



**QNAP**

# JBOD 设备

TL-R1200PES-RP

TL-R1600PES-RP

TL-R2400PES-RP

**用户指南**

# 内容

<b>1. 重要信息</b>	
安全信息.....	3
<b>2. 产品概述</b>	
关于 TL-Rx00PES-RP JBOD 系列.....	5
硬件规格.....	5
包装内容.....	6
组件.....	6
前面板.....	7
后面板.....	8
硬盘编号.....	10
安装要求.....	12
设置 JBOD 设备.....	13
<b>3. 硬件安装</b>	
安装硬盘.....	14
在 TL-R1200PES-RP 或 TL-R1600PES-RP 上安装 3.5 英寸硬盘.....	14
在 TL-R2400PES-RP 上安装 3.5 英寸硬盘.....	16
在 TL-R1200PES-RP 或 TL-R1600PES-RP 上安装 2.5 英寸固态硬盘.....	19
在 TL-R2400PES-RP 上安装 2.5 英寸固态硬盘.....	21
连接和断开 JBOD 设备.....	24
在 NAS 上热插入 JBOD 设备.....	24
将 JBOD 设备连接到 NAS.....	24
将 JBOD 设备与 NAS 断开连接.....	29
热插拔冗余电源单元.....	29
导轨套件.....	30
<b>4. 基本操作</b>	
电源按钮.....	32
LED.....	32
警告音.....	33
<b>5. 故障排除</b>	
强制存储与快照总管识别 JBOD 设备.....	34
热插拔故障硬盘.....	34
支持和其他资源.....	35
<b>6. 术语表</b>	
QTS.....	36
QuTS hero.....	36
存储与快照总管.....	36
<b>7. 声明</b>	
有限保修.....	37
免责声明.....	37
版权和商标.....	37
GNU General Public License.....	37
CE 声明.....	45
UKCA 声明.....	45
FCC 声明.....	45

VCCI 声明.....	46
BSMI 声明.....	46
SJ/T 11364-2006.....	46

# 1. 重要信息

## 原始包装

请保留原始包装和包装材料。如果要产品退货或寄回进行修理，请使用原始包装以免损坏。

对于因包装不当受损的产品，QNAP 保留不提供退款或保修服务的权利。

## 硬件缺陷

如果您的 QNAP 产品有硬件方面的缺陷，请将产品退回 QNAP 或 QNAP 授权的服务中心进行维修或更换。您本人或未经授权的第三方对产品进行的任何维修或维护流程均会使保修失效。

对于因未经授权进行的修改和安装不受支持的第三方应用程序而造成的任何损坏或数据丢失，QNAP 概不负责。

有关详细信息，请参见 [QNAP 产品保修服务条款](#)。

## 安全信息

以下说明有助于确保个人安全和环境安全。在执行任何操作之前，请仔细阅读这些说明。

### 一般说明

- 设备应存放在通过器具、锁和钥匙或任何安保措施限制进入的安全场所。
- 只有经过授权并掌握技能的合格人员才能实际接触设备，相关人员需了解所有限制措施、安全预防措施和安装维护流程。
- 为避免潜在伤害或组件的损坏，请务必等硬盘和其他内部系统组件冷却后再触碰。
- 请执行静电放电 (ESD) 规程，以避免可能的人员受伤或组件受损。

### 电源

- 为降低失火或触电风险，请确保只将电源线连接到接地良好的电源插座。



配备冗余电源的设备可能有一条或多条电源单元 (PSU) 线。为避免受到严重伤害，安装或更换系统组件前，经培训的维修技师必须先从设备拔下所有电源单元线。

### 运动的部件



**转动的风扇叶片：** 在设备连接到电源时，使您的身体各部位远离正在转动的风扇叶片。



**运动的组件：** 使您的身体各部位远离正在运动的其他组件。

- 设备不适合在儿童可能会出现的场所使用。

## 2. 产品概述

本章提供有关 QNAP JBOD 设备的基本信息。

### 关于 TL-Rx00PES-RP JBOD 系列

QNAP TL-Rx00PES-RP JBOD 设备旨在提高 NAS 的容量和实用性，并提供多种存储应用程序。您可以独立管理已安装的硬盘，或者使用主机 NAS 将其配置为软件 RAID 组。

TL-R1200PES-RP、TL-R1600PES-RP 和 TL-R2400PES-RP 分别具有 12、16 和 24 个 3.5 英寸 SATA 硬盘架以及 2 个 SFF-8644 1x2 端口。


### 硬件规格



#### 提示

型号规格如有更改，恕不另行通知。要查看最新规格，请转到 <https://www.qnap.com>。

组件	TL-R1200PES-RP	TL-R1600PES-RP	TL-R2400PES-RP
存储空间			
硬盘架	12 x 3.5 英寸 SATA 6 Gbps	16 x 3.5 英寸 SATA 6 Gbps	24 x 3.5 英寸 SATA 6 Gbps
	<b>注</b> 您可以从 QNAP 或授权经销商处购买托盘底座。有关详细信息，请转到 <a href="https://shop.qnap.com/">https://shop.qnap.com/</a> 。		
硬盘兼容性	3.5 英寸硬盘架： <ul style="list-style-type: none"> <li>• 3.5 英寸 SATA 机械硬盘</li> <li>• 2.5 英寸 SATA 固态硬盘</li> </ul>		
热插拔	此设备对所有硬盘均支持热插拔。		
外部 I/O 端口			
SFF 端口	2 x SFF-8644 1x2		
界面			
按钮	电源		
LED			
系统	<ul style="list-style-type: none"> <li>• 状态</li> <li>• 链路</li> <li>• 风扇错误</li> <li>• 硬盘</li> <li>• 设备 ID</li> </ul>		
端口	<ul style="list-style-type: none"> <li>• 连接器链路</li> <li>• 连接器存取</li> </ul>		
尺寸			
外形规格	2U 机架式	3U 机架式	4U 机架式

组件	TL-R1200PES-RP	TL-R1600PES-RP	TL-R2400PES-RP
尺寸 (高 x 宽 x 深)	88.65 x 482.2 x 423.8 mm (3.49 x 18.98 x 16.68 英寸)	131.3 x 482.2 x 425.3 mm (5.17 x 18.98 x 16.74 英寸)	176.15 x 480.74 x 672.05 mm (6.94 x 18.93 x 26.46 英寸)
净重	9.22 kg (20.33 磅)	11.56 kg (25.49 磅)	18.67 kg (41.16 磅)
其他			
热插拔	此设备支持在 QNAP NAS 上进行热插拔。 有关详细信息，请参见在 <a href="#">NAS 上热插入 JBOD 设备</a> 。		
导轨兼容性	RAIL-B02	RAIL-B02	RAIL-A02-90
	 <b>注</b> <ul style="list-style-type: none"> <li>导轨套件未随 NAS 提供，必须单独购买。有关详细信息，请联系授权经销商或转到 <a href="https://shop.qnap.com">https://shop.qnap.com</a>。</li> <li>有关导轨套件安装的信息，可在导轨套件包装随附的安装指南中找到。有关详细信息，请转到 <a href="https://www.qnap.com/go/product/rail-kit">https://www.qnap.com/go/product/rail-kit</a>。</li> </ul>		
电源单元	2 x 300W, 100-240V AC, 50/60 Hz	2 x 550W, 100-240V AC, 50/60 Hz	2 x 550W, 100-240V AC, 50/60 Hz
风扇	2 x 80 mm, 12V DC 风扇	3 x 80 mm, 12V DC 风扇	3 x 80 mm, 12V DC 风扇
工作温度	<ul style="list-style-type: none"> <li>无冷凝相对湿度：5% 至 95%</li> <li>湿球温度：27°C (80.6°F)</li> </ul>		



#### 提示

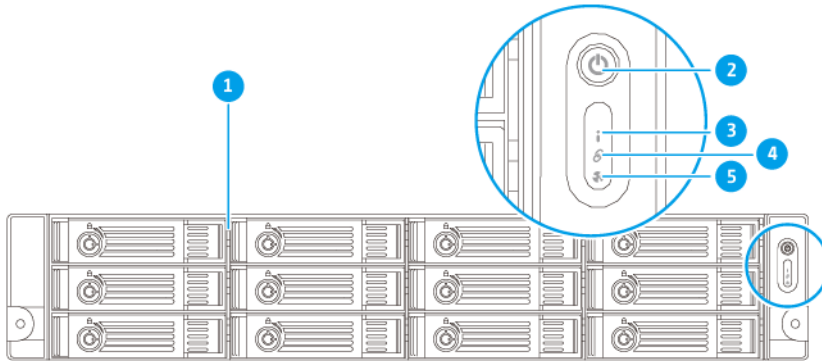
有关兼容硬盘型号的列表，请转到 <https://www.qnap.com/compatibility>。

## 包装内容

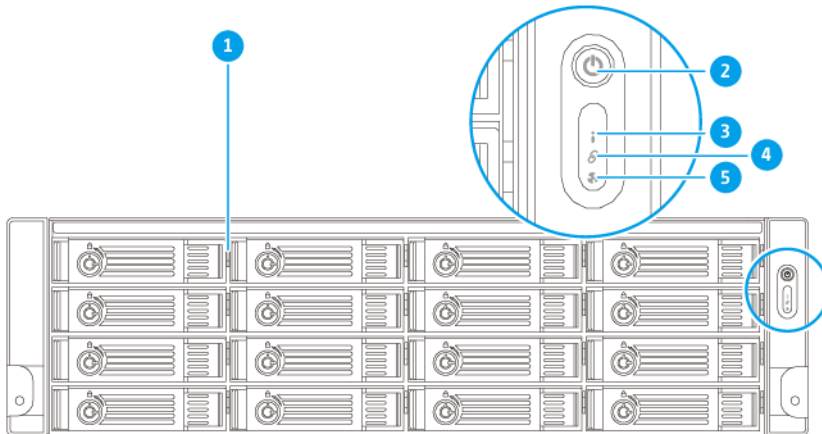
项目	数量
JBOD 设备	1
电源线	2
PCIe JBOD 专用线缆 (SFF-8644 1x2)	1 x CAB-PCIE10M-8644-8X
适用于 3.5 英寸硬盘的螺丝	<ul style="list-style-type: none"> <li>TL-R1200PES-RP: 48</li> <li>TL-R1600PES-RP: 64</li> <li>TL-R2400PES-RP: 96</li> </ul>
适用于 2.5 英寸硬盘的螺丝	<ul style="list-style-type: none"> <li>TL-R1200PES-RP: 36</li> <li>TL-R1600PES-RP: 48</li> <li>TL-R2400PES-RP: 72</li> </ul>
快速安装指南 (QIG)	1

