Allen-Bradley

1756 ControlLogix Controllers

ControlLogix Controller Catalog Numbers
1756-L61, 1756-L62, 1756-L63, 1756-L63XT, 1756-L64, 1756-L65, 1756-L71, 1756-L72, 1756-L73, 1756-L73XT, 1756-L74, 1756-L75

GuardLogix Controller Catalog Numbers 1756-L61S, 1756-L62S, 1756-L63S, 1756-LSP, 1756-L71S, 1756-L72S, 1756-L73S, 1756-L7SP, 1756-L73SXT, 1756-L7SPXT

Armor GuardLogix Catalog Number 1756-L72EROMS

ControlLogix Redundancy Catalog Numbers 1756-RM, 1756-RMXT, 1756-RM2, 1756-RM2XT

1756 GuardLogix Controllers

A GuardLogix® controller is a ControlLogix controller that also provides safety control. The GuardLogix system is a dual controller solution—you must use a 1756-L6*x*S/1756-L7*x*S primary controller and a 1756-LSP/1756-L7SP safety partner to achieve up to SIL CL 3/PLe/Cat. 4. A major benefit of this system is that it's still a single project, safety and standard together. The safety partner controller is a part of the system, is automatically configured, and requires no user setup.

During development, safety and standard have the same rules; multiple programmers, online editing, and forcing 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 can't be modified and all safety functions operate with SIL 3 CL integrity. On the standard side of the GuardLogix controller, all functions operate like a regular Logix controller. Thus, online editing, forcing, and other activities are all allowed.

With this level of integration, safety memory can be read by standard logic and external devices, like 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, and 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.

In addition to the standard features of a ControlLogix controller, the GuardLogix controller has these safety-related features.

Table 14 - Features - GuardLogix Controllers

Feature	1756-L61S, 1756-L62S, 1756-L63S, 1756-L71S, 1756-L72S, 1756-L73S, 1756-L73SXT
Safety communication options	Standard and safety • EtherNet/IP • ControlNet • DeviceNet
Network connections, per network module	• 100 ControlNet (1756-CN2/A) • 40 ControlNet (1756-CNB/D, 1756-CNB/E) • 128 ControlNet (1756-CN2/B) • 256 EtherNet/IP; 128 TCP (1756-EN2*x*) • 128 EtherNet/IP; 64 TCP (1756-ENBT)
Controller redundancy	Not supported
Programming languages	Relay ladder with safety application instructions

Primary Controller	Safety Partner
1756-L61S, 1756-L62S, 1756-L63S	1756-LSP
1756-L71S, 1756-L72S, 1756-L73S	1756-L7SP
1756-L73SXT	1756-L7SPXT

Table 16 - Environmental Specifications - 1756-L7*xS* GuardLogix Controllers

Attribute	1756-L71S, 1756-L72S, 1756-L73S, 1756-L7SP
Temperature, operating IEC 60068-2-1 (Test Ad, Operating Cold), IEC 60068-2-2 (Test Bd, Operating Dry Heat), IEC 60068-2-14 (Test Nb, Operating Thermal Shock)	0…60 °C (32…140 °F)
Temperature, nonoperating IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold), IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat), IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock)	-40…85 °C (-40…185 °F)
Relative humidity IEC 60068-2-30 (Test Db, Unpackaged Damp Heat)	5…95% noncondensing
Temperature, surrounding air, max	60 °C (140 °F)
Vibration IEC 60068-2-6 (Test Fc, Operating)	2 g @ 10…500 Hz
Shock, operating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	30 g
Shock, nonoperating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	50 g (45 g with SD card installed)
Emissions CISPR 11 IEC 61000-6-4	Class A
ESD immunity IEC 61000-4-2	6 kV contact discharges 8 kV air discharges
Radiated RF immunity IEC 61000-4-3	10V/m with 1 kHz sine-wave 80% AM from 80…2000 MHz 10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz 10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz 3V/m with 1 kHz sine-wave 80% AM from 2000…2700 MHz

