QNAP Drive Adapter

QDA-A2AR
QDA-A2MAR

User Guide

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Contents

1. Preface

About This Guide

This guide provides information on the QDA-A2AR and QDA-A2MAR QNAP drive adapters 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 QDA-A2AR and QDA-A2MAR QNAP drive adapters.

About QNAP Drive Adapters

QNAP drive adapters are designed to increase the capacity and utility of HDDs and SSDs in your NAS or computer. QNAP drive adapters provide RAID, JBOD, and port multiplier support for improved compatibility and security across various platforms. The QDA-A2AR and QDA-A2MAR feature a simple, compact chassis for easy access as well as an internal mode switch for hardware RAID configuration to ensure the safety and security of your data.

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.

Component	QDA-A2AR	QDA-A2MAR
Ordering Information		
Ordering P/N	QDA-A2AR	QDA-A2MAR
Storage		
Drive slots	2 x 2.5-inch SATA 6 Gbps	2 x M.2 SATA 6 Gbps
Drive compatibility	• 2.5-inch SATA hard disk drives • 2.5-inch SATA solid-state drives **Important** 2.5-inch drive slots only support drives with a maximum height of 9.5 mm.	M.2 SATA SSDs
M.2 SSD form factor	N/A	2280
Interface		
Switches	Mode	
Dimensions		
Form factor (chassis)	3.5-inch drive	2.5-inch drive
Dimensions (H x W x D)	25.9 x 101.6 x 138.2 mm (1.01 x 4.00 x 5.44 in)	9.5 x 69.8 x 100.5 mm (0.37 x 2.75 x 3.96 in)
Net weight	0.15 kg (0.33 lbs)	0.10 kg (0.22 lbs)
Others		
Operating temperature	0˚C to 40˚C (32˚F to 104˚F)	
Relative humidity	• Non-condensing relative humidity: 5% to 95% • Wet-bulb temperature: 27˚C (80.6˚F)	

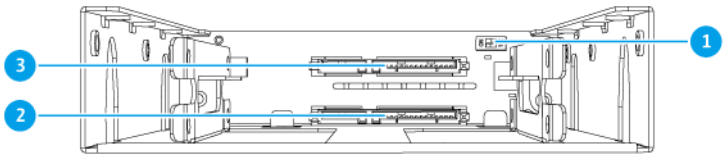
Tip
Model specifications are subject to change without prior notice. To see the latest specifications, go to https://www.qnap.com.

Package Contents

Item	Quantity
QNAP drive adapter	1
Mode switch tool	1
Screws for 2.5-inch drives	QDA-A2AR: 8
Screws for M.2 SSDs	QDA-A2MAR: 2
Thermal pads for M.2 SSDs	QDA-A2MAR: 6
Quick Installation Guide (QIG)	1

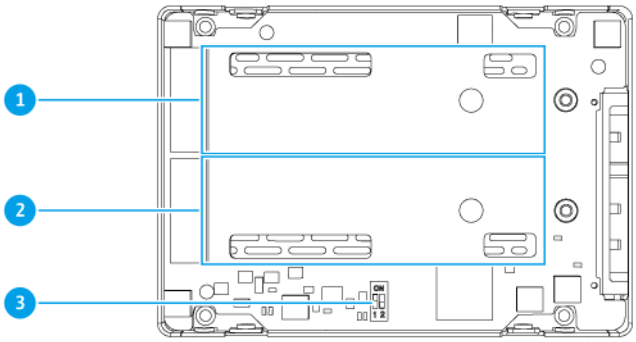
Components

Inside Panel



QDA-A2AR

No.	Component	No.	Component
1	Mode switch	3	Drive slot 1
2	Drive slot 2	-	-



QDA-A2MAR

No.	Component	No.	Component
1	M.2 SSD slot 1	3	Mode switch
2	M.2 SSD slot 2	-	-

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)
Hardware and peripherals	• NAS or computer • Storage drives **Tip** For details on compatible devices and drives, go to https://www.qnap.com/compatibility/.
Tools	• Phillips #1 or #2 screwdriver • Anti-static wrist strap

3. Hardware Installation

This section provides information on installing drives.

