Allen-Bradley

ControlLogix Controllers, Revision 19

ControlLogix Controllers Catalog Numbers

1756-L61, 1756-L62, 1756-L63, 1756-L64, 1756-L65, 1756-L72, 1756-L73, 1756-L74, 1756-L75

ControlLogix-XT Controller Catalog Number

1756-L63XT

GuardLogix Controllers Catalog Numbers

1756-L61S, 1756-L62S, 1756-L63S, 1756-LSP

IMPORTANT Consider the following before upgrading the firmware on your Logix5000 controller:

- Before updating your controller, we strongly recommend that you review information pertinent to previous major firmware revisions. For example, when updating from revision 17.*x* to 19.*x*, view information in the following publications:
  - ControlLogix Controllers, Revision 17 Release Notes, publication 1756-RN017
  - ControlLogix Controllers (1756-L6*x* controllers), Revision 18 Release Notes, publication 1756-RN018
  - ControlLogix Controllers (1756-L7*x* controllers), Revision 18 Release Notes, publication 1756-RN677

  Firmware release notes contain material for all minor revisions subsequent to each major revision. If your controller, for example, is at revision 17.11, and not the last minor revision, 18.15, you should view all of the information for revisions 17.11...18.15 before updating to revision 19.*x*.

  Release notes are available at: http://www.rockwellautomation.com/literature.
- After upgrading the firmware on your module, we strongly recommend that you **retest/validate your application offline before going online.**

This publication describes enhancements, anomalies (corrected and known), and restrictions for ControlLogix controllers, firmware revisions 19.13 and 19.11, and GuardLogix controllers, firmware revision 19.11.

Table 1 - Controllers and Firmware Revisions

Cat. No.	Major and Minor Revision No.
1756-L61	19.11
1756-L62	
1756-L63	
1756-L63XT	
1756-L64	
1756-L65	
1756-L61S	
1756-L62S	
1756-L63S	
1756-L72	19.13
1756-L73	
1756-L74	
1756-L75	

Compatible Software Versions

To use firmware revisions 19.11 or 19.13, these minimum software versions are required.

Table 2 - Compatible Software Versions

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

Before You Begin

Before you upgrade your firmware, consider the following.

IMPORTANT Loss of communication or power during a controller firmware upgrade may result in the controller rejecting the new firmware. If the controller firmware upgrade fails due to the conditions described, these corrective actions may be required:

- Cycle controller power and successfully complete the upgrade.
- If a nonrecoverable fault occurs, then return the controller for factory repair.

The preliminary actions are required before upgrading your controller firmware.

Table 3 - Before You Begin

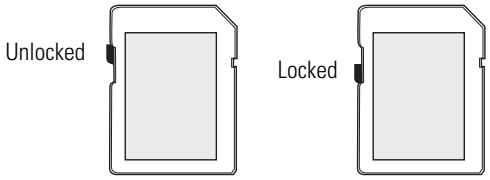
If	Then
You are updating a **1756-L7*x*** controller	Before you begin updating your controller, check the status of your Secure Digital (SD) card. **If your SD card is** / **Then** Unlocked: You can successfully upgrade the firmware to the intended revision. Locked and the Load Image option is set to On Power Up: You should unlock the SD card before beginning the upgrade. If the card is locked when you attempt to upgrade the firmware, the upgrade fails and the controller reverts to the firmware revision already stored on the SD card. **Figure 1 - SD card - Unlocked and Locked** 
You are using ControlFLASH software, version 9, (CPR9 SR3) with firmware revision 19.*xx* or later	Consider the following before you install the software: • We recommend you install RSLinx software, version 2.57, before you install ControlFLASH software, version 9 (CPR9 SR3). • If you install RSLinx software, version 2.57, before you install ControlFLASH software, version 9, you can enable or disable the FactoryTalk Security platform during ControlFLASH software, version 9, installation. However, to disable the FactoryTalk Security platform, you must first uninstall ControlFLASH software, version 9, then reinstall it. • If the FactoryTalk Security platform is enabled during ControlFLASH software, version 9, installation, the software opens with a Select FactoryTalk Directory dialog box. At that dialog box, click the following: – Network – Local – Cancel - If you click Cancel, you must select a directory. • ControlFLASH software, version 9, integrates only the FactoryTalk Security platform in the FactoryTalk Services platform, version 2.30 or later.
Your controller is close to its limits of memory	This revision may require more memory than previous revisions: • To see what components of your current project require more memory, see page 20. • RSLogix 5000 software, version 13.0 or later, lets you estimate the memory requirements of the controller offline. To upgrade to this revision, you may need to use a controller with a larger amount of memory.
Your controller is at firmware revision 11 or earlier	You must first upgrade to revision 12 or 13, before attempting to upgrade to revision 19.*x*. Once you have your controller upgraded to revision 12 or 13, then you can upgrade the controller to revision 19.*x*.

Table 3 - Before You Begin

If	Then
Your controller meets **both** of these conditions: • It has nonvolatile memory • It is currently at revision 11.*x* or earlier	Remove the CompactFlash card from the controller or check the Load Image option of the CompactFlash card. If it is set to On Power Up or On Corrupt Memory, first store the project with the Load Image option set to User Initiated. Otherwise, you may get a major fault when you upgrade controller firmware. This occurs because the On Power Up or On Corrupt Memory options cause the controller to load the project from nonvolatile memory. The firmware mismatch after the load then causes a major fault.
Your controller is connected to a DH-485 network	Disconnect it from the DH-485 network before you upgrade the controller firmware. If you upgrade the controller firmware while it is connected to a DH-485 network, communication on the network may stop.

Enhancements

These enhancements are available when you use ControlLogix and GuardLogix controllers, firmware revision 19.11, with RSLogix 5000 software, version 19.01.

