



1756 ControlLogix Controllers Specifications

ControlLogix Controller Catalog Numbers

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

GuardLogix Controller Catalog Numbers

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

ControlLogix-XT Controller Catalog Number

1756-L63XT

ControlLogix Redundancy Catalog Numbers

1756-RM, 1756-RMXT, 1757-SRM

Memory Card Catalog Numbers

1784-CF64, 1784-CF128, 1784-SD1, 1784-SD2

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Important User Information

Solid state equipment has operational characteristics differing from those of electromechanical equipment. Safety Guidelines for the Application, Installation and Maintenance of Solid State Controls (publication [SGI-1.1](#) available from your local Rockwell Automation sales office or online at <http://www.rockwellautomation.com/literature/>) describes some important differences between solid state equipment and hard-wired electromechanical devices. Because of this difference, and also because of the wide variety of uses for solid state equipment, all persons responsible for applying this equipment must satisfy themselves that each intended application of this equipment is acceptable.

In no event will Rockwell Automation, Inc. be responsible or liable for indirect or consequential damages resulting from the use or application of this equipment.

The examples and diagrams in this manual are included solely for illustrative purposes. Because of the many variables and requirements associated with any particular installation, Rockwell Automation, Inc. cannot assume responsibility or liability for actual use based on the examples and diagrams.

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Throughout this manual, when necessary, we use notes to make you aware of safety considerations.

WARNING



Identifies information about practices or circumstances that can cause an explosion in a hazardous environment, which may lead to personal injury or death, property damage, or economic loss.

IMPORTANT

Identifies information that is critical for successful application and understanding of the product.

ATTENTION



Identifies information about practices or circumstances that can lead to personal injury or death, property damage, or economic loss. Attentions help you identify a hazard, avoid a hazard, and recognize the consequence

SHOCK HAZARD



Labels may be on or inside the equipment, for example, a drive or motor, to alert people that dangerous voltage may be present.

BURN HAZARD



Labels may be on or inside the equipment, for example, a drive or motor, to alert people that surfaces may reach dangerous temperatures.

Rockwell Automation, Rockwell Software, Allen-Bradley, ArmorBlock, ArmorBlock Guard I/O, ArmorBlock MaXum, ArmorPoint, Compact I/O, CompactBlock I/O, CompactBlock Guard I/O, CompactLogix, ControlLogix, ControlLogix-XT, Data Highway Plus, DH+, DriveLogix, FactoryTalk, FLEX Ex, FLEX I/O, FLEX I/O-XT, FlexLogix, Guard I/O, GuardLogix, InView, MicroLogix, On-Machine, PanelView, PanelView e, PanelView Plus, PLC-2, PLC-3, PLC-5, POINT I/O, POINT Guard I/O, PowerFlex, RSLinx, RSLinx Enterprise, RSLinx 5000, SCANport, SLC, SoftLogix, SynchLink, TechConnect are trademarks of Rockwell Automation, Inc.

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1756 ControlLogix Controllers

The ControlLogix controller provides a scalable controller solution that is capable of addressing a large amount of I/O points. The ControlLogix controller can be placed into any slot of a ControlLogix I/O chassis and multiple controllers can be installed in the same chassis.

ControlLogix controllers can monitor and control I/O across the ControlLogix backplane, as well as over network links. To provide communication for a ControlLogix controller, install the appropriate communication interface module into the chassis.

Features - Standard ControlLogix Controllers

| Feature | 1756-L61, 1756-L62, 1756-L63, 1756-L64, 1756-L65 | 1756-L73, 1756-L75 |
|---|---|--------------------|
| Controller tasks | <ul style="list-style-type: none"> • 32 tasks • 100 programs/task • Event tasks: all event triggers | |
| Built-in communication ports | 1 port RS-232 serial | 1 port USB |
| Communication options | <ul style="list-style-type: none"> • EtherNet/IP • ControlNet • DeviceNet • Data Highway Plus • Remote I/O • SynchLink • Third-party process and device networks | |
| Serial port communication | <ul style="list-style-type: none"> • ASCII • DF1 full/half-duplex • DF1 radio modem • DH-485 • Modbus via logic | — |
| Controller connections supported, max | 250 | 500 |
| Network connections, per network module | <ul style="list-style-type: none"> • 100 ControlNet (1756-CN2/A) • 40 ControlNet (1756-CNB) • 256 EtherNet/IP; 128 TCP (1756-EN2x) • 128 EtherNet/IP; 64 TCP (1756-ENBT) | |
| Controller redundancy | Full support | |
| Integrated motion | <ul style="list-style-type: none"> • SERCOS interface • Analog options (encoder input, LDT input, SSI input) | |
| Programming languages | <ul style="list-style-type: none"> • Relay ladder • Structured text • Function block • SFC | |

IMPORTANT

Scan time for a project loaded in a 1756-L64 or 1756-L65 controller may be slower than for the same project loaded in one of the other 1756-L6x controllers. See the Logix5000 Controllers Instruction Execution Time and Memory Use Reference Manual, publication [1756-RM087](#), for instruction execution times.

