

SoftLogix 5800 Controllers, Version 19.01

Catalog Numbers 1789-L10, 1789-L30, 1789-L60

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IMPORTANT

Consider the following before upgrading your SoftLogix 5800 controller:

- Before updating your controller, we strongly recommend that you review information pertinent to previous major versions. For example, when updating from version 17 to 19, view information for versions 17 and 18 in these publications:
 - SoftLogix 5800 Controllers, Version 17 Release Notes, publication [1789-RN017](#)
 - SoftLogix 5800 Controllers, Version 18 Release Notes, publication [1789-RN018](#)

Release notes contain material for all minor versions subsequent to each major version. If your controller, for example, is at version 17.00, and not the latest version, such as 18.03, you should view all of the information for version 17.0...18.03 before updating to version 19.01.

Release notes are available at <http://www.rockwellautomation.com/literature>.

- After upgrading your controller, we strongly recommend that you **retest/validate your application offline before going online.**

This publication describes enhancements, anomalies (known and corrected), and restrictions for SoftLogix 5800 controllers, version 19.00 and later.

Table 1 - Controller Version

Cat. No.	Version
1789-L10	19.00, 19.01
1789-L30	
1789-L60	

Compatible Software Versions

To use version 19.00 and later, these minimum software versions are required.

Table 2 - Compatible Software Versions

Software	Required Version
RSLinx Classic	2.57 (CPR9, SR3)
RSLinx Enterprise	5.30 (CPR9, SR3)
RSLogix 5000	19.01 (CPR9, SR3)
RSNetWorx for ControlNet	10.01 (CPR9, SR3)
RSNetWorx for DeviceNet	
RSNetWorx for EtherNet/IP	
FactoryTalk Activation Manager	3.30 (CPR 9, SR3)

Compatible PCI-based Cards and Drivers

This table lists PCI-based cards, firmware revisions, and driver versions that you can use with the SoftLogix 5800 controller, version 19.00 or later.

IMPORTANT The PCI-based motion cards, that is 1784-PM16SE and 1784-PM02AE cards, listed in the following table are no longer available. However, if you already have the cards that are listed, you can use them with the SoftLogix 5800 controller, version 19 and later, and the Windows XP operating system.

An Ethernet network is supported only on the Microsoft Windows 7 operating system when using SoftLogix 5800 controllers. No other communication modules or motion modules are supported.

Table 3 - PCI-based Products Operating System, Firmware, and Driver Compatibility

PCI-based Products	Windows XP Operating System	Windows 2003 Server Operating System	Windows Vista Operating System Windows 2008 Server Operating System	Firmware and Driver Compatibility
1784-PCIC/B, 1784-PCICS/B	Yes	Yes	Yes	Firmware revision 4.10 and driver revision 4.06 ⁽¹⁾
1784-PCIC/A, 1784-PCICS/A	Yes	Yes	Yes	Firmware revision 3.10 and driver revision 4.06 ⁽¹⁾
1784-PCIDS/B	Yes	Yes	No	Firmware revision 3.016 and driver revision 2.01
1784-PCIDS/A	Yes	Yes	No	Firmware revision 2.008 and driver revision 2.01
1784-PM16SE	Yes	No	No	Firmware revision 19.1 and driver revision 19.01 ⁽²⁾
1784-PM02AE	Yes	No	No	Firmware revision 19.2 and driver revision 19.02 ⁽²⁾

(1) If you are installing a ControlNet card for the first time or if you already have a ControlNet card installed, use the instructions in the ControlNet Communication Card Installation Instructions, publication [1784-IN003](#), to install or update the driver as appropriate.

(2) **Windows XP users:** If you are installing a 1784-PM16SE or 1784-PM02AE PCI-based motion card for the first time, use the instructions in the 16 Axis PCI SERCOS interface Card Installation Instructions, publication [1784-IN041](#) (catalog number 1784-PM16SE), or the PCI 2 Axis Servo Card Installation Instructions, publication [1784-IN005](#) (catalog number 1784-PM02AE).

If you already have a PCI-based motion card installed, follow [Update Motion Drivers in Windows XP Systems on page 18](#).

System Requirements

This table identifies system requirements for the SoftLogix 5800 controller.

IMPORTANT Treat the computer that is running the SoftLogix 5800 controller like an industrial controller, not a personal computer. The SoftLogix 5800 controller executes real-time operations. If you use other programs or applications on the computer when the SoftLogix 5800 controller is executing real-time operations, those operations may be disrupted.

Category	Description
Personal computer	<p>IBM-compatible Pentium 4 1.6 GHz or later⁽¹⁾</p> <p>Other requirements include the following:</p> <ul style="list-style-type: none"> • FactoryTalk Activation Manager if you are currently using Factory Activation software • A hard disk that supports bus mastering • The need for bus-mastering drivers for the personal computer's chip set; for Intel motherboards, this software is called Application Accelerator • Applications that are resource-intensive, including applications that use sequential, motion, and other local applications running on the computer, may require a dual CPU to achieve performance requirements.
Operating system	<p>SoftLogix software is supported on 32-bit operating systems (x86). SoftLogix software is not supported on 64-bit operating systems (x64) and has not been tested in this configuration</p> <p>Supported operating systems include the following:</p> <ul style="list-style-type: none"> • Microsoft Windows XP, Service Pack 2, or later (recommended) • Microsoft Windows 2003 Server - These PCI-based cards are not supported: <ul style="list-style-type: none"> – 1784-PM02AE – 1784-PM16SE • Microsoft Windows Vista - These PCI-based cards are not supported: <ul style="list-style-type: none"> – 1784-PCIDS – 1784-PM02AE – 1784-PM16SE • Microsoft Windows 2008 Server - These PCI-based cards are not supported: <ul style="list-style-type: none"> – 1784-PCIDS – 1784-PM02AE – 1784-PM16SE • Microsoft Windows 7 (32-Bit) <ul style="list-style-type: none"> – All PCI-based cards are not supported – EVRSI works only when UAC is off <p>Accessing SoftLogix software via Remote Desktop on remote machines is not supported.</p> <p>Virtual Windows operating systems are not supported for executing SoftLogix software.</p>
RAM	1 GB, min
Hard disk space	64 MB of free hard disk space per controller instance (or more based on application requirements)

Category	Description
Motion requirements	<p>Motion is available only on Microsoft Windows XP, Service Pack 2 or later operating system.</p> <p>SoftLogix 5800 controllers do not support Integrated Motion on EtherNet/IP.</p> <p>SoftLogix 5800 controllers can use only PCI-based motion cards with these requirements:</p> <ul style="list-style-type: none"> • 1784-PM16SE SERCOS interface card: <ul style="list-style-type: none"> – Only supported on Microsoft Windows XP, Service Pack 2 or later, operating system – Four 1784-PM16SE cards per computer, max – Associate only one 1784-PM16SE card with one controller • 1784-PM02AE Analog Encoder SERVO card: <ul style="list-style-type: none"> – Only supported on Microsoft Windows XP, Service Pack 2 or later, operating system – Four 1784-PM02AE cards per computer, max – Four 1784-PM02AE cards can be associated with one controller, max • You cannot associate a 1784-PM02AE card with the same controller as a 1784-PM16SE card. • Primary 32-bit PCI slot (one slot per PCI-based motion card).
Network requirements	<p>Primary or extended 32-bit PCI slot (one slot per communication PCI-based card).</p> <p>Supports 1784-PCICS card for the ControlNet network (not compatible with Microsoft Windows 7 operating system).</p> <p>Supports 1784-PCIDS card for the DeviceNet network (not compatible with Microsoft Windows Vista, Microsoft Windows 2008 Server, and Microsoft Windows 7 operating systems).</p> <p>Supports EtherNet/IP and Ethernet port of the personal computer.</p> <p>Third-party networks are supported through the Rockwell Automation Encompass Program.</p>
Video requirements	<p>16-color VGA graphics adapter 640 x 480, or later resolution (256-color, 800 x 600 min., for optimal resolution)</p>

(1) The SoftLogix 5800 controller has been tested and qualified only on genuine Intel processors.

