GuardLogix® Integrated Safety Systems

GuardLogix Integrated Safety System Overview

A GuardLogix® controller is a full-function Logix processor that also provides safety control. The GuardLogix system is a dual processor solution that uses a primary controller and a safety partner to achieve SIL 3, PLe. A major benefit of this system is that it is a single project, with safety and standard control together. The GuardLogix system is a 1oo2 safety architecture that provides unmatched safety and ease of use.

Just like other Logix processors during development, safety and standard have the same rules. Online editing, forcing, even multiple users are all allowed. Once the project is tested and ready for final validation, you set the Safety Task to a SIL 3 integrity level, which is then enforced by the GuardLogix controller. When safety memory is locked and protected, the safety logic cannot be modified. On the standard side of the GuardLogix controller, all functions operate like a regular Logix controller, motion, drive, sequential, even process. Thus, online editing, forcing, and other activities are all allowed, while safety is securely isolated.

With this level of integration, safety memory can be read by standard logic and external devices, such as HMIs or other controllers, eliminating the need to condition safety memory for use elsewhere. The result is easy, system-wide integration and the ability to display safety status on displays or marquees. Use Guard I/O modules for field device connectivity on Ethernet or DeviceNet networks. For safety interlocking between GuardLogix controllers, use Ethernet or ControlNet networks. Multiple GuardLogix controllers can share safety data for zone-to-zone interlocking, or a single GuardLogix controller can use remote distributed safety I/O between different cells/areas.

Environmentals and Certifications

GuardLogix Controllers Environmental Specifications

	1756 GuardLogix Controllers	1768 Compact GuardLogix Controllers∗
Operating temperature	0…60 °C (32…140 °F)	0…60 °C (32…140 °F)
Storage temperature	-40…85 °C (-40…185 °F)	-40…85 °C (-40…185 °F)
Relative humidity	5…95% noncondensing	5…95% noncondensing
Vibration	2 g at 10…500 Hz	5 g at 10…500 Hz
Operating shock	30 g	30 g
Nonoperating shock	50 g	50 g

∗ 1768 Compact GuardLogix controller specification and certification listings are preliminary.

GuardLogix Controllers Certifications

Certifications: UL, c-UL-us, CE, CSA, C-Tick, FM, ATEX, certified by TÜV for Functional Safety.

When product is marked. See the Product Certification link at www.ab.com/certification/ce to Declarations of Conformity, Certificates, and other certification details. For safety and SIL certification details, see www.rockwellautomation.com/products/certification/safety/index.html.

GuardLogix Controllers

Cat. No.	Description	User Memory		Module Expansion Capacity‡
		Standard Tasks and Components	Safety Task and Components	
1756-L61S	GuardLogix safety controller	2 MB	1 MB	Not applicable
1756-L62S		4 MB	1 MB	
1756-L63S		8 MB	3.75 MB	
1756-LSP	GuardLogix safety partner∗	—	—	
1768-L43S	Compact GuardLogix safety controller	2 MB	0.5 MB	1768 Modules: 2 1769 Modules: 16
1768-L45S		3 MB	1 MB	1768 Modules: 4 1769 Modules: 30

