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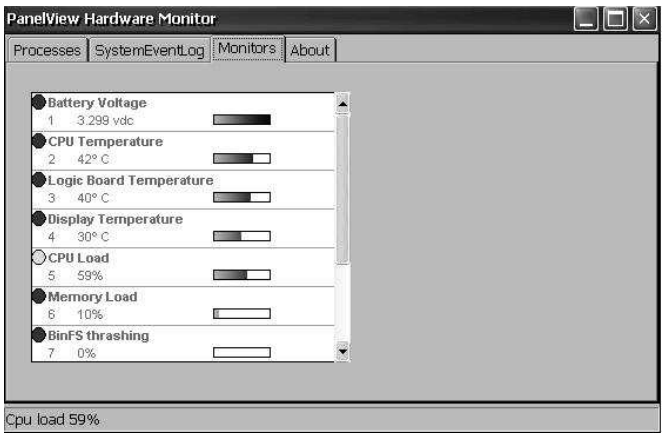
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Monitors

The Monitors tab of the PanelView Hardware Monitor provides continuous voltage, temperature, and load information for the terminal.



Battery Voltage

The Monitors tab gives a visual status and voltage reading of the battery for the real-time clock. The battery voltage is updated at powerup and then every hour.

Table 51 - Battery Conditions

Condition	Logic Module Battery
Depleted	Less than 2.0V indicates a dead battery or no power.
Low	2.0…2.74V
Normal	2.75V or higher

Temperatures

The Monitors tab provides a visual status and current temperature of the CPU, logic board, and terminal display. The temperature is updated every 10 seconds.

Table 52 - Temperature Conditions

Condition	Logic Board	CPU(1)	Display(1)
Low	–	–	10 °C (50 °F) or lower
Normal	25…94 °C (77…201 °F)	25…94 °C (77…201 °F)	11…59 °C (52…138 °F)
High	95 °C (203 °F) and higher	95 °C (203 °F) and higher	60 °C (140 °F) and higher

(1) The CPU and display temperatures do not apply to the 400 and 600 terminals.

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Keypad Properties

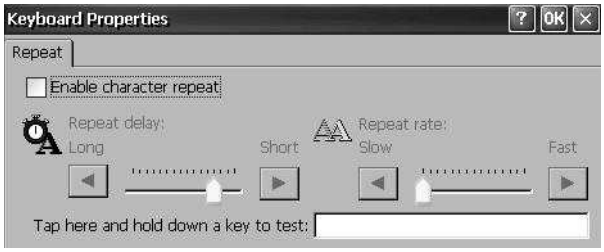


Use the Keypad and Keyboard dialog boxes to adjust settings for the membrane keypad of your terminal or an attached USB keyboard. The Keyboard applet is always present. The Keypad applet appears only if your device has a keypad. If you attach two USB keyboards, settings are used that work with both keyboards.

Repeat Tab

The Repeat tab on the Keypad or Keyboard Properties dialog box controls the character repeat behavior of keys on the keypad or attached keyboard.

When character repeat is enabled, you can set the repeat delay and repeat rate of keys. Verify your settings by pressing a key in the test edit box.



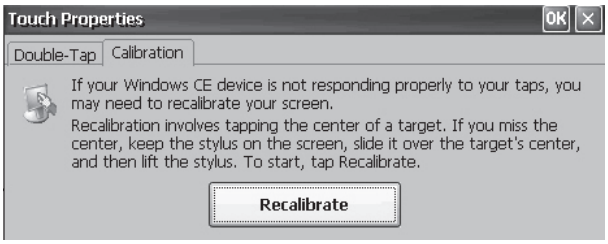
Touch Properties



Touch Properties is accessible only on devices with a touch screen. It lets you calibrate the touch screen and set the sensitivity of touch screen taps.

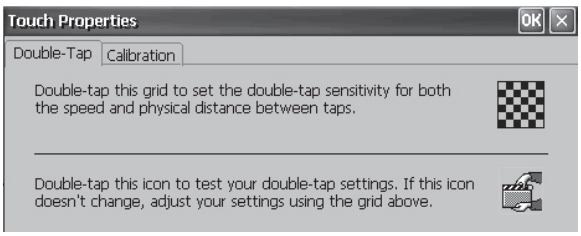
Calibration

The Calibration tab lets you recalibrate the touch screen if your device is not responding appropriately to taps. Follow the instructions in the dialog box to recalibrate.



Double-Tap

The Double-Tap tab on the Touch Properties dialog box lets you set and test the double-tap sensitivity of the touch screen taps.



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Display Properties



Use Display Properties to control the desktop background image and appearance, the brightness of the backlight, and screen saver settings.

Desktop Background

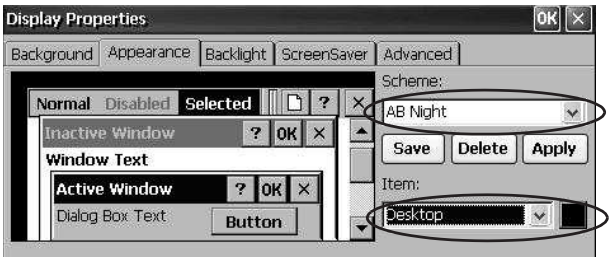
The Background tab in Display Properties controls the background bitmap on the desktop. The default bitmap is abclocknight.



You can select another image from the pull-down menu or browse the system for a bitmap image. Custom images are in the \Windows folder.

Desktop Appearance

The Appearance tab in Display Properties controls the visual style and colors of the desktop and other window elements.

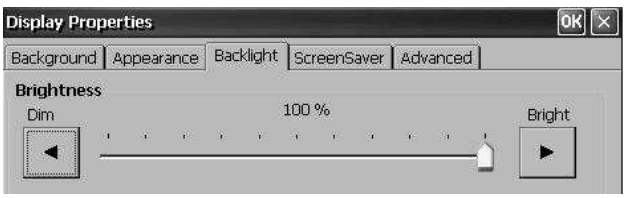


Two custom schemes and images are provided for day or night viewing. When changing schemes, remember to also change the image on the Background tab.

Scheme	Desktop Color	Background Logo
AB Day	Blue	abclocknight
AB Night	Black	ablclockday

Backlight Intensity

The Backlight tab in Display Properties lets you set the brightness level of the display between 1...100%. At 1%, the display is minimally visible.

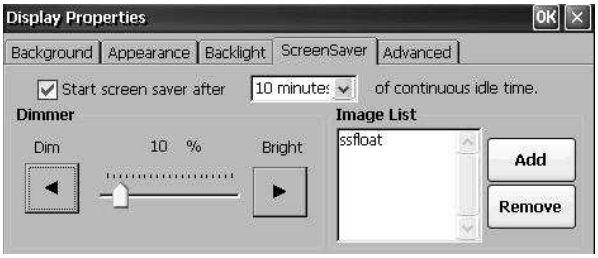


When the backlight is in Overdrive mode, the brightness cannot be adjusted. Refer to View the Display Temperature on page 69 for more details.

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Screen Saver

The screen saver extends the lifetime of the display by dimming the backlight when the terminal is idle. The screen saver activates and displays a moving bitmap at a reduced brightness level after a continuous idle time. When the screen saver is deactivated, the display brightness returns to its normal level.



The Screen Saver tab in Display Properties lets you perform these operations:

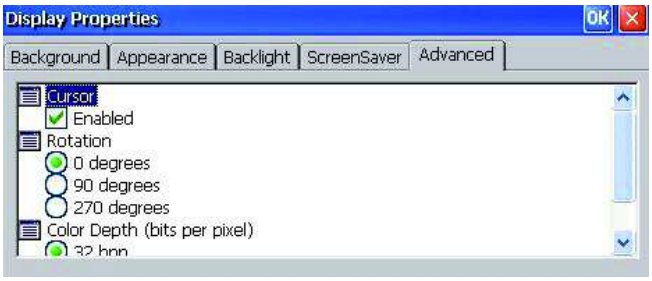
- Enable the screen saver by using a specified idle timeout. The default idle time is 10 minutes.

  When the screen saver is activated, the dimmer controls the backlight intensity level. You set the brightness level of the dimmer in the range 0...100%. The default dimmer intensity is 10%. At 0%, the backlight is off and the display is dark.
- Browse the system for a bitmap to be displayed by the screen saver at a nonzero brightness level. The default screen saver is SSFloat.bmp. Click Add or Remove to change the screen saver bitmap. The system recognizes bitmaps stored in the \Windows folder.
- Disable the screen saver by clearing the Start screen saver checkbox.

Cursor, Rotation, and Color Depth

The Advanced tab in Display Properties lets you perform these operations:

- Enable or disable the visible cursor that you see on the display. The cursor is visible by default.
- Rotate the screen on the terminal. The default is 0 degrees.
- Specify the color depth of the display. The default is 32 bits per pixel (bpp).



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Logo Manager



Use the Logo Manager to change the logo that appears on the splash screen at startup and the default screen saver image. The default image is the Allen-Bradley logo (ablogo.bmp).



The logo can be a .bmp, .jpg, .gif, or .png image. For best results, it is recommended that the logo be created as a 90 x 90 pixel, 16-bit color image.

Before applying the new logo, you can do the following:

- Preview the logo on the splash screen.
- Resize the image to fit the fixed area on the splash screen.

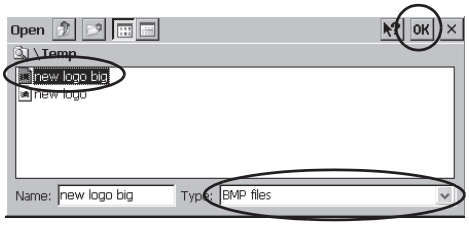
Follow these steps to apply a new logo to the splash screen and screen saver.

1. Double-click the Logo Manager icon.

   The Logo Manager opens with the current logo.



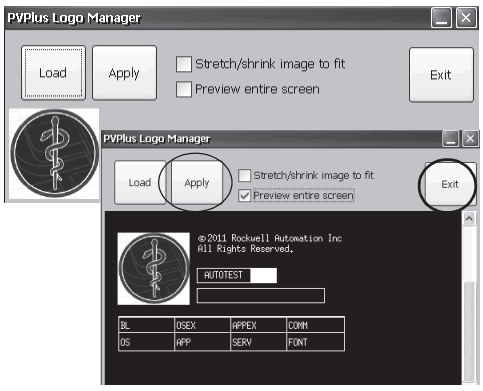
2. Click Load.
3. Select the location of the new image you want to load:
   - A folder
   - Storage Card2 - SD card
   - USB Storage - USB drive
4. Select the image file to load.
5. Verify the file type is correct.
6. Click OK.



   The new logo appears in the Logo Manager dialog box.

7. Check 'Preview entire screen' to view the logo on the splash screen.

   If the logo is truncated or too small, check 'Stretch/shrink image to fit' to resize the logo to fit in the area.



8. If satisfied with the preview, click Apply.

   A dialog box confirms the splash screen was successfully updated. The default screen saver, ssfloat.bmp, is also updated with the new image.

9. Click OK, then click Exit to close the Logo Manager.

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System Information



The System Information dialog provides tabs to let you view and set system-wide properties for your terminal.

General Information

The General tab of the System Information dialog box shows the current version of the Windows CE operating system, the processor type and speed, and RAM memory on terminal.



Startup Options

The Startup Options tab in the System Information dialog box lets you set these options at startup:

- Show or hide battery warning
- Launch the platform as open or closed system
- Disable or enable Safe mode request
- Show or hide system watchdog errors

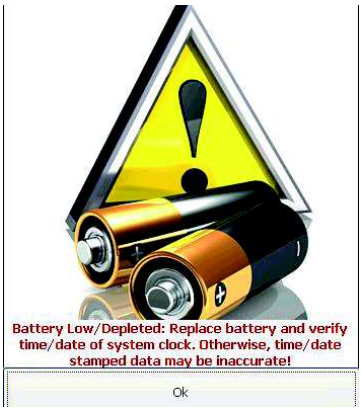


Battery Warnings

If the battery is low, missing, or dead, a warning displays each time the terminal starts up.

TIP

- The terminal can be operated without a battery if it is not required that the time and date be accurate.
- When replacing the battery, you can verify the accuracy of the system date and time from the control panel or the terminal settings in FactoryTalk View ME Station Configuration mode.



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You have three options for handling the battery warning.

Battery Warning Start-up Options	Description
Always show at startup (continue with startup)	Shows the battery warning at startup with FactoryTalk View ME Station software running behind it. This is the default.
Always show at startup (halt startup)	Shows the battery warning at startup but halts the startup or boot process until you press OK.
Never show at startup	Hides the battery warning at startup.

Shell Options

Use the Shell options to launch an open or closed desktop at startup or to set the visual appearance of button controls.



Shell Startup Options	Description
System Type	Launches the terminal as an open or closed system at startup: • Open - launches the Windows CE desktop on startup. • Closed (default) - launches FactoryTalk View ME Station Configuration mode on startup. You can also allow or restrict desktop access within FactoryTalk View ME Station Configuration mode by pressing Terminal Settings>Desktop Access Setup. Refer to Desktop Access on page 56.
User Interface Button Controls	Sets the visual appearance of control buttons at startup: • Windows XP Style (default) • Windows 95 Style

Boot Option

The boot option provides a way for you to enter Safe mode at startup.



Safe Mode Option	Description
Do not detect Safe mode request at startup	Disables Safe mode detection during startup. This is the default.
Detect Safe mode request at startup	Displays a small white box in the lower left corner of the terminal display during startup that you can touch or press F1 to enter Safe mode. This lets you bypass a loaded FactoryTalk View ME application and go directly to Configuration mode. If you don't press F1 or touch the white box, the system boots up normally. Another way to enter Safe mode is to access Maintenance mode. Refer to Access Maintenance Operations on page 174.

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Watchdog Errors

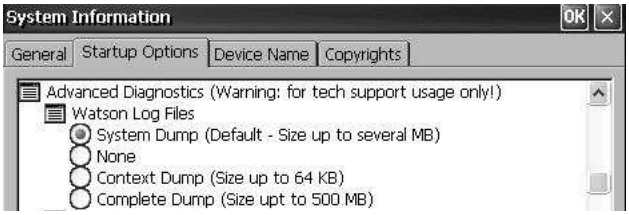
You can show or hide watchdog errors at startup.



Watchdog Error Options	Description
Always show watchdog errors at startup	Shows the fatal watchdog error (error 02) at startup and halts the normal boot process. This is the default. The system launches the maintenance window with the watchdog error displayed. You can continue booting from this window. Refer to Access Maintenance Operations on page 174 for details. The error is logged to the System Event log.
Never show watchdog errors at startup	Hides the errors at startup and logs the error to the system event log.

Advanced Diagnostics

Advanced diagnostics are for technical support use to diagnose and resolve system errors. They are not for use in a normal production environment.



Device Name

The Device Name tab of the System Information dialog box identifies your terminal to other devices on the network by providing a device name and description.



TIP Duplicate names conflict and cause network problems.

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User Accounts



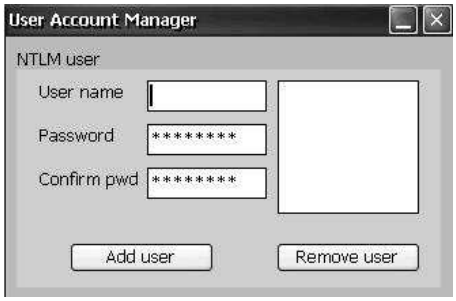
The User Accounts application lets you set up NTLM user accounts that can be used to authenticate client connections when using the FTP, web, and file servers.

TIP NTLM is the authentication protocol used on networks that run Windows operating systems.

A user account consists of a user name and password.

Follow these steps to add a user account.

1. Double-click the User Accounts icon.



2. Click in the user name field and type a name.
3. Click in the Password field to clear the field and type a password.

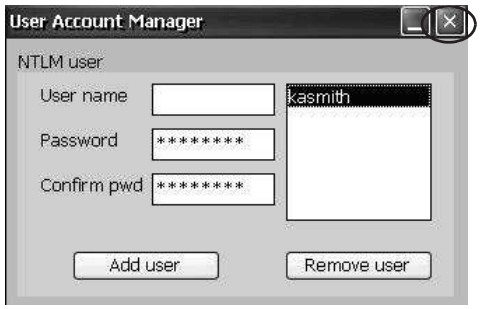
   Asterisks display as you type the password.
4. Re-enter the password in the Confirm pwd field.
5. Click Add user.



6. Click OK to acknowledge the new user account.



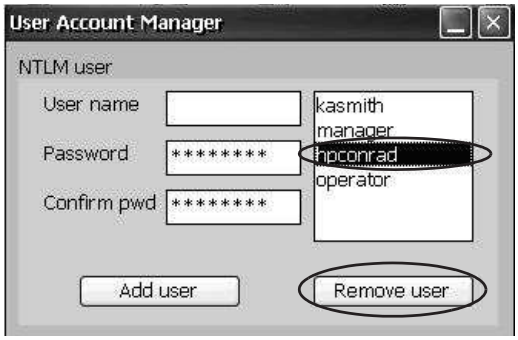
   The new user name is added to the user list.
7. Repeat steps 1...6 to add additional user accounts.
8. When done, click X to close the dialog box.



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Follow these steps to remove a user account.

1. Select a name in the user name list.
2. Click Remove user.



3. Click Yes to confirm the removal of the selected user account.

   The user account is permanently deleted from the user account list.



4. Close the User Account Manager by clicking x.

TIP Users entered in authentication lists of FTP, web, or file server configurations are removed when user accounts are deleted.

Services



The Services application shows servers that are supported by the terminal and lets you enable (start) or disable (stop) each server. The ViewPoint server is not supported on the 400 and 600 terminals and appears red.



The buttons are color coded:

- Green indicates the server is currently running and automatically started at system startup.
- Red indicates the server is not currently running.
- Gray indicates the server is not available on platform.

To enable or disable a server, press the corresponding button and the color changes accordingly.

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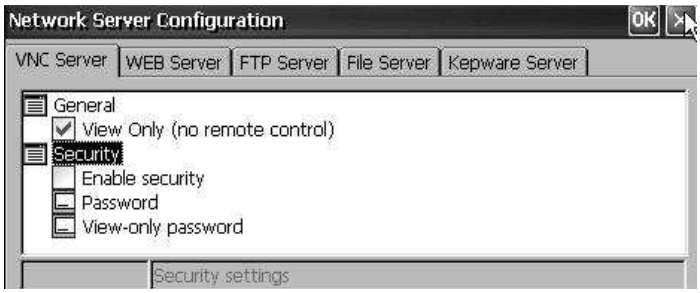
Network Server Configuration



The Server Config applet in the control panel configures settings used for VNC, web, FTP, file server, and KEPServer activities on an Ethernet network.

VNC Server Configuration

The VNC Server tab in the Network Server Configuration dialog box configures settings used by a client device to view or control the terminal over a VNC connection. The VNC service supports two concurrent client connections.



TIP Always click OK to apply new settings. You are asked if you want to restart the service immediately.

The terminal provides two VNC client viewers:

- Vncviewer.exe can be deployed to a personal computer for connecting, viewing, and controlling the VNC server on the terminal. This viewer is in the \Windows folder.
- Another VNC viewer is available on the terminal to establish a VNC connection between two PanelView Plus terminals. To access this client, choose Start>Programs>VNC Viewer.

Table 53 - VNC Server Parameters

VNC Parameter	Description	Default
General		
View Only	Check this option to let users view terminal displays over a VNC connection. Uncheck this option to let users both control and view terminal displays over a VNC connection. If security is disabled, users are not required to enter a password when connecting to the terminal.	Enabled for view only
Security		
Enable Security	Check this option to require password protection for VNC connections to the terminal. This means users must enter a valid password before viewing or controlling terminal displays. If you enable security, you must supply a password for one of these parameters: • Password - for control and view operations • View-only password - for view only operations	Disabled (Unchecked)
Password	Specifies a password a user must enter when establishing a VNC connection to control terminal displays. Select the box, then type a password in the field at the bottom of the dialog box. The password is a maximum of seven characters. Password protection is required to control terminal displays if: • View Only is unchecked (allowing control access) • Security is enabled	No password
View-only password	Specifies a password a user must enter when establishing a VNC connection to view terminal displays. Select the box, then type a password in the field at the bottom of the dialog box. The password is a maximum of seven characters. **TIP**: If you uncheck the View Only parameter, you have control and view access to the terminal. With control access enabled, you can restrict one or more users to view-only access by providing a View-only password. View-only password protection is required to view terminal displays if security is enabled: • View Only is checked or unchecked • Security is enabled	No password

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VNC Connection Requiring Password for View-only Operations

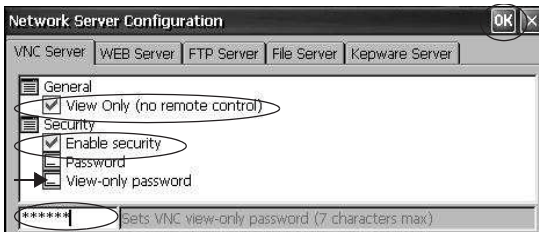
The default VNC configuration enables view-only access to the terminal without requiring a password. This applies to the VNC viewer that resides on the terminal and the viewer you can deploy to a computer.

This example uses the VNC viewer deployed to a computer to connect to the HMI terminal.

TIP Copy vncviewer.exe, in the \Windows folder on the terminal, to your computer and install the TightVNC software.

Follow these steps to configure a VNC connection that requires a password to view terminal operations.

1. On the VNC Server tab, check the following:
   - View Only
   - Enable security

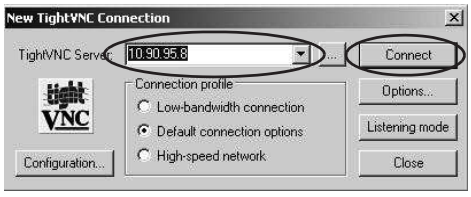


2. Select View-only password, then enter a seven-character password in the field that opens.
3. Click OK, then restart the service to apply the new settings.

Follow these steps to launch a VNC connection to view terminal operations.

1. From your computer, choose Start>Programs>TightVNC>TightVNC Viewer.
2. Enter the IP address of your terminal and click Connect.

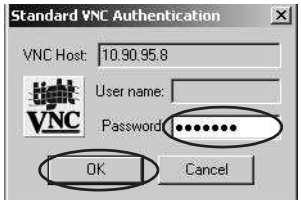
   Click the network connection icon in the system tray to view the IP address.



TIP If security is disabled, a password is not required.

3. Enter the View-only password defined in the VNC configuration and click OK.

   The PanelView VNC Server opens the current view of the HMI terminal on your desktop. You can view, but not control terminal operations.