Technical Specifications - 1756-L6x ControlLogix Controllers

| Attribute | 1756-L61 | 1756-L62 | 1756-L63 | 1756-L64 | 1756-L65 |
|-------------------------------------|---|--|--|--|--|
| User memory | 2 MB | 4 MB | 8 MB | 16 MB | 32 MB |
| I/O memory | 478 KB | | | | |
| Optional nonvolatile memory storage | 64 MB (cat. no. 1784-CF64) 128 MB (cat. no. 1784-CF128) | | | | |
| Digital I/O, max | 128,000 | | | | |
| Analog I/O, max | 4000 | | | | |
| Total I/O, max | 128,000 | | | | |
| Replacement battery | Series A: 1756-BA1, 1756-BATM, 1756-BATA Series B: 1756-BA2 | Series A: 1756-BA1, 1756-BATM, 1756-BATA Series B: 1756-BA2 | Series A: 1756-BA1, 1756-BATM, 1756-BATA Series B: 1756-BA2 | 1756-BA2 | |
| Current draw @ 5V DC | 1200 mA | | | | |
| Current draw @ 24V DC | 14 mA | | | | |
| Power dissipation | 3.5 W | | | | |
| Thermal dissipation | 11.9 BTU/hr | | | | |
| Isolation voltage | 30V (continuous), basic insulation type, RS-232 to system Controllers tested to withstand 707V DC for 60 s | | | | |
| Serial cables | 1756-CP3 or 1747-CP3, right angle connector to controller, straight to serial port, 3 m (9.84 ft) | | | | |
| Weight, approx. | Series A: 0.32 kg Series B: 0.35 kg (Series A: 0.71 lb Series B: 0.78 lb) | Series A: 0.32 kg Series B: 0.35 kg (Series A: 0.71 lb Series B: 0.78 lb) | Series A: 0.32 kg Series B: 0.35 kg (Series A: 0.71 lb Series B: 0.78 lb) | Series A: 0.32 kg Series B: 0.35 kg (Series A: 0.71 lb Series B: 0.78 lb) | Series A: 0.32 kg Series B: 0.35 kg (Series A: 0.71 lb Series B: 0.78 lb) |
| Slot width | 1 | | | | |
| Module location | Chassis-based, any slot | | | | |
| Chassis | 1756-A4, 1756-A7, 1756-A10, 1756-A13, 1756-A17 | | | | |
| Power supply, standard | 1756-PA72/C, 1756-PA75/B, 1756-PB72/C, 1756-PB75/B, 1756-PC75/B, 1756-PH75/B | | | | |
| Power supply, redundant | 1756-PA75R, 1756-PB75R, 1756-PSCA2 | | | | |
| Wire category | 2 - on communication ports ⁽¹⁾ | | | | |
| 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](#).

Environmental Specifications - 1756-L6x ControlLogix Controllers

| Attribute | 1756-L61, 1756-L62, 1756-L63, 1756-L64, 1756-L65 |
|---|---|
| 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, 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) |
| Relative humidity IEC 60068-2-30 (Test Db, Unpackaged Nonoperating 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 1V/m with 1 kHz sine-wave 80% AM from 2000...2700 MHz |
| EFT/B immunity IEC 61000-4-4 | ±4 kV at 5 kHz on signal ports |
| Surge transient immunity IEC 61000-4-5 | ±2 kV line-line (DM) and ±2 kV line-earth (CM) on signal ports |
| Conducted RF immunity IEC 61000-4-6 | 10Vrms with 1 kHz sine-wave 80% AM from 150 kHz...80 MHz |

Certifications - 1756-L6x ControlLogix Controllers

| Certification ⁽¹⁾ | 1756-L61, 1756-L62, 1756-L63, 1756-L64, 1756-L65 |
|------------------------------|---|
| 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. |
| CSA | CSA Certified Process Control Equipment. See CSA File LR54689C. CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations. See CSA File LR69960C. |
| CE | European Union 89/336/EEC EMC Directive, compliant with: <ul style="list-style-type: none"> • EN 50082-2; Industrial Immunity • 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 Radiocommunications 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" (Zone 2) |
| FM | FM Approved Equipment for use in Class I Division 2 Group A,B,C,D Hazardous Locations |

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

For Australian Mining certification, use a 1756-BA1 battery. For guidelines, see your local distributor or sales office.

Technical Specifications - 1756-L7x ControlLogix Controllers

| Attribute | 1756-L73 | 1756-L75 |
|-------------------------------------|--|----------|
| User memory | 8 MB | 32 MB |
| I/O memory | 0.98 MB | |
| Optional nonvolatile memory storage | 1 GB (cat. no. 1784-SD1) 2 GB (cat. no. 1784-SD2) | |
| Digital I/O, max | 128,000 | |
| Analog I/O, max | 4000 | |
| Total I/O, max | 128,000 | |
| Energy storage module | 1756-ESMCAP capacitor-based energy-storage module 1756-ESMNSE energy-storage module without stored energy 1756-ESMNRM energy-storage module that secures the controller by preventing the USB connection and SD card use | |
| Current draw @ 1.2V DC | 5 mA | |
| Current draw @ 5V DC | 800 mA | |
| Power dissipation | 2.5 W | |
| Thermal dissipation | 8.5 BTU/hr | |
| Isolation voltage | 30V (continuous), basic insulation type, USB port-to-system Type tested at 500V AC for 60 s | |
| USB port | USB 2.0, full speed (12 Mbs) | |
| USB cable | Samtec cable, P/N RSP-199350 | |
| Weight, approx. | 0.25 kg (0.55 lb) | |
| Slot width | 1 | |
| Module location | Chassis-based, any slot | |
| Chassis | 1756-A4, 1756-A7, 1756-A10, 1756-A13, 1756-A17 | |
| Power supply, standard | 1756-PA72/C, 1756-PA75/B, 1756-PB72/C, 1756-PB75/B, 1756-PC75/B, 1756-PH75/B | |
| Power supply, redundant | 1756-PA75R, 1756-PB75R, 1756-PSCA2 | |
| Wire category | 3 - on USB port ⁽¹⁾ | |
| North American temperature code | T5 | |
| IEC temperature code | T5 | |
| 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](#).

