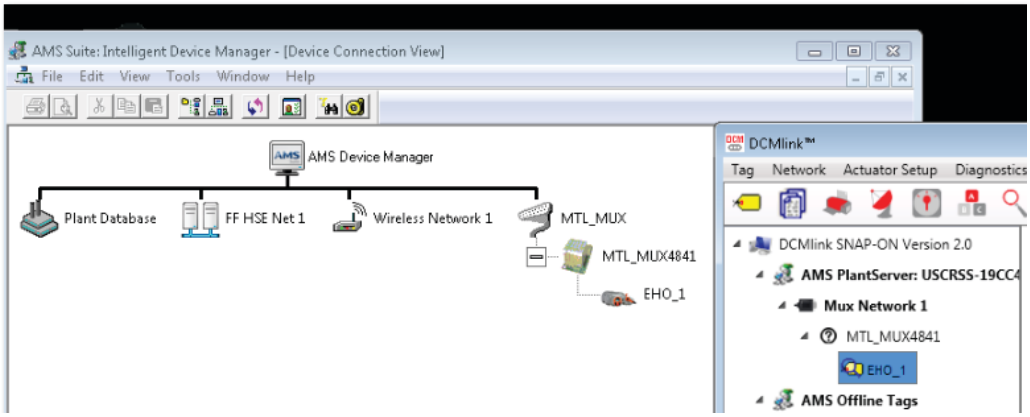
- On each Pepperl+Fuchs slave module, **Set Slave Address** switch to an unused value so that each module has its own individual setting.
- On **Pepperl+Fuchs Module Setup screen**, check those modules that are installed.

Figure 110 Pepperl+Fuchs Module Setup Screen



7.5.2.4 Setting Up **MTL Multiplexer**

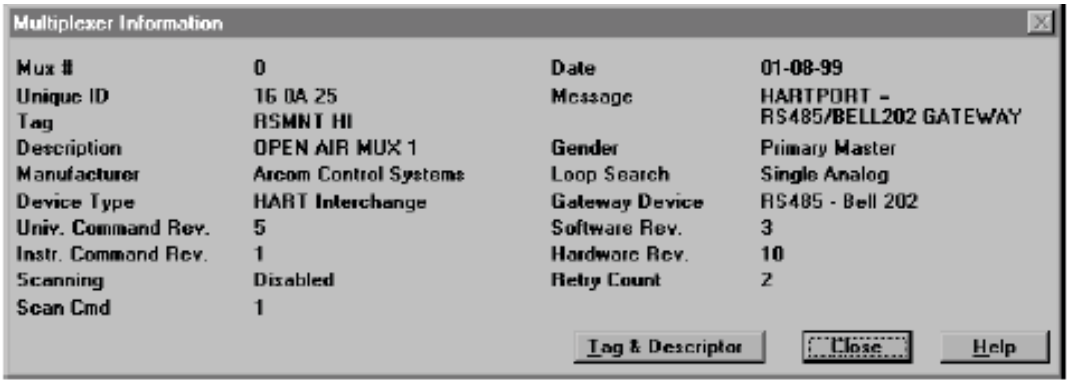
Figure 111 MTL Multiplexer



7.5.2.5 Viewing Multiplexers Status

User can view the status and add a tag and descriptor to each multiplexer on the network. For a Pepperl+Fuchs multiplexer, user can also define which modules are included in the multiplexer.

Figure 112 Multiplexer Information Window



Multiplexer fields:

- **Mux #:** The multiplexer address, determined by the address switch settings on the multiplexer or communications module.
- **Unique ID:** The last six digits of a unique ID number assigned to the multiplexer by the manufacturer.
- **Tag:** A name assigned to the multiplexer from the tag and descriptor screen.
- **Description:** A description assigned to the multiplexer from the Tag and Descriptor screen.
- **Manufacturer:** The multiplexer manufacturer, Emerson, MTL, ELCON, or P&F.
- **Device Type:** HART Interchange for a 2530H1 HART Interchange Multiplexer, MTL4841 Communications Module for a MTL4840 HART Maintenance System, KFD HART. Multiplexer System for a Pepperl+Fuchs multiplexer, or an ELCON Mux.
- **Univ. Command Rev.:** The HART command language revision number, always 5.
- **Instr. Command Rev.:** The multiplexer or communications module firmware revision number.
- **Scanning:** Alert scanning. Should always be disabled when not viewing the Network Scan window.
- **Scan Cmd:** HART command level returned to the multiplexer or communications module by the instrument if an alert occurs. May be a1 or a3.
- **Date:** The date data was entered.
- **Message:** A message programmed into the multiplexer or communications module software.
- **Gender:** Whether the multiplexer or communications module is a primary master or secondary master.

- **Loop Search:** Currently the multiplexer or communications module only searches for single analog loops, those loops where the instrument polling address is 0.
- **Gateway Device:** HART signaling scheme. Always RS485 - Bell 202.
- **Software Rev.:** Revision number of the software installed in the multiplexer or communications module.
- **Hardware Rev.:** Hardware revision level.
- **Retry Count:** Number of times multiplexer or communications module attempts to send a command to the instrument. Should be 2 after initialization.

7.5.2.6 Adding Actuator to Multiplexer

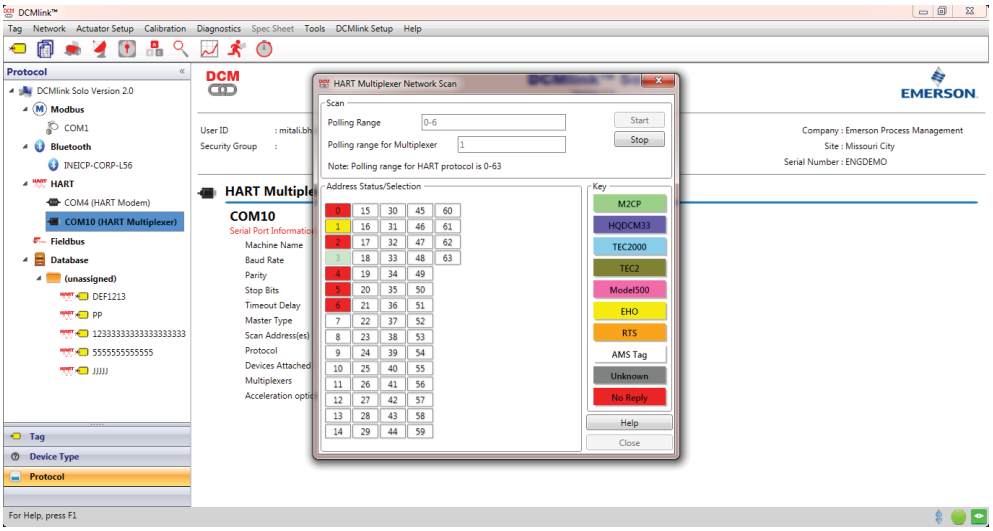
NOTE:
DCMlink Solo must be licensed with a Tag Limit sufficient for the number of connected actuators.

Depending upon the multiplexer, DCMlink Solo can support up to 256 individual loop channels per multiplexer. User can connect one actuator to each loop channel.

To add a new actuator to a multiplexer:

- **Connect HART signal** wiring to the **multiplexer**.
- **Apply power** to the actuator and multiplexers.
- Right click the **multiplexer symbol** and select **Reset and Rescan the Multiplexer** from the drop-down menu.
- If the actuator is recognized by the software, actuator symbol appears beneath the multiplexer on the device connection diagram. If no symbol appears, then the software does not recognize the actuator. Check physical connections and actuator loop power.

Figure 113 Adding Actuator to Multiplexer



7.5.3 Setup Wireless Network

7.5.3.1 Wireless Gateway

— Set Up Gateway Internet Access for AMS Session

NOTE:
A special **CROSSOVER CABLE** must be used for this application.

- Connect crossover Ethernet cable between computer and Ethernet #1 port on Gateway.
- On PC navigate to: **Control Panel > View Network Connections >Local Area Connection > Properties > Internet Protocol Version 4 (TCP/IPv4) > Properties**.
- Select **Use the following IP Address** and enter 192.168.1.12 (subnet mask will come up) select **Ok** and then **Ok** on the next prompt.
- Open Internet Explorer and enter the following address: HTTPS://192.168.1.10 and hit enter. (*If Security certificate message comes up, you may have to select **Diagnose Connection Problem**).
- Select **Continue to Website** and enter for Username **admin** and Password **default**.
- Select **Explorer** in left margin to read devices (this process might take up to 15 minutes).

— Set up a computer using a HART Modem

- Install all software/drivers necessary for HART modem prior to connection.
- Open AMS Device Manager and navigate to **Configuration > Add > HART Modem >Install > Next > Next** and select **Hand held device as secondary HART master**, then select the correct COM port for HART modem.
- Go to **Wireless HART adapter block** and check **include Wireless HART adapter** then click **finish**.

7.5.3.2 Wireless THUM

— THUM Programming – Join to Gateway Network Using a PC

Using the **Wireless HART THUM Kit** (Part No 87263), set up the THUM as shown below:

- Set up computer internet for Gateway.
- **Plug HART modem** into computer.
- **Open AMS** and navigate to **Device Connection icon > HART modem > THUM >** to read the parameters.
- Select **Configure > Join Device to Network > Enter Network ID** and enter the Network ID inside the cover of the Gateway, click **next**.
- Enter Join Key (Number shown on THUM Tag). All Three remaining Join Keys are (8) zeros.
- Select **Network Configuration** on AMS menu and select **Add**.

— Running AMS to Change the Device Setpoint.

- Navigate and start your AMS Device Manager application.
- Locate and select the **Device Connection View** in the middle of the toolbar.
- Double click **Wireless Network** to see devices.

NOTE:
The message **Network disruption was detected** means no devices are sensed by gateway. If no devices show up on the screen, right click on **Wireless Network** and select **Rebuild and Identify hierarchy**.

- **Expand Gateway > myNet > THUM** and double click on the device Logo.
- **Set Time** in the lower left hand corner of the screen to **Current** from the drop down box select **Yes** when prompted to continue.
- Expand **Online** on the **Configure/Setup Screen > Detailed Setup > Valve Control >Setpoint** and select the **Change Setpoint** method.
- Select **Yes** and click **next** when the writing wetpoint requires placing the device in out of service mode... Prompt shows up.
- Enter the desired setpoint for the device and click **Next**.
- After receiving the **write setpoint success** message, select **next**, then **finish** to complete the change setpoint method.

7.5.3.3 Installation of Optional THUM Wireless Adapter

1. Component Installation on M2CP

Table 8. Attach wires from the Wireless HART THUM to the CAM16 J4

CAM 16	THUM
I-	White
I+	Yellow

Table 9. Connect Wireless THUM to 320B Board

320B	THUM
26	Red
29	Black

2. Component Installation on HQ

Table 10. Connect Wireless THUM to CAM16

CAM 16	THUM
I-	White
I+	Yellow

Table 11. Connect Wireless THUM to DCM33 Board

HQ	THUM
P3-3	Red
P3-4	Black

3. Component Installation on TEC2000/TEC2

Table 12. Connect Wireless THUM to Actuator

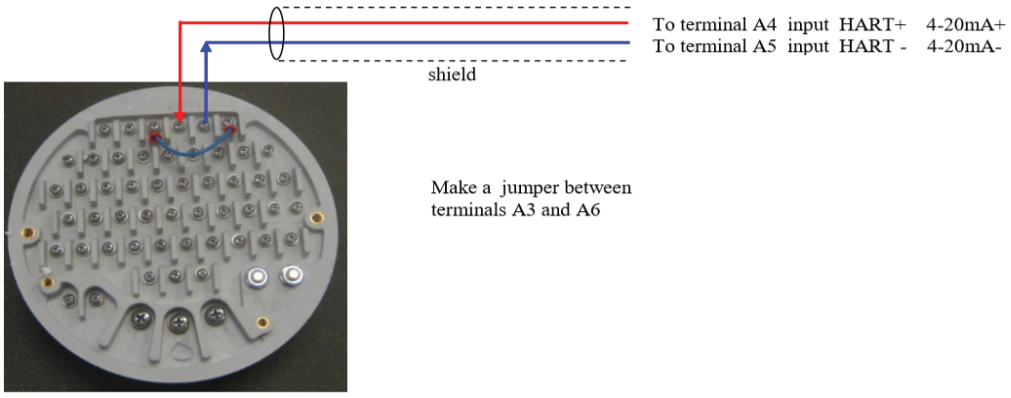
TEC2000 STC	THUM
9	Red
10	Black1200 Ohm Series Resistor
24	Green (Optional)
43	Yellow
44	White

4. Connect to XTE3000 Actuator

Table 13.

SW5 Pin 1	SW5 Pin 2	SW5 Pin 3	SW5 Pin 4	Connections Mode
OFF	OFF	ON	ON	Point to Point
OFF	OFF	ON	ON	Split Ranging
ON	ON	OFF	OFF	Multidrop

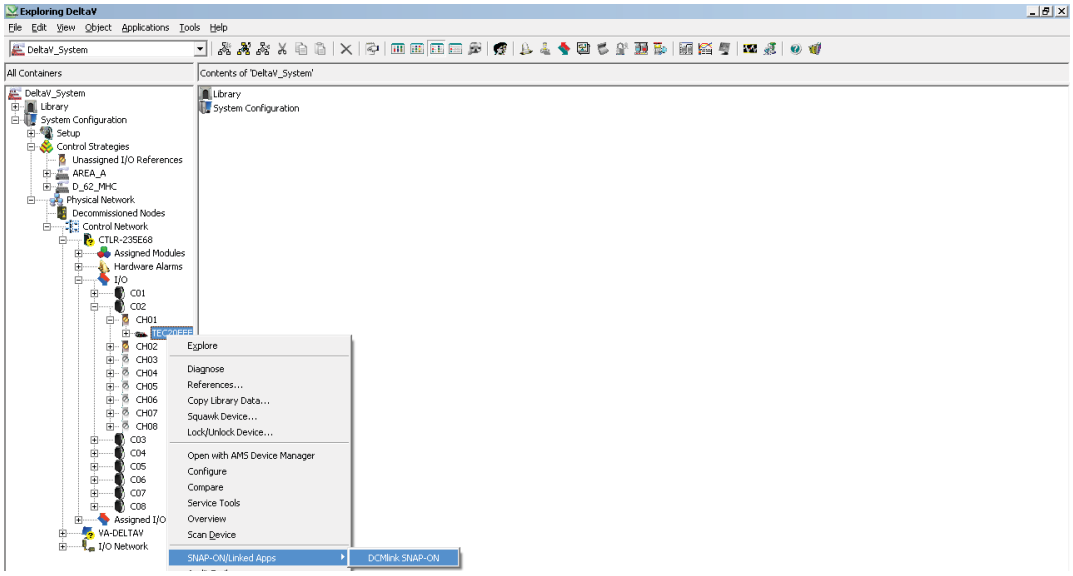
Figure 114



7.5.4 Setup DeltaV Network

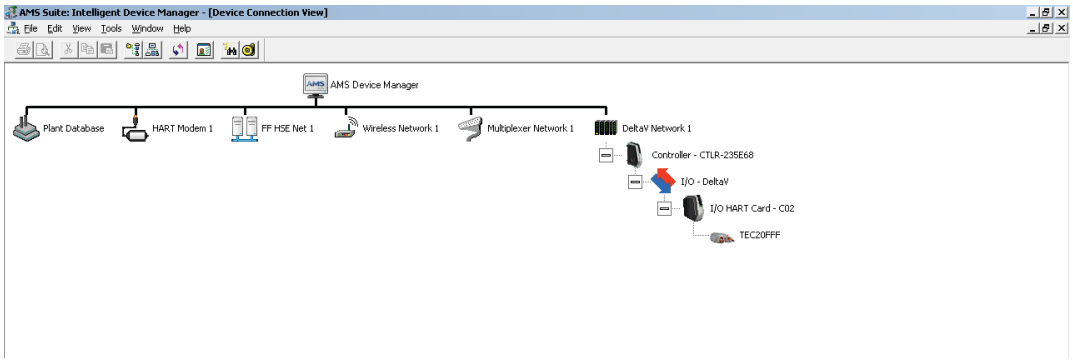
- Connect actuator, DeltaV HART Network.
- Using DeltaV Explorer navigate to actuator.

Figure 115 DeltaV Explorer



- Right click on the actuator and from Context menu user can launch AMS. Once AMS is launched, actuator can be seen under **Navigation view of AMS**.

Figure 116 Actuator on AMS

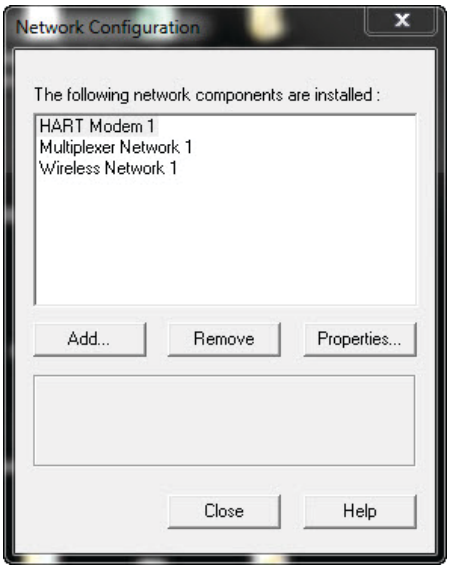


- User can now **launch DCMlink.**

7.6 Multiplexer Networks for DCMlink SNAP-ON

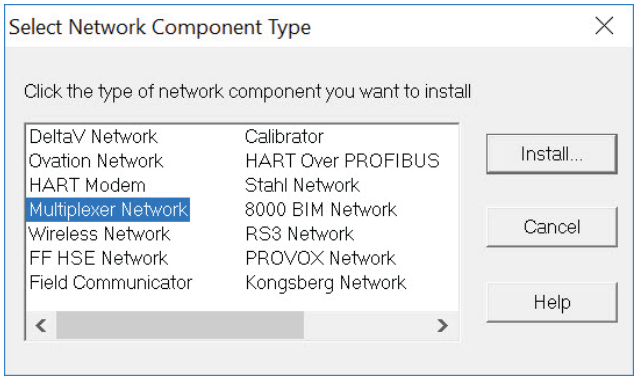
For MUX Connections refer to Section 7.5.2. Once connection is completed with MUX, user needs to configure AMS. To configure AMS:

Figure 117 Network configuration



- Select **Network Component Type** and click **Add.**
- For HART device: **HART Modem.**

Figure 118 Select Network Component Type



- Click **Install** and follow screen instructions.

Figure 119 Add HART Modem Wizard-Start

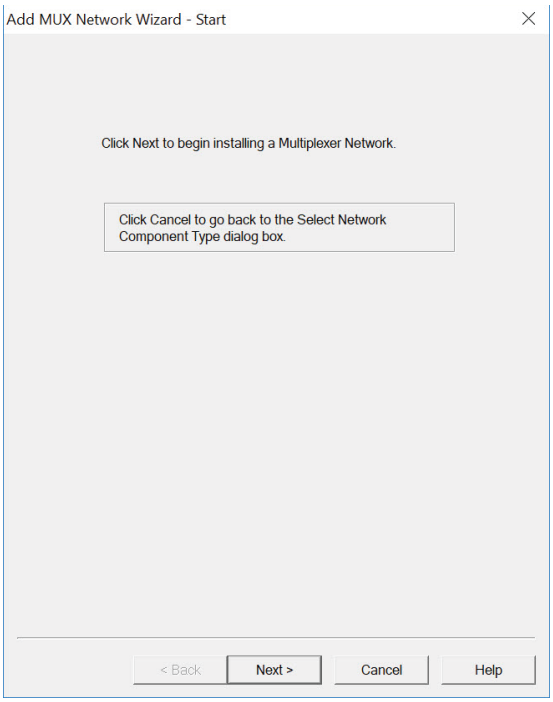


Figure 120 Add HART Modem Wizard-Modem Name

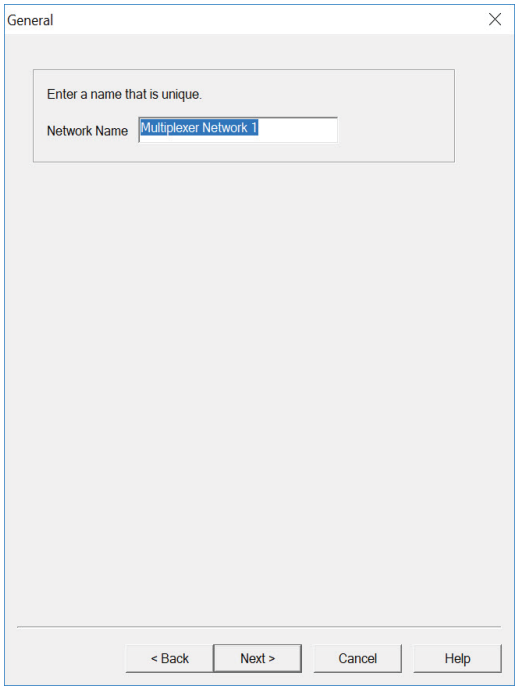
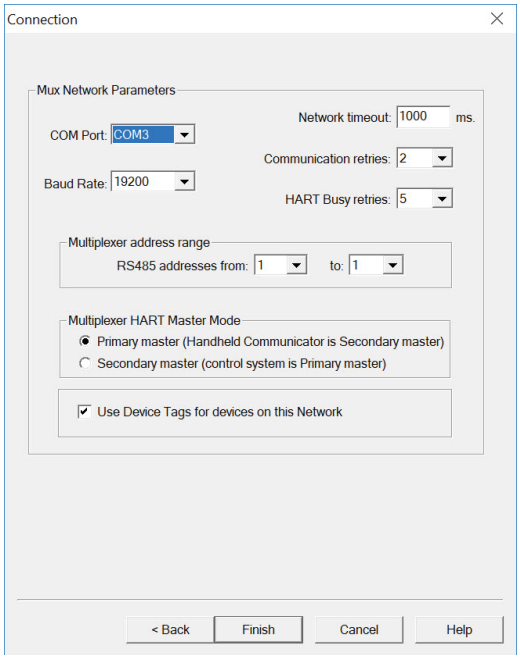


Figure 121 Add HART Modem Wizard-Network Controller



— Select one **COM Port** from the list.

Figure 122 Add HART Modem Wizard-Connection

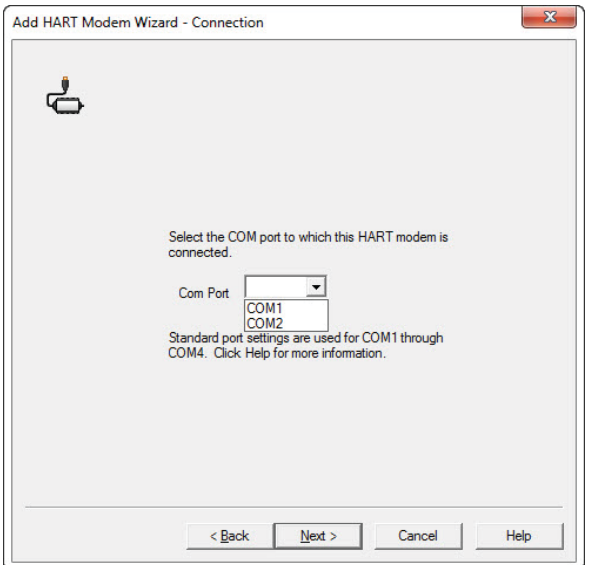
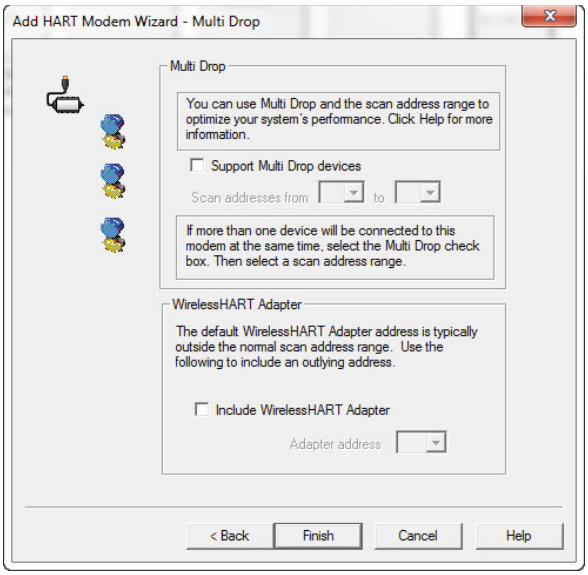
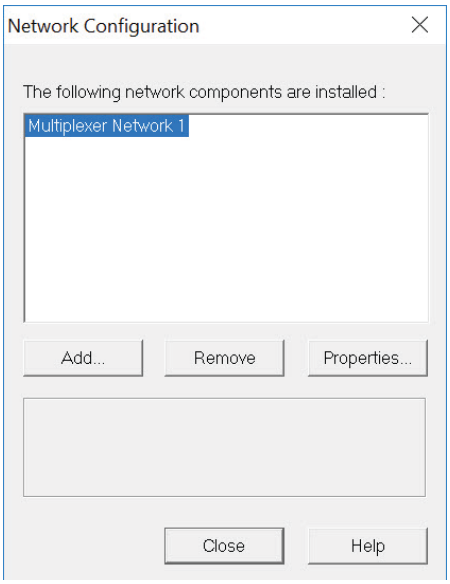


Figure 123 Add HART Modem Wizard-Multi Drop



— When completed you will see a **HART Modem** added into the **Network Configuration Screen.**

Figure 124 Network Configuration



7.7 AMS SNAP-ON Setup

AMS SNAP-ON is a software application that is installed as an integral part of AMS Device Manager to extend its functionality. AMS SNAP-ON adds the diagnostic test capabilities of DCMlink software to AMS Device Manager.

A USB hardware key is not used for installing AMS DCMlink SNAP-ON. However, AMS Device Manager must be licensed for the AMS DCMlink SNAP-ON.

To install AMS DCMlink SNAP-ON, user must first have installed a properly licensed copy of AMS Device Manager.

7.7.1 User Setup

— Installing DCMlink SNAP-ON.

— Starting AMS DCMlink SNAP-ON.

⚠ CAUTION

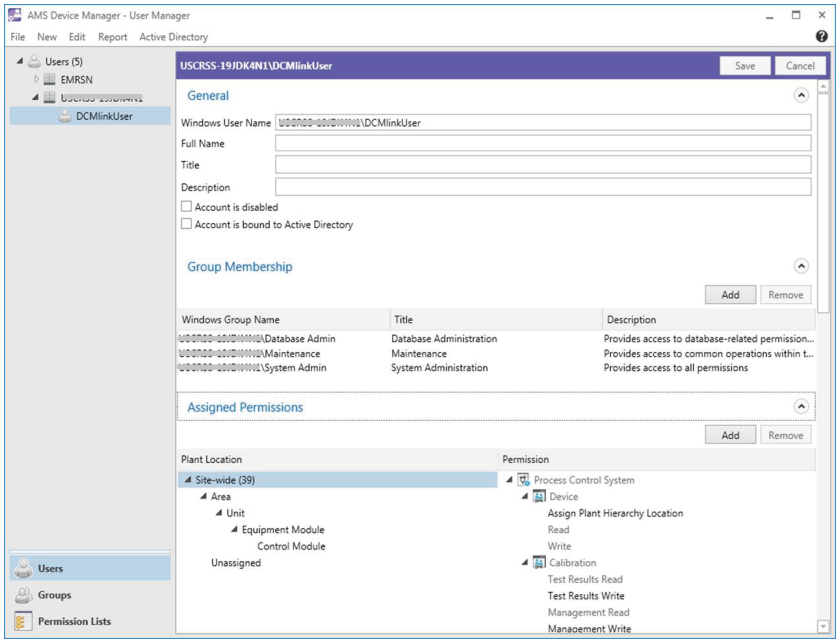
Do not run DCMlink SOLO at the same time when using AMS Device Manager or AMS DCMlink SNAP-ON. Running both simultaneously may cause communication errors.

NOTE:

To successfully use DCMlink SNAP-ON, user must be familiar with using AMS Device Manager. Refer to the **AMS online User's Guide**.

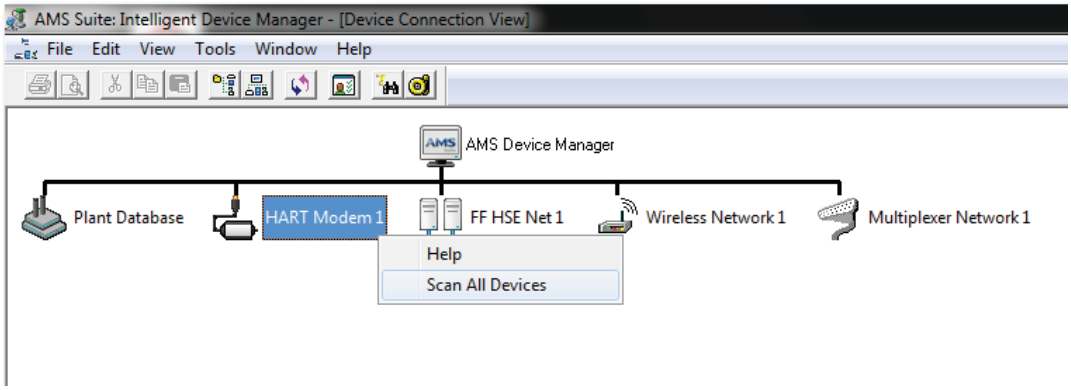
- To make DCMlink SNAP-ON work on AMS 12.5 or below, please ensure to add Computer-Name (DCMlinkUser) as the domain and and password (DCMlink@123) to the AMS User Manager dialog. After adding the user to the AMS, make sure to add groups and select all groups for the DCMlinkUser, followed by granting of permissions. See below for a screen capture.
- For AMS 13.0 and above, add user login to AMS User Manager dialog. This will launch AMS 13.0 and above using the user login credentials directly from the system.

Figure 125 AMS Device Manager - User Manager



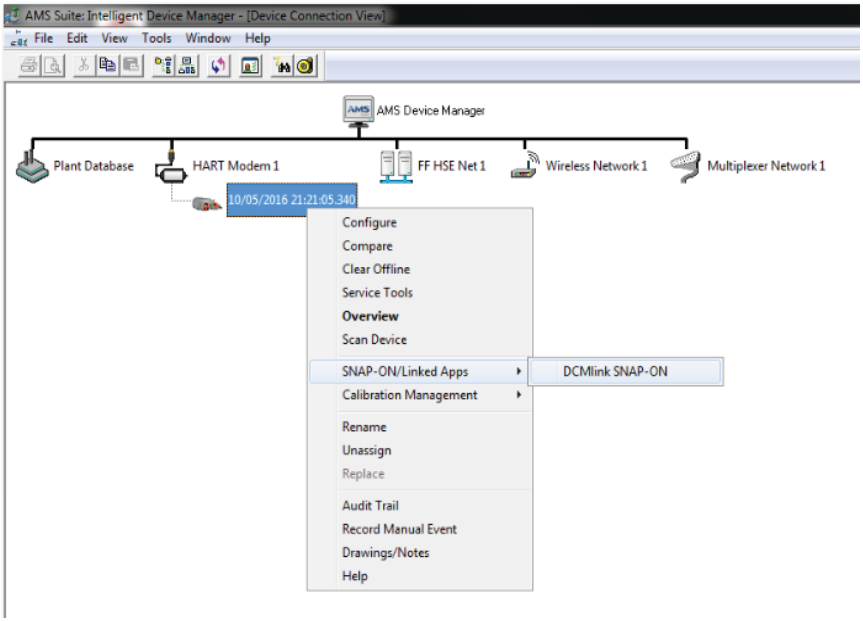
- Start AMS Device Manager by selecting **Start> Programs > AMS > AMS system** from the Windows taskbar.
- The AMS Explorer or Device Connection View window displays.
- AMS displays the communication devices (modem, multiplexer) that are connected to the PC running AMS and the AMS DCMlink SNAP-ON. Right-click device icon and select **Scan All Devices** to locate connected HART instruments.

Figure 126 AMS Device Manager Device Connection View



- When actuator icon appears, right-click the actuator icon and select **SNAP-ON/Linked Apps > DCMlink** from the context menu.

Figure 127 Right-Click Communications Device Icon to Open Menu



7.7.2 Licensing

For AMS to show DCMlink SNAP-ON as an option please contact AskPSS@emerson.com valid license is required to activate this feature.

7.8 Setup Foundation™ Fieldbus Network

The use of FOUNDATION™ fieldbus in DCMlink will available in a future version.

7.9 Troubleshooting Communication Issues

Table 14. Communication Issues Question and Answer Table

Section	Question and Answer
Serial Ports	**Question:** **DCMlink software does not detect all of my serial ports.** **How do I enable DCMlink Software to use a port that it doesn't automatically detect?**
	Answer: In the PreferenceSetting.XML file, ModbusSettings section, user can add a entry for ModbusSetting. If the user makes this change while DCMlink Software is running, the user will have to exit and restart the software for this change to take effect.
COM Port	**Question:** **DCMlink Software isn't detecting the COM port. What could be causing this problem?**
	Answer: Close DCMlink and relaunch application. If the problem persists, restart the computer. Alternatively, the user can try programs, such as Allen Bradley or competitive valve suppliers, etc., that may be using the COM port. Other causes may include: The power saving option is set and has caused the port to use the low power option. You need to set the power saving to none and delete and reinstall the COM port. The COM ports hardware is malfunctioning. To solve this, please contact your System Administartor.
Communication Errors in DCMlink	**Question:** **I am getting communication errors when performing operations with DCMlink. What can I do to fix the errors?**
	Answer: In the PreferenceSetting.XML file, ModbusSetting section, try changing the value of delay [Timeout delay]. If you make this change while DCMlink Software is running, the user will have to exit and restart the software for this change to take effect.

Section 8: Scan Device

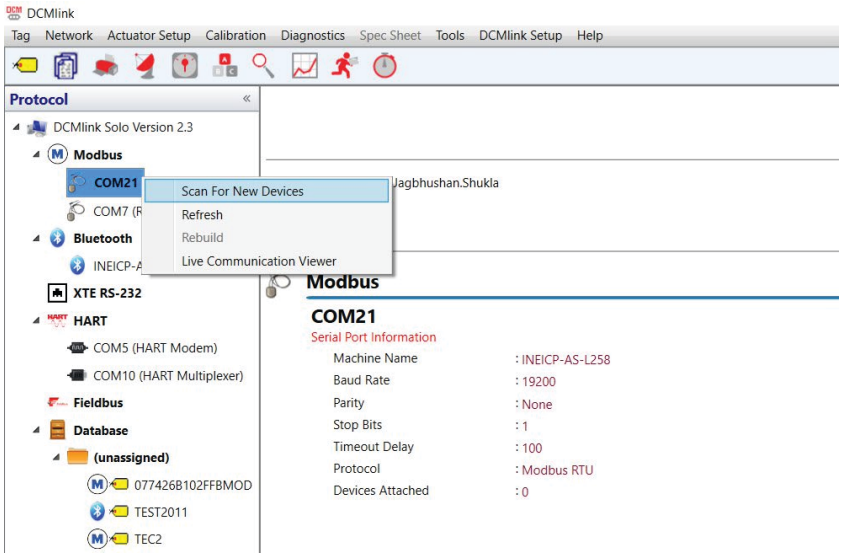
8.1 Scan for New Devices in Modbus Master Mode

After a COM Port has been configured in Modbus, the user may begin scanning for installed electric actuators in the network. Follow the below:

8.1.1 On Protocol Selection View (navigation pane), right nmnmclick newly created Modbus **COM#** Port.

8.1.2 On the context menu, click **Scan For New Devices.**

Figure 128 Scan for New Devices

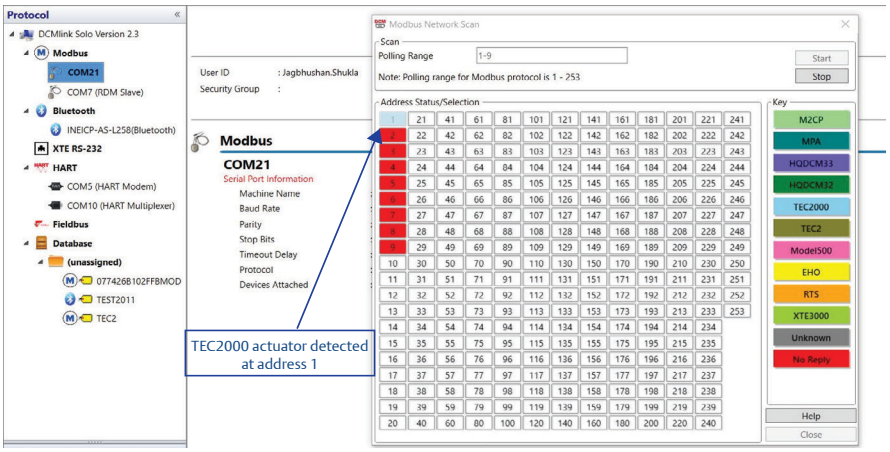


8.1.3 On the Modbus Network Scan Window, enter number in the **Polling Range** field. This number should be the address of the actuator. In the example on the next page, the TEC2000 device is in Polling Address Number 1.

NOTE:

Each electric actuator model series is indicated by a unique color. This feature aims to make it easier to detect multiple actuators across a wide address range in the scan device window. Please ensure that Polling Address w.r.t. Actuator gives Complete Colour blinking during network scanning process. This will ensure the stable communication.

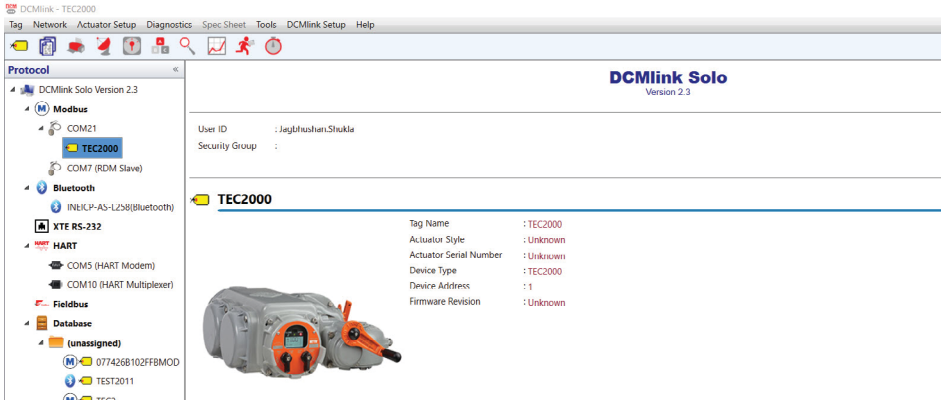
Figure 129 New Device Detected



8.1.4 Click **Stop** on the device scanner once the device has been detected. Click **Close**.

8.1.5 Click **New Device Tag** on the navigation pane to view the actuator.

Figure 130 TEC2000 Detected



8.1.6 Live Communication Viewer details are covered in Section 12.2.

NOTE:

Live Communication Viewer details are required for Modbus Master. In order to use Modbus Master, the user needs a CAM card.

8.2 Check Network for Actuators in Modbus RDM Slave Mode

TEC2000 actuator communicates with Remote Display Module (RDM) using few special custom Modbus commands. If any software can simulate the behavior of RDM (in terms of those custom modbus commands), TEC2000 will treat that software application as a physical RDM and will continue to communicate with it. This allows DCMlink to behave like a RDM and talk to TEC2000. User can use, connect, and control TEC2000 actuator.

Below explains the available RDM Mode options and the various parts of the application window.

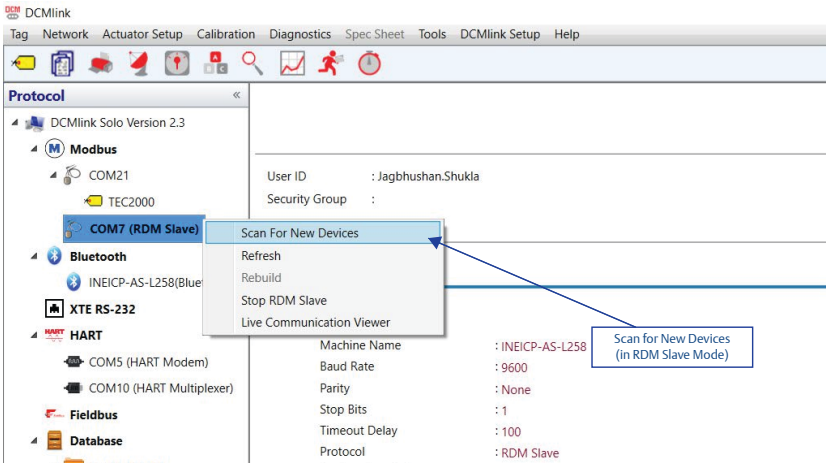
NOTE:
RDM Slave Mode is only available in TEC2000 actuator.
Do not modify these parameters in the application.

About RDM Slave Mode:

- In RDM Slave Mode, DCMlink detects TEC2000 always at address 0.
- In RDM Slave Mode, DCMlink acts as RDM slave and TEC2000 actuator acts as Master.

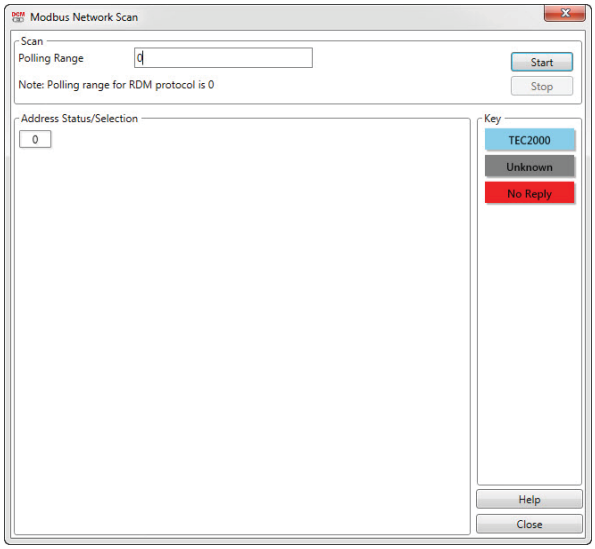
8.2.1 Right click **RDM port node** to access the following context menu:

Figure 131 Scan for New Devices Using RDM Slave Mode



8.2.2 On the Network Scan Window, click **Start**.

Figure 132 Network Scan Window Using RDM Slave Mode

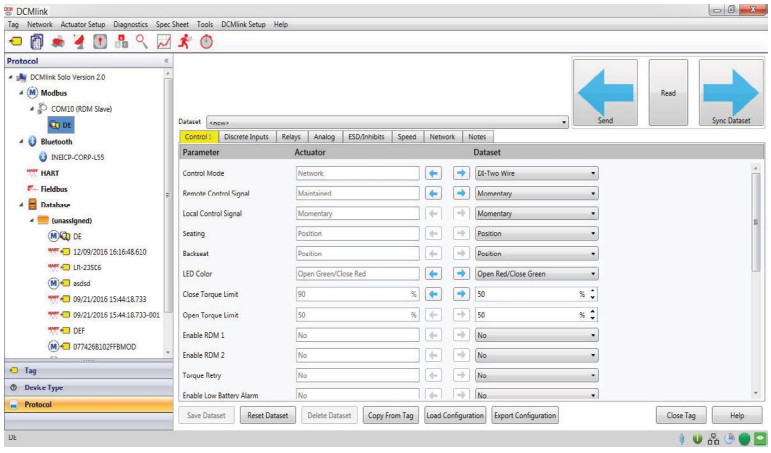


8.2.3 RDM Mode does not require specifying an address. User just needs to start scanning for actuators.

- As DCMlink work on address: 0.
- No need for the user to choose the device address.
- In RDM slave mode, DCMlink will act as RDM (Slave) and the TEC2000 actuator acts as a Master.

8.2.4 The detailed setup of RDM Mode actuator:

Figure 133 Detailed Setup in RDM Slave Mode



8.2.5 Whenever there is a change in any configuration parameters, the arrow button will be enabled as shown below:

Figure 134 Enabled Left and Right Arrows

- The **Send arrow button** allows the user to write data to the actuator. It also allows writing all changed data at a time, to the actuator.
- The **Sync Dataset arrow button** allows the user to write data from actuator to DCMlink dataset.
- The **Read button** is used to read all parameter values (actuator and dataset) from the detailed setup.

NOTE:

For RDM mode, **Setpoint** is not present on Status Monitor, Valve Control, and Trend Screen.

8.3 Check Network for Actuators in Modbus TCP/IP Mode

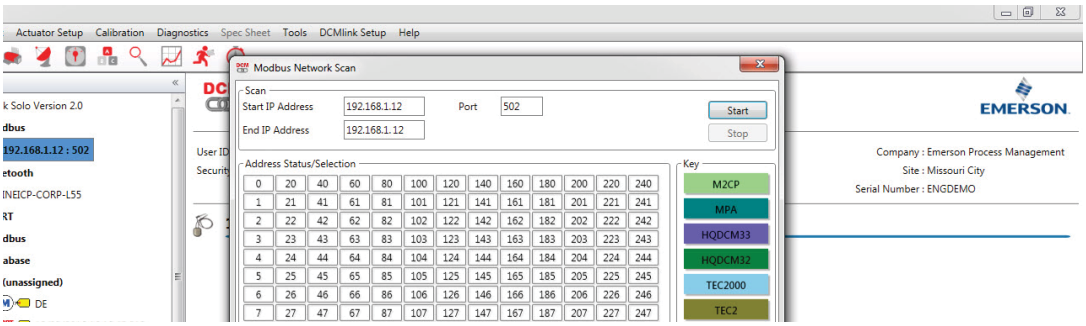
Below is about Modbus TCP/IP and its implementation into DCMlink. The details of Modbus TCP/IP is explained in this section.

8.3.1 In DCMlink Preference settings, select mode as Modbus TCP and select the IP address, port number, and timeout delay as per the actuator's TCP/IP setting. For more information on how to access the dialog box shown below, refer to Section 7.2.1.

8.3.2 To scan and identify a device connected to the Modbus TCP/IP, follow the below:

8.3.2.1 From the DCMlink, right-click on IP port address and **select Scan for New Devices**.

Figure 135 IP and Port Address from the Navigation Pane

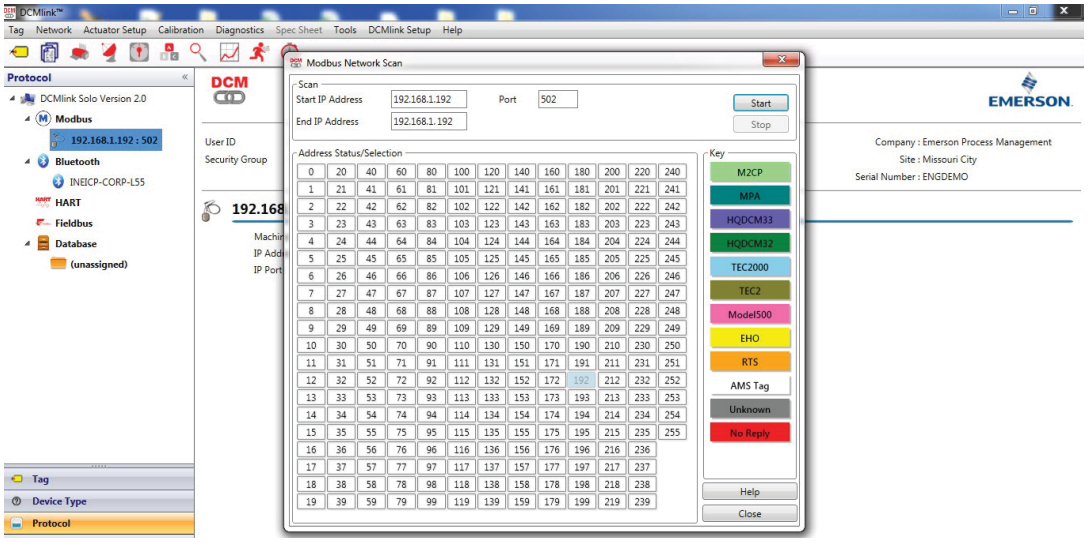


8.3.2.2 On the **Modbus Network Scan** window, observe the start IP address, End IP address, and Port number which is similar to configured IP address under Modbus Tag in **Navigation Pane**.

8.3.2.3 Click **Start**.

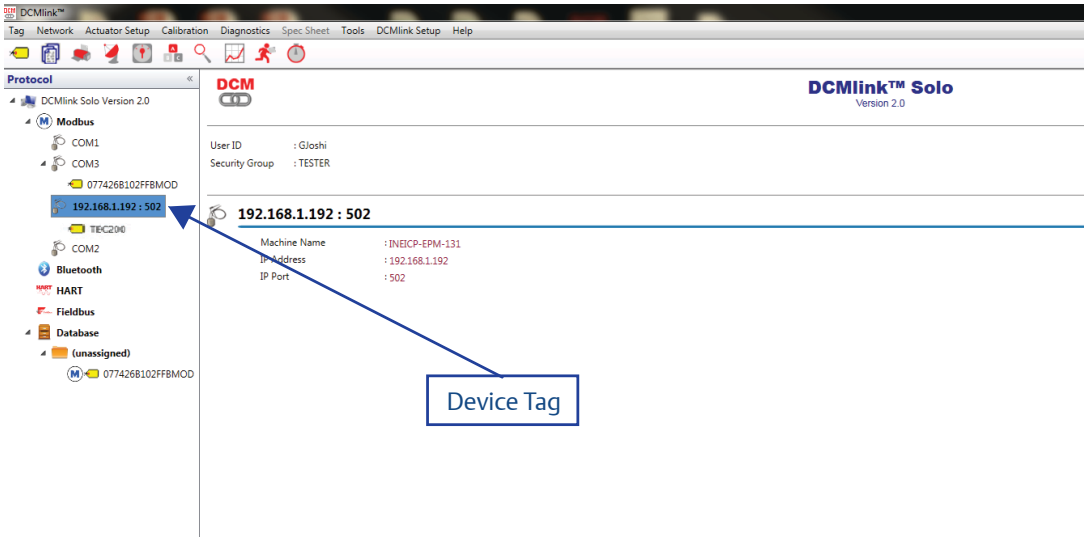
8.3.2.4 Once the device is found, click on **Stop** then click **Close**.

Figure 136 Detected Actuator at Specified Address



8.3.2.5 Notice that the device Tag appears on the navigation menu pane.

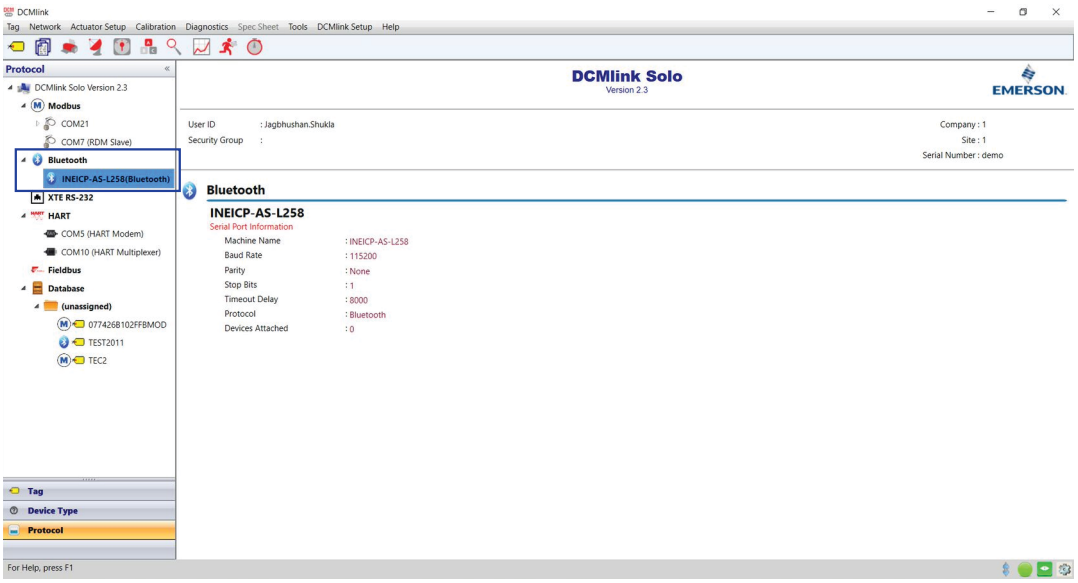
Figure 137 Detected Actuator in the Navigation Pane



8.4 Check Network for Actuators in Bluetooth

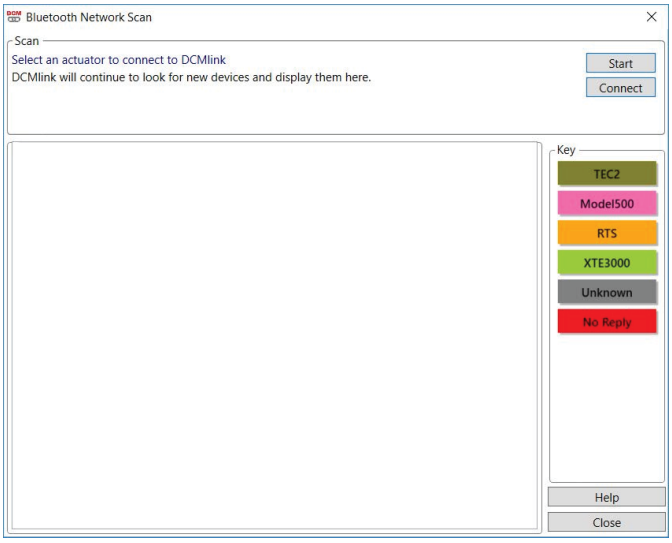
8.4.1 From the DCMlink, right-click Bluetooth sub-item in the navigation bar and select **Scan for New Devices**.

