



## **PowerFlex<sup>®</sup> 755 Drives (revision 2.011)**

These release notes correspond to major revision 2, minor revision 11 of firmware for PowerFlex<sup>®</sup> 755 drives.

### **Introduction**

The following information is included in this document:

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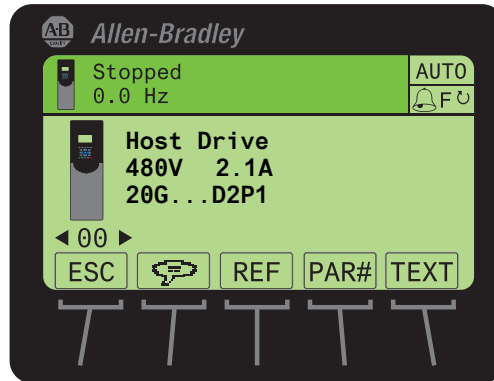
## Determining Firmware Revision Level









This section describes procedures to determine the firmware revision of your PowerFlex 755 drive.

### Using the Drive LCD HIM

1. Access the Status screen, which is displayed on HIM power up.

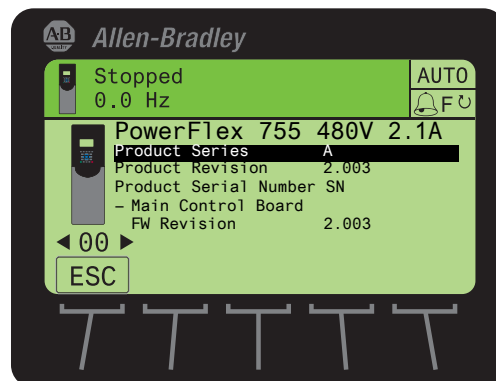
Figure 1 Status Screen



2. Use the  or  key to scroll to Port 00 for the Host Drive.
3. Press the  key to display its last-viewed folder.
4. Use the  or  key to scroll to the DIAGNOSTIC folder.
5. Use the  or  key to select **Device Version**.
6. Press the  (Enter) key to display device version information.

FW Revision is listed under –Main Control Board; see [Figure 2](#).

Figure 2 Device Version Information Screen

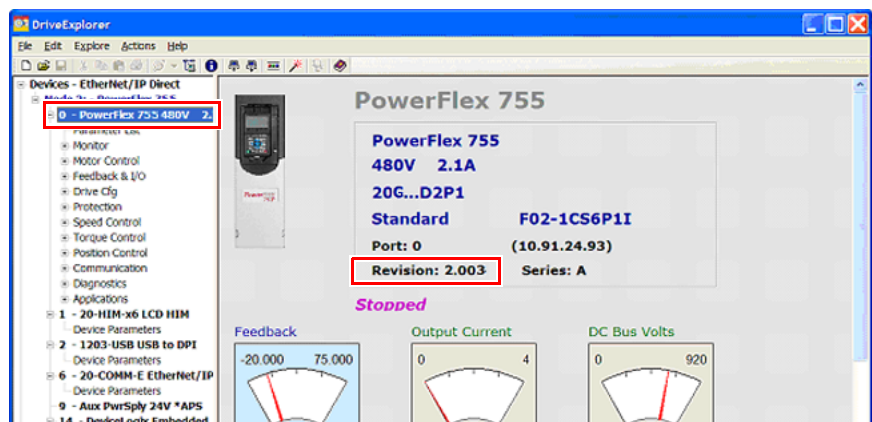


## Using DriveExplorer Lite/Full

**Important:** You need DriveExplorer version 6.01 or later to interface with the PowerFlex 755 drive. To obtain the latest version, visit the Allen-Bradley Web Updates site located at <http://www.ab.com/support/abdrives/webupdate>.

1. Launch DriveExplorer and go online with the PowerFlex 755 drive. To connect to the drive, use a 1203-USB converter, a 1203-SSS converter, or an EtherNet/IP network connection.
2. In the Devices hardware view, select the PowerFlex 755 drive.

Once selected, information regarding the PowerFlex 755 drive is shown in the right panel including the current firmware revision number.



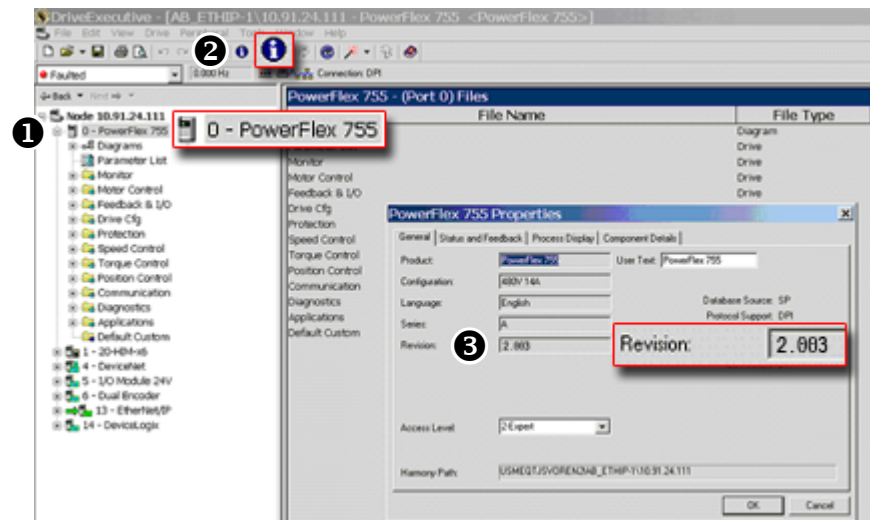
## Using DriveExecutive

**Important:** You need DriveExecutive version 5.01 or later to interface with the PowerFlex 755 drive. To obtain the latest version, visit the Allen-Bradley Web Updates site located at <http://www.ab.com/support/abdrives/webupdate>.

1. Launch DriveExecutive and go online with the PowerFlex 755 drive. To connect to the drive, use a 1203-USB converter, a 1203-SSS converter, or an EtherNet/IP network connection.
2. In the Drives hardware view, select the PowerFlex 755 drive (❶ in [Figure 3 on page 4](#)).
3. Click the information icon (❷ in [Figure 3](#)) to display the drive's Properties dialog box.

In the Properties dialog box the “Revision:” field (❸ in [Figure 3](#)) will show the drive's current firmware revision number.

