



Installation Instructions

ControlLogix® Controller and Memory Board

| Product | Catalog Number | Series |
|-------------------------------|---|--------|
| ControlLogix5550 controller | 1756-L1, 1756-L1M1, 1756-L1M2, 1756-L1M3 | A |
| ControlLogix5555 controller | 1756-L55, 1756-L55M12, 1756-L55M13, 1756-L55M14, 1756-L55M16, 1756-L55M22, 1756-L55M23, 1756-L55M24 | A |
| ControlLogix5561 controller | 1756-L61 | A, B |
| ControlLogix5562 controller | 1756-L62 | A, B |
| ControlLogix5563 controller | 1756-L63 | A, B |
| ControlLogix5550 memory board | 1756-M1, 1756-M2, 1756-M3 | A |
| ControlLogix5555 memory board | 1756-M12, 1756-M13, 1756-M14, 1756-M16, 1756-M22, 1756-M23, 1756-M24 | A |
| Industrial CompactFlash card | 1784-CF64 | n/a |

Are You Replacing a Controller That has Failed?

For abbreviated steps, see page 4.

WARNING



An electrical arc can occur if you:

- insert or remove the CompactFlash card
- insert or remove the controller while backplane power is on
- connect or disconnect the battery
- connect or disconnect the serial cable with power applied to this module or the serial device on the other end of the cable

This could cause an explosion in hazardous location installations. Make sure that power is removed or the area is nonhazardous before proceeding.

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.

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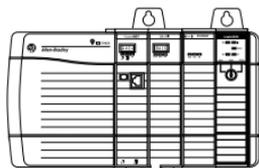
Throughout this manual, when necessary we use notes to make you aware of safety considerations.

| | |
|--|---|
|  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: <ul style="list-style-type: none">• identify a hazard• avoid a hazard• recognize the consequence |
|  SHOCK HAZARD | Labels may be located on or inside the equipment (e.g., drive or motor) to alert people that dangerous voltage may be present. |
|  BURN HAZARD | Labels may be located on or inside the equipment (e.g., drive or motor) to alert people that surfaces may be dangerous temperatures. |

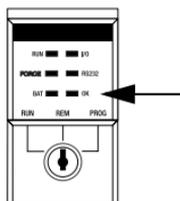
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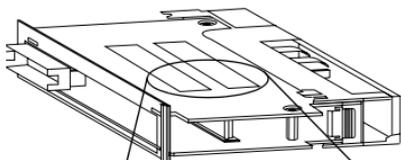
Replace a Suspected Failed Controller



1. Cycle the power to the chassis.



2. Make sure the OK LED is solid red. If the OK LED is *not* solid red, the controller *does not* require replacement.



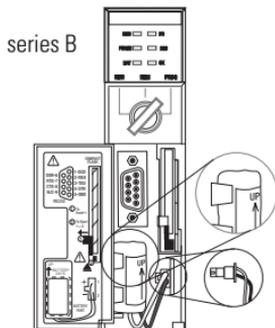
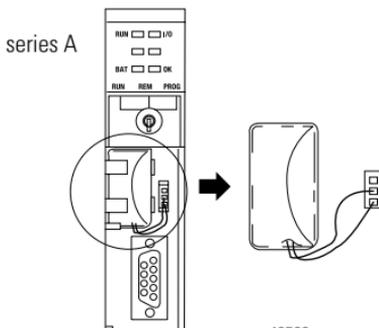
Allen-Bradley
ControlLogix
CAT. NO./SERIES
1756-M...

Catalog number of the memory board, if one is installed

Allen-Bradley
ControlLogix
CAT. NO./SERIES
1756-L...

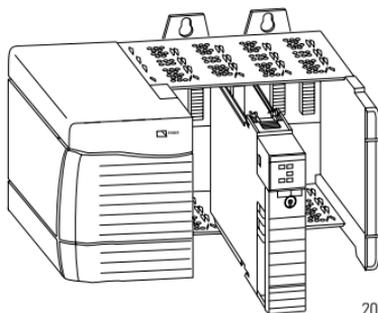
Catalog number of the controller

4. Install the battery.





5. Insert the key and turn it to the PROG position.

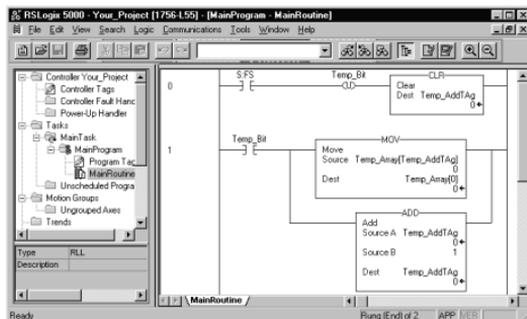


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6. Insert the controller into the chassis.



7. Use ControlFlash software to update the firmware of the controller.



8. Download the RSLogix 5000 project to the controller.

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.
-

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.

Avoid These Common Errors

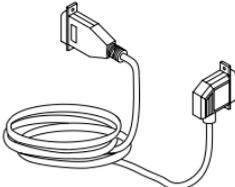
| If you have this controller: | Make sure that you: |
|--|---|
| all | Update the firmware of the controller to the revision that is compatible with your RSLogix 5000 software. Controllers ship with firmware that lets you only update them. |
| ControlLogix5550 | Make sure you use the correct memory board (one per controller). See page 10. |
| ControlLogix5555 | <ul style="list-style-type: none"> • If you purchased a ControlLogix5555 controller without a memory board, you <i>must</i> install a memory board. • Make sure you use the correct memory board (one per controller). See page 10. |
| IMPORTANT | <ul style="list-style-type: none"> • <i>Before</i> you change a memory board, update the controller to a revision that is compatible with the memory board that you intend to install. |
| | <ul style="list-style-type: none"> • Make sure you use the correct firmware revision. See page 10. |
| ControlLogix5561 ControlLogix5562 ControlLogix5563 | <ul style="list-style-type: none"> • <i>Do not</i> install a memory board. • Make sure you use the correct firmware revision. See page 10. |

Make Sure that You Have All the Components

These components ship with the controller:

| Component: | Description: |
|---|--|
|  | Series A controllers: 1756-BA1 battery Series B controllers: 1756-BA2 battery |
|  | key |

You may also use these components with the controller:

| If you want to: | And you have this controller: | Then use this component: |
|--|--|---|
| connect a device to the serial port of the controller (e.g., connect a computer to the controller) | → | 1756-CP3 serial cable  |
| increase the memory of the controller | ControlLogix5550 ControlLogix5555 | memory board  For the correct memory board, see page 10. |
| | ControlLogix5561 ControlLogix5562 ControlLogix5563 | NOT available for this controller |

| If you want to: | And you have this controller: | Then use this component: |
|---|---|--|
| add nonvolatile memory | ControlLogix5550 | NOT available for this controller |
| | ControlLogix5555 | memory board |
| | |  |
| | | For the correct memory board, see page 10. |
| | ControlLogix5561 ControlLogix5562 ControlLogix5563 | 1784-CF64 Industrial CompactFlash card |
| | |  31376-M |
| maintain memory longer than is available with the battery | ControlLogix5550 | NOT available for this controller |
| | ControlLogix5555 ControlLogix5561 Series A ControlLogix5562 Series A ControlLogix5563 Series A | 1756-BATM ControlLogix battery module |
| Important: This option maintains memory <i>only</i> while the controller is in the chassis | |  31298 |
| | ControlLogix5561 Series B ControlLogix5562 Series B ControlLogix5563 Series B | NOT available for this controller ⁽¹⁾ |

⁽¹⁾ Series B controllers use the battery differently than previous controllers. Battery life depends on chassis temperature, project size, and how often you cycle power. Battery life *no longer* depends on whether or not the controller has power.

