



Enhanced, Protected, Ethernet, and ControlNet PLC-5 Firmware

Series F, Revision A.2
 Series F, Revision E.2
 Series D, Revision L.2
 Series C, Revision U.2
 Series B, Revision S.2
 Series A, Revision S.2
 Series A, Revision R.2

Introduction

Use these release notes with the following PLC-5 programmable controllers.

Catalog Number	Series A	Series B	Series C	Series D	Series E	Series F
Enhanced	Revision	Revision	Revision	Revision	Revision	Revision
1785-L11B	R.2		U.2	L.2	K.2	
1785-L20B	R.2		U.2	L.2	K.2	
1785-L30B	S.2		U.2	L.2	K.2	
1785-L40B		S.2	U.2	L.2	K.2	
1785-L40L		S.2	U.2	L.2	K.2	
1785-L60B		S.2	U.2	L.2	K.2	
1785-L60L		S.2	U.2	L.2	K.2	
1785-L80B			U.2	L.2	K.2	
Protected	Revision	Revision	Revision	Revision	Revision	Revision
1785-L26B	R.2		U.2	L.2	K.2	
1785-L46B		S.2	U.2	L.2	K.2	
1785-L46L		S.2	U.2			
1785-L86B			U.2	L.2	K.2	
Ethernet	Revision	Revision	Revision	Revision	Revision	Revision
1785-L20E			U.2	L.2	K.2	A.2
1785-L40E			U.2	L.2	K.2	A.2
1785-L80E			U.2	L.2	K.2	A.2
ControlNet	Revision	Revision	Revision	Revision	Revision	Revision
1785-L20C15			U.2	L.2	K.2	E.2
1785-L40C15			U.2	L.2	K.2	E.2
1785-L46C15					K.2	E.2
1785-L60C15				L.2		
1785-L80C15				L.2	K.2	E.2

What This Document Describes

For Information About	See Page
Enhancements in This Release	2
Enhancements in The Previous Release Series F, Revision E Series E, Revision K Series D, Revision L Series C, Revision U Series B, Revision S Series A, Revision S Series A, Revision R	2
Corrected Anomalies in This Release Series F, Revision E.2 Series E, Revision K.2 Series D, Revision L.2 Series C, Revision U.2 Series B, Revision S.2 Series A, Revision S.2 Series A, Revision R.2	3
Corrected Anomalies in Previous Revisions Series F, Revision E Series E, Revision K Series D, Revision L Series C, Revision U Series B, Revision S Series A, Revision S Series A, Revision R	6
Firmware Compatibility and Maintenance Requirements for ControlNet Controllers	7
Software Requirements for ControlNet Controllers	8
Corrected Anomalies in the Previous Revision of PLC-5 Controllers Series F, Revision D.1	9
Corrected Anomalies in Previous Revisions of ControlNet Controllers Series F, Revision D Series E, Revision J Series D, Revision K Series C, Revision T	10
ControlNet Controllers Known Anomalies	10

Enhancements in This Release

We made no enhancements to this release of firmware.

Enhancements in The Previous Release

Series F, Revision E
Series E, Revision K
Series D, Revision L
Series C, Revision U
Series B, Revision S
Series A, Revision S
Series A, Revision R

We made two enhancements to this revision of firmware.

- **Email client functionality with 1785-ENET module** - this enhancement lets you send email messages via the message instruction. This enhancement requires a series C or later 1785 Ethernet interface module and this release or later of PLC-5 firmware.
- **Support for 1734 POINT I/O modules on the ControlNet network** - this enhancement lets specific ControlNet PLC-5 controllers make module connections through a 1734-ACN adapter. The specific controllers are the series F, revision E 1785-L20C15, 1785-L40C15, 1785-L46C15, and 1785-L80C15 controllers.

Corrected Anomalies in This Release

Series F, Revision E.2
 Series E, Revision K.2
 Series D, Revision L.2
 Series C, Revision U.2
 Series B, Revision S.2
 Series A, Revision S.2
 Series A, Revision R.2

All Controllers

This table describes corrected anomalies in this revision of all controllers.