Figure 3 Accessing the PowerFlex 755 Drive Firmware Revision Number



## Firmware Flashing

This section describes procedures to flash upgrade your drive firmware. Flash kits for drives are provided on the Allen-Bradley Web Updates site located at <http://www.ab.com/support/abdrives/webupdate>.

Flashing can be performed using a 1203-USB or 1203-SSS converter. For information on connecting either converter to your drive, refer to the 1203-USB USB Converter User Manual, publication [DRIVES-UM001](#) or the 1203-SSS Smart Self-powered Serial Converter User Manual, publication [20COMM-UM001](#).

### Installing the Flash Kit

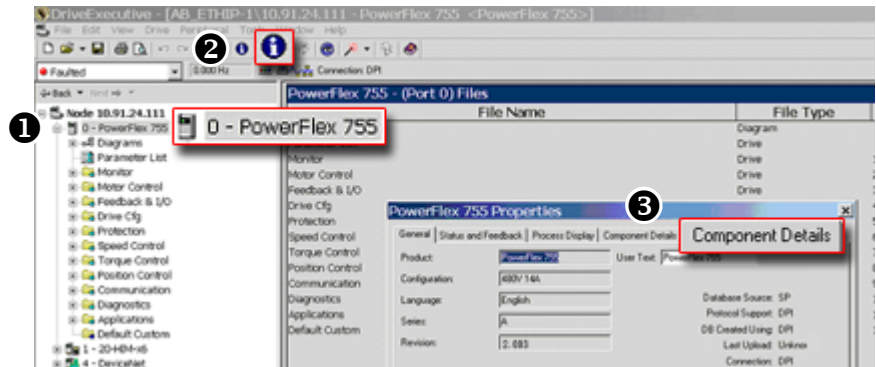
1. Install the flash kit utility from the Allen-Bradley Web Updates site for the PowerFlex 755 drive, which includes the latest version of the ControlFLASH utility and deploys firmware files for using HyperTerminal on your computer.
2. You are now ready to use DriveExplorer, DriveExecutive, ControlFLASH or HyperTerminal to update the drive. Refer to the respective section below and follow the instructions.

### Using DriveExplorer Lite/Full to Flash Update

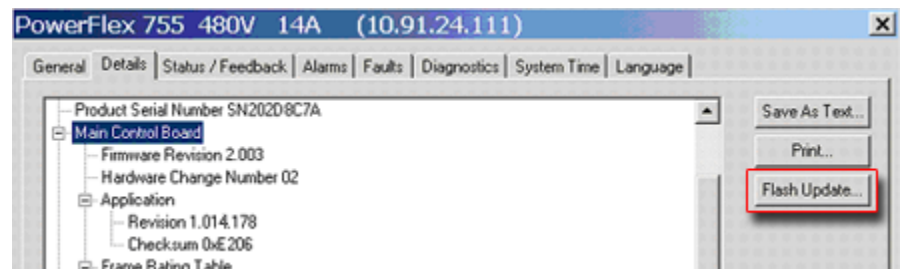
1. With the Flash Kit installed (see [Installing the Flash Kit](#)), launch DriveExecutive and go online (via a 1203-USB or 1203-SSS converter) with the PowerFlex 755 drive.
2. In the Devices hardware view, select the PowerFlex 755 drive (1 in [Figure 4](#)).
3. Click the information icon (2 in [Figure 4](#)) to display the drive's Properties dialog box.

4. In the Properties dialog box, click the Component Details tab (3 in Figure 4).

Figure 4 Accessing the Component Details Tab of the Properties Dialog Box

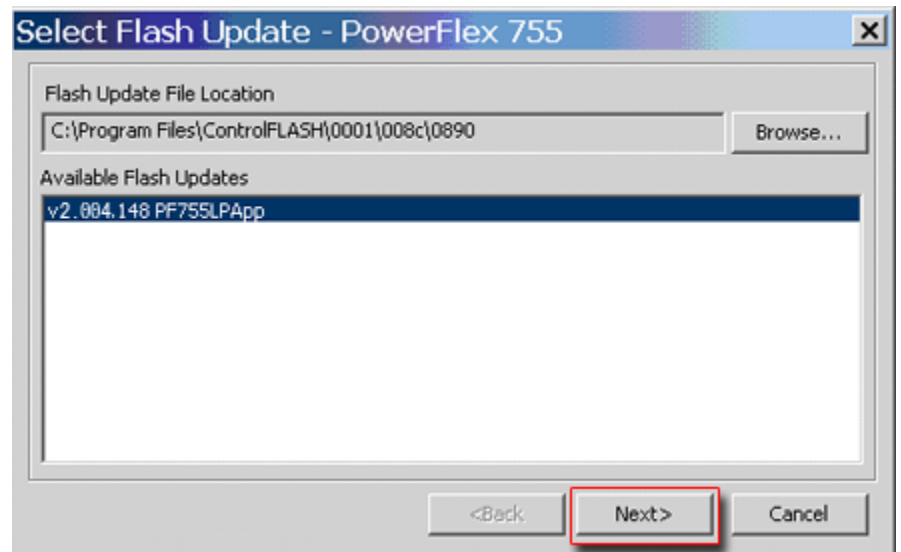


5. With the Main Control Board selected, click **Flash Update**.



**Important:** Flash updating the device firmware may cause the device to load defaults. It is recommended that you save the setting to your PC before proceeding.

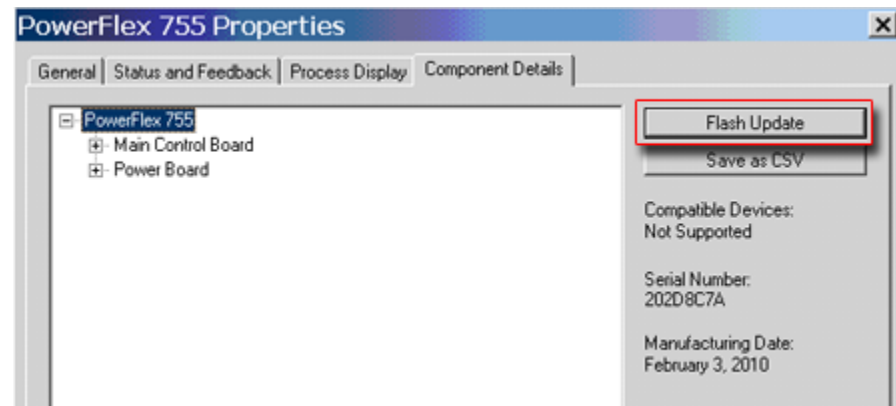
6. From the list of available updates, select “v2.011.xxx” and click **Next >**.



