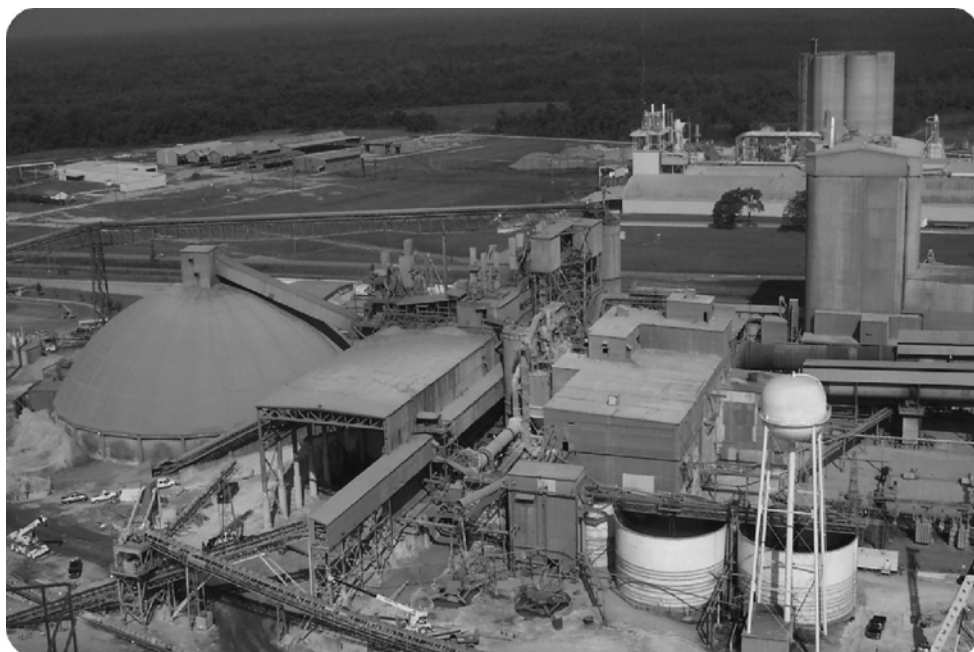


PowerFlex 7000 HMI Offering With Enhanced Functionality

Publication Number 7000-UM201B-EN-P



Important User Information

Read this document and the documents listed in the Additional Resources section about installation, configuration, and operation of this equipment before you install, configure, operate, or maintain this product. Users are required to familiarize themselves with installation and wiring instructions in addition to requirements of all applicable codes, laws, and standards.

Activities including installation, adjustments, putting into service, use, assembly, disassembly, and maintenance are required to be carried out by suitably trained personnel in accordance with applicable code of practice.

If this equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

In no event will Rockwell Automation, Inc. be responsible or liable for indirect or consequential damages resulting from the use or application of this equipment.

The examples and diagrams in this manual are included solely for illustrative purposes. Because of the many variables and requirements associated with any particular installation, Rockwell Automation, Inc. cannot assume responsibility or liability for actual use based on the examples and diagrams.

No patent liability is assumed by Rockwell Automation, Inc. with respect to use of information, circuits, equipment, or software described in this manual.

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Throughout this manual, when necessary, we use notes to make you aware of safety considerations.



WARNING: Identifies information about practices or circumstances that can cause an explosion in a hazardous environment, which may lead to personal injury or death, property damage, or economic loss.



ATTENTION: Identifies information about practices or circumstances that can lead to personal injury or death, property damage, or economic loss. Attentions help you identify a hazard, avoid a hazard, and recognize the consequence.

IMPORTANT

Identifies information that is critical for successful application and understanding of the product.

Labels may also be on or inside the equipment to provide specific precautions.



SHOCK HAZARD: Labels may be on or inside the equipment, for example, a drive or motor, to alert people that dangerous voltage may be present.



BURN HAZARD: Labels may be on or inside the equipment, for example, a drive or motor, to alert people that surfaces may reach dangerous temperatures.



ARC FLASH HAZARD: Labels may be on or inside the equipment, for example, a motor control center, to alert people to potential Arc Flash. Arc Flash will cause severe injury or death. Wear proper Personal Protective Equipment (PPE). Follow ALL Regulatory requirements for safe work practices and for Personal Protective Equipment (PPE).

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Introduction

The HMI Interface Board is an HMI-enabling device for the PowerFlex 7000 drive. It allows the user to acquire all the necessary executable tools, documentation and reports required to commission, troubleshoot and maintain the drive.

Via the HMI Interface Board, the user can choose the style and size of the desired Windows-based operator terminal to interact with the drive (e.g. PanelView CE terminal, laptop, or desktop computer). The HMI Interface Board removes past issues with compatibility between the drive and configuration tools, as all the necessary tools are acquired from the drive.

The HMI Interface Board is well suited for applications that require remote placement of the operator terminal and remote maintenance.

Basic Configurations

There are three basic configurations for the HMI Interface Board.

Remote-mounted HMI

The HMI is not mounted in the traditional location on the low voltage door of the Variable Frequency Drive (VFD). A remote mounting plate, complete with E-Stop push button, and HMI is supplied loose for the customer to mount wherever desired. The HMI connects to the VFD via a hardwired Ethernet cable. Distance limitation is defined by network hardware.

This is ideal for non-PLC users wanting to control and monitor remotely (e.g. at the driven machine, control room, etc.). Also ideal for customers having policies in place to control access to medium voltage equipment and the associated requirements of PPE when using the operator interface at the VFD, etc.

Locally-mounted HMI

Similar to the existing PanelView 550, the HMI is mounted on the LV door of the VFD.

No HMI supplied

A service access port (RJ-45 connector) is located on the LV door of the VFD. Customers use their own laptop as the HMI. All programs required to use the laptop as the HMI are stored in the VFD. Their laptop is connected to the VFD via a hardwired Ethernet cable, when required. This is ideal for unmanned sites, where a dedicated HMI is not required.

These documents contain additional information concerning related products from Rockwell Automation.

Resource	Description
Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1	Provides general guidelines for installing a Rockwell Automation industrial system.
Product Certifications website, http://www.ab.com	Provides declarations of conformity, certificates, and other certification details.
Industrial Security Best Practices, SECUR-AT001 -EN-P	Provides further information and guidelines on product and system security

You can view or download publications at <http://www.rockwellautomation.com/literature/>. To order paper copies of technical documentation, contact your local Allen-Bradley distributor or Rockwell Automation sales representative.

Quick Start - “Out of the Box”

Overview

The Quick Start application is used for Remote-mounted HMI or Locally-mounted HMI configurations. When no HMI is supplied, the Quick Start application is not available (refer to [Chapter 2](#) on [page 15](#) to configure a personal computer or Windows terminal).

The PowerFlex 7000 HMI Interface Board (HMI Interface Board) and the Rockwell Automation PanelView Plus CE terminal communicate to each other over Ethernet. Both devices must be configured with unique IP addresses on the same network.

The Quick Start application establishes the initial connection between the PanelView Plus CE terminal and the PowerFlex 7000 drive.

Requirements

- PanelView Plus CE terminal
- Windows CE (6.0 or greater)
- .NET Compact Framework (2.0 or greater)
- Internet Explorer 6.0 or greater
- Screen Resolution of at least 640x480
- Ethernet connection

Chapter Objectives

This chapter describes how the Quick Start application (supplied with PanelView Plus CE only) configures a unique IP address in the HMI Interface Board and the terminal.

The application is also used to access the Forge Shell program from a ‘discovered’ HMI Interface Board and to set the Internet Explorer homepage to the selected HMI Interface Board.

Introduction

When the drive is first powered up, the PanelView Plus CE terminal and PowerFlex HMI Interface Board are configured for ‘Dynamic IP addressing’, meaning they attempt to obtain an IP Address from a DHCP Server.

If the drive is not connected to an external network that contains a DHCP server, the devices cannot obtain an IP Address via this method. In the absence of a DHCP Server, the HMI Interface Board defaults to an address of 169.254.0.10.

In the absence of a DHCP Server, the Terminal defaults to an address in the range of 169.254.xxx.xxx that will be of the same network as the HMI Interface Board.

If either device is configured with a Static IP address, the two devices may not communicate with each other if the IP addresses are not of the same network.

When the drive is powered up, the terminal will initially show the Desktop ([Figure 1](#)).

Figure 1 - Desktop



IMPORTANT

The  icon in the taskbar indicates whether the terminal is successfully connected to the Ethernet network.

If this icon has a red 'X' through the icon, the terminal:

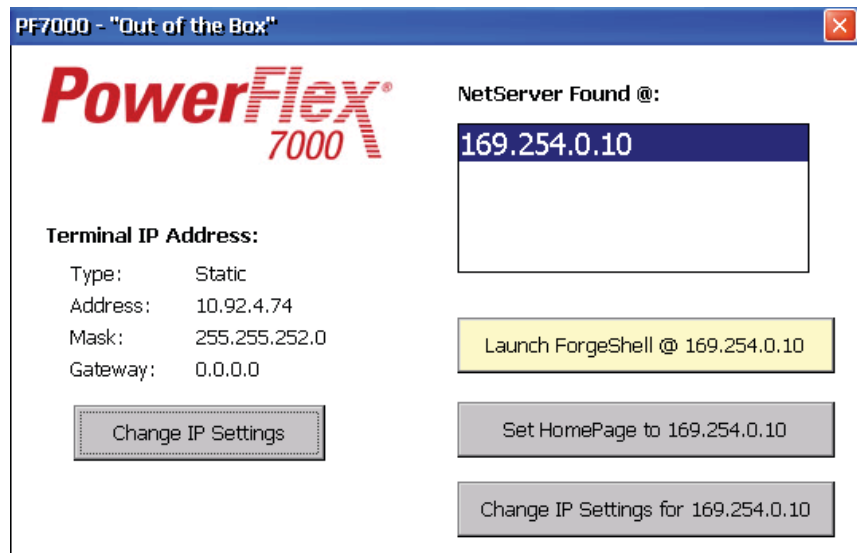
- is not physically connected to the network,
- does not have a dynamically assigned IP address.

It can take upwards of 15 seconds for the terminal to determine a usable IP address (if no DHCP Server is available).

Quick Start Application

The desktop contains a pre-installed 'Quick Start' icon on the desktop ([Figure 1](#)). Double-click this icon to open the Out of the Box application ([Figure 2](#)).

Figure 2 - Out of the Box Application



Launch the Forge Shell Application

The main interface to the HMI Interface Board is via the Forge Shell application.

Select the desired HMI Interface Board from the list and click Launch ForgeShell.

Configure IP Settings

The Quick Start application shows the current IP configuration of the terminal and all HMI Interface Board modules found on the network.

TIP Although the default values used by the devices will function, connections are much quicker if:

- the devices use a Static IP Address, and/or
- a DHCP server is present on the connected network.

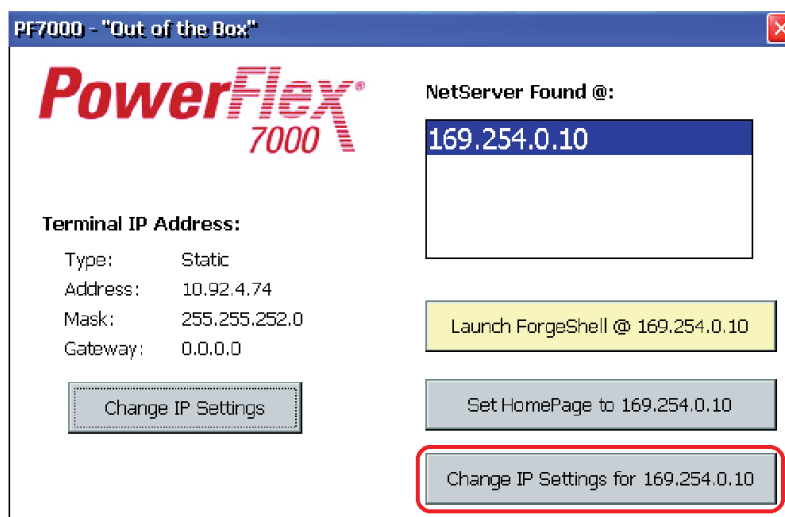
To have more than one HMI Interface Board (i.e. Drive) connected on the same network where there is no DHCP Server, all HMI Interface Boards must be configured with distinct Static IP Addresses. This process must occur before the drive is connected to the common network. Failure to do so results in conflicting HMI Interface Boards with the same IP address.

IMPORTANT When changing IP Settings, the HMI Interface Board settings should be changed before the Terminal settings, otherwise this application may no longer be able to communicate with the HMI Interface Board module.

Configure HMI Interface Board IP Settings

1. Select the desired module IP address from the list.
2. Click Change IP Settings ([Figure 3](#)).

Figure 3 - Configure HMI Interface Board IP Settings

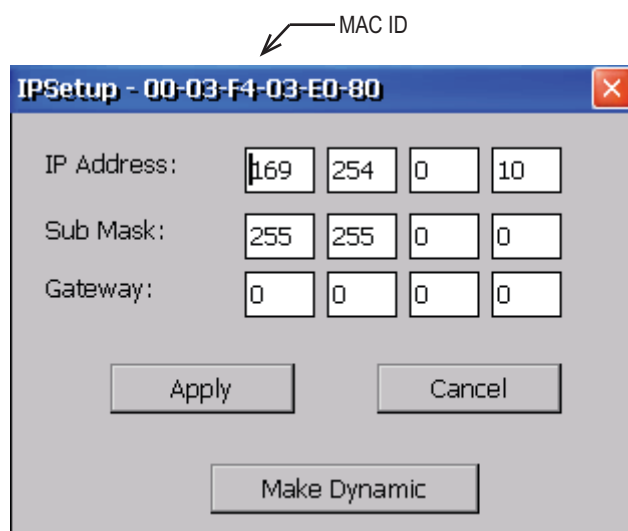


The MAC ID of the HMI Interface Board module will be displayed in the Title Bar of the dialog to identify the module that is being changed.

3. To enter a Static IP configuration, enter the data in all three fields and click Apply ([Figure 4](#)).

To enter a Dynamic IP configuration, click Make Dynamic.

Figure 4 - IP Setup



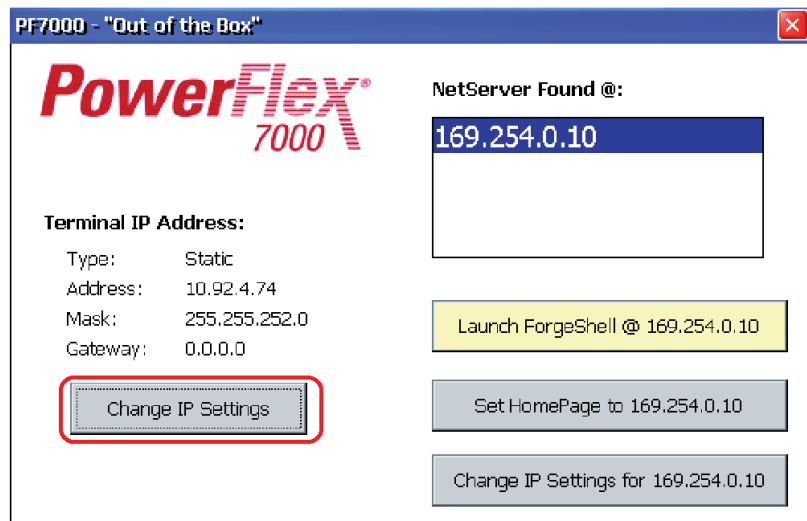
When the dialog closes and returns to the main application ([Figure 2](#)), the application searches for all available HMI Interface Boards on the same network as the terminal.

TIP If you are configuring both the terminal and the HMI Interface Board to a different network, the HMI Interface Board may no longer appear in the list until the terminal has also been re-configured.

Configure Terminal IP Settings

1. Click Change IP Settings ([Figure 5](#)) to launch Network Connections ([Figure 6](#)).

Figure 5 - Configure Terminal IP Settings



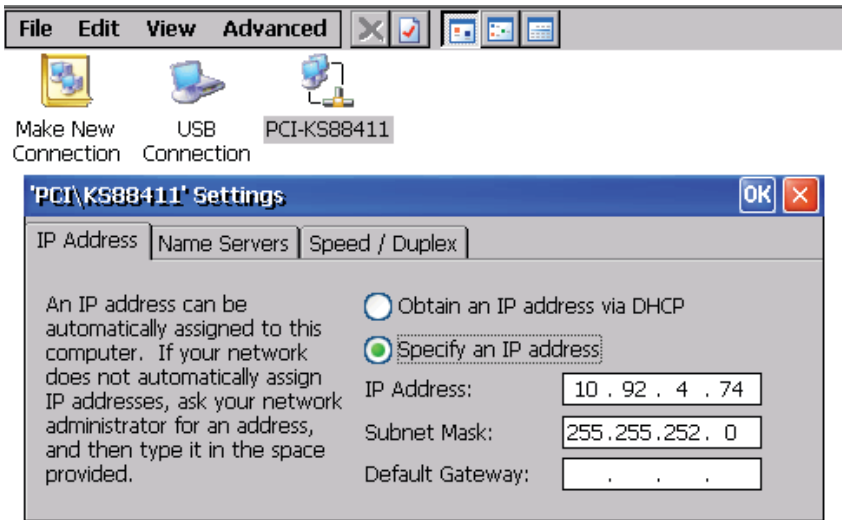
2. Double-click "PCI-KS88411" to open the Settings dialog.

Figure 6 - Network Connections



3. Enter the desired configuration settings and click OK.

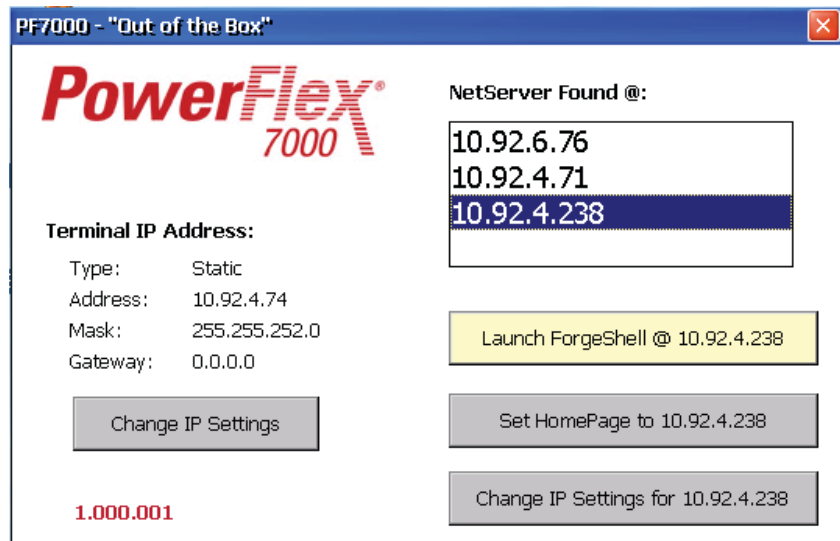
Figure 7 - PCI/K S88411 Settings



4. Close the Network Connections window to return to the main application ([Figure 2](#)).

The application will search for all available HMI Interface Boards on the same network as the terminal ([Figure 8](#)).

Figure 8 - Quick Start Application showing Available HMI Interface Boards



Once the IP Settings are properly configured, go to [Chapter 3](#) on [page 23](#). See [Chapter 2](#) to setup a configuration where no HMI is supplied.