IMPORTANT SoftLogix 5800 controllers and software do not support CIP motion.

These PCI-based motion cards are not supported on the Microsoft 2003 Server operating system:

- 1784-PM16SE
- 1784-PM02AE

These PCI-based cards are not supported when using the Microsoft Windows Vista or Windows 2008 Server operating systems:

- 1784-PCIDS
- 1784-PM16SE
- 1784-PM02AE

All PCI-based cards are not supported when using the Microsoft Windows 7 operating system.

Before You Begin

Before you upgrade your controller, consider how close it is to the limits of memory. This version may require more memory than previous versions.

- To see what components of your current project require more memory, see [Additional Memory Requirements on page 20](#).

RSLogix 5000 programming software, version 13.0 or later, lets you estimate the memory requirements of the controller offline.

Enhancements

These enhancements are available when you use controller version 19.00 and later with RSLogix 5000 programming software, version 19 and later.

Table 4 - Enhancements with Controller Version 19.00 and Later

Cat. No.	Description
1789-L10, 1789-L30, 1789-L60	Load Observer The Load Observer is a new servo loop feature that improves servo performance and robustness and simplifies system tuning.
	Option to Suppress Array Faults During Postscan of SFC Actions Use this feature to configure your application so that selected faults, that is, 4/20 and 4/83, encountered when an SFC action is postscanned, are suppressed. When the fault is suppressed, the controller uses an internal fault handler to clear it. Clearing the fault causes the postscan process to skip the instruction containing the fault and continue with the next instruction. This enhancement is valid only when SFC instructions are configured for automatic reset.

Corrected Anomalies Version 19.01 and Later

This anomaly has been corrected with controller version 19.01.

Table 5 - Corrected Anomaly with Controller Version 19.01

Cat. No.	Description
1789-L10, 1789-L30, 1789-L60	If both Source and Destination array names are the same and overlapping, the COP and CPS instructions do not give intended results. This behavior is seen only in SoftLogix controllers, versions 18.00 and 18.01. Lgx00114647

Corrected Anomalies

These anomalies have been corrected with controller version 19.00 and later.

Table 6 - Corrected Anomalies with Controller Version 19.00 and Later

Cat. No.	Description
1789-L10, 1789-L30, 1789-L60	<p>Controller may fail to transition from Run mode to Program mode when some MSG instruction types are used.</p> <p>The failure to transition to Program mode occurs after the controller receives an 0x13 error code, that is, Configuration Data too Short. When a transition request is made after the controller receives an 0x13 error code, the controller acknowledges the request but never completes the transition.</p> <p>Either of the following conditions cause this anomaly to occur:</p> <ul style="list-style-type: none"> • Controller executes SLC Typed Write message with the Number of Elements exceeding 108 bytes • Controller executes SLC Typed Read message with the Number of Elements exceeding 118 bytes <p>The controller remains in Run mode until power is cycled.</p> <p style="text-align: right;">Lgx00113381, Lgx00109216</p>
	<p>PCCC command bit write does not update the controller.</p> <p>When you use PCCC command bit write (CMD OF FNC 02) to execute bit-level writes to a controller, the PCCC command appears to complete successfully but does not. Consequently, the data in the controller does not change in the targeted address in the memory. Instead, the write operation writes to the wrong address in memory; this may potentially cause a major non-recoverable fault.</p> <p>A typical condition where you may be using this command is when you set up PLC/SLC mapping in the controller that is the target of the communication. Additionally, you can use this command when communicating to a Logix controller from legacy systems that do not use the CIP protocol.</p> <p>Logix controllers do not initiate this command.</p> <p>For more information about this anomaly, see the Technical Note titled Bit writes fail with a Standard PanelView to a ControlLogix processor with revision 18 firmware when using SLC/PLC mapping #69234, in the Technical Support Knowledgebase available at http://www.rockwellautomation.com/knowledgebase/.</p> <p style="text-align: right;">Lgx00113378, Lgx00111497</p>
	<p>A watchdog fault occurs during prescan on a transition from Program mode to Run mode.</p> <p>In large applications that include elements, such as many Add-On Instructions, Add-On Instructions with defined prescan routines, and complex Structural Text routines, the prescan could exceed 60 seconds. Because 60 seconds was the prescan watchdog setting, the controller experienced a major recoverable fault.</p> <p>To correct this anomaly, the prescan watchdog has been changed to 300 seconds.</p> <p>IMPORTANT: You cannot configure the prescan watchdog value.</p> <p style="text-align: right;">Lgx00113376, Lgx00112413</p>
	<p>Controller experiences a major non-recoverable fault during a partial import online to a periodic or event task.</p> <p>This anomaly occurred when the following conditions existed:</p> <ul style="list-style-type: none"> • Program in the Task previously had no Add-On Instructions, and the imported changes included Add-On Instructions. • Program in the Task was being rescheduled under another Task. <p style="text-align: right;">Lgx00112034, Lgx00108203</p>
	<p>A Shutdown fault action issued by the controller overrides the drive state change only when the drive state change is reported as Disable.</p> <p style="text-align: right;">Lgx00109658, Lgx00106420</p>