4. When finished, close the PanelView VNC Server.

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VNC Connection with Separate Passwords for View and Control Operations

You can configure the VNC server to require separate passwords for view-only and control operations.

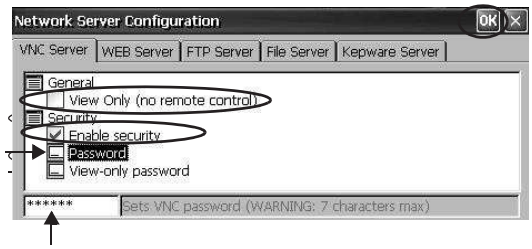
This example uses the VNC viewer deployed to a computer to connect to the HMI terminal.

TIP Copy vncviewer.exe, in the \Windows folder on the terminal, to your computer and install the TightVNC software.

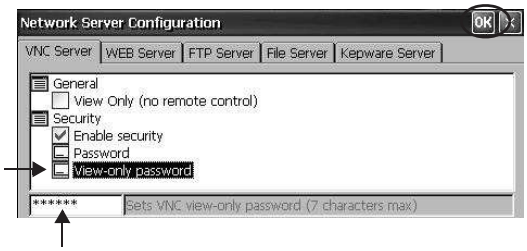
Follow these steps to configure the VNC server to require a password for view-only and control operations.

1. On the VNC Server tab, do the following:
   - Clear View Only
   - Check Enable security
2. Select Password, then enter a password for control privileges.

   Passwords are a maximum of seven characters.



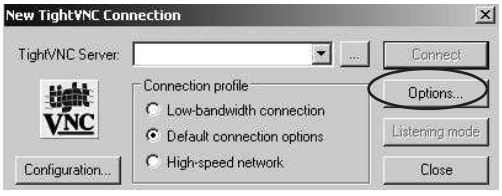
3. Select View-only password and enter a password for view-only privileges.
4. Click OK, then restart the service to apply the new settings.



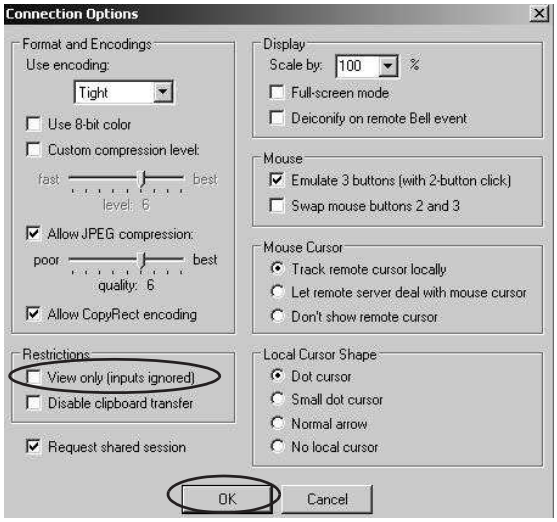
Follow these steps to launch a VNC connection to enable control of the terminal.

TIP To launch a VNC connection from your computer that requires password protection for view-only operations, refer to page 108 and follow steps 1…4.

1. From your computer, choose Start>Programs>TightVNC>TightVNC Viewer.
2. Click Options.

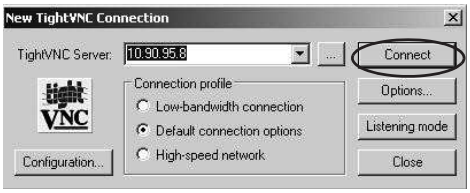


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3. Clear View only (inputs ignored).
4. Click OK.

5. Enter the IP address of your terminal and click Connect.

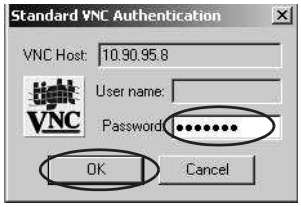




Click the network connection icon in the system tray to view IP information.

The Standard VNC Authentication dialog box opens.

6. Enter the control password that was defined in the VNC configuration dialog box on the terminal and click OK.



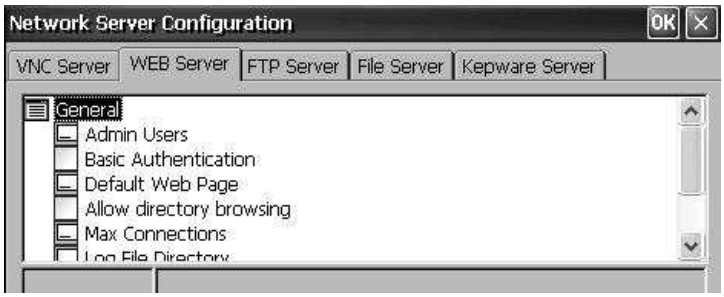
The PanelView VNC viewer opens.

7. On your computer, perform some actions to verify that you have control of the terminal.
8. When finished, close the PanelView VNC Server.

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Web Server Configuration

The Web Server tab in the Network Server Configuration dialog box configures settings that are used for HTTP web activities. These are standard Microsoft Windows CE parameters.



TIP Always click OK to apply new settings. You are asked if you want to restart the service immediately.

Table 54 - Web Server Parameters

Parameter	Description	Default
Admin Users	Specifies a list of users allowed to administer web activities. When selected, you can enter a list of user names, separated by semicolons, in the field that opens at the bottom of the dialog box.	ADMIN
Basic Authentication	Check this option to require a user name and password to access the web server.	Disabled (unchecked)
Default Web Page	Specifies default web pages users can access.	default.htm;index.htm
Allow Directory Browsing	Check this option to let users browse directories on a web server.	Disabled (unchecked)
Max Connections	Specifies the maximum number of incoming web connections.	256
Log File Directory	Specifies the path where the log file is stored. This file logs web activity.	\windows\www
Max Log Size	Specifies the maximum size of the log file stored in the log file directory. A new log file is created, when the current log file reaches the maximum size.	32768 bytes
NTLM Authentication	Check this option to require a valid user name and password to access the web server. If NTLM Authentication is enabled, you must enter a valid user name in the Admin Users field. NTLM user accounts are defined in the User Account Manager of the control panel.	Enabled (checked)

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FTP Server Configuration

The FTP Server tab in the Network Server Configuration dialog box configures settings that are used for exchanging files over a network. These are standard Microsoft Windows CE parameters.

The default FTP configuration lets any user establish an FTP connection to the HMI terminal by logging in anonymously and downloading files from the FTP default directory (\Temp).



TIP Always click OK to apply new settings. You are asked if you want to restart the service immediately.

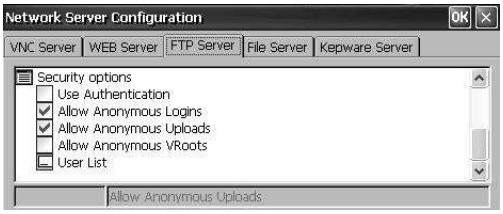
Table 55 - FTP Server Parameters

FTP Parameters	Description	Default
General		
Default Directory	Specifies a file storage location on your HMI terminal for transferring files. This is the directory that users come to when they first connect to the FTP server.	\Temp\
Idle Timeout	Specifies the time in seconds after which inactive control connections are closed during a data transfer. An FTP session requires one control connection, plus one data connection during file transfers. Without a timeout, the FTP server process can be left pending indefinitely if the corresponding client crashes without closing the control connection.	300 seconds (5 minutes)
Debug Output Channels	Specifies the number of debug output channels.	2
Debug Output Mask	Specifies the port number of the output mask used for debugging.	23
Base Directory	Specifies the path where the FTP log file and other support files are stored.	\Windows
Log Size	Specifies the maximum size of the file that logs FTP activities. The log file is stored in the base directory. A new log file is created, when the current log file reaches the maximum size.	4096 bytes
Security Parameters		
Use Authentication	Check this option to require a valid NTLM user name and password to access the FTP server. If authentication is enabled, you must enter one or more valid user names in the User List field. NTLM user accounts are defined in the User Account Manager of the control panel.	Enabled (checked)
Allow Anonymous Logins	Check this option to let anyone connect to the ftp server. Anonymous logins do not require a user name and password.	Enabled (Checked)
Allow Anonymous Uploads	Check this option to let users logged in anonymously to upload (or write) files to the FTP server (or default directory). If unchecked, users logged in anonymously can download (or copy) files from the server.	Disabled (Unchecked)
Allow Anonymous VRoots	Check this option to let users logged in anonymously to access virtual roots.	Disabled (Unchecked)
User List	Specifies which NTLM users can access the ftp server and exchange files to or from the default directory. When selected, you can enter a list of NTLM user names, separated by semicolons, in the field that opens at the bottom of the dialog box. User names and passwords are defined in the User Account Manager of the control panel.	None

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FTP Anonymous Login and Upload

Follow these steps to establish an FTP connection to the terminal by allowing anonymous logins and file transfers to or from the default FTP folder on the terminal.



TIP If Allow Anonymous Uploads is not checked, you can copy files from the default FTP folder on the terminal but not to the folder.

1. Open your web browser or any folder on your computer.

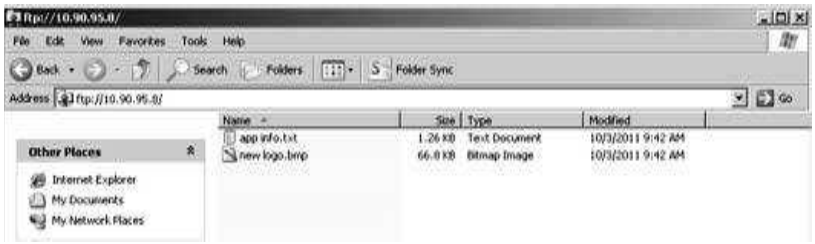


TIP You need the IP address of your HMI terminal to establish an FTP connection. Click the network connection icon in the system tray to view IP information.

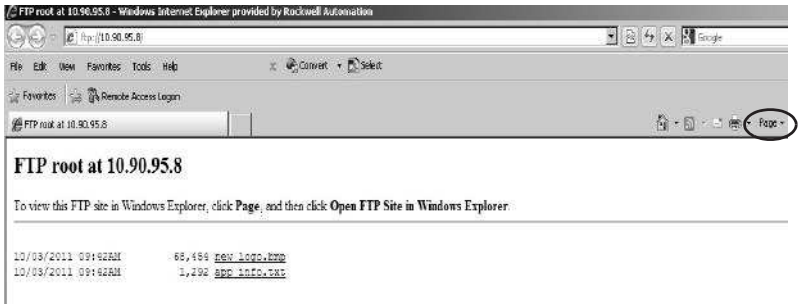
2. Type the IP address of the terminal in the address field by using the syntax ftp://ipaddress_of_hmi_terminal.

   ftp://90.95.80.8

   An anonymous connection is established to the \Temp folder, which is the FTP default directory on the terminal. The folder shows two files.



   If you launch the FTP connection from your browser, you might see this view.



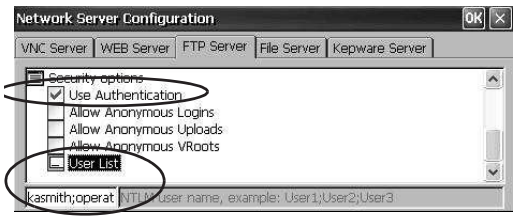
   To see the folder view, click Page, then from the File menu, choose Open FTP site in Windows Explorer.

3. Transfer files between your computer and the FTP folder:
   - Drag or copy a file from the FTP folder to your computer.
   - Drag or copy a file to the FTP folder from your computer.

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FTP Connection Requiring User Authentication

Follow these steps to establish an FTP connection to the terminal by first entering a valid user name and password.



1. Open your web browser or any folder on your computer.
2. Type the IP address of the HMI terminal in the address field by using the syntax ftp://ipaddress_of_hmi_terminal.

   ftp://90.95.80.8

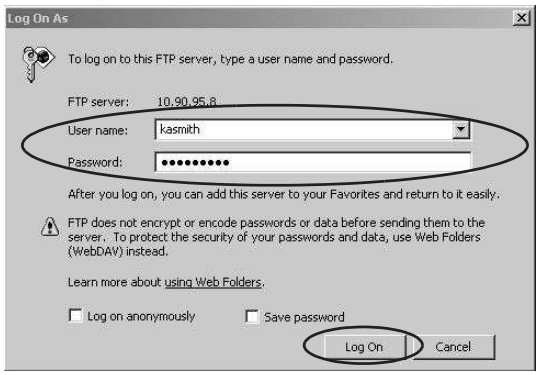
3. Click OK when you see the FTP Folder Error dialog box.



   If you launch the FTP connection from your browser, a prompt can appear notifying you that Internet Explorer cannot display this web page. Choose Page>File>Open FTP site in Windows Explorer.

4. From the File menu, choose Login As.

   The user name field is populated with the first user name entered in the User List of the FTP configuration.



   TIP The user name you enter must be in the User List of the FTP configuration and previously set up as a valid account in the User Accounts application.

5. Type a valid user name and password, then click Log On.

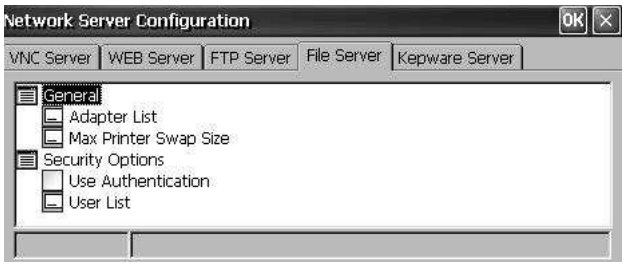
   The default FTP directory on the terminal opens. You can transfer files to or from this folder.



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File Server Configuration

The File Server tab in the Network Server Configuration dialog box provides settings that allow shared access to files, printers, serial ports, and miscellaneous communication between computers on a network. These are standard Microsoft Windows CE parameters.



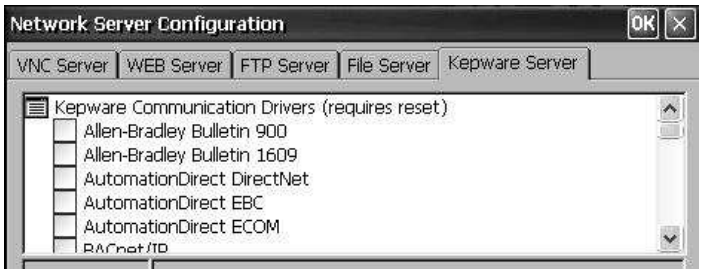
TIP Always click OK to apply new settings. You are asked if you want to restart the service immediately.

Table 56 - File Server Configuration

Parameter	Description	Default
General		
Adapter List	Provides a list of valid adapters.	* (all adapters)
Max Printer Swap Size	Specifies the maximum size of the printer swap file.	4096 bytes
Security Options		
Use Authentication	Check this option to require a valid NTLM user name and password to access the file server. If authentication is enabled, you must enter one or more valid user names in the User List field. NTLM user accounts are defined in the User Account Manager of the control panel.	Disabled (unchecked)
User List	Specifies a list of valid NTLM users allowed to access the file server. When selected, you can enter a list of NTLM user names, separated by semicolons, in the field that opens at the bottom of the dialog box. User names and passwords are defined in the User Account Manager of the control panel.	None

KEPServer Configuration

The KEPServer tab in Network Server Configuration lets you select Kepware communication drivers for a connected device.



TIP Always click OK to apply new settings. You are asked if you want to restart the service immediately. You must also reset your terminal.

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Printer Support

The terminals supports selected USB printers such as Canon, Epson, Hewlett-Packard, and Brother. Automatic printer installation that uses plug-and-play capabilities is supported as well as manual installation if a suitable printer driver is available. You can connect a printer to a USB port on the terminal.

For more information on supported printers, go to the knowledgebase at http://www.rockwellautomation.com/support/ and search for ID 111636 in the Search Answers box.



Printers are configured and managed from Printers in the desktop control panel. A wizard is supported for each printer type.

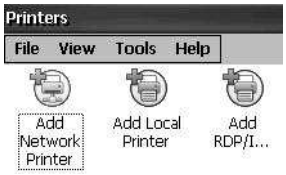


Table 57 - Support for Printers

Printer Type	Description
Local USB	You can connect a JETCET supported printer to a USB host port. The printer attached to the USB host port can be shared by a remote terminal when configured as a network printer on the remote terminal.
Network	The terminal supports a remote printer connected to the network via the Ethernet port. The printer can be addressed by its device name or IP address.
RDP /ICA	A local printer can be made available to a Windows server application that is running in an RDP (Remote Desktop Protocol) session on the terminal. (1)

(1) Applies only to PanelView Plus 6 terminals with extended features.

After configuring a printer, you can access it from desktop applications or from FactoryTalk View ME Station Configuration mode by pressing Terminal Settings>Print Setup. Applications can also select and share printers.

Automatic Printer Installation

Follow these steps to install a plug-and-play printer from the Windows desktop. For manual printer installation, refer to page 118.

TIP The procedure illustrates automatic plug-and-play installation for the Hewlett Packard HP deskjet 5650 printer.

1. Connect the printer to a USB host port on the terminal.
2. Plug the power cord of the printer into an outlet and turn the printer on.

   Windows detects your plug-and-play printer and, in many cases, installs it without requiring you to make any selections.

   The printer is ready to print.

IMPORTANT If automatic plug-and-play installation is not supported for a printer, this error is logged to the System Event log in the Hardware Monitor.

'JETCET PRINT was unable to auto-configure printer. To manually configure printer, go to the Printers folder from the Control Panel.'

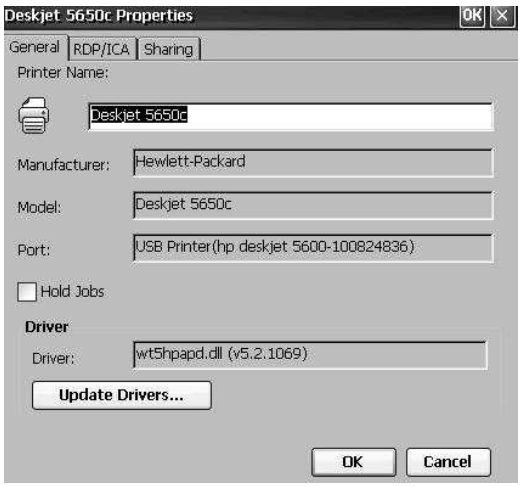
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3. Verify printer installation from the desktop control panel by opening the Printers applet.

   Notice the icon for the Deskjet 5650C printer. The check mark indicates this is the default printer.



4. From the File menu, choose Properties to view the properties of the printer.

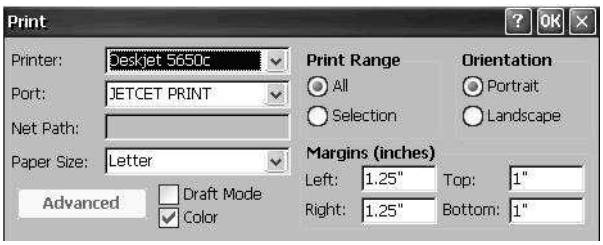


   Printer configuration includes the printer name, manufacturer and model, printer driver, and port-specific parameters.

   TIP
   - New printer configurations are retained through a power cycle.
   - Printers set up through the desktop control panel are also available within FactoryTalk View ME Station configuration mode when by pressing Terminal Settings>Print Setup.

5. Right-click the printer and print a test page to verify installation.

When printing from an application such as WordPad, a Print dialog box opens where you can adjust print settings as needed.

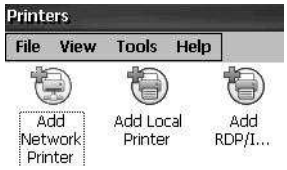


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Manual Printer Installation

Follow these steps to manually set up a supported printer.

1. Connect the printer to the USB port.
2. Plug the power cord of the printer into an outlet and turn the printer on.
3. From the desktop control panel, open Printers.
4. Click Add Local Printer.



5. Follow the Add Local Printer Wizard instructions to configure the printer:
   a. Verify the connected printer appears on the USB printer port.
   b. Select the manufacture and model of the JETCET printer.
   c. Accept the default printer name or enter another.
   d. Print a test page to verify the installed printer.
   e. Specify whether you want the printer to be shared on the network.

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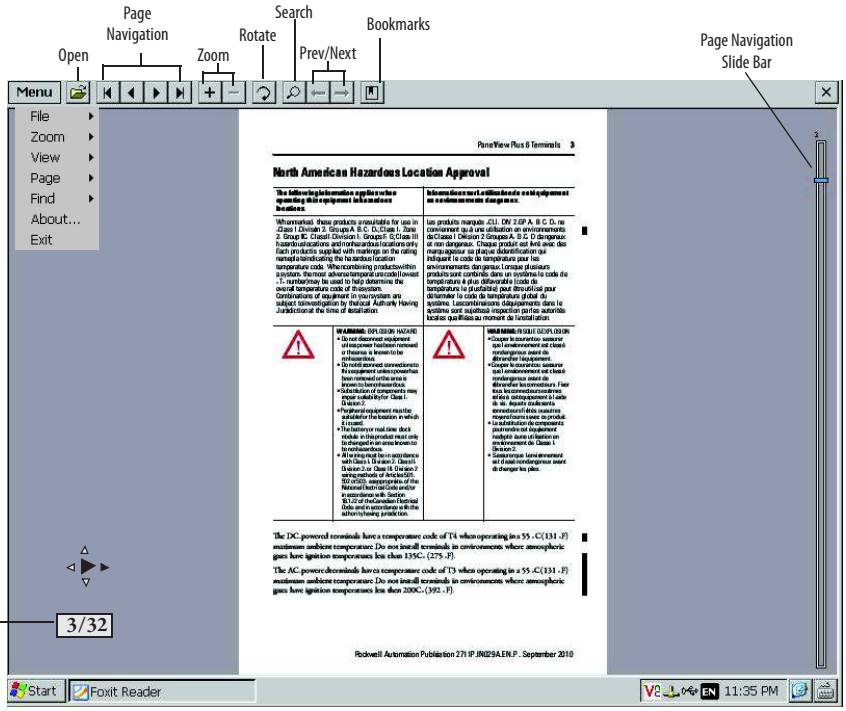
PDF Reader

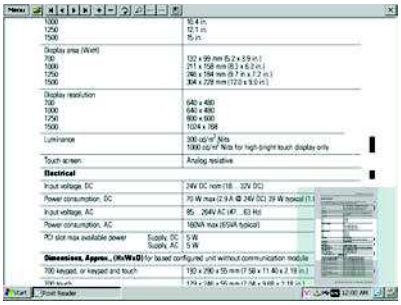


A PDF reader is available on all PanelView Plus 6 terminals and provides typical PDF view and search functions. You can run this reader from the Windows desktop or from a command prompt.