Anomaly	Description
Channel locks up while doing online editing.	Communication channels could lockup or the controller could fault with memory loss when simultaneously doing online edits or downloading and monitoring the controller through an application such as RSLogix 5, RSView 32, or RSLinx software. Communication channels include all channels that perform messaging. I/O channels will continue to perform as normal. Online edits include editing ladder logic and adding or deleting files. This anomaly was introduced in the CNET F/E, ENET F/A, and all enhanced PLC-5 controllers with firmware series/revisions of E/K, D/L, C/U and B/S. This anomaly has been corrected in this revision so that doing online editing or downloading and running applications like RSLinx software will not cause any channel lockups or memory loss faults.
Memory loss fault on power-up with a large number of Adapter mode block transfers (BTs) and a interface module.	When cycling power to a PLC-5 controller in RUN mode with more than 8 Adapter mode BTs and an Ethernet interface module is attached to the controller, the controller could incur a memory loss fault. This anomaly has been corrected so that there will be no memory loss fault when cycling power to a controller with the application conditions noted above.

Ethernet Controllers

This table describes a corrected anomaly in this release of EtherNet controllers.

Anomaly	Description
1785-ENET series C status information invalid	When connecting a Series C 1785-ENET Ethernet interface module to the PLC-5 controller, some of the status information was not valid. This status information was whether the SNMP and HTTP servers are enabled and the baud, duplex, and Autonegotiate status of the channel. This invalid status information would show up in the channel 3A status screens in RSLogix 5 software for the 1785-ENET module. This anomaly has been corrected in this release so that all the status information listed above is valid.

Ethernet Controllers

Series E, Revision K.1

Series D, Revision L.1

Series C, Revision U.1

This table describes anomalies corrected by firmware revision K.1 (series E), firmware revision L.1 (series D), and firmware revision U.1 (series C).

Anomaly	Description
When performing edits to the controller using CIP protocol, inadvertent protection violations can appear in the programming software. The CIP protocol is used when you select an EtherNet/IP driver in RSLinx software. Performing an edit includes modifying the ladder logic, creating data tables, uploading the project, modifying forces, and changing the controller's mode.	This anomaly has been corrected so that you no longer encounter protection violations when you edit the controller.
When accessing the data table via the HTTP server, the module may fault with loss of program.	This anomaly has been corrected so that you no longer fault the module while accessing the data via the HTTP server.
When the processor powers up with invalid memory, any BootP parameters received before the processor memory is initialized are not transferred to the module configuration.	This anomaly has been corrected so that after the processor memory is initialized, the modules Ethernet configuration is updated.

Series F, Revision A.1

This table describes anomalies corrected by firmware revision A.1, series F.

Anomaly	Description
When Forced mode was selected, some Ethernet switches had problems with the Duplex mode. Forced mode fixes the communication rate (100 Mbps or 10 Mbps) and duplex (full-duplex or half-duplex) of the link between the PLC-5 controller and the Ethernet switch to a specified communication rate and duplex.	The Force mode of the Ethernet channel was corrected so that it will work properly when connected to Ethernet switches.
When doing online edits in RUN mode, if the program file being edited has labels, a jump to the labels may fail with a Major Fault code 42 (no label exists) after the system is placed in Test Edits mode.	This anomaly has been corrected so that the controller will not Major Fault code 42 in Test Edits mode if the label exists.
When Autonegotiation is selected in the channel 2 Ethernet configuration, power cycling the controller will cause the configuration of channels 1A and 1B to go to their default state. Channel 1A's default state is DH+ and channel 1B's default state is Remote I/O Scanner mode with an empty scan list.	This anomaly has been corrected so that channel 1A and channel 1B configurations will remain intact after a power cycle when Autonegotiate is selected on channel 2.
If the Ethernet traffic received by the controller significantly exceeds 45 frames per 10 ms interval, there is a possibility that a Memory Loss Fault may occur. A Memory Loss Fault causes all operations on the controller to stop. In order to restore normal operation, it is necessary to cycle power to the controller and download the project.	This anomaly has been corrected so that regardless of the amount of Ethernet traffic received by the controller, a Memory Loss Fault will not occur.

ControlNet Controllers

This table describes a corrected anomaly in this release of ControlNet controllers.

Anomaly	Description
Data table corruption when messaging over ControlNet network or doing Hot Backup crossloads.	When there is a delay of more than 1 second between ControlNet unscheduled messages to a node, there is a small window where the new message may use the reply from the last completed message. This anomaly could be seen as invalid data being written into the data table for read messages and premature status of completion for write messages. This anomaly has been corrected in this release.

