FlexLogix Controllers Revision 15

Catalog Number 1794-L34

About This Publication

These release notes correspond to controller revision 15.6.

Compatible Revisions

To use this controller revision, update your system to these software revision levels or later.

Compatible Software Revisions

Update This Software	To This Revision or Later
RSLinx Classic RSLinx Enterprise	2.43 3.00
RSLogix 5000	15.00
RSNetWorx for ControlNet	5.11
RSNetWorx for DeviceNet	
RSNetWorx for EtherNet/IP	

Before You Begin

Before you update your controller to this revision, do the following preliminary actions.

DH-485 Disconnect Information

If	Then
Your controller is connected to a DH-485 network	Disconnect it from the DH-485 network before you update the firmware of the controller. If you update the firmware of a controller while it is connected to a DH-485 network, communication on the network may stop.

Known Anomaly in Revisions 15.0, 15.3, 15.4, 15.5, and 15.6

Revisions 15.0, 15.3, 15.4, 15.5, and 15.6 of FlexLogix controllers have this known anomaly.

Known Anomaly Description in Revisions 15.0, 15.3, 15.4, 15.5, and 15.6

Anomaly	Description
LimitsInv and SelectLimitInv are swapped.	In the High/Low Limit (HLL) instruction: • LimitsInv parameter is set when the SelectLimit is invalid. • SelectLimitInv parameter is set when the HighLimit and LowLimit parameters are invalid. Lgx00055977

Corrected Anomaly in Revision 15.6

Revision 15.6 of FlexLogix controllers corrects this anomaly.

Corrected Anomaly Description in Revision 15.6

Anomaly	Description
The 1794-L34 controllers experience a non-recoverable major fault in approximately 3… 4 months of continuous operation.	The 1794-L34 controllers experience a non-recoverable major fault in approximately 3… 4 months of continuous operation. Continuous operation is defined as the controller being powered up; the mode of the controller (program, run, remote) does not matter. This was caused by a background diagnostic test completion. Lgx00066633

The information in this section contains previous release notes.

Corrected Anomaly in Revision 15.5

Revision 15.5 of FlexLogix controllers corrects this anomaly.

Corrected Anomaly Description in Revision 15.5

Anomaly	Description
Sometimes I/O modules on the local rails would not be sent the proper configuration data.	If a module that uses a direct connection on the local rails of a 1794-L34 FlexLogix controller was removed or inserted under power (RIUP) or had its power removed and then reapplied, the module may not have its configuration data passed to it when the controller reopens the connection. When this happened, no indication was given that the module did not receive the configuration. The only way to tell was that the input and output values were not correct. Lgx00061814

Corrected Anomalies in Revision 15.4

Revision 15.4 of FlexLogix controllers corrects these anomalies.

Corrected Anomalies Description in Revision 15.4

Anomaly	Description
The Batch recipe became inoperative.	If two PXRQ instructions that had been triggered on the same phase were received by the batch server before the first PXRQ completes, the Batch recipe became inoperative. Lgx00056918
RSLogix 5000 software reported that POINT I/O connections were not scheduled even though they were scheduled and working on the network.	After associating the RSNetWorx for ControlNet file in RSLogix 5000 software and scheduling the network, RSLogix 5000 software displayed an error while trying to save the configuration. The error stated that the POINT I/O connections were not scheduled even though they clearly were and working properly on the network. If you made changes to the program that didn't involve ControlNet changes, and then downloaded, you had to reschedule the ControlNet network. The work around was to remove the association before you saved. Revision 15.4 removes the need for this work around. Lgx00058517
PXRQ Instruction sometimes stayed in process and did not complete.	When executing phase request messages to a batch server, the PXRQ instruction would sometimes stay in process (IP bit set) and never complete. The same scenario could have occurred if you took ownership of a phase from Logix5000 software while a PXRQ instruction was in process. The only recovery method was to transition from program to run or to cycle power to the controller. Lgx00058484, 58631, 59317, 58390, 57760
Executing PXRQ instruction through manual phase control could have caused loss of controller communication.	If the batch server was running and a PXRQ instruction was executed by manual control within Logix5000 software, the controller could have lost communication. The recovery method was to cycle power to the controller. Lgx00058151
An Attempt to Abort a Phase Request (PXRQ) caused all PXRQ's not to function.	If the abort bit was set in a PXRQ instruction with the IP or WA bit set, all remaining PXRQ's in the phase would stop operating correctly. Recovery from this situation required that you download the program again or to cycle power to the controller. Lgx00058678

