

TVS-x72XU

**TVS-972XU
TVS-972XU-RP**

User Guide

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1. Preface

About This Guide

This guide provides information on the QNAP TVS-x72XU NAS and step-by-step instructions on installing the hardware. It also provides instructions on basic operations and troubleshooting information.

Audience

This document is intended for consumers and storage administrators. This guide assumes that the user has a basic understanding of storage and backup concepts.

Document Conventions

Symbol	Description
	Notes provide default configuration settings and other supplementary information.
	Important notes provide information on required configuration settings and other critical information.
	Tips provide recommendations or alternative methods of performing tasks or configuring settings.
	Warnings provide information that, when ignored, may result in potential loss, injury, or even death.

2. Product Overview

This chapter provides basic information about the QNAP TVS-x72XU NAS.

About the TVS-x72XU

Powered by an Intel® Core™ i3-8100 processor, the TVS-x72XU is an enterprise-class series NAS. The series supports different disk storage configurations to better meet your virtualization and data storage needs. It also features four Long-DIMM memory slots, scaling up to 64GB of memory, one expansion card slot, and various input/output (I/O) ports for better scalability and flexibility.

Hardware Specifications



Warning

If your QNAP product has hardware defects, return the product to QNAP or a QNAP-authorized service center for maintenance or replacement. Any attempt to repair or perform maintenance procedures on the product by you or an unauthorized third-party invalidates the warranty.

QNAP is not responsible for any damage or data loss caused by unauthorized modifications and installation of unsupported third-party applications.

For details, see the [QNAP Warranty Terms and Conditions](#).

Ordering P/N	CPU	Memory	Power supply
TVS-972XU-I3-4G	Intel® Core™ i3-8100	4 GB	Single
TVS-972XU-RP-I3-4G	Intel® Core™ i3-8100	4 GB	Redundant

Component	TVS-972XU TVS-972XU-RP
Processor	
CPU	Intel® Core™ i3-8100
Frequency	4-core 3.6 GHz
Architecture	x86 64-bit
Encryption engine	AES-256
Memory	
Pre-installed memory	4 GB RAM: 1 x 4 GB DDR4
Memory slots	4 x Long-DIMM DDR4  Important Use only QNAP memory modules to maintain system performance and stability. For NAS devices with more than one memory slot, use QNAP modules with identical specifications. Using unsupported modules may degrade performance, cause errors, or prevent the operating system from starting.
Maximum memory	64 GB RAM: 4 x 16 GB
Flash memory	4 GB (dual boot OS protection)

Component		TVS-972XU TVS-972XU-RP
Storage		
Drive bays		• 4 x 3.5-inch SATA 6 Gbps bays • 5 x 2.5-inch SATA 6 Gbps bays
Drive compatibility		• 3.5-inch SATA hard disk drives • 2.5-inch SATA hard disk drives • 2.5-inch SATA solid-state drives  Important 2.5-inch drive trays only support drives with a maximum height of 9.5 mm.
Network		
10 Gigabit Ethernet ports		2 x 10GbE SFP+ SmartNIC
Gigabit Ethernet ports		2 x GbE RJ45
External I/O Ports & Expansion Slots		
PCIe slots		1 x PCIe 3.0 (x16)  Tip For the list of compatible expansion cards, go to https://www.qnap.com/compatibility.
USB ports		• 2 x USB 3.0 Type-A • 2 x USB 3.1 Gen 2 (10Gbps) 5V/3A Type-C • 2 x USB 3.1 Gen 2 5V/1A Type-A
HDMI ports		1 x HDMI 2.0 (up to 3840 x 2160 resolution at 30 Hz)
Interface		
Buttons		• Power • Reset
Dimensions		
Form factor		1U Rackmount
Dimensions (H x W x D)		• TVS-972XU: 43.3 x 482.6 x 484.15 mm (1.70 x 19 x 19.06 in) • TVS-972XU-RP: 43.3 x 482.6 x 507.54 mm (1.70 x 19 x 19.98 in)
Net weight		• TVS-972XU: 7.48 kg (16.49 lbs) • TVS-972XU-RP: 8.63 kg (19.03 lbs)
Others		

Component	TVS-972XU TVS-972XU-RP
Rail compatibility	RAIL-B02  Note • Rail kits are not included with the NAS and must be purchased separately. For details, contact an authorized reseller or go to http://shop.qnap.com. • Information on rail kit installation can be found in the installation guide included in the rail kit package.
Power supply unit	• TVS-972XU: 250W, 100-240V AC, 50/60Hz • TVS-972XU-RP: 2 x 300W, 100-240V AC, 50/60Hz  Warning To reduce the risk of fire or electric shock, ensure that you only connect the power cord to a properly grounded electrical outlet.
System battery	CR2032 lithium battery (3V, 225 mAh)  Warning To avoid potential battery explosion, causing injury or damage to components, ensure that you replace the existing battery with a battery of the same type.  Important Dispose of used batteries according to local regulations or the instructions of the battery manufacturer.
Sound level	• TVS-972XU: 32 db(A) • TVS-972XU-RP: 43.3 db(A)  Note The sound level was tested at a bystander position, which is within one meter of the NAS. The test NAS operated at low speed with the maximum number of drives installed.
Fans	System: 3 x 40 mm, 12V DC  Warning To avoid potential injury or damage to components, do not touch the fans while the NAS is connected to a power source.
Operating temperature	0°C to 40°C (32°F to 104°F)

Component	TVS-972XU TVS-972XU-RP
Relative humidity	- Non-condensing relative humidity: 5% to 95% - Wet-bulb temperature: 27°C (80.6°F)

**Tip**

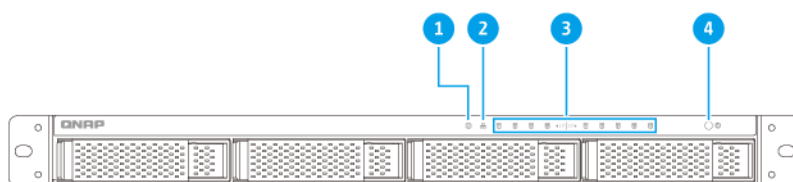
Model specifications are subject to change without prior notice. To see the latest specifications, go to <https://www.qnap.com>.

Package Contents

Item	Quantity
TVS-x72XU NAS	1
Power cord	- TVS-972XU: 1 - TVS-972XU-RP: 2
Ethernet cable	2
Screws for 2.5-inch drives	TVS-972XU, TVS-972XU-RP: 24
Screws for 3.5-inch drives	TVS-972XU, TVS-972XU-RP: 32
Quick Installation Guide (QIG)	1

Components

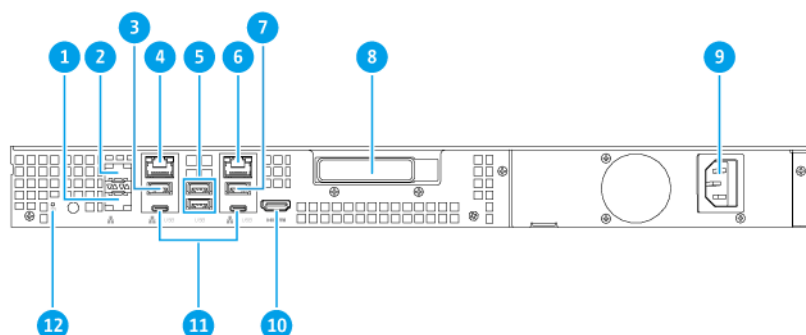
Front Panel



TVS-972XU, TVS-972XU-RP

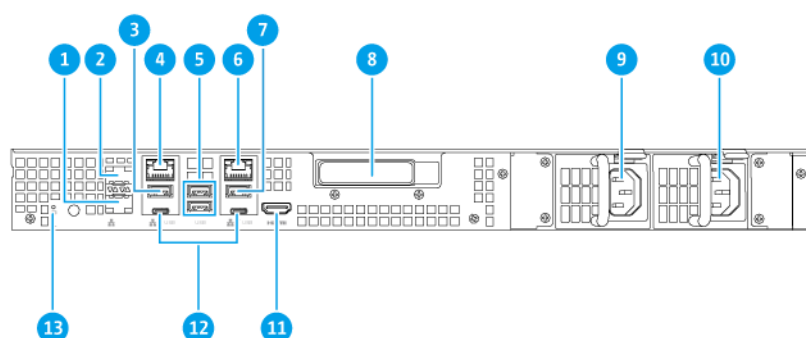
No.	Component	No.	Component
1	Status LED	3	Drive LEDs
2	LAN LED	4	Power button