Table 4 - Enhancements with Firmware Revision 19.11

Cat. No.	Description
1756-L61, 1756-L62, 1756-L63, 1756-L64, 1756-L65, 1756-L61S, 1756-L62S, 1756-L63S, 1756-L63XT, 1756-L72, 1756-L73, 1756-L74, 1756-L75	Integrated Motion on the EtherNet/IP network PowerFlex Support With RSLogix 5000 software, version 19.*x*, Integrated Motion on the EtherNet/IP network is available for the PowerFlex 755 drive. This enhancement provides a common configuration, commissioning, programming, and maintenance solution for Kinetix and PowerFlex 755 drives. When operating in the Integrated Motion mode, all the features and benefits of Logix Integrated Motion are available for the PowerFlex 755 drive. This list of features and benefits includes the following: • Motion configuration and commissioning tool support • Motion instruction set support, including the following: – Point-to-point motion – Time and position CAM motion – Linear/circular interpolation – Kinematics – Direct velocity control • Motion automatic device replacement support • Motion faults and alarms logging
	Integrated Motion on the EtherNet/IP Network Motor Test and Commutation Angle Test With RSLogix 5000 software, version 19, support for defining and commissioning third-party motors is available. You can enter motor name plate data directly into RSLogix 5000 software. You can also use Motor test and Commutation angle test utilities to commission the motor. This enhancement eliminates the need to use custom motor data base files for third-party motor support.
	Load Observer The Load Observer is a new servo loop feature that improves servo performance and robustness and simplifies system tuning.
1756-L61, 1756-L62, 1756-L63, 1756-L64, 1756-L65, 1756-L61S, 1756-L62S, 1756-L63S, 1756-L63XT, 1756-L72, 1756-L73, 1756-L74, 1756-L75	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.
	New Method to Define Articulated Dependent Transform End Effecter Offsets With RSLogix 5000 software, version 19, a second option is available to define end effecter offset values used in applications with Articulate Dependent Arms. You can define end effector offset values that are connected via parallel links back to the base. This method results in end effecter values that hold their orientation relative to the XY plane and only move on the Z axis.

Table 4 - Enhancements with Firmware Revision 19.11

Cat. No.	Description
1756-L72 1756-L74	Firmware support for two new ControlLogix controllers, catalog numbers 1756-L72 and 1756-L74. For more information about these controllers, the ControlLogix Selection Guide, publication 1756-SG001.
1756-L61S, 1756-L62S, 1756-L63S	Safety Unicast Produce/Consume CIP Safety unicast Produce/Consume allows direct point-to-point communication between two GuardLogix controllers on a network, for example, EtherNet/IP or ControlNet. Safety unicast communication is useful when safety data does not need to be shared between more than two GuardLogix controllers.

Corrected Anomalies

These anomalies have been corrected with these firmware revisions:

- Corrected Anomalies with Firmware Revision 19.13 on page 5
- Corrected Anomalies with Firmware Revision 19.11 on page 6

Table 5 - Corrected Anomalies with Firmware Revision 19.13

Cat. No.	Description
1756-L72, 1756-L73, 1756-L74, 1756-L75	**CORRECTED**: An internal floating point calculation may result in an incorrect value. Calculations executed internally can result in unexpected values being generated, including some instructions generating incorrect results or unintended movement of motion axes in motion applications. This anomaly may affect both motion and non-motion applications. This anomaly is not a common occurrence. However, the possibility of code generating incorrect values or unintended axis motion does exist. This anomaly can manifest itself any time the 1756-L7*x* controller is in Run mode. For more information on this anomaly, see 186811 - Product Safety Advisory - 2011-04-005 - L7*x* Processor Internal Calculations May Result in Unexpected Events Including Unintended Movement of a Motion Axis available at http://rockwellautomation.custhelp.com/. **IMPORTANT**: This anomaly does not exist with the 1756-L6*x* controllers. Lgx00119694, Lgx00120055, Lgx00120056
	CORRECTED: Some third-party communication software may cause a major non-recoverable fault on the controller. **IMPORTANT**: This anomaly does not exist with the 1756-L6*x* controllers. Lgx00116419, Lgx00116066, Lgx00116418, Lgx00116420

Table 5 - Corrected Anomalies with Firmware Revision 19.13

Cat. No.	Description
1756-L72, 1756-L73, 1756-L74, 1756-L75	**CORRECTED**: An anomaly can occur in either of these conditions: • A Coordinated Merge All move is executed at low speed, such as a speed at which the move completes in less than one iteration. • A Coordinated Merge All move is executed where the ratio of the last and next-to-last command position deltas is 1:3. When the anomaly occurs, the result can be unintended motion. Lgx00119802, Lgx00119183, Lgx00119983

Table 6 - Corrected Anomalies with Firmware Revision 19.11

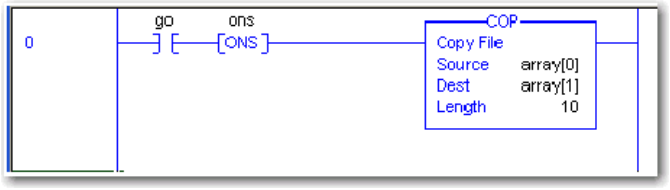
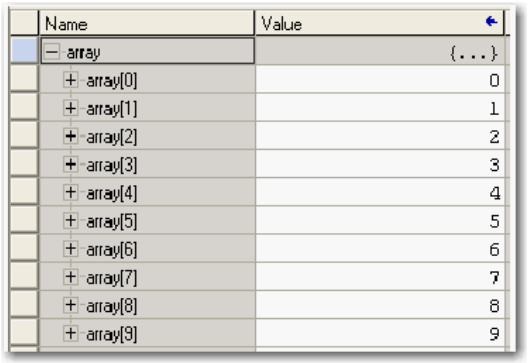
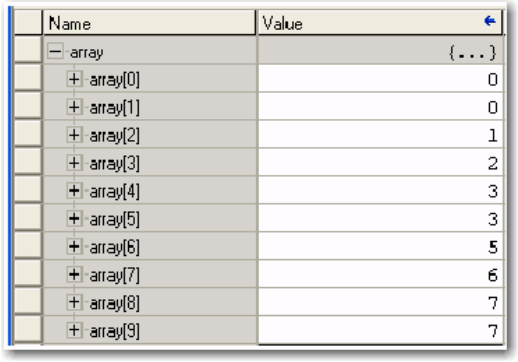
Cat. No.	Description
1756-L61, 1756-L62, 1756-L63, 1756-L64, 1756-L65, 1756-L61S, 1756-L62S, 1756-L63S, 1756-L63XT, 1756-L72, 1756-L73, 1756-L74, 1756-L75	**CORRECTED**: The Copy File (COP) Synchronous Copy File (CPS) instruction use may result in Unexpected Execution. If the COP or CPS instructions are configured so that the source and destination tags overlap, the instruction has unexpected execution. For example, these graphics show an example COP instruction and its tag values before execution.   The result should be an array that contains all zeros. Instead, the result is an array that contains the values shown in this graphic.  Lgx00114495, Lgx00114576