Corrected Anomalies in Revision 15.3

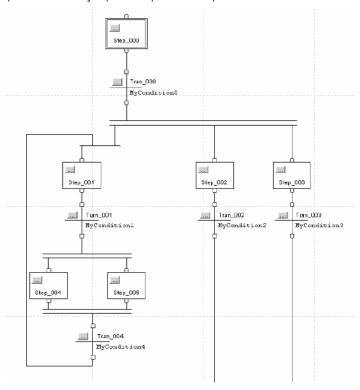Revision 15.3 of FlexLogix controllers corrects these anomalies.

Corrected Anomalies Description in Revision 15.3

Anomaly	Description
Large write MSG instructions.	This revision of FlexLogix firmware adds more stringent range checks when reading to or writing from tags. Message packets are now limited to 240 bytes. This could cause some MSG instructions that worked in previous firmware revisions to not work in revision 15 firmware. For example, use a CIP Generic MSG instruction to perform a Get Attribute Single service. The attribute is 4 bytes in. Assume the destination tag is an INT data type (2 bytes). In revision 13 firmware, the MSG instruction places the first 2 bytes of the attribute in the destination tag. In revision 15 firmware, the MSG instruction errors because the destination tag is not large enough. To correct this error, change the destination tag to a DINT data type. Lgx00052504
The file search compare (FSC) instruction caused a nonrecoverable fault.	The FSC instruction caused an nonrecoverable fault if both these conditions occurred. • A major fault was declared from within the expression of an FSC instruction. • The user fault routine cleared the fault. When the user fault routine attempted to recover, information previously saved was not properly restored, which resulted in corrupted system registers and a nonrecoverable fault. Lgx00055522
Programmatic change of MSG instruction status bits could cause the MSG instruction to appear remain active (EN Set).	If you programmatically reset the DN or ER bits of a MSG instruction due to the asynchronous nature of the MSG instruction, the MSG instruction could appear to remain active (EN set). In fact, the MSG instruction was not active. The MSG instruction required manual intervention to trigger it to execute again. Revision 15 removes the need for manual intervention to trigger the MSG instruction to execute again. Lgx00053112

Anomaly	Description
An SFC instruction could execute the wrong step.	If you had an SFC instruction with nested simultaneous branches, the controller could begin execution at an unexpected step. Following the convergence of a nested simultaneous branch, if the SFC looped back to the initial step of the parent branch, instead of executing that step, the SFC could jump to a step of another path in the nested simultaneous branch. Execution starts at Step_000. When Tran_000 becomes true, Step_001, Step_002 and Step_003 should become active. However, because the nested simultaneous branch in the left path converged and looped back to its parent step (Step_001), the active steps were actually Step_005, Step_002, and Step_003. Lgx00054247
Quick power cycling or removing and reinserting local input modules could cause controller to fault	When cycling power to or removing and reinserting input modules that use direct connections, a momentary window existed where the module could lose its connection to the controller and reestablish the connection, and the module connection was never properly closed. This only occurred on the local rails. To clear the fault, you had to power cycle the controller and redownload the program. Lgx00054979

Anomaly	Description
If you simultaneously applied power to a 1794-VHSC and a controller, the controller might not turn on.	In applications that used the 1794-L34 controller, revision 12.x or later, and a 1794-VHSC module, if the controller and I/O modules were powered up at the same time, occasionally the controller would not cycle power. In this case, the 1794-VHSC module displayed a solid red on its status indicators.

