Installation Instructions

1769-L32E, -L35E CompactLogix™ Controller

(Catalog Numbers 1769-L32E, 1769-L35E)

Inside...

Publication 1769-IN020B-EN-P - March 2004

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.ab.com/manuals/gi) 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.

No patent liability is assumed by Rockwell Automation, Inc. with respect to use of information, circuits, equipment, or software described in this manual.

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Throughout this manual 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 • recognize the consequence
SHOCK HAZARD 	Labels may be located on or inside the drive to alert people that dangerous voltage may be present.
SHOCK HAZARD 	Labels may be located on or inside the drive to alert people that surfaces may be dangerous temperatures.

Environment and Enclosure Information

ATTENTION

Environment and Enclosure

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

This equipment is considered Group 1, Class A industrial equipment according to IEC/CISPR Publication 11. Without appropriate precautions, there may be potential difficulties ensuring electromagnetic compatibility in other environments due to conducted as well as radiated disturbance.

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 prevent personal injury resulting from accessibility to live parts. 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.

See NEMA Standards publication 250 and IEC publication 60529, as applicable, for explanations of the degrees of protection provided by different types of enclosure. Also, see the appropriate sections in this publication, as well as the Allen-Bradley publication 1770-4.1 ("Industrial Automation Wiring and Grounding Guidelines"), for additional installation requirements pertaining to this equipment.

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.	**AVERTISSEMENT** 	**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.

Before You Begin

Use this document as a guide for installing and powering-up your 1769-L32E, -L35E CompactLogix controller. You should already be familiar with the system components.

You must FLASH upgrade the firmware on your CompactLogix controller before you can use it. The controller ships with firmware revision 1.x but must be upgraded to match the version of RSLogix 5000 that you are using (e.g. if you are using RSLogix 5000 V13, you must upgrade your CompactLogix controller firmware to revision 13.x before using it. For more information on upgrading your controller's firmware, see page 21.

How to Handle CompactLogix Components

ATTENTION

Preventing Electrostatic Discharge

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.
- If available, use a static-safe workstation.
- When not in use, store the equipment in appropriate static-safe packaging.

Make Sure that You Have All the Components

These components ship with the controller:

Component:	Description:
	1769-BA battery **Important:** The 1769-BA battery is the only battery you can use with the 1769-L32E, -L35E controller.
	1747-KY controller key

You may also use these components with the controller:

If you want to:	Then use this component:
connect a device to the RS-232 port	1756-CP3 or 1747-CP3 serial cable
connect a device to the EtherNet/IP port	standard Ethernet cable with RJ-45 connector
Add nonvolatile memory	1784-CF64 Industrial CompactFlash card

System Planning

Consider the following when planning your CompactLogix system:

- The CompactLogix controller is always the left-most module in the system.
- The controller must be located within four modules of the system power supply. Some I/O module's may be located up to 8 modules away from the power supply. See the documentation for your 1769 I/O modules for details.
- The 1769-L32E controller supports as many as 16 I/O modules in a maximum of 3 I/O banks with 2 expansion cables.

  The 1769-L35E controller supports as many as 30 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.

Installation Steps

✓	Installation Step:	See Page:
❑ 1.	Connect the battery	7
❑ 2.	Install the 1784-CF64 CompactFlash card (optional)	8
❑ 3.	Assemble the system	9
❑ 4.	Mount the system	10
❑ 5.	Make serial connections	13
❑ 6.	Make Ethernet connections	16
❑ 7.	Install the appropriate EDS files	20
❑ 8.	Load controller firmware	21

Connect the 1769-BA Battery

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

ATTENTION

The 1769-BA battery is the only battery you can use with the 1769-L32, -L35E controller. The 1747-BA battery is not compatible with the 1769-L32E, -L35E controller and may cause problems.

1. Slide the battery door forward.

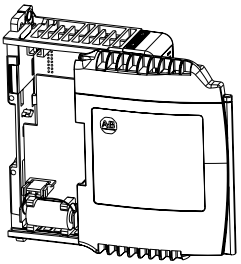
IMPORTANT Do not remove the plastic insulation covering the battery. The insulation is necessary to protect the battery contacts.

2. Insert the battery into the battery port. Insert the battery connector into the connector port. The connector is keyed to engage in the correct polarity.
3. Slide the battery door back until it clicks into position.

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*, publication AG 5-4.



