



## CompactLogix L20 and L30 Controllers Revision 13

Catalog Numbers 1769-L20, 1769-L30

These release notes correspond to firmware revision 13.19.

Use this firmware release with:

Product	Compatible version
RSLogix 5000 programming software	13.00
RSLink software	2.42
RSNetWorx for DeviceNet software	4.21
RSNetWorx for EtherNet/IP software	4.21
1769-SDN firmware	2.2

These release notes provide this information:

For Information About	See This Section	On This Page
preliminary actions to take before you use this revision	Before You Update Your System	2
new features for CompactLogix controllers	Enhancements	2
changes to CompactLogix controllers	Changes	6
restrictions that no longer apply to CompactLogix controllers	Corrected Anomalies	8
restrictions for CompactLogix controllers	Restrictions	12
using electronic data sheets	Installing EDS Files	13
upgrading your CompactLogix with the most recent firmware	Loading Controller Firmware	13
additional memory requirements to update to this revision	Additional Memory Requirements	14
using the hold last state and safe state features with 1769 Compact I/O modules	Hold Last State and User-defined Safe State Not Supported	15
making sure your CompactLogix controller has enough memory to support your system's design <sup>(1)</sup>	Verify I/O Layout by Adding Words of Backplane Memory Used	16

<sup>(1)</sup> You must verify backplane memory use to make sure that the controller can support the proposed system.

# Before You Update Your System

Before you update your controller or RSLogix 5000 software to this revision, do the following preliminary actions:

If	Then
Your controller is connected to a DH-485 network.	We recommend that you use DH-485 communications as follows: <ul style="list-style-type: none"><li>• If you update the firmware of a controller while the controller 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.</li><li>• Logix5000 controllers should be used on DH-485 networks only when you wish to add these controllers to an existing DH-485 network. For new applications with Logix5000 controllers, DeviceNet, Ethernet, and ControlNet are the recommended networks.</li></ul>

# Enhancements

This revision of CompactLogix controllers supports the enhancements described in Table 1.

Table 1 Enhancements

Enhancement	Description
Consumed Tag Trigger for Event Tasks	<p>An event task performs a function only when a specific event (trigger) occurs. Whenever the trigger for the event task occurs, the event task:</p> <ul style="list-style-type: none"><li>• interrupts any lower priority tasks</li><li>• executes one time</li><li>• returns control to where the previous task left off</li></ul> <p>With the firmware revisions in this publication, the CompactLogix controller event task trigger can be:</p> <ul style="list-style-type: none"><li>• consumed tag</li><li>• EVENT instruction (also available with FW 12.x)</li></ul>
Online Edits of Sequential Function Charts (SFC) and Structured Text (ST)	This revision lets you perform online editing of Sequential Function Chart (SFC) and Structured Text (ST) routines.

**Table 1 Enhancements**

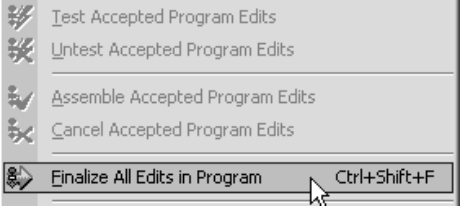

Enhancement	Description
Finalize All Edits in a program	<p>The <i>Finalize All Edits in Program</i> option lets you make an online change to your logic <i>without</i> testing the change.</p> <p>Finalize All Edits in Program</p>   <p>When you choose <i>Finalize All Edits in Program</i>:</p> <ul style="list-style-type: none"> <li>• All edits in the program (pending and test), immediately download to the controller and begin execution.</li> <li>• The original logic is permanently removed from the controller.</li> <li>• Outputs that were in the original logic stay in their last state unless executed by the new logic (or other logic).</li> <li>• If your edits include an SFC, the SFC resets to the initial step and stored actions turn off.</li> </ul>
Motion Calculate Slave Value (MCSV) instruction	<p>Use the MCSV instruction in the following applications:</p> <ul style="list-style-type: none"> <li>• Position cam: electronic camming between two axes according to a specified cam profile</li> <li>• Time cam: electronic camming of an axis as a function of time, according to a specified cam profile</li> </ul> <p>The MCSV instruction returns the slave value within a specified cam profile for a given master value. The master value can be master position or time. Use that information to re-synchronize motion after a fault or to calculate dynamic phase corrections.</p>

