Allen-Bradley 1756-L72

ControlLogix 4 MB Controller

The 1756-L72 is a ControlLogix 5570 controller for modular machine and process-control applications. It executes application logic, coordinates I/O and supports integrated motion within the applicable ControlLogix system configuration.



Technical Specifications

Product Identity	
Manufacturer	Allen-Bradley
Complete part number	1756-L72
Controller family	ControlLogix 5570
Module width	1 chassis slot
Functional Configuration	
Built-in communication port	1 × USB
USB communication	USB 2.0 full speed, 12 Mbps; temporary programming only
Nonvolatile memory	Secure Digital; 1784-SD1 standard option
Energy storage	1756-ESMCAP removable capacitor module; alternate ESM options available
Performance & Power	
User memory	4 MB
I/O memory	0.98 MB
Maximum controller connections	500
Controller tasks	32
Programs per task	Up to 1000 with Logix Designer v24 or later
Backplane current at 5.1V DC	800 mA
Backplane current at 1.2V DC	5 mA
Power dissipation	2.5 W
Environment	
Operating temperature	0…60 °C

Selected original manufacturer pages follow on pages 3–9.

Compatibility & Selection Guide

System and software compatibility. Use project firmware with a compatible RSLogix 5000 or Studio 5000 Logix Designer version. Logix Designer version 24 or later supports up to 1000 programs per task; redundancy requires a supported chassis configuration with compatible hardware and firmware.

Wiring & Installation Reference

Interfaces and connections

Keep the USB connection temporary; the cable must be no longer than 3 m and must not include a hub.

Allow the energy storage module to finish charging before removing power; CHRG or ESM Charging must no longer be displayed.

Mounting and connection

Prepare the enclosure. Install the chassis and power supply in the required enclosure.

Fit the controller. Align the board with the upper and lower guides and slide it in until it locks and sits flush.

Check accessories. Seat the specified ESM and SD card, insert the controller key, and verify status indicators after power-up.

Installation precautions. Do not use USB in hazardous locations. Remove power or verify the area is nonhazardous before making or breaking connections or inserting or removing the controller, SD card or ESM. Use grounding and ESD precautions; avoid touching connectors and board components. After power is removed, wait until the controller OK indicator changes from green to steady red and then turns off before removing a removable ESM. Do not remove a fitted 1756-ESMNRM, which is non-removable. If an application requires a 1756-ESMNSE to deplete residual stored energy to 40 µJ or less before transport, turn off chassis power and wait at least 20 minutes before removing the ESM; the OK indicator does not measure this waiting period.

View connection specifications (PDF) · PDF page 3 | View chassis installation · PDF page 7

Manufacturer sources: ControlLogix and GuardLogix Controller Specifications / ControlLogix 5570 and 5560 Controllers User Manual / ControlLogix and GuardLogix Controller Specifications — redundancy.

Technical Specifications - ControlLogix 5570 Standard and Conformal Coated Controllers

Attribute	1756-L71, 1756-L71K	1756-L72, 1756-L72K	1756-L73, 1756-L73K	1756-L74, 1756-L74K	1756-L75, 1756-L75K
User memory	2 MB	4 MB	8 MB	16 MB	32 MB
I/O memory	0.98 MB				
Nonvolatile memory storage	1 GB Secure Digital (SD) card (1784-SD1), ships pre-installed in the controller(1)				
Digital I/O max	128,000				
Analog I/O max	4000				
Total I/O max	128,000				
Energy storage module	• 1756-ESMCAP, 1756-ESMCAPK capacitor energy storage module (removable, ships installed with every controller) • 1756-ESMNSE, 1756-ESMNSEK capacitor energy storage module (removable, no residual WallClockTime power backup) • 1756-ESMNRM, 1756-ESMNRMK capacitor energy storage module (non-removable, helps prevent USB connection and SD card use to help secure the controller)				
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 type, USB port-to-system Compliant and tested according to IEC/UL 61010-1				
USB port(2)	USB 2.0, full speed (12 Mbps)				
Weight approx	0.25 kg (0.55 lb)				
Slot width	1				
Module location	Chassis-based, any slot				
Chassis	1756-A4, 1756-A4K, 1756-A7, 1756-A7K, 1756-A10, 1756-A10K, 1756-A13, 1756-A13K, 1756-A17, 1756-A17K				
Power supply, standard	1756-PA50, 1756-PA50K, 1756-PA72, 1756-PA72K, 1756-PA75, 1756-PA75K, 1756-PB50, 1756-PB50K 1756-PB72, 1756-PB72K, 1756-PB75, 1756-PB75K, 1756-PC75, 1756-PH75				
Power supply, redundant	1756-PA75R, 1756-PA75RK, 1756-PB75R, 1756-PB75RK, 1756-PSCA2, 1756-PSCA2K				
Wire category(3)	3 - on USB port				
Temperature code	T4				
Enclosure type rating	None (open-style)				