In addition to using FlexLogix firmware revision 15.03, you must update your 1794-VHSC firmware to firmware revision F to correct this anomaly. You must return the 1794-VHSC module to Rockwell Automation for a firmware upgrade. The firmware cannot be upgraded in the field.

Lgx00052295 |

Restrictions in Revision 15.4

FlexLogix controllers do not support the FLEX I/O or FLEX Ex HART modules on the local rail. They can only be used on the ControlNet network with a FLEX I/O ControlNet adapter and a FlexLogix communication card. Also, all FLEX Ex modules must be used on the local rail and cannot be used with a 1794-FLA module.

Restriction in Revision 15.3

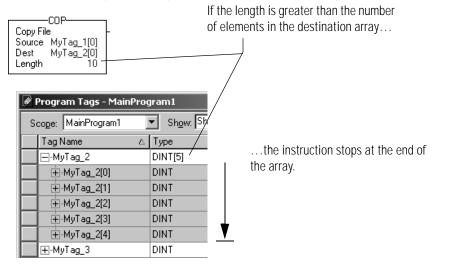Revision 15.3 of FlexLogix controllers has this restriction.

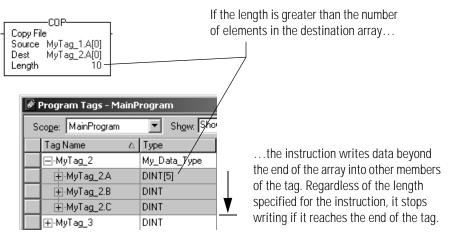**Restriction Description in Revision 15.3**

Restriction	Description
In a tag of a user-defined data type, an instruction may write past the end of an array.	If you write too much data to an array that is within a user-defined data type, some instructions write beyond the array and into other members of the tag.

Example 1: Instruction Stops at the End of the Array

```
┌─────COP─────────────┐
│ Copy File           │
│ Source  MyTag_1[0]  │
│ Dest    MyTag_2[0]  │
│ Length          10  │
└─────────────────────┘
```

If the length is greater than the number of elements in the destination array…

…the instruction stops at the end of the array.

Program Tags - MainProgram1

Scope: MainProgram1   Show: Sh

Tag Name △	Type
⊟-MyTag_2	DINT[5]
⊞-MyTag_2[0]	DINT
⊞-MyTag_2[1]	DINT
⊞-MyTag_2[2]	DINT
⊞-MyTag_2[3]	DINT
⊞-MyTag_2[4]	DINT
⊞-MyTag_3	DINT

Example 2: Instruction Writes Beyond the Array

```
┌─────COP──────────────┐
│ Copy File            │
│ Source  MyTag_1.A[0] │
│ Dest    MyTag_2.A[0] │
│ Length           10  │
└──────────────────────┘
```

If the length is greater than the number of elements in the destination array…

…the instruction writes data beyond the end of the array into other members of the tag. Regardless of the length specified for the instruction, it stops writing if it reaches the end of the tag.

Program Tags - MainProgram

Scope: MainProgram   Show: Sho

Tag Name △	Type
⊟-MyTag_2	My_Data_Type
⊞-MyTag_2.A	DINT[5]
⊞-MyTag_2.B	DINT
⊞-MyTag_2.C	DINT
⊞-MyTag_3	DINT

The following instructions write beyond the array into other members of the tag:

BSL	FBC	LFL
BSR	FFL	LFU
COP	FFU	SQL
CPS	FLL	SRT
DDT	GSV	SSV

This restriction also applies to all previous revisions.
To prevent writing beyond the limits of the destination array, make sure the length operand of the instruction is less than or equal to the number of elements in the array.