Environmental Specifications - 1756-L7x ControlLogix Controllers

| Attribute | 1756-L73, 1756-L75 |
|---|----------------------------|
| 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, 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) |

Environmental Specifications - 1756-L7x ControlLogix Controllers

| Attribute | 1756-L73, 1756-L75 |
|--|---|
| Relative humidity IEC 60068-2-30 (Test Db, Unpackaged Nonoperating 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 |

Certifications - 1756-L7x ControlLogix Controllers

| Certification⁽¹⁾ | 1756-L73, 1756-L75 |
|------------------------------------|---|
| 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: <ul style="list-style-type: none"> • 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 Radiocommunications Act, compliant with: AS/NZS CISPR 11; Industrial Emissions |
| Ex | European Union 94/9/EC ATEX Directive, compliant with: <ul style="list-style-type: none"> • EN 60079-15; Potentially Explosive Atmospheres, Protection "n" • EN 60079-0; General Requirements II 3 G Ex nA IIC T5X |

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

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-L6xS primary controller and a 1756-LSP safety partner to achieve SIL 3/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 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.

Features - GuardLogix Controllers

| Feature | 1756-L61S, 1756-L62S, 1756-L63S, 1756-LSP |
|---|--|
| Safety communication options | Standard and safety <ul style="list-style-type: none"> • EtherNet/IP • ControlNet • DeviceNet |
| Network connections, per network module | <ul style="list-style-type: none"> • 100 ControlNet (1756-CN2/A) • 40 ControlNet (1756-CNB) • 256 EtherNet/IP; 128 TCP (1756-EN2x) • 128 EtherNet/IP; 64 TCP (1756-ENBT) |
| Controller redundancy | Not supported |
| Programming languages | Relay ladder |

Technical Specifications - 1756 GuardLogix Controllers

| Attribute | 1756-L61S | 1756-L62S | 1756-L63S | 1756-LSP |
|--------------------------------------|---|-----------|-----------|----------|
| User memory | 2 MB | 4 MB | 8 MB | — |
| Safety memory | 1 MB | 1 MB | 3.75 MB | — |
| I/O memory | 478 KB | | | — |
| Optional flash memory ⁽¹⁾ | 64 MB (cat. no. 1784-CF64) 128 MB (cat. no. 1784-CF128) | | | — |
| Digital I/O, max | 128,000 | | | — |
| Analog I/O, max | 4000 | | | — |
| Total I/O, max | 128,000 | | | — |
| Replacement battery | 1756-BA2 | | | |
| Current draw @ 5V DC | 1200 mA | | | |
| Current draw @ 24V DC | 14 mA | | | |
| Power dissipation | 3.5 W | | | |
| Thermal dissipation | 11.9 BTU/hr | | | |
| Isolation voltage | 30V (continuous), Basic Insulation Type, RS-232 to system Controllers tested to withstand 707V DC for 60 s | | | |
| Serial cables | 1756-CP3 or 1747-CP3, right angle connector to controller, straight to serial port, 3 m (9.84 ft) | | | |
| Weight, approx. | 0.32 kg (0.70 lb) | | | |
| Slot width | 1 | | | |
| Module location | Chassis-based, any slot | | | |
| Chassis | 1756-A4, 1756-A7, 1756-A10, 1756-A13, 1756-A17 | | | |
| Power supply, standard | 1756-PA72/C, 1756-PA75/B, 1756-PB72/C, 1756-PB75/B, 1756-PC75/B, 1756-PH75/B | | | |
| Power supply, redundant | 1756-PA75R, 1756-PB75R, 1756-PSCA2 | | | |
| Wire category | 2 - on communication ports ⁽²⁾ | | | |
| North American temperature code | T4A | | | |
| Enclosure type rating | None (open-style) | | | |

⁽¹⁾ The GuardLogix controller does not support user program storage or retrieval by using a CompactFlash card.

⁽²⁾ 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](#).

Environmental Specifications - 1756 GuardLogix Controllers

| Attribute | 1756-L61S, 1756-L62S, 1756-L63S, 1756-LSP |
|---|---|
| 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, 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) |
| Relative humidity IEC 60068-2-30 (Test Db, Unpackaged Nonoperating Damp Heat) | 5...95% noncondensing |

Environmental Specifications - 1756 GuardLogix Controllers

| Attribute | 1756-L61S, 1756-L62S, 1756-L63S, 1756-LSP |
|---|---|
| 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 | 6kV contact discharges 8kV 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 1V/m with 1 kHz sine-wave 80% AM from 2000...2700 MHz |
| EFT/B immunity IEC 61000-4-4 | ±4 kV at 5 kHz on signal ports |
| Surge transient immunity IEC 61000-4-5 | ±2 kV line-line (DM) and ±2 kV line-earth (CM) on signal ports |
| Conducted RF immunity IEC 61000-4-6 | 10Vrms with 1 kHz sine-wave 80% AM from 150 kHz...80 MHz |

Certifications - 1756 GuardLogix Controllers

| Certification ⁽¹⁾ | 1756-L61S, 1756-L62S, 1756-L63S, 1756-LSP |
|------------------------------|---|
| UL | UL Certified for Functional Safety up to and including SIL 3, see UL File E256621. ⁽²⁾ |
| 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. |
| CSA | CSA Certified Process Control Equipment. See CSA File LR54689C. CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations. See CSA File LR69960C. |
| CE | European Union 2004/108/EC EMC Directive, compliant with: <ul style="list-style-type: none"> • 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) |
| C-Tick | Australian Radiocommunications Act, compliant with: AS/NZS CISPR 11; Industrial Emissions |
| FM | FM Approved Equipment for use in Class I, Division 2 Group A, B, C, D Hazardous Locations |
| Functional Safety | Certified by TÜV: capable of SIL 1 to 3, according to IEC 61508; and PLe/Cat. 4 according to ISO 13849-1:2006. Certified by UL: capable of SIL 3, see UL File E256621. |
| SIL 2 | Use standard ControlLogix controllers. |
| SIL 3 | Use GuardLogix controllers (cat. no. 1756-L61S, 1756-L62S, 1756-L63S) and the Safety Partner (cat. no. 1756-LSP). |

⁽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 software versions.

