



# FlexLogix Controller

Catalog Number 1794-L33, 1794-L34

These release notes correspond to major revision 10, minor revision 16 of the FlexLogix controller firmware. Use this firmware release with:

Software Product:	Compatible Version:
RSLogix 5000 programming software	10.00
RSLink software	2.30.00 (with Service Pack 1)
RSNetWorx for ControlNet software	3.21
RSNetWorx for DeviceNet software	3.21

## FlexLogix Enhancements

This revision of FlexLogix controllers contains these new features:

- support for DeviceNet connectivity using the 1788-DNBO DeviceNet communication daughtercard

Previous releases of the FlexLogix controller required a 1788-CN2DN linking device for DeviceNet connectivity. While this is still possible, a 1788-DNBO card requires less equipment and configuration.

- the 1794-L33 controller supports 64 Kbytes of nonvolatile memory

Nonvolatile memory lets you store a copy of your project on the controller. The controller does not need power to keep this copy. Once you update the firmware of a 1794-L33 controller to this revision, *future* updates automatically clear the project that is in the nonvolatile memory of the controller. This lets you update the controller even if the project in the nonvolatile memory is set to either of the following Load Image options:

- *On Power Up*
- *On Corrupt Memory*

## Common Logix Enhancements

This revision of FlexLogix controllers contains these new features, which are common to all the Logix controllers:

Enhancement:	Description:									
new instructions	SWPB Rearrange the bytes of a value LOWER Convert the alphabetical characters in a string to lower case UPPER Convert the alphabetical characters in a string to upper case									
expanded MESSAGE structure	The MESSAGE structure, which controls the execution of MSG instructions, contains new members. The new members let you use logic to change these properties of a message during run time, including: <ul style="list-style-type: none"><li>• path</li><li>• channel, rack, group, and slot</li><li>• source link, destination link, and destination node</li><li>• address of the data in the destination device</li><li>• properties of a CIP generic message</li><li>• timeout values</li><li>• local and remote index (See “wildcard in the Source and/or Destination of a MSG.”)</li></ul>									
wildcard in the Source and/or Destination of a MSG	The MSG instruction lets you use logic to control the starting element number of the Source and/or Destination array: <ul style="list-style-type: none"><li>• The instruction accepts an asterisk [ * ] in place of the element number in the Source and Destination arrays. For two and three dimension arrays, you can use an asterisk for only one of the dimensions.</li><li>• A corresponding index member stores the actual value to be used in place of the asterisk [ * ]. You can use different values for the Source and Destination.</li><li>• To change the element number, change the value of the index.</li></ul>									
block transfers over ControlNet	The MSG instruction now performs block transfers over a ControlNet network. This lets you access modules over this network that require block transfers, such as 1771 analog I/O modules.									
additional data types for SLC messages	The MSG instruction lets you exchange 32-bit data with SLC or MicroLogix controllers: <b>For this controller:and this data type:use the Logix data type:</b> <table><tr><td>SLC 500</td><td>F</td><td>REAL</td></tr><tr><td>MicroLogix 1000, 1200, and 1500</td><td>F</td><td>REAL</td></tr><tr><td>MicroLogix 1200 and 1500</td><td>L</td><td>DINT</td></tr></table>	SLC 500	F	REAL	MicroLogix 1000, 1200, and 1500	F	REAL	MicroLogix 1200 and 1500	L	DINT
SLC 500	F	REAL								
MicroLogix 1000, 1200, and 1500	F	REAL								
MicroLogix 1200 and 1500	L	DINT								
pre-configured CIP generic MSG	In the Message Properties dialog box, a list of CIP messages lets you select a common function for a CIP message. The selection automatically fills in many of the properties for the message.									

Enhancement:	Description:
reconfigure an I/O module	<p>A new message type, Module Reconfigure, lets you send new configuration information to an I/O module. During the reconfiguration:</p> <ul style="list-style-type: none"> <li>• Input modules continue to send input data to the controller.</li> <li>• Output modules continue to control their output devices.</li> </ul> <p>This lets you change configuration properties such as set points and alarm values without experiencing a bump.</p>
string data types in CMP and FSC expressions	<p>The CMP and FSC instructions let you use string data types in the expression to compare two strings. For example, the FSC instruction lets you search an array of strings for a specific string of characters.</p>
JSR/SBR/RET instructions	<p>Enhancements to the JSR/SBR/RET instructions let you:</p> <ul style="list-style-type: none"> <li>• use these instructions in function block routines</li> <li>• use the BOOL data type as an input and return parameter</li> </ul>
update firmware as part of the download	<p>When you download a project, you have the option of updating the firmware of the controller as part of the download sequence. To use this feature, first install a firmware upgrade kit.</p>

