PowerFlex® 700H Drive Firmware (Revision 4.001)

These release notes correspond to major revision 4.001 of firmware for PowerFlex® 700H Drives.

Introduction

The following information is included in this document:

Determining the Firmware Revision Level

To determine the firmware version for a PowerFlex 700H Drive, view parameter 29 [Control SW Ver].

Firmware Upgrades

This section describes the procedures necessary to flash upgrade your PowerFlex 700H drive firmware. You can download the required PowerFlex 700H Flash Update Tool and firmware on the Allen-Bradley Web Updates site located at http://www.ab.com/support/abdrives/webupdate.

Note: Control Flash and 1203-SSS and 1203-USB serial adapter support through the DPI are not yet available for PowerFlex 700H drives.

⚠️ **ATTENTION:** Risk of drive damage exists if drive power is removed during the Boot Flash segment of the upgrade/download. To guard against damage, Do Not Remove Power to the drive until the download is complete and the drive has been reset.

Important: Once a flash update has been started, do not remove drive power until the download is complete and the drive has been reset. If power is removed during Boot Flash, the drive may be permanently damaged. A drive that has been damaged in this way cannot be repaired. If power is removed during Application Flash, the drive will remain in Boot and can be reflashed.

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Using the PowerFlex Flash Update Tool

Important: The PowerFlex 700H Flash Update Tool is used with a straight serial cable with male-female connectors. Do not use a crossover cable (NULL Modem) cable. If your computer only has a USB port, you must obtain a USB to serial converter cable in order to complete this procedure.

Important: Shut down RSLinx before completing this procedure in order to avoid a COMM PORT error.

The system firmware is named RPF700HAV024.vcn and is the only file required for this update. The standard application firmware is bundled with system firmware and does not require a separate download or flash.

1. Connect the serial cable from your computer to the port on the front of the 700H control assembly as shown below.

Connect serial cable to port on control assembly
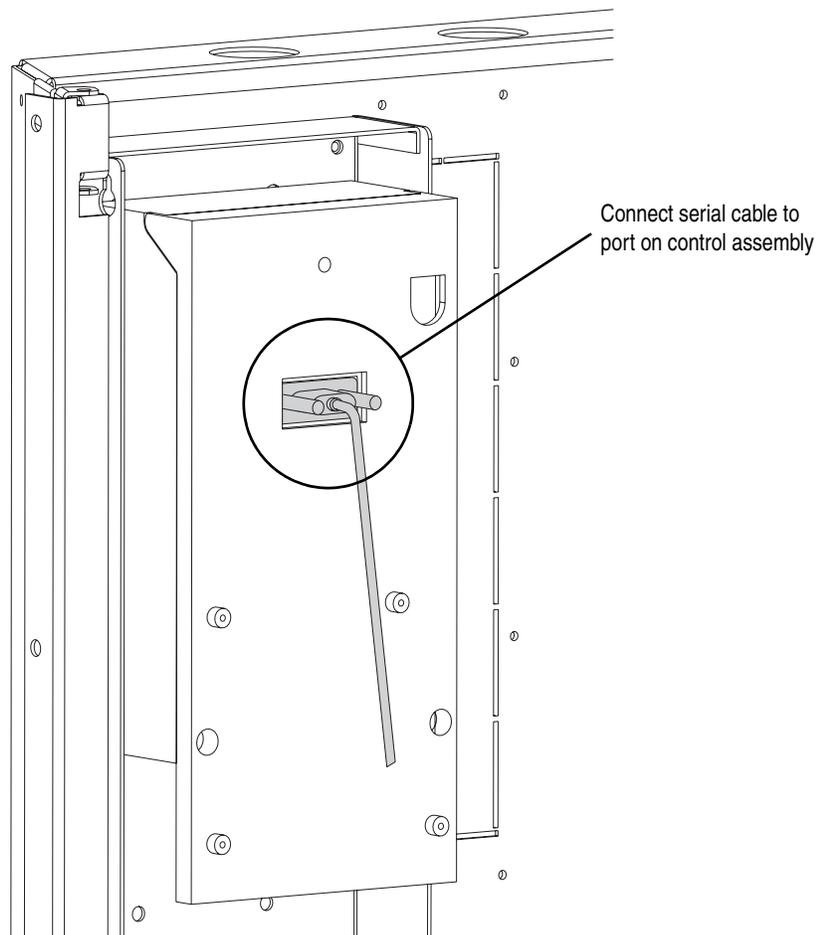
2. Start the PowerFlex 700H Flash Update Tool and follow the screen prompts until the flash procedure is completed and the new firmware version is displayed.