When viewing a PDF document, you can initiate functions from the menu or toolbar. Bookmarks created in the original PDF appear under Bookmarks.

Figure 13 - PDF Reader Workspace





Magnified view of page with minimap. You can touch the gray areas on the minimap to view another area of page at the same zoom level.

TIP If a keyboard is attached, you can use the Page Up and Page Down keys for page navigation. On keypad terminals, hold down the Alt key while pressing the up and down cursor keys.

Some viewing functions can be initiated on touch-screen terminals by touching or dragging.

Table 58 - Touch Screen operations

To	Do This	Indicator
Zoom In or Out	Tap the screen once to zoom in. Tap the screen again to zoom out. If Menu>View>Minimap is chosen, a miniview of the page appears in lower right of workspace. You can tap the gray areas to change view.	
Navigate pages	• Drag your stylus or finger to the right or left to view next and previous pages. An indicator shows the direction your are dragging. A box shows the current page/total page count. • Drag up or down the screen to activate the page navigation bar on the right. Move slide bar up or down to navigate pages.	 3/32 See page navigation bar in Figure 13.
Rotate	Drag in a circular, clockwise or counterclockwise direction to rotate the page.	

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Command Prompt Parameters

You can run the PDF reader from the Windows Command Prompt by choosing Start>Programs>Command Prompt and executing the command parameters in Table 59.

Command Prompt Syntax

Foxitreader "file_path/file-name.pdf" *parameter parameter_ value*

- Enclose the file path and file name in double quotes and use forward slashes to separate the file path directories and file name.
- Use spaces to separate the parameter from the file name and optional parameter value.

Command Prompt Example

Foxitreader "windows/desktop/example.pdf" -p 4

This command prompt opens example.pdf in Foxit Reader at page 4.

Table 59 - Command Prompt Parameters

Parameter	Parameter Function	Example	Description
-p	Go to page	Foxitreader "file_path/file.pdf" -p 2	Opens the PDF file to page 2.
-zw	Fit width	Foxitreader "file_path/file.pdf" -zw	Opens the PDF file and fits the view to the page width.
-zp	Fit page	Foxitreader "file.pdf"-zp	Opens the PDF file and shows the full page.
-z	Zoom to	Foxitreader "file.pdf"-z 150	Opens the PDF file and zooms to 150%.
Multiple parameters	Enter empty spaces between parameters and parameter values	Foxitreader "file_path/file.pdf" -p 2 -zw	Opens the PDF file to page 2 and fits the view the page width
-b	Go to bookmark	Foxitreader "file_path/file.pdf" -b "Bookmark1"	Opens the PDF file to the location specified within Bookmark1
-d	Go to named destination	Foxitreader "file_path/file.pdf" -b "Destination1"	Opens the PDF file to the location specified within Destination 1.
-g	Disable the File>Open command on the Menu and the Open folder button.	Foxitreader "file_path/file.pdf" -g	Opens the PDF file and dims the Menu, File>Open command the Open button.

Image Viewer

Use the Image Viewer to view bmp, jpg, and png images. You can control how images are viewed to create a slide show. Images can be sorted, rotated, zoomed. You can set the timing between slides and use other transition effects.

To run the image viewer, choose Start>Programs>File Viewers>Image Viewer>imageviewer.

For help on using the viewer, see the help available from the Image Viewer menu.

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Notes:

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Install and Replace Components

Topic	Page
Install or Replace the Logic Module	122
Install or Replace a Communication Module	123
Replace the Display Module	125
Replace the Bezel	126
Replace the Backlight	128
Replace the Battery	132
Install the AC Power Supply Module	134
Remove the Product ID Label	136
Replace the Keypad Legend Inserts	136
Load an SD Card	138
Clean the Display	139



ATTENTION: Prevent Electrostatic Discharge

This equipment is sensitive to electrostatic discharge, which can cause internal damage and affect normal operation.

Follow these guidelines when you handle this equipment:

- Touch a grounded object to discharge potential static.
- Wear an approved grounding wriststrap.
- Do not touch connectors or pins on component boards.
- Do not touch circuit components inside the equipment.
- Use a static-safe workstation, if available.
- Store the equipment in appropriate static-safe packaging when not in use.



ATTENTION: Shock Hazard

Disconnect power from the terminal before installing or replacing any components. Failure to disconnect power can result in electrical shock or damage to the terminal.

Required Tools

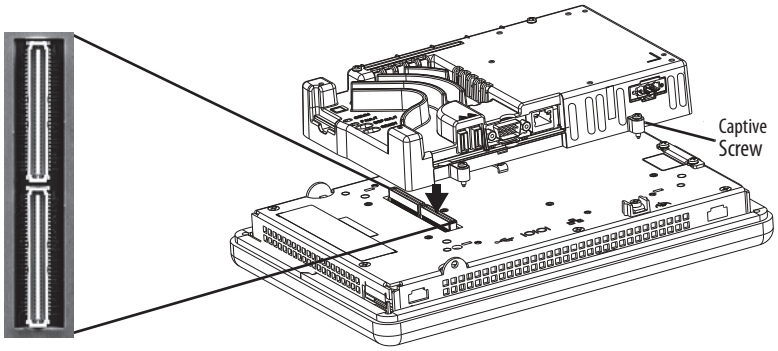
You need a #1 and #2 Phillips screwdriver to replace some of the components.

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Install or Replace the Logic Module

The display modules and logic modules for the 700, 1000, 1250, and 1500 terminals can be ordered as separate components for field installation. If modules are ordered as separate components, attach the logic module to the display module before panel installation.

1. Make sure power is disconnected from the terminal.
2. Set the display module display-side down on a clean, flat, stable surface.
3. Position the logic module over the back of the display module, aligning the logic module connector with the connectors on the display module.



4. Push down on the logic module until it is firmly seated.
5. Tighten the four captive screws that secure the logic module to the display module and torque to 0.58 N•m (5...7 lb•in).

Before replacing a logic module, you must first remove the communication module, if attached.

Follow these steps to replace a logic module.

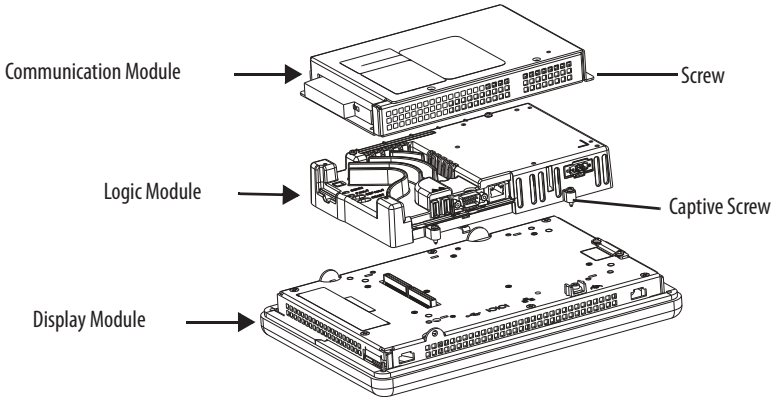
1. Disconnect power from the terminal.
2. Disconnect all power and communication cables.

> **WARNING:** Do not connect or disconnect any communication cable with power applied to this device or any device on a network. An electrical arc could cause an explosion in hazardous location installations. Be sure power is removed or the area is known to be nonhazardous before proceeding.

3. Set the display module display-side down on a clean, flat, stable surface.

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4. Remove the four screws that secure the communication module, if attached, to the logic module and set the communication module aside.



5. Loosen the four captive screws that secure the logic module to the display module.
6. Carefully lift the logic module from the back of the display.

ATTENTION: Wear a properly grounded ESD wristband before touching any of the electronic components in the logic module.

7. Install the new logic module and torque the four captive screws to 0.58 N•m (5...7 lb•in).
8. Install, the communication module, if necessary, and torque the four screws to 0.58 N•m (5...7 lb•in).

Install or Replace a Communication Module

The communication module installs over the logic module. Communication modules for the 700, 1000, 1250, and 1500 terminals are available as separate catalog numbers for field installation.

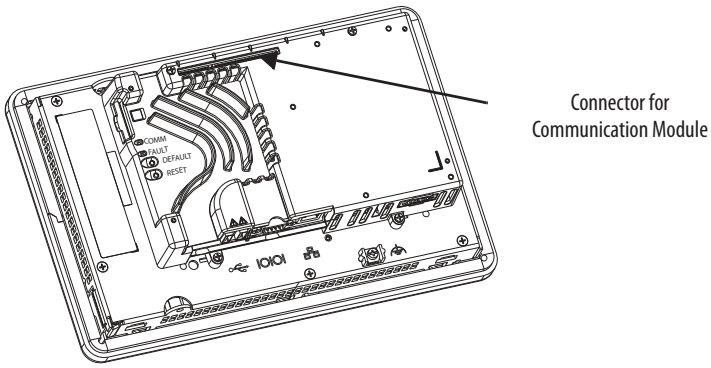
TIP The logic module must be attached to the display module before you attach the communication module.

Follow these steps to install a communication module.

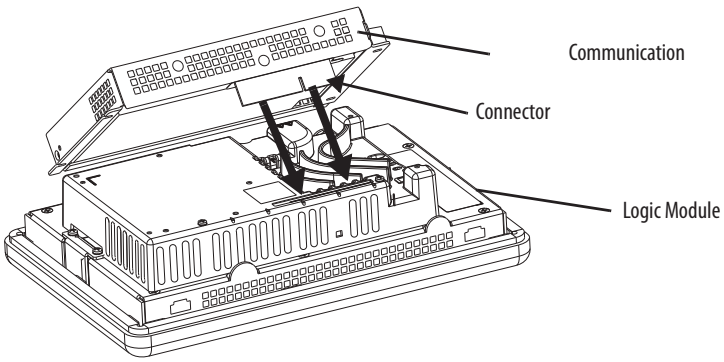
1. Disconnect power from the terminal.

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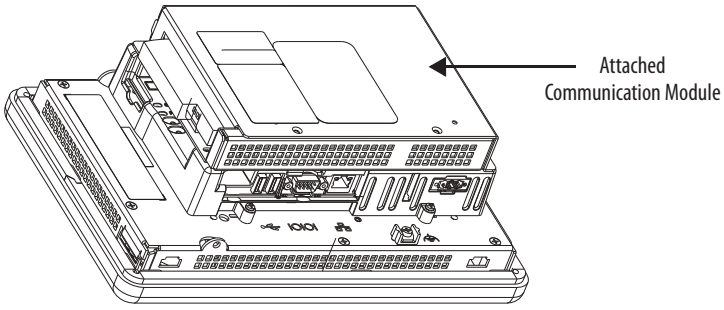
2. If the display module is removed from the panel, set the terminal, display-side down, on a clean, flat, stable surface.



3. Position the communication module over the logic module so that the connector on the bottom of the module aligns with the connector on the logic module.
4. To prevent ESD between the modules, let the communication module touch the logic module before making the connection.



5. Push down on the communication module until the connectors are seated.
6. Tighten the four screws that secure the communication module to the logic module to a torque of 0.58 N•m (5...7 lb•in).



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Follow these steps to replace a communication module.

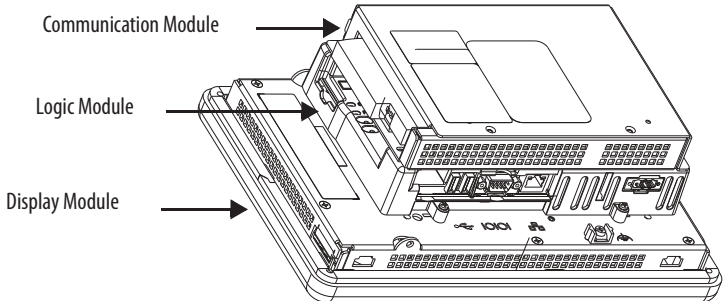
1. Disconnect power from the terminal.
2. Disconnect communication cables from the module.

> **WARNING:** Do not connect or disconnect any communication cable with power applied to this device or any device on a network. An electrical arc could cause an explosion in hazardous location installations. Be sure power is removed or the area is known to be nonhazardous before proceeding.

3. Remove the four screws that secure the communication module.
4. Carefully lift the communication module away from the logic module.
5. Install the new communication module by following steps 4...6 in Install or Replace a Communication Module on page 123.

Replace the Display Module

Follow these steps to replace a 700, 1000, 1250, or 1500 display module.

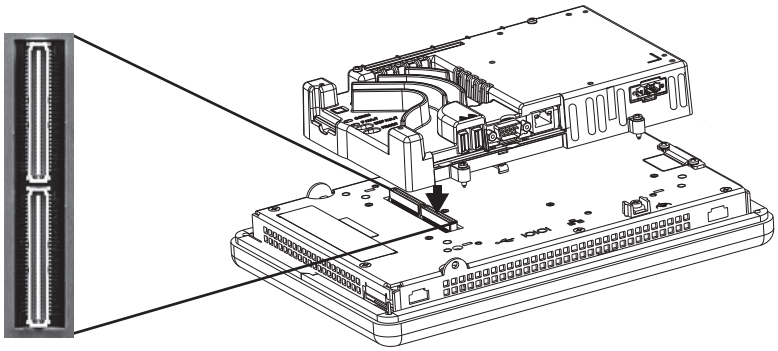


Follow these steps to replace the display module.

1. Disconnect power from the terminal.
2. Remove the terminal from the panel.
3. Detach the communication module, if attached, from the logic module by removing the four screws.
4. Loosen the four captive screws that attach the logic module to the display module.
5. Carefully lift the logic module from the display module.
6. Set the display module aside.

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7. Position the logic module over the new display module so that the connectors align.



8. Push down on the logic module until firmly seated.
9. Tighten the four captive secures that secure the logic module to the display module and torque to 0.58 N•m (5...7 lb•in).
10. Attach the communication module, if necessary, and torque the four screws to 0.58 N•m (5...7 lb•in).

Replace the Bezel

You can replace the bezel on the 700, 1000, 1250, and 1500 terminals. It is not necessary to remove the logic module or communication module before removing the bezel, except on the 700 terminal.

Remove the Display Module Bezel

Follow these steps to remove the display module bezel.

1. Disconnect power from the terminal.
2. Set the terminal, display side down, on a flat stable surface.

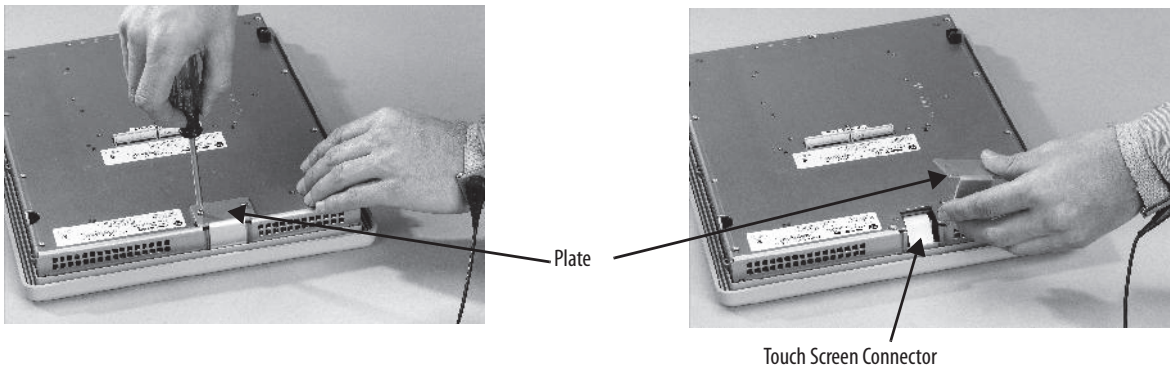


ATTENTION: Wear a properly grounded ESD wristband before touching any of the electronic components in the logic module.

3. On touch-screen only terminals, remove the two screws that secure the small metal plate to the back of the display module.

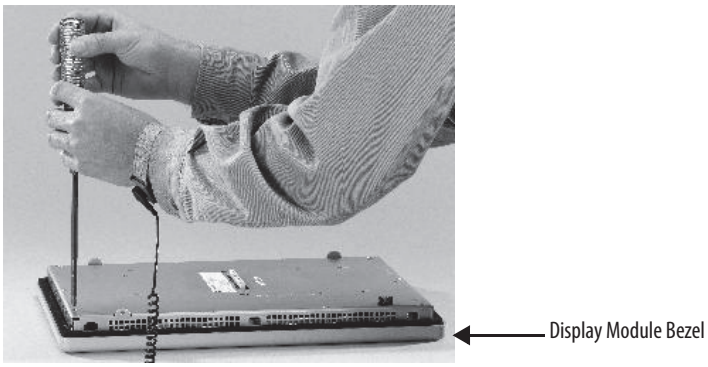
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4. Disconnect the touch screen connector.

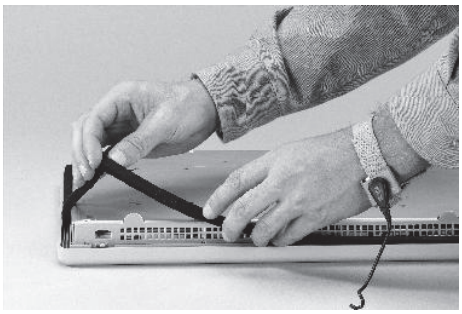


5. Remove the screws from the back of the display module.

   The number of screws varies for each terminal type.



6. Remove the sealing gasket.



7. Lift the back of the display module away from the bezel.

   Work on a clean, flat, stable surface to protect the display from debris, scratches and damage.

8. Detach the connectors.
   - Function key connector
   - Connector on keypad or keypad/touch units

9. Set the bezel aside.

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Replace the Display Module Bezel

Follow these steps to replace the display module bezel.

1. Make sure the bezel is free of lint and marks before attaching.
2. Attach the connectors.
   - Function key connector
   - Connector on keypad or keypad/touch units
3. Place the back of the display module over the bezel.

   Be careful not to pinch any of the cables. Let the touch screen connector out of the access opening.
4. Attach the touch screen connector.
5. Replace the new sealing gasket.
6. Attach the screws that secure the display module to the bezel and tighten to a torque of 1.35...1.58 N•m (12...14 lb•in).
7. On touch-screen terminals, reattach the small metal plate to the back of the display module and torque the two screws to 0.58 N•m (5...7 lb•in).

Replace the Backlight

The 700, 1000, 1250, and 1500 CCFL-display modules have replaceable backlights except for the 1250 high-bright displays. Backlight replacement does not apply to LED displays.

Table 60 - CCFL Backlight Replacements(1)

Use Cat. No.	For Display	Series	Number of CCFL Backlights
2711P-RL7C	700	A and B	1
2711P-RL7C2		C and D	1
2711P-RL10C	1000	A	1
2711P-RL10C2		B and C	1
2711P-RL12C	1250	A and B	2
2711P-RL12C2		C	1
2711P-RL15C	1500	B	2

(1) These CCFL-backlight replacement catalog numbers do not apply to LED displays.

IMPORTANT Disposal: The backlights for these products contain mercury. Dispose of per applicable laws.

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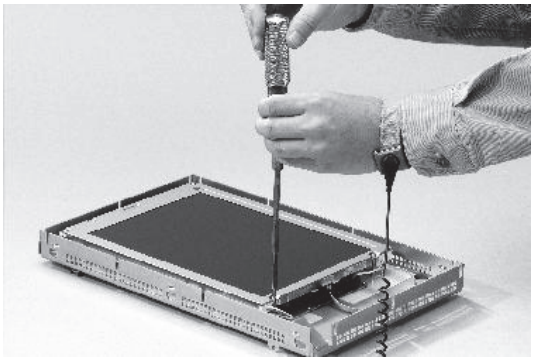
Follow these steps to replace the backlight.

1. Disconnect power from the terminal.
2. Remove the display module bezel.

IMPORTANT	The 700 series C display is not secured by screws and is retained only by a bracket. Use care not to drop the display once the bezel is removed.

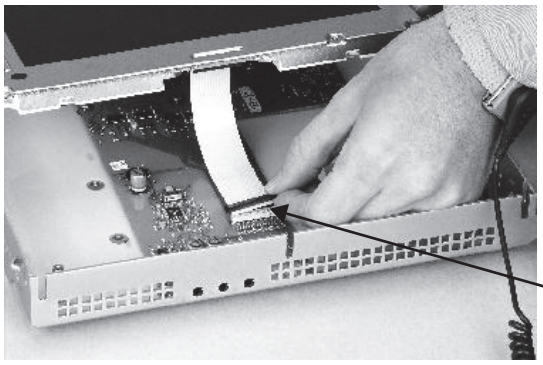
3. Remove the four screws that secure the LCD display.

   For 700 displays, remove the four screws that secure the display bracket.

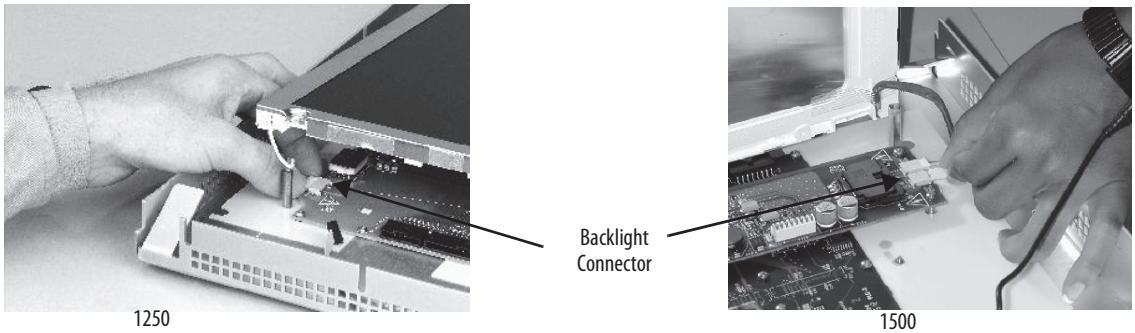


4. Lift the LCD display and detach the display connector from the circuit board.

   The circuit board layout can vary for each terminal model. The location of the connector varies by model.



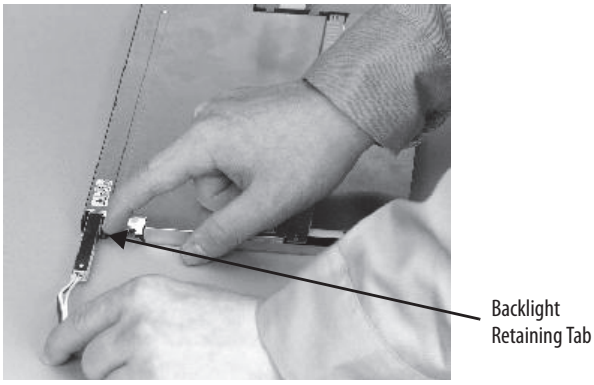
5. Detach the backlight connectors from the circuit board.
   - The 1250 has one or two backlight connectors depending on the series of the display.
   - The 1500 has four backlight connectors.