1756 ControlLogix-XT Controllers

The ControlLogix-XT controllers function in the same way as the traditional ControlLogix controllers. The ControlLogix-XT products include control and communication system components that are conformally coated to extend product life in harsh, corrosive environments.

- When used with FLEX I/O-XT products, the ControlLogix-XT system can withstand temperatures range from -20...70 °C (-4...158 °F).
- When used independently, the ControlLogix-XT system can withstand temperature ranges from -25...70 °C (-13...158 °F).

Technical Specifications - 1756-L63XT Controller

| Attribute | 1756-L63XT |
|---------------------------------|--|
| User memory | 8 MB |
| I/O memory | 478 KB |
| Optional flash memory | 64 MB (cat. no. 1784-CF64) 128 MB (cat. no. 1784-CF128) |
| Digital I/O, max | 128,000 |
| Analog I/O, max | 4000 |
| Total I/O, max | 128,000 |
| Replacement battery | 1756-BA2 |
| Current draw @ 5V DC | 1200 mA |
| Current draw @ 24V DC | 14 mA |
| Power dissipation | 3.5 W |
| Thermal dissipation | 11.9 BTU/hr |
| Isolation voltage | 30V (continuous), basic insulation type, RS-232 to system Controllers tested to withstand 707V DC for 60 s, RS232 to system |
| Serial cables | 1756-CP3 or 1747-CP3, right angle connector to controller, straight to serial port, 3 m (9.84 ft) |
| Weight, approx. | 0.35 kg (0.78 lb) |
| Slot width | 1 |
| Module location | Chassis-based, any slot |
| Chassis | 1756-A5XT, 1756-A7LXT |
| Power supply, standard | 1756-PBXT |
| Power supply, redundant | None |
| Wire category | 2 - on communication ports ⁽¹⁾ |
| 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](#).

Environmental Specifications - 1756-L63XT Controller

| Attribute | 1756-L63XT |
|---|---|
| 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, 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) |
| Relative humidity IEC 60068-2-30 (Test Db, Unpackaged Nonoperating 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 |
| EFT/B immunity IEC 61000-4-4 | ±4 kV at 5 kHz on signal ports |
| Surge transient immunity IEC 61000-4-5 | ±2 kV line-line (DM) and ±2 kV line-earth (CM) on signal ports |
| Conducted RF immunity IEC 61000-4-6 | 10Vrms with 1 kHz sine-wave 80% AM from 150 kHz...80 MHz |

Certifications - 1756-L63XT Controller

| Certification ⁽¹⁾ | 1756-L63XT |
|------------------------------|---|
| 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: <ul style="list-style-type: none"> • 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) |
| C-Tick | Australian Radiocommunications Act, compliant with: AS/NZS CISPR 11; Industrial Emissions |
| Ex | European Union 94/9/EC ATEX Directive, compliant with: <ul style="list-style-type: none"> • EN 60079-15; Potentially Explosive Atmospheres, Protection "n" (II 3 G Ex nA IIC T4 X) • EN 60079-0; General Requirements (Zone 2) |
| TÜV | TÜV Certified for Functional Safety: Capable of SIL 2 |

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

Controller Memory Use

The following equations provide a rough memory estimate.

| | | | |
|--|---------------|---|------------------------------|
| Controller tasks | _____ * 4000 | = | _____ bytes (minimum 1 task) |
| Digital I/O points | _____ * 400 | = | _____ bytes |
| Analog I/O points | _____ * 2600 | = | _____ bytes |
| DeviceNet modules⁽¹⁾ | _____ * 7400 | = | _____ bytes |
| Other communication modules⁽²⁾ | _____ * 2000 | = | _____ bytes |
| Motion axis | _____ * 8000 | = | _____ bytes |
| FactoryTalk alarm instruction | _____ * 1000 | = | _____ bytes (per alarm) |
| FactoryTalk subscriber | _____ * 10000 | = | _____ bytes |

⁽¹⁾ The first DeviceNet module is 7400 bytes. Additional DeviceNet modules are 5800 bytes each.

⁽²⁾ Count all the communication modules in the system, not just those in the local chassis. This includes device connection modules, adapter modules, and ports on PanelView terminals.

For redundant controller systems, double the memory estimate you calculate. For example, if you estimate you need 2 MB of memory, select a controller with 4 MB of memory.

Reserve 20...30% of the controller memory to accommodate growth.

Controller Compatibility

Control Distributed I/O Modules

The controller can control these distributed I/O modules via the I/O Configuration tree in RSLogix 5000 programming software.

| I/O Modules | EtherNet/IP | ControlNet | DeviceNet | Remote I/O |
|---|-------------|------------|-----------|------------|
| Chassis-based I/O | | | | |
| 1746 SLC I/O | No | No | No | Yes |
| 1756 ControlLogix I/O | Yes | Yes | No | No |
| 1769 Compact I/O | No | No | Yes | No |
| 1771 Universal I/O | No | Yes | No | Yes |
| In-Cabinet I/O | | | | |
| 1734 POINT I/O | Yes | Yes | Yes | No |
| 1734D POINTBlock I/O | No | No | Yes | No |
| 1790, 1790D, 1790P CompactBlock LDX I/O | No | No | Yes | No |
| 1791D, 1791P, 1791R CompactBlock I/O | No | No | Yes | No |
| 1794 FLEX I/O | Yes | Yes | Yes | Yes |
| 1797 FLEX Ex I/O | No | Yes | No | No |
| On-Machine I/O | | | | |
| 1732 ArmorBlock I/O | Yes | No | Yes | No |
| 1738 ArmorPoint I/O | Yes | Yes | Yes | No |
| 1792D ArmorBlock MaXum I/O | No | No | Yes | No |
| 1799 Embedded I/O | No | No | Yes | No |