Enhancements

This section describes the enhancements included in this revision:

Ability for HIM to Control Speed Reference, Start and Jog in Two-Wire Control Mode

The ability to issue a speed reference only or a speed reference, and start and jog commands from the HIM while in manual mode and two-wire control mode has been added in this release.

The following parameter changes have been made to support this new feature.

• Bit 1 "Manual Mode" was added to parameter 192 [Save HIM Ref].

Bit 6 "Heatsink Temp" of Parameter 211 [Drive Alarm 1] Implemented

Bit 6 "Heatsink Temp" of parameter 211 [Drive Alarm 1] was added in firmware version 3.001 but was not active. This bit has been activated in this firmware version.

Cyclic Redundancy Check (CRC) Added for Automatic Device Replacement (ADR) Functionality

This feature provides a checksum value that indicates whether or not a change in drive programming has occurred and is required for the ADR functionality provided with DeviceNet. This value can be read in parameter 203 [Drive Checksum].

Dynamic Selection of User Parameter Sets

The ability to dynamically select a User Set has been added for this firmware release. This feature can be used if frequent or automated control of the User Sets is required by an application. Dynamic Mode is required not only to meet application requirements, but also to avoid non-volatile memory write cycle limitations. In this mode, either a parameter (typically controlled by the network) or digital inputs are used to quickly transfer a complete User Set to RAM without affecting any non-volatile memory.

The following parameter additions/changes have been made to support this new feature.

• The following new parameters were added: 204 [Dyn UserSet Cnfg], 205 [Dyn UserSet Sel] and 206 [Dyn UserSet Actv].

• Options 41 "UserSet Sel1" and 42 "UserSer Sel2" were added to [Digital Inx Sel], parameters 361-366.

• Bit 11 "UserSetCflct" was added to parameter 212 [Drive Alarm 2].

• The new Type 2 Alarm 139 "UserSetCflct" was added.

Fan Control Option Added

The ability to turn off the main cooling fans under certain conditions has been added. For 480V AC / 650V DC drives, when the drive is stopped and the heatsink temperature has dropped below the limit of 55° C for 60 seconds the cooling fans will turn off. Also, for 690V AC / 932V DC drives, when the DC bus voltage drops below 1000V, the cooling fans will turn off after a four minute delay. If this functionality is not enabled, the fans run whenever the drive is energized.

The following parameter has been added to support this new feature.

• 465 [Fan Control]

[Fault x Subcode] Parameters Added to Further Define Faults

The new [Fault x Subcode] parameters have been added to provide additional details for certain faults. For example, if parameter 243 [Fault 1 Code] displays "12" and the new parameter 543 [Fault 1 Subcode] displays "275", an over current fault (F12) has occurred in the U phase of the power unit. Refer to "Fault and Alarm Descriptions" in Chapter 3 of the *PowerFlex 700H AC Drives Programming Manual*, publication 20C-PM001… for more information on fault subcodes.

The following parameters have been added to support this new feature:

• 543 [Fault 1 Subcode]

• 545 [Fault 2 Subcode]

• 547 [Fault 3 Subcode]

• 549 [Fault 4 Subcode]

• 551 [Fault 5 Subcode]

• 553 [Fault 6 Subcode]

• 555 [Fault 7 Subcode]

• 557 [Fault 8 Subcode]

Increased Maximum Value of [Motor Poles] to 18

The maximum value of parameter 49 [Motor Poles] has been changed to 18 in order to accommodate 18 pole motors.

"RunFwd Level" and "RunRev Level" Options Added to Digital Inputs

Options 44 "RunFwd Level" and 45 "RunRev level" were added to the digital inputs, parameters 361-366. These options allow you to program the drive to start without a "Run" command after the following conditions are met in the drive:

- **Use with Enable** - With a digital input programmed as "Enable" and another as either of the new "RunFwd Level" or "RunRev Level" options, the drive can be started by transitioning the "Run" input and will continue to run as long as both the "Enable" and "RunFwd Level" or "RunRev level" inputs are asserted. When the "Enable" input is removed, the drive "disconnects" from the motor and the motor coasts. When the "Enable" input is asserted again and the "RunFwd Level" or "RunRev Level" input is still asserted the drive will run without the need to transition the "Run" input.