Table 6 - Corrected Anomalies with Firmware Revision 19.11

Cat. No.	Description
1756-L61, 1756-L62, 1756-L63, 1756-L64, 1756-L65, 1756-L61S, 1756-L62S, 1756-L63S, 1756-L63XT, 1756-L72, 1756-L73, 1756-L74, 1756-L75	**CORRECTED**: Controller may fail to transition from Run mode to Program mode when some MSG instruction types are used. 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. Either of the following conditions can cause this anomaly to occur: • 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 The controller remains in Run mode until power is cycled. Lgx00113381, Lgx00109216
	CORRECTED: Serial port UART may stall during communication between a controller and a device. This anomaly may have manifested itself in the following conditions when a controller is connected to another device, such as a PanelView terminal, through its serial port: • Communication through the serial port stops completely. • The controller's RS-232 status indicator turns solid green. Execute either of the following tasks to resume communication over the serial port connection: • Cycle power to the controller. • Change the serial port configuration, for example, the node number. For more information about this anomaly, see the Technical Note titled Serial Port UART Appears To Be Stalling #67950, in the Technical Support Knowledgebase available at http://www.rockwellautomation.com/knowledgebase/. Lgx00113379, Lgx00106893
	CORRECTED: PCCC command bit write does not update the controller. When you use PCCC command bit write (CMD 0F 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. 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. Logix controllers do not initiate this command. For more information about this anomaly, see the Technical Note titled Bit writes fail with a Standard PanelView to a ControlLogix processor with version 18 firmware when using SLC/PLC mapping #69234, in the Technical Support Knowledgebase available at http://www.rockwellautomation.com/knowledgebase/. Lgx00113378, Lgx00111497
	CORRECTED: A watchdog fault occurs during prescan on a transition from Program mode to Run mode. 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. To correct this anomaly, the prescan watchdog has been changed to 300 seconds. **IMPORTANT**: You cannot configure the prescan watchdog value. Lgx00113376, Lgx00112413
	CORRECTED: Controller experiences a major non-recoverable fault during a partial import online to a periodic or event task. This anomaly occurred when the following conditions existed: • 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. lLgx00112034, Lgx00108203

Table 6 - Corrected Anomalies with Firmware Revision 19.11

Cat. No.	Description
1756-L61, 1756-L62, 1756-L63, 1756-L64, 1756-L65, 1756-L61S, 1756-L62S, 1756-L63S, 1756-L63XT, 1756-L72, 1756-L73, 1756-L74, 1756-L75	**CORRECTED**: A Shutdown fault action issued by the controller overrides the drive state change only when the drive state change is reported as Disable. Lgx00109658, Lgx00106420
	CORRECTED: 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. 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. 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/. Lgx00113377, Lgx00110876
	CORRECTED: 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: • 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. 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. 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. Lgx00113391, Lgx00111367
	CORRECTED: 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. **IMPORTANT** This anomaly occurs only when the controller producing the axes is configured for rotary operation. You could work around this anomaly in one of the following ways: • 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. Lgx00111591, Lgx00111473
	CORRECTED: This anomaly occurs only in applications that use Integrated Motion on the EtherNet/IP network. With the home switch active and the home configuration set to Active, Forward or Reverse Uni-directional Home to Switch, a Motion Axis Home (MAH) causes the motor to move an amount inversely prepositional to the commanded position value at the start of the home process. For example, if the commanded position is- 2 before the MAH instruction is executed, the motor moves + 2. Lgx00113536, Lgx00108517
	CORRECTED: This anomaly occurs only in applications that use Integrated Motion on the EtherNet/IP network. With the home switch active and the home configuration set to Active Reverse-Bi-directional Home with or without marker, a Motion Axis Home (MAH) instruction causes the motor to move in the opposite direction than intended. The move occurs at the defined return speed until the switch is deactivated. At that point, the Maker is found, and the MAH instruction is considered complete. Lgx00113535, Lgx00108519

Table 6 - Corrected Anomalies with Firmware Revision 19.11

Cat. No.	Description
1756-L61, 1756-L62, 1756-L63, 1756-L64, 1756-L65, 1756-L61S, 1756-L62S, 1756-L63S, 1756-L63XT, 1756-L72, 1756-L73, 1756-L74, 1756-L75	**CORRECTED**: This anomaly occurs only in applications that use Integrated Motion on the EtherNet/IP network. When an Integrated Motion on the EtherNet/IP network axis registration is continuously rearmed events are captured every revolution, it may capture duplicate registration events, and the .PC bit is set with each event. This anomaly only occurs in non-windowed registration and typically when the rearm registration rate is configured for an unusually high rate. Lgx00113534, Lgx00108653
	CORRECTED: This anomaly occurs only in applications that use Integrated Motion on the EtherNet/IP network. When an Integrated Motion on the EtherNet/IP network axis configured for cyclic travel mode is moving in the negative direction and unwinds, it can incorrectly trigger Motion Arm Watch (MAW) instruction set for a Trigger Condition = Forward. Lgx00113526, Lgx00110560
	CORRECTED: This anomaly occurs only in applications that use Integrated Motion on the EtherNet/IP network. On an Integrated Motion on the EtherNet/IP network axis, a Motion Axis Home (MAH) instruction may not produce the desired motion if a previous MAH instruction was cancelled by a Motion Axis Stop (MAS) instruction, or any other stopping action, before homing was complete. Subsequently, the controller does not command motion when new MAH instructions are executed after the homing process started the first MAH instruction is aborted. Lgx00113527, Lgx00110145
	CORRECTED: This anomaly occurs only in applications that use Integrated Motion on the EtherNet/IP network. There is a remote possibility that numerous power cycles of Integrated Motion on the EtherNet/IP network drives may cause any of the following events to occur on the axis: • Major non-recoverable fault • Connection format fault • Excessive lost packets declared Lgx00113537
	CORRECTED: This anomaly occurs only in applications that use Integrated Motion on the EtherNet/IP network. When a Motion Axis Shutdown Reset (MASR) instruction, Motion Group Shutdown Reset (MGSR), or Motion Coordinated Shutdown Reset (MCSR) instruction is used to reset a faulted an Integrated Motion on the EtherNet/IP network axis, the instruction might set the .DN bit slightly before the reset from the shutdown operating state completes. Lgx00113533, Lgx00108862
	CORRECTED: This anomaly occurs only in applications that use Integrated Motion on the EtherNet/IP network. When an Absolute Position Recovery (APR) fault causes a major recoverable fault on the controller, an Unknown Fault is recorded in the controller's major fault tab instead of the specific fault that caused the major fault on the controller. Lgx00113532, Lgx00108872
	CORRECTED: This anomaly occurs only in applications that use Integrated Motion on the EtherNet/IP network. If an axis is configured to read VelocityFeed with every cycle, a Set System Value (SSV) instruction of Command Torque cannot set a zero or negative value. A minor fault occurs and is logged. Lgx00113528, Lgx00109838