Figure 138 Bluetooth Scan



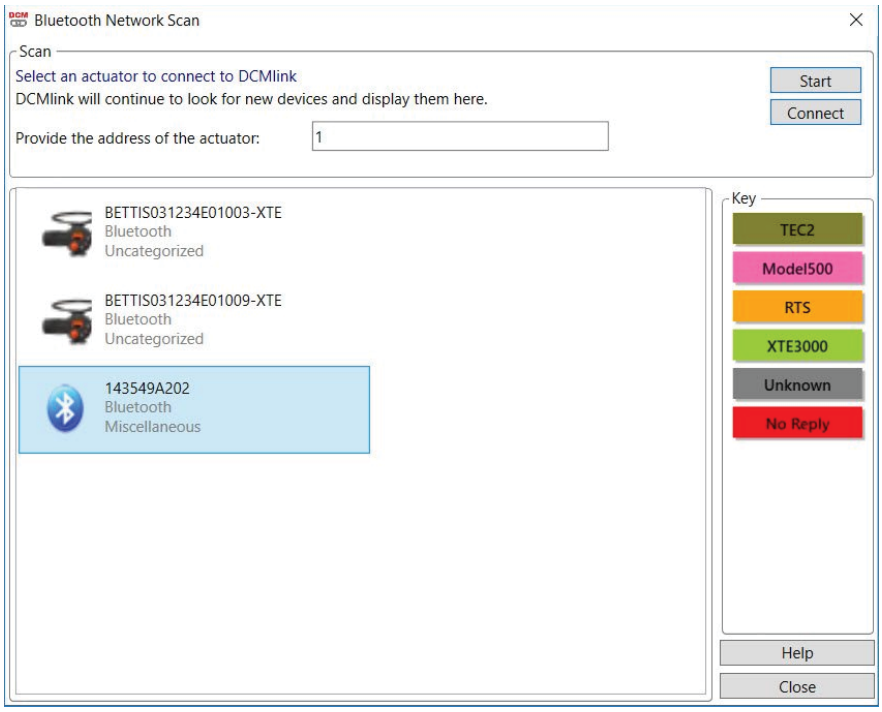
8.4.2 Provide the address of the actuator and click **Start**.

Figure 139 Device Address Input



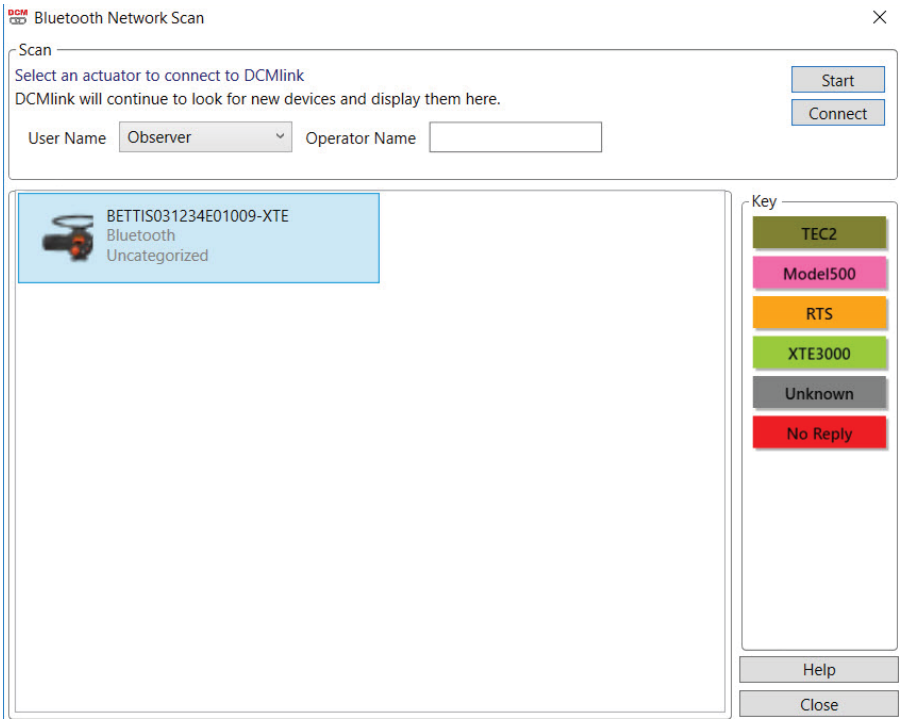
8.4.3 Select the detected Bluetooth device.

Figure 140 Detected Devices



NOTE:
Applicable to TEC2 actuator.

Figure 141



NOTE:
Applicable to XTE3000 actuator.

8.4.4 Click **Connect**.

8.4.5 Click **Close** to see the connected actuator on navigation view.

8.4.6 Live Communication Viewer details are covered in Section 12.2.

NOTE:
Bluetooth option is available in TEC2 and XTE3000.

8.5 Check Network for Actuators in HART

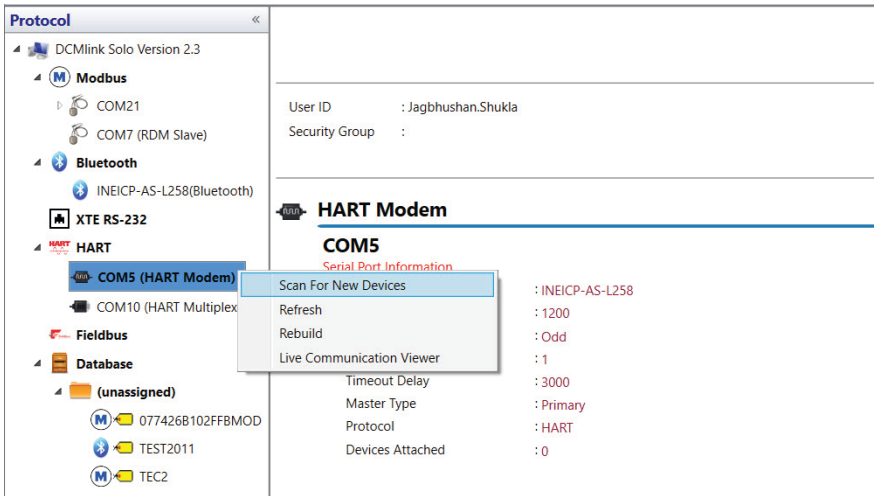
There are 4 different sections for HART Network

- HART Modem
- HART MUX (Multiplexer)
- Wireless Gateway
- DeltaV

8.5.1 For Modem and MUX refer to below procedures (for SOLO):

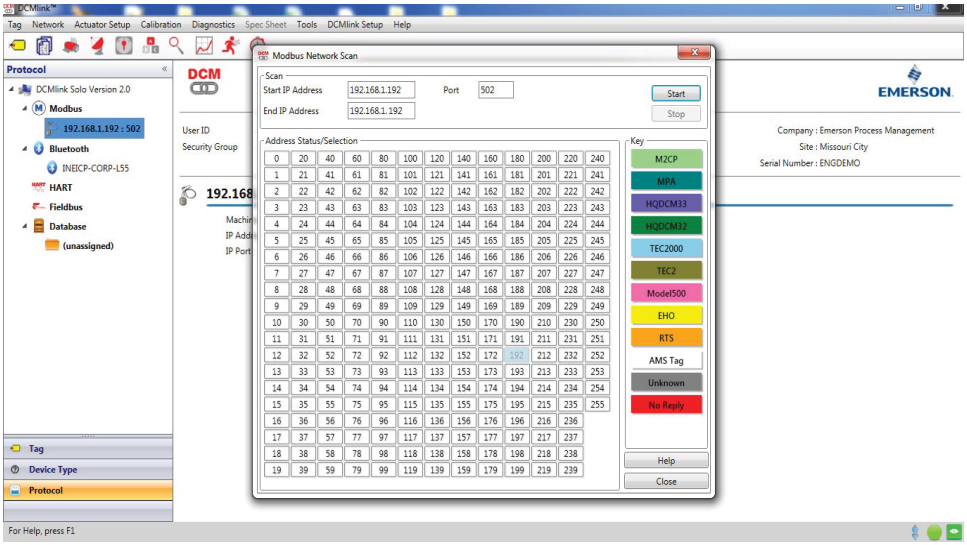
- In **Preference** settings, select mode as **HART** and **configure HART Modem /MUX** as per Section 7.5.1.1.
- To scan and identify device connected to the HART Modem as below:
  - From the DCMlink, right-click **HART Modem**.
  - Select **Scan for New Device**.

Figure 142 Scan for New Device



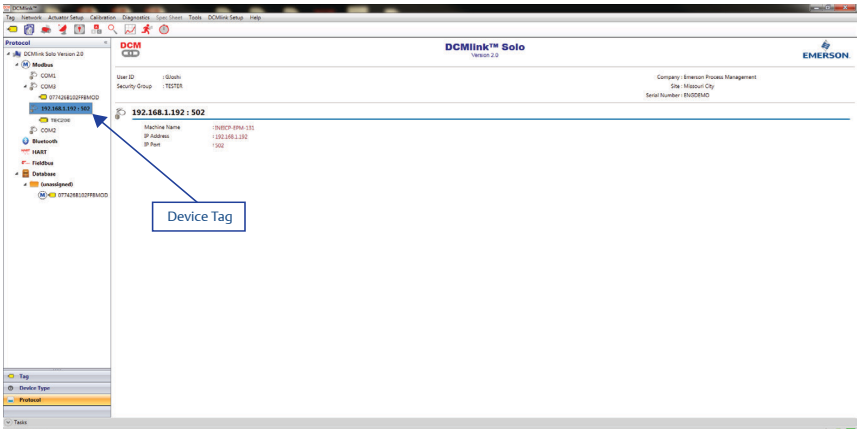
  - Click **Start**.
  - Once the device is found, click **Stop**, followed by **Close**.

Figure 143 Detected Actuator at Specified Address



– You can find **Device Tag** on the **Navigation Pane**.

Figure 144 Detected Actuator in the Navigation Pane



8.5.2 For **Modem** (for SNAP-ON) refer to Section 7.5.1.2 and for MUX (for SNAP-ON) refer to Section 7.6.

8.5.3 For **Wireless Gateway and DeltaV** (for SNAP-ON) refer to Section 7.5.3 and 7.5.4.

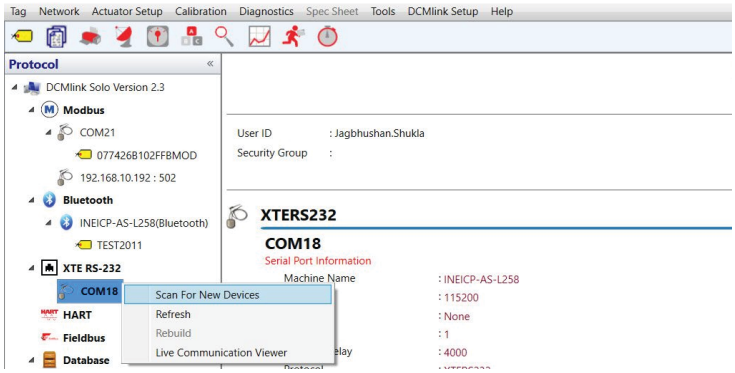
8.6 Check Network for Actuators in XTE RS-232 Protocol

After a COM Port has been configured for XTE RS-232, the user may begin scanning for installed electric actuators in the network. Follow the below:

8.6.1 On Protocol Selection View (navigation pane), right-click newly created XTE RS-232 COM# Port.

8.6.2 On the context menu, click Scan for New Devices.

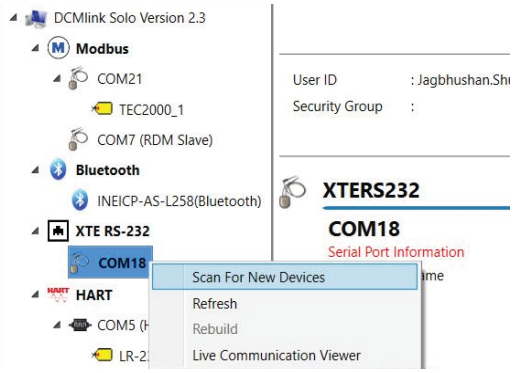
Figure 145 Scan for New Devices



NOTE:

Each electric actuator model series is indicated by a unique color. This feature aims to make it easier to detect multiple actuators across a wide address range in the scan device window. Please ensure that Polling Address w.r.t. Actuator gives Complete Colour blinking during network scanning process. This will ensure the stable communication.

Figure 146 New Device Detected



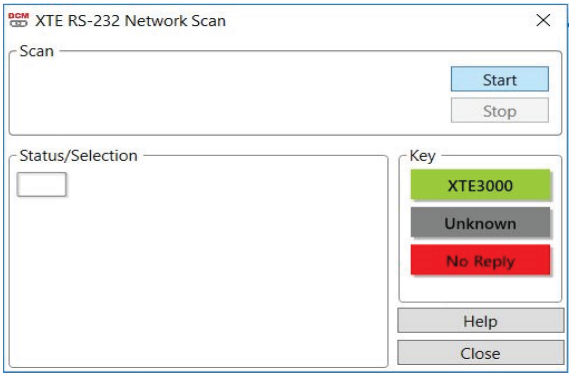
8.6.3 Click **Start** on the device scanner to detect the connected device.

8.6.4 On device scanner, first it tries with the configured Baud Rate the with another baud rate. Once device it connected, notifies the user with which Baud Rate connection was established.

8.6.5 Click **Stop** on the device scanner once the device has been detected. Click **Close**.

8.6.6 Click **New Device Tag** on the navigation pane to view the actuator.

Figure 147 XTE3000 Detected



8.6.7 Live Communication Viewer details are covered in Section 12.2.

Section 9: Status Monitor

9.1 Introduction

DCMlink menu options offer a wide range of features to customize the software experience and control installed actuators.

9.2 View Monitor Information

9.2.1 View Monitor Information

Figure 148 View Buttons

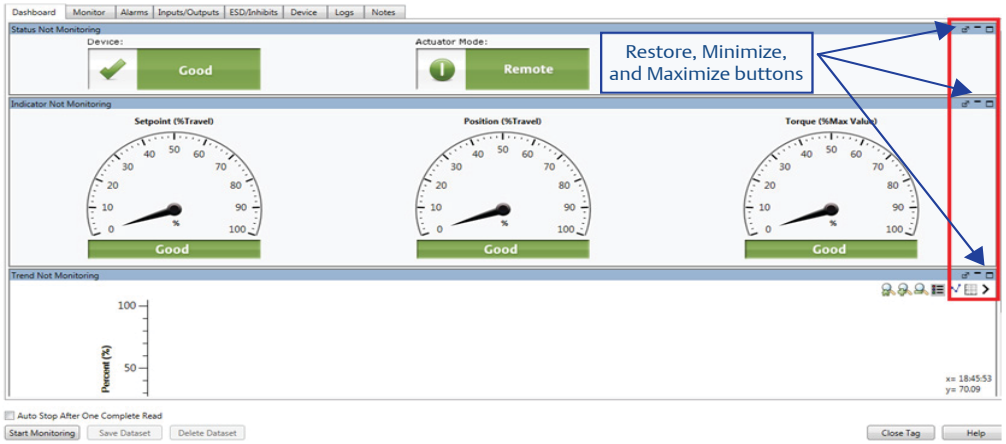
Good	Good
Bad	Bad
Degraded	Degraded

Table 15. Status Parameters

Parameter	Device Status		
	Good	Degraded	Bad
Setpoint	If “Degraded”, “Bad” is not active, then the Status is Good	If the Value returned from Actuator > 4095 XTE3000: If the Value returned from Actuator > 1000	If there is Communication Failure with the Actuator
Position	If “Degraded”, “Bad” is not active, then the Status is Good	If the Value returned from Actuator > 4095 XTE3000: If the Positioner Sensor alarm is set.	If there is Communication Failure with the Actuator
Torque	If “Degraded”, “Bad” is not active, then the Status is Good	If the Value returned from Actuator > 4095 XTE3000: If the: “Hi Hi Torque in open direction” OR “ Hi Hi Torque in close direction” alarm is set.	If there is Communication Failure with the Actuator
Analog Input 1	If “Degraded”, “Bad” is not active, then the Status is Good	If "Analog Input 1 Out of Range Alarm" is SET	a) If “Lost Analog Input 1 Alarm” is SET Or b) If there is Communication Failure with the Actuator
Analog Input 2	If “Degraded”, “Bad” is not active, then the Status is Good	If "Analog Input 2 Out of Range Alarm" is SET.	a) If “Lost Analog Input 2 Alarm” is SET Or b) If there is Communication Failure with the Actuator
Analog Output 1	If “Degraded”, “Bad” is not active, then the Status is Good	If the Value returned from Actuator > 4095	If there is Communication Failure with the Actuator
Analog Output 2	If “Degraded”, “Bad” is not active, then the Status is Good	If the Value returned from Actuator > 4095	If there is Communication Failure with the Actuator
Hydraulic Pressure	If “Degraded”, “Bad” is not active, then the Status is Good	Hydraulic Pressure range change as per its unit as follow: Pressure Unit Range- bar: 0-400 psi: 0-5000 Kilopascal(kPa): 0-35000 Depending Upon the unit following is the Status of Hydraulic Pressure: Good- 0-5000 Degraded- >5000 Bad- If “Over Pressure in Mid Travel Alarm"	If there is Communication Failure with the Actuator
Accumulator Pressure	If “Degraded”, “Bad” is not active, then the Status is Good	Pressure Unit Range- bar: 0-400 psi: 0-5000 Kilopascal(kPa): 0-35000 Depending Upon the unit following is the Status of Accumulator Pressure Good- 0-5000 Degraded- >5000 Bad- If “Over Pressure in Mid Travel Alarm”	If there is Communication Failure with the Actuator

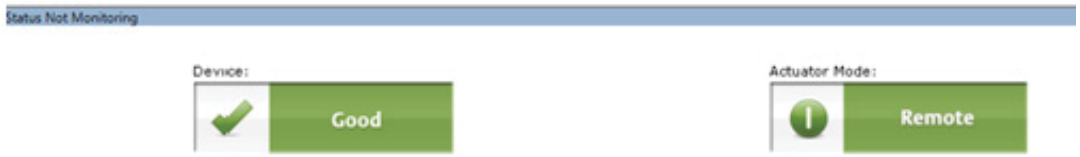
9.2.2 Dashboard (Maximize, Restore, Minimize)

Figure 149 View Buttons



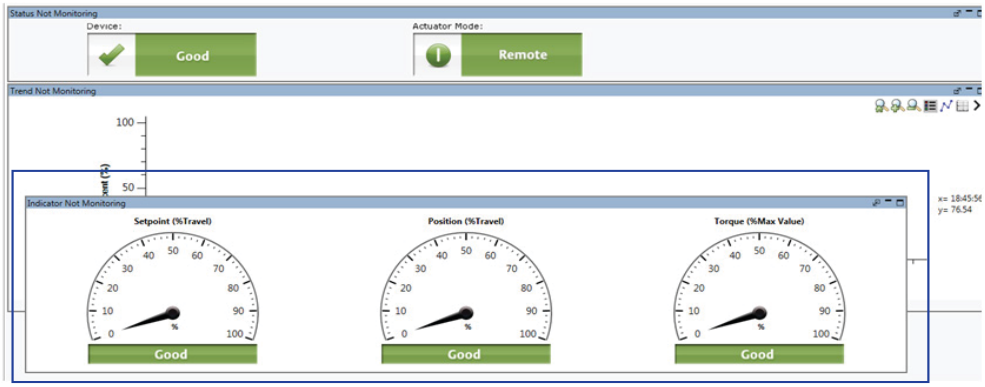
a. **Maximize**: Selected window maximizes the screen.

Figure 150 Maximize



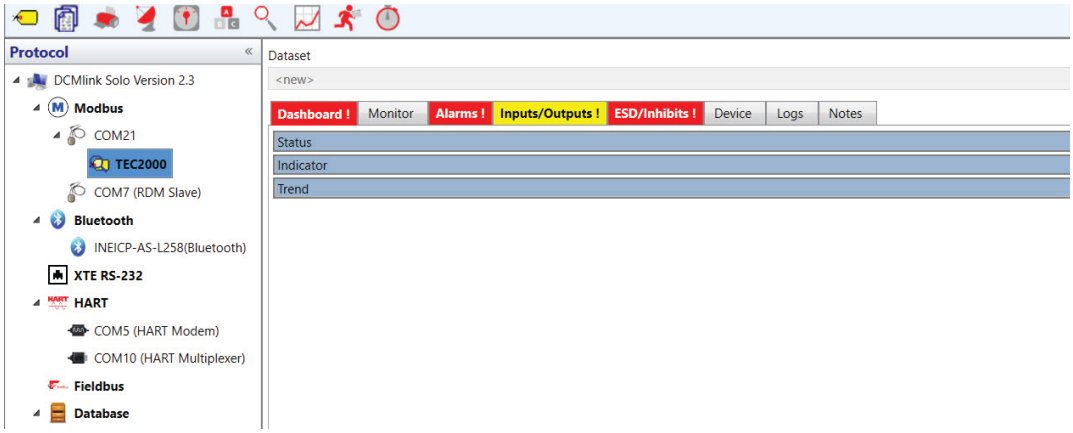
b. **Undock**: Turns the selected window into a movable window. Click and drag to move. (Third window shown below is now movable).

Figure 151 Undock



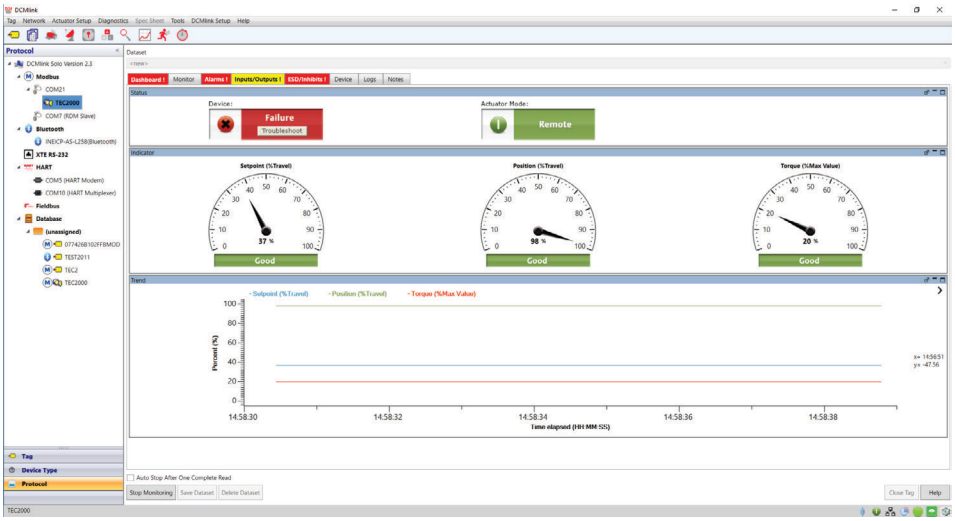
c. **Minimize**: Collapses the selected windows showing only the top window bar.

Figure 152 Minimize



d. **Trend**: Shows the torque graph readings.

Figure 153 Trend View

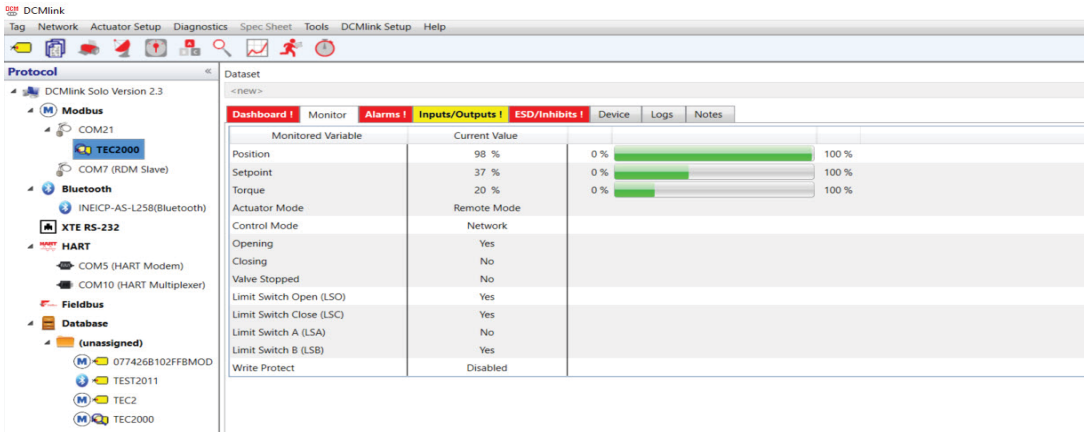


- **Zoom In:** Magnifies a particular portion the graph, showing lines in greater detail.
- **Zoom Out:** Reduces the magnification on the graph.
- **Zoom Back:** Moves zoom magnitude to the original setting.
- **Grid:** Shows trend graph grid.
- **Legend:** Toggles Setpoint, Position and Travel on top of the graph.

NOTE:
Zoom in and zoom out works when status monitoring has stopped.

9.2.3 Monitor: Shows the discrete values shown in the graph.

Figure 154 Monitor Tab

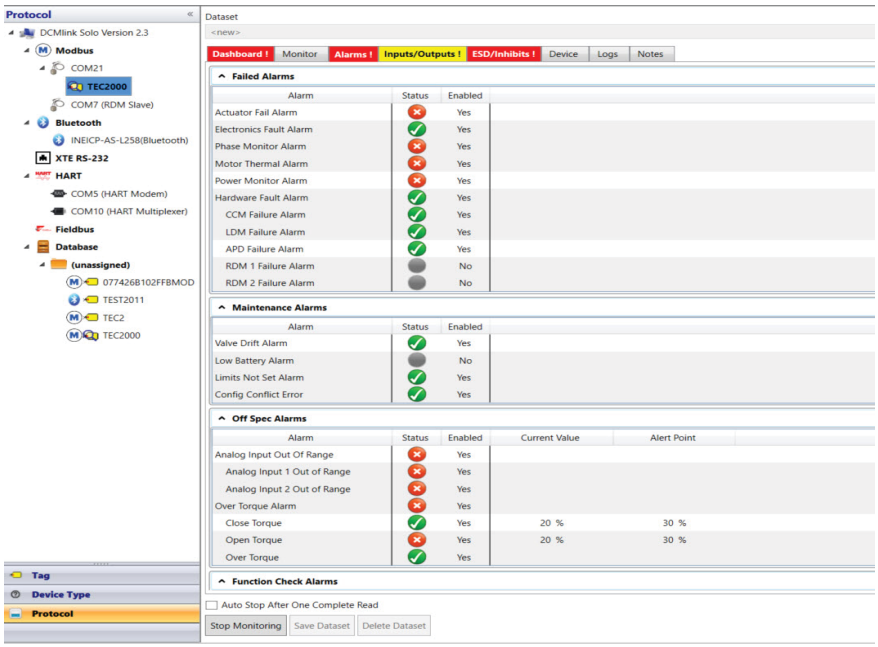


9.2.4 Alarms: Shows applicable alarms for the selected actuator.

⚠ CAUTION: PAY ATTENTION TO DCMLINK ALARMS

DCMlink monitors the status of the plant infrastructure. If warnings and cautions show up in status alerts, a device needs urgent attention or is providing important information. Carefully monitor alarms and alerts to allow for immediate action.

Figure 155 Alarms Tab



NOTE:
If there is any active alarm, the TAB Color will be **red**.

Figure 156 Alarms Legend

- **Red Cross:** Alarm is active.
- **Green Tick:** No Alarm is active.
- **Grey Circle:** Alarm is disabled.

The following is a summary of alarms applicable to the actuator device type:

Table 16. Application of Alarms for Actuator Device Type (1)

Alert	Alert Sub-bit	Applicable to Actuator Type						Alert Information	
		MPA	M2CP (320B)	HQDCM32/ HQDCM33	TEC2000	TEC2	EHO	State of the Problem	Recommended Action
Actuator Fail Alarm	N/A	Yes	Yes	N/A	Yes	Yes	Yes	A device has failed due to an internal self-test of the actuator.	1. Cycle power to the actuator to clear this alarm. 2. If power cycling did not clear this alert, immediate actuator maintenance is required on the contactor, position detector, and motor or power circuit. 3. Please check the connection between Pin #20 and Pin #22 on STC (this is applicable only for TEC family).
Phase Monitor Alarm	N/A	Yes	Yes	N/A	Yes	Yes	Yes	The actuator has failed because the phase monitor indicated a loss of one phase or reversed phase rotation of incoming three-phase power.	1. Verify if the manifold valves are in the proper position. Reverse phase is non-fatal whereas the lost phase shall be addressed. For TEC family, (TEC2000/ TEC2/EHO) and MPA the phase monitor is always enabled. For M2CP, this feature is optional and the jumper on the TBM can be configured to enable/disable phase correction. 2. Check the incoming power supply to the actuator.
Motor Thermal Alarm	N/A	Yes	Yes	N/A	Yes	Yes	Yes	A device failure because the motor control circuit is disabled due to motor overheating or motor overload relay (optional) has tripped.	1. The motor has overheated due to operating the motor beyond the recommended starts or duty cycle. Another cause may be a seized valve that will not allow the motor to turn (motor stall). 2. Let the motor cool, look for any obstructions and examine your control strategy to make sure you are not overloading the motor.
Power Monitor Alarm	N/A	Yes	Yes	N/A	Yes	Yes	Yes	This alert indicates a device failure due to loss of control voltage to the motor.	Check fuse F3 to clear alarm. (This is applicable only for M2CP actuator). For TEC Family: 1. It indicates flaw in functionality of contactor. 2. Occurrence of power monitor alarm indicates failure to operate contactors, hence valve will not move. 3. Cable between CCM and MCM can have a loose connection, change cable. 4. Problem in MCM, change MCM. 5. Connector on CCM board can be bad, change CCM.

Table 17. Application of Alarms for Actuator Device Type (2)

Alert	Alert Sub-bit	Applicable to Actuator Type						Alert Information	
		MPA	M2CP (320B)	HQDCM32/ HQDCM33	TEC2000	TEC2	EHO	State of the Problem	Recommended Action
Moving Wrong Direction	N/A	Yes	N/A	N/A	N/A	N/A	N/A	The actuator was turning in the wrong direction.	1. This alarm may occur on a three-phase model due to a hardware failure. The wiring in the TBM (Terminal Board Module) or the wiring to the contactor (or the contactor itself), or the position detector may have failed. 2. Immediate actuator service is required on the actuator as this alarm locks out all further movement to prevent damaging the seals.
Hardware Fault Alarm	CCM Failure Alarm	N/A	N/A	N/A	Yes	Yes	N/A	Central Control Module has detected an error indicating an internal failure.	Please check the connection between Pin #20 and Pin #22 on STC (This is applicable only for TEC family). Please contact Emerson or your local representative.
	LDM Failure Alarm	N/A	N/A	N/A	Yes	Yes	Yes	Local Display Module has detected an error indicating an internal failure.	Please contact Emerson or your local representative.
	APD Failure Alarm	N/A	N/A	N/A	Yes	Yes	N/A	Absolute Position Detector Failure.	Please contact Emerson or your local representative.
	RDM1 Failure Alarm	N/A	N/A	N/A	Yes	Yes	Yes	Remote Display 1 failure. Remote display has been enabled in the configuration, and either the RDM is not present, or has communication errors.	Please contact Emerson or your local representative.
	RDM2 Failure Alarm	N/A	N/A	N/A	Yes	Yes	Yes	Remote Display 2 failure. Remote display has been enabled in the configuration and either the RDM is not present, or has communication errors.	Please contact Emerson or your local representative.
	Hydraulic Power Unit Fault Alarm	N/A	N/A	N/A	N/A	N/A	Yes	The alarm indicates the hydraulic power unit failure. Triggered when the motor ran for more than 4 seconds but hydraulic pressure has not increased.	Please contact Emerson or your local representative.
	Solenoid Valve Fault Alarm	N/A	N/A	N/A	N/A	N/A	Yes	This alarm indicates SOV failed.	Please contact Emerson or your local representative.
	Pressure Transmitter Fault Alarm	N/A	N/A	N/A	N/A	N/A	Yes	The alarm indicates pressure transmitter failed.	Please contact Emerson or your local representative.
	Encoder Fault Alarm	N/A	N/A	N/A	N/A	N/A	Yes	Encoder indicates the position value is incorrect due to communication error in encoder circuit.	Please contact Emerson or your local representative.

Table 18. Application of Alarms for Actuator Device Type (3)

Alert	Alert Sub-bit	Applicable to Actuator Type						Alert Information	
		MPA	M2CP (320B)	HQDCM32/ HQDCM33	TEC2000	TEC2	EHO	State of the Problem	Recommended Action
Fieldbus CAM card specific alarms	Communication Failed Alarm	Yes	Yes	Yes	Yes	Yes	Yes	A device failed because communication between the Fieldbus Interface and actuator has failed or has an error due to data integrity.	1.Communication failure may occur when the actuator is powered down such as when maintenance is being performed. 2. Check the communication integrity from the Fieldbus Interface to the actuator and if the actuator is powered.
	Actuator Lost Power Alarm	Yes	Yes	Yes	Yes	Yes	Yes		
Electronic Failure	Electronics fault alarm	N/A	N/A	N/A	Yes	Yes	N/A	Internal hardwired system failure of electronics.	Reset power. If alarm reoccurs, Please contact Emerson or your local representative.
	ROM Integrity Failure	Yes	Yes	Yes	Yes	Yes	Yes		
	Mfg. Blk. Integrity Failure	Yes	Yes	Yes	Yes	Yes	Yes		
Initialization Failed Alarm		Yes	Yes	Yes	Yes	Yes	Yes	The Fieldbus Interface cannot communicate with the actuator or the upload/download generates an error.	1. When the Fieldbus Interface goes through a Reset, either by cycling power or via the Resource Block Reset parameter, it attempts to download/upload initialization data to/from the actuator. 2. This alert will clear after the Fieldbus Interface initializes communication with the actuator.
	Compatibility Error	Yes	Yes	Yes	Yes	Yes	Yes		
NV Memory failure		Yes	Yes	Yes	Yes	Yes	Yes	Nonvolatile EEPROM data corruption was detected on the Fieldbus Electronic board.	1. Check the device configuration for changes in the block parameter values. 2. Reset the device to clear the error. 3. Download a device Configuration.

Table 19. Application of Alarms for Actuator Device Type (4)

Alert	Alert Sub-bit	Applicable to Actuator Type						Alert Information	
		MPA	M2CP (320B)	HQDCM32/ HQDCM33	TEC2000	TEC2	EHO	State of the Problem	Recommended Action
Over Pressure in Mid-Travel Alarm	N/A	N/A	N/A	N/A	N/A	N/A	Yes	This alert indicates that the hydraulic pressure has exceeded the archived pressure value and pressure value tolerance level (%) in the open direction.	1. Check the archived Hydraulic Pressure value. Also, check to ensure there is no obstruction preventing the actuator from making a full open stroke. 2. Running the actuator in the opposite direction successfully will clear this alarm.
Analog Input Out of Range Alarm	AI-1 Out of Range	N/A	Yes	Yes	Yes	Yes	Yes	Analog input to the actuator is beyond the legal limits of the input channel.	1. Check the 4 - 20 mA source. Check the 4 - 20 mA cabling and connection. 2. Try Analog calibration procedure on the actuator using the same 4 - 20 mA source.
	AI-2 Out of Range	N/A	Yes	N/A	Yes	Yes	N/A		
Over Torque Alarm	Close Torque	N/A	Yes	Yes	Yes	Yes	Yes	The close torque limit has exceeded its value the last time the actuator attempted to move in the close direction.	1. Check the close torque limit settings to ensure proper set up. Also, check to ensure there is no obstruction preventing the actuator from making a full close stroke. 2. Running the actuator in the opposite direction successfully will clear this alarm.
	Open Torque	N/A	Yes	Yes	Yes	Yes	Yes	The open torque has exceeded the configured value in the open direction.	1. Check the open torque limit settings to ensure proper set up. 2. Also, check to ensure there is no obstruction preventing the actuator from making a full open stroke. 3. Running the actuator in the opposite direction successfully will clear this alarm.
	Over Torque	Yes	N/A	N/A	Yes	Yes	Yes	The torque has exceeded the torque limit.	1.Check the torque limit setting to ensure proper set up. 2. Also, check to ensure there is no obstruction preventing the actuator from moving.

Table 20. Application of Alarms for Actuator Device Type (5)

Alert	Alert Sub-bit	Applicable to Actuator Type						Alert Information	
		MPA	M2CP (320B)	HQDCM32/ HQDCM33	TEC2000	TEC2	EHO	State of the Problem	Recommended Action
Overshoot Alarm	N/A	Yes	N/A	N/A	N/A	N/A	N/A	This condition is reported when the valve crossed the target port and the valve must go all the way around. After 3 retries, this alarm will be triggered indicating a maintenance issue.	1. Check if the flow selector has no fluid at all, resulting in very little torque. 2. The actuator may require calibration to be performed by a qualified technician.
Stop Between Ports Alarm	N/A	Yes	N/A	N/A	N/A	N/A	N/A	The actuator has failed to move to the commanded port.	1. This alert occurs when the actuator is power-cycled while it is moving. This alert can also occur if the selector knob is switched to the “off” position while the actuator is moving. 2. Immediate actuator maintenance is required on the TBM (Terminal Board Module), contactor, position detector, motor or power circuit. Also ensure the clutch is not in the hand position.
CPU Has Reset	N/A	N/A	Yes	Yes	Yes	Yes	Yes	This alarm indicates that the CPU has reset due to power cycle. Additionally, for TEC2 and EHO actuators, this alarm also indicates a request to restart the processor from host has been executed successfully.	This alarm will remain on until cleared from the Host.
Config Conflict Error	Config Conflict Error	N/A	Yes	Yes	Yes	N/A	N/A	Actuator has been incorrectly configured, or hardware sanity checks do not match the actuator configuration settings. Internal system corruption of control board.	1. Check power. 2. Check that the actuator settings are configured correctly for the installed actuator. 3. Check the connection between Pin#20 and Pin #22 on STC (This is applicable only for TEC family) If the issue is not resolved, Please contact Emerson or your local representative.
	Invalid SOV configuration Alarm	N/A	N/A	N/A	N/A	N/A	Yes	This alarm indicates SOV configuration is in correct during Self-Calibration.	Check the SOV configuration and self-calibrate the actuator. It will clear the alarm once Self-Calibration is completed successfully.

Table 21. Application of Alarms for Actuator Device Type (6)

Alert	Alert Sub-bit	Applicable to Actuator Type						Alert Information	
		MPA	M2CP (320B)	HQDCM32/ HQDCM33	TEC2000	TEC2	EHO	State of the Prolem	Recommended Action
Valve Drift Alarm	N/A	N/A	N/A	N/A	Yes	Yes	Yes	Movement has been detected that was not initiated from the motor running.	Make sure the actuator is not in the handwheel position.
Low Battery Alarm	N/A	N/A	N/A	N/A	Yes	Yes	N/A	The actuator has detected a low charge voltage on the internal Super CAP/Battery.	1. Check the charge volTage because the Super CAP has fallen below a predetermined voltage, indicating that the Super CAP is not sufficiently charged. 2. Actuator maintenance is required if this alert persists for more than four hours after power is applied to the actuator.
Limits Not Set Alarm	N/A	N/A	N/A	N/A	Yes	Yes	Yes	This alarm indicates that the fully open and fully close limits are not configured.	For TEC family of actuators, limits can be configured from the Local Display Module (LDM). For the M2CP family of actuators, please refer to the corresponding DIP switch settings to configure the limits.
Accumulator Alarm	Accumulator Pre Charge Alarm	N/A	N/A	N/A	N/A	N/A	Yes	The accumulator nitrogen pre-charge is not within the set range.	Refer to the pre-charge instructions in the information package and add or subtract nitrogen to the accumulator accordingly. Immediate service is required to ensure proper functionality of the unit.
	Accumulator Charge Fault Alarm	N/A	N/A	N/A	N/A	N/A	Yes	The accumulator did not charge to the maximum pressure within the allowed charge time. The electric motor has been stopped until another command is received.	Refer to the maintenance instructions for reasons and solutions to resolve this issue. Immediate service is advised to ensure proper functionality of the unit.
Low Oil Level Alarm	N/A	N/A	N/A	N/A	N/A	N/A	Yes	This alarm indicates oil level in hydraulic tank is less. However, this alert does not prevent actuator operation.	Once oil is filled in the tank, this alert will be cleared.
Inhibit Alarm	Close Inhibit Alarm	N/A	N/A	N/A	Yes	Yes	Yes	Actuator has been configured to use the discrete inputs as inhibits and one of them is currently active. When active, this alarm will inhibit actuator from moving.	Check the host system. Check external control wiring and connections. Clear the inhibit conditions on the host.
	Open Inhibit Alarm	N/A	N/A	N/A	Yes	Yes	Yes		

Table 22. Application of Alarms for Actuator Device Type (7)

Alert	Alert Sub-bit	Applicable to Actuator Type						Alert Information	
		MPA	M2CP (320B)	HQDCM32/ HQDCM33	TEC2000	TEC2	EHO	State of the Problem	Recommended Action
Lost COM Alarm	Lost COM1 Alarm	N/A	Yes	N/A	Yes	Yes	Yes	This alarm indicates that the network communications has failed.	Check the network cables. Check the network connections on the STC. Check the BAUD rate on the host. Check if the host is operating.
	Lost COM2 Alarm	N/A	Yes	N/A	Yes	Yes	Yes	This alarm indicates that the network communications has failed.	Check the network cables. Check the network connections on the STC. Check the BAUD rate on the host. Check if the host is operating.
ESD Active Alarm	ESD from Lost COM	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Hardwired ESD Alarm	Yes	Yes	Yes	Yes	Yes	Yes	An open circuit (or closed circuit, depending on configuration) to the Local ESD input of the actuator.	1. ESD input overrides control of the actuator as long as the ESD condition exists. The actuator will go to a pre-selected position of close, open or stay put. 2. Clear the local ESD by supplying the normal signal (open/closed circuit, depending on the configuration) to the actuator.
	Host Command ESD	Yes	Yes	Yes	Yes	Yes	Yes	This alarm indicates that the host has sent an ESD command to the actuator.	This alarm will remain on until it is cleared from the Host.
Lost Analog Input Alarm	Lost Analog Input 1	N/A	N/A	N/A	Yes	Yes	Yes	This alarm is triggered when the analog input 1 signal is not present and the actuator is configured for analog control.	Check analog cable. Check connections on Analog Input on the STC. Check if the analog input source is valid.
	Lost Analog Input 2	N/A	N/A	N/A	Yes	Yes	N/A	This alarm is triggered when the analog input 2 signal is not present and the actuator is configured for analog control.	Check analog cable. Check connections on analog input on the STC. Check that the analog input source is valid.
Backup Power Alarm	N/A	N/A	N/A	Yes	N/A	N/A	N/A	This alarm indicates the actuator has detected a low charge voltage on the internal Super CAP.	Actuator maintenance is required if this alarm persists for more than four hours after power is applied to the actuator.
Valve Stall Alarm	N/A	Yes	Yes	Yes	Yes	Yes	Yes	The actuator has stalled for more than 10 seconds while moving to the commanded position.	1. Run the actuator in the opposite direction (except MPA) to clear this alarm. 2. Check the contactor, position detector, clutch and the motor.
Partial Stroke Test Fail Alarm	N/A	N/A	N/A	N/A	N/A	N/A	Yes	This alarm is reported when the partial stroke test was not successful.	Alarm will get cleared when a new partial stroke test is successful.
Check Function	N/A	Yes	Yes	Yes	Yes	Yes	Yes	Transducer block is not in auto mode.	Check transducer block mode.

Table 23. Application of Alarms for XTE3000 Actuator Device Type (1)

Alert	XTE3000	Alert Information	
		State of the Problem	Recommended Action
Motor Thermostat	Yes	Motor thermostat open for high temperature in the motor windings	Wait until the motor cools down
Hi Hi Torque in open direction	Yes	Measured torque greater than the relevant value configured in torque set-up or stroke limits routine	Operate the actuator in closing direction. Check the torque needed to operate the valve
Hi Hi Torque in close direction	Yes	Measured torque greater than the relevant value configured in torque set-up or stroke limits routine	Operate the actuator in opening direction. Check the torque needed to operate the valve
Blocked in open	Yes	Not used	
Blocked in close	Yes	Not used	
Hi Hi temperature	Yes	Temperature inside the actuator enclosure higher than 90 °C or lower than -40 °C	Ambient temperature too high or too low. Verify insulation among actuator and heat source
Position Sensor	Yes	Value of the actuator position not valid	Replace position sensor or recalibrate both stroke limits
Speed Sensor	Yes	Measure of motor speed not valid	Replace speed sensor
Main Voltage	Yes	Main voltage lower than -20% or higher than +20% of the value stated in the name plate menu	Check main voltage supply and frequency on terminals L1, L2, L3. Check that wires section is correct
K1 Contactor	Yes	The test routine reports a failure of K1 (coil or auxiliary contact)	Check the contactor
K2 Contactor	Yes	The test routine reports a failure of K2 (coil or auxiliary contact)	Check the contactor
Configuration Error	Yes	The checksum of the EEPROM memory that contains the configuration data is wrong	Reconfigure all parameters (see details next page)
Hardware Error	Yes	The diagnostic program detects some malfunction in the electronics controlling the actuator	Some circuit is damaged and does not work (see details next page)
Low Battery	Yes	The voltage of the lithium battery is too low (only detected if the lithium battery is present and the relevant parameter of the miscellaneous routine is set to “present”)	Change lithium battery
Lost Phase	Yes	The alarm appears only with 3-phase main supply. The alarm is generated in case of fault of one of the phases that supply the actuator transformer	Check main power supply on terminals L1, L2, L3
Request Signal	Yes	The analog 4 - 20 mA signal is not correct	Check the external 4 - 20 mA generator and wiring
Max Torque intermediate position	Yes	The valve does not move in presence of an open/close control	Control in opposite direction
Jammed in close	Yes	No position change after receiving a CLOSE control	Check status of actuator and valve mechanical parts
Jammed in open	Yes	No position change after receiving an OPEN control	Check status of actuator and valve
Direction Test fail	Yes	Motor rotates in the wrong direction	Check the motor wiring
Mid travel in open	Yes	The valve does not move in presence of an open control	Check status of actuator and valve mechanical parts. Recalibrate both stroke limits
Mid travel in close	Yes	The valve does not move in presence of a close control	Check status of actuator and valve mechanical parts. Recalibrate both stroke limits

9.2.5 Warnings

Figure 157 Warnings for XTE3000

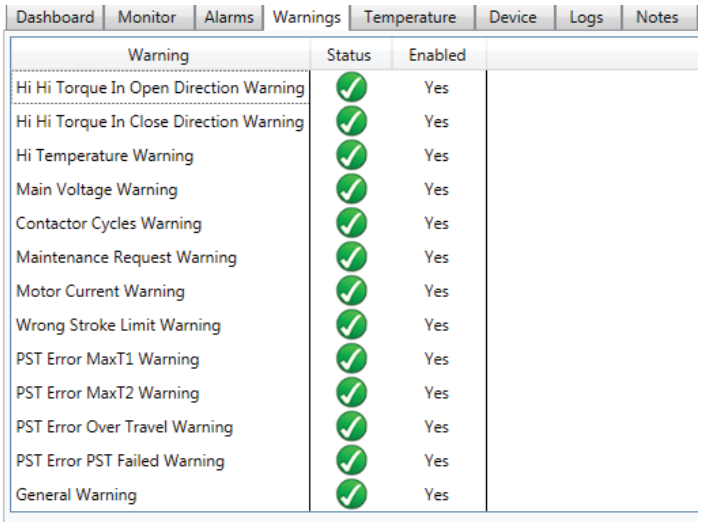


Table 24. Warnings

Warnings	XTE3000	Warning Information	
		State of the Problem	Recommended Action
Hi Hi Torque in open direction	Yes	Measured torque 10% lower than the relevant value configured in torque set-up or stroke limits routines	Check the torque necessary to move the valve
Hi Hi Torque in close direction	Yes	Measured torque 10% lower than the relevant value configured in torque set-up or stroke limits routines	Check the torque necessary to move the valve
Hi Hi Temperature	Yes	Temperature inside the actuator enclosure higher than 80 °C or lower than -35 °C	Find the heat source and insulate the actuator
Main Voltage	Yes	Value of the main voltage out of the correct range (-15% or +10% of the value stated in the name plate menu) or wrong frequency	Check section of wires and values of voltage and frequency
Contactor Cycles	Yes	Max. number of contactor cycles reached	Change contactor and reset operation log
Maintenance request	Yes	Date of the next maintenance reached	Perform maintenance and set nextmaintenance date
Motor current	Yes	Motor current greater or lower than limits	Check electrical motor
Wrong stroke limits	Yes	The routine that monitors the stroke limits detects a wrong end of travel condition	Recalibrate both stroke limits
PST Error – Max T1	Yes	During the last PST, the T-PST time measured is greater than or lower than the “MAX T-PST” of the T-PST measured during the Baseline PST. “MAX T-PST” is configurable from 1 – 1000%	Generate a new successfully PST
PST Error – Max T2	Yes	During the last PST, the T-RET time measured is greater than or lower than the “MAX T-RET” of the T-RET measured during the Baseline PST. “MAX T-RET” is configurable from 1 – 1000%.	Generate a new successfully PST
PST Error – OverTravel	Yes	During the last PST, the position travel is greater than the “MAX OV-TR” “MAX OV-TR” is configurable from 1 – 100	Generate a new successfully PST
PST Error – PST Failed	Yes	At least two of “PST-Max T1”, “PST- Max T2”, “OV-TR” are active or after a device reset	Generate a new successfully PST
General Warning	Yes	Almost one warning is active	All warning must be cleared

9.2.6 Temperature

Figure 158 Temperature

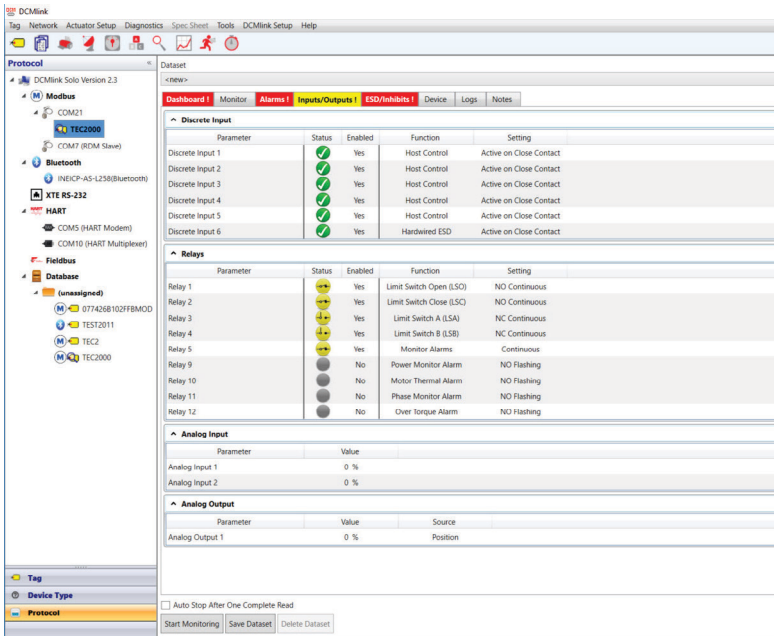
Dashboard | Monitor | Alarms | Warnings | Temperature | Device | Logs | Notes

Temperature Variable	Temperature Value
Min Temperature Of Base Card	24 °C
Max Temperature Of Base Card	36 °C
Min Temperature Of Terminal Board	22 °C
Max Temperature Of Terminal Board	32 °C
Max Temperature Of Motor	65 °C
Recent Min Temperature Of Base Card	24 °C
Recent Max Temperature Of Base Card	36 °C
Recent Min Temperature Of Terminal Board	22 °C
Recent Max Temperature Of Terminal Board	32 °C
Recent Max Temperature Of Motor	65 °C

9.2.7 Input/Outputs

Actuator specific details are available in the respective actuator IOM.