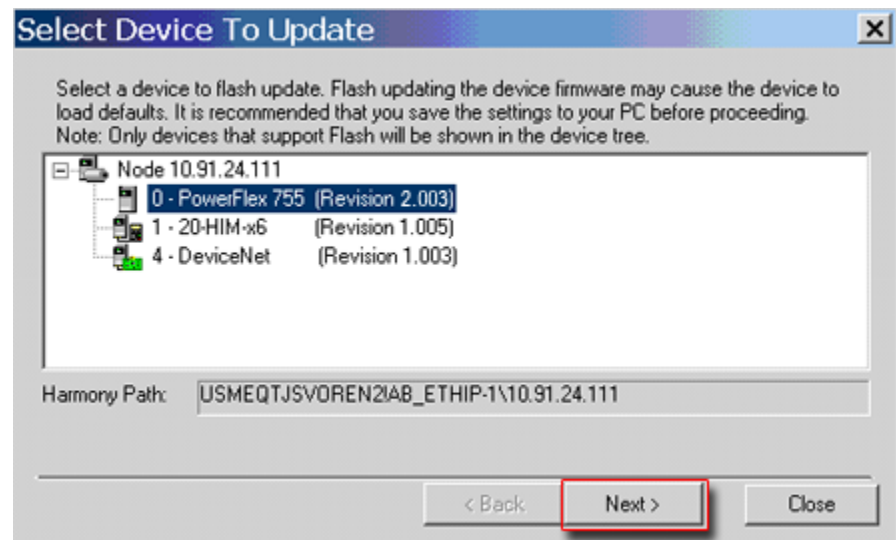
7. Follow the remaining prompts until the flash update procedure completes and displays the new firmware revision.

## Using DriveExecutive to Flash Update

1. With the Flash Kit installed (see [Installing the Flash Kit](#)), launch DriveExecutive and go online (via a 1203-USB or 1203-SSS converter) with the PowerFlex 755 drive.
2. In the Drives hardware view, select the PowerFlex 755 drive (❶ in [Figure 3 on page 4](#)).
3. Click the information icon (❷ in [Figure 3](#)) to display the drive's Properties dialog box.
4. In the Properties dialog box, click the Component Details tab (❸ in [Figure 3](#)).
5. With the PowerFlex 755 drive selected, click **Flash Update**.

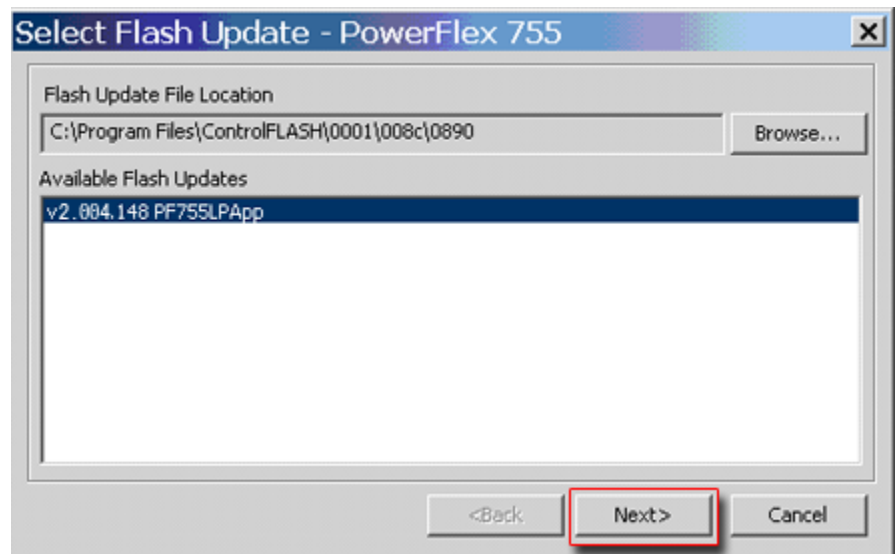


6. From the list of available devices, select the PowerFlex 755 drive and click **Next >**.



**Important:** Flash updating the device firmware may cause the device to load defaults. It is recommended that you save the setting to your PC before proceeding.

7. From the list of available updates, select “v2.011.xxx” and click **Next >**.



8. Follow the remaining screen prompts until the flash update procedure completes and displays the new firmware revision.

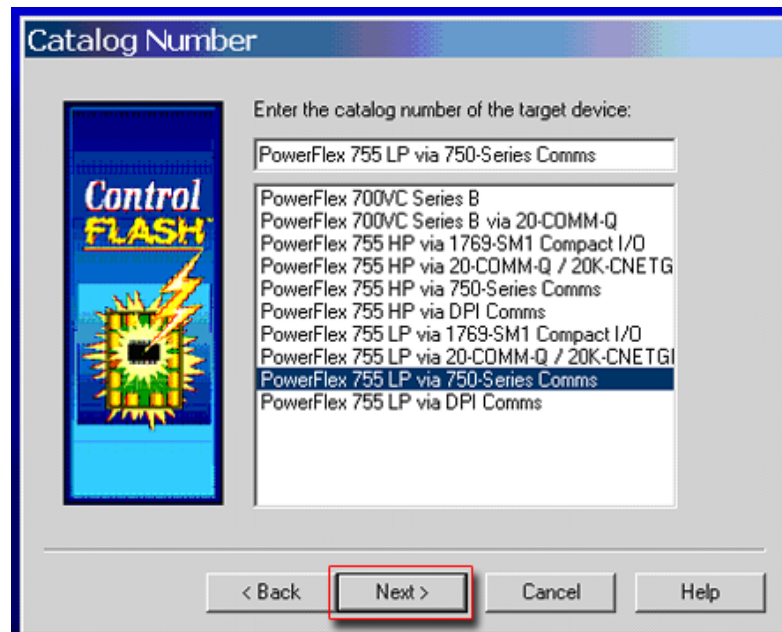
## Using ControlFLASH to Flash Update

1. With the Flash Kit installed (see [Installing the Flash Kit on page 4](#)), launch ControlFLASH by selecting **Start > (All) Programs > Flash Programming Tools > ControlFLASH**.
2. On the ControlFLASH Welcome screen, click **Next >**.