Rear Panel



TVS-972XU

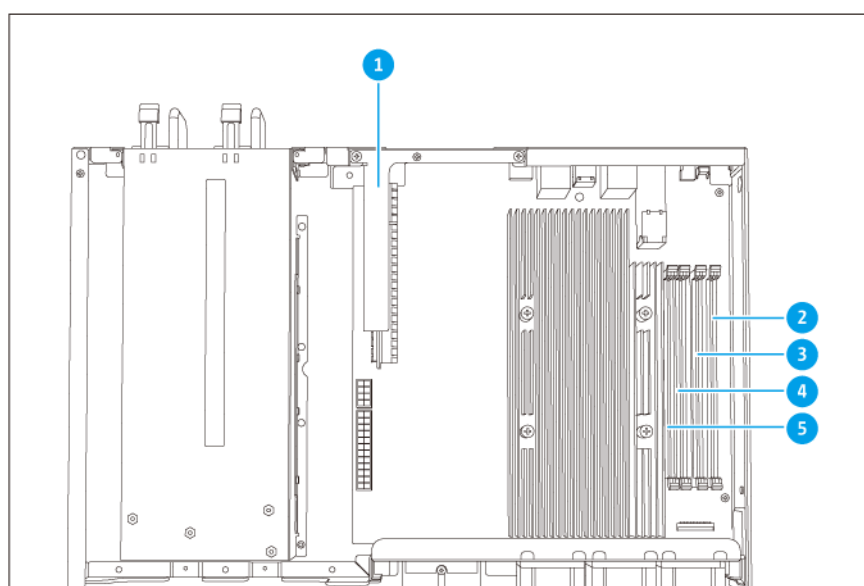
No.	Component	No.	Component
1	Ethernet port 4 (10 GbE SFP+)	7	USB 3.1 Gen 2 Type-A port
2	Ethernet port 3 (10 GbE SFP+)	8	PCIe 3.0 slot 1 (x16)
3	USB 3.1 Gen 2 Type-A port	9	Power input
4	Ethernet port 2 (GbE RJ45)	10	HDMI port
5	USB 3.0 Type-A ports	11	USB 3.1 Gen 2 Type-C ports
6	Ethernet port 1 (GbE RJ45)	12	Reset button



TVS-972XU-RP

No.	Component	No.	Component
1	Ethernet port 4 (10 GbE SFP+)	8	PCIe 3.0 slot 1 (x16)
2	Ethernet port 3 (10 GbE SFP+)	9	Power supply unit 1
3	USB 3.1 Gen 2 Type-A port	10	Power supply unit 2
4	Ethernet port 2 (GbE RJ45)	11	HDMI port
5	USB 3.0 Type-A ports	12	USB 3.1 Gen 2 Type-C ports
6	Ethernet port 1 (GbE RJ45)	13	Reset button
7	USB 3.1 Gen 2 Type-A port	14	-

System Board



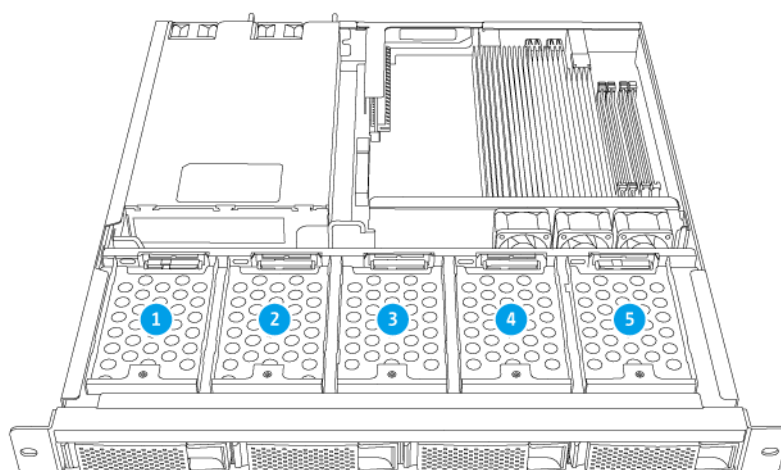
TVS-972XU, TVS-972XU-RP

No.	Component	No.	Component
1	PCIe 3.0 slot (x16)	4	Memory slot 3
2	Memory slot 1	5	Memory slot 4
3	Memory slot 2	-	-

Drive Numbering



TVS-972XU, TVS-972XU-RP 3.5-inch Trays



TVS-972XU, TVS-972XU-RP 2.5-inch Trays

Installation Requirements

Category	Item
Environment	- Room temperature: 0°C to 40°C (32°F to 104°F) - Non-condensing relative humidity: 5% to 95% - Wet-bulb temperature: 27°C (80.6°F) - Flat, anti-static surface without exposure to direct sunlight, liquids, or chemicals

Category	Item
Hardware and peripherals	- Storage drives For details on compatible drives, go to https://www.qnap.com/compatibility/. - Network cable
Tools	- Phillips #1 or #2 screwdriver - Anti-static wrist strap

Setting up the NAS

1. Place your NAS device in an environment that meets the requirements.
For details, see [Installation Requirements](#).
2. Install the drives.
For details, see the following topics:
 - [Installing 3.5-inch Hard Drives on 3.5-inch Trays](#)
 - [Installing 2.5-inch Hard Drives or Solid State Drives on 3.5-inch Trays](#)
 - [Installing 2.5-inch Solid State Drives on 2.5-inch Trays](#)
3. Connect the power cord and all applicable cables.
4. Power on the NAS.
5. Install QTS.
For details, see [QTS Installation](#).
6. Log on to QTS.

3. Installation and Configuration

This chapter provides specific hardware and firmware installation and configuration steps.

Hardware Installation

This section provides information on installing drives, memory modules, and expansion cards.

Drive Installation

The TVS-x72XU is compatible with 3.5-inch and 2.5-inch hard drives, and 2.5-inch solid state drives.

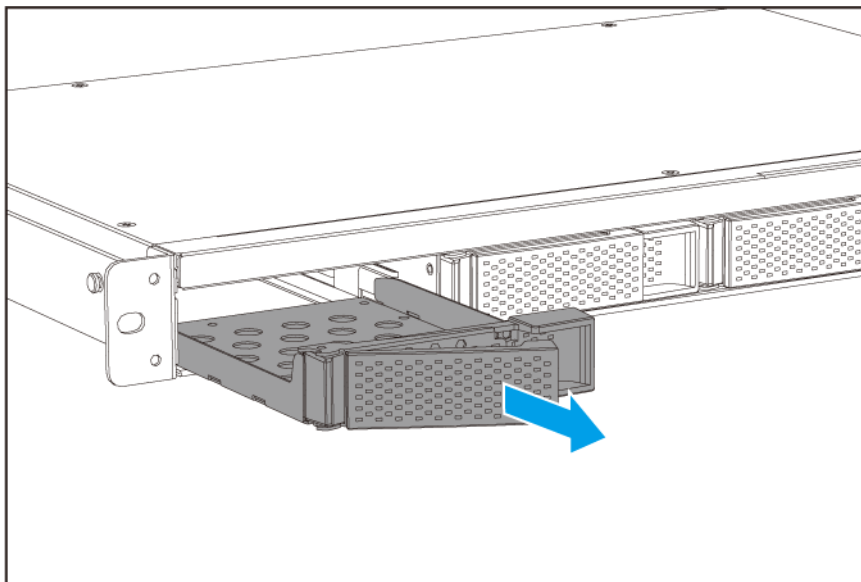
Installing 3.5-inch Hard Drives on 3.5-inch Trays



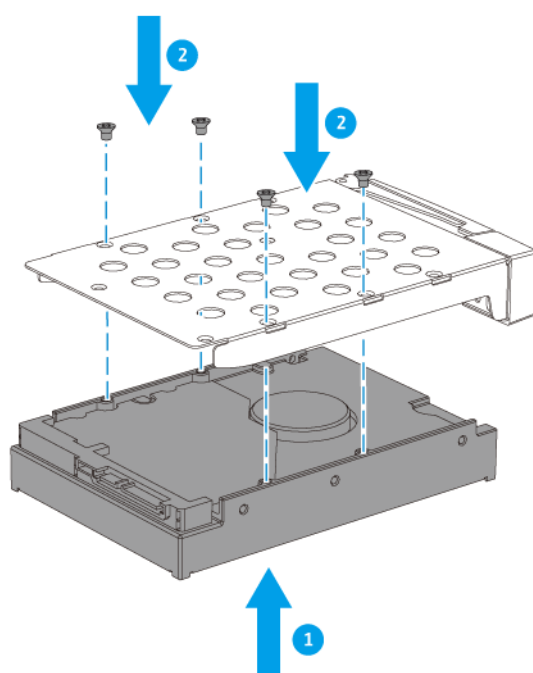
Warning

- Installing a drive deletes all data on the drive.
- Observe electrostatic discharge (ESD) procedures to avoid damage to components.

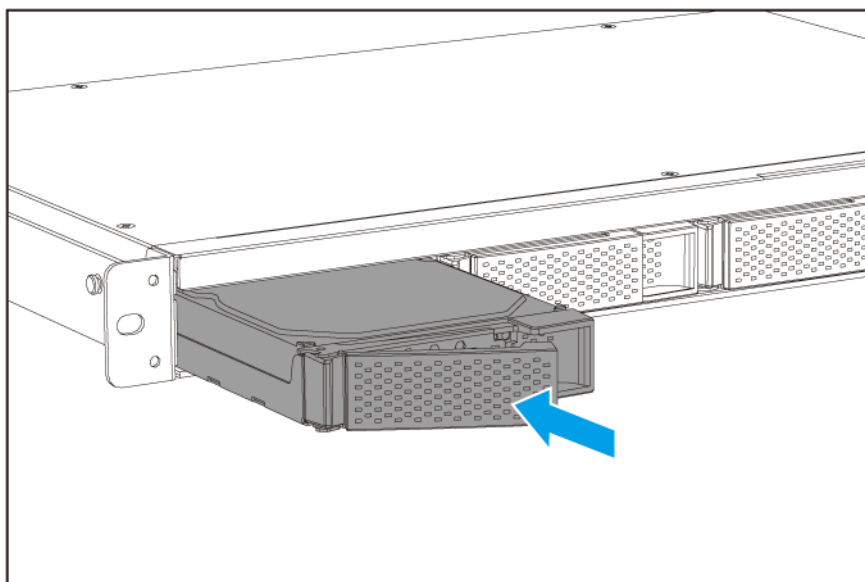
1. Power off the NAS.
2. Remove the drive tray.
 - a. Pull the handle to release the tray.
 - b. Pull the tray out.