Installing 2.5-inch Drives on the QDA-A2AR

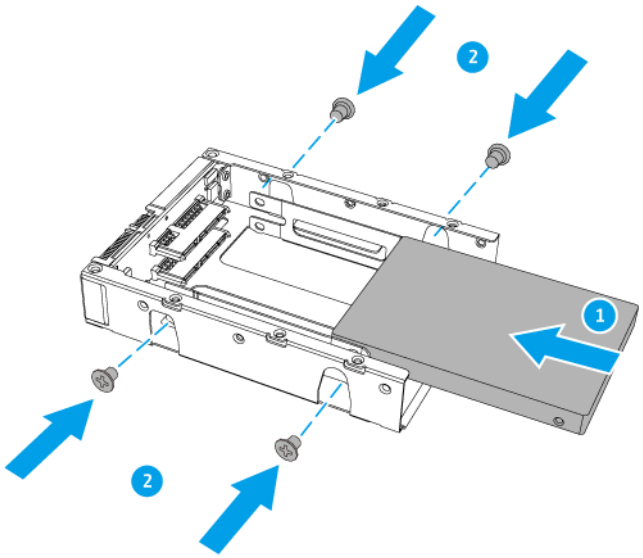
The QDA-A2AR is compatible with 2.5-inch hard drives and solid-state drives.

Warning

- Installing a drive deletes all data on the drive, unless the drive adapter is in Individual mode.
- Observe electrostatic discharge (ESD) procedures to avoid damage to components.
- Installing a QNAP drive adapter in another QNAP drive adapter is not supported.

1. Insert the drive into the slot.
2. Attach the screws.

Tip
Use a Philips #2 screwdriver.



Installing M.2 Solid-state Drives on the QDA-A2MAR

The QDA-A2MAR is compatible with M.2 2280 SATA solid-state drives.

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.

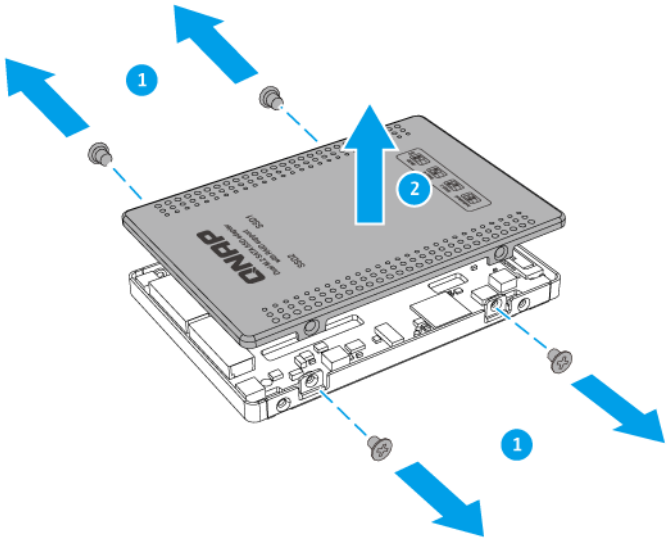
- Installing a QNAP drive adapter in another QNAP drive adapter is not supported.

Note

- The QDA-A2MAR has two M.2 SSD slots. For a list of compatible M.2 SSDs, go to https://www.qnap.com/compatibility.
- QNAP recommends installing thermal pads on the M.2 SSD controllers to enhance cooling efficiency and ensure consistent performance.

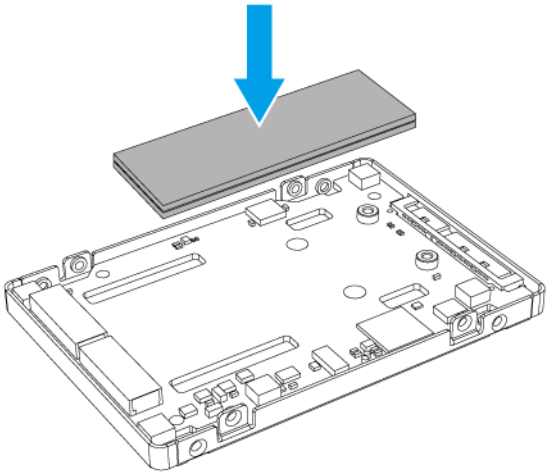
1. Remove the cover.
   a. Remove the screws.
   b. Lift the cover.