Make Sure You Have the Correct Memory Board

| If you have this controller: | And you want: | Use one of these memory boards: |
|------------------------------|-----------------------|--|
| ControlLogix5550 | —————▶ | 1756-M1, 1756-M2, 1756-M3 |
| ControlLogix5555 | NO nonvolatile memory | 1756-M12, 1756-M13, 1756-M14, 1756-M16 |
| | nonvolatile memory | 1756-M22, 1756-M23, 1756-M24 |
| ControlLogix5561 | —————▶ | <i>Do not</i> install a memory board. |
| ControlLogix5562 | —————▶ | <i>Do not</i> install a memory board. |
| ControlLogix5563 | —————▶ | <i>Do not</i> install a memory board. |

Determine Which Firmware Revisions to Use

To update the firmware of a controller, first install a firmware upgrade kit.

- An upgrade kit ships on a supplemental CD along with RSLogix 5000 software.
- To download an upgrade kit, go to www.ab.com. Choose *Product Support*. Choose *Firmware Updates*.

Use the following table to determine which firmware revisions to use with your controller and memory board combination:

| For this controller and memory board: | And this series: | And: | Use this revision OR later: |
|--|-------------------------|----------------------|------------------------------------|
| 1756-L1 | → | → | any |
| 1756-L1M1 | → | → | any |
| 1756-L1M2 | → | → | any |
| 1756-L1M3 | → | → | any |
| 1756-L55M12 | → | → | 10.x or later |
| 1756-L55M13 | → | → | 6.x or later |
| 1756-L55M14 | → | → | 6.x or later |
| 1756-L55M16 | → | → | 6.x or later |
| 1756-L55M22 | → | → | 10.x or later |
| 1756-L55M23 | → | → | 8.x or later |
| 1756-L55M24 | → | → | 8.x or later |
| 1756-L61 | A | → | 12.x or later |
| | B | → | 13.40 or later |
| 1756-L62 | A | → | 12.x or later |
| | B | → | 13.40 or later |
| 1756-L63 | A | NO CompactFlash card | 10.x or later |
| | | CompactFlash card | 11.x or later |
| | B | → | 13.40 or later |

Make sure that the firmware revision is compatible with your revision of RSLogix 5000 software.

Prepare the Chassis

Before you install a controller, do these preliminary steps:

- Install a ControlLogix chassis.
- Install a ControlLogix power supply.

Remove the Controller from the Chassis, If Required

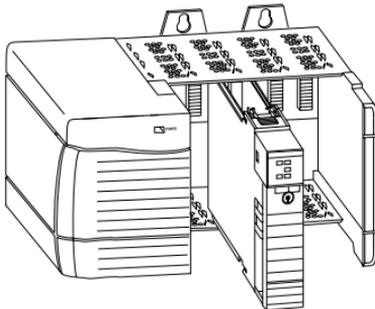
You can install or remove a controller while chassis power is on and the system is operating. If you remove the controller, all the devices owned by the controller go to their configured fault state.

WARNING

When 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.

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.

1. On the top and bottom of the controller, press the locking tabs.
2. Slide the controller out of the chassis.



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Install a Memory Board on a ControlLogix5550 or ControlLogix5555 Controller

ATTENTION


Before you install or replace the memory board, disconnect the battery from the controller. Otherwise, you may damage the memory board.

If your ControlLogix5550 or ControlLogix5555 controller requires a different memory board, install or replace the board as follows:

Tools that You Need

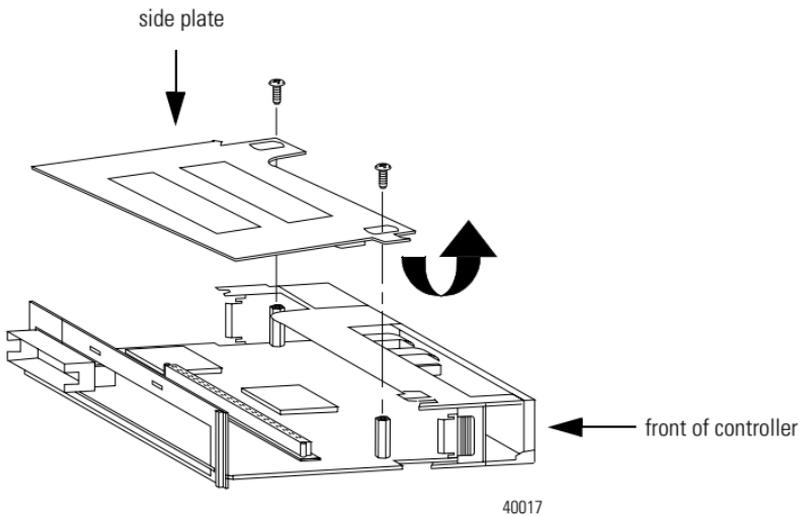
- #2 phillips screwdriver
- grounding wriststrap

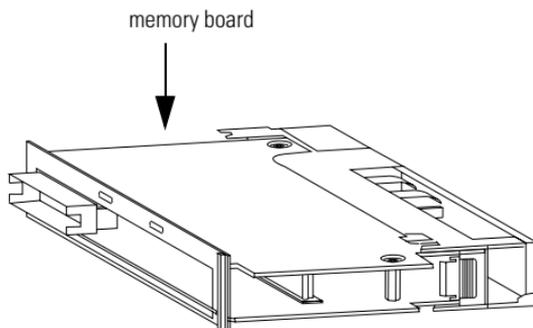
Determine If You Must Update the Controller Firmware Before You Replace the Board.

| If you have this controller: | And you are replacing the memory board with a: | Then: |
|-------------------------------------|---|--|
| ControlLogix5550 | —————▶ | No update is required at this time. |
| ControlLogix5555 | same catalog number of memory board different catalog number of memory board For example, you are replacing a 1756-M13 memory board with a 1756-M23 memory board. | No update is required at this time. <i>Before you replace the board:</i> <ul style="list-style-type: none"> • Update the firmware of the controller to a revision that is compatible with the memory board that you will install. • See "Update the Controller" on page 29. |

Remove the Side Plate of the Controller

1. Lay the controller on its side with the label facing up.
2. While wearing a grounding wriststrap, remove the two screws that attach the side plate to the controller.
3. Rotate the side plate up and unhook it from the controller.



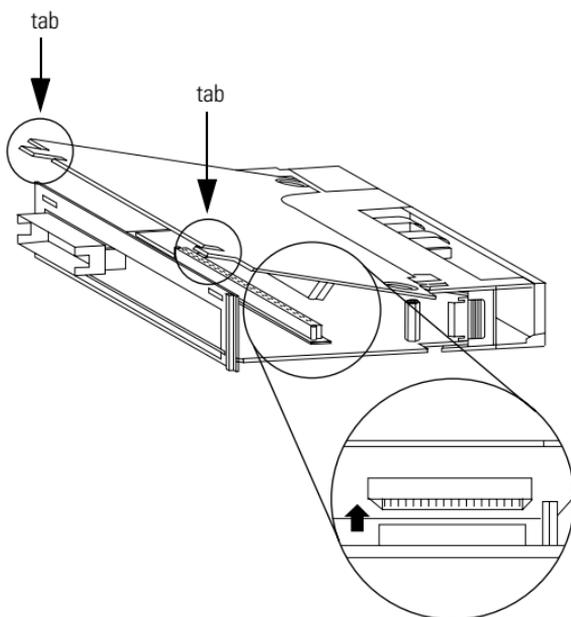
Remove the Existing Memory Board (If Any)

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1. Does the controller already have a memory board?

| If: | Then: |
|------------|--|
| No | Go to "Install the Memory Board" on page 17. |
| Yes | Go to step 2. |

