



ControlLogix Controllers Revision 14

Cat. No. 1756-L61, 1756-L62, 1756-L63

IMPORTANT

Do not use this revision of firmware in a redundant controller system (ControlLogix Redundancy system).

When to Use These Release Notes

These release notes correspond to the following revisions of the ControlLogix family of controllers:

Controller:	Catalog number:	Revision:
ControlLogix®5561	1756-L61	14.03
ControlLogix®5562	1756-L62	14.03
ControlLogix®5563	1756-L63	14.03

Compatible Revisions

To use this controller revision, update your system as follows:

Update this:	To this version or later:
RSLinX® software	2.43
RSLogix™ 5000 software	14.01
RSNetWorx™ for ControlNet™ software	5.11
RSNetWorx™ for DeviceNet™ software	5.11
RSNetWorx™ for EtherNet/IP software	5.11

These release notes include the changes and corrected anomalies of earlier revisions of 14.x firmware.

Before You Update Your System

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

If:	Then:						
Your controller meets <i>both</i> of these conditions: <ul style="list-style-type: none"> • It has nonvolatile memory. • It is currently at revision 11.x or earlier. 	Take these precautions: <table border="1" style="width: 100%; margin-top: 10px;"> <thead> <tr> <th style="text-align: left;">If the controller:</th> <th style="text-align: left;">Then:</th> </tr> </thead> <tbody> <tr> <td style="vertical-align: top;"><i>does not</i> use a CompactFlash card</td> <td style="vertical-align: top;">Save the project to an offline file. When you update the firmware of the controller, you erase the contents of the nonvolatile memory (revision 10.x or later).</td> </tr> <tr> <td style="vertical-align: top;">uses a CompactFlash card</td> <td style="vertical-align: top;"> Either: <ul style="list-style-type: none"> • Remove the CompactFlash card from the controller. • Check the <i>Load Image</i> option of the CompactFlash card. If it is set to <i>On Power Up</i> or <i>On Corrupt Memory</i>, first store the project with the <i>Load Image</i> option set to <i>User Initiated</i>. Otherwise, you may get a major fault when you update the firmware of the controller. This occurs because the <i>On Power Up</i> or <i>On Corrupt Memory</i> options cause the controller to load the project from nonvolatile memory. The firmware mismatch after the load then causes a major fault. </td> </tr> </tbody> </table>	If the controller:	Then:	<i>does not</i> use a CompactFlash card	Save the project to an offline file. When you update the firmware of the controller, you erase the contents of the nonvolatile memory (revision 10.x or later).	uses a CompactFlash card	Either: <ul style="list-style-type: none"> • Remove the CompactFlash card from the controller. • Check the <i>Load Image</i> option of the CompactFlash card. If it is set to <i>On Power Up</i> or <i>On Corrupt Memory</i>, first store the project with the <i>Load Image</i> option set to <i>User Initiated</i>. Otherwise, you may get a major fault when you update the firmware of the controller. This occurs because the <i>On Power Up</i> or <i>On Corrupt Memory</i> options cause the controller to load the project from nonvolatile memory. The firmware mismatch after the load then causes a major fault.
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<i>does not</i> use a CompactFlash card	Save the project to an offline file. When you update the firmware of the controller, you erase the contents of the nonvolatile memory (revision 10.x or later).						
uses a CompactFlash card	Either: <ul style="list-style-type: none"> • Remove the CompactFlash card from the controller. • Check the <i>Load Image</i> option of the CompactFlash card. If it is set to <i>On Power Up</i> or <i>On Corrupt Memory</i>, first store the project with the <i>Load Image</i> option set to <i>User Initiated</i>. Otherwise, you may get a major fault when you update the firmware of the controller. This occurs because the <i>On Power Up</i> or <i>On Corrupt Memory</i> options cause the controller to load the project from nonvolatile memory. The firmware mismatch after the load then causes a major fault.						
Your controller is close to its limits of memory.	This revision <i>may</i> require more memory than previous revisions. <ul style="list-style-type: none"> • To see what components of your current project require more memory, see page 6. • RSLogix 5000 software version 13.0 or later lets you estimate the memory requirements of the controller offline. To upgrade to this revision, you may have to change to a 1756-L62 or 1756-L63 controller, or modify your application.						
Your controller is connected to a DH-485 network.	Disconnect it from the DH-485 network <i>before</i> 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.						

Enhancement

This revision of ControlLogix firmware adds more stringent range checks when reading to or writing from tags. This could cause some MSG instructions that worked in previous firmware revisions to not work in revision 14 firmware.

For example, use a CIP Generic MSG instruction to perform a Get Attribute Single service. The attribute is 4 bytes in length. Assume the destination tag is an INT data type (2 bytes in length). In revision 13 firmware, the MSG instruction places the first 2 bytes of the attribute in the destination tag. In revision 14 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.

