



Guidelines for Handling Lithium Batteries

Catalog Number: 1770-XO, 1770-XR, 1770-XY, 1770-XYB, 1770-XYC, 1770-XZ, 1756-BA1, 1756-BA2, 1756-BATA, 1769-BA, 6630-U1

Lithium batteries are primary (not rechargeable) cells that give extended memory support for Rockwell Automation products.

Safety Considerations

ATTENTION

Failure to follow the guidelines in this document may result in damaged equipment and personal injury.

Use the battery for its intended application only.

Do not:

- recharge
- open, puncture, or crush
- incinerate or expose to high temperatures
- solder leads
- short positive or negative terminals together
- ship or dispose except according to the procedures in this document

2 Guidelines for Handling Lithium Batteries

For lithium batteries installed in Class I, Division 2 Hazardous Locations:

WARNING

Explosion Hazard - Batteries must only be changed in an area known to be non-hazardous.

AVERTISSEMENT

RISQUE D'EXPLOSION - Afin d'éviter tout risque d'explosion, s'assurer que l'emplacement est désigné non dangereux avant de changer la batterie.

Storing Lithium Batteries

- Store in a cool, dry environment. We recommend 25° C with 40 ... 60% relative humidity.
- Regularly monitor the temperature and humidity of the storage area.
- Use a first-in/first-out system for handling stored batteries.
- Store in the original containers away from flammable materials.
- Keep track of storage time. Reference storage time to the date of manufacture.
- *Do not* store batteries longer than 10 years.
- *Do not* store used batteries longer than 3 months before disposal.
- Clearly mark the contents of the storage area.
- Place a Lith-X or Class D Powder fire extinguisher in a readily accessible area in or around the storage area.
- Ventilate and protect the storage area against fire. You must have a system that automatically detects and extinguishes fires and automatically activates an alarm signal.
- *Do not* smoke in the storage area.

Storage Temperatures for Lithium Batteries

| Battery | Storage Temperature | |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|
| 1756-BA1 | <ul style="list-style-type: none"> You may store batteries for up to 30 days between -45°...85° C, such as during transportation. <i>Do not</i> store in temperatures above 85° C (185° F). To avoid leakage or other hazards, <i>do not</i> store batteries above 60°C for more than 30 days. The rate of capacity loss increases as storage temperature increases. | |
| 1756-BA2 | | |
| 1769-BA | | |
| Battery | Storage Temperature | Capacity Loss |
| 1756-BA1 | 39° C or less | retains full capacity |
| 1769-BA | 40° C for 5 years | loses up to 4% of original capacity |
| | 60° C | loses 2.5% of capacity each year |
| 1756-BA2 | 29° C or less | retains full capacity |
| | 40° C for 5 years | loses up to 13% of original capacity |
| | 60° C | loses 13% of capacity each year |
| 1756-BATA | <i>Do not</i> store in temperatures above 30° C (86° F) or relative humidity above 30%. | |
| 1770 series 6630-UI | <i>Do not</i> store in temperatures above 100° C (212° F). The rate of capacity loss increases as storage temperature increases. Batteries stored at 40° C for 5 years can lose up to 25% of their original capacity. | |

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Transporting Lithium Batteries

The transportation of lithium batteries is regulated as follows:

| These shipments: | Are regulated by: |
|---------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
| ground shipments within the United States | US DOT 49CFR 173.185 |
| air shipments within the domestic US or internationally | International Air Transportation Association (IATA) and International Civil Aviation Organization (ICAO) |

Regulations for transporting lithium batteries are periodically revised. It is the responsibility of the shipper of the batteries to investigate and verify the most recent transportation regulatory information.

Refer to the appropriate transportation regulations for the shipment of depleted batteries.

Lithium Battery Disposal

ATTENTION

- DO NOT incinerate or dispose of lithium batteries in general trash collection. They may explode or rupture violently.
 - Collect batteries for disposal carefully to prevent short circuiting, compacting, or destroying the battery case.
 - Check local, state, and local regulations dealing with the disposal of these materials. You are legally responsible for hazards created while your battery is being disposed.
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Disposing of Depleted Batteries

1. Visually inspect all batteries for damage to the battery casing or leakage of electrolyte. If a battery is damaged and/or leaking, see the following section on handling damaged batteries.
2. If the battery has leads and is clean and undamaged, use side cutters to remove the leads as close to the body of the battery as possible.

ATTENTION

Do not damage the battery case when removing leads.



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3. Put clean and undamaged batteries in a polyethylene bag and heat seal the bag.
 4. Store the bagged batteries in a closed metal container filled with vermiculite. Alternate layers of batteries and vermiculite.
 5. Contact your local Environmental Protection Agency (EPA) office for information about battery disposal companies and proper labeling of battery containers.

