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> HP Smart Array 650mAh 4.8V Battery Module User Manual

## HP 462976-001

# HP Smart Array 650mAh 4.8V Battery Module User Manual

Model: 462976-001 | Brand: HP

## 1. INTRODUCTION

This manual provides essential information for the proper installation, operation, and maintenance of your HP Smart Array 650mAh 4.8V Battery Module (Model: 462976-001). This battery module is designed to provide backup power for the cache memory of compatible HP Smart Array RAID controllers, ensuring data integrity during unexpected power outages.

## 2. SAFETY INFORMATION

Please read and understand all safety precautions before handling or installing the battery module. Failure to follow these instructions may result in injury or damage to the equipment.

- **Battery Disposal:** This battery module contains Nickel Metal Hydride (Ni-MH) and must be disposed of properly. Do not dispose of in general waste. Follow local regulations for battery recycling.
- **Handling:** Handle the battery module with care. Avoid dropping or subjecting it to strong impacts.
- **Temperature:** Do not expose the battery module to extreme temperatures, direct sunlight, or high humidity.
- **Modifications:** Do not attempt to open, disassemble, or modify the battery module. There are no user-serviceable parts inside.
- **Compatibility:** Use this battery module only with compatible HP Smart Array RAID controllers as specified by HP.

## 3. PRODUCT OVERVIEW

The HP Smart Array 650mAh 4.8V Battery Module is a critical component for maintaining the integrity of cached data

on your RAID controller. It provides temporary power to the controller's cache in the event of a power loss, allowing the controller to write pending data to the disk array once power is restored.

### 3.1. Features

- 650 mAh capacity
- 4.8V nominal voltage
- Nickel Metal Hydride (Ni-MH) chemistry
- Designed for HP Smart Array RAID controllers
- Proprietary form factor for specific HP server environments

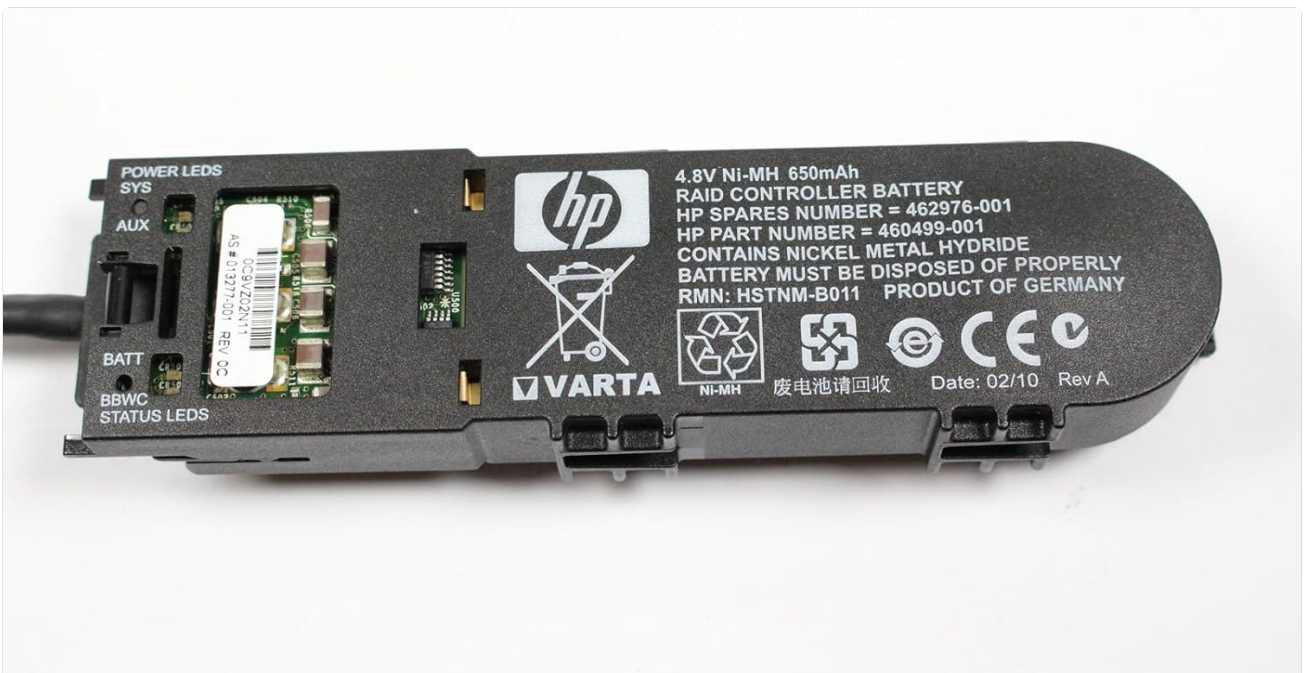
### 3.2. Specifications

| Specification                | Value                      |
|------------------------------|----------------------------|
| Model Number                 | 462976-001                 |
| HP Spares Number             | 462976-001                 |
| HP Part Number               | 460499-001                 |
| Battery Type                 | Ni-MH                      |
| Voltage                      | 4.8V                       |
| Capacity                     | 650 mAh                    |
| Wattage                      | 3.12 watts                 |
| Maximum Input Voltage        | 5.6 Volts                  |
| Dimensions (L x W x H)       | 3.54 x 11.42 x 7.48 inches |
| Item Weight                  | 3.19 ounces                |
| Manufacturing Date (Example) | 02/10 (February 2010)      |

### 3.3. Component Identification



**Figure 1:** Top view of the HP Smart Array Battery Module, showing the main body, attached cable with multi-pin connector, and product labels. Visible labels include HP logo, VARTA logo, battery specifications (4.8V Ni-MH 650mAh), part numbers, and disposal warnings. Status LEDs for Power, System, Auxiliary, Battery, and BBWC are also indicated.