Configure the Home Page

Internet Explorer can be used to 'browse' to the HMI Interface Board module's webpage.

1. Select the desired HMI Interface Board from the list in [Figure 2](#).
2. Click Homepage.

Manual Refresh

HMI Interface Board modules listed are found on a network via a 'discovery' process. If a HMI Interface Board module attaches to the network after the application has been started, manually refresh the list by forcing a 'discovery' operation.

To initiate a Refresh operation, click the "PowerFlex 7000" logo in the upper left corner of this application.

Notes:

PowerFlex HMI Interface Board

Overview

This chapter outlines how to setup a configuration when no HMI is supplied and a PC is used to interface with the drive.

The HMI Interface Board module is a File Server capable of providing any file stored on the internal SD Card or reports which are generated within the drive. The HMI Interface Board is also used for updating firmware modules in the drive using common tools found on any PC such as Microsoft Windows Explorer™.

Requirements

To access the HMI Interface Board, a personal computer or windows terminal (such as the PanelView CE 1000) is required. This device must meet the following minimum requirements:

- Windows XP, CE, or Windows 7
- .NET Compact Framework (2.0 or greater), .NET Framework
- Internet Explorer 6.0 or greater
- Screen Resolution of at least 640x480
- Ethernet connection

Chapter Objectives

This chapter describes how the HMI Interface Board transfers files between the PC/Terminal and the PowerFlex 7000 Medium Voltage Drive. In this chapter you will learn how to:

- Configure the HMI Interface Board using the no HMI configuration.
- Information to help configure a network firewall

This chapter outlines the capability of the HMI Interface Board. Individual applications are discussed in separate chapters or documents.

Computer Configuration

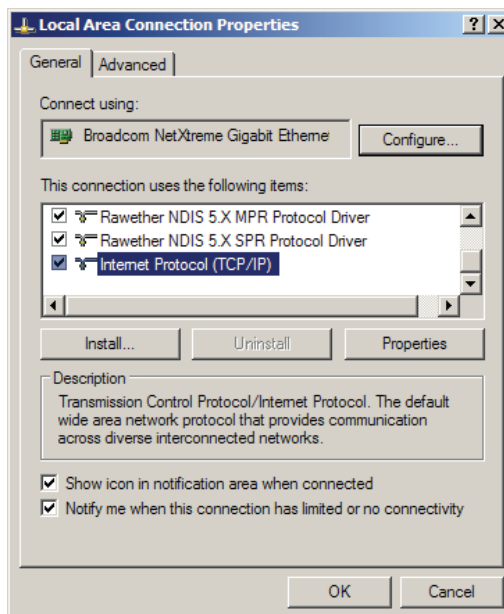
The HMI Interface Board module and a computer must be configured with a unique IP address to properly communicate. When connected to a network with a DHCP Server present, the configuration of the computer is automatic as it can be configured to receive a Dynamic IP address. If the computer is connected to a network without a DHCP Server (or is connected directly to the HMI Interface Board module), the computer must be configured with a Static IP address. This section provides guidance to configuring this Static IP address.

The remainder of this discussion will assume that the HMI Interface Board module is using the default IP address of 169.254.0.10. If the HMI Interface Board module has been configured with a different Static IP address, choose an appropriate Static IP address for the computer (within the same subnet).

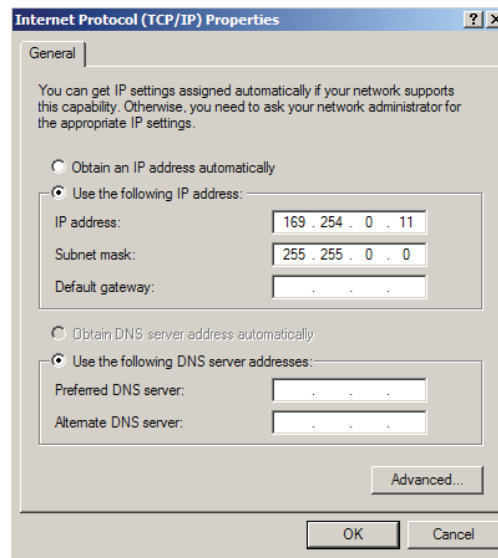
Windows XP

1. From the Start menu, choose Settings>Network Connections>Local Area Connection.
2. Click Properties under the General tab to open the Local Area Connection Properties window ([Figure 9](#)).

Figure 9 - Local Area Connection Properties



3. Scroll through the list and select Internet Protocol (TCP/IP) under the General tab.
4. Click Properties to open the Internet Protocol Properties window ([Figure 10](#)).

Figure 10 - Internet Protocol Properties

5. Click the Use the following IP address radio button and enter the IP address of 169.254.0.11. Enter a Subnet mask of 255.255.0.0.
All other entries can be left blank.
6. Click OK on the two open dialogs, and Close the Local Area Connection Status window.

Windows 7

1. From the Start menu, choose Control Panel>Network and Sharing Center.
2. Click Change adapter settings, and double-click Local Area Connection.
3. Click Properties under the General tab to open the Local Area Connection Properties window ([Figure 9](#)).
4. Scroll through the list and select Internet Protocol Version 4 (TCP/IP) under the General tab.
5. Click Properties to open the Internet Protocol Properties window ([Figure 10](#)).
Click the Use the following IP address radio button and enter the IP address of 169.254.0.11. Enter a Subnet mask of 255.255.0.0.
All other entries can be left blank.
6. Click OK on the two open dialogs, and Close the Local Area Connection Status window.

HMI Interface Board Configuration

The HMI Interface Board module must be configured with an IP address in order to communicate on a network.

By default, the module does not have an address and uses a Dynamically assigned IP address from a DHCP server, if it can locate a DHCP server on the network. If no DHCP server exists, the address defaults to 169.254.0.10 with a subnet mask of 255.255.0.0 with no gateway.

To communicate with the HMI Interface Board in almost all cases, the IP address assigned to the module must be known. This is also true to change the current IP address of the module.

For this reason, it is recommended that a static IP address be assigned to the HMI Interface Board module upon installation into a network.

To Determine an IP Address

Using ForgeShell

The easiest method is to use the Forge Shell application if a copy of this application is available. The program ForgeShell.exe is available in the root directory of the SD Card contained in the HMI Interface Board module. If required, the card can be removed from the drive in order to copy this program to a PC for this purpose, and then the card must be replaced into the HMI Interface Board. (If required on the PC, use an USB-SD card adapter). Refer to [Set an IP Address with Forge Shell on page 20](#).

Using Ethernet cable

If the HMI Interface Board module is on a network where no DHCP server exists and the HMI Interface Board has never been configured with a static address, its address will default to 169.254.0.10. In this case an Ethernet cable can be connected between a PC and the HMI Interface Board module directly. The PC must be given an IP address of 169.254.0.x with a submask of 255.255.0.0. In the PC's browser, type the following:

<http://169.254.0.10>

The HMI Interface Board module webpage opens from which the Forge Shell program can be launched. Refer to [Set an IP Address with Forge Shell on page 20](#).

Using MAC ID

If the HMI Interface Board is on a network with no DHCP server, assistance from your Network Administrator and providing them with the MAC ID of the HMI Interface Board module, the IP address assigned to the module can be determined. Referring to [Figure 79](#), the MAC ID is written on the white barcode label on the NetBurner module.

Knowing this IP address, open a web browser and enter the IP address prefixed with `http://`. This opens the web page for the HMI Interface Board module from which the Forge Shell program is launched. Refer to [Set an IP Address with Forge Shell on page 20](#).

Using HyperTerminal

If the IP address of an existing module cannot be determined, connect to the USB port of the HMI Interface Board module.

TIP See [USB Port on page 83](#) for information on obtaining and installing USB drivers for Windows XP and Windows 7.

1. Use a program such as HyperTerminal™ (usually supplied with the Windows OS) to connect to the HMI Interface Board using the following settings:
 - 115,200 Baud
 - 8-data bits
 - 1-Stop bit
 - No parity

2. Set the HMI Interface Board DIP Switch (SW2), switch 1 to ON. Refer to [DIP Switch Settings on page 81](#).

3. Press the reset button SW1 on the HMI Interface Board module.

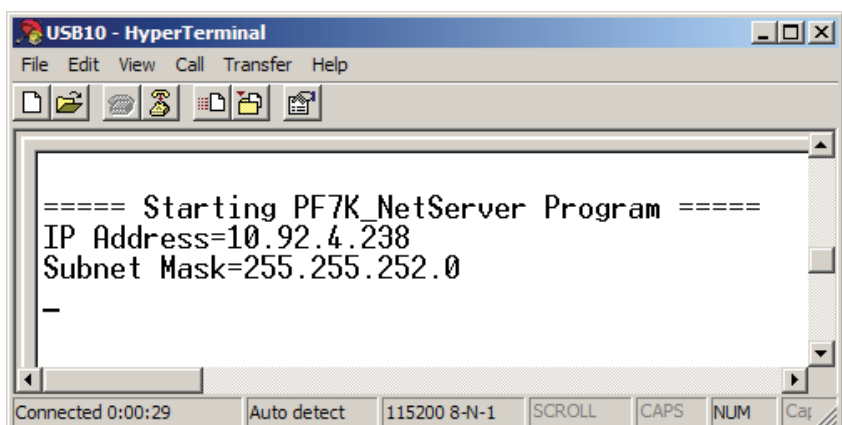
The screen typical of [Figure 11](#), shows the current configuration of the HMI Interface Board module.

4. After obtaining the IP address, place the DIP Switch (SW2) Switch 1, back to the default position of OFF.

5. Open a web browser and enter the IP address prefixed with `http://`

This opens the web page for the HMI Interface Board module from which the Forge Shell program is launched (refer to [Set an IP Address with Forge Shell on page 20](#)).

Figure 11 - IP Address via HyperTerminal



Set an IP Address with Forge Shell

This section explains how the Forge Shell configures a static IP address in the HMI Interface Board module. The Forge Shell program ([Figure 15](#)) discovers all the HMI Interface Board modules on a network.

Open Forge Shell using Windows Explorer

1. Right-click on the Start button in the taskbar.
2. Click “Open Windows Explorer”.
3. Enter ftp://<ip_address> in the address field, where <ip_address> is the IP Address of the HMI Interface Board ([Figure 12](#)).

Figure 12 - Windows Explorer - HMI Interface Board

Name	Size	Type	Modified
PFNetServer1.008D.s19	512 bytes	S19 File	9/9/2005 12:00 AM
LOCAL		File Folder	9/9/2005 12:00 AM
DRIVE		File Folder	9/9/2005 12:00 AM
CARD		File Folder	9/9/2005 12:00 AM

4. Double-click on the ‘CARD’ directory to open the subdirectory ([Figure 13](#)).

Figure 13 - Windows Explorer- CARD SubDirectory

Name	Size	Type	Modified
BIN		File Folder	
DOWNLOAD		File Folder	
HTML		File Folder	
Manuals		File Folder	
ForgeShell.exe	135 KB	Application	
index.htm	375 bytes	HTML Document	
shell.xml	2.58 KB	XML Document	

5. Double-click ForgeShell.exe.

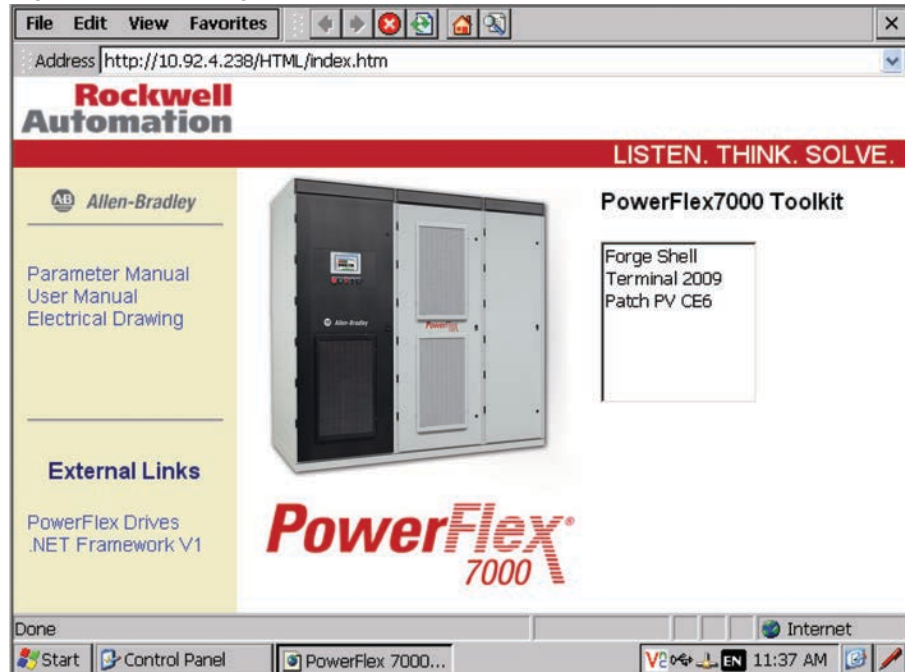
When launching a program from the drive, you may be presented with two dialogs. The first asks to Run or Save the program. Click “Run” or “Run this program from its current location”. A second dialog asks to verify the publisher of the software. Click “Run”.

Open Forge Shell from a Webpage

The preferred way to launch the Forge Shell program from a Desktop or Laptop computer is using the web page of the drive ([Figure 14](#)).

1. Open Internet Explorer.
2. Enter <http://ip_address> in the address bar.
3. Click Forge Shell.

Figure 14 - Drive Web Page



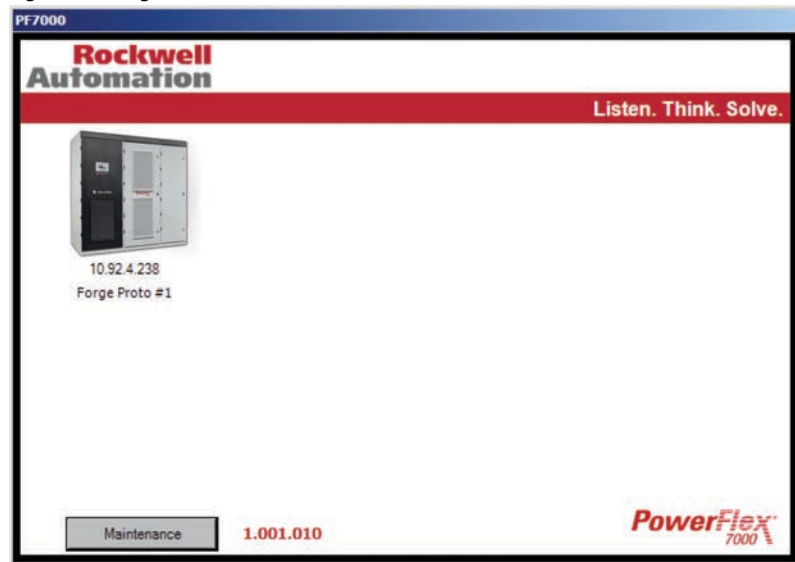
When launching a program from the drive, you may be presented with two dialogs. The first asks to Run or Save the program. Select “Run” or “Run this program from its current location”. A second dialog asks to verify the publisher of the software, select “Run”.

TIP To add a short cut to Windows Internet Explorer, the URL entered in the properties of the short cut is `http://<ip_address>/ForgeShell.exe`, where <ip_address> is the IP Address of the HMI Interface Board module.

IP Setup with Forge Shell

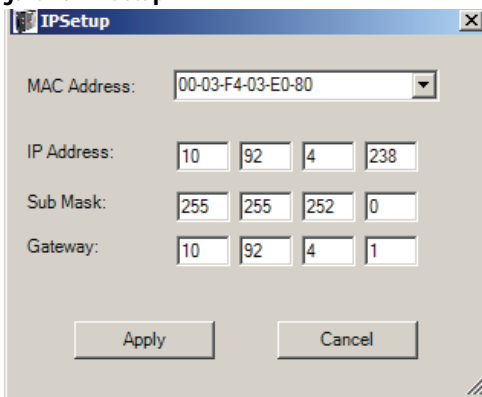
1. Press the 'Maintenance' button ([Figure 15](#)).

Figure 15 - Forge Shell



2. Select IP Setup.

Figure 16 - IP Setup



3. Select the MAC Address in the pulldown menu ([Figure 16](#)) that corresponds to the MAC ID printed on the white label of the HMI Interface Board (see [Figure 79](#)).
4. Enter the IP Address, Sub Mask and Gateway address and click Apply.
This information must be obtained from your network administrator.
If the IP address is set to all zeroes, the module will be configured use a Dynamic IP address assigned by a DHCP server, if one exists on the network.
5. After the HMI Interface Board module has reset in the Forge Shell application, click Maintenance and Refresh.
The configured module now appears with its new IP address.

Forge Shell

Overview

The Forge Shell program is the primary method for accessing the contents of the PowerFlex 7000 Medium Voltage Drive via the HMI Interface Board module.

The program is designed to run on both Windows CE and full operating systems such as Windows XP and Windows 7, although the displayed content will differ depending on the requirements of components on the drive.

The program provides an iconic representation of up to 10 drives, each with an associated menu of accessible content.

Chapter Objectives

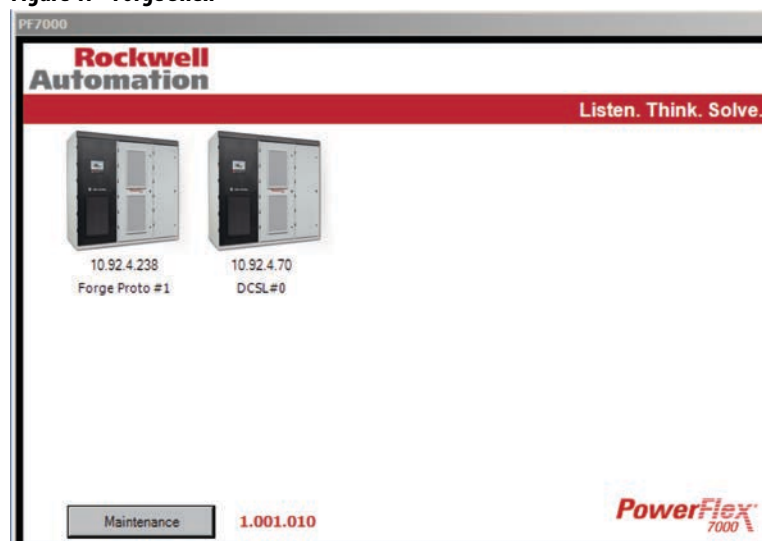
This chapter describes how you use the Forge Shell to interact with the PowerFlex 7000 Medium Voltage Drive. In this chapter, you will learn how to:

- Configure the Forge Shell
- Access the components of a particular PowerFlex 7000 drive.

Using Forge Shell

The Forge Shell automatically discovers all PowerFlex 7000 HMI Interface Board modules on the local network. This discovery process does not extend beyond routers to other networks. Each discovered HMI Interface Board module is represented by the PowerFlex 7000 drive icon displaying the IP Address of the module and the name (if it exists) of the drive ([Figure 17](#)).