Lgx00033747

Enhancements to Revision 15.3

Revision 15.3 of FlexLogix controllers adds these enhancements:

- The PhaseManager option provides a state model for your equipment. It includes:
  - equipment phase to run the state model.
  - PHASE data type.
  - equipment phase instructions (relay ladder and structured text only)

Enhancement Descriptions to Revision 15.3

If You Want To	Use This Instruction
Signal a phase that the state routine is complete so go to the next state	Equipment Phase State Complete (PSC)
Change the state or substate of a phase	Equipment Phase Command (PCMD)
Signal a failure for a phase	Equipment Phase Failure (PFL)
Clear the failure code of a phase	Equipment Phase Clear Failure (PCLF)
Initiate communication with RSBizWare Batch software	Equipment Phase External Request (PXRQ)
Clear the NewInputParameters bit of a phase	Equipment Phase New Parameters (PRNP)
Set up breakpoints within the logic of a phase	Equipment Phase Pause (PPD)
Take ownership of a phase to either: - prevent another program or RSBizWare Batch software from commanding a phase. - make sure another program or RSBizWare Batch software does **not** already own a phase.	Attach to Equipment Phase (PATT)
Relinquish ownership of a phase	Detach from Equipment Phase (PDET)
Override a command	Equipment Phase Override Command (POVR)

- In function block diagram instructions, DeltaT for periodic timing in a periodic task now includes fractional values.

Additional Memory Requirements

Revision 15.0 or later may require more memory than previous revisions (for example, 10.x, 11.x). To estimate the additional memory that your project may require, use the following table.

Estimate Additional Memory Requirements

If You Have This Firmware Revision (add all that apply)	Then Add The Following Memory Requirements to Your Project		Which Comes From This Type of Memory[1]	
	Component	Increase Per Instance	I/O (base)	Data and Logic (expansion)
15.x or earlier	Tag that uses the COORDINATE SYSTEM data type	60 bytes		4
13.x or earlier	Program	12 bytes		4
	Task	4 bytes		4
	User-defined data type	4 bytes		4
	I/O module	16 bytes	4 (8 bytes)	4 (8 bytes)
	Produced or consumed tag	8 bytes	4	
12.x or earlier	I/O module with a comm format = Rack Optimization	90 bytes		4
	I/O module with a comm format = something other than Rack Optimization (that is, direct connection)	144 bytes		4
	Bridge module with a comm format = None	160 bytes		4
	Bridge module with a comm format = Rack Optimization	220 bytes		4
11.x or earlier	User-defined data type. • Number of user-defined data types in the controller organizer > Data Types folder > User-defined folder • **Not** the use of that data type in tags	128 bytes		4
	Indirect address (using a tag as the subscript for an array in an instruction, for example, Array_A[Tag_B]). This memory change applies only if the array: • uses a structure as its data type • does **not** use one of these data types: CONTROL, COUNTER, PID, or TIMER • has only one dimension (for example, UDT_1[5])	(-60 bytes)		4
10.x or earlier	Program	12 bytes		4
	Routine	16 bytes		4
9.x or earlier	Tag that uses the MESSAGE data type	376 bytes		4
7.x or earlier	Project	1050 bytes	4	
	Tag	0.55 bytes		4
	Message that transfers more than 500 bytes of data and targets a controller in the same chassis. This memory is allocated only when the MSG instruction is enabled. To estimate, count the number of these messages that are enabled and/or cached at one time.	2000 bytes	4	

If You Have This Firmware Revision (add all that apply)	Then Add The Following Memory Requirements to Your Project				Which Comes From This Type of Memory[1]	
	Component			Increase Per Instance	I/O (base)	Data and Logic (expansion)
6.x or earlier	Base tag			24 bytes		4
	Alias tag			16 bytes		4
	Produced or consumed tag	Data type	Bytes per tag			
		DINT	4	12 bytes	4	
		REAL	4	12 bytes	4	
				3 x bytes per tag	4	
				3 x bytes per tag	4	
6.x	Routine			68 bytes		4
5.x or earlier	Routine			116 bytes		4

[1]   In the FlexLogix controllers, the I/O and expansion memory types are merged into a single merged pool.

Connect Power Supplies

If you use a 1794-PS13 power supply, connect the power supply to the controller before applying ac power to the power supply. This is also the recommended installation procedure for any third-party power supply you might use.

Additional Resources

You can view or download publications at http://literature.rockwellautomation.com. To order paper copies of technical documentation, contact your local Rockwell Automation distributor or sales representative.

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.

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