2. Pull the plastic back edge of the controller out slightly to clear the tabs on the memory board.

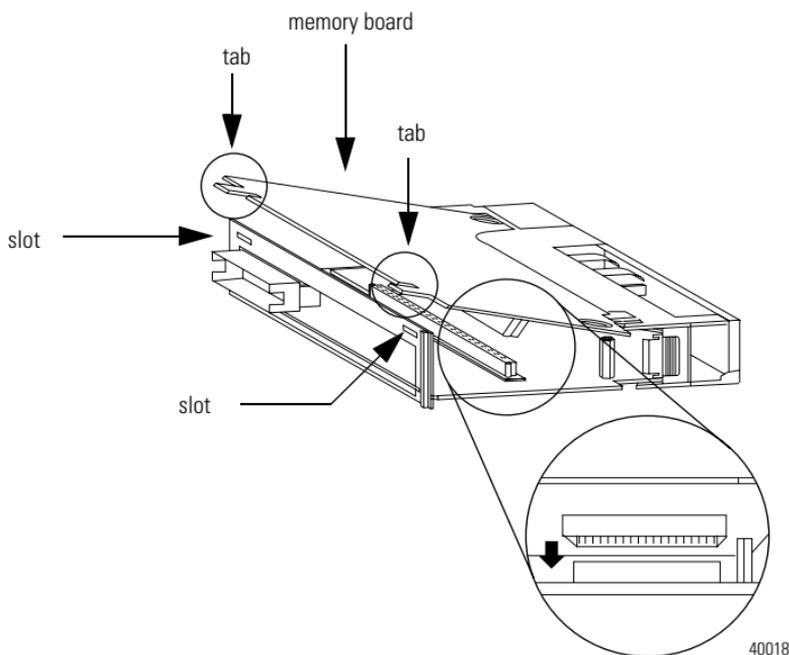


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3. Gently separate and remove the memory board from the controller.

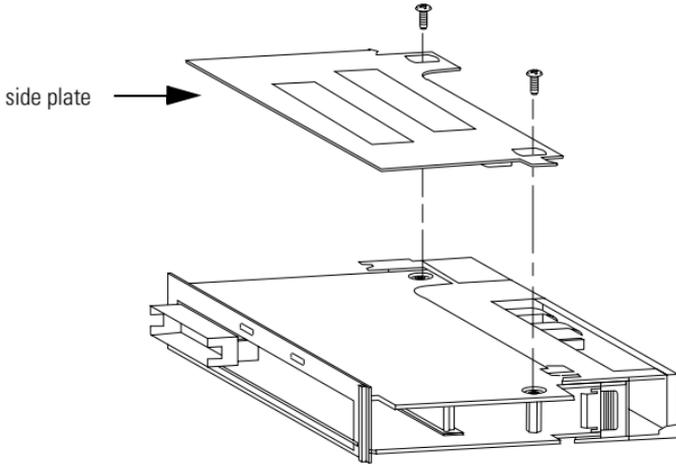
Install the Memory Board

1. Place the memory board over the connector and slide the memory board into the controller.



2. Pull the plastic back edge of the controller out slightly to clear the tabs of the memory board.
3. Line up the connectors.
4. Place your hands on the boards over the connectors and gently squeeze them together.
5. Make sure that the tabs on the memory board extend through the slots on the plastic housing of the controller.

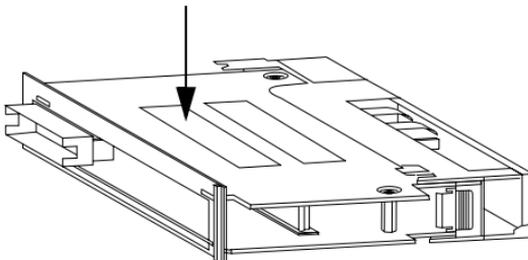
Replace the Side Plate



1. Line up the hinge tabs on the side plate with the slots in the plastic housing of the controller.
2. Gently press the side plate against the controller.
3. Replace the screws.

Attach Labels

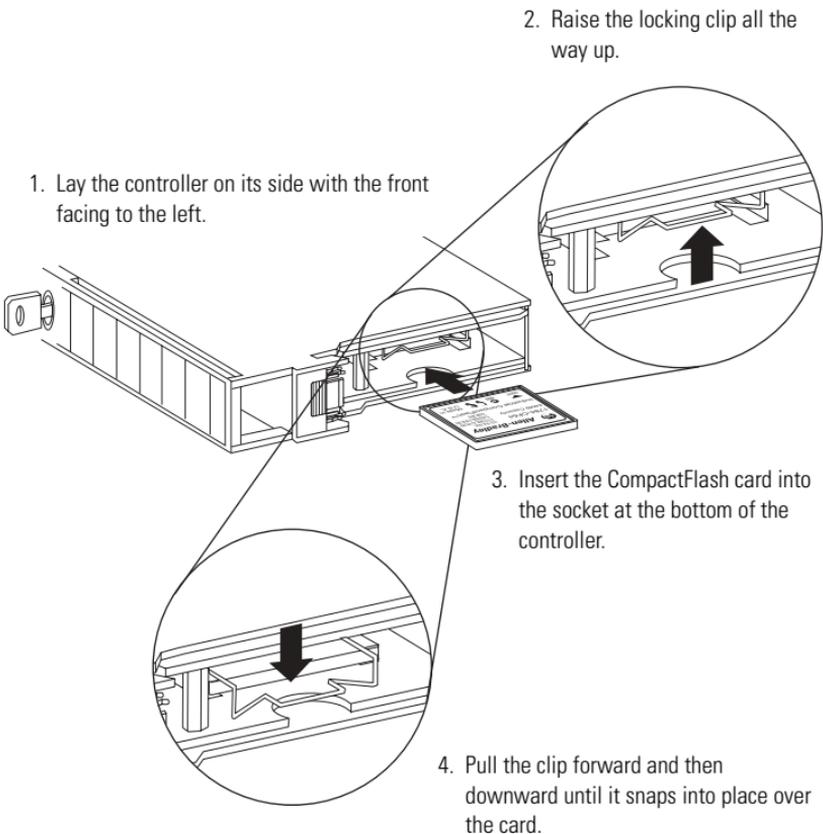
To identify which memory board is installed, place the memory board label on the side of the controller.



Install a 1784-CF64 Industrial CompactFlash Card in a ControlLogix5561, ControlLogix5562, ControlLogix5563 Controller

A 1784-CF64 Industrial CompactFlash card provides nonvolatile memory for a ControlLogix5561, ControlLogix5562, ControlLogix5563 controller.

Install a CompactFlash Card in a Series A Controller



Install a CompactFlash Card in a Series B Controller

WARNING

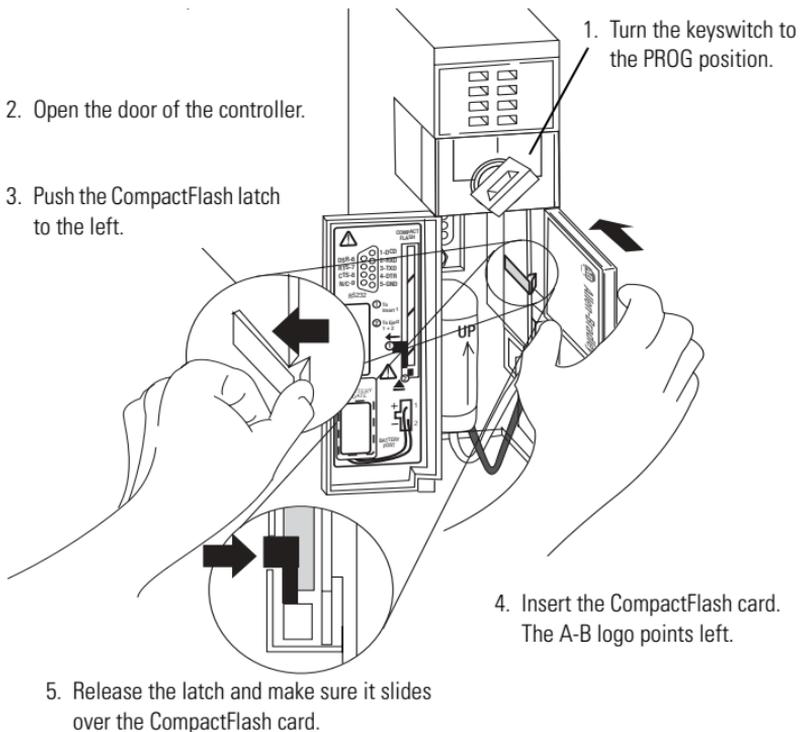


When you insert or remove the CompactFlash card an electrical arc can occur. This could cause an explosion in hazardous location installations. Be sure that power is removed or the area is nonhazardous before proceeding.