Table 6 - Corrected Anomalies with Controller Version 19.00 and Later

Cat. No.	Description
1789-L10, 1789-L30, 1789-L60	<p>When using Master Control Reset (MCR) zones that contain Add-On Instructions, the rungs may not evaluate correctly. After the Add-On Instruction, the remainder of the MCR zone is scanned as if the MCR zone were scanned true.</p> <p>If your application requires the use of Add-On Instructions in MCR zones, we recommend you reposition the Add-On Instructions before or after the MCR zone and add their own conditional logic.</p> <p>For more information about this anomaly, see the Technical Note titled MCR Zones Containing AOIs May Not Scan Rungs as False in Certain Firmware Revisions #68915, in the Technical Support Knowledgebase available at http://www.rockwellautomation.com/knowledgebase/.</p> <p style="text-align: right;">Lgx00113377, Lgx00110876</p>
	<p>The Coordinated Control (CC), Internal Model Control (IMC), and Modular Multivariable Control (MMC) instructions may experience a bump in the output control variable (CV) if you transition from Manual mode to Auto mode soon after placing the controller into Run mode. For this anomaly to occur, your application must have one of the following conditions:</p> <ul style="list-style-type: none"> • CVxInitValue is not equal to zero. • CVxProg is wired to a non-zero value that is different from CVxInitValue while in ProgramManual mode. • CVxOper is wired to a non-zero value that is different from CVxInitValue while in OperatorManual mode. <p>In addition, the CC instruction may experience a bump in the output CV if you transition from Manual mode to Auto mode soon after a Modelinit. For this to occur, CVxEUMin and CVxEUMax must have a range other than 0...100.</p> <p>In both cases, the bump will occur if the time from the initial condition to the Manual -> Auto mode switch is less than $((3 * CVxModelTC) + CVxModelDt)$. The sooner the mode switch is made, the larger the bump.</p> <p style="text-align: right;">Lgx00113391, Lgx00111367</p>
	<p>When a controller is configured for rotary operation and produces axes that other controllers consume, the consumed actual position was not tracking the consumed commanded position and manifested itself via two anomalous behaviors. The actual position appeared to have a small constant displacement in comparison to commanded position and would also exceed the expected unwind value.</p> <hr/> <p>IMPORTANT This anomaly occurs only when the controller producing the axes is configured for rotary operation.</p> <hr/> <p>You could work around this anomaly in one of the following ways:</p> <ul style="list-style-type: none"> • If the produced axes were commanded axes, and it was acceptable in your application, you could reference the consumed axes' Commanded Position. • If the produced axes were virtual axes, you could reference the consumed axes' Commanded Position. This option would work for all applications. <p style="text-align: right;">Lgx00111591, Lgx00111473</p>
	<p>If a Motion Group is configured as General Fault Type = Major Fault and a motion fault occurs, there is a remote possibility either the fault log gets overrun or a major non-recoverable fault occurs.</p> <p style="text-align: right;">Lgx00113529, Lgx00109362</p>
	<p>If a Motion Axis Move (MAM) or Motion Coordinated Linear Move (MCLM) instruction is executed on a Coordinate System that contains the source axes configured in a Motion Coordinated Transform (MCT) instruction that is also being executed (that is, while the target axes are moving and the transformations are active), then a Major Nonrecoverable Fault (MNRF) occurs.</p> <p>To work around this anomaly, set the Transform Dimension of the Coordinate System that contains the source axes to a value >0. This keeps the MNRF from occurring.</p> <p style="text-align: right;">Lgx00109662, Lgx00108920</p>

Table 6 - Corrected Anomalies with Controller Version 19.00 and Later

Cat. No.	Description
1789-L10, 1789-L30, 1789-L60	<p>On the rare occasion that a controller misses an input update from a SERCOS or analog motion module, the controller then stops processing input updates for 256 coarse updates. During the time in which the controller is not processing input updates, it uses data from the last input update before missing an update. Therefore, the controller does not use current input data for 256 coarse updates.</p> <p>After 256 coarse updates, the controller re-synchronizes with the SERCOS or analog motion module and uses current data on the axis until another missed input update occurs.</p> <p style="text-align: right;">Lgx00113524, Lgx00112064</p>
	<p>The controller may experience a major non-recoverable (MNR) fault if these conditions exist:</p> <ul style="list-style-type: none"> • System Configuration uses the following three coordinate systems: <ul style="list-style-type: none"> – Coordinate system 1 (CS1) contains the X, Y, Z axes and is the Source Coordinate System for a Transform. – Coordinate system 2 (CS2) contains the J1, J2, J3 axes and is the Target Coordinate System. – Coordinate system 3 (CS3) contains the X, Y, A axes and is a third coordinate system containing one or more axes in the coordinate system. • Preconditions exist: <ul style="list-style-type: none"> – A transform has been activated, that is, a Motion Coordinated Transform (MCT) instruction was executed, between the source, that is CS1, and target, that is CS2, coordinate systems. – Any axis in CS2 is moving. For example, a Motion Axis Move (MAM) instruction is active on an axis in CS2, or a Motion Coordinated Linear Move (MCLM) instruction is active in CS2. • Either of the following actions are taken: <ul style="list-style-type: none"> – A MCLM or Motion Coordinated Circular Move (MCCM) instruction is executed on CS3. – A MAM instruction is executed on any axis in CS1. <p style="text-align: right;">Lgx00108920, Lgx00113383</p>
	<p>On a Velocity/Torque axis, a MGS instruction configured for a Stop mode of Fast Stop (this includes a programmed Stop mode of Fast Stop) decelerates the axis to a stop and then disables the drive. As of this release, the drive remains enabled.</p> <p style="text-align: right;">Lgx00112392, Lgx00110834</p>
	<p>Consecutive XPY instructions on DINTs give different results based on different sets of numbers. The XPY instruction works correctly on variables of the REAL data type.</p> <p style="text-align: right;">Lgx00112837, Lgx00106572</p>
	<p>If you are running the SoftLogix 5800 controller on a computer that has limited processor speed, you may continue to experience errors indicated by yellow warning triangles on I/O modules in the I/O Configuration tree of RSLogix 5000 software. If left to run for an extended period of time, these errors may result in the system crashing.</p> <p style="text-align: right;">Lgx00105708</p>
	<p>The Totalizer (TOT) instruction may not function properly when a converted project is downloaded to a SoftLogix 5800 controller, catalog number 1789-L10, 1789-L30, or 1789-L60. This anomaly may occur under these conditions:</p> <ol style="list-style-type: none"> 1. An RSLogix 5000 project is running on any Logix5000 controller, catalog numbers 1756-L6x, 1756-L6xS, 1768-L4x, 1768-L4xS, 1769-L2x, or 1769-L3x, with the TOT instruction in Run mode. 2. The project is uploaded and saved to a new file. 3. The new file is changed to use a SoftLogix 5800 controller, catalog number 1789-L10, 1789-L30, or 1789-L60. and is downloaded to a new controller of the same catalog number. 4. The project transitions to Run mode. <p>Upon transitioning to Run mode, the TOT instruction's output value is different from the last value generated when the same project was running on the first controller.</p> <p style="text-align: right;">Lgx00114767, Lgx00116677, Lgx00114731</p>

Known Anomalies

These anomalies have been identified with controller version 19.00 and later.

Table 7 - Known Anomalies with Controller Version 19.00 and Later

Cat. No.	Description
1789-L10, 1789-L30, 1789-L60	<p>SoftLogix 5800 controllers operate differently in integer calculations involving XPY. Operands in XPY are converted to REAL before executing XPY. Multiplication, however, is treated as an integer operation. The increased precision in XPY may lead to discrepancy in behavior compared to using multiplication.</p> <p style="text-align: right;">Lgx00114013</p>
	<p>When a SoftLogix 5800 controller application that is online restarts after a computer restart, a 1784-PM16SE SERCOS interface card may incorrectly transition to Program mode when configured to return to Run mode. Typically, this anomaly occurs in these conditions:</p> <ul style="list-style-type: none"> • A SoftLogix 5800 controller is configured so that its Startup mode is specified as Last Controller State. • The SoftLogix Chassis Monitor housing the SoftLogix 5800 controller also includes a 1784-PM16SE SERCOS interface card. • The application goes online, and the controller and interface card transition to Run mode. • At some point later, the computer running the application restarts. <p>When the SoftLogix 5800 controller starts the application back up and goes to Run mode, the 1784-PM16SE SERCOS interface card may transition to Program mode instead of Run mode.</p> <p>To transition the 1784-PM16SE SERCOS interface card back to Run mode, briefly transition the controller back to Program mode. When the 1784-PM16SE SERCOS interface card's Communication Phase (CP) status indicator turns steady green, that is, indicating that the card is configured and active, you can transition the controller back to Run mode and resume normal application operation.</p> <p style="text-align: right;">Lgx00107681</p>
	<p>The use of Windows Vista or Server operating systems does not result in an expected EtherNet/IP configuration error.</p> <p>If you are using Windows XP operating system and have two EtherNet/IP modules in the same chassis configured with the same IP address, an error is indicated by a red X on top of the last EtherNet/IP module added to the SoftLogix chassis configuration. This is the expected behavior for such a configuration when any of the operating systems is used.</p> <p>However, if you are using Windows Vista or Server operating systems, you can configure two EtherNet/IP modules in one SoftLogix chassis with identical IP addresses. This configuration should result in an error, but does not.</p> <p style="text-align: right;">Lgx00107669, Lgx00107451</p>
	<p>Unsuccessful MSG execution results in subsequent unsuccessful messages in master/slave controller configurations.</p> <p>When a DF-1 serial connection is used between a master and slave controller, a MSG instruction is not successfully executed and an in-polling sequence error occurs if the master station address is not listed in the poll node list.</p> <p>However, with this anomaly, after the in-polling sequence error, subsequent MSG instructions are also unsuccessful.</p> <p>To work around this anomaly, change the master controller's station address to a different value or re-execute the unsuccessful MSG instruction in Master Transmit mode and use the Between Station Polls parameter.</p> <p style="text-align: right;">Lgx00083882, Lgx00082610</p>