Figure 159 Input/Outputs Tab



NOTE:
If any discrete input or relay is high, the tab color will turn **red**.

Figure 160 Status Monitor Alarms Legend

- **Red Cross:** Means discrete input/relay is high/set.
- **Green Tick:** Means discrete input/relay is low/reset.
- **Grey Circle:** Means discrete input/relay is disabled.

9.2.8 ESD/Inhibits

Displays the related ESD alarms and relay status.

Figure 161 ESD Inhibits Tab

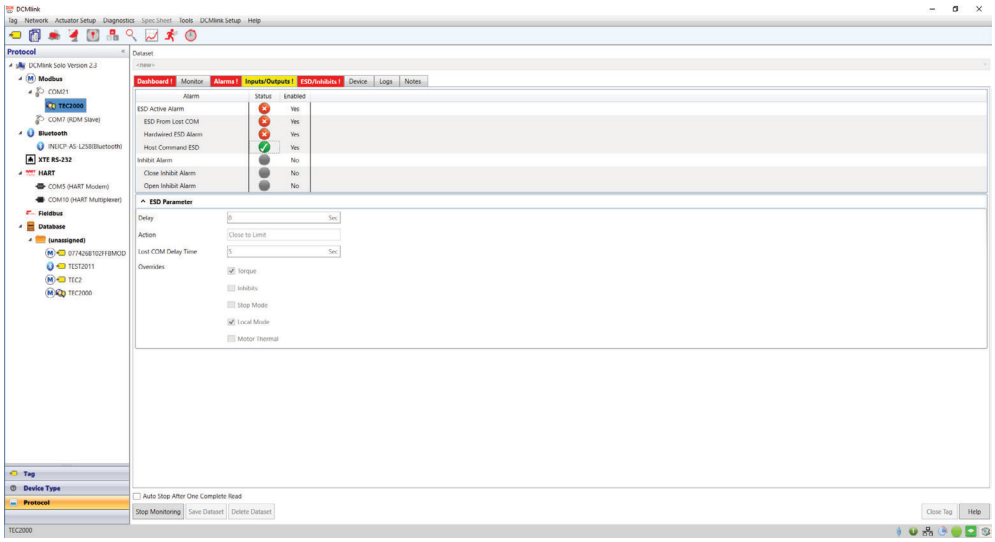


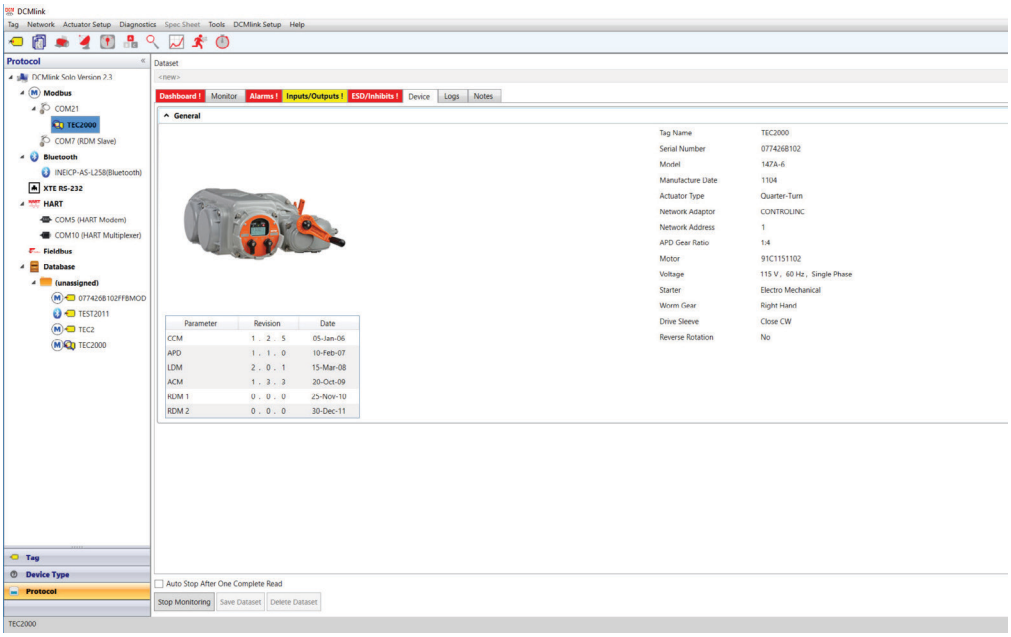
Figure 162 ESD Inhibit Alarms Legend

- **Red Cross**: Means alarm is active.
- **Green Tick**: Means no alarm is active.
- **Grey Circle**: Means alarm is disabled.

9.2.9 Device

The Device Tab shows detailed information about the selected actuator. The information found here varies per actuator model.

Figure 163 Device Tab

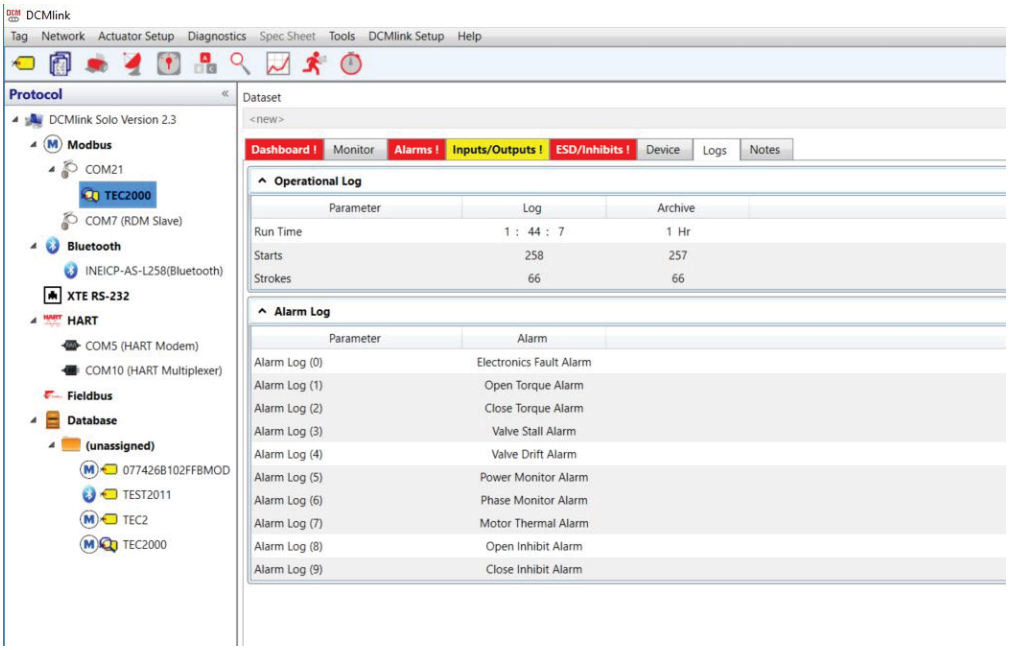


- **Tag Name:** Tag unique ID.
- **Serial Number:** Actuator serial number.
- **Model:** Actuator model type.
- **Manufacture Date:** Date actuator was manufactured.
- **Actuator Type:** Actuator type, such as multi-turn, quarter turn etc.
- **Network Adapter:** Network adapter for the DCS.
- **Network Address:** Actuator network address.
- **APD Gear Ratio:** Absolute Position Detector (APD) records the position calibration of the actuator. This information shows the gear ratio used by the APD.
- **Motor:** Motor ID.
- **Voltage:** Voltage of selected actuator.
- **Starter:** Type of starter mechanism.
- **Worm Gear:** Worm gear orientation.
- **Drive Sleeve:** Displays drive sleeve.
- **Reverse Rotation:** Shows a (Yes/No) if the actuator rotates in reverse.

9.2.10 Logs

The Logs tab shows operation-related information regarding the selected actuator. Information such as total run time, starts, strokes and others are to be found here.

Figure 164 Logs Tab



Section 10: Detailed Setup

10.1 Introduction

DCMlink reduces commissioning time with simplified configuration screens that are easy to navigate and provide clarity over each parameter.

The **Detailed Setup View** is a function that allows the user to monitor and control the numerous aspects of the managed electric actuator. Using this part of DCMlink, users can see the current configuration prior to downloading the new data, without having to remember what is in the device. Easy navigation buttons allow synchronization at each parameter level, page level or the entire configuration.

DCMlink allows configuration settings to be stored and archived for later use or for the purpose of export to a central database or import to another device.

Detailed setup view can be accessed by clicking on the corresponding detailed setup icon in the tool bar as shown below.

NOTE:

Detailed Setup can be launched primarily by right-clicking on the actuator Tag on the navigation pane and clicking **Detailed Setup.** The second way of launching is to click the tool bar icon for Detailed Setup. The third way of doing detailed setup involves clicking on the menu bar item **Actuator Setup** and then accessing the item for **Detailed Setup.** It should be noted, however, that the second and third methods will only be available when the Tag is open (such as valve control, status monitor, and factory settings are open).

Figure 165 Detailed Setup Icon

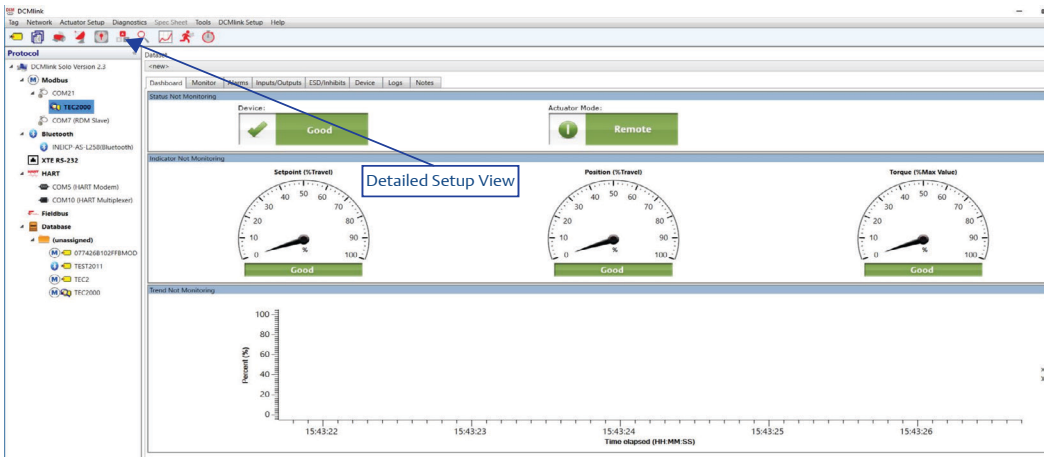
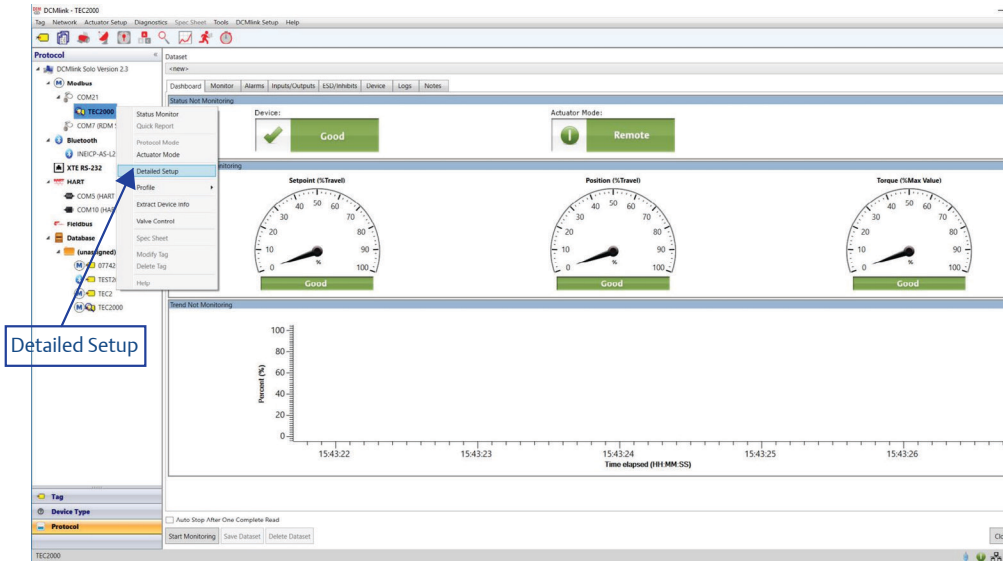
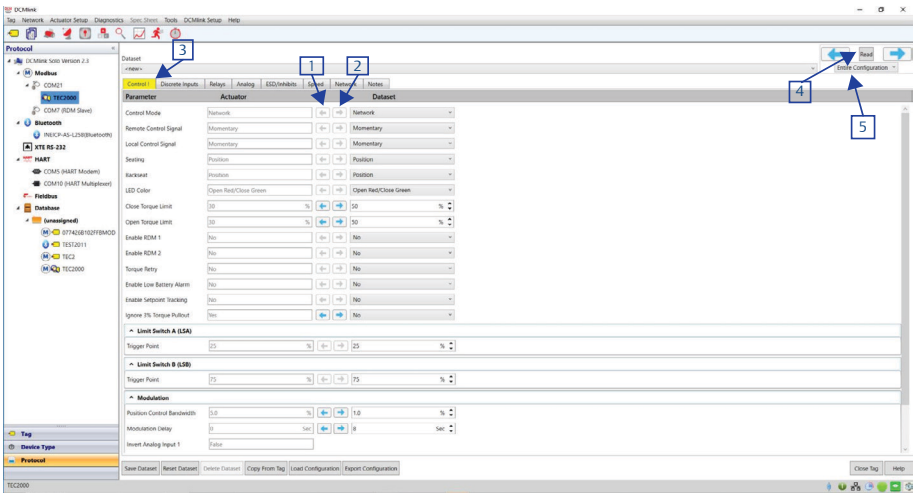


Figure 166 Detailed Setup from the Context Menu



The Detailed Setup View after launching.

Figure 167 Detailed Setup After Launching

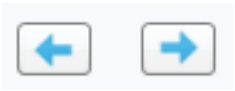


1. **Left arrow button**
   Left arrow is used to update data from DCMlink dataset to actuator.
2. **Right arrow button**
   Right arrow updates the actuator data to DCMlink user interface.

NOTE:
The data that is written from actuator to dataset using right arrow button would go to the database.

— If there is any difference, between the dataset value and actuator value, the arrow button will appear with the blue color, as shown in the image below:

Figure 168 Colored Left and Right Arrows



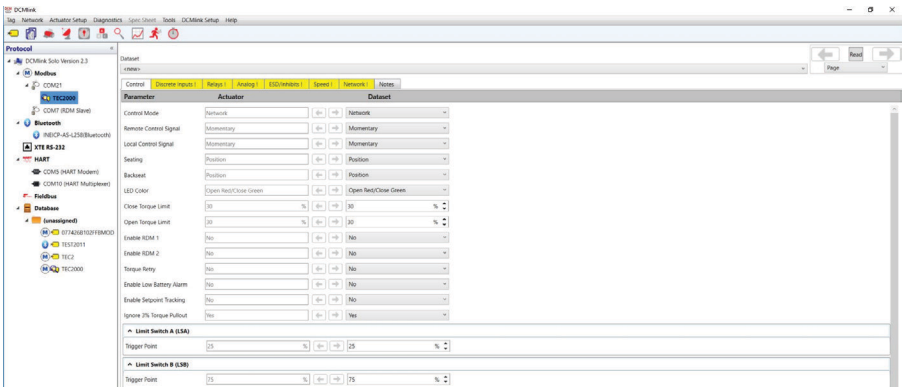
— If there is no difference, then the arrow button will appear in gray color, as shown in below image:

Figure 169 Gray Left and Right Arrows

3. **Change tab color to yellow**

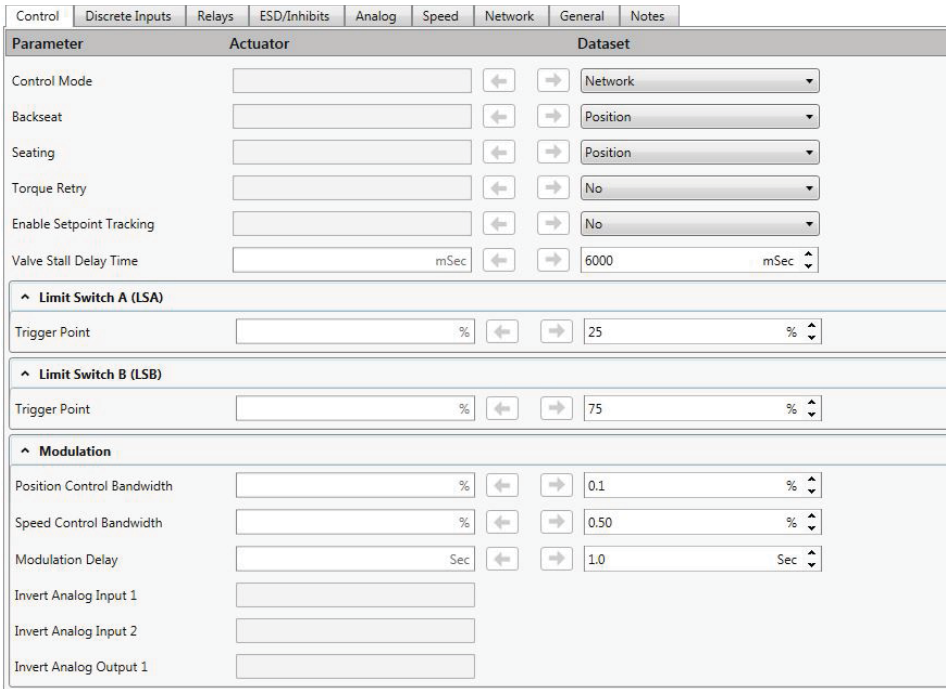
— If there is any difference in value from actuator and dataset then the tab will be highlighted in yellow:

Figure 170 Yellow Tabs in Detailed Setup



— If there is no any difference then there will be no change in tab color:

Figure 171 No Highlighted Tabs in Detailed Setup



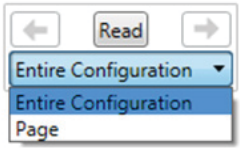
4. **Read Button**
The **Read** button is present on the upper right hand corner for detailed setup. Whenever Read is clicked, it will read the entire parameter data from DCMlink.

5. **Read Entire Configuration/Page**
Two options available:

— Entire configuration: Whenever the user select this option and clicks on **Read**, it will read all the parameters from the detailed setup tab.

— Page: Whenever the user selects this option and clicks on **Read**, it will read only the particular tab page parameters from the detailed setup screen.

Figure 172 Configuration Page Options



6. **Save Dataset**
   Refer to Section 18.5.5 for details.
7. **Reset Dataset**
   Refer to Section 18.5.7 for details.
8. **Delete Dataset**
   Refer to Section 18.5.6 for details.
9. **Copy from Tag**
   Refer to Section 18.5.8 for details.
10. **Load Configuration**
    - Configuration button will provide an option to select a configuration file to load/open on DCMlink.
    - The following file types from the legacy applications are supported:

Table 25. Import Configuration Supported File Extensions

Actuator Type	File Extension
TEC family	*.cfg OR *.TEC
M2CP	*.cfg OR *.320AB
HQDCM32	*.cfg OR *.HQDCM32
HQDCM33	*.cfg OR *.HQDCM33
MPA	*.cfg OR *.MPA
XTE3000	*.cfg (for Modbus only), *.icon OR *.xte (for bluetooth only), *.hart (for HART only)

    - After uploading is complete, it will load all the datasets available on configuration file. This gives information to the user on the settings available on the configuration file.

NOTE:
If the settings/configuration inside the configuration file is different than the current actuator, the tab color will turn yellow. And the send/receive button will be enabled.

11. **Export Configuration**
    - Whenever the user clicks on the export configuration button, it will save the current configuration into a file which the user can load/open on DCMlink.
    - Default path of the open file dialog will be **C:\Users\[user name]\Desktop**.

10.2 Configure Parameters

DCMlink has the capability to make various configurations for different actuator parameters. Listed below are the three primary areas in which different configurations are made.

NOTE:

Please put the actuator in Setup Mode first before changing configuration parameters in TEC2000. As TEC2000 takes some time to enter into Setup Mode, the write configuration command sent during actuator transition to Setup Mode may fail.

10.2.1 Actuator Setup

On menu bar, **Actuator Setup** features:

a. Clock Sync
This will synchronize the actuator clock with the computer clock.

Figure 173 Clock Sync

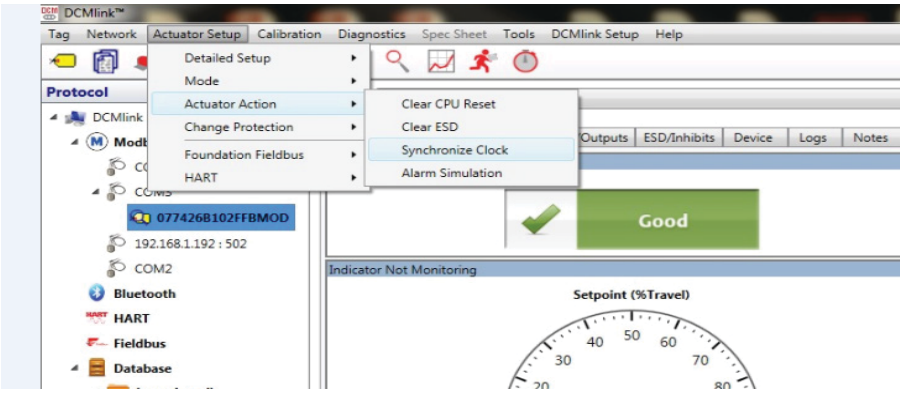
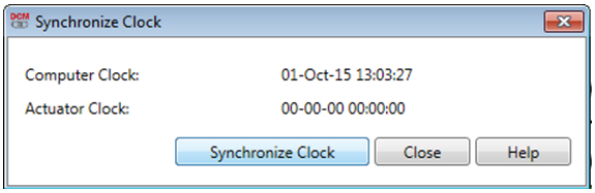


Figure 174 Synchronize Clock Window



b. Clear CPU Reset
This will clear CPU reset alarm.

Figure 175 Accessing Clear CPU Reset

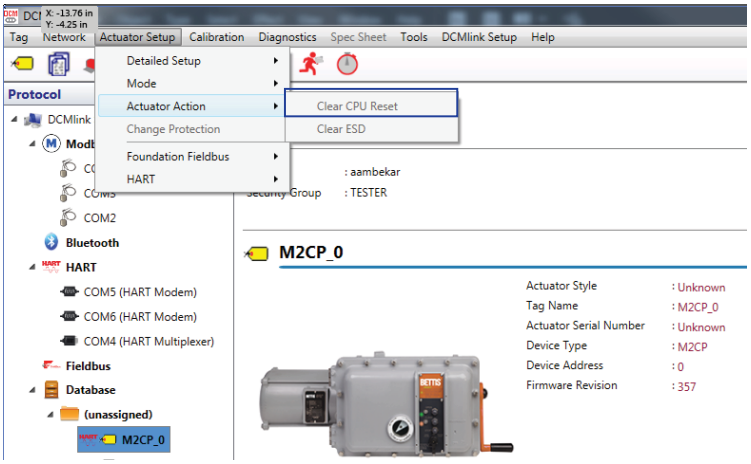
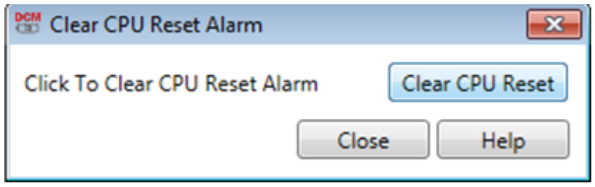


Figure 176 Clear CPU Reset Window



c. Clear ESD
This will clear the ESD alarm active in the actuator.

Figure 177 Accessing Clear ESD

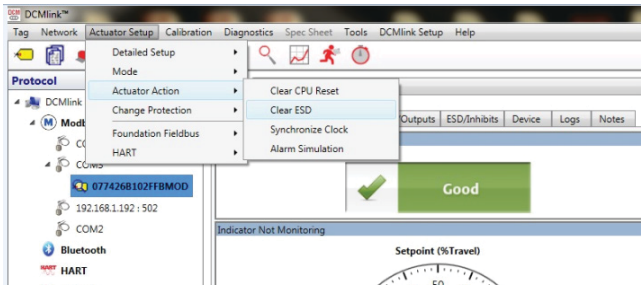
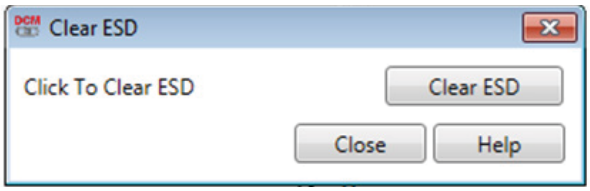
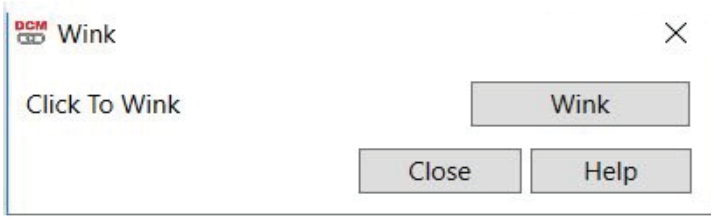


Figure 178 Clear ESD Window



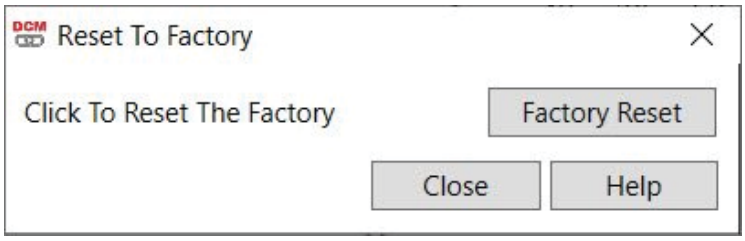
d. Wink/Squawk
This sends Wink/Squawk command to the Actuator. Wink option is available for XTE3000 actuator and Squawk option is available for both TEC2 and EHO actuators. User can Launch Wink/Squawk command window from Menu Option **Actuator Setup -> Actuator Action -> Wink.**

Figure 179 Sending Wink/Squawk Command



e. Reset to Factory
This sends Reset to factory command to the Actuator. User can Launch Reset to factory command window from Menu Option **Actuator Setup -> Actuator Action -> Reset to Factory.**

Figure 180 Sending Reset to Factory Command

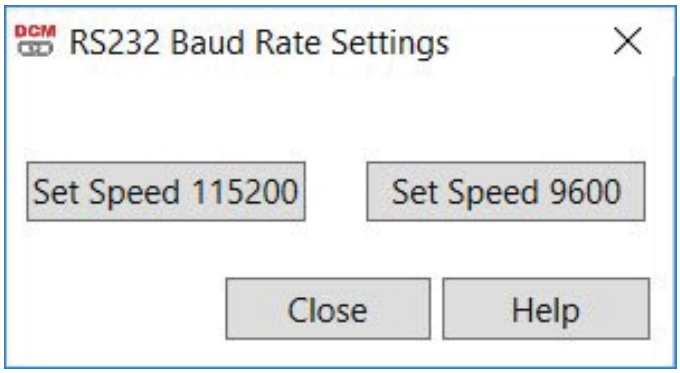


f. RS-232 Baud Rate Settings
This option is only available for XTE3000 actuator.

— Baud rate could be set to either 115200 or 9600.

User can Launch RS-232 Baud Rate Settings window from Menu Option **Actuator Setup -> Actuator Action -> RS-232 Baud Rate Settings.**

Figure 181 Setting RS-232 Baud Rate Settings



10.2.2 Actuator Mode

In **Modbus Master Mode, Actuator Mode** allows the user to enter and exit setup mode. In Modbus RDM Slave Mode, the user can switch between all the modes of the actuator and other modes:

— Remote Mode

— Local Mode

— Stop/Off Mode

— Setup Mode

NOTE:

Actuator Mode Dialog can be opened or launched when actuator monitoring is inactive.

Figure 182 Accessing Actuator Mode

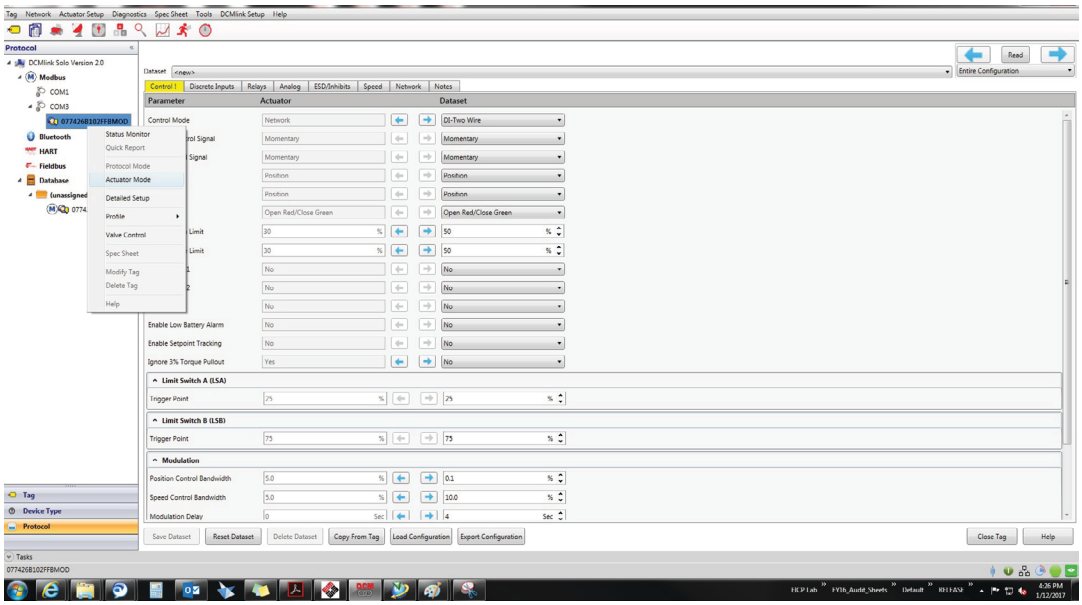
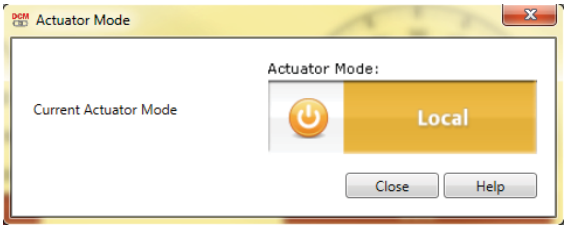


Figure 183 Actuator Mode Window



10.2.3 Detailed Setup

Primarily accessed via the tool bar or by right-clicking on the actuator Tag in the navigation window, Detailed Setup features a wide array of functions and tabs that allow the following configurations:

10.2.4 Control

The Detailed Setup features an array of drop-down options for control mode. Features below:

Figure 184 Control Tab

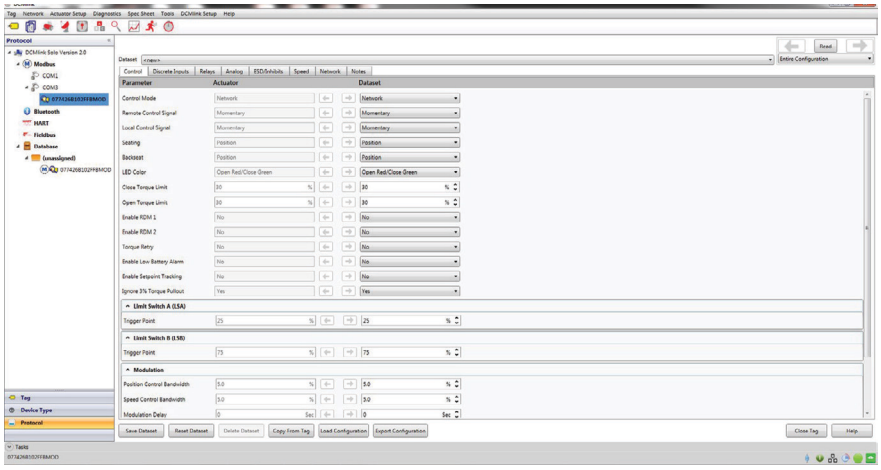


Figure 185 Drop-down Options for Control Tab View

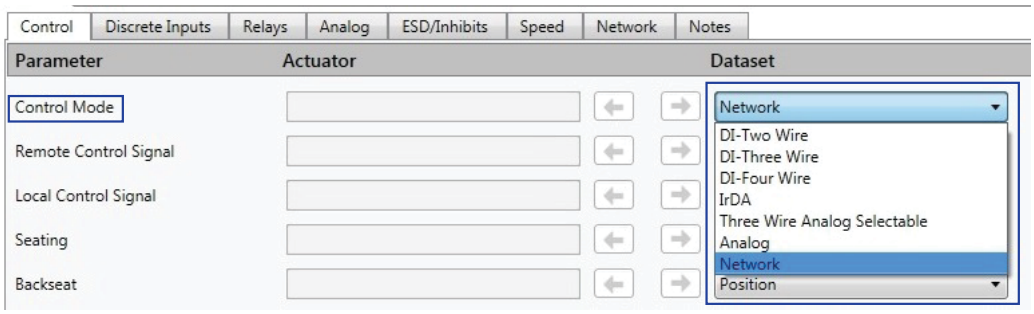


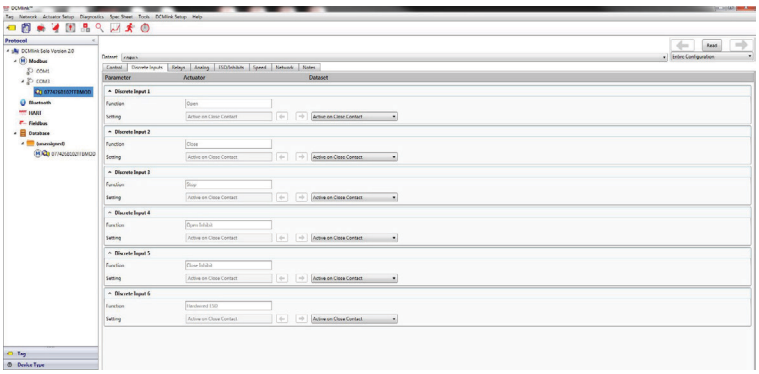
Table 26. Drop-down Options Selection for Control Tab

Parameter	Dataset Option
Control	DI Two-Wire
	DI Three-Wire
	DI Four-Wire
	IrDA
	Three-Wire Analog Selectable
	Analog
	Network
Remote Control Signal	Maintained
	Momentary
Local Control Signal	Maintained
	Momentary
Seating	Position
	Torque
Backseat	Position
	Torque
LED Color	Open Green / Close Red
	Open Red / Close Green
Close Torque Limit	(Numeric Percentage Value)
Open Torque Limit	(Numeric Percentage Value)
Enable RDM 1	Yes / No
Enable RDM 2	Yes / No
Enable Log Jam	Yes / No
Enable Low Battery Alarm	Yes / No
Enable Setpoint Tracking	Yes / No
Ignore 3% Torque Pullout	Yes / No

NOTE:
If the user enables or disables Bluetooth communication with the device may be lost.

10.2.4.1 Discrete Input

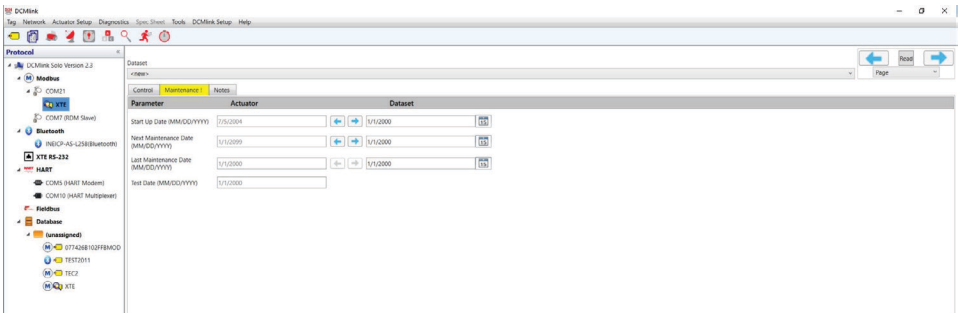
Figure 186 Discrete Input Tab



- **Save Dataset**
  Refer to Section 18.5.5 for details.
- **Reset Dataset**
  Refer to Section 18.5.7 for details.
- **Delete Dataset**
  Refer to Section 18.5.6 for details.
- **Copy From Tag:** Copies configuration from an existing Tag.
- **Load Configuration:** Loads a configuration from an existing configuration file for input to actuator.
- **Export Configuration:** Collects the current configuration and saves it as a file in the target directory.

10.2.4.2 Maintenance for XTE3000

Figure 187 Maintenance for XTE3000



NOTE:
The above functions also apply to other tabs in the detailed setup view.

— The discrete inputs table for each actuator series listed below:

Table 27. TEC2000

Discrete Input	Function	Setting
1	1 = Open/Host Control	1 = Active on Open Contact 0 = Active on Close Contact
2	2 = Close/Host Control	1 = Active on Open Contact 0 = Active on Close Contact
3	3 = Stop/PST Input/Host Control	1 = Active on Open Contact 0 = Active on Close Contact
4	4 = Open Inhibit/Host Control	1 = Active on Open Contact 0 = Active on Close Contact
5	5 = Close Inhibit/Host Control	1 = Active on Open Contact 0 = Active on Close Contact
6	6 =Hardwired ESD/Host Control	1 = Active on Open Contact 0 = Active on Close Contact

NOTE:
For MPA, there is no discrete input available.

Table 28. M2CP

Discrete Input	Function	Setting
1	1 = Open/Host Control	NA
2	2 = Close/Host Control	NA

Table 29. HQDCM33

Discrete Input	Function	Setting
1	Close/Host Control	NA
2	Stop/PST Input/Host Control	NA

Table 30. TEC2

Discrete Input	Function	Setting
1	1 = Open/Host Control	1 = Active on Open Contact 0 = Active on Close Contact
2	2 = Close/Host Control	1 = Active on Open Contact 0 = Active on Close Contact
3	3 = Stop/PST Input/Host Control	1 = Active on Open Contact 0 = Active on Close Contact
4	4 = Open Inhibit/Host Control	1 = Active on Open Contact 0 = Active on Close Contact
5	5 = Close Inhibit/Host Control	1 = Active on Open Contact 0 = Active on Close Contact
6	6 = Hardwired ESD/Host Control	1 = Active on Open Contact 0 = Active on Close Contact

Table 31. EHO

Discrete Input	Function	Setting
1	1 = Open/Host Control	1 = Active on Open Contact 0 = Active on Close Contact
2	2 = Close/Host Control	1 = Active on Open Contact 0 = Active on Close Contact
3	3 = Stop/PST Input/Host Control	1 = Active on Open Contact 0 = Active on Close Contact
4	4 = Host Control	1 = Active on Open Contact 0 = Active on Close Contact
5	NA	NA
6	6 = Hardwired ESD/Host Control	1 = Active on Open Contact 0 = Active on Close Contact

10.2.4.3 Relays

The relays tab shows the current state of relays in the actuator and also shows the datasets, which can be configured and loaded to the actuator.

Figure 188 Relays Tab

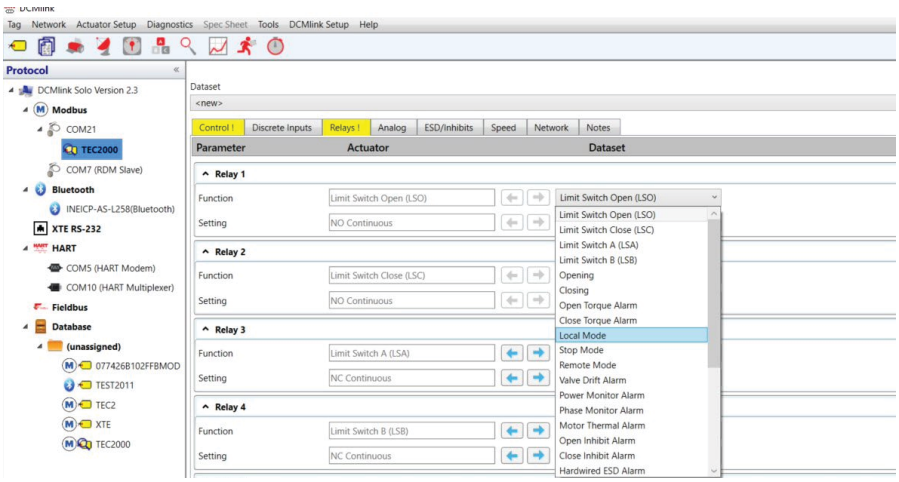


Figure 189 Drop-down Options for Relay Tab

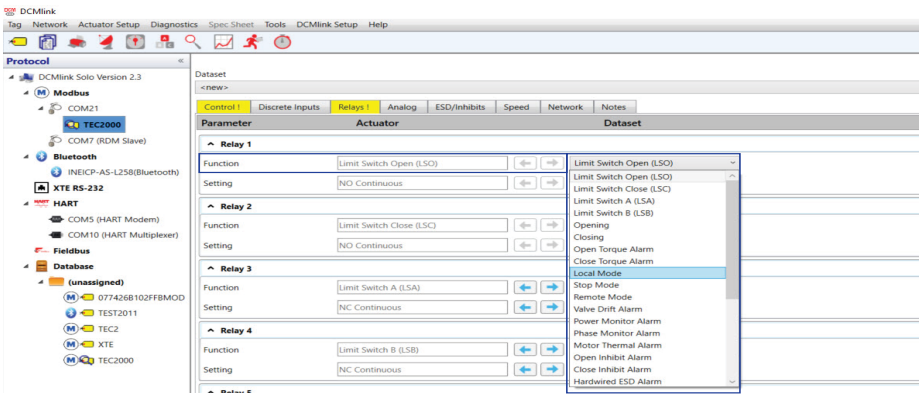


Table 32. Drop Down Options for Relay Tab

Parameter	Dataset Option
Relay (#)	Limit Switch Open (LSO)
	Limit Switch Close (LSC)
	Limit Switch A (LSA)
	Limit Switch B (LSB)
	Opening
	Closing
	Open Torque Alarm
	Close Torque Alarm
	Local Mode
	Stop Mode
	Remote Mode
	Valve Drift Alarm
	Power Monitor Alarm
	Phase Monitor Alarm
	Motor Thermal Alarm
	Open Inhibit Alarm
	Close Inhibit Alarm
	Hardwired ESD Alarm
	ESD Active Alarm
	Analog Input Control Alarm
	Actuator Fail Alarm
	Host Control
	Electronics Fault Alarm
	Moving
	Over Torque Alarm
	Valve Stall Alarm
	Low Battery Alarm
	Monitor Alarms
Setting	NC Continuous
	NC Flashing
	NO Continuous
	NO Flashing

— The relay functions table for each type of relay and actuator is listed below:

Table 33. TEC2000 Relay 1

Relay	Function	Setting
1	0 = Limit Switch Open (LSO) 1 = Limit Switch Close (LSC) 2 = Limit Switch A (LSA) 3 = Limit Switch B (LSB) 4 = Opening 5 = Closing 6 = Open Torque Alarm 7 = Close Torque Alarm 8 = Local Mode 9 = Stop Mode 10 = Remote Mode 16 = Valve Drift Alarm 17 = Power Monitor Alarm 18 = Phase Monitor Alarm 19 = Motor Thermal Alarm 20 = Open Inhibit Alarm 21 = Close Inhibit Alarm 22 = Hardwired ESD Alarm 23 = ESD Active Alarm 24 = Analog Input Control Alarm 25 = Actuator Fail Alarm 26 = Host Control 27 = Electronic Fault Alarm 28 = Moving 29 = Over Torque Alarm 30 = Valve Stall Alarm 31 = Low Battery Alarm 32 = Monitor Alarms	0 = NC Continuous 1 = NC Flashing 2 = NO Continuous 3 = NO Flashing

Table 34. TEC2000 Relay 2

Relay	Function	Setting
2	0 = Limit Switch Open (LSO) 1 = Limit Switch Close (LSC) 2 = Limit Switch A (LSA) 3 = Limit Switch B (LSB) 4 = Opening 5 = Closing 6 = Open Torque Alarm 7 = Close Torque Alarm 8 = Local Mode 9 = Stop Mode 10 = Remote Mode 16 = Valve Drift Alarm 17 = Power Monitor Alarm 18 = Phase Monitor Alarm 19 = Motor Thermal Alarm 20 = Open Inhibit Alarm 21 = Close Inhibit Alarm 22 = Hardwired ESD Alarm 23 = ESD Active Alarm 24 = Analog Input Control Alarm 25 = Actuator Fail Alarm 26 = Host Control 27 = Electronic Fault Alarm 28 = Moving 29 = Over Torque Alarm 30 = Valve Stall Alarm 31 = Low Battery Alarm 32 = Monitor Alarms	0 = NC Continuous 1 = NC Flashing 2 = NO Continuous 3 = NO Flashing

Table 35. TEC2000 Relay 3

Relay	Function	Setting
3	0 = Limit Switch Open (LSO) 1 = Limit Switch Close (LSC) 2 = Limit Switch A (LSA) 3 = Limit Switch B (LSB) 4 = Opening 5 = Closing 6 = Open Torque Alarm 7 = Close Torque Alarm 8 = Local Mode 9 = Stop Mode 10 = Remote Mode 16 = Valve Drift Alarm 17 = Power Monitor Alarm 18 = Phase Monitor Alarm 19 = Motor Thermal Alarm 20 = Open Inhibit Alarm 21 = Close Inhibit Alarm 22 = Hardwired ESD Alarm 23 = ESD Active Alarm 24 = Analog Input Control Alarm 25 = Actuator Fail Alarm 26 =Host Control 27 = Electronic Fault Alarm 28 = Moving 29 = Over Torque Alarm 30 = Valve Stall Alarm 31 = Low Battery Alarm 32 = Monitor Alarms 33 = PST- (Partial Stroke Test) Pass	0 = NC Continuous 1 = NC Flashing 2 = NO Continuous 3 = NO Flashing

Table 36. TEC2000 Relays 4 and 5

Relay	Function	Setting
4	0 = Limit Switch Open (LSO) 1 = Limit Switch Close (LSC) 2 = Limit Switch A (LSA) 3 = Limit Switch B (LSB) 4 = Opening 5 = Closing 6 = Open Torque Alarm 7 = Close Torque Alarm 8 = Local Mode 9 = Stop Mode 10 = Remote Mode 16 = Valve Drift Alarm 17 = Power Monitor Alarm 18 = Phase Monitor Alarm 19 = Motor Thermal Alarm 20 = Open Inhibit Alarm 21 = Close Inhibit Alarm 22 = Hardwired ESD Alarm 23 = ESD Active Alarm 24 = Analog Input Control Alarm 25 = Actuator Fail Alarm 26 = Host Control 27 = Electronic Fault Alarm 28 = Moving 29 = Over Torque Alarm 30 = Valve Stall Alarm 31 = Low Battery Alarm 32 = Monitor Alarms 33 = PST (Partial Stoke Test) Fail	0 = NC Continuous 1 = NC Flashing 2 = NO Continuous 3 = NO Flashing
5	26 decimal = Host Control 32 decimal = Monitor Alarms 35 decimal = Unit Alarm	6 = Continuous 7 = flashing

NOTE:

For MPA, there is no relay available.

Table 37. M2CP

Relay	Function	Setting
1	41 = ESD (Change request) 10 = Remote Mode 8 = Local Mode 2 = Limit Switch A (LSA)	4 = Normally Open Contact 5 = Normally Closed Contact
2	23 = ESD Active Alarm 10 = Remote Mode 8 = Local Mode 3 = Limit Switch B (LSB)	4 = Normally Open Contact 5 = Normally Closed Contact
5	40 = Monitor 26 = Host Control 41 = ESD	NA

NOTE:

For HQ32/33, there is no relay available.