ATTENTION



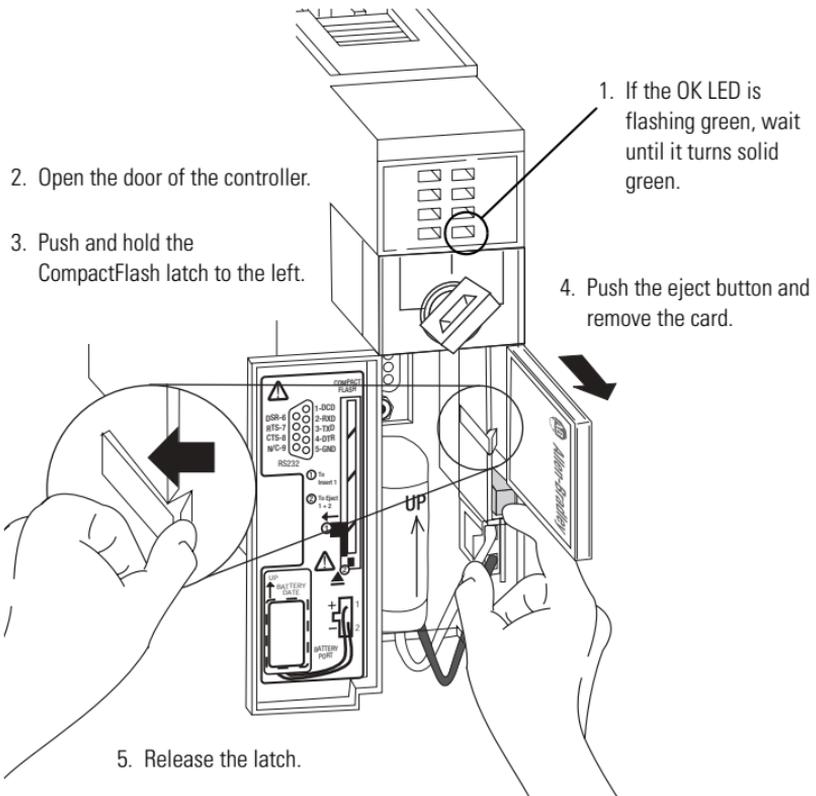
If you are NOT sure of the contents of the CompactFlash card, *before* you install the card turn the keyswitch of the controller to the PROG position. Depending on the contents of the card, a power cycle or fault could cause the card to load a different project into the controller.



Remove a CompactFlash Card from a Series B Controller

WARNING


When you insert or remove the CompactFlash card 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.



Connect a Battery

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.

ATTENTION


To prevent possible battery leakage, even if the BAT LED is off, replace a 1756-BA1 or 1756-BA2 battery according to the following schedule:

| If the temperature 1 in. below the chassis is: | Replace the battery within: |
|---|------------------------------------|
| 0° ... 35° C | No required replacement |
| 36° ... 40° C | 3 years |
| 41° ... 45° C | 2 years |
| 46° ... 50° C | 16 months |
| 51° ... 55° C | 11 months |
| 56° ... 60° C | 8 months |

ATTENTION

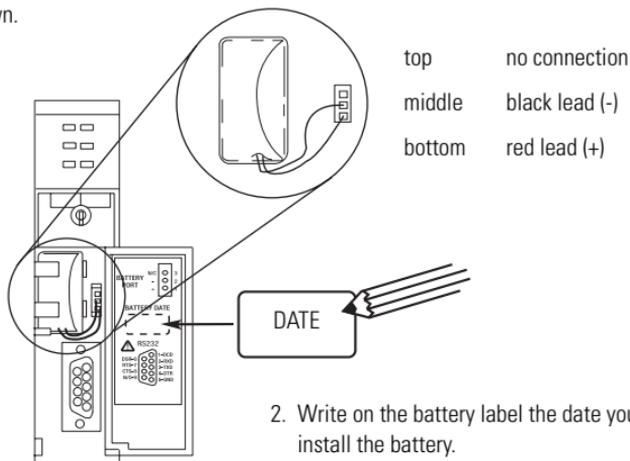

Store batteries in a cool, dry environment. We recommend 25°C with 40%...60% relative humidity. You may store batteries for up to 30 days between -45°...85°C, such as during transportation. To avoid leakage or other hazards, *do not* store batteries above 60°C for more than 30 days.

Install a Battery in a Series A Controller

ATTENTION


For a series A controller, connect only a 1756-BA1 battery or a 1756-BATM battery module. Other batteries may damage the controller.

1. Insert and connect the battery as shown.



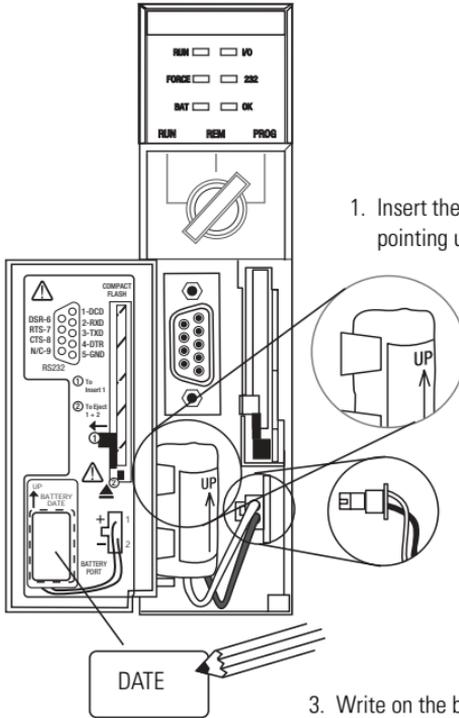
2. Write on the battery label the date you install the battery.
3. Attach the label to the inside of the controller door.

Install a Battery in a Series B Controller

ATTENTION



For a series B controller, connect only a 1756-BA2 battery. Other batteries may damage the controller.



1. Insert the battery with the arrow pointing up as shown.

2. Connect the battery.
+ red
- black

3. Write on the battery label the date you install the battery.
4. Attach the label to the inside of the controller door.

Install the Controller into the Chassis

When you install a ControlLogix controller, you can:

- place the controller in any slot
- use multiple controllers in the same chassis

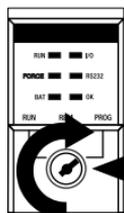
You can install or remove a ControlLogix controller while chassis power is on and the system is operating.

WARNING



When you insert or remove the module while backplane power is on, an 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.

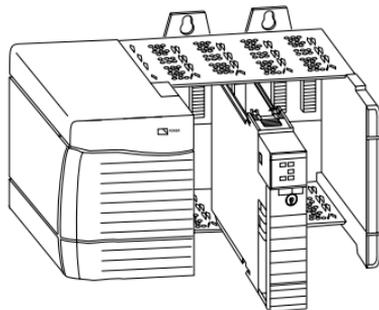
Repeated electrical arcing causes excessive wear to contacts on both the module and its mating connector. Worn contacts may create electrical resistance that can affect module operation.