Install a 1784-CF64 Industrial CompactFlash Card (optional)

ATTENTION

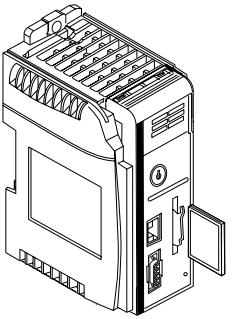
Do not remove the CompactFlash card while the controller is reading from or writing to the card, as indicated by a flashing green CF LED. This could corrupt the data on the card or in the controller, as well as corrupt the latest firmware in the controller.

A 1784-CF64 Industrial CompactFlash card provides nonvolatile memory for a CompactLogix controller. This is an optional feature and is not required to operate the controller. Install the card as follows:

1. Push the locking tab to the right and insert the 1784-CF64 Industrial CompactFlash card into the socket on the front of the controller.

   The label of the CompactFlash card faces towards the left. Match the orientation arrow on the card with the arrow on the front of the controller.

   The CompactFlash card supports removal and insertion under power.



WARNING

When you insert or remove the card 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. Repeated electrical arcing causes excessive wear to contacts on both the module and its mating connector. Worn contacts may create electrical resistance that can affect module operation.

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. For mounting instructions, see Panel mounting on page 12 or DIN rail mounting on page 12.

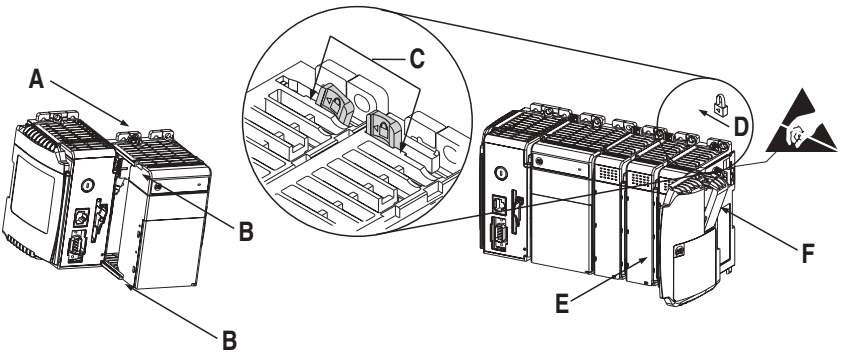
WARNING

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

If you connect or disconnect the communications cable while power is applied to this module or the wiring while the field-side 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.

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



1. Disconnect line power.
2. Check that the lever of the adjacent module (A) is in the unlocked (fully right) position.
3. Use the upper and lower tongue-and-groove slots (B) to secure the modules together.
4. Move the module back along the tongue-and-groove slots until the bus connectors line up with each other.
5. Use your fingers or a small screwdriver to push the module's bus lever back slightly to clear the positioning tab (C).

6. Move the module's bus lever fully to the left (D) until it clicks. Ensure it is locked firmly in place.

ATTENTION

When attaching the controller, power supply, and I/O modules, make sure the bus connectors are securely locked together to ensure proper electrical connection.

7. Attach an end cap terminator (E) to the last module in the system by using the tongue-and-groove slots as before.

8. Lock the end cap bus terminator (F).

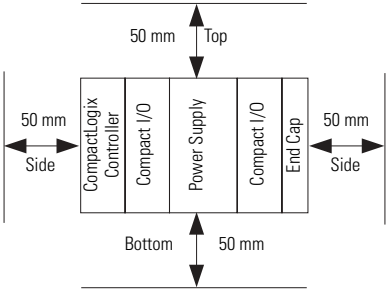
Mount the System

ATTENTION

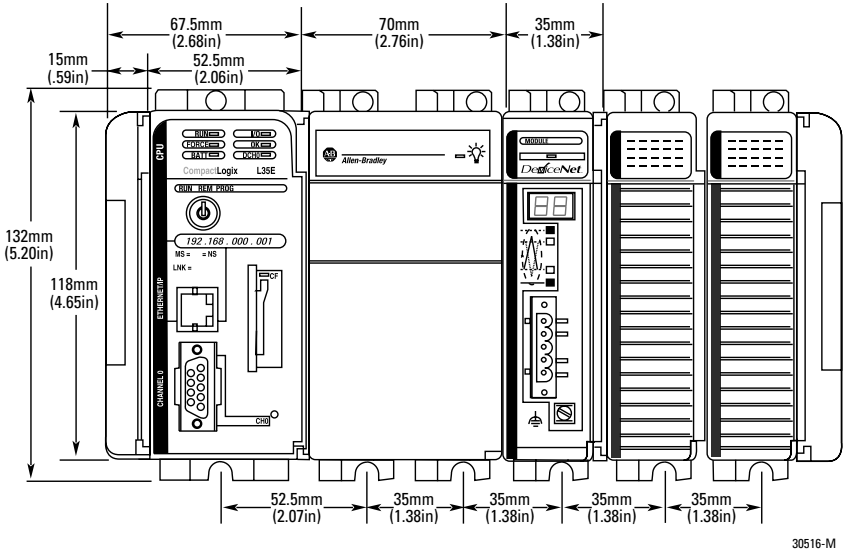
During panel or DIN rail mounting of all devices, be sure that all debris (metal chips, wire strands, etc.) is kept from falling into the controller. Debris that falls into the controller could cause damage while the controller is energized.