Table 1 Enhancements

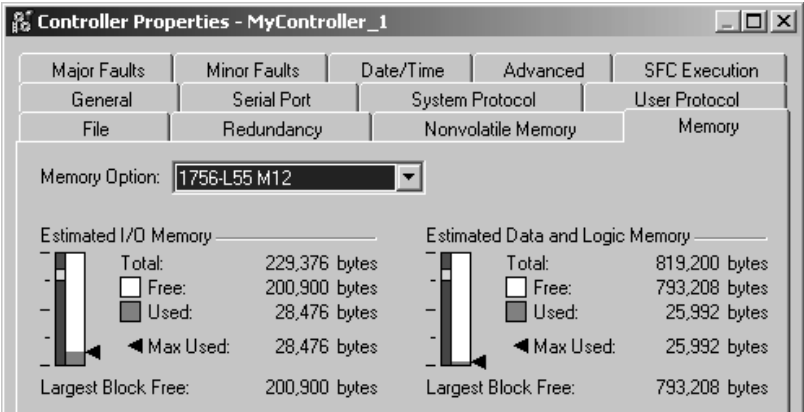
Enhancement	Description									
Estimate Memory Information Offline View Memory Information Online	<p>To estimate how much controller memory your project requires, use the <i>Memory</i> tab of the controller properties dialog box. For each of the memory areas of your controller, the Memory tab lets you estimate number of bytes of:</p> <ul style="list-style-type: none"><li>• free (unused) memory</li><li>• used memory</li><li>• largest free contiguous block of memory</li></ul> <div></div> <p>When online with a controller, the <i>Memory</i> tab shows the actual memory usage of the controller. The tab includes a <i>Max Used</i> entry for each type of memory. The <i>Max Used</i> values show the peak of memory usage as communication occurs.</p>									
Improved Performance of Simple Structured Text Statements	<p>The controller now executes simple structured text (ST) assignments and comparisons faster than previous revisions.</p> <table><tr><th>For this</th><th>This is simple</th><th>This is not simple</th></tr><tr><td>assignment</td><td>A:= B;</td><td>A:= -B; A:= B + C; A:= sin(B);</td></tr><tr><td>comparison (=, &lt;, &lt;=, &gt;, &gt;=, &lt;&gt;)</td><td>A &gt; B A = B</td><td>A &gt; -B A &gt; (B + C) A &gt; sin(B)</td></tr></table>	For this	This is simple	This is not simple	assignment	A:= B;	A:= -B; A:= B + C; A:= sin(B);	comparison (=, <, <=, >, >=, <>)	A > B A = B	A > -B A > (B + C) A > sin(B)
For this	This is simple	This is not simple								
assignment	A:= B;	A:= -B; A:= B + C; A:= sin(B);								
comparison (=, <, <=, >, >=, <>)	A > B A = B	A > -B A > (B + C) A > sin(B)								