Table 7 - Known Anomalies with Controller Version 19.00 and Later

Cat. No.	Description
1789-L10, 1789-L30, 1789-L60	<p>PI function block appears to stop executing as the output does not change and no instruction faults are logged.</p> <p>If the PI instruction is being used in Linear mode, this floating-point equation is used to calculate the ITerm.</p> $Kp \times Wld \times \frac{WldInput + WldInput_{n-1}}{2} \times DeltaT + ITerm_{n-1}$ <p>Due to the use of the single-precision floating point values, it may be possible, depending on the values of WLD and KP, for the ITerm value to be small enough, less than 0.0000001, to be lost when adding to the ITerm_{n-1}.</p> <p>For more information regarding the PI instruction, see the Logix5000 Controllers Process Control and Drives Instructions User Manual, publication 1756-RM006.</p> <p style="text-align: right;">Lgx00070832</p>
	<p>Changes made to the Buffer Timeout value for FactoryTalk Alarms and Events subscribers do not take effect until the existing buffer has been deleted.</p> <p>The FactoryTalk Alarms and Events alarm buffer (stored in Logix controller memory) is designed to persist through power cycles. If you change the Buffer Timeout value (via the Communication Setup dialog box in FactoryTalk View SE software), the controller does not use the new timeout value until the existing buffer is deleted and then recreated. To force recreation of this buffer, do one of the following:</p> <ul style="list-style-type: none"> • Redownload the project to the controller • Disconnect the FactoryTalk Alarms and Events subscriber and leave it disconnected until the existing timeout expires. <p style="text-align: right;">Lgx00069461</p>
	<p>Under some rare occurrences, if a Motion Axis Move (MAM) instruction with Merge Enabled is activated during the deceleration segment of an active MAM instruction then the new MAM instruction may overshoot its programmed endpoint. The occurrence of the overshoot depends on the following factors:</p> <ul style="list-style-type: none"> • The original MAM instruction's remaining travel distance at the time of the merge and the new MAM instruction's remaining travel distance • The relationship of the decel jerk of the new MAM instruction to the decel jerk of the original MAM instruction • If the original MAM instruction is decelerating <p>Typically, the overshoot does not occur. If either of the following conditions exist, you will avoid the overshoot</p> <ul style="list-style-type: none"> • The new MAM instruction is programmed with Merge Disabled. If there is no other motion active at the time of the merge, then the Merge Disable results in the same operation as the Merge Enable. • The new MAM instruction has a slightly higher jerk (in units/seconds³) than the original MAM instruction. You should note, though, lower value of jerk in % of time results in higher value of jerk (in units/seconds³). <p style="text-align: right;">Lgx00078822</p>
	<p>If a Motion Group Shutdown Reset (MGSR) instruction is executed while a Motion Group Shutdown (MGSD) is still executing, motion error #7, that is, Shutdown State Error, results.</p> <p>The purpose of an MGSR instruction is to bring an axis group out of the shutdown state. However, when the scenario described in the previous paragraph exists, the MGSR instruction is not executed because the shutdown procedure, initiated by the MGSD instruction, has precedence. Thus, the MGSR instruction generates motion error #7 because the shutdown procedure has not completed. The shutdown procedure must complete before any attempt to reset the shutdown.</p> <p style="text-align: right;">Lgx00095484</p>
	<p>A small window exists where, when the .PC bit is set on a Motion Group Stop (MGS) instruction configured as Stop Mode = Fast Disable, all axes in the selected group are not disabled. However, the axes in the group are disabled after the next Coarse Update Period.</p> <p style="text-align: right;">Lgx00113546, Lgx00106782</p>

Table 7 - Known Anomalies with Controller Version 19.00 and Later

Cat. No.	Description
1789-L10, 1789-L30, 1789-L60	<p>The .ACCEL and .DECEL Motion status bits operate differently than in RSLogix 5000 programming software, version 17.x because the axis status bits of the consumed axis are recalculated instead of reusing the axis status bits of the producer axis.</p> <p style="text-align: right;">Lgx00107454</p>
	<p>IMPORTANT This anomaly occurs only in SERCOS applications that use Kinetix SERCOS drives and linear motors.</p> <hr/> <p>Under certain conditions, it is possible that the Real Time Axis attribute VelocityFeedback contains an incorrect value. The inaccuracy is the result of incorrect scaling of that attribute.</p> <p>Your program will have an incorrect value for the VelocityFeedback attribute if you follow these steps.</p> <ol style="list-style-type: none"> 1. While offline, you write your RSLogix 5000 program and, as part of that program, the VelocityFeedback attribute is selected. 2. You save the program and download it to the controller. 3. You go online. <p>The VelocityFeedback attribute value is incorrect because that attribute was enabled before the program was saved, downloaded, and put online.</p> <p>To work around this anomaly, do not enable the VelocityFeedback attribute until the RSLogix 5000 program is online.</p> <p style="text-align: right;">Lgx00107793</p>
	<p>When a Master Axis Position Cam (MAPC) instruction, with Execution Schedule = Pending, is executed, its master axis is ignored. However, its master axis' scaling constant is used to scale the Master Scaling parameter instead of the scaling constant on the axis that is currently active. Using the incorrect scaling constant results in incorrect overall scaling of the PCAM.</p> <p>You can take one of the following actions to work around this anomaly:</p> <ul style="list-style-type: none"> • Set the PCAM's master axis to be identical to the active master axis. • Update the Master Scaling coefficient off the pending move to achieve desired scaling factor. <p style="text-align: right;">Lgx00113538, Lgx00112356</p>
	<p>When using Add-On Instructions, if you use the same backing/reference tag for multiple Add-On Instructions that are in different tasks, the controller may experience a major non-recoverable (MNRF) fault.</p> <p>For example, you have an Add-On Instruction called Motor_Start that is used twice in the application, once in Periodic Task 1 and once in Periodic Task 2, in both cases the Motor_Start Add-On Instruction uses the same backing/reference tag Pump_Motor_Start. The following events may occur when the program is executing:</p> <ol style="list-style-type: none"> 1. Periodic Task 1 is executing and the Motor_Start is being scanned. 2. Periodic Task 2 preempts Periodic Task 1. 3. Periodic Task 2 runs and the Motor_Start is executed. 4. Periodic Task 1 is allowed to again execute and completes scanning of the Motor_Start. 5. Upon completion of scanning Motor_Start the controller can MNRF. <p>The MNRF occurs if one instance of the Motor_Start scans false and the other scans true.</p> <p>To work around this anomaly, use individual backing/reference tag for all Add-On Instructions.</p> <p style="text-align: right;">Lgx00113790, Lgx00113448</p>

Restrictions

These restrictions exist for controller version 19.00 and later.

