

## 5. Installing the Battery

**CAUTION** A battery is already installed upon delivery.

### Role of the Battery

The battery provides backup power to the user memory area in SRAM (for non-volatile device memory \$L and \$LD, sampling data storage, etc.) as well as the built-in clock.

### Battery Replacement Period

The service life of the battery is about 5 years from the date of manufacture. When the battery voltage has dropped, the message “Brownout of Battery” appears at the lower left of the Main Menu screen on the TS2060 unit.

\* For details on the Main Menu screen, refer to “3. Main Menu Screen” (page 5-5).

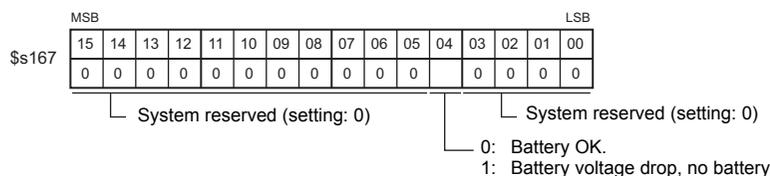


### Battery Voltage Drop Detection

The battery status is output to the internal device memory address \$s167 of the TS2060 unit.

When the battery voltage drops, the 4th bit of \$s167 turns ON.

If the battery voltage drops (4th bit turns ON) within the expiration date (five years), replace the battery immediately.



### Battery Replacement

Replacement batteries are available from Hakko Electronics.

Name	Model	Description
Battery for replacement	TS-BT	<ul style="list-style-type: none"> <li>Coin-type lithium primary cell (CR2032W/CR2032X) 1 pce.</li> <li>Caution sticker 1 pce.</li> </ul>

\* When using a commercially available battery, use “CR2032W/CR2032X”.

## Safety Instructions on Handling Batteries

Lithium batteries contain combustible material such as lithium and organic solvents. Mishandling may cause heat, explosion, or ignition resulting in fire or injury. To prevent accidents, pay attention to the following cautions when handling lithium batteries.



### DANGER

- The battery indicates polarity with a “+” symbol so be sure to insert the battery in the correct direction. Inserting the battery in the wrong direction may cause the battery to burst or ignite.
- The electrodes are exposed on the TS-BT and CR2032W/CR2032X batteries. Do not carry or store replacement batteries together with metal products. Short-circuiting of the electrodes may reduce battery capacity or cause batteries to burst or ignite.
- Do not disassemble, incinerate, or heat batteries.
- Never attempt to recharge batteries.



### CAUTION

- Only experts are authorized to perform battery replacement.
- Be sure to discharge static electricity from your body before performing battery replacement.
- Use the recommended battery for replacement.
- Rough handling of the battery may cause fire or chemical burns.
- Do not disassemble, incinerate, or heat the battery.
- Observe local and governmental regulations when disposing of waste batteries.
- Keep batteries out of reach of children. (If swallowed, immediately consult a doctor.)
- If a battery leaks or smells, note that the leaking battery electrolyte is flammable. Keep away from heat or flame.

## SRAM Area Backup Procedure

Replace the battery within three minutes after the unit is turned off.

If it is not possible to replace the battery within three minutes, use the V-SFT-6 editor or a storage device to make a backup copy of the data in SRAM.

### When Using the V-SFT-6 Editor

- 1) Connecting a cable  
Connect the TS2060 unit and the computer using the transfer cable (“V-CP”, USB cable, or Ethernet cable).
  - 2) Starting the V-SFT-6 editor  
Start the V-SFT-6 editor on the computer.
  - 3) Displaying the [Transfer] dialog  
Click [Transfer] → [Upload]. The [Transfer] dialog is displayed.
  - 4) Selecting data to be transferred  
Select [SRAM Data] for [Transfer Data].
  - 5) Starting SRAM data transfer  
Click the [PC <-] button. Data transfer from the SRAM is started.
  - 6) Saving the SRAM data  
When the SRAM data has been transferred, the [Save As] dialog is displayed on the computer. Save the data as a backup copy. The file extension is “\*.RAM”.
- \* To transfer the “\*.RAM” data, which was saved as a backup copy, back to the TS2060 unit, click [Transfer] → [Download] in step 3, and click the [PC ->] button in step 5.

### When Using a Storage Device (TS2060i Only)

For details on the procedure for making backups using a storage device (SD card or USB flash drive), refer to "7-3. Saving Backup Copies of SRAM (TS2060i Only)" (page 5-25).

### Battery Replacement Procedure



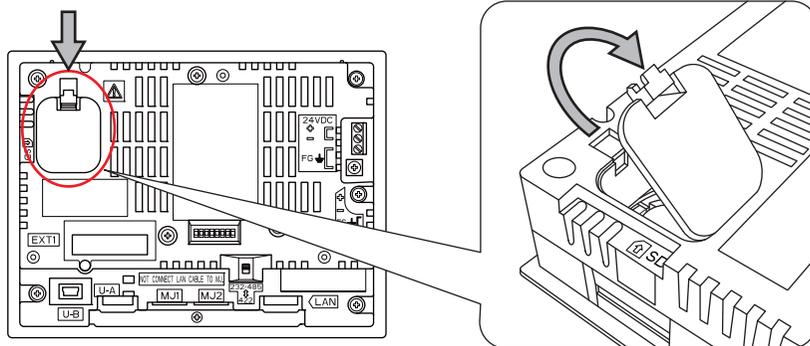
#### DANGER

There is a risk of electric shock.