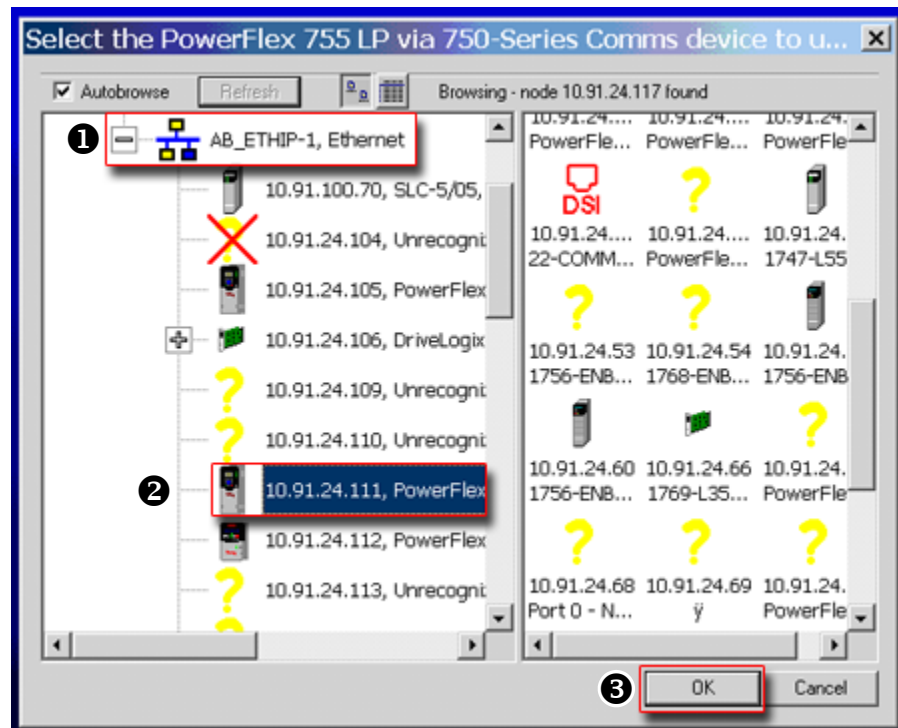
3. The Catalog Number dialog box appears. From the list, choose the communication device you will use to update the PowerFlex 755 drive. In the figure below, the embedded EtherNet device is selected.

Once the appropriate communication device is selected, click **Next >**.

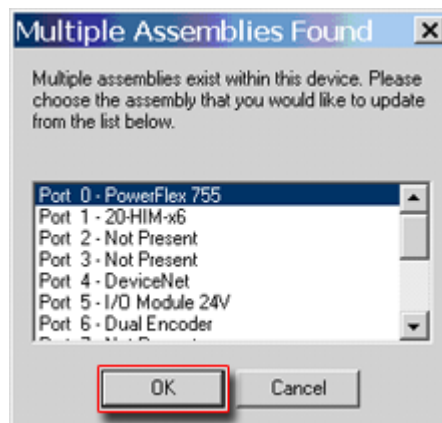


4. Now that the correct communication device has been selected, you must select which device is being updated. With the Select the PowerFlex... dialog box displayed, follow these steps.
  - a. Expand the hardware view for the communication path you are using (❶ in [Figure 5](#)).
  - b. Select the drive icon that represents the PowerFlex 755 drive you are updating (❷ in [Figure 5](#)).
  - c. Click OK (❸ in [Figure 5](#)).

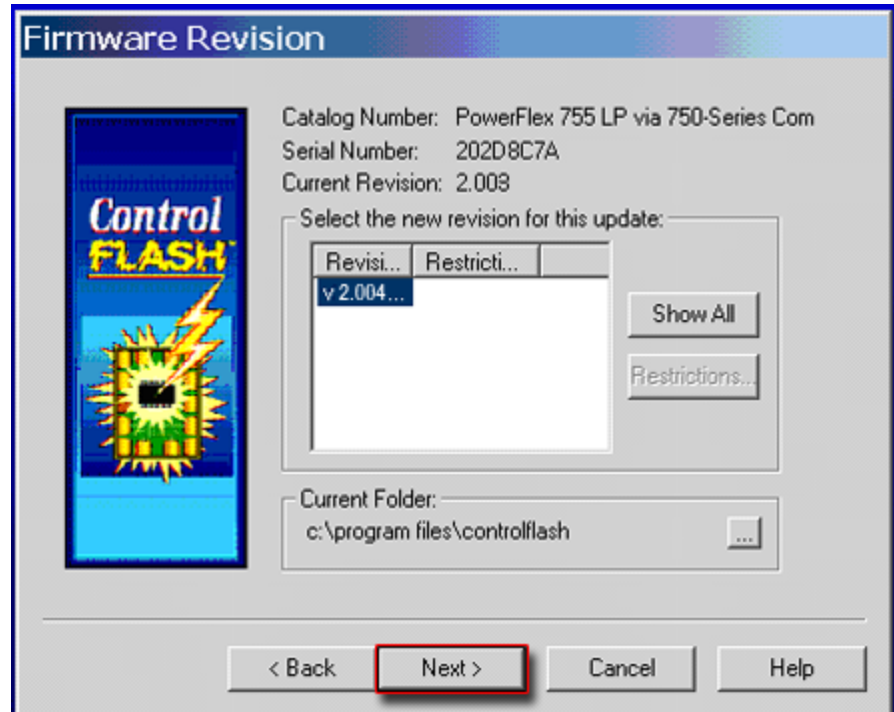
Figure 5 Selecting the Correct Drive to Flash



5. In the Multiple Assemblies Found display box, select “Port x-PowerFlex 755” from the list and click OK.



- In the Firmware Revision dialog box, select “v2.011...” from the list of available updates and click **Next >**.