Table 8 - Restrictions with Version 19.00 and Later

Restriction	Description
Remotely accessing the SoftLogix 5800 controller results in a system crash.	Do not attempt to remotely access the computer running the SoftLogix 5800 controller. If you attempt to remotely access a computer running the SoftLogix 5800 controller, the system running the SoftLogix 5800 controller crashes.
External access options have software requirements.	For best results with the new External Access tag attributes provided with RSLogix 5000 software, version 18.00, and controller version 18.00, use RSLinx Classic software, version 2.56, and RSLinx Enterprise software, version 5.21 or later. Using earlier versions of RSLinx Classic and RSLinx Enterprise software may result in anomalous behavior from the data servers with the External Access options Read Only and None. For more information about tag data access attributes, see the Logix5000 Controllers I/O and Tag Data Programming Manual, publication 1756-PM004 . Lgx00103263
Repeated minor faults can cause the controller to display a red X.	If your SoftLogix 5800 controller experiences repeated minor faults, it may display a red X. This happens only in systems in which minor faults are repeatedly generated on each program scan. To avoid this, correct any programs that may cause repeated minor faults to occur.
Trends may momentarily block the SoftLogix 5800 thread from executing.	Running or stopping a trend momentarily blocks the SoftLogix 5800 thread from executing. Depending on your application and system performance, this can affect motion by causing increased errors in axis position or velocity. Controllers containing programs that generate motion should be in Program mode when starting or stopping a trend.
Downloading to a SoftLogix 5800 controller while another controller in the chassis is running a motion application may affect the motion application.	Do not perform a download to a SoftLogix 5800 controller in the chassis while another controller in the same chassis is running a motion application. Doing so may impact the motion execution.
Be sure to only single-click the SoftLogix 5800 icon during installation.	Do not double-click the SoftLogix 5800 icon on the installation browser dialog box. This can cause two copies of the SoftLogix 5800 installation procedure to launch. If two copies of the installation program start, you may not be able to perform a normal uninstall. If this occurs, you will see this error message when an uninstall is attempted: 'Failed to load dll: _UninstallTmp'. If this situation occurs, you have to manually uninstall the program. The manual uninstall procedure is available as the P19762551 technical note document.
Avoid mixed operand types between the destination and its inputs.	For maximum portability across platforms, it is best to avoid mixed operand types between the destination and its inputs. If getting identical results for similar operations across languages is important to you, make sure to perform floating point operations. However, floating point operations do not perform as well. Other considerations exist as well, such as how compatible your operands are with that of the I/O being used and so on. See below for more details on typed operations across Logix platforms and across languages.
Incorrect setting for .Initialization bit may cause incorrect function block execution values	When you perform a Partial Import Online (PIO) of a function block routine that contains S-Curve function blocks across Logix platforms, set the .Initialize bit in the backing tag control structure of all S-Curve instructions. This configuration causes the S-Curve instructions to re-initialize themselves. Failure to set the .Initialize bit in the backing tag control structure of all S-Curve instructions, may cause the S-Curve function block to execute with uninitialized values. Lgx114927, Lgx114935

Table 8 - Restrictions with Version 19.00 and Later

Restriction	Description
Download of converted RSLogix 5000 project to SoftLogix 5800 controller causes need for additional tasks	<p>The Totalizer (TOT) instruction may not function properly when a converted project is downloaded to a SoftLogix 5800 controller, catalog number 1789-L10, 1789-L30, or 1789-L60, version 19.00 and later. This anomaly may occur under these conditions:</p> <ul style="list-style-type: none"> • An RSLogix 5000 project is running on a SoftLogix 5800 controller, catalog number 1789-L10, 1789-L30, or 1789-L60, version 18 or earlier, with the TOT instruction in Run mode. • The project is uploaded and saved to a new file. • The new file is changed to use a SoftLogix 5800 controller, catalog number 1789-L10, 1789-L30, or 1789-L60, version 19.00 and later and is downloaded to a new controller of the same catalog number. • The project transitions to Run mode. <p>Upon transitioning to Run mode, the TOT instruction's output value is different from the last value generated when the same project was running on the first controller.</p> <p>To reset an invalid Totalizer value, set the ProgResetReq or OperResetReq to move the value of the instruction's Reset input parameter to the instruction's Total output parameter. Repeat this task once more to move the invalid value out of the instruction's OldTotal output parameter.</p> <p style="text-align: right;">Lgx00114767, Lgx00116677, Lgx00114731</p>

Performing Typed Operations

Consider the following when performing typed operations.


Typed Operation	Description
Across Logix platforms	<p>Due to the fact that the SoftLogix family is based on open systems technology, the controller performs computational operations much the same way as open systems platforms and tools. This becomes important when performing mixed typed operations, such as dividing two integers and storing the result in a real. Integer operations typically truncate the rational portion of a computation result while floating point operations preserve it.</p> <p>For example, when a SoftLogix program performs $a = n / m$ where the data types for 'a', 'n', and 'm' are real, integer, and integer respectively, this specifies an integer divide between 'n' and 'm' and places the answer into 'a', performing an integer to real conversion. If 'n' = 800 and 'm' = 1000, the result is 0 and gets stored into 'a' as 0.0.</p> <p>Alternatively, when a ControlLogix program performs the same $a = n / m$ where the data types for 'a', 'n', and 'm' are real, integer, and integer respectively, this specifies a floating point divide between 'n' and 'm' and places the answer into 'a', with no conversion needed. If 'n' = 800 and 'm' = 1000, the result is 0.8 and gets stored into 'a' as 0.8.</p> <p>In SoftLogix software, the input operand types dictate the operation while in THE ControlLogix PROGRAM, if any of the operands are real, a floating point operation is performed. SoftLogix software performs the operation exactly like a C routine would.</p>
Across languages	<p>There are instruction differences across programming languages as well as across Logix platforms. The following examples use the operation $i = n / m$ where all the operands are integers.</p> <p>Ladder DIV instructions perform an integer divide operation and store the immediate result in the destination. For 'n' = 800 and 'm' = 1000, 'i' is equal to 0. The DIV function block instructions only does floating point operation. The function block instruction converts the inputs to reals (if necessary) and then converts the result from a real to the destination type (if necessary). In this example, 'n' is converted to 800.0 and 'm' is converted to 1000.0. The result of the operation is 0.8. That result then gets converted to an integer where rounding rules apply and the final destination value is 1.</p> <p>This difference between ladder and function block instructions applies to all Logix platforms. Function block instructions perform only floating point operations.</p>

Functionality Issues in Specific Circumstances

You may experience some or all of these issues when programming or using your SoftLogix 5800 controller.