Table 38. TEC2 Relay 1

Relay	Function	Setting
1	0 = Limit Switch Open (LSO) 1 = Limit Switch Close (LSC) 2 = Limit Switch A (LSA) 3 = Limit Switch B (LSB) 4 = Opening 5 = Closing 6 = Open Torque Alarm 7 = Close Torque Alarm 8 = Local Mode 9 = Stop Mode 10 = Remote Mode 16 = Valve Drift Alarm 17 = Power Monitor Alarm 18 = Phase Monitor Alarm 19 = Motor Thermal Alarm 20 = Open Inhibit Alarm 21 = Close Inhibit Alarm 22 = Hardwired ESD Alarm 23 = ESD Active Alarm 24 = Lost Analog Input 1 Alarm 25 = Lost Analog Input 2 Alarm 26 = Host Control 28 = Moving 29 = Over Torque Alarm 30 = Valve Stall Alarm 31 = Low Battery Alarm 32 = Monitor Alarms 33 = N/A 34 = Actuator Fail Alarm	0 = NC Continuous 1 = NC Flashing 2 = NO Continuous 3 = NO Flashing

Table 39. TEC2 Relay 2

Relay	Function	Setting
2	0 = Limit Switch Open (LSO) 1 = Limit Switch Close (LSC) 2 = Limit Switch A (LSA) 3 = Limit Switch B (LSB) 4 = Opening 5 = Closing 6 = Open Torque Alarm 7 = Close Torque Alarm 8 = Local Mode 9 = Stop Mode 10 = Remote Mode 16 = Valve Drift Alarm 17 = Power Monitor Alarm 18 = Phase Monitor Alarm 19 = Motor Thermal Alarm 20 = Open Inhibit Alarm 21 = Close Inhibit Alarm 22 = Hardwired ESD Alarm 23 = ESD Active Alarm 24 = Lost Analog Input 1 Alarm 25 = Lost Analog Input 2 Alarm 26 = Host Control 28 = Moving 29 = Over Torque Alarm 30 = Valve Stall Alarm 31 = Low Battery Alarm 32 = Monitor Alarms 33 = N/A 34 = Actuator Fail Alarm	0 = NC Continuous 1 = NC Flashing 2 = NO Continuous 3 = NO Flashing

Table 40. TEC2 Relay 3

Relay	Function	Setting
3	0 = Limit Switch Open (LSO) 1 = Limit Switch Close (LSC) 2 = Limit Switch A (LSA) 3 = Limit Switch B (LSB) 4 = Opening 5 = Closing 6 = Open Torque Alarm 7 = Close Torque Alarm 8 = Local Mode 9 = Stop Mode 10 = Remote Mode 16 = Valve Drift Alarm 17 = Power Monitor Alarm 18 = Phase Monitor Alarm 19 = Motor Thermal Alarm 20 = Open Inhibit Alarm 21 = Close Inhibit Alarm 22 = Hardwired ESD Alarm 23 = ESD Active Alarm 24 = Lost Analog Input 1 Alarm 25 = Lost Analog Input 2 Alarm 26 = Host Control 28 = Moving 29 = Over Torque Alarm 30 = Valve Stall Alarm 31 = Low Battery Alarm 32 = Monitor Alarms 33 = PST-(Partial Stroke Test) Pass 34 = Actuator Fail Alarm	0 = NC Continuous 1 = NC Flashing 2 = NO Continuous 3 = NO Flashing

Table 41. TEC2 Relays 4 and 5

Relay	Function	Setting
4	0 = Limit Switch Open (LSO) 1 = Limit Switch Close (LSC) 2 = Limit Switch A (LSA) 3 = Limit Switch B (LSB) 4 = Opening 5 = Closing 6 = Open Torque Alarm 7 = Close Torque Alarm 8 = Local Mode 9 = Stop Mode 10 = Remote Mode 16 = Valve Drift Alarm 17 = Power Monitor Alarm 18 = Phase Monitor Alarm 19 = Motor Thermal Alarm 20 = Open Inhibit Alarm 21 = Close Inhibit Alarm 22 = Hardwired ESD Alarm 23 = ESD Active Alarm 24 = Lost Analog Input 1 Alarm 25 = Lost Analog Input 2 Alarm 26 = Host Control 28 = Moving 29 = Over Torque Alarm 30 = Valve Stall Alarm 31 = Low Battery Alarm 32 = Monitor Alarms 33 = PST (Partial Stroke Test) Fail 34 = Actuator Fail Alarm	0 = NC Continuous 1 = NC Flashing 2 = NO Continuous 3 = NO Flashing
5	26 = Generic (Host Control) 32 = Monitor Alarms 35 = Unit Alarm	6 = Continuous 7 = Flashing

Table 42. EHO Relay 1

Relay	Function	Setting
1	0 = Limit Switch Open (LSO) 1 = Limit Switch Close (LSC) 2 = Limit Switch A (LSA) 3 = Limit Switch B (LSB) 4 = Opening 5 = Closing 8 = Local Mode 9 = Stop Mode 10 = Remote Mode 16 = Valve Drift Alarm 17 = Power Monitor Alarm 18 = Phase Monitor Alarm 19 = Motor Thermal Alarm 22 = Hardwired ESD Alarm 23 = ESD Active Alarm 24 = Lost Analog Input 1 Alarm 26 = Generic (Host Control) 27 = Electronic Fault Alarm 28 = Moving 30 = Valve Stall Alarm 34 = Actuator Fail Alarm 35 = Unit Alarm 36 = SOV Failure Alarm 37 = Hydraulic Circuit Failure Alarm 38 = Self-Calibration Failure Alarm 39 = Over Pressure Alarm 40 = Emergency Stop Alarm 41 = Host Command ESD Alarm	0 = NC Continuous 1 = NC Flashing 2 = NO Continuous 3 = NO Flashing

Table 43. EHO Relay 2

Relay	Function	Setting
2	0 = Limit Switch Open (LSO) 1 = Limit Switch Close (LSC) 2 = Limit Switch A (LSA) 3 = Limit Switch B (LSB) 4 = Opening 5 = Closing 8 = Local Mode 9 = Stop Mode 10 = Remote Mode 16 = Valve Drift Alarm 17 = Power Monitor Alarm 18 = Phase Monitor Alarm 19 = Motor Thermal Alarm 22 = Hardwired ESD Alarm 23 = ESD Active Alarm 24 = Lost Analog Input 1 Alarm 26 = Generic (Host Control) 27 = Electronic Fault Alarm 28 = Moving 30 = Valve Stall Alarm 34 = Actuator Fail Alarm 35 = Unit Alarm 36 = SOV Failure Alarm 37 = Hydraulic Circuit Failure Alarm 38 = Self-Calibration Failure Alarm 39 = Over Pressure Alarm 40 = Emergency Stop Alarm 41 = Host Command ESD Alarm	0 = NC Continuous 1 = NC Flashing 2 = NO Continuous 3 = NO Flashing

Table 44. EHO Relay 3

Relay	Function	Setting
3	0 = Limit Switch Open (LSO) 1 = Limit Switch Close (LSC) 2 = Limit Switch A (LSA) 3 = Limit Switch B (LSB) 4 = Opening 5 = Closing 8 = Local Mode 9 = Stop Mode 10 = Remote Mode 16 = Valve Drift Alarm 17 = Power Monitor Alarm 18 = Phase Monitor Alarm 19 = Motor Thermal Alarm 22 = Hardwired ESD Alarm 23 = ESD Active Alarm 24 = Lost Analog Input 1 Alarm 26 = Generic (Host Control) 27 = Electronic Fault Alarm 28 = Moving 30 = Valve Stall Alarm 33 = PST- (Partial Stroke Test) 34 = Actuator Fail Alarm 35 = Unit Alarm 36 = SOV Failure Alarm 37 = Hydraulic Circuit Failure Alarm 38 = Self-Calibration Failure Alarm 39 = Over Pressure Alarm 40 = Emergency Stop Alarm 41 = Host Command ESD Alarm	0 = NC Continuous 1 = NC Flashing 2 = NO Continuous 3 = NO Flashing

Table 45. EHO Relays 4 and 5

Relay	Function	Setting
4	0 = Limit Switch Open (LSO) 1 = Limit Switch Close (LSC) 2 = Limit Switch A (LSA) 3 = Limit Switch B (LSB) 4 = Opening 5 = Closing 8 = Local Mode 9 = Stop Mode 10 = Remote Mode 16 = Valve Drift Alarm 17 = Power Monitor Alarm 18 = Phase Monitor Alarm 19 = Motor Thermal Alarm 22 = Hardwired ESD Alarm 23 = ESD Active Alarm 24 = Lost Analog Input 1 Alarm 26 = Generic (Host Control) 27 = Electronic Fault Alarm 28 = Moving 30 = Valve Stall Alarm 33 = PST- (Partial Stroke Test) 34 = Actuator Fail Alarm 35 = Unit Alarm 36 = SOV Failure Alarm 37 = Hydraulic Circuit Failure Alarm 38 = Self-Calibration Failure Alarm 39 = Over Pressure Alarm 40 = Emergency Stop Alarm 41 = Host Command ESD Alarm	0 = NC Continuous 1 = NC Flashing 2 = NO Continuous 3 = NO Flashing
5	26 decimal = Generic (Host Control) 32 decimal = Monitor Alarms 35 decimal = Unit Alarm	6 = Continuous 7 = Flashing

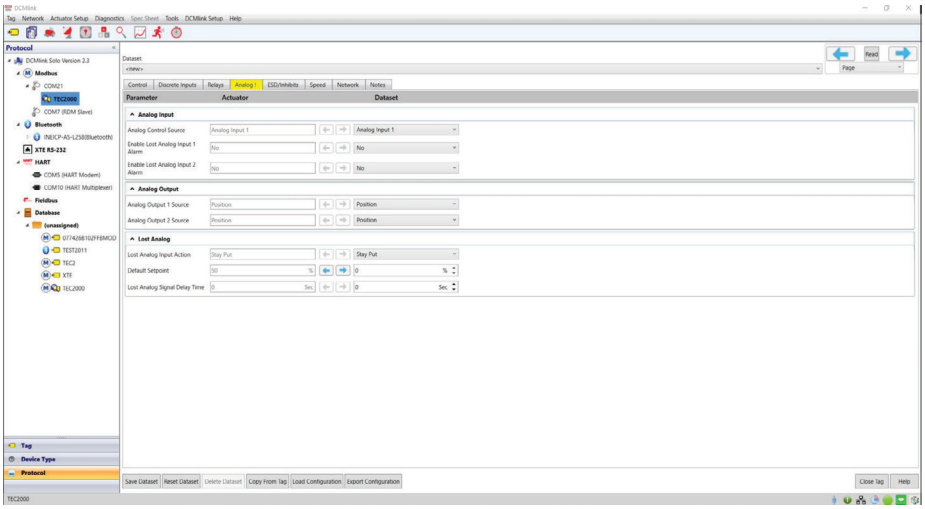
Table 46. XTE3000 Relay 1 - Relay 7

Relay	Function	Contact	Position
Relay 1 to Relay 7	0 = Open limit 1 = Close limit 2 = Position >= % 3 = Position <= % 4 = Closing 5 = Opening 6 = Running 7 = Blinker 8 = Mid-travel 9 = Local Selected 10 = Remote Select 11 = Local STOP On 12 = ESD/PST-efs 13 = Man. Operation 14 = Motor OverTemp 15 = Over Torque 16 = OP Over Torque 17 = CL Over Torque 18 = Jammed in Open 19 = Jammed IN Close 20 = Valve Jammed 21 = Low Battery 22 = Warnings 23 = Mid Travel AL 24 = EFS in manual 25 = PST failed 26 = MAINS-Only AS8 27 = EFS Mid Travel 28 = INTER/PST-icon 29 = EFS Coil Off	Make Break	0 % to 100%

10.2.4.4 Analog

The Analog tab shows the analog inputs and outputs possible for the actuator.

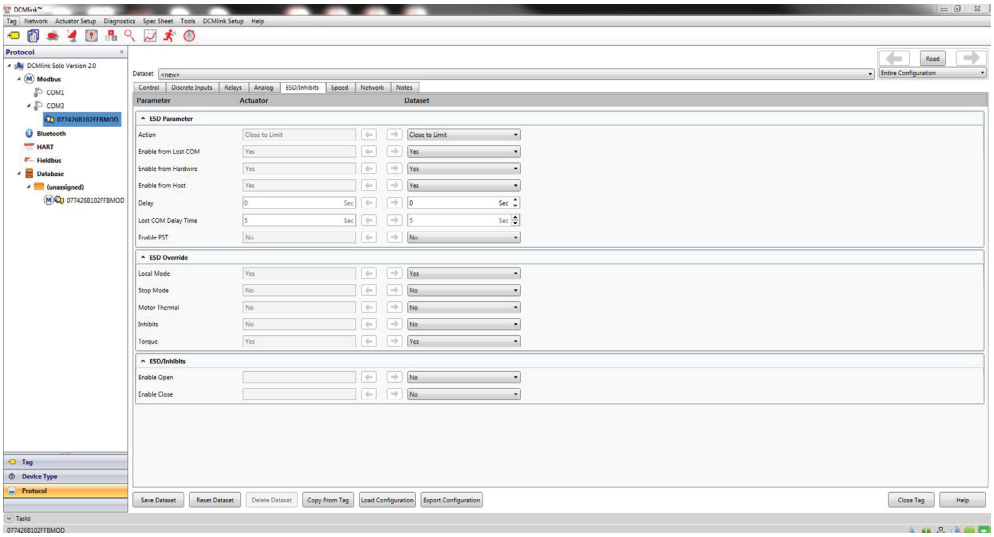
Figure 190 Analog Tab



10.2.4.5 ESD/Inhibits

The ESD/Inhibits tab shows the various Emergency Shutdown (ESD) parameters, overrides, and inhibits.

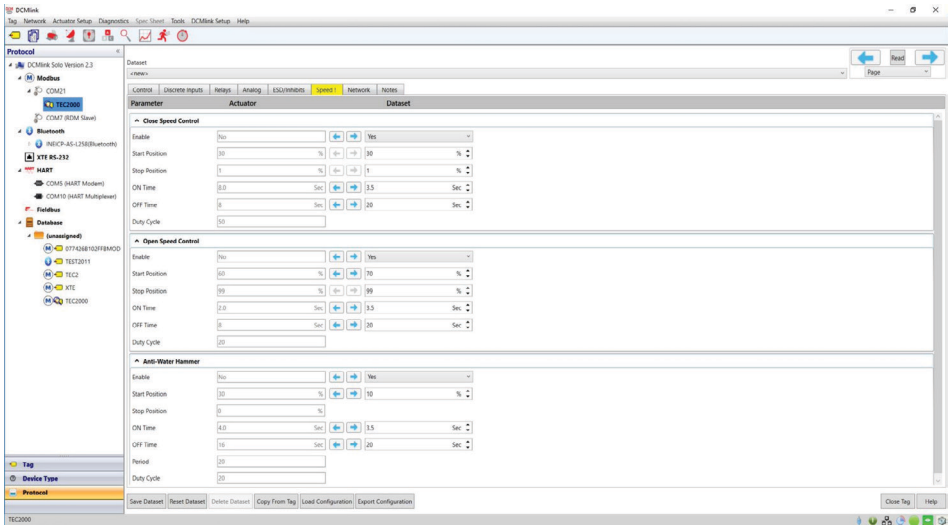
Figure 191 ESD/Inhibits Tab



10.2.4.6 Speed

The Speed tab shows the various speed control options available to the selected actuator.

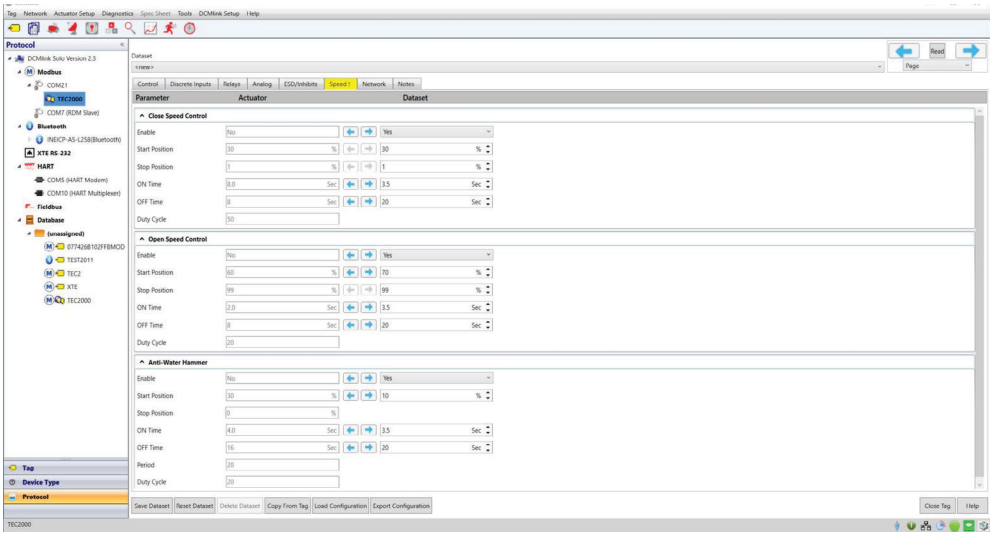
Figure 192 Speed Tab



10.2.4.7 Network

The Network tab shows the network settings and configuration of the selected actuator. Some of the parameters here are set during the configuration of COM ports.

Figure 193 Network Tab



NOTE:

If user changes network configuration, communication with the device may be lost.
In case DCMlink is not communicating with the device, please close the Tag and use the communication setting that has been updated to that actuator.

10.2.4.8 Input Characterization

NOTE:
This is only available in TEC2 actuators.

Figure 194 Input Characterization Tab

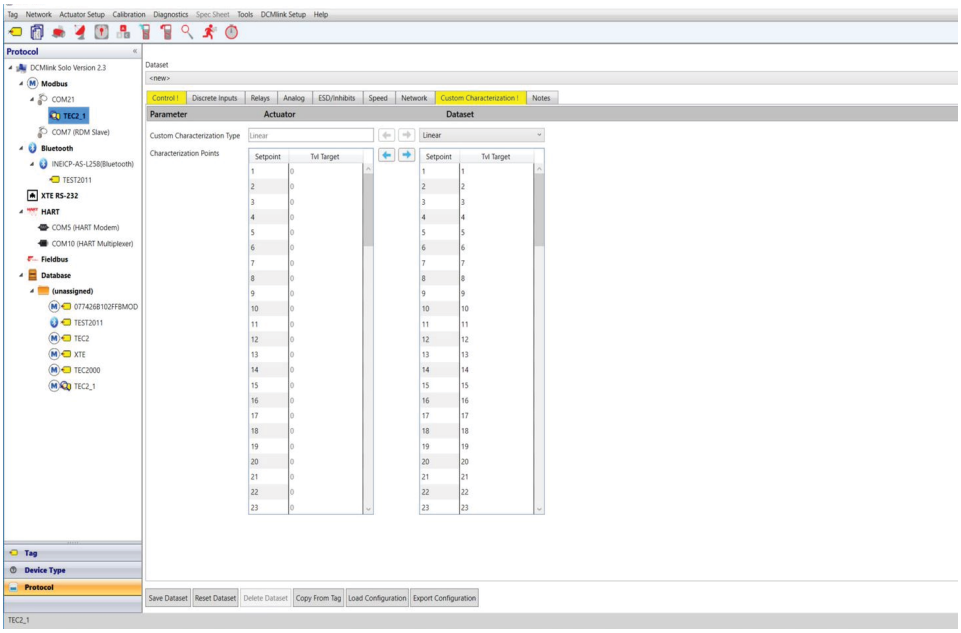
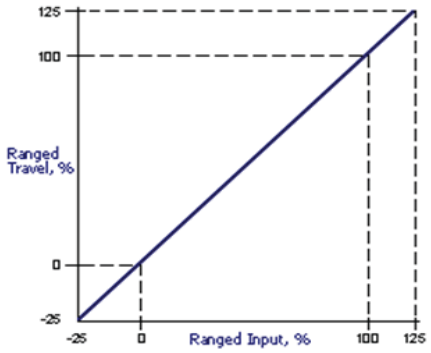


Table 47. Input Characterization Type

Model	TEC Family	M2CP	XTE3000	MPA	HQDCM33	EHO
Input Characterization Type	Only applicable to TEC2: (4 options are available) 0: Linear 1: Quick open 2: Equal percent 3: Custom	N/A	N/A	N/A	N/A	N/A

a. Linear
The following curve shows a linear characteristic. The plot is ranged travel versus ranged input.

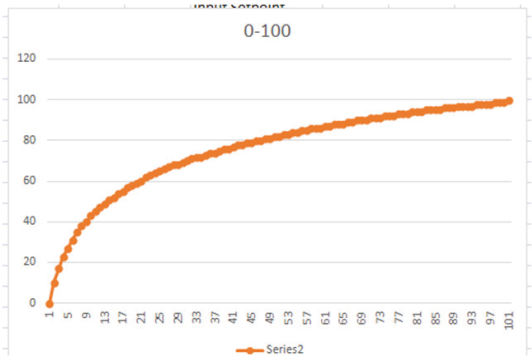
Figure 195 Linear Characteristic Curve



- For linear type, characterization points are equal for Setpoint and target travel. The user can not change the data from target travel.
- The user can write these points to the actuator.
- The target travel points are as shown in below image.

b. Quick Open

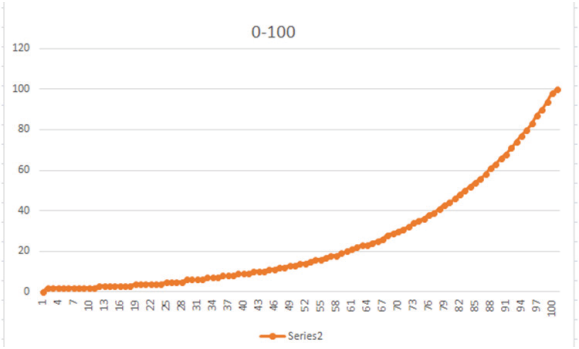
Figure 196 Linear Characteristic Curve



- For Quick open type, the user cannot change the data from target travel.
- The data points which are coming for Target travel section in dataset depend on the algorithm which is mentioned in attached spread sheet. The user can write these points in the actuator.
- DCMlink will load target travel points by itself when user selects Quick open type.

c. Equal Percent

Figure 197 Equal Percent Curve



- For Equal percent type, the user cannot change the data from target travel.
- The data points which are coming for target travel section in dataset depend on the algorithm which is mentioned in attached spread sheet above. The user can write these points in the actuator.
- DCMlink will load target travel points by itself when the user selects Equal percent type.
- The target travel points are shown in below image:

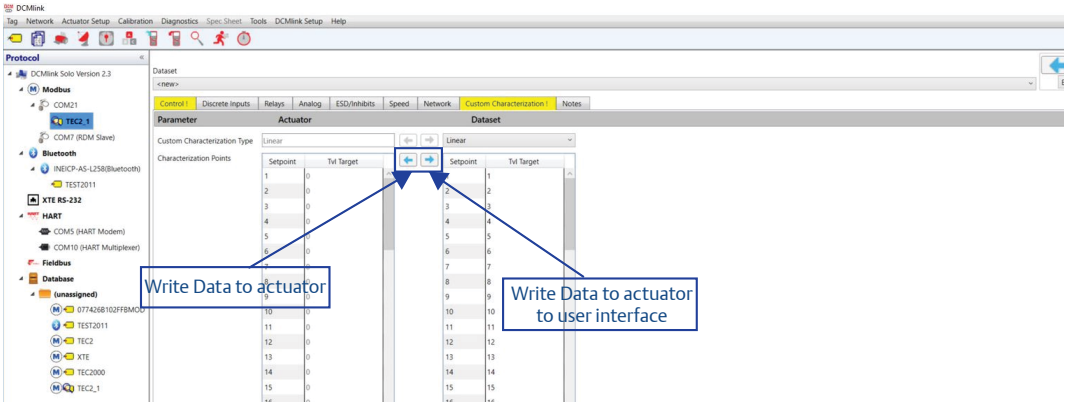
Figure 198 Target Travel Points

Setpoint	Tvl Target
1	2
2	2
3	2
4	2
5	2
6	2
7	2
8	2
9	2
10	2
11	3
12	3
13	3
14	3
15	3
16	3
17	3
18	4
19	4
20	4
21	4
22	4
23	4

d. Custom

- The custom characteristic can be any number of curves. Therefore, no example characteristic is shown here. The process of entering values for a Custom Input Characterization is not obvious.
- Default values for dataset will be based on the earlier target travel being loaded at DCMlink.
- To change Travel Target* (Tvl Target) values, the user will need to change value at target travel section.
- Custom characterization read and write window is shown below:

Figure 199 Input Characterization

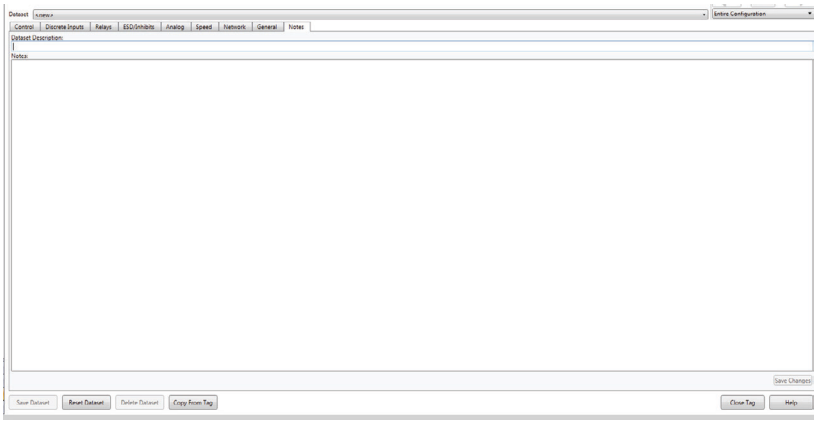


10.2.4.9 Notes

NOTE:
Refer to Section 10.2.4.8 for details.

- Notes Tab will look like:

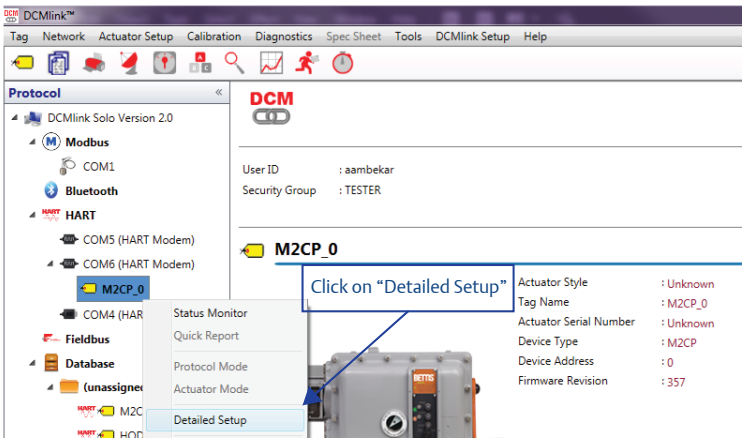
Figure 200 Notes Tab



10.3 General Tab (Specific for HART)

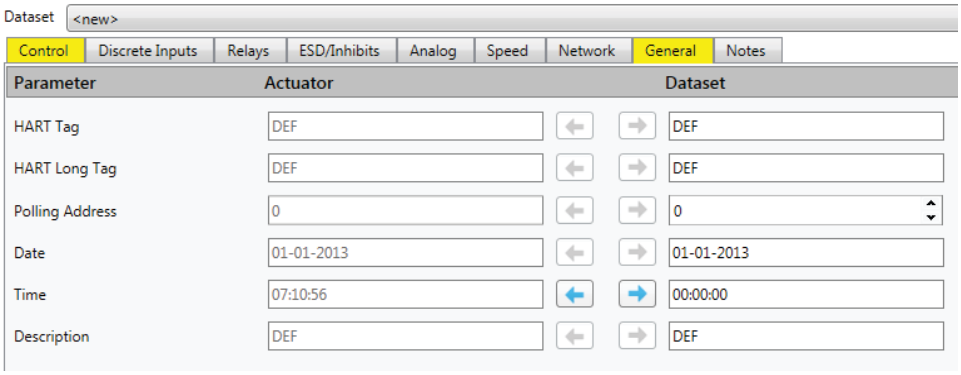
- **Right click** on **HART mode** and select option as **Detailed Setup.**

Figure 201 Detailed Setup from HART Mode



- Click on **General** tab.

Figure 202 General Tab Parameters



General Tab Parameters:

- **HART Tag:** 8 character HART Tag.
- **HART Long Tag:** 32 Character HART Long Tag.
- **Polling Address:** Polling address range should be 0-63.
- **Date:** Date entered by user DD-MM-YYYY.
- **Time:** Time entered by user HH:MM:SS.
- **Description:** 32 character brief description of the device.

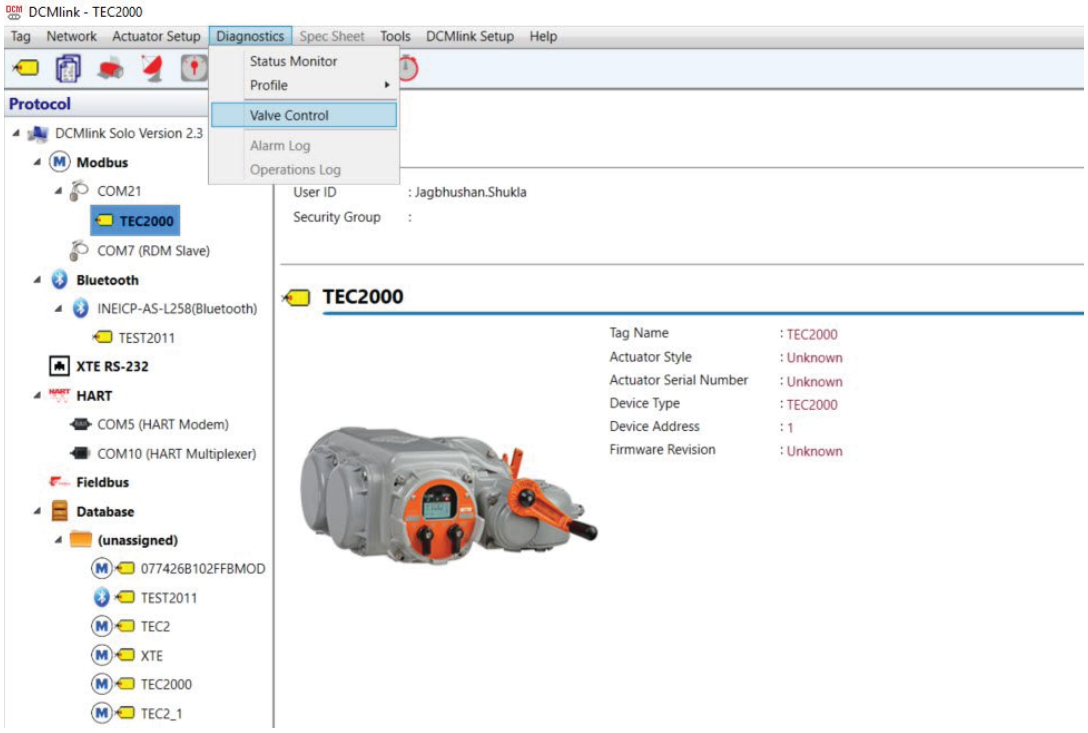
Section 11: Valve Control

11.1 Introduction

DCMlink allows control of valve actuation through the Valve Control option. Users can use this function to open/close valves.

- Valve control can also be used for initiating Host ESD or to clear ESD.
- May also be used for initiating PST (the Relay shall be wired to the concerned DI at the STC/TBM).
- Analog Output can be controlled and Setpoint can be changed.

Figure 203 Accessing Valve Monitoring



11.2 Configure Parameters

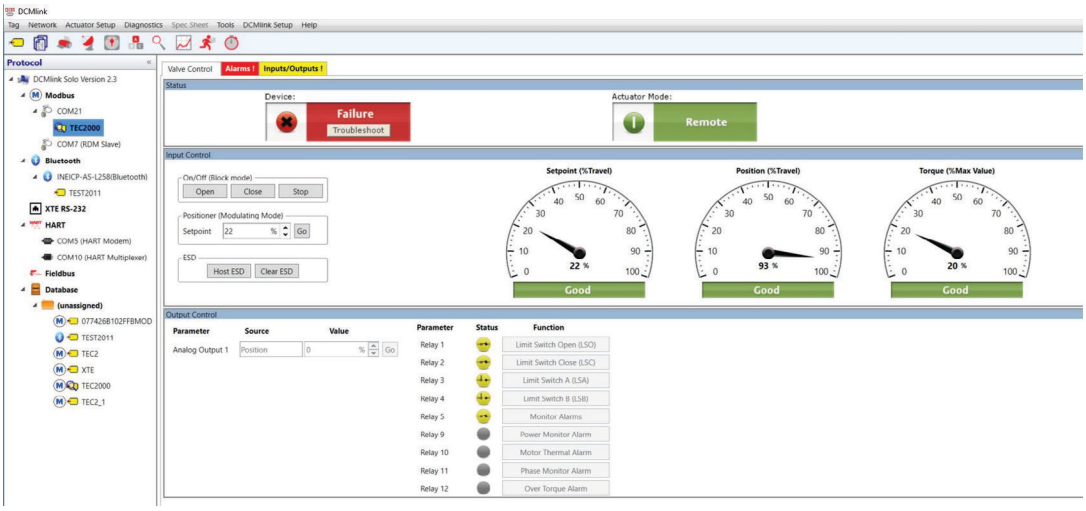
Valve control features three primary tabs used to control several parameters of a monitored actuator. Apart from controlling an active actuator, alarms and other inputs, as well as outputs, may be viewed and modified through the following tabs:

- Valve Control
- Alarms
- Input/Outputs

11.2.1 Valve Control

After clicking **Valve Control**, the following screen is displayed:

Figure 204 Parameter Configuration in Valve Control



- Status Monitoring Window
  This will be similar to status shown in the status monitor screen.
- Input Control
  - On/Off
    - Open: Clicking on this button will move the valve to open position.
    - Close: Clicking on this button will move the valve to close position.
    - Stop: Clicking on this button will stop actuator movement.

NOTE:

Actuator monitoring should be active and control mode should be set to network for the above functions to be usable.

NOTE:
If the Set point tracking is not enabled in Detailed setup then the status below the Set point dial will show as degraded. It is recommended to enable Set point Tracking in Detailed setup.

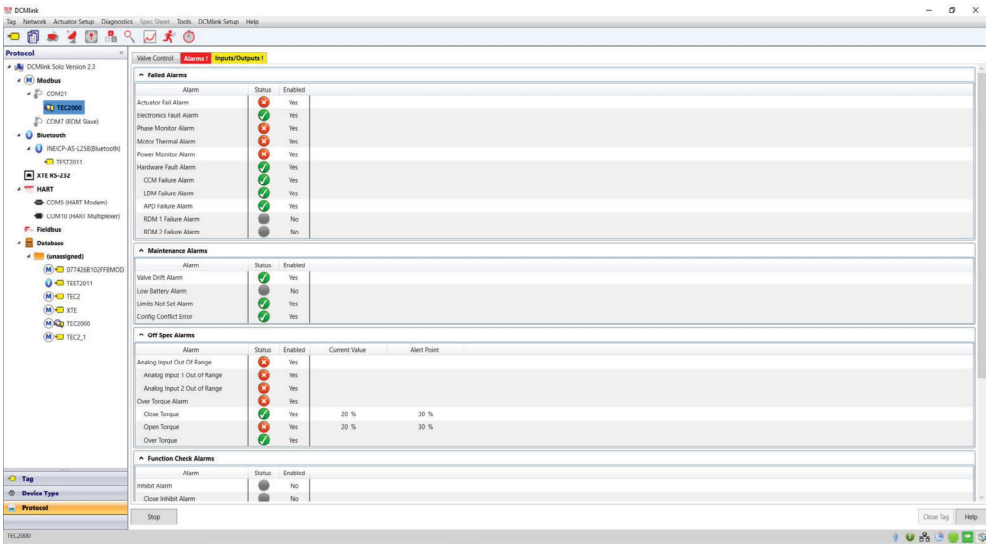
- Positioner (Modulating Mode)
  Setpoint sets the target position for the actuator to achieve. For example, if you set it at 10%, it will go to 10% Open (for MPA actuator; Setpoint corresponds to port number).

NOTE:
Actuator monitoring should be active and control mode should be set to network for the Positioner function to be usable.

- For more information please refer to Section 10.2 Configure Parameters.
- ESD
  - Host ESD
    To Host ESD Command, two conditions must be met:
    - Actuator Monitoring should be active.
    - Host Command ESD should be enabled.
  - Clear ESD
    This will clear the ESD Alarm being raised in the actuator.
- Input Control Window
  Shows **Setpoint**, **Position,** and **Torque** readings taken from the actuator. This information is similar to what is found in the status monitor screen.
- Output Control Window
  - Analog Output: This function, based on the percenTage, sends anywhere from 4 mA to 20 mA to the Analog Output Pin. 0% -> 4 mA; 100% -> 20 mA. To enable analog output, two conditions must be met:
    - Actuator monitoring should be active.
    - The source should be the host control.
  - Relay Control: Clicking on this will provide 24 V output to relay pins. To enable relay control, two conditions must be met:
    - Actuator monitoring should be active.
    - The source should be host control.

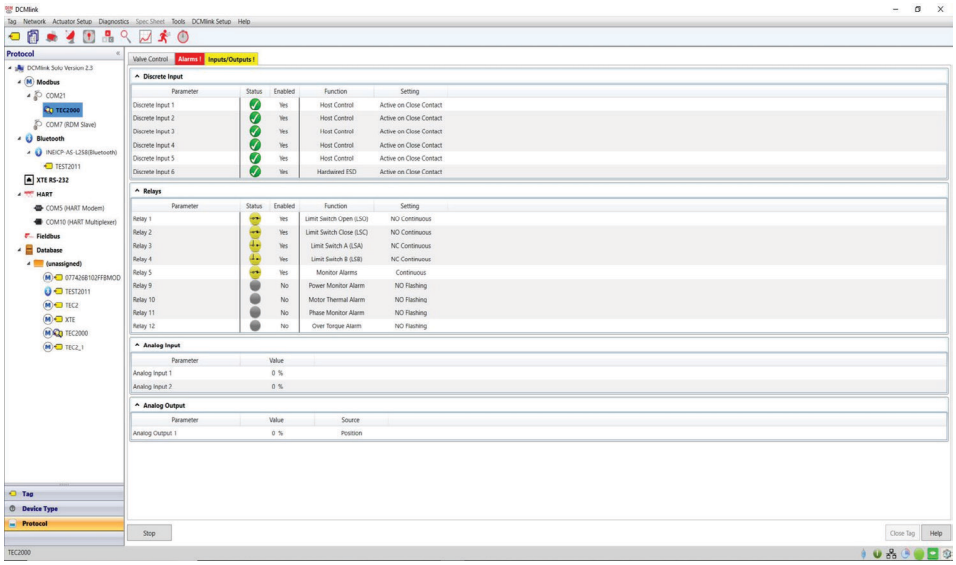
11.2.2 Alarms may be accessed by clicking on the **Alarms** tab in valve control mode. Depending on the actuator model, alarms and their current status are shown in this screen:

Figure 205 Alarms



11.2.3 The **Inputs/Outputs** tab shows the status of all input/output settings. This tab is used to monitor and modify the various parameters available to the active actuator model.

Figure 206 Inputs/Outputs



Section 12: Diagnostics

12.1 Profile

12.1.1 Torque Profile

12.1.1.1 Torque Profile
12.1.1.2 Max Torque Profile
12.1.1.3 Commanded Torque (PST/FST) Profile

12.1.2 Commanded Pressure (PST) Profile

Table 48. DCMlink Profile Comparison Table

Profile	EHO	TEC2	M2CP	TEC2000	MPA	HQ32	HQ33	XTE3000[2]
Commanded Torque (PST) Profile	No	**Yes**	**Yes**	No	No	No	No	**Yes**[3]
Commanded Pressure (PST) Profile	**Yes**	No	No	No	No	No	No	No
Commanded Torque (FST) Profile	No	Yes	Yes	No	No	No	No	No
Max Torque Profile / HWM (101 points)	No	**Yes**	**Yes**	No	No	No	No	No
Max Torque Profile / HWM (3 points)	No	No	No	No	No	No	No	**Yes**
Torque Curve (1 Curve, 9 1/2 Points)	No	No	**Yes**[1]	**Yes**	No	No	No	No
Torque Curve (100 curves, 101 Points)	No	No	No	No	No	No	No	**Yes**

Notes:
1. Open direction only.
2. Available: Modbus, RS-232, Bluetooth (HART not available).
3. 16 curves. Datapoints plotted based on the travel limits. Modbus has only Diagnostic initiation PST command.

12.1.3 Torque Profile

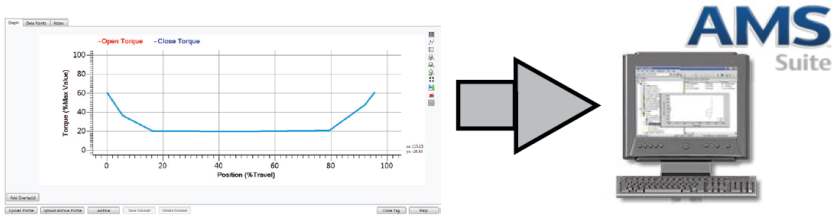
Diagnostics to detect emerging valve repair requirements:

- Torque profile
- Archived torque profile

Torque Profile is currently available on:

- TEC2000 (open and close), M2CP (open only), and XTE3000

Figure 207 Torque Profile

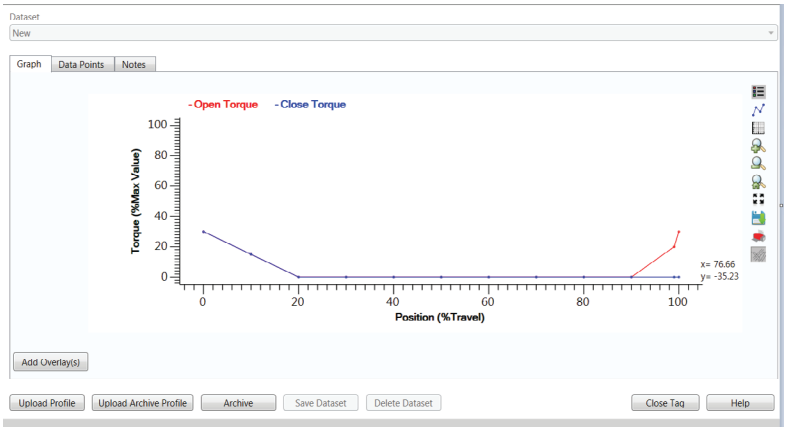


Functions available in Torque Profile View include:

- **Upload Profile:** Gives option to load the current torque profile in the actuator.
- **Upload Archive Profile:** Gives option to load the archive/saved torque profile in the actuator.
- **Archive:** Gives command to the actuator to archive the current profile into memory.
- **Add Overlays:** Gives option to plot the data from a previously saved dataset on top of the graph currently displayed
- **Save Dataset:** Gives option to save the database whenever user changes any parameter from the tab or when at least one profile is loaded or when user perform Upload profile.
- **Delete Dataset:** Gives option to delete a dataset.

1. Graph Tab
Shows the reported torque of the actuator. The **blue** lines show the closing torque profile and the **red** line shows the opening torque profile.

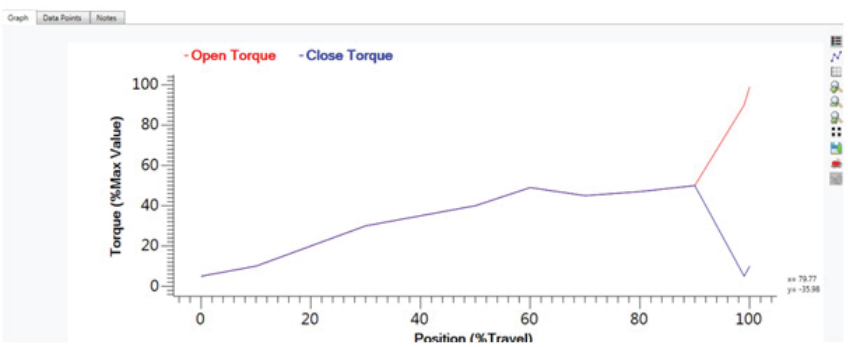
Figure 208 Torque Profile View



Functions available in the graph portion of torque profile view are:

- **Plot Points:** Shows plot points on graph.
- **Grid Lines**: Displays grid overlay on graph.
- **Zoom In:** Magnifies a particular portion on the graph and showing lines in greater detail.
- **Zoom Out:** Reduces magnification on graph.
- **Zoom Back**: Moves zoom magnitude to the original setting.
- **Save Button**: Saves graph to target directory.
- **Print Button**: Prints the graph.
- **Full Screen**: Maximizes view of the graph to full screen.
- **Highlight Overlays:** Allow user to cycle through the overlays displayed on graph.

Figure 209 Blue vs. Red Plot Lines in Open and Close Torque



2. Data Points Tab
Shows the actual values of actuator-reported torque.

Figure 210 Data Points Tab

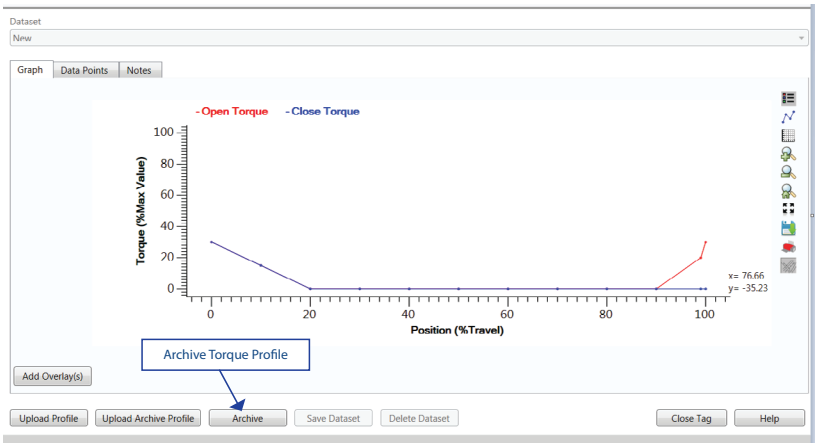
3. Notes Tab
Allows user to take notes on the available information.

NOTE:

Open and Close torque profile is only available for TEC2000 and TEC2. Open torque profile and archive open torque profile are applicable only for M2CP. There is no torque profile for MPA, HQ, and EHO.

- **Archive Torque Profile**
  - An existing torque profile may be archived for later use by clicking on **Archive** while in Torque profile view.

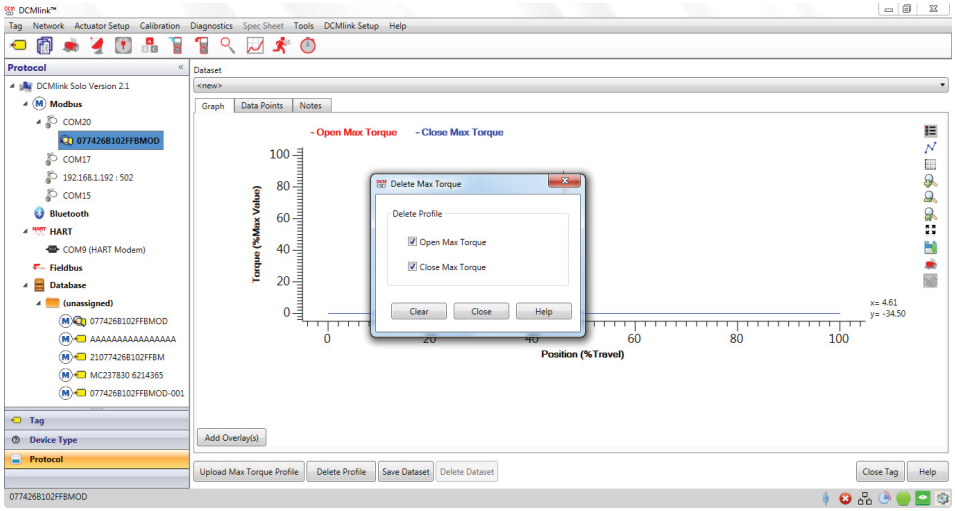
Figure 211 Archive Torque Profile View



12.1.3.1 Max Torque Profile (Water Mark Torque Profile)

Max Torque Profile is currently available for TEC2 and M2CP Actuator.

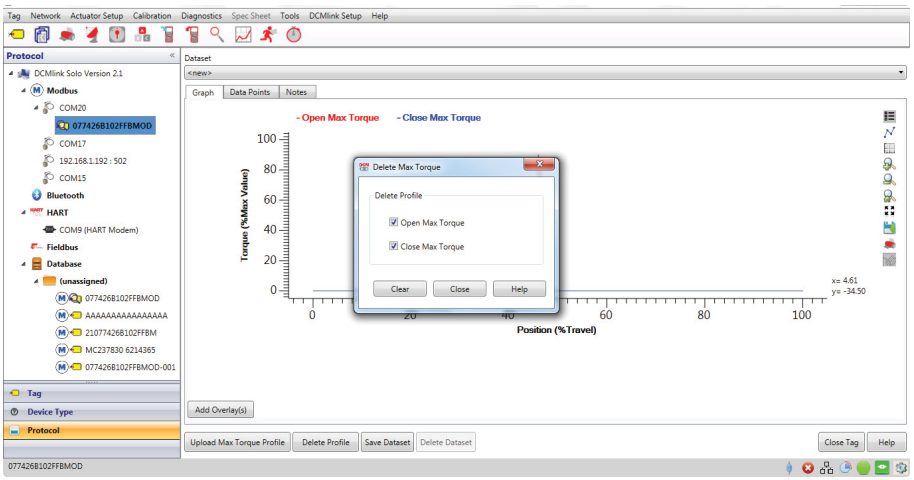
Figure 212 Max Torque Profile



Functions available in Max Torque Profile View includes:

- **Upload Max Torque Profile:** Gives option to load the current Max torque profile in the actuator.
- **Delete Profile:** Gives option to clear current Open/Close Max torque profile in the actuator.

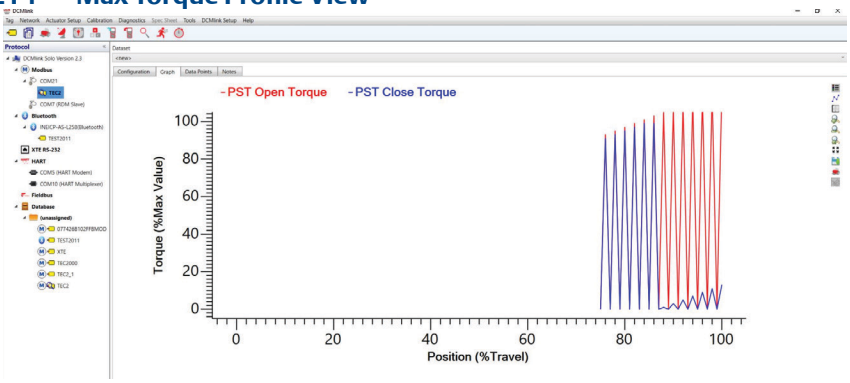
Figure 213 Delete Profile



- **Add Overlays:** Gives option to plot the data from a previously saved dataset on top of the graph currently displayed
- **Save Dataset:** Gives option to save the database whenever user changes any parameter from the tab or when at least one profile is loaded or when user perform Upload profile.
- **Delete Dataset:** Gives option to delete a dataset.

1. Graph Tab
   Shows the reported torque of the actuator. The **blue** lines show the closing Max torque profile and the **red** line shows the opening Max torque profile.

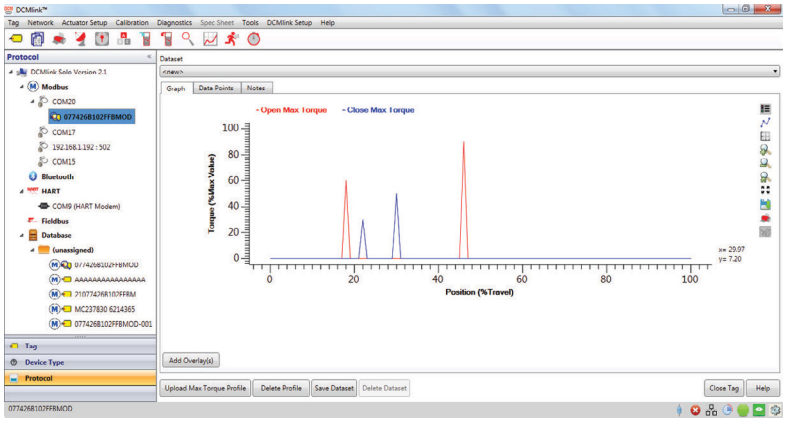
Figure 214 Max Torque Profile View



Functions available in the graph portion of Max torque profile view are:

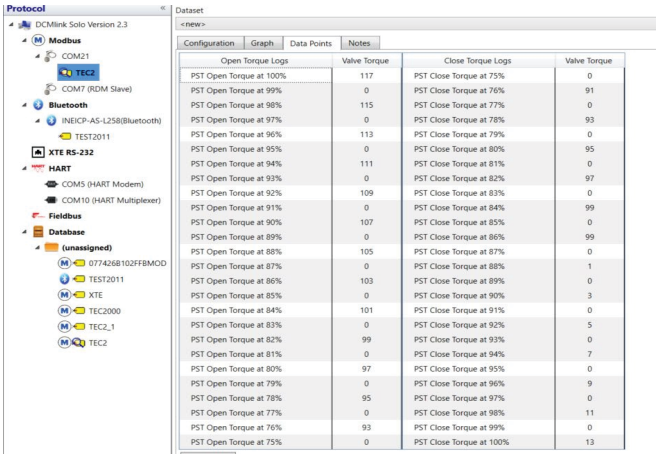
- **Plot Points:** Shows plot points on graph.
- **Grid Lines:** Displays grid overlay on graph.
- **Zoom In:** Magnifies a particular portion on the graph and showing lines in greater detail.
- **Zoom Out:** Reduces magnification on graph.
- **Zoom Back:** Moves zoom magnitude to the original setting.
- **Save Button:** Saves graph to target directory.
- **Print Button:** Prints the graph.
- **Full Screen:** Maximizes view of the graph to full screen.
- **Highlight Overlays:** Allow user to cycle through the overlays displayed on graph.

Figure 215 Blue vs. Red Plot Lines in Open and Close Max Torque



2. Data Points Tab
Shows the actual values of actuator-reported torque.

Figure 216 Data Points Tab



3. Notes Tab
   Allows user to take notes on the available information.

12.1.3.2 Commanded Torque (PST/FST) Profile

For TEC2/M2CP: PST/FST is available via Command.

- User need to **select** TEC2/M2CP **Actuator Tag**.
- **Right click Actuator Tag** then click **Torque Profile**. The Dialog Box will appear.
- In **Configuration Tab**, PST/FST profile options are available for all funtions like Start Diagnostics, Upload Profile, Upload Archive Profile, and Archive.