Control Safety I/O Modules

The GuardLogix controller can control these safety I/O modules in a safety system.

| I/O Modules | EtherNet/IP | ControlNet | DeviceNet |
|-------------------------------|-------------|------------|-----------|
| In-Cabinet I/O | | | |
| 1791DS CompactBlock Guard I/O | No | No | Yes |
| 1791ES CompactBlock Guard I/O | Yes | No | No |
| 1734 POINT Guard I/O | Yes | No | No |
| On-Machine I/O | | | |
| 1732DS ArmorBlock Guard I/O | No | No | Yes |

Communicate with Display Devices

The controller can communicate with these display devices.

| Display Devices | EtherNet/IP | ControlNet | DeviceNet | DH+ | Remote I/O | RS-232 (DF1) | DH-485 |
|---|-------------|------------|-----------|-----|------------|--------------|--------|
| Industrial Computers | | | | | | | |
| Rockwell Automation industrial computers (all) ⁽¹⁾ | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Graphic Terminals | | | | | | | |
| PanelView Plus and PanelView CE terminals | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| PanelView Standard terminals | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| PanelView "e" terminals | No | Yes | No | Yes | Yes | No | No |
| Message Displays | | | | | | | |
| InView message displays | Yes | Yes | Yes | Yes | Yes | Yes | Yes |

⁽¹⁾ Includes Rockwell Automation integrated display rotating media (HDD) and solid state (SSD) computers, Rockwell Automation non-display computers, and Rockwell Automation integrated display computers with keypad.

Communicate with Other Controllers

The controller can communicate with these programmable controllers.

| Controller | EtherNet/IP | ControlNet | DeviceNet | DH+ | RS-232 (DF1) | DH-485 ⁽¹⁾ |
|--|------------------------|------------|--------------------|-----|--------------|-----------------------|
| 1756 ControlLogix 1756 GuardLogix | Yes | Yes | Yes | Yes | Yes | Yes |
| 1768, 1769 CompactLogix 1768 Compact GuardLogix | Yes | Yes | Yes | No | Yes | Yes |
| 1789 SoftLogix5800 | Yes | Yes | Yes | No | Yes | No |
| 1794 FlexLogix | Yes | Yes | Yes | No | Yes | Yes |
| PowerFlex with DriveLogix | Yes | Yes | Yes | No | Yes | Yes |
| 1785 PLC-5 | Yes ^{(2) (3)} | Yes | Yes ⁽⁴⁾ | Yes | Yes | — |

| Controller | EtherNet/IP | ControlNet | DeviceNet | DH+ | RS-232 (DF1) | DH-485 ⁽¹⁾ |
|-----------------|--------------------|------------|--------------------|-----|--------------|-----------------------|
| 1747 SLC | Yes ⁽⁵⁾ | Yes | Yes ⁽⁴⁾ | Yes | Yes | Yes |
| 1761 MicroLogix | Yes | No | Yes ⁽⁴⁾ | No | Yes | Yes |
| 1762 MicroLogix | Yes | No | Yes ⁽⁴⁾ | No | Yes | Yes |
| 1763 MicroLogix | Yes | No | Yes ⁽⁴⁾ | No | Yes | Yes |
| 1764 MicroLogix | Yes | No | Yes ⁽⁴⁾ | No | Yes | Yes |
| 1772 PLC-2 | — | — | — | Yes | Yes | — |
| 1775 PLC-3 | — | — | — | Yes | Yes | — |
| 5250 PLC-5/250 | — | — | No | Yes | Yes | — |

⁽¹⁾ The 1756-DH485 module supports full DH-485 functionality.

⁽²⁾ The Ethernet PLC-5 controller must be series C, firmware revision N.1 or later; series D, firmware revision E.1 or later; or series E, firmware revision D.1 or later.

⁽³⁾ The 1785-ENET Ethernet communication interface module must be series A, firmware revision D or later.

⁽⁴⁾ The PLC-5, SLC, and MicroLogix processors appear as I/O points to the Logix controller. Use the appropriate DeviceNet interface for the controller.

⁽⁵⁾ Use a 1747-L55x controller with OS501 or later.

Communicate with Other Communication Devices

The controller can communicate with these communication devices.

| Communication Device | EtherNet/IP | ControlNet | DeviceNet | DH+ |
|--|-------------|---|--|------------|
| Linking device (ControlLogix controllers only) | 1788-EN2DN | 1788-CN2DN 1788-CN2FF | 1788-EN2DN 1788-CN2DN | — |
| PCMCIA card | — | 1784-PCC | 1784-PCD | 1784-PCMK |
| PCI card | — | 1784-PCIC 1784-PCICS | 1784-PCID 1784-PCIDS 1784-CPCIDS | — |
| Drives SCANport module | — | 1203-FM1 1203-FB1 ⁽¹⁾ | — | — |
| Communication module | — | 1203-CN ⁽²⁾ 1770-KFC15 1770-KFCD15 1747-KFC15 | 1770-KFD 1770-KFG | — |
| Communication card | — | 1784-PKTCS 1784-KTCS 1784-KTCX15 | 1784-PKTX 1784-PKTXD | — |
| USB communication device | — | 1784-U2CN | 1784-U2DN | 1784-U2DHP |

⁽¹⁾ Use a CIP generic MSG instruction to communicate with the 1203-FM1 SCANport module on a DIN rail that is remote to the controller. The remote DIN rail also requires a 1794-ACN15 or 1794-ACNR15 ControlNet adapter module.