## 组件

## 前面板

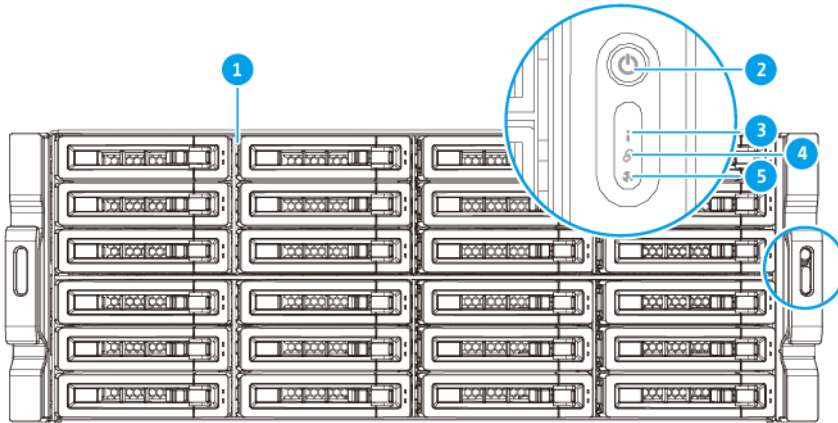


### TL-R1200PES-RP



### TL-R1600PES-RP

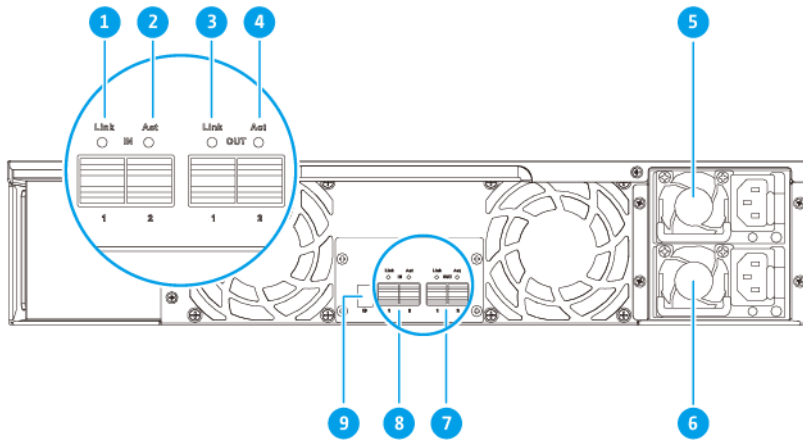




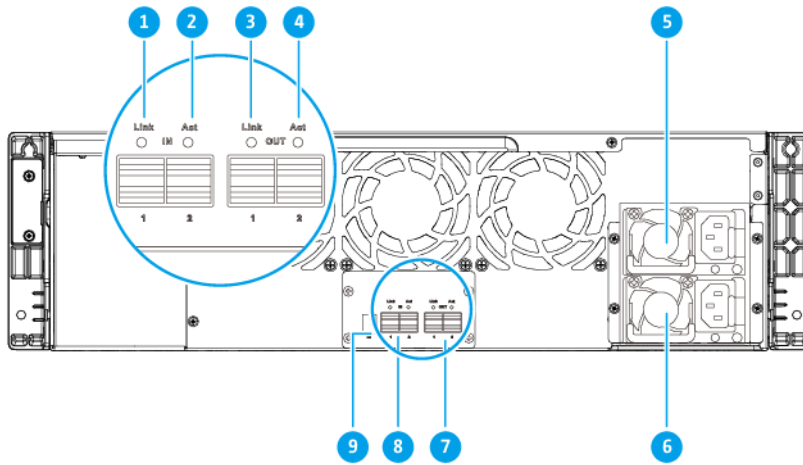
### TL-R2400PES-RP

编号	组件	编号	组件
1	硬盘 LED	4	链路 LED
2	电源按钮	5	风扇错误 LED
3	状态 LED	-	-

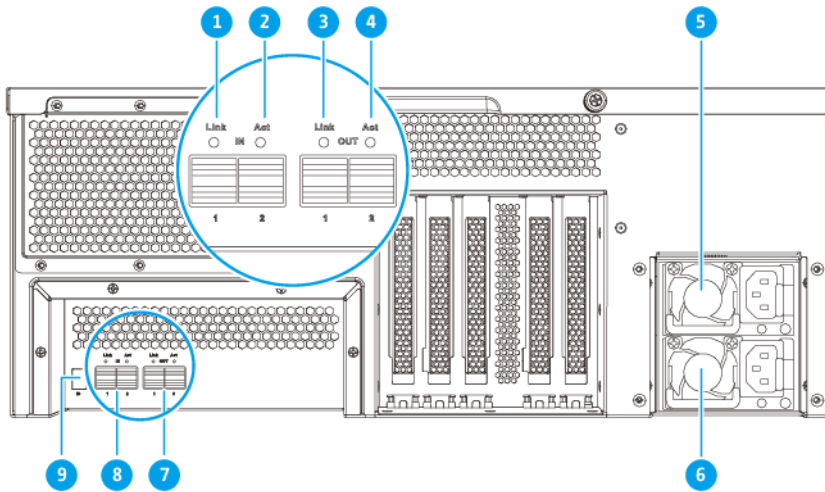
### 后面板



### TL-R1200PES-RP





### TL-R1600PES-RP



### TL-R2400PES-RP

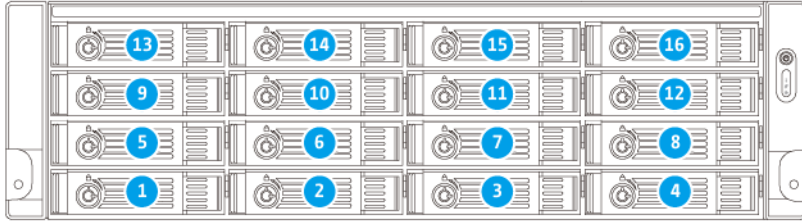
编号	组件	编号	组件
1	连接器链路 LED (上游)	6	电源单元 2
2	连接器存取 LED (上游)	7	SFF-8644 1x2 端口 (下游)
			<p><b>注</b> 此端口用于在级联连接中连接下游 JBOD 设备。</p>

编号	组件	编号	组件
3	连接器链路 LED (下游)	8	SFF-8644 1x2 端口 (上游)   <b>注</b> 此端口用于在级联连接中连接主机 NAS 或上游 JBOD 设备。
4	连接器存取 LED (下游)	9	设备 ID   <b>注</b> NAS 为连接至 NAS 的每个扩展设备分配的一个设备 ID。为前九个设备分配的编号为 1 至 9。后续设备以字母 A 开头，按字母顺序排序。
5	电源单元 1	-	-

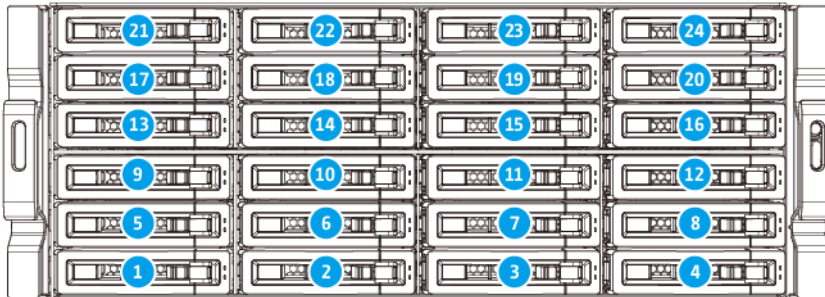
## 硬盘编号



## TL-R1200PES-RP







### TL-R1600PES-RP



### TL-R2400PES-RP

## 安装要求

类别	项目
环境	<ul style="list-style-type: none"> <li>• 室温：0°C 至 40°C (32 至 104°F)</li> <li>• 无冷凝相对湿度：5% 至 95%</li> <li>• 湿球温度：27°C (80.6°F)</li> <li>• 平坦的防静电表面，无直射阳光、液体或化学药剂</li> </ul> <p>限制进入</p> <ul style="list-style-type: none"> <li>• 设备应存放在通过器具、锁和钥匙或任何安保措施限制进入的安全场所。</li> <li>• 只有经过培训和授权的合格设备管理员才能实际接触设备，管理员需了解所有限制措施、安全预防措施和安装维护流程。</li> </ul>
硬件和外围设备	<ul style="list-style-type: none"> <li>• NAS</li> </ul> <p> <b>注</b></p> <ul style="list-style-type: none"> <li>• 有关兼容 NAS 型号、每个 NAS 型号支持的 JBOD 设备的最大数量以及适用的 PCIe 插槽的详细信息，请转到 <a href="https://www.qnap.com/go/compatibility-expansion/">https://www.qnap.com/go/compatibility-expansion/</a>。</li> <li>• NAS 必须运行 QTS 5.1.2 (或更高版本) 或 QuTS hero h5.1.2 (或更高版本)。</li> </ul> <ul style="list-style-type: none"> <li>• 存储硬盘</li> </ul> <p> <b>注</b></p> <p>有关兼容硬盘型号的列表，请转到 <a href="https://www.qnap.com/compatibility">https://www.qnap.com/compatibility</a>。</p> <ul style="list-style-type: none"> <li>• 主机总线适配器</li> </ul> <p> <b>注</b></p> <p>NAS 上必须安装 QXP-3X4PES 或 QXP-3X8PES 主机总线适配器。第三方主机总线适配器可能与 QNAP JBOD 设备不兼容。</p> <ul style="list-style-type: none"> <li>• 一个或多个 SF-8644 连接器线缆</li> </ul> <p> <b>注</b></p> <ul style="list-style-type: none"> <li>• QXP-3X4PES 主机总线适配器需要 CAB-PCIE10M-8644-4X 线缆。</li> <li>• QXP-3X8PES 主机总线适配器需要 CAB-PCIE10M-8644-8X 线缆 (JBOD 设备随附一根)。</li> </ul>
工具	<ul style="list-style-type: none"> <li>• 1 号或 2 号十字螺丝刀</li> <li>• 防静电腕带</li> </ul>

## 设置 JBOD 设备



### 重要

在设置 JBOD 设备或安装 JBOD 设备组件之前，请仔细阅读[安全信息](#)中的所有安全要求和信息。

1. 将 JBOD 设备置于符合要求的环境中。  
有关详细信息，请参见[安装要求](#)。
2. 将 JBOD 设备安装在机架上。  
有关详细信息，请参见[导轨套件](#)。
3. 安装硬盘。  
有关详细信息，请参见以下主题：
  - [在 TL-R1200PES-RP 或 TL-R1600PES-RP 上安装 3.5 英寸硬盘](#)
  - [在 TL-R2400PES-RP 上安装 3.5 英寸硬盘](#)
  - [在 TL-R1200PES-RP 或 TL-R1600PES-RP 上安装 2.5 英寸固态硬盘](#)
  - [在 TL-R2400PES-RP 上安装 2.5 英寸固态硬盘](#)
4. 连接电源线。
5. 将 JBOD 设备连接到 NAS。  
有关详细信息，请参见[将 JBOD 设备连接到 NAS](#)。
6. 启动 JBOD 设备电源。

