

## Hewlett-Packard 481653-002

# HP 481653-002 146GB SAS Hard Disk Drive User Manual

Model: 481653-002

## 1. INTRODUCTION

This manual provides essential information for the proper installation, operation, and maintenance of your HP 481653-002 146GB 15000RPM 3.5-inch SAS Hard Disk Drive. Please read these instructions carefully before proceeding with installation or use to ensure optimal performance and longevity of the product.

The HP 481653-002 is a high-performance Serial Attached SCSI (SAS) hard drive designed for enterprise environments, offering reliable data storage and fast access speeds.

## 2. SAFETY INFORMATION

Observe the following safety precautions to prevent injury and damage to the drive or system:

- **Electrostatic Discharge (ESD) Protection:** Always wear an anti-static wrist strap and work on an anti-static mat when handling the hard drive. ESD can severely damage electronic components.
- **Power Off:** Ensure the system is completely powered off and disconnected from the power source before installing or removing the hard drive.
- **Handle with Care:** Hard drives are delicate. Avoid dropping, jarring, or exposing the drive to excessive vibration. Hold the drive by its edges, not by the circuit board or connector pins.
- **Ventilation:** Ensure adequate airflow around the drive to prevent overheating during operation.
- **Qualified Personnel:** Installation and maintenance should ideally be performed by qualified technical personnel.

## 3. PACKAGE CONTENTS

Verify that all items are present in the package. If any items are missing or damaged, contact your vendor immediately.

- HP 481653-002 146GB 15000RPM 3.5-inch SAS Hard Disk Drive with Tray
- Documentation (this manual, if printed)

*Note: SAS cables and mounting screws are typically supplied with the server or storage enclosure and are not included with the drive itself.*

## 4. SETUP AND INSTALLATION

Follow these steps to properly install the HP 481653-002 hard drive into your compatible server or storage system.

### 4.1 Pre-Installation Checks

1. Ensure your server or storage system supports 3.5-inch SAS hard drives.
2. Verify that your system's firmware and operating system are up to date to ensure compatibility.
3. Gather necessary tools, such as a Phillips head screwdriver (if required for the drive tray).

### 4.2 Physical Installation

1. **Power Down:** Shut down the server or storage system completely and disconnect all power cables.
2. **Access Drive Bay:** Open the server or storage enclosure to access the available 3.5-inch drive bays. Refer to your system's manual for specific instructions on accessing drive bays.
3. **Insert Drive:** Carefully slide the HP 481653-002 hard drive, with its attached tray, into an empty drive bay until it clicks securely into place. Ensure the SAS connector on the drive properly mates with the backplane connector in the bay.
4. **Secure Drive:** If your system requires additional securing mechanisms (e.g., screws or latches), engage them to hold the drive firmly.
5. **Close Enclosure:** Close the server or storage enclosure.
6. **Reconnect Power:** Reconnect all power cables and power on the system.



*Figure 1: HP 481653-002 146GB SAS Hard Disk Drive with its hot-pluggable tray. This image shows the front view of the drive, indicating its form factor and the integrated tray for easy installation into compatible server bays.*

### 4.3 System Recognition and Configuration

After physical installation, the system's operating system or RAID controller will need to recognize and configure the new drive.

- **BIOS/UEFI/RAID Controller:** Access your system's BIOS/UEFI or RAID controller configuration utility during boot-up to verify that the drive is detected.
- **Operating System:** Once detected, you may need to initialize, partition, and format the drive within your operating system's disk management tools before it can be used for data storage. Refer to your

operating system's documentation for detailed instructions.

## 5. OPERATING THE HARD DRIVE

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The HP 481653-002 operates as a standard storage device within your server or storage array. Once installed and configured, it functions continuously to store and retrieve data as requested by the operating system and applications.

- **Data Access:** Data is written to and read from the drive via the SAS interface, managed by the system's controller.
- **Hot-Pluggable:** This drive is designed to be hot-pluggable, meaning it can be inserted or removed from a running system without powering down, provided the system's backplane and RAID controller support hot-swapping. Always consult your server's documentation for proper hot-swap procedures to avoid data loss or system instability.
- **Performance:** The 15000RPM rotational speed provides high performance suitable for demanding applications and environments.

## 6. MAINTENANCE

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Proper maintenance ensures the longevity and reliability of your hard drive.

- **Data Backup:** Regularly back up critical data stored on the drive. While reliable, all hard drives can eventually fail.
- **Firmware Updates:** Periodically check the Hewlett-Packard support website for firmware updates for your drive model. Firmware updates can improve performance, stability, and compatibility.
- **System Monitoring:** Utilize server management software to monitor the health and temperature of your hard drives. Early detection of issues can prevent data loss.
- **Cleanliness:** Ensure the server environment is clean and free of dust, which can impede airflow and lead to overheating.

## 7. TROUBLESHOOTING

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If you encounter issues with your HP 481653-002 hard drive, consider the following troubleshooting steps:

- **Drive Not Detected:**
  - Verify the drive is fully seated in its bay.
  - Check SAS cable connections (if applicable, for external enclosures).
  - Ensure the RAID controller or HBA is properly installed and its drivers are up to date.
  - Test the drive in a different bay or with a different controller, if available.
- **Performance Issues:**
  - Check system resource utilization (CPU, RAM).
  - Ensure the drive is not overheating.
  - Verify RAID array health (if part of a RAID configuration).
  - Run diagnostic tools provided by your operating system or HP.

- **Unusual Noises:**

Clicking, grinding, or loud whirring noises can indicate a failing drive. Immediately back up any critical data and consider replacing the drive.

If troubleshooting steps do not resolve the issue, contact HP support or your system vendor for further assistance.

## 8. SPECIFICATIONS

Feature	Specification
Model Number	481653-002
Manufacturer	Hewlett-Packard
Digital Storage Capacity	146 GB
Hard Disk Interface	SAS (Serial Attached SCSI)
Rotational Speed	15000 RPM
Form Factor	3.5-inch
Connectivity Technology	SATA ( <i>Note: SAS drives use SAS connectors, but often listed with SATA for general compatibility context in some specifications. The primary interface is SAS.</i> )
Port Type	Single Port
Hot-Pluggable	Yes, with compatible systems

## 9. WARRANTY AND SUPPORT

This HP hard disk drive is covered by a limited warranty. For specific warranty terms and conditions, please refer to the documentation provided with your original system purchase or visit the official Hewlett-Packard support website.

For technical support, driver downloads, firmware updates, and additional resources, please visit the Hewlett-Packard support portal. When contacting support, have your product model number (481653-002) and any relevant system information ready.

**HP Support Website:** [www.hp.com/support](http://www.hp.com/support)