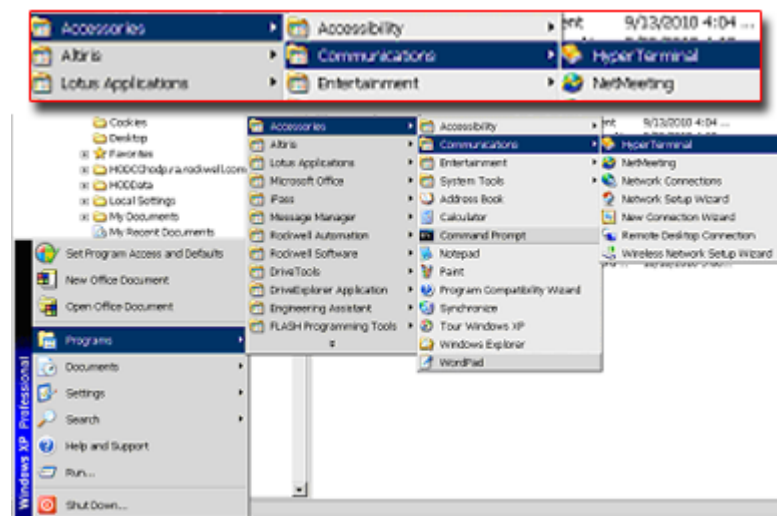


- Follow the remaining prompts until the flash procedure completes and displays the new firmware revision.

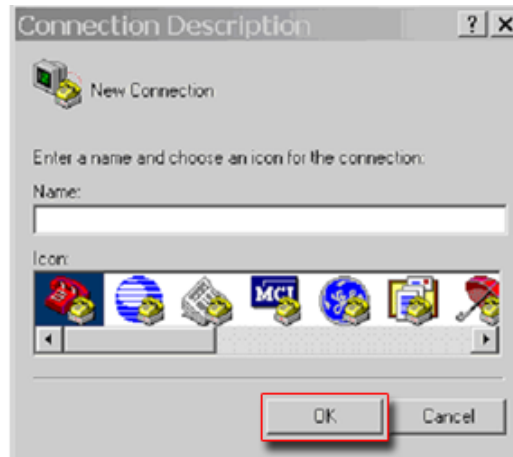
### Using HyperTerminal to Flash Update

**Important:** The HyperTerminal process **takes at least one hour to complete.**

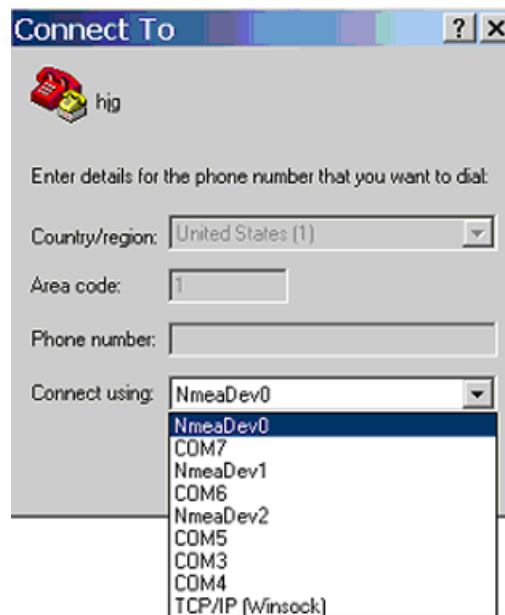
- With the Flash Kit installed (see [Installing the Flash Kit on page 4](#)), access and launch HyperTerminal as shown below.



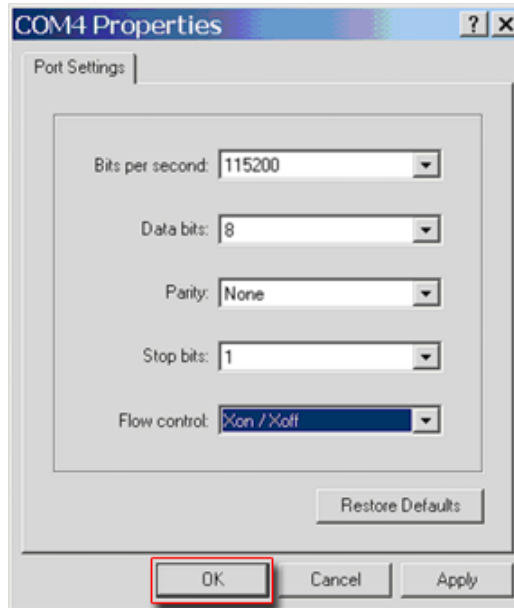
2. A New Connection dialog box appears.
  - a. Enter the connection device name in the Name field or select an icon from the library.
  - b. Click **OK** once you have finished.



3. A Connect To dialog box appears,
  - a. Use the “Connect using:” drop-down menu to select the appropriate connection device.
  - b. Click **OK** once you have finished.

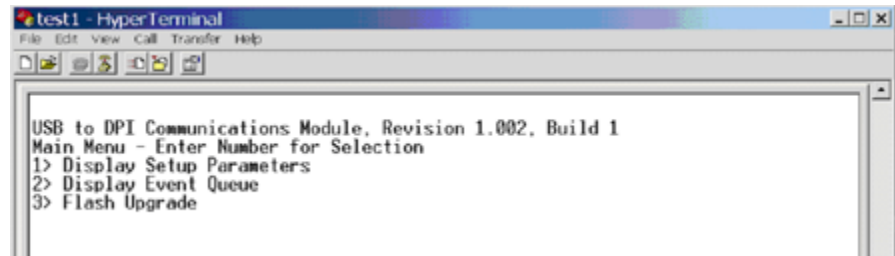


4. A Properties dialog box will appear for the selected connection device.
  - a. Use any of the drop-down menus to change the various port settings.
  - b. Click **OK** once you have finished.



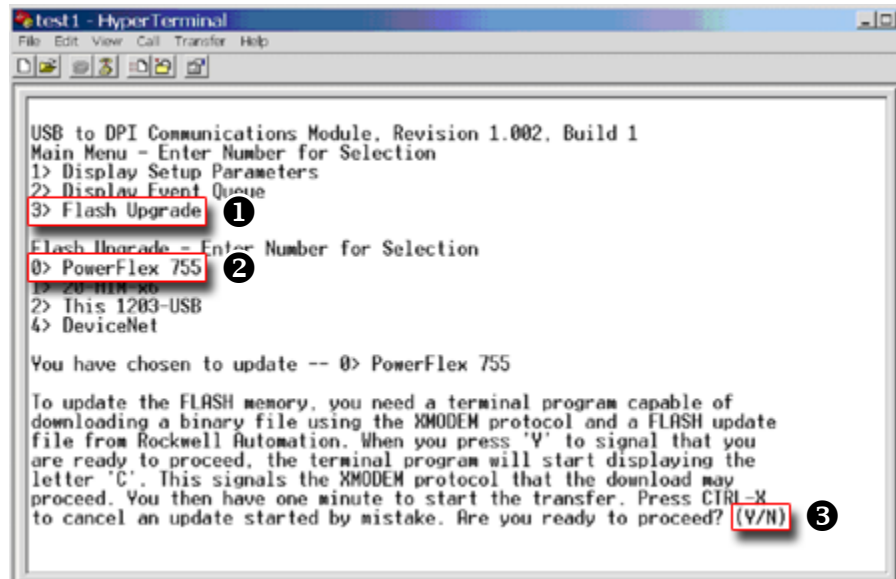
5. After you click OK, you will get a blank screen.