(1) Larger versions may be available. See Memory Cards on page 61.
(2) The USB port is intended for temporary local programming purposes only and not intended for permanent connection. Do not use the USB port in hazardous locations.
(3) Use this conductor category information to plan conductor routing. See Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1.

Install a ControlLogix 5570 Controller

ATTENTION: Personnel responsible for the application of safety-related programmable electronic systems (PES) shall be aware of the safety requirements in the application of the system and shall be trained in using the system.

Environment and Enclosure

ATTENTION:

This equipment is intended for use in a Pollution Degree 2 industrial environment, in overvoltage Category II applications (as defined in IEC 60664-1), at altitudes up to 2000 m (6562 ft) without derating.

This equipment is not intended for use in residential environments and may not provide adequate protection to radio communication services in such environments.

This equipment is supplied as open-type equipment. It must be mounted within an enclosure that is suitably designed for those specific environmental conditions that will be present and appropriately designed to help prevent personal injury resulting from accessibility to live parts. The enclosure must have suitable flame-retardant properties to help prevent or minimize the spread of flame, complying with a flame spread rating of 5VA or be approved for the application if nonmetallic. The interior of the enclosure must be accessible only by the use of a tool. Subsequent sections of this publication may contain additional information regarding specific enclosure type ratings that are required to comply with certain product safety certifications.

In addition to this publication, see the following:

- Industrial Automation Wiring and Grounding Guidelines, Rockwell Automation publication 1770-4.1, for additional installation requirements
- NEMA Standard 250 and IEC 60529, as applicable, for explanations of the degrees of protection provided by enclosure

North American Hazardous Location Approval

The following information applies when operating this equipment in hazardous locations.	Informations sur l'utilisation de cet équipement en environnements dangereux.
Products marked "CL I, DIV 2, GP A, B, C, D" are suitable for use in Class I Division 2 Groups A, B, C, D, Hazardous Locations and nonhazardous locations only. Each product is supplied with markings on the rating nameplate indicating the hazardous location temperature code. When combining products within a system, the most adverse temperature code (lowest "T" number) may be used to help determine the overall temperature code of the system. Combinations of equipment in your system are subject to investigation by the local Authority Having Jurisdiction at the time of installation.	Les produits marqués "CL I, DIV 2, GP A, B, C, D" ne conviennent qu'à une utilisation en environnements de Classe I Division 2 Groupes A, B, C, D dangereux et non dangereux. Chaque produit est livré avec des marquages sur sa plaque d'identification qui indiquent le code de température pour les environnements dangereux. Lorsque plusieurs produits sont combinés dans un système, le code de température le plus défavorable (code de température le plus faible) peut être utilisé pour déterminer le code de température global du système. Les combinaisons d'équipements dans le système sont sujettes à inspection par les autorités locales qualifiées au moment de l'installation.
WARNING: EXPLOSION HAZARD • Do not disconnect equipment unless power has been removed or the area is known to be nonhazardous. • Do not disconnect connections to this equipment unless power has been removed or the area is known to be nonhazardous. Secure any external connections that mate to this equipment by using screws, sliding latches, threaded connectors, or other means provided with this product. • Substitution of components may impair suitability for Class I, Division 2. • If this product contains batteries, they must only be changed in an area known to be nonhazardous.	**WARNING:** RISQUE D'EXPLOSION • Couper le courant ou s'assurer que l'environnement est classé non dangereux avant de débrancher l'équipement. • Couper le courant ou s'assurer que l'environnement est classé non dangereux avant de débrancher les connecteurs. Fixer tous les connecteurs externes reliés à cet équipement à l'aide de vis, loquets coulissants, connecteurs filetés ou autres moyens fournis avec ce produit. • La substitution de composants peut rendre cet équipement inadapté à une utilisation en environnement de Classe I, Division 2. • S'assurer que l'environnement est classé non dangereux avant de changer les piles.