⁽²⁾ Use the generic module configuration to configure the 1203-CN1 module and a CIP generic MSG instruction to communicate with the module.

Redundancy

The ControlLogix controller supports controller redundancy. In a redundant controller system, you need these components:

- Two 1756 chassis each with the same:
 - number of slots.
 - modules in the same slots.
 - redundancy firmware revisions in each module.
 - two additional ControlNet nodes outside the redundant chassis pair.

You need **one** of the following redundancy modules:

- One 1756-RM module per chassis, which supports:
 - two 1756-L61, 1756-L62, 1761-L63 controllers or one 1756-L64 controller.
 - a maximum of seven communication modules, which can be 1756-CN2 series B, 1756-CN2R series B, and 1756-EN2T modules.
 - one 1756-RMC x cable.
- One 1757-SRM module per chassis, which supports:
 - one 1756-L61, 1756-L62, 1756-L63, 1756-L64 controller.
 - a maximum of seven communication modules, which can be 1756-CNB series D or E, 1756-CNBR series D or E, 1756-ENBT, and 1756-EWEB modules.
 - one 1757-SRC x cable.

Technical Specifications - 1756, 1757 Redundancy Modules

| Attribute | 1756-RM | 1757-SRM |
|-------------------------|---|---|
| Voltage, max | — | 30V AC/DC |
| Current, max | — | 100 mA |
| Current draw @ 1.2V DC | 4 mA | — |
| Current draw @ 3.3V DC | — | 750 mA |
| Current draw @ 5V DC | 1200 mA | 1000 mA |
| Current draw @ 24V DC | 120 mA | 90 mA |
| Power dissipation | 9.0 W | 9.6 W |
| Thermal dissipation | 31 BTU/hr | 38.49 BTU/hr |
| Connector cables | 1756-RMC1, 1 m (3.28 ft) 1756-RMC3, 3 m (9.84 ft) 1756-RMC10, 10 m (32.81 ft) | 1757-SRC1, 1 m (3.28 ft) 1757-SRC3, 3 m (9.84 ft) 1757-SRC10, 10 m (32.81 ft) 1757-SRC50, 50 m (164.04 ft) 1757-SRC100, 100 m (328.08 ft) |
| Slot width | 1 slot | 2 slot |
| Module location | Chassis-based, any slot | Chassis-based, any slot. Recommended defaults: slots 5-6 in 10-slot and 17-slot chassis, slots 4-5 in 7-slot and 13-slot chassis |
| Chassis | 1756-A4, 1756-A7, 1756-A10, 1756-A13, 1756-A17 | |
| Power supply, standard | 1756-PA72/C, 1756-PA75/B, 1756-PB72/C, 1756-PB75/B, 1756-PC75/B, 1756-PH75/B | |
| Power supply, redundant | 1756-PA75R, 1756-PB75R, 1756-PSCA2 | |

Technical Specifications - 1756, 1757 Redundancy Modules

| Attribute | 1756-RM | 1757-SRM |
|---------------------------------|-------------------|---|
| Wire size | — | Relay Terminals: 0.3... 2.1 mm ² (22...14 AWG) solid or stranded shielded copper wire rated at 75 °C (167 °F) or greater 1.2 mm (3/64 in.) insulation max |
| Wire category | — | 3 - on relay terminals ⁽¹⁾ |
| North American temperature code | T4 | T4A |
| IEC temperature code | — | T4 |
| Enclosure type | 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](#).

Environmental Specifications - 1756, 1757 Redundancy Modules

| Attribute | 1756-RM | 1757-SRM |
|---|---|--|
| 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, 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) | |
| Relative humidity IEC 60068-2-30 (Test Db, Unpackaged Nonoperating 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 | |
| EFT/B immunity IEC 61000-4-4 | — | ±4 kV at 5 kHz on signal ports |
| Surge transient immunity IEC 61000-4-5 | — | ±2 kV line-line (DM) and ±2 kV line-earth (CM) on signal ports |
| Conducted RF immunity IEC 61000-4-6 | — | 10Vrms with 1 kHz sine-wave 80% AM from 150 kHz...80 MHz |

Certifications - 1756, 1757 Redundancy Modules

| Certification⁽¹⁾ | 1756-RM | 1757-SRM |
|------------------------------------|--|--|
| UL | UL Listed Industrial Control Equipment, certified for US and Canada. See UL File E65584. | |
| CSA | CSA Certified Process Control Equipment. See CSA File LR54689C. CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations. See CSA File LR69960C. | |
| CE | European Union 2004/108/IEC EMC Directive, compliant with: <ul style="list-style-type: none"> • 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 Radiocommunications Act, compliant with: AS/NZS CISPR 11; Industrial Emissions | Australian Radiocommunications 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” (Zone 2) |
| FM | — | FM Approved Equipment for use in Class I Division 2 Group A,B,C,D Hazardous Locations |
| TÜV | — | TÜV Certified for Functional Safety: up to and including SIL 2 |

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

Technical Specifications - 1756-RMXT Redundancy Module

| Attribute | 1756-RMXT |
|---------------------------------|---|
| Current draw @ 1.2V DC | 4 mA |
| Current draw @ 5.1V DC | 1.2 A |
| Current draw @ 24V DC | 120 mA |
| Power dissipation | 9.0 W |
| Thermal dissipation | 31 BTU/hr |
| Connector cables | 1756-RMC1, 1 m (3.28 ft) 1756-RMC3, 3 m (9.84 ft) 1756-RMC10, 10 m (32.81 ft) |
| Slot width | 1 slot |
| Module location | Chassis-based, any slot |
| Chassis | 1756-A5XT, 1756-A7LXT |
| Power supply, standard | 1756-PBXT |
| Power supply, redundant | None |
| North American temperature code | T4 |
| IEC temperature code | T4 |