Figure 17 - Forge Shell

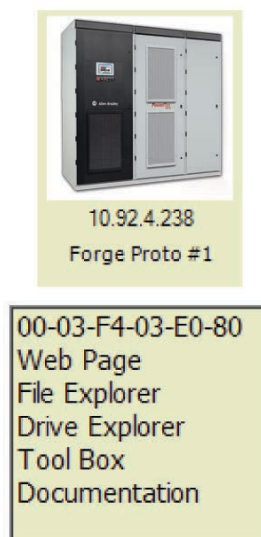


HMI Interface Board modules can also be detected explicitly on external networks if the IP Addresses of those modules are defined in a configuration file. Refer to [LocalShell.xml on page 25](#).

Drive Menu

To access the drive, select the desired Drive icon to open the Drive Menu [Figure 18](#).

Figure 18 - Drive Menu

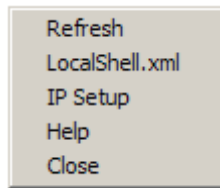


MAC ID	The top entry of the menu is the MAC ID of the HMI Interface Board module. Selecting this menu option provides a dialog typical of Figure 19. From this dialog, the IP Address of the HMI Interface Board module can be changed. If the IP Address is set to 0:0:0:0, the module will use Dynamic IP Addressing or default to 169.254.0.10 (if no DHCP server can be found).
Web page	Uses Internet Explorer to open the main webpage of the drive.
Windows Explorer	Uses Microsoft File Explorer to open an FTP client connection to the HMI Interface Board module. From this connection, the contents of the SD Card on the HMI Interface Board and the Drive files can be accessed.
Drive Explorer	Opens Rockwell Automation's Drive Explorer (if installed previously on the computer), connecting directly to the drive selected by the Icon.
Tool Box	Opens a sub-menu of executable programs which are obtained and launched from the HMI Interface Board module.
Documentation	Opens a sub-menu of all documentation files which are obtained from the HMI Interface Board module. These files are typically in PDF format and consist of User Manuals and Wiring Diagrams.

Maintenance Menu

The maintenance button on the ForgeShell main screen opens the menu in [Figure 19](#).

Figure 19 - Maintenance Menu



Refresh

The discovery process only occurs when the program is launched.

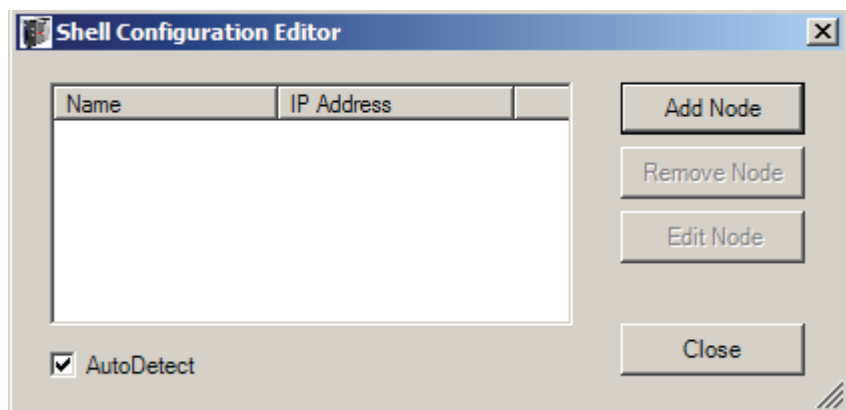
To discover devices which have subsequently come online or have been reconfigured, click Refresh.

LocalShell.xml

The discovery process can be configured to explicitly look for certain drives. Selecting this option, opens the dialog of [Figure 20](#).

When the 'AutoDetect' button is checked, the program automatically discovers all PowerFlex 7000 HMI Interface Board modules on the local network. Drives on a different network can also be discovered, but only if their node IP Address is explicitly added to the list. If the AutoDetect is NOT checked, modules on the local network can still be discovered if they also are added to the Node list.

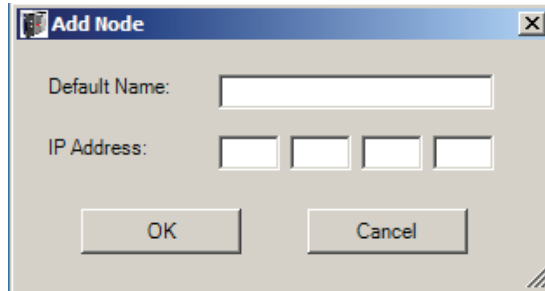
Figure 20 - Shell Configuration



To add an explicit node to the list:

1. Press Add Node ([Figure 21](#)).

Figure 21 - Configuration Node



2. Enter the IP Address of the HMI Interface Board module to be discovered.

The Default Name is the name that will be associated with the Drive Icon if the Drive cannot be discovered, thus using the name from the drive.

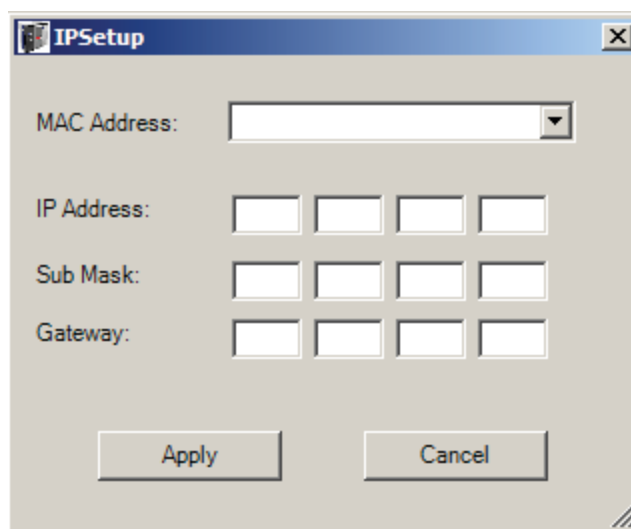
3. Click OK to add this drive node to the list.

Nodes are removed or edited by selecting the desired node from the list and pressing the appropriate push button.

IP Setup

The IP Setup from the maintenance menu opens the dialog of [Figure 22](#). It works similar to the IP Setup of the Drive Menu, except this dialog performs a discovery process to find all HMI Interface Board modules on the local network. The MAC Address of all modules are presented in a drop down list from which the desired module can be selected.

This method is useful when configuring HMI Interface Board modules on a network for the first time. These modules may not be correctly configured with an IP Address for the network, but are still detectable via the MAC Address via this method.

Figure 22 - Maintenance IP Setup

From this dialog, the IP Address of the HMI Interface Board module can be entered or changed. If the IP Address is set to 0:0:0:0, the module uses Dynamic IP Addressing or defaults to 169.254.0.10 (if no DHCP server can be found).

Help

For the discovery process to work, the PC on which Forge Shell is running must allow UDP traffic on Port 20034. Some firewalls may block this traffic. Doing so results in no modules showing within the Forge Shell program.

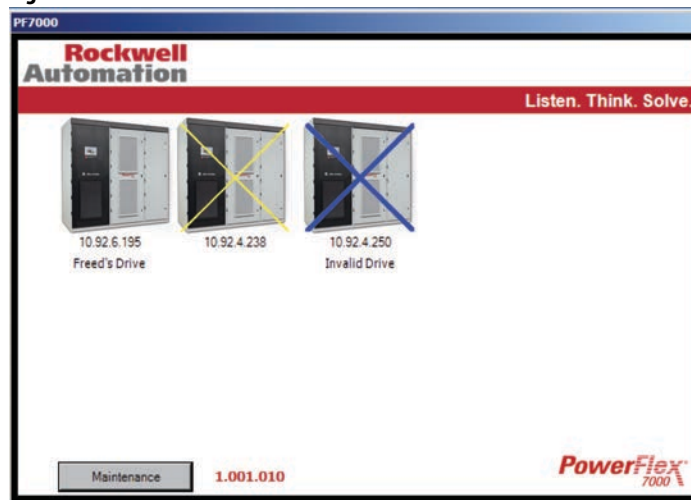
Close

Click Close to terminate the Forge Shell program. Clicking on the PowerFlex 7000 logo in the bottom right corner of the window also closes the program.

Troubleshooting

The icons displayed in the Forge Shell program can take on three forms as shown in [Figure 23](#).

Figure 23 - Drive Icon Status



A normal icon (with no X) is a HMI Interface Board module and drive which is currently online and active. The name displayed for the drive is that obtained from the Drive. If the name is missing, then no name has been assigned to the Drive.

An icon with a Yellow X is a module which has been discovered automatically, but is unable to communicate to its associated drive. It will have no name associated as the only name could come from the drive itself. This can occur for a couple of reasons:

- The HMI Interface Board has powered up, but the drive has not synchronized with the HMI Interface Board. Wait 30 seconds and use the Refresh option of the Maintenance button to initiate another discovery process.
- The drive firmware in the associated drive is earlier than FRN 8.001 and is unable to communicate with the HMI Interface Board module. Update the drive firmware.
- The drive is in Download Mode. This drive will also present an “Invalid Response” error message indicating the “Drive returned an error on connection xxx.xxx.xxx.xxx”.
- There are more than five simultaneous Ethernet/IP connections to the drive.

When a blue X is over the drive icon, this module was explicitly defined in the Node List, but no communications could be made to that node. The name displayed is the name that was supplied with the Node entry. Problems causing this include, but are not limited to:

- Drive is powered off
- HMI Interface Board is not plugged into network
- Node address is not reachable on the network.

Drive Terminal Application

Overview

The Drive Terminal for the PowerFlex 7000 Medium Voltage Drive is a software application which can be run on many Windows based systems. The communication to the PowerFlex 7000 drive is via Ethernet. The application is optimized using 640x480 screen resolution.

Requirements

The application will run on the following operating systems provided that the host hardware contains a minimum of .Net Framework 2.0 or .Net Compact Framework 2.0.

- Windows XP
- Windows Vista
- Windows 7
- Windows CE 6

Chapter Objectives

This chapter describes how the Drive Terminal application modifies and obtains information within the drive. In this chapter you will learn how to:

- Configure information associated with the initial drive setup.
- Monitor:
 - Drive parameters
 - Drive Status
- View and Reset Alarm conditions.
- Perform Diagnostic Trending

This chapter deals only with the operation of the terminal application. Specific references to any particular parameter are only for illustrative purposes. Refer to [Publication 7000-TD002__-EN-P](#) for information about actual parameters within a given firmware release.

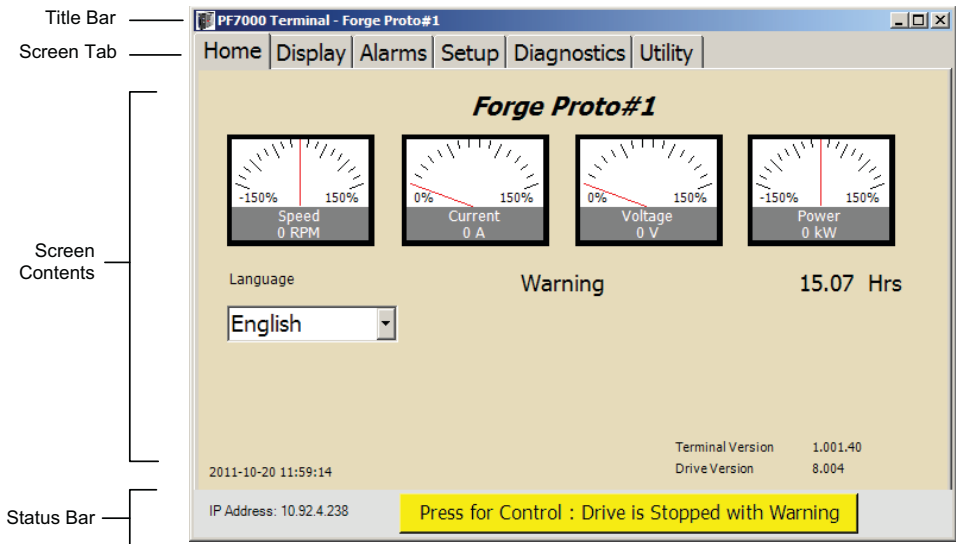
Navigating the Terminal

Depending on the hardware on which this application is running, the tab may be selected via a mouse click, or by touching the tab if using a touch sensitive screen.

Each screen is made up of four distinct areas as shown in [Figure 24](#).

Windows Title	Provides the name of the drive to which the application is currently attached. This name is read from the drive and can be modified. Refer to the section Home Setup.
Screen tabs	Provide access to each of the screens within the application.
Screen contents	The screen contents vary depending on the selected tab, but contain some common elements. Refer to Common Panel on page 32 .
Status Bar	The Status Bar is common to all screens and provides: • The IP Address of the drive connected to Drive status • Access to the Control Panel for operation of the drive. Refer to Control Panel on page 62. • Terminal busy icon to indicate the terminal is processing a transaction and cannot respond to user input at this time.

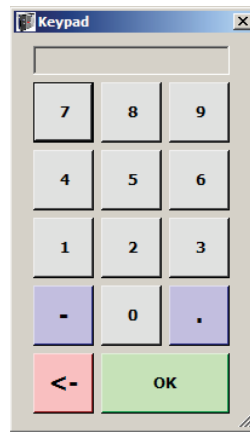
Figure 24 - Typical Screen (Home)



Soft Keypad

Use the Soft keypad to enter data on a touch screen ([Figure 25](#)).

Figure 25 - Soft Keypad



The Soft Keypad is available on various dialogs and screens by pressing the symbol shown in [Figure 26](#).

Figure 26 - Soft Keypad Icon



TIP

The Terminal application is written to make use of a touch screen style of interface. On a touch screen, it is difficult to perform a double-tap, analogous to a mouse double-click, with any degree of accuracy or repeatability. For this reason, the application does not make use of any 'double-tap' type of selection, even with the mouse.

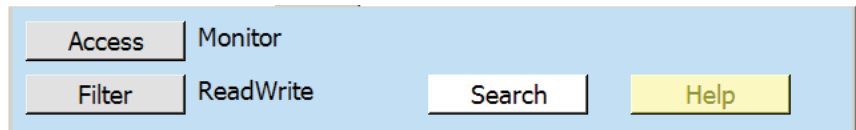
The terms 'click' and 'tap' are interchangeable in this document.

When making parameter selections, a two-step process is typically required. First step is to select the parameter. Second step is to confirm the selection via a push button or, if a list is being displayed, a column header. This is explained in greater detail during the description of the various screens.

Common Panel

The Common Panel ([Figure 27](#)) appears on a number of screens. It provides the same functionality regardless of the screen with which it is associated.

Figure 27 - Common Panel



The Common Panel:

- **Filters Parameters:** The drive can contain a large number of parameters. In order to help reduce the number of parameters to select from or that are displayed, two types of filters can be applied.
- **Searches for Parameters:** As an alternative to looking for parameters in a group, this allows the parameter to be accessed via its name or parameter number.

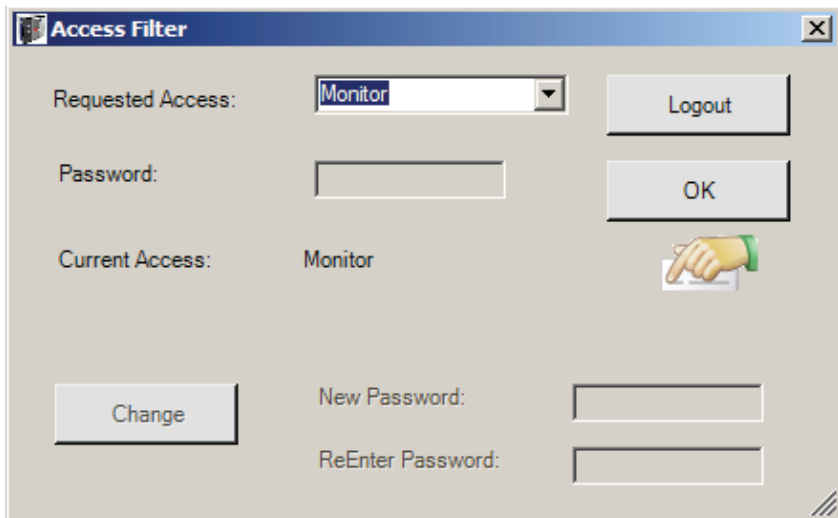
Change the Access Filter

Each parameter has an access level. These Access levels are protected with a PIN. An “Access Denied” dialog appears when an attempted operation does not have sufficient access rights. The terminal only shows parameters for the given Access level or lower. When viewing a parameter, its value can only be changed if the user has the appropriate access level.

To change the Access level:

1. Click Access ([Figure 28](#)).

Figure 28 - Access Filter



2. Select the desired level from the pull-down menu.

3. Enter the PIN (password) for the given level.

The PIN can be entered directly in the 'Password' input box or via the Soft Keypad. If the correct PIN is entered, the "Current Access" will change to the Access level requested.

4. Press OK.

TIP Pressing the Logout push button will return the access level to the default Access level at which no parameters can be modified.

Change the Access Password

The Access Filter dialog can also change the PIN associated with the Access Level. PINs are stored within the drive, not the terminal application.

You must gain access to the PIN level you wish to change.

To change the PIN value:

1. Click Change.
2. Enter the new password into the field or via the Soft Keypad.
The new PIN must be re-entered into the next data entry field.
A status message indicates if the operation was successful.

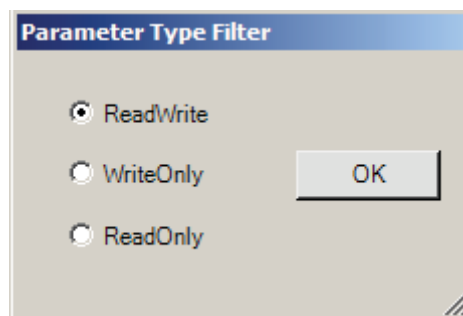
Change the ReadWrite Filter

All parameters can be read, however only some can be written to.

To change the filter that is active:

- Touch or click the desired radio button ([Figure 29](#)) and press OK.

Figure 29 - Parameter Filter



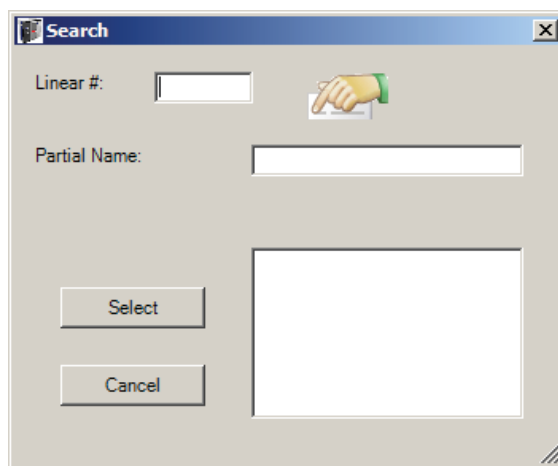
Search for Parameter

There are two methods to search for a parameter, the parameter number or partial name.

Search Parameters using Linear Number

1. Enter the parameter number in the Linear # field ([Figure 30](#)).
The associated parameter appears in the list.
2. Click Select.

Figure 30 - Search Dialog



A parameter can be searched for using a couple of methods.

Search Parameters using Partial Name

1. Type the parameter in the Partial Name field and press Enter.
A list of all associated parameters appears in the list.
2. Select the desired parameter.

TIP The list is not dependant on the Access Level or the current Filter.

3. Press the Select button.

Home

The initial screen displayed when the terminal starts is the Home Screen.