Minimum spacing

Maintain spacing from enclosure walls, wireways, adjacent equipment, etc. Allow 50 mm (2 in.) of space on all sides, as shown. This provides ventilation and electrical isolation.



System dimensions



NOTE: All dimensions are in mm (in.).
Hole spacing tolerance: ±0.4 mm (0.016 in.)

TIP

Compact I/O expansion cables have the same dimensions as the end caps. Expansion cables can be used on either the right or left end. A 1769-ECR (right end cap) or 1769-ECL (left end cap) terminates the end of the communication bus.

Panel mounting

Mount the controller to a panel using two screws per module. Use M4 or #8 panhead screws. Mounting screws are required on every module.

The following procedure allows you to use the assembled modules as a template for drilling holes in the panel. Due to module mounting hole tolerance, it is important to follow these procedures:

1. On a clean work surface, assemble no more than three modules.
2. Using the assembled modules as a template, carefully mark the center of all module-mounting holes on the panel.
3. Return the assembled modules to the clean work surface, including any previously mounted modules.
4. Drill and tap the mounting holes for the recommended M4 or #8 screw.
5. Place the modules back on the panel and check for proper hole alignment.
6. Attach the modules to the panel using the mounting screws.

   TIP If mounting more modules, mount only the last one of this group and put the others aside. This reduces remounting time during drilling and tapping of the next group.

7. Repeat steps 1 to 6 for any remaining modules.

DIN rail mounting

The controller can be mounted using the following DIN rails:

- 35 x 7.5 mm (EN 50 022 - 35 x 7.5)
- 35 x 15 mm (EN 50 022 - 35 x 15)

Before mounting the controller on a DIN rail, close the DIN rail latches. Press the DIN rail mounting area of the controller against the DIN rail. The latches will momentarily open and lock into place.

Grounding considerations

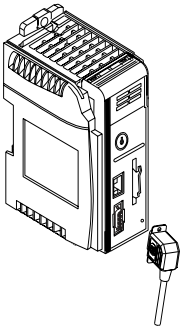
This product is intended to be mounted to a well-grounded mounting surface such as a metal panel. Additional grounding connections from the controller's mounting tabs or DIN rail (if used), are not required unless the mounting surface cannot be grounded. Refer to *Industrial Automation Wiring and Grounding Guidelines*, Allen-Bradley publication 1770-4.1, for additional information.

ATTENTION

This product is grounded through the DIN rail to chassis ground. Use zinc plated yellow-chromate steel DIN rail to assure proper grounding. The use of other DIN rail materials (e.g. aluminum, plastic, etc.) that can corrode, oxidize, or are poor conductors, can result in improper or intermittent grounding.

Make RS-232 Connections to the Controller

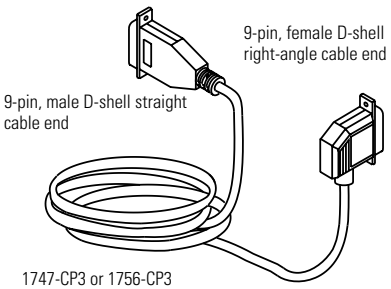
Connect the 9-pin female end of the serial cable to the serial port (bottom port, CH0) of the controller.



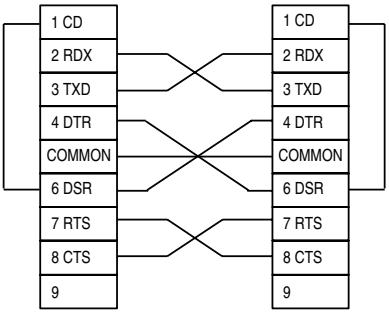
WARNING

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.



