

WFM200BA Rechargeable Battery Pack

Instructions



075-1041-01

Tektronix

Safety Summary

Review the following safety precautions to avoid injury and prevent damage to this product or any products connected to it.

To avoid potential hazards, use this product only as specified.

Retain product literature. Retain the original product information for future reference.

To Avoid Fire or Personal Injury

Do not operate with suspected failures. If you suspect there is damage to the battery, charger, or power supply, have it inspected by qualified service personnel.

Recharge battery pack properly. Recharge the battery pack only for the recommended charge cycle at the recommended temperature.

Replace battery pack properly. Replace the battery pack only with the specified type and rating.

Use proper battery charger. Use only the WFM2200 waveform monitor or the WFM200BC battery charger to charge the WFM200BA battery pack.

Do not operate in wet/damp conditions.

Do not operate in an explosive atmosphere.

Keep product surfaces clean and dry.

Safety Terms in This Manual

CAUTION. These statements identify conditions or practices that could result in damage to the equipment or other property.

Safety Symbols and Terms on the Product

DANGER indicates an injury hazard immediately accessible as you read the marking.

WARNING indicates an injury hazard not immediately accessible as you read the marking.

CAUTION indicates a hazard to property including the product.



CAUTION
Refer to Manual

Battery Recycling

This WFM200BA Lithium-Ion rechargeable battery pack must be recycled or disposed of properly.

- Lithium-Ion batteries are subject to disposal and recycling regulations that vary by country and region. Always check and follow your applicable regulations before disposing of any battery. Contact Rechargeable Battery Recycling Corporation (www.rbcc.org) for U.S.A. and Canada, or your local battery recycling organization.
- Many countries prohibit the disposal of waste electronic equipment in standard waste receptacles.
- Place only discharged batteries in a battery collection container. Use electrical tape or other approved covering over the battery connection points to prevent short circuits.



This symbol indicates that this product complies with the applicable European Union requirements according to Directives 2002/96/EC and 2006/66/EC on waste electrical and electronic equipment (WEEE) and batteries. For information about recycling options, check the Support/Service section of the Tektronix Web site (www.tektronix.com).

Lithium-Ion Battery Transportation

The capacity of the Lithium-Ion rechargeable battery pack in this product is under 100 Wh. The lithium equivalent content has been shown to meet the applicable requirements as defined by the UN Manual of Tests and Criteria Part III Subsection 38.3.

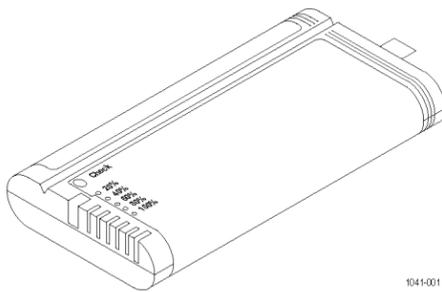
- Always check all applicable local, national, and international regulations before transporting a Lithium-Ion battery.
- Transporting an end-of-life, damaged, or recalled battery may, in certain cases, be specifically limited or prohibited.
- The battery pack must be adequately protected against short-circuit or damage during transport.

Description

The WFM200BA rechargeable battery pack is intended for use only with the Tektronix WFM2200 SD/HD/3G SDI Waveform Monitor & Generator. The battery pack consists of an array of Lithium-Ion battery cells.

When the battery is installed, an internal circuit monitors the charge on the battery and reports the condition to either the WFM2200 waveform monitor or the WFM200BC External Battery Charger.

When the battery is not installed, you can check the battery charge level by pressing the Check button on the back of the battery pack. LEDs illuminate to indicate the amount of charge in increments of approximately 20%.

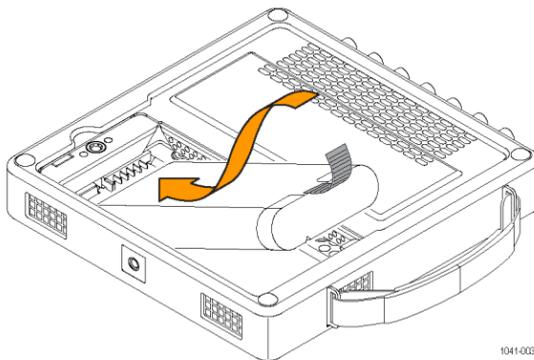


Battery Pack Installation

NOTE. For optimum performance, charge the battery pack completely before using it for the first time or after prolonged storage.

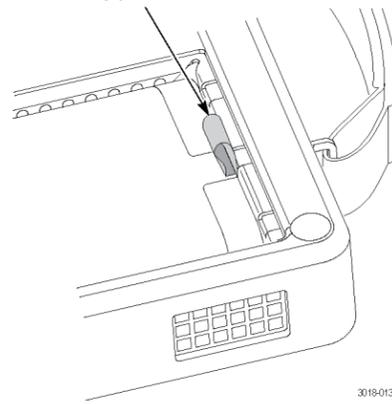
The battery can be installed, removed, or replaced while the instrument is turned on and operating with the AC adapter.