Table 1 Enhancements

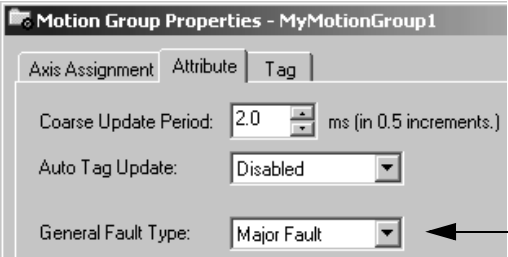
Enhancement	Description			
For some non-recoverable faults, the controller produces a major fault and may be able to log diagnostic information.	If the controller detects a non-recoverable fault that was <i>not</i> caused by the controller's hardware, the controller now responds as follows:			
	If the controller		Then	
	has a CompactFlash socket		The controller clears the project from its memory and produces a major fault (flashing red OK LED)	
	has <i>no</i> CompactFlash socket		The controller <i>initially</i> shows a solid red OK LED. After you cycle power, the controller produces a major fault (flashing red OK LED).	
	In either case, the controller still clears the project from memory. The fault code that the controller displays depends on whether you have installed a CompactFlash card in the controller.			
	Type	Code	Cause	Recovery Method
	1	60	For a controller with <i>no</i> CompactFlash card installed, the controller: <ul style="list-style-type: none"><li>detected a non-recoverable fault</li><li>cleared the project from memory</li></ul>	<ol style="list-style-type: none"><li>1. Clear the fault.</li><li>2. Download the project.</li><li>3. Change to Remote Run/Run mode.</li></ol> If the problem persists: <ol style="list-style-type: none"><li>1. Before you cycle power to the controller, record the state of the OK and RS232 LEDs.</li><li>2. Contact Rockwell Automation support. See the back of this publication.</li></ol>
	1	61	For a controller with a CompactFlash card installed, the controller: <ul style="list-style-type: none"><li>detected a non-recoverable fault</li><li>wrote diagnostic information to the CompactFlash card</li><li>cleared the project from memory</li></ul>	<ol style="list-style-type: none"><li>1. Clear the fault.</li><li>2. Download the project.</li><li>3. Change to Remote Run/Run mode.</li></ol> If the problem persists, contact Rockwell Automation support. See the back of this publication.
In <i>previous</i> revisions: <ul style="list-style-type: none"><li>The controller would <i>not</i> go to faulted mode or display a fault code for the type of situation described above.</li><li>Controllers with a CompactFlash socket showed a solid red OK LED.</li></ul>				

Changes

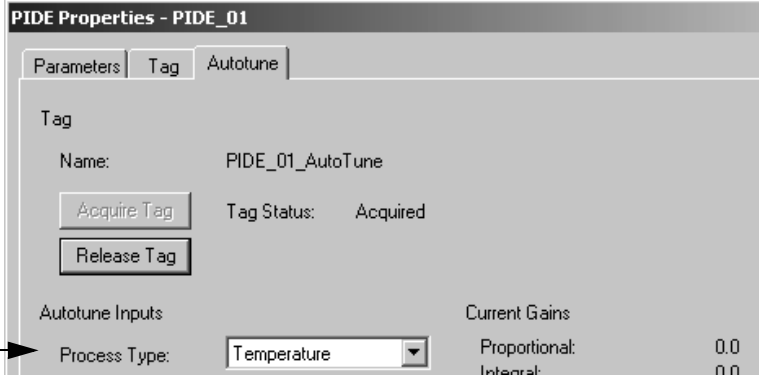
Changes are organized by firmware revision in which the change occurred.

CompactLogix 1769-L20, 1769-L30 Rev. 13.17

Table 2 Changes

Change	Description
In a Message (MSG) instruction, you cannot set or clear certain status bits.	<p><i>Do not</i> set or clear the following members of a Message (MSG) instruction:</p> <ul style="list-style-type: none"><li>• EW</li><li>• ER</li><li>• DN</li><li>• ST</li><li>• Flags</li></ul> <p><b>Important:</b> If your logic currently manipulates any of the above members of a MSG instruction, your controller <i>may</i> operate differently when you update to this revision.</p> <p>If you set or clear one of those bits, RSLogix 5000 software displays the change. But the MSG instruction ignores the change and continues to execute based on the internally-stored value of those bits.</p>
Motion planner no longer waits for consumed data to start flowing	<p>The motion planner now begins execution immediately, regardless of whether or not the planner is receiving data via a consumed axis.</p> <p>In previous revisions, a consumed axis caused the motion planner to delay its execution until data started flowing from the producing controller. Under the following <i>combination</i> of circumstances, the motion task of the controller failed to start at all:</p> <ul style="list-style-type: none"><li>• The system included 2 controllers in the same chassis.</li><li>• Each controller produced an axis for the other controller.</li></ul>
For Function Block Instructions that use periodic timing, DeltaT now includes the fractional portion of the task's period	<p>If your function block instruction uses the periodic timing mode, the controller <i>no longer</i> truncates the fractional portion of a task's period to produce the delta time (DeltaT).</p> <p>In previous revisions, the controller truncated the fractional portion of the task's period.</p>
While in Program mode, a motion group fault no longer produces a major fault	<p>As an option, you can configure a motion group to produce a <i>major fault</i> any time the group detects a motion fault.</p> <div data-bbox="540 1451 1044 1705"></div> <p>With this revision, a motion group that is configured to produce a major fault produces a major fault <i>only</i> if the controller is in Run/Remote Run mode.</p> <p>In <i>previous</i> revisions, the motion group could produce a major fault while the controller was in Program/Remote Program mode. For example, a store to nonvolatile memory interrupts the execution of the motion planner, which produces a fault.</p>