Functions available in Commanded Torque PST/FST Profile View includes:

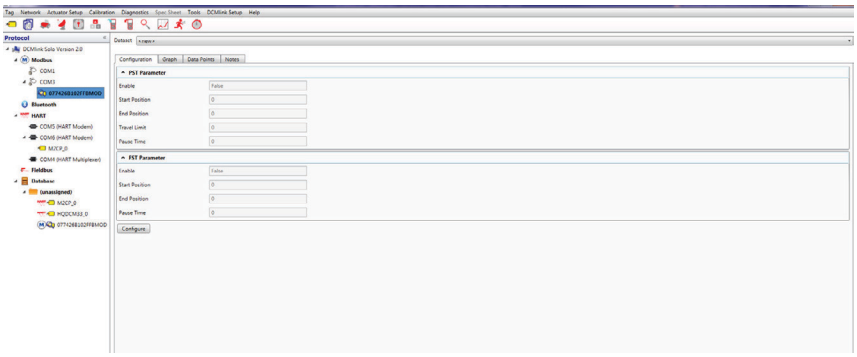
- **Start Diagnostics:** Gives option to Start the PST/FST profile.
- **Upload Profile:** Gives option to load the current torque profile in the actuator.
- **Upload Archive Profile:** Gives option to load the archive/saved torque profile in the actuator.
- **Archive:** Gives command to the actuator to archive the current profile into memory.
- **Add Overlays:** Gives option to plot the data from a previously saved dataset on top of the graph currently displayed.
- **Save Dataset:** Gives option to save the database whenever user changes any parameter from the tab or when at least one profile is loaded or when user perform Upload profile.
- **Delete Dataset:** Gives option to delete a dataset.

Commanded Torque (PST/FST) Profile has 4 Tabs:

1. Configuration Tab
2. Graph Tab
3. Data Points Tab
4. Notes Tab

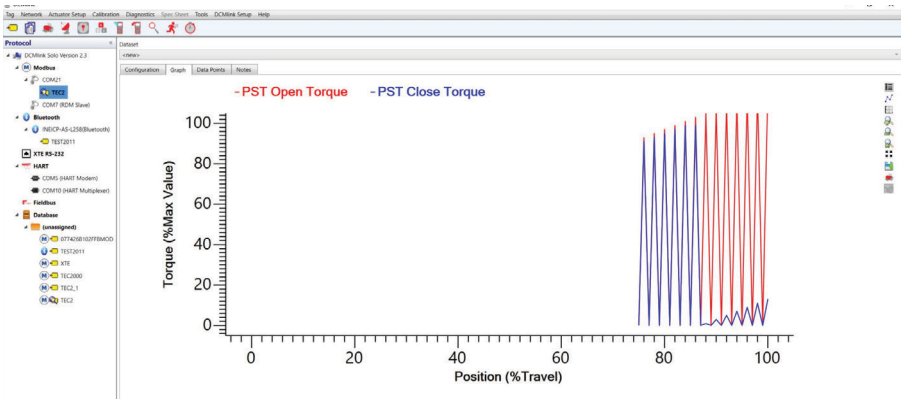
1. Configuration Tab
It includes PST/FST parameter groups and user should click **Configure** to edit needed parameters.

Figure 217 Configuration Tab For Commanded Torque (PST/FST) Profile



2. Graph Tab
Shows the reported PST/FST of the actuator. The blue lines show the closing profile and the red line shows the opening profile.

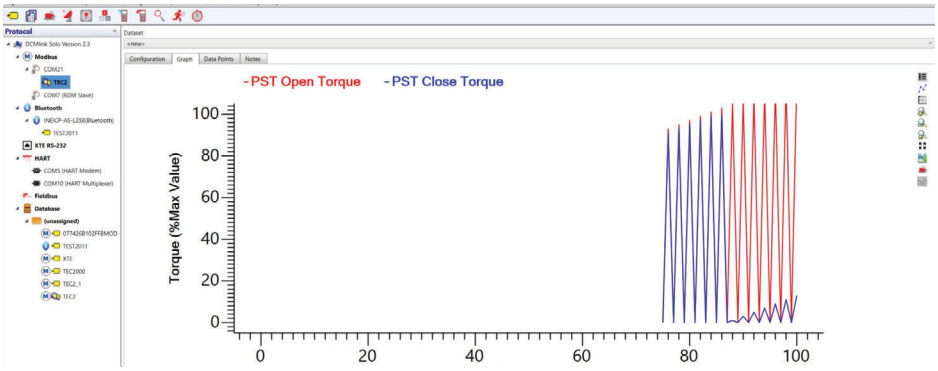
Figure 218 PST /FST Profile View



Functions available in the graph portion of PST/FST view are:

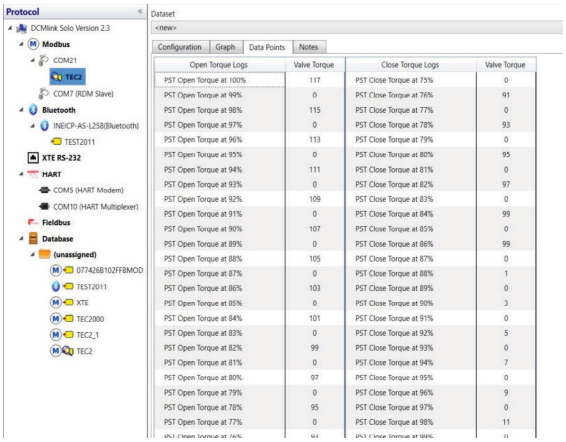
- **Plot Points:** Shows plot points on graph.
- **Grid Lines:** Displays grid overlay on graph.
- **Zoom In:** Magnifies a particular portion graph, showing lines in greater detail.
- **Zoom Out:** Reduces magnification on graph.
- **Zoom Back:** Moves zoom magnitude to the original setting.
- **Save Button:** Saves graph to target directory.
- **Print Button:** Prints graph reading.
- **Full Screen:** Maximizes the view graph to full screen.
- **Highlight Overlays:** Allow user to cycle through the overlays displayed on graph.

Figure 219 Blue vs. Red Plot Lines in Open and Close PST/FST



3. Data Points Tab
Shows the actual values of actuator reported for PST/FST.

Figure 220 Data Points Tab



4. Notes Tab
Allows user to take notes on the available information.

Running the Valve Signature Test include the below steps:

- From **Diagnostics** menu, select **Torque Profile.**
- On the **Configuration page**, **enter** values in the PST and FST Start Position, End Position, travel limit and pause time text boxes, as necessary and **click** on the **Start PST/FST**.
- PST/FST status shows the status of the test.
- To **save** the new diagnostic data in the DCMlink Software database, click the **Save Dataset**.
- To review other saved diagnostic data, select a dataset.
- To run another new diagnostic test, select >new> in the Datasets list.
- To **view** valve signature graph, **click Graph tab**.

12.1.4 Commanded Pressure (PST) Profile

This is applicable for EHO actuator only. For other actuators this option is disabled. Diagnostics to detect emerging valve repair requirements are:

- To access the **Pressure Profile**, right click **Actuator Tag context menu>Profile> Pressure Profile.**
- On the **Configuration page click Start Diagnostics.**
- Click on **Start PST.**

Functions available in Pressure Profile View includes:

- **Start Diagnostics:** Gives option to start PST profile.
- **Upload Profile:** Gives option to load current PST profile in the actuator.
- **Add Overlays:** Gives option to plot data from a previously saved dataset on top of the graph currently displayed.
- **Save Dataset:** Gives option to save the database whenever user changes any parameter from the tab or when at least one profile is loaded or when user perform upload profile.
- **Delete Dataset:** Gives option to delete a dataset.

Pressure Profile has 4 Tabs:

1. Configuration Tab
2. Graph Tab
3. Data Points Tab
4. Notes Tab

1. Configuration Tab
   Includes PST parameter group, and then user clicks **Configure** to add necessary parameters.

Figure 221 Configuration Tab

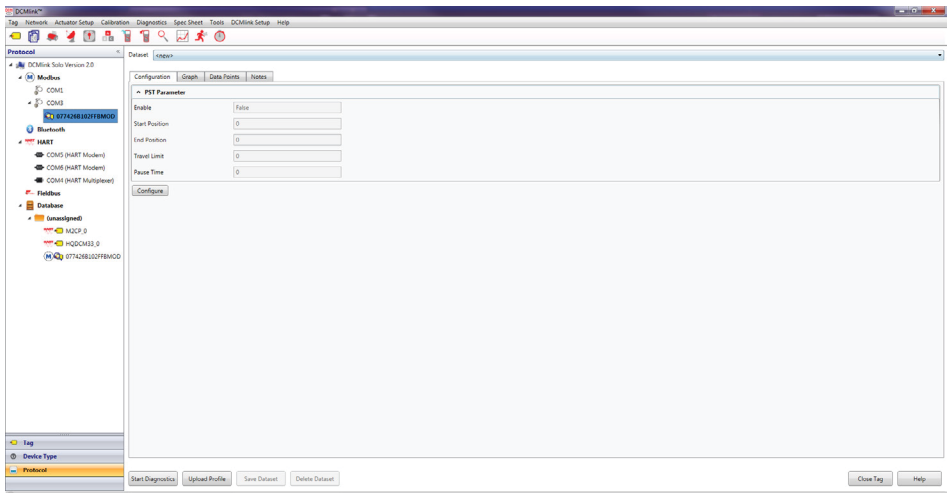
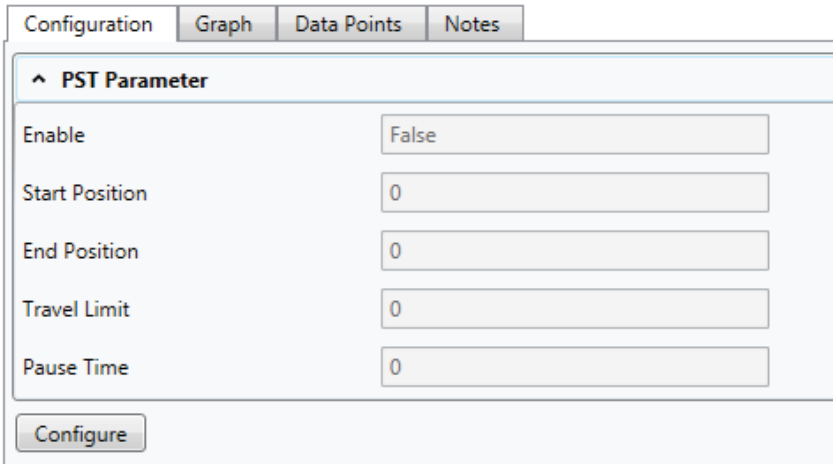
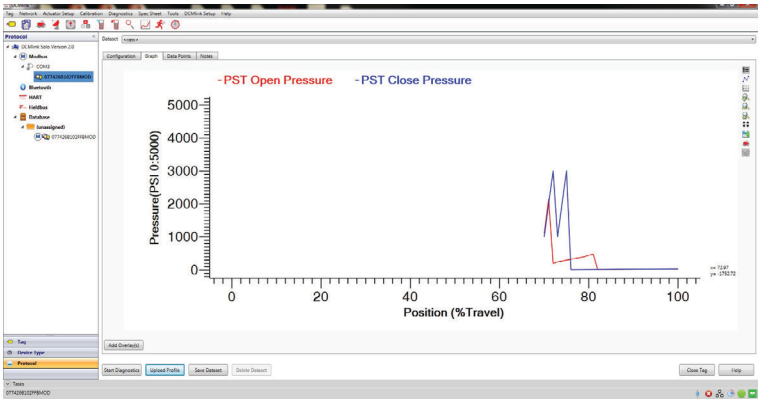


Figure 222 PST Parameters



2. Graph Tab
Shows the reported Pressure of the actuator. The blue lines show the closing Pressure profile and the red line shows the opening Pressure profile.

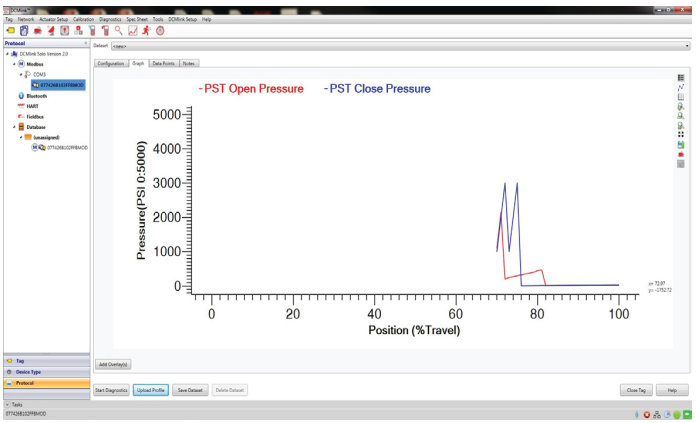
Figure 223 Pressure Profile View



Functions available in the graph portion of Pressure profile view are:

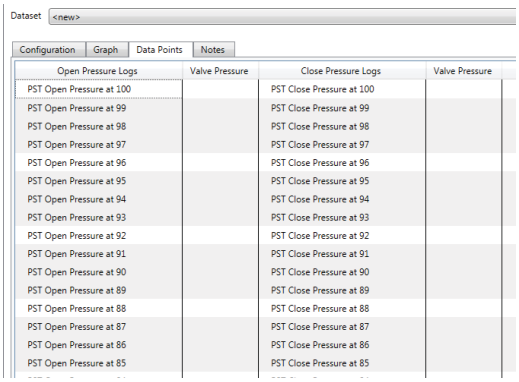
- **Plot Points:** Shows plot points on graph.
- **Grid Lines:** Displays grid overlay on graph.
- **Zoom In:** Magnifies particular portion on graph, showing lines in greater detail.
- **Zoom Out:** Reduces magnification on graph.
- **Zoom Back:** Moves zoom magnitude to the original setting.
- **Save Button:** Saves graph to the target directory.
- **Print Button:** Prints graph reading.
- **Full Screen:** Maximizes view of graph to full screen.
- **Highlight Overlays:** Allows user to cycle through the overlays displayed on graph.

Figure 224 Blue vs. Red Plot Lines in Open and Close Pressure



3. Data Points Tab
Shows the actual values of actuator reported pressure.

Figure 225 Data Points Tab



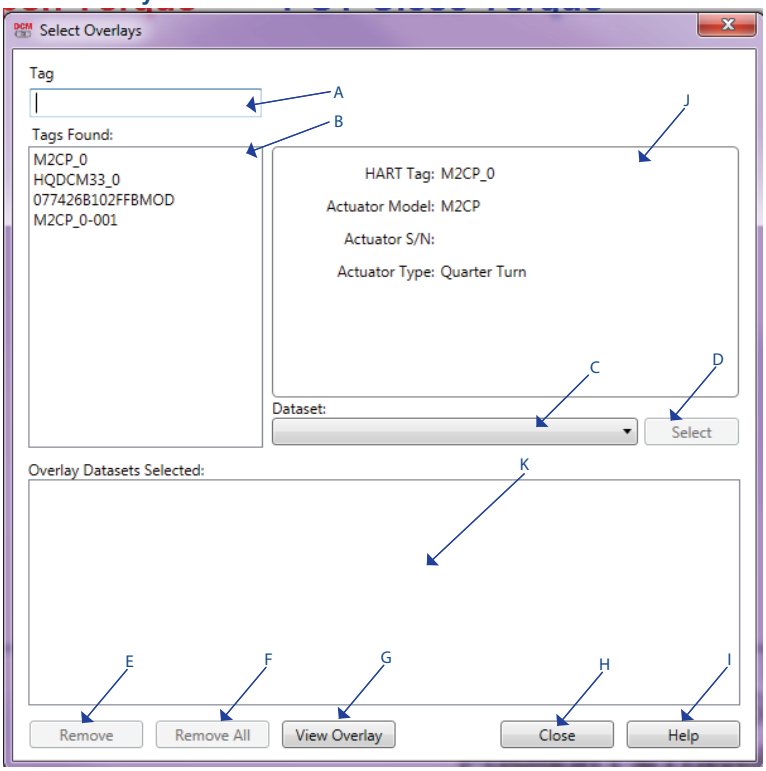
4. Notes Tab
Allows user to take notes on the available information.

Running the Valve Signature Test for Pressure Profile requires the below steps:

- From the **Diagnostics menu** select **Pressure Profile.**
- On the **Configuration page**, enter values in the PST, for Start Position, End Position, travel limit and pause time text boxes, as necessary and click **Start Diagnostics** to Start PST option.
- PST status will show the status of the test.
- To save the new diagnostic data in the DCMlink Software database, click **Save Dataset**.
- To review other saved diagnostic data, select a dataset.
- To run another new diagnostic test, select >new> in the dataset list.
- To view valve signature graph, click Graph tab.

5. Add Overlay

Figure 226 Add Overlay



Note:
The DCMlink permits a maximum of 10 graph overlays.

a. **Tag:** In tag text box user can enter the tag name of device and then click Enter to search.

b. **Tags Found:** Displays all the tags which are saved in database.

c. **Dataset:** Dataset dropdown allows user to select the previously saved dataset. It contains the dataset name and profile name in bracket ( ).

d. **Select:** The selected dataset name will be displayed in the overlay datasets selected box.

e. **Remove:** Removes the selected dataset.

f. **Remove All:** Removes all datasets added in Overlay Datasets Selected section.

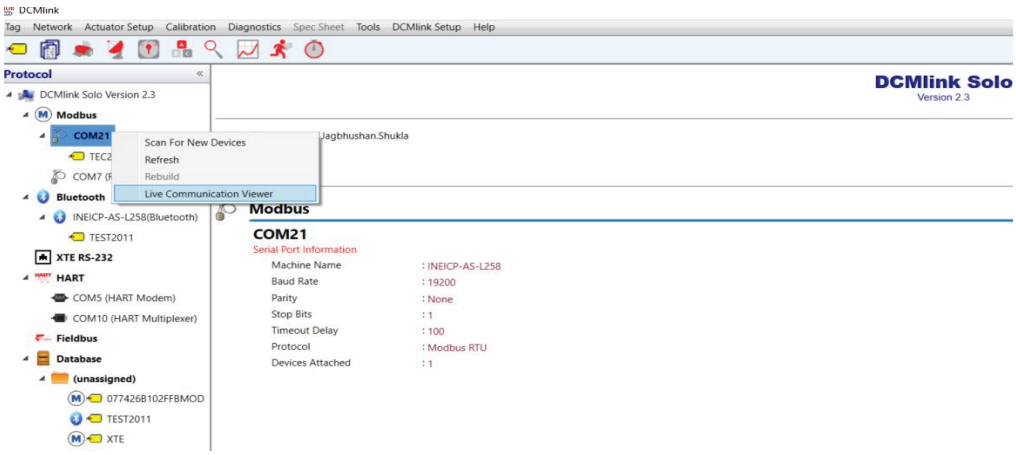
g. **View Overlay:** Shows the selected dataset graph on graph window.

h. **Close:** Overlay dialog box gets closed, without applying any settings.

12.2 Modbus Traffic Viewer

12.2.1 This application provides option to launch **Live Communication Viewer** window using the right-click context menu from the Device Tag.

Figure 227 Accessing Device Configuration Viewer



12.2.2 Live Communication Viewer must log every request as RX in **Red**:
RX <Date Time> <Communication Data coming from actuator>

12.2.3 Live Communication Viewer must log every response as TX in **Blue**:
TX <Date Time> <Communication Data sent to actuator>

Figure 228 Live Communication Viewer in Modbus Master

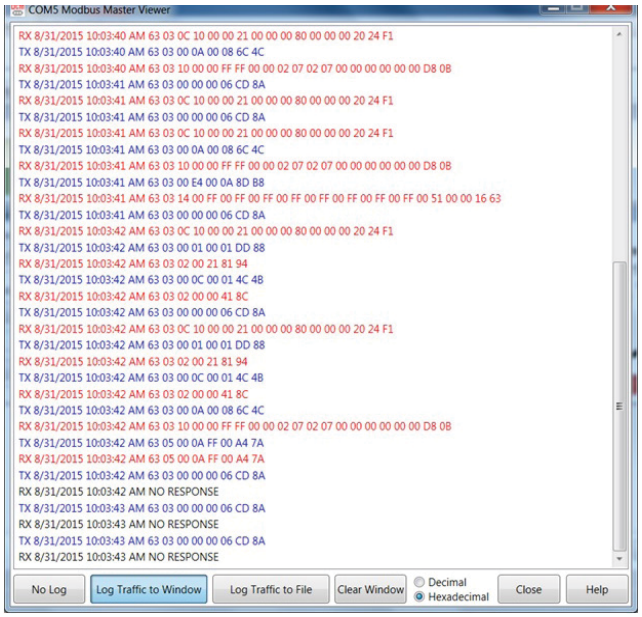


Figure 229 Live Communication Viewer in RDM

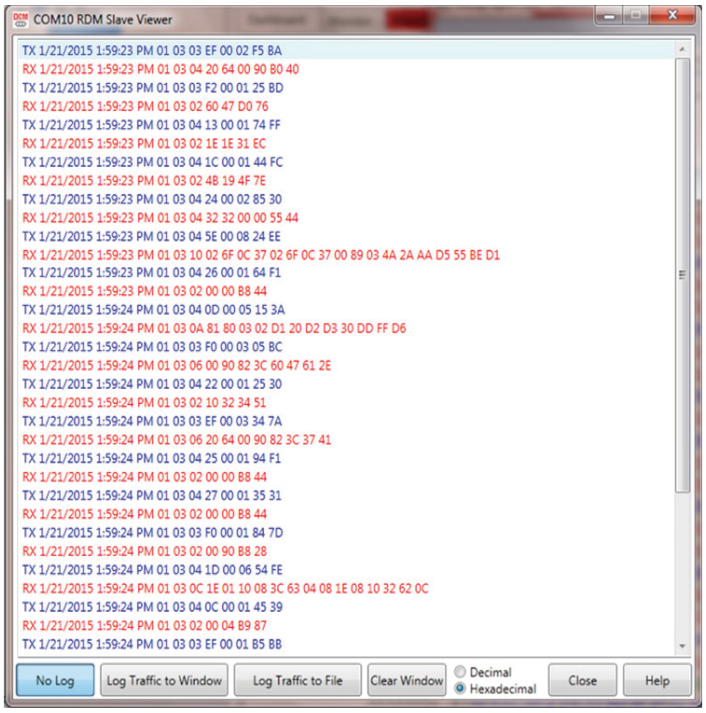
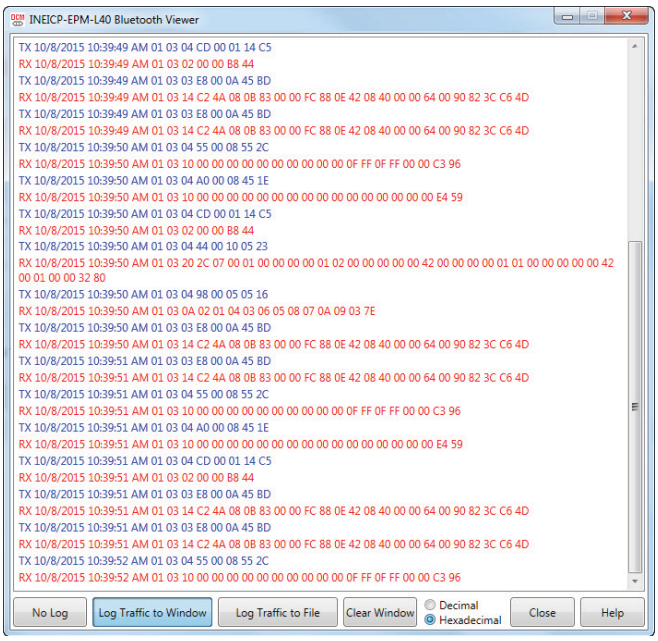


Figure 230 Live Communication Viewer in TCP

Figure 231 Live Communication Viewer in Bluetooth

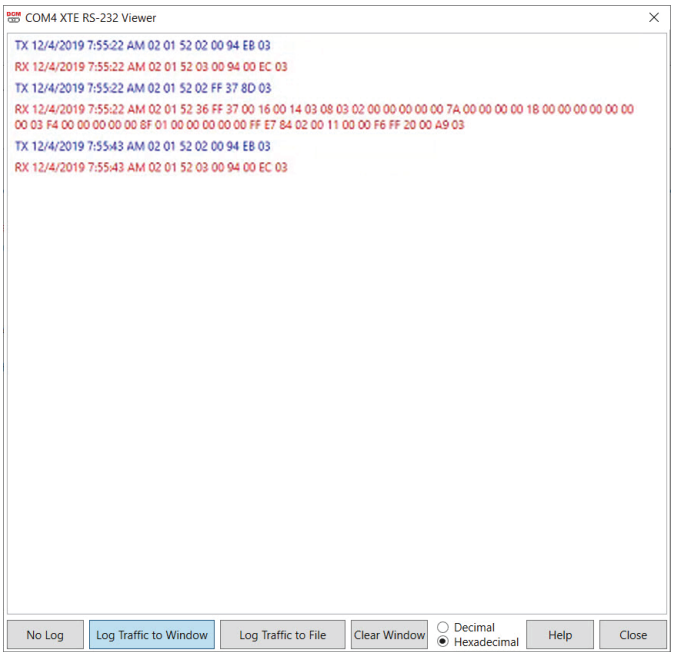


12.2.4 Also Live Communication Viewer window provides the below options:

- **No Log:** To stop logging traffic to window.
- **Log Traffic to Window:** To start logging traffic to window.
- **Log Traffic to File:** To export logged traffic to external file.
- **Clear Window:** To clear logged traffic in window.
- **Log in Decimal:** To show traffic communication data in Decimal.
- **Log in Hexadecimal:** To show traffic communication data in Hexadecimal.
- **Close:** To close Live Communication Viewer window.
- **Help:** To launch help related to Live Communication Viewer window.

12.3 XTE3000 RS-232 Communication Viewer

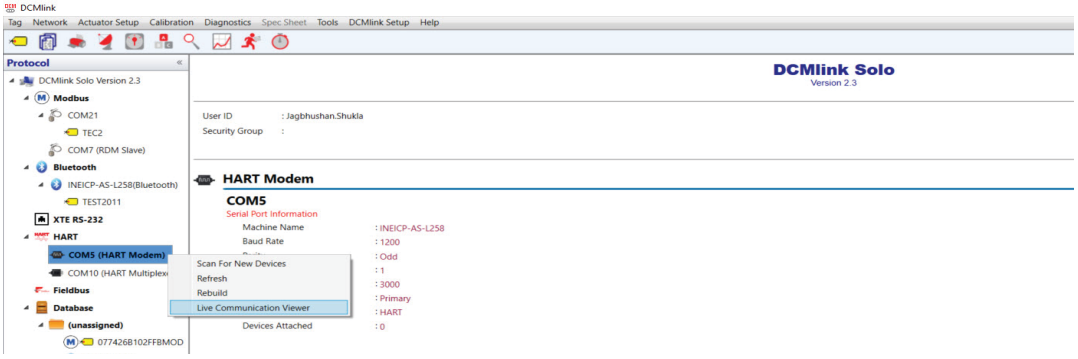
Figure 232



12.4 HART Communication Viewer

12.4.1 This application provides option to launch **Live Communication Viewer** window using the right-click context menu from the Device Tag.

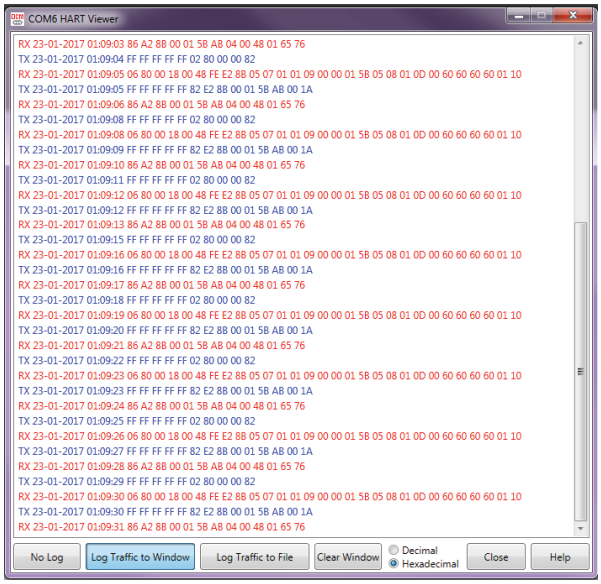
Figure 233 Accessing Device Configuration Viewer



12.4.2 Live Communication Viewer must log every request as RX in Red:
RX <Date Time> <Communication Data coming from actuator>

12.4.3 Live Communication Viewer must log every response as TX in Blue:
TX <Date Time> <Communication Data sent to actuator >

Figure 234 Live Communication Viewer HART



12.4.4 Live Communication Viewer window provides the belwo options:

- **No Log:** To stop logging traffic to window.
- **Log Traffic to Window:** To start logging traffic to window.
- **Log Traffic to File:** To export logged traffic to external file.
- **Clear Window:** To clear logged traffic in window.
- **Log in Decimal:** To show traffic communication data in Decimal.
- **Log in Hexadecimal:** To show traffic communication data in Hexadecimal.
- **Close:** To close Live Communication Viewer window.
- **Help:** To launch help related to Live Communication Viewer window.

12.5 Event Log

NOTE:
Event logging is available only for the TEC2 and M2CP.

Figure 235 Event Log Viewer

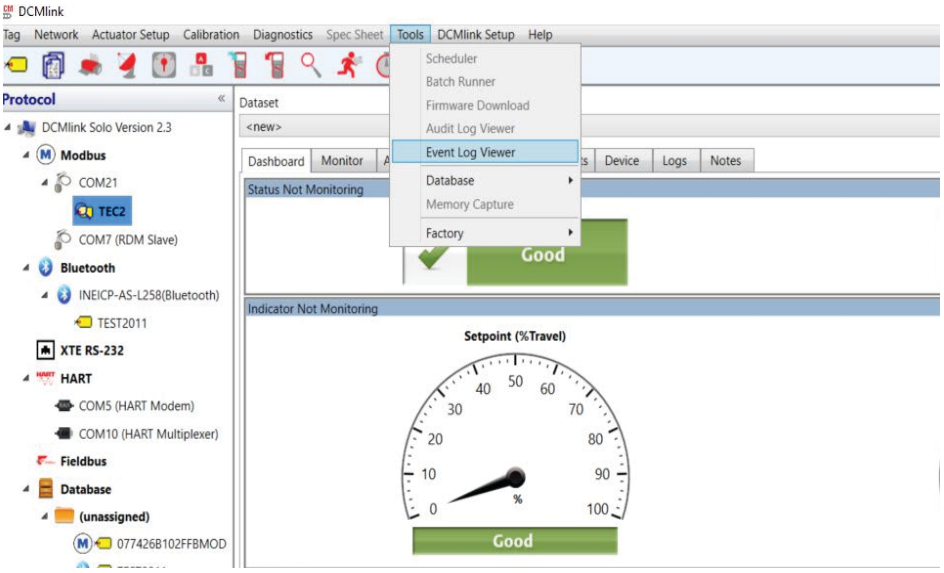
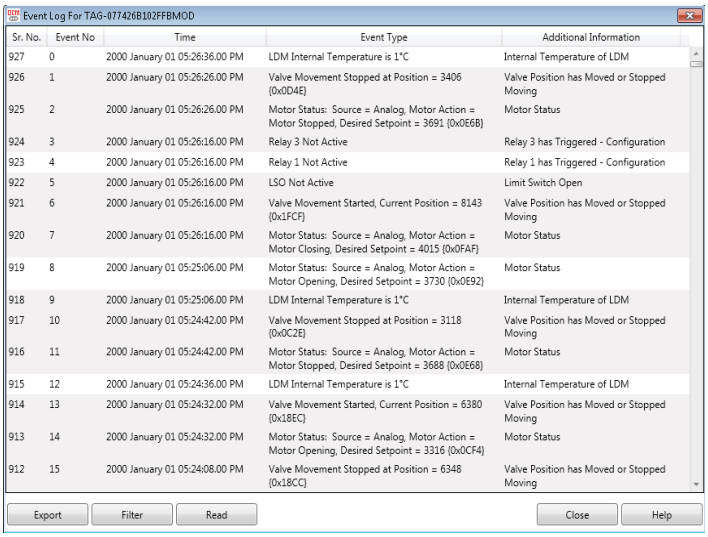
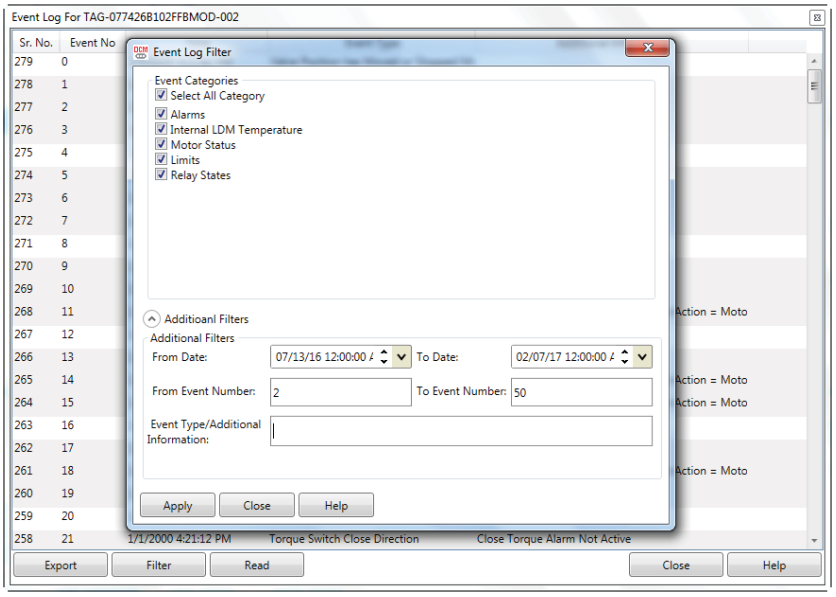


Figure 236 Event Log Viewer Window



- **Export:** Exports the entire event log in .csv format.
- **Filter:** Allows the option to display information based on the selected event type only.

Figure 237 Event Log Filter

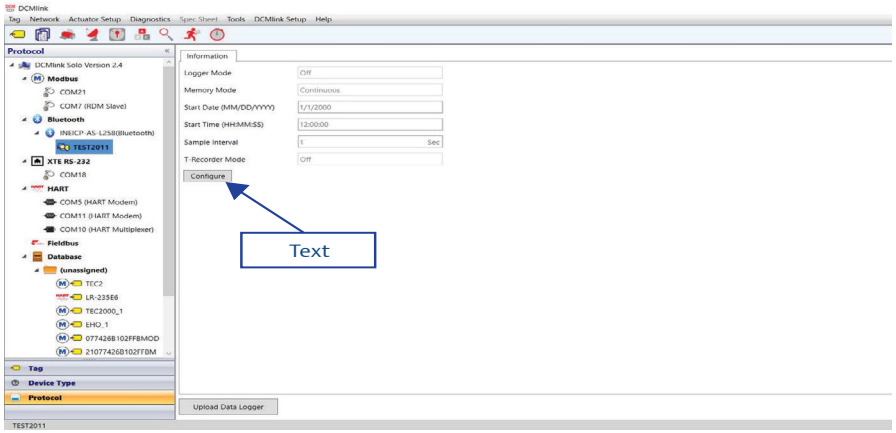


- **Read:** Reloads the entire event log.
- **Close:** Closes the Event Log window.
- **Help:** Opens the help dialog box.

12.6 Data Logger

Data Logger is available only for the XTE3000 over Bluetooth and RS-232 protocol.

Figure 238 Data Logger Viewer



In XTE3000 there are four modes of Data Logger:

- Event
- Recorder
- T-Recorder
- OFF

All Data Logger Information could be configured using the “configure” button. It navigates to the "Detailed Setup" screen where under "Data Logger" tab user can set configuration.

On clicking the ‘Upload’ button, it will upload all the tabs for the selected Data Logger Mode.

Figure 239 Data Logger with Logger Mode as “Event”

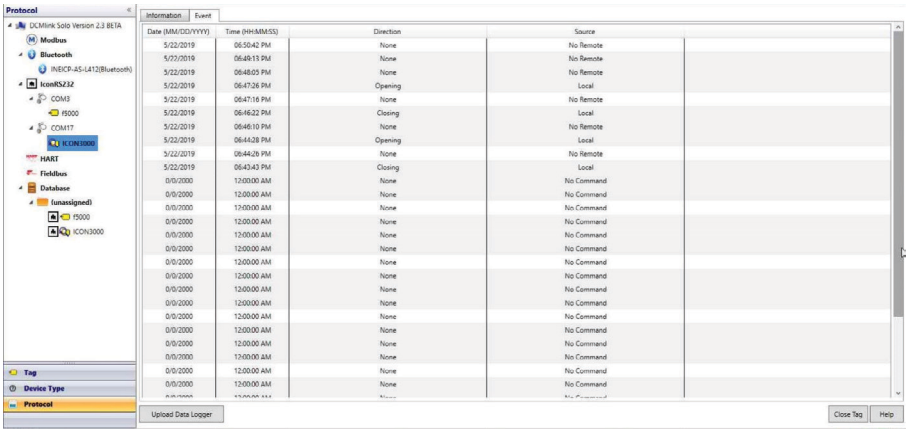


Figure 240 Data Logger with Logger Mode as “Recorder”

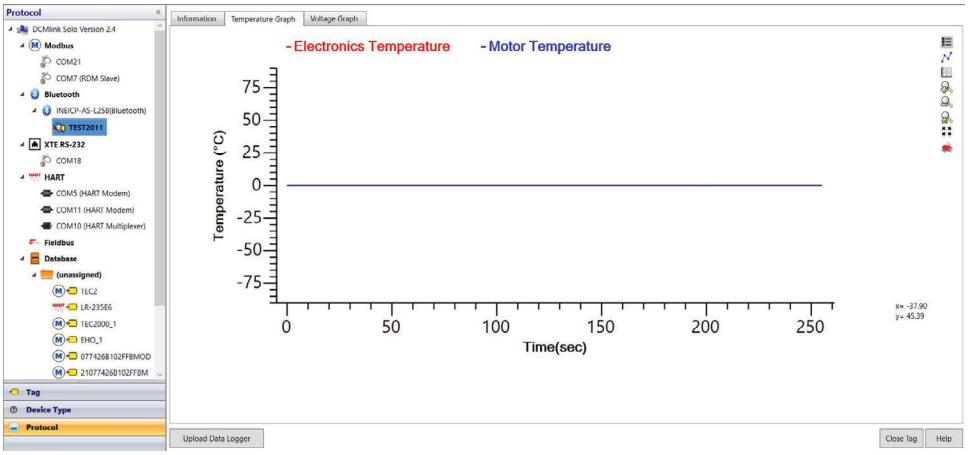
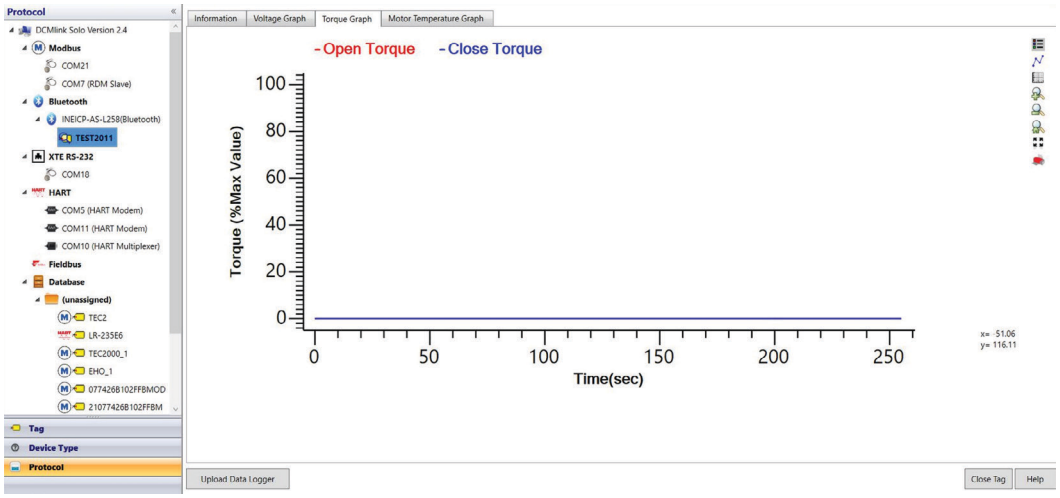


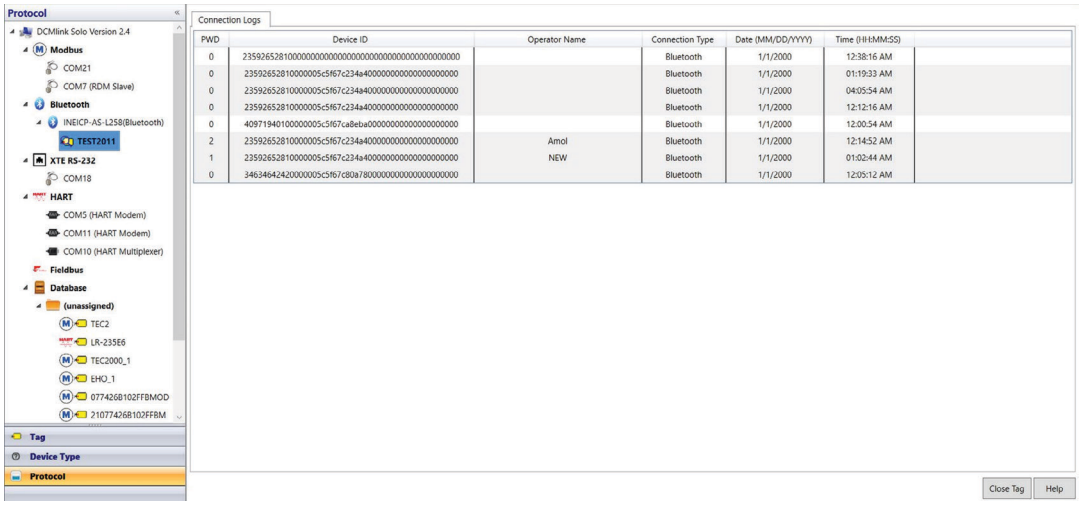
Figure 241 Data Logger with Logger Mode as "T-Recorder"



12.7 Connection Logger

Connection Logger is available only for the XTE3000 over Bluetooth and RS-232 protocol. Connection Logger screen is launched from Menu **Tools -> Connection Logs Viewer.**

Figure 242 Connection Logger Viewer

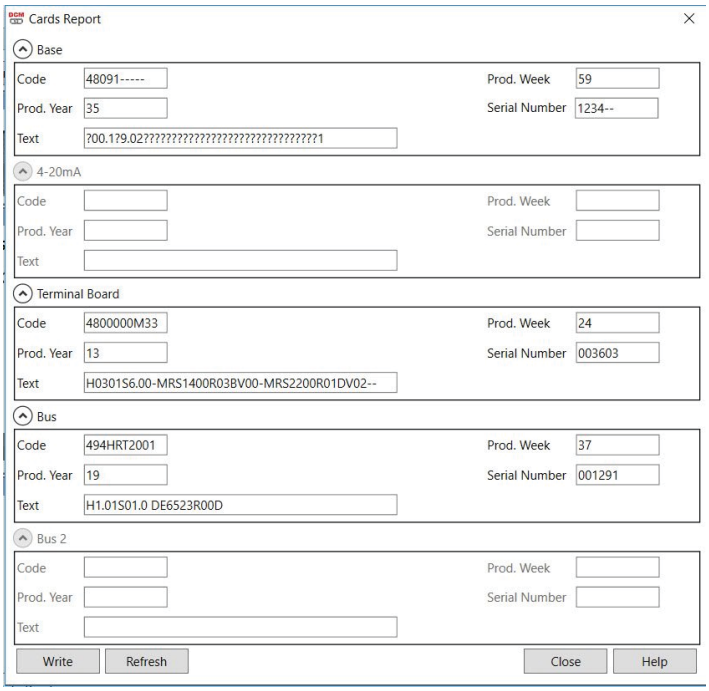


Connection Logger screen keeps the record of all the connections made with the actuator. Its shows information PWD, Device Id, Operator Name, Connection type, Date, and time of connection.

12.8 Card Report

Card Report is available only for the XTE3000 over Bluetooth and RS-232 protocol.
Card Report screen is launched from Menu **Tools -> Card Report.**

Figure 243 Card report View

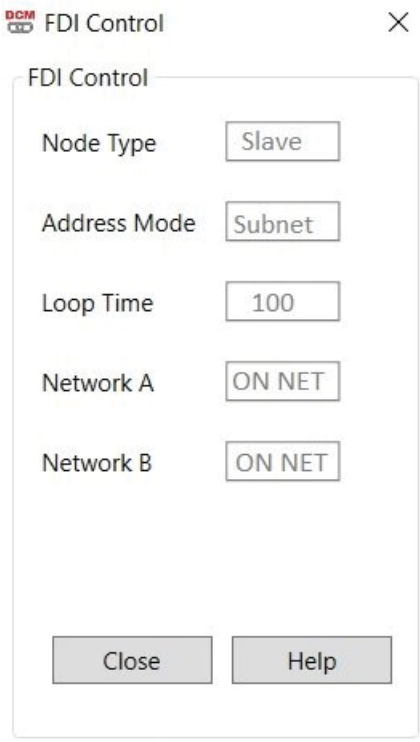


- **Refresh**: Reloads all Parameters values.
- **Write**: Write all the changed parameters to actuator.

12.9 FDI Controls

FDI Controls is available only for the XTE3000 over Bluetooth and RS-232 protocol.
FDI Controls screen is launched from Menu **Tools -> FDI Controls.**

Figure 244 FDI Controls Views

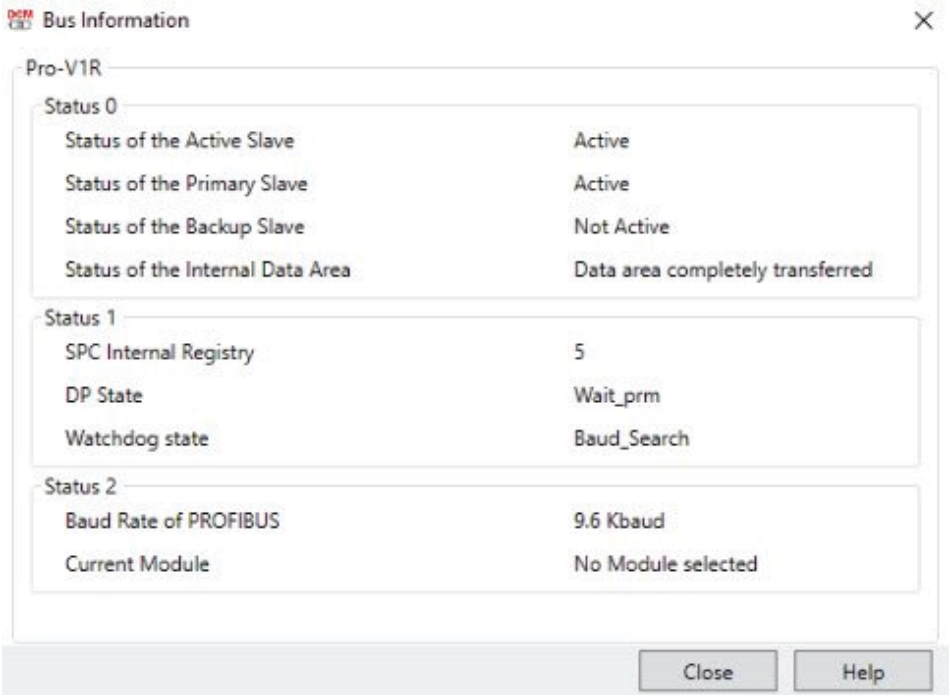


NOTE:
FDI Controls Details are based on the Hardware Configuration.

12.10 Bus Information

Bus Information is available only for the XTE3000 over Bluetooth and RS-232 protocol.
Bus Information screen is launched from Menu **Tools -> Bus Information.**

Figure 245 Bus Information Views

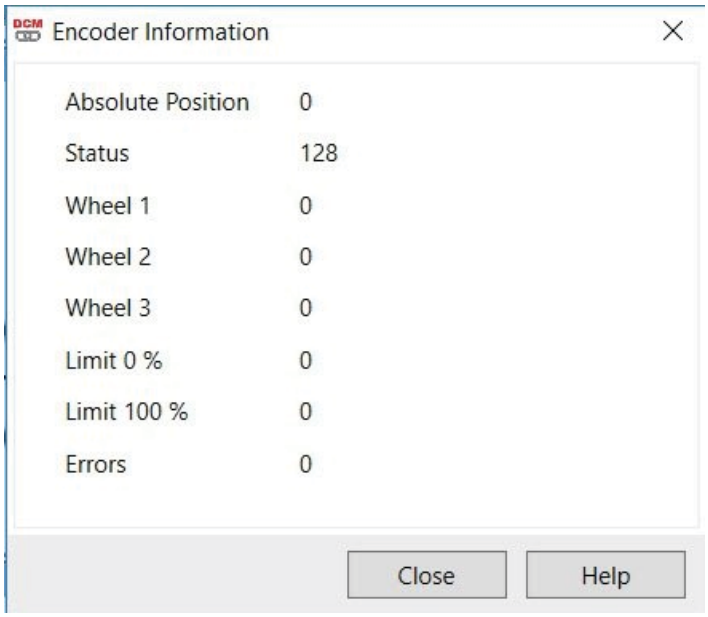


NOTE:
Bus Information Details are based on the Hardware Configuration.

12.11 Encoder Information

FDI Controls is available only for the XTE3000 over Bluetooth and RS-232 protocol.
FDI Controls screen is launched from Menu **Tools -> Encoder Information.**

Figure 246 Encoder Information Views



Section 13: Calibration Procedure

13.1 Introduction

DCMlink provides a step-by-step procedure for end user to perform Analog Input and Output calibration.

Calibration allows the user to calibrate using various calibration tools. It also provides the following functions and advantages:

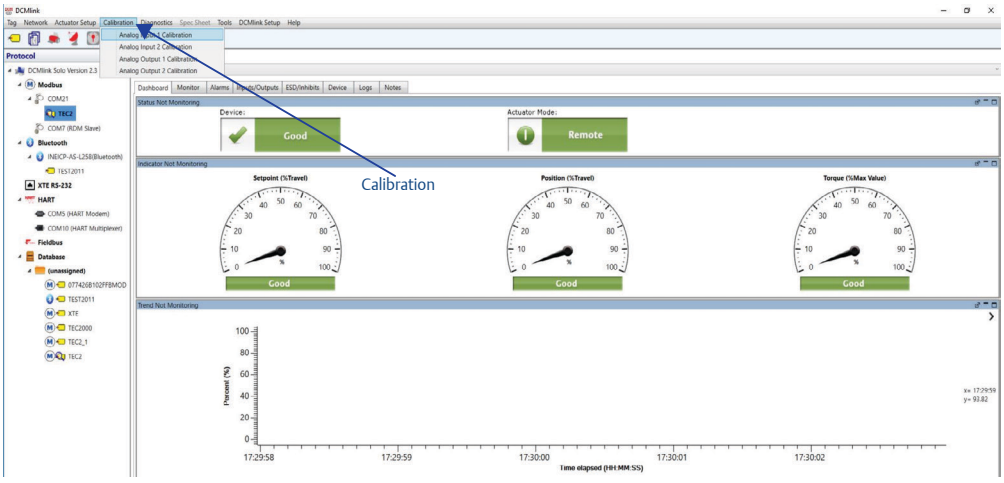
- Enhance productivity with easy-to-use calibration tools.
- Support for Analog Input and Output Calibration.
- Calibration available for TEC2/M2CP/HQ/EHO.
- Home Port Calibration is only available for the MPA.

NOTE:

Calibration may be executed only when monitoring is inactive. Perform calibration preferably before device monitoring is activated.
Calibration settings and menus vary per actuator. For example, an M2CP will have different calibration procedures than a TEC2. Check actuator manual for calibration settings.

13.1.1 On the menu bar, click **Calibration.**

Figure 247 Calibration from the Menu Bar



13.1.2 Alternatively, **Calibration** may be accessed by right-clicking on the actuator Tag in the navigation pane and clicking on **Calibration.** The user may also click on the **Calibration** icons in the tool bar.

13.2 Analog Input & Output Actuator Connection Details

Below are the calibration options available from DCMlink.

Table 49.