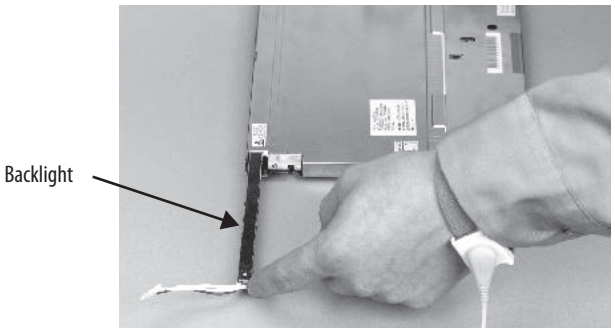
1250 1500

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6. Follow these steps for the 700 and 1000 displays.
   a. Press the retaining tab that secures the backlight, then pull out the backlight.



   b. Insert the new backlight.

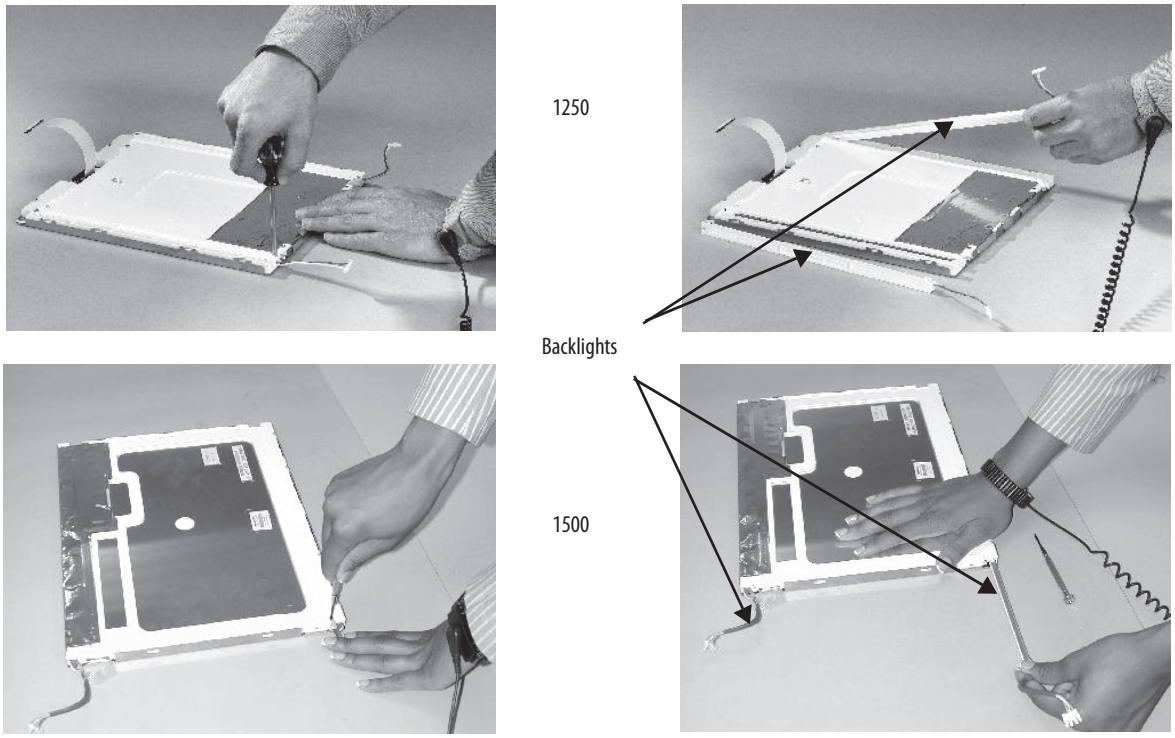


7. Follow these steps for the 1250 and 1500 displays.
   a. Remove the screws that secure the backlights and remove the backlights.

      For the 1250 series A and B displays, the two backlights are each secured with two screws. The single backlight for the 1250 series C displays is secured with one screw.

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For the 1500 series B displays, remove the tape, then remove the backlights.



b. Insert the new backlights then secure each with the same screws from the previous step, and torque to 0.117 N•m (1.04 lb•in).

8. Attach the LCD display connector to the circuit board.

   Refer to step 4.

9. Attach the backlight connector to the circuit board.

   Refer to step 5.

10. Secure the LCD display.

    a. Attach the display bracket then secure the display in the bracket for the 700 series C display.

    b. Attach the four screws for all other displays.

    Tighten the screws and torque to 0.58 N•m (5...7 lb•in).

11. Replace the display module bezel.

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Replace the Battery

The product has a lithium battery that is used by the real-time clock. The battery is not used for backup or retention.



This product contains a sealed lithium battery which may need to be replaced during the life of the product.

At the end of its life, the battery contained in this product should be collected separately from any unsorted municipal waste.

The collection and recycling of batteries helps protect the environment and contributes to the conservation of natural resources as valuable materials are recovered.



ATTENTION: Shock Hazard

Failure to follow proper safety precautions could result in severe electrical shock or damage to the terminal.



WARNING: There is a danger of explosion if the lithium battery or real-time clock module in this product is incorrectly replaced. Do not replace the battery or real-time clock module unless power has been removed and the area is known to be nonhazardous.

Replace the battery with catalog number 2711P-RY2032 or an equivalent CR2032 coin cell battery.

Do not dispose of the lithium battery or real-time clock module in a fire or incinerator. Dispose of used batteries in accordance with local regulations.

For safety information on the handling of lithium batteries, including handling and disposal of leaking batteries, see Guidelines for Handling Lithium Batteries, publication AG 5-4.

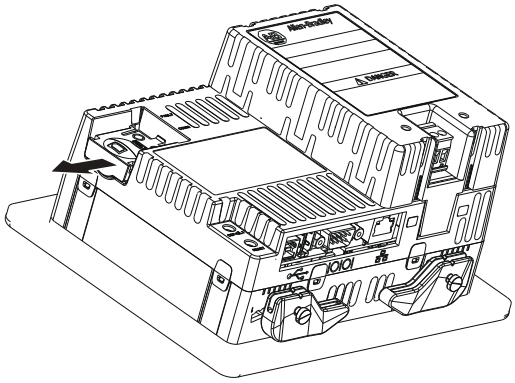
400 and 600 Terminals

You can replace the battery with the terminal mounted in the panel. No special tools are required to remove the battery.

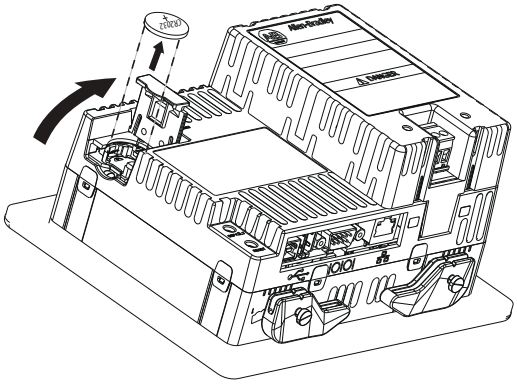
Follow these steps to replace the battery in a 400 or 600 terminal.

1. Disconnect power from the terminal.
2. Unlatch the battery cover by pulling it straight out.

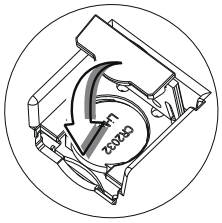
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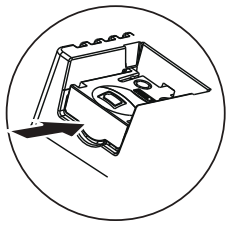


3. Lift up on the cover.
4. Remove the battery.



5. Insert the new battery with the positive (+) polarity facing up and press gently until the battery snaps into place.





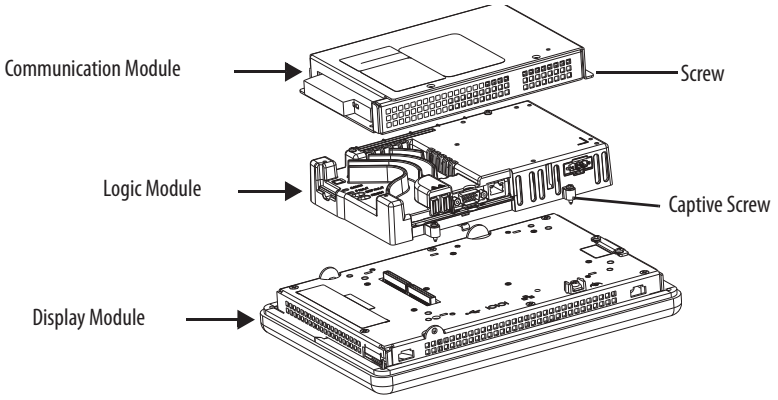
6. Close the battery cover and push the end in until you hear a click.

700 to 1500 Terminals

Follow these steps to replace the battery.

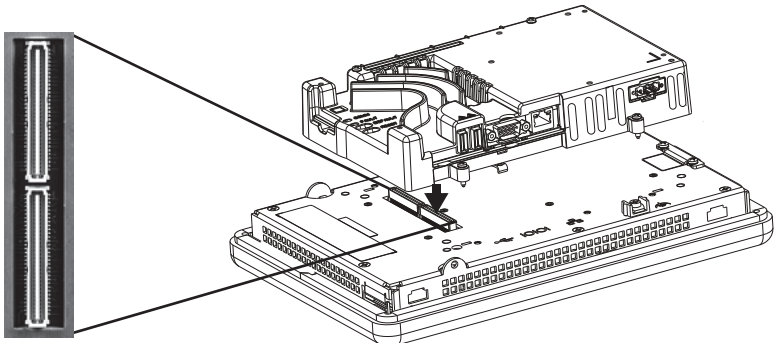
1. Disconnect power from the terminal.
2. Place the terminal, display side down, on a flat stable surface.
3. Detach the communication module, if attached, from the logic module by removing the four screws.
4. Loosen the four captive screws that attach the logic module to the display.

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5. Carefully lift the logic module away from the terminal and turn over to expose the circuit board.
6. Locate the battery on the circuit board.
7. Remove the battery by lifting up the side of the battery.

   The battery can be removed up to 15 seconds without losing clock and calendar data.
8. Insert the new battery.
9. Reattach the logic module by aligning the two connectors on the bottom of the logic module with the connectors on the back of the display module.

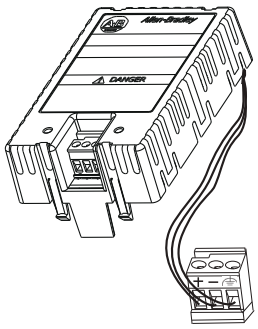


10. Push down on the logic module until it is firmly seated.
11. Tighten the four captive screws that secure the logic module to a torque of 0.58 N•m (5...7 lb•in).
12. Reattach the communication module, if necessary, and tighten the four screws to a torque of 0.58 N•m (5...7 lb•in).

Install the AC Power Supply Module

The AC power supply module for the 400 and 600 terminals, catalog number 2711P-6RSA, attaches to the back of a DC-powered terminal to convert the terminal from DC to AC power. You can install the AC module with the terminal mounted in the panel. No special tools are needed.

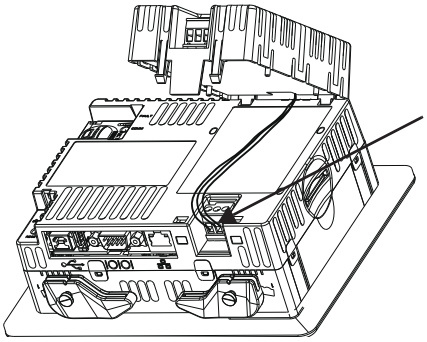
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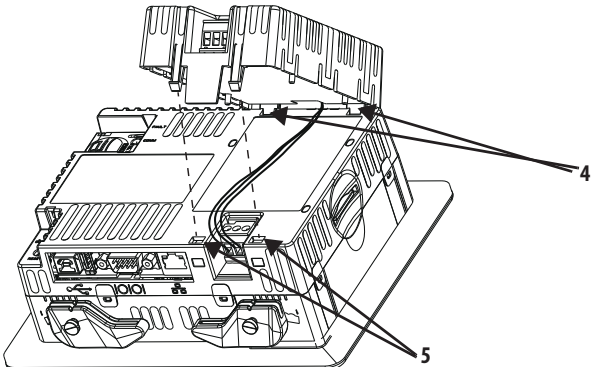
Follow these steps to attach and wire the AC power module.

1. Disconnect power to the terminal.
2. Remove the DC power terminal block currently installed in your terminal.

   See Remove and Install the Power Terminal Block on page 37.
3. Plug the DC power terminal block connected to the AC power supply module into the terminal.



4. Insert the two short tabs on the AC module into the slots on the back of the terminal.



5. Push down on the module until the two long tabs snap into the slots on the opposite side of the terminal.

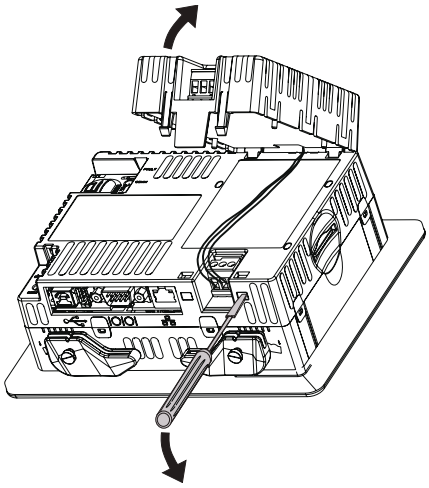
   Make sure the module is securely connected and that the power supply wires are not pinched between the module and the terminal.
6. Connect AC power to the terminal block on the AC module.

   Refer to Connect AC Power on page 43 for details on how to wire power.

Follow these steps to remove the AC power module.

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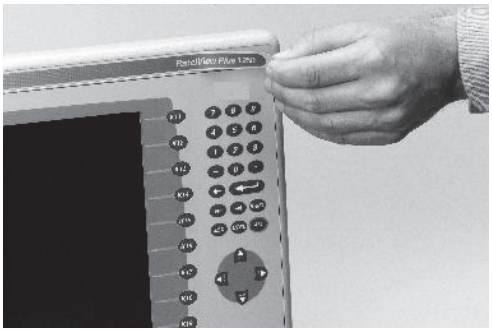
1. Disconnect power to the terminal.
2. Remove the AC power wiring from the power terminal block.
3. Insert a small, flat-blade screwdriver into one of the two slots below the AC module and pry up carefully to release the tabs from the slot.
4. Pull up on the front of the module to release the back tabs.
5. Remove the DC power terminal block and wiring from the terminal.



Remove the Product ID Label

You can replace the product ID label on the terminal with a custom label.

1. Remove the Allen-Bradley label by using your fingers or a tweezers.



2. Clean area with damp cloth and isopropyl alcohol.
3. Remove adhesive backing of new label and affix to the same location.

Replace the Keypad Legend Inserts

Legend strips are available as separate catalog numbers for keypad terminals, except for the 400 keypad terminals. One side of the legend strips have default key legends; the other side is blank for creating custom legends.

600 Terminals

The legend inserts for function keys F1...F10 are accessible from the back of the unit and can be replaced with the terminal mounted in the panel.

Follow these steps to replace the legend insert.

1. Disconnect power to the terminal.
2. From the rear of the unit, pull the legend strip from the slot.

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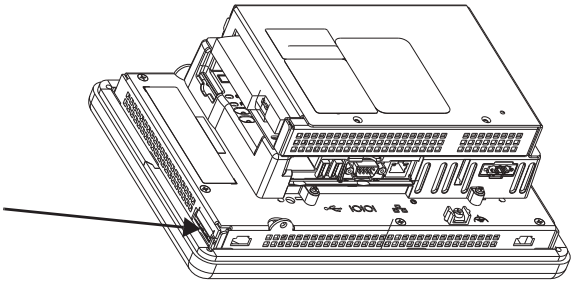


3. Slide the new legend insert into the same slot.

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700 to 1500 Terminals

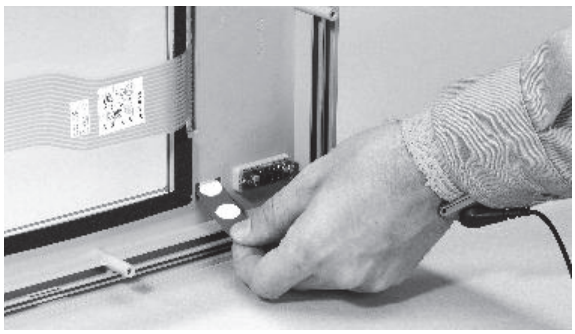
On the 700 to 1500 terminals, the F1-Fxx legend strips are accessible from the back of the unit.



The K1-K*xx* legend inserts are accessible when the display bezel is removed.

Follow these steps to replace the K1-K*xx* key legend inserts.

1. Remove power from the terminal.
2. Remove the display module bezel as described on page 126.
3. Pull the legend inserts out from the slots on the bezel.



4. Slide the new legend strips into the slots until only the end tab is visible.
5. Replace the display module bezel.

Load an SD Card

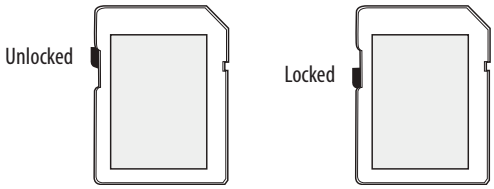
A Secure Digital (SD) card provides extra storage when inserted into the SD card slot. Supported cards include catalog number 1784-SDx. The SD cards are hot-swappable; they can be inserted and removed while the terminal is operating.

The SD card slot is accessible from the inside or back of the panel in which the terminal is installed.

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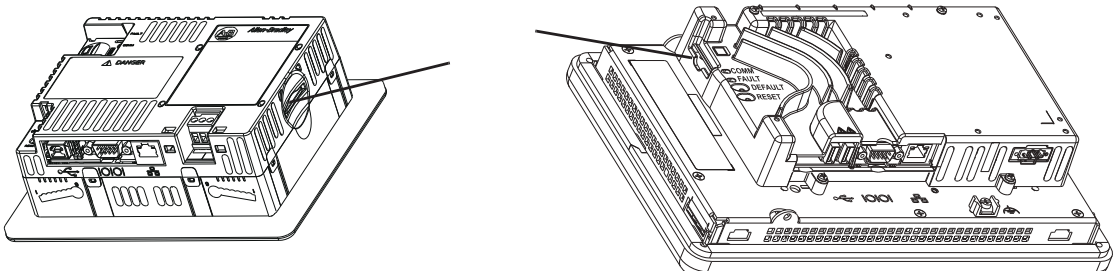
Follow these steps to install an SD card in the card slot.

1. Verify that the SD card is locked or unlocked according to your preference:
   - If unlocked, the terminal can write data to or read data from the card.
   - If locked, the terminal can only read data from the card.



ATTENTION: Orient the SD card correctly before inserting into slot. Forcing the card into the slot can damage the card or the terminal.

2. Insert the SD card firmly into the slot until you hear a click.



Press and release the SD card to eject the card from the slot.

TIP
- SD card volumes are named StorageCard2, StorageCard3,...
- SD card volumes and their physical characteristics are consistent with the CompactFlash card used by other PanelView Plus products. You can migrate applications on CompactFlash cards to an SD card.

Clean the Display

Use a protection antiglare overlay for easier cleaning of the display screen.

ATTENTION: Abrasive cleaners or solvents can damage the display. Do not scrub or use brushes on the display.

Follow these steps to clean the display screen.

1. Disconnect power from the terminal.
2. Use a clean sponge or soft cloth with mild soap or detergent to clean the display.
3. Dry the display with a chamois or moist cellulose sponge to avoid water spots.

Remove fresh paint splashes and grease before drying by rubbing lightly with isopropyl alcohol (70% concentration). Then wash the display by using mild soap or detergent. Rinse with clean water.

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Notes:

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Terminal Connections

Topic	Page
USB Ports	142
Ethernet Connections	144
Serial Connections	146
DH-485/DH+ Communication Module	149
ControlNet Communication Module	152
Controller Connections	155



ATTENTION: Wiring and Safety Guidelines

Use publication NFPA 70E, Electrical Safety Requirements for Employee Workplaces, IEC 60364 Electrical Installations in Buildings, or other applicable wiring safety requirements for the country of installation when wiring the devices. In addition to the NFPA guidelines, here are some other guidelines to follow:

- Route communication cables to terminal by a separate path from incoming power. Do not run signal wiring and power wiring in the same conduit.
- Cross power and communication lines at right angles if they must cross.
- Communication lines can be installed in the same conduit as low-level DC I/O lines (less than 10V).
- Shield and ground cables appropriately to avoid electromagnetic interference (EMI). Grounding minimizes noise from EMI and is a safety measure in electrical installations.

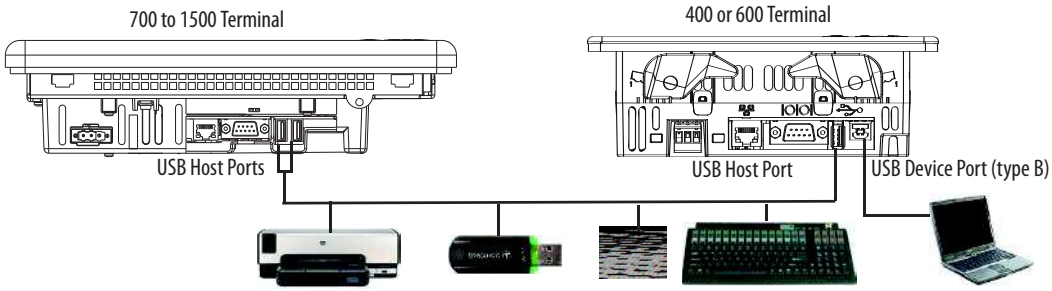
For more information on grounding recommendations, refer to the National Electrical Code published by the National Fire Protection Association.

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USB Ports

All terminals have one or two USB 2.0 host ports, and the 400 and 600 terminals have one USB 2.0 device port.

Figure 14 - USB Ports



IMPORTANT The USB host and device ports are intended only for temporary use and must not be used for runtime operations.