3. Install a drive on the tray.
 - a. Place the drive on the tray so that the holes on the bottom of the drive are aligned with the holes on the bottom of the tray.
 - b. Attach the screws to lock the drive to the tray.



4. Load the tray into the bay.
 - a. Slide the tray into the drive bay.
 - b. Push the handle.



5. Power on the NAS.

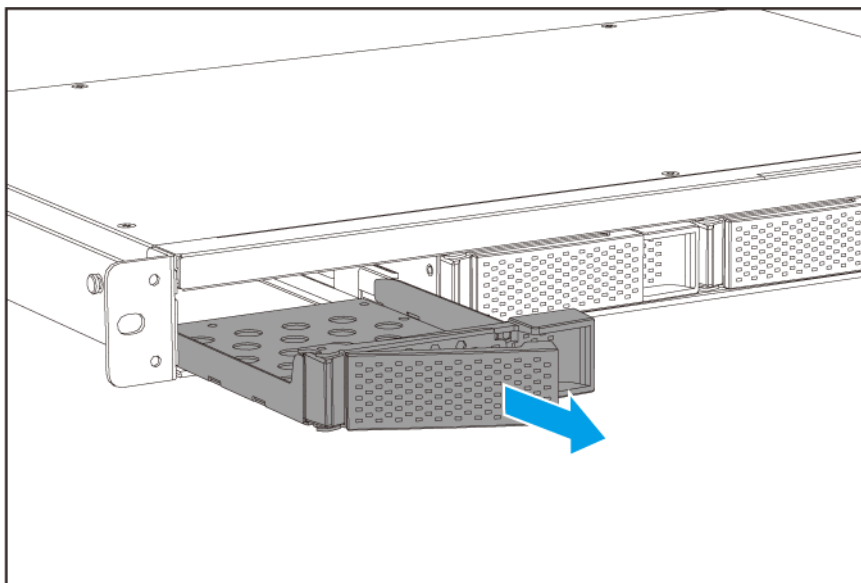
Installing 2.5-inch Hard Drives or Solid State Drives on 3.5-inch Trays



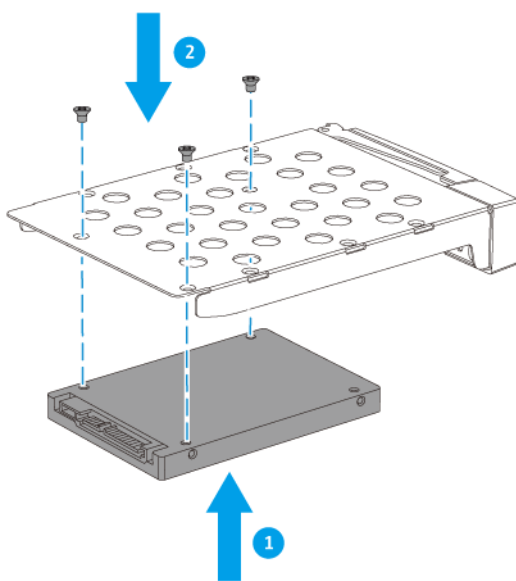
Warning

- Installing a drive deletes all data on the drive.
- Observe electrostatic discharge (ESD) procedures to avoid damage to components.

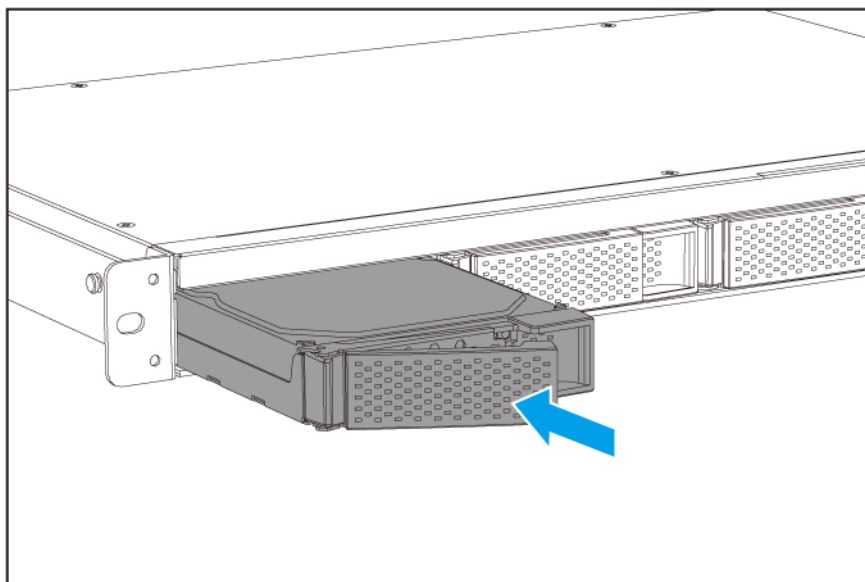
1. Power off the NAS.
2. Remove the drive tray.
 - a. Pull the handle to release the tray.
 - b. Pull the tray out.



3. Install a drive on the tray.
 - a. Place the drive on the tray so that the holes on the bottom of the drive are aligned with the holes on the bottom of the tray.
 - b. Attach the screws to lock the drive to the tray.



4. Load the tray into the bay.
 - a. Slide the tray into the drive bay.
 - b. Push the handle.



5. Power on the NAS.

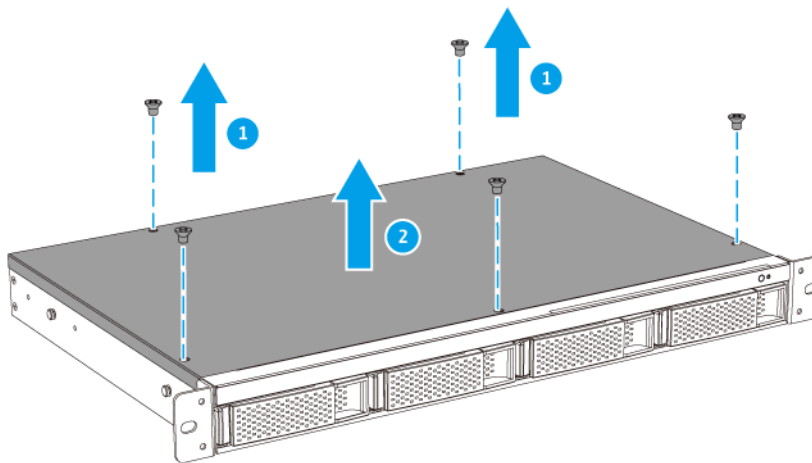
Installing 2.5-inch Solid State Drives on 2.5-inch Trays



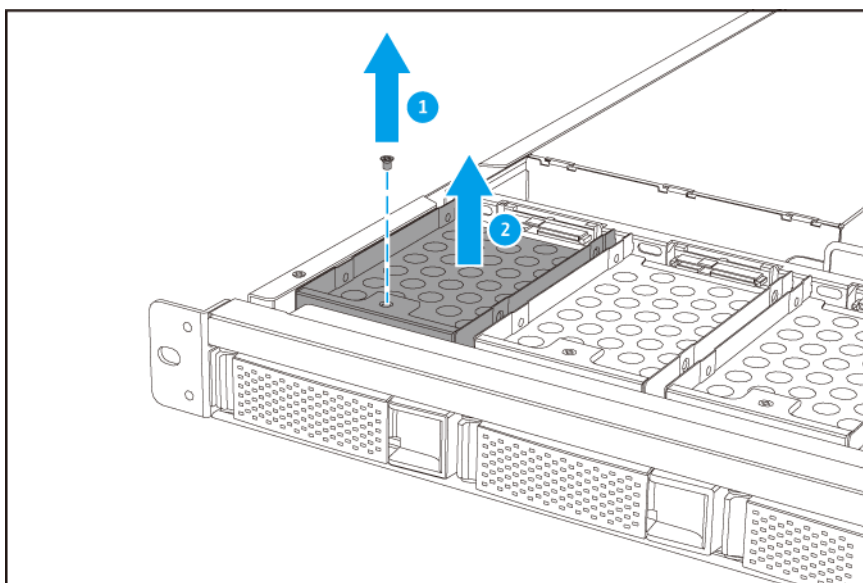
Warning

- Installing a drive deletes all data on the drive.
- Observe electrostatic discharge (ESD) procedures to avoid damage to components.

1. Power off the NAS.
2. Remove the top cover.
 - a. Remove the screws connecting the top cover to the chassis.
 - b. Lift the top cover up.