Actuator	Analog Input 1	Analog Input 2	Analog Output 1	Analog Output 2	Analog Torque Pot Input
M2CP	P4 Connector=> Pin#1 (+ve) Pin#2 (-ve)	P4 Connector=> Pin#3 (+ve) Pin#4 (-ve)	P4 Connector=> **Step 1**. Pin#5 (apply 24V DC) **Step 2**. 0V connects to – of loop calibrator **Step 3**. + of loop calibrator connects to Pin#6	NA	Connect a 5K or 10K potentiometer to connector P3
TEC2	25+ve 26-ve	27+ve 28-ve	31+ve 32-ve	33+ve 34-ve	NA
MPA	NA	NA	NA	NA	NA
HQ32	NA	NA	NA	NA	NA
HQ33	NA	NA	NA	NA	NA
TEC2000	NA	NA	NA	NA	NA
EHO	25+ve 26-ve	NA	27+ve 28-ve	29+ve 30-ve	NA
XTE3000	NA	NA	NA	NA	NA

13.2.1 Apply Current source to Pins of each Actuator as shown below:

Figure 248 M2CP Actuator Analog Input, Output, Ground Connections

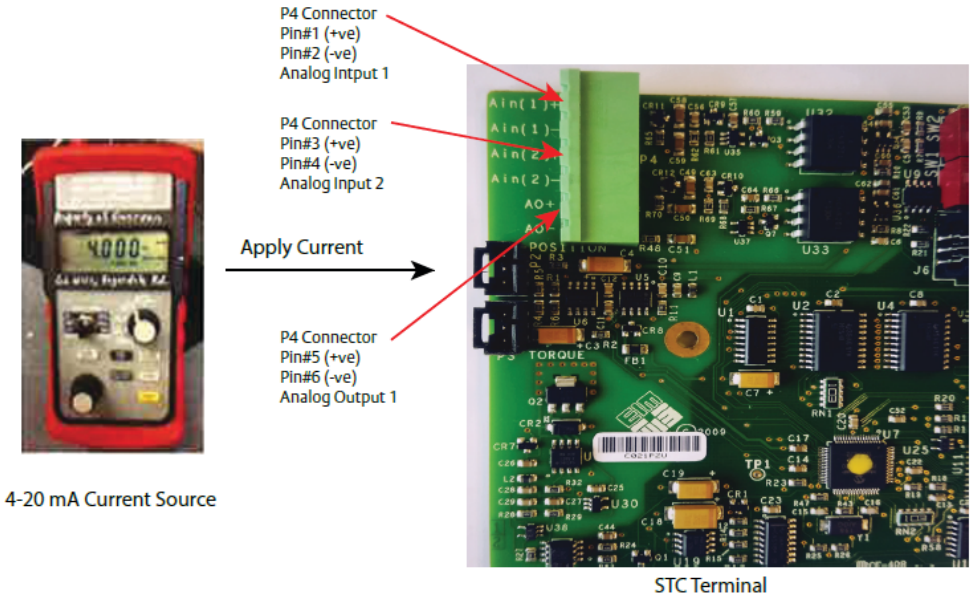


Figure 249 TEC2 Actuator Analog Input, Output, Ground Connections

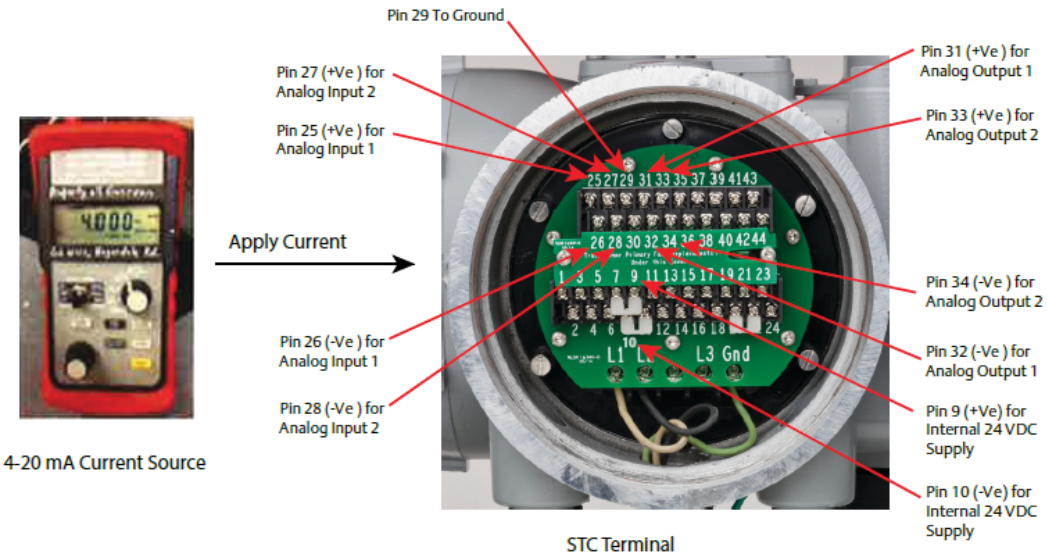


Figure 250 TEC2 Input, Output, Ground Pin Details

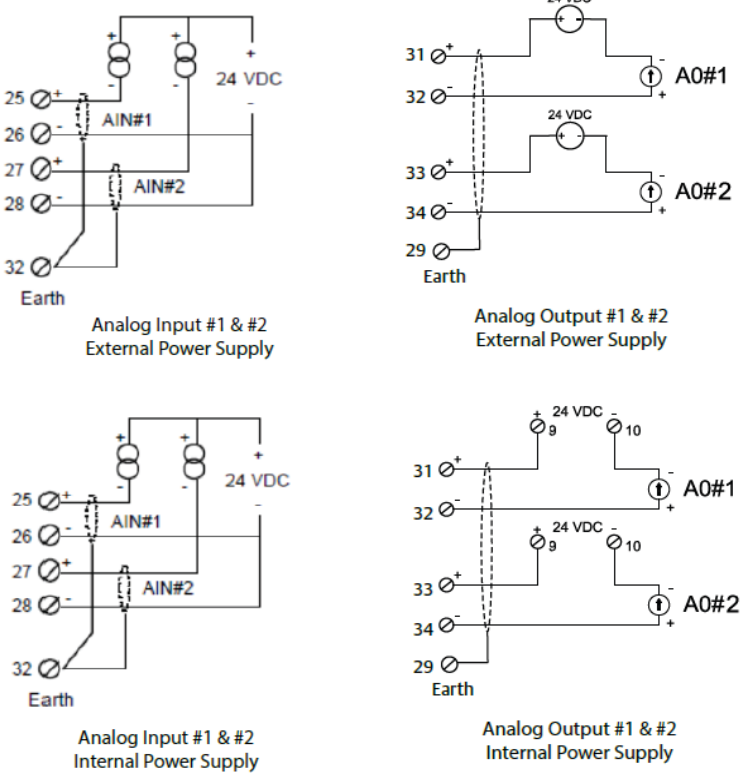


Figure 251 EHO Actuator Analog Input, Output, Ground Connections

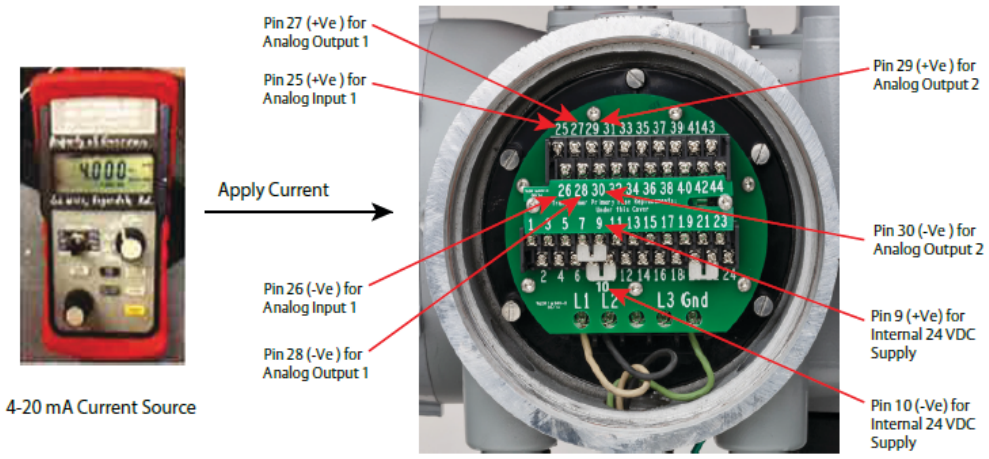
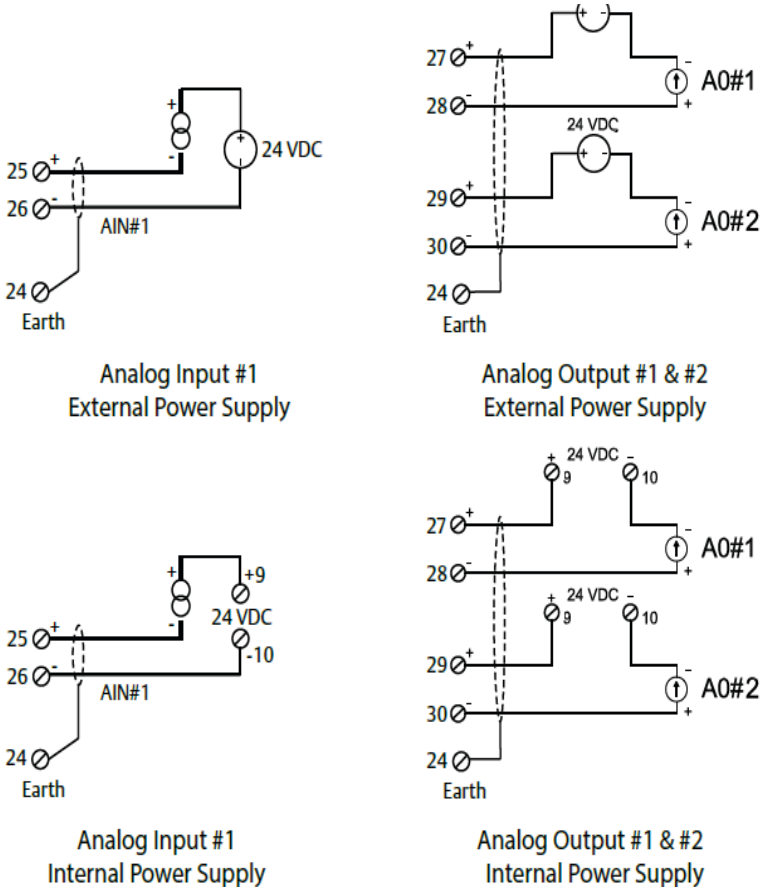
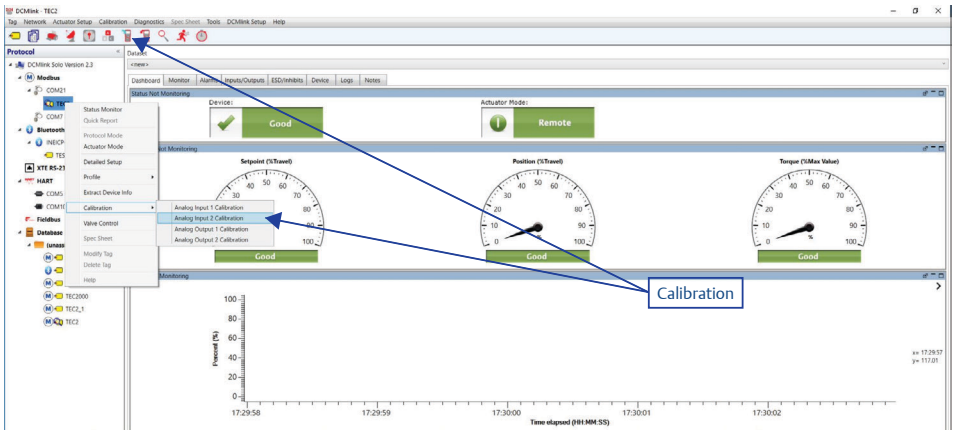


Figure 252 EHO Input, Output, Ground Pin Details



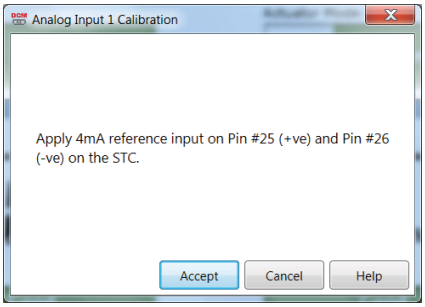
13.3 Analog Input Calibration

Figure 253 Calibration from the Navigation pane



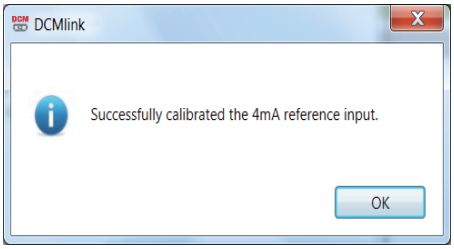
13.3.1 After clicking **Calibration,** click **Accept.**

Figure 254 Analog Input 1 or 2 Calibration



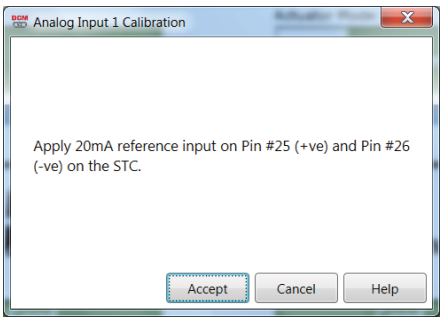
13.3.2 After calibration completes, click **OK.**

Figure 255 Calibrating to 4 mA Reference



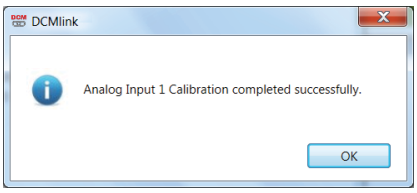
13.3.3 Another calibration option (20 mA). Click **Accept.**

Figure 256 Calibrating to 20 mA reference



13.3.4 Calibration is completed after clicking **Accept**.

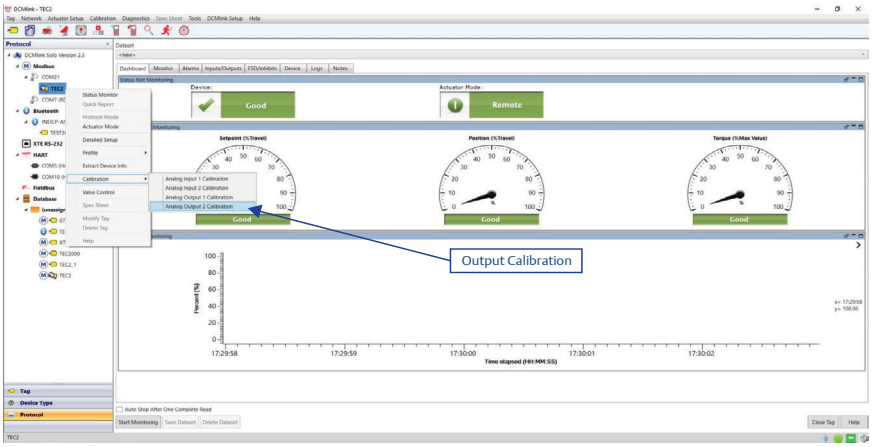
Figure 257 Analog Input 1 Calibration Completed



13.4 Analog Output Calibration

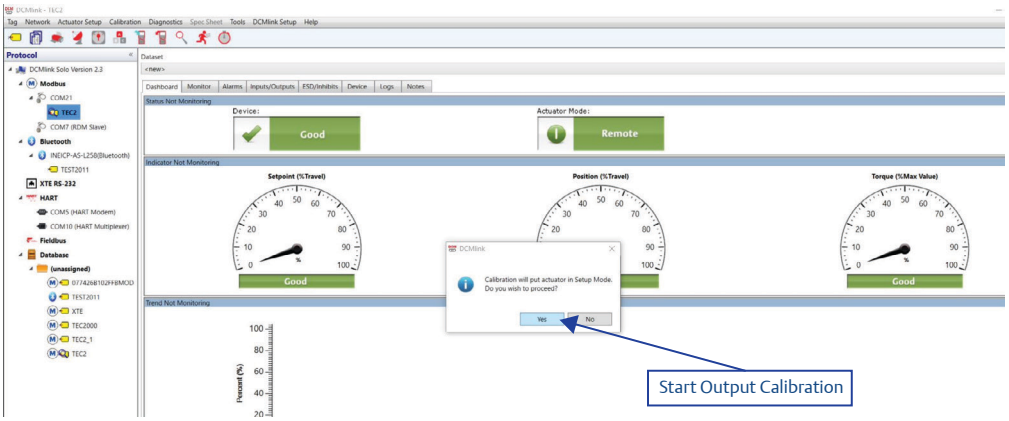
13.4.1 Executing Output Calibration using the applicable actuators begins by clicking **Analog Output Calibration.**

Figure 258 Analog Output Calibration 1 or 2



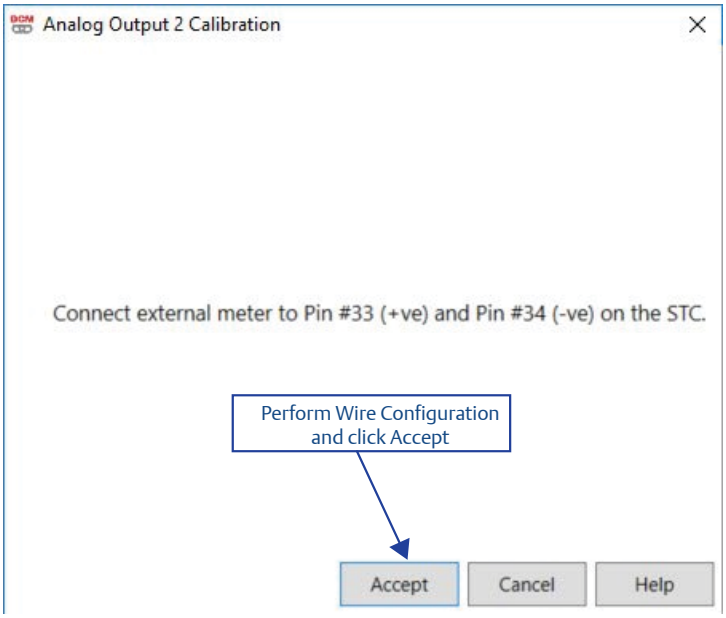
13.4.2 Click **Yes.**

Figure 259 Start Analog Output Calibration



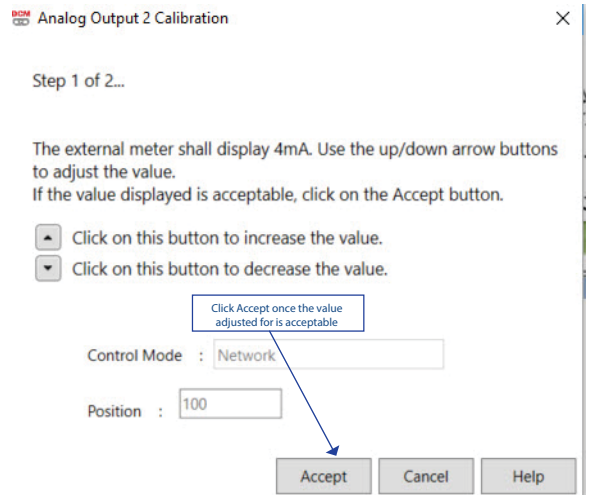
13.4.3 Ensure correct wire configuration and click **Accept.**

Figure 260 Start Analog Output Calibration



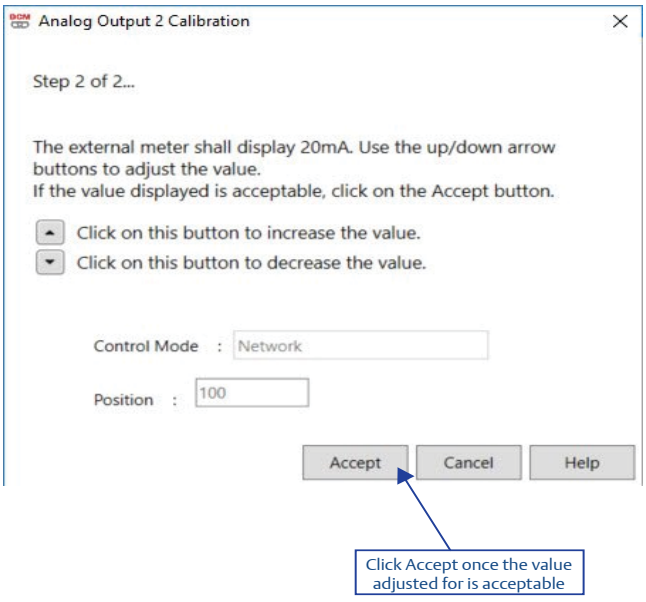
13.4.4 Click **Up and Down** arrows until the value adjusted for is acceptable. Once complete, click **Accept**. This concludes the 4 mA output calibration.

Figure 261 Start 4 mA Analog Output Calibration



13.4.5 For the 20 mA output calibration, similar steps apply. Click **Up and Down** arrows until the values are acceptable. Once complete, click **Accept**.

Figure 262 Start 20 mA Analog Output Calibration



13.4.6 Once output calibration completes, a window will appear stating this. Click **OK**.

13.5 MPA Home Port Calibration

13.5.1 MPA Home Port Calibration window is used to align the electronic position with the physical ports of the MPA.

Figure 263 Accessing MPA Home Port Calibration

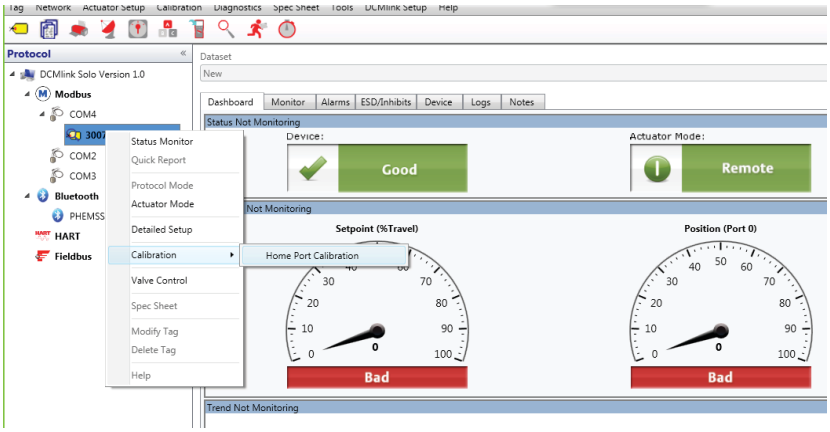
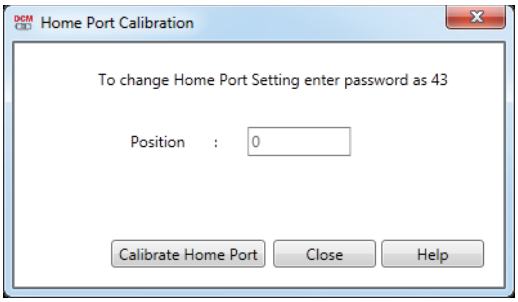


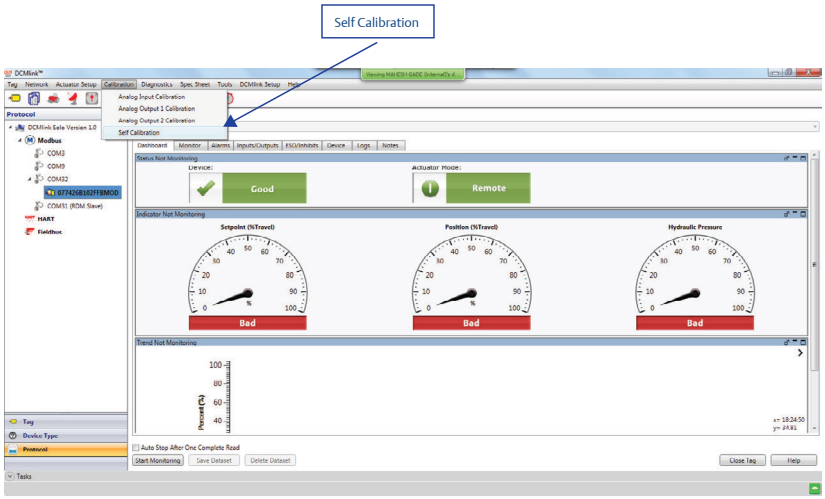
Figure 264 MPA Home Port Calibration



13.6 EHO Self-Calibration

13.6.1 Self calibration can be performed on the EHO Smart electric actuators. After loading an EHO Tag, calibration can be accessed by using the menu bar, the tool bar, or right-clicking on the Tag. In this example, the menu bar **Calibration** is clicked, followed by **Self-Calibration**.

Figure 265 EHO Self-Calibration (1)

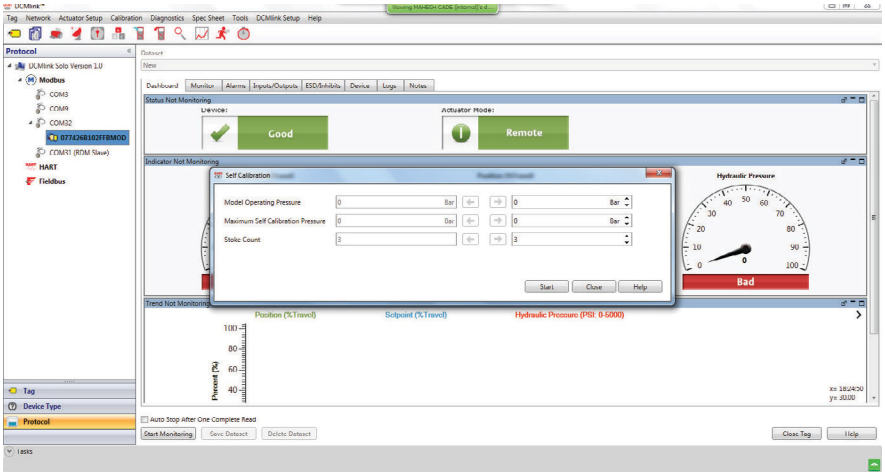


13.6.2 A dialog box will appear and ask for calibration to proceed. Click **Yes**.

13.6.3 Input the desired values and click **Start**.

13.6.4 Self-Calibration concludes once the inputted values are accepted. Click **OK** on the dialog box that appears at the conclusion.

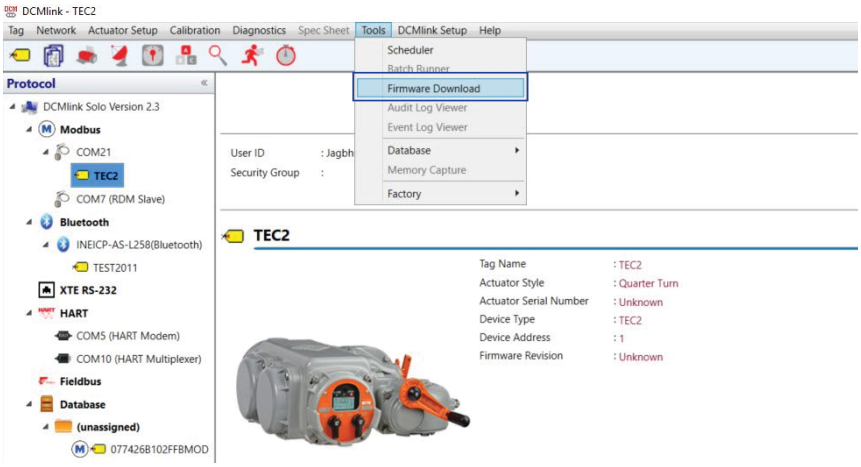
Figure 266 Input values for Self-Calibration



Section 14: Firmware Download

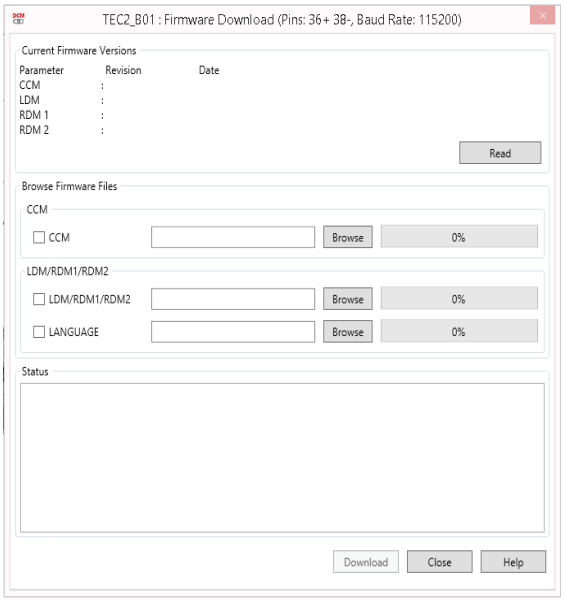
To download Firmware from **DCMlink**:
Select **Tools** Menu and click on **Firmware Download** option.

Figure 267 Firmware Download Menu



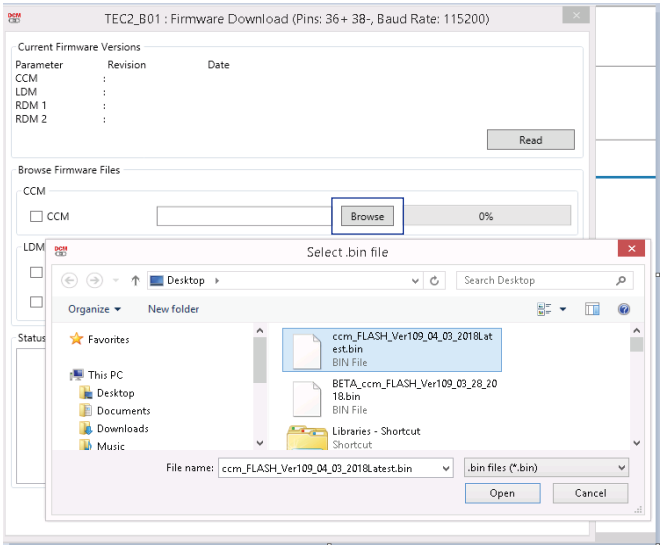
- Click **Firmware Download** option, Dialog Box will appear.

Figure 268 Firmware Download Dialog



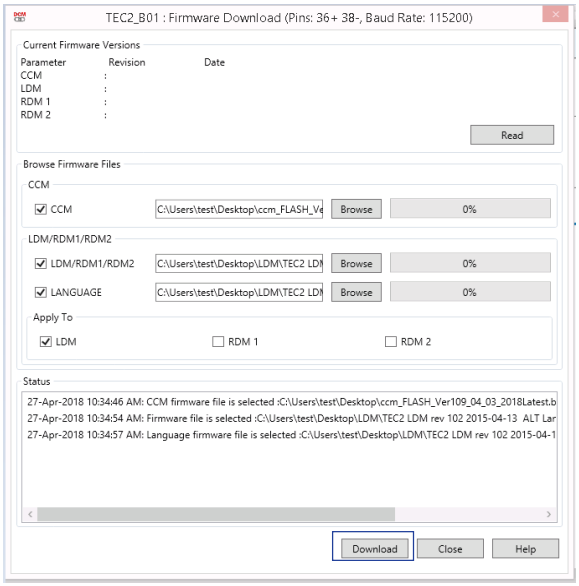
- Click on Firmware File Option & click on the **Browse** to select the file.

Figure 269 Firmware Download Selection Dialog



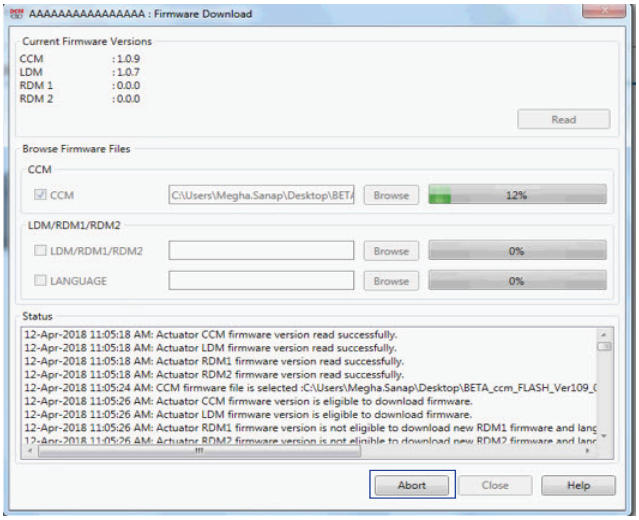
- Once all Firmware files are selected click on **Download**.

Figure 270 Firmware Download



- Firmware Download is in Progress & user can click on **Abort** if Download is not required.

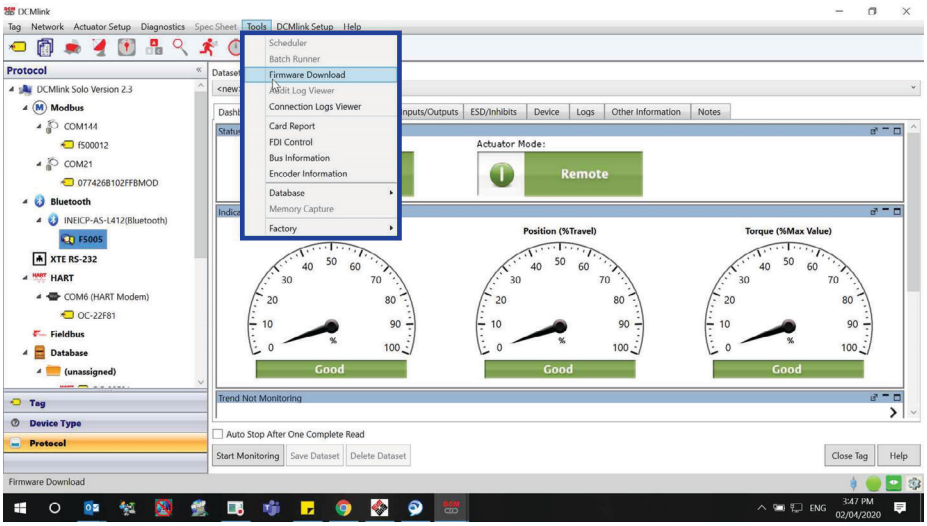
Figure 271 Firmware Download In Progress



14.1 Firmware Download XTE3000

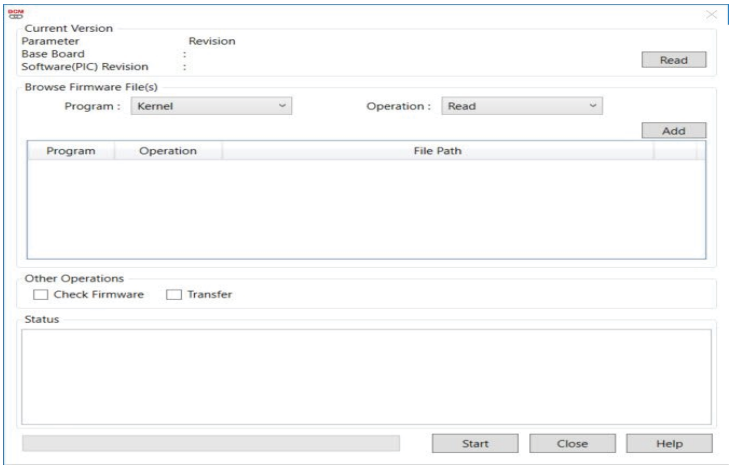
To download Firmware from DCMlink; select **Tools Menu** and click on **Firmware Download** option.

Figure 272 Firmware Download Menu



- Click **Firmware Download** option, Dialog Box will appear.

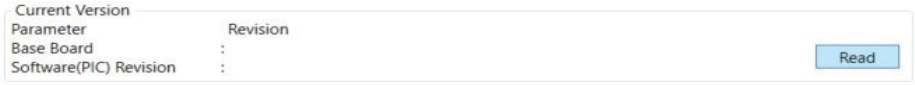
Figure 273 Firmware Download Dialog



- As it could be seen that Firmware download screen is divided into four groups.

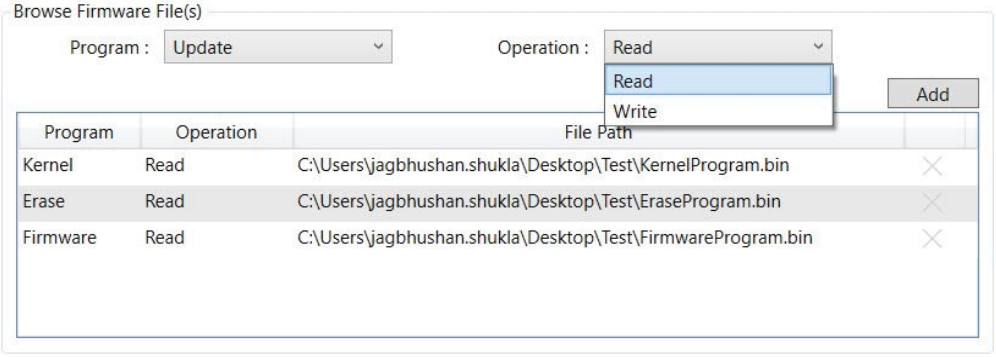
1. **Current Version**: By clicking on the Read Button, current Firmware information would get populated.

Figure 274



2. **Browse Firmware File(s)**: One by one we select the Program and the Operation need to perform and then browse file location. There are Five Programs – Kernel, Erase, Update, Firmware, and Language. For each program there are two Operations (except language has write operation only). Then Click on Add button to browse file path.

Figure 275

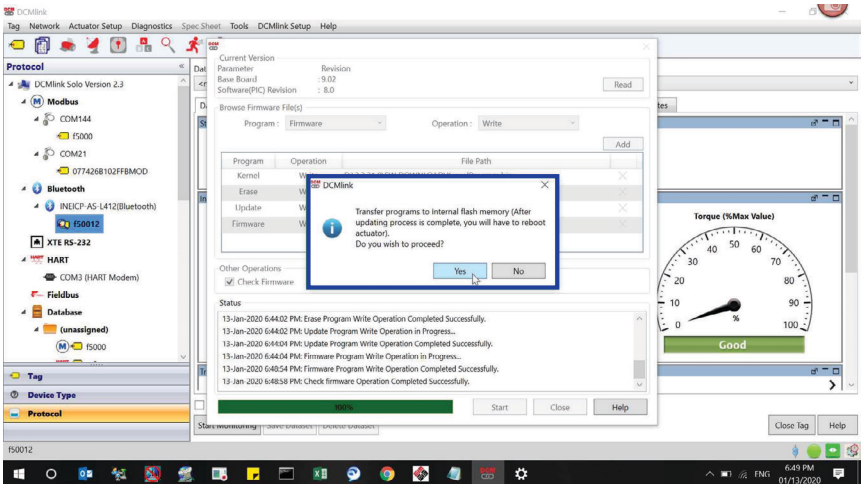


3. **Other Operation**: After Browsing all Firmware File, two other operation can be performed.
a. Check Firmware and b. Transfer

Figure 276

4. **Click:** Check 'Firmware' to verify the data are correct. Click 'Transfer' to initiate transferring the new firmware from actuator flash memory to the actuator program memory. When the operation ends it needs to repower the actuator.

Figure 277



5. **Status:** On clicking start button, it will start performing all the operation listed above and status of all can be seen one after another.

Figure 278

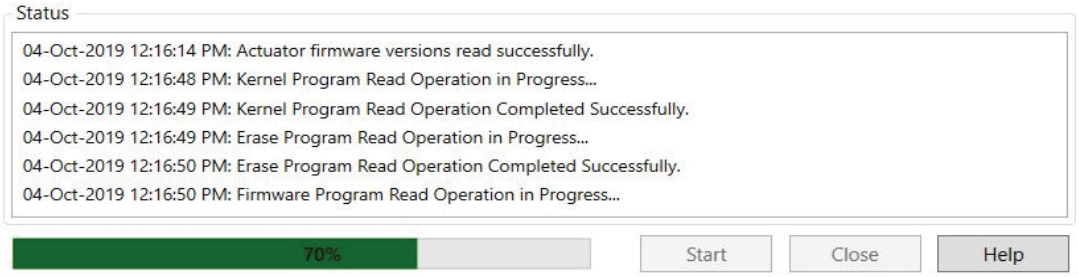
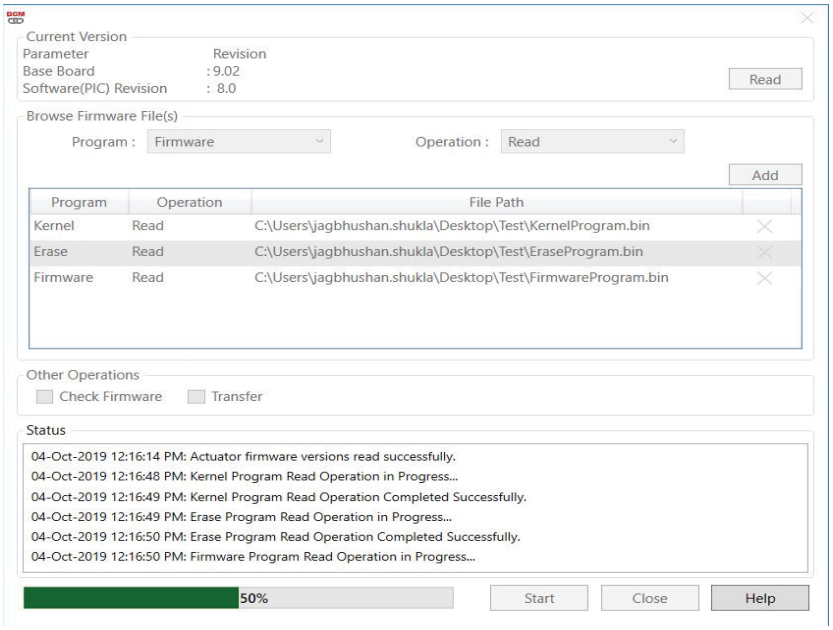


Figure 279 Firmware Download in Progress

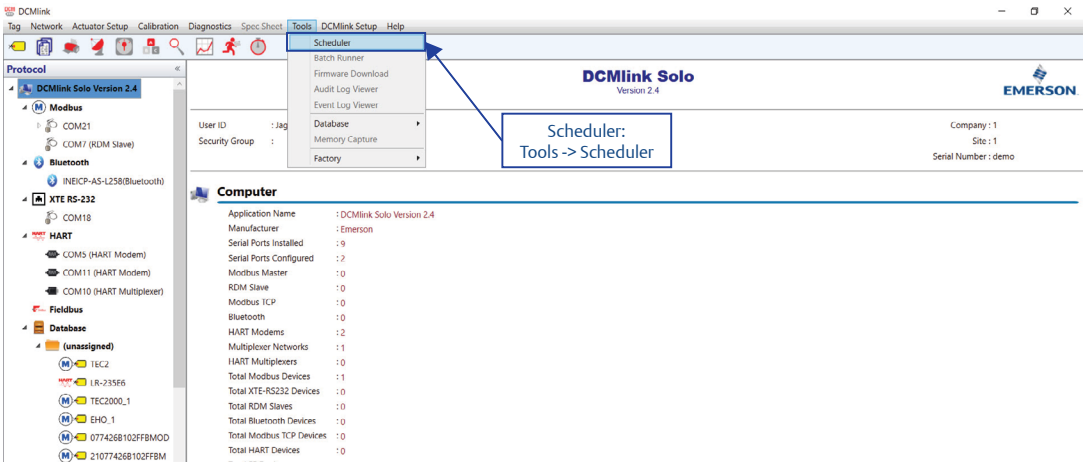


Section 15: Scheduler

Scheduler is a feature that allows user to run various types of tests at predefined intervals without user intervention. The resulting data is available for later viewing and analysis.

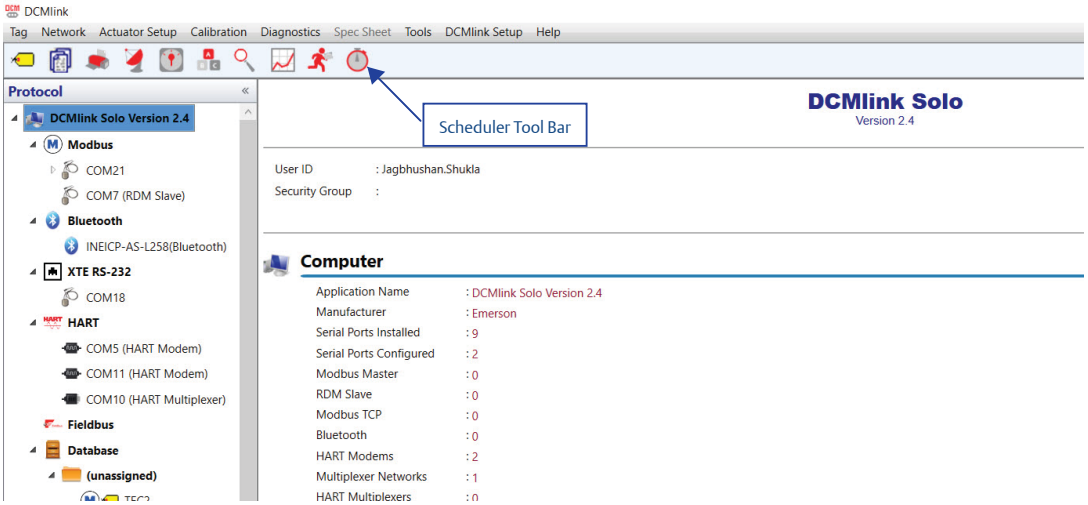
- The Scheduler gives the capability to specify a time and date to automatically run a task on a actuator.
- An unlimited number of tasks can be set up in the Scheduler for a one-time use, daily, weekly, monthly, or yearly occurrence.
- A history of all tasks completed is maintained in the History page of the Scheduler, indicating the problem found, the reason for the problem, and a solution to resolve the problem.
- Scheduler functionality is not available from DCMlink SNAP-ON™ for DeltaV™, and it is only available on DCMlink Software (Solo) installations.
- DCMlink S/W allows the user to enable/disable the scheduler.
- Scheduler information (tag and task data) will be persisted in the database (on a local PC).
- If the Scheduler has initiated a task on an actuator then the corresponding device icon in the tree view is modified to show a stopwatch superimposed on the original icon. Also, the progress will appear in the Taskbar window.

Figure 280



— Scheduler menu item is disabled when polling is on for Status Monitor/Valve Control screen.

Figure 281



- All error conditions are gracefully handled by Scheduler and noted in the Status column for that task. For example, if the device is disconnected, the Scheduler would display retry under the Status column.
- If the retry limits exceed, then show the reason for failure in the Status column.

15.1 Scheduling A New Task

15.1.1 Current Tab

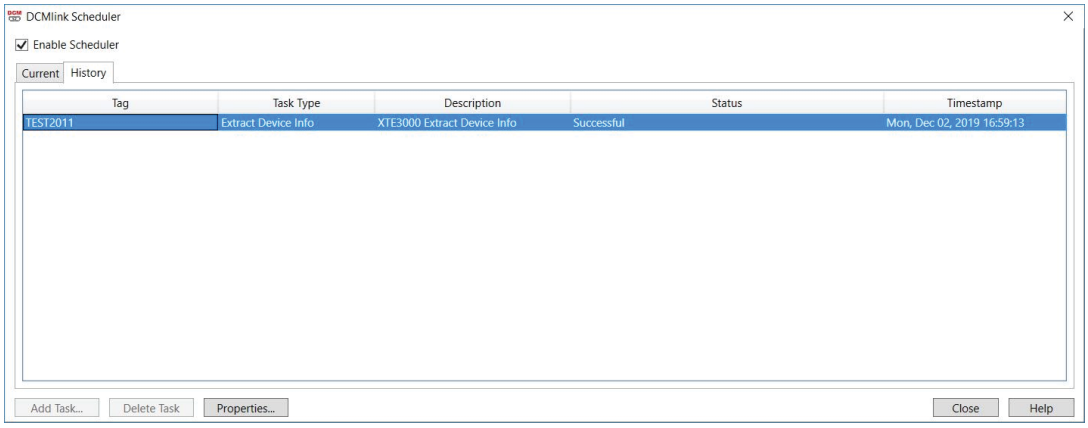
- Scheduler window includes the current tab for showing the list of Scheduled Task.
- This page must contain the current schedule configuration, including tasks that are currently running and ones that are scheduled for the future.
- Current tab data grid shows following columns:
  - **Tag:** Selected Tag.
  - **Task Type:** Selected task type for scheduler.
  - **Description:** Task's description.
  - **Parameters:** Parameters required for the task.
  - **Status:** Current Status of the task.
  - **Frequency:** Frequency of the task to be executed.
  - **Next Time:** Display next time on which task shall be executed.

Figure 282 Scheduler Current Tab view

15.1.2 History Tab

- Scheduler window includes the History tab for logging and tracking the status of Scheduler and Scheduled Task.
- A history of all tasks completed is maintained in the History page of the Scheduler, indicating the problem found, the reason for the problem, and a solution to resolve the problem.
- History tab must show following columns:
  - **Tag:** Tag name.
  - **Task Type:** Selected task type.
  - **Description:** Description about the task.
  - **Status:** Shows the status of the task.
  - **Timestamp:** Date and Time when this entry is logged.

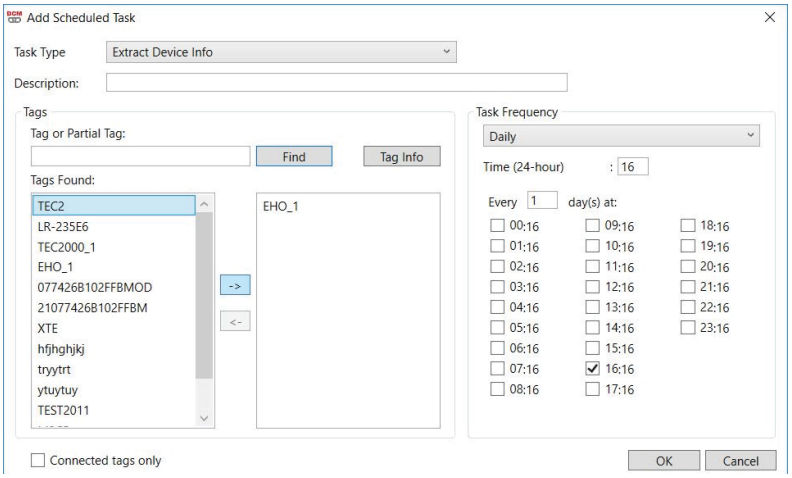
Figure 283



15.1.3 Add New Task

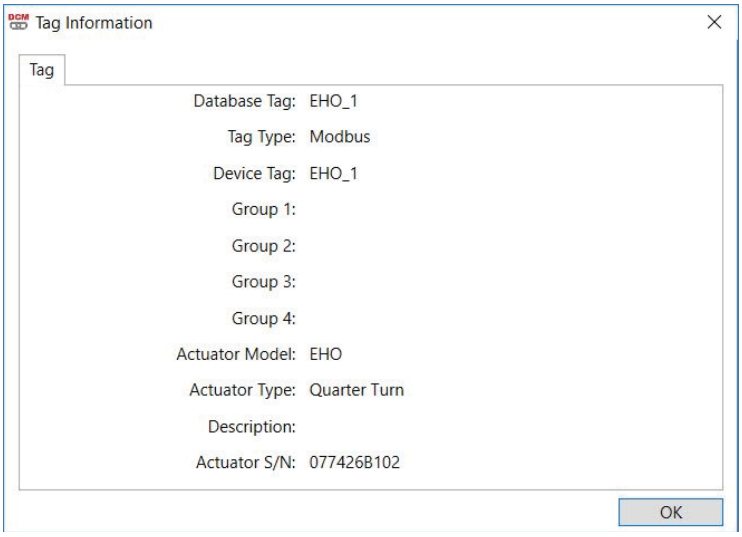
When user clicks on Add Task button then display below dialog to user for adding task into scheduler. The dialog is loaded with below fields and values as shown in below snap.

Figure 284



- User can also fetch tag information, after selecting the tags from the list and clicking on tag Info button.

Figure 285



NOTE:

Scheduler allows unlimited number of tasks to be set up in the Scheduler for a one-time use, daily, weekly, monthly, or yearly occurrence.

15.1.4 Scheduler Task Types

- There is different scheduler task available for different actuators on the basis of protocols.
- Below table states the task list.

Table 50.