Table 61 - USB Device Support

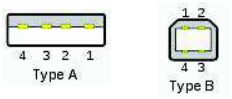
USB Port Type	Supported USB Devices	Tips
Host Ports (type A)	• Keyboard or mouse, HID devices with native device drivers • USB flash drives for external storage • Supported printers • Cameras, modems, and bar code readers	For a list of compatible devices, go to: http://www.rockwellautomation.com/knowledgebase and search the Knowledgebase for ID 115072. USB flash drive volumes are named USB Storage, USB Storage2,... USB flash drive partitions are managed by Storage Manager in the Control Panel.
Device Port (type B, only 400 and 600 terminals)	Host computer with the USB remote RNDIS network deice driver installed.	For details on how to install the USB remote NDIS driver on a computer and configure the terminal for the USB connection, go to http://www.rockwellautomation.com/knowledgebase and search the Knowledgebase for ID 115608.

IMPORTANT Refer to page 29 for information on using the USB host ports and USB peripheral devices in hazardous locations.

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The USB ports are identified by a USB icon. Each USB host port supports 0.5 A at 5V DC. Connected USB devices must not exceed this power load.

Table 62 - USB Connector Pinouts

USB Icon	USB Ports	Pin	Signal	Description
		1	VCC	+5V
		2	D-	Data -
		3	D+	Data +
		4	GND	Ground

Hi-speed USB 2.0 certified cables are recommended for error-free transmissions.



WARNING: USB devices not powered by the USB port must be within same enclosure as the terminal. USB devices must be connected to a ground system common with the terminal or used with a USB hub providing galvanic isolation.

Connect only externally-powered USB hubs to the terminal. Before attaching devices to a USB hub, make sure the power adapter is connected and powered on.

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Ethernet Connections

The Ethernet port connects to a controller on an EtherNet/IP network by using standard Ethernet and network connections. The port also supports application transfers, and printing.

TIP The 2711P-RN20 Ethernet communication module is available for the 700 to 1500 terminals if another Ethernet port is required. The module has its own unique IP address.

Ethernet Connector

The Ethernet port has an RJ45, 10/100Base-T connector for network communication and supports MDI/MDI-X connections.

Figure 15 - Ethernet Connector

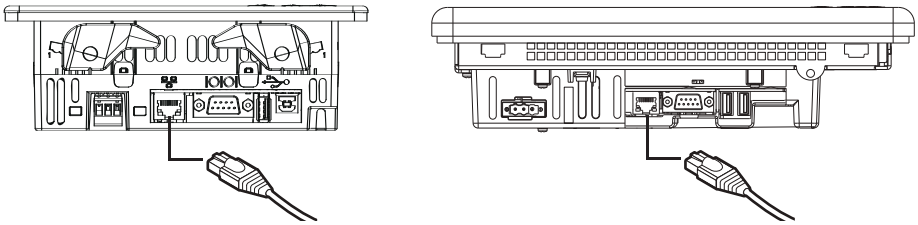


Table 63 - Ethernet Connector Pinout

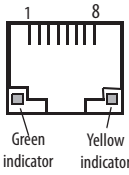
Connector	Pin	Pin Name	Pin	Pin Name
RJ45 Connector 	1	Transmit +	5	Unused
	2	Transmit –	6	Receive –
	3	Receive +	7	Unused
	4	Unused	8	Unused

Table 64 - Ethernet Status Indicators

Indicator	Status Indicator Color	Description
Link Integrity	Yellow	Asserted when a link is present.
Activity Status Indicator	Green	Pulsed active when receive or transmit activity is present.

Ethernet Cable

Table 65 - Ethernet Cable Requirements

For These Terminal Models	Use this Ethernet Cable
700 to 1500 terminals	Belden 7921A shielded CAT5E cable according to TIA 568-B.1 and RJ45 connector according to IEC 60603-7 for compliance with Marine emission limits and the European Union 89/336/EEC EMC Directive.
400 to 600 terminals	Use category five, twisted-pair cables. You can use a standard Ethernet cable or a crossover cable, such as catalog number 2711P-CBL-EX04, when connecting directly to a logic controller or switch.

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The maximum cable length between the Ethernet port and a 10/100Base-T port on an Ethernet hub (without repeaters or fiber) is 100 m (328 ft).



WARNING: Do not connect or disconnect any communication cable with power applied to this device or any device on the network. An electrical arc could cause an explosion in hazardous location installations. Be sure that power is removed or the area is nonhazardous before proceeding.

Security Considerations

IGMP (Internet Group Management Protocol) is used for IPv4 multicast. A multicast is communication between a single sender and multiple receivers on a network. IGMP is used to exchange membership status data between IPv4 routers that support multicasting and members of multicast groups. A router is an intermediary device on a communication network that expedites message delivery by finding the most efficient route for a message packet within a network, or by routing packets from one sub-network to another. A sub-network is a separate part of an organization's network identified through IP addressing.

PanelView Plus terminals provide level 2 (full) support for IPv4 multicasting (IGMP version 2) as described in RFC 1112 and RFC 2236.

SNMP (Simple Network Management Protocol) is used for internal network management and is not supported.

Ports 137 and 138 are normally open to support the NetBIOS protocol used by Windows CE.NET similar to other Microsoft and IBM network operating systems.

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Serial Connections

The RS-232 serial port is multi-purpose and supports these connections:

- DH-485 communication through a serial connection
- DF1 full-duplex communication with controllers by using direct connections or modem connections
- Third-party point-to-point communication
- Application transfers and printing

The serial port is a 9-pin, male, RS-232 connector. Table 66 shows the pinout descriptions and how these pins map to the serial ports on the controllers.

The maximum cable length for serial communication is 15.24 m (50 ft).

Figure 16 - RS-232 Serial Port

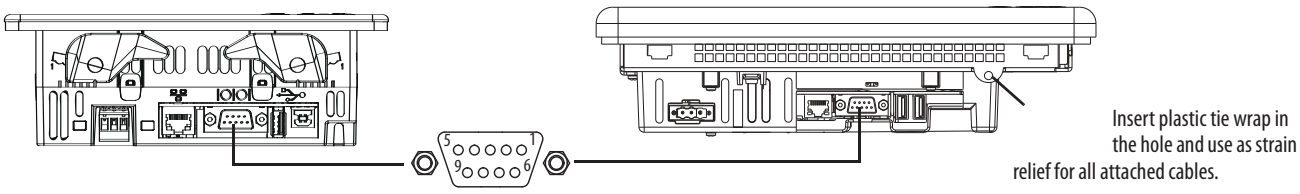


Table 66 - RS-232 Serial Port Connector Pinout

PanelView Plus 6 RS-232 Port 9-pin DCE		SLC or Logix 9-pin	PLC 25-pin	MicroLogix/ ENI 8-pin DIN
1				
2	RXD →	2	3	4
3	← TXD	3	2	7
4	← DTR	4	20	
5	↔ COM	5	7	2
6	DSR →	6	6	
7	← RTS	7	4	
8	CTS →	8	5	
9				
Connector Shell	Chassis Gnd			

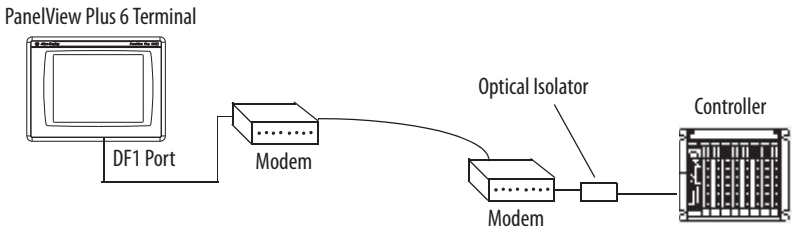
WARNING: Do not connect or disconnect the communication cable with power applied to the terminal, or the serial device on the other end of the cable. An electrical arc could cause an explosion in hazardous location installations. Be sure that power is removed or the area is nonhazardous before proceeding.

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Modem Connection

Wire or radio modem communication is possible between the terminal and controller. Each modem must support full duplex communication. Refer to your modem user manual for details on settings and configuration.

Figure 17 - Modem Connection



Construct a Null Modem Cable

To construct a null modem cable, refer to this pinout.

Table 67 - Null Modem Pinout

Pin Description	PanelView Plus 6 9-pin	9-pin Modem	PanelView Plus 6 9-pin	25-pin Modem	Pin Symbol
FG (Frame Ground)	-	-	-	1	FG
TD (Transmit Data)	3	2	3	3	RD
RD (Receive Data)	2	3	2	2	TD
RTS (Request to Send)	7	8	7	5	CTS
CTS (Clear to Send)	8	7	8	4	RTS
SG (Signal Ground)	5	5	5	7	SG
DSR (Data Set Ready)	6	4	6	20	DTR
DTR (Data Terminal Ready)	4	6	4	6	DSR

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Computer Connections

The RS-232 serial port supports application uploads and downloads between the terminal and a computer by using a direct connection.

Figure 18 - Serial Port Connection to Computer

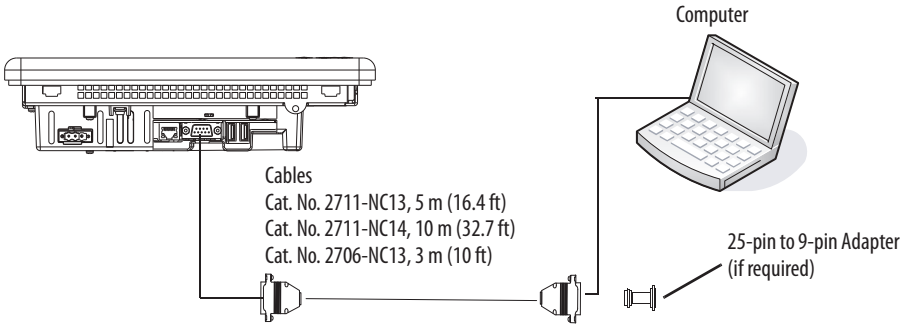


Table 68 - Upload/Download Cable with Handshaking

PanelView Plus 6 Port (DCE)		Computer Port (DTE) with Handshaking	
9-pin male		**9-pin male**	
1 NC		1	DCD
2	RXD →	2	RXD (Data Receive)
3	← TXD	3	TXD (Data Transmit)
4 NC		4	
5	↔ COM	5	COM
6 (pulled high to +12V)	DSR →	6	DSR
7	← RTS	7	RTS
8	CTS →	8	CTS
9 NC		9	NC

Table 69 - Upload/Download Cable without Hardware Handshaking

PanelView Plus 6 Port (DCE)		Computer Port (DTE)	
9-pin male		**9-pin**	**25-pin**
2	RXD →	2	3
3	← TXD	3	2
5	↔ COM	5	7

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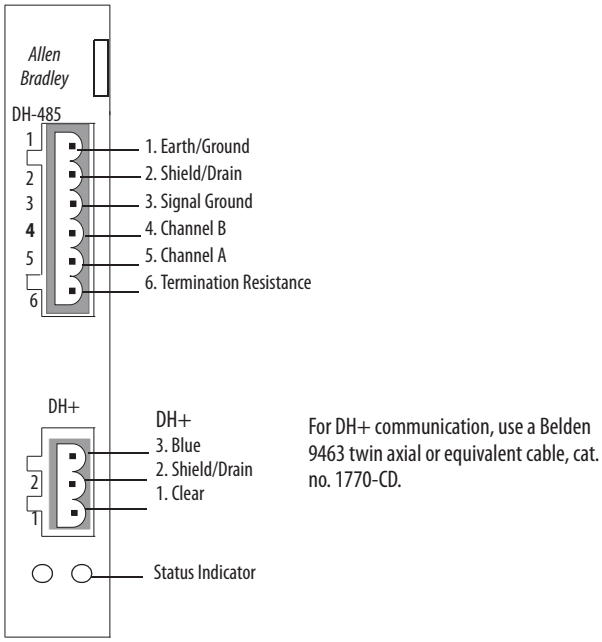
DH-485/DH+ Communication Module

700 to 1500 terminals with a catalog number 2711P-RN6 or 2711P-RN6K communication module support communication with these networks:

- DH+ networks
- DH-485 networks

The communication module has a separate port for each communication protocol. You can communicate with one network only at one time.

Figure 19 - DH-485/DH+ Communication Module Connectors



IMPORTANT See your controller documentation for appropriate controller connections.

Status Indicators

The module has indicators that show the status of the DH-485 or DH+ network connection.

Table 70 - DH-485 and DH+ Status Indicators

Indicator State	Description
Off	Channel is not online.
Blinking green	Device is only node on the network.
Solid green	Device is online and receiving token.
Blinking red	DH-485: Duplicate node. DH+: Parity error.
Solid red	Failed selftest.

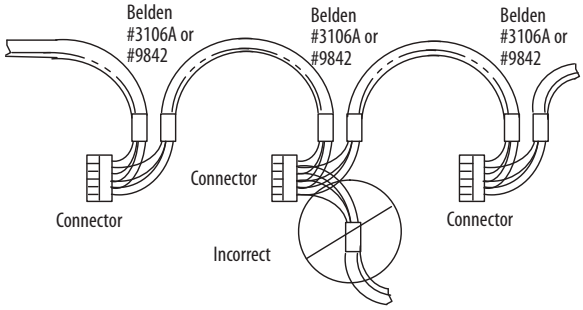
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DH-485 Network Port Wiring

Refer to the figures to attach the RS-485 connector to a Belden 3106A or 9842 cable. Refer to Controller Connections on page 155 if you are using standard Allen-Bradley® cables.

IMPORTANT A daisy-chained network is recommended. We do not recommend a hybrid star/daisy chain networks as shown.

Figure 20 - Daisy-chain Connection



Attach the connector to a Belden 3106A or 9842 cable as shown in Figure 21 or Figure 22.

Figure 21 - Single Cable Connection

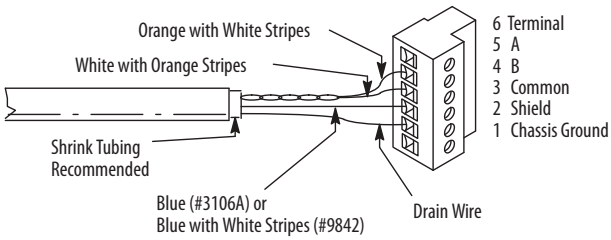


Figure 22 - Multiple Cable Connection

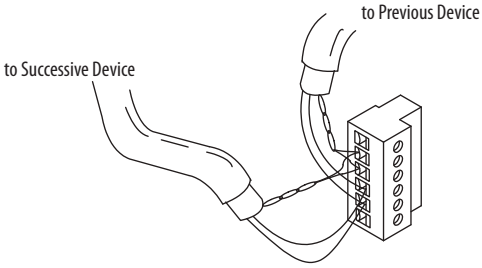


Table 71 - Belden 3106A Wire Connections

For this Wire/Pair	Connect this Wire	To this Terminal
Shield/Drain	Non-jacketed	Terminal 2 - Shield
Blue	Blue	Terminal 3 - (Common)
White/Orange	White with Orange Stripe	Terminal 4 - (Data B)
	Orange with White Stripe	Terminal 5 - (Data A)

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DH+ Network Connections

Use a Belden 9463 twin-axial or equivalent cable, catalog number 1770-CD, to connect a terminal to a DH+ link.

You can connect a DH+ link in two ways:

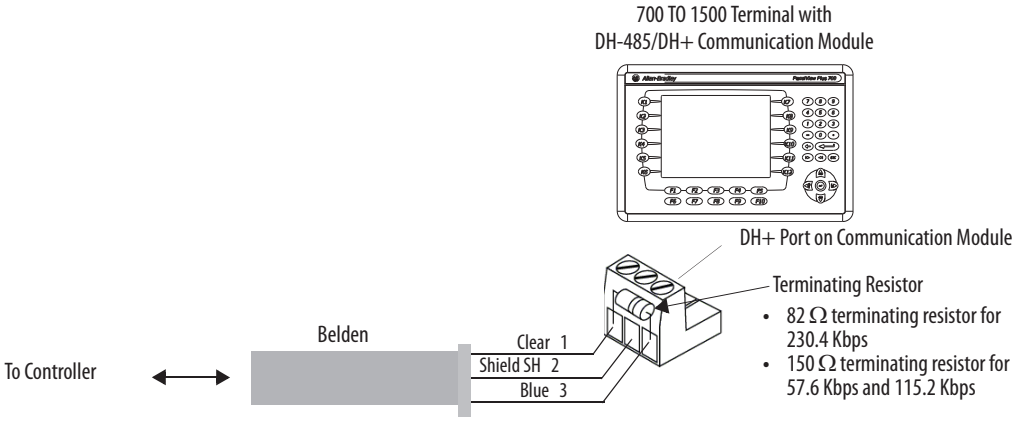
- **Trunk line/drop line** - from the drop line to the connector screw terminals on the DH+ connectors of the processor.
- **Daisy chain** - to the connector screw terminals on the DH+ connectors on the processor.

Follow these guidelines when installing DH+ communication links:

- Do not exceed these cable lengths:
  - Trunk line-cable length: 3048 m (10,000 ft)
  - Drop-cable length: 30.4 m (100 ft)

  The maximum cable length is determined by the baud rate.
- Do not connect more than 64 stations on a single DH+ link.

Figure 23 - Terminal Connection to DH+ Link



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ControlNet Communication Module

700 to 1500 terminals with a catalog number 2711P-RN15S or 2711P-RN15SK communication module support ControlNet communication and the transfer of applications between devices on a ControlNet network.

Additional Resources

For more information on ControlNet products, refer to these publications:

- NetLinx Selection Guide, publication NETS-SG001
- ControlNet Coax Media Planning and Installation Guide, publication CNET-IN002

The Rockwell Automation website http://www.rockwellautomation.com provides information and product descriptions of ControlNet products.

ControlNet Protocol

The terminals support Unscheduled and Scheduled messaging, Scheduled I/O, and redundant cabling with PLC-5C and ControlLogix controllers.

The ControlNet architecture supports multiple processors and up to 99 nodes (via taps) anywhere along the trunk cable of the network. There is no minimum tap separation and you can access the ControlNet network from every node (including adapters).

Compatible ControlNet Controllers

A PanelView Plus 6 terminal with a ControlNet module communicates with a PLC-5C or ControlLogix controller by using Unscheduled messaging:

- PLC-5C (PCCC commands)
- ControlLogix controller (CIP protocol)

These controllers are supported:

- ControlLogix controller with a 1756-CNB ControlNet module
- PLC-5/20C, PLC-5/40C, PLC-5/60C, PLC-5/80C

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Software and Firmware Requirements

The software and firmware must be installed on the development computer and the PanelView Plus 6 terminal to configure and communicate with an Allen-Bradley controller on a ControlNet network.

Table 72 - ControlNet Unscheduled Communication

Software/Firmware	Minimum Version
FactoryTalk View Studio	6.0 or later
FactoryTalk View Machine Edition Runtime	6.0 or later
ControlNet module firmware	2711P-RN15S, Series A, Rev A (firmware revision 2.07 or later) (1)

(1) This applies to terminals that are ordered as pre-configured units with the ControlNet module.

Table 73 - ControlNet Scheduled Communication

Requirements	Minimum Version
FactoryTalk View Studio	6.0 or later
FactoryTalk View Machine Edition Runtime	6.0 or later
RSNetWorx™ for ControlNet	5.11 or later
Studio 5000	21.00.00 or later
ControlNet module firmware	2711P-RN15S, Series A, Rev C (firmware revision 3.08 or later) (1)

(1) This applies to terminals that are ordered as preconfigured units with the ControlNet module.

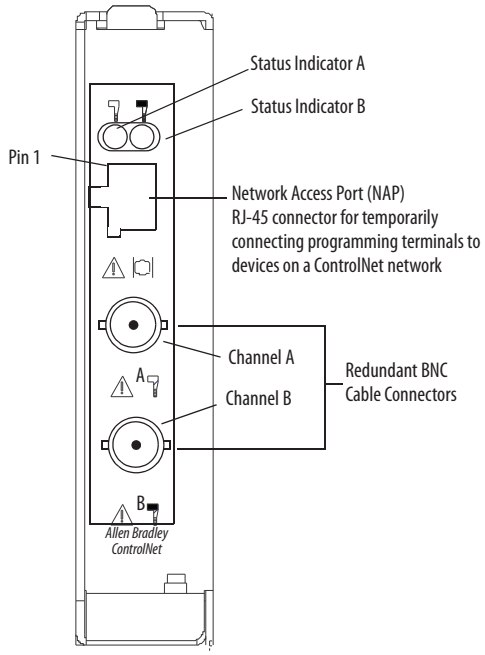


WARNING: The ControlNet communication module, cat. no. 2711P-RN15S or 2711P-RN15SK, does not run with FactoryTalk View ME firmware revision 3.20.04 or earlier. All ControlNet modules with revision 3.07 firmware must be upgraded to revision 3.08 or later; otherwise, outputs can turn on an indeterminate state.

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ControlNet Module Connectors

Figure 24 - Cat. No. 2711P-RN15S or 2711P-RN15SK Communication Module



Pin	NAP Signal
1	Signal Common
2	No Connection
3	TX_H
4	TX_L
5	RX_L
6	RX_H
7	No Connection
8	Signal Common
Shell	Earth/Ground

IMPORTANT Do not connect to a network by using both the redundant cable BNC connector and the Network Access Port (NAP).

Module Connection to ControlNet Network

You can make these connections with the ControlNet communication module:

- Connect directly to a ControlNet network which requires a tap.

ATTENTION: Do not connect more than one ControlNet network to the communication module. If you attempt to connect a second network to the module, your communication system can operate erratically.

- Connect to a device already connected to the ControlNet network.

Refer to the ControlNet Coax Media Planning and Installation Guide, publication CNET-IN002, for descriptions of ControlNet components.

WARNING: When used in a Class I, Division 2, hazardous location, this equipment must be mounted in a suitable enclosure with proper wiring that complies with the governing electrical codes.

WARNING: Do not connect or disconnect any communication cable with power applied to this device or any device on the network. An electrical arc could cause an explosion in hazardous location installations. Be sure that power is removed or the area is nonhazardous before proceeding.

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Controller Connections

The tables provide a summary of PanelView Plus 6 connections to controllers and interface modules for runtime communication.