Press **Enter** on your computer keyboard so the following test screen appears.

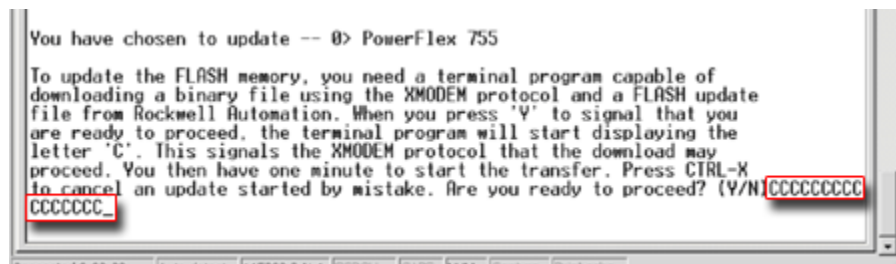


6. From the Main Menu, select the flash upgrade (❶ in [Figure 6](#)) by pressing the number **3** key on your computer keyboard.
7. Additional text appears. From the Flash Upgrade menu, select the PowerFlex 775 drive (❷ in [Figure 6](#)) by pressing the number **0** key on your computer keyboard.
8. Additional text appears. After reading the conditions, select Yes (❸ in [Figure 6](#)) to proceed by pressing the letter **Y** key on your computer keyboard.

Figure 6 HyperTerminal Test Screen Dialogue



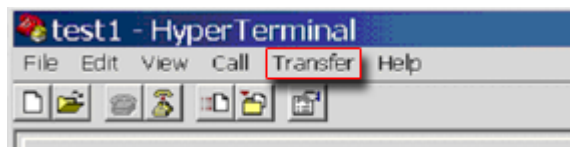
The terminal program will start displaying the letter “C”. This signals the XMODEM protocol that the download may proceed.



**Important:** You have one minute to complete steps 9...14 or HyperTerminal will return to step 5, where you must repeat steps 5...8.

► **TIP:** To cancel the flash update at any time, press **CTRL-X**.

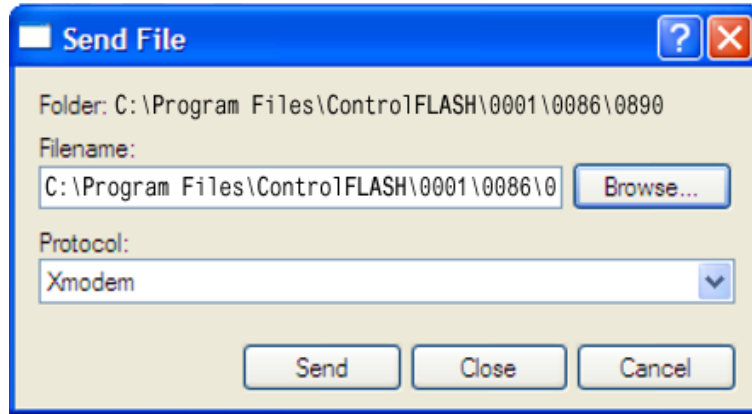
9. Select **Transfer > Send File** to display the Send File dialog box.



10. Click **Browse** and navigate to one of the following locations:

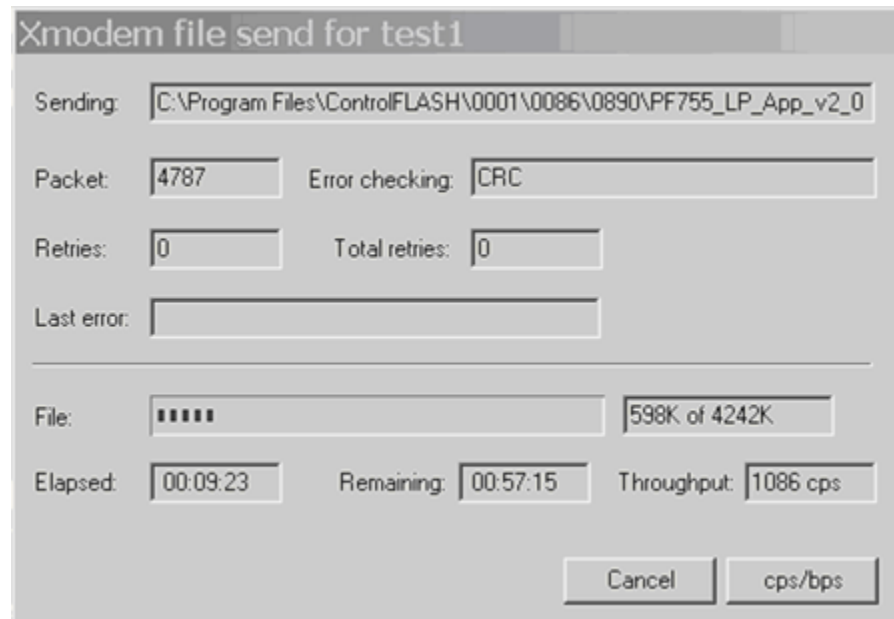
- For PowerFlex 755 drive frames 2...7, go to  
C: > Program Files > ControlFLASH > 0001 > 0086 > **0890**
- For PowerFlex 755 drive frames 8 and larger, go to  
C: > Program Files > ControlFLASH > 0001 > 0086 > **0C90**

11. Search within the appropriate subfolder until the “PF755\_LP\_App\_v3\_004\_xxx.dpi” file appears in the Select File to Send list.
12. With the file name highlighted, click **Open** so it appears in the Filename data field in the Send File dialog box.



13. In the Protocol box, select “Xmodem.”
14. Click **Send**.

A dialog box appears and reports the update progress, which **takes about one hour for HyperTerminal to complete**. When it is complete, the message “Flash Complete” appears.



15. Press any key to continue.
16. Press the **Enter** key to return to the main menu.

## Enhancements

There are no enhancements in this revision of firmware.

## Corrected Anomalies

This section describes the anomalies corrected in this revision.