This screen ([Figure 24](#)) displays general information about the drive.

- The drive name, which can be changed in the Setup Screen.
- Four analog style meters. The default meters show Speed, Current, Voltage and Power. The meters can be changed to other parameters within the drive via the Setup Screen.
- The status of the drive.
- A Hobbs style meter giving the running hours of the drive.
- The current date and time.
- The revision of the terminal application.
- The revision of the drive firmware.

Change the Language

1. Select the Language pull-down menu.
2. Select the desired language from the list.

The terminal reloads all strings for the selected language.

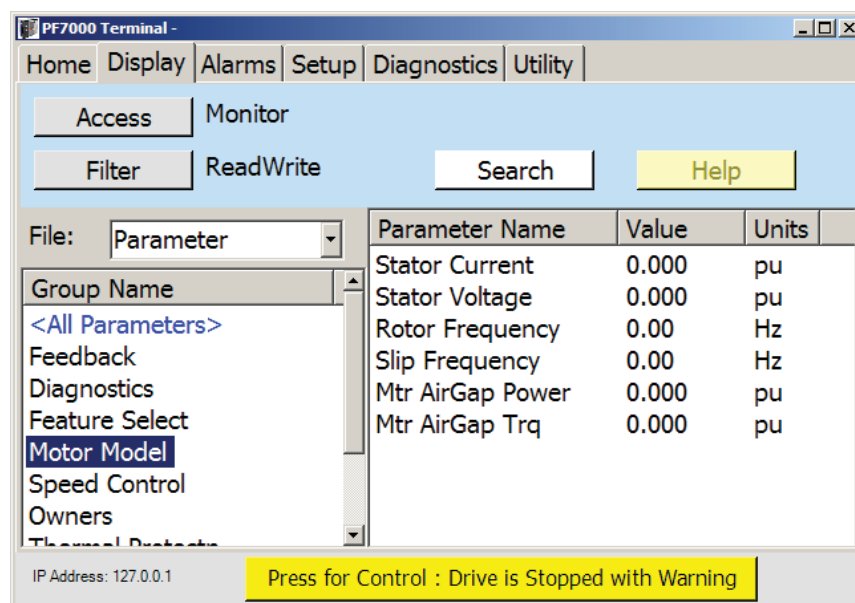
Since a language change requires considerable communications activity, the Control Panel automatically closes to prevent possible communication timeouts with the drive.

TIP Not all language strings are under control of this application and the PowerFlex 7000 drive. Strings which are controlled by the OS (Operating System), such as the "OK" button of a message dialog are determined by the OS Language settings. Search for "Regional and Language Settings" in the OS that you are using for more information.

Display

The display screen, shown in [Figure 31](#), is used to both monitor and make changes to any parameter in the drive.

Figure 31 - Display Screen



The screen is arranged into two panes. The left pane shows the name of the groups within the selected file, while the right pane shows the parameters which are within the selected group. The contents of the two panes are filtered according to current Access Level and the Read/Write filter (see [Common Panel on page 32](#)).

The column header of the left pane is “Group Name”. Pressing this header will cause the group names to be sorted on each press based on:

- normal drive arrangement (group numbers)
- alphabetically
- group access level (sort on a secondary alpha key)

Special to the group pane is the first entry in the list. This entry “<All Parameters>” shows all parameters, regardless of grouping, within the drive which meet the filter criteria. The last entries are also special in that they will show custom created groups which the user has defined. The naming of the custom group is in alternative color (green) to distinguish from the standard group names used in the drive. Custom groups are defined within the Setup Screen.

A custom group is not filtered by the Access Level, but the ability to change the parameter in a custom group still applies based on the current access level.

EXAMPLE A ‘Rockwell’ level parameter may be viewed in a custom group at the ‘Basic’ level, but would not be changeable without first gaining the ‘Rockwell’ access level).

The column headers of the right pane are “Parameter Name”, “Value” and “Units”. Clicking on the Value header displays a dialog which provides additional information for the selected parameter as well as modification of the parameter.

Clicking on the Parameter name header will sort the list based on:

- normal drive arrangement (element number within group)
- alphabetically
- parameter access level (sort on a secondary alpha key)

Editing & Viewing Parameters

When viewing a parameter, the dialog used will be dependant on the type of the parameter, i.e. Value, Binary or Enum.

Value Parameter

The dialog used for a value type of parameter, typical of [Figure 32](#), displays the following attributes about the parameter:

- Default Value
- Minimum Value
- Maximum Value
- Units
- Parameter Number and Name
- Current Value

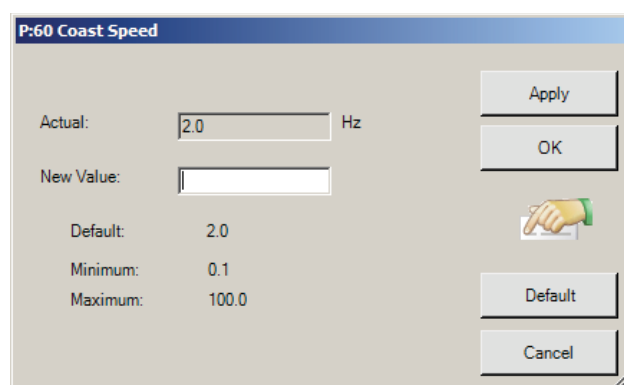
To change the value:

1. Select the New Value field.
2. Enter the new value into the field.
3. Press ‘Apply’ or ‘OK’.

The Cancel button exits the dialog without applying changes.

The Default button places the default value into the ‘New Value’ field.

Figure 32 - Edit Value Parameter



Binary Parameter

The dialog used for a binary type of parameter, typical of [Figure 33](#), shows a descriptive string for each bit position within the parameter. The 'A' column shows the actual state of the bit. The 'N' column shows the new value that has not yet been applied.

To change the state of a bit:

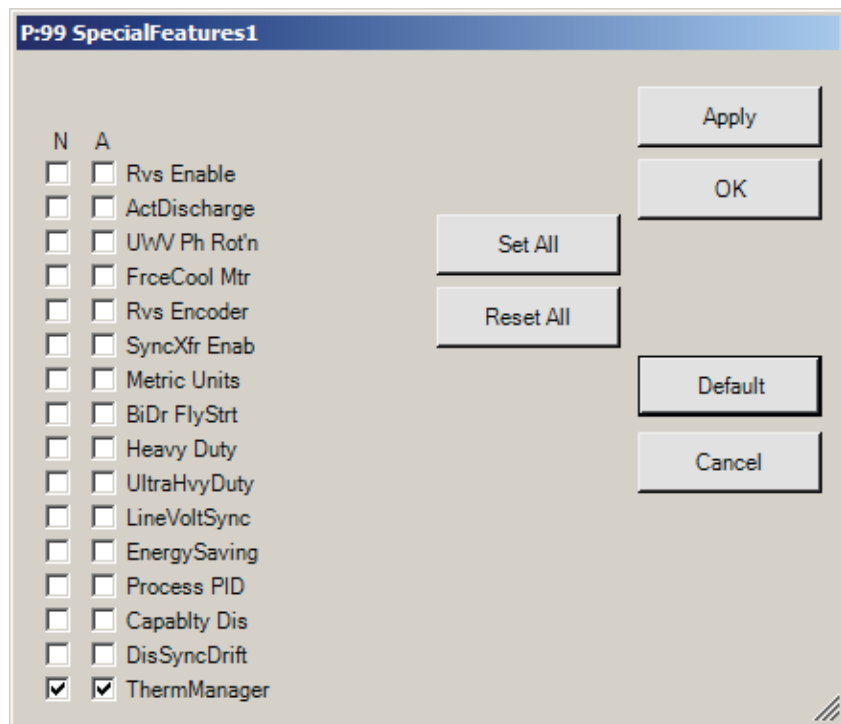
- Click the 'N' check box for the appropriate bit.

TIP To quickly clear all bits, click Reset All.
To set all bits, click Set All.

Apply and OK applies the changes in the 'N' column to the actual parameter.

To leave the dialog without applying any outstanding changes to the parameter, click Cancel.

Figure 33 - Edit Binary Parameter



Enum Parameter

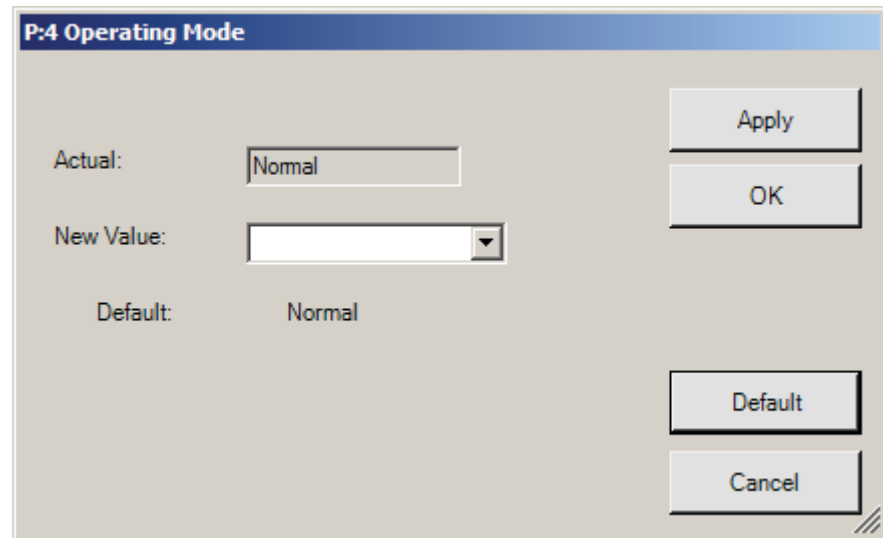
An enum parameter shows a descriptive text for each value within the range of the parameter. The dialog used for an enum parameter is typical of [Figure 34](#), and shows the following attributes about the parameter:

- Parameter Number and Name
- Default Value
- Current Value

To change the value of the parameter:

1. Select the New Value pulldown menu.
 2. Select the new value which will be displayed in the 'New Value' field.
The Default button selects the default value for the 'New Value' field.
 3. Press the 'Apply' or 'OK' button.
- To leave the dialog without applying the new value, press Cancel.

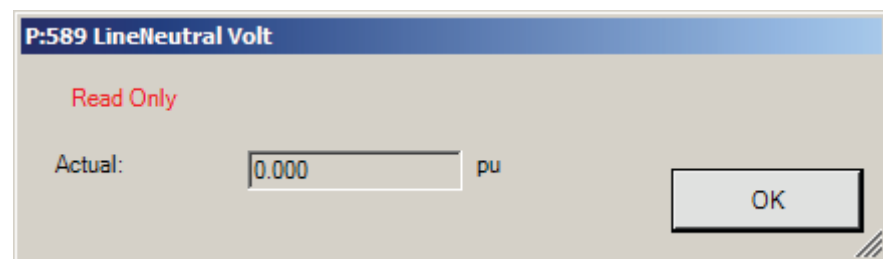
Figure 34 - Edit Enum Parameter



Read Only Parameters

Read only dialogs ([Figure 35](#)) are similar to those used to edit a parameter, but lack the editing controls.

Figure 35 - Read Only Parameter

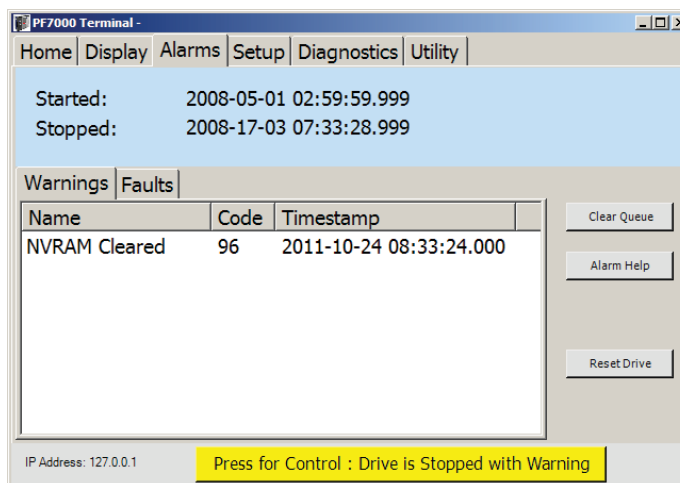


Alarms

In the PowerFlex 7000, “Alarms” refer collectively to ‘Faults’ and ‘Warnings’. The Alarms screen, typical of [Figure 36](#), provides two tabs to independently show the Warnings or the Faults.

TIP The Alarm Screen Common Panel shows a timestamp for the last time the drive was started and stopped for any reason.

Figure 36 - Alarm Screen



Select the desired queue by selecting the tab. The operation of both queues is identical.

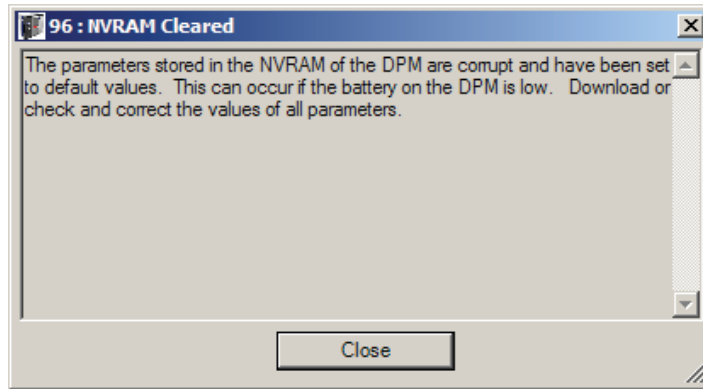
The queue contains three columns:

- The name of the alarm,
- A code associated with the alarm
- Timestamp

Alarm Help

Additional information about the alarm is available by selecting the alarm and pressing Alarm Help. A dialog typical of [Figure 37](#), will be displayed.

Figure 37 - Alarm Help



Clearing Alarm Queue

The 'Clear Queue' button clears the currently selected alarm queue. This operation may only be performed if the Access level is Basic or greater.

The 'Reset Drive' button resets the drive but does not reset the queue.

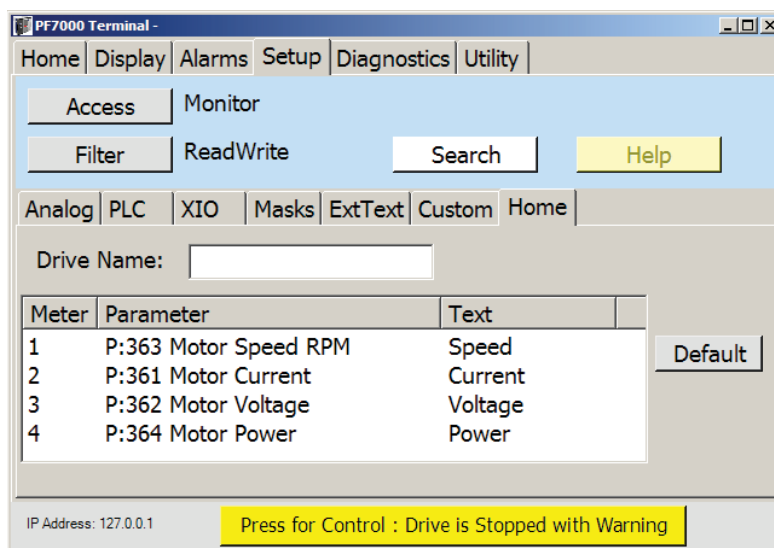
Setup

The Setup group of screens, typical of [Figure 38](#), modifies the same drive parameters as the Display screen, but in a task oriented, context-friendly format. It is intended that this screen will be used for drive commissioning.

The Setup screen consists of sub tabs containing panels to perform operations:

- **Analog** - assigning parameters to, scaling of and calibrating Analog ports
- **PLC** - assigning parameters to PLC ports
- **XIO** - assigning XIO cards and configuring outputs
- **Masks** - configuring the fault masks
- **ExtText** - defining the text assigned to external fault inputs
- **Custom** - defining custom display screens
- **Home** - modifications to the Home Screen

Figure 38 - Setup Screen Group

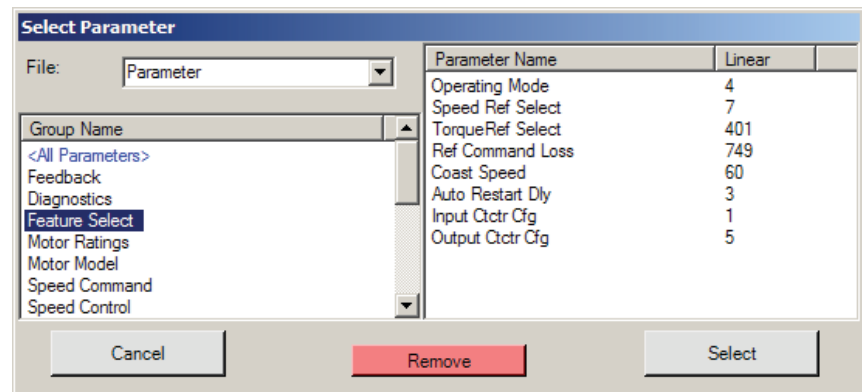


Assign a Parameter

Numerous Setup screens require the user to select and assign a parameter to a function using the same method.

1. Select the desired function from the first column.
2. Press the 'Parameter' column heading to open the Select Parameter dialog ([Figure 39](#)).

Figure 39 - Select Parameter



TIP Alternatively, after selecting the associated function from the first column, the 'Search' button will find the parameter by Parameter number or by Name.

3. Select the desired group name.
A list of parameters are presented in the right panel.
4. Select the desired parameter you wish to assign to the current function.
5. Press Select to apply the change.

Pressing the 'Remove' button unassigns any parameter from the current function.

Pressing the 'Cancel' button aborts the selection process.

TIP Click Group Name or Parameter header to sort the column based on:

- normal drive arrangement (group numbers)
- alphabetically
- group access level (sort on a secondary alpha key)

Clicking on the Linear header sorts the list based on parameter number.

Configure Analog Ports

The Analog Setup screen, typical of [Figure 40](#), shows all analog output ports of the drive to which a parameter can be assigned.

Assign a Parameter to an Analog Output Port

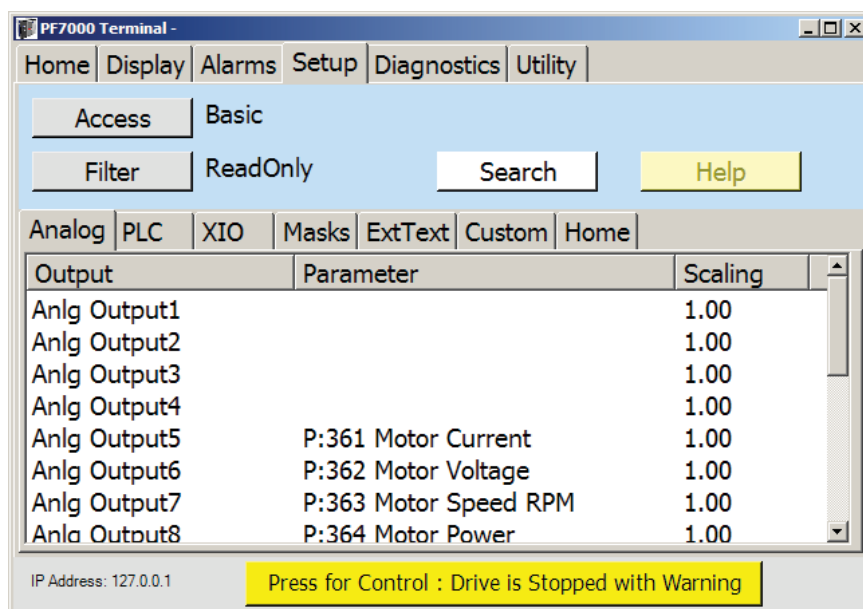
1. Select the desired port from the Output column.
2. Press the Parameter column header.

