



PowerFlex 700L Active Converter Firmware v3.001

This release note describes major revision 3, minor revision 1 of firmware for PowerFlex 700L Active Converters.

Introduction

The following information is included in this document:

For information about:	See page:
Determining Firmware Revision Level	1
Firmware Upgrades	1
Enhancements	2
Corrected Anomalies	5
Known Anomalies	5
Restrictions	5
Rockwell Automation Support	6
Product Satisfaction Return	6

Determining Firmware Revision Level

To determine the firmware version for a PowerFlex 700L Active Converter, view parameter 204 - [Control SW Ver]. The firmware version is the data in this parameter.

Example:

Firmware Version 3.001

Firmware revision from parameter 204 - [Control SW Ver] 3.001

Firmware Upgrades

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

The upgrade to version 3.001 involves new boot code and application code. If the Active Converter is to operate as a DPI Host, the new boot code must be installed before installing the new application code.



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

Important: Once a flash update has been started, do not remove power until the download is complete and the active converter has been reset. If power is removed during Boot Flash, the converter may

be permanently damaged. A converter that has been damaged in this way cannot be repaired. If power is removed during Application Flash, the converter will remain in Boot and can be reflashed.

1. Remove/disconnect any HIMs before proceeding.
2. Download the flash update file from the Allen-Bradley Web Updates site.
3. Connect to the PowerFlex 700L drive using a 1203-USB or 1203-SSS Series B serial converter and HyperTerminal.
4. Select Flash Upgrade.
5. When operating as a Coupled unit (DPI SLAVE), select Port 6 to update the PowerFlex 700L active converter. When operating as a Stand Alone unit (DPI MASTER), select Port 0 to update the active converter.
6. Select Y to proceed.
7. Select the appropriate .bin file for the active converter firmware. Select X-modem for the Protocol.
8. Select send. HyperTerminal should show progress of the flash upgrade and indicate when the flash is complete.
9. You may need to cycle power after flashing is complete to re-establish communication.

Enhancements

This section describes the enhancements provided in this revision of firmware:

Added Support for Various Languages

In addition to English, the text for PowerFlex 700L Active Converter information shown on the HIM is now available in these other languages:

- French
- Spanish
- Italian
- German
- Portuguese
- Dutch

Applied a Digital Filter to the Precharge Feedback Signal

The precharge feedback signal is now read more frequently and its value must be off for several consecutive scans before reporting that the precharge contactor has opened.

Added DPI Security Aware Feature

The DPI security aware feature was added to inhibit changing any parameter values when so directed.

Changed Parameter 051 - [Option Select]

The following items were changed:

- Changed Bit 6 from “Reserved” to “VC Inverter.” This bit is used only when the Active Converter is operating as a DPI master and Bit 3 (PWM SyncRecv) is enabled. Bit 6 now selects between synchronizing to an Inverter with PowerFlex 700 Vector Control or PowerFlex 700S Phase II Control. Bit 6 must be set if the Inverter has PowerFlex 700 Vector Control or must remain off if the Inverter has PowerFlex 700S Phase II Control. Bit 6 is not used when the Active Converter is operating as a DPI peripheral.
- Changed Bit 7 from “Reserved” to “Prechg Cntrl.” When Run On Start is selected in parameter 50 [Start Config] and this bit is turned off, then the precharge bypass contactor is closed when the unit is put into run. When Run On Start is selected and this bit is turned on, then the precharge bypass contactor is closed at power up after the DC link has reached steady state. This reduces the time delay between putting the unit in run and the DC link reaching its regulated level.
- The default was changed from “xxxx xxxx xx00 0001” to “xxxx xxxx 0000 0001” as shown below:

Bit Definition											Prechg Cntrl	VC Inverter	Sim ModFreq	Sim ModIndex	PWM SyncRecv	PWM SyncXmit	Unbal V Comp	AutoPhaseRot
Default	x	x	x	x	x	x	x	x	x	x	0	0	0	0	1	0	0	1
Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0		

0 = Disabled
1 = Enabled
x = Reserved

Added New Parameter 105 - [Regen I Lmt]

This parameter sets the maximum active phase current the unit will request when regenerating. Values are entered as a percent of converter rated current. When the converter goes into current limit while regenerating, the DC link will go up and the unit may fault on DC Over Voltage if the condition is not externally corrected.

Minimum Value = -150.0%

Maximum Value = 0.0%

Default Value = -150.0%

Increased High Current Loop Bandwidth to Support the Unbalanced Voltage Compensation Feature

Increased the maximum value for parameter 153 - [CML Bandwidth] from “3000 Rad/sec” to “4000 Rad/sec” to allow a higher current loop bandwidth to support the unbalanced voltage compensation feature.