**Table 2 Changes**

Change	Description
Out-of-range subscript no longer produces a fault during prescan	<p>During prescan, the controller automatically clears any faults due to an array subscript that is beyond the range of the array (out of range).</p> <p>In <i>previous</i> revisions, this produced a major fault.</p>
Autotune now uses a non-integrating process model for temperature processes	<p>When you autotune an Enhanced PID (PIDE) function block with the Process Type = Temperature, autotune now uses a non-integrating process model to estimate tuning constants. This gives better tuning constants for most application.</p>  <p>In previous revisions, autotune used an integrating process model.</p>
You <i>must</i> place a label (LBL) instruction at the start of a rung	<p>If your logic includes a Label (LBL) instruction, make sure the instruction is the first instruction on the rung. If the instruction is not the first, move the LBL instruction to the beginning of the rung. Otherwise, the routine will <i>not</i> verify.</p> <p>In previous revisions, RSLogix 5000 software let you place the LBL instruction elsewhere on the rung. But the controller always executed the instruction as if it were at the beginning of the rung.</p>
Reduction in the prescan time of projects with many jump to subroutine (JSR) instructions	<p>During a prescan, the controller no longer prescans a routine more than once. Once the controller prescans a routine, it does not prescan the routine again during that prescan.</p> <p>In previous revisions, the controller would prescan a routine as often as the routine was called in logic. For projects with many calls to subroutines, this could produce a very long prescan and cause a watchdog timeout fault.</p>

## Corrected Anomalies

The corrected anomalies are organized by the firmware revision that corrected them.

CompactLogix 1769-L20, 1769-L30 Rev. 13.19

**Table 3 Corrected Anomalies**

Anomaly	Description
Controller Occasionally Failed to Load Program at Power-Up	When the controller was powered up, occasionally it did not load its program. An internal check in the power-up sequence erroneously caused the controller not to load the program.  Lgx00053881

CompactLogix 1769-L20, 1769-L30 Rev. 13.18

**Table 4 Corrected Anomalies**

Anomaly	Description
Subroutines Invoked from SFC Actions Were Not Properly Postscanned	A subroutine invoked from an SFC action was not properly postscanned when the SFC was configured for automatic reset. Instructions and assignments may not have set their data to postscan values. For example, an Output Energize (OTE) instruction may not have cleared its data during postscan.  Lgx00047935
In SFCs Configured for Auto Reset, Stored Actions Were Not Properly Postscanned	When an SFC was configured for Automatic Reset and an Action used a stored qualifier (S, SD, SL, DS), when a reset action (R) executed, the action being reset was not postscanned.  Lgx00047407

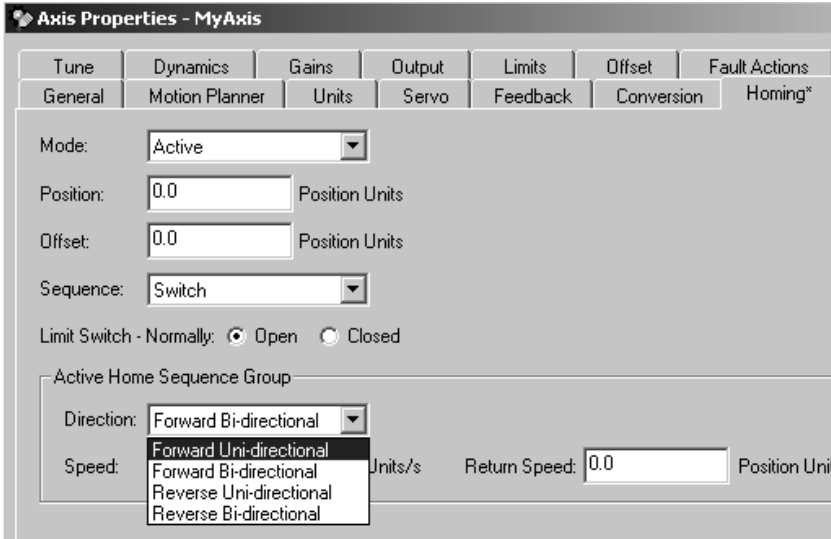
CompactLogix 1769-L20, 1769-L30 Rev. 13.17