European Hazardous Location Approval

The following applies when the product bears the Ex Marking.
This equipment is intended for use in potentially explosive atmospheres as defined by European Union Directive 94/9/EC and has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of Category 3 equipment intended for use in Zone 2 potentially explosive atmospheres, given in Annex II to this Directive. Compliance with the Essential Health and Safety Requirements has been assured by compliance with EN 60079-15 and EN 60079-0.

ATTENTION: This equipment is not resistant to sunlight or other sources of UV radiation.

WARNING:

- This equipment shall be mounted in an ATEX certified enclosure with a minimum ingress protection rating of at least IP54 (as defined in IEC60529) and used in an environment of not more than Pollution Degree 2 (as defined in IEC 60664-1) when applied in Zone 2 environments. The enclosure must utilize a tool removable cover or door.
- This equipment shall be used within its specified ratings defined by Rockwell Automation.
- This equipment must be used only with ATEX certified Rockwell Automation backplanes.
- Secure any external connections that mate to this equipment by using screws, sliding latches, threaded connectors, or other means provided with this product.
- Do not disconnect equipment unless power has been removed or the area is known to be nonhazardous.

Insert the Controller into the Chassis

When installing a ControlLogix controller, you can do the following:

- Place the controller in any slot.
- Use multiple controllers in the same chassis.

You can install or remove a ControlLogix controller while chassis power is on and the system is operating.

WARNING: When you insert or remove the module while backplane power is on, an electric arc can occur. This could cause an explosion in hazardous location installations.

Be sure that power is removed or the area is nonhazardous before proceeding. Repeated electrical arcing causes excessive wear to contacts on both the controller and its mating connector on the chassis. Worn contacts may create electrical resistance that can affect controller operation.

Table 4 - Prevent Electrostatic Discharge

ATTENTION: This equipment is sensitive to electrostatic discharge, which can cause internal damage and affect normal operation. Follow these guidelines when you handle this equipment:

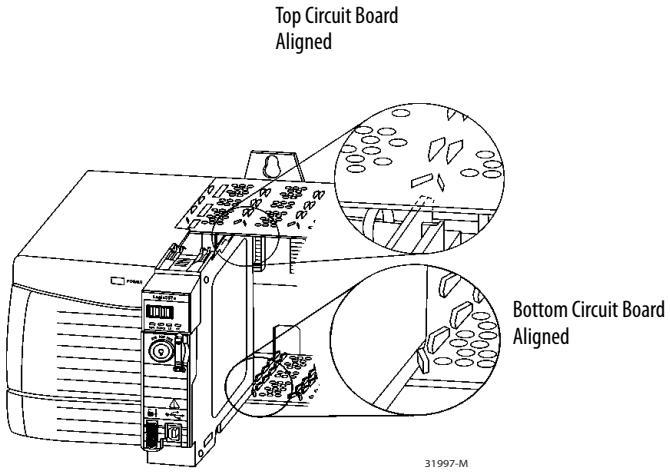
- Touch a grounded object to discharge potential static.
- Wear an approved grounding wriststrap.
- Do not touch connectors or pins on component boards.
- Do not touch circuit components inside the equipment.
- Use a static-safe workstation, if available.
- Store the equipment in appropriate static-safe packaging when not in use.

IMPORTANT The ESM begins charging when one of these actions occurs:

- The controller and ESM are installed into a powered chassis.
- Power is applied to the chassis that contains a controller with the ESM installed.
- An ESM is installed into a powered controller.