This cable must be shielded and tied to the connector housing.



straight cable end

right-angle cable end

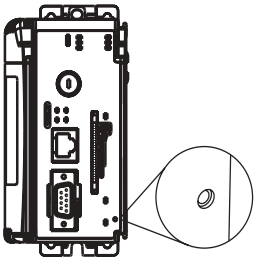
Default serial configuration

Channel 0 (serial) has the following default communication configuration.

Parameter	Default
Protocol	DF1 full-duplex
Baud Rate	19.2 Kbit/s
Parity	none
Station Address	0
Control Lines	no handshaking
Error Detection	BCC
Embedded Responses	auto detect
Duplicate Packet (Message) Detect	enabled
ACK Timeout	50 (x 20 ms)
NAK Receive Limit	3 retries
ENQ Transmit Limit	3 retries
Data Bits	8
Stop Bits	1

Using the channel 0 default communication push button

The Channel 0 Default Communication Push Button is located on the front of the controller in the lower right corner as shown in the illustration below.



Use the Channel 0 Default Communication Push Button to change from the user-defined communication configuration to the default communications mode. The Channel 0 Default Communications (DCH0) LED turns on (green, steady) to show when the default communication configuration is active.

TIP

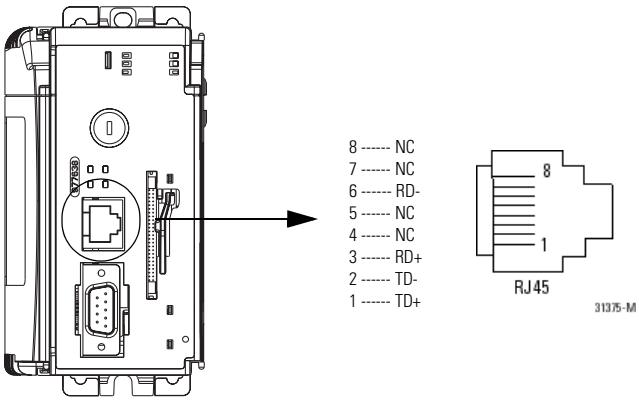
- The Default Communication Push Button is recessed.
- Before pressing the Default Communication Push Button, be sure to note the present communication configuration for Channel 0. Pushing the Default Communication Push Button resets all configured parameters back to their default settings. To return the channel to its user-configured parameters, you must enter them manually while online with the controller or download them as part of an RSLogix 5000 Project file. To accomplish this online using RSLogix 5000, enter the Controller Properties screen and use the Serial Port, System Protocol and User Protocol tabs.

Make Ethernet Connections to the Controller

The 1769-L32E, -L35E controller ships with BOOTP enabled. You must assign an IP address to the Ethernet port in order for the controller to communicate over an EtherNet/IP network. Connect the RJ-45 connector of the Ethernet cable to the Ethernet port (top port, CH1) on the controller.

ATTENTION

Do not plug a DH-485 network cable or a NAP port cable into the Ethernet port. Undesirable behavior and/or damage to the port may result.



Assign an IP address

You can set the IP address using either of these utilities:

- Rockwell BOOTP Utility (available with RSLinx and RSLogix 5000 software)
- RSLinx software
- RSLogix 5000 software

Using BOOTP to set the IP address

The BOOTP utility is a stand alone program that is located in the:

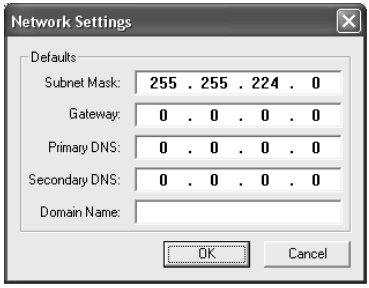
- RSLinx Tools directory in the Rockwell Software program folder on the Start menu (the utility is automatically installed when you install RSLinx software)
- Utils directory on the RSLogix 5000 installation CD.

To use the BOOTP utility.

1. Start the BOOTP software.

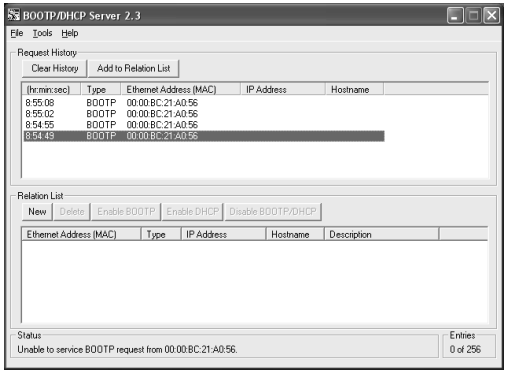
2. Select Tool → Network Settings.