Table 6 - Corrected Anomalies with Firmware Revision 19.11

Cat. No.	Description
1756-L61, 1756-L62, 1756-L63, 1756-L64, 1756-L65, 1756-L61S, 1756-L62S, 1756-L63S, 1756-L63XT, 1756-L72, 1756-L73, 1756-L74, 1756-L75	**CORRECTED**: This anomaly occurs only in applications that use Integrated Motion on the EtherNet/IP network. The Transmission Statistics screen incorrectly update the Controller to Drive Lost and Late Transmission counters. The counters begin at 0 and increment to 512. Once the counters reach 512, they rollover to 256 and begin incrementing again. Any value over 256 is not valid. Lgx00113525, Lgx00110668
	CORRECTED: This anomaly occurs only in applications that use Integrated Motion on the EtherNet/IP network. Integrated Motion on the EtherNet/IP network axes do not stop, as expected, after losing the CST master in an application with these conditions: • A ControlLogix SynchLink module, that is, 1756-SYNCH module, is the CST master in the chassis that contains the controller that is commanding Integrated Motion on the EtherNet/IP network. • Integrated Motion on the EtherNet/IP network axes are running. • Precision Time Protocol (PTP) remains synchronized despite the loss of the CST master. **IMPORTANT**: If the CST master is the same module as the PTP master, Integrated Motion on the EtherNet/IP network axes stop as expected. Lgx00110467, Lgx00109725
	CORRECTED: This anomaly occurs only in applications that use Integrated Motion on the EtherNet/IP network. If you have an Integrated Motion on the EtherNet/IP network drive in the controller program and if you do any I/O forcing, selecting Remove All I/O Forces causes the controller to trigger a nonrecoverable major fault. To work around this anomaly, disable forces or remove individual forces. Lgx00113716, Lgx00113817
	CORRECTED: 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. Lgx00113529, Lgx00109362
	CORRECTED: 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. 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. Lgx00109662, Lgx00108920
	CORRECTED: 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. 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. Lgx00113524, Lgx00112064
	CORRECTED: When using a 1756-M02AE module, controllers may experience a major non-recoverable fault when the key is turned to Program mode. In addition to experiencing the fault the controller may also lose its program from memory. The Coarse Update Rate value, determines whether or not the controller loses its program when the fault occurs: • If the Coarse Update Rate > 2 ms, the controller retains its program. • If the Coarse Update Rate < 2ms, the controller loses its program. **IMPORTANT**: This anomaly only occurs if your application uses an analog drive axis or if the DriveFault is not wired. If your application uses a SERCOS drive axis or if the DriveFault is wired, the anomaly does not occur. Lgx00113380, Lgx00110296

Table 6 - Corrected Anomalies with Firmware Revision 19.11

Cat. No.	Description
1756-L61, 1756-L62, 1756-L63, 1756-L64, 1756-L65, 1756-L61S, 1756-L62S, 1756-L63S, 1756-L63XT, 1756-L72, 1756-L73, 1756-L74, 1756-L75	**CORRECTED**: The controller may experience a major non-recoverable (MNRF) fault if these conditions exist: • System Configuration uses the following three coordinate systems: – 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: – 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: – A MCLM or Motion Coordinated Circular Move (MCCM) instruction is executed on CS3. – A MAM instruction is executed on any axis in CS1. Lgx00108920, Lgx00113383
	CORRECTED: 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. Lgx00112392, Lgx00110834
1756-L72, 1756-L73, 1756-L74, 1756-L75	**CORRECTED**: The Totalizer (TOT) instruction may not function properly when a converted project is downloaded to a ControlLogix controller, catalog numbers 1756-L7*x*. This anomaly may occur under these conditions: • An RSLogix 5000 project is running on any Logix5000 controller, catalog numbers 1756-L6*x*, 1756-L6*x*S, 1768-L4*x*, 1768-L4*x*S, 1769-L2*x*, or 1769-L3*x*, 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 ControlLogix controller, catalog numbers 1756-L7*x* and is downloaded to a new controller of the same catalog number. • The project transitions to Run mode. 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. Lgx00114767, Lgx00116677, Lgx00114731
1756-L61S, 1756-L62S, 1756-L63S	**CORRECTED**: If a GuardLogix controller uses produced and consumed tags in a safety application, the tags must be at least 17 bits. If the tags are fewer than 17 bits, the controller receives an error message of Message Timeout. Lgx00113373, Lgx00109284

Known Anomalies

These anomalies have been identified with firmware revisions 19.13 and 19.11.

Table 7 - Known Anomalies with Firmware Revisions 19.13 and 19.11

Cat. No.	Description
1756-L61, 1756-L62, 1756-L63, 1756-L64, 1756-L65, 1756-L61S, 1756-L62S, 1756-L63S, 1756-L63XT, 1756-L72, 1756-L73, 1756-L74, 1756-L75	An anomaly can occur when an Integrated Motion on the EtherNet/IP network axis is configured for **Cyclic** Travel mode and Motion Polarity inverted. When the axis is Jogged, a high actual velocity occurs at the Position unwind for one iteration. If this Integrated Motion on the EtherNet/IP network sxis is geared or cammed to another axis with Master Reference = Actual, the slave axis experiences Position and Velocity Error faults immediately. To work around this anomaly, the Motion Axis Gear (MAG) or Motion Axis Position Cam (MAPC) instructions that are used for Gearing and Camming should use the Master Reference = Command. Lgx00118600, Lgx00118507
	This anomaly occurs only in applications that use Integrated Motion on the EtherNet/IP network. An anomaly can occur when an Integrated Motion on the EtherNet/IP network axis is configured for **Cyclic** Travel mode and its Actual Position exceeds its Unwind Position. For example, the anomaly can occur when the Unwind Position is configured to 360°, but the Actual Position reaches 371°. Typically, this anomaly appears when a 1756-L7*x* controller operating at high Integrated Motion on the EtherNet/IP network loading as indicated by regular late updates seen in the Integrated Motion on the EtherNet/IP network drive's Motion_Diagnostic tag. The capacity level at which the controller operates and the speed determine the number of packets missed. The packets missed are found in the late or lost Transmission counts shown in the Motion_Diagnostic tag. Therefore, the controller's operating capacity and the speed of packets missed determines the size of difference between the Unwind Position value and the Actual Position value. Lgx00114256, Lgx00113950
	An anomaly will occur that causes the controller to lose the Absolution Position on motion axes when converting version 18 RSLogix 5000 projects to version 19 RSLogix 5000 projects.. When this anomaly occurs, the motion axes revert to the raw drive position scaled in user units, and the AxisHomedStatus bit is cleared. To work around this anomaly, complete these tasks. 1. Record the actual positions of the axes that are already Homed in the version 18 RSLogix 5000 project. 2. After converting the version 18 RSLogix 5000 project to a version 19 project, execute an Active or Passive Home with 'Immediate Sequence' to the actual positions used in the version 18 project that you recorded before converting the project. Lgx00119576, Lgx00119400
	During online editing, an anomaly can occur when testing edits to a Sequential Function Chart (SFC) routine. Normally, test edits are applied to a test SFC routine and verified before accepting them in the program's logic. When this anomaly occurs, test edits are implemented in the online routine. When the option appears to cancel the program edits, they are accepted despite trying to cancel the online editing operation. There are no workarounds for this anomaly. Lgx00119071