### 3. 硬件安装

本节提供有关安装硬盘、将 JBOD 设备连接到 NAS 或断开连接、热插拔冗余电源单元和导轨套件的信息。

#### 安装硬盘

TL-Rx00PES-RP 兼容 3.5 英寸硬盘和 2.5 英寸固态硬盘。

#### 在 TL-R1200PES-RP 或 TL-R1600PES-RP 上安装 3.5 英寸硬盘



#### 警告

- 安装硬盘将删除硬盘上的所有数据。
- 请执行静电放电 (ESD) 规程，以避免组件损坏。

•



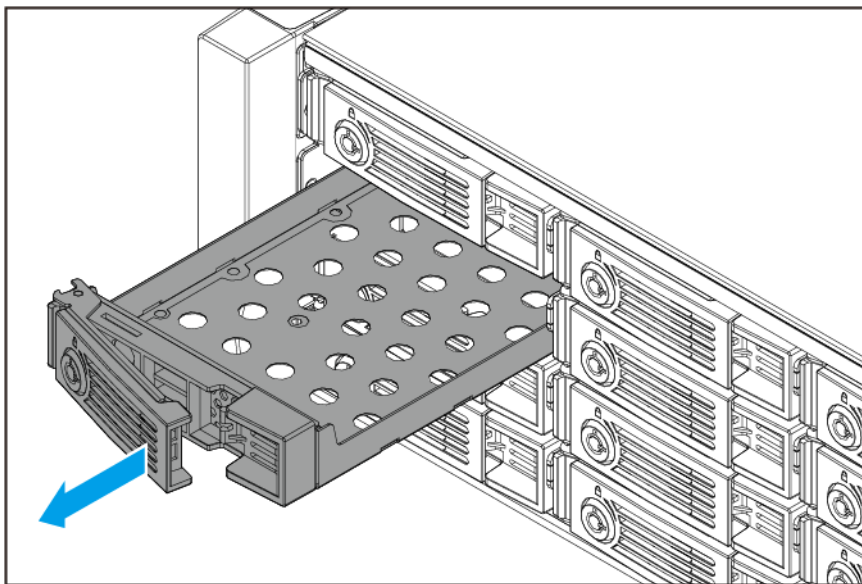
**转动的风扇叶片：**使您的双手和身体其他部位远离正在转动的风扇叶片。

•



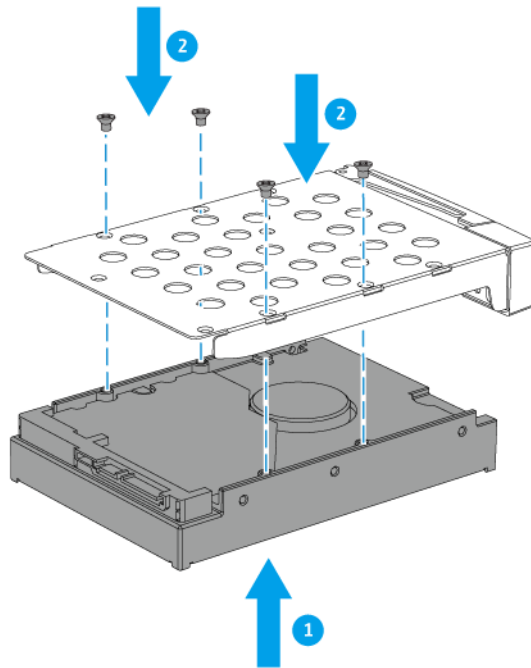
**运动的其他组件：**使您的双手和身体其他部位远离正在运动的其他组件。

1. 关闭 JBOD 设备电源。
2. 取下硬盘托盘。
  - a. 拉动手柄以松开托盘。
  - b. 拉出托盘。



**3. 将硬盘安装到托盘上。**

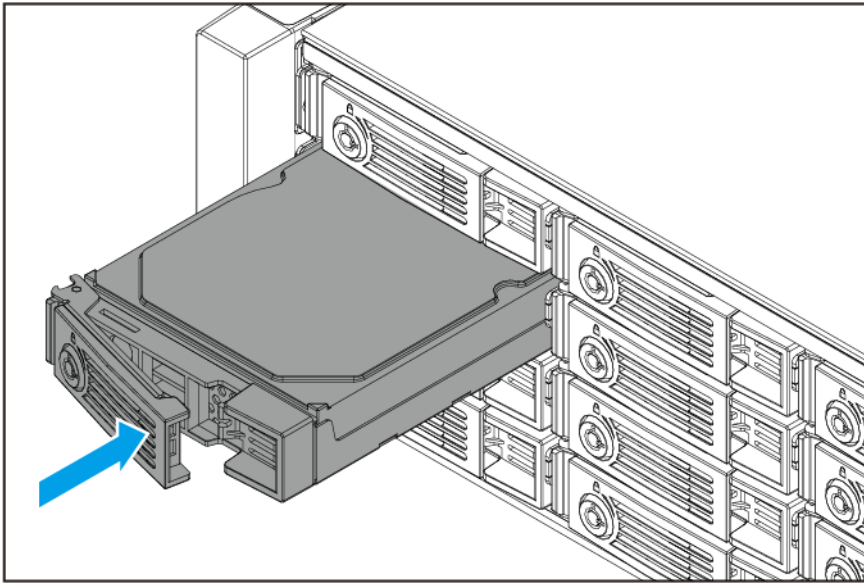
- a. 将硬盘放在托盘上，使硬盘底部的孔与托盘底部的孔对齐。
- b. 安装螺丝。