Table 9 - Possible Functionality Issues

Issue	Description
Performance	<p>Performance-related considerations that should be made are as follows:</p> <ul style="list-style-type: none"> The latest drivers for various items like video and networking devices may be required for satisfactory system operation. <p>We recommend that you use Microsoft-certified drivers for video cards and Ethernet NICs if performance problems are observed when running motion applications. Certified drivers can be found on the Microsoft website. You can also use Windows Update utility to update drivers on Windows 2000/XP systems or see the website of the hardware manufacturer.</p> <ul style="list-style-type: none"> Disable all graphical screen savers, especially OpenGL, when running motion applications.
General	<p>If you use drive image software to duplicate your hard disk drive to deploy multiple SoftLogix 5800 systems, follow these steps to be sure of proper operation of the systems. The installation of SoftLogix 5800 on a computer generates a unique CIP serial number that is used to identify messages from that node on the network. This serial number must be unique for every SoftLogix 5800 computer in the system.</p> <ol style="list-style-type: none"> Prior to running the drive image software to produce the master image, make sure that there are no controllers in the chassis and then terminate the Chassis Monitor by right-clicking the icon in the tool tray and choosing Shutdown Monitor. Delete the key ASASerialNumber from the Windows registry by using the regedit.exe tool provided with your Windows operating system. HKEY_LOCAL_MACHINE\SOFTWARE\Rockwell Automation\VirtualBackplaneMonitor\Installed Modules\0001!000E!000F ASASerialNumber. Create the drive image with the computer in this state, making sure that you do not run the Chassis Monitor again because that will cause the CIP serial number to be regenerated in the registry. <p>After the master image is copied to your new computer and the computer is restarted, a unique CIP serial number will be generated the first time that the Chassis Monitor is launched.</p>
Instruction set	<ul style="list-style-type: none"> If you run SoftLogix 5800 software and you perform continuous messaging or block-transfers where the instructions are triggered by their own enable bits (.EN), there is a potential for the instructions to stop executing and remain in a state with only the enable bit set. The SoftLogix 5800 controller may stop responding and require removal and re-insertion in the virtual chassis to recover from this fault. The RSLogix 5000 project will also have to be re-downloaded. <p>You can prevent this problem by using the Cache Connections option on the Communications tab of the message configuration dialog. You can cache as many as 32 instructions with any combination of message instructions and block-transfer instructions. For example, you can cache 28 message instructions and 4 block-transfer instructions.</p> <p>If you configure more than 32 cached connections, some of the connections will be made without caching, which causes this issue to continue to occur. In general, lower the frequency of less critical messages/block-transfers and use caching for critical messages/block-transfers.</p> <ul style="list-style-type: none"> The SoftLogix 5800 controller executes on a 32-bit microprocessor, which can perform 80-bit floating point operations. Due to extensive accuracy, comparisons between one REAL operand and another could reveal small differences in the lesser significant digits (for example, 1.000005 and 1.000052). As an alternative, use the LIM instruction when REAL operands are involved.
Motion card	<p>IMPORTANT If you have a virtual axis on a SoftLogix 5800 controller as a master reference, you must also have a physical axis in the same motion group on the same controller. Avoid producing a virtual axis on one controller and then consuming that axis on another controller in the virtual chassis that contains the slave axis. You cannot obtain smooth motion on any of the slave axes in this scenario if the controller with the virtual axis does not contain a physical axis.</p>

Issue	Description						
1784-PCIDS DeviceNet module	<ul style="list-style-type: none"> If you place the SoftLogix 5800 controller in Program mode with DeviceNet I/O currently mapped through a 1784-PCIDS module, and then you use RSNetWorx software to change the data mapping on the network, the controller does not detect this change until the 1784-PCIDS module is reset. You can reset the module in the RSLogix 5000 Controller Organizer. Right-click the module and choose Properties. Then click the Module Info tab and click Reset Module. You can also reset the module by removing and re-inserting the module in the SoftLogix chassis. You can reset the module while the SoftLogix 5800 controller is running. The connections are automatically established after the 1784-PCIDS module is reset. <div style="border: 1px solid black; padding: 5px; margin: 10px 0;">  <p>ATTENTION: Do not reset a module that is currently being used for control. The connection to the module will be broken and control might be interrupted.</p> </div> <ul style="list-style-type: none"> The 1784-PCIDS card in the SoftLogix 5800 chassis uses the CommandRegister bits the same way as a 1756-DNB module. Use the CommandRegister.Run bit to enable/disable output data on the DeviceNet I/O network. <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th data-bbox="630 787 963 850">When CommandRegister.Run is set to</th> <th data-bbox="971 787 1417 819">The 1784-PCIDS card</th> </tr> </thead> <tbody> <tr> <td data-bbox="630 856 963 982">Zero (0)</td> <td data-bbox="971 856 1417 982">Is in Idle mode. In Idle mode, the card still receives inputs from its slave devices on the network, but the card does not send active output data to the devices.</td> </tr> <tr> <td data-bbox="630 989 963 1087">One (1)</td> <td data-bbox="971 989 1417 1087">Is in Run mode. In Run mode, the card sends active outputs on the network and receives inputs.</td> </tr> </tbody> </table>	When CommandRegister.Run is set to	The 1784-PCIDS card	Zero (0)	Is in Idle mode. In Idle mode, the card still receives inputs from its slave devices on the network, but the card does not send active output data to the devices.	One (1)	Is in Run mode. In Run mode, the card sends active outputs on the network and receives inputs.
When CommandRegister.Run is set to	The 1784-PCIDS card						
Zero (0)	Is in Idle mode. In Idle mode, the card still receives inputs from its slave devices on the network, but the card does not send active output data to the devices.						
One (1)	Is in Run mode. In Run mode, the card sends active outputs on the network and receives inputs.						

For more information on configuring your SoftLogix 5800 system, see the SoftLogix 5800 System User Manual, publication [1789-UM002](#).

Install Version 19.00 and Later

To install the SoftLogix 5800 controller, version 19.00 and later, run the install.exe file available on the installation CD. This executable file launches a browser you can use to install the SoftLogix 5800 controller.

IMPORTANT

Consider the following before a SoftLogix 5800 controller, version 19.00 and later:

- Install RSLinx software before installing the SoftLogix 5800 controller.
- You must add the virtual backplane driver to slot 0 of the SoftLogix 5800 controller before you can use RSLinx 5000 programming software to connect to the SoftLogix 5800 controller. If you do not install the virtual backplane driver, you can not use persistent storage.
- When using the SoftLogix 5800 controller, make sure RSLinx communication software is operating as a service and not an application.
- Make sure .Net is installed on your computer before installing the SoftLogix 5800 controller. .Net can be installed from the SoftLogix or RSLinx 5000 software CD.

During installation of the SoftLogix 5800 controller, the installation utility verifies that the correct version of .Net is installed. If you do not have .Net on your computer, you cannot install the controller.

Use Add/Remove Programs in the control panel to remove previous versions of the SoftLogix 5800 controller. When installing or uninstalling, note any messages that recommend a system restart. Failure to follow the restart instructions can render your installation inoperable.

For more information about installing the controller, see the SoftLogix 5800 Controller Installation Instructions, publication [1789-IN001](#).

Update Motion Drivers in Windows XP Systems

This procedure explains how to update the drivers of your PCI-based motion card.

IMPORTANT PCI-based motion cards are no longer available.

If you already have a PCI-based motion card and are upgrading to the SoftLogix 5800 controller, version 18.00, on a Windows XP operating system, use this procedure to upgrade the drivers of your card.

If you are using Windows XP and have a motion card in your system, you must update the driver for the motion card by using this procedure.

1. Right-click My Computer and choose Manage.
2. Open Device Manager under System Tools.
3. Expand the A-B Virtual Backplane folder.
4. Right-click the appropriate motion device and choose Properties.
5. Click the Driver tab and then click Update Driver.
6. Use the wizard to install a new driver.
 - a. Select 'Install from a list or specific location (Advanced)' and click Next.
 - b. Verify that 'Include this location in the search' is checked and click Next.
 - c. Click Browse and locate the new driver in directory:
<CD-drive letter>\SoftLogix 5800\Drivers\Win2k
or
C:\Program Files\Rockwell
Automation\SoftLogx5800\Drivers\Win2k.