   Enter the Ethernet mask and gateway. Click OK.

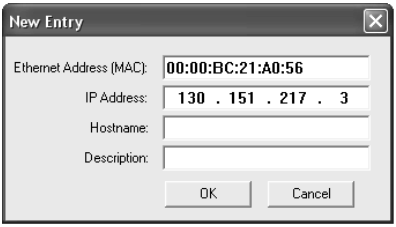


3. In the BOOTP Request History panel you see the hardware addresses of devices issuing BOOTP requests. Double-click on the hardware address of the device you want to configure.

   The hardware address is on the sticker located on the left-side circuit board of the controller next to the battery. See Connect the 1769-BA Battery on page 7 for instructions on accessing this area. The hardware address will be in this format: 00-0b-db-14-55-35.



4. The New Entry window appears with the device's Ethernet Address (MAC). Enter the IP address. Click OK.



5. To permanently assign this configuration to the device, highlight the device and click on the Disable BOOTP/DHCP button. When power is recycled, the device uses the configuration you assigned and not issue a BootP request.

Using RSLinx software to set the IP address

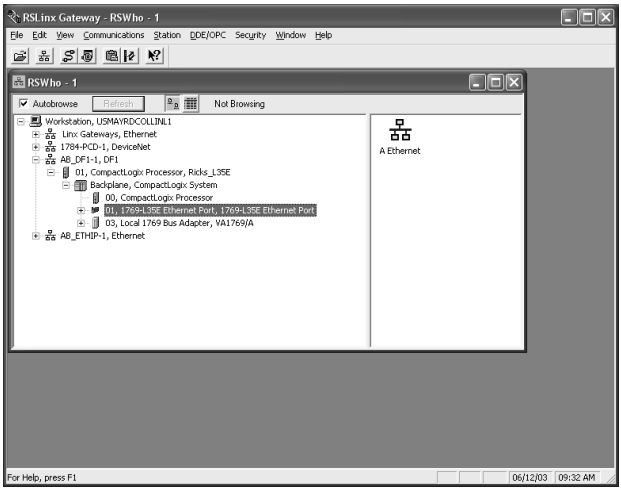
You can use RSLinx software, version 2.41 or higher, to set the IP address.

1. Make sure the controller that uses the IP address is installed and running.

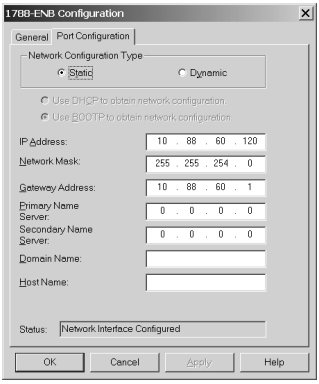
2. Connect to the controller via the serial connection (see page 13).

3. Start RSLinx. The RSWho window opens. Navigate in RSWho to the Ethernet network.

4. Right-click on the Ethernet port (not the controller) and select Module Configuration



5. Select the Port Configuration tab, choose the Status Network Configuration type, and enter the IP address, network (subnet) mask, and gateway address (if needed).



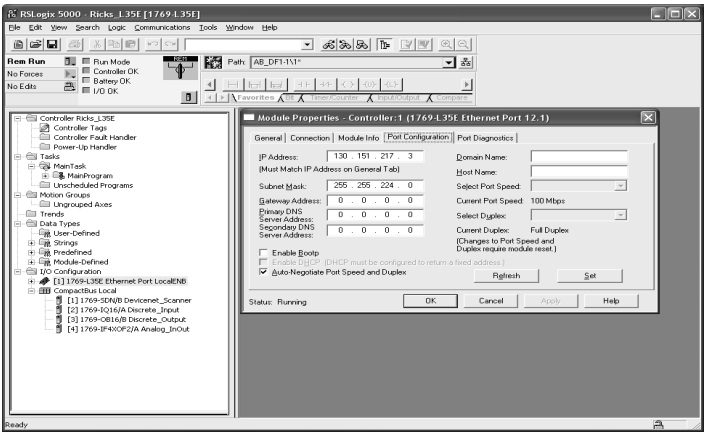
Using RSLogix 5000 software to set the IP address

You can use RSLogix software to set the IP address.

1. Make sure the controller that uses the IP address is installed and running.

2. Connect to the controller via the serial connection (see page 13).

3. Start RSLogix 5000 software. In the Controller Organizer, select properties for the Ethernet port.



4. Select the Port Configuration tab and specify the IP address and click Apply. Then click OK.

   This sets the IP address in the hardware. This IP address should be the same IP address you assigned under the General tab.