Environmental Specifications - 1756-RMXT Redundancy Module

| Attribute | 1756-RMXT |
|---|---|
| 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, 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) |
| Relative humidity IEC 60068-2-30 (Test Db, Unpackaged Nonoperating 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 |
| EFT/B immunity IEC 61000-4-4 | ±4 kV at 5 kHz on signal ports |

Certifications - 1756-RMXT Redundancy Module

| Certification ⁽¹⁾ | 1756-RMXT |
|------------------------------|--|
| 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/IEC EMC Directive, compliant with: <ul style="list-style-type: none"> • 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 Radiocommunications Act, compliant with: AS/NZS CISPR 11; Industrial Emissions |
| Ex | European Union 94/9/EC ATEX Directive, compliant with: <ul style="list-style-type: none"> • EN 60079-15; Potentially Explosive Atmospheres, Protection "n" (II 3 G Ex nA IIC T4 X) • EN 60079-0; General Requirements (Zone 2) |
| TÜV | TÜV Certified for Functional Safety: Capable of SIL 2 |

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

ControlLogix Connections

A ControlLogix system uses connections to establish communication links between devices. The types of connections include:

- controller-to-local I/O modules or local communication modules.
- controller-to-remote I/O or remote communication modules.
- controller-to-remote I/O (rack-optimized) modules.
- produced and consumed tags.
- messages.
- controller access by RSLogix 5000 programming software.
- controller access by RSLinx software for HMI or other applications.

You indirectly determine the number of connections the controller uses by configuring the controller to communicate with other devices in the system. The limit of connections may ultimately reside in the communication module you use for the connection. If a message path routes through a communication module, the connection related to the message also counts towards the connection limit of that communication module.

The 1756-L6x controller supports 250 connections; the 1756-L7x controller supports 500. To calculate the total connections for a controller, consider the connections to local I/O modules and the connections to remote modules. Use this table to tally **local** connections.

| Connection Type | Device Quantity | Connections per Device | Total Connections |
|--|-----------------|------------------------|-------------------|
| Local I/O module (always a direct connection) | | 1 | |
| 1756-M16SE, 1756-M08SE, 1756-M03SE SERCOS motion module 1756-M02AE, 1756-M02AS, 1756-HYD02 analog motion module | | 3 | |
| 1756-CN2, 1756-CN2R communication module 1756-CNB, 1756-CNBR communication module 1756-CN2RXT communication module | | 0 | |
| 1756-EN2F, 1756-EN2T communication module 1756-ENBT, 1756-EWEB communication module 1756-EN2TXT communication module | | 0 | |
| 1756-DNB communication module | | 2 | |
| 1756-DHRIO communication module 1756-RIO 1756-DHRIOXT | | 1 | |
| 1756-DH485 communication module | | 1 | |
| Total | | | |

Regardless of how you configure local I/O modules (rack-optimized or direct connect), the controller establishes a direct connection for each local I/O module.

Remote connections depend on the communication module. The number of connections the module itself supports determines how many connections the controller can access through that module. Use this table to tally **remote** connections for the controller.

| Connection Type | Device Quantity | Connections per Device | Total Connections |
|---|------------------------|-------------------------------|--------------------------|
| Remote ControlNet communication module Configured as a direct (none) connection Configured as a rack-optimized connection | | 0 or 1 | |
| Remote I/O module over a ControlNet network (direct connection) | | 1 | |
| Remote Ethernet communication module Configured as a direct (none) connection Configured as a rack-optimized connection | | 0 or 1 | |
| Remote I/O module over an EtherNet/IP network (direct connection) | | 1 | |
| Remote device over a DeviceNet network (accounted for in rack-optimized connection for local 1756-DNB module) | | 0 | |
| Other remote communication adapter | | 1 | |
| Safety input module | | 1 | |
| Safety output module | | 2 | |
| Produced tag Each consumer | | 1 1 | |
| Consumed tag | | 1 | |
| Cached message | | 1 | |
| Block-transfer message | | 1 | |
| Total | | | |

ControlLogix Controller Accessories

Memory Cards

Memory cards offer nonvolatile memory to permanently store a user program and tag data on a controller. The 1756-L7x ControlLogix controller comes with 1784-SD1 Secure Digital card already installed. The 1756-L6x controllers support optional CompactFlash cards that you purchase separately. The memory cards install in a socket on the controller. Through RSLogix 5000 software, you can manually trigger the controller to save to or load from nonvolatile memory or configure the controller to load from nonvolatile memory on powerup.

The GuardLogix controller does not support user program storage or retrieval by using a CompactFlash card.

Technical Specifications - 1784 Memory Cards

| Attribute | 1784-CF64 | 1784-CF128 | 1784-SD1 | 1784-SD2 |
|-----------------------|-----------------|------------|-------------------|----------|
| Memory | 64 MB | 128 MB | 1 GB | 2 GB |
| Supported controllers | 1756-L6x | | 1756-L7x | |
| Weight, approx. | 14.2 g (0.5 oz) | | 1.76 g (0.062 oz) | |

Environmental Specifications - 1784 Memory Cards

| Attribute | 1756-CF64 | 1784-CF128 | 1784-SD1, 1784-SD2 |
|---|--|----------------------------|--------------------|
| 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) | -25...70 °C (-13...158 °F) | |
| 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) | -40...85 °C (-40...185 °F) | |
| Relative humidity IEC 60068-2-30 (Test Db, Unpackaged Nonoperating 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 | 4 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 1V/m with 1 kHz sine-wave 80% AM from 2000...2700 MHz | | |

Certifications - 1784 Memory Cards

| Certification ⁽¹⁾ | 1784-CF64, 1784-CF128, 1784-SD1, 1784-SD2 |
|------------------------------|---|
| CE | European Union 2004/108/EC EMC Directive, compliant with: <ul style="list-style-type: none"> 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) |
| C-Tick | Australian Radiocommunications Act, compliant with: AS/NZS CISPR 11; Industrial Emissions |

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

1756 Energy Storage Modules

Instead of a battery, the 1756-L7x controller ships with a 1756-ESMCAP energy storage module already installed.