Table 74 - PanelView Plus 6 Terminals to SLC Controllers

Protocol	PanelView Plus 6 Comm Port	SLC 500, 5/01, 5/02 CH1 RJ45 (DH-485)	SLC 5/03, 5/04, 5/05 CH0 (9-pin RS-232) (DF1 or DH-485)	SLC 5/03 CH1 (RJ45) (DH-485)	SLC 5/04 CH1 (DH+)	SLC 5/05 CH1 (ENET)
DF1	RS-232 (DF1) port (9-pin) All terminals	—	2711-NC13 (5 m/16 ft) 2711-NC14 (10 m/32 ft)	—	—	—
DH-485	RS-232 (DH-485) port (9-pin) All terminals	Use AIC+ module (1761-NET-AIC) to connect to port 1 or 2	2711-NC13 (5 m/16 ft) 2711-NC14 (10 m/32 ft)	Use AIC+ module (1761-NET-AIC) to connect to port 1 or 2	—	—
	DH-485 port 700 to 1500 terminals only Require 2711P-RN6, 2711P-RN6K	1761-CBL-AS03 (3 m/10 ft) 1761-CBL-AS09 (9 m/30 ft)	Use AIC+ module (1761-NET-AIC) to connect to port 3	1761-CBL-AS03 (3 m/10 ft) 1761-CBL-AS09 (9 m/30 ft)	—	—
EtherNet/IP	EtherNet/IP port All terminals 2711P-RN20 provides additional port - 700 to 1500 terminals only	—	Use 1761-NET-ENI module with Ethernet cable	—	—	1585J-M type cable or 2711P-CBL-EX04 (4 m/14 ft)
ControlNet	ControlNet port 700 to 1500 terminals only Require 2711P-RN15S, 2711P-RN15SK	—	—	—	—	—
DH+	DH+ port 700 to 1500 terminals only Require 2711P-RN6, 2711P-RN6K	—	—	—	Shielded twinaxial cable (1770-CD)	—

Table 75 - PanelView Plus 6 Terminals to PLC-5 and MicroLogix Controllers

Protocol	PanelView Plus 6 Comm Port	PLC-5, PLC-5C, PLC-5E CH0 (25-pin RS-232) (DF1)	MicroLogix 1400, 1500LRP CH1/CH2 (9-pin RS-232) (DF1 or DH-485)	MicroLogix 1000, 1100, 1200, 1400, 1500LSP CH0 (8-pin Mini DIN) (DF1 or DH-485)	MicroLogix 1100, 1400 Ethernet
DF1	RS-232 (DF1) port (9-pin) All terminals	2711-NC13 (5 m/16 ft) 2711-NC14 (10 m/32 ft) (9-to-25 pin adapter required)	2711-NC13 (5 m/16 ft) 2711-NC14 (10 m/32 ft)	2711-NC21 (5 m/16 ft) 2711-NC22 (15 m/49 ft) (1)	—
DH-485	RS-232 (DH-485) port (9-pin) All terminals	—	2711-NC13 (5 m/16 ft) 2711-NC14 (10 m/32 ft)	2711-NC21 (5 m/16 ft) 2711-NC22 (15 m/49 ft)	—
	DH-485 port 700 to 1500 terminals only Require 2711P-RN6, 2711P-RN6K	—	—	Use AIC+ module (1761-NET-AIC) to connect to port 3	—
EtherNet/IP	EtherNet/IP port All terminals 2711P-RN20 provides additional port - 700 to 1500 terminals only	To PLC-5E with 1585J-M type cable or 2711P- CBL-EX04 (4 m/14 ft)	Use 1761-NET-ENI module with Ethernet cable		1585J-M type cable or 2711P- CBL-EX04 (4 m/14 ft) (1)
ControlNet	ControlNet port 700 to 1500 terminals only Require 2711P-RN15S, 2711P-RN15SK	To PLC-5C with ControlNet cable	—	—	—
DH+	DH+ port 700 to 1500 terminals only Require 2711P-RN6, 2711P-RN6K	Shielded twinaxial cable (1770-CD)	—	—	—

(1) The AIC+ module is recommended for isolation purposes when the terminal and controller are not on same power supply.

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Table 76 - PanelView Plus 6 Terminals to Logix Controllers

Protocol	PanelView Plus 6 Comm Port	ControlLogix CH0 (9-pin RS-232) (DF1)	CompactLogix CH0 (9-pin RS-232) (DF1 or DH-485)
DF1	RS-232 (DF1) port (9-pin) All terminals	2711-NC13 (5 m/16 ft) 2711-NC14 (10 m/32 ft) 2706-NC13 (3 m/10 ft)	2711-NC13 (5 m/16 ft) 2711-NC14 (10 m/32 ft) 2706-NC13 (3 m/10 ft)
DH-485	RS-232 (DH-485) port (9-pin) All terminals	—	2711-NC13 (5 m/16 ft) 2711-NC14 (10 m/32 ft) 2706-NC13 (3 m/10 ft)
	DH-485 port 700 to 1500 terminals only Require 2711P-RN6, 2711P-RN6K	—	Use AIC+ module (1761-NET-AIC) Connect to Port 3
EtherNet/IP	EtherNet/IP port All terminals 2711P-RN20 provides additional port - 700 to 1500 terminals only	Use 1756-EN2T or 1756-ENBT module with 1585J-M type cable or 2711P- CBL-EX04 (4 m/14 ft)	To 1769-L35E, 1769-L23E, 1769-L32E, or 1768-ENBT module with 1585J-M type cable or 2711P- CBL-EX04 (4 m/14 ft)
ControlNet	ControlNet port 700 to 1500 terminals only Require 2711P-RN15S, 2711P-RN15SK	Use 1756-CNB module with ControlNet cable	1769-L35CR, 1769-L32C, 1768-CNB, or 1768-CNBR with ControlNet cable
DH+	DH+ port 700 to 1500 terminals only Require 2711P-RN6, 2711P-RN6K	Use 1756-DHRIO module with shielded twinaxial cable (1770-CD)	—

Table 77 - PanelView Plus 6 Terminals to Interface Modules

Protocol	PanelView Plus 6 Comm Port	1747-AIC	1761-NET-AIC			1761-NET-ENI
			Port 1 (9-pin)	Port 2 (8-pin Mini DIN)	Port 3 (DH-485)	Port 2 (8-pin Mini DIN)
DF1	RS-232 port (9-pin) All terminals	—	2711-NC13 (5 m/16 ft) 2711-NC14 (10 m/32 ft)	2711-NC21 (5 m/16 ft) 2711-NC22 (15 m/49 ft) Null modem required	—	1761-CBL-AP00 (5 m) 1761-CBL-PM02 (2 m) 2711-CBL-PM05 (5 m) 2711-CBL-PM10 (10 m)
DH-485	RS-232 port (9-pin) All terminals	—	2711-NC13 (5 m/16 ft) 2711-NC14 (10 m/32 ft)	2711-NC21 (5 m/16 ft) 2711-NC22 (15 m/49 ft) Null modem required	—	
	DH-485 port 700 to 1500 terminals only Require 2711P-RN6, 2711P-RN6K	Direct connection to single AIC with Belden 9842 cable[1]	—	—	Direct connection to single AIC+ with Belden 9842 cable [1]	—

(1) Use serial port on the PanelView Plus 6 terminal with an AIC+ module for a DH-485 network solution.

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Firmware Upgrades

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Upgrade Terminal Firmware from a Storage Device	159
Upgrade Terminal Firmware over the Network	162

Terminal Firmware

Firmware components are packaged as execute-in-place (XIP) regions in a single System Code (SC) .img file. When the SC .img file is copied to the Virtual File System (VFS) on the terminal, the terminal's XIP regions are updated and the terminal restarts automatically. These firmware components are affected during an upgrade:

- FactoryTalk View Machine Edition Station software
- Communication protocols and drivers including Kepware drivers
- Windows fonts
- Windows CE components
- FactoryTalk components
- User extensions

A firmware upgrade does not affect these terminal components or settings:

- Windows registry
- File system including the FactoryTalk View Machine Edition application loaded in the terminal
- Network parameters including the network device name, DHCP-enabled and static IP addressing, speed, and duplex setting
- Display settings
- Screen saver configuration
- Touch-screen calibration

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Download Firmware Files

Download the appropriate firmware installation package from the Rockwell Automation website. The package is named:

PVP6_<*terminal family*>_6.x-yyyymmdd.exe, where:

- <*terminal family*> is 400-600 or 700-1500
- 6.*x* is the FactoryTalk View ME software version contained in the package
- yyyymmdd is the date the package was created

This installation package contains the following:

- Firmware Upgrade Package (FUP) contains an autorun executable and the new firmware files.
- Firmware Upgrade Wizard (FUW), version 6.10 or later, is used to upgrade the terminal firmware by using the contents of the FUP.

The FUP and FUW are copied to your computer during the download.

Follow these steps to download firmware installation files to your computer.

1. Go to http://www.rockwellautomation.com/support and click the Firmware Updates link.
2. Select Computers & Operator Interface, then PanelView Plus.
3. Follow the instructions on the website to locate the firmware installation package for the appropriate PanelView Plus 6 terminals.
4. Download the upgrade file (.exe) to a temporary folder on the same drive as FactoryTalk View Machine Edition (ME) software.
5. Run the upgrade file (.exe) installation procedure:
   - The FUW is installed in the FactoryTalk View ME folder.
   - The firmware upgrade package (.fup) file is installed into the folder specified during the installation procedure.

TIP The FUP name is ME_PVP6xX_6.*x*-yymmdd (700 to 1500) or ME_PVP6xA_6.*x*-yymmdd (400 and 600)

- yyyymmdd is the date the firmware package was created
- 6.*x* is the version of ME contained in this package

You are now ready to run the FUW to upgrade the terminal firmware from a USB flash drive or SD card or by using a network connection.

Firmware Upgrade Wizard

The Firmware Upgrade Wizard (FUW) is used to upgrade the terminal firmware. Two methods are provided for upgrading the firmware:

- Create a firmware upgrade card with the contents of the FUP file that you can then load in the terminal to upgrade the firmware.

  The firmware upgrade card can be a USB flash drive or an SD card, catalog number 1784-SD*x*.
- Upgrade firmware in a terminal connected to a computer over a direct network connection. The network connection requires a computer running RSLinx Enterprise software, version 5.0 or later. In the RSLinx Enterprise software, you select the terminal you want to upgrade.

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You can run the FUW from within FactoryTalk View Studio software or from the Programs menu on your computer:

- In FactoryTalk View Studio software, from the Tools menu, choose Firmware Upgrade Wizard.
- Choose Start>Programs>Rockwell Software>FactoryTalk View>Tools>ME Firmware Upgrade Wizard.

Upgrade Terminal Firmware from a Storage Device

Upgrading firmware from a storage device is a two-step process. First, you create a firmware upgrade card with the required firmware files. Secondly, you load the card in the target terminal to upgrade the firmware.

The firmware upgrade card can be a USB flash drive or an SD card.

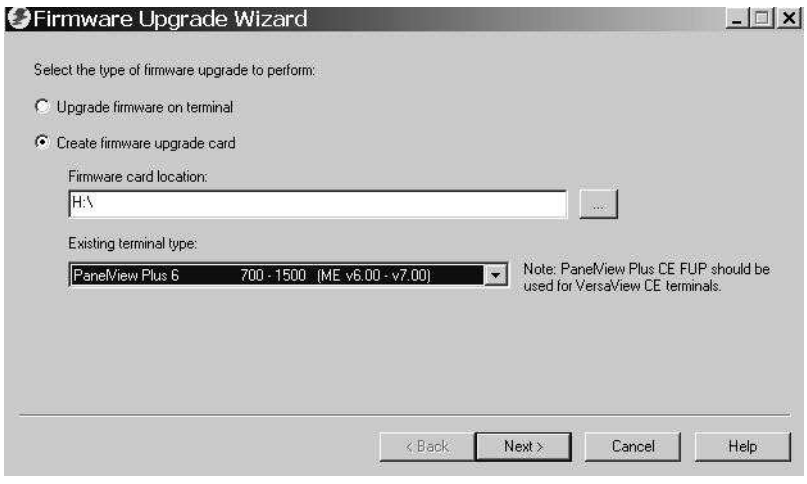
Create a Firmware Upgrade Card

Follow these steps to copy firmware files to a USB flash drive or SD card.

1. Insert either a USB flash drive or an SD card into the appropriate slot on your computer.
2. Run the Firmware Upgrade Wizard:
   - In FactoryTalk View Studio software, from the Tools menu, choose Firmware Upgrade Wizard.
   - Choose Start>Programs>Rockwell Software>FactoryTalk View>Tools>ME Firmware Upgrade Wizard.
3. Follow these steps from the initial Firmware Upgrade Wizard dialog box.
   a. Click Create firmware upgrade card.
   b. Select the location of the firmware card by browsing to the root directory of the storage card loaded in your computer for example E:\.

      The firmware files are copied to this location. You can also specify a folder on the hard drive.
   c. From the Existing terminal type pull-down menu, select a version v6.00-v7.00 PanelView Plus 6 terminal.

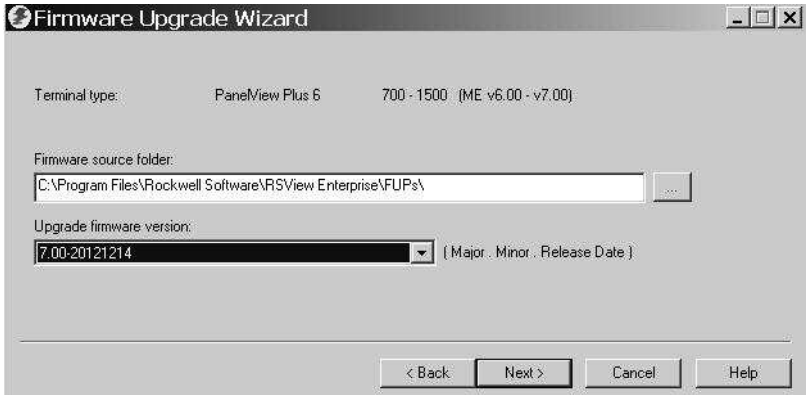
      The example shows the firmware upgrade is for a 700 - 1500 PanelView Plus 6 terminal.
   d. Click Next.



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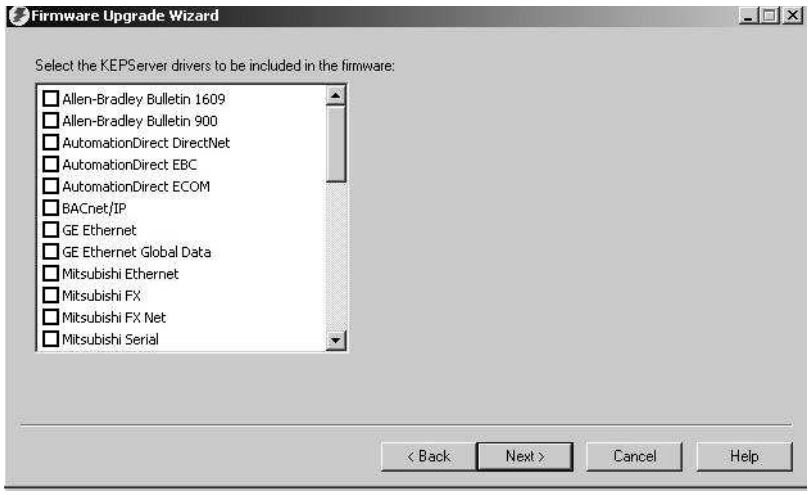
4. Follow these steps from this dialog box.
   a. Browse to the location of the firmware source files on your computer, where the FUP was installed.
   b. Choose the firmware revision for the upgrade.
   c. Click Next.

      It can take several seconds for the next dialog box to appear while the FUP is being retrieved.



5. From this dialog box, optionally select the KEPServer drivers you want included with the firmware, then click Next.

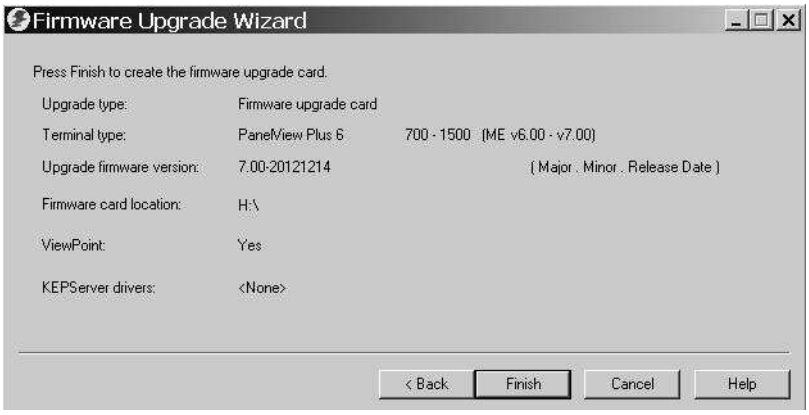
   Kepware drivers are already installed on the PanelView Plus 6 terminals.



   The final dialog box summarizes your choices for creating the firmware upgrade card.

6. Click Finish to copy the firmware files to the firmware upgrade card.

   A progress bar automatically updates as files are copied to the USB flash drive or SD card.



7. Click OK when the firmware upgrade completes successfully.



TIP If the firmware files were copied to the hard drive, copy the files to the root directory of the USB flash drive or SD card.

8. Remove the USB flash drive or SD card from your computer.
9. Proceed to the next section to use this firmware upgrade card to upgrade the terminal firmware.

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Upgrade Terminal Firmware by Using Firmware Upgrade Card

Follows these steps to transfer firmware files from the USB flash drive or SD card to the terminal. This is the firmware upgrade card created in the previous section.

IMPORTANT
- Do not remove or accidently disconnect the USB flash drive or SD card while a firmware upgrade is in process. This could corrupt the firmware and make the terminal unstable.
- Do not power off the terminal during a firmware upgrade.
- USB hubs can produce unexpected behavior and are not recommended.

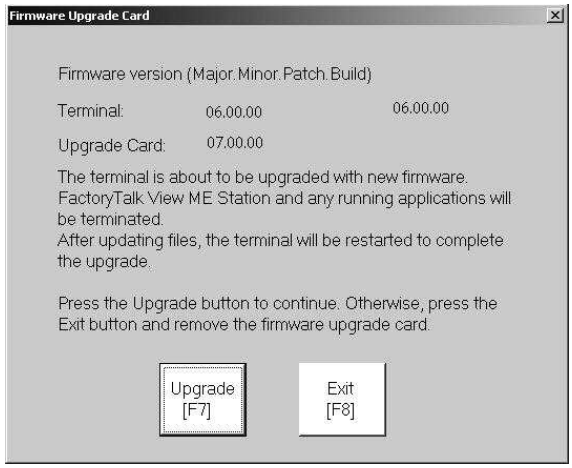
1. Insert the USB flash drive or SD card into the appropriate slot on your terminal.

   The firmware upgrade automatically starts and displays this dialog box.

2. Press Upgrade or [F7] on the terminal to start the firmware upgrade.

   The terminal restarts and displays a progress bar during the upgrade.

   When the upgrade is complete, the terminal restarts, executing the new firmware.



3. Remove the USB flash drive or SD card from the terminal.

IMPORTANT If the firmware upgrade fails because of a power loss or the firmware upgrade card is inadvertently removed, you can restore the terminal to the factory default firmware. Refer to Access Maintenance Operations on page 174 for details on how to restore the factory default settings.

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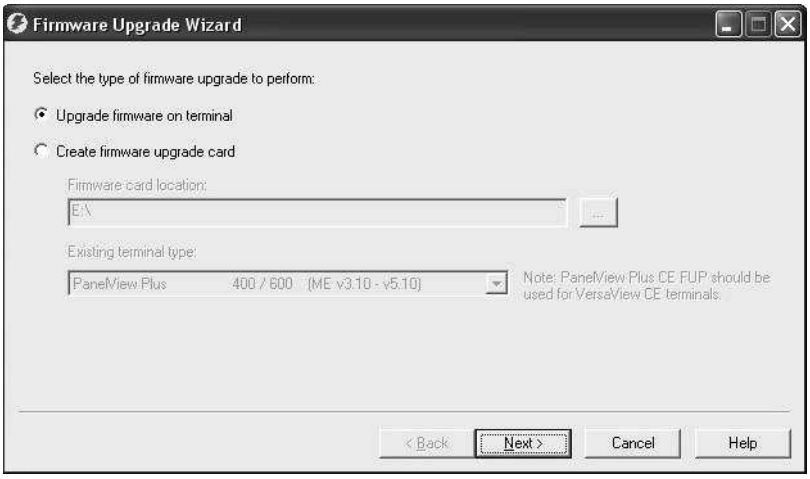
Upgrade Terminal Firmware over the Network

You can upgrade firmware in a terminal connected to a computer over a direct network connection. The network connection requires a computer running the Firmware Upgrade Wizard (FUW) and RSLinx Enterprise software, version 5.0 or later.

RSLinx Enterprise software is required so that you can select the terminal on the network.

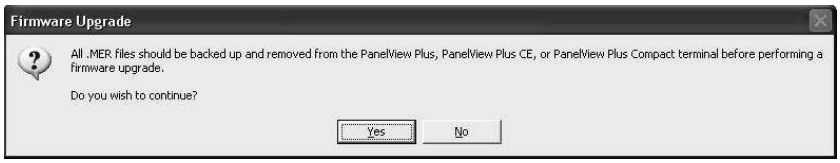
Follow these steps to copy firmware files to the terminal over a network by using RSLinx Enterprise software and Ethernet communication.

1. Run the Firmware Upgrade Wizard:
   - In FactoryTalk View Studio software, from the Tools menu, choose Firmware Upgrade Wizard.
   - Choose Start>Programs>Rockwell Software>FactoryTalk View>Tools>ME Firmware Upgrade Wizard.
2. Click Upgrade firmware on terminal and click Next.



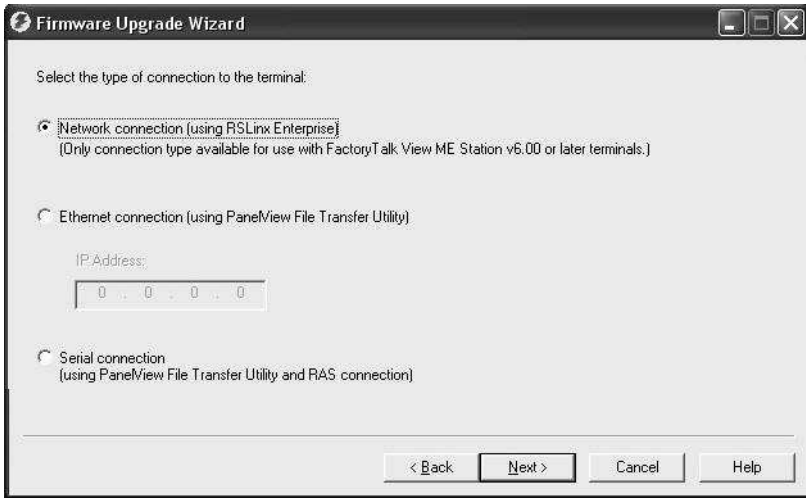
3. Click Yes to continue.

   It is not necessary to back up files on PanelView Plus 6 terminals.