## Corrected Anomalies

In previous revisions of the controller:

- when using RSLogix 5000 software to enable, disable, or remove input forces, the other inputs (the ones not being forced) associated **with that connection** might have gone to zero. The modified inputs would stay at zero for approximately 1 RPI and then the inputs returned to their proper state. If the connection was a module connection, all inputs from that module might have gone to zero. If the connection was a rack connection, all inputs from that rack might have gone to zero.
- you *could not* download a project that used an indirect address (tag in the subscript of an array) to a string data type.
- If you used the same Message Control Tag for messages in different tasks, the controller may have become inoperative. (The OK LED of the controller turned solid red.)
- If you turned on the TO bit of a MESSAGE structure in your logic, the controller may have become inoperative. (The OK LED of the controller turned solid red.)
- If you turned on the CommandRegister.Reset member of two 1756-DNB modules at the same time, the controller became inoperative. (The OK LED of the controller turned solid red.)

- Deleting a Tag While Online Might Have Locked-Up Communication or Caused a Controller Failure

If you deleted an unused tag while online, either of the following failures might have occurred:

- You were unable to communicate with the controller. RSLink showed a red X over the controller and you were unable to communicate with the controller through either the serial port or another communication module.
- The controller may have become inoperative. (The OK LED of the controller turned solid red.)

The failure could have occurred immediately after you deleted the tag or later on in the execution of the project. A power cycle would temporarily clear the problem.

## Restrictions

This firmware version has these restrictions:

- If you use an ABL instruction, set the size of the ASCII buffer of the serial port to less than or equal to 255 characters. If you use a larger setting, an ABL instruction may miss the termination character and the status bits may be set to erroneous values.
- The FlexLogix controller can support a 1794-VHSC module only when it is remotely connected to the controller via a 1794-ACNR15 ControlNet adapter module. The 1794-VHSC module will not function if you install it on a local or extended-local FlexLogix rail.

We recommend that you use DH-485 communications as follows:

- If you update the firmware of a controller while it is connected to a DH-485 network, communication on the network may stop. To prevent this, disconnect the controller from the DH-485 network *before* you update the firmware of the controller.
- Place a FlexLogix controller on a DH-485 network only when you need to add the controller to an existing system. For new systems, use a ControlNet network.
- While your system is running, use a DH-485 network to send messages between devices (e.g., controllers, PanelView terminals).

- To use RSLogix 5000 software over a DH-485 network (upload, download, monitor, edit while online), place all controllers in the program mode. Excessive traffic may make it impractical to use RSLogix 5000 software over this network while your system is running.

## Controller Memory Considerations

This revision may increase the size of a controller project from previous revisions.

- Before you upgrade to this revision, check the amount of unused memory that you have in the controller.
- If you have a 1794-L33 controller (64 Kbytes user memory) and find that you need more memory, you will need to purchase a 1794-L34 controller (512 Kbytes user memory).
- To estimate the additional memory that your project will 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:			
	Component	Number in your project	Increase per instance	Total (number * increase)
9.x or earlier	tag that uses the MESSAGE data type		376 bytes	
8.x or later	axis		(-21.6K bytes)	
8.x or earlier	output cam execution targets		5,404 bytes	
	motion group		32 bytes	
7.x or earlier	project		1050 bytes	1050 bytes
	tags		0.55 bytes	
	messages that: <ul style="list-style-type: none"> <li>• transfer more than 500 bytes of data <i>and</i></li> <li>• target a controller in the same chassis</li> </ul> Memory is allocated only when the MSG is enabled. Count the number of messages that are enabled and/or cached at one time.		2000 bytes	

If you have this firmware revision (add <i>all</i> that apply):	Then add the following memory requirements to your project:				
	Component		Number in your project	Increase per instance	Total (number * increase)
6.x	base tags			24 bytes	
	alias tags			16 bytes	
	produce and consumed tags	Data type	Bytes per tag		
		DINT	4	12 bytes	
		REAL	4	12 bytes	
				3 x bytes per tag	
				3 x bytes per tag	
				3 x bytes per tag	
				3 x bytes per tag	
	routines			68 bytes	
	Total additional bytes				

## Connecting 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.

If you intend to use a 1794-PS1 power supply, you must install a 1 Kohm, 2-watt resistor on the 24V dc side of the power supply.

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