Changed Parameter 162 - [Capacitance] Description/Maximum Value

This parameter sets the DC Link capacitance. When set to non-zero, this value is used to calculate the tuning coefficients for the voltage loop VML Ki and Kp. In the case of a Frame 2 or Frame 3A drive, this is the capacitance inside the drive. In the case of a Frame 3B drive, it is the capacitance in the Converter and one Inverter. The capacitance of any additional Inverters connected to a common bus must be entered in parameter 170 - [Bus Capacitance].

The maximum value was changed from “32767” to “65535” μ F.

Added New Parameter 170 - [Bus Capacitance]

This parameter sets the additional capacitance connected to the DC link in a common bus application. This value, in addition to the value of parameter 162 - [Capacitance], sets the tuning coefficients for the voltage loop VML Ki and Kp.

Minimum Value = 0 μ F
 Maximum Value = 2000000000 μ F
 Default Value = 0 μ F

Added New Bit 11 to Parameter 214 - [Start Inhibit]

Added new Bit 11 (High DC Link). This bit is set when Run On PwrUp is selected in parameter 50 [Start Config] and the DC Link is greater than 1.44 times the value in parameter 114 [High Vac Lmt]. On a 480 volt unit, parameter 114 [High Vac Lmt] defaults to 528 Vac so inhibit Bit 11 (High DC Link) defaults to 760 Vac.

Changed Default for Parameter 238 - [Fault Config]

The default was changed from “xxxx xxx1 1110 1100” to “xxxx xxx1 0110 1100” as shown below:

Bit Definition									Inverter Fit	PWM SynclLost	V Imbalance	I Imbalance	High dFdt	Ac High Freq	Ac Low Freq	Ac High Volt	Ac Low Volt
Default	x	x	x	x	x	x	x	x	1	0	1	1	0	1	1	0	0
Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	

0 = Disabled
 1 = Enabled
 x = Reserved

Added Feature to Operate the Active Converter as a Stand Alone Unit (DPI MASTER) or Coupled Unit (DPI SLAVE)

Previously, the PowerFlex 700L Active Converter has always operated as a Coupled unit (DPI SLAVE). This feature now allows the Active Converter to operate as a Stand Alone unit (DPI MASTER) or a Coupled unit (DPI SLAVE) as selected by a DIP switch on the control board. When the Active Converter is supplying a common bus feeding a set of inverters, it may be desirable to have the Active Converter be independent of the Inverter it presently needs to be associated with. The following two new parameter groups have been added and are only displayed and available in the Communication File when the Active Converter is operated as a Stand Alone unit (DPI MASTER):

- Masks and Owners Group
 - Parameter 340 - [Logic Mask]
 - Parameter 341 - [Start Mask]
 - Parameter 342 - [Fault Clr Mask]
 - Parameter 343 - [Stop Owner]
 - Parameter 344 - [Start Owner]
 - Parameter 345 - [Fault Clr Owner]
- Security Group
 - Parameter 346 - [Port Mask Act]
 - Parameter 347 - [Write Mask Cfg]
 - Parameter 348 - [Write Mask Act]
 - Parameter 349 - [Logic Mask Act]

Corrected Anomalies

This section describes the anomalies corrected in this revision of firmware:

Improved Calculation that Commands KVARs

Equations were revised that calculate the reactive current limit for commanding KVARs.

Known Anomalies

This firmware revision has no known anomalies.

Restrictions

No restrictions apply to this revision of firmware.

Rockwell Automation Support

Rockwell Automation 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 Frequently Asked Questions (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.

Rockwell Automation also provides complimentary phone support for drives, communication adapters, and peripherals. If you experience a problem with the adapter, please review the information in its User Manual. For further help in getting your adapter operational, contact a Customer Support representative:

United States	(1) 262.512.8176 Monday – Friday, 7am – 6pm CST
Outside United States	Please contact your local Rockwell Automation representative for any technical support issues.

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>.

Product Satisfaction Return

Rockwell Automation tests all 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 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, Online: www.ab.com/support/abdrives

www.rockwellautomation.com

Power, Control and Information Solutions Headquarters

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

Europe/Middle East/Africa: Rockwell Automation, Vorstlaan/Boulevard du Souverain 36, 1170 Brussels, Belgium, Tel: (32) 2 663 0600, Fax: (32) 2 663 0640

Asia Pacific: Rockwell Automation, Level 14, Core F, Cyberport 3, 100 Cyberport Road, Hong Kong, Tel: (852) 2887 4788, Fax: (852) 2508 1846