

Installation Instructions

1769-L31 CompactLogix Controller

Catalog Number 1769-L31

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Before You Begin

Use this document as a guide for installing the controller.

Consider the following when planning your CompactLogix system:

- The CompactLogix controller is always the leftmost module in the system.
- The controller must be located within four modules of the system power supply. Some I/O modules may be located up to eight modules away from the power supply. See the documentation for your 1769 I/O modules for details.
- The 1769-L31 controller supports as many as 16 I/O modules in a maximum of 3 I/O banks with 2 expansion cables.
- Each I/O bank requires its own power supply.
- Only one controller can be used in a CompactLogix system.
- A 1769-ECR right end cap or 1769-ECL left end cap is required to terminate the end of the communication bus.

These components ship with the controller.

IMPORTANT

The 1769-BA battery is the only battery you can use with the 1769-L31 controller.

Component	Description
	1769-BA battery
	1747-KY controller key

You can also use these components with the controller:

- 1756-CP3 or 1747-CP3 serial cable to connect a device to the RS-232 port
- 1784-CF64 or 1784-CF128 industrial CompactFlash card to add nonvolatile memory

Connect the 1769-BA Battery

The controller is shipped with the 1769-BA battery packed separately. To connect the battery, follow this procedure.

ATTENTION



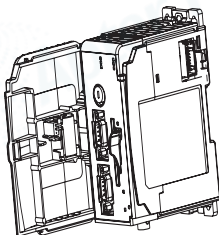
The 1769-BA battery is the only battery you can use with the 1769-L31 controllers. The 1747-BA battery is not compatible with the 1769-L31 controllers and can cause problems.

WARNING



When you connect or disconnect the battery, an electrical 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. For safety information on the handling of lithium batteries, including handling and disposal of leaking batteries, see Guidelines for Handling Lithium Batteries Technical Data, publication [AG-5.4](#).

1. Remove the battery door by sliding it forward.

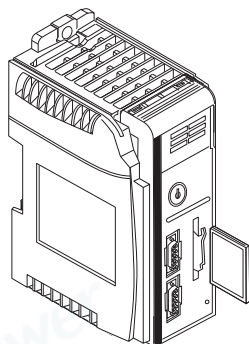


IMPORTANT

Do not remove the plastic insulation covering the battery. The insulation is necessary to protect the battery contacts.

2. Insert the battery connector into the black receptacle on the board.
The connector is keyed for installation with the correct polarity.

2. Insert the industrial CompactFlash card into the socket on the front of the controller, noting that the label of the CompactFlash card faces toward the left.
3. Match the orientation arrow on the card with the arrow on the front of the controller.
4. To remove the CompactFlash card, push the locking tab away from the CompactFlash card and pull the CompactFlash card from the socket.



Assemble the System

The controller can be attached to an adjacent I/O module or power supply before or after mounting.

This procedure shows you how to install the controller in a CompactLogix system.

WARNING



The CompactLogix controller is not designed for removal and insertion under power.

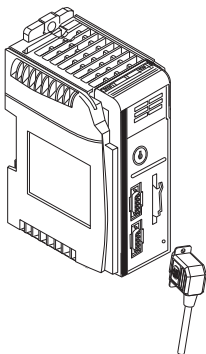
If you insert or remove the module while backplane power is on, an electrical arc can occur. This could cause an explosion in hazardous location installations.

Be sure that power is removed or the area is nonhazardous before proceeding.

1. Disconnect line power.

Make RS-232 Connections to the Controller

Connect the 9-pin female end of the serial cable to the serial port of the controller.

**WARNING**

If you connect or disconnect the serial cable with power applied to this module or the serial device on the other end of the cable, an electrical 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.

Follow this procedure to connect to the serial port.

1. Determine whether you need an optical isolator.

Channel 0 is fully isolated and does not need a separate isolation device. Channel 1 is nonisolated. If you connect channel 1 to a device outside of the system's enclosure, consider installing an isolator (such as the 1761-NET-AIC interface converter) between the controller and device.