Known Anomaly

This revision of ControlLogix controllers has the following known issue:

Restriction:	Description:
Communication Error When Updating 1756-L6x Controller from Revision 10 or 11 to Revision 14	<p>When attempting to flash update a ControlLogix556x (1756-L61, -L62, or -L63) controller from revision 10 or 11 to revision 14, a communication error occurs and prevents the flash update. The error message is "Failed to communicate to the target device. An unknown communication error code was received from the target device." Acknowledging this error message displays a second ControlFlash message "Manually Reset Module." Acknowledging this message returns to the calling application, which is either ControlFlash or RSLogix 5000 software.</p> <p>To avoid this, first flash update the 1756-L6x controller to either revision 12 or 13 and then update the controller to revision 14.</p>

Lgx00050334

Corrected Anomalies*ControlLogix5561, 5562, 5563 Rev 14.03*

Corrected anomaly:	Description:
Programmatic Change of MSG Status Bits Could Cause the MSG to Appear Remain Active (.EN Set)	If you programmatically reset the .DN or .ER bits of a MSG due to the asynchronous nature of the MSG, the MSG could appear to remain active (.EN set). In fact, the MSG was not active. The MSG required manual intervention to trigger it to execute again. This firmware revision removes the need for manual intervention to trigger the MSG to execute again.
	Lgx00053112
Produce Tag Connections Did Not Speed Up When a Consumer Requested a Faster RPI	If you had a tag produced for one consumer and then a second consumer requested a connection to the same tag at a faster rate, the second connection would open, but at the slower rate of the first consumer. This firmware revision correctly sends produced data at the requested rate.
	Lgx00054434
Major, Non-Recoverable Fault Due to Internal Diagnostic Failure	A rare, internal diagnostic failure could cause a major, non-recoverable fault.
	Lgx00054678
Major, Non-Recoverable Fault When Accessing Data Monitor from RSLinx Software	With more current versions of RSLinx software, when you browsed the serial port of the controller and tried to monitor data, RSLinx software appeared to lock up and the controller generated a major, non-recoverable fault.
	Lgx00054973
The File Search Compare (FSC) Instruction Caused a Non-Recoverable Fault	The FSC instruction caused a non-recoverable fault if both these conditions occurred: <ul style="list-style-type: none"> • 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 non-recoverable fault.
	Lgx00055522
CONCAT Instruction Generated Minor Fault When the Length of the Data Equaled the Maximum Characters Allowed for the String	The CONCAT instruction incorrectly generated a minor fault (Type 4, Code 51) when the length of the data was equal to the maximum number of characters allowed for the string data type.
	Lgx00056558
POINT I/O Modules Added Via RSNetWorx for ControlNet Software Would Not Associate Correctly with RSLogix 5000 Software	If you added 1734-IB8, 1734-OB8, or 1734-OB4 POINT I/O modules to a ControlNet network, associated the network file in RSLogix 5000 software, and scheduled the network, when you saved, you received a warning that some connections were not scheduled (even though they were clearly scheduled and worked on the network). Then if you downloaded this saved project to the controller, your point I/O adapter modules may not have established connections and in the module properties you would see a connection not scheduled error.
	Lgx00058833

Restrictions

This revision of ControlLogix controllers has the following restrictions:

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...

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	

...the instruction stops at the end of the array.

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...

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 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.

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

Additional Memory Requirements

Revision 14.0 or later *may* require more memory than previous revisions (e.g., 10.x, 11.x). To estimate the additional memory that your project *may* require, use the following table:

If you have this firmware revision (add <i>all</i> that apply):	Then add the following memory requirements to your project:		Which comes from this type of memory:	
	Component	Increase per instance	I/O (base)	Data and Logic (expansion)
13.x or earlier	program	12 bytes		✓
	task	4 bytes		✓
	user-defined data type	4 bytes		✓
	I/O module	16 bytes	✓ (8 bytes)	✓ (8 bytes)
	produced or consumed tag	8 bytes	✓	
12.x or earlier	I/O module with a comm format = <i>Rack Optimization</i>	90 bytes		✓
	I/O module with a comm format = something other than <i>Rack Optimization</i> (i.e., direct connection)	144 bytes		✓
	CompactLogix 1769 I/O module	170 bytes		✓
	bridge module with a comm format = <i>None</i>	160 bytes		✓
	bridge module with a comm format = <i>Rack Optimization</i>	220 bytes		✓
11.x or earlier	user-defined data type: <ul style="list-style-type: none"> number of user-defined data types in the controller organizer ⇒ Data Types folder ⇒ User-Defined folder <i>not</i> the use of that data type in tags 	128 bytes		✓
	indirect address (using a tag as the subscript for an array in an instruction, e.g., Array_A[Tag_B]). This memory change applies <i>only</i> if the array: <ul style="list-style-type: none"> uses a structure as its data type does <i>not</i> use one of these data types: CONTROL, COUNTER, PID, or TIMER has only one dimension (e.g., UDT_1[5]) 	(-60 bytes)		✓
10.x or earlier	program	12 bytes		✓
	routine	16 bytes		✓
9.x or earlier	tag that uses the MESSAGE data type	376 bytes		✓

If you have this firmware revision (add <i>all</i> that apply):	Then add the following memory requirements to your project:			Which comes from this type of memory:		
	Component		Increase per instance	I/O (base)	Data and Logic (expansion)	
7.x or earlier	project		1050 bytes	✓		
	tag		0.55 bytes		✓	
	message that: <ul style="list-style-type: none"> transfers more than 500 bytes of data <i>and</i> 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	✓		
6.x or earlier	base tag		24 bytes		✓	
	alias tag		16 bytes		✓	
	produced or consumed tag	Data type	Bytes per tag			
		DINT	4	12 bytes	✓	
		REAL	4	12 bytes	✓	
				3 x bytes per tag	✓	
		3 x bytes per tag	✓			
6.x	routine		68 bytes		✓	
5.x or earlier	routine		116 bytes		✓	

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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 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.

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