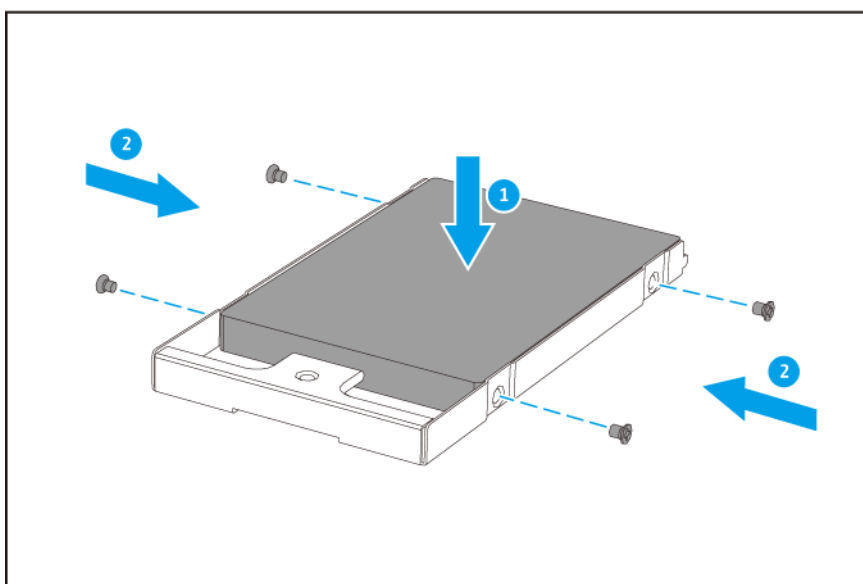


3. Remove the drive tray.
 - a. Remove the screws that secure the tray to the chassis.
 - b. Pull the tray out.



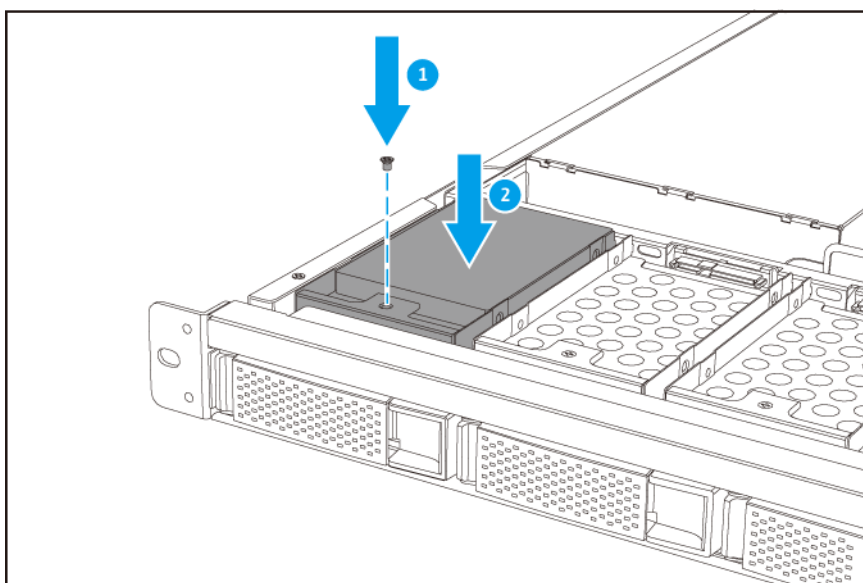
4. Install a drive on the tray.

- a. Place the drive on the tray so that the holes on the side of the drive are aligned with the holes on the side of the tray.
- b. Attach the screws to lock the drive to the tray.



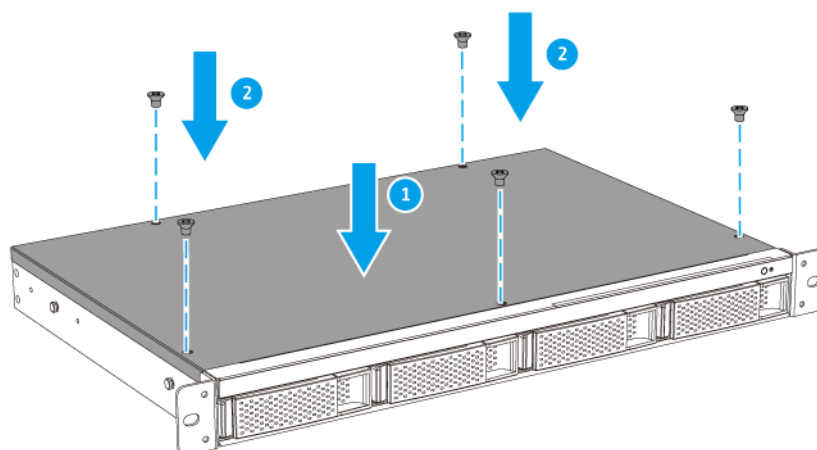
5. Load the tray into the bay.

- a. Slide the tray into the drive bay.
- b. Attach the screws that secure the drive tray to the chassis.



6. Attach the top cover.

- a. Place the cover on the NAS.
- b. Attach the screws connecting the top cover to the chassis.



7. Power on the NAS.

Expansion Unit Installation

The TVS-x72XU supports SAS expansion units.

Type	Description	Required Accessories
SAS	• Uses a SAS 12 Gbps interface • Supports a maximum of eight expansion units • Supports SAS/SATA HDD/SSD	• SAS-12G2E storage expansion card • mini-SAS SFF-8644 cable • RAIL-A03-57 rail kit

Connecting SAS Expansion Units

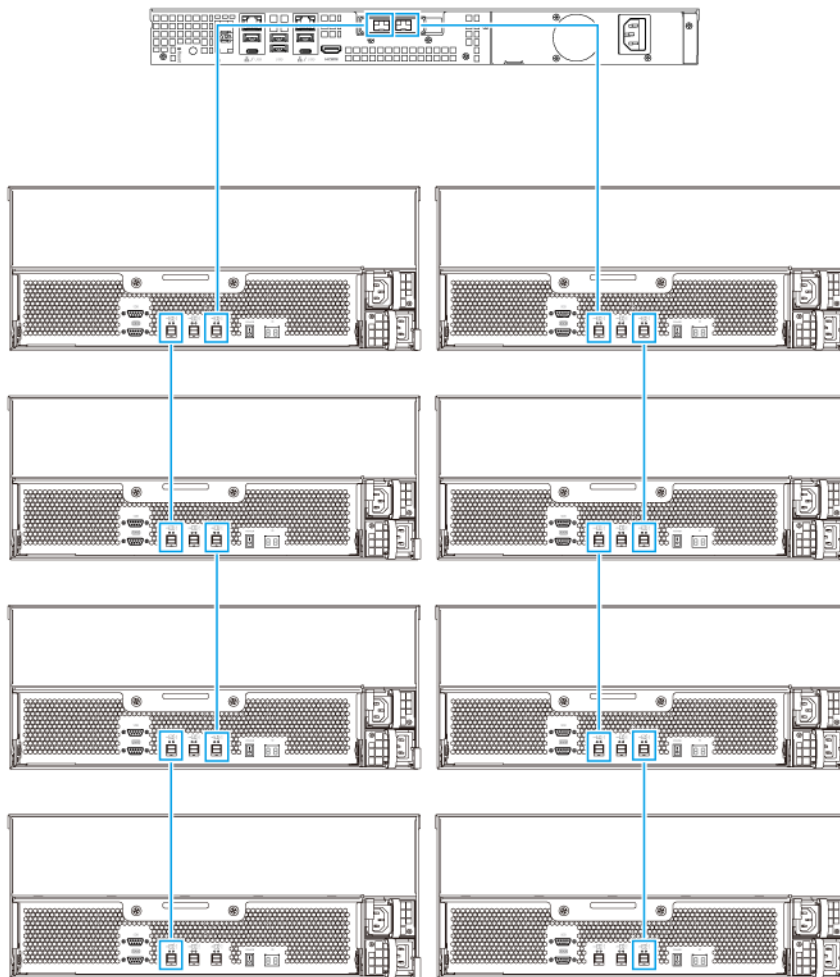
The TVS-x72XU supports a maximum of eight SAS expansion units and is compatible with the following models:

- REXP-1210U-RP
- REXP-1220U-RP
- REXP-1610U-RP
- REXP-1620U-RP

To use SAS expansion units, an SAS-12G2E storage expansion card must be installed on the NAS and connected to the expansion units using mini-SAS SFF-8644 cables. You can purchase storage expansion accessories from QNAP or an authorized reseller.

For details, go to <https://shop.qnap.com/>.

1. Install a storage expansion card on the PCIe slot.
For details, see [Installing Expansion Cards](#)
2. Connect the expansion units to the NAS using the following topology.



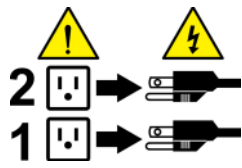
3. Power on the expansion units.
4. Verify that the expansion units are recognized by the NAS.
 - a. Log on to QTS as administrator.
 - b. Go to **Main Menu > Storage & Snapshots > Overview > System**.
 - c. Verify that the expansion units are listed.

Hot-swapping Redundant Power Supply Units

NAS devices with redundant power supply units (PSUs) support hot-swapping.