1. On the rear panel of the instrument, remove the cover for the battery compartment:
 - a. Lift up the battery cover ring.
 - b. Turn the battery cover ring ¼ turn counterclockwise.
 - c. Lift away the battery cover.
2. Insert the WFM200BA battery pack into the battery compartment as shown below.



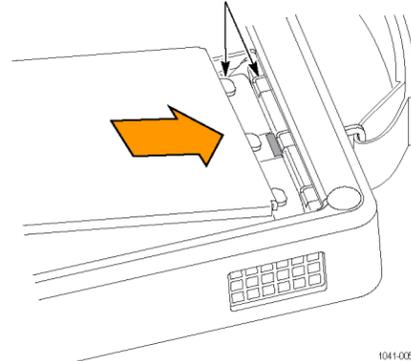
3. Secure the battery pack tab as shown below.

Fold the end of the tab between the battery pack and the chassis



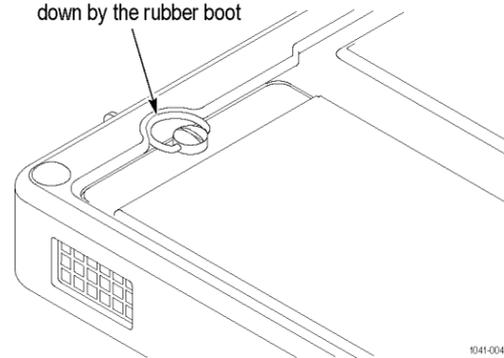
4. Replace the battery compartment cover:
 - a. Insert the three tabs on the battery cover into the chassis slots as shown below.

Insert the three tabs into the chassis slots



- b. Close the battery cover and turn the battery cover ring ¼ turn clockwise to secure the cover.
- c. Press the battery cover ring down so that it latches into place as shown below.

Make sure that the battery cover ring lies flat and is held down by the rubber boot



Battery Maintenance Guidelines

The WFM200BA Lithium-Ion rechargeable battery pack requires routine maintenance and care in its use and handling. Be sure to use the following guidelines to safely use the WFM200BA Lithium-Ion batteries and achieve the maximum battery life span.

Battery Pack Considerations

Do not leave a battery unused for an extended period of time, either in the product or in storage. When a battery has been unused for six months, check the charge status, and charge or dispose of the battery as appropriate. See *Charging the Battery Pack* and *Battery Recycling*.

The typical estimated life of a Lithium-Ion battery is about two to three years, or 300 to 500 charge cycles, whichever occurs first. One charge cycle is a period of use from fully charged, to fully discharged, and fully recharged again. You should expect a two to three year life expectancy for batteries that do not run through complete charge cycles.

A rechargeable Lithium-Ion battery has a limited life and will gradually lose its capacity to hold a charge. This loss of capacity (aging) is irreversible. As the battery loses capacity, the length of time it will power the product (run time) decreases.

A Lithium-Ion battery continues to slowly discharge (self-discharge) when not in use or while in storage. You need to routinely check the charge status of the battery.

Use the WFM200BA battery pack only in WFM2200 waveform monitor. Use only WFM200BA battery packs in your WFM2200 waveform monitor.

Battery Pack Maintenance

- Observe and note the run time that a new fully-charged battery provides for powering your product. You can use this new battery run time as a basis to compare run times for older batteries. The run time of your battery will vary depending on the product's configuration and the applications that you run.
- The battery pack gives the best performance when operated at normal room temperature, 20 °C ±5 °C (68 °F ±9 °F).
- Routinely check the charge status of the battery.
- Carefully monitor a battery that is approaching the end of its estimated life.
- Consider replacing the battery with a new one if the battery run time drops below about 80% of the original run time, or the battery charge time increases significantly.
- Follow the storage requirements if you store or do not use a battery for an extended period. If you do not follow the storage requirements, and the battery will not power the waveform monitor when installed, consider the battery to be damaged. Do not connect power to the waveform monitor during this time. Remove the battery pack from the waveform monitor. Do not attempt to recharge or reuse the battery. Replace it with a new battery.

Battery Pack Charging

The battery pack charges automatically when the waveform monitor is connected to the external power supply. You can also charge the battery pack with the Tektronix WFM200BC External Battery Charger. Remove the battery pack from the WFM200BC charger when charging is complete.

A Lithium-Ion battery pack will self-discharge during non-use. To achieve the longest operating time, charge your battery pack before use. If you plan to store battery packs, read the instructions in the *Battery Pack Storage* section of this document.

When the battery pack is in the WFM2200 waveform monitor, the battery gauge (■□□) on the waveform monitor display indicates the approximate amount of charge.

- To avoid automatic shutdown of the battery pack, only run the waveform monitor on the battery pack when the gauge on the waveform monitor is green or yellow.
- Always verify the correct placement of the battery in the WFM2200 waveform monitor or the WFM200BC battery charger.
- When the battery pack is installed in the waveform monitor, it will automatically charge whenever the supplied AC adapter is connected, whether the instrument is On, Off, or in Standby mode.