Actuator	Protocol	Tasks
TEC2	Modbus	Extract Device Info, Max Torque, PST, FST
	HART	Extract Device Info, Max Torque, PST, FST
	Bluetooth	Extract Device Info, Max Torque, PST, FST
XTE3000	Modbus	Extract Device Info, PST
	HART	Extract Device Info, PST
	XTE RS-232	Extract Device Info, PST
	Bluetooth	Extract Device Info, PST
TEC 2000	Modbus	Extract Device Info
	HART	Extract Device Info
EHO	Modbus	Extract Device Info, PST
	HART	Extract Device Info, PST
M2CP (FW 361)	Modbus	Extract Device Info, Max Torque, PST, FST
	HART	Extract Device Info, Max Torque, PST, FST
M2CP	Modbus	Extract Device Info
	HART	Extract Device Info
MPA	Modbus	Extract Device Info

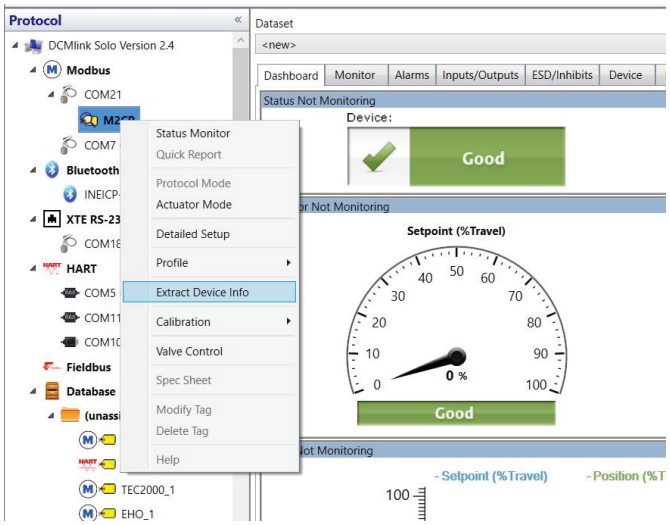
NOTE:

DCMlink would initiate PST, FST command, but it would not save the profile information in the dataset.

Section 16: Extract Device Info

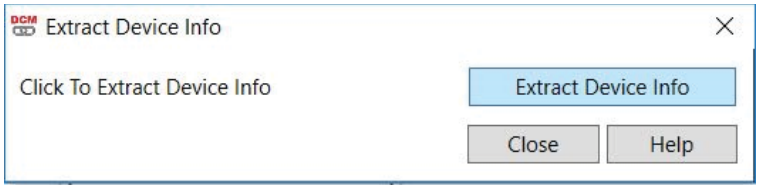
- Extract Device Info can be launch through context Menu of the selected tag.

Figure 286 Extract Device Info Launch



- Whenever user clicks on the “Extract Device Info” Button, it will export all the available actuator data in .dfx file (TEC2, M2CP, EHO).
- Only for XTE3000 over Bluetooth and RS-232 protocol it exports all the available actuator data in .xte file.
- Only for XTE3000 over HART protocol it exports all the available actuator data in .hart file.

Figure 287 Extract Device Info View



- Default path of the open file dialog will be C:\Users\ [user name]\Desktop Default File Name will be [TagName]_ExtractConfig_[ActuatorName]_[CurrentDate]__ [CurrentTime]

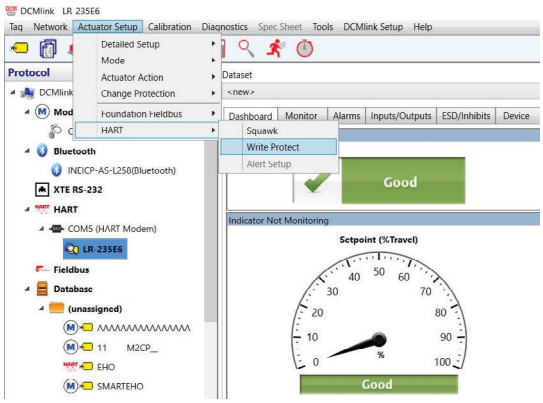
NOTE:
Extract Device Info Operation can also be performed through scheduler.

Section 17: DCMlink HART Features

17.1 Write Protect

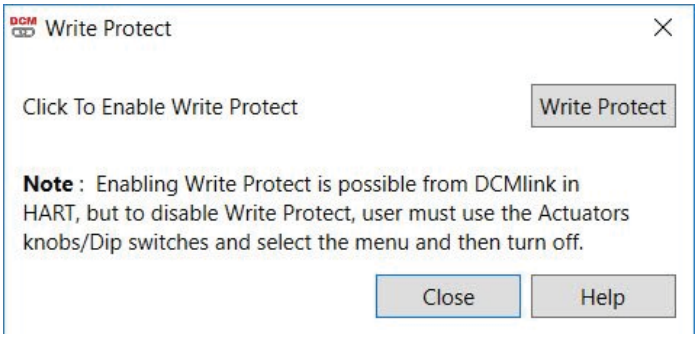
Write protection is the ability to prevent new configuration from being written or old information being changed. This means you can read the data, but not write.
To Enable **Write Protect** from DCMlink select **Actuator Setup** Menu and click **HART**.

Figure 288 Write Protect Menu



- Click **Write Protect** option, Dialog Box will appear.

Figure 289 Write Protect Dialog Box



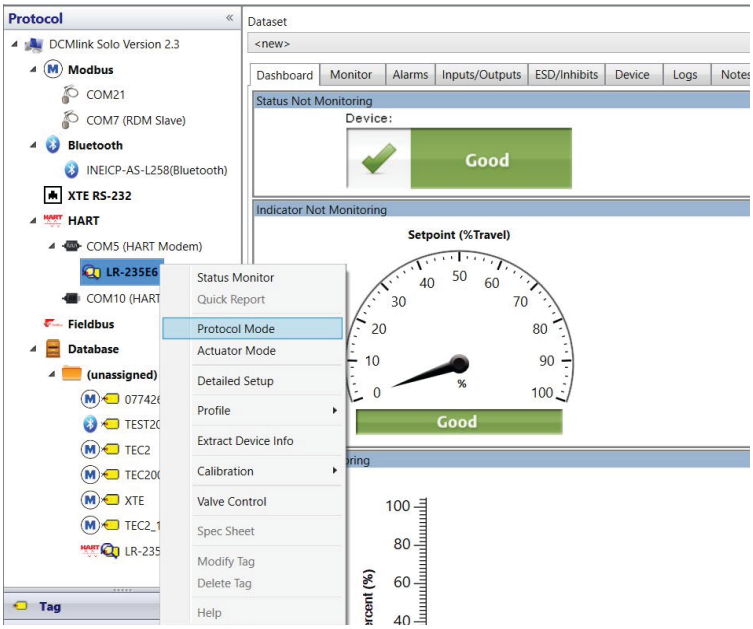
NOTE:
Write Protect can be Enabled from DCMlink. Once it is Enabled, it can be disabled only through LDM on the actuator. For Disabling the Write Protect please refer to the Actuator Manual.

17.2 Device HART Mode Dialog (AUTO/MANUAL)

To change the current **HART protocol Mode** use below steps:

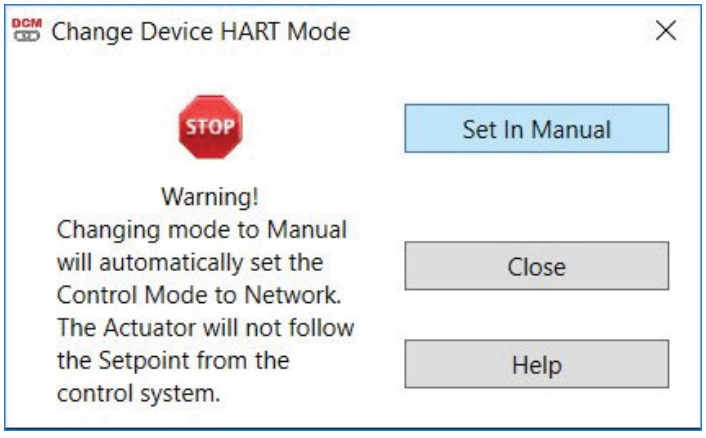
- From **HART Tag** context menu click **Protocol Mode**.

Figure 290 Protocol Mode From Context Menu



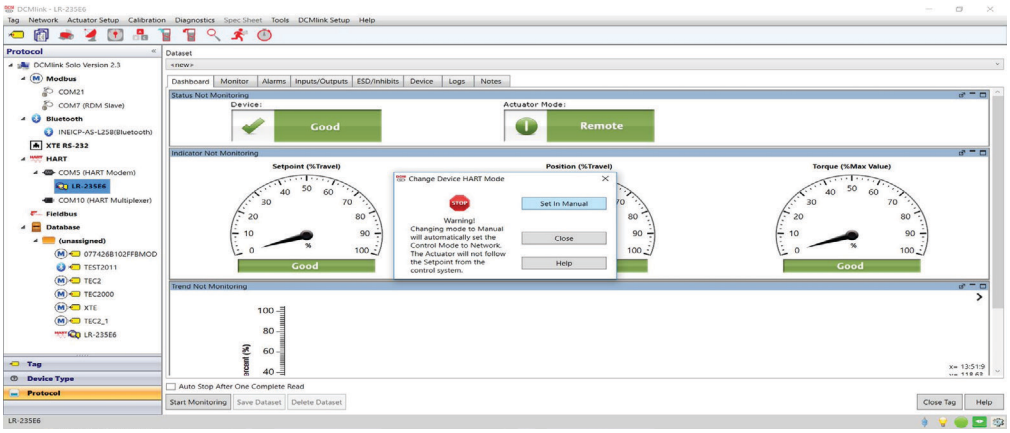
- Below Dialog box will appear, which will allow making the device **In service** and **Out of service mode**.

Figure 291 Device HART Mode Dialog



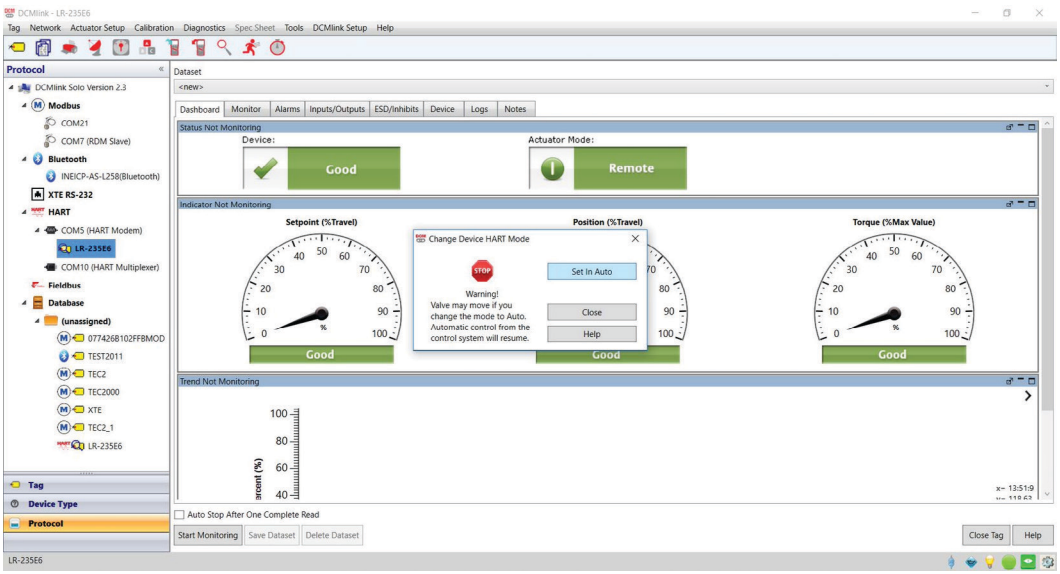
- To **Set Out of Service**:

Figure 292 Set Out of Service (MANUAL) Dialog



- To **Set In Service Mode**:

Figure 293 In Service Mode (AUTO) Dialog



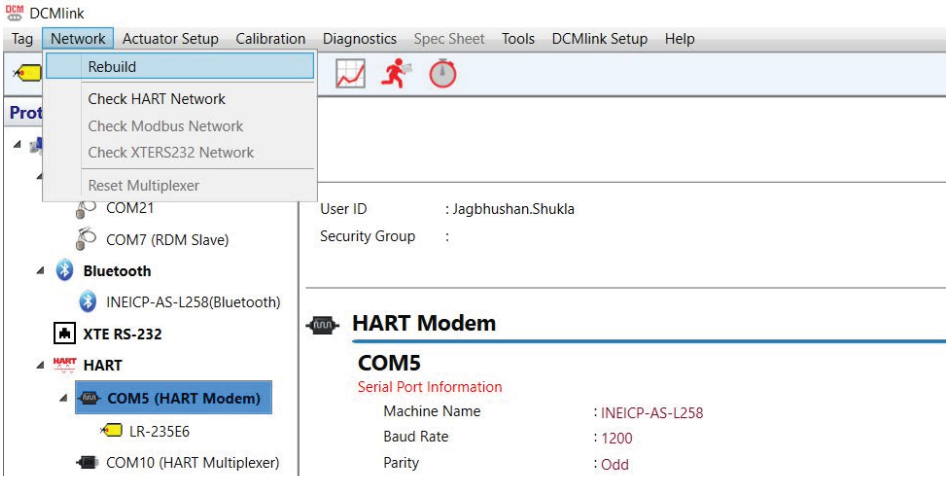
17.3 Rebuild HART Network

There are 2 Rebuild options:

- HART Modem
- HART MUX rebuild

- From **Network Menu** click **Rebuild Option.**

Figure 294 Rebuild Option



- For **HART Modem Rebuild** below Windows will appear.

Figure 295 HART Modem Rebuild Menu

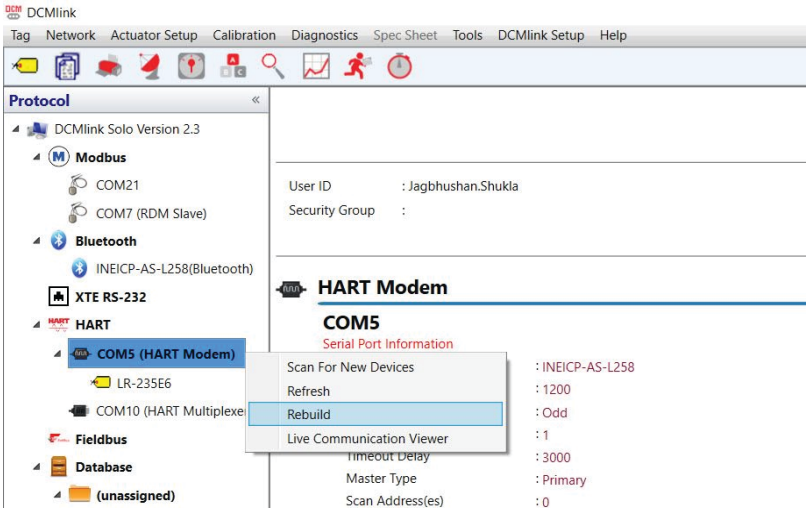
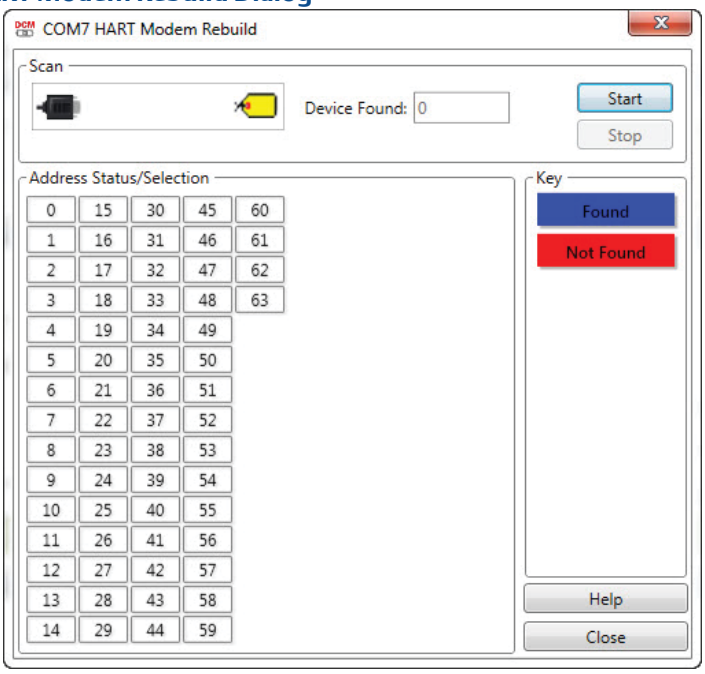


Figure 296 HART Modem Rebuild Dialog



- For **HART MUX Rebuild** below Windows will appear.

Figure 297 HART MUX Rebuild

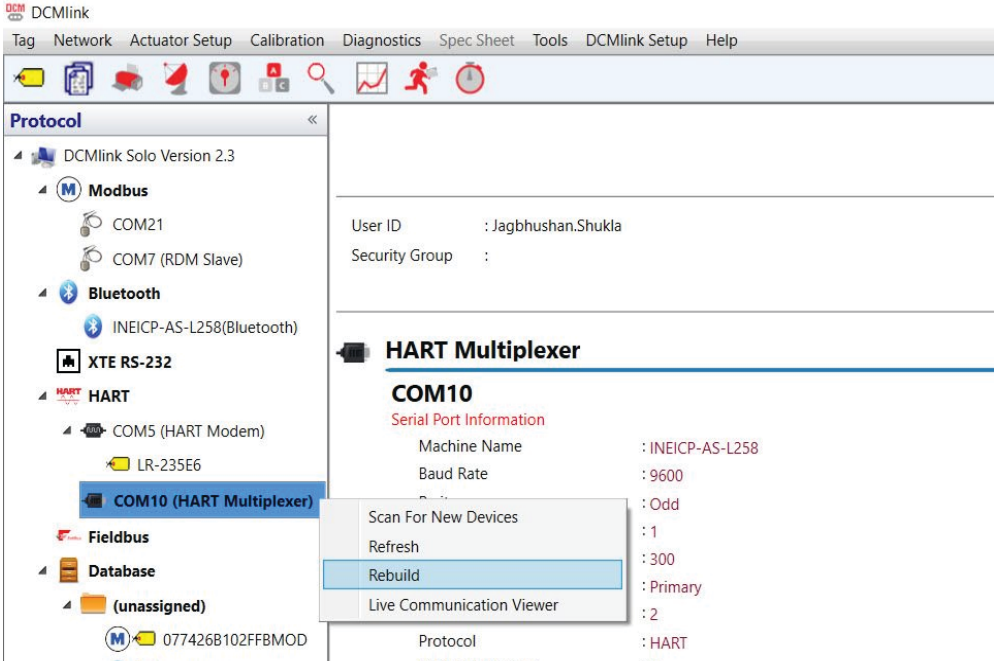
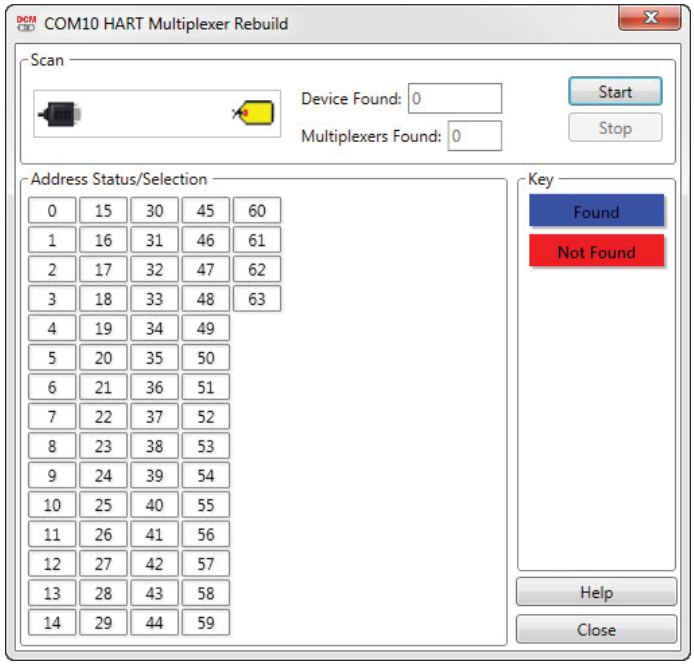


Figure 298 HART MUX Rebuild



Section 18: Database

Database is a collection of data stored systematically to allow rapid searches, sorts, and simple retrieval. DCMlink database stores data about Tags and associated devices. A Tag's database record might include multiple datasets from actuator specifications, configuration parameters and diagnostic test results.

18.1 Database for Diagnostic Storage

18.1.1 Database for SOLO

18.1.1.1 SQL CE

— By default DCMlink uses the SQL CE 4.0 or later database.

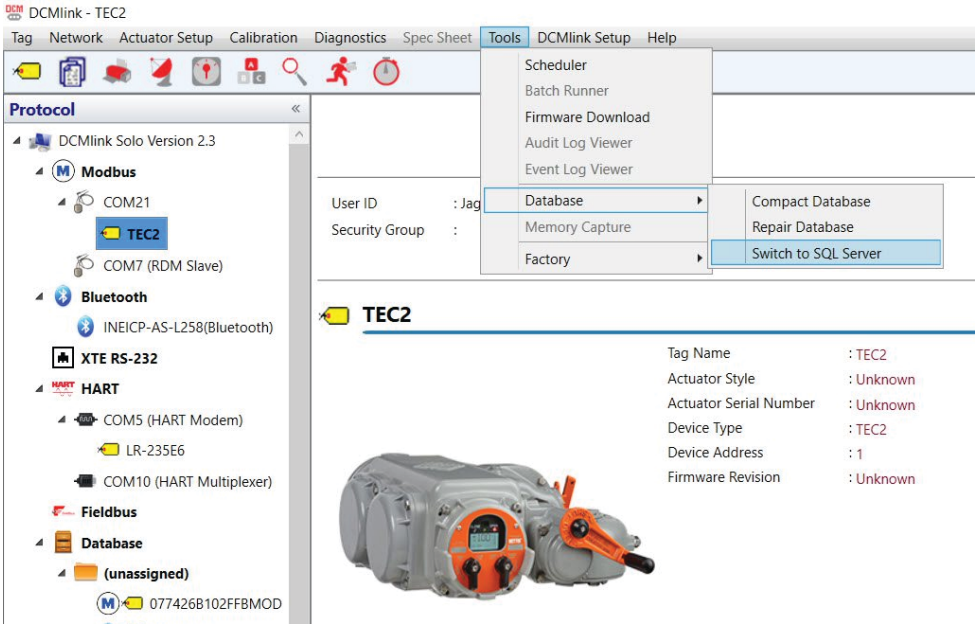
18.1.1.2 SQL Server

— Installation of the SQL server need to be done by the customer.

18.1.1.3 Switch Between SQL CE and SQL Server

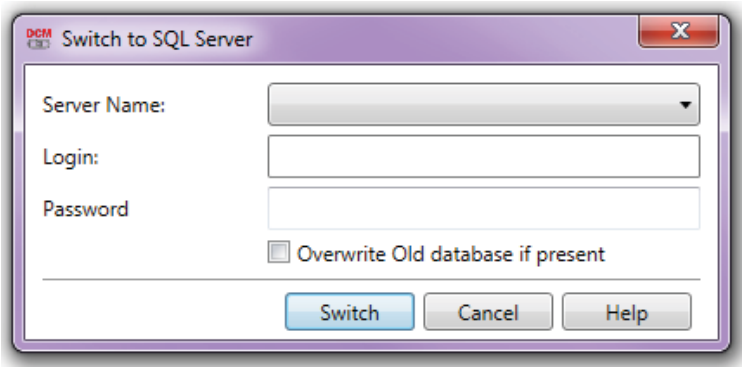
— User can switch between SQL CE and SQL server from DCMlink. DCMlink will copy the data content from SQL CE database to the SQL Server database whenever user want to switch.

Figure 299 Switch Between SQL CE and SQL Server



- Switch to SQL Server
  - Once the tables are created in the main SQL server, the DCMlink remembers the SQL server details and begin storing the data to the new database.

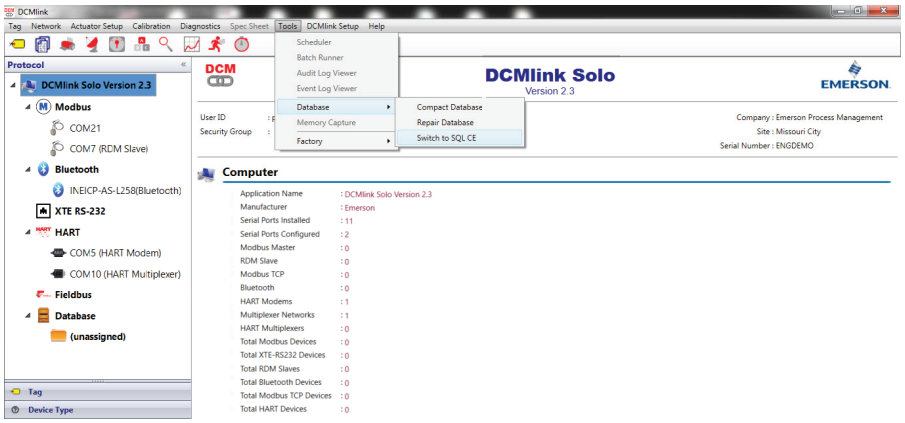
Figure 300 Switch to SQL Server



NOTE:
User must have a licensed version of SQL server. DCMlink will **not** distribute the SQL server license.

- Switch to SQL CE
  - Once the tables are created in the SQL CE, the DCMlink remembers the SQL CE connection details and begin storing the data to the new database.

Figure 301 Switch to SQL CE



18.1.2 Database for AMS SNAP-ON

- The DCMlink SNAP-ON will use the SQL-CE 4.0 or later.

18.2 Tag Management for SOLO and SNAP-ON

For SOLO and DTM, the user can add, delete or modify existing Tags.

NOTE:

Database makes entry while user opens (launches: Status Monitor, Detailed Setup, etc.) any Tag for the first time.

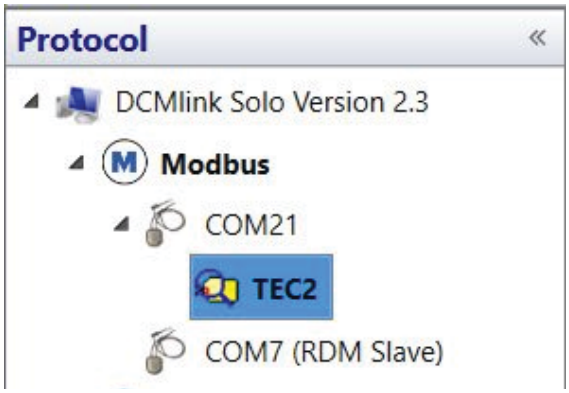
The offline Tags are already stored in the local SQL-CE DB of DCMlink. They are available even if the corresponding DTM device is not available.

If the database Tag is referenced to a live Tag, user can perform operation like a live Tag.

If there is no live reference Tag available, any operation that needs communication with actuator is restricted (like: Start Monitoring on Status Monitor, Saving settings to actuator on Detailed Setup). These buttons (write/action) are disabled. When the actuator column is empty, means no data is showing in the device. Under scheduler user can schedule any task for DB Tag, but it will fail during execution, as DCMlink will not find live matching Tag connected.

- When user opens Tag (launches: Status Monitor, Detailed Setup, etc.) then DCMlink updates Tag icon in both live Tag and corresponding matching DB Tag with Magnifying icon overlapped to Tag icon.

Figure 302 Magnifying Symbol



18.2.1 HART Tag Management

There are more options for Offline Tags:

1. New HART Tag
2. Modify HART Tag
3. Delete HART Tag

1. New HART Tag

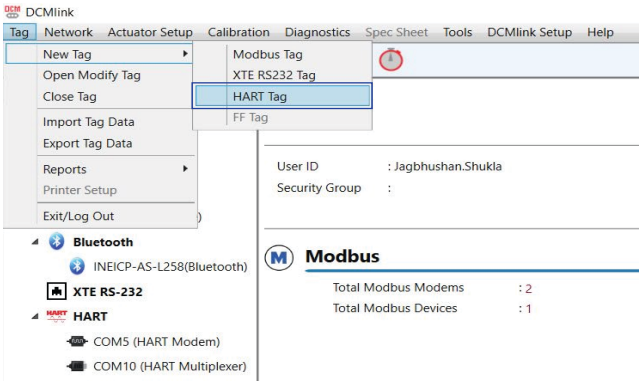
Creating a Tag establishes a new database record in the DCMlink database to store information about the actuator.

— The **New HART Tag** option is available in Tag **New Tag** menu.

— **New Tag** Dialog Box will appear, enter information about the actuator in the HART Tag Window tabs: Valve, Groups, HART Mux, and Notes in the New Tag window.

— When you finish entering information, click **Save Tag**.

Figure 303 New HART Tag



- When user clicks on **HART Tag** option below options appear.

— **HART Tag** Window contains below four groups:

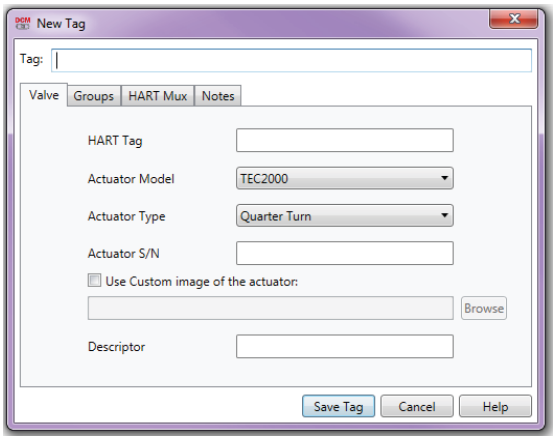
a. Valve

b. Groups

c. HART Mux

d. Notes

Figure 304 HART Tag Window-Valve

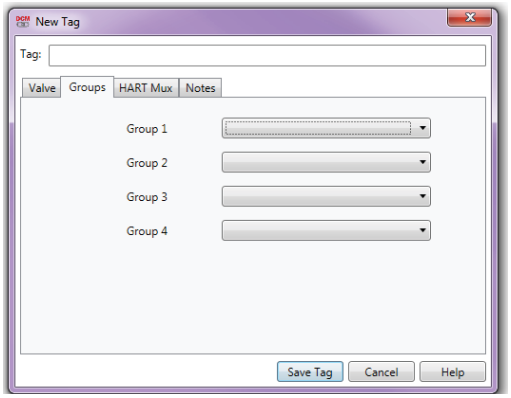


a. Valve

- **HART Tag:**
  - The HART Tag should be up to 8 characters.
  - It is any combination of up to 32 letters, numbers, and characters as a Tag. The Tag can be saved in the DCMlink database when user clicks Save Tag.
  - While creating a HART Tag manually, DCMlink checks if there is any old Tag present in the database with the same **Tag** value (not the **HART Tag**). If there is no matching Tag found, then DCMlink creates a new Tag entry in the database. But if DCMlink finds a matching Tag, it displays a message box to the user.
  - This Means multiple Tags can be present in the database, with same **HART Tag**. But multiple Tags with same Tag name can't be present. Also, with the same **HART Tag** value, there could be multiple Tags present (having different Tag value).
- **Actuator Model:**
  - TEC2000, TEC2, M2CP, MPA, HQDCM33, EHO, XTE3000.
- **Actuator Type:**
  - Quarter-turn or Multi-turn (NA for XTE3000).
- **Actuator SN:**
  - Actuator serial number.
- **Use Custom image of the actuator:**
  - In case customer wants to see any other image that DCMlink shows by default for an actuator. This image information gets stored in the database for that particular Tag.
- **Descriptor:**
  - User can enter the 16 characters description of the device.

b. Groups

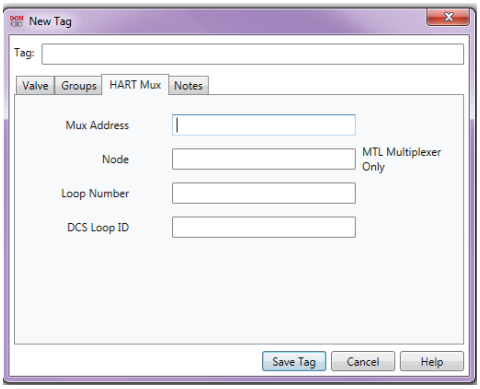
Figure 305 HART Tag Window-Groups



- **Group label:**
  - The labels are the Groups created or available. The default group names are Group 1 to Group 4.
- **Drop down list:**
  - The drop down list displays the Sub Groups that are available in the main group.

c. HART MUX

Figure 306 HART Tag Window-HART MUX



- **Mux Address:**
  - DCMlink allows the user to enter the multiplexer address to which the instrument is attached. Values range from 0 to 31.
- **Node:**
  - Information in this field applies to the MTL multiplexers only. DCMlink allows user to enter the node number for the MTL4842 HART interface module to which the instrument is attached in a MTL4840 Maintenance system; values range from 1 to 16.

NOTE:
If the instrument is not connected in an MTL system, DCMlink allows to enter 0 in the Node field.

- **Loop Number:**
  - The loop number is for the actuator. its Value ranges from 0 to 255.

NOTE:
Mux address, Node and loop number should not be empty. If fields are empty then display message box to user as following.

- **DCS Loop ID**:
  - Enter the DCS (Distributed Control System) point Tag, or other identifying information, for the loop associated with the actuator. The DCS is the controlling system that sends a 4-20 mA analog signal to the actuator.

d. Notes tab:

- Notes field is used for entering descriptive information of the HART Tag. This note gets saved with current system date/time as dataset in the database. DCMlink allows modifying this note, without creating a new dataset. Means the new note text gets updated against the dataset ID.

2. Modify HART Tag

- Right Click on **HART Tag** and click **Modify Tag** option
- **Modify Database Tag** Dialog Box will appear, enter information about the Actuator in the **Modify Tag** Window tabs: Valve, Groups, HART Mux, and Notes (for HART Tag Window Tabs detail information refer to section **New HART Tag**).
- When you finish entering information, click **Save** Tag button.

Figure 307 Modify HART Tag

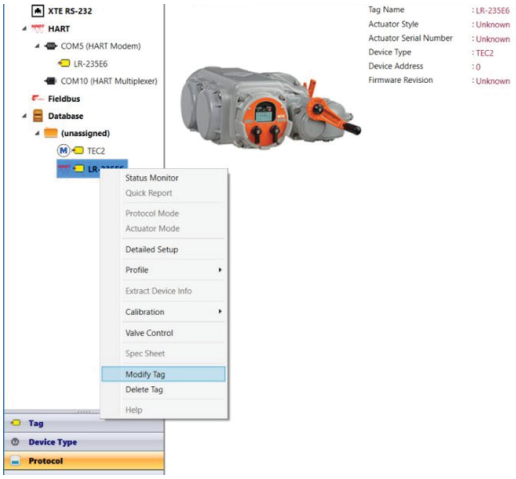
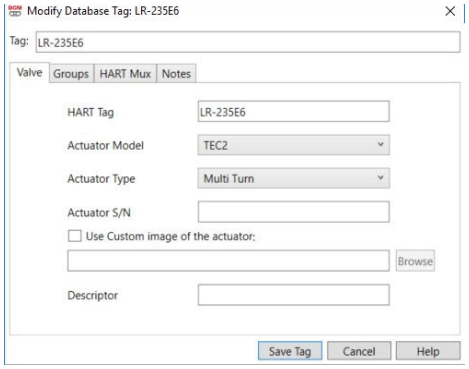


Figure 308 Modify HART Tag Dialog Box



3. Delete HART Tag

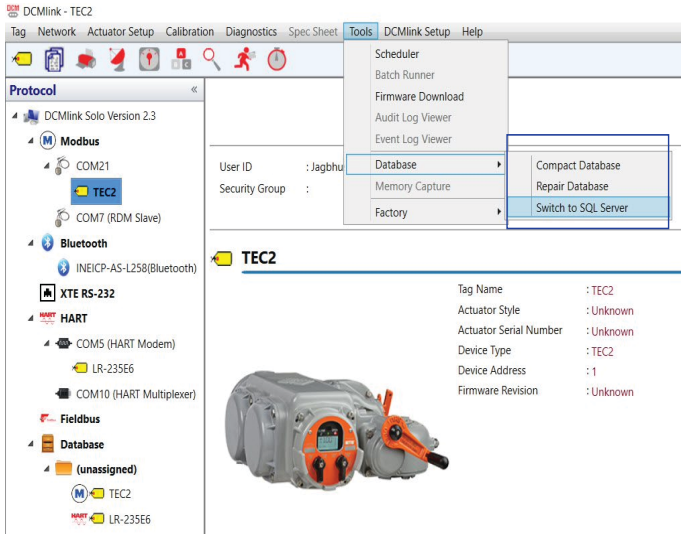
When user wants to delete a tag, it also deletes all DCMlink Software database records associated with that tag.

NOTE:

User cannot delete an open tag. Tag must be in Closed condition.

- Right Click on **HART Tag** and click **Delete Tag** option.
- An alert Dialog box will appear to confirm the Tag Delete operation. At the confirmation message, click **Yes** to delete the selected tag and its associated DCMlink software database records. Click **No** to close the confirmation message window and return to the Tag Management window.

Figure 309 Delete HART Tag



18.2.2 Modbus Tag Management

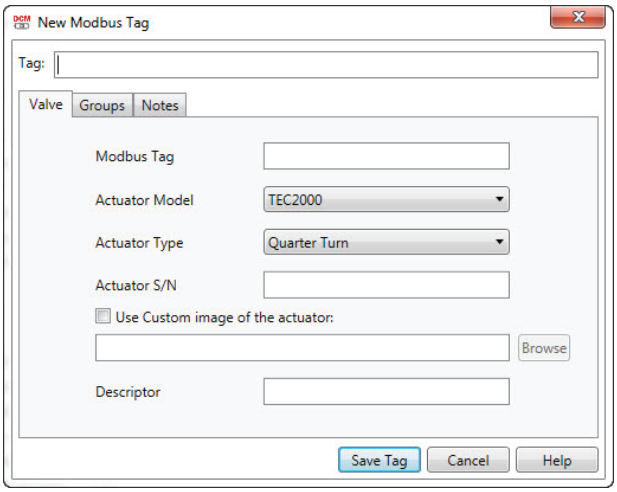
Creating a tag establishes a new database record in the DCMlink database to store information about the Actuator.

— The **New Modbus Tag** option is available in Tag **New Tag** menu.

— **New Tag** Dialog Box will appear, enter information about the Actuator in the New Tag Window tabs: Valve, Groups and Notes (for New Tag Window tab detail information refer to section New HART Tag).

— When you finish entering information, click **Save** Tag.

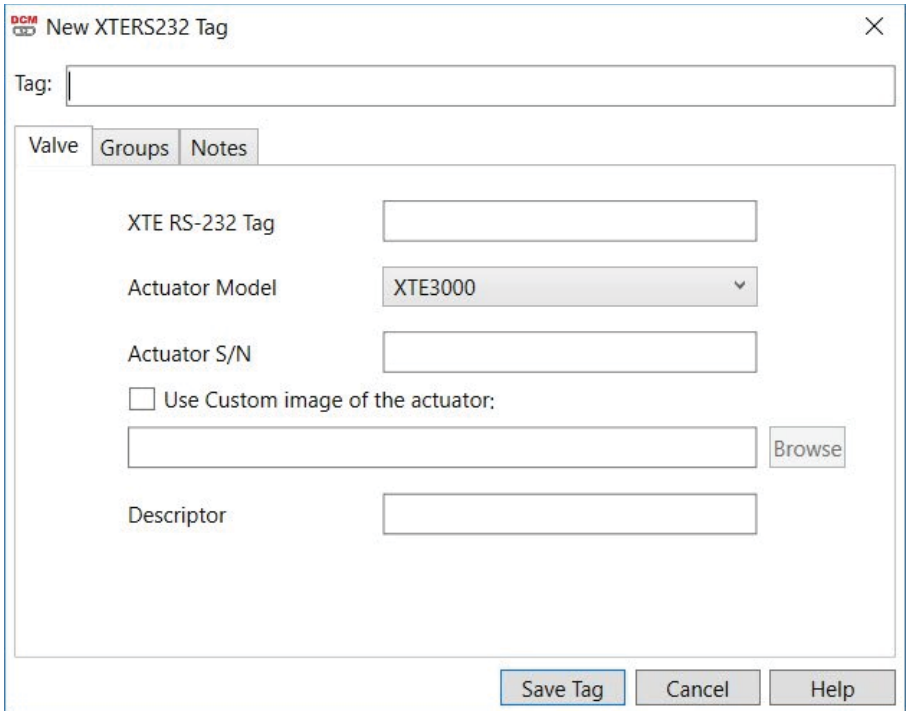
Figure 310 Modbus Tag Management



18.3 XTE RS-232 Tag Management

- The **New XTE RS-232 Tag** option is available in **New Tag** menu.
- **New Tag** Dialog Box will appear, enter information(s) about the Actuator in the New Tag Window tabs: Valve, Groups and Notes (for New Tag Window tab detail information refers section New HART Tag).
- When you finish entering information, click **Save** Tag.

Figure 311 XTE RS-232 Tag Management



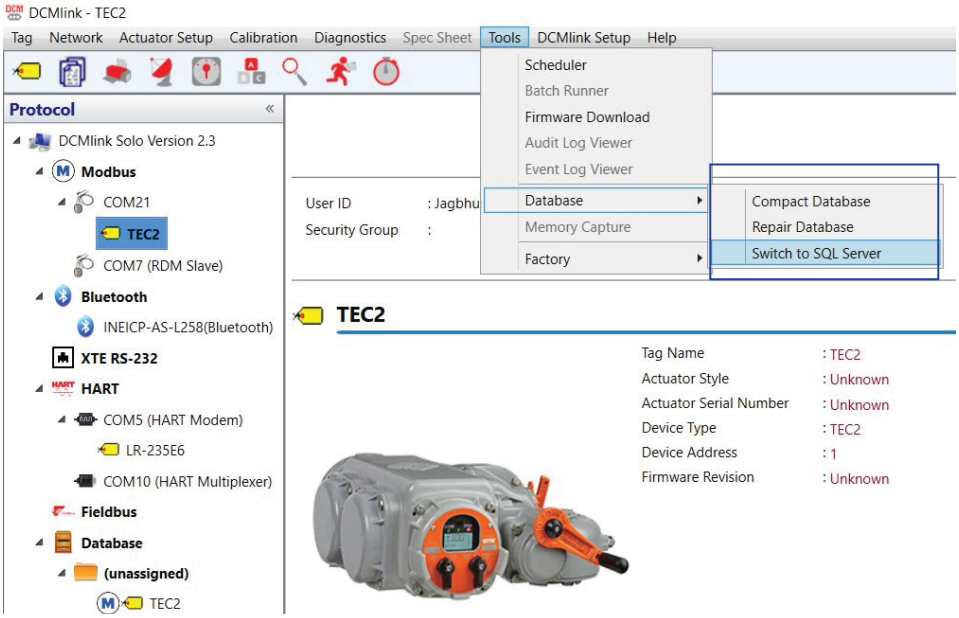
NOTE:
XTE RS-232 Tag could only be created for XTE3000 actuator.

18.4 Database Operation (SOLO on SQL CE)

Database has 3 options available.

1. Compact Database
2. Repair Database
3. Switch Between SQL CE and SQL Server

Figure 312 Database Options



1. Compact Database
   - It helps to reclaim wasted space in database by creating a new database file from the existing file.
2. Repair Database
   - This option is used to repair a corrupted database.
     - First try to recover the corrupted rows.
     - Then remove the remaining corrupted rows (If repair does not work.)
3. Switch Between SQL CE and SQL Server
   - For details refer to Section 18.1.1.3.

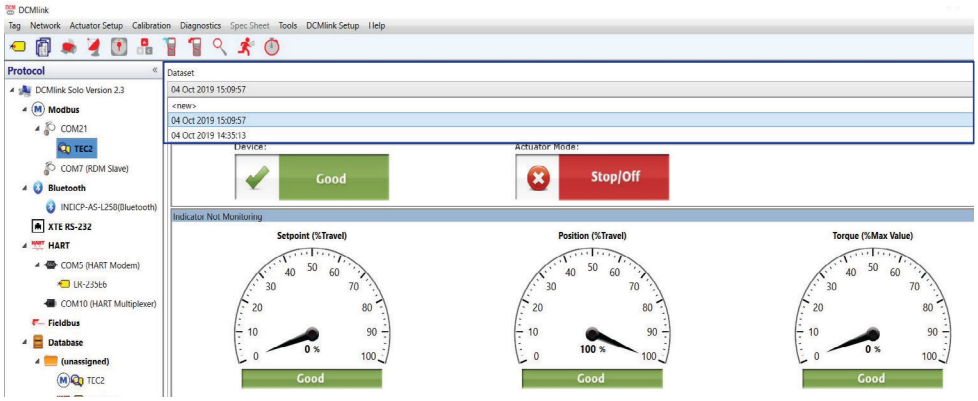
18.5 Dataset

A Dataset is a grouping of actuator information that can be saved as a date and time stamped record in the database. Datasets are historical records of the particular condition and state of the actuator the time the dataset was saved. The values saved in a dataset are for the user's reference only.

Dataset may be saved in many different DCMlink functions:

- Detailed Setup
- Status Monitor
- Factory Settings
- PST/FST (Profile)

Figure 313 Dataset

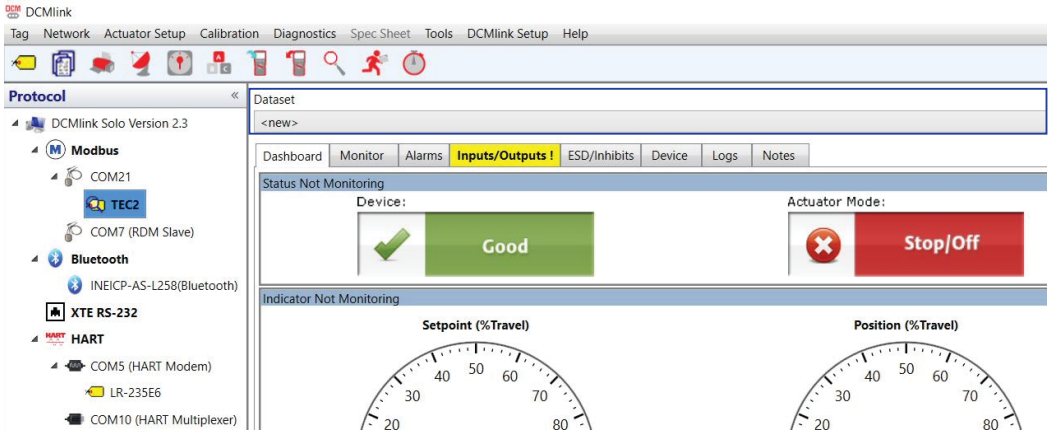


18.5.1 New Dataset

It is used to save new entry in the database or if user makes any changes to the Saved Dataset and save with **New Dataset**. It is available while opening any Tag function listed below:

- Detailed Setup
- Status Monitor
- Factory Settings
- Profile

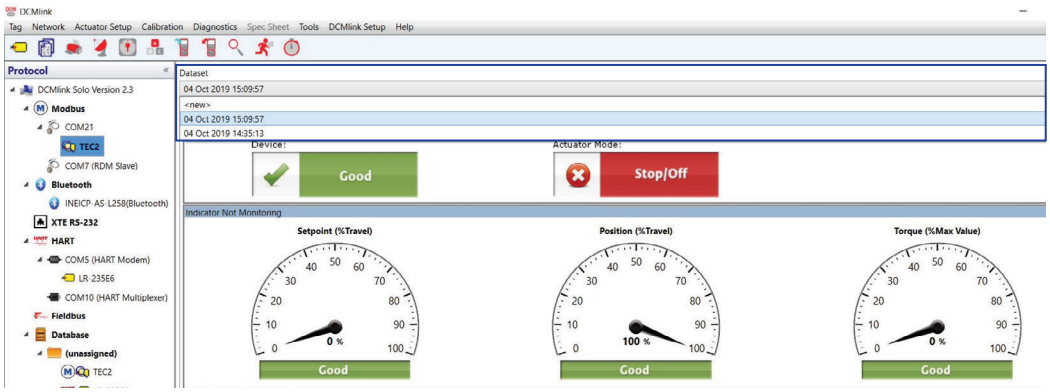
Figure 314 New Dataset



18.5.2 Select **Saved Dataset**

— DCMlink allows user to select from any **Saved Dataset**. Click on the dataset item that needs to be retrieved and wait till the dataset values get loaded.

Figure 315 Select Saved Dataset

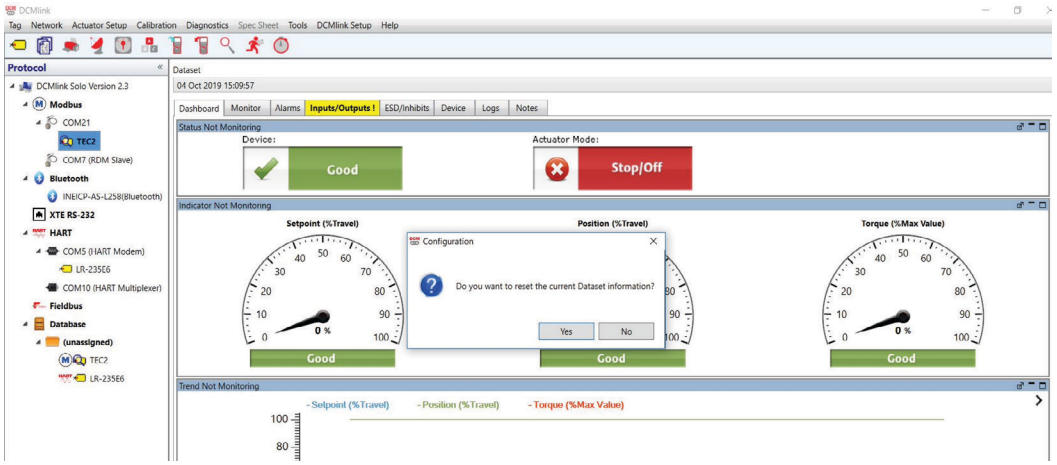


18.5.3 Changing Dataset Dropdown Item

Changing Dataset

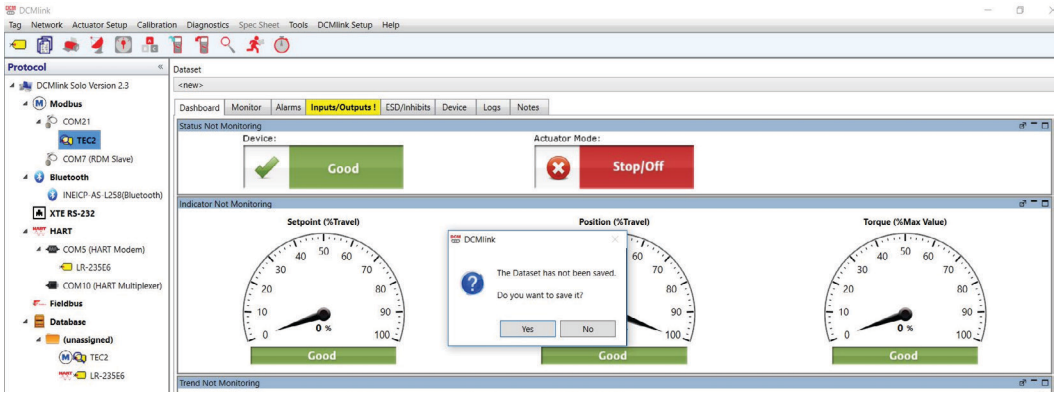
— DCMlink prompts user in case of changing the drop down option from Saved dataset to **New.**

Figure 316 Changing Dataset



— If user makes any changes in the dataset side, below message will appear while changing the Dataset drop down option from the top.