**Table 5 Corrected Anomalies**

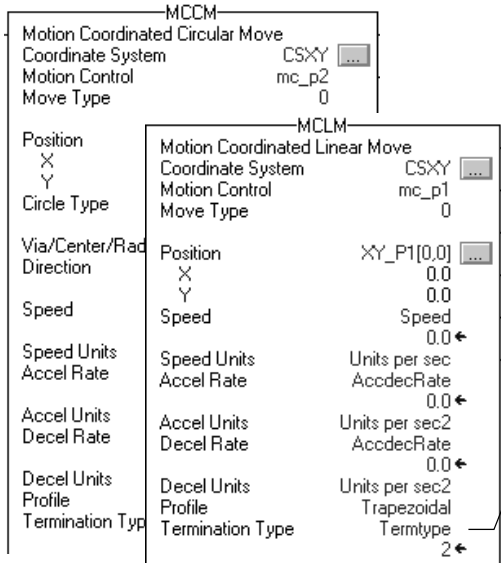
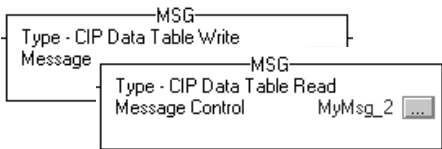
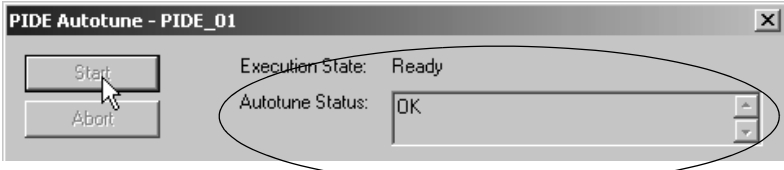
Anomaly	Description
The controller did not support 32 consumed connections.	Over EtherNet/IP, previous revisions of the CompactLogix controllers supported only 25 connections.
The WallClockTime increased after power cycles.	When the CompactLogix controllers had power cycled, the controller wallclock time increased.
The WallClockTime changed to an invalid value after restoring from CompactFlash at power up.	If you use a CompactFlash card and have it set to "restore on power up," you may have needed to reset the wallclock time. If maintaining an accurate wallclock time was crucial to your application, you either had to disable the "restore on power up" feature or use a combination of GSV and SSV instructions to check the wallclock time and, if necessary, reset it to an accurate time.



**Table 5 Corrected Anomalies**

Anomaly	Description
uni-directional homing failed to complete	<p>A Motion Axis Home (MAH) instruction sometime failed to complete (IP bit remained on) under the following axis configuration:</p> <ul style="list-style-type: none"> <li>Return Speed = 0</li> <li>uni-directional homing (forward or reverse)</li> </ul> 
unconditional MDR instruction did not re-execute	<p>A Motion Disarm Registration (MDR) instruction failed to repeatedly execute under the following circumstances:</p> <ul style="list-style-type: none"> <li>You placed the MDR instruction in a structured text routine.</li> <li>You did <i>not</i> provide any conditions to control the execution of the instruction, that is, you programmed it to execute continuously.)</li> </ul> <p>In those circumstances, the EN bit might have been left on after the first execution and the instruction no longer executed again.</p> <p><b>Important:</b> In structured text, we recommend that you condition the instruction so that it only executes on a transition.</p>