Tip
Use a Phillips #1 screwdriver.

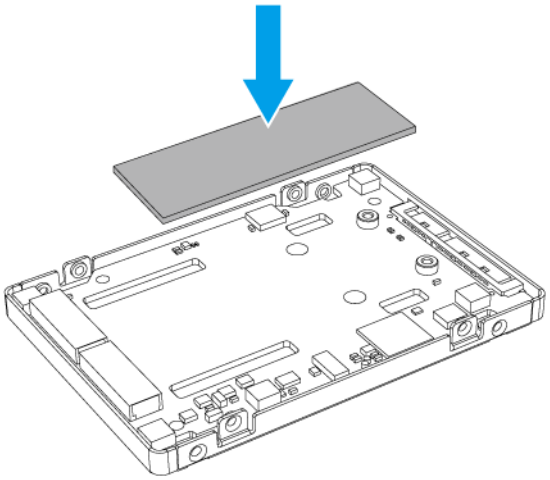


2. Install thermal pads on the system board.
   a. Remove the protective film from the thermal pads.
   b. Apply the thermal pads to the system board.

Note
Single-sided M.2 SSDs have components (e.g., controllers, flash ICs) mounted only on the top side, and double-sided M.2 SSDs have components mounted on both sides. Apply two thermal pads for single-sided M.2 SSDs and one thermal pad for double-sided M.2 SSDs.