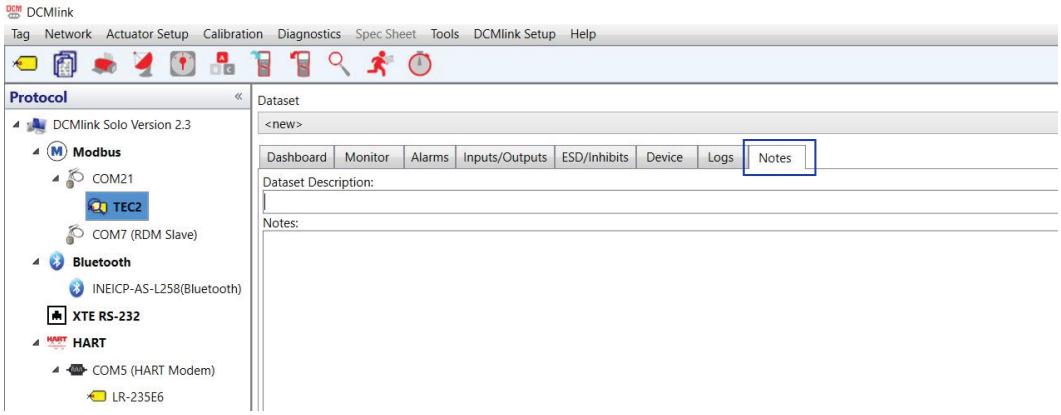
Figure 317 Changing Dataset Dialog Box



18.5.4 Notes Tab

— Notes field is used for entering descriptive information on the alert conditions and monitor values.

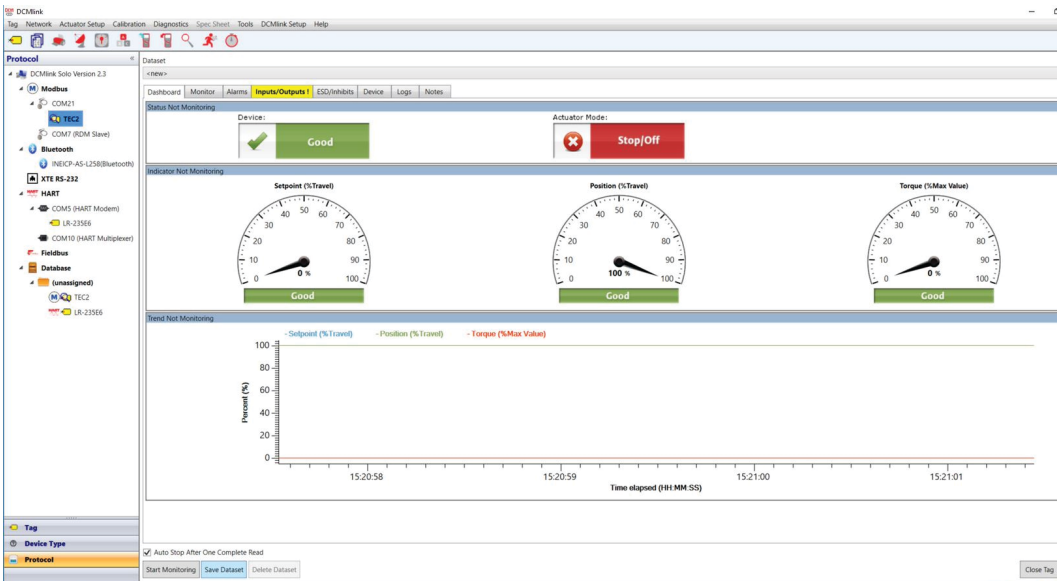
Figure 318 Notes Tab



18.5.5 Save Dataset

This is used to save new dataset or if user makes any changes to the Saved Dataset.

Figure 319 Save Dataset



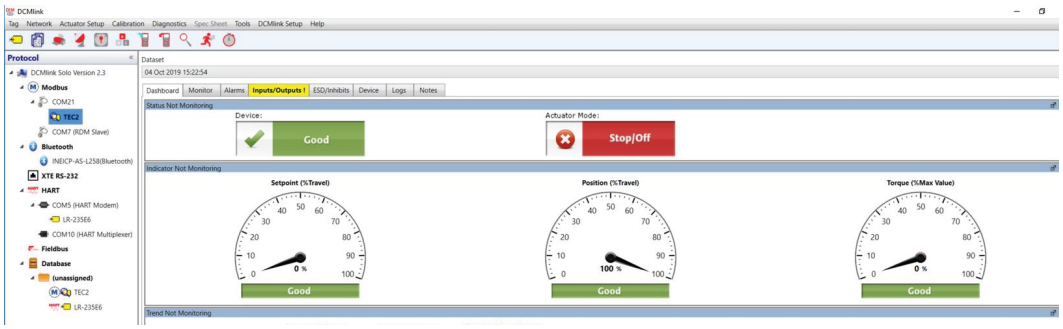
NOTE:

While monitoring is going on (polling is going on) **Save Dataset** will remain disabled. If user stops monitoring (means stops polling) the **Save Dataset** will be enabled.

18.5.6 Delete Dataset

- When user deletes a tag, it also deletes all database records associated with that tag.
- When user clicks on **Delete Dataset**, the Dataset name gets deleted from the dropdown combo box. DCMlink allows deleting saved dataset.

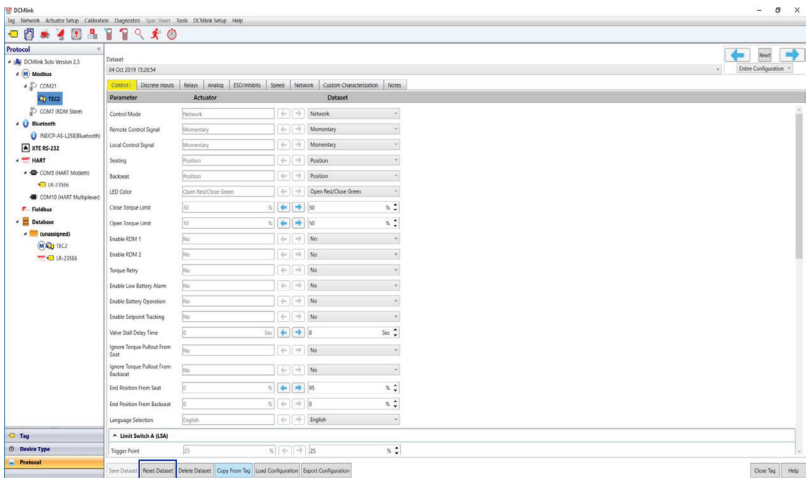
Figure 320 Delete Dataset



18.5.7 Reset Dataset

— **Reset Dataset** option is not applicable for Status Monitor. It is only applicable for **Detailed Setup, Factory Settings and Profile.** This option resets the Dataset column values for all the parameters to their default values.

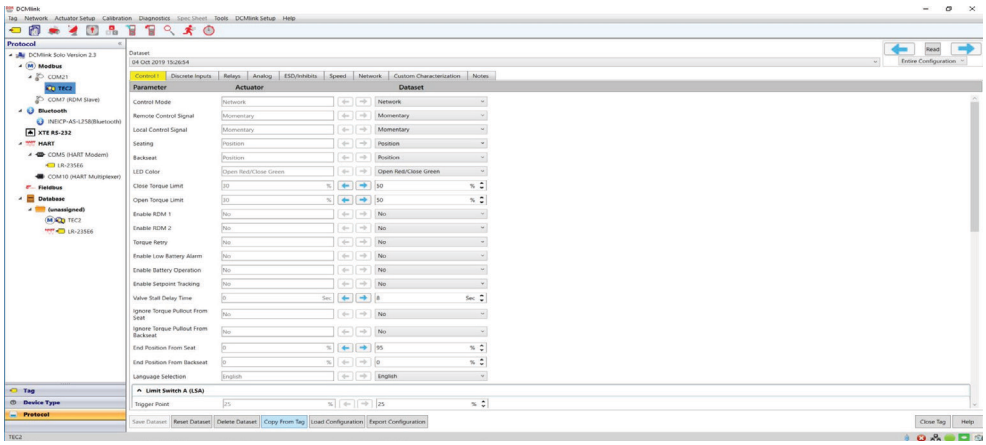
Figure 321 Reset Dataset



18.5.8 Copy From Tag

— **Copy From Tag** Option is not applicable for Status Monitor.

Figure 322 Copy From Tag



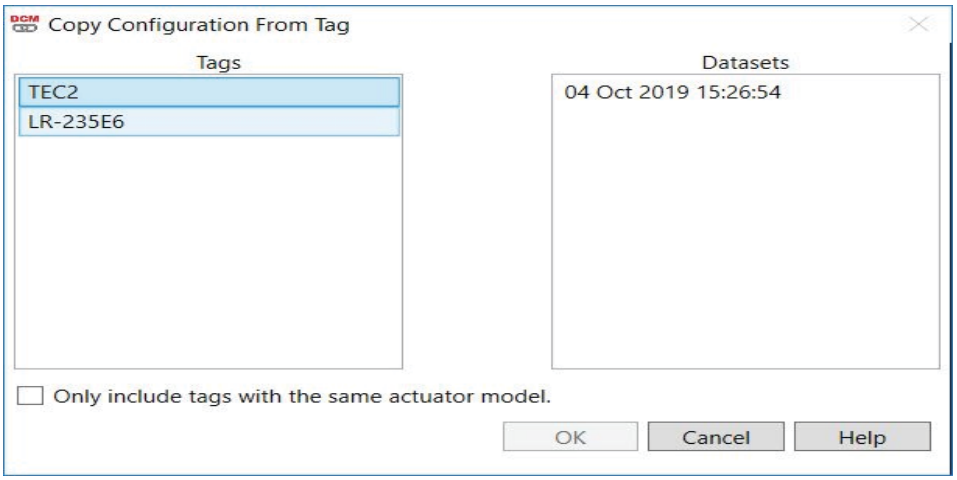
— Once user clicks on this option below Dialog box appears.

— DCMlink shows all the saved dataset available against the particular Tag; so that user can select any one among the saved datasets.

NOTE:

Only Includes Tags with the same actuator types.

Figure 323 Copy Configuration From Tag



18.5.9 Download/Upload Entire Configuration

— This function is available in actuator **Detail Setup** menu.

There are the 2 options available to write parameters to the actuator.

- Download To Actuator
  - — User can make changes to the parameters in DCMlink and write those parameters to the actuator. When user clicks on save all changes arrow button for Page/Entire configuration as shown below, then DCMlink shows a message box which contains accumulated text of all the individual parameters with **Yes** and **No** button. This option is disabled until DCMlink Software is connected to the actuator.
- Actuator To Dataset
  - — User can make changes to the dataset value of parameters and write those parameters to the DCMlink database. When user clicks on save all changes arrow button for Page/Entire configuration as shown below. This option is disabled until DCMlink Software is connected to the actuator.

Figure 324 Download To Actuator and Actuator To Dataset

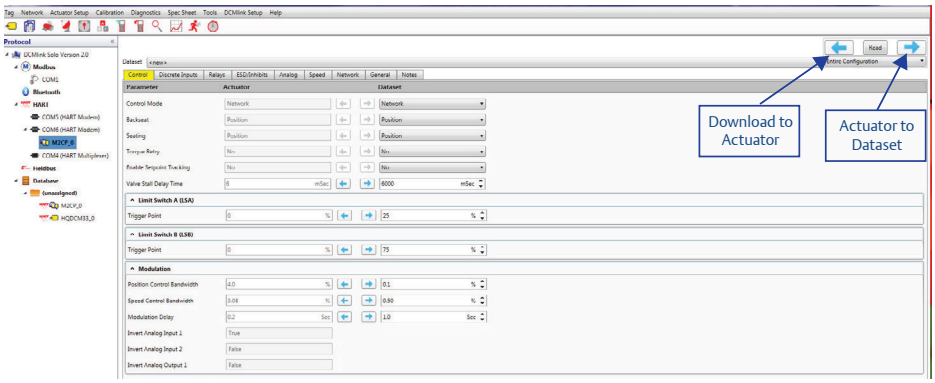
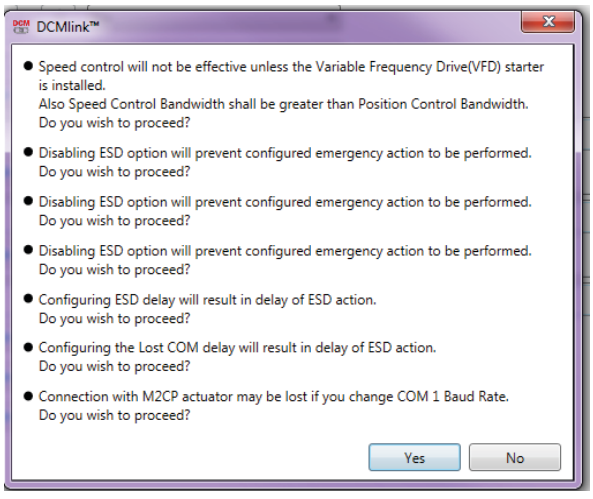


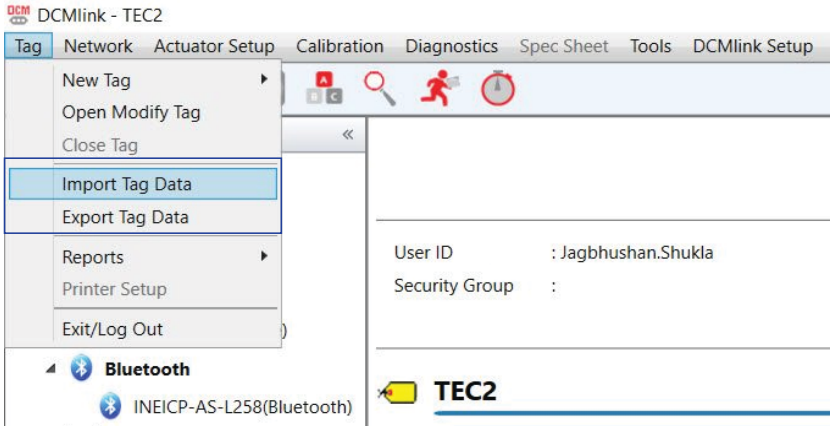
Figure 325 Message Box for Parameter Changes



18.5.10 Import/Export Tag

DCMlink provides an option to **Import** and **Export** Tag data in file format.

Figure 326 Import/Export Tag



- Import Tag Data

Copy a file containing tag information and datasets into the DCMlink Software database.

— From Tag menu click on **Import Tag Data**.

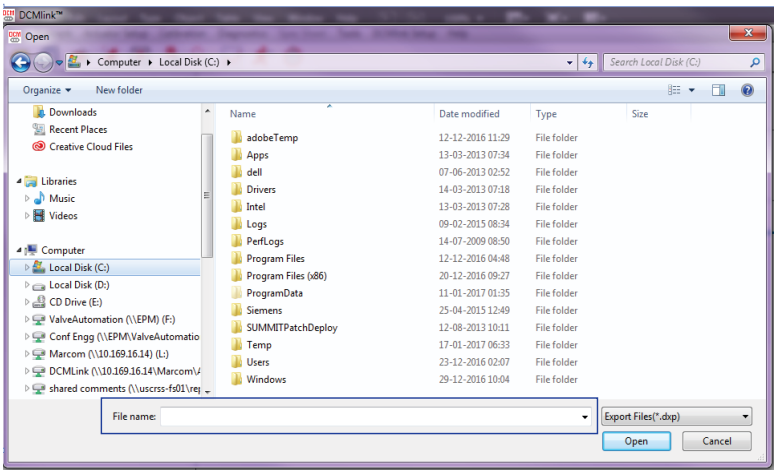
— User can select a file to **import** and click **Open**.

— Import tag option shall be enabled and executed when live device tag is closed.

NOTE:

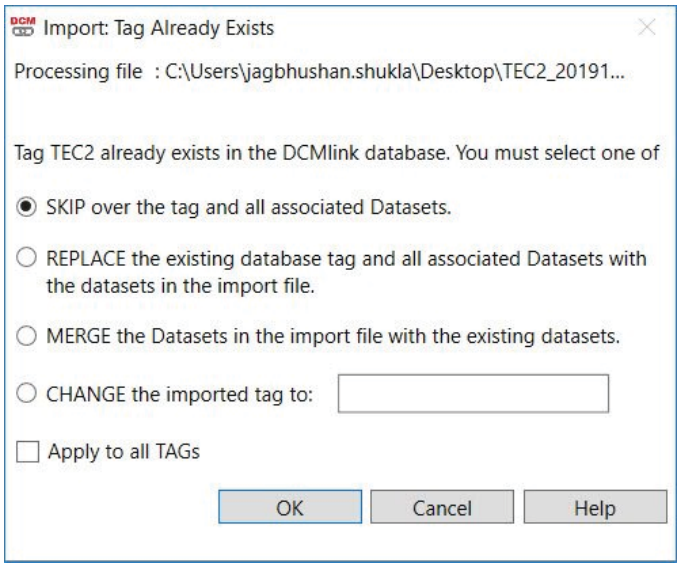
When an import is selected it will bring in all information that was exported.
One exported Tag file can have details of multiple Tags.

Figure 327 Import Tag Data



- After importing Tag, DCMlink copies the database records contained in the file into the DCMlink Software database.
- If a Tag has the same name as an existing Tag, DCMlink Software notify user with a message and provides options for handling the duplicate Tag.

Figure 328 Tag Already Exists



- **Skip**
  - DCMlink do not import the Tag into the database. The existing Tag and its dataset remains unchanged.
- **Replace**
  - DCMlink imports the Tag and replace the existing Tag. The imported Tag's datasets replace the existing Tag's datasets.
- **Merge**
  - DCMlink imports the Tag datasets and includes them with the existing Tag's datasets.
- **Change**
  - DCMlink provides this option to the user to type a new Tag that does not match the name of an existing Tag in the database. DCMlink changes the Tag and imports the Tag and its associated datasets. The existing Tag and its datasets remains unchanged.
- **Apply to all Tags**
  - DCMlink selects same option for the remaining Tags while importing.

- **Export Tag Data**

Copies selected tags and selected datasets from the DCMlink database into a file. User can import this file into another DCMlink Software database or into other Windows applications.

NOTE:

The **Datasets to Include in Export File** option is only available under DCMlink Solo. When running SNAP-ON, all datasets are always included in the export file.

— From Tag menu click **Export Tag Data**.

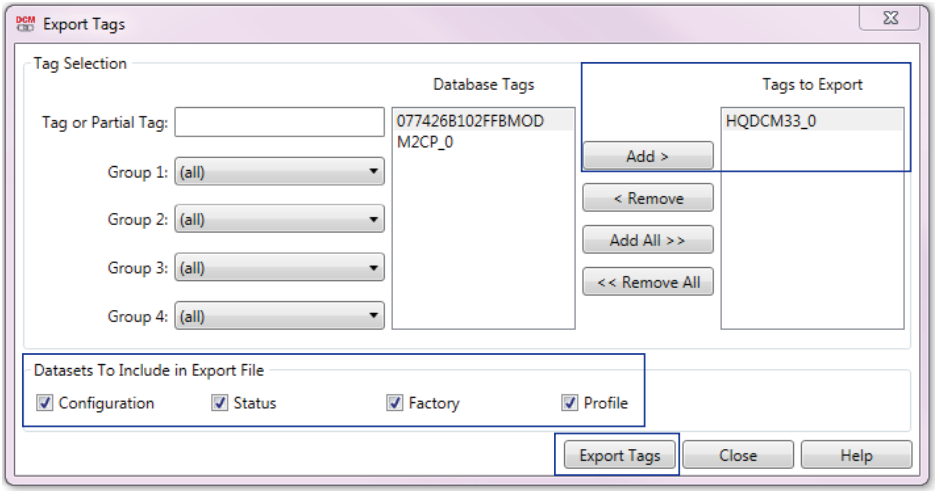
— Below Dialog Box will appear for Export options.

— Select Tag to export and click **Add**.

— While Exporting Tag user can select/deselect the Dataset to include in the Export file.

— Click **Export Tags**.

Figure 329 Export Tag Data



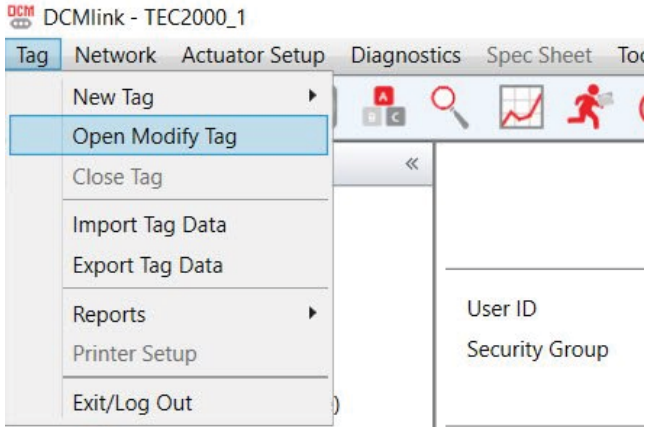
- File Name:
  - For Single Tag: TagName_YYYYMMDD_HHMM (e.g.: 03631470_20160225_1755.dxp)
  - For Multiple Tags: MULTIPLE_TagS_YYYYMMDD_HHMM (e.g.: MULTIPLE_TagS_20160225_1755.dxp)

18.5.11 Open Modify Tag

This option is available in Tag Menu and Database option. The **Tag Management** window opens when this command is selected. The Tag Management window enables user to search for and select a particular tag to open, modify, copy, or delete. Use tag groups to narrow search criteria.

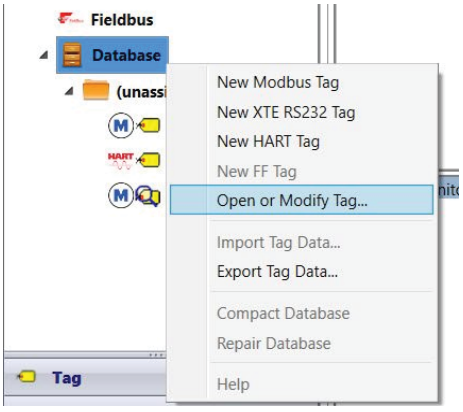
- From Tag menu click **Open Modify Tag**.

Figure 330 Open Modify Tag From Tag Menu



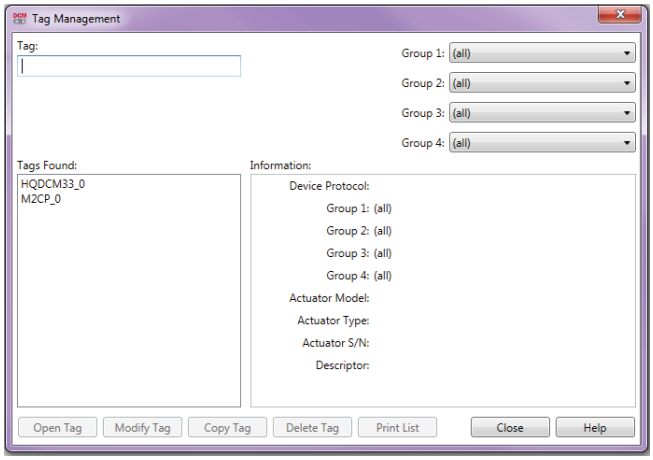
- Right click Database **Open Modify Tag**.

Figure 331 Open Modify Tag From Database option



— **Tag Management** Dialog box will appear to select the Tag to Open, Modify, Delete, Copy, and Print List option.

Figure 332 Tag Management



- **Tags:**
  - — Allows search for Tag in list.
  - — If user entered Tag is found, Tag will be shown and highlighted.
  - — **Tags Found** list shows all the Tags available in application.
- **Tag Groups:**
  - — It contains group name.
  - — The drop down list contains the associated selections.
  - — DCMlink lists Tags associated with the selected group and selection in the Tags Found box.
- **Tags Found:**
  - — **Tags Found** lists the **Tags** that matches the search criteria entered in the Tag box and selected from the Tag groups.
- **Information box:**
  - — It shows important data associated with the selected Tag as below.
    - – **Device Protocol:** HART/FF.
    - – **HART Tag:** HART Tag Number. For FF this should be Device Tag.
    - – **Group name:** Group 1 to 4 names should be displayed.
    - – **Actuator Model:** TEC2000, TEC2, M2CP, MPA, HQDCM33, and EHO.
    - – **Actuator Type:** Quarter turn or Multi-turn.
    - – **Actuator S/N:** Actuator serial number.
    - – **Descriptor:** Description about the device.

After selecting a Tag in the Tags Found box, it further allows to open, modify, copy, or delete the Tag or print a Tag report.

NOTE:
DCMlink allows to select only one Tag at a time from **Tags Found** list.

- **Open Tag:**
  - If click on this, DCMlink opens the selected Tag related to Status Monitor screen.
  - Opens the selected tag so that you can configure, calibrate, or test an instrument.
- **Modify Tag:**
  - If click on this, DCMlink opens **Modify Tag** dialog.
  - Opens a window where user can change information that identifies the selected tag and its associated database record in DCMlink software.
- **Copy From Tag:**
  - Opens the Copy Tag dialog box. Note that the selected tag is identified in the window title bar. Enter a new tag descriptor up to 25 characters. Click the OK button to copy information that identifies the selected tag and its associated database record in DCMlink software.
- **Delete Tag:**
  - It deletes the selected Tag from the Tags found list and all associated database records from DCMlink software.
  - At the confirmation message, user need to click **Yes** to delete the selected tag and its associated DCMlink Software database records. Click **No** to close the confirmation message window and return to the Tag Management window.

NOTE:
DCMlink does not allow deleting an Open Tag.

- **Print List:**
  - Opens Print Tag Report window. In the Print Tag Report window, select information to print and design the format of the printed tag report for the selected tag.

Section 19: Frequently Asked Questions

19.1 Usage

1. **Where can I get the latest version of DCMlink?**
   Please contact the nearest Emerson Local Business Partner for the latest version.
2. **Will I be notified if a new version of DCMlink is released?**
   No. However, users can call Technical Support regarding the latest version.
3. **What do I do if my DCMlink installation doesn't detect the installed actuator(s)?**
   a. Cross check wire connection.
   b. Check communication settings.
   c. Refer to the above chapters for connection details.
   d. If the steps in the User's Guide fail to solve the issue, please contact Emerson technical support.
4. **Can I add actuator models to the device scan function to use unlisted models?**
   No. User can request to add unlisted actuator models by calling Technical Support team.

19.2 RS485 Modem and Driver Details

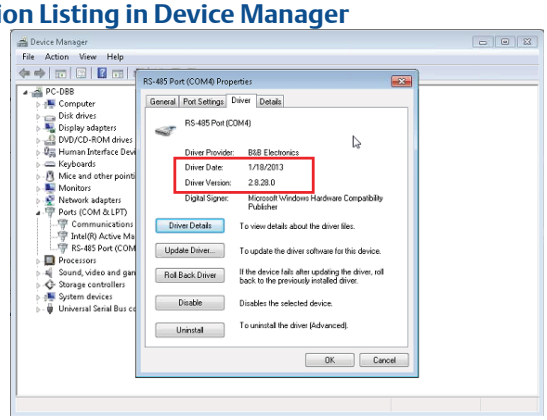
DCMlink is tested using the USB to RS485 modem from B&B Electronics.

Figure 333 B&B Electronics USB to RS485 Modem

19.2.1 Installation is accomplished by downloading and installing the latest driver. The version listed below (and newer) is fit for use.

— USB-to-Serial-2.08.28 or later.
(Verify through control panel; **Device Manager**)

Figure 334 Version Listing in Device Manager



19.3 Wiring the Modem and Actuator

19.3.1 Details on wiring the actuator can be found in Section 7.

19.3.2 Details on wiring the modem are shown below:

Figure 335 Modem Wiring Legend (1)

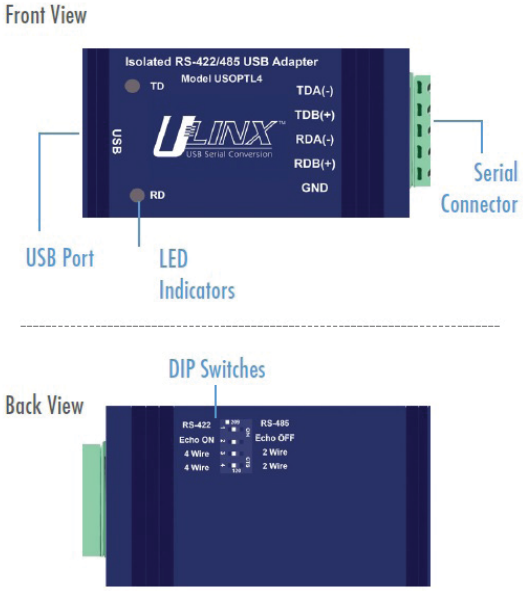


Figure 336 Modem Wiring Legend (2)

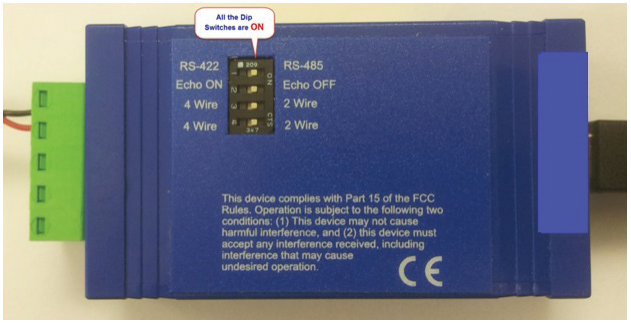


Figure 337 Modem Wiring Legend (3)

NOTE:

Wiring connection details are found on the datasheet of the modem the user has purchased.

19.4 Bluetooth Stack Information

19.4.1 Microsoft Stack

This type of stack is the first of the two Bluetooth stacks supported in DCMlink. Microsoft stack is a Bluetooth stack developed by Microsoft for the Windows operating system.

Figure 338 Microsoft Bluetooth Device in Device Manager

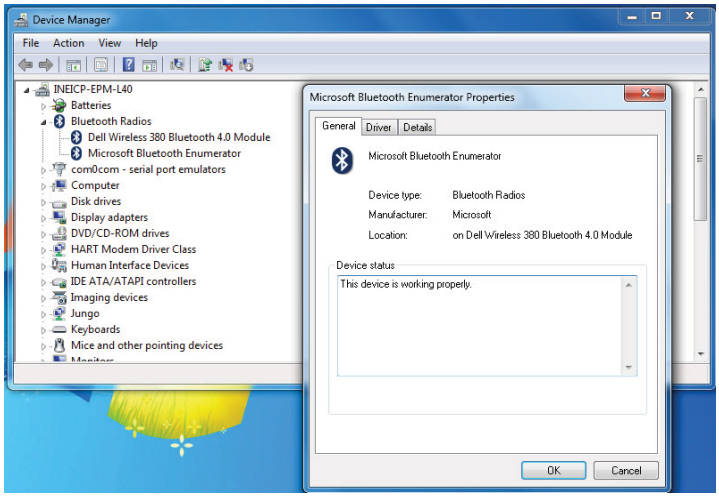
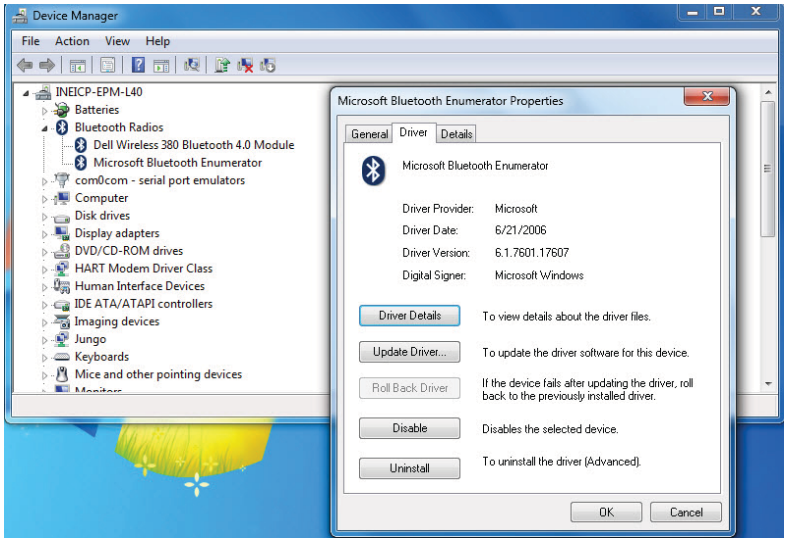


Figure 339 Microsoft Bluetooth Driver Details



19.4.2 Broadcom Stack

This is the second supported Bluetooth stack in DCMlink. Widcomm was the first Bluetooth stack for the Windows operating system. The stack was initially developed by a company named Widcomm Inc.

Figure 340 Broadcom Bluetooth Device in Device Manager

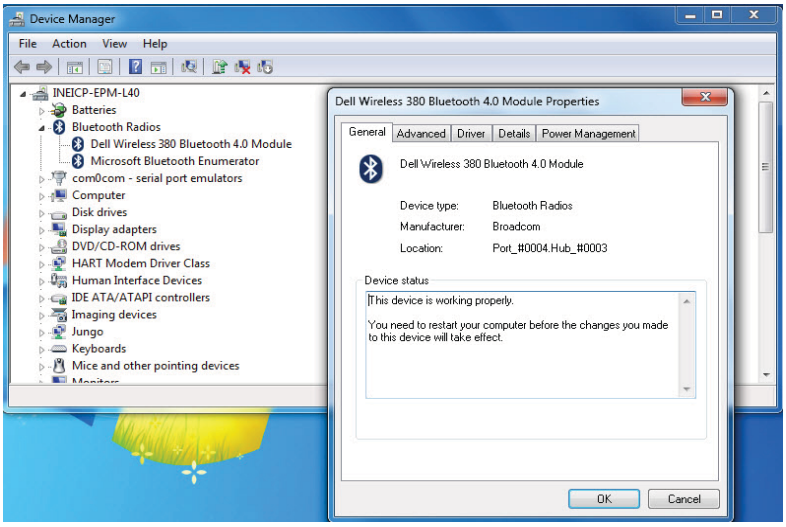
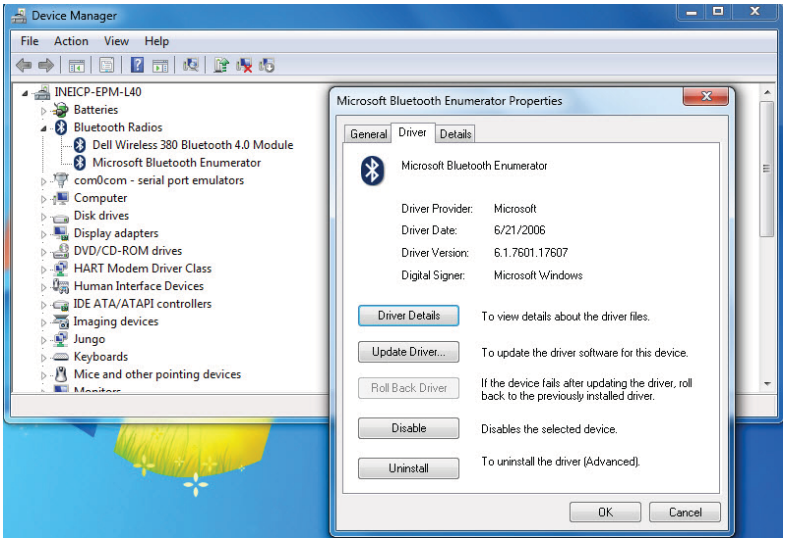


Figure 341 Broadcom Driver Details



19.5 Wiring the HART Modem and MUX

19.5.1 Details on wiring the actuator can be found in Section 7.

19.5.2 Details on wiring the modem are shown below:

Figure 342 HART Modem Wiring

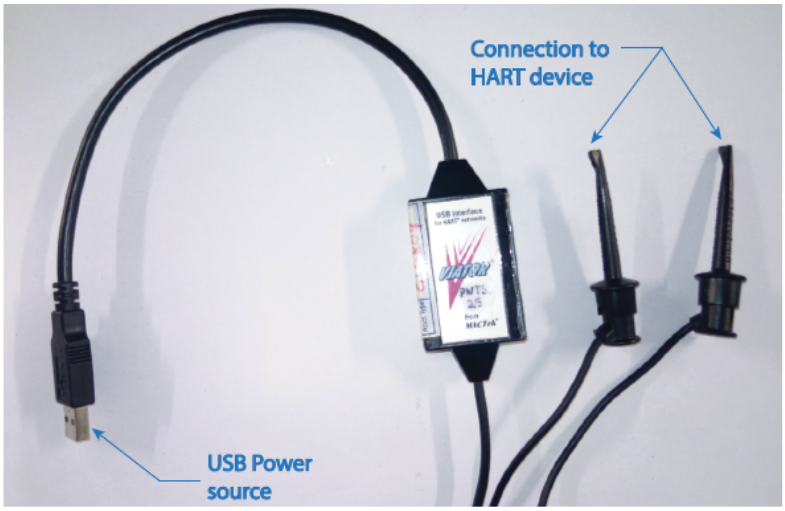


Figure 343 MUX Wiring

19.6 Technical Support and Contact Details

Whom will I contact for installation and licensing issues?
Please contact the nearest Emerson Local Business Partner. For further help, please contact the DCMlink Helpdesk using the contact information below:

- **Phone Number:**
  International Access Code +1(281) 499-1561 / (800) 679-1561 toll-free (US Only)
- **Fax Number:**
  International Access Code +1(281) 499-8445
- **E-Mail Address:**
  DCMlink.Registration@Emerson.com

19.7 Trademarks

- DCMlink Software, Bettis™ and EIM™, Fisher®, AMS™ Intelligent Device Manager, SNAP-ON™, PlantWeb®, Ovation®, and DeltaV™ are the trademarks owned by one of the companies of Emerson Electric Co.
- Emerson logo is a trade and service mark of Emerson Electric Co.
- FOUNDATION™ is a trademark of the Fieldbus Foundation.
- HART® is a registered trademark of the HART Communication Foundation.
- Bluetooth® is a registered trademark of Bluetooth SIG Inc.
- All other company and product names mentioned in this document are trademarks or registered trademarks of their respective companies.

Section 20: Assembly Numbers

- **87360:** DCMlink Software Basic
- **87361:** DCMlink Software Advanced
- **87367:** CD Media
- **87368:** DCMlink - USB Media

Section 21: Troubleshooting

21.1 Device Scan Troubleshooting

COM port settings shall match with device(s)

- The Baud rate, parity and polarity shall match.
- ALL devices connected to the same COM port shall use the same settings.
- Use multiple COM ports in case different settings are required.
- Monitor traffic with **Live Communication Viewer**.
- Available via each COM port listed on the Tree view.
- BAD PACKETS are indicative one or more of the issues listed.
- Physical connection:
  - Incorrect COM port
  - Incorrect communication settings
  - Polarity of physical connection
  - Actuator not powered

21.2 DCMlink Services Error

For DCMlink Service Error click on **Restart DCMlink serices** from **DCMlink Setup** Menu.

Figure 344 DCMlink Services Error

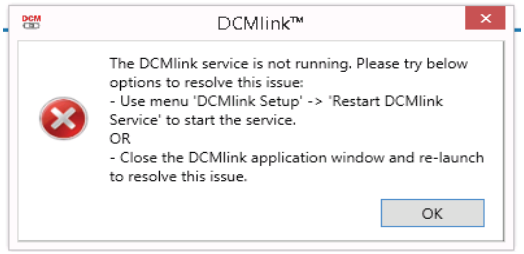
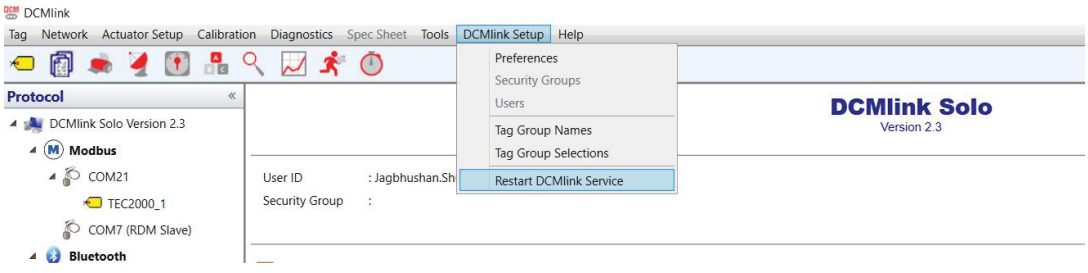


Figure 345 Restart DCMlink Services



Section 22: Document Revision

Table 51. Revision Overview

REVISION	ACTION	STATUS	BY *	DATE
0	Original User's Guide made by Valve Automation	Compiled	Charles Khalid S. Rico	Aug. 2015
1	Review Technical Content	Reviewed	Pijush Nath Rhishikesh Lathe	Oct. 2015
1	Final Approval	Approved	Mahesh Gade	Dec. 2015
1.1	Updates	Approved	Mahesh Gade	May 2016
2.0	Addition of HART	Compiled	Archana Ambekar	Mar. 2017
2.0	Review Technical Content	Reviewed	Pijush Nath	Jan. 2018
2.0	Final Approval	Approved	Mahesh Gade	Jan. 2018
2.1	Updates	Approved	Pijush Nath	April 2018
2.2	XTE3000 Support & M2CP Profile addition	Approved	Pijush Nath	Sep. 2018
2.3	Draft	In Review	Pijush Nath	February 2020

Appendix A: Glossary

A.1 Definition of Terms

1. **ACM**
   Acronym: Auxiliary Control Module
2. **Address**
   One or more integers arranged to identify the location of an instrument or multiplexer.
3. **AI/AO**
   Acronym: Analog Input/Analog Output
4. **AMS**
   AMS Device Manager is plant asset management software from Asset Optimization (Emerson). It provides a single application for predictive diagnostics, documentation, calibration management, and device configuration for managing field instruments and digital valve controllers.
5. **APD**
   Acronym: Absolute Position Detector
   This module eliminates the need for any and all mechanical cam-driven switches. The assembly eliminates the need to open and close the control compartment to set travel and torque limits. It has no contacting components and is impervious to oil, greases and grime.
6. **ARM**
   Acronym: Auxiliary Relay Module
7. **ASCII**
   Acronym: American Standard Code for Information Interchange
8. **Byte**
   A unit of binary digits (bits). A byte consists of eight bits.
9. **Baud Rate**
   Data transmission speed. The baud rate is the rate at which information is transferred in a communication channel. In the serial port context, **9600 baud** means that the serial port is capable of transferring a maximum of 9600 bits per second. If the information unit is one baud (one bit), the bit rate and baud rate are identical.
10. **CAM**
    Acronym: Communication Adapter Module
11. **CCM**
    Acronym: Central Control Module
12. **COM Port**
    COM (Communication port) is the original, yet still common, name of the serial port interface on IBM PC-compatible computers. It might refer not only to physical ports, but also to virtual ports, such as ports created by Bluetooth or USB-to-serial adapters.
13. **Data Bits**
    The number of data bits in each character can be 7 (for true ASCII) or 8 (for most kinds of data, as this size matches the size of a byte). 8 data bits are almost universally used in newer applications.

14. **Device ID**
A unique identifier embedded in the instrument at the factory. DCMlink software uses this identifier to ensure it is communicating with the correct instrument.

15. **DCMlink**
Acronym:
Diagnostics - Torque Profile, Archived Torque profile, Partial Stroke
Configuration - Detailed Setup for easy access to every parameter
Monitoring - Real-time status of the device with pass/fail indication

16. **DI/DO**
Acronym: Digital Input/Digital Output

17. **Discrete**
Individually separate and distinct. Actuators take input and provide output in discrete format. The actuator can be controlled by discrete inputs: two-wire control, three-wire control and four-wire valve control. Discrete outputs are used primarily for hardwired status feedback. Each Discrete outputs (Relay) may be configured (assigned) to various status, alarm, or control functions.

18. **Download**
Sending configuration instructions and calibration information from the DCMlink software database to a device.

19. **ESD**
Acronym: Emergency Shut Down

20. **EHO**
Acronym: Electro-Hydraulic Operator

21. **HART**
Acronym: Highway Addressable Remote Transducer
The HART Communications Protocol (Highway Addressable Remote Transducer Protocol) is an early implementation of Fieldbus, a digital industrial automation protocol. Its most notable advantage is that it can communicate over legacy 4-20 mA analog instrumentation wiring, sharing the pair of wires used by the older system.

22. **HZ** (Hertz)
The frequency of the applied motor voltage and control package voltage.

23. **IOM**
Acronym A: Instruction and Operation Manual
Acronym B: Input/Output Module

24. **Inhibit**
Actuators can be prevented from operating in either OPEN or CLOSE direction, or both, until an external contact has been made. This is useful when interlocking with other process equipment (e.g. pumps, other valves, sensors, PLC, DCS, etc.), and it will inhibit operation in both remote and local operating modes.

25. **LDM**
Acronym: Local Display Module

26. **LSA**
Acronym: Limit Switch A
It's the Intermediate limit A.

27. **LSB**
Acronym: Limit Switch B
It's the Intermediate limit B.

28. **LSC**
Acronym: Limit Switch Close
It's the Close limit.

29. **LSO**
Acronym: Limit Switch Open
It's the Open limit.

30. **mA**
Milliampere(s): Unit of measurement for small electric currents.

31. **MCP**
Acronym: Modular Controls Package – first generation

32. **MCM**
Acronym: Motor Control Module

33. **MPA**
Acronym: Multiport Actuator

34. **MPFS**
Acronym: Multiport Flow Selector

35. **Modbus**
Modbus is a serial communications protocol originally published by Modicon (now Schneider Electric) in 1979 for use with its programmable logic controllers (PLCs). Simple and robust, it has since become a de facto standard communication protocol, and it is now a commonly available means of connecting industrial electronic devices.

36. **MUX**
Acronym: Multiplexer

36. **Navigation Pane**
Sidebar view in DCMlink that shows the communication protocols and installed Tags.

37. **Parity**
Parity is a method of detecting errors in transmission. When parity is used with a serial port, an extra data bit is sent with each data character, arranged so that the number of 1 bits in each character, including the parity bit, is always odd or always even.

38. **Phase**
This is the electric service used with the actuator's motor.

39. **Polling Range**
Range of actuator addresses in Modbus.

40. **PST**

Partial Stroke Test

40. **FST**

Full Stroke Test

40. **QSG**
Acronym: Quick Start Guide

41. **RDM**
Acronym: Remote Display Module

42. **RPM**
Constant speed of the actuator motor on this individual actuator. Can be 1725 or 3400 RPM motor.

43. **RPM/Seconds**
This is the time in seconds that it takes an actuator to operate a multi-turn or quarter turn valve. For example, a 30-second rating is the time it takes the actuator to move the attached valve from open to close or close to open.

44. **Run Amps**
This is the amperage that the motor should draw at full load without the thermal overloads tripping. This also indicates that the motor is a limit duty unit that must be allowed to cool off after 15 minutes of continuous operation. There are no vents or airways used to cool the motor during operation except through ambient conditions outside of the housing.

45. **STC**
The TEC2000 STC (Separate Terminal Chamber) is an isolated point that is separate from the controls enclosure.

46. **Stall amps**
This is the locked rotor amperage of a motor when it is mechanically prevented from rotating the actuator's power gear train. Generally, this is at least three times the running amperage of the motor and the point at which the thermals will trip the motor offline.

47. **Stop Bits**
Stop bits sent at the end of every character allow the receiving signal hardware to detect the end of a character and to re-synchronize with the character stream. Electronic devices usually use one stop bit.

48. **Tag**
A unique identifying mnemonic or label for a controller or point of a process control system. Typically, this is a valve Tag number or location for assembly placement in a plant's operation.

49. **TBM**
Acronym: Terminal Board Module

50. **TCP/IP**
TCP/IP (Transmission Control Protocol/Internet Protocol) is the basic communication language or protocol of the Internet. It can also be used as a communications protocol in a private network (either an intranet or an extranet).

51. **Tmot**
Abbreviation: Timeout

Index

A
ACM, 5
AMS, 9, 52, 64, 73, 76, 80, 81, 82, 179
APD, 5, 99, 107

B
Baud Rate, 32, 36, 37, 42, 48, 57, 62, 69, 104, 210

C
CAM, 6, 57, 60, 74, 83, 86, 100,
CCM, 5, 98, 99,
COM Port, 32, 35, 36, 42, 44, 45, 47, 50, 51, 62, 67, 73, 79, 83, 84, 210

D
Database, 19, 110, 112, 147, 150, 153, 156, 157, 178-188, 191, 194, 196, 197
DI/DO, 119, 143
Discrete, 96, 103, 105, 106, 119, 120, 121

E
ESD, 104, 106, 116, 120, 121, 123, 124-136, 143, 145,
EHO, 1, 2, 5, 6, 59, 60, 83, 98, 99, 100, 101-105, 121, 133,
EIM HQ, 1, 2, 5, 6, 58, 59 60, 74, 83, 149, 164

F
FOUNDATION™ fieldbus, 6, 31, 83

H
HART, 6, 19, 31, 40-48, 51, 57, 64-69, 71-75, 77-83, 92, 108, 109, 142, 161, 171-177, 181-186, 200, 207

I
Inhibit, 103, 106, 120-135

L
LDM, 5, 99, 103, 171,
LSA, 123-135
LSB, 123-135
LSC, 123-135
LSO, 123-135

M

M2CP, 1,2 5, 6, 58, 60, 74, 83, 98-105, 109, 114, 120, 128, 138, 147, 149, 164, 182, 200
M2CP Family, 6, 83, 103, 109
mA, 101, 184
MCM, 98
MPA, 1, 2, 5, 6, 53, 57, 60, 61, 83, 98,-104, 114, 120, 127, 138, 145, 149, 164, 169, 182, 200
Modbus, 1, 5, 6, 19, 31, 32, 34, 37, 38, 39, 55-60, 83-89, 116, 158, 186

P

Parity, 32, 37, 43, 49, 62, 210
Phase, 98, 99, 123-135
Polling Range, 84

R

RDM, 31, 34, 36, 37, 55, 62, 86, 87, 88, 99, 116, 119, 159

S

STC, 55, 56, 61, 62, 75, 98, 99, 102, 104, 143
Stop Bits, 32, 37, 43, 49, 62

T

Tag, 30, 33, 39, 52, 69, 71-73, 85, 89, 83, 107, 109, 110, 114, 118, 120, 137, 142, 150, 153, 157, 158, 161, 164,170, 172, 180-188, 192, 193, 196-201
TBM, 98, 99, 102, 143,
TCP/IP, 6, 37, 39, 55, 60, 61, 83, 88,
TEC2, 1, 2, 5, 6, 56, 57, 60, 75, 83, 91, 98-105, 121, 128-131, 138, 149, 150, 162, 164, 182, 200
TEC2000, 1, 5, 6, 36, 37, 55, 56, 60, 62, 75, 83-87, 98-105, 114, 120, 124-127, 147, 149, 182, 200
TEC Family, 6, 83, 98-103, 109, 114, 138

U

Upload, 100, 147, 150, 153, 194

World Area Configuration Centers (WACC) offer sales support, service, inventory and commissioning to our global customers.
Choose the WACC or sales office nearest you:

NORTH & SOUTH AMERICA

19200 Northwest Freeway
Houston TX 77065
USA
T +1 281 477 4100

Av. Hollingsworth
325 Iporanga Sorocaba
SP 18087-105
Brazil
T +55 15 3413 8888

ASIA PACIFIC

No. 9 Gul Road
#01-02 Singapore 629361
T +65 6777 8211

No. 1 Lai Yuan Road
Wuqing Development Area
Tianjin 301700
P. R. China
T +86 22 8212 3300

MIDDLE EAST & AFRICA

P. O. Box 17033
Jebel Ali Free Zone
Dubai
T +971 4 811 8100

P. O. Box 10305
Jubail 31961
Saudi Arabia
T +966 3 340 8650

24 Angus Crescent
Longmeadow Business Estate East
P.O. Box 6908 Greenstone
1616 Modderfontein Extension 5
South Africa
T +27 11 451 3700

EUROPE

Holland Fasor 6
Székesfehérvár 8000
Hungary
T +36 22 53 09 50

Strada Biffi 165
29017 Fiorenzuola d'Arda (PC)
Italy
T +39 0523 944 411

For complete list of sales and manufacturing sites, please visit www.emerson.com/actuationtechnologieslocations or contact us at info.actuationtechnologies@emerson.com

www.emerson.com

VCIOM-14668-EN ©2020 Emerson. All rights reserved.

The Emerson logo is a trademark and service mark of Emerson Electric Co. All other marks are property of their respective owners.

The contents of this publication are presented for information purposes only, and while every effort has been made to ensure their accuracy, they are not to be construed as warranties or guarantees, express or implied, regarding the products or services described herein or their use or applicability. All sales are governed by our terms and conditions, which are available on request. We reserve the right to modify or improve the designs or specifications of our products at any time without notice.

EMERSON™