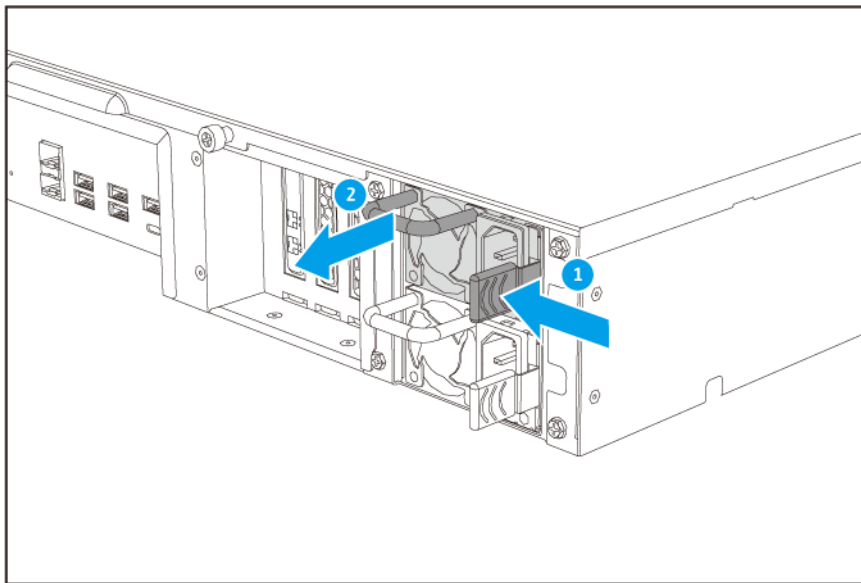


Warning

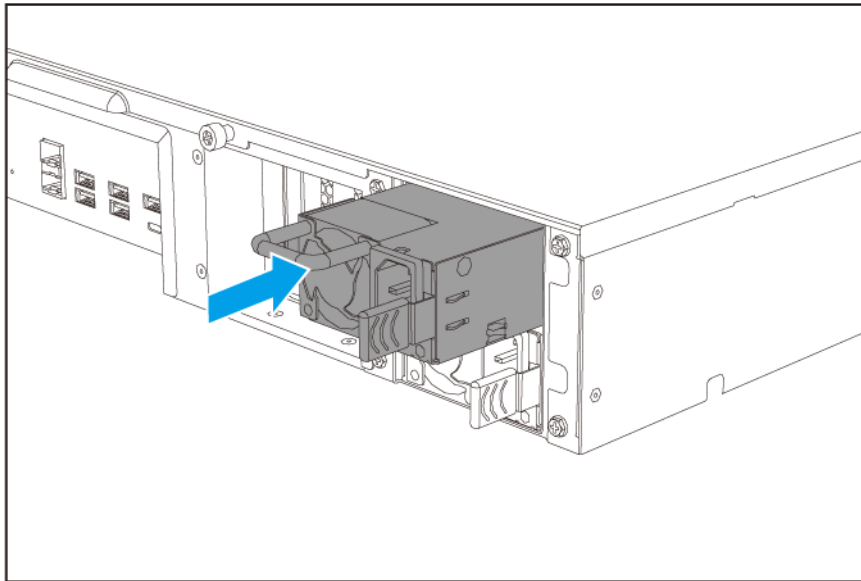


The NAS may have one or more power supply unit (PSU) cords. To avoid serious injuries, a trained service technician must disconnect all PSU cords before installing or replacing system components.

1. Power off the NAS.
2. Disconnect the power cord from the electrical outlet and the PSU that you are replacing.
3. Firmly press the latch toward the handle and then pull the PSU out.



4. Insert the new PSU.



5. Connect the power cord to the PSU and the electrical outlet.
6. Power on the NAS.
7. Enable alerts for PSU failures.
 - a. Log on to QTS as administrator.
 - b. Go to **Control Panel > System > Hardware > General**.
 - c. Select **Enable Redundant Power Supply Mode**.
 - d. Click **Apply All**.

Installing Expansion Cards

The NAS supports selected expansion cards, some of which require QNAP PCIe brackets. QNAP-branded expansion cards purchased from the company website are shipped with the brackets necessary to fit all QNAP NAS models.

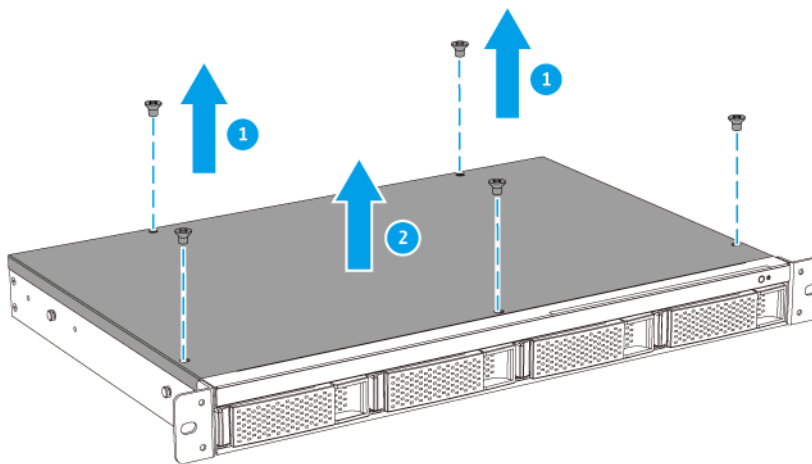


Warning

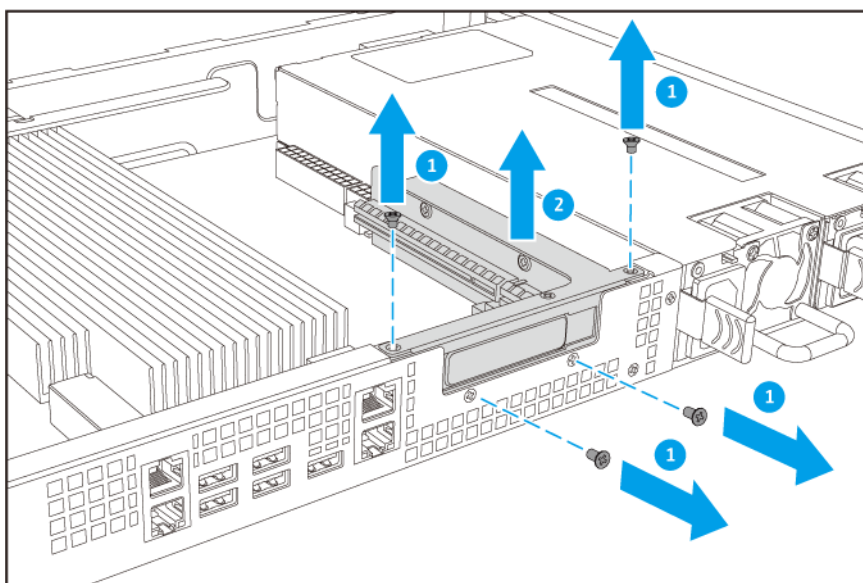
- Only qualified personnel should perform the following steps. Failure to follow instructions can result in serious injury or death.
- Observe electrostatic discharge (ESD) procedures to avoid damage to components.

1. Check the expansion cards and brackets supported by your model on the QNAP website.
 - a. Go to www.qnap.com/compatibility.
 - b. Click **Search by NAS**.
 - c. Specify the number of bays and the specific model of your NAS.
 - d. Under **Category**, select the component or device type.

- e. Locate a specific component or device model in the list.
 - f. Optional: Click the corresponding **Note** icon to view more information.
2. Power off the NAS.
 3. Disconnect the power cord from the electrical outlet.
 4. Disconnect all cables and external attachments.
 5. Remove the top cover.
 - a. Remove the screws connecting the top cover to the chassis.
 - b. Lift the top cover up.

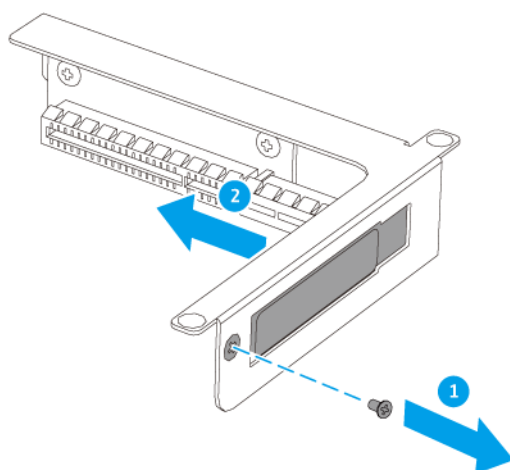


6. Remove the PCIe bracket.
 - a. Remove the screws that secure the bracket to the chassis.
 - b. Remove the bracket from the chassis.