Corrected Anomalies in Previous Revisions

Series F, Revision E
 Series E, Revision K
 Series D, Revision L
 Series C, Revision U
 Series B, Revision S
 Series A, Revision S
 Series A, Revision R

The following anomalies were corrected in a previous release of firmware.

All Controllers

This table describes corrected anomalies in this release of all controllers.

Anomaly	Description
Major fault with EEPROM restore with an 1785-ENET Ethernet interface module.	When performing an EEPROM restore and channel 1A changes from DH+ to Scanner mode, and there is an Ethernet interface module attached, the module will fail and the controller will Major Fault with error code 95.
RSLogix5 software cannot display the domino plug firmware revision on 1785-L20C15 or 1785-L20E controllers.	An addressing problem in the controller firmware prevented RSLogix 5 software from correctly displaying the DH+RIO plug firmware revision when attached to the ControlNet port of a 1785-L20C15 or the Ethernet port of a 1785-L20E controller.
PLC-5 controller leaves a residual crash log after firmware is updated with the ControlFlash utility.	After reprogramming a controller using the ControlFlash utility, the controller would fault and leave a crash log in user memory.

ControlNet Controllers

Series F, Revision E
 Series E, Revision K
 Series D, Revision L
 Series C, Revision U
 Series B, Revision S
 Series A, Revision S
 Series A, Revision R

This table describes a corrected anomaly in this release of ControlNet controllers.

Anomaly	Description
The ControlNet controller displays error 0x315 in the ControlLogix I/O tree in RSLogix 5000 software.	The controller would incorrectly return an error which causes it to be marked as a module with a problem in the ControlLogix controller I/O tree. This anomaly has been corrected so that the firmware returns the correct response to the ControlLogix ping request.

Firmware Compatibility and Maintenance Requirements for ControlNet Controllers

For General Applications

If your version of RSNetWorx software does not recognize a newer ControlNet PLC-5 controller, you may need to update your RSNetWorx software or the electronic data sheet (EDS file) for the controller. To update your EDS file, do one of the following:

- Use the RSNetWorx for ControlNet Register Device feature to perform an online update
- Download the EDS file from www.ab.com/networks/eds.

Use either the RSNetWorx for ControlNet EDS Wizard or the EDS hardware installation tool.

- Contact Rockwell Automation Technical Support at 440.646.3223

IMPORTANT

If you are using this firmware to upgrade series C, D, or E, ControlNet controllers, you must also update the EDS files if you are using version 6.0 of RSNetWorx for ControlNet software.

IMPORTANT

ControlNet PLC-5 programmable controllers in a hot-backup system must have compatible firmware revisions. Refer to the table below to determine compatibility.

For Backup Applications

This series/revision of firmware	Is only compatible with
Series F/Revision E, E.2	Series F/Revision E, E.2
Series F/Revision D, D.1	Series F/Revision D, D.1
Series F/Revisions C, C.1, C.2, and C.3	Series F/Revisions C, C.1, C.2 and C.3
Series F/Revisions B and B.1	Series F/Revisions B and B.1
Series F/Revisions A, A.1, A.2, and A.3	Series F/Revisions A, A.1, A.2 and A.3

Be sure that all **spare** ControlNet PLC-5 hot-backup controllers contain compatible firmware.

Software Requirements for ControlNet Controllers

Use the following table to understand specific features that are only available with specific versions and releases of software:

If you want this feature	You need both of these versions of software	
	RSLogix 5	RSNetWorx
Standard functionality	2.2 or later	1.8 or later
Hot-backup (1771 and FLEX I/O modules)	3.21 or later	1.8 or later
Multicast Outputs	3.21 or later	3.0 or later
SLC I/O (also with Hot-backup)	5.0 or later	3.0 or later

Corrected Anomalies in the Previous Revision of PLC-5 Controllers

Series F, Revision D.1

This table describes corrected anomalies in previous revisions of ControlNet PLC-5 controllers.