**Table 5 Corrected Anomalies**

Anomaly	Description
<p>blended moves produce smoother, more accurate motion</p>	<p>This revision improves the response of the axes when you blend the execution of Motion Coordinated Linear Move (MCLM) and Motion Coordinated Circular Move (MCCM) instructions.</p> <ul style="list-style-type: none"> <li>• If the Termination Type = command tolerance (2) or no deceleration (3), axes change more smoothly and follow the intended path more closely.</li> <li>• If the Termination Type = command tolerance (2) or no deceleration (3) and the program path direction is reversed, the instruction will exceed the specified acceleration/deceleration for the MCLM or MCCM instruction.</li> </ul>  <p>Termination Type 0 = actual tolerance 1 = no settle 2 = command tolerance 3 = no deceleration</p>
<p>large message (MSG) instructions might have caused a non-recoverable fault</p>	<p>The following configuration of a Message (MSG) instruction might have produced a non-recoverable fault:</p>  <ul style="list-style-type: none"> <li>• Message type = CIP Data Table Read or Write</li> <li>• The instruction transferred &gt; 240 bytes.</li> <li>• Communication was through the serial port.</li> </ul> <p>When the controller experiences a non-recoverable fault, it clears the project from memory.</p>
<p>during power up, the controller erroneously showed a red I/O LED</p>	<p>During power up, the controller sometimes showed a flashing red I/O LED when there was <i>no</i> problem.</p>
<p>autotune produced unnecessary warnings</p>	<p>When you completed an autotune of an Enhanced PID (PIDE) function block instruction, the Autotune Status field sometimes showed warning messages that were incorrect (did <i>not</i> apply).</p> 

**Table 5 Corrected Anomalies**

<b>Anomaly</b>	<b>Description</b>
Ramp/soak (RMPS) instruction failed to initialize to the correct mode	<p>On download, a Ramp/Soak (RMPS) Instruction now initializes to Operator Manual mode unless some other mode is requested.</p> <p>In <i>previous</i> revisions, the instruction failed to initialize to the correct mode. This lack of initialization could have caused the RMPS instruction to ignore the soak time for the first ramp/soak segment.</p>
Remote output module momentarily dropped its connection	<p>The following combination of circumstances occasionally caused an output module to drop its connection to the controller and then re-establish the connection:</p> <ul style="list-style-type: none"> <li>• The module was in a remote chassis.</li> <li>• The module used a Rack Optimization communication format.</li> <li>• The controller also executed a Message (MSG) instruction that bridged across the backplane of that same remote chassis to another communication module.</li> </ul> <p>Occurred most frequently if the MSG instruction was not cached.</p>

## Known Anomalies

The known anomalies are organized by the catalog number in which they are known to exist.

**Table 6 Known Anomalies**

<b>Anomaly</b>	<b>Description</b>
Using RPI = 1ms with 1769-L20 and 1769-L30 controllers causes a fault on the Virtual Adapter.	<p>The RPI range for the CompactLogix Virtual Adapter was changed to allow settings from 1 ms - 750 ms for all CompactLogix controller types. Currently the only CompactLogix controllers that support a 1 ms RPI are the 1769-L31, 1769-L32E, 1769-L35E controllers. The 1769-L20, 1769-L30 controllers support a 2 ms minimum RPI.</p> <p>You can configure a 1769-L20, 1769-L30 controller project for 1 ms RPI since this appears as a valid range for the controller and you can download the project without error, but the Virtual Adapter will be faulted. The fault indicated on the Virtual Adapter Connection tab is "Requested Packet Interval (RPI) out of range." The software indicates the setting is valid but the controller rejects the RPI because it is invalid.</p>

# Restrictions

The restrictions are organized by the catalog number.