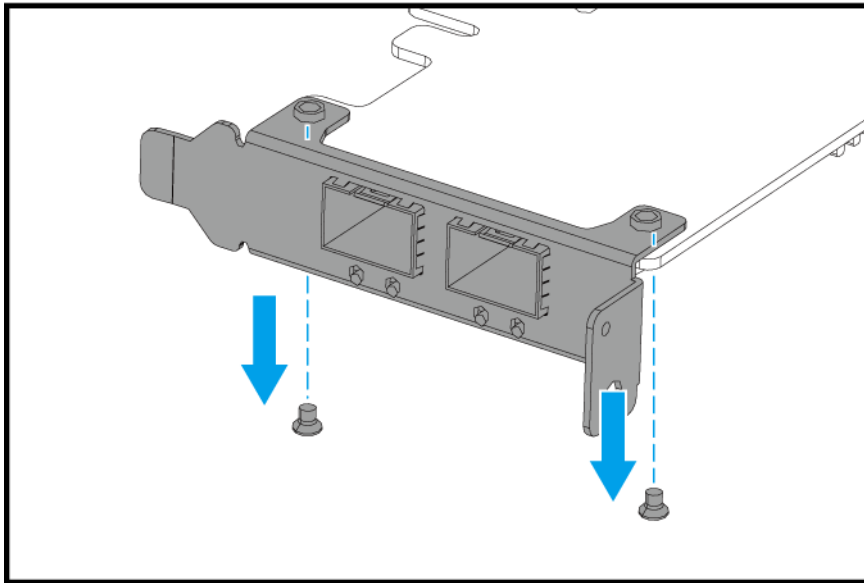
7. Remove the PCIe cover.

- a. Remove the screw that secures the cover to the bracket.
- b. Pull the cover away from the slot.

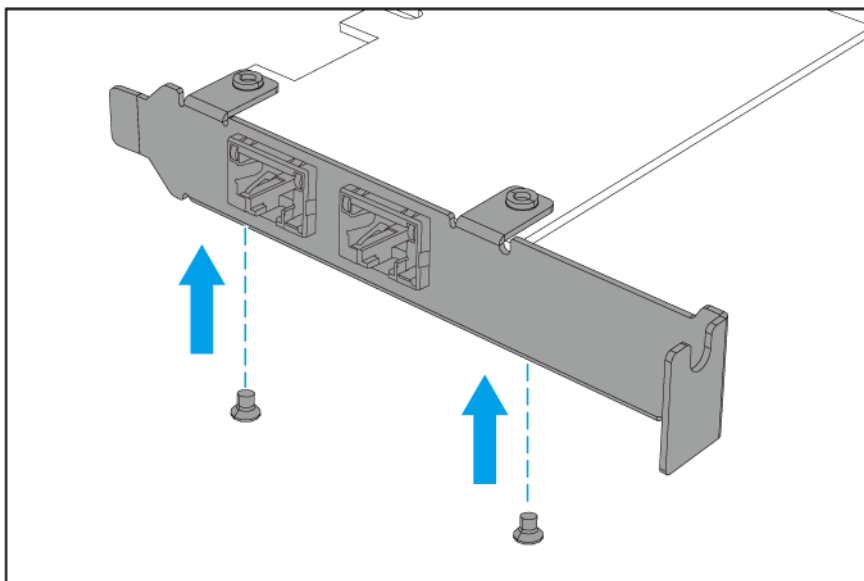


8. Optional: Attach the QNAP bracket to the expansion card.

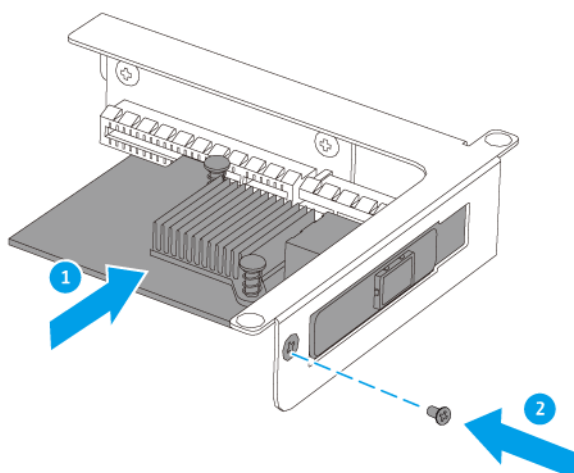
- a. Remove all screws of the existing bracket.



- b. Carefully pull the bracket away from the card.
- c. Attach the QNAP bracket to the card using the same screws.

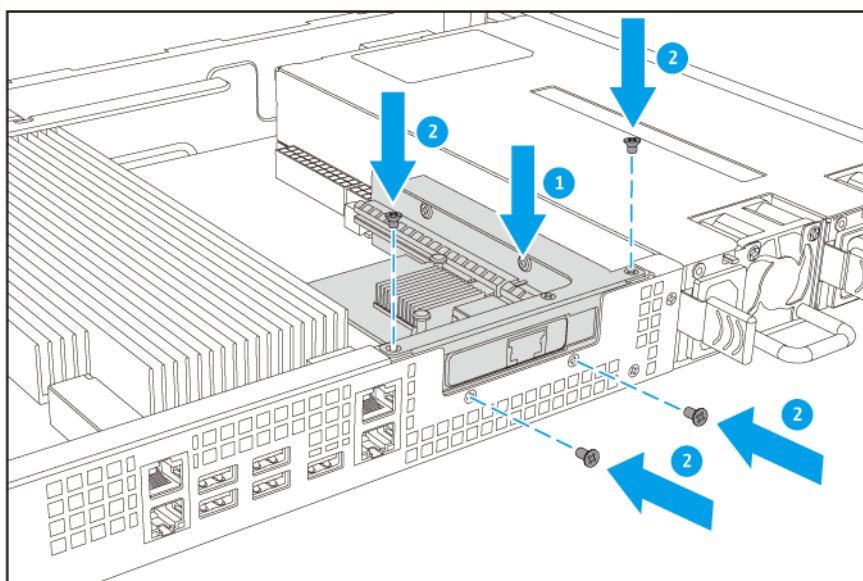


- d. Verify that the bracket does not move.
9. Install the expansion card.
- a. Insert the card into the PCIe slot on the bracket.
 - b. Attach the screw.



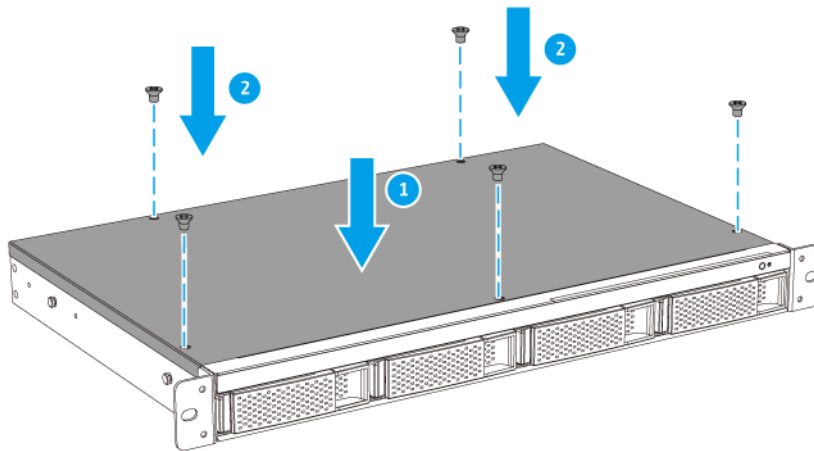
10. Insert the PCIe bracket.

- a. Insert the PCIe connector on the bracket into the PCIe slot on the system board.
- b. Attach the screws that secure the bracket to the chassis.



11. Attach the top cover.

- a. Place the cover on the NAS.
- b. Attach the screws connecting the top cover to the chassis.

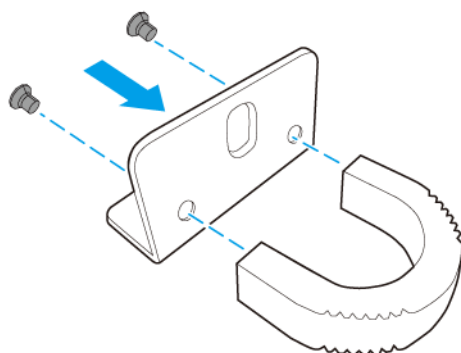


12. Connect all cables and external attachments.
13. Connect the power cord to the electrical outlet.
14. Power on the NAS.

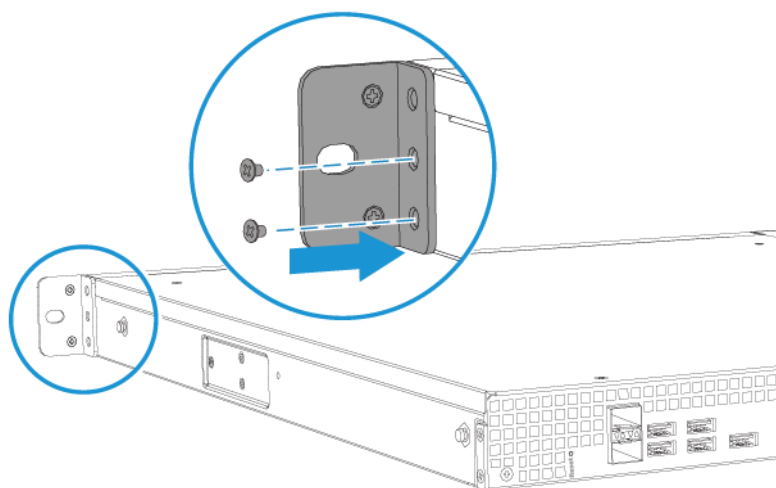
Installing Handles

Installing handles enables you to better grip and further secure the NAS on a rack. Handles on the TVS-972XU and TVS-972XU-RP require manual installation.

1. Power off the NAS.
2. Install a handle on an angle bracket.
 - a. Align the openings of the handle with the screw holes of the angle bracket.
 - b. Attach the screws to lock the handle to the angle bracket.