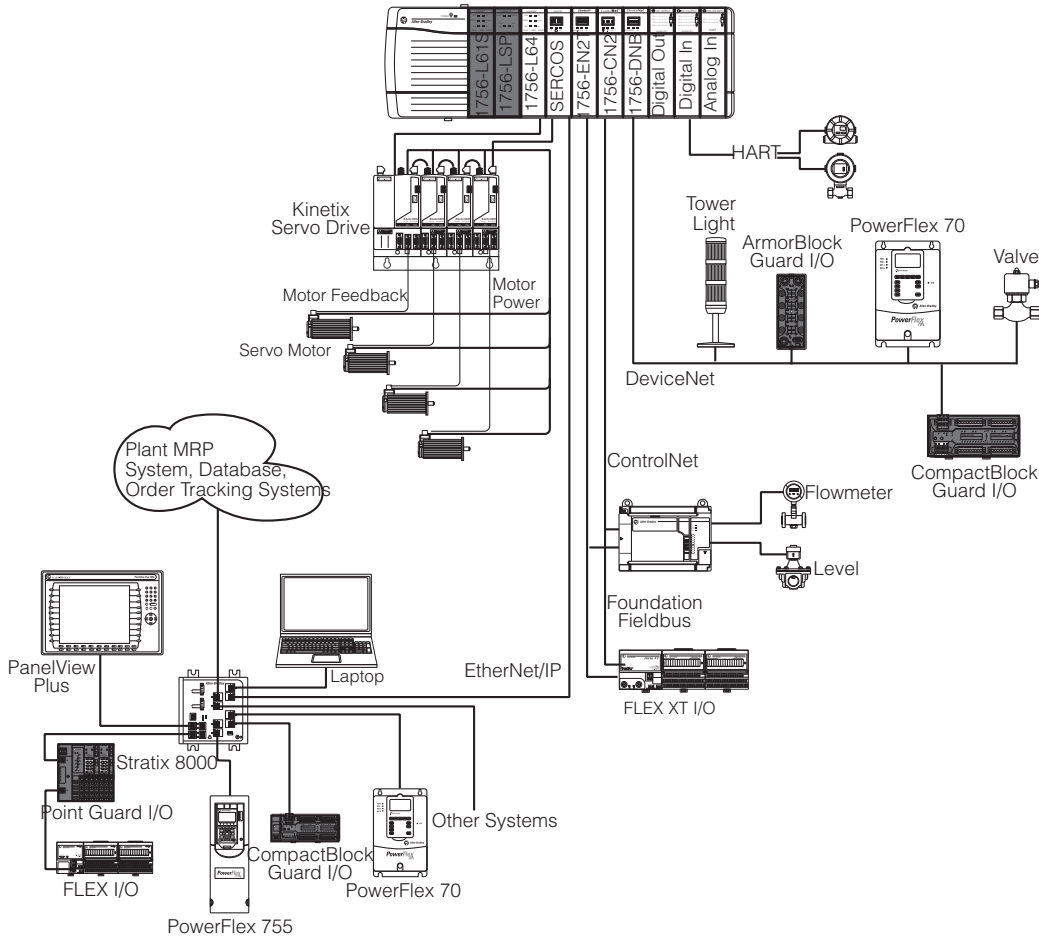∗ A safety partner is required for each 1756 GuardLogix controller.
‡ You can install any combination of motion and network modules in a 1768 system. A maximum of two network modules may be installed in a 1768 system.
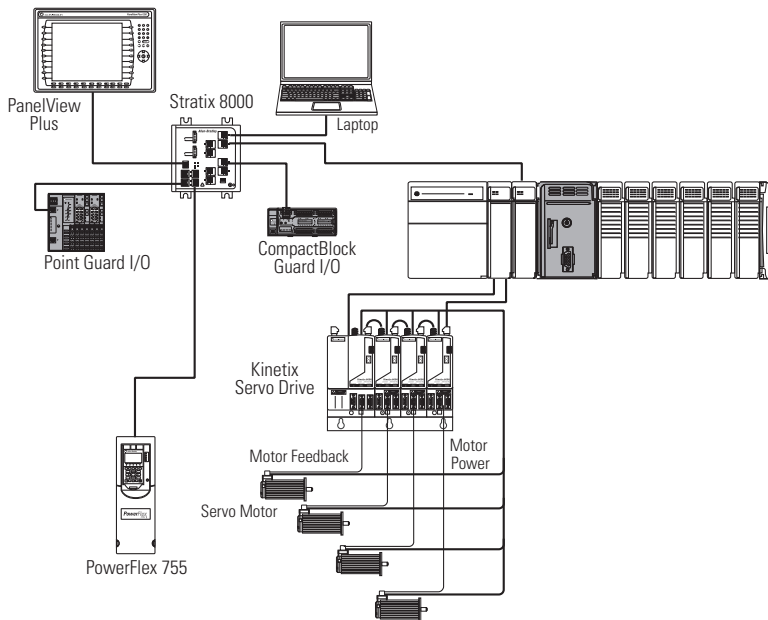
Features

In addition to the standard features of a Logix controller, GuardLogix controllers have these safety-related features.

Feature	1756-L61S, 1756-L62S, 1756-L63S, 1756-LSP	1768-L43S, 1768-L45S	
Communication options	Standard and safety • EtherNet/IP • ControlNet • DeviceNet	Standard • EtherNet/IP • ControlNet • DeviceNet	Safety • EtherNet/IP • ControlNet
Network connections, per network module	• 256 EtherNet/IP; 128 TCP (1756-EN2x) • 128 EtherNet/IP; 64 TCP (1756-ENBT) • 100 ControlNet (1756-CN2/A) • 40 ControlNet (1756-CNB)	• 128 EtherNet/IP; 64 TCP (1768-ENBT) • 48 ControlNet (1768-CNB)	
Controller redundancy	Not supported		
Programming languages	Standard control—all languages Safety control—relay ladder		

Logic

GuardLogix® Integrated Safety Systems
Overview/Controllers

Example Configuration—1756 GuardLogix System

Example Configuration—1768 Compact GuardLogix System

5-Programmable
Safety Solutions

5-134

Visit our website: www.ab.com/catalogs

Publication S117-CA001A-EN-P

Allen-Bradley

GuardLogix® Integrated Safety Systems

Standard Components in a GuardLogix System

Virtually all standard components are approved for use in GuardLogix safety systems. For specific series or version supported, see www.rockwellautomation.com/products/certification/safety/index.html.

