

OFFICIAL MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

1756-BA1

Rockwell Automation official documentation applicable to this exact model

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Applicable official manufacturer pages follow this Amikon cover without alteration.



ControlLogix 5570 and 5560 Controllers

Catalog Numbers 1756-L71, 1756-L72, 1756-L73, 1756-L73XT, 1756-L74, 1756-L75, 1756-L72EROM, 1756-L73EROM, 1756-L61, 1756-L62, 1756-L63, 1756-L63XT, 1756-L64, 1756-L65



Allen-Bradley

by **ROCKWELL AUTOMATION**

User Manual

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Before You Begin

To install a ControlLogix® chassis and power supply before you install your controller and power supply, see the following publications:

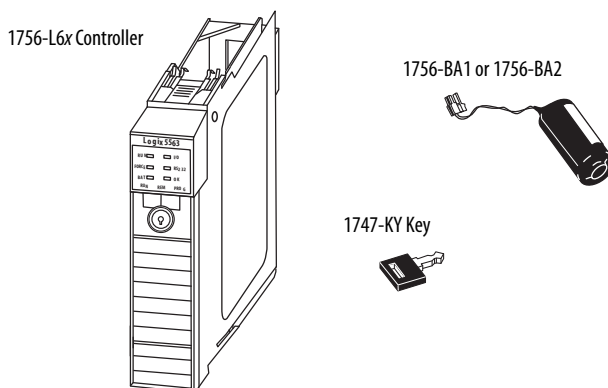
- ControlLogix Chassis Installation Instructions, publication [1756-IN621](#)
- ControlLogix Power Supply Installation Instructions, publication [1756-IN619](#)
- ControlLogix Redundant Power Supply Installation Instructions, publication [1756-IN620](#)

ControlLogix 5560 Controller Parts

These sections describe parts that are included with ControlLogix 5560 controllers and available accessory parts:

- One of the following batteries is included with your controller:
 - For series A controllers, catalog number 1756-BA1
 - For series B controllers, catalog number 1756-BA2
- Key, catalog number 1747-KY

Figure 2 - Parts Included with ControlLogix 5560 Controllers



Parts Not Included with the Controller

You can choose to use the parts included with the controller and these parts specific to your application.

If your application requires	Then use this component
RS-232 connection to the controller	1756-CP3 serial cable
Nonvolatile memory	1784-CF128 CompactFlash card
Expanded battery life for extended memory retention	1756-BATM battery module ⁽¹⁾

(1) The 1756-BATM can be used with series A controllers, but it cannot be used with series B controllers. Series B controllers use battery power differently than previous controllers and therefore battery considerations for this series controller vary. For more information to determine what battery to use, see the ControlLogix Controllers Selection Guide, publication [1756-SG001](#).

Battery Connection and Replacement



This product contains a hermetically sealed lithium battery that may need to be replaced during the life of the product.

At the end of its life, the battery contained in this product should be collected separately from any unsorted municipal waste.

The collection and recycling of batteries helps protect the environment and contributes to the conservation of natural resources as valuable materials are recovered.



WARNING: When you connect or disconnect the battery an electric arc can occur. This could cause an explosion in hazardous location installations. Be sure that power is removed or the area is nonhazardous before proceeding. 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](#).

IMPORTANT To help prevent program loss, replace a 1756-BA1 or 1756-BA2 battery according to the following schedule even if the BAT status indicator is Off.

If the temperature 2.54 cm (1 in.) below the chassis is	Replace the battery within
-25...+35 °C (-13...+95 °F)	No replacement required
36...40 °C (96.8...104 °F)	3 years
41...45 °C (105.8...113 °F)	2 years
46...50 °C (114.8...122 °F)	16 months
51...55 °C (123.8...131 °F)	11 months
56...70 °C (132.8...158 °F)	8 months



ATTENTION: Store batteries in a cool, dry environment. We recommend 25 °C (77 °F) with 40...60% relative humidity. You can store batteries for up to 30 days between -45...+85 °C (-49...+185 °F), such as during transportation. To avoid leakage or other hazards, **do not** store batteries above 60 °C (140 °F) for more than 30 days.

Connection of the battery varies depending on your controller series:

- If you are using a series A controller, see [page 37](#).
- If you are using a series B controller, see [page 38](#).

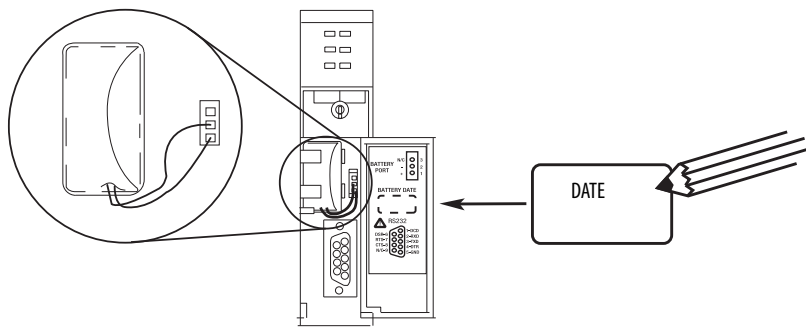
Install the Battery on a Series A Controller

Complete these steps to install a 1756-BA1 battery on a series A controller.