CompactLogix 1769-L20, 1769-L30

**Table 7 Restrictions**

Restriction	Description																																											
In a tag of a user-defined data type, an instruction may write past the end of an array	<p>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.</p> <p><b>Example 1 Instruction Stops at the End of the Array</b></p> <div><div><div>COP</div><div>Copy File</div><div>Source MyTag_1[0]</div><div>Dest MyTag_2[0]</div><div>Length 10</div></div><div><div>Program Tags - MainProgram1</div><div>Scope: MainProgram1</div><div>Shgw: Sh</div><table><thead><tr><th>Tag Name</th><th>Type</th></tr></thead><tbody><tr><td>[-MyTag_2</td><td>DINT[5]</td></tr><tr><td>  [+MyTag_2[0]</td><td>DINT</td></tr><tr><td>  [+MyTag_2[1]</td><td>DINT</td></tr><tr><td>  [+MyTag_2[2]</td><td>DINT</td></tr><tr><td>  [+MyTag_2[3]</td><td>DINT</td></tr><tr><td>  [+MyTag_2[4]</td><td>DINT</td></tr><tr><td>[+MyTag_3</td><td>DINT</td></tr></tbody></table></div><div>If the length is greater than the number of elements in the destination array...</div><div>...the instruction stops at the end of the array.</div></div> <p><b>Example 2 Instruction Writes Beyond the Array</b></p> <div><div><div>COP</div><div>Copy File</div><div>Source MyTag_1.A[0]</div><div>Dest MyTag_2.A[0]</div><div>Length 10</div></div><div><div>Program Tags - MainProgram</div><div>Scope: MainProgram</div><div>Shgw: Sho</div><table><thead><tr><th>Tag Name</th><th>Type</th></tr></thead><tbody><tr><td>[-MyTag_2</td><td>My_Data_Type</td></tr><tr><td>  [+MyTag_2.A</td><td>DINT[5]</td></tr><tr><td>  [+MyTag_2.B</td><td>DINT</td></tr><tr><td>  [+MyTag_2.C</td><td>DINT</td></tr><tr><td>[+MyTag_3</td><td>DINT</td></tr></tbody></table></div><div>If the length is greater than the number of elements in the destination array...</div><div>...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.</div></div> <p>The following instructions write beyond the array into other members of the tag:</p> <table><tr><td>BSL</td><td>FBC</td><td>LFL</td></tr><tr><td>BSR</td><td>FFL</td><td>LFU</td></tr><tr><td>COP</td><td>FFU</td><td>SQL</td></tr><tr><td>CPS</td><td>FLL</td><td>SRT</td></tr><tr><td>DDT</td><td>GSV</td><td>SSV</td></tr></table> <p>This restriction also applies to <i>all previous revisions</i>. 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.</p>	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	Tag Name	Type	[-MyTag_2	My_Data_Type	[+MyTag_2.A	DINT[5]	[+MyTag_2.B	DINT	[+MyTag_2.C	DINT	[+MyTag_3	DINT	BSL	FBC	LFL	BSR	FFL	LFU	COP	FFU	SQL	CPS	FLL	SRT	DDT	GSV	SSV
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																																											
Tag Name	Type																																											
[-MyTag_2	My_Data_Type																																											
[+MyTag_2.A	DINT[5]																																											
[+MyTag_2.B	DINT																																											
[+MyTag_2.C	DINT																																											
[+MyTag_3	DINT																																											
BSL	FBC	LFL																																										
BSR	FFL	LFU																																										
COP	FFU	SQL																																										
CPS	FLL	SRT																																										
DDT	GSV	SSV																																										

## Installing EDS Files

If you have RSLinx software, version 2.42 or greater, the most current EDS files were installed with the software. If you are using an older version of RSLinx software, you might need to install EDS files. You need EDS files for:

- appropriate controller
- 1769 CompactBus
- 1769 local adapter

All of these EDS files, except for the 1769 CompactBus file, are updated for each firmware revision. There is also a revision 1 of the EDS files that you need for new controllers. Each controller ships with revision 1 firmware.

To update the controller firmware, you must have the revision 1 EDS file 0001000E00410100.eds installed.

The EDS files are available on the CD for RSLogix 5000 Enterprise Series software, version 13. The files are also available at:

<http://www.ab.com/networks/eds>.

## Loading Controller Firmware

The controller is shipped without working firmware. You must download the current firmware before you can use the controller. The firmware for all CompactLogix controllers is available on the website and on the RSLogix 5000 CD. To load firmware, you can use:

- ControlFlash utility that ships with RSLogix 5000 programming software.
- AutoFlash that launches through RSLogix 5000 software when you try to open or create a project and the controller does not have the current firmware.

See the controller installation instructions for more information about using these utilities to load firmware.