**4. 将托盘装入硬盘架。**

- a. 将托盘插入硬盘架。
- b. 推动手柄。





5. 启动 JBOD 设备电源。



**注**

JBOD 设备最长可能需要 30 秒才能检测到新设备。

## 在 TL-R2400PES-RP 上安装 3.5 英寸硬盘



**警告**

- 安装硬盘将删除硬盘上的所有数据。
- 请执行静电放电 (ESD) 规程，以避免组件损坏。

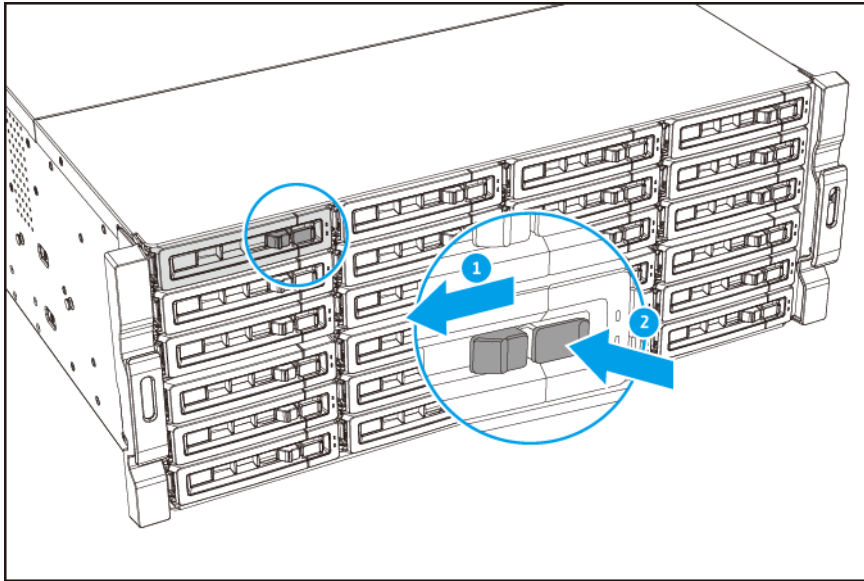


**转动的风扇叶片：**使您的双手和身体其他部位远离正在转动的风扇叶片。

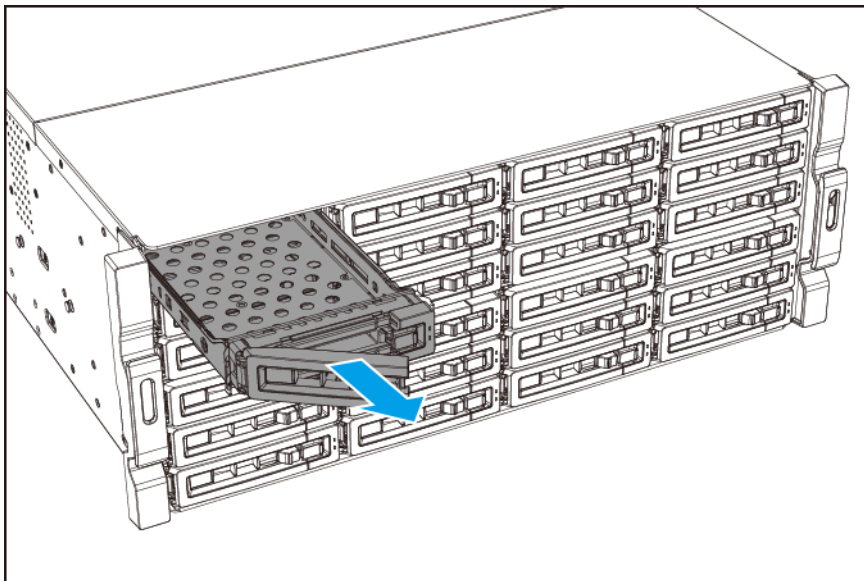


**运动的其他组件：**使您的双手和身体其他部位远离正在运动的其他组件。

1. 关闭 JBOD 设备电源。
2. 取下硬盘托盘。
  - a. 将锁滑到左侧。
  - b. 按下按钮以松开托盘手柄。

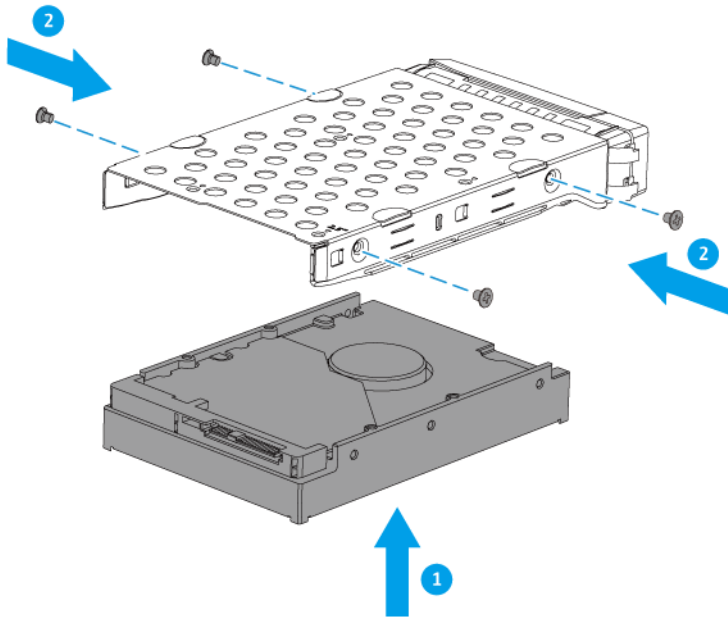


c. 拉出托盘。

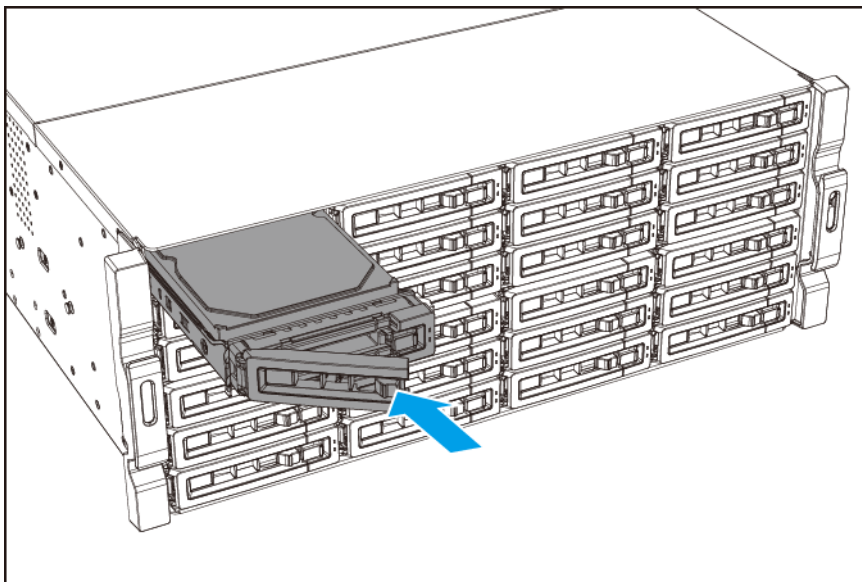


3. 将硬盘安装到托盘上。

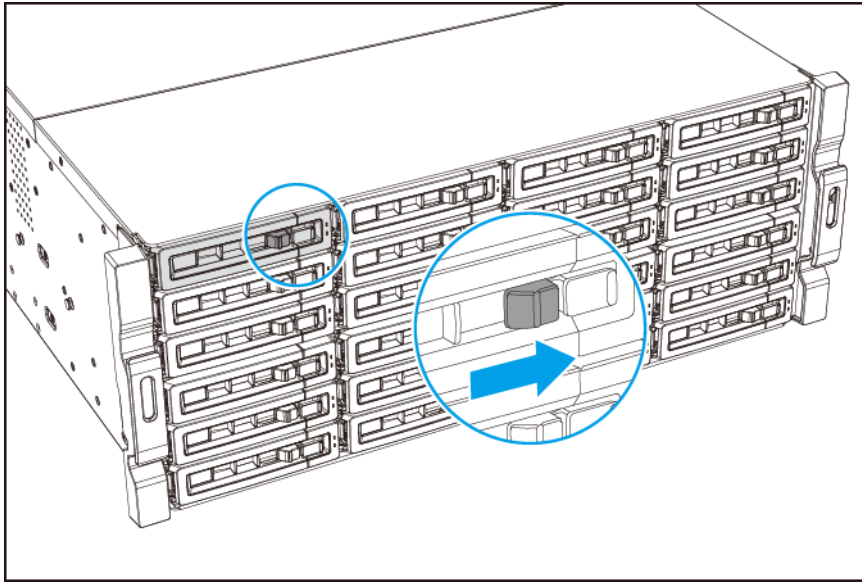
- a. 将硬盘放在托盘上，使硬盘两侧的孔与托盘两侧的孔对齐。
- b. 安装螺丝。



4. 将托盘装入硬盘架。
  - a. 将托盘插入硬盘架。
  - b. 推动手柄。



- c. 将锁滑到右侧。



5. 启动 JBOD 设备电源。



**注**

JBOD 设备最长可能需要 30 秒才能检测到新设备。

## 在 TL-R1200PES-RP 或 TL-R1600PES-RP 上安装 2.5 英寸固态硬盘



**警告**

- 安装硬盘将删除硬盘上的所有数据。
- 请执行静电放电 (ESD) 规程，以避免组件损坏。

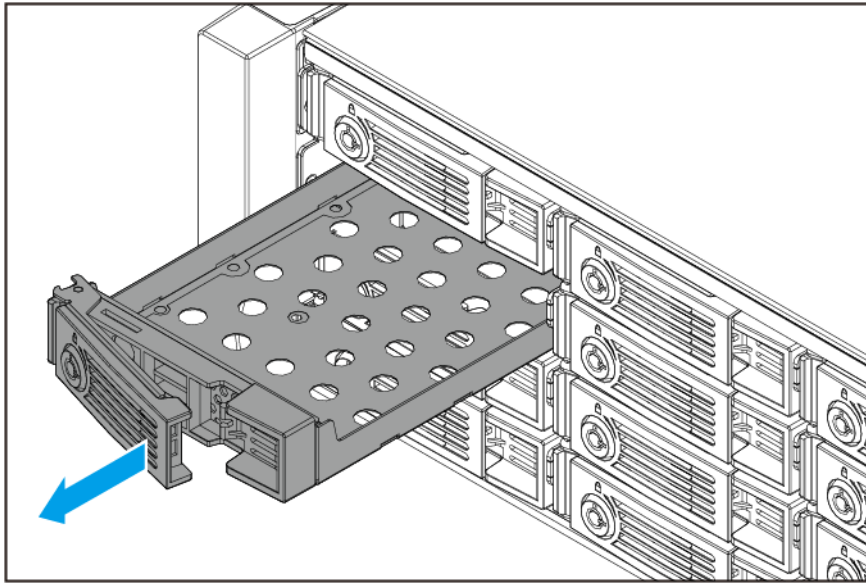


**转动的风扇叶片：**使您的双手和身体其他部位远离正在转动的风扇叶片。



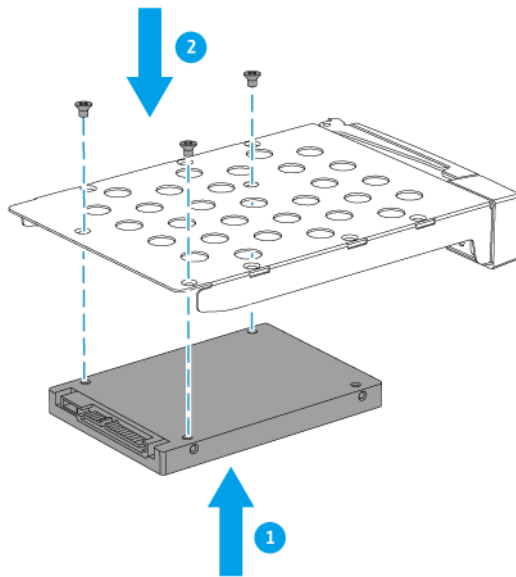
**运动的其他组件：**使您的双手和身体其他部位远离正在运动的其他组件。

1. 关闭 JBOD 设备电源。
2. 取下硬盘托盘。
  - a. 拉动手柄以松开托盘。
  - b. 拉出托盘。



**3. 将硬盘安装到托盘上。**

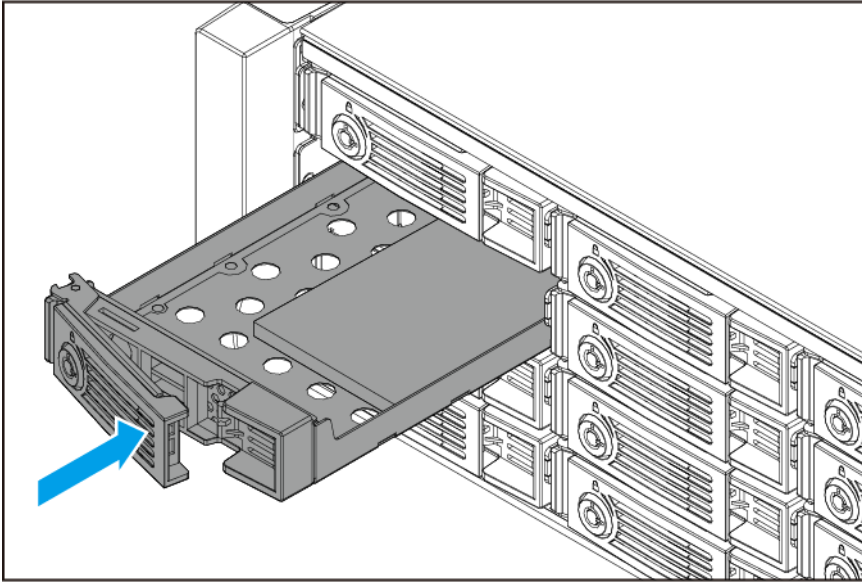
- a. 将硬盘放在托盘上，使硬盘底部的孔与托盘底部的孔对齐。
- b. 安装螺丝。