Install the Appropriate EDS Files

If you have RSLinx software, version 2.42 or greater, the most current EDS files were installed with the software. If you are using an older version of RSLinx software, you might need to install EDS files. You need EDS files for:

- 1769-L32E controller
- 1769-L32E EtherNet/IP port
- 1769-L35E controller
- 1769-L35E EtherNet/IP port
- 1769 CompactBus
- 1769 local adapter

All of these EDS files, except for the 1769 CompactBus file, are updated for each firmware revision. There is also a revision 1 of the EDS files that you need for new controllers. Each controller ships with revision 1 firmware. In order to update the firmware, you must have these revision 1 EDS files installed:

- 0001000E00410100.eds for the controller
- 0001000C00780100.eds for the EtherNet/IP port

The EDS files are available on the CD for RSLogix 5000 Enterprise Series software, version 13. The files are also available at:

http://www.ab.com/networks/eds.

Load the Controller Firmware

The controller ships without working firmware. You must download the current firmware before you can use the controller. To load firmware, you can use:

- ControlFlash utility that ships with RSLogix 5000 programming software.
- AutoFlash that launches through RSLogix 5000 software when you try to open or create a project and the controller does not have the current firmware.
- a 1784-CF64 CompactFlash card with valid memory already loaded.

The firmware is available with RSLogix 5000 software or you can download it from the support website:

1. Go to http://support.rockwellautomation.com
2. In the left column (frame), select Firmware Updates under Technical Support
3. Select the firmware revision.

   The download process will require you to enter the serial number of your RSLogix 5000 programming software.

If you load (flash) controller firmware via the ControlFlash or AutoFlash utilities, you need either a serial or EtherNet/IP connection to the controller. Flashing via an EtherNet/IP connection is faster than the serial connection. The controller's EtherNet/IP configuration settings are maintained during a flash process.

Using ControlFlash to load firmware

You can use ControlFlash to load firmware through either an Ethernet connection (an IP address must already be assigned to the Ethernet port) or a serial connection.

1. Make sure the appropriate network connection is made before starting.
2. Start the ControlFlash utility. Click Next when the Welcome screen appears.
3. Select the catalog number of the controller and click Next.

4. Expand the network until you see the controller. If the required network is not shown, first configure a driver for the network in RSLinx software.

   If you use an Ethernet connection to load the firmware (which is much faster than the serial connection), the utility will ask for a valid IP address before connecting to the controller.

5. Select the controller and click OK
6. Select the revision level to which you want to update the controller and click Next.
7. To start the update of the controller, click Finish and then click Yes.
8. After the controller is updated, the status box displays *Update complete*. Click OK.
9. To close ControlFlash software, click Cancel and then click Yes.

Using AutoFlash to load firmware

You can use AutoFlash to load firmware through either an Ethernet connection (an IP address must already be assigned to the Ethernet port) or a serial connection.

1. Make sure the appropriate network connection is made before starting.
2. Use RSLogix 5000 programming software to attempt to create a controller project. This automatically launches AutoFlash.
3. Select the catalog number of the controller and click Next.
4. Expand the network until you see the controller. If the required network is not shown, first configure a driver for the network in RSLinx software.

   If you use an Ethernet connection to load the firmware (which is much faster than the serial connection), the utility will ask for a valid IP address before connecting to the controller.

5. Select the controller and click OK
6. Select the revision level to which you want to update the controller and click Next.
7. To start the update of the controller, click Finish and then click Yes.
8. After the controller is updated, the status box displays *Update complete*. Click OK.
9. To close AutoFlash software, click Cancel and then click Yes.

Using a CompactFlash card to load firmware

If you have an existing controller that is already configured and has firmware loaded, you can store the current controller user program and firmware on CompactFlash and use that card to update other controllers.

1. Use RSLogix 5000 software to store the controller user program and firmware of a currently configured controller to the CompactFlash card.

   Access the Nonvolatile Memory tab of the Controller Properties dialog. Make sure to select Load Image On Powerup when you save to the card.

2. Remove the card and insert it into a controller that you want to have the same firmware and controller user program.

3. When you power up the second controller, the image stored on the CompactFlash card is loaded into the controller.

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 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.