1. Insert the key into the controller.



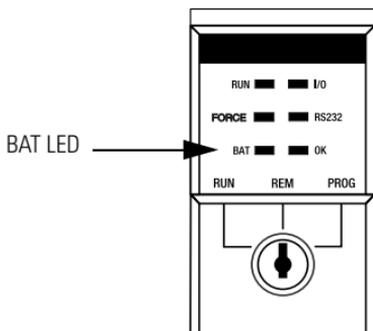
2. Turn the key to the PROG position.
3. Align the circuit board with the top and bottom guides in the chassis.



4. Slide the module into the chassis. Make sure it is flush with the power supply or other modules and the top and bottom latches are engaged.

Check the BAT LED

1. Turn on the chassis power.



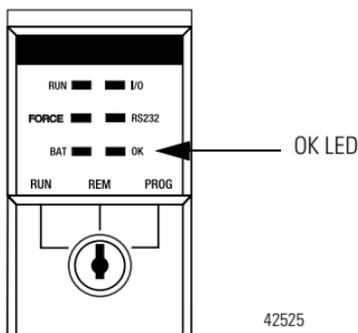
42525

2. Is the BAT LED off?

| If: | Then: |
|------------|---|
| Yes | Go to "Determine Which Firmware Revisions to Use" on page 10. |
| No | Go to step 3. |

3. Check that the battery or battery module is correctly connected to the controller.
4. If the BAT LED remains on, install another battery.
5. If the BAT LED remains on after you complete step 4, contact your Rockwell Automation representative or local distributor.

Check the OK LED



1. What color is the OK LED?

| If: | Then: | Actions: |
|--------------|---|--|
| solid green | The controller is OK and its firmware has been updated. | No further actions are required. However, the revision of firmware must be compatible with your revision of RSLogix 5000 software. |
| flashing red | The controller is OK but it requires a firmware update. | Go to "Determine Which Firmware Revisions to Use" on page 10. |
| solid red | The memory board of the controller may not be compatible with the revision of firmware. | Go to step 2. |

2. Is this a ControlLogix5555 controller?

| If: | Then: |
|-----|--|
| No | The controller is not operational. Contact your Rockwell Automation representative or local distributor. |
| Yes | Go to step 3. |

3. Did you replace a memory board with a memory board that has a different catalog number? For example, did you replace a 1756-M13 memory board with a 1756-M23 memory board?

| If: | Then: |
|------------|--|
| No | The controller is not operational. Contact your Rockwell Automation representative or local distributor. |
| Yes | Go to step 4. |

4. Re-install the previous memory board.
5. Update the firmware of the controller to a revision that is compatible with the memory board that you intend to install. See “Determine Which Firmware Revisions to Use” on page 10.
6. Install the new memory board.
7. What color is the OK LED?

| If: | Then: |
|-------------|--|
| solid green | No further actions are required. However, the revision of firmware must be compatible with your revision of RSLogix 5000 software. |
| solid red | The controller is not operational. Contact your Rockwell Automation representative or local distributor. |

Update the Controller

TIP

RSLogix 5000 software, revision 10.0 or later, lets you update the firmware of a controller as part of the download sequence. To update the controller, download your project and follow the prompts of the software.

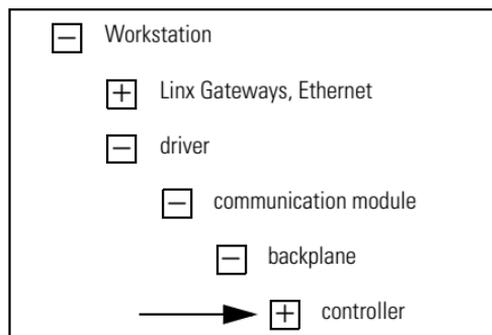
1. Connect the controller or chassis to the same network as your workstation.
2. Start ControlFLASH software.
3. Choose Next >.
4. Select the catalog number of the controller and choose Next >.
5. Expand the network until you see the controller.

IMPORTANT

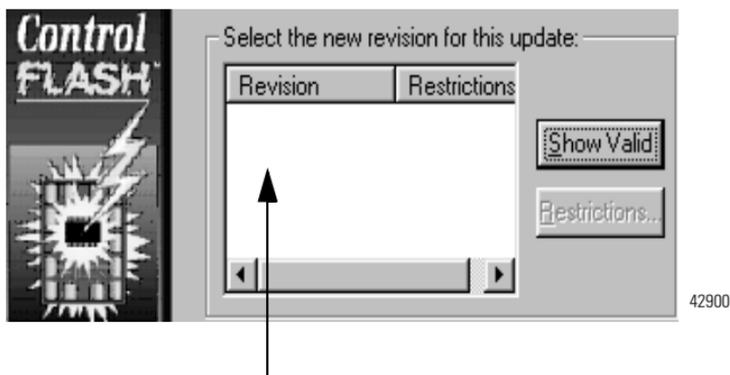
If the required network is not shown, first configure a driver for the network in RSLinx software.

To expand a network one level, do one of the following:

- Double-click the network.
- Select the network and press the → key.
- Click the + sign.



6. Select the controller and choose *OK*.



7. Select the revision level to which you want to update the controller and choose *Next >*.

IMPORTANT

If the Revision list is empty, download a new upgrade kit. Some older upgrade kits do not work with new controllers.

8. To start the update of the controller, choose *Finish* and then *Yes*.

After the controller is updated, the status box displays *Update complete*.
9. Choose *OK*.
10. To close ControlFLASH software, choose *Cancel* and then *Yes*.

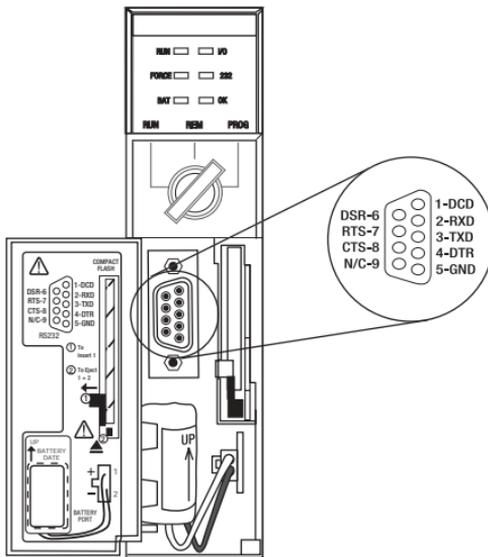
Connect a Serial Cable

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.

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

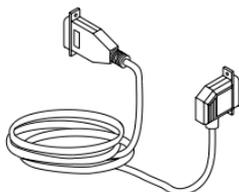
Use the serial port for RS-232 communication.



To connect a workstation to the serial port, use one of these cables:

- 1756-CP3 serial cable
- 1747-CP3 cable from the SLC product family (If you use this cable, the controller door may not close.)

workstation end

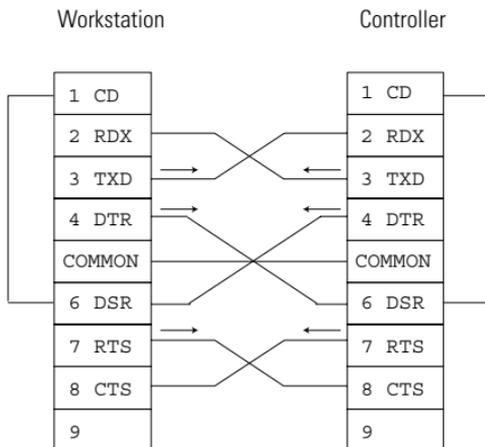


controller end

42576

If you make your own serial cable:

- Limit the length to 15.2m (50 ft).
- Wire the connectors as follows:



- Attach the shield to both connectors

Interpret Controller LEDs

RUN Indicator

| Color | Description | Recommended Action |
|-------------|--|---|
| off | The controller is in Program or Test mode. | See "Choose the Operating Mode of the Controller" on page 39. |
| solid green | The controller is in Run mode. | |