Table 7 - Known Anomalies with Firmware Revisions 19.13 and 19.11

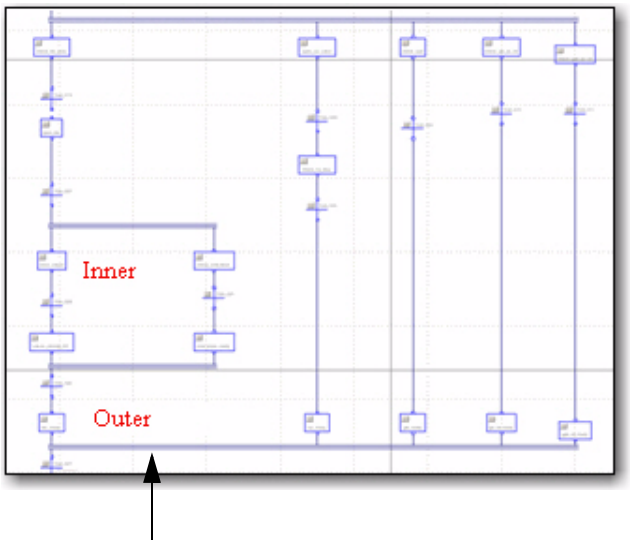
Cat. No.	Description
1756-L61, 1756-L62, 1756-L63, 1756-L64, 1756-L65, 1756-L61S, 1756-L62S, 1756-L63S, 1756-L63XT, 1756-L72, 1756-L73, 1756-L74, 1756-L75	An anomaly can occur when you nest simultaneous branches in a Sequential Function Chart (SFC) routine as shown below.  Bottom-most Steps During normal operations, the logic does not step out of a simultaneous branch until all of the incoming legs have reached their bottom-most step. In the example shown, the logic does not step out of the Outer simultaneous branch until the leftmost leg has stepped out of the Inner simultaneous branch. The first time through the SFC routine, the application works as expected. On subsequent scans, however, the chart steps out of the Outer simultaneous branch even though the left leg has not reached the Inner simultaneous branch yet. This behavior occurs because the information in the bottom step, that is, the step next to the word Outer, remains from the previous scan. This stale information incorrectly causes the transition to move on as if the left leg is at the bottom step when it actually is not. To work around this anomaly, confirm all of the incoming legs have reached their bottom steps in the transition. You can check the .x bits to make sure the bottom-most step of each converging leg is active before allowing the chart to advance. This check can be added to the transition logic already present. For example, the steps in the following expression are the bottom steps (see graphic above) of the incoming legs. Each step has a timer. The transition does not move on until all of the step timers have reached their preset value. The expression can be modified to be sure those steps are truly active. This is the **original expression**: // Unit is ready to Transition Step1_ready.dn and Step2_ready.dn and Step3_ready.dn and Step4_ready.dn and Step5_ready.dn This is the **modified expression** to workaround this anomaly. // Unit is ready to Transition Step1_ready.*x* and Step2_ready.*x* and Step3_ready.*x* and Step4_ready.*x* and Step5_ready.*x* and Step1_ready.dn and Step2_ready.dn and Step3_ready.dn and Step4_ready.dn and Step5_ready.dn **IMPORTANT**: The *x* bit is cleared when the chart transitions out of a step. Adding this check to the condition forces the engine to wait until all of those steps are genuinely active before advancing out of the simultaneous branch. Lgx00118189, Lgx00116506

Table 7 - Known Anomalies with Firmware Revisions 19.13 and 19.11

Cat. No.	Description
1756-L61, 1756-L62, 1756-L63, 1756-L64, 1756-L65, 1756-L61S, 1756-L62S, 1756-L63S, 1756-L63XT, 1756-L72, 1756-L73, 1756-L74, 1756-L75	PI function block appears to stop executing as the output does not change and no instruction faults are logged. If the PI instruction is being used in Linear mode, this floating-point equation is used to calculate the ITerm. $$Kp \times Wld \times \frac{WldInput + WldInput_{n-1}}{2} \times DeltaT + ITerm_{n-1}$$ 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 $ITerm_{n-1}$. For more information regarding the PI instruction, see the Logix5000 Controllers Process Control and Drives Instructions User Manual, publication 1756-RM006. Lgx00070832
	Changes made to the Buffer Timeout value for FactoryTalk Alarms and Events subscribers do not take effect until the existing buffer has been deleted. The FactoryTalk 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: • Redownload the project to the controller. • Disconnect the FactoryTalk Alarms and Events subscriber and leave it disconnected until the existing timeout expires. Lgx00069461
	If you issue an Absolute Feedback Offset via an SSV instruction on the 1756-M02AS module, the result is a feedback fault. The feedback fault occurs regardless of whether feedback is on or off. Lgx00076298
	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: • 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 Typically, the overshoot does not occur. If **either** of the following conditions exist, you will avoid the overshoot: • 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/seconds^3) than the original MAM instruction. You should note, though, lower value of jerk in % of time results in higher value of jerk (in units/seconds^3). Lgx00078822
	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. 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. Lgx00095484
	This anomaly occurs only in applications that use Integrated Motion on the EtherNet/IP network. With any coordinated move in a system that uses two or more Integrated Motion on the EtherNet/IP network axes, if one axis is disabled using a Motion Servo Off (MSF) instruction, any remaining Integrated Motion on the EtherNet/IP network axes will generate an Excessive Velocity Error, that is, Drive Error S55. Lgx00105360