- **Use with Fault** - With a digital input programmed as either of the new "RunFwd Level" or "RunRev Level" options, the drive can be started by transitioning the "Run" input. If the drive faults, the drive "disconnects" from the motor and the motor coasts. When the fault is cleared and the "RunFwd Level" or "RunRev Level" input is still asserted the drive will run without the need to transition the "Run" input. If, however, a "Stop" input is used to reset faults, the "RunFwd Level" or "RunRev Level" input must be transitioned.

This function is only valid using two-wire control mode. Once a digital input is programmed as any of the "Run Level" options, the start on the HIM module will not function.

Security Features Added

This new feature provides write access protection for individual communication ports in the drive and whether network security is controlling the ports. This security technology can be used with any DPI capable device. Example communication peripheral devices include:

- 20-COMM-E EtherNet/IP v2.002 (or higher)

- 20-COMM-C/-Q ControlNet v2.001 (or higher)

- 20-COMM-D DeviceNet v2.001 (or higher)

- 20-COMM-S DF1 v1.003 (or higher)

The following drive software tools support this security technology.

- DriveExplorer v4.04 (or higher)

- DriveTools SP v4.01 (or higher)

The following parameters have been added to support this new feature.

- 595 [Port Mask Act]

- 596 [Write Mask Cfg]

- 597 [Write Mask Act]

- 598 [Logic Mask Act]

Corrected Anomalies   This section describes the anomalies corrected in this revision:

"At Speed" Status Changes when Using an Analog Input Speed Reference

Anomaly:

When using an analog input to control speed, the display status on the HIM would change to Accelerating/Decelerating while the drive was actually "At Speed".

Correction:

The system "At Speed" status is used to provide a stable "At Speed" on the HIM display.

Bit 0 of [Drive Alarm 2] Incorrectly Named

Anomaly:

Bit 0 "DigIn Test" of parameter 212 [Drive Alarm 2] is incorrectly named.

Correction:

The bit name was changed to "DigIn CflctA".

Control I/O Card Version Numbers do not Display Correctly

Anomaly:

Certain control I/O cards do not display the proper version number when viewed fro the HIM > Device Version menu.

Correction:

All I/O cards now display the correct version number.

Drive Changes from Manual to Auto Speed Reference After Power Cycle

Anomaly:

When the speed reference is controlled by a manual source (one of the digital inputs, parameters 361-366 [Digital Inx Sel], is set to 18 "Auto/Manual") and power to the drive is cycled, the speed reference reverts to the auto source.

Correction:

A time delay was added to the Auto/Manual option for the digital inputs so that after power up to the drive the digital input set to Auto/Manual is scanned and maintains the appropriate speed reference source.

Frame 12 and 14 Drives do not Have Unique Configuration Codes in DriveTools SP

Anomaly:

Frame 12 and 14 drives do not have unique configuration codes in Drive Tools SP and causes certain database files to be unintentionally overwritten.

Correction:

Frame 12 and 14 drives have now been assigned unique configuration codes in DriveTools SP.

Parameters [Power Up Marker] and [Drive Ref Rslt] Contain Offline Values of Zero (0)

Anomaly:

The minimum and maximum values for parameters 242 [Power Up Marker] and 272 [Drive Ref Rslt] in the offline database are set to zero (0).

Correction:

The offline database files have been corrected for this firmware release and will now contain the correct minimum and maximum values for these parameters.

Restrictions

There are no known restrictions for this revision of firmware.

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Technical Support Options

For U.S. Allen-Bradley Drives Technical Support:

Telephone:	(1) 262.512.8176
Fax:	(1) 262.512.2222
Email:	support@drives.ra.rockwell.com
Online:	www.ab.com/support/abdrives

Rockwell Automation also provides technical information on the web to assist you in using our products. At http://support.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://support.rockwellautomation.com.

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 document. You can also contact a special Customer Support number for initial help in getting your module up and running:

United States	1.440.646.3223 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.