I/O Indicator

| Color | Description | Recommended Action |
|----------------|---|---|
| off | Either: <ul style="list-style-type: none"> • There are <i>no</i> devices in the I/O configuration of the controller. • The controller does <i>not</i> contain a project (controller memory is empty). | <ul style="list-style-type: none"> • Add the required devices to the I/O configuration of the controller. • Download the project to the controller. |
| solid green | The controller is communicating with all the devices in its I/O configuration. | None |
| flashing green | One or more devices in the I/O configuration of the controller are <i>not</i> responding. | Go online with RSLogix 5000 software and check the I/O configuration of the controller. |
| flashing red | The chassis is bad. | Replace the chassis. |

FORCE Indicator

| Color | Description | Recommended Action |
|----------------|---|---|
| off | <ul style="list-style-type: none">• No tags contain I/O force values.• I/O forces are inactive (disabled). | None |
| solid amber | <ul style="list-style-type: none">• I/O forces are active (enabled).• I/O force values may or may not exist. | USE CAUTION if you install (add) a force. If you install (add) a force, it IMMEDIATELY takes effect. |
| 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. | USE CAUTION if you enable I/O forces. If you enable I/O forces, ALL existing I/O forces also take effect. |

RS232 Indicator

| Color | Description | Recommended Action |
|-------------|---------------------------------------|--------------------|
| off | There is no activity. | None |
| solid green | Data is being received or transmitted | None |

BAT Indicator

| Color | Description | Recommended Action | |
|-------------|--|--|------|
| off | The battery supports memory. | None | |
| solid green | If the controller is: | Then: | |
| | series A | The controller does NOT show this indication. | None |
| | series B | During power-down, the controller is saving the project to its internal nonvolatile memory. If the BAT LED is solid red before you turn off the power, the BAT LED remains solid red even during the save. | None |
| solid red | Either the battery is: | | |
| | <ul style="list-style-type: none"> not installed. 95% or more discharged | Install a battery. Replace the battery. | |

OK Indicator

| Color | Description | Recommended Action | |
|----------------|---|---|---|
| off | No power is applied. | When ready, turn on power to the controller. | |
| flashing red | If the controller is: | Then: | |
| | a new controller (just out of the box) | The controller requires a firmware update. | See "Update the Controller" on page 29. |
| | NOT a new controller (previously in operation) | Major fault occurred. | See "Clear a Major Fault" on page 37. |
| solid red | The controller detected a non-recoverable fault, so it cleared the project from memory. | See "Clear a Non-Recoverable Fault" on page 38. | |
| solid green | The controller is OK | None | |
| flashing green | The controller is storing or loading a project to or from nonvolatile memory. | If the controller has a CompactFlash card, leave the card in the controller until the OK LED turns solid green. | |

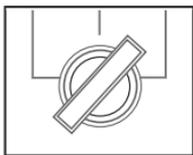
Clear a Major Fault

1. Go online with RSLogix 5000 software and get the fault code.
2. Determine what to do next:

| Fault Type | Fault Code | Action |
|-------------------|-------------------|---|
| 1 | 60 | A. Clear the fault. B. Download the project to the controller. C. Return the controller to the run/remote run mode. If the problem persists: A. Before you cycle power to the controller, record the state of the OK and RS232 LEDs. B. Contact Rockwell Automation support. See the back of this publication. |
| 1 | 61 | A. To get diagnostic information about the fault, see Knowledgebase document A92558072. To get the document, see the back of this publication. B. Clear the fault. C. Download the project to the controller. D. Return the controller to the run/remote run mode. |
| none of the above | none of the above | A. Clear the fault. B. Correct the reason for the fault. C. Return the controller to the run/remote run mode. |

To use the keyswitch of the controller to clear a major fault, turn the keyswitch in the following sequence:

1. PROG
2. RUN
3. PROG



Clear a Non-Recoverable Fault

1. Cycle power to the chassis.
2. Determine what to do next:

| If the OK LED is: | Then: |
|--------------------------|--|
| solid green | A. Download the project to the controller. B. Return the controller to the run/remote run mode. |
| flashing red | A. Go online with RSLogix 5000 software and clear the major fault. B. Download the project to the controller. C. Return the controller to the run/remote run mode. |
| solid red | Contact your Rockwell Automation representative or local distributor. |

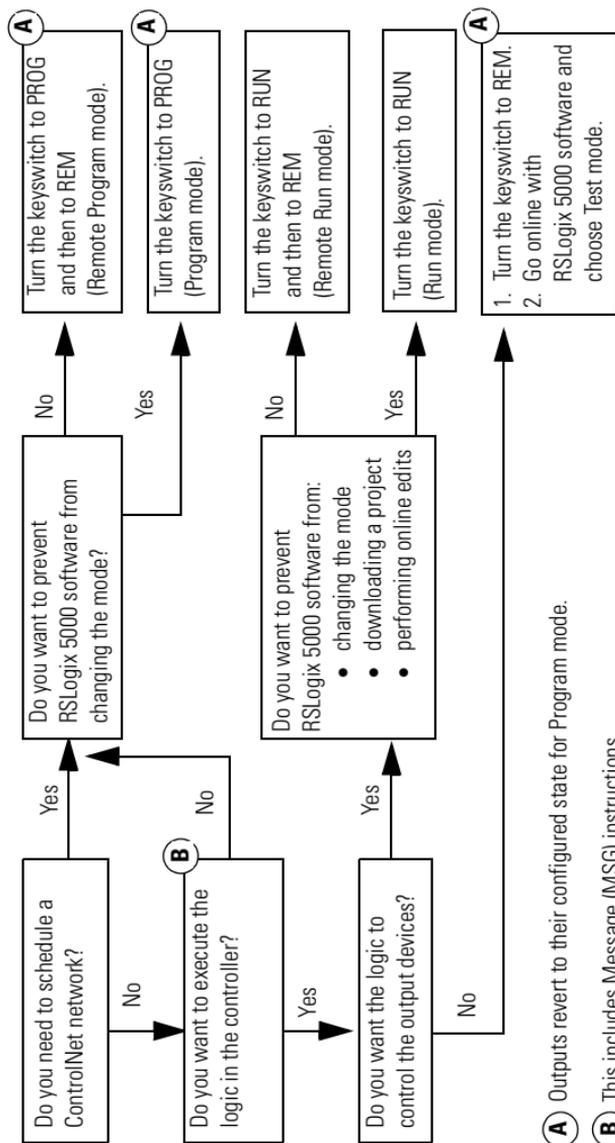
If the problem persists:

1. Before you cycle power to the controller, record the state of the OK and RS232 LEDs.
2. Contact Rockwell Automation support. See the back of this publication.

Choose the Operating Mode of the Controller

Important

- All modes send and receive data in response to a message from another controller.
- All modes produce and consume tags.



Specifications: ControlLogix Controllers - Sheet 1 of 2

| Catalog Number | Memory | | Nonvolatile Memory | Backplane Current | | Power Dissipation | Thermal Dissipation | Weight |
|----------------|--------------------------------|--------------------|--------------------|-------------------|----------|-------------------|---------------------|-------------------|
| | Data and Logic ⁽¹⁾ | I/O ⁽²⁾ | | @ 5.1V dc | @ 24V dc | | | |
| 1756-L1 | 64K bytes | | No | 0.65A | 0.02A | 3.3W | 11.3 BTU/hr | 0.28 kg (10.0 oz) |
| 1756-L1M1 | 500K bytes | 150K bytes | No | 0.95A | 0.02A | 4.6W | 15.6 BTU/hr | 0.35 kg (12.5 oz) |
| 1756-L1M2 | 1M bytes | 150K bytes | No | 1.05A | 0.02A | 4.8W | 16.4 BTU/hr | 0.35 kg (12.5 oz) |
| 1756-L1M3 | 2M bytes | 150K bytes | No | 1.20A | 0.02A | 5.4W | 18.4 BTU/hr | 0.36 kg (12.7 oz) |
| 1756-L55M12 | 750K bytes | 208K bytes | No | 1.23A | 0.014A | 5.6W | 19.1 BTU/hr | 0.35 kg (12.5 oz) |
| 1756-L55M13 | 1.5M bytes | 208K bytes | No | 1.23A | 0.014A | 5.6W | 19.1 BTU/hr | 0.35 kg (12.5 oz) |
| 1756-L55M14 | 3.5M bytes | 208K bytes | No | 1.25A | 0.014A | 5.7W | 19.4 BTU/hr | 0.36 kg (12.8 oz) |
| 1756-L55M16 | 7.5M bytes (≤ 3.5M of data) | 208K bytes | No | 1.48A | 0.014A | 6.3W | 21.5 BTU/hr | 0.38 kg (13.4 oz) |

(1) Data and logic memory stores; tags other than I/O, produced, or consumed tags; logic routines; and communication with OPC/DDE tags that use RSLinx software (also uses I/O memory)

(2) I/O memory stores: I/O tags, produced tags, consumed tags, communication via Message (MSG) instructions, communication with workstations, and communication with OPC/DDE tags that use RSLinx software (also uses data and logic memory).