Table 7 - Known Anomalies with Firmware Revisions 19.13 and 19.11

Cat. No.	Description
1756-L61, 1756-L62, 1756-L63, 1756-L64, 1756-L65, 1756-L61S, 1756-L62S, 1756-L63S, 1756-L63XT, 1756-L72, 1756-L73, 1756-L74, 1756-L75	This anomaly occurs only in applications that use Integrated Motion on the EtherNet/IP network. The Command Update Delay Offset feature is typically used with generic SERCOS drives that have different dynamic responses. The feature aligns the command position for each drive to compensate for the different dynamic responses. The Command Delay Compensation Offset parameter for each drive is adjusted as needed. However, the Command Update Delay Offset feature does not affect an Integrated Motion on the EtherNet/IP network axis as expected. An SSV instruction of 'CommandUpdateDelayOffset' on an Integrated Motion on the EtherNet/IP networkaxis is accepted but has no effect on the Command Delay Compensation Offset feature. Even though the axis attributes can be modified, the instruction execution does not alter the command position of an Integrated Motion on the EtherNet/IP network axis. Lgx00107320
	The .ACCEL and .DECEL Motion status bits operate differently than in RSLogix 5000 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. Lgx00107454
	This anomaly occurs only in SERCOS applications that use Kinetix SERCOS drives and linear motors. 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. Your program will have an incorrect value for the VelocityFeedback attribute if you follow these steps. 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. The VelocityFeedback attribute value is incorrect because that attribute was enabled before the program was saved, downloaded, and put online. To work around this anomaly, do not enable the VelocityFeedback attribute until the RSLogix 5000 program is online. Lgx00107793
	This anomaly occurs only in applications that use Integrated Motion on the EtherNet/IP network. When you create a new Integrated Motion on the EtherNet/IP network axis, the default value for Mechanical Brake Delay = 0. If you are using a motor with a brake on this axis and do not change the Mechanical Brake Delay value, the motor will not work properly when you attempt to execute motion. To work around this anomaly, make sure that you set the Mechanical Brake Delay to the appropriate value before executing motion. Lgx00113541, Lgx00107169
	This anomaly occurs only in applications that use Integrated Motion on the EtherNet/IP network. Every time there is a Motion Servo Off (MSF) instruction/Motion Servo On (MSO) instruction cycle, the Position Trim value is added to the axis position. This change in axis position causes the axis to move unexpectedly by a distance equal to the Position Trim value. Lgx00113540, Lgx00108486
	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. You can take one of the following actions to work around this anomaly: • 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. Lgx00113538, Lgx00112356

Table 7 - Known Anomalies with Firmware Revisions 19.13 and 19.11

Cat. No.	Description
1756-L61, 1756-L62, 1756-L63, 1756-L64, 1756-L65, 1756-L61S, 1756-L62S, 1756-L63S, 1756-L63XT, 1756-L72, 1756-L73, 1756-L74, 1756-L75	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 fault (MNRF). 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. 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. The MNRF occurs if one instance of the Motor_Start scans false and the other scans true. To work around this anomaly, use individual backing/reference tag for all Add-On Instructions. Lgx00113790, Lgx00113448
	This anomaly occurs only in applications that use Integrated Motion on the EtherNet/IP network. When an Integrated Motion on the EtherNet/IP network drive operates on an axis that is configured for Cyclic Travel mode and uses a Coarse Update Rate that is fast enough to generate Lost and Late Drive to Controller updates, there may be instances where the axis' Actual Position briefly exceeds its Unwind Position. In this case, the Late and Lost Drive to Controller updates are logged in the drive's Status tags. Some network activities, for example, disturbances or loading, may also cause the controller to experience this anomaly. To workaround this anomaly, complete one of the following: • Change the axis' Coarse Update Rate to a rate that does not cause Lost and Late Drive to Controller updates, that is, slow down the Coarse Update Rate. • Troubleshoot the network for other causes of the anomaly and correct those issues. Lgx00113950, Lgx00114022
1756-L72, 1756-L73, 1756-L74, 1756-L75	On every controller power cycle, a **Media Removed** event is recorded in the controller log. Lgx00113409, Lgx00113263
1756-L61, 1756-L62, 1756-L63, 1756-L64, 1756-L65, 1756-L61S, 1756-L62S, 1756-L63S, 1756-L63XT	Unsuccessful MSG execution results in subsequent unsuccessful messages in master/slave controller configurations. When a DF-1 serial connection is used between a master and slave controller, an 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. However, with this anomaly, after the in-polling sequence error, subsequent MSG instructions are also unsuccessful. 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. Lgx00083882, Lgx00082610

Table 7 - Known Anomalies with Firmware Revisions 19.13 and 19.11

Cat. No.	Description
1756-L61S, 1756-L62S, 1756-L63S	The use of a safety tag with several multicast consuming controllers at varying firmware revisions can result in a connection timeout. If your application is configured with GuardLogix controllers consuming safety tags produced by a GuardLogix controller at revision 18.*x*, and the consuming controllers of one safety tag are at varying firmware revisions, you may experience a connection timeout with error code 0x203. In the event of a connection timeout, all of the consuming controllers appear to connect to the tag and run for some time, but then the connection timeout occurs. If you use a single consumer of a safety tag, that consumer will connect and remain connected. To workaround this anomaly, set the revision of the producing controller to the same revision as the lowest revision of the consumers connecting to the safety tag. For example, if you have consuming GuardLogix controllers at revisions 17.*x* and 18.*x*, set the producing controller to revision 17.*x* to match the lowest revision of the consumers. Lgx00104877
	Cycling power to the GuardLogix controller may result in a major nonrecoverable fault (MNRF) when a battery is dead or missing from either the safety controller or the safety partner. That is, a MNRF may occur when power is cycled if the safety controller or the safety partner has a battery installed while the other module of the pair is missing a battery or has a dead battery. To work around this anomaly, complete one of the following tasks: • Verify that both the controller and the safety partner have good batteries. If desired, you can monitor the condition of the batteries via GSV instructions that check the MinorFaultBits attribute of the FaultLog object. • Remove the batteries from both the safety controller and the safety partner. Lgx00108233

Restrictions

These restrictions exist for firmware revisions 19.13 and 19.11.