Alternatively, press the Search button (see [Search for Parameter on page 34](#)).

Some of the analog outputs also contain a 'Scaling' parameter which is associated with the output.

Pressing the 'Scaling' column header will provide a Value Parameter dialog to edit the associated scaling parameter.

Figure 40 - Analog Port Setup



Configure PLC Link

The PLC Setup Screen ([Figure 41](#)) shows the parameter links which are assigned to PLC Input and PLC Output links.

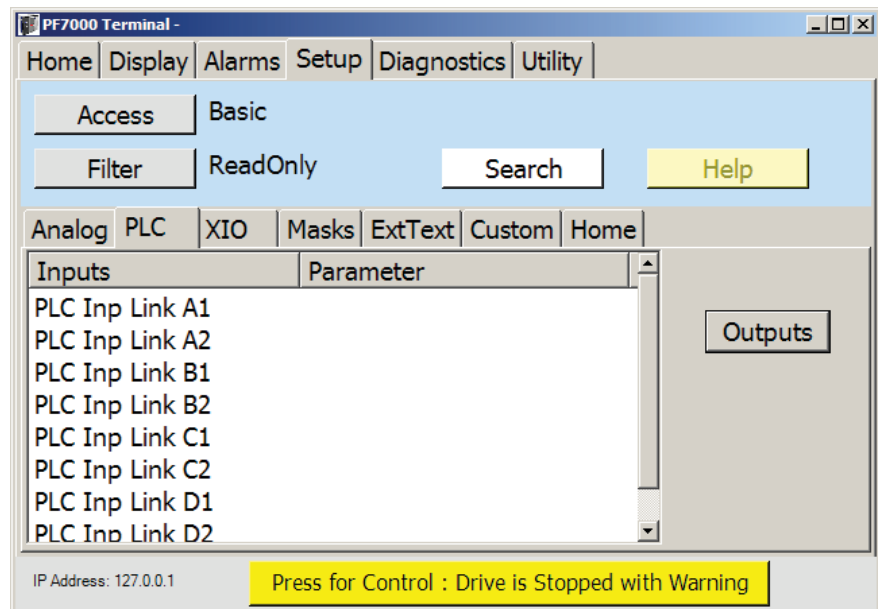
Toggle between 'Inputs' and 'Outputs' by pressing the respective button on the right side of the screen.

Assign a Parameter to an Analog Output Port

1. Select the desired link from the left column ([Figure 41](#)).
2. Press the Parameter column header.

Alternatively, press the Search button (see [Search for Parameter on page 34](#)).

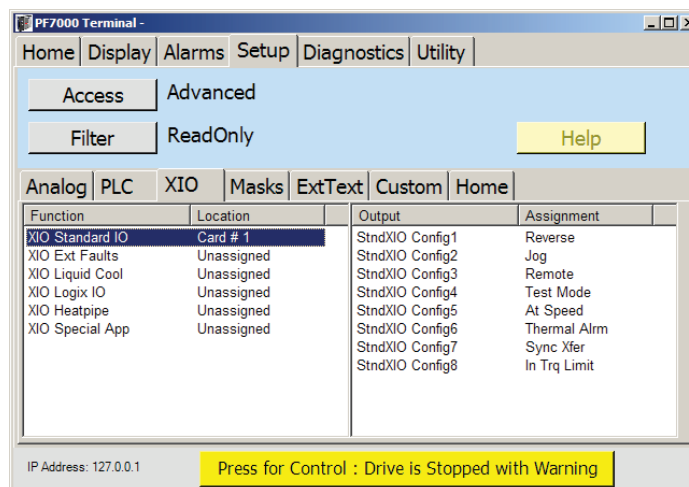
Figure 41 - PLC Link Setup



Configure XIO

The XIO configuration screen (Figure 42) provides two XIO functions. The left pane is used to assign functional group of I/O to a particular card number. The right pane is used to assign a selectable function to the outputs of the Standard I/O card.

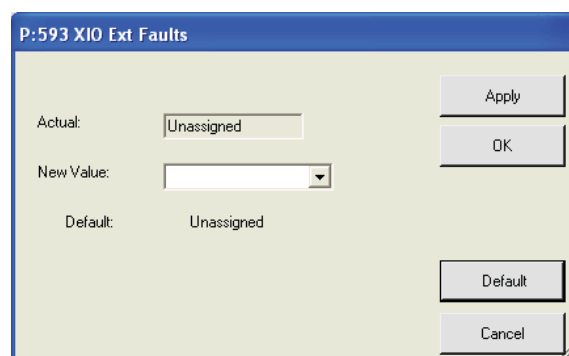
Figure 42 - XIO Configuration Setup



Assign an XIO Card

1. Select the 'Function' from the list in the left panel.
2. Press the 'Location' column header to open an Enum Parameter dialog.

Figure 43 - Enum Parameter Dialog



3. Open the pulldown menu and select a New Value.
4. Press OK.

Assign a Configurable Function to the Outputs on the Standard XIO Card

1. Select an 'Output' from the right panel.
2. Press the 'Assignment' column header to open an Enum Parameter dialog.
3. Open the pulldown menu and select a New Value.
4. Press OK.

Enable or Disable Fault Masks

The drive contains numerous fault masks which enable or disable whether that particular fault occurs.

The screen typical of [Figure 44](#) contains two panels. The left shows the faults which are enabled and the right panel shows the faults which are disabled.

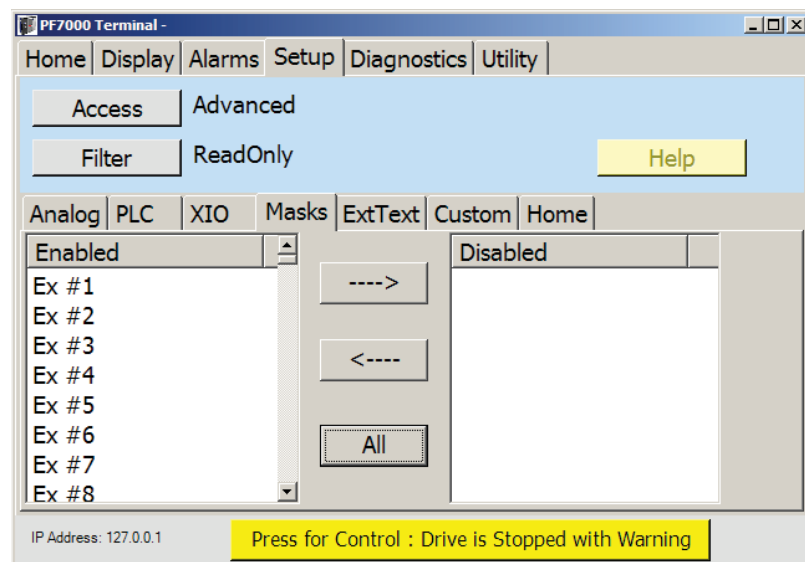
Clicking on the column headers sorts the list by either standard drive ordering or alphabetically.

To change the status of a particular fault:

1. Select the fault you wish to enable or disable.
2. Press the arrow (----> or <----) key to move the fault to the other state.

TIP To move all the masks to the other state, select a fault in the group and press 'All'.

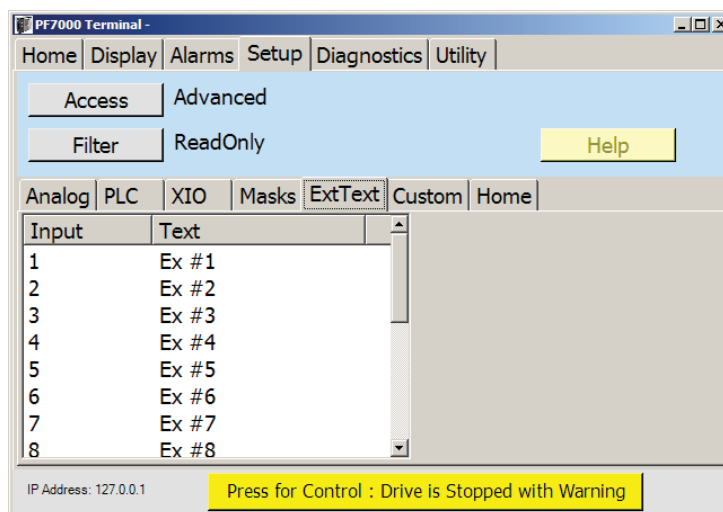
Figure 44 - Masks Setup



Customize External Alarm Text

The PowerFlex 7000 drive contains an XIO card which is used for customer defined alarms. A custom text string can be assigned to the inputs of this card via this setup screen, typical of [Figure 45](#).

Figure 45 - External Alarm Text Setup

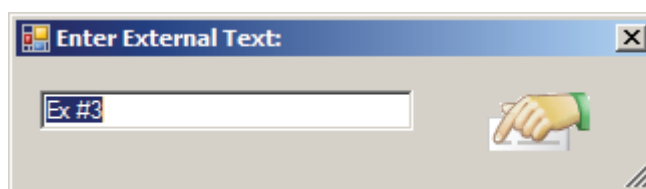


To change the assigned text:

1. Select the 'Input' to be changed in the left column.
2. Press the 'Text' column header ([Figure 45](#)).
3. Using a keyboard, enter the desired text.
4. Press Enter to exit.

TIP This text is stored in the drive and does not change when an alternative language is selected.

Figure 46 - External Text Editor

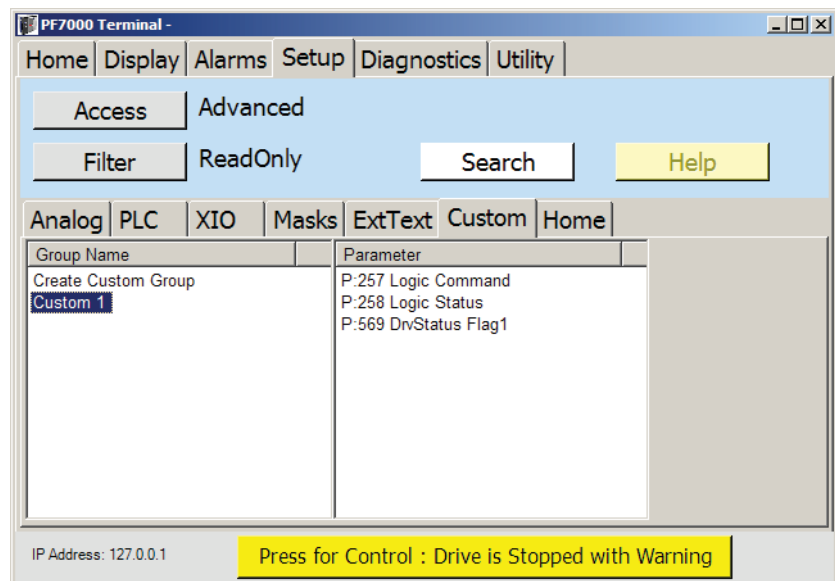


Create a Custom Group of Parameters

The custom setup (Figure 47) arranges user-definable groups. These groups are displayed wherever the normal File-Group-Parameter arrangement of predefined drive groups is displayed. These are typically found during a Select Parameter operation or on the Display screen.

Since the custom group name could conflict with a predefined drive group, all custom groups are displayed in the color green in a list. The custom group names are enclosed using chevrons to further distinguish them.

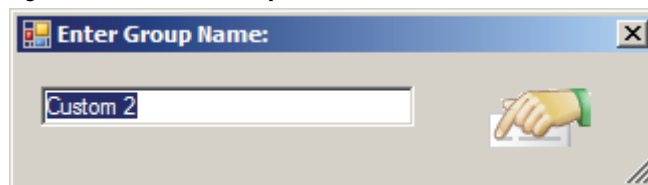
Figure 47 - Custom Setup



To create a new group:

1. Select “Create Custom Group” from the left panel.
2. Press the ‘Group Name’ column header to open Enter Group Name dialog (Figure 48).

Figure 48 - Edit Custom Group Name



3. Use the keyboard to change the default name.
4. Pressing enter or the ‘Soft Keypad Icon’ to accept the changes.

A new, but empty group will now be displayed. Adding parameters to this new group is the same as editing an existing group (see [Assign a Parameter on page 43](#)).

TIP

The group assignments are stored locally on the terminal where this application is running. These defined groups will not be available on any other terminal, unless that terminal also defines the same groups. The custom group definitions are stored in a file called `customdisplay_k1.xml` which is typically in the 'base' directory.

To change the name of an existing group:

1. Select a group from the Group Name column.
2. Press the Group Name column header.
3. Enter the new name in the dialog and press enter.

To add parameters to an existing group:

1. Select a group from the Group Name column.
2. Press the Parameter column header in the right panel (see [Assign a Parameter on page 43](#)).

To remove an existing parameter from a group:

1. Select a group from the Group Name column.
2. Select the desired parameter from the right panel.
3. Press the Parameter column header.
4. Press Remove.

To delete a group:

1. Select a group from the Group Name column.
2. Press the Group Name column header.
3. Delete the current name and press enter.

Home Setup

The Home setup screen (Figure 49) changes the information found on the Home screen. From this screen, the name of the drive can be changed. The parameters assigned to the four meters on the screen can be modified along with the associated text for the meters.

Figure 49 - Home Setup

Meter	Parameter	Text
1	P:363 Motor Speed RPM	Speed
2	P:361 Motor Current	Current
3	P:362 Motor Voltage	Voltage
4	P:364 Motor Power	Power

To change the drive name:

1. Click the data field associated with Drive Name.
2. Edit the name of the drive and press enter.

To change the parameter associated with a meter:

1. Select the desired Meter.
2. Press the Parameter column header (see [Assign a Parameter on page 43](#)).

To change the name associated with a meter:

1. Select the desired Meter.
2. Press the Text column header to open a dialog in which the meter name can be edited.
3. Press Enter to exit.

TIP

Pressing the Default push button will assign all four meters to the default parameters and default names.

Text associated with a meter is stored within the drive and does not change when an alternative language is selected.

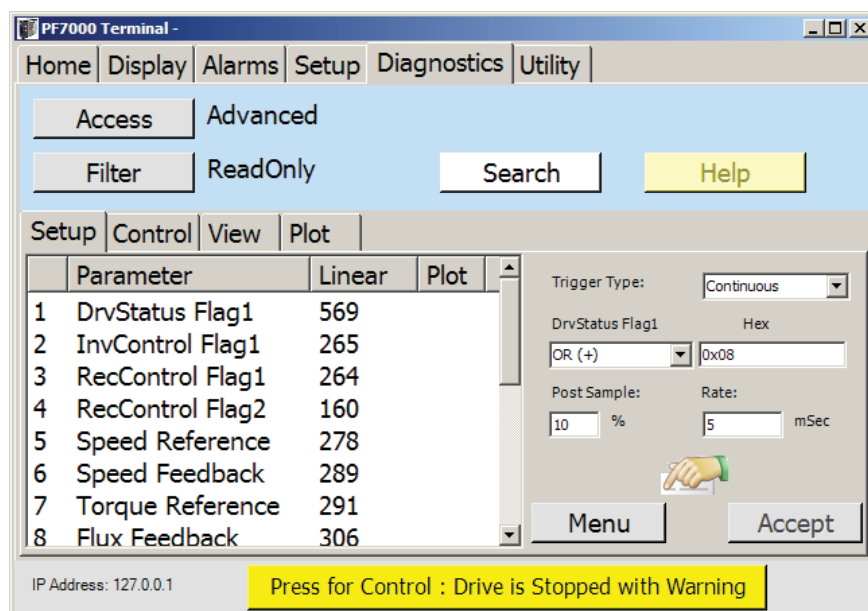
Diagnostics

The PowerFlex 7000 drive can capture parameters on a real-time basis for later analysis.

The Diagnostics screen, typical of [Figure 50](#), consists of sub panels used to:

- Configure the diagnostic setup
- Control and provide status of the operation of the data collection.
- View the collected data in tabular format
- View the collected data in a plot

Figure 50 - Diagnostics Screen



Assign a Parameter to a Trace

The data is captured to a number of traces.

To assign a parameter to a trace:

1. Select the desired trace.
2. Select the Parameter column header. See [Assign a Parameter on page 43](#).

If the parameter number is known:

1. Select the desired trace.
2. Press the Linear column header.

This opens the Soft Keypad. The parameter number can be directly entered.

Parameters can also be selected for assignment by using the 'Search' button.

Parameters are not plotted by default.

To setup the parameter to appear in the plot:

1. Select the desired trace.
2. Press the Plot column header.

The trace is removed from the plot in a similar manner.

Diagnostic Trigger

The trigger variable is always based on the first trace parameter.

The trigger type is defined by the drive as either:

- Single – the capture will only be triggered once and then must be manually armed again for an additional trigger.
- Continuous – the capture will be re-armed each time the drive starts or when manually re-armed.

The trigger condition is set from a pulldown menu and consists of:

- Greater then (>)
- Less then (<)
- Equal To (=)
- Not Equal To (!=)
- AND (&)
- NAND (N&)
- OR (+)
- NOR (N+)

The value the trigger condition is being applied to is entered by selecting the data field and then clicking on the Soft Keypad Icon. Depending on the type of parameter assigned to trace 1, the following dialogs are possible:

- Value Parameter – the soft keypad will be displayed in which the value can be directly entered.
- Binary Parameter – Select the applicable check boxes and press OK ([Figure 51](#)).
- Enum Parameter – Select the desired value and press OK ([Figure 52](#)).

Figure 51 - Binary Trigger Data

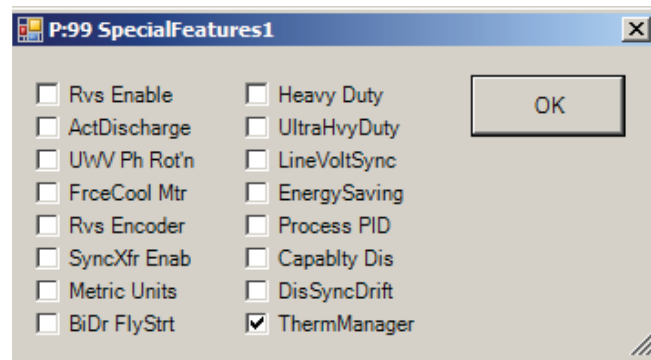
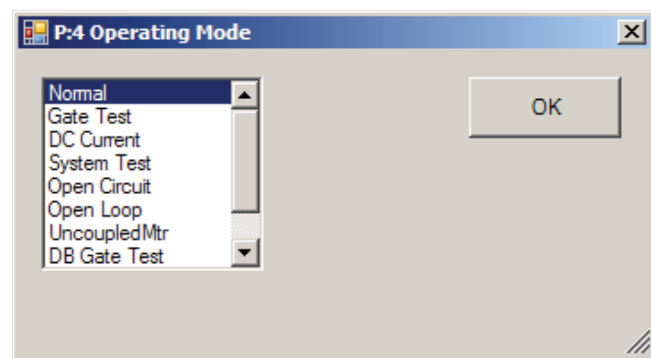


Figure 52 - Enum Trigger Data



Post Sample Value

The Post Sample value can be set from 0...99%.