Table 17 - Certifications - 1756-L7*xS* GuardLogix Controllers

Certification(1)	1756-L71S, 1756-L72S, 1756-L73S, 1756-L7SP
c-UL-us	UL Listed Industrial Control Equipment, certified for US and Canada. See UL File E65584. UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for U.S. and Canada. See UL File E194810.
CE	European Union 2004/108/EC EMC Directive, compliant with: • EN 61000-6-4; Industrial Emissions • EN 61326-1; Meas./Control/Lab., Industrial Requirements • EN 61000-6-2; Industrial Immunity • EN 61131-2; Programmable Controllers (Clause 8, Zone A & B) European Union 2006/42/EC MD, compliant with: • EN 60204-1; Electrical equipment of machines • EN ISO 13849-1; Safety-related parts of control systems • EN 62061; Functional safety of safety-related control systems
C-Tick	Australian Radio communications Act, compliant with: AS/NZS CISPR 11; Industrial Emissions
Ex	European Union 94/9/EC ATEX Directive, compliant with: • EN 60079-15; Potentially Explosive Atmospheres, Protection 'n' • EN 60079-0; General Requirements • II 3 G Ex nA IIC T4 X
KC	Korean Registration of Broadcasting and Communications Equipment, compliant with: Article 58-2 of Radio Waves Act, Clause 3
TÜV certified for functional safety(2)	Capable of SIL CL 3 according to IEC 61508, capable of Category 4 according to EN954-1, and capable of PL(e) according to ISO 13849-1 when used as described in the GuardLogix Controller Systems Safety Reference Manual, publication 1756-RM093.

(1) When marked. See the Product Certification link at http://www.ab.com for Declarations of Conformity, Certificates, and other certification details.

(2) When used with specified firmware revisions.

1756 GuardLogix-XT Controllers

The GuardLogix-XT controllers function the same way as the traditional GuardLogix controllers. The GuardLogix-XT controllers are conformally coated for extended protection in harsh, corrosive environments. The GuardLogix-XT system can withstand temperature ranges from -25...70 °C (-13...158 °F). You must use a 1756-L73SXT primary controller with a 1756-L7SPXT safety partner.

Equipment designated as LXT is certified for use only within a surrounding air temperature of -25...60 °C (-13...140 °F) even when used with other XT equipment.

Attribute	1756-L73SXT	1756-L7SPXT
User memory	8 MB	—
Safety memory	4 MB	Same as corresponding primary controller
I/O memory	0.98 MB	
Digital I/O, max	128,000	
Analog I/O, max	4,000	
Total I/O, max	128,000	
Energy storage modules	• 1756-ESMCAPXT capacitor energy storage module extreme temperature (removable, ships installed with every controller) • 1756-ESMNSEXT capacitor energy storage module extreme temperature (removable, no residual WallClockTime power backup) • 1756-ESMNRMXT capacitor energy storage module extreme temperature (nonremovable, secures controller by preventing USB connection an d SD card use)	• 1756-SPESMNSEXT capacitor energy storage module for the safety partner extreme temperature (removable, no residual WallClockTime power backup) • 1756-SPESMNRMXT capacitor energy storage module for the safety partner extreme temperature (nonremovable, secures controller by preventing USB connection an d SD card use)
Current draw @ 1.2V DC	5 mA	
Current draw @ 5.1V DC	800 mA	
Power dissipation	2.5 W	
Thermal dissipation	8.5 BTU/hr	
Isolation voltage	30V (continuous), Basic Insulation, USB port to backplane Type tested at 500V AC for 60 s	
Weight, approx	0.25 kg (0.55lb)	
Slot width	2 (need 2 modules; each uses a slot)	
Module location	Chassis-based, any slot (the safety partner must be in a slot to the right of the primary)	
Chassis	1756-A4LXT, 1756-A5XT, 1756-A7LXT, 1756-A7XT	
Power supply	1756-PAXT, 1756-PBXT	
Wire category(1)	3 - on USB ports	
North American temperature code	T4A	
IEC temperature code	T4	
Enclosure type rating	None (open-style)	

(1) Use this conductor category information for planning conductor routing as described in the system level installation manual. See the Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1.