Table 8 - Restrictions with Firmware Revisions 19.13 and 19.11

Cat. No.	Description
1756-L61, 1756-L62, 1756-L63, 1756-L64, 1756-L65, 1756-L61S, 1756-L62S, 1756-L63S, 1756-L63XT, 1756-L72, 1756-L73, 1756-L74, 1756-L75	With the use of the CIP Sync time synchronization feature, if one of the EtherNet/IP modules listed below is used in the chassis with the controller, then we recommend that you update the firmware of **all** your EtherNet/IP modules in the chassis to major revision 3.*x* or later. EtherNet/IP modules that this restriction applies to include the following: • 1756-EN2T • 1756-EN2TF • 1756-EN2TR • 1756-EN3TR If the EtherNet/IP modules in the chassis with the controller are not all at major revision 3.*x*, then the system may change the time master and/or reductions in synchronization accuracy and system performance may result.
	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 Firmware Revisions 19.13 and 19.11

Cat. No.	Description
1756-L72, 1756-L73, 1756-L74, 1756-L75	The Totalizer (TOT) instruction may not function properly when a converted project is downloaded to a ControlLogix controller, catalog numbers **1756-L7*x*, revision 19**. This anomaly may occur under these conditions: • An RSLogix 5000 project is running on a ControlLogix controller, catalog numbers **1756-L7*x*, revision 18**, 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 ControlLogix controller, catalog numbers **1756-L7*x*, revision 19**, and is downloaded to a new controller of the same catalog number. • The project transitions to Run mode. 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. 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. Lgx00114767, Lgx00116677, Lgx00114731
1756-L61, 1756-L62, 1756-L63, 1756-L64, 1756-L65, 1756-L63XT	To use the Absolute Position Recovery feature available with RSLogix 5000 software, use a series B ControlLogix controller. Series A ControlLogix controllers do not support the use of the Absolute Position Recovery feature. Lgx00096863
1756-L61S, 1756-L62S, 1756-L63S	With earlier revisions of GuardLogix firmware, we recommended that you set the GuardLogix controller as the Coordinated System Time (CST) master to avoid nonrecoverable safety faults. If you are using the CIP Sync enhancement with RSLogix 5000 software and a GuardLogix controller, we recommend that you configure the GuardLogix controller so that it becomes the CST master. To do so, select Enable Time Synchronization on the Date/Time tab of the Controller Properties dialog box. If you do not configure the GuardLogix controller to become the CST master and your project uses safety tags that are produced, I/O faults can occur when the project is downloaded. For more information about enabling the GuardLogix controller to become the CST master, see the GuardLogix Controllers User Manual, publication 1756-UM020. Lgx00104194

Install the Controller Revision

To download the latest ControlLogix or GuardLogix controllers firmware revision, go to http://www.rockwellautomation.com/support/downloads and select your desired revision. Then, use the ControlFLASH utility to upgrade your controller.

Alternatively, if you have installed RSLogix 5000 software, version 16, and related firmware, you may not need to complete the tasks described. The AutoFlash feature of RSLogix 5000 software detects if your controller firmware needs to be upgraded upon a program download to the controller. If a firmware upgrade is necessary, AutoFlash will initiate an upgrade.

After you have completed your firmware upgrade, complete these steps to verify that the upgrade was successful.

1. Cycle power to the controller.
2. Go online with the controller and view controller properties.
3. Verify that the firmware revision listed matches the firmware to which you intended to upgrade.
4. If the controller's firmware is not correct, initiate another firmware upgrade.

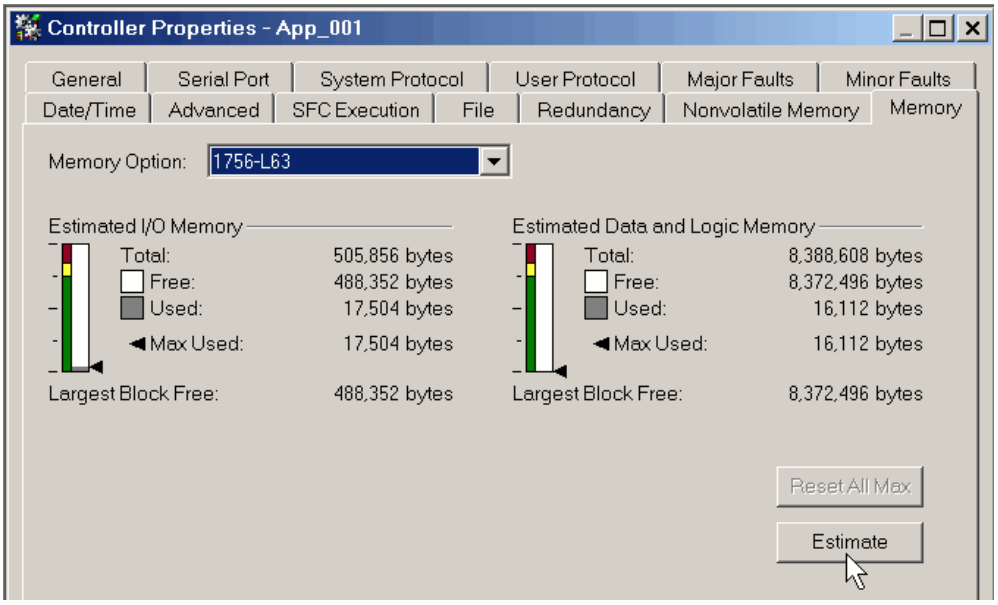
For more information about errors when completing a ControlFLASH upgrade, see the ControlFLASH Firmware Upgrade Kit Quick Start, publication 1756-QS105.

Additional Memory Requirements

This firmware revision may require more memory than previous revisions (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 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 revision 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 software, use this table to estimate the additional memory that your project may require.