To adjust the value:

1. Select the Post Sample field.
2. Press the Soft Keypad Icon and enter the desired value.
Alternatively, a keyboard can be used to type directly into the field.
3. Press OK to accept.

Rate Value

The Rate of which the data is captured can be set from 0...20,000 mSec. A value of 0 will capture the data as quickly as possible and is determined by loading of the drive processor.

To adjust the rate value:

1. Select the Post Sample field.
2. Press the Soft Keypad Icon and enter the desired value.
Alternatively, a keyboard can be used to type directly into the field.
3. Press OK to accept.

TIP The setup and trigger conditions are sent to the drive when the 'Accept' button is pressed or another screen is selected. This also arms the diagnostics trigger.

Save and Retrieve Diagnostic Setups

Any number of configured setups can be saved to any media accessible to the terminal.

To save a configuration:

1. Press the Menu button.
2. Select Save.
3. Enter a filename and Press Save.

To retrieve a stored setup:

1. Press the Menu button.
2. Select Load.
3. Select the stored configuration file and Press Open.

TIP The drive contains a default diagnostic setup.
Press Menu and select Default to load the default configuration.

Diagnostic Control

The control screen, typical of [Figure 53](#), shows the current status of the data capture and provides a means to control the data capture process.

Last Trigger shows a time stamp (if available) when the last trigger occurred. The status of the data capture shows:

- Stopped
- Running
- Triggered
- Force Triggered

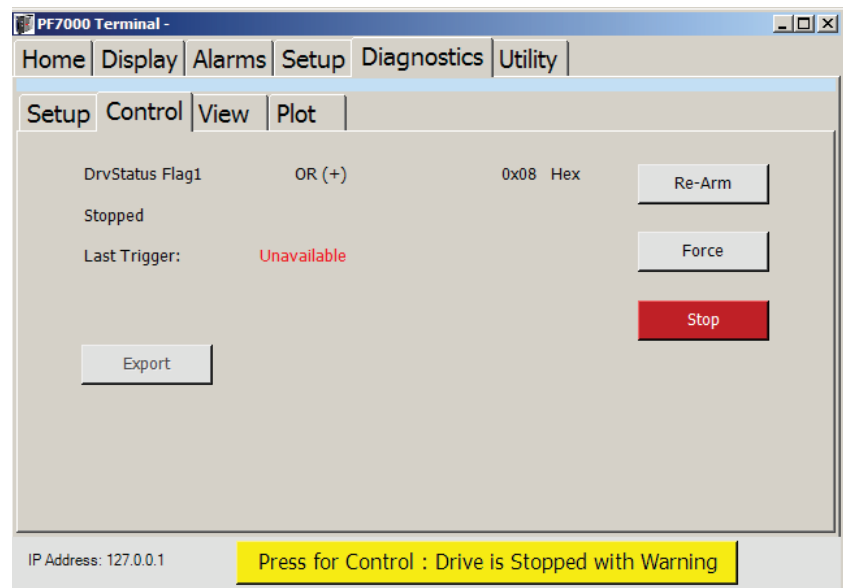
When a trigger is stopped, it can be Re-Armed by pressing the 'Re-Arm' push button.

While the data collection is running and waiting for a trigger condition to occur, the user can elect to unconditionally trigger the data collection by pressing the 'Force' push button.

If the data collection process is to be aborted, press the 'Stop' push button. This will allow the previous capture to be viewed. Once a trigger condition occurs, the previously captured data is overwritten.

The 'Export' push button is currently not active.

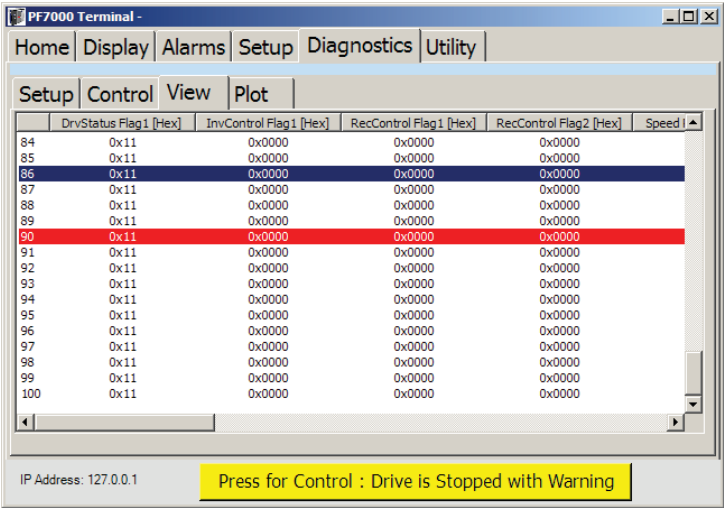
Figure 53 - Diagnostics Control



Diagnostics View

Each trace is a column in the view window (Figure 54).

Figure 54 - Diagnostics View



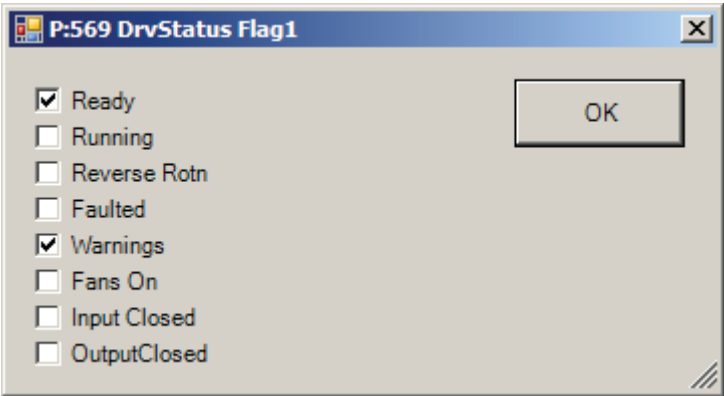
Decode Binary Data

The value can be decoded for data which is binary in nature.

1. Select the desired capture point (row).
2. Pressing the desired column header (Figure 54).
3. Select the desired condition to decode.
4. Press OK.

The collection point at which the trigger condition occurred will be highlighted in RED.

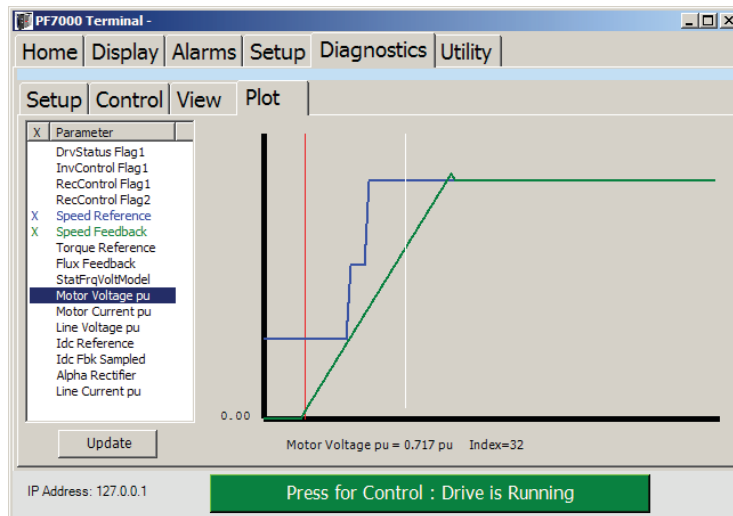
Figure 55 - Diagnostics Binary Decode



Diagnostics Plot

The plot screen ([Figure 56](#)) shows relationships and trends amongst the captured data.

Figure 56 - Diagnostics Plot



Trace parameters which were selected on the Diagnostics Setup screen are plotted automatically when the screen is selected.

Add or Remove Parameters

1. Select the desired parameter.
2. Press the X column header to add or remove the parameter.
3. Press Update to redraw the new plot.

TIP Colors assigned to the parameter name, correspond to the colors used in the plot.

Show True Value of a Captured Point

All values in the plot are normalized. To see the true value of a captured point, even if it is not plotted:

1. Select the desired parameter from the list.
2. Click on the graph at the point where the desired value is sought.

The location is marked by a white marker and the true value is shown at the bottom of the plot.

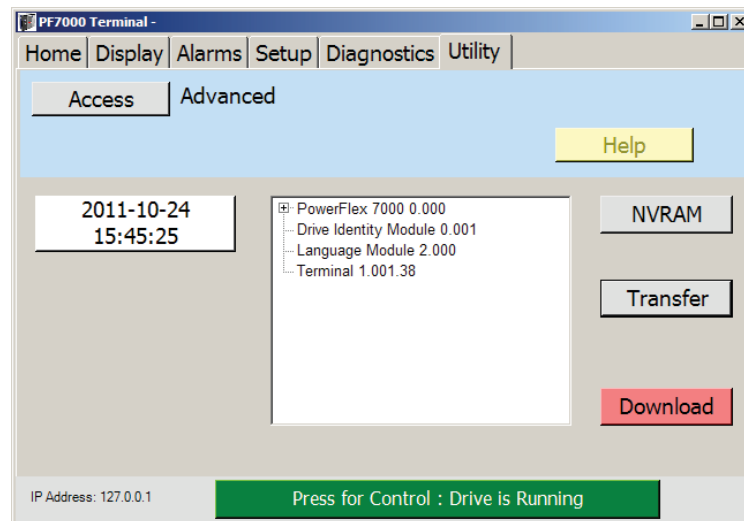
Other parameter values can be read without moving the marker point by selecting the desired parameter from the list. The red marker shows the trigger point.

Utility

The utility screen, typical of [Figure 57](#), can:

- Set the time and date within the drive
- Show revision levels of all drive components
- Transfer parameters between NVRAM and working RAM on the drive.
- Transfer parameters between the drive and a file on any media accessible by this terminal.
- Place the drive into Download mode for new firmware and modules.

Figure 57 - Utility Screen



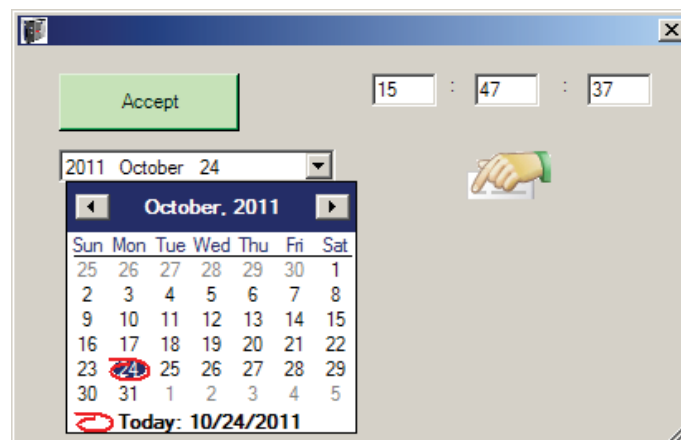
Set Date and Time

The current time and date is shown on the screen.

To change the clock within the drive:

1. Press the displayed time and date ([Figure 57](#)).

Figure 58 - Setting the Clock



2. To set the time, click on the hours:minute:seconds field and enter the desired value using a keyboard or the Soft Keypad Icon.

To change the date, select the pulldown menu and select the new date using a keyboard or the Soft Keypad Icon.

3. Press Accept to change the value in the drive.

Display Drive Revision Levels

The center panel shows a tree view of all the modules within the drive and the associated revisions of each of the modules. The tree can be expanded or collapsed by clicking on the '+' symbol.

Save and Restore Parameters

Parameters are stored and retrieved from either internal NVRAM or any external file accessible by the terminal.

NVRAM Operations

Operations are carried out on the NVRAM within the drive by pressing the 'NVRAM' button. A list of operations can then be selected from:

- Init – Set all parameter values in the drive to their default values.
- Load – Transfer the saved parameters from the drive's NVRAM into the working RAM.
- Save – Transfer the current working RAM set of parameters to NVRAM.

Parameter Set Operations

The complete set of parameters can be stored and retrieved from any media accessible by the terminal. The operation is carried out by pressing the 'Transfer' button, resulting in two operations:

- Drive to File – upload the parameters from the drive to a file.
- File to Drive – download the parameters previously saved in a file to the drive.

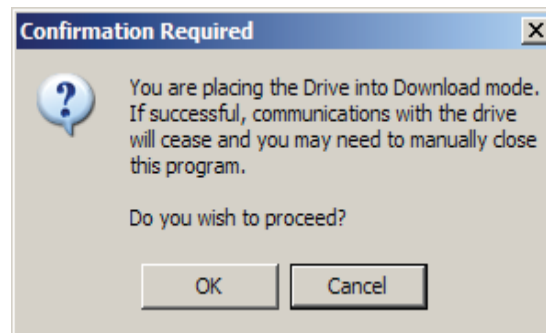
In both cases, a dialog will open allowing the file to be selected. The file extension is .CSF which is the same file format used by low voltage drive tools (i.e. Drive Tools, Drive Explorer) to store parameter files.

Place the Drive into Download Mode

To load new firmware or other modules to the PowerFlex 7000 drive, it must first be placed into download mode. A minimum of “Advanced” access level is required to perform this operation.

1. Press Download ([Figure 57](#)).

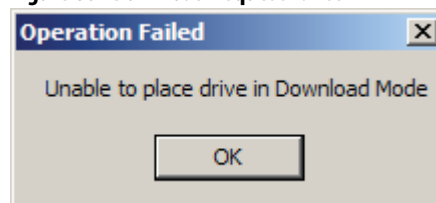
Figure 59 - Download Confirmation



2. Press OK to confirm the task.

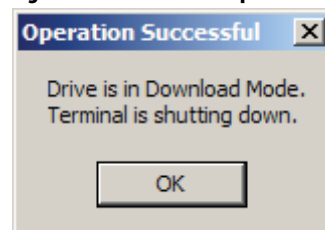
If the operation cannot be completed, the dialog in [Figure 60](#) is displayed and the action will be aborted.

Figure 60 - Download Request Failed



If the request is successful, the message in [Figure 61](#), is displayed and the terminal application closes.

Figure 61 - Download Request Successful



Control Panel

The terminal can control the operation of the drive from a remote location. These functions mimic those which can be found on the drive door if supplied. The available functions are:

- Stop
- Start
- Reset
- Reverse
- Reference Setpoint

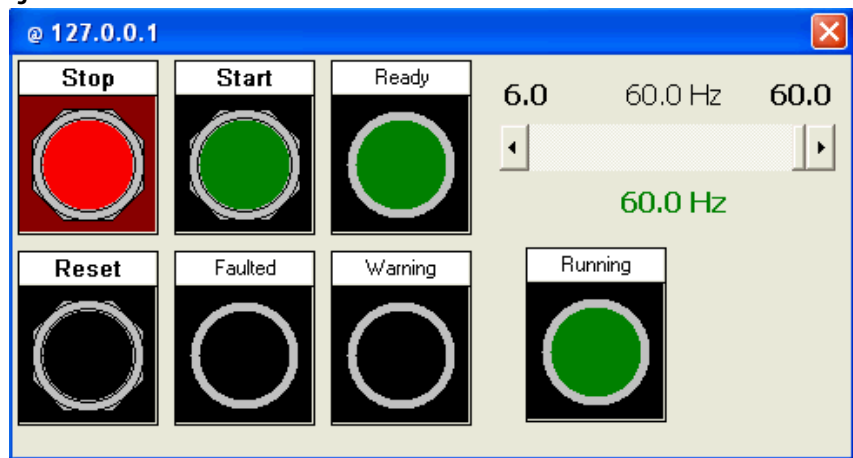
Indications of the drive status are:

- Ready
- Running
- Faulted
- Warning
- Reverse
- Frequency Reference

The Control Panel is displayed by pressing the Status Bar on the bottom of any screen and is typical of [Figure 62](#).

IMPORTANT The top of the Control Panel shows the Drive Name and the Drive's IP address. This is critical information when the PC hardware is running more than one terminal application to different drives.

Figure 62 - Control Panel



The control panel remains open as its own window while other screens are being used. While the panel is active, the terminal must maintain contact with the drive, or the drive will be react based on the "NetSrvr FltAct'n (HMI Interface Board Fault Action) parameter #879.

The Control Panel can be closed when not required without affecting the operation of the drive. Pressing the Status Bar opens and activates the window.

Configure Multiple Control Points

The drive can be configured to allow more than one terminal device to be in control at a time. This is configured through parameter 981 (NetSrvr MPntCntl).

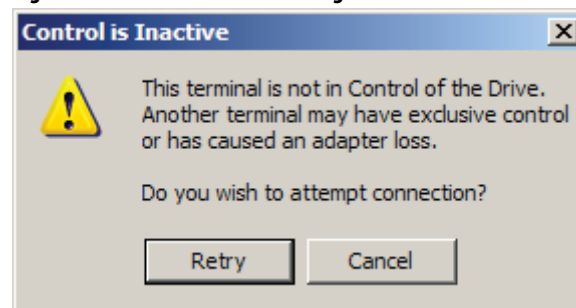
To allow multiple control points:

1. Click Search in the Common Panel ([Common Panel on page 32](#)).
2. Enter 981 in the Linear # field and select the parameter from the list.
3. Select the desired configuration settings from the pulldown menu.
4. Click OK.

The following configuration settings are available:

- Disabled – only one terminal device can control the drive at any given time. If a second terminal device attempts to take control, the message in [Figure 63](#) is displayed. Press ‘Cancel’ as control will not be given to an additional terminal. The other terminal device will need to close its Control Panel before this terminal can take control.

Figure 63 - Control Inactive Warnings



- Enabled Any – Multiple terminal devices can control the drive at the same time. If any of the devices lose communications with the drive, an Adapter Loss event will occur in the drive. Terminals which are still communicating with the drive will receive the message in [Figure 63](#). Press ‘Retry’ in order to reconnect and take control of the drive.
- Enabled All - Multiple terminal devices can control the drive at the same time. A single loss of communications between a device and the drive will not cause an Adapter Loss event. It is only when all connected devices have lost the communications, will an Adapter Loss event occur in the drive.

This feature is only available with Drive Firmware FRN 9.003 or greater. Prior to this release, the default setting of “Enabled Any” is always used.

Configure Adapter Loss Parameter

The Control Bar must actively communicate with the drive on a regular basis. If communication is interrupted between this terminal device and the drive prior to closing the Control Panel, the drive experiences an “Adapter Loss”.

The action the drive takes on an Adapter Loss is determined by the configuration of the adapter. When the terminal is connected through a PowerFlex 7000 HMI Interface Board, this is configured by parameter 879, (NetSrvr FltAct’n).

To configure fault actions on an Adapter Loss:

1. Click Search in the Common Panel ([Common Panel on page 32](#)).
2. Enter 879 in the Linear # field and select the parameter from the list.
3. Select the desired configuration settings from the pulldown menu.
4. Click OK.