After power is applied, the ESM charges for up to two minutes as indicated by CHRG or ESM Charging on the status display.

1. Align the circuit board with the top and bottom guides in the chassis.

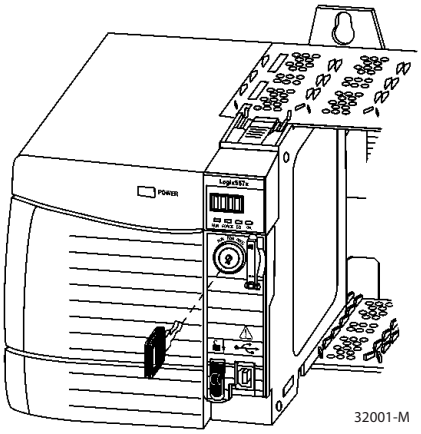


2. Slide the module into the chassis until it snaps into place.
3. Verify that the controller is flush with the power supply or other installed modules.

After you have inserted the controller into the chassis, reference the Troubleshoot the Module on page 171 for information to interpret the status indicators.

Insert the Key

After the controller is installed, insert the key.



After you install the ESM, it can take up to 15 seconds for the charging status messages to display.

IMPORTANT Allow the ESM to finish charging before removing power from the controller. Failure to do so can result in the loss of the application program. A type 1, code 40 major fault is logged on powerup.

To verify that the ESM is fully charged, check the status display to confirm that messages CHRG or ESM charging are no longer indicated.

TIP We recommend that you check the WallClockTime object attributes after installing an ESM to verify that the time of the controller is correct.

The ESM contains a real-time clock. If the ESM is new or came from another controller, the WallClockTime object attributes for your controller can change.

Uninstall the ESM



WARNING: If your application requires the ESM to deplete its residual stored energy to 40 µJ or less before you transport it into or out of the application, use only the **1756-(SP)ESMNSE(XT)** module. In this case, complete these steps before you remove the ESM.

- Turn power off to the chassis.

After you turn power off to the chassis, the controller's OK status indicator transitions from green to steady red to OFF.

- Wait **at least 20 minutes** for the residual stored energy to decrease to 40 µJ or less before you remove the ESM.

There is no visual indication of when the 20 minutes has expired. **You must track that time period**.



WARNING: When you insert or remove the energy storage module while backplane power is on, an electric arc can occur. This could cause an explosion in hazardous location installations.

Be sure that power is removed or the area is nonhazardous before proceeding. Repeated electrical arcing causes excessive wear to contacts on both the module and its mating connector.

IMPORTANT Before you remove an ESM, make the necessary adjustments to your program to account for potential changes to the WallClockTime attribute.

Consider these points before removing the ESM:

- The following ESM modules can be currently installed in your 1756-L7*x* or 1756-L7*x*XT controller:
  - 1756-ESMCAP
  - 1756-ESMNSE
  - 1756-ESMCAPXT
  - 1756-ESMNSEXT
- The 1756-L7*x* controllers come with the 1756-ESMCAP module installed. The 1756-L7*x*XT extreme temperature controller ships with a 1756-ESMCAPXT module installed. For more information on how to use a 1756-ESMNSE, 1756-ESMNRM, 1756-ESMNSEXT, or 1756-ESMNRMXT module, see page 24.
- After the 1756-L7*x* or 1756-L7*x*XT controllers lose power, because the chassis power is turned off or the controller has been removed from a powered chassis, do not immediately remove the ESM.

  Wait until the OK status indicator on the controller transitions from green to steady red to OFF before you remove the ESM.
- You can use the 1756-ESMNSE module with only a 1756-L73 (8 MB) or smaller memory-sized controller.
- Use the 1756-ESMNSE module if your application requires that the ESM depletes its residual stored energy to 40 µJ or less before transporting it into or out of your application.
- Once it is installed, you cannot remove the 1756-ESMNRM or 1756-ESMNRMXT module from a 1756-L7*x* or 1756-L7*x*XT controller.
- The Armor™ controller energy storage modules (ESM) cannot be removed or replaced.