**4. 将托盘装入硬盘架。**

- a. 将托盘插入硬盘架。

b. 推动手柄。



5. 启动 JBOD 设备电源。



**注**  
JBOD 设备最长可能需要 30 秒才能检测到新设备。

## 在 TL-R2400PES-RP 上安装 2.5 英寸固态硬盘



### 警告

- 安装硬盘将删除硬盘上的所有数据。
- 请执行静电放电 (ESD) 规程，以避免组件损坏。

•



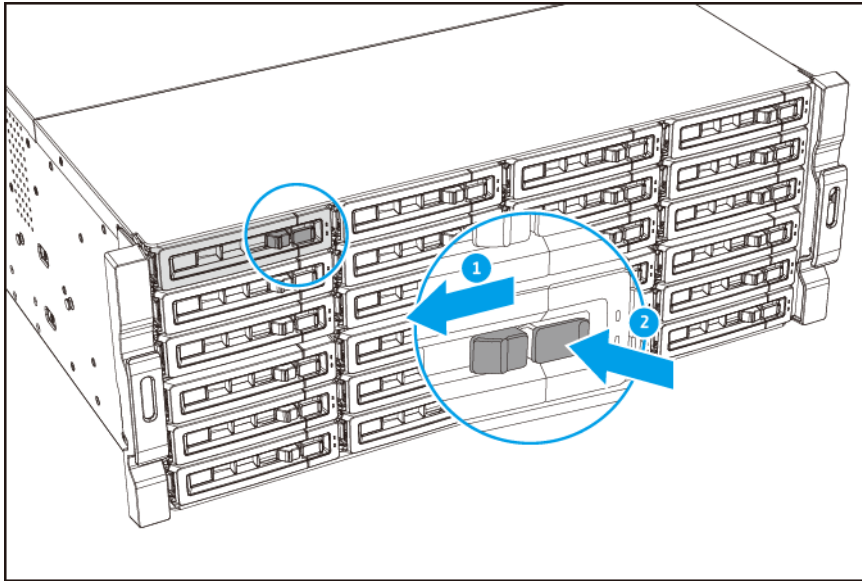
**转动的风扇叶片：**使您的双手和身体其他部位远离正在转动的风扇叶片。

•

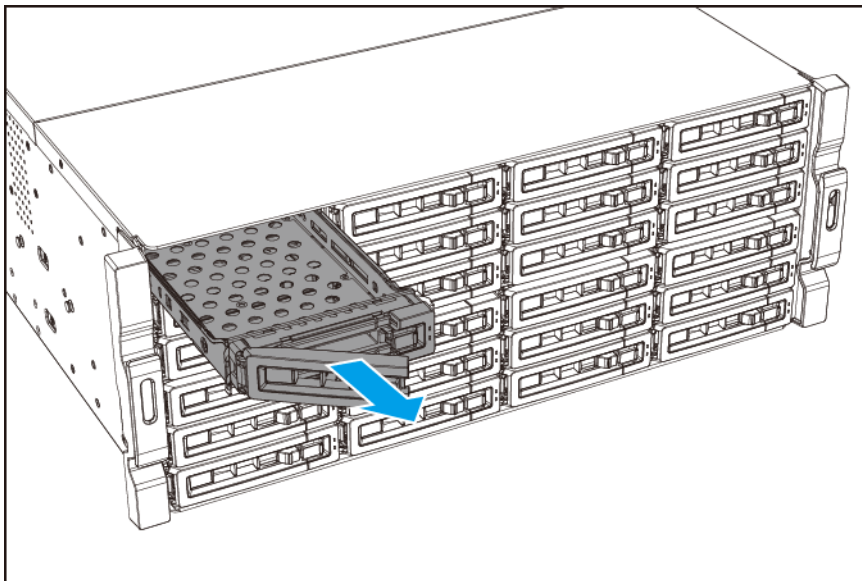


**运动的其他组件：**使您的双手和身体其他部位远离正在运动的其他组件。

1. 关闭 JBOD 设备电源。
2. 取下硬盘托盘。
  - a. 将锁滑到左侧。
  - b. 按下按钮以松开托盘手柄。

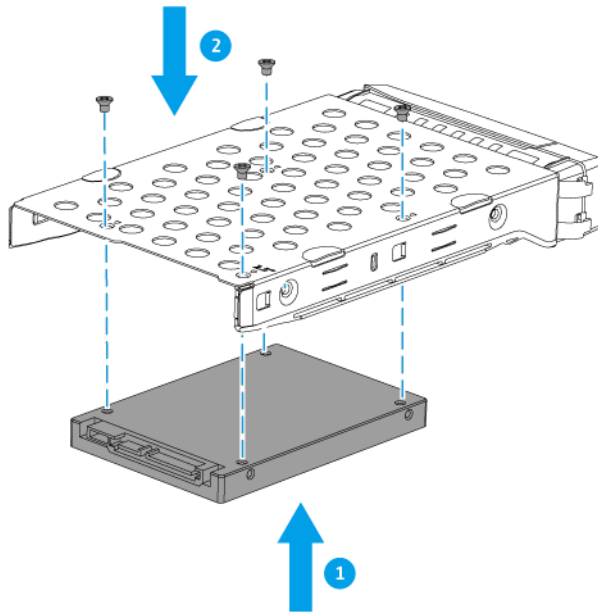


c. 拉出托盘。

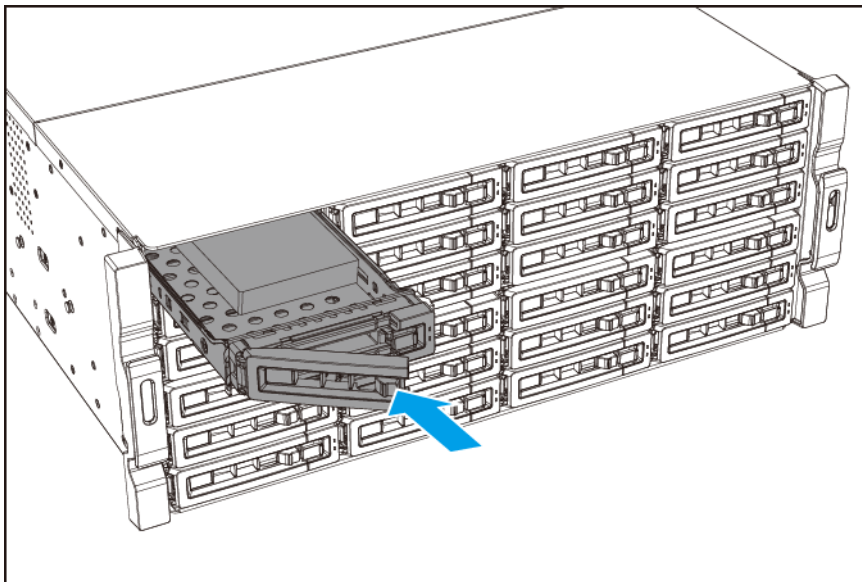


3. 将硬盘安装到托盘上。

- a. 将硬盘放在托盘上，使硬盘底部的孔与托盘底部的孔对齐。
- b. 安装螺丝。

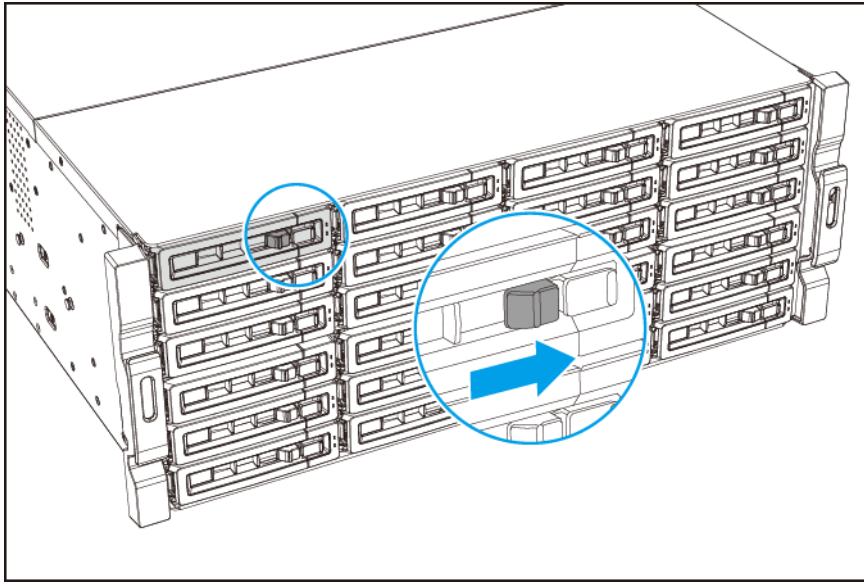


4. 将托盘装入硬盘架。
  - a. 将托盘插入硬盘架。
  - b. 推动手柄。



- c. 将锁滑到右侧。





## 5. 启动 JBOD 设备电源。



**注**

JBOD 设备最长可能需要 30 秒才能检测到新设备。

## 连接和断开 JBOD 设备

TL-Rx00PES-RP 支持连接到 QNAP NAS 进行存储扩展。此外，JBOD 设备支持热插入和级联配置。

### 在 NAS 上热插入 JBOD 设备

TL-Rx00PES-RP 支持在 QNAP NAS 上热插入。您可以在 NAS 启动时将 JBOD 设备连接到 NAS 或断开连接，但有以下限制和注意事项：

- 仅当在仅使用 JBOD 设备上安装的磁盘在 JBOD 设备上创建存储池时，才支持热插入。
- 使用 JBOD 设备上的磁盘在 NAS 上扩展存储池时，不支持热插入。
- 为防止数据丢失或其他损坏，如果已在 JBOD 设备上创建存储池或 RAID 组，请勿热断开 JBOD 设备。如果您必须在此情况下断开 JBOD 设备，请联系授权管理员执行此操作。
- 将 JBOD 设备与 NAS 断开连接时，请确保在断开任何线缆之前，将 JBOD 设备从 NAS 操作系统安全卸载。  
有关详细信息，请参见[将 JBOD 设备与 NAS 断开连接](#)。

### 将 JBOD 设备连接到 NAS

要将 JBOD 设备连接到 NAS，必须使用与建议的 QNAP 操作系统版本和最新 BIOS 固件版本兼容的 NAS 型号。还必须在 NAS 上安装兼容的主机总线适配器并使用兼容的连接线缆，具体取决于 NAS 上的 PCIe 插槽。

NAS 要求

要求	描述
NAS 型号	请确保 QNAP NAS 与 JBOD 设备兼容。 有关兼容 NAS 型号的列表，请转到 <a href="https://www.qnap.com/go/compatibility-expansion/">https://www.qnap.com/go/compatibility-expansion/</a> 。
NAS 操作系统	<ul style="list-style-type: none"> <li>• QTS 5.1.2 或更高版本</li> <li>• QuTS hero h5.1.2 或更高版本</li> </ul> 有关适用于您的 NAS 型号的最新 QNAP 操作系统，请转到 <a href="https://download.qnap.com/">https://download.qnap.com/</a> 。
NAS BIOS	NAS 必须安装最新 BIOS 固件版本。 有关适用于您的 NAS 型号的最新 BIOS 固件，请转到 <a href="https://download.qnap.com/">https://download.qnap.com/</a> 。
NAS 内存和 JBOD 存储	<ul style="list-style-type: none"> <li>• QTS               <ul style="list-style-type: none"> <li>• JBOD 设备上的最大存储池大小：304 TB</li> </ul> </li> <li>• QuTS hero               <ul style="list-style-type: none"> <li>• 最低 NAS 内存：16 GB</li> <li>• 1-2 PB JBOD 存储的建议 NAS 内存：≥ 128 GB</li> <li>• 3-5 PB JBOD 存储的建议 NAS 内存：≥ 256 GB</li> </ul> </li> </ul>

#### 主机总线适配器和线缆要求

NAS PCIe 插槽	主机总线适配器和线缆
PCIe x4 插槽	<ul style="list-style-type: none"> <li>• 主机总线适配器：QXP-3X4PES</li> <li>• 线缆：CAB-PCIE10M-8644-4X</li> <li>• 最高 32 Gbps（配备 PCIe Gen 3 或更高版本）</li> </ul> <p> <b>重要</b> 包装中随附的 CAB-PCIE10M-8644-8X 线缆无法与 QXP-3X4PES 主机总线适配器搭配使用。</p>
PCIe x8 插槽	<ul style="list-style-type: none"> <li>• 主机总线适配器：QXP-3X8PES</li> <li>• 线缆：CAB-PCIE10M-8644-8X（包装中随附）</li> <li>• 最高 64 Gbps（配备 PCIe Gen 3 或更高版本）</li> </ul> <p> <b>注</b> CAB-PCIE10M-8644-4X 线缆可以与 QXP-3X8PES 搭配使用。但连接速度限于最高 32 Gbps。</p>




#### 注

- QXP-3X4PES 和 QXP-3X8PES 主机总线适配器各具有两个端口，支持最多两个 JBOD 连接。您可以使用级联配置连接更多 JBOD 设备。
- 有关您的 NAS 型号支持的扩展卡和 JBOD 设备的最大数量，请转到 <https://www.qnap.com/go/compatibility-expansion/>。
- 您可以从 <https://shop.qnap.com/> 或授权经销商处购买 QNAP 扩展卡和线缆。

1. 请确保 NAS 已关机。  
如果您将 JBOD 设备热连接到 NAS，请跳过此步骤。有关详细信息，请参见在 [NAS 上热插入 JBOD 设备](#)。
2. 在 NAS 上安装 QXP-3X4PES 或 QXP-3X8PES 主机总线适配器。  
请参阅 NAS 用户指南的硬件安装部分，了解安装扩展卡的说明。
3. 准备 SFF-8644 连接器线缆。  
使用与主机总线适配器兼容的线缆：

主机总线适配器	线缆
QXP-3X4PES	CAB-PCIE10M-8644-4X (32 Gbps 连接速度)
QXP-3X8PES	CAB-PCIE10M-8644-8X (64 Gbps 连接速度)


**注**  
 CAB-PCIE10M-8644-4X 线缆还可以与 QXP-3X8PES 搭配使用。但连接速度限于最高 32 Gbps。

4. 将 JBOD 设备连接到 NAS。



#### 重要

- 连接 CAB-PCIE10M-8644-8X 线缆时，请确保快速将电缆插头插入端口。请勿摇晃插头或插入过慢，否则会激活保护模式，导致连接速度下降。
- 如果保护模式处于激活状态，则连接两头的连接器链路 LED 闪烁橙色。要重新建立正常连接，请从 QTS 或 QuTS hero 安全卸载 JBOD 设备，断开连接器线缆，重新启动 NAS，然后重新连接 JBOD 设备。