Specifications: ControlLogix Controllers - Sheet 2 of 2

| Catalog Number | Memory | | Nonvolatile Memory | Backplane Current | | Power Dissipation | Thermal Dissipation | Weight |
|----------------|-------------------------------|--------------------|--------------------|-------------------|----------|-------------------|---------------------|-------------------|
| | Data and Logic ⁽¹⁾ | I/O ⁽²⁾ | | @ 5.1V dc | @ 24V dc | | | |
| 1756-L55M22 | 750K bytes | 208K bytes | Yes | 1.23A | 0.014A | 5.6W | 19.1 BTU/hr | 0.35 kg (12.5 oz) |
| 1756-L55M23 | 1.5M bytes | 208K bytes | Yes | 1.23A | 0.014A | 5.6W | 19.1 BTU/hr | 0.35 kg (12.5 oz) |
| 1756-L55M24 | 3.5M bytes | 208K bytes | Yes | 1.25A | 0.014A | 5.7W | 19.4 BTU/hr | 0.36 kg (12.8 oz) |
| 1756-L61/A | 2M bytes | 478K bytes | Yes ⁽³⁾ | 1.20A | 14mA | 3.5W | 11.9 BTU/hr | 0.32 kg (11.3 oz) |
| 1756-L62/A | 4M bytes | 478K bytes | | | | | | |
| 1756-L63/A | 8M bytes | 478K bytes | | | | | | |
| 1756-L61/B | 2M bytes | 478K bytes | Yes ⁽³⁾ | 1.20A | 14mA | 3.5W | 11.9 BTU/hr | 0.35 kg (12.4 oz) |
| 1756-L62/B | 4M bytes | 478K bytes | | | | | | |
| 1756-L63/B | 8M bytes | 478K bytes | | | | | | |

(1) Data and logic memory stores: tags other than I/O, produced, or consumed tags; logic routines; and communication with OPC/DDE tags that use RSLinx software (also uses I/O memory)

(2) I/O memory stores: I/O tags, produced tags, consumed tags, communication via Message (MSG) instructions, communication with workstations, and communication with OPC/DDE tags that use RSLinx software (also uses data and logic memory).

(3) Requires a 1784-CF64 Industrial CompactFlash card.

The following specifications apply to all ControlLogix controllers:

| Description: | Value: |
|--------------------------|--|
| Operating 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): <ul style="list-style-type: none">• 0° ... 60° C (32 ... 140° F) |
| Storage Temperature | IEC 60068-2-1 (Test Ab, Un-packaged Non-operating Cold), IEC 60068-2-2 (Test Bb, Un-packaged Non-operating Dry Heat), IEC 60068-2-14 (Test Na, Un-packaged Non-operating Thermal Shock): <ul style="list-style-type: none">• -40° ... 85° C (-40 ... 185° F) |
| Relative Humidity | IEC 60068-2-30 (Test Db, Un-packaged Non-operating Damp Heat): <ul style="list-style-type: none">• 5% ... 95% noncondensing |
| Vibration | IEC60068-2-6 (Test Fc, Operating): <ul style="list-style-type: none">• 2g @ 10-500Hz |
| Operating Shock | IEC60068-2-27 (Test Ea, Unpackaged Shock): <ul style="list-style-type: none">• 30g |
| Non-Operating Shock | IEC60068-2-27 (Test Ea, Unpackaged Shock): <ul style="list-style-type: none">• 50g |
| Emissions | CISPR 11: <ul style="list-style-type: none">• Group 1, Class A |
| ESD Immunity | IEC 61000-4-2: <ul style="list-style-type: none">• 6kV contact discharges• 8kV air discharges |
| Radiated RF Immunity | IEC 61000-4-3: <ul style="list-style-type: none">• 10V/m with 1kHz sine-wave 80%AM from 30MHz ... 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: <ul style="list-style-type: none">• ±4kV at 5kHz on power ports• ±4kV at 5kHz on communications ports |
| Surge Transient Immunity | IEC 61000-4-5: <ul style="list-style-type: none">• ±1kV line-line(DM) and ±2kV line-earth(CM) on AC power ports• ±2kV line-earth(CM) on communications ports |
| Conducted RF Immunity | IEC 61000-4-6: <ul style="list-style-type: none">• 10Vrms with 1kHz sine-wave 80%AM from 150kHz ... 80MHz |

| Description: | Value: | |
|--------------------------------|---|--------------------------|
| Enclosure Type Rating | none (open-style) | |
| Isolation Voltage | 30V Series A controllers: Tested to withstand 500V ac for 60 seconds Series B controllers: Tested to withstand 720V dc for 60 seconds | |
| Wiring Category ⁽¹⁾ | category 3 on communications ports | |
| Programming Cable | 1756-CP3 or 1747-CP3 serial cable | |
| Replacement Battery | For this component: | Use this battery: |
| | 1756-L1, 1756-L1M1, 1756-L1M2, 1756-L1M3 | 1756-BA1 (0.59g lithium) |
| | 1756-L55, 1756-L55M12, 1756-L55M13, 1756-L55M14, 1756-L55M16, 1756-L55M22, 1756-L55M23, 1756-L55M24 | 1756-BA1 (0.59g lithium) |
| | 1756-L61/A, 1756-L62/A, 1756-L63/A | 1756-BA1 (0.59g lithium) |
| | 1756-L61/B, 1756-L62/B, 1756-L63/B | 1756-BA2 (0.50g lithium) |
| | 1756-BATM battery module | 1756-BATA (10g lithium) |

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

Specifications - 1784-CF64 Industrial CompactFlash Card

| Description | Value |
|-----------------------|---|
| User Available Memory | 64M bytes |
| Nonvolatile Memory | Yes |
| Weight | 14.2 g (0.5 oz). |
| Operating 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): <ul style="list-style-type: none"> 0 ... 60°C (32 ... 140°F) |
| Storage Temperature | IEC 60068-2-1 (Test Ab, Un-packaged Non-operating Cold), IEC 60068-2-2 (Test Bb, Un-packaged Non-operating Dry Heat), IEC 60068-2-14 (Test Na, Un-packaged Non-operating Thermal Shock): <ul style="list-style-type: none"> -40 ... 85°C (-40 ... 185°F) |
| Relative Humidity | IEC 60068-2-30 (Test Db, Un-packaged Non-operating Damp Heat): <ul style="list-style-type: none"> 5% ... 95% noncondensing |
| Vibration | IEC60068-2-6 (Test Fc, Operating): <ul style="list-style-type: none"> 2g @ 10-500Hz |
| Operating Shock | IEC60068-2-27 (Test Ea, Unpackaged Shock): <ul style="list-style-type: none"> 30g |
| Non-Operating Shock | IEC60068-2-27 (Test Ea, Unpackaged Shock): <ul style="list-style-type: none"> 50g |
| Emissions | CISPR 11: <ul style="list-style-type: none"> Group 1, Class A |
| ESD Immunity | IEC 61000-4-2: <ul style="list-style-type: none"> 4kV contact discharges 8kV air discharges |
| Radiated RF Immunity | IEC 61000-4-3: <ul style="list-style-type: none"> 10V/m with 1kHz sine-wave 80%AM from 30MHz...2000MHz 10V/m with 200Hz 50% Pulse 100%AM at 900Mhz 10V/m with 200Hz 50% Pulse 100%AM at 1890Mhz |

| Description | Value |
|-----------------------|---|
| EFT/B immunity | IEC 61000-4-4: <ul style="list-style-type: none"> • ±4kV at 5kHz on power ports |
| Conducted RF Immunity | IEC 61000-4-6: <ul style="list-style-type: none"> • 10Vrms with 1kHz sine-wave 80%AM from 150kHz ... 80MHz |
| Enclosure Type Rating | none (open-style) |