Technical Specifications - 1756 Energy Storage Modules

| Attribute | 1756-ESMCAP | 1756-ESMNSE | 1756-ESMNRM |
|---------------------------------|--|--|--|
| Description | Capacitor-based energy-storage module Comes with the controller | ESM without WallClockTime backup power Use this ESM if your application requires that the installed ESM deplete its residual energy to 200 µjoules 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. | Energy-storage module that secures the controller by preventing the USB connection and SD card use This ESM provides your application an enhanced degree of security. |
| Current draw @ 5V DC | 300 mA | 330 mA | 300 mA |
| North American temperature code | T4A | | |
| IEC temperature code | T4 | | |

Certifications - 1756 Energy Storage Modules

| Certification ⁽¹⁾ | 1784-CF64, 1784-CF128 |
|------------------------------|--|
| 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. |

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

1756 ControlLogix Batteries

Each ControlLogix controller ships with a battery. The 1756-L6x controllers have nonvolatile memory if you install a 1784-CF64 or 1784-CF128 industrial CompactFlash card. With nonvolatile memory, the controller can be used without a battery. If you do not use a battery, current tag data will be at the state it was when the nonvolatile memory was saved.

These tables summarize battery life, replacement battery compatibility, and recommendations for use of an externally mounted battery assembly.

Technical Specifications - 1756 ControlLogix Batteries

| Attribute | 1756-BA1 | 1756-BA2 | 1756-BATM ⁽¹⁾ | 1756-BATA |
|--------------------------|--|--|--|---|
| Description | Lithium battery (0.59 g) | Lithium battery (0.59 g) | Externally mounted battery assembly | Replacement lithium battery for 1756-BATM (5 g max lithium per each D cell; contains 2 D cells) |
| ControlLogix controllers | 1756-L61, 1756-L62, 1756-L63 controllers, series A | 1756-L61, 1756-L62, 1756-L63 controllers, series B 1756-L64, 1756-L65 controllers | 1756-L61, 1756-L62, 1756-L63 controllers, series A | 1756-BATM battery module |
| GuardLogix controllers | — | 1756-L61S, 1756-L62S, 1756-L63S | — | — |

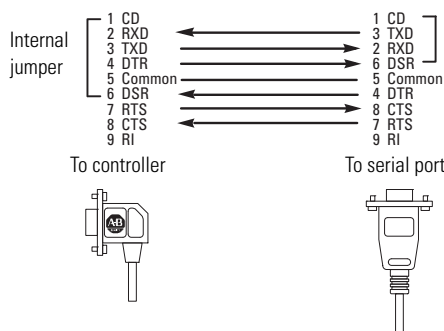
⁽¹⁾ The 1756-BATM externally mounted battery assembly is highly recommended for use with all series A 1756-L6x controllers and provides longer battery life than the 1756-BA1 battery. The 1756-BATM includes one 1756-BATA lithium battery assembly and a 1 m (3.28 ft) cable to connect housing to controller.

Technical Specifications - 1756 ControlLogix Replacement Batteries—Legacy Controllers

| Attribute | 1756-BA1 | 1756-BATM ⁽¹⁾ | 1756-BATA |
|-----------------------|---|---|---|
| Description | Lithium battery (0.59 g) | Externally mounted battery assembly | Replacement lithium battery for 1756-BATM (5 g max lithium per each D cell; contains 2 D cells) |
| Supported controllers | 1756-L55Mx controllers ⁽²⁾ 1756-L60M03SE controller | 1756-L55Mx controllers ⁽²⁾ 1756-L60M03SE controller | 1756-BATM battery module |

⁽¹⁾ The 1756-BATM externally mounted battery assembly is recommended for use with all 1756-L55x controllers and provides longer battery life than the 1756-BA1 battery. The 1756-BATM includes one 1756-BATA lithium battery assembly and a 1 m (3.28 ft) cable to connect housing to controller.

⁽²⁾ The 1756-L55M22, 1756-L55M23, and 1756-L55M24 controllers have nonvolatile memory and can be used without a battery.



Serial Communication Cables

The 1756-L6x controllers have a built-in serial port.

Technical Specifications - 1756 Serial Cables

| Attribute | 1756-CP3 | 1747-CP3 |
|-----------------|--|----------|
| Connector type | Female 9-pin D-shell | |
| Connector angle | Right angle connector to controller, straight to serial port | |
| Length | 3 m (9.84 ft) | |

Notes:

Rockwell Automation Support

Rockwell Automation provides technical information on the Web to assist you in using its products. At <http://www.rockwellautomation.com/support/>, you can find technical manuals, a knowledge base of FAQs, technical and application notes, sample code and links to software service packs, and a MySupport feature that you can customize to make the best use of these tools.

For an additional level of technical phone support for installation, configuration, and troubleshooting, we offer TechConnect support programs. For more information, contact your local distributor or Rockwell Automation representative, or visit <http://www.rockwellautomation.com/support/>.

Installation Assistance

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

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

New Product Satisfaction Return

Rockwell Automation tests all of its products to ensure that they are fully operational when shipped from the manufacturing facility. However, if your product is not functioning and needs to be returned, follow these procedures.

| | |
|-----------------------|---|
| United States | Contact your distributor. You must provide a Customer Support case number (call the phone number above to obtain one) to your distributor to complete the return process. |
| Outside United States | Please contact your local Rockwell Automation representative for the return procedure. |

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