- a. 将 SFF-8644 连接器线缆连接到安装在 NAS 中的主机总线适配器 (HBA) 上的 SFF-8644 端口。



#### 注

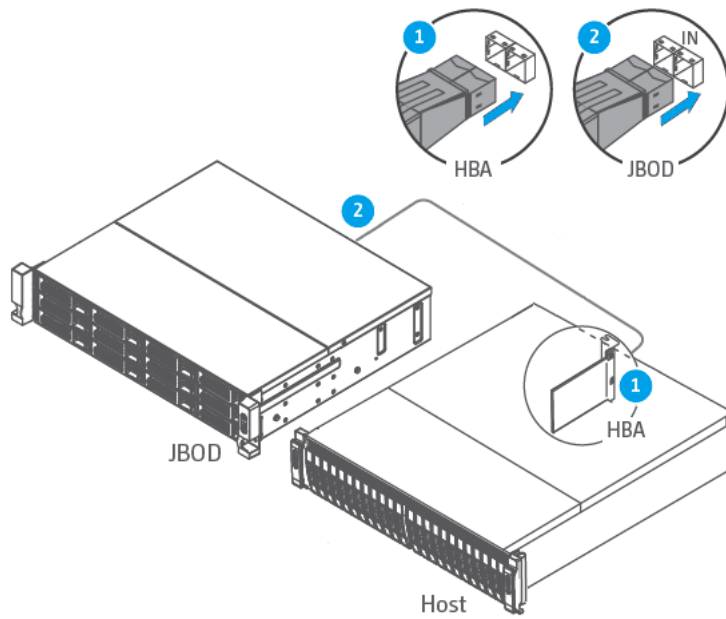
要将 CAB-PCIE10M-8644-4X 线缆连接到 QXP-3X8PES 主机总线适配器，必须将线缆插头插入适配器的 A1 端口或 B1 端口，且连接速度限于最高 32 Gbps。请勿将线缆插头插入适配器的 A2 端口或 B2 端口。  
有关适配器端口位置的详细信息，请查看适配器上的标签。

- b. 将 SFF-8644 连接器线缆连接到 JBOD 设备上的上游 SFF-8644 端口。



#### 注

- 使用 CAB-PCIE10M-8644-4X 线缆时，请连接到端口的左侧。
- 有关上游端口位置的详细信息，请参见 [后面板](#)。



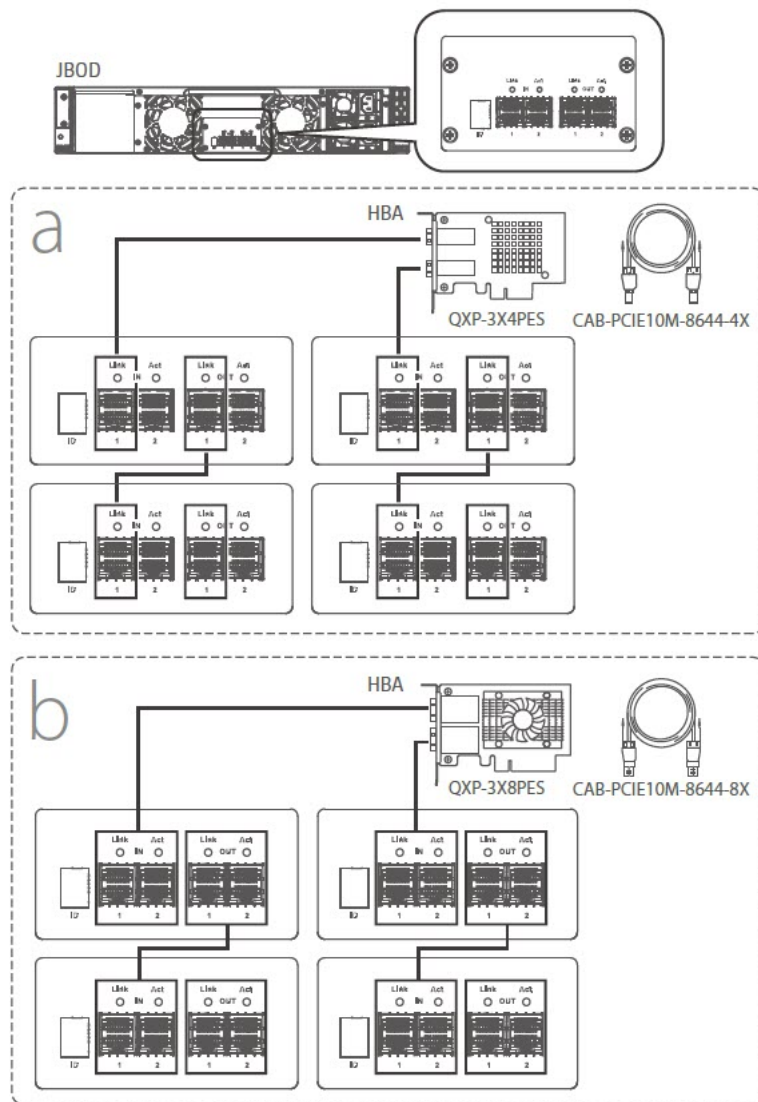
5. 可选: 将其他 JBOD 设备连接到 NAS。



**重要**

连接多个 JBOD 设备时，请确保电源线缆和 CAB-PCIE10M-8644-4X 线缆已正确连接到第一个 JBOD，然后依次连接其余 JBOD 设备。

将多个 JBOD 设备连接到 NAS 时，使用以下拓扑之一，具体取决于主机总线适配器：



## 注

- 使用 CAB-PCIE10M-8644-4X 线缆时，始终连接到上游和下游端口的端口左侧。
- 连接到主机总线适配器的两个端口时，在两个连接之间共享 NAS 上的 PCIe 插槽的总带宽。
- 只有在级联配置中连接 NAS 或上游 JBOD 设备时才使用上游端口。
- 只有在级联配置中连接下游 JBOD 设备时才使用下游端口。
- 有关上游和下游端口位置的详细信息，请参见[后面板](#)。

6. 启动 JBOD 设备电源。

7. 启动 NAS 电源。

如果 NAS 已启动且您正在热连接 JBOD 设备，请跳过此步骤。

8. 确认 NAS 能够识别 JBOD 设备。

- a. 以管理员身份登录 QTS 或 QuTS hero。
- b. 转到**主菜单 > 存储与快照总管 > 概述 > 存储**。
- c. 确认 JBOD 设备已列出。



#### 注

- NAS 最长可能需要 30 秒才能检测到 JBOD 设备和安装的硬盘。
- 连接的设备和安装的硬盘数量越多，NAS 检测到它们所需的时间越长。
- 在 NAS 检测到 JBOD 设备之前，JBOD 设备上的状态 LED 显示橙色，表示其处于待机模式。当 JBOD 设备处于待机模式时，设备上的风扇和硬盘 LED 仍处于熄灭状态。

## 将 JBOD 设备与 NAS 断开连接

将 JBOD 设备与 NAS 断开连接（包括热断开连接）时，请确保在断开任何线缆之前，将 JBOD 设备从 NAS 操作系统安全卸载。

断开线缆但未安全卸载 JBOD 设备可能会导致数据丢失或其他损坏。



#### 警告

如果已在 JBOD 设备上创建存储池或 RAID 组，请勿热断开 JBOD 设备。如果您必须在此情况下断开 JBOD 设备，请联系授权管理员执行此操作。

1. 在 NAS 上登录 QTS 或 QuTS hero。
2. 转到**存储与快照总管 > 存储 > 磁盘/VJBOD > NAS 和设备**。
3. 选择 JBOD 设备。
4. 单击**操作**，然后选择**安全卸载**。  
JBOD 设备已安全拆卸。
5. 将连接器线缆与 NAS 断开连接。

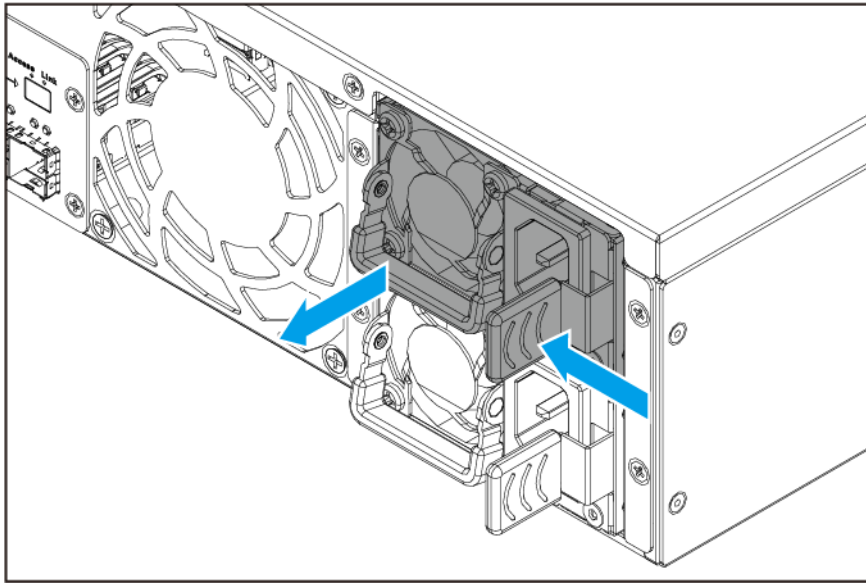


#### 重要

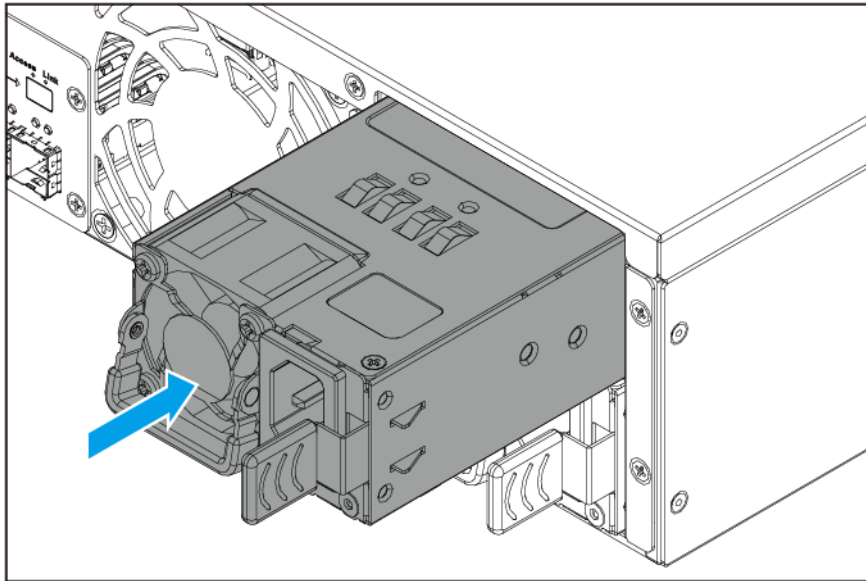
断开多个 JBOD 设备时，请确保从最后一个 JBOD 开始，并正确断开电源线和 CAB-PCIE10M-8644-4X，然后依次断开其他 JBOD 设备。

## 热插拔冗余电源单元

1. 从插座和要更换的电源单元 (PSU) 上拔下电源线。
2. 向手柄方向紧按闩锁并拉出 PSU。



3. 插入新 PSU。



4. 将电源线连接到 PSU 和插座。

**导轨套件**

导轨套件未随设备提供，必须单独购买。有关详细信息，请联系授权经销商或转到 <http://shop.qnap.com>。

型号	兼容的导轨套件
TL-R1200PES-RP	RAIL-B02
TL-R1600PES-RP	
TL-R2400PES-RP	RAIL-A02-90

安装信息位于导轨套件包中。






## 4. 基本操作

本章介绍 JBOD 设备的基本操作。

### 电源按钮

操作	用户操作	结果
启动电源	按下此按钮一次。	设备启动或正在从睡眠模式中唤醒。
待机模式	按住此按钮 1.5 秒钟。	硬盘和风扇关闭，设备进入待机模式。
强制关机	按住此按钮 5 秒钟。	设备关机。  <div style="display: flex; align-items: center;">  <div> <p><b>注</b></p> <ul style="list-style-type: none"> <li>• 仅当设备无响应时才能使用此方法。</li> <li>• 当设备关机时，主机 NAS 无法控制设备的电源状态。</li> </ul> </div> </div>