Configuration	Typical charging time
One fully discharged battery pack charging in the WFM2200 waveform monitor with the waveform monitor turned on or off	5.5 hours
One or two fully discharged battery packs charging in the WFM200BC external battery charger	5.5 hours

CAUTION. To avoid damage to the battery pack, use only the WFM2200 waveform monitor or the WFM200BC battery charger to charge the battery pack. Do not connect any other voltage source to the battery pack.

NOTE. For optimum performance, charge the battery pack completely before using it for the first time or after prolonged storage.

To discharge the battery pack completely, continue to run the waveform monitor on the battery pack until automatic shutdown occurs. After the instrument shuts down, either recharge the battery pack promptly or remove it from the instrument until you are ready to recharge the battery pack.

NOTE. To prolong the life of the battery pack and to prevent shutdown, do not operate or charge the battery pack at high temperatures. For best results, allow the battery pack to cool to room temperature before using or charging the battery pack.

Do not leave a battery pack discharged for extended periods. See the *Storing Battery Packs* section for information on how to properly store a battery pack.

The battery pack stops charging under the following conditions:

- The battery pack is fully charged.
- The internal temperature of the battery pack exceeds the safe charging threshold.
- A fault condition occurs.

The battery pack shuts down and disconnects itself from the WFM2200 waveform monitor under the following conditions:

- The battery pack is fully discharged.
- The internal temperature of the battery pack exceeds the safe discharging threshold.
- A fault condition occurs.

Battery Pack Handling

- Do not disassemble, crush, drop, or puncture the battery.
- Do not short the external contacts on the battery.
- Do not dispose of the battery in fire or water.
- Do not expose the battery to temperatures above +60 °C (+140 °F).
- Seek medical advice if a battery or part of it has been swallowed.
- Do not put battery packs near heat or fire. Do not put in sunlight.
- Keep the battery pack clean and dry. Clean dirty connectors with a dry, clean cloth.
- Batteries contain hazardous chemicals that can cause burns or explode. If exposure to chemicals occurs, clean with soap and water and get medical aid. Repair the product before use if the battery leaks.
- Do not attempt to open, modify, reform or repair a battery pack that appears to be malfunctioning, or which has been physically damaged.
- Keep the battery away from children and animals.
- Avoid exposing the battery to excessive shock or vibration.
- Do not use a damaged battery or charger.
- If a battery pack has leaking fluids, do not touch any fluids. Dispose of a leaking battery pack. See the *Battery Recycling* section for information on disposal and recycling.
- In case of eye contact with fluid, do not rub eyes. Immediately flush eyes thoroughly with water for at least 15 minutes, lifting upper and lower lids, until no evidence of the fluid remains. Seek medical attention.

Battery Pack Storage

- Store battery packs in a low-humidity environment free of corrosive gases. Storing battery packs in high-humidity environments, or outside the temperature range, can cause oxidation on the metallic parts, increased leakage, significant aging and premature failure.
- Do not store battery packs near heat or fire. Do not store in the sunlight.
- Do not keep battery packs in a place where the terminals can be shorted by metal objects (for example, coins, paper clips, or pens).
- Do not remove a battery pack from its original packaging until required for use.
- When possible remove the battery pack from the equipment when not in use.
- Charge the battery to approximately 50% of capacity at least once every six months.
- Remove the battery and store it separately from the instrument. Refer to the *WFM2200 User Manual* for instructions on removing and installing the battery.
- For optimal battery life, store the battery at temperatures between +5 °C and +25 °C (+41 °F and +77 °F). Higher temperatures reduce the battery storage life.

Battery Pack Replacement

Use the instructions to remove and replace battery packs.

NOTE. Replace the Lithium-Ion battery pack only with a WFM200BA battery pack.

See the *Battery Recycling* section for information on how to properly dispose of a Lithium-Ion battery pack.

Specifications

Characteristic	Description
Capacity, typical	6.14 Ah
Output, nominal	14.4 VDC
Charging temperature	Installed in the WFM2200 waveform monitor or WFM200BC battery charger: 10 °C to +40 °C (+50 °F to +104 °F); varies per the WFM2200 heat dissipation characteristics, the actual limit may be lower
Operating temperature	Installed in the WFM2200 waveform monitor: 0 °C to +40 °C (+32 °F to +104 °F)
Storage temperature	-20 °C to +60 °C (-4 °F to +140 °F)
Weight	Battery: 453.6 g (16.0 oz) Battery (including packaging): 567 g (20.0 oz)

Warranty Information

For warranty information, go to the www.tektronix.com Web site, and search for “WFM200BA warranty”.

Contacting Tektronix

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For product information, sales, service, and technical support:

- In North America, call 1-800-833-9200.
- Worldwide, visit www.tektronix.com to find contacts in your area.