Table 21 - Environmental Specifications - 1756 GuardLogix-XT Controllers

Attribute	1756-L73SXT, 1756-L7SPXT
Temperature, operating IEC 60068-2-1 (Test Ad, Operating Cold), IEC 60068-2-2 (Test Bd, Operating Dry Heat), IEC 60068-2-14 (Test Nb, Operating Thermal Shock)	-25…70 °C (-13…158 °F) When using a 1756-A7LXT chassis, surrounding air temperature range is -25…60 °C (-13…140 °F) even when using an XT controller
Temperature, storage IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold), IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat), IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock)	-40…85 °C (-40…185 °F)
Temperature, surrounding air, max	70 °C (158 °F)
Relative humidity IEC 60068-2-30 (Test Db, Unpackaged Damp Heat)	5…95% noncondensing
Vibration IEC 60068-2-6 (Test Fc, Operating)	2 g @ 10…500 Hz
Shock, operating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	30 g
Shock, nonoperating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	50 g (45 g with SD card installed)
Emissions CISPR 11 IEC 61000-6-4	Class A
ESD immunity IEC 61000-4-2	6 kV contact discharges 8 kV air discharges
Radiated RF immunity IEC 61000-4-3	10V/m with 1 kHz sine-wave 80% AM from 80…2000 MHz 10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz 10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz 3V/m with 1 kHz sine-wave 80% AM from 2000…2700 MHz

Table 22 - Certifications - 1756 GuardLogix-XT Controllers

Certification[1]	1756-L73SXT, 1756-L7SPXT
c-UL-us	UL Listed Industrial Control Equipment, certified for US and Canada. See UL File E65584. UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for U.S. and Canada. See UL File E194810.
CE	European Union 2004/108/EC EMC Directive, compliant with: • EN 61000-6-4; Industrial Emissions • EN 61326-1; Meas./Control/Lab., Industrial Requirements • EN 61000-6-2; Industrial Immunity • EN 61131-2; Programmable Controllers (Clause 8, Zone A & B) European Union 2006/42/EC MD, compliant with: • EN 60204-1; Electrical equipment of machines • EN ISO 13849-1; Safety-related parts of control systems • EN 62061; Functional safety of safety-related control systems
C-Tick	Australian Radio communications Act, compliant with: AS/NZS CISPR 11; Industrial Emissions
Ex	European Union 94/9/EC ATEX Directive, compliant with: • EN 60079-15; Potentially Explosive Atmospheres, Protection 'n' • EN 60079-0; General Requirements • II 3 G Ex nA IIC T4 X
KC	Korean Registration of Broadcasting and Communications Equipment, compliant with: Article 58-2 of Radio Waves Act, Clause 3
TÜV certified for functional safety[2]	Capable of SIL CL 3 according to IEC 61508, capable of Category 4 according to EN954-1, and capable of PL(e) according to ISO 13849-1 when used as described in the GuardLogix Controller Systems Safety Reference Manual, publication 1756-RM093.

(1) When marked. See the Product Certification link at http://www.ab.com for Declarations of Conformity, Certificates, and other certification details.

(2) When used with specified firmware revision.

1756 Energy Storage Modules

Instead of a battery, the 1756-L7*x* and 1756-L7*x*S controllers are shipped with a 1756-ESMCAP energy storage module (ESM) already installed.

Table 36 - Technical Specifications - 1756 Energy Storage Modules

Attribute	1756-ESMCAP	1756-ESMNSE	1756-ESMNRM
Description	Capacitor energy storage module (removable, ships installed with every controller).	Capacitor energy storage module (removable, no residual WallClockTime power backup). Use this ESM if your application requires that the installed ESM deplete its residual energy to 40 µJ or less before transporting it into or out of your application. Additionally, you can use this ESM with a 1756-L73 (8 MB) or smaller memory-sized controller only. Wait at least 20 minutes for the residual stored energy to decrease to 40 µJ or less before you remove the ESM.	Capacitor energy storage module (nonremovable, secures controller by preventing USB connection an d SD card use). If the SD card is installed prior to insertion of the 1756-ESMNRM module, the SD card remains functional, but not removable. This ESM provides your application an enhanced degree of security.
Current draw @ 5.1V DC	330 mA	300 mA	330 mA
North American temperature code	T4A		
IEC temperature code	T4		
Enclosure type rating	None (open-style)		