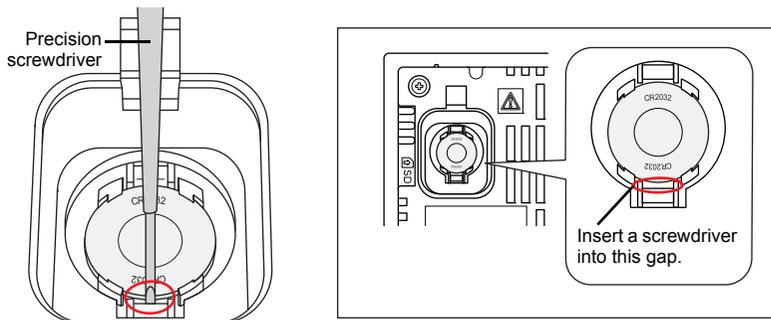
Turn off power to the TS2060 unit before performing steps 2. through 7. below.

1. Turn off power to the TS2060 unit.
2. Slide the battery holder cover in the direction of the arrow to open it, and then remove the cover.

Rear view

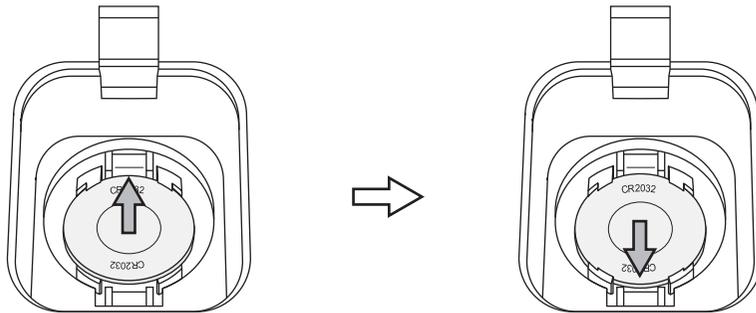


3. Insert a non-conducting precision screwdriver (flat-head screwdriver) into the gap under the battery and lift the battery out.

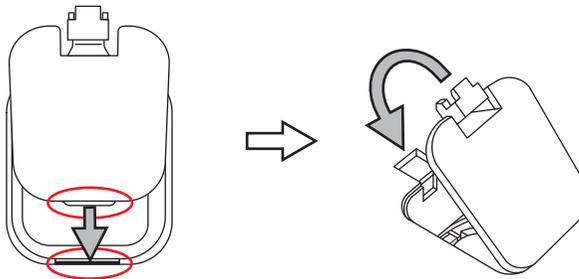


4. Remove the battery.

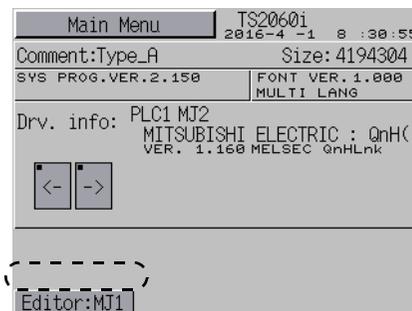
- Slide a new battery up into the battery holder with the "+" side facing upward and then press the lower side of the battery until it clicks.



- Close the battery holder cover by inserting the tab on the bottom of the cover into the TS2060 unit and pressing the top of the cover until it clicks.



- Write a date five years from the present date for battery replacement on the new caution sticker and attach the sticker to an empty area on the TS2060 unit.
  - \* Do not attach the sticker over any air holes on the TS2060 unit or optional units.
- Turn on the TS2060 unit and check that the "Brownout of Battery" message has disappeared from the lower left of the Main Menu screen.



- If a "\*.RAM" backup file was saved, transfer it back to the TS2060 unit.

## Notes on the Battery: EU Directive 2006/66/EC

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According to EU directive 2006/66/EC effective in EU countries, the package box of the TS2060 unit and the packaging of the replacement battery have the marking shown below.



### CAUTION

- The marking shown above is effective only in EU countries.
- The details on the marking are designated in Article 20 “Information for end-users” and ANNEX II in EU directive 2006/66/EC.
- The marking indicates that the battery should be disposed of separately from general household waste.
- If element symbols are indicated below the marking, it means that the battery contains the specified heavy metal at a concentration exceeding the control value. The concentration control values are given below.  
Hg: mercury (0.0005 %), Cd: cadmium (0.002 %), Pb: lead (0.004 %)
- The EU has determined the separating program for used batteries.  
Dispose of used batteries properly at your local waste-disposal/recycling center.

## “Perchlorate Best Management Practices” Regulations in California State Law, U.S.

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The TS2060 unit is an applicable product under the “Perchlorate Best Management Practices” regulations of California state law in the U.S. The package box of the TS2060 unit and the packaging of the replacement battery have the explanation shown below.

Perchlorate Material - special handling may apply.  
See [www.dtsc.ca.gov/hazardouswaste/perchlorate/](http://www.dtsc.ca.gov/hazardouswaste/perchlorate/).

If exporting a product with an embedded TS2060 unit that contains a lithium primary battery to California, the above explanation must be printed on the product's package box.

## Notes on Transport

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Transportation of batteries containing lithium must observe the relevant transport regulations.