Anomaly	Description
Possible fault with memory loss when the controller reestablishes communication on the ControlNet network.	Although very unlikely, when the controller reestablishes communication on the ControlNet network, an internal selftest may inadvertently fail, causing the controller to fault with memory loss. This anomaly has been corrected.
Connection path greater than 127 words becomes corrupted.	On ControlNet network, it was possible that the connection path would become corrupted if the size of the path was greater than 127 words. This anomaly has been corrected so that connection path sizes greater than 127 words can no longer become corrupted.
Intermittent memory loss with memory cartridge and uninitialized RAM.	It was possible that the controller would incur a fault with memory loss at powerup if it had uninitialized RAM and had a memory cartridge installed and configured to load RAM at powerup. This anomaly has been corrected so that under these conditions, this fault is no longer possible.
Two-minute serial port lockup possible when altering Channel 1A configuration through serial port.	When altering Channel 1A configuration (through configuration changes or during downloading) when connected to the serial port (Channel 0), it was possible that the serial channel would lock up for 2 min. and then resume normal operation. This anomaly has been corrected so that under these conditions, the lockup can no longer occur.
In ControlNet hot-backup applications, crossloading over the DH+ channel could corrupt data table files.	When using the controller's hot-backup feature to perform crossloads over the DH+ channel, it was possible for the data tables on the secondary controller to become corrupted by having the data copied into the wrong file. This anomaly has been corrected so that data table files crossloaded from the primary controller to the secondary controller are loaded into the correct file.
In ControlNet hot-backup applications, a Major Fault 232 (dual primary condition) can be caused by scheduled connection opening or closing.	When using the controller's hot-backup feature, it was possible for a Major Fault 232 (dual primary condition) to occur when either opening or closing a scheduled connection on the controller. Examples of opening or closing scheduled connections include inhibiting or uninhibiting the scheduled connection or physical network problems that cause connection timeouts. This anomaly has been corrected so that opening and closing of scheduled connections will not cause a dual primary condition to occur.
In ControlNet hot-backup applications, redundant connections with zero length outputs may cause inaccurate Output Ownership Invalid Counts.	Configuring redundant owner connections to modules that have no output data would cause the controller to not send ownership information to those modules. This would cause the Output Ownership Invalid Counts to be inaccurate. This anomaly has been corrected to allow ownership information to be shared and gathered correctly even when modules have no output data.

Corrected Anomalies in Previous Revisions of ControlNet Controllers

Series F, Revision D
Series E, Revision J
Series D, Revision K
Series C, Revision T

The following table describes the corrected anomalies in the prior release of ControlNet PLC-5 controllers.

Anomaly	Description
Duplicate DH+ nodes would cause the programmable controller to fault with memory loss.	If the programmable controller detects duplicate DH+ nodes and the condition is not corrected, the controller may eventually fault with memory loss. The fault may occur immediately, or over an extended period of time. This anomaly has been corrected in revision S of the DH+/RIO communication plug firmware so that if there are uncorrected duplicate DH+ nodes, the programmable controller will not fault with memory loss.
Multiple retries on remote I/O scanner when configured to 230 Kbaud.	On the remote I/O scanner, when channel 1B or 2B is configured at 230 Kbaud and the corresponding channel 1A or 2A is configured to DH+ or Remote I/O Adapter mode at 230 Kbaud, excessive retries may occur. This anomaly has been corrected by the Revision T firmware of the DH+/RIO communication plug. The plug's firmware was revised to minimize the number of retries in this configuration.
Setting .TO bit may lock-up Ethernet interface module message.	Setting the .TO bit of an active Ethernet interface module message may cause the message to lock up with the .EN and .ST bit set. This anomaly has been corrected so that when you set the .TO bit of an active message, it properly aborts the message with an .ER bit set and the .ST bit reset.
Writing to the Global Status Flags file causes fault with memory loss.	If you write through a communication channel to the Global Status Flags file, the controller may fault with memory loss. This anomaly has been corrected.

ControlNet Controllers Known Anomalies

The following is a known anomaly that has **not** been corrected in any series of PLC-5/80C controllers:

- Under certain network configurations, the PLC-5/80C will only support 127 (out of a possible 128) I/O Map Table Entries. The controller may fault with memory loss when all 128 I/O Map Table Entry connections are established.

Notes:

Rockwell Automation Support

Rockwell Automation provides technical information on the Web to assist you in using its 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 manual. You can also contact a special Customer Support number for initial help in getting your module up and running.

United States	1.440.646.3223 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 its products to ensure that they are fully operational when shipped from the manufacturing facility. However, if your product is not functioning, it may need 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.

RSView32, RSLinx, RSLogix 5, RSLogix 5000, FLEX I/O, SLC, Allen-Bradley, RSNetWorx, ControlFlash, ControlLogix, POINT I/O, PLC-5, DH+, RSNetWorx for ControlNet, and TechConnect are trademarks of Rockwell Automation, Inc.

Trademarks not belonging to Rockwell Automation are property of their respective companies.

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