The path will be different if you did not install the SoftLogix 5800 controller in the default directory.

- d. Click Next to update the motion driver.
- e. If asked to overwrite newer versions of files, click YES.
- f. Click Finish to complete the update wizard.

Use Motion Drivers in Windows XP Systems

The Windows XP System Restore feature affects how motion runs on a SoftLogix 5800 controller. When System Restore is enabled, random motion retries occur, which may result in irregular motion and/or motion issues.

About System Restore

The System Restore feature provides a way to restore the system to a previously known state that would otherwise require you to reinstall an application or even the entire operating system. Applications that are compatible with Windows XP operating systems integrate with System Restore to create a restore point before an installation begins. By default, the feature creates a restore point every 24 hours while the system is operational. It does this by creating a restore point directory and then creating a snapshot of a set of critical system files, including parts of the registry. System Restore tracks changes to files and directories, and saves copies of files that are being changed or deleted in a change log. Restore point data is maintained on a per-volume basis.

Disable System Restore

For motion to operate correctly, you must disable System Restore.

1. From the Start Menu, right-click My Computer and choose Properties.

The System Properties page displays.

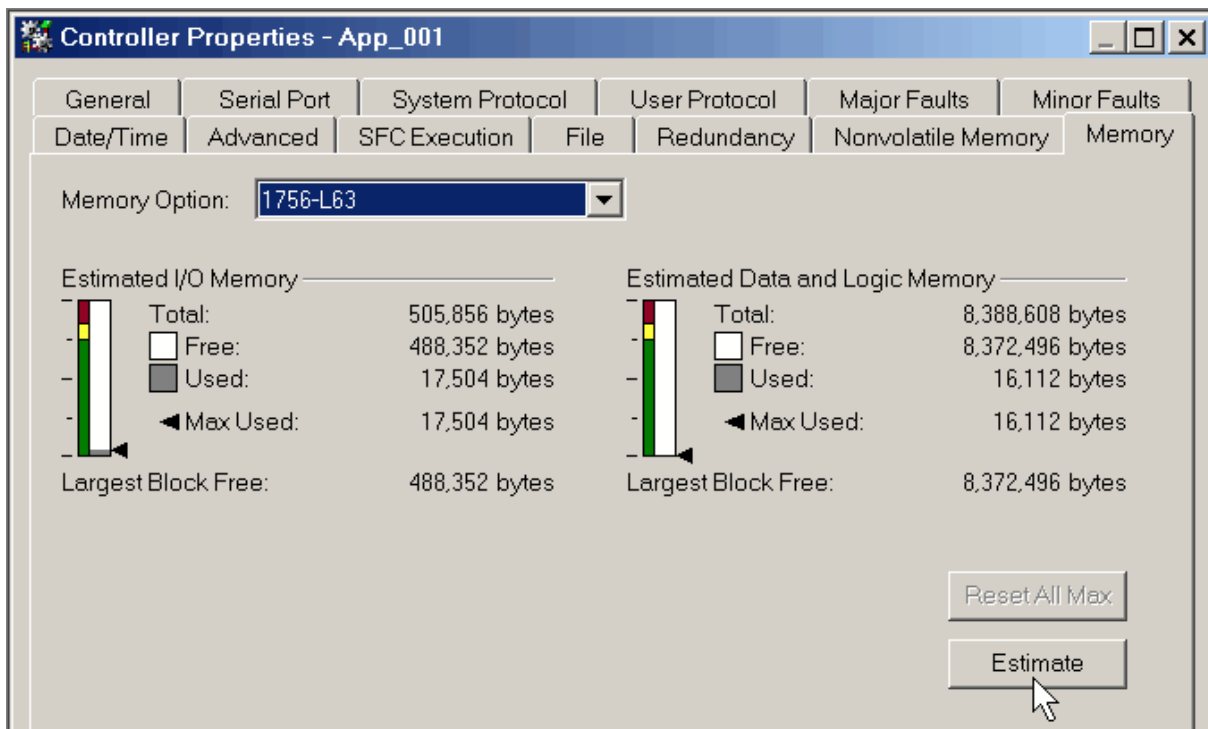
2. Click the System Restore tab from the System Properties page.
3. Check Turn off System Restore.
4. Click OK so the change takes effect.

Additional Memory Requirements

This controller version may require more memory than previous versions (for example, 10.x, 11.x). To estimate additional memory requirements for your application, you can either use the memory estimation tool provided with RSLogix 5000 programming software or the tables provided in these release notes.

Use the Estimate Tool

To estimate the amount of memory required by your application, convert the project to the controller version desired and use the Estimate tool available in the Memory tab of the Controller Properties.



Estimate Based on Application Components

If you do not have the desired version of RSLogix 5000 programming software, use this table to estimate the additional memory that your project may require.

If you are upgrading your system through multiple controller versions, add all components your application uses for each of the versions you upgrade through. For example, if you are upgrading from version 15.x to version 19.x, total your application components for revisions 15.x to 16.x, 16.x to 17.x, 17.x to 18.x, and 18.x to 19.x.

Table 10 - Additional Memory Requirements per Application Component

If you upgrade from revision (add all that apply)	Then add the following memory requirements to your project		Which comes from this type of memory	
	Component	Increase/Decrease Per Instance	I/O	Data and Logic
18.x to 19.x		<no change>		
17.x to 18.x	Program	+ 8 bytes		ü
	Equipment phase	+ 20 bytes		ü
	Add-On Instruction	+ 12 bytes		ü
	Each tag	+ 4 bytes		ü
	In addition, if you use a tag of the types listed below, increase the memory as indicated for each instance:			
	Produced tag	+ 36 bytes + (24 bytes * number of consumers)	ü	
	Consumed tag	+ 24 bytes	ü	
	Data access control	+ 4 bytes per symbol		ü
	Tag that uses ALARM_ANALOG data type	- 20 bytes		ü
	Tag that uses ALARM_DIGITAL data type	+ 28 bytes		ü
	Tag that uses MOTION_GROUP data type	+ 76		ü
	Tag that uses AXIS_SERVO_DRIVE or AXIS_GENERIC_DRIVE data type	+ 786 bytes		ü
	Tag that uses AXIS data type other than AXIS_SERVO_DRIVE or AXIS_GENERIC_DRIVE	+ 818 bytes		ü
	Tag that uses COORDINATE_SYSTEM data type with no transform dimensions	+ 40 bytes		ü
	Tag that uses COORDINATE_SYSTEM data type with transform dimensions	+ 100 bytes		ü
Module input connection	+ 20 bytes		ü	
Module output connection	+ 24 bytes		ü	
Safety controller	- 8 bytes		ü	
Safety partner	- 8 bytes		ü	