3. Install the angle bracket on the NAS.
 - a. Align the holes on the angle bracket with the holes on the left side of the chassis.
 - b. Ensure the handle faces the same direction as the front panel.
 - c. Attach the screws to lock the angle bracket to the chassis.



4. Install a second handle on the other side of the chassis.
5. Power on the NAS.

Rail Kits

Rail kits are not included with the NAS and must be purchased separately. For details, contact an authorized reseller or go to <http://shop.qnap.com>.

The TVS-x72XU is compatible with the following rail kit models:

Model	Compatible Rail Kit
• TVS-972XU • TVS-972XU-RP	RAIL-B02

You can find installation information in the rail kit package.

Replacing Memory Modules

The NAS has four memory slots. You can increase the memory capacity of the NAS by upgrading the memory module.

Use only QNAP modules of the same type and capacity to maintain system performance and stability. You can purchase QNAP memory modules from authorized resellers.



Important

Ensure the following when replacing memory modules:

- When installing only one module, use slot 1.
- When installing two modules, use slots 1 and 3. Ensure that the modules are identical.
- When installing four modules, use slots 1 and 3 for the first pair, and slots 2 and 4 for the second pair. Ensure that each pair uses identical modules.

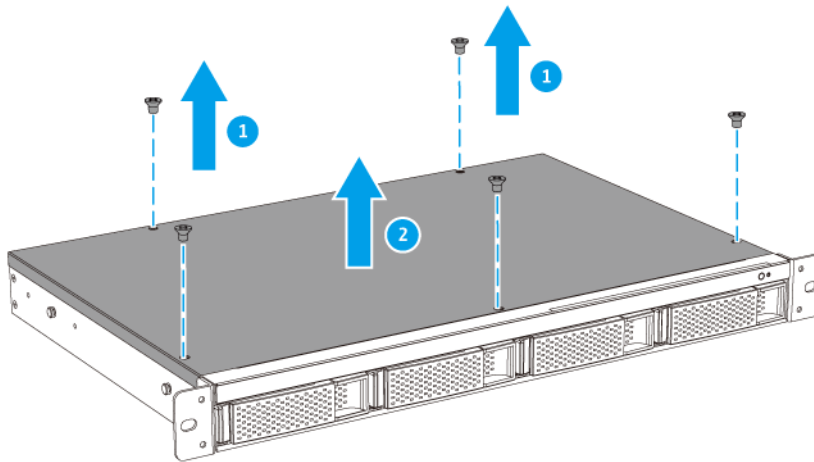
For details on slot numbering, see [System Board](#).



Warning

- Only qualified personnel should perform the following steps. Failure to follow instructions can result in serious injury or death.
- Observe electrostatic discharge (ESD) procedures to avoid damage to components.

1. Power off the NAS.
2. Disconnect the power cord from the electrical outlet.
3. Disconnect all cables and external attachments.
4. Remove the top cover.
 - a. Remove the screws connecting the top cover to the chassis.
 - b. Lift the top cover up.



5. Remove an existing module.

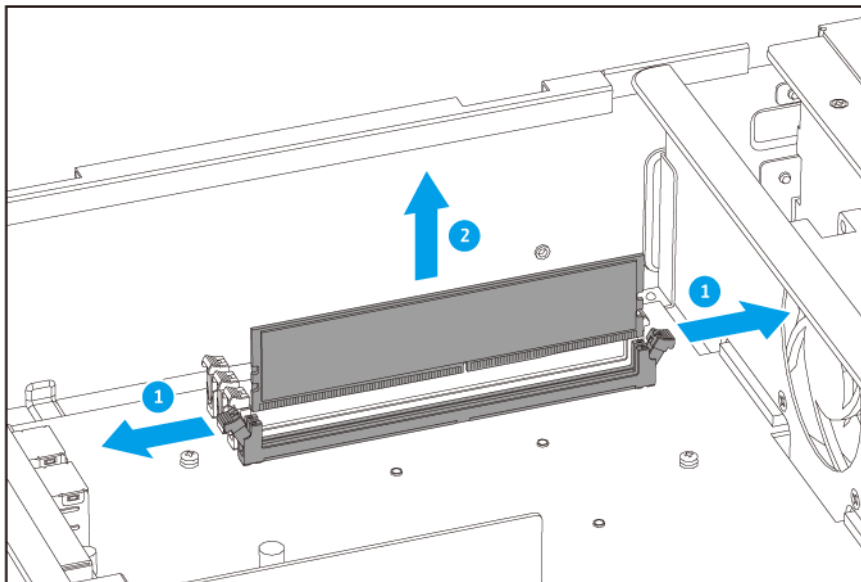
- a. Push the retention clips outward simultaneously to release the module.



Warning

Attempting to remove a module that is not completely released may damage the module and the motherboard.

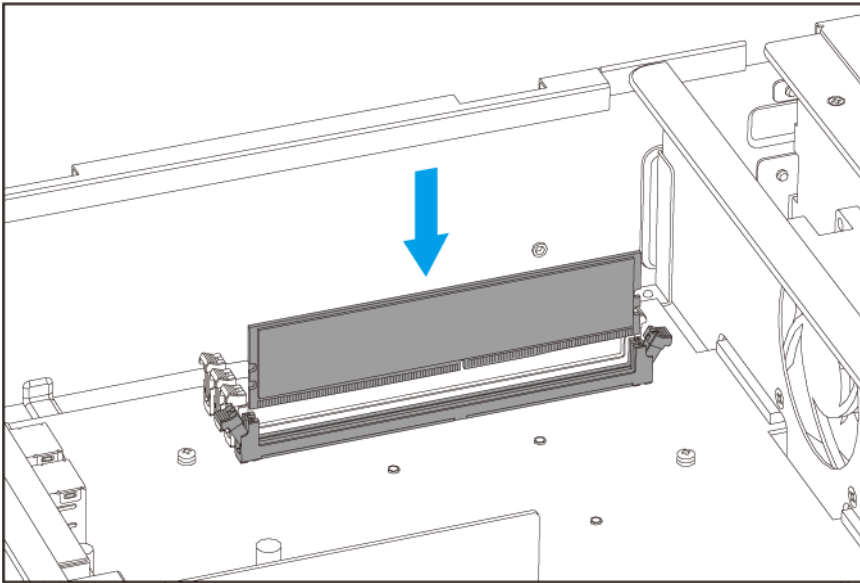
- b. Hold the module by the edges and then carefully slide it out of the slot.



6. Install a new module.

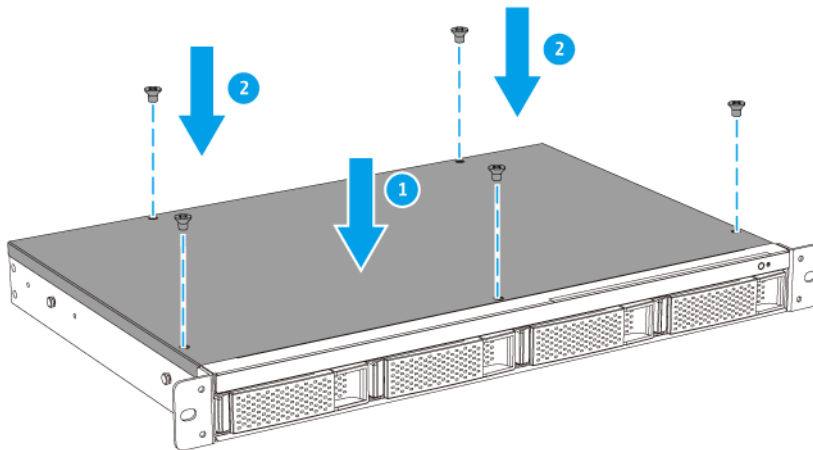
- a. Align the notch with the ridge in the slot.
- b. Insert the module into the slot.

- c. Verify that the metal connectors are completely inserted into the slot.
- d. Carefully press down on the module until the retention clips lock the module into place.



7. Attach the top cover.

- a. Place the cover on the NAS.
- b. Attach the screws connecting the top cover to the chassis.



- 8. Connect all cables and external attachments.
- 9. Power on the NAS.
- 10. Verify that the module is recognized by the NAS.
 - a. Log on to QTS as administrator.

b. Go to **Control Panel > System > System Status > Hardware Information** .

c. Check the value for **Total memory**.

QTS Installation

The TVS-x72XU uses the QNAP QTS operating system. You can install QTS using any of the following methods.

Method	Description	Requirements
Qfinder Pro installation (Recommended)	If the NAS is connected to your local area network, you can do the following: • Locate the NAS using Qfinder Pro. • Complete the steps in the Smart Installation Guide wizard. For details, see Installing QTS Using Qfinder Pro.	• Computer • Network cable • Qfinder Pro installer
Cloud installation	If the NAS is connected to the internet, you can do the following: • Scan the QR code on the NAS. • Log into your myQNAPcloud account. • Use CloudLink to remotely access your NAS. • Complete the steps in the Smart Installation Guide wizard. For details, see Installing QTS Using the Cloud Key.	• Computer or mobile device • Network cable • myQNAPcloud account • CloudKey

Installing QTS Using Qfinder Pro



Warning

Installing QTS deletes all data on the drives. Back up your data before proceeding.