The parameter can be configured for:

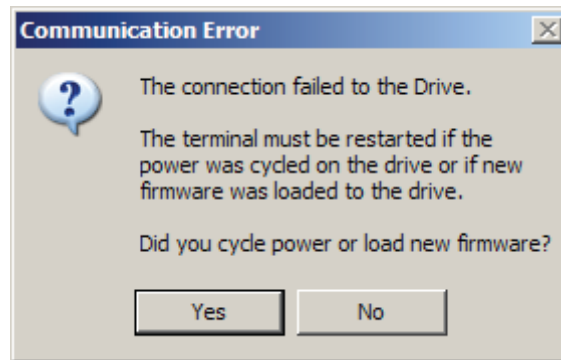
- Fault – Cause a fault in the drive.
- Stop – Issue a stop command to the drive.
- Zero Data – Sets the Reference and Command to zero.
- Hold Last – Speed Reference and command is maintained at the last known state.
- Ref Cmd Loss – Perform the action defined by the Reference Command Loss parameter.

The HMI Interface Board is considered by the drive to be Adapter 6. When an “Adapter6 Force Fault” is encountered, it is the result of this Adapter Loss.

Communications Failure

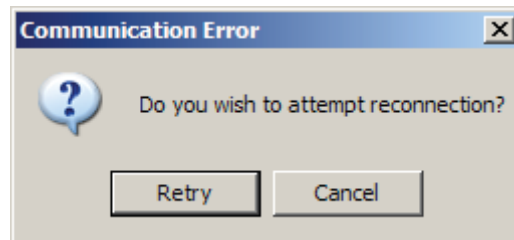
When the terminal application cannot communicate to the drive, a communication error dialog appears ([Figure 64](#)). The error could be the result of a user action, such as putting the drive into download mode from another terminal, or cycling power to the drive. If this is the case, press Yes and the terminal will close.

Figure 64 - Communications Error Notification



If the communications loss was unexpected, it may be the result of the Ethernet connection and might be recoverable. Press 'No', and the message in [Figure 65](#) will be displayed giving the opportunity to attempt to reconnect.

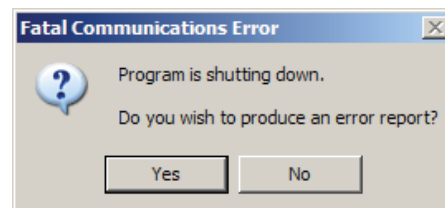
Figure 65 - Communications Error Action



To reconnect, press the 'Retry' button, otherwise press 'Cancel'. If the communication loss was due to loading new firmware to the drive, 'Cancel' should be pressed. If reconnection is successful, the terminal application will continue to function, otherwise this message will continue to reappear.

When it is not possible to reconnect to the drive and 'Cancel' has been pressed, the message in [Figure 66](#) will be shown. Pressing either button closes the terminal application.

Figure 66 - Fatal Communications Error

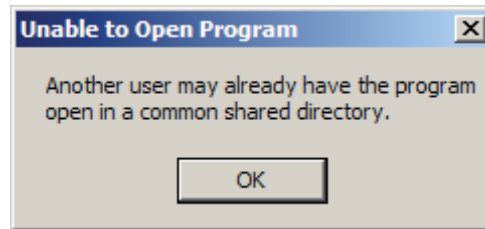


An error report can be produced if required at the request of Product Support for analysis. The report is called "Terminal2009Dump.txt" and is found in the 'Base Directory'.

Unable to Open Program

A device is capable of running multiple terminal sessions, but only if they are to different drives. Any attempt to run more than one session on the same drive results in an error message ([Figure 67](#)).

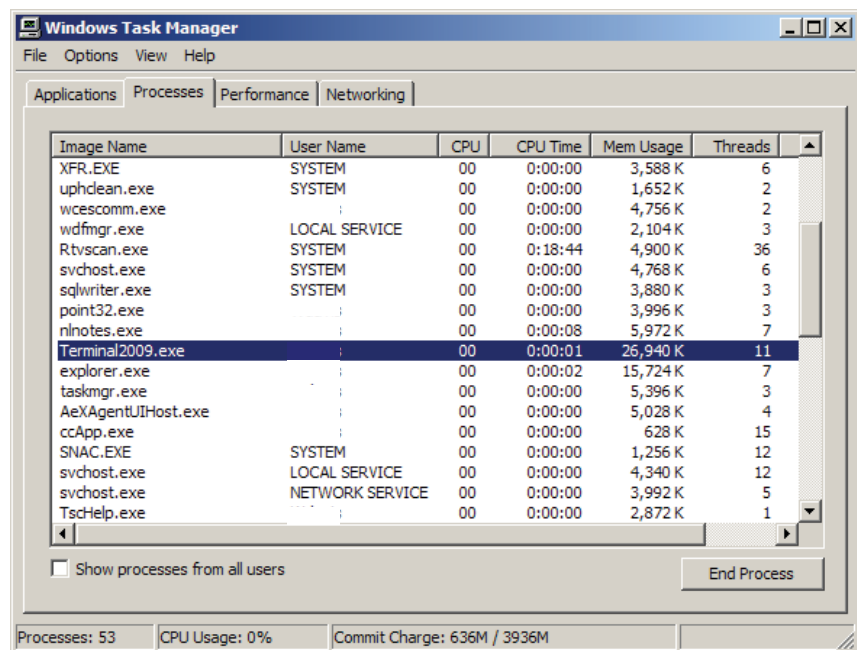
Figure 67 - Unable to Open Program



If this occurs and no other terminal session is evident, the most likely cause is a previous session which did not close down properly due to some unknown error condition.

Task Manager on your computer can be used to check for such an occurrence, typical of that shown in [Figure 68](#). Look for the application named "Terminal2009.exe" and select 'End Process'.

Figure 68 - Task Manager



Windows Explorer

Overview

This section demonstrates the use of Windows Explorer™ as it is available on every Windows based PC. However, other FTP clients however are equally usable.

Chapter Objectives

This chapter describes how the HMI Interface Board transfers files between the PC/Terminal and the PowerFlex 7000 Medium Voltage Drive. In this chapter, you will learn how to:

- Copy and open files directly from the drive.
- Use Windows Explorer to access the drive.

Windows Explorer Tutorial

This section demonstrates the capability of using Windows Explorer with the HMI Interface Board module.

To open Windows Explorer:

1. Right-click the Start button in Windows.
2. Click Open Windows Explorer.
3. Enter <ftp://ip.ip.ip.ip> in the address bar, where ip.ip.ip.ip is the IP address of the HMI Interface Board module.

Alternatively, Windows Explorer can also be launched from the menu within the Forge Shell application (see [Drive Menu on page 24](#)).

The root directory ([Figure 69](#)) shows the revision level of the PowerFlex HMI Interface Board firmware. In this example, it is 1.008D.

There are also three sub-directories:

- Local – for System use only.
- Drive – files which are available from the drive
- Card – files which are stored on the SD Card

Figure 69 - Root Directory

Name ▾	Size	Type	Modified
 PFNetServer1.008D.s19	512 bytes	S19 File	9/9/2005 12:00 AM
 LOCAL		File Folder	9/9/2005 12:00 AM
 DRIVE		File Folder	9/9/2005 12:00 AM
 CARD		File Folder	9/9/2005 12:00 AM

The directories and files can be opened or copied either individually or as a complete directory, the same as you would with any files contained on the hard drive of your PC/Terminal. The operating system uses a default program to open the files.

EXAMPLE A .TXT file is, by default, opened by an ASCII viewer or editor. A .CSV file is opened by Excel™, if your PC knows this file type has been associated with the Excel program and the PC has Excel installed.

Drive Directory

The drive directory contains information about the drive configuration and the reports which can be generated and retrieved from the drive. The directory contains two sub directories as shown in [Figure 70](#).

Figure 70 - Drive Directory

Name ^	Size	Type	Modified
CONFIG		File Folder	4/2/2008 12:00 AM
REPORTS		File Folder	4/2/2008 12:00 AM

Config Subdirectory

The configuration subdirectory displays information about the drive modules ([Figure 71](#)).

Figure 71 - Drive Config Directory

Name ^	Size	Type	Modified
dim.bin	512 bytes	BIN File	11/4/2011 9:28 AM
French.ffw	512 bytes	FFW File	11/4/2011 9:28 AM
FRN09002J.ffw	512 bytes	FFW File	11/4/2011 9:28 AM
parameters.csf	512 bytes	CSF File	11/4/2011 9:28 AM

In this example:

- FRN 9.002J is the firmware of the drive
- French.ffw is the French language database
- The parameters.csf file contains a copy of the drive parameters
- The dim.bin file is for future use and is not active.

TIP New firmware and language modules can be added to the drive by a simple “Copy and Paste” or “Drag & Drop” operation of an .FFW file to this directory. If the drive has not been previously placed into download mode, the files will appear as write protected; similarly, “Copy and Paste” or “Drag & Drop” will not work.

Copy or Restore Drive Parameters

The parameters.csf file contains a copy of the drive parameters.

To store this parameter set:

- Copy this file and store in any desired location.

To restore a parameter set:

- Copy a previously saved .CSF file to this directory.

The .CSF file is the same format as used by Drive Explorer, Drive Tools and other Rockwell Automation tools associated with the PowerFlex family of drives.

Reports Directory

The reports sub-directory is further broken into two sub-directories ([Figure 72](#)).

- The PRINTOUT subdirectory contains all the reports that are formatted to be used by the standard printer on the drive. These reports are simple ASCII text files.
- The DATA subdirectory contains reports that are formatted in the CSV (Comma Separated Variable) format which allows programs such as Excel to open them directly as a spreadsheet.

All of these reports are generated by the Drive on demand. For example, copy a report of the drive variables, and then make a second copy of the same report, the contents of the two reports may be different. This is because the report is generated at the time the copy is made and values may have changed between the two requests.

Figure 72 - Reports Directory

Name ^	Size	Type	Modified
DATA		File Folder	4/2/2008 12:00 AM
PRINTOUT		File Folder	4/2/2008 12:00 AM

Card Directory

The CARD directory shows the contents of the SD Card. With the exception of the DOWNLOAD sub-directory, the entire card is read only.

The only directory which the user may wish to access directly is the 'Manuals' directory. Within this directory are located .PDF files pertaining to the users drive.

Configuration Tips

Since the user can configure Windows Explorer in many ways, this section describes known setting requirements and issues seen with the use of Windows Explorer.

- FTP clients must use PORT mode connections
- Enable FTP Folder View

This option is enabled by opening the Internet Explorer options, select the Advanced Tab and make sure the option is checked.

- Windows Explorer opens two connections to the NetBurner module when it accesses a file. On completion of the operation, it returns one of those connections. To regain all the connections, all instances of Windows Explorer must be closed. No other FTP clients have been discovered that behave in this inappropriate manner. The total number of concurrent sessions on the NetBurner is five, after which time, no additional connections can be made until some are returned.

The exhaustion of connections typically shows up as an error message that the file could not be opened, the page could not be displayed, or a request for a user login and password.

- FTP transfers are Anonymous. Do not enter a password if prompted.
- Cached Internet Files need to be refreshed on each access, otherwise changing data in reports will not be automatically refreshed. In Internet Explorer 8, select Tools > Internet Option > Browsing History > Settings. Select “Check for Newer Version of Stored Pages”: “Everytime I visit the Webpage”.
- If experiencing issues with transferring files and programs, ensure the network settings of your Ethernet Adapter are configured correctly. Items to consider are “Flow Control” and “Speed & Duplex” which can be set to “Auto”.

System Updates

Overview

The HMI Interface Board can be updated over a network. In doing so, only certain files and directories can be written to.

These updates are completed using either an FTP Client such as Microsoft Windows Explorer or a supplied utility from Rockwell Automation.

Chapter Objectives

This chapter describes how the HMI Interface Board updates files and firmware in the PowerFlex 7000 Medium Voltage Drive. In this chapter, you will learn how to:

- Update drive firmware and language modules using an FTP Client such as Microsoft Windows Explorer™.
- Update the entire drive system including the SD Card contents using a utility which aids in the update process and is superior to using the FTP Client.

Using an FTP Client to Update Firmware



ATTENTION: Read this section before attempting to perform firmware updates using an FTP Client as it provides necessary background information.

Drive Firmware

An FTP Client updates the drive firmware by copying an .FFW file used for drive firmware or drive language modules to the '/Drive/Config' directory on the HMI Interface Board module. (see [Drive Directory on page 68](#))

The .FFW files can only be copied to the drive when the drive is in download mode (see [Place the Drive into Download Mode on page 61](#)).

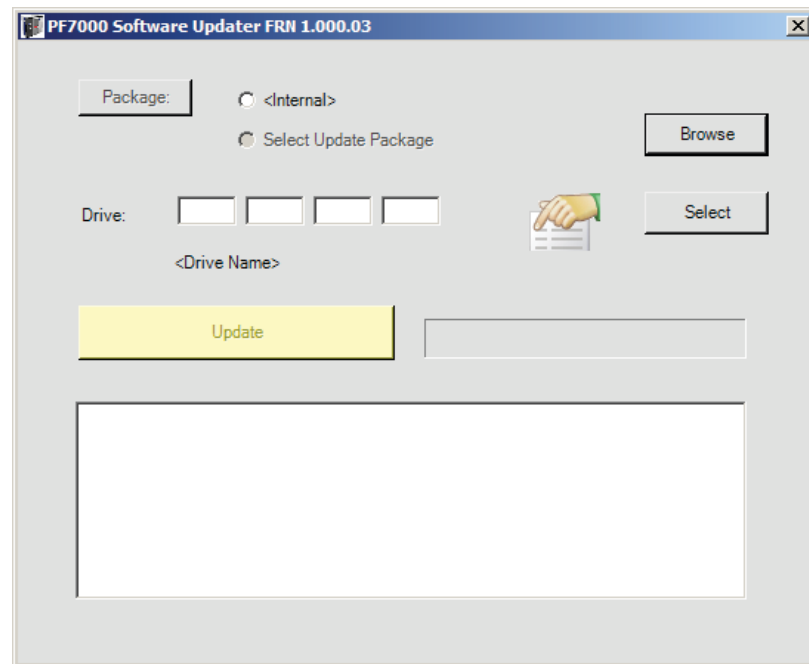
After copying an .FFW file to the drive's configuration directory, the drive automatically resets. To download an additional module, the drive will again have to be placed into download mode.

Forge Package Updater

The Package Updater utility is a program which updates the drive and operates on both Windows and Windows CE platforms. It is supplied by Rockwell Automation.

It can be provided as a separate .PKG file, or can be embedded within this utility.

Figure 73 - Package Updater



Update the HMI Interface Board

1. Open the Package Updater utility ([Figure 73](#)).

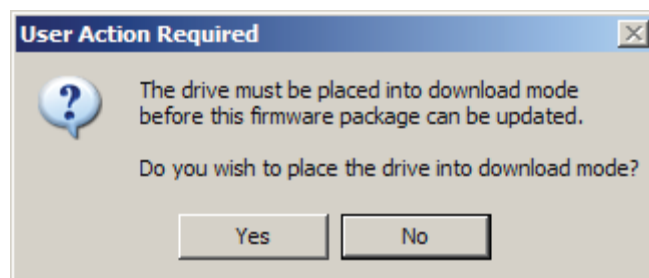
Refer to the Windows Explorer section under [Drive Menu on page 24](#).

2. Enter the IP address of the drive in the fields, or press Select to choose from a list of discovered drives.

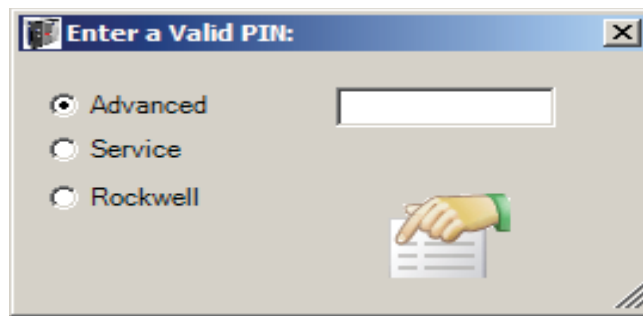
Once selected, the Drive's name (if configured) is displayed to confirm the entered IP address. If using an external file, press Browse and select the appropriate file.

Once the desired IP address of the drive is either selected or entered, the drive must be placed in Download Mode.

3. Click Internal, and click Update.



- Click Yes, and enter the appropriate PIN value for the desired access level.

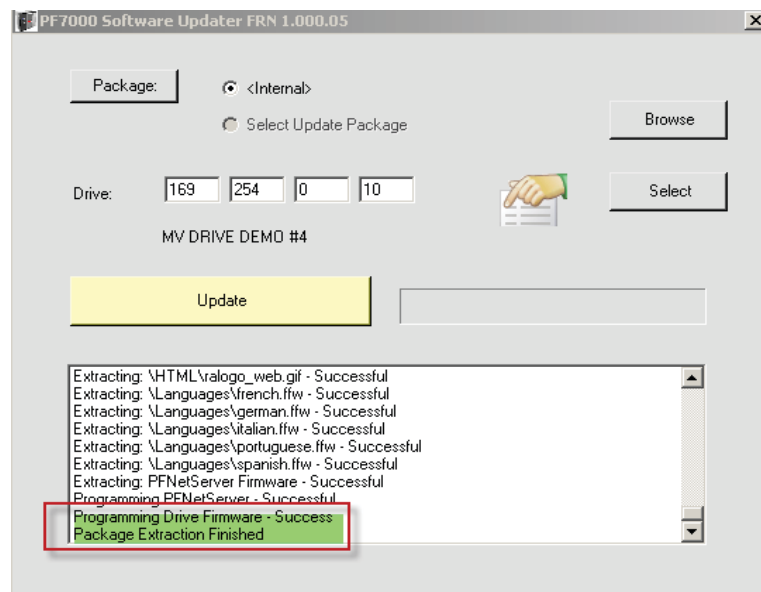


TIP The PIN codes required for the firmware download are the same PIN codes used in the operator interface. Unless changed, the Advanced PIN is 0 by default. If an incorrect PIN is entered, the update process must be restarted.

- Press Enter on the keyboard.

A bar graph shows the progress of the file transfer to the HMI Interface Board. A status window under the Update button shows information about the update progress.

Once the entire Package has been downloaded, the HMI Interface Board will perform a validation process on the contents.



Status strings provide information about each step in the process:

- Validating each file
- Extracting each file
- Completion status

If any of the contents fails validation, or the drive is not in download mode to accept an included .FFW file, the entire process will be aborted.

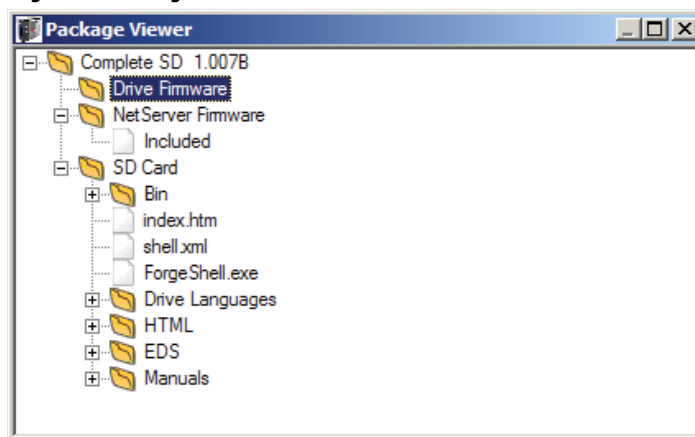
- Press Update.

TIP

The package contents of the either selected option can be previewed by pressing the Package.