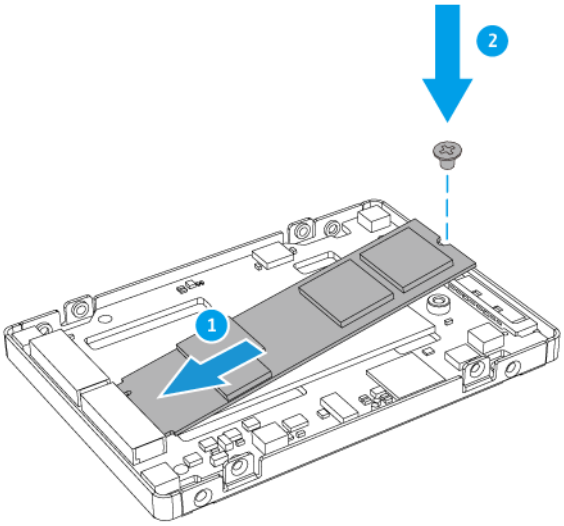


Single-sided M.2 SSD

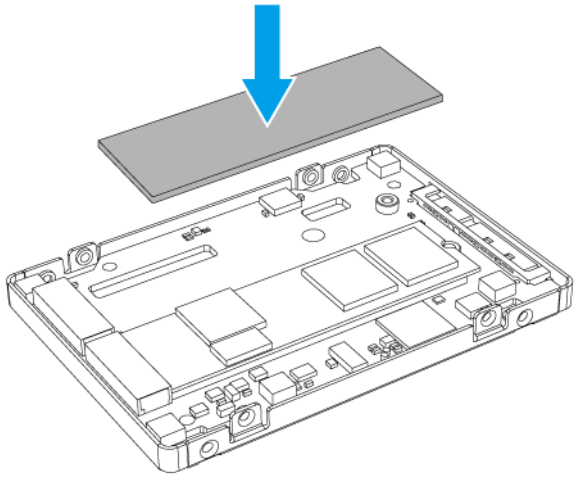


Double-sided M.2 SSD

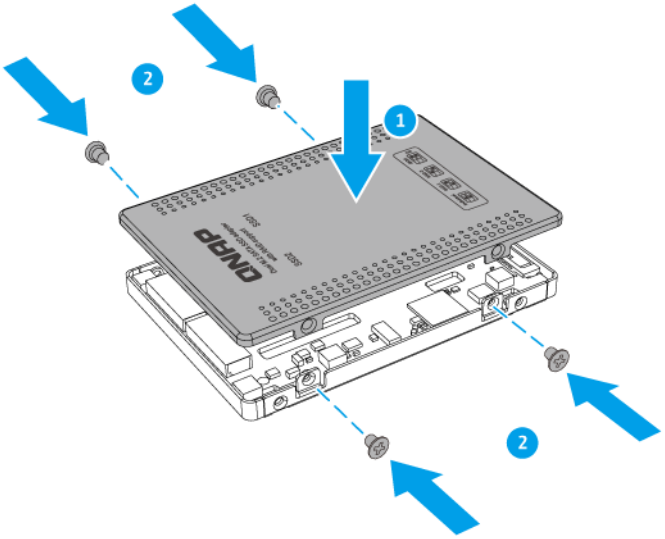
3. Install the M.2 SSD.
   a. Insert the M.2 SSD.
   b. Attach the screw.



4. Install a thermal pad on the M.2 SSD controller.



5. Attach the cover.
   a. Place the cover on the drive adapter.
   b. Attach the screws.


2
1
2

4. RAID Configuration

This section provides information on configuring RAID settings.

Supported RAID Types

QNAP drive adapters support several RAID types.

Important

- When disks with different capacities are combined in one RAID group, all disks function according to the capacity of the smallest disk.
- You can only use one disk type (HDD or SSD) in a RAID group. Combining different types of disk in one RAID group is not supported.

RAID Type	Number of Disks	Description
JBOD (Just a Bunch of Disks)	2	• JBOD combines disks together in a linear fashion. The system writes data to a disk until it is full, and then writes to the next disk. • JBOD allows all of the disks capacity to be used, but does not provide any disk failure protection or performance benefits. • Unless you have a specific reason to use JBOD, use RAID 0 instead.
RAID 0	2	• Disks are combined together using striping. • RAID 0 offers the fastest read/write speeds and uses the total capacity of all the disks. • RAID 0 provides no disk failure protection. This RAID type must be paired with a data backup plan. • RAID 0 is recommended for high performance applications such as video editing.
RAID 1	2	• An identical copy of data is stored on two disks. If either disk fails, data can still be read from the other disk. • Half of the total disk capacity is lost, in return for a high level of data protection. • RAID 1 is recommended if you have two disks.

Mode Switch

You can configure RAID settings manually using the Mode switch on the inside panel of the drive adapter by moving the switches to the corresponding positions as illustrated above.

Important

- You can only use one disk type (HDD or SSD) in a RAID group. Combining different types of disk in one RAID group is not supported.
- If disks with different capacities are combined in one RAID group, all disks function according to the capacity of the smallest disk.

Configuration	Description
Individual	Each disk is identified as a separate drive. The disks are not combined into a single volume or RAID group. This configuration is also known as a port multiplier. **Note** • QNAP NAS devices do not support Individual mode for QNAP drive adapters. • Your system's SATA controller must support port multiplier in order for both drives to be detected in Individual mode. Contact your system provider to ensure that your SATA controller is updated with the latest drivers.
• JBOD • RAID 0 • RAID 1 (default factory setting)	QNAP drive adapters provide hardware RAID support for these RAID types. For details, see Supported RAID Types.

Configuring RAID Settings Using the Mode Switch

Switching From Individual Mode to a RAID Mode

Warning
Configuring RAID settings deletes all data on the drives.

1. Remove the drive adapter from the host device.

2. Ensure that the Mode switch is set to Individual.
   For details, see Mode Switch.
3. Set the Mode switch to the desired RAID mode.
4. Insert the drive adapter into the host device.

Important
The host device may take up to 10 seconds to detect the new settings.

5. Verify that the settings have been applied.
   a. Open **QNAP External RAID Manager** on your computer or go to **Storage & Snapshots** in QTS.
   b. Verify that the settings have changed.

Method	User Action
QNAP External RAID Manager	1. Open **QNAP External RAID Manager** on your computer. 2. Locate the RAID group, and verify that the status has changed to the intended setting. **Tip** Go to http://www.qnap.com/download to download QNAP External RAID Manager and supporting documentation.
Storage & Snapshots	1. Log on to QTS as administrator. 2. Go to **Main Menu** > **Storage & Snapshots** > **Storage** > **Disks/VJBOD** . 3. Locate the RAID group, and verify that the status has changed to the intended setting.