Controller LEDs

Indicator:	Color:	Description:
RUN	off	The controller is in Program or Test mode.
	solid green	The controller is in Run mode.
FORCE	off	No tags contain I/O force values. I/O forces are inactive (disabled).
	solid amber	I/O forces are active (enabled). I/O force values may or may not exist.
	flashing amber	One or more input or output addresses have been forced to an On or Off state, but the forces have not been enabled.
BAT	off	The battery supports memory.
	solid red	Either the battery is: • not installed. • 95% discharged and should be replaced.
I/O	off	Either: • There are *no* devices in the I/O configuration of the controller. • The controller does *not* contain a project (controller memory is empty).
	solid green	The controller is communicating with all the devices in its I/O configuration.
	flashing green	One or more devices in the I/O configuration of the controller are *not* responding.
	flashing red	The controller is not communicating to any devices. The controller is faulted.
OK	off	No power is applied.
	flashing red	**If the controller is:** / **Then:** a new controller / the controller requires a firmware update not a new controller / A major fault occurred. To clear the fault, either: - Turn the keyswitch from PROG to RUN to PROG - Go online with RSLogix 5000 software
	solid red	The controller detected a non-recoverable fault, so it cleared the project from memory. To recover: 1. Cycle power to the chassis. 2. Download the project. 3. Change to Run mode. If the OK LED remains solid red, contact your Rockwell Automation representative or local distributor.
	solid green	Controller is OK.
	flashing green	The controller is storing or loading a project to or from nonvolatile memory.

RS-232 serial port LEDs (channel 0)

Indicator:	Color:	Description:
DCH0	off	Channel 0 is configured differently than the default serial configuration.
	solid green	Channel 0 has the default serial configuration.
CH0	off	No RS-232 activity.
	flashing green	RS-232 activity.

CompactFlash card LED

ATTENTION

Do not remove the CompactFlash card while the controller is reading from or writing to the card, as indicated by a flashing green CF LED. This could corrupt the data on the card or in the controller, as well as corrupt the latest firmware in the controller.

Indicator:	Color:	Description:
CF	off	No activity.
	flashing green	The controller is reading from or writing to the CompactFlash card.
	flashing red	CompactFlash card does not have a valid file system.

EtherNet/IP LEDs

Module Status (MS) indicator

Condition:	Status:	Indicates:	Recommended Action:
off	no power	The controller does not have power.	Check the controller power supply.
flashing green	standby	The port does not have an IP address and is operating in BOOTP mode.	Verify that the BOOTP server is running.
solid green	OK	The port is operating correctly.	Normal operation. No action required.
solid red	held in reset	The controller is holding the port in reset or the controller is faulted.	Clear the controller fault. Replace the controller.
	self-test	The port is performing its power-up self-test.	Normal operation during power-up. No action required.
	major fault	An unrecoverable fault has occurred.	Cycle power to the controller. Replace the controller.
flashing red	updating firmware	The port firmware is being updated.	Normal operation during firmware update. No action required.

Network Status (NS) indicator

Condition:	Status:	Indicates:	Recommended Action:
off	not initialized	The port does not have an IP address and is operating in BOOTP mode.	Verify that the BOOTP server is running.
flashing green	no CIP connections established	The port has an IP address, but no CIP connections are established.	Normal operation if no connections are configured. No action required. If connections are configured, check connection originator for connection error code.
solid green	CIP connections established	The port has an IP address and CIP connections (Class 1 or Class 3) are established.	Normal operation. No action required.
solid red	duplicate IP address	The port has detected that the assigned IP address is already in use.	Verify that all IP addresses are unique.
flashing red/green	self-test	The port is performing its power-up self-test.	Normal operation during powerup.

Link Status (LNK) indicator

Condition:	Status:	Indicates:	Recommended Action:
off	no link	The port is not connected to a powered Ethernet device. The port cannot communicate on Ethernet.	Verify that all Ethernet cables are connected. Verify that Ethernet switch is powered.
flashing green	self-test	The port is performing its power-up self-test.	Normal operation during powerup.
	data transmission and reception	The port is communicating on Ethernet.	Normal operation. No action required.
solid green	link OK	The port is connected to a powered Ethernet device. The port can communicate on Ethernet.	Normal operation. No action required.