The Package dialog ([Figure 74](#)) shows the contents of the SD Card which will be created or updated on the HMI Interface Board module. Drive Firmware and HMI Interface Board Firmware is also included in the package if so stated. In the provided example, the HMI Interface Board Firmware will be updated, but no update is contained for the Drive Firmware.

Figure 74 - Package Viewer



PanelView Plus 6 Terminal

Overview

The standard local and remote terminal options for the PowerFlex 7000 Medium Voltage Drive is the Rockwell Automation PanelView Plus 6 Terminal.

This terminal utilizes the Windows CE6 Operating System.

IMPORTANT	If the PowerFlex 7000 Medium Voltage Drive already contains a PanelView Plus terminal, the setup described in this section will have already been completed.
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Chapter Objectives

This chapter describes how to configure and use the PanelView Plus 6 Terminal with the HMI Interface Board. In this chapter you will learn how to:

- Configure a replacement terminal
- Make use of offline storage devices
- Use a File Client designed for CE

IMPORTANT	The CE Operating System is designed for systems with limited resources. It does not have the full capabilities of operating systems for the PC. Not all the capability and applications contained within the HMI Interface Board are available for the CE Operating System.
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If replacing an existing terminal with a new PanelView Plus, the user must configure the terminal to work with the HMI Interface Board.

The PanelView Plus User Manual is [Publication 2711P-UM006B](#).

Access to the Desktop

All terminals are initially shipped with desktop access disabled. To use the terminal with the PowerFlex 7000 Medium Voltage Drive, the Desktop must be accessible.

To access the desktop:

1. Select 'Terminal Settings' – F4.
2. Select 'Desktop Access Setup' and press Enter.
3. Set the 'Desktop Access' – F2 to 'Allow'.

The required default password is "password", (case sensitive).

The default challenge question, "What is the opposite of lock?" is answered with "unlock", (case sensitive).

4. Once the Desktop access has been set to 'allow', select OK>Close>Exit to access the Windows CE Desktop.

Network Connection

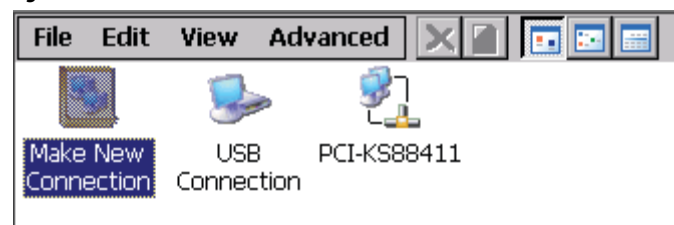
When the terminal is connected to a network which has a DHCP Server to assign an IP Address, this network configuration is not necessary. Otherwise, a static IP Address may need to be assigned to the terminal.

A terminal which is configured to obtain a network address from a DHCP Server eventually defaults to an address in the 169.254.xxx.xxx block of addresses if no DHCP Server can be found. The process can take a considerable period of time, (up to 2 minutes). Refer to the [Quick Start Application on page 9](#) for more information.

To change the IP address of the Terminal from the Desktop:

1. Select Start>Settings>Control Panel.
2. Click "Network and Dialup Connections" ([Figure 75](#)).

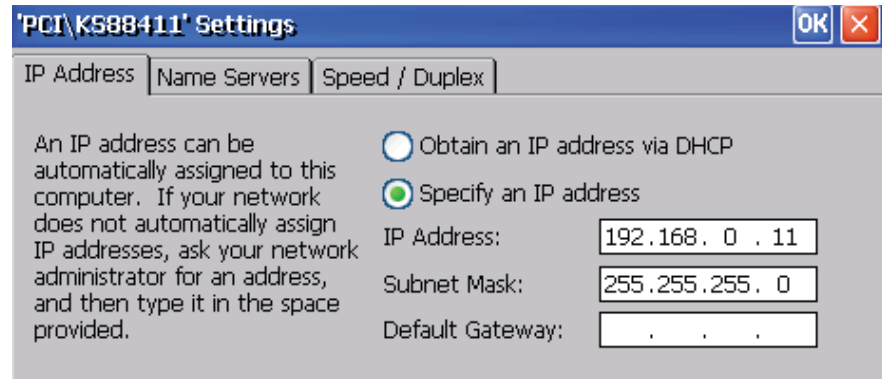
Figure 75 - Connections Window



3. Click PCI-KS88411 (note the name could be different).

If you are required to use a static IP Address, then set the radio button to Specify an IP Address ([Figure 76](#)).

Figure 76 - IP Address Settings



The specific IP Address, Subnet Mask and Default Gateway that you use will depend on your network. Consult with your network administrator.

The configuration shown in [Figure 76](#) will work for a PowerFlex 7000 Medium Voltage Drive where the terminal is connected directly to the HMI Interface Board with no DHCP Server involved.

Obtain Terminal Patch from HMI Interface Board

The PanelView Plus 6 terminal requires a patch to properly display color push buttons and the Chinese language. This patch is available on the PowerFlex 7000 Medium Voltage Drive HMI Interface Board.

To obtain the patch:

1. Open an instance of Internet Explorer (see [Windows Explorer Tutorial on page 67](#)).
2. Type "http://<ip_address>" in the address bar, where <ip_address> is the IP Address of the HMI Interface Board module.\

In a network with no DHCP Server and where the module has not been configured with a static IP address, the HMI Interface Board's IP Address is 169.254.0.10. The webpage typical of [Figure 77](#) will be shown.

3. Select Patch PV CE6 from the list.

Figure 77 - HMI Interface Board Webpage



4. Select Run this Program from its current location and press OK.

After the download, the program “Patch PanelView Terminal OS Utility” is displayed.

5. Press OK.
6. Press Close when the program has completed.

The terminal is now ready to be used with the PowerFlex 7000 Medium Voltage Drive.

External Storage

All PanelView Plus 6 terminals have an SD card slot and two USB host ports for external storage:

- The SD card slot supports catalog number 1784-SDx cards
- The USB host ports support USB flash drives

Both the SD card and USB flash drives are hot-swappable; they can be loaded and unloaded while the terminal is powered on and running.

Drive Volume Naming

- SD card volume names are Storage Card *x*
- USB flash drive volumes are named USB Storage *x*

Refer to [Publication 2711-UM006_-EN-P](#) for further details.

File Transfer Client

An FTP client has been written specifically for use by the CE Terminal and is obtainable from the PowerFlex 7000 Medium Voltage Drive HMI Interface Board.

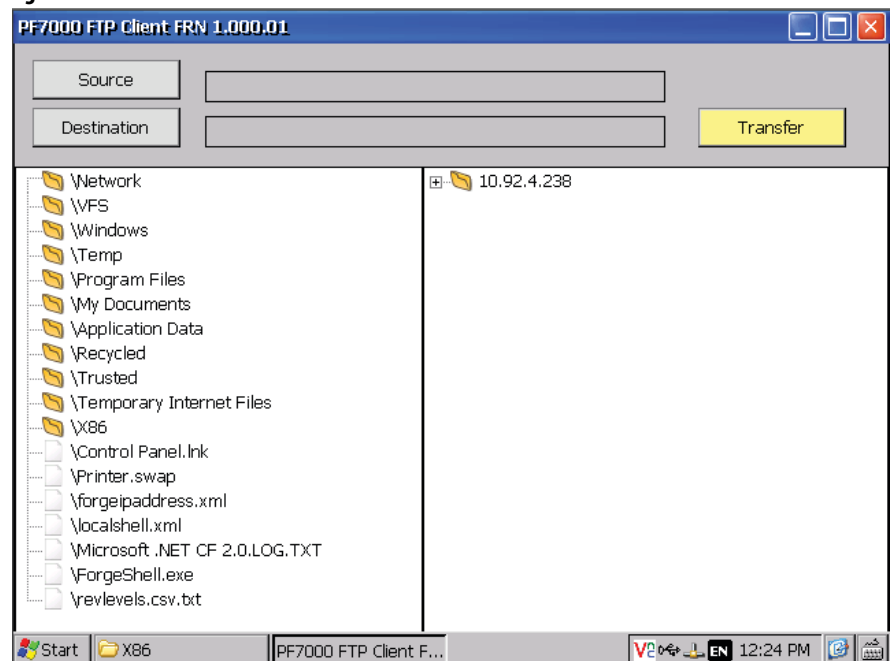
To Transfer a File or directory using an FTP Client

1. Select the appropriate application from the Forge Shell toolbox (see [Drive Menu on page 24](#)).

The left pane is the directory structure of the storage device(s) in the terminal. The right pane is the directory structure of the drive.

2. Select the source in the desired tree structure.
3. Press the Source button.
4. Select the destination in the opposite pane.
5. Press the Destination button.
6. Press the Transfer button once the source and destination has been selected.

Figure 78 - FTP Client



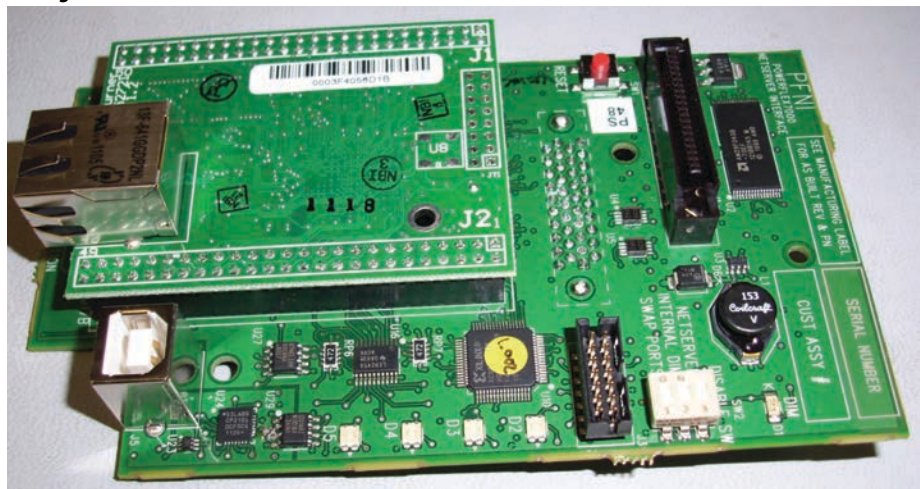
Notes:

Hardware

Introduction

The HMI Interface Board module ([Figure 79](#)) consists of two circuit boards sandwiched together. The base board is the PFNI (PowerFlex Network Interface Board). It contains a socket into which the processor module (NetBurner) connects into. This assembly is collectively referred to as the HMI Interface Board. The HMI Interface Board (Part no. 80190-780-01-R) connects into the DPM (Drive Processor Module) and becomes part of the drive control platform.

Figure 79 - HMI Interface Board Module



DIP Switch Settings

The DIP Switches (SW2), located on the PFNI board, perform the following functions:

Switch 1: Swap Port

On	Port 0 is on USB
Off	Port 1 is on USB
Default	OFF

Port 0 is a diagnostic port which is available on either J3 as a standard USART port or the USB Port. When this switch is OFF, the diagnostic port is on the J3 connection. The J3 connection is used exclusively for development and diagnostic testing. Port 1 is a port to replace the functionality of the J4 Data port on the DPM for PCs which do not have a serial port (for future use).

Unless directed by Rockwell Automation, this switch will always be in the Default position.

Switch 2: Internal DIM

On	Internal DIM disabled
Off	Internal DIM enabled
Default	Off

The PFNI has a built in DIM as well as a socket for an external DIM. When the external DIM is plugged in, it is always active, regardless of this switch setting. When the internal DIM is in use, this switch allows for the rare occasion that it must be disabled. When there is no DIM in use (internal or external), the RED LED D1 marked as 'DIM' is illuminated.

Switch 3: HMI Interface Board

On	HMI Interface Board is disabled
Off	NetServer is enabled
Default	Off

To place the PFNI board on an external Flash Programmer and to burn the internal DIM, the HMI Interface Board module must be disabled. Place this switch to the ON position for programming. When complete, return the switch to the Off position.

Status LEDs

The PFNI board contains five LEDs labeled D1 through D5. D1 is a red LED only, the remainder of the LEDs are either red or green.

D1 – DIM Disabled	When RED, the DIM has been disabled. When disabled, the factory defaults are not available and no NVRAM image will be backed up on the DIM.
D2 – FTP Activity	File Transfer Protocol is active.
D3 – DFTP Activity	Drive File Transfer Protocol. A file is actively being transferred with the Drive DPM board.
D4 – Ethernet/IP Activity	When communications is occurring to the drive via the Ethernet/IP Port, this LED will flash green.
D5 – FTP Connections Available	On initial power up, the LED will be extinguished. After the first FTP Connection is made, the LED will pulse out a count giving the number of connections remaining. If either an FTP or Ethernet/IP connection is attempted and there are no available connections, the LED flashes RED until at least one connection of the depleted type is returned.

Ethernet Port

The standard RJ45 connector for Ethernet. The port is configured for 100 Mbps, Full Duplex. A standard Cat5 Ethernet cable is used for connection.

DIM (Drive Identity Module) Socket

The HMI Interface Board module plugs into the DPM via the existing DIM socket on the DPM. To accommodate the existing external DIMs, the DIM can be reinserted into the socket on the PFNI board.

Hardware Reset Button

The reset push button (SW1) on the PFNI board restarts the HMI Interface Board module. This switch does not cause any direct action to occur within the drive control. Any communications currently active with the Drive will be disconnected by pressing this button.

USB Port

The USB port on the HMI Interface Board module will be used to replace the functionality of the RS232 Data Port on the DPM (not currently available). The majority of PCs and Laptops no longer support a serial port. For these devices, the USB port can be used instead. A standard type A-B cable is required.

The functionality of the port can be changed by DIP Switch (SW2), (refer to [DIP Switch Settings on page 81](#)).

Windows XP and Windows 7 drivers for the USB Port can be found at the following website: <http://www.silabs.com/products/mcu/Pages/USBtoUARTBridgeVCPDrivers.aspx>

SD Card Socket

This socket contains an SD Card used to store the majority of files which are available via the HMI Interface Board.

IMPORTANT This card should not normally be removed. Removing the card reduces the functionality of the HMI Interface Board.

The SD Card contains a Write Protect Tab. When the Tab is in the upper position (tab on the left of the card), the card can be written to. If you want to protect against any updates to the drive over the network, this tab can be set to the lower position. The lower position is a write protect position and no contents on the card can be modified.

Upper Position	Card is open for writing
Lower Position	Card is write-protected

Network Protocols

The HMI Interface Board module is an Ethernet device. The network must allow certain ports to be accessed on PCs or Terminals which interact with the HMI Interface Board.

IMPORTANT Security of a Network is the responsibility of the IT Department which maintains the network in the Application of the device. The HMI Interface Board does not provide any form of firewall protection. Refer to Rockwell Automation [Publication ENET-TD001 -EN-P](#) and [Publication ENET-RM002 -EN-P](#) for further guidance.

This section describes the Ethernet protocols and ports used by the HMI Interface Board.

TCP Ports 20 & 21

The FTP (File Transfer Protocol) performs the main file transfer mechanism between a PC/Terminal and the HMI Interface Board module which allows tools such as Microsoft Windows Explorer to be used.

TCP Port 80

The HTTP (Hyper Text Transfer Protocol) is the method by which web pages and executable modules are retrieved from the HMI Interface Board. This allows a standard browser such as Microsoft Internet Explorer™ to be used.

TCP Port 44818

The Ethernet/IP port is used by a variety of tools to interact with the PowerFlex 7000 drive. The HMI Interface Board contains only a subset of the Ethernet/IP protocol in that it only supports the DPI protocol embedded within the PCCC packets.

UDP Port 20034

This port is designated as the NetBurner port. It is required for the 'Discovery' process to find HMI Interface Board modules on a network, and to configure those modules.

UDP Port 514

This SysLog port provides status from the HMI Interface Board module while it is being updated with new information to the SD Card.

Base Discovery	The directory where .XML files are stored by default. When the application is launched from a remote device, a directory named “Temporary Internet Files” will be created on the local terminal. Within this directory, will be subdirectories which are named according to the IP address of the remote device. This subdirectory which corresponds to the IP address is the Base Directory. If the application was launched locally, then the Base Directory is the directory where this application was found.
Combo Box	A combo box displays both information for the current selection, as well as a drop down list of available selections. It allows the user to pick from a number of options.
DHCP (Dynamic Host Configuration Protocol)	A DHCP server automatically assigns an IP address to a device on the network if that device is configured for Dynamic addressing. Although this method is easy to setup a device, the assigned address is not easily determined and can change over time. For this reason, Static IP addressing is recommended for an HMI Interface Board module, whereby the IP address is permanently assigned to the module.
Dialog	A window that is popped up to allow operator interaction. While a dialog is open, no other operations can be performed on the terminal until the current dialog is completed or closed.
DIM (Drive Identity Module)	This module contains the Factory Default values for the parameters. The factory defaults are customized to a particular drive order at the time of manufacturing. The DIM also contains a mirror image of parameters which are saved to the drive’s NVRAM. In the event of the NVRAM is found to be corrupt, this mirror image will be restored to the NVRAM. It also allows the saved NVRAM information to be physically moved to another drive or new control boards.
DPM (Drive Processor Module)	The main control board of the drive. This board contains all processors, memory, and intelligent peripherals.
Dynamic IP Address	An address which has been assigned by a DHCP Server. This address can change each time the device’s power is cycled.
MAC (Media Access Control)	Every Ethernet device has a unique ID (i.e. address) which identifies it on a network. This ID can be read from the white barcode on the HMI Interface Board module. It is only required when the HMI Interface Board is being configured with an IP address.
Radio Button	A user interface component which will allow only the selection of one exclusive option from a group of options.
SD (Secure Digital) Card	This memory card is in the HMI Interface Board module and stores the majority of the files provided by the HMI Interface Board module.
Static IP Address	An address which has been manually assigned to a device. This IP address never changes when power to the device is cycled.

Notes:

Rockwell Automation Support

Rockwell Automation provides technical information on the Web to assist you in using its products.

At <http://www.rockwellautomation.com/support>, you can find technical manuals, technical and application notes, sample code and links to software service packs, and a MySupport feature that you can customize to make the best use of these tools. You can also visit our Knowledgebase at <http://www.rockwellautomation.com/knowledgebase> for FAQs, technical information, support chat and forums, software updates, and to sign up for product notification updates.

For an additional level of technical phone support for installation, configuration, and troubleshooting, we offer TechConnectSM support programs. For more information, contact your local distributor or Rockwell Automation representative, or visit <http://www.rockwellautomation.com/support/>.

Installation Assistance

If you experience a problem within the first 24 hours of installation, review the information that is contained in this manual. You can contact Customer Support for initial help in getting your product up and running.

United States or Canada	1.440.646.3434
Outside United States or Canada	Use the Worldwide Locator at http://www.rockwellautomation.com/rockwellautomation/support/overview.page , or contact your local Rockwell Automation representative.

New Product Satisfaction Return

Rockwell Automation tests all of its products to help ensure that they are fully operational when shipped from the manufacturing facility. However, if your product is not functioning and needs to be returned, follow these procedures.

United States	Contact your distributor. You must provide a Customer Support case number (call the phone number above to obtain one) to your distributor to complete the return process.
Outside United States	Please contact your local Rockwell Automation representative for the return procedure.

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