Table 10 - Additional Memory Requirements per Application Component

If you upgrade from revision (add all that apply)	Then add the following memory requirements to your project		Which comes from this type of memory	
	Component	Increase/Decrease Per Instance	I/O	Data and Logic
17.x to 18.x	For each controller (> 1K bytes change):			
	1756-L6x, 1756-L6xS, 1756-L63XT	+ 16728 bytes		ü
	1768-L4x, 1768-L4xS	+ 14448 bytes		ü
	1769-L2x	+ 35084 bytes	ü	
	1769-L31	+ 14740 bytes	ü	
	1769-L32C, 1769-L35CR	+ 35400 bytes	ü	
	1769-L32E, 1769-L35E	+ 35036 bytes	ü	
	1789-L10, 1789-L30, 1789-L60	+ 4992	ü	
16.x to 17.x	Task	+ 4 bytes		ü
	Program	+ 4 bytes		ü
	Equipment phase	+ 8 bytes		ü
	LD routine	+ 12 bytes		ü
	FBD routine	- 8 bytes		ü
	SFC routine	+ 28 bytes		ü
	ST routine	+ 4 bytes		ü
	Add-On Instruction	- 12 bytes		ü
	If you use a tag of the types listed below, increase the memory as indicated for each instance:			
	Produced tag	+ [4 bytes + (4 bytes * number of consumers)]	ü	
	Consumed tag	+ 8 bytes	ü	
	Tag that uses MESSAGE data type	+ 4 bytes		ü
	Tag that uses ALARM_ANALOG data type	- 64 bytes		ü
	Tag that uses ALARM_DIGITAL data type	- 28 bytes		ü
Tag that uses AXIS_SERVO_DRIVE or AXIS_GENERIC_DRIVE data type	- 34 bytes (2 bytes x number of output cam execution targets)		ü	
Tag that uses AXIS data type other than AXIS_SERVO_DRIVE or AXIS_GENERIC_DRIVE	- 52 bytes (2 bytes x number of output cam execution targets)		ü	
Tag that uses COORDINATE_SYSTEM data type of 2 dimensions with 2 transform dimensions	+ 20 bytes		ü	
Tag that uses COORDINATE_SYSTEM data type of 3 dimensions with 3 transform dimensions	+ 108 bytes		ü	

Table 10 - Additional Memory Requirements per Application Component

If you upgrade from revision (add all that apply)	Then add the following memory requirements to your project		Which comes from this type of memory	
	Component	Increase/Decrease Per Instance	I/O	Data and Logic
15.x to 16.x	If you use a tag of the types listed below, increase the memory as indicated for each instance:			
	Tag that uses ALARM_ANALOG data type (with no associated tag references)	+ 16 bytes		ü
	Tag that uses ALARM_DIGITAL data type (with no associated tag references)	+ 4 bytes		ü
	Tag that uses ALARM_ANALOG data type (if associated tags are configured for the ALARM_ANALOG tag)	+ 22 bytes + (9 x the number of configured, associated tags) + (3 x the sum of the bytes used by the data type of each of the configured associated tags) For example, an analog alarm moved to V16.03 with two Associated Tags – one DINT (4 bytes) and one STRING (88 bytes) would need to add: $22 + 9(2) + 3(92) = 316$ bytes		ü
	Tag that uses the COORDINATE_SYSTEM data type	+ 132 bytes		ü
14.x to 15.x	Input module	+ 4 bytes	ü	
	If you use a tag of the types listed below, increase the memory as indicated for each instance:			
	Produced tag	+ 12 bytes	ü	
	Consumed tag	+ 4 bytes	ü	
	Tag that uses COORDINATE_SYSTEM data type	+ 748 bytes		ü
	Tag the uses any AXIS data type	+ 800 bytes		ü
	Task	+ 20 bytes		ü
	Program or equipment phase	+ 24 bytes		ü
	Routine	+ 4 bytes		ü
	Serial port	+ 1120 bytes		ü
	Project	+ 4012 bytes		ü

Table 10 - Additional Memory Requirements per Application Component

If you upgrade from revision (add all that apply)	Then add the following memory requirements to your project		Which comes from this type of memory	
	Component	Increase/Decrease Per Instance	I/O	Data and Logic
13.x to 14.x	If you use a tag of the types listed below, increase the memory as indicated for each instance:			
	Tag that uses the COORDINATE SYSTEM data type	+ 60 bytes		ü
	Tag that uses any AXIS data type	+ 4 bytes		ü
12.x to 13.x	Program	+ 12 bytes		ü
	Task	+ 4 bytes		ü
	User-defined data type	+ 4 bytes		ü
	I/O module	+ 16 bytes	ü (8 bytes)	ü (8 bytes)
	If you use a tag of the types listed below, increase the memory as indicated for each instance:			
	Produced tag	+ 8 bytes	ü	
	Consumed tag	+ 8 bytes	ü	
11.x to 12.x	I/O module with a comm format = Rack Optimization	+ 90 bytes		ü
	I/O module with a comm format = something other than Rack Optimization (such as a direct connection)	+ 144 bytes		ü
	CompactLogix 1769 I/O module	+ 170 bytes		ü
	Bridge module with a comm format = None	+ 160 bytes		ü
	Bridge module with a comm format = Rack Optimization	+ 220 bytes		ü
10.x to 11.x	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 • Not the use of that data type in tags 	+ 128 bytes		ü
	Indirect address (using a tag as the subscript for an array in an instruction, such as an Array_A[Tag_B]). This memory change applies only if the array: <ul style="list-style-type: none"> • uses a structure as its data type • does not use one of these data types: CONTROL, COUNTER, PID, or TIMER • has only one dimension (such as UDT_1[5]) 	- 60 bytes		ü
9.x to 10.x	Program	+ 12 bytes		ü
	Routine	+ 16 bytes		ü
8.x to 9.x	If you use a tag of the types listed below, increase the memory as indicated for each instance:			
	Tag that uses the MESSAGE data type	+ 376 bytes		ü
7.x to 8.x	Project	+ 1050 bytes	ü	
	Tag	+ 0.55 bytes		ü
	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	ü	

Table 10 - Additional Memory Requirements per Application Component

If you upgrade from revision (add all that apply)	Then add the following memory requirements to your project			Which comes from this type of memory		
	Component		Increase/Decrease Per Instance	I/O	Data and Logic	
6.x to 7.x	If you use a tag of the types listed below, increase the memory as indicated for each instance:					
	Base tag		+ 24 bytes		ü	
	Alias tag		+ 16 bytes		ü	
	Produced tag	DINT	4	+ 12 bytes	ü	
		REAL	4	+ 12 bytes	ü	
	Consumed tag	DINT	4	+ 12 bytes		
		REAL	4	+ 12 bytes		
Routine			+ 68 bytes		ü	
5.x to 6.x	Routine			+ 116 bytes		ü

Additional Resources

These documents contain additional information.

Resource	Description
Logix5000 Controllers Common Procedures Reference Manual, publication 1756-PM001	Contains information specific to procedures related to programming your controller.
SoftLogix 5800 Controllers, Version 17 Release Notes, publication 1789-RN017	Describes anomalies and enhancements related to controller version 17.
SoftLogix 5800 Controllers, Version 18 Release Notes, publication 1789-RN018	Describes anomalies and enhancements related to controller version 18.
Logix5000 Controllers General Instructions, publication 1756-RM003	Contains information about general instructions.
Logix5000 Motion Controllers Instructions Reference Manual, publication MOTION-RM002	Contains information about motion instructions.
Logix5000 Process Controls and Drives Instructions Reference Manual, publication 1756-RM006	Contains information specific to the PI instruction.

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Tech Notes and other resources are available at the Technical Support Knowledgebase, <http://www.rockwellautomation.com/knowledgebase>.

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Installation Assistance

If you experience a problem within the first 24 hours of installation, review the information that is contained in this manual. You can contact Customer Support for initial help in getting your product up and running.

United States or Canada	1.440.646.3434
Outside United States or Canada	Use the Worldwide Locator at http://www.rockwellautomation.com/support/americas/phone_en.html , or contact your local Rockwell Automation representative.

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