### LED

#### 系统状态 LED

状态	描述
红色	<ul style="list-style-type: none"> <li>• 系统风扇故障。</li> <li>• 系统温度超过 65°C。</li> <li>• 一个或多个电源单元异常。</li> </ul>
绿色	设备已就绪。
橙色	设备处于待机模式。
熄灭	<ul style="list-style-type: none"> <li>• 所有硬盘都处于待机模式。</li> <li>• 设备已关机。</li> </ul>

#### 硬盘 LED

状态	描述
绿色	<ul style="list-style-type: none"> <li>• 设备已开机。</li> <li>• 硬盘可供访问。</li> </ul>
闪烁绿色	正在访问数据。
红色	发生硬盘读/写错误。
闪烁琥珀色，频率为 4 Hz	操作系统正在定位硬盘。
所有硬盘 LED 闪烁绿色和红色，频率为 1 Hz	操作系统正在定位设备。
熄灭	未检测到硬盘。

**链路 LED**

状态	描述
绿色	连接的端口已完全连接。
熄灭	未连接任何线缆。

**连接器链路 LED**

状态	描述
绿色	设备已完全连接。
橙色	设备未完全连接。
熄灭	<ul style="list-style-type: none"> <li>设备未连接。</li> <li>设备没有线缆连接。</li> </ul>

**连接器存取 LED**

状态	描述
绿色	正在访问数据。
熄灭	<ul style="list-style-type: none"> <li>未访问数据。</li> <li>未检测到硬盘。</li> </ul>

**风扇错误 LED**

状态	描述
红色	系统风扇故障。
熄灭	系统风扇运行正常。

**警告音**

时长	频率	描述
短提示音 (0.5 秒)	1	<ul style="list-style-type: none"> <li>JBOD 硬盘托盘架链路已连接。</li> <li>JBOD 硬盘托盘架链路已断开连接。</li> <li>主机与 JBOD 已连接。</li> <li>JBOD 与 JBOD 已建立级联连接。</li> </ul>
长提示音 (2 秒)	3 (每 5 分钟)	<ul style="list-style-type: none"> <li>系统风扇故障。</li> <li>系统温度超过阈值。</li> </ul> <p><b>注</b> 默认的温度警告阈值为 65°C。您可以使用 QNAP JBOD Manager 将该阈值设置为介于 55°C 至 69°C 之间的温度。</p>
长提示音	1 Hz	正在定位或取消定位设备。

## 5. 故障排除

本章介绍基本故障排除信息。

### 强制存储与快照总管识别 JBOD 设备

如果存储与快照总管在运行期间找不到 JBOD 设备，则 JBOD 设备上的硬盘或数据可能有故障。

1. 关闭 JBOD 设备电源。
2. 将 JBOD 设备与 NAS 断开连接。
3. 从 JBOD 设备中取下所有硬盘。
4. 将 JBOD 设备重新连接到 NAS。
5. 启动 JBOD 设备电源。
6. 使用存储与快照总管找到 JBOD 设备。
7. 重新插入硬盘。
8. 继续操作。

### 热插拔故障硬盘

连接到 QTS 或 QuTS hero NAS 时，JBOD 设备支持在以下情况下热插拔硬盘：

RAID 类型	磁盘数量	情形
QTS 和 QuTS hero		
RAID 1	2	一个成员硬盘有故障。
RAID 5	≥ 3	一个成员硬盘有故障。
RAID 6	≥ 4	一个或两个成员硬盘有故障。
RAID 10	≥ 4 (必须为偶数)	处于两个不同对中的一个或两个成员硬盘有故障。 <ul style="list-style-type: none"> <li>• 一个成员硬盘有故障。</li> <li>• 处于两个不同对中的两个成员硬盘有故障。</li> </ul>
RAID 50	≥ 6	每个子组的一个磁盘有故障。
RAID 60	≥ 8	每个子组的两个磁盘有故障。
仅限 QuTS hero		
Triple Mirror	3 的倍数。(例如，3、6、9、12 个磁盘等。)	一个或两个成员硬盘有故障。
RAID-TP	≥ 5	一个、两个或三个成员硬盘有故障。

1. 登录 QTS 或 QuTS hero。
2. 转到**主菜单 > 存储与快照总管 > 存储 > 磁盘/VJBOD**。
3. 找到发生故障的硬盘。
4. 准备一个与故障硬盘具有相同或更大容量的新硬盘。
5. 从 JBOD 设备中取下故障硬盘。

6. 等待 30 秒或 JBOD 设备发出两次提示音。
7. 从硬盘托盘中取下故障硬盘。
8. 将新硬盘插入硬盘托盘中。
9. 安装新硬盘。  
JBOD 设备发出两次提示音。
10. 等待 30 秒或 JBOD 设备发出两次提示音。
11. 转到**主菜单 > 存储与快照总管 > 存储 > 存储/快照**。
12. 找到包含新硬盘的存储池，然后确认状态为正在重建。

## 支持和其他资源

QNAP 提供了以下资源：

资源	URL
文档	<a href="https://download.qnap.com">https://download.qnap.com</a>
兼容性列表	<a href="https://www.qnap.com/compatibility">https://www.qnap.com/compatibility</a>
NAS 迁移兼容性	<a href="https://www.qnap.com/go/nas-migration">https://www.qnap.com/go/nas-migration</a>
扩展单元兼容性	<a href="https://www.qnap.com/go/compatibility-expansion">https://www.qnap.com/go/compatibility-expansion</a>
服务门户	<a href="https://service.qnap.com">https://service.qnap.com</a>
产品支持状态	<a href="https://www.qnap.com/go/product/eol.php">https://www.qnap.com/go/product/eol.php</a>
下载项	<a href="https://download.qnap.com">https://download.qnap.com</a>
社区论坛	<a href="https://forum.qnap.com">https://forum.qnap.com</a>
QNAP 配件商店	<a href="https://shop.qnap.com">https://shop.qnap.com</a>

## 6. 术语表

### QTS

QNAP NAS 操作系统

### QuTS hero

采用 ZFS 文件系统的 QNAP NAS 操作系统

### 存储与快照总管

可用于查看和配置连接到 QNAP NAS 的 QNAP JBOD 设备的 QTS 实用工具

## 7. 声明

本章提供有关保修、免责声明、许可和联邦法规的信息。

### 有限保修

QNAP 为本公司产品提供有限保修服务。自发票注明日期起一 (1) 年或更长期限内，QNAP 品牌的硬件产品享受材料和工方面艺缺陷的保修服务。("保修期")。请访问 [www.qnap.com/warranty](http://www.qnap.com/warranty) 查看您的法定权利 (QNAP 可不时自行修改这些权利)。

### 免责声明

本文档中提供的信息与 QNAP Systems, Inc. (即 "QNAP") 的产品有关。本文档未通过禁止反言或以其他方式授予对任何知识产权的明示或暗示许可。除非在 QNAP 针对此类产品的销售条款和条件中明确注明，QNAP 不承担任何责任，并且 QNAP 不提供任何与 QNAP 产品的销售和/或使用有关的明示或暗示的担保，包括与特定用途的适用性、适销性或者侵犯任何专利、版权或其他知识产权有关的责任或担保。

QNAP 产品不适用于医疗、救生、生命维持、关键控制、安全系统或核设施应用。

在任何情况下，对于因使用本产品、其随附软件或文档而导致的直接、间接、特殊、偶发或继发损失，QNAP 的赔偿责任均不超出产品售价。QNAP 对其产品或本文档的内容或使用以及所有随附软件，不做任何明示、暗示或法定的保证或表述，并特别声明，不保证其质量、性能、适销性或适用于任何特定用途。QNAP 保留修改或更新其产品、软件或文档的权利，无需通知任何个人或实体。

建议定期备份系统，以避免任何潜在的数据丢失。QNAP 对所有类型的数据丢失或恢复不承担任何责任。

如果退回 QNAP 产品 (例如 NAS，网络连接存储) 包装中的任何组件进行退款或维修，请务必妥善包装以便运输。对于因包装不当而造成的任何形式的损坏，QNAP 将不予赔偿。

所有特性、功能和其他产品规格如有更改，恕不另行通知，亦不承担任何责任。本文所包含的信息如有更改，恕不另行通知。

此外，文中未使用 ® 或 ™ 符号。

### 版权和商标

版权所有 © 2023 QNAP Systems, Inc. 保留所有权利。

QNAP 和其他 QNAP 产品名称及徽标是 QNAP Systems, Inc. 的专有标志、商标或注册商标。



词语 HDMI、HDMI High-Definition Multimedia Interface (高清晰度多媒体接口)、HDMI 商业外观和 HDMI 徽标均为 HDMI Licensing Administrator, Inc. 的商标或注册商标。

本文提及的其他公司名称和产品是其各自持有者的商标或注册商标。

### GNU General Public License

Version 3, 29 June 2007

Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

## Preamble

The GNU General Public License is a free, copy left license for software and other kinds of works.

The licenses for most software and other practical works are designed to take away your freedom to share and change the works. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change all versions of a program--to make sure it remains free software for all its users. We, the Free Software Foundation, use the GNU General Public License for most of our software; it applies also to any other work released this way by its authors. You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for them if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs, and that you know you can do these things.

To protect your rights, we need to prevent others from denying you these rights or asking you to surrender the rights. Therefore, you have certain responsibilities if you distribute copies of the software, or if you modify it: responsibilities to respect the freedom of others.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must pass on to the recipients the same freedoms that you received. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

Developers that use the GNU GPL protect your rights with two steps: (1) assert copyright on the software, and (2) offer you this License giving you legal permission to copy, distribute and/or modify it.

For the developers' and authors' protection, the GPL clearly explains that there is no warranty for this free software. For both users' and authors' sake, the GPL requires that modified versions be marked as changed, so that their problems will not be attributed erroneously to authors of previous versions.

Some devices are designed to deny users access to install or run modified versions of the software inside them, although the manufacturer can do so. This is fundamentally incompatible with the aim of protecting users' freedom to change the software. The systematic pattern of such abuse occurs in the area of products for individuals to use, which is precisely where it is most unacceptable. Therefore, we have designed this version of the GPL to prohibit the practice for those products. If such problems arise substantially in other domains, we stand ready to extend this provision to those domains in future versions of the GPL, as needed to protect the freedom of users.

Finally, every program is threatened constantly by software patents. States should not allow patents to restrict development and use of software on general-purpose computers, but in those that do, we wish to avoid the special danger that patents applied to a free program could make it effectively proprietary. To prevent this, the GPL assures that patents cannot be used to render the program non-free.

The precise terms and conditions for copying, distribution and modification follow.

## Terms and Conditions

### 1. Definitions.

"This License" refers to version 3 of the GNU General Public License.

"Copyright" also means copyright-like laws that apply to other kinds of works, such as semiconductor masks.

"The Program" refers to any copyrightable work licensed under this License. Each licensee is addressed as "you". "Licensees" and "recipients" may be individuals or organizations.

To "modify" a work means to copy from or adapt all or part of the work in a fashion requiring copyright permission, other than the making of an exact copy. The resulting work is called a "modified version" of the earlier work or a work "based on" the earlier work.

A "covered work" means either the unmodified Program or a work based on the Program.

To "propagate" a work means to do anything with it that, without permission, would make you directly or secondarily liable for infringement under applicable copyright law, except executing it on a

computer or modifying a private copy. Propagation includes copying, distribution (with or without modification), making available to the public, and in some countries other activities as well.