Switching From a RAID Mode to Individual Mode

Warning
Configuring RAID settings deletes all data on the drives.

1. Remove the drive adapter from the host device.
2. Ensure that the Mode switch is set to a RAID mode.
   For details, see Mode Switch.
3. Set the Mode switch to Individual mode.
4. Insert the drive adapter into the host device.

Important
The host device may take up to 10 seconds to detect the new settings.

5. Verify that the settings have been applied.
   a. Open **QNAP External RAID Manager** on your computer or go to **Storage & Snapshots** in QTS.
   b. Verify that the settings have changed.

Method	User Action
QNAP External RAID Manager	1. Open **QNAP External RAID Manager** on your computer. 2. Locate the RAID group, and verify that the status has changed to the intended setting.  **Tip** Go to http://www.qnap.com/download to download QNAP External RAID Manager and supporting documentation.
Storage & Snapshots	1. Log on to QTS as administrator. 2. Go to **Main Menu** > **Storage & Snapshots** > **Storage** > **Disks/VJBOD** . 3. Locate the RAID group, and verify that the status has changed to the intended setting.

5. Troubleshooting

This chapter describes basic troubleshooting information.

Forcing Storage & Snapshots or QNAP External RAID Manager to Recognize the Drive Adapter

If Storage & Snapshots or QNAP External RAID Manager is unable to locate the drive adapter, the drives or data may be faulty.

1. Power off the host device.
2. Remove the drive adapter.
3. Remove the drives from the drive adapter.
4. Power on the host device.
5. Reinsert the drives.
6. Locate the drive adapter using Storage & Snapshots or QNAP External RAID Manager.

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

QTS

QNAP NAS operating system

QNAP External RAID Manager

Windows and macOS utility that allows you to view QNAP drive adapters

Storage & Snapshots

QTS utility that allows you to view QNAP drive adapters installed in a QNAP NAS

7. Notices

This chapter provides information about warranty, disclaimers, licensing, and federal regulations.

Limited Warranty

QNAP offers limited warranty service on our products. Your QNAP-branded hardware product is warranted against defects in materials and workmanship for a period of one (1) year or more from the date printed on the invoice. ("Warranty Period"). Please review your statutory rights at www.qnap.com/warranty, which may be amended from time to time by QNAP in its discretion.

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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.

Should you return any components of the package of QNAP products such as NAS (Network Attached Storage) for refund or maintenance, make sure they are carefully packed for shipping. Any form of damages due to improper packaging will not be compensated.

All the features, functionality, and other product specifications are subject to change without prior notice or obligation. Information contained herein is subject to change without notice.

Further, the ® or ™ symbols are not used in the text.

FCC Notice

FCC Class B 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 B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/television technician for help.

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.

CE Notice

This QNAP NAS complies with CE Compliance Class B.

SJ/T 11364-2006

本产品符合中国 RoHS 标准。以下表格标示此产品中某有毒物质的含量符合中国 RoHS 标准规定的限量要求。

本产品上会附有”环境友好使用期限”的标签，此期限是估算这些物质”不会有泄漏或突变”的年限。本产品可能包含有较短的环境友好使用期限的可替换元件，像是电池或灯管，这些元件将会单独标示出来。

部件名称	有毒有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (CR(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
壳体	0	0	0	0	0	0

部件名称	有毒有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (CR(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
显示	0	0	0	0	0	0
印刷电路板	0	0	0	0	0	0
金属螺帽	0	0	0	0	0	0
电缆组装	0	0	0	0	0	0
风扇组装	0	0	0	0	0	0
电力供应组装	0	0	0	0	0	0
电池	0	0	0	0	0	0
O: 表示该有毒有害物质在该部件所有物质材料中的含量均在 SJ/T11363-2006 标准规定的限量要求以下。						
X: 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T11363-2006 标准规定的限量要求。						

VCCI Notice

VCCI–B

BSMI Notice

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RoHS