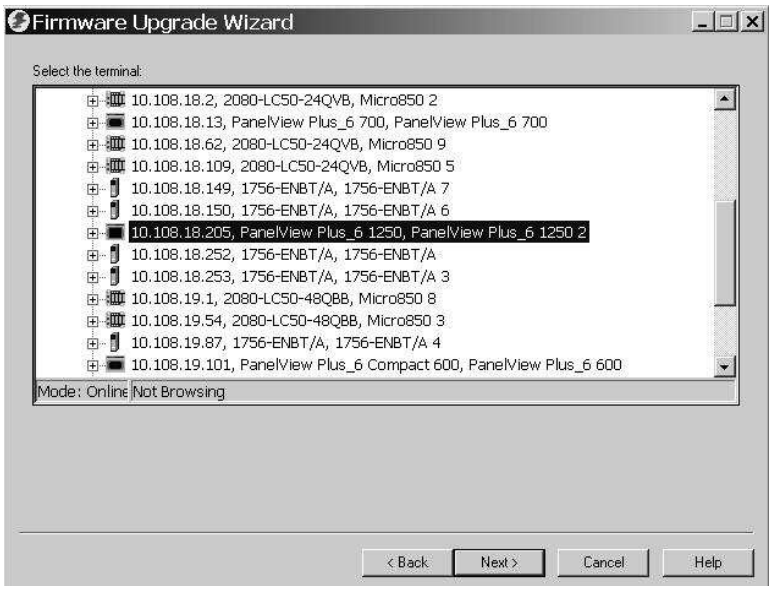
4. Click Network Connection (using RSLinx Enterprise) and click Next.

   This is the only valid selection for PanelView Plus 6 terminals.



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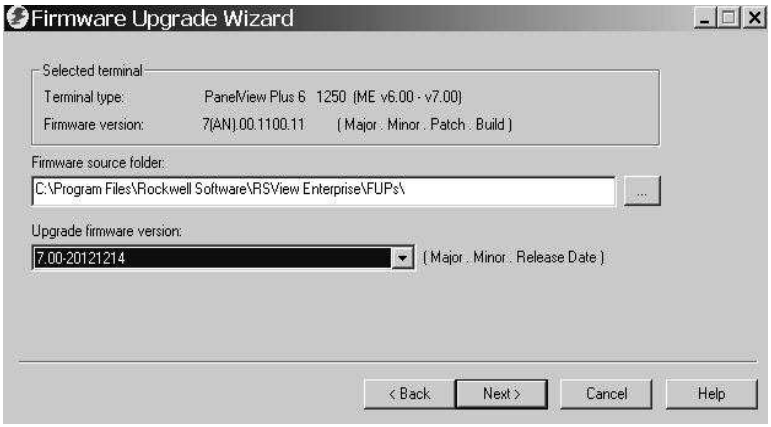
5. Navigate to and select the terminal to receive the firmware update, then click Next.



6. Follow these steps from this dialog box.
   a. Browse to the location of the firmware source files on your computer, where the FUP was installed.

      The default location is shown.
   b. Choose the version of the upgrade firmware from the pull-down menu.
   c. Click Next.

      It can take several seconds for the next dialog box to appear while the FUP is being retrieved.



7. From this dialog box, optionally select the KEPServer drivers you want included in the firmware, then click Next.

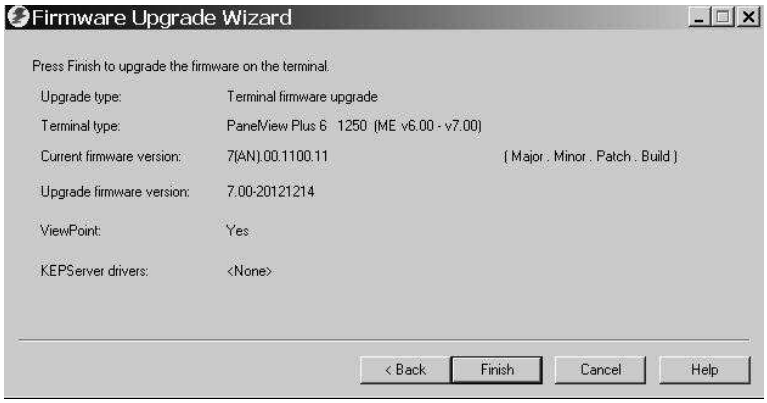
   Kepware drivers are already installed on the PanelView Plus 6 terminals.



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The final dialog box summarizes your choices for upgrading the terminal firmware.

8. Click Finish to update the firmware in the terminal.



9. Click Yes to continue with the update.

   A progress bar updates as firmware files are copied to the terminal.



10. Click OK when the firmware upgrade is complete.

    The terminal restarts, executing the new firmware.



IMPORTANT If the firmware upgrade fails because of a power loss or some other reason, you can restore the terminal to the factory default firmware. Refer to Access Maintenance Operations on page 174 for details on how to restore the factory default settings.

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Troubleshooting

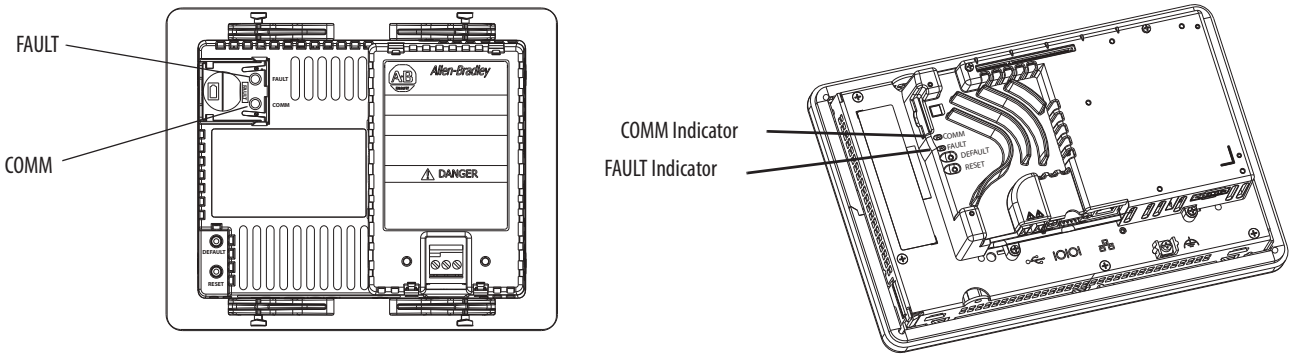
Topic	Page
Status Indicators	165
Terminal Does Not Start Properly	166
Start-up Messages and Codes	168
Check Terminal Components	170
Ethernet Connection	171
Program Launcher ActiveX Control	172
Application Does Not Run	172
Configuration Mode Access	172
File System Errors	173
Advanced Diagnostics	173
Access Maintenance Operations	174
Restore Factory Defaults	176

Status Indicators

The terminals have two status indicators to isolate operating anomalies:

- COMM indicator (green) for communication
- FAULT indicator (red) for hardware and firmware faults

Figure 25 - Status Indicators



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Terminal Does Not Start Properly

This section provides general troubleshooting information to assist you when trying to isolate anomalies.

Check for Adequate Power

A terminal that does not receive adequate power could result in unpredictable behavior. Refer to Chapter 2 for power requirements.

Check Indicators at Startup

When the terminal starts, the fault and comm indicators flash on and off, then the comm indicator flashes to signal progress during startup. When startup is complete, the comm indicator remains on, and is controlled by the communication driver or application. The comm indicator typically flashes when communication is active.

If the indicators remain off, the power supply or logic module has failed. Check the power cable:

- If the power is not within range, replace the power supply.
- If the power is within range, replace the logic module or terminal.

The table shows indicator states if the terminal powers on and stops during startup.

Table 78 - Indicator States if Terminal Stops during Startup

Fault (Red) Indicator	Comm (Green) Indicator	Description
Blinking	Off	Recoverable firmware error. Last firmware download failed. Reload the firmware by using the Firmware Upgrade Wizard (FUW).
On	Off	Non-recoverable hardware fault with logic module: • For 400 and 600 terminals, replace the terminal. • For 700 to 1500 terminals, replace the logic module.
	Blinking	Non-recoverable hardware fault with display module: • For 400 and 600 terminals, replace the terminal. • For 700 to 1500 terminals, replace the display module.

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Check the Start-up Messages and Codes

Refer to Start-up Messages and Codes on page 168 for a list of message states and error codes that can appear on the splash screen during startup.

Check Voltages and Temperatures

Check the battery voltage, processor temperature, and display temperature.

Table 79 - Checking Voltage and Temperature Conditions

Check for These Conditions		Where	What to Do
Battery voltage	< 2.75V DC	• From terminal desktop: Refer to Battery Voltage on page 96 • From FactoryTalk View ME Station Configuration mode: Refer to View Terminal Information on page 78	Replace the battery if needed.
CPU temperature	>95 °C (203 °F)	• From terminal desktop: Refer to Temperatures on page 96 • From FactoryTalk View ME Station Configuration mode: Refer to View Terminal Information on page 78	Check for obstructed airflow in the chassis and attempt to moderate the ambient temperatures within the enclosure and surroundings.
Display temperature	>55 °C (131 °F)	• From terminal desktop: Refer to Temperatures on page 96: • From FactoryTalk View ME Station Configuration mode: Refer to View the Display Temperature on page 69	

Check the System Event Log

Check the system event log for errors or unexpected behaviors:

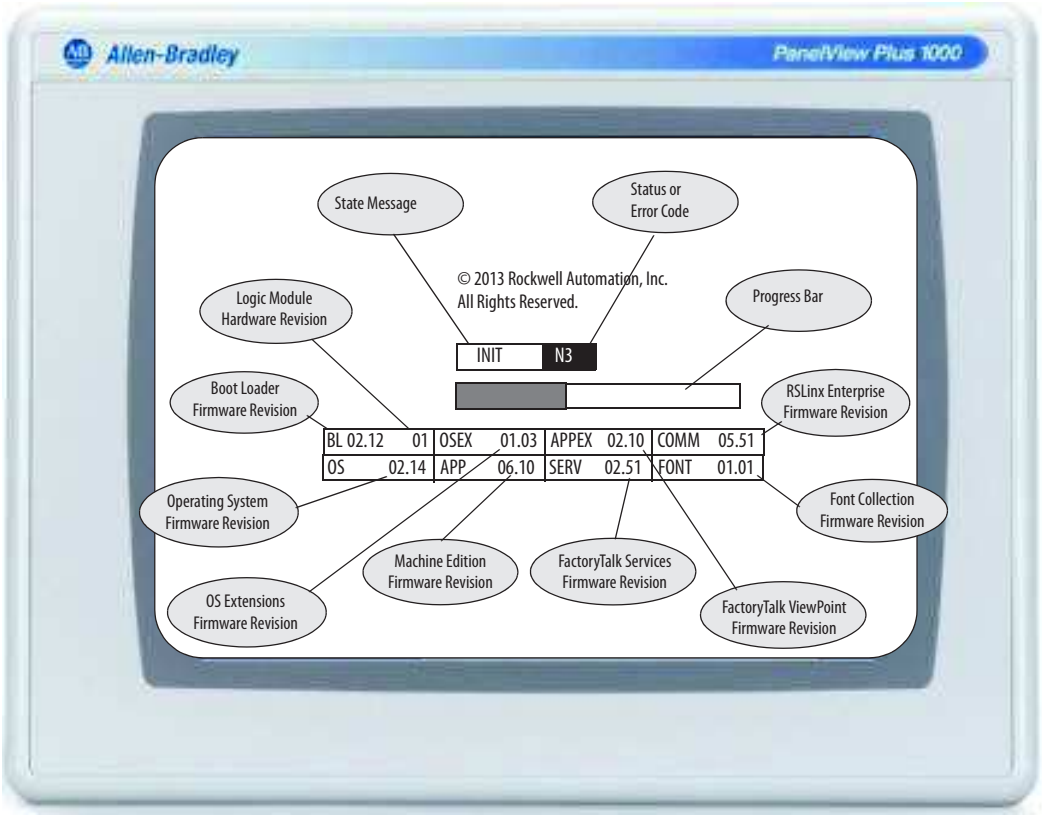
- From FactoryTalk View ME Station Configuration mode, press Terminal Settings>System Event Log. Refer to View and Clear the System Event Log on page 78.
- From the control panel, open the Hardware Monitor and click the System Event Log tab. Refer to System Event Log on page 95.

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Start-up Messages and Codes

The splash screen reports actions and status conditions that occur during startup. This includes firmware and hardware revision information.

Figure 26 - Start-up Splash Screen



This table lists messages associated with each state and the corresponding status or error codes.

Table 80 - Start-up Messages and Codes

State Message Description	State Message	Code	Recommended Action
Common Start-up Messages			
Boot loader attempting PC connection via USB device	AutoTest	0A	Messages during this phase of startup are for information purposes only.
Boot loader loads firmware image into RAM	AutoTest	E6	
Boot loader jumps to operating system	AutoTest	FF	
Operating system starts up	Boot	G0	
Operating system registration and initialization	Init	H1 - JA	
Machine Edition registration and initialization	Init	K1 - MA	
Machine Edition load and execute	Init	ME	

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Table 80 - Start-up Messages and Codes

State Message Description	State Message	Code	Recommended Action
Firmware Installation and Loading			
Load firmware image into RAM	Update	1E	Messages during firmware installation and loading are for information purposes only.
Write firmware image to storage	Update	A5	
Load factory-default firmware image into RAM	Restore	E6	
Write factory-default firmware image to storage	Restore	A5	
Restore factory-default configuration data	Restore	DC	
Firmware validation (CRC/format) failure	Fatal	1E	A fatal error during firmware installation or loading is usually recoverable by doing one of the following: • Reset terminal from maintenance menu • Restore factory defaults from maintenance menu See page 176 for details on how to perform a restore. • Re-install firmware Refer to Access Maintenance Operations on page 174 for details on resetting terminal and restoring factory defaults.
Firmware failed to validate compatibility index of a firmware region	Fatal	1F	
Firmware update failure	Fatal	0F	
Firmware write to storage failure	Fatal	A5	
Firmware stored image verification failure	Fatal	D2	
Invalid or missing OS firmware image	Fatal	FF	
Power on Self-test (POST) Failures			
Failed RAM	Fatal	03	A fatal error during POST is usually due to failed hardware: • For failed RAM, replace the logic module (700 to 1500) or the terminal (400 and 600). • For stuck key, stuck touch, and failed backlight, replace the display module.
Stuck key	Fatal	31	
Stuck touch	Fatal	3A	
Failed backlight	Fatal	3B	
Restore Operation Failures			
Failed to initialize restore operation	Fatal	R0	A fatal error during a restore operation is usually recoverable by resetting the terminal from the maintenance menu. Refer to Access Maintenance Operations on page 174 for details on resetting the terminal.
Failed restore because of invalid header in .pvb file	Fatal	R1	
Failed restore because of invalid header	Fatal	R2	
Failed restore because of inability to write intermediate files to terminal	Fatal	R3	
Failed restored because of corrupt .pvb file	Fatal	R4	
Watch Dog			
Watch dog reset	Fatal	02	A watch dog reset is usually a momentary loss of control due to a software failure. Monitor this error for recurrence and remedial action.

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Check Terminal Components

This section provides tips on how to isolate anomalies with the display, touch screen, keypad, attached keyboard, or mouse. If you are unable to resolve the anomaly, replace the touch screen display module (700-1500) or the terminal (400-600).

Table 81 - Resolve Anomalies with Touch Screen

Symptom	Recommended Action
The display does not have a touch screen.	Check the catalog number of the unit. Verify that your display is a touch screen by looking at the label on the terminal.
The touch screen is not operating correctly.	Calibrate the touch screen: • In FactoryTalk View ME Station Configuration mode, press Terminal Settings>Input Devices>Touch Screen>Calibration. • From the control panel on the terminal desktop, open the Touch dialog box and click the Calibration tab.
Touch input and dragging is inaccurate. The touch screen is present and working but requires calibration.	The calibration requires five screen touches. When the touches do not converge to a satisfactory calibration, you are asked repeatedly for additional screen touches. The process continues until a valid calibration is performed. A touch screen that does not calibrate is not present or is not functioning properly. Replace the touch screen display module (700-1500) or the terminal (400-600).
The screen cursor is not visible.	Verify that the cursor is enabled: • In FactoryTalk View ME Station Configuration mode, press Terminal Settings>Display>Cursor. • From the control panel on the terminal desktop, open Display and click the Advanced tab.
The touch screen does not accept touch input.	Attach a USB mouse to check whether the anomaly is with the touch screen or the application: • If the mouse works, but the touch screen does not, then the touch driver or touch screen is not functioning. • If both the mouse and the touch screen are not working, then it is an application issue.

Table 82 - Resolve Anomalies with Display

Symptom	Recommended Action
The display is dim or unreadable.	Check the brightness setting: • In FactoryTalk View ME Station Configuration mode, press Terminal Settings>Display>Display Intensity. • From the control panel on the terminal desktop, open Display and click the Backlight tab.
The backlight is turning off or dimming the display unexpectedly.	Check the screen saver settings: • In FactoryTalk View ME Station Configuration mode, press Terminal Settings>Display>Screen Saver. • From the control panel on the terminal desktop, open Display and click the Screen Saver tab.
A start-up error appears during startup.	Record the message and check the start-up error messages table on page 168.

Table 83 - Resolve Anomalies with Mouse

Symptom	Recommended Action
The mouse is not operating correctly.	Check the USB cable and connection. Detach and then reattach the mouse. Cycle power to the terminal.
The screen cursor is not be visible or the mouse settings need adjusting.	Check if the screen cursor is disabled: • In FactoryTalk View ME Station Configuration mode, press Terminal Settings>Display>Cursor. • From the control panel on the terminal desktop, open Display and click the Advanced tab. Check the mouse setting: • In FactoryTalk View ME Station Configuration mode, press Terminal Settings>Input Devices>Mouse. • From the control panel on the terminal desktop, open the Mouse dialog box.
The mouse is a USB composite device (keyboard + mouse).	Attach a standalone USB mouse. For a list of compatible USB devices, go to the knowledgebase at the Rockwell Automation technical support site http://www.rockwellautomation.com/knowledgebase and search for ID 115072.
The USB mouse does not work.	The mouse can be noncompliant. Replace the USB mouse. Try a different model or manufacturer. If attaching a new mouse resolves the anomaly, then the old mouse was noncompliant. For a list of compatible USB devices, go to the knowledgebase at the Rockwell Automation technical support site http://www.rockwellautomation.com/knowledgebase and search for ID 115072.

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Table 84 - Resolve Anomalies with Keyboard

Symptom	Recommended Action
The keyboard is not operating correctly.	Check the USB cable and connector. Detach and reattach the keyboard. Verify a good connection. Cycle power to the terminal.
The keyboard is not accepting key input.	Check key input by using the keypad: • If the keypad works, but the keyboard does not, then the keyboard driver or keyboard is not working. • If both the keypad and keyboard are not working, then the issue is probably an application failure. Issues with keyboard input can be the fault of the application. • Press a key outside the application such as an edit box in the shell. If the keypad works outside the application, then the application is at fault. • Press Ctrl+Esc simultaneously to open the Start menu, cursor to run, type numbers and viewable characters into the Run dialog box.
The keyboard is a USB composite device (keyboard + mouse).	Attach a standalone USB keyboard.
The USB keyboard does not work.	The keyboard can be noncompliant. Replace the USB keyboard. Try a different model or manufacturer. If a new keyboard resolves the issue, then the old keyboard was probably noncompliant. For a list of compatible USB devices, go to the knowledgebase at the Rockwell Automation technical support site http://www.rockwellautomation.com/knowledgebaseand search for ID 115072.

Ethernet Connection

This table provides tips on how to isolate Ethernet anomalies.

Table 85 - Resolve Ethernet Anomalies

Action	Description
Check the status indicators at the Ethernet connection	• Green indicates a communication link and is normally on. • Yellow indicates data activity and is normally flashing.
Check cable connections and quality of cable	Check for the following: • Cable crimping • Ethernet hub/switch connection • Uplink ports
Check the IP Address of the Built-in Ethernet Controller	• From FactoryTalk View ME Station, select Terminal Settings>Networks and Communications>Network Connections>Network Adapters. • From the control panel on the terminal desktop, open Network and Dial-up Connections. If DHCP is enabled, the device expects a valid IP address to be acquired within several seconds after startup. The TCP/IP protocol automatically assigns 169.254.nnn.nnn when it fails to acquire an IP address from the server. In general, an IP address that begins with 169 does not support a network connection. A bad Ethernet connection and the absence of a valid IP address are typically reported in a Communication error message box with the Winsock critical error 10065 - No route to host.
Check for conflicting IP addresses	If DHCP is not enabled, make sure the IP address of the terminal is not in conflict with the address of another device on the network.
Check the device name of the terminal	Devices on the network must not have the same host name: • In FactoryTalk View ME Station, select Terminal Settings>Communications and Networks>Network Connections>Device Name. • From the control panel on the terminal desktop, open the System applet and click the Device Name tab.
Contact your Network Administrator to check peer or server settings	The other side of the Ethernet connection can be an issue.
Check the requirements of network applications	Network applications can have specific requirements such as Proxy Settings for Internet Explorer and Ethernet Configuration for ActiveSync.
Check multi-homed devices	Multi-homed devices, more than one Ethernet node, can cause confusion and ambiguity. Keep the network connections as simple as possible.
From the desktop, use the network tools Ping.exe and Ipconfig.exe to diagnose issues with IP addresses and host devices.	These network utilities are diagnostic tools: • Ping is an Internet utility used to determine whether a particular IP address is reachable online by sending out a packet and waiting for a response. Ping is used to test and debug a network as well as see if a user or server is online. • IPconfig is a Windows command line utility that manages the IP address assigned to the machine it is running in. It displays the computer's currently assigned IP, subnet mask and default gateway addresses.

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Program Launcher ActiveX Control

If desktop access is restricted and you use the Program Launcher - ActiveX control to launch a file viewer, text editor, or PDF reader, the system locks up when you try to open a file.

To avoid this issue, associate a file with the application you are launching. The viewer, editor, or PDF reader automatically launches with the associated file.

Application Does Not Run

If a terminal application does not run at startup, there can be an issue with the FactoryTalk View Machine Edition (ME) application:

- Verify that a start-up screen was configured and that the runtime file is a compatible version.
- Try to run the application manually. If the application runs manually, then the operating system can be starting up with an invalid shortcut path. Check the shortcuts in the Windows Startup folder.

  \Windows\StartUp

  Check the syntax of each shortcut path in the Startup folder and verify that a valid target application exists.
- Check that the application is not missing components or required DLLs. Remove and reload the application.