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Select the Controller's Operating Mode

Use the keyswitch on the front panel of the controller to determine the controller's operating mode.

Keyswitch Position	Description	
RUN	• Upload projects. • Run the program and enable outputs. • You cannot create or delete tasks, programs, or routines. You cannot create or delete tags or edit online while the keyswitch is in the RUN position. • You cannot change the mode by using the programming software while the keyswitch is in the RUN position.	
PROG	• Disable outputs. • Upload/download projects. • Create, modify, and delete tasks, programs, or routines. • The controller does not execute (scan) tasks while the keyswitch is in the PROG position. • You cannot change the mode through the programming software while the keyswitch is in the PROG position.	
REM	• Upload/download projects. • Change between Remote Program, Remote Test, and Remote Run modes through the programming software.	
	Remote Run	• The controller executes (scans) tasks. • Enable outputs. • Edit online.
	Remote Program	• Disable outputs. • Create, modify, and delete tasks, programs, or routines. • Download projects. • Edit online. • The controller does not execute (scan) tasks.
	Remote Test	• Execute tasks with outputs disabled. • Edit online.

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Specifications

CompactLogix Controller - 1769-L31

Attribute	Value
Communication ports	CH0 - RS-232 RS-232 DF1, DH-485, ASCII fully isolated 38.4 Kbps max CH1 - RS-232 RS-232 DF1, DH-485 nonisolated 38.4 Kbps max
User memory	512 KB
Nonvolatile memory	1784-CF64 or 1784-CF128 CompactFlash card
Number of I/O modules, max	16 I/O modules
Number of I/O banks, max	3 banks
Backplane current	330 mA at 5V DC 40 mA at 24V DC
Power dissipation	2.61 W
Power supply distance rating	4 (The controller must be within four slot positions of the power supply.)
North American temp code	T5
Battery	1769-BA
Weight, approx.	0.30 kg (0.66 lb)
Programming cable	1747-CP3 or 1756-CP3
Panel mounting screw torque (using M4 or #8 screws)	1.1...1.8 N•m (10...16 lb•in)
Enclosure type rating	None (open style)
Wiring category	2 on communication ports ⁽¹⁾
Isolation voltage	30V (continuous), Basic Insulation Type Type tested at 710V DC for 60 s, RS232 channel 0 to system No isolation between RS232 channel 1 and system

⁽¹⁾ Use this Conductor Category information for planning conductor routing. See Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#)

Environmental Specifications

Attribute	Value
Operational Temperature 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)
Storage Temperature 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 Thermal Shock)	-40...85 °C (-40 ...185 °F)
Relative Humidity IEC 60068-2-30 (Test Db, Unpackaged Damp Heat)	5...95% noncondensing
Vibration IEC 60068-2-6 (Test Fc, Operating)	5 g @ 10...500 Hz
Shock IEC 60068-2-27 (Test Ea, Unpackaged Shock) DIN rail mount Panel mount	Operating: 20 g; Nonoperating: 30 g Operating: 30 g; Nonoperating: 40 g
Emissions - CISPR 11	Group 1, Class A
ESD Immunity - IEC61000-4-2	4 kV contact discharges, 8 kV air discharges
Radiated RF Immunity - IEC61000-4-3	10V/m with 1kHz sine-wave 80%AM from 80...2000 MHz 10V/m with 200 Hz 50% Pulse 100%AM at 900 MHz 10V/m with 200 Hz 50% Pulse 100%AM at 1890 MHz
EFT/B Immunity - IEC 61000-4-4	±2 kV at 5 kHz on communication ports
Surge Transient Immunity - IEC61000-4-5	Channel 0: ±2 kV line-earth (CM) on shielded communication ports Channel 1: ±1 kV line-earth (CM) on shielded communication ports
Conducted RF Immunity - IEC61000-4-6	10V rms with 1kHz sine-wave 80% AM from 150 kHz...80 MHz