Table 37 - Environmental Specifications - 1756 Energy Storage Modules

Attribute	1756-ESMCAP, 1756-ESMNSE, 1756-ESMNRM
Temperature, operating IEC 60068-2-1 (Test Ad, Operating Cold), IEC 60068-2-2 (Test Bd, Operating Dry Heat), IEC 60068-2-14 (Test Nb, Operating Thermal Shock)	0…60 °C (32…140 °F)
Temperature, nonoperating IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold), IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat), IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock)	-40…85 °C (-40…185 °F)
Temperature, surrounding air, max	60 °C (140 °F)
Relative humidity IEC 60068-2-30 (Test Db, Unpackaged Damp Heat)	5…95% noncondensing
Vibration IEC 60068-2-6 (Test Fc, Operating)	2 g @ 10 …500 Hz
Shock, operating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	30 g
Shock, nonoperating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	50 g
Emissions CISPR 11	Group 1, Class A
ESD immunity IEC 61000-4-2	6 kV contact discharges 8 kV air discharges

Table 37 - Environmental Specifications - 1756 Energy Storage Modules (continued)

Attribute	1756-ESMCAP, 1756-ESMNSE, 1756-ESMNRM
Radiated RF immunity IEC 61000-4-3	10V/m with 1 kHz sine-wave 80% AM from 80…2000 MHz 10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz 10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz 3V/m with 1 kHz sine-wave 80% AM from 2000…2700 MHz

Table 38 - Certifications - 1756 Energy Storage Modules

Certification[1]	1756-ESMCAP, 1756-ESMNSE, 1756-ESMNRM
c-UL-us	UL Listed Industrial Control Equipment, certified for US and Canada. See UL File E65584. UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for US and Canada. See UL File E194810.
CE	European Union 2004/108/EC EMC Directive, compliant with: • EN 61326-1; Meas./Control/Lab., Industrial Requirements • EN 61000-6-2; Industrial Immunity • EN 61000-6-4; Industrial Emissions • EN 61131-2; Programmable Controllers (Clause 8, Zone A & B)
C-Tick	Australian Radio communications Act, compliant with: AS/NZS CISPR 11; Industrial Emissions
Ex	• European Union 94/9/EC ATEX Directive, compliant with: • EN 60079-15; Potentially Explosive Atmospheres, Protection 'n' • EN 60079-0; General Requirements • II 3 G Ex nA IIC T4 X
KC	Korean Registration of Broadcasting and Communication Equipment, compliant with: Article 58-2 of Radio Waves Act, Clause 3

(1) See the Product Certification link at http://www.ab.com for Declarations of Conformity, Certificates, and other certification details.

Extreme Temperature Energy Storage Modules

The 1756-L7*x*XT and the 1756-L7*x*SXT extreme temperature controllers are shipped with a 1756-ESMCAPXT installed.

Table 39 - Technical Specifications - 1756 Extreme Temperature Energy Storage Modules

Attribute	1756-ESMCAPXT	1756-ESMNSEXT	1756-ESMNRMXT
Description	Capacitor energy storage module extreme temperature (removable, ships installed with every controller).	Capacitor energy storage module extreme temperature (removable, no residual WallClockTime power backup). Use this ESM if your application requires that the installed ESM deplete its residual energy to 40 µJ or less before transporting it into or out of your application. Additionally, you can use this ESM with a 1756-L73 (8 MB) or smaller memory-sized controller only. Wait at least 20 minutes for the residual stored energy to decrease to 40 µJ or less before you remove the ESM.	Capacitor energy storage module extreme temperature (nonremovable, secures controller by preventing USB connection an d SD card use). If the SD card is installed prior to insertion of the 1756-ESMNRM module, the SD card remains functional, but not removable. This ESM provides your application an enhanced degree of security.
Current draw @ 5.1V DC	330 mA	300 mA	330 mA
North American temperature code	T4A		
IEC temperature code	T4		
Enclosure type rating	None (open-style)		

Table 40 - Environmental Specifications - 1756 Extreme Temperature Energy Storage Modules