Lithium batteries can be stored and shipped as universal waste in most states in the United States of America. Alternately, you can ship lithium batteries as hazardous waste.

Disposal of Damaged and/or Leaking Batteries

ATTENTION



If the batteries are badly damaged and/or leaking, evacuate all personnel from the immediate area.

You must wear protective clothing (protective eyewear, clothes, safety shield, and self-contained breathing apparatus).

Do not:

- pick up ruptured batteries with bare hands. Lithium can cause skin burns. Use tongs, scoops, or a shovel to place the batteries in a mineral-oil-filled container.
- breathe fumes. Ventilate the area to disperse the fumes before entering the room.

If toxic or corrosive material comes in contact with your eyes or skin, flush with water and consult a physician. Dispose of clothing that is contaminated.

Use the following procedure to dispose of damaged and/or leaking batteries:

1. Put the damaged batteries in two polyethylene bags and add about 1 ounce of calcium carbonate (CaCO_3) to the inner bag. Slowly-leaking batteries have a deposit of white salt crystals on the outside of the battery casing.
2. Heat seal both bags.
3. Take the container outside. This helps air out the area where you discovered the damaged batteries.
4. Contact your local EPA office for information about battery disposal companies.

Overheated Batteries

An overheated battery may explode or rupture violently. If you must try to save the battery, wear the protective clothing described above. If a lithium battery overheats:

- take shelter
- attempt to remove any external source of heat
- remove power from any equipment involved
- remove the battery to a well-ventilated fire-protected area after it cools

In Case of a Lithium Fire

ATTENTION

Do not use water or carbon dioxide (CO₂) fire extinguishers in a lithium battery fire. Lithium reacts with these substances.

If lithium is burning:

- avoid exposure to toxic fumes from burning lithium
- smother the fire using a Class D fire extinguisher or a graphite powder, such as Lith-X
- you can also use a long-handled tool to apply an appropriate metal fire extinguishing powder

Hazards to Personnel

Potential hazards to personnel include:

- burns from overheated cells
 - Wash skin with running water and go to the nearest medical center.
- injury from explosion or violent rupture of overheated cells
- injury from fire caused by combustion of lithium
- exposure to toxic or corrosive liquids or gases from the battery or its decomposition products
 - Remove and discard contaminated clothing.
 - Wash areas where clothing touched skin.
 - If breathing difficulties result, remove the person from the area, administer oxygen, then go to the nearest medical center.
 - If the battery contents come in contact with eyes, rinse eyes immediately for at least 15 minutes without interruption. Go to the nearest medical center and advise the attending physician of contact with:

| This battery: | Contains |
|------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| 1770-XO 1770-XYC 1770-XR 1770-XZ 1770-XY 1756-BATA 1770-XYB 6630-U1 | This toxic material: thionyl chloride (SOCl ₂) |
| 1756-BA1 1769-BA | This toxic material: dimethoxyethane These irritants: ethylene carbonate butylene carbonate lithium trifluoro methane sulphonate |
| 1756-BA2 | dimethoxyethane propylene carbonate lithium trifluoromethane sulfonate |

Installing/Replacing Lithium Batteries

Use the following procedure for installing and replacing lithium batteries:

ATTENTION

Maintain power to your memory equipment throughout the entire replacement procedure. Failure to do this results in lost and/or altered memory.

1. Maintain backplane power to the equipment. Loosen any mounting screws and open the battery compartment. If the compartment does not contain a battery, go to step 4.
2. Before removing the old battery, check for signs of damage

ATTENTION

If the battery case is broken:

- ventilate the area
- wear protective clothing and safety equipment
- use a scoop or tongs for handling the battery
- place the battery in a well-ventilated, fire-protected area

see the previous section on disposing of damaged and/or leaking batteries

3. Remove the old battery. See the previous section on battery disposal.

IMPORTANT

When replacing a lithium battery with another lithium battery, make sure the replacement is identical to the original battery.

4. Read the caution label. Locate the two date labels supplied with the new battery. Write the current date on both labels. Place one date label on the front of the battery compartment. If the battery has a space for a date, write directly on the battery; otherwise place the second date label on the battery.
5. Install the battery.
6. Check that the battery low indicator is off. If the battery low indicator is off, continue with step 7. If the battery low indicator is on, check the battery connection and the battery. If the battery low indicator remains on, contact your local Rockwell Automation/Allen-Bradley representative.
7. If the battery low indicator is off and the battery is connected properly, place the battery in the battery compartment. Replace the cover to the battery compartment and secure any mounting screws.

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. |

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