Certifications

When marked, the components have the following certifications. See the Product Certification link at www.ab.com for Declarations of Conformity, Certificates, and other certification details.

| Catalog Number | Certification | Description |
|----------------|---------------|--|
| 1756-L1 | UL | UL Listed Industrial Control Equipment |
| | CSA | CSA Certified Process Control Equipment |
| | CSA | CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations |
| | CE | European Union 89/336/EEC EMC Directive, compliant with: <ul style="list-style-type: none"> • 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 | Australian Radiocommunications Act, compliant with: AS/NZS CISPR 11; Industrial Emissions |
| | EEx | European Union 94/9/EC ATEX Directive, compliant with: EN 50021; Potentially Explosive Atmospheres, Protection "n" (Zone 2) |

46 ControlLogix® Controller and Memory Board

| Catalog Number | Certification | Description |
|----------------------------------|---------------|--|
| 1756-L55 | UL | UL Listed Industrial Control Equipment |
| | CSA | CSA Certified Process Control Equipment |
| | CSA | CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations |
| | CE | European Union 89/336/EEC EMC Directive, compliant with: <ul style="list-style-type: none"> • 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 | Australian Radiocommunications Act, compliant with: AS/NZS CISPR 11; Industrial Emissions |
| | EEx | European Union 94/9/EC ATEX Directive, compliant with: EN 50021; Potentially Explosive Atmospheres, Protection "n" (Zone 2) |
| | TÜV | TÜV Certified for Functional Safety 1oo2D (AK 1-6, SIL 1-3, according to DIN V 19250 and IEC 61508 respectively) |
| 1756-L61 1756-L62 1756-L63 | UL | UL Listed Industrial Control Equipment |
| | CSA | CSA Certified Process Control Equipment |
| | CSA | CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations |
| | FM | FM Approved Equipment for use in Class I Division 2 Group A,B,C,D Hazardous Locations |
| | CE | European Union 89/336/EEC EMC Directive, compliant with: <ul style="list-style-type: none"> • 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 | Australian Radiocommunications Act, compliant with: AS/NZS CISPR 11; Industrial Emissions |
| | EEx | European Union 94/9/EC ATEX Directive, compliant with: EN 50021; Potentially Explosive Atmospheres, Protection "n" (Zone 2) |

| Catalog Number | Certification | Description |
|--|---------------|--|
| 1756-M1, 1756-M2 1756-M3 | UR | UL Recognized Component Industrial Control Equipment |
| 1756-M12 1756-M13 | CSA | CSA Accepted Component for Process Control Equipment |
| 1756-M14 1756-M16 1756-M22 1756-M23 1756-M24 | CE | <p>CSA Accepted Component for Process Control Equipment in Class I, Division 2 Group A,B,C,D Hazardous Locations</p> <p>European Union 89/336/EEC EMC Directive, compliant with:</p> <ul style="list-style-type: none"> • 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 | Australian Radiocommunications Act, compliant with: AS/NZS CISPR 11; Industrial Emissions |
| | EEx | European Union 94/9/EEC ATEX Directive, compliant with: EN 50021; Potentially Explosive Atmospheres, Protection "n" |
| 1784-CF64 | CE | <p>European Union 89/336/EEC EMC Directive, compliant with:</p> <ul style="list-style-type: none"> • EN 50082-2; Industrial Immunity • EN 61326; Meas./Control/Lab., Industrial Requirements • EN 61000-6-2; Industrial Immunity • zEN61000-6-4; Industrial Emissions |
| | C-Tick | Australian Radiocommunications Act, compliant with: AS/NZS CISPR 11; Industrial Emissions |

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.

NOTE: 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.

European Hazardous Location Approval

European Zone 2 Certification (The following applies when the product bears the EEx Marking)

This equipment is intended for use in potentially explosive atmospheres as defined by European Union Directive 94/9/EC.

The LCIE (Laboratoire Central des Industries Electriques) certifies that this equipment 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 potentially explosive atmospheres, given in Annex II to this Directive. The examination and test results are recorded in confidential report No. 28 682 010.

Compliance with the Essential Health and Safety Requirements has been assured by compliance with EN 50021.

IMPORTANT

- This equipment is not resistant to sunlight or other sources of UV radiation.
 - The secondary of a current transformer shall not be open-circuited when applied in Class I, Zone 2 environments.
 - Equipment of lesser Enclosure Type Rating must be installed in an enclosure providing at least IP54 protection when applied in Class I, Zone 2 environments.
 - This equipment shall be used within its specified ratings defined by Allen-Bradley.
 - Provision shall be made to prevent the rated voltage from being exceeded by transient disturbances of more than 40% when applied in Class I, Zone 2 environments.
-

North American Hazardous Location Approval

The following information applies when operating this equipment in hazardous locations:

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.

Informations sur l'utilisation de cet équipement en environnements dangereux:

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.

This product may contain licensed technology which is the subject of one or more of the following Microsoft Corporation patents:

- US Patent No. 5,579,517
- US Patent No. 5,745,902
- US Patent No. 5,758,352
- US Patent No. 6,286,013
- DE Patent No. 618540
- FR Patent No. 615840
- GB Patent No. 615840

Rockwell Automation Support

Rockwell Automation provides technical information on the web to assist you in using its 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 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:

| | |
|-----------------------|---|
| 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

Corporate Headquarters

Rockwell Automation, 777 East Wisconsin Avenue, Suite 1400, Milwaukee, WI 53202-5302 USA, Tel: (1) 414.212.5200, Fax: (1) 414.212.5201

Headquarters for Allen-Bradley Products, Rockwell Software Products and Global Manufacturing Solutions

Americas: Rockwell Automation, 1201 South Second Street, Milwaukee, WI 53204-2496 USA, Tel: (1) 414.382.2000, Fax: (1) 414.382.4444
Europe/Middle East/Africa: Rockwell Automation SA/NV, Vorstlaan/Boulevard du Souverain 36, 1170 Brussels, Belgium, Tel: (32) 2 663 0600, Fax: (32) 2 663 0600
Asia Pacific: Rockwell Automation, Level 14, Core F, Cyberport 3, 100 Cyberport Road, Hong Kong, Tel: (852) 2887 4788, Fax: (852) 2508 1846

Headquarters for Dodge and Reliance Electric Products

Americas: Rockwell Automation, 6040 Ponders Court, Greenville, SC 29615-4617 USA, Tel: (1) 864.297.4800, Fax: (1) 864.281.2433
Europe/Middle East/Africa: Rockwell Automation, Herman-Helrich-Gossen-Strasse 3, 50858 Köln, Germany, Tel: 49 (0) 2234 379410, Fax: 49 (0) 2234 3794164
Asia Pacific: Rockwell Automation, 55 Newton Road, #11-01/02 Revenue House, Singapore 307987, Tel: (65) 6356 9077, Fax: (65) 6356 9011

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