**Figure 2:** A detailed view of the product label on the battery module. This label provides critical information such as the battery type (4.8V Ni-MH 650mAh), HP spare and part numbers (462976-001, 460499-001), and manufacturing details, including the product origin (Germany) and manufacturing date (02/10).



**Figure 3:** Bottom view of the battery module, revealing a 'PRODUCT OF SINGAPORE' label and a yellow warning label. The warning states: 'WARNING: DISCONNECT CABLE IF NO BATTERY PRESENT!', indicating a safety measure related to the module's connection within the system.

## 4. SETUP AND INSTALLATION

Installation of the HP Smart Array Battery Module typically involves connecting it to the appropriate port on your HP Smart Array RAID controller. Always refer to your specific server or RAID controller's documentation for detailed, model-specific installation instructions.

### 4.1. General Installation Steps

1. **Power Down:** Before beginning, ensure the server or system containing the RAID controller is completely powered off and disconnected from all power sources.
2. **Locate Controller:** Identify the HP Smart Array RAID controller within your server chassis.
3. **Locate Battery Connector:** Find the dedicated battery connector port on the RAID controller. This is typically a small, multi-pin header.
4. **Connect Battery Module:** Carefully align the proprietary multi-pin connector of the battery module's cable with the port on the RAID controller. Gently push until it is securely seated. Ensure the cable is not pinched or strained.
5. **Secure Module:** Depending on your server model, the battery module may have a designated slot or mounting point within the chassis. Secure the module to prevent it from moving or disconnecting.
6. **Power On:** Once the battery module is securely installed, reconnect power to the server and power it on. The system should detect the new battery module.

**Note:** Some server models may require specific firmware updates or configuration changes after battery installation. Consult your server's documentation for details.

## 5. OPERATION

Once installed, the battery module operates automatically to charge and maintain its readiness. Its primary function is to provide power to the RAID controller's cache memory during a power failure, allowing the controller to safely write cached data to the disk array.

### 5.1. Status Indicators (LEDs)

The battery module features several LEDs that provide visual feedback on its status and the status of the RAID controller. Refer to your RAID controller's documentation for the exact meaning of each LED state (e.g., solid green, blinking amber, off).

- **POWER LED:** Indicates the power status of the module.
- **SYS (System) LED:** Indicates overall system status.
- **AUX (Auxiliary) LED:** May indicate auxiliary power or specific system conditions.
- **BATT (Battery) LED:** Indicates the charge status or health of the battery.
- **BBWC (Battery-Backed Write Cache) STATUS LED:** Indicates the status of the write cache, often related to the battery's ability to protect it.

Upon initial installation, the battery may require several hours to fully charge. The system may report a 'battery not charged' or 'battery learning cycle' message until the charging process is complete.

## 6. MAINTENANCE

The HP Smart Array Battery Module is designed for minimal maintenance. However, proper care can extend its lifespan and ensure reliable operation.

- **Environmental Conditions:** Ensure the server environment maintains stable temperatures and humidity levels as specified by the server manufacturer.
- **Physical Inspection:** Periodically inspect the battery module and its cable for any signs of physical damage, corrosion, or loose connections.
- **Cleaning:** If necessary, gently clean the exterior of the module with a dry, lint-free cloth. Do not use liquid cleaners or solvents.
- **Replacement:** Batteries have a finite lifespan. If the system consistently reports battery errors, or if the battery fails to hold a charge after a full charging cycle, it may need to be replaced.

## 7. TROUBLESHOOTING

This section addresses common issues you might encounter with your HP Smart Array Battery Module.

| Problem | Possible Cause | Solution |
|---------|----------------|----------|
|---------|----------------|----------|

|  |  |   |
|--|--|---|
| Battery not detected or error message      | Loose connection, incorrect installation, faulty battery, or controller issue. | 1. Power down the server and check that the battery cable is securely connected to the RAID controller. 2. Ensure the battery module is correctly seated in its designated slot. 3. Allow several hours for the battery to charge after installation. 4. If the problem persists, the battery module may be faulty and require replacement. Consult HP support. |
| Battery not charging or holding charge     | Battery degradation, faulty charging circuit on controller.                    | 1. Ensure the server has been powered on for a sufficient period (e.g., 24 hours) to allow for a full charge cycle. 2. Check system logs for specific battery health warnings. 3. If the battery is old or has been in service for a long time, it may have reached the end of its lifespan and needs replacement.  |
| BBWC (Battery-Backed Write Cache) disabled | Battery not charged, battery faulty, or controller configuration.              | 1. Allow the battery to fully charge. 2. Check the battery status LEDs and system logs for battery health. 3. Verify RAID controller settings to ensure BBWC is enabled. 4. Replace the battery if it is determined to be faulty.   |

## 8. DISPOSAL

This product contains a Nickel Metal Hydride (Ni-MH) battery, which requires special handling for disposal. Do not dispose of the battery module with regular household waste. Please follow your local regulations and guidelines for the proper recycling or disposal of electronic waste and batteries. Many electronic retailers and recycling centers offer collection services for such items.

## 9. WARRANTY AND SUPPORT

For warranty information, technical support, or service inquiries regarding your HP Smart Array 650mAh 4.8V Battery Module, please contact HP customer support or visit the official HP support website. Ensure you have your product model number (462976-001) and any relevant server or controller information available when seeking support.

You can find more information and support resources on the official HP website: [www.hp.com](http://www.hp.com)