Attribute	1756-ESMCAPXT	1756-ESMNSEXT	1756-ESMNRMXT
Temperature, operating IEC 60068-2-1 (Test Ad, Operating Cold), IEC 60068-2-2 (Test Bd, Operating Dry Heat), IEC 60068-2-14 (Test Nb, Operating Thermal Shock)	-25…70 °C (-13…158 °F)		
Temperature, nonoperating IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold), IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat), IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock)	-40…85 °C (-40…185 °F)		
Temperature, surrounding air, max	70 °C (158 °F)		
Relative humidity IEC 60068-2-30 (Test Db, Unpackaged Damp Heat)	5…95% noncondensing		
Vibration IEC 60068-2-6 (Test Fc, Operating)	2 g @ 10 …500 Hz		
Shock, operating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	30 g		
Shock, nonoperating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	50 g		
Emissions CISPR 11	Group 1, Class A		
ESD immunity IEC 61000-4-2	6 kV contact discharges 8 kV air discharges		
Radiated RF immunity IEC 61000-4-3	10V/m with 1 kHz sine-wave 80% AM from 80…2000 MHz 10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz 10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz 3V/m with 1 kHz sine-wave 80% AM from 2000…2700 MHz		

Table 41 - Certifications - 1756 Extreme Temperature Energy Storage Modules

Certification[1]	1756-ESMCAPXT, 1756-ESMNSEXT, 1756-ESMNRMXT
c-UL-us	UL Listed Industrial Control Equipment, certified for US and Canada. See UL File E65584. UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for US and Canada. See UL File E194810.
CE	European Union 2004/108/EC EMC Directive, compliant with: • EN 61326-1; Meas./Control/Lab., Industrial Requirements • EN 61000-6-2; Industrial Immunity • EN 61000-6-4; Industrial Emissions • EN 61131-2; Programmable Controllers (Clause 8, Zone A & B)
C-Tick	Australian Radio communications Act, compliant with: AS/NZS CISPR 11; Industrial Emissions
Ex	European Union 94/9/EC ATEX Directive, compliant with: • EN 60079-15; Potentially Explosive Atmospheres, Protection 'n' • EN 60079-0; General Requirements • II 3 G Ex nA IIC T4 X
KC	Korean Certification of Broadcasting and Communication Equipment, compliant with: Article 58-2 of Radio Waves Act, Clause 3

(1) See the Product Certification link at http://www.ab.com for Declarations of Conformity, Certificates, and other certification details.

GuardLogix Safety Partner Energy Storage Modules

The 1756-L7SP safety partner for a GuardLogix system has these energy storage modules available.

Table 42 - Technical Specifications - 1756-L7SP Safety Partner Energy Storage Modules

Attribute	1756-SPESMNSE	1756-SPESMNRM
Description	Capacitor energy storage module for the safety partner (removable, no residual WallClockTime power backup). Use this ESM if your application requires that the installed ESM deplete its residual energy to 40 µJ or less before transporting it into or out of your application. Additionally, you can use this ESM with a 1756-L73 (8 MB) or smaller memory-sized controller only. Wait at least 20 minutes for the residual stored energy to decrease to 40 µJ or less before you remove the ESM.	Capacitor energy storage module for the safety partner (nonremovable, secures controller by preventing USB connection and SD card use). If the SD card is installed prior to insertion of the 1756-ESMNRM module, the SD card remains functional, but not removable. This ESM provides your application an enhanced degree of security.
Current draw @ 5.1V DC	300 mA	330 mA
North American temperature code	T4A	
IEC temperature code	T4	
Enclosure type rating	None (open-style)	

Table 43 - Environmental Specifications - 1756-L7SP Safety Partner Energy Storage Modules

Attribute	1756-SPESMNSE	1756-SPESMNRM
Temperature, operating IEC 60068-2-1 (Test Ad, Operating Cold), IEC 60068-2-2 (Test Bd, Operating Dry Heat), IEC 60068-2-14 (Test Nb, Operating Thermal Shock)	0…60 °C (32…140 °F)	
Temperature, nonoperating IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold), IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat), IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock)	-40…85 °C (-40…185 °F)	
Temperature, surrounding air, max	60 °C (140 °F)	
Relative humidity IEC 60068-2-30 (Test Db, Unpackaged Damp Heat)	5…95% noncondensing	
Vibration IEC 60068-2-6 (Test Fc, Operating)	2 g @ 10…500 Hz	
Shock, operating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	30 g	
Shock, nonoperating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	50 g	
Emissions CISPR 11	Group 1, Class A	
ESD immunity IEC 61000-4-2	6 kV contact discharges 8 kV air discharges	
Radiated RF immunity IEC 61000-4-3	10V/m with 1 kHz sine-wave 80% AM from 80…2000 MHz 10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz 10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz 3V/m with 1 kHz sine-wave 80% AM from 2000…2700 MHz	