For control that is not SIL 3 related, other 1756 series I/O modules can be used with 1756 GuardLogix controllers and 1768 or 1769 I/O modules can be used with 1768 Compact GuardLogix controllers. These modules must be certified to the Low Voltage and EMC Directives. Refer to www.ab.com/certification/ce to find the certificate for the Programmable Control – ControlLogix or CompactLogix Product Families.

Accessories

Replacement Batteries

	1756-BA2
Description	Lithium battery (0.59 g)
GuardLogix controllers	1756-L61S, 1756-L62S, 1756-L63S

Industrial CompactFlash Cards

CompactFlash cards offer nonvolatile memory (flash) to permanently store a user program and tag data on a controller. You install the 1784 CompactFlash card in a socket on the controller. You can manually trigger the controller to save to or load from nonvolatile memory or configure the controller to load from nonvolatile memory on power up.

1756 and 1768 GuardLogix controllers support user program storage or retrieval by using a CompactFlash card with version 18 or later of RSLogix 5000 software.

|	1784-CF64	1784-CF128
Memory	64 MB	128 MB
Weight, approx.	14.2 g (0.5 oz)	

Software

GuardLogix controllers use RSLogix™ 5000 programming software, the standard development environment for all Allen-Bradley Logix controllers. RSLogix 5000 software manages safety, so you don't have to manually manage the separation of standard and safety memory, or worry about partitioning logic to isolate safety.

FactoryTalk Suite from Rockwell Software extends the Rockwell Automation Integrated Architecture™ by providing an information tier of software applications and services for production and performance management. Tight integration with the Rockwell Automation Logix control platform, as well as connectivity to third-party and legacy systems can help deliver a seamless flow of high-fidelity data across your enterprise.

Safety-certified Instructions in RSLogix 5000 Software

All instructions available for use within the safety task are certified safety instructions. Choose from standard relay ladder safety instructions and safety application instructions, including:

- 49 safety-certified instructions
  - Subset of standard ladder logic instruction set
- Safety-certified application instructions
  - Dual channel suite - 6 instructions
  - Metalforming suite - 10 instructions
  - Muting suite - 3 instructions
  - Safety mat
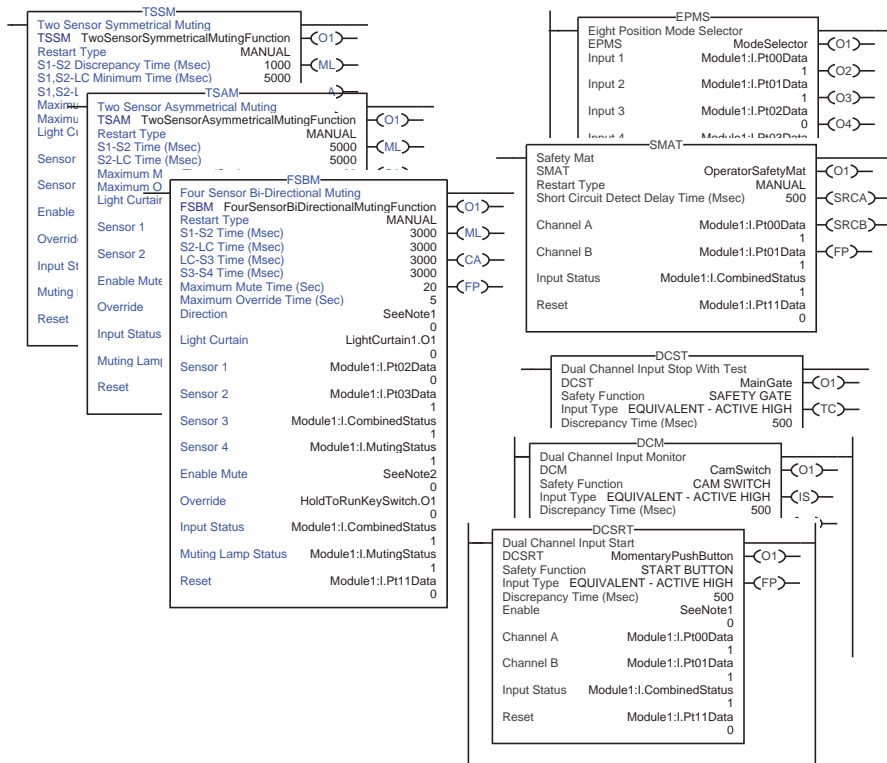
Safety application instructions provide unmatched ease of use for complex safety functions like muting, safety gate control, metalforming, and more.

Allen-Bradley