If you are upgrading your system through multiple firmware revisions, add all components your application uses for each of the revisions you upgrade through. For example, if you are upgrading from revision 15.*x* to revision 18.*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 9 - 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		✓
	Equipment phase	+ 20 bytes		✓
	Add-On Instruction	+ 12 bytes		✓
	Each tag In addition, if you use a tag of the types listed below, increase the memory as indicated for each instance:	+ 4 bytes		✓
	Produced tag	+ 36 bytes + (24 bytes * number of consumers)	✓	
	Consumed tag	+ 24 bytes	✓	
	Data access control	+ 4 bytes per symbol		✓
	Tag that uses ALARM_ANALOG data type	- 20 bytes		✓
	Tag that uses ALARM_DIGITAL data type	+ 28 bytes		✓
	Tag that uses MOTION_GROUP data type	+ 76		✓
	Tag that uses AXIS_SERVO_DRIVE or AXIS_GENERIC_DRIVE data type	+ 786 bytes		✓
	Tag that uses AXIS data type other than AXIS_SERVO_DRIVE or AXIS_GENERIC_DRIVE	+ 818 bytes		✓
	Tag that uses COORDINATE_SYSTEM data type with no transform dimensions	+ 40 bytes		✓
	Tag that uses COORDINATE_SYSTEM data type with transform dimensions	+ 100 bytes		✓
	Module input connection	+ 20 bytes		✓
	Module output connection	+ 24 bytes		✓
	Safety controller	- 8 bytes		✓
	Safety partner	- 8 bytes		✓

Table 9 - 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-L6*x*, 1756-L6*x*S, 1756-L63XT	+ 16728 bytes		✓
	1768-L4*x*, 1768-L4*x*S	+ 14448 bytes		✓
	1769-L2*x*	+ 35084 bytes	✓	
	1769-L31	+ 14740 bytes	✓	
	1769-L32C, 1756-L35CR	+ 35400 bytes	✓	
	1769-L32E, 1756-L35E	+ 35036 bytes	✓	
	1789-L10, 1789-L30, 1789-L60	+ 4992	✓	
16.*x* to 17.*x*	Task	+ 4 bytes		✓
	Program	+ 4 bytes		✓
	Equipment phase	+ 8 bytes		✓
	LD routine	+ 12 bytes		✓
	FBD routine	- 8 bytes		✓
	SFC routine	+ 28 bytes		✓
	ST routine	+ 4 bytes		✓
	Add-On Instruction	- 12 bytes		✓
	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)]	✓	
	Consumed tag	+ 8 bytes	✓	
	Tag that uses MESSAGE data type	+ 4 bytes		✓
	Tag that uses ALARM_ANALOG data type	- 64 bytes		✓
	Tag that uses ALARM_DIGITAL data type	- 28 bytes		✓
	Tag that uses AXIS_SERVO_DRIVE or AXIS_GENERIC_DRIVE data type	- 34 bytes (2 bytes x number of output cam execution targets)		✓
	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)		✓
	Tag that uses COORDINATE_SYSTEM data type of 2 dimensions with 2 transform dimensions	+ 20 bytes		✓
	Tag that uses COORDINATE_SYSTEM data type of 3 dimensions with 3 transform dimensions	+ 108 bytes		✓

Table 9 - 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		✓
	Tag that uses ALARM_DIGITAL data type (with no associated tag references)	+ 4 bytes		✓
	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		✓
	Tag that uses the COORDINATE_SYSTEM data type	+ 132 bytes		✓
14.*x* to 15.*x*	Input module	+ 4 bytes	✓	
	If you use a tag of the types listed below, increase the memory as indicated for each instance:			
	Produced tag	+ 12 bytes	✓	
	Consumed tag	+ 4 bytes	✓	
	Tag that uses COORDINATE_SYSTEM data type	+ 748 bytes		✓
	Tag the uses any AXIS data type	+ 800 bytes		✓
	Task	+ 20 bytes		✓
	Program or equipment phase	+ 24 bytes		✓
	Routine	+ 4 bytes		✓
	Serial port	+ 1120 bytes		✓
	Project	+ 4012 bytes		✓

Table 9 - 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		✓
	Tag that uses any AXIS data type	+ 4 bytes		✓
12.*x* to 13.*x*	Program	+ 12 bytes		✓
	Task	+ 4 bytes		✓
	User-defined data type	+ 4 bytes		✓
	I/O module	+ 16 bytes	✓ (8 bytes)	✓ (8 bytes)
	If you use a tag of the types listed below, increase the memory as indicated for each instance:			
	Produced tag	+ 8 bytes	✓	
	Consumed tag	+ 8 bytes	✓	
11.*x* to 12.*x*	I/O module with a comm format = Rack Optimization	+ 90 bytes		✓
	I/O module with a comm format = something other than Rack Optimization (such as a 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		✓
10.*x* to 11.*x*	User-defined data type • Number of user-defined data types in the controller organizer > Data Types folder > User-Defined folder • **Not** the use of that data type in tags	+ 128 bytes		✓
	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: • 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		✓
9.*x* to 10.*x*	Program	+ 12 bytes		✓
	Routine	+ 16 bytes		✓

Table 9 - 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**
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		✓
7.*x* to 8.*x*	Project			+ 1050 bytes	✓	
	Tag			+ 0.55 bytes		✓
	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	✓	
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		✓
	Alias tag			+ 16 bytes		✓
	Produced tag	DINT	4	+ 12 bytes	✓	
		REAL	4	+ 12 bytes	✓	
	Consumed tag	DINT	4	+ 12 bytes		
		REAL	4	+ 12 bytes		
	Routine			+ 68 bytes		✓
5.*x* to 6.*x*	Routine			+ 116 bytes		✓

Additional Resources

These documents contain additional information about products from Rockwell Automation.

Resource	Description
Logix5000 Controllers Common Procedures Reference Manual, publication 1756-PM001	Contains information specific to procedures related to programming your controller.
ControlLogix Controllers, Revision 17 Release Notes, publication 1756-RN017	Describes anomalies and enhancements related to controller revision 17.
ControlLogix Controllers (1756-L6x controllers), Revision 18 Release Notes, publication 1756-RN018	Describes anomalies and enhancements related to controller revision 18.
ControlLogix Controllers (1756-L7x controllers), Revision 18 Release Notes, publication 1756-RN677	Describes anomalies and enhancements related to controller revision 18.
ControlLogix Systems User Manual, publication 1756-UM001	Provides information necessary to program, operate, and troubleshoot you ControlLogix application.
GuardLogix Controllers Systems User Manual, publication 1756-UM020	Provides information necessary to program, operate, and troubleshoot you GuardLogix application.
GuardLogix Controller Systems Safety Reference Manual, publication 1756-RM093	Provides information specific to the use of GuardLogix controllers and safety program elements.
Logix5000 Controllers Execution Time and Memory Use Reference Manual, publication 1756-RM087	Provides calculations of execution times and memory use for Logix5000 controllers.
ControlFLASH Firmware Upgrade Kit Quick Start, publication 1756-QS105	Contains informations about upgrading firmware and related error messages.

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

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

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