### **PowerFlex 755 Frame 8 400/480 Volt Drive and Safe Torque-Off Option Module Safety Certification Ratings**

When used with the Safe Torque-Off module (20-750-S), the PowerFlex 755 (20G or 21G) Frame 8 Drive did not provide the published Functional Safety SIL CL3 rating according to EN 61800-5-2, EN 61508, and EN62061; or Performance Level PLe and Category 3 according to EN ISO 13849-1.

This revision of firmware adds diagnostic tests that are required for the above certification ratings.

## Know Anomalies

This section describes the known anomalies that are present in this revision:

### **Delta Junction Temp at Zero Speed**

The protection algorithms in high power (frames 8) drives create false 168 - "PWM Freq Reduced" exception events when running at zero speed. These events can occur when the drive is first energizing the motor and establishing motor flux.

### **Support for Changing Permanent Magnet Direction Test Current**

You cannot change the level of current used during the direction test on a permanent magnet motor while in Integrated Motion on EtherNet/IP (CIP Motion) mode. It is set at 10%. If the system requires more than 10% to turn the motor, it will fail to perform the test.

### **Multicast Messages Cause Synch Fault**

When a new node is added to an Ethernet switch (this has occurred on Stratix 8000 switch, which is recommended in the CIP Motion Reference Architecture), the switch sends out a high volume of multicast messages and the PowerFlex 755 drives would respond with a CIP Motion Synch Fault.

### **Max Pole Count**

The motor pole count is incorrectly limited to 20, in high power (frame 8) drives.

### **Pepperl+Fuchs Linear Position Encoder and Universal Feedback Board**

The anomaly concerns the interaction with a Pepperl+Fuchs Linear Position Encoder and the Universal Feedback Board (UFB). The Pepperl+Fuchs linear position encoder communicates to the UFB using the Synchronous Serial Interface (SSI). The reading head on the linear position encoder reads the code rail and sends the position to the UFB. When the code rail is not in the reading head, the reading head sends an out-of-rail alarm to the UFB.

When the anomaly occurs, the UFB ceases to communicate with the linear position encoder. The UFB does not re-establish communication when the code rail enters the reading head, and the drive does not receive position feedback data.

Three things can trigger the anomaly:

- The drive is powered up when the code rail was not in the reading head.
- There is a command to initialize the UFB when the code rail was not in reading head.
- Change to the value of a parameter in the UFB that can only be modified when the drive is stopped when the code rail is not in the reading head (this causes a command to initialize the UFB).

This occurs regardless of the settings for parameters 9 [FB0 Loss Cfg] and 39 [FB1 Loss Cfg]. Even if you configure the drive to ignore the feedback loss or alarm in response to the feedback loss, the UFB stops communicating to the linear position encoder.

### **End Limit Functionality in Non-Speed Applications**

The reverse end limit is not consistent with the forward end limit in non-speed applications (for example position control).

Customers select the Reverse End Limit function by configuring parameter 198 [DI Rev End Limit].

In position mode, the reverse end limit does nothing. The forward end limit stops the drive, but you can restart the drive in the forward direction even when the signal is low.

### **Power Structure Configuration Changes Not Detected on First Power Cycle after Flash Update**

The drive fails to recognize configuration changes to the power structure on the first power cycle after the drive firmware is updated. This only affects frame 8 drives.

### **Incorrect Option Parameter Settings after Device Conflict Resolved**

When a device conflict is found and the new device accepted, the option-accept code does not reset option module parameter values to defaults (although it does clear the option parameter Non Volatile Storage). If there is previously another option module in the slot, the new option module could have non-default values in any parameters, which had non-default values in the old option module.

## **Improper Fault Code after Reset to Defaults on Ports 10 or 11**

The drive produces a fault F59 “Invalid Code” after the converter at port 11 or the inverter at port 10 is reset to defaults.

## **Interference between Simultaneous Non Volatile Storage (NVS) Rebuilds**

When NVS rebuilds occur at the same time for multiple option modules there can be interference. This can produce improper parameter values in the option modules after a power cycle.

## **Non-Volatile Storage Buffers for DeviceLogix and EtherNet/IP Port**

After a power cycle, some parameters related to DeviceLogix and the EtherNet/IP port can return to their default values. This is related to the size of the space allocated for DeviceLogix and EtherNet/IP parameters.

If you change more DeviceLogix parameter values than the allotted space, some of those parameter values will not be stored in NVS and will return to their default values after a power cycle. If you download a DeviceLogix configuration file or Ethernet/IP Port configuration file containing more parameter values than three-fourths of the allotted space, the download will fail and some of the parameters that should be downloaded will remain at their default values and/or return to their default values after a power cycle.

## **Non-Volatile Storage for I/O Option Modules and the EtherNet/IP Port**

After a power cycle, some parameters related to I/O option modules and the EtherNet/IP port can return to their default values. This is related to a particular issue related to the addressing of NVS.

Parameters related to 115VAC I/O option modules include: 6 [Dig Out Invert], 7 [Dig Out Setpoint], 10 [RO0 Sel], 11 [RO0 Level Sel], 12 [RO0 Level], 14 [RO0 On Time], 15 [RO0 Off Time], 20 [RO1 Sel], 21 [RO1 Level Sel], 22 [RO1 Level], 24 [RO1 On Time], 25 [RO1 Off Time], 40 [PTC Cfg], 46 [Anlg In Sqrt], 53 [Anlg In0 LssActn], 55 [Anlg In0 FiltGn], 56 [Anlg In0 Filt BW], 63 [Anlg In1 LssActn], 65 [Anlg In1 FiltGn], 66 [Anlg In1 Filt BW], 71 [Anlg Out Abs], 75 [Anlg Out0 Sel], 76 [Anlg Out0 Stpt], 78 [Anlg Out0 DataHi], 79 [Anlg Out0 DataLo], 85 [Anlg Out1 Sel], 86 [Anlg Out1 Stpt], 88 [Anlg Out1 DataHi], 89 [Anlg Out1 DataLo].