1. Power on the NAS.
2. Connect the NAS to your local area network.
3. Run Qfinder Pro on a computer that is connected to the same local area network.



Note

To download Qfinder Pro, go to <https://www.qnap.com/utilities>.

4. Locate the NAS in the list and then double-click the name or IP address.
The **Smart Installation Guide** opens in the default web browser.
5. Click **Start Smart Installation Guide**.
6. Specify the following information.

- **NAS name:** Specify a name with 1 to 14 characters. The name supports letters (A to Z, a to z), numbers (0 to 9), and hyphens (-), but cannot end with a hyphen.
- **Password:** Specify an administrator password with 1 to 64 characters. The password supports all ASCII characters.

7. Click **Next**.

8. Specify the time zone, date, and time.



Tip

QNAP recommends connecting to an NTP server to ensure that the NAS follows the Coordinated Universal Time (UTC) standard.

9. Click **Next**.

10. Select **Obtain an IP address automatically (DHCP)**.

11. Click **Next**.

12. Select the types of devices that you will use to access shared folders on the NAS.

13. Click **Next**.

14. Review the settings.

15. Click **Apply**.

A confirmation message appears.



Warning

Clicking **Confirm** deletes all data on the drive before installing QTS.

16. Click **Confirm**.

QTS is installed.

Installing QTS Using the Cloud Key



Warning

Installing QTS deletes all data on the drives. Back up your data before proceeding.

1. Power on the NAS.

2. Connect the NAS to the internet.

3. Go to the QNAP Cloud Installation page using one of the following methods:

- On your computer, go to <http://install.qnap.com/>.
- Scan the QR code on the NAS using a mobile device.

The web page lists all the uninitialized QNAP NAS devices on the local network.

4. Find your NAS from the list and then click **Initialize**.



Note

If your NAS is not listed, follow the instructions on the web page to specify the Cloud Key on the NAS.

The installation wizard opens in the default web browser.

5. Create an account or sign in to myQNAPcloud.



Note

You must return to this page to complete the installation after creating an account.

6. Specify the myQNAPcloud device name for the NAS.



Note

- The myQNAPcloud device name is used when remotely accessing the NAS.
- For security purposes, the CloudLink remote connection service will be disabled on your NAS after initialization. You can enable it by connecting to QTS through LAN and then installing CloudLink.

7. Click **Next**.

The **Smart Installation Guide** opens in the default web browser.

8. Click **Start Smart Installation Guide**.

9. Specify the following information.

- **NAS name:** Specify a name with 1 to 14 characters. The name supports letters (A to Z, a to z), numbers (0 to 9), and hyphens (-), but cannot end with a hyphen.
- **Password:** Specify an administrator password with 1 to 64 characters. The password supports all ASCII characters.

10. Click **Next**.

11. Specify the time zone, date, and time.



Tip

QNAP recommends connecting to an NTP server to ensure that the NAS follows the Coordinated Universal Time (UTC) standard.

12. Click **Next**.

13. Select **Obtain an IP address automatically (DHCP)**.

14. Click **Next**.

15. Select the types of devices that you will use to access shared folders on the NAS.

16. Click **Next**.

17. Review the settings.

18. Click **Apply**.

A confirmation message appears.



Warning

Clicking **Confirm** deletes all data on the drive before installing QTS.

19. Click **Confirm**.
QTS is installed.

4. Basic Operations

This chapter describes basic NAS operations.

Power Button

Operation	User Action	Result
Power on	Press the button once.	The NAS powers on.
Power off	Press and hold the button for 1.5 seconds.	The NAS powers off.
Force power off	Press and hold the button for 5 seconds.	The NAS shuts down.  Important Use this method only when the NAS is unresponsive.

Reset Button

Operation	User Action	Result
Basic system reset	Press and hold the button for 3 seconds.	The following settings are reset to default: • System administrator password: admin • TCP/IP configuration: • Obtain IP address settings automatically via DHCP • Disable jumbo frames • If port trunking is enabled (multi-LAN models only), the port trunking mode is reset to “Active Backup (Failover)”. • System port: 8080 (system service port) • Security level: Low (Allow all connections) • LCD panel password: (blank) • VLAN: Disabled
Advanced system reset	Press and hold the button for 15 seconds.	The default factory settings are restored. • To retrieve old data after an advanced system reset, recreate the previous folder structure on the NAS.

LEDs

LEDs indicate system status and related information when the NAS is powered on. The following LED information applies only when the drive is correctly installed and when the NAS is connected to the network.

For details on the location of the LEDs, see [Components](#).

LED	Status	Description
System Status	Flashes green and red alternately every 0.5 seconds	• The drive is being formatted. • The NAS is being initialized. • The operating system is being updated. • RAID rebuilding is in progress. • Online RAID Capacity Expansion is in progress. • Online RAID Level Migration is in progress.
	Red	• The drive is invalid. • The disk volume has reached its full capacity. • The disk volume is about to reach its full capacity. • The system fan is not functioning. • An error occurred when accessing (read/write) the data. • A bad sector is detected on the hard drive. • The NAS is in degraded read-only mode (two member drives failed in RAID 5 or RAID 6 but the data can still be read). • Hardware self-test error
	Flashes red every 0.5 seconds	The NAS is in degraded mode (one member drive failed in RAID 1, RAID 5, or RAID 6).
	Flashes green every 0.5 seconds	• The NAS is starting up. • The NAS is not configured. • A drive is not formatted.
	Green	The NAS is ready.
	Off	All drives are in standby mode.
LAN	Orange	A read/write error occurred while another device is accessing data.
	Flashes orange	The NAS is being accessed from the network.
Drive	Flashes red	The data is being accessed and a read/write error occurs during the process.
	Red	A drive read/write error occurred.
	Flashes green	The data is being accessed.
	Green	The drive can be accessed.

LED	Status	Description
USB	Flashes blue every 0.5 sec	- A USB device (connected to the front USB port) is detected. - A USB device (connected to the front USB port) is being removed from the NAS. - A USB device (connected to the front USB port of the NAS) is being accessed. - Data is being copied to or from a USB or eSATA device.
	Blue	A USB device is detected in the front USB port.
	Off	- No USB device is detected. - The NAS has finished copying data to or from the USB device connected to the front USB port.

Beep Alarm

Duration	Frequency	Description
Short beep (0.5 seconds)	1	- The NAS is starting up. - The NAS is shutting down (software shutdown). - The user pressed the Reset button. - The operating system was updated.
	3	The user tried to copy the NAS data to the external storage device from the front USB port, but the data cannot be copied.
Long beep (1.5 seconds)	3 (every 5 minutes)	The system fan is not functioning.
	2	- The disk volume is about to reach its full capacity. - The disk volume has reached its full capacity. - The drives are in degraded mode. - The user started the drive rebuilding process. - A drive is plugged in or out.
	1	- The NAS was powered off by force shutdown (hardware shutdown). - The NAS was powered on successfully and is ready.

5. Troubleshooting

This chapter describes basic troubleshooting information.

Forcing Qfinder Pro or myQNAPcloud to Locate the NAS

If Qfinder Pro or myQNAPcloud is unable to locate the NAS during QTS installation, the drives or data may be faulty.

1. Power off the NAS.
2. Remove all drives.
3. Power on the NAS.
4. Locate the NAS using Qfinder Pro or myQNAPcloud.
5. Reinsert the drives.
6. Continue with the QTS installation.

Hot-swapping Failed Drives

The NAS supports hot-swapping of drives in the following situations:

- RAID 1: One member drive fails
- RAID 5: One member drive fails
- RAID 6: One or two member drives fail

1. Log on to QTS.
2. Go to **Main Menu > Storage Manager > Storage > Disks/VJBOD**.
3. Locate the failed drive.
4. Prepare a new hard drive with a capacity that is the same as or larger than the failed hard drive.
5. Remove the failed drive from the NAS.
6. Wait for 20 seconds or until the NAS beeps twice.
7. Remove the failed drive from the drive tray.
8. Insert the new drive into the drive tray.
9. Install the new drive.
The NAS beeps twice.
10. Go to **Main Menu > Storage Manager > Storage Space**.
11. Locate the volume that contains the new drive and then verify that the status is *Rebuilding*.

Support and Other Resources

QNAP provides the following resources:

Resource	URL
Documentation	http://docs.qnap.com
Helpdesk	http://helpdesk.qnap.com
Downloads	http://download.qnap.com
Community Forum	http://forum.qnap.com

6. Glossary

CloudKey

Unique 8-digit code assigned to each NAS device

CloudLink

Enables you to access the NAS over the internet without configuring complex port forwarding settings

myQNAPcloud

Provides various remote access services such as DDNS and CloudLink

myQNAPcloud ID

Email address that was used to register for a myQNAPcloud account

Qfinder Pro

Enables you to locate and access the QNAP NAS devices in your local area network

QTS

QNAP NAS operating system

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Back up the system periodically to avoid any potential data loss is recommended. QNAP disclaims any responsibility of all sorts of data loss or recovery.

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CE Notice



This QNAP NAS complies with CE Compliance Class A.

FCC Notice

FCC Class A Notice



This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.



Note

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.



Important

Any modifications made to this device that are not approved by QNAP Systems, Inc. may void the authority granted to the user by the FCC to operate this equipment.

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Version 3, 29 June 2007

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