Configuration Mode Access

To access Configuration mode while an application is running, your FactoryTalk View ME application must contain a screen with a Goto Configuration Mode button. When the application is running, you can press this button to access Configuration mode.

If a running application does not contain a Goto Configuration Mode button, you can access Configuration mode during startup in one of two ways:

- Enter Safe mode from the general Maintenance screens. Refer to page 174 for details.
- Detect a Safe mode request at startup by enabling this start-up option in the System dialog box of the control panel. Refer to page 102 for details.

TIP If the terminal is configured to enter Configuration mode at startup and does not, then reload the firmware.

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File System Errors

File system errors are rare as the internal file system is transaction safe. Always stop applications before removing power so that data is cleanly flushed out to the file system and the file system is brought to an orderly stop.

Do not remove the external USB or SD storage devices while writing to the device is in progress. Although the FactoryTalk View Machine Edition (ME) application runs from RAM, functions such as data logging, event logging, and historical trending, write to nonvolatile memory and must be stopped before removing power.

Advanced Diagnostics

Ping and ipconfig are valuable tools for network debugging along with some knowledge of IP and the Winsock error codes:

- Try to ping the destination host.
- Check the destination address.
- Check whether you have a router configured in your network system (your WinSock implementation).
- Use the tracert command at the command prompt on the desktop to try and determine where the failure occurs along the route between your host and the destination host.

Other diagnostic tips that can help include the following:

- Take advantage of alternate connectivity - mouse versus touch screen, keyboard versus keypad, serial communication, and alternate Ethernet connections.
- Examine the folder \Windows\DumpFiles for crash logs when suspecting an application or operating system crash.

  The crash dump file is viewable offline, on a workstation, by using common Windows development or debugging tools, for example, Visual Studio or WinDBG. At a minimum, the information in the crash dump file reveals the date and time of the exception, the exception type, the name of the offending process and the register state, including the program counter.
- Store Autorun.exe utilities on an SD card that can be easily run by inserting the card in the SD card slot of the terminal.
- Know useful keyboard shortcuts so that you can navigate around the system without a mouse or touch screen.
- Check the system event log in the Hardware Monitor control panel application or under Terminal Settings>System Event Log in FactoryTalk View ME Configuration mode. Look for error conditions or reasons that can cause unexpected behaviors or restarts.
- Check the configuration settings in the control panel on the terminal desktop or in FactoryTalk View ME Configuration mode.

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Access Maintenance Operations

The terminal typically launches the Windows desktop or a FactoryTalk View ME application on startup. You can also start the system in Maintenance mode for diagnostic and repair purposes.

Table 86 - Maintenance Start-up Operations

Operation	Description
None	Exits Maintenance mode and continues with a normal restart.
Safe mode	Starts the system in Safe operating mode. This is a diagnostic mode with reduced functionality that lets you recover from a software anomaly. In Safe mode, you can repair offending applications or changes that caused the anomaly. **Important:** FactoryTalk View ME Station software does not run the HMI .mer application on startup if one is loaded, but instead enters Configuration mode. The HMI application runs the next time the system is reset.
Restore factory defaults	Restores all storage media on the terminal to its initial factory default state, including firmware, registry, file system, and configuration data. Typically, this option is used to recover from a failed firmware upgrade. **Important:** All storage media is returned to its original state when purchased. All user-installed, firmware updates are removed. See Restore Factory Defaults on page 176 for details on how to perform a restore.
Reset terminal	Restores all user-accessible storage and configuration data on the terminal to its default state. The current firmware revision is retained. **Important:** All storage media is returned to its original state when purchased except for the firmware. The latest FactoryTalk View ME image is retained. All user data changes or additions are lost.
Display resolution (700 to 1500 terminals only)	Sets the display resolution at startup. If the system can't detect the resolution, you can choose the appropriate resolution by terminal model. • Auto - auto detects the display resolution. • VGA - sets the resolution to 640x480x16 for the 700 and 1000 terminals. • SVGA - sets the resolution to 800 x 600 x 16 for the 1250 terminals. • XVGA - sets the resolution to 1024 x 768 x 16 for the 1500 terminal. The 400 and 600 displays are 320x240 QVGA.

Perform the maintenance operations **in this order** to diagnose and repair operating problems with your terminal.

1. Safe mode - stops an application from starting automatically.
2. Reset terminal - removes user-installed applications, user-configuration changes, and user-accessible data.
3. Restore factory defaults - returns the terminal to its original, out-of-box state.

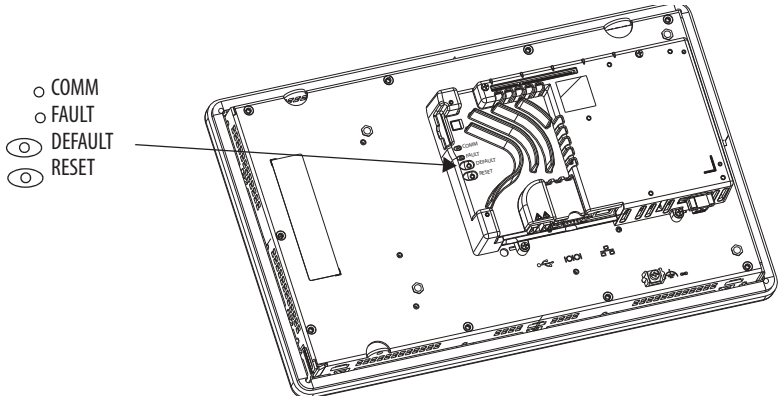
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Access Maintenance Operations

Follow these steps to access Maintenance actions at startup.

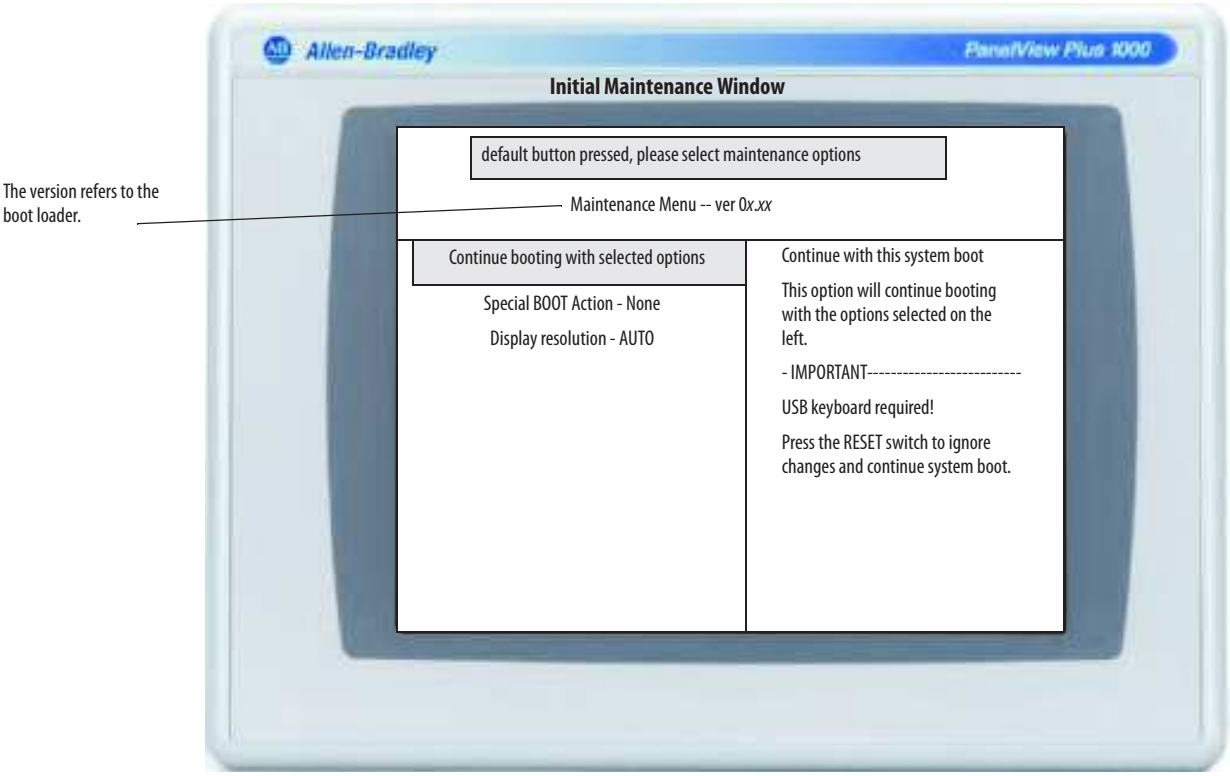
TIP Terminals require an attached USB keyboard to navigate in Maintenance mode.

1. Insert a thin, nonconductive probe into the hole marked Default on the back of the logic module and press the switch.



TIP To access this menu from a fault state, press the Reset switch, then press and hold the Default switch until you see the menu.

The terminal restarts in Maintenance mode with the display brightness set to 100%. Refer to Table 86 on page 174 for a description of maintenance operations.

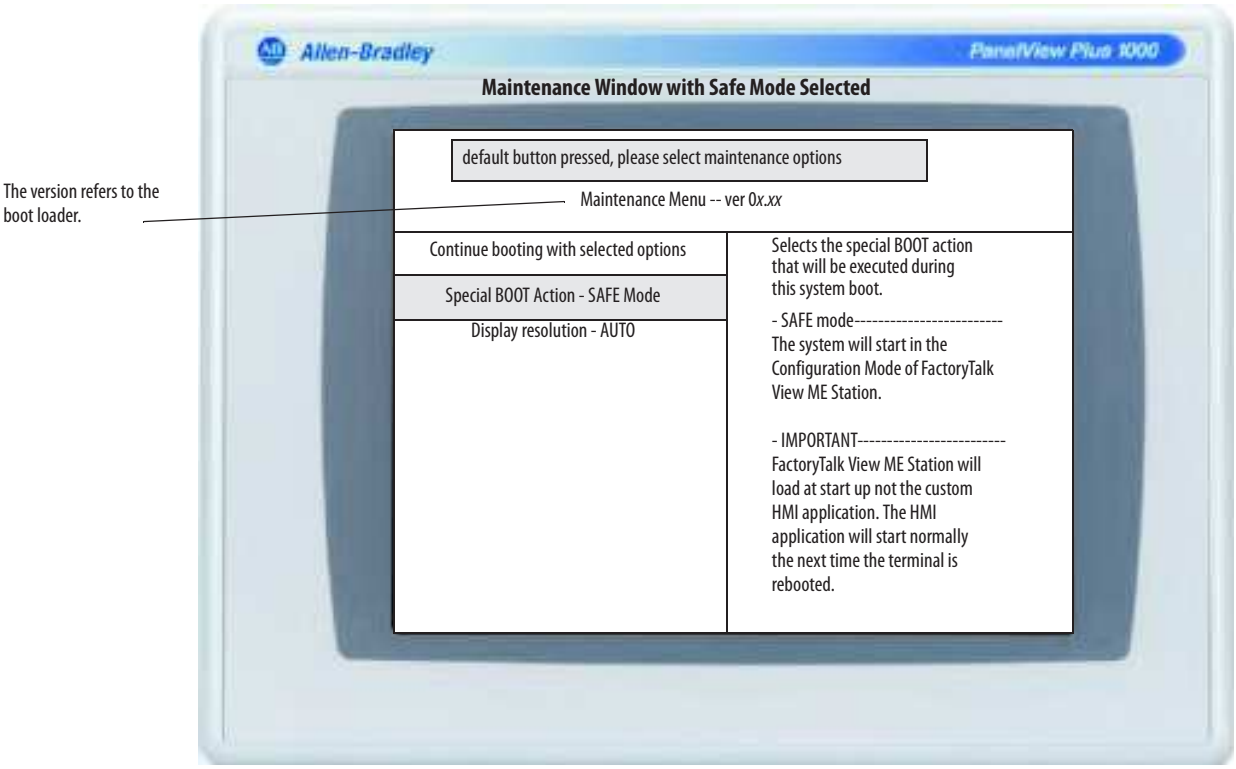


TIP Use the keys at the bottom of window to make selections.

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2. Press the up and down arrow keys on the keypad or attached keyboard to move up and down the list of maintenance options:
   - Continue booting with selection option.
   - Special Boot Action
   - Display Resolution (not on 400 and 600 terminals)
3. With an option selected, press the right or left arrow keys to cycle through the available operations or settings.

   The result of each action is explained on the right.



4. Follow these steps, when done making selections.
   a. Press the up arrow to return to 'Continue booting with selected options'.
   b. Press the Enter key to continue booting.

Restore Factory Defaults

To recover from a firmware update failure, for example, fatal code 0F, you need to restore your terminal to its out-of-box, factory default state.

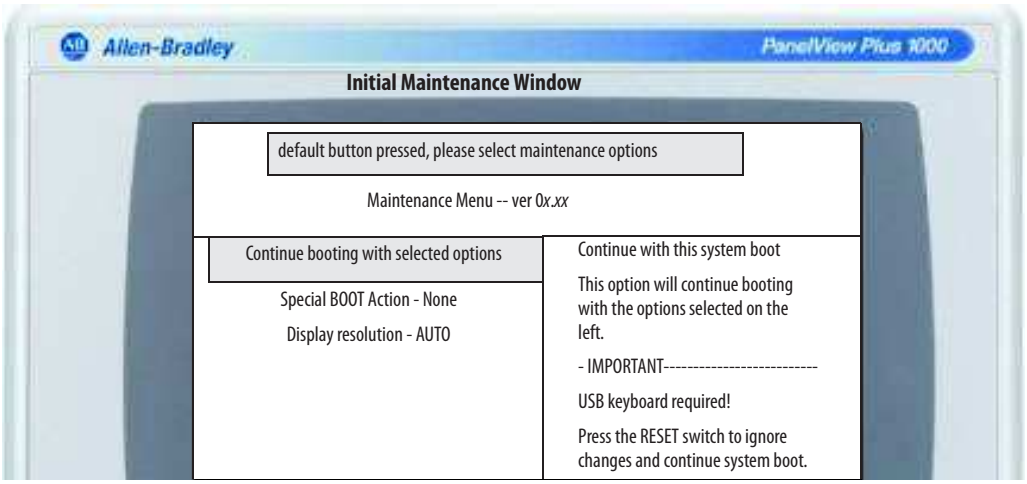
Follow these steps to restore factory defaults from Maintenance mode.

TIP Terminals require an attached USB keyboard to navigate in Maintenance mode.

1. While pressing and holding the Default switch on the back of the logic module, press and release the Reset switch.

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After releasing the Reset switch, release the Default switch to enter the maintenance menu.



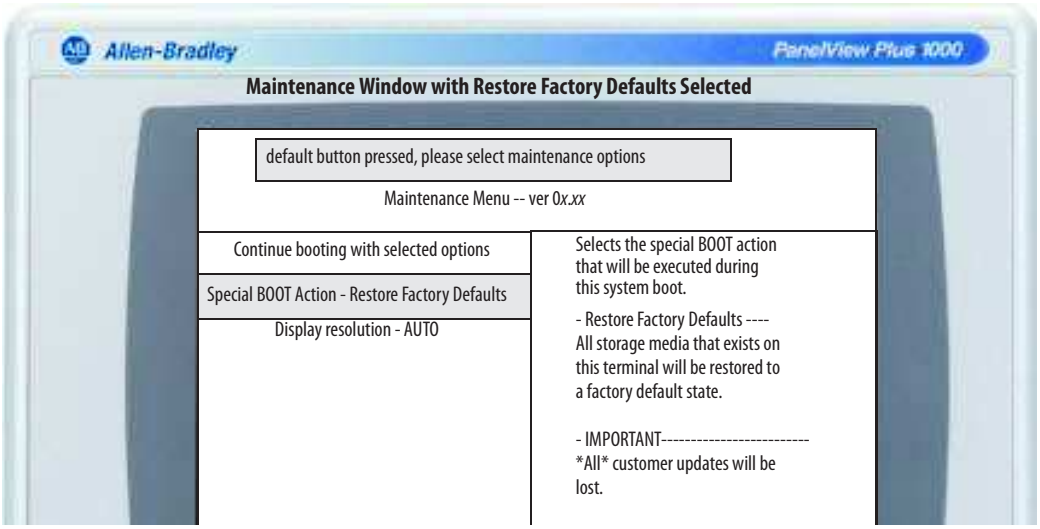
TIP Use the keys at the bottom of window to make selections.

2. Press the down arrow on the keyboard to select the following option:

   Special BOOT Action -None

3. Press the right arrow three times to select the following option:

   Special BOOT Action - Restore Factory Defaults.



4. Press the up arrow to select “Continue booting with selected options”.
5. Press Enter on your keyboard to initiate the factory default restore process.

   The terminal is returned to its out-of-box state, including the firmware, registry, file system, and storage areas. All user data is lost after the restore.

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Notes:

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Fonts Resident on Terminal

True Type Fonts

The table lists true type fonts that are pre-installed on the terminals. The default system font is Tahoma.

TIP The Arial Unicode MS font contains almost 50,000 characters and provides default language support for many non-Latin languages and scripts including Arabic, Hebrew, Vietnamese, Thai, Hindi (Devanagari), and other Indic languages. The font also includes Chinese, Japanese, and Korean (CJK) support.

You can load additional fonts on the system by copying the font files to the \Windows\Fonts folder on the terminal desktop. To access this folder, select the My Device icon on the terminal desktop or choose Start>Programs>Windows Explorer.

Table 87 - True Type Fonts

True Type Fonts	File Name
Arial Unicode MS version 1.01	arialuni.ttf
Latin Fonts	
Arial	
Arial (Subset 1_30)	arial_1_30.ttf
Arial Black	arialk.ttf
Arial Bold	arialbd.ttf
Arial Bold Italic	arialbi.ttf
Arial Italic	ariali.ttf
Comic Sans MS	
Comic Sans MS	comic.ttf
Comic Sans MS Bold	comicbd.ttf
Courier New	
Courier New (Subset 1_30)	cour_1_30.ttf
Courier New Bold	courbd.ttf
Courier New Bold Italic	courbi.ttf
Courier New Italic	couri.ttf
Georgia	
Georgia	georgia.ttf
Georgia Bold	georgiab.ttf
Georgia Bold Italic	georgiaz.ttf
Georgia Italic	georgiai.ttf
Impact	impact.ttf
Kino	kino.ttf

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Table 87 - True Type Fonts

True Type Fonts	File Name
Microsoft Logo	mslogo.ttf
Symbol	symbol.ttf
Tahoma	
Tahoma (Subset 1_07)	tahoma_1_07.ttf
Tahoma Bold	tahomabd.ttf
Times New Roman	
Times New Roman (Subset 1_30)	times_1_30.ttf
Times New Roman Bold	timesbd.ttf
Times New Roman Bold Italic	timesbi.ttf
Times New Roman Italic	timesi.ttf
Trebuchet MS	
Trebuchet MS	trebuc.ttf
Trebuchet MS Bold	trebucbd.ttf
Trebuchet MS Bold Italic	trebucbi.ttf
Trebuchet MS Italic	trebucit.ttf
Verdana	
Verdana	verdana.ttf
Verdana Bold	verdanab.ttf
Verdana Bold Italic	verdanaz.ttf
Verdana Italic	verdanai.ttf
Webdings	webdings.ttf
Wingding	wingding.ttf
PanelView Fonts	
PV 12 x 24, PV 12 x 8	PV12x24.tff, PV12x8.ttf
PV 16 x 24	
PV 18 x 16, PV 18 x 8	
PV 24 x 32	
PV 32 x 40, PV 32 x 64	
PV 4 x 6	
PV 6 x 16, PV 6 x 24, PV 6 x 8, PV 6 x 9	
PV 8 x 16, PV 8 x 20, PV 8 x 24	
PV Double High	PVdouble_high.ttf
PV Double Wide	PVdouble_wide.ttf
PV Extra Large	PVextra_large.ttf
PV Large	PVlarge.ttf
PV Small	PVsmall.ttf
PV Tiny	PVtiny.ttf
PV Very Tiny	PVvery_tiny.ttf
East Asian Fonts	
Gulim version 2.21 - Korean	gulim.ttc
MS Gothic version 2.30 - Japanese	gulim.ttc

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Outdoor Installations for High-bright Displays

Important Considerations

When using a high-bright display module outdoors, catalog number 2711P-RDT12H, there are important considerations in maximizing the field-life of the front bezel and display:

- Using an antiglare overlay and visor
- Selecting the proper enclosure
- Using the proper orientation of the terminal

Ultraviolet and infrared radiation can reduce the field life of any electronic device. While the materials used in the terminal bezels provide long field life, that field life can be extended by proper installation.

IMPORTANT	The high-bright display module is compatible only with DC-powered logic modules, catalog numbers 2711P-RP8D, 2711P-RP8DK, 2711P-RP9D, 2711P-RP9DK. It cannot be used with AC-powered logic modules.

Using an Antiglare Overlay

Ultraviolet (UV) radiation from the sun causes all plastics to fade or yellow, and become brittle over time. Using an antiglare overlay, catalog number 2711P-RGT12, protects the front of the terminal from direct exposure to UV radiation and increase its field life.

Using a Solar Visor

If the high-bright display module is in direct sunlight during the hottest part of the day and the external ambient temperature exceeds 40 °C (104 °F), use the visor kit, catalog number 2711P-RVT12. The visor reduces the solar load on the front of the display and helps to maintain temperatures within specification.

The high-bright display module has a built-in temperature sensor that automatically reduces the backlight intensity if the temperature inside the cabinet exceeds 55 °C (131 °F). This reduces the risk of damage to the display.

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Selecting an Enclosure

The paint, color, size, and power dissipated by the internal components of an enclosure affect the temperature rise inside the cabinet. Hoffman, a Rockwell Automation Encompass Partner, has information to help you select an enclosure, and heating/cooling accessories to meet the temperature requirements of the installed equipment. See http://www.hoffmanonline.com.

Stirring fans or active cooling be required in high altitude and high ambient temperature locations to keep the internal enclosure temperature below 55 °C (131 °F). Use a heater in installations where the ambient temperature is below 0 °C (32 °F).

Backlight Considerations

The backlight of the high-bright display generates a significant amount of heat when set to full intensity. To minimize the amount of heat generated and extend the life of the backlight, decrease the display intensity by using the screen saver with a 5...10 minute delay.

Orientation of the Terminal

If outside, avoid placing the terminal on the south (north in the southern hemisphere) or west side of a cabinet, if possible. This reduces the heat rise due to solar loading during the hottest part of the day.

Mount the terminal vertically to minimize solar loading on the display. Do not mount the terminal in a sloped enclosure if it is exposed to direct sunlight.

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