For information to install a 1756-BATM battery module or replace a 1756-BATM assembly, see the ControlLogix Battery Module Installation Instructions, publication [1756-IN576](#).



ATTENTION: For a series A controller, connect only a 1756-BA1 battery or a 1756-BATM battery module. The use of other batteries can damage the controller.



Wire Terminal Location	Connected Wire
Top	No connection
Middle	Black lead (-)
Bottom	Red lead (+)

1. Connect the battery connector to the port to the right of the battery slot.
2. Snap the battery into the battery slot.
3. Write the date on the battery label.
4. Attach the label to the inside of the controller door.

Estimate the ESM Support of the WallClockTime

The ESM provides support for the maintenance of the WallClockTime of the controller when power is not applied. Use this table to estimate the hold-up time of the ESM based on the temperature of the controller and installed ESM.

Temperature	Hold-up Time (in days)		
	1756-ESMCAP	1756-ESMNRM	1756-ESMNSE
20 °C (68 °F)	12	12	0
40 °C (104 °F)	10	10	0
60 °C (140 °F)	7	7	0

IMPORTANT Any action that causes the 1756-L7x controller to reset (hard or soft), without an ESM installed, results in the WallClockTime of the controller being reset to the factory default of 01/01/1998.

To check the status of the ESM, see [General Status Messages on page 174](#).

Maintain the Battery (Only 1756-L6x Controllers)

This section explains how to monitor and maintain the lithium batteries that the ControlLogix controllers support.

Table 8 - 1756-L6x Controllers and Compatible Batteries

Cat. No.	Series	Compatible Battery
1756-L61 1756-L62 1756-L63	A	1756-BA1 or 1756-BATA or 1756-BATM
1756-L61 1756-L62 1756-L63 1756-L64 1756-L65	B	1756-BA2
1756-L63XT	B	

For further information, see the [Additional Resources](#) section in the preface.

Check the Battery Status

When the battery is approximately 95% discharged, these low-battery warnings are indicated:

- The BAT is steady red.
- A minor fault (type 10, code 10) is logged.

IMPORTANT To help prevent possible battery leakage, even if the BAT status indicator is off, replace a battery according to this schedule.

If the temperature 2.54 cm (1 in.) below the chassis is	Replace the battery within
-25...35 °C (-13...95 °F)	No replacement required
36...40 °C (96.8...104 °F)	3 years
41...45 °C (105.8...113 °F)	2 years
46...50 °C (114.8...122 °F)	16 months
51...55 °C (123.8...131 °F)	11 months
56...70 °C (132.8...158 °F)	8 months

1756-BA1 or 1756-BATA Battery Life

To estimate how long a 1756-BA1 or 1756-BATA battery can support controller memory on 1756-L6x, series A controllers, perform this procedure.

1. Determine the temperature 2.54 cm (1 in.) below the chassis.
2. Determine the weekly percentage of time that the controller is turned on.

EXAMPLE If a controller is Off at one of these times:

- 8 hr/day during a 5-day work week
- All day Saturday and Sunday

Then the controller is off 52% of the time:

- Total hours per week = $7 \times 24 = 168$ hrs
- Total off hours per week = (5 days $\times$ 8 hr/day) + Saturday + Sunday = 88 hrs
- Percentage off time = $88/168 = 52\%$

3. Determine the estimated worst-case battery life before and after the BAT status indicator turns on.
4. For each year of battery life, decrease the time before the BAT status indicator turns on by the percentage that is shown in the table.

Do not decrease the time after the BAT status indicator turns on.

IMPORTANT If the BAT status indicator turns on when you apply power to the controller, the remaining battery life can be less than [Table 9](#) indicates. Some of the battery life can be used up while the controller is off and unable to turn on the BAT status indicator.

Table 9 - Worst-case Estimates of 1756-BA1 Battery Life

Temperature	Battery Life Before BAT Status Indicator Turns On			Battery Life After BAT Status Indicator Turns On and Power is Off
	Power Off 100%	Power Off 50%	Yearly Decrease	
60 °C (140 °F)	22 days	43 days	23%	6 hrs
25 °C (77 °F)	21 days	42 days	17%	28 hrs
0 °C (32 °F)	14 days	28 days	17%	2.5 days

Table 10 - Worst-case Estimates of 1756-BATA Battery Life

Temperature	Battery Life Before BAT Status Indicator Turns On			Battery Life After BAT Status Indicator Turns On and Power is Off
	Power Off 100%	Power Off 50%	Yearly Decrease	
60 °C (140 °F)	98 days	204 days	11%	104 days
25 °C (77 °F)	146 days	268 days	5%	157 days
0 °C (32 °F)	105 days	222 days	6%	113 days

1756-BATM Battery Module and Battery Life

Use the 1756-BATM battery module with any 1756-L6x/A controller. The battery module is highly recommended for higher-memory controllers.

IMPORTANT If your project is not stored in nonvolatile memory, the use of the battery module is highly recommended.

When the 1756-BATA battery within the 1756-BATM module is approximately 50% discharged, these low-battery warnings are indicated:

- The BAT is steady red.
- A minor fault (type 10, code 10) is logged.

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