## Additional Memory Requirements

Revision 13.0 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 Table 8:

**Table 8**

If you have this firmware revision (add all that apply)	Then add the following memory requirements to your project									
	Component	Increase per instance								
12.x or earlier	I/O module with a comm format = Rack Optimization	90 bytes								
	I/O module with a comm format = something other than Rack Optimization, that is, direct connection.	144 bytes								
	CompactLogix 1769 I/O module	170 bytes								
	bridge module with a comm format = None	160 bytes								
	bridge module with a comm format = Rack Optimization	220 bytes								
11.x or earlier	tag that uses the MOTION_INSTRUCTION data type	4 bytes								
	tag for an axis									
	<table><tr><th>If the data type is</th><th>And the tag is</th></tr><tr><td>AXIS_VIRTUAL</td><td>produced for another controller</td></tr><tr><td></td><td>not produced for another controller</td></tr></table>	If the data type is	And the tag is	AXIS_VIRTUAL	produced for another controller		not produced for another controller	<table><tr><td>264 bytes</td></tr><tr><td>264 bytes</td></tr></table>	264 bytes	264 bytes
	If the data type is	And the tag is								
	AXIS_VIRTUAL	produced for another controller								
		not produced for another controller								
	264 bytes									
	264 bytes									
output cam execution targets	648 bytes									
user-defined data type: <ul style="list-style-type: none"><li>number of user-defined data types in the controller organizer ⇒ Data Types folder ⇒ User-defined folder</li><li>not the use of that data type in tags</li></ul>	128 bytes									
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: <ul style="list-style-type: none"><li>uses a structure as its data type</li><li>does not use one of these data types: CONTROL, COUNTER, PID, or TIMER</li><li>has only one dimension, for example, UDT_1[5]</li></ul>	(-60 bytes)									
10.x or earlier	programs	12 bytes								
	routines	16 bytes								

# Hold Last State and User-defined Safe State Not Supported

When 1769 Compact I/O modules are used as local I/O modules in a CompactLogix system, the local I/O modules do not support the Hold Last State or User-defined Safe State features, even though you can configure these options in the programming software.

- If a local I/O module fails such that the module’s communication to the controller is lost, or if any module is disconnected from the system bus while under power, the controller will go into the fault mode. All outputs turn off when the system bus or any module faults.
- RSLogix 5000 software creates tags for modules when you add them to the I/O configuration. The 1769 module tags define configuration (C) data type members that may include attributes for alternate outputs. CompactLogix does not enable local modules to use the alternate outputs. Do not configure the attributes listed below:

For Digital Output Modules	For Analog Output Modules
<ul style="list-style-type: none"> <li>• ProgToFaultEn</li> <li>• ProgMode</li> <li>• ProgValue</li> <li>• FaultMode</li> <li>• FaultValue</li> </ul>	<ul style="list-style-type: none"> <li>• CHxProgToFaultEn</li> <li>• CHxProgMode</li> <li>• CHxFaultMode</li> <li>• where CHx = the channel number</li> </ul>

Any 1769 Compact I/O modules used as remote I/O modules in a CompactLogix system do support the Hold Last State and User-Defined Safe State features.

## Verify I/O Layout by Adding Words of Backplane Memory Used

Each module in a CompactLogix system uses a set amount of backplane memory, in addition to the data that the module stores or transfers. Some modules require a considerable amount of backplane memory. Take this into account when designing your system because backplane memory usage affects how many modules a controller can support. Each CompactLogix controller supports 256, 16-bit words of backplane data. Table 9 shows how many backplane words each module uses:

**Table 9**

Catalog Number	Number of Modules	Number of Words Used	Total Number
1769-IA8I		8	
1769-IA16		8	
1769-IM12		8	
1769-IQ16		8	
1769-IQ32		8	
1769-IQ6XOW4		12	
1769-OA8		12	
1769-OA16		12	
1769-OB8		12	
1769-OB16		12	
1769-OB16P		12	
1769-OB32		12	
1769-OV16		12	
1769-OW8		12	
1769-OW8I		12	
1769-OW16		12	
1769-IF4		14	
1769-IF8		63	
1769-IF4XOF2		20	
1769-OF2		14	
1769-OF8C		84	
1769-OF8V		84	
1769-IR6		14	
1769-IT6		16	
1769-HSC		187 (35 words input, 34 words output, 118 words configuration)	
1769-SDN		76 plus total words in scanlist	
system overhead (per controller)		34	34
Total Words Required <sup>(1)</sup>			

<sup>(1)</sup> The total words required cannot exceed 256 words.



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# 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 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.

**[www.rockwellautomation.com](http://www.rockwellautomation.com)**

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