Specifications

Description	1769-L32E	1769-L35E
Communication Ports	**CH0 - RS-232** RS-232 DF1 38.4 Kbit/s maximum	**EtherNet/IP** RJ-45 or 10BaseT EtherNet/IP 10/100 MBytes/sec
User Memory	750 Kbytes	1.5 Mbytes
Nonvolatile Memory	1784-CF64 CompactFlash	
Maximum Number of I/O Modules	16 I/O modules	30 I/O modules
Maximum Number of I/O Banks	3 banks	3 banks
Backplane Current	660 mA at 5V dc 90 mA at 24V dc	660 mA at 5V dc 90 mA at 24V dc
Power Dissipation	4.74 W	4.74 W
Power Supply Distance Rating	4 (The controller must be within four slot positions of the power supply.)	
Battery	1769-BA	
Programming Cable	1747-CP3 or 1756-CP3	
Panel Mounting Screw Torque (using M4 or #8 screws)	10 - 16 in-lb (1.1 - 1.8 Nm)	
Enclosure Type Rating	none (open style)	
Wiring Category	2 on communication ports[1]	
Isolation Voltage (continuous-voltage withstand rating)	30V dc continuous Tested to withstand 710V dc for 60 sec	
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° to +60°C (+32° to +140°F)	
Storage Temperature IEC 60068-2-1 (Test Ab, Unpackaged Non-operating Cold) IEC 60068-2-2 (Test Bb, Unpackaged Non-operating Dry Heat) IEC 60068-2-14 (Test Na, Unpackaged Non-operating Thermal Shock)	-40° to +85°C (-40° to +185°F)	
Relative Humidity IEC 60068-2-30 (Test Db, Unpackaged Non-operating Damp Heat)	5% to 95% non-condensing	
Vibration IEC 60068-2-6 (Test Fc, Operating)	Operating: 5G @ 10-500Hz	
Shock IEC 60068-2-27 (Test Ea, Unpackaged Shock) DIN mount Panel mount	 Operating: 20G; Non-operating: 30G Operating: 30G; Non-operating: 40G	
Emissions	CISPR 11: Group 1, Class A	

Description	1769-L32E	1769-L35E
ESD Immunity (IEC61000-4-2)	4kV contact discharges, 8kV air discharges	
Radiated RF Immunity (IEC61000-4-3)	10V/M with 1kHz sine-wave 80%AM from 80MHz to 2000MHz 10V/m with 200Hz 50% Pulse 100%AM at 900MHz 10V/m with 200Hz 50% Pulse 100%AM at 1890MHz	
EFT/B Immunity (IEC 61000-4-4)	±2kV at 5kHz on communication ports	
Surge Transient Immunity (IEC61000-4-5)	±2kV line-earth (CM) on shielded ports	
Conducted RF Immunity (IEC61000-4-6)	10Vrms with 1kHz sine-wave 80% AM from 150kHz to 80MHz	

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

Certifications

Certifications (when product is marked):	Description:
c-UL-us	UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for U.S. and Canada
CE(1)	European Union 89/336/EEC EMC Directive, compliant with: • EN 50082-2; Industrial Immunity • EN 61326; Meas./Control/Lab., Industrial Requirements • EN 61000-6-2; Industrial Immunity • EN 61000-6-4; Industrial Emissions
C-Tick(1)	Australian Radio Communications Act, compliant with: • AS/NZS CISPR 11; Industrial Emissions

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

Additional Information

Installation instructions ship with each component. If you want other documentation, you must order it separately. This product has the following manuals:

- *Logix5000 Controllers Common Procedures*, publication 1756-PM001
- *Logix5000 Controllers General Instructions Reference Manual*, publication 1756-RM003
- *Logix5000 Controllers Process Control and Drives Instructions Reference Manual*, publication 1756-RM006
- *CompactLogix System User Manual*, publication 1769-UM0011

If you want to:	Then:
view a manual	Visit either of these locations: • www.ab.com/manuals • www.theautomationbookstore.com
download a manual	
purchase a printed manual	Use one of these options: • contact your local distributor or Rockwell Automation representative • visit www.theautomationbookstore.com and place an order • call 800.963.9548 (USA/Canada) or 001.320.725.1574 (outside USA/Canada)

You can download:

- firmware from: support.rockwellautomation.com
- EDS files from: www.ab.com/networks/eds

Rockwell Automation Support

Rockwell Automation provides technical information on the web to assist you in using our products. At http://support.rockwellautomation.com, 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://support.rockwellautomation.com.

Installation Assistance

If you experience a problem with a hardware module within the first 24 hours of installation, please review the information that's contained in this manual. You can also contact a special Customer Support number for initial help in getting your module up and running:

United States	1.440.646.3223 Monday – Friday, 8am – 5pm EST
Outside United States	Please contact your local Rockwell Automation representative for any technical support issues.

New Product Satisfaction Return

Rockwell tests all of our 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:

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

www.rockwellautomation.com

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