Parameters related to the 24V I/O option modules with transistor outputs include: 2 [Dig In Filt Mask], 3 [Dig In Filt], 6 [Dig Out Invert], 7 [Dig Out Setpoint], 10 [RO0 Sel], 11 [RO0 Level Sel], 12 [RO0 Level], 14 [RO0 On Time], 15 [RO0 Off Time], 20 [RO1 Sel], 21 [RO1 Level Sel], 22 [RO1 Level], 24 [RO1 On Time], 25 [RO1 Off Time], 30 [TO1 Sel], 31 [TO1 Level Sel], 32 [TO1 Level], 34 [TO1 On Time], 35 [TO1 Off Time], 40 [PTC Cfg], 46 [Anlg In Sqrt], 53 [Anlg In0 LssActn], 55 [Anlg In0 FiltGn], 56 [Anlg In0 Filt BW], 63 [Anlg In1 LssActn], 65 [Anlg In1 FiltGn], 66 [Anlg In1 Filt BW], 71 [Anlg Out Abs], 75 [Anlg Out0 Sel], 76 [Anlg Out0 Stpt], 78 [Anlg Out0 DataHi], 79 [Anlg Out0 DataLo], 85 [Anlg Out1 Sel], 86 [Anlg Out1 Stpt], 88 [Anlg Out1 DataHi], 89 [Anlg Out1 DataLo].

Parameters related to the 24V I/O option modules with relay outputs include: 2 [Dig In Filt Mask], 3 [Dig In Filt], 6 [Dig Out Invert], 7 [Dig Out Setpoint], 10 [RO0 Sel], 11 [RO0 Level Sel], 12 [RO0 Level], 14 [RO0 On Time], 15 [RO0 Off Time], 20 [RO1 Sel], 21 [RO1 Level Sel], 22 [RO1 Level], 24 [RO1 On Time], 25 [RO1 Off Time], 40 [PTC Cfg], 46 [Anlg In Sqrt], 53 [Anlg In0 LssActn], 55 [Anlg In0 FiltGn], 56 [Anlg In0 Filt BW], 63 [Anlg In1 LssActn], 65 [Anlg In1 FiltGn], 66 [Anlg In1 Filt BW], 71 [Anlg Out Abs], 75 [Anlg Out0 Sel], 76 [Anlg Out0 Stpt], 78 [Anlg Out0 DataHi], 79 [Anlg Out0 DataLo], 85 [Anlg Out1 Sel], 86 [Anlg Out1 Stpt], 88 [Anlg Out1 DataHi], 89 [Anlg Out1 DataLo].

Parameters related to the EtherNet/IP port include the datalink parameters (1 [DL From Net 01]...16 [DL From Net 16] and 17 [DL To Net 01]...32 [DL To Net 16]).

### **Logic Mask Does Not Affect Start at Power Up**

The Start at Power Up function, which is configured by parameter 345 [Start AtPowerUp], will work regardless of the settings in parameter 324 [Logic Mask].

### **Erroneous Fault Reporting During Autotune Test**

The DriveExplorer fault queue can indicate F12 “HW Over-current” after a reverse Autotune test. The HIM will not display the fault.

### **ControlFLASH Times Out when Updating Drive**

ControlFLASH will time out when updating the drive over EtherNet/IP with a Stratix 8000 switch. However, the drive will properly apply the flash update.

### **Parameter 1114 [Brake Test Torq] Missing from File and Group**

Parameter 1114 [Brake Test Torq] is missing from the Torque Prove group in the Application parameter file in frame 8 drives. The parameter is in the general Linear List.

### **Missing Error When Drive NV Selected in Integrated Motion Mode**

This anomaly affects customers using Integrated Motion on EtherNet/IP (CIP Motion). If you attempt to use Drive NV when configuring the motor on a motion axis with a PowerFlex 755, the drive will not return the appropriate error. This feature is not currently supported in the PowerFlex 755.

### **MRHD Motion Run Hookup Diagnostics**

The .PC and .DN bits of a MHRD motion instruction will not behave properly. An additional 40 ms delay is required before executing another motion instruction.

### Parameters 490 [HSFanElpsdLife] and 501 [InFanResetLog] Not Shown

Parameters 490 [HSFanElpsdLife] and 501 [InFanResetLog] are not displayed in high power (frame 8) drives.

### Restrictions and Compatible Revisions

The following restrictions apply to this revision of firmware:

#### Embedded EtherNet/IP Port Requires Quality of Service (QoS)

With this firmware revision, the drive's embedded EtherNet/IP port requires the EtherNet/IP scanner and switches and ports between the drive and the scanner support Quality of Service (QoS). The following table details the compatible products and firmware revisions.

Product	Compatible Rev. No.
DriveLogix 5730 Embedded Ethernet Port	Update not available
CompactLogix (1769-L2x/L3x)	Rev. 17.03
ControlLogix (1756-ENBT)	Rev 4.005
CompactLogix (1768-ENBT)	Rev 2.001
FlexLogix (1788-ENBT)	Rev 2.004
ControlLogix 1756-EN2T (F)(XT)	No Update needed
SoftLogix I/O Messaging	No Update needed
Stratix 8000 & 6000	No Update needed

## Rockwell Automation Support

Rockwell Automation provides technical information on the web to assist you in using our products. At <http://www.rockwellautomation.com>, you can find technical manuals, a knowledge base of FAQs, technical and application notes, sample code and links to software service packs, and a MySupport feature that you can customize to make the best use of these tools.

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

## Installation Assistance

If you experience a problem with a hardware module within the first 24 hours of installation, please review the information that's contained in this manual. You can also contact a special Customer Support number for initial help in getting your module up and running:

United States	1.440.646.3434 Monday – Friday, 8am – 5pm EST
Outside United States	Please contact your local Rockwell Automation representative for any technical support issues.

## New Product Satisfaction Return

Rockwell tests all of our products to ensure that they are fully operational when shipped from the manufacturing facility. However, if your product is not functioning and needs to be returned:

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

U.S. Allen-Bradley Drives Technical Support - Tel: (1) 262.512.8176, Fax: (1) 262.512.2222, Email: [support@drives.ra.rockwell.com](mailto:support@drives.ra.rockwell.com), Online: [www.ab.com/support/abdrives](http://www.ab.com/support/abdrives)

[www.rockwellautomation.com](http://www.rockwellautomation.com)

### Corporate Headquarters

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Americas: Rockwell Automation, 1201 South Second Street, Milwaukee, WI 53204-2496 USA, Tel: (1) 414.382.2000, Fax: (1) 414.382.4444

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Asia Pacific: Rockwell Automation, 27/F Citicorp Centre, 18 Whitfield Road, Causeway Bay, Hong Kong, Tel: (852) 2887 4788, Fax: (852) 2508 1846

### Headquarters for Dodge and Reliance Electric Products

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