To “convey” a work means any kind of propagation that enables other parties to make or receive copies. Mere interaction with a user through a computer network, with no transfer of a copy, is not conveying.

An interactive user interface displays “Appropriate Legal Notices” to the extent that it includes a convenient and prominently visible feature that (1) displays an appropriate copyright notice, and (2) tells the user that there is no warranty for the work (except to the extent that warranties are provided), that licensees may convey the work under this License, and how to view a copy of this License. If the interface presents a list of user commands or options, such as a menu, a prominent item in the list meets this criterion.

## 2. Source Code.

The “source code” for a work means the preferred form of the work for making modifications to it.

“Object code” means any non-source form of a work.

A “Standard Interface” means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The “System Libraries” of an executable work include anything, other than the work as a whole, that (a) is included in the normal form of packaging a Major Component, but which is not part of that Major Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A “Major Component”, in this context, means a major essential component (kernel, window system, and so on) of the specific operating system (if any) on which the executable work runs, or a compiler used to produce the work, or an object code interpreter used to run it.

The “Corresponding Source” for a work in object code form means all the source code needed to generate, install, and (for an executable work) run the object code and to modify the work, including scripts to control those activities. However, it does not include the work’s System Libraries, or general-purpose tools or generally available free programs which are used unmodified in performing those activities but which are not part of the work. For example, Corresponding Source includes interface definition files associated with source files for the work, and the source code for shared libraries and dynamically linked subprograms that the work is specifically designed to require, such as by intimate data communication or control flow between those subprograms and other parts of the work.

The Corresponding Source need not include anything that users can regenerate automatically from other parts of the Corresponding Source.

The Corresponding Source for a work in source code form is that same work.

## 3. Basic Permissions.

All rights granted under this License are granted for the term of copyright on the Program, and are irrevocable provided the stated conditions are met. This License explicitly affirms your unlimited permission to run the unmodified Program. The output from running a covered work is covered by this License only if the output, given its content, constitutes a covered work. This License acknowledges your rights of fair use or other equivalent, as provided by copyright law.

You may make, run and propagate covered works that you do not convey, without conditions so long as your license otherwise remains in force. You may convey covered works to others for the sole purpose of having them make modifications exclusively for you, or provide you with facilities for running those works, provided that you comply with the terms of this License in conveying all material for which you do not control copyright. Those thus making or running the covered works for you must do so exclusively on your behalf, under your direction and control, on terms that prohibit them from making any copies of your copyrighted material outside their relationship with you.

Conveying under any other circumstances is permitted solely under the conditions stated below.

Sublicensing is not allowed; section 10 makes it unnecessary.

## 4. Protecting Users' Legal Rights From Anti-Circumvention Law.

No covered work shall be deemed part of an effective technological measure under any applicable law fulfilling obligations under article 11 of the WIPO copyright treaty adopted on 20 December 1996, or similar laws prohibiting or restricting circumvention of such measures.



When you convey a covered work, you waive any legal power to forbid circumvention of technological measures to the extent such circumvention is effected by exercising rights under this License with respect to the covered work, and you disclaim any intention to limit operation or modification of the work as a means of enforcing, against the work's users, your or third parties' legal rights to forbid circumvention of technological measures.

#### 5. Conveying Verbatim Copies.

You may convey verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice; keep intact all notices stating that this License and any non-permissive terms added in accord with section 7 apply to the code; keep intact all notices of the absence of any warranty; and give all recipients a copy of this License along with the Program.

You may charge any price or no price for each copy that you convey, and you may offer support or warranty protection for a fee.

#### 6. Conveying Modified Source Versions.

You may convey a work based on the Program, or the modifications to produce it from the Program, in the form of source code under the terms of section 4, provided that you also meet all of these conditions:

- a. The work must carry prominent notices stating that you modified it, and giving a relevant date.
- b. The work must carry prominent notices stating that it is released under this License and any conditions added under section 7. This requirement modifies the requirement in section 4 to "keep intact all notices".
- c. You must license the entire work, as a whole, under this License to anyone who comes into possession of a copy. This License will therefore apply, along with any applicable section 7 additional terms, to the whole of the work, and all its parts, regardless of how they are packaged. This License gives no permission to license the work in any other way, but it does not invalidate such permission if you have separately received it.
- d. If the work has interactive user interfaces, each must display Appropriate Legal Notices; however, if the Program has interactive interfaces that do not display Appropriate Legal Notices, your work need not make them do so.  
A compilation of a covered work with other separate and independent works, which are not by their nature extensions of the covered work, and which are not combined with it such as to form a larger program, in or on a volume of a storage or distribution medium, is called an "aggregate" if the compilation and its resulting copyright are not used to limit the access or legal rights of the compilation's users beyond what the individual works permit. Inclusion of a covered work in an aggregate does not cause this License to apply to the other parts of the aggregate.

#### 7. Conveying Non-Source Forms.

You may convey a covered work in object code form under the terms of sections 4 and 5, provided that you also convey the machine-readable Corresponding Source under the terms of this License, in one of these ways:

- a. Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by the Corresponding Source fixed on a durable physical medium customarily used for software interchange.
- b. Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by a written offer, valid for at least three years and valid for as long as you offer spare parts or customer support for that product model, to give anyone who possesses the object code either (1) a copy of the Corresponding Source for all the software in the product that is covered by this License, on a durable physical medium customarily used for software interchange, for a price no more than your reasonable cost of physically performing this

conveying of source, or (2) access to copy the Corresponding Source from a network server at no charge.

- c. Convey individual copies of the object code with a copy of the written offer to provide the Corresponding Source. This alternative is allowed only occasionally and noncommercially, and only if you received the object code with such an offer, in accord with subsection 6b.
- d. Convey the object code by offering access from a designated place (gratis or for a charge), and offer equivalent access to the Corresponding Source in the same way through the same place at no further charge. You need not require recipients to copy the Corresponding Source along with the object code. If the place to copy the object code is a network server, the Corresponding Source may be on a different server (operated by you or a third party) that supports equivalent copying facilities, provided you maintain clear directions next to the object code saying where to find the Corresponding Source. Regardless of what server hosts the Corresponding Source, you remain obligated to ensure that it is available for as long as needed to satisfy these requirements.
- e. Convey the object code using peer-to-peer transmission, provided you inform other peers where the object code and Corresponding Source of the work are being offered to the general public at no charge under subsection 6d.

A separable portion of the object code, whose source code is excluded from the Corresponding Source as a System Library, need not be included in conveying the object code work.

A "User Product" is either (1) a "consumer product", which means any tangible personal property which is normally used for personal, family, or household purposes, or (2) anything designed or sold for incorporation into a dwelling. In determining whether a product is a consumer product, doubtful cases shall be resolved in favor of coverage. For a particular product received by a particular user, "normally used" refers to a typical or common use of that class of product, regardless of the status of the particular user or of the way in which the particular user actually uses, or expects or is expected to use, the product. A product is a consumer product regardless of whether the product has substantial commercial, industrial or non-consumer uses, unless such uses represent the only significant mode of use of the product.

"Installation Information" for a User Product means any methods, procedures, authorization keys, or other information required to install and execute modified versions of a covered work in that User Product from a modified version of its Corresponding Source. The information must suffice to ensure that the continued functioning of the modified object code is in no case prevented or interfered with solely because modification has been made.

If you convey an object code work under this section in, or with, or specifically for use in, a User Product, and the conveying occurs as part of a transaction in which the right of possession and use of the User Product is transferred to the recipient in perpetuity or for a fixed term (regardless of how the transaction is characterized), the Corresponding Source conveyed under this section must be accompanied by the Installation Information. But this requirement does not apply if neither you nor any third party retains the ability to install modified object code on the User Product (for example, the work has been installed in ROM).

The requirement to provide Installation Information does not include a requirement to continue to provide support service, warranty, or updates for a work that has been modified or installed by the recipient, or for the User Product in which it has been modified or installed. Access to a network may be denied when the modification itself materially and adversely affects the operation of the network or violates the rules and protocols for communication across the network.

Corresponding Source conveyed, and Installation Information provided, in accord with this section must be in a format that is publicly documented (and with an implementation available to the public in source code form), and must require no special password or key for unpacking, reading or copying.

## 8. Additional Terms.

"Additional permissions" are terms that supplement the terms of this License by making exceptions from one or more of its conditions. Additional permissions that are applicable to the entire Program shall be treated as though they were included in this License, to the extent that they are valid under applicable law. If additional permissions apply only to part of the Program, that part may be used

separately under those permissions, but the entire Program remains governed by this License without regard to the additional permissions.

When you convey a copy of a covered work, you may at your option remove any additional permissions from that copy, or from any part of it. (Additional permissions may be written to require their own removal in certain cases when you modify the work.) You may place additional permissions on material, added by you to a covered work, for which you have or can give appropriate copyright permission.

Notwithstanding any other provision of this License, for material you add to a covered work, you may (if authorized by the copyright holders of that material) supplement the terms of this License with terms:

- a. Disclaiming warranty or limiting liability differently from the terms of sections 15 and 16 of this License; or
- b. Requiring preservation of specified reasonable legal notices or author attributions in that material or in the Appropriate Legal Notices displayed by works containing it; or
- c. Prohibiting misrepresentation of the origin of that material, or requiring that modified versions of such material be marked in reasonable ways as different from the original version; or
- d. Limiting the use for publicity purposes of names of licensors or authors of the material; or
- e. Declining to grant rights under trademark law for use of some trade names, trademarks, or service marks; or
- f. Requiring indemnification of licensors and authors of that material by anyone who conveys the material (or modified versions of it) with contractual assumptions of liability to the recipient, for any liability that these contractual assumptions directly impose on those licensors and authors. All other non-permissive additional terms are considered “further restrictions” within the meaning of section 10. If the Program as you received it, or any part of it, contains a notice stating that it is governed by this License along with a term that is a further restriction, you may remove that term. If a license document contains a further restriction but permits relicensing or conveying under this License, you may add to a covered work material governed by the terms of that license document, provided that the further restriction does not survive such relicensing or conveying.

If you add terms to a covered work in accord with this section, you must place, in the relevant source files, a statement of the additional terms that apply to those files, or a notice indicating where to find the applicable terms.

Additional terms, permissive or non-permissive, may be stated in the form of a separately written license, or stated as exceptions; the above requirements apply either way.

## 9. Termination.

You may not propagate or modify a covered work except as expressly provided under this License. Any attempt otherwise to propagate or modify it is void, and will automatically terminate your rights under this License (including any patent licenses granted under the third paragraph of section 11).

However, if you cease all violation of this License, then your license from a particular copyright holder is reinstated (a) provisionally, unless and until the copyright holder explicitly and finally terminates your license, and (b) permanently, if the copyright holder fails to notify you of the violation by some reasonable means prior to 60 days after the cessation.

Moreover, your license from a particular copyright holder is reinstated permanently if the copyright holder notifies you of the violation by some reasonable means, this is the first time you have received notice of violation of this License (for any work) from that copyright holder, and you cure the violation prior to 30 days after your receipt of the notice.

Termination of your rights under this section does not terminate the licenses of parties who have received copies or rights from you under this License. If your rights have been terminated and not permanently reinstated, you do not qualify to receive new licenses for the same material under section 10.

**10. Acceptance Not Required for Having Copies.**

You are not required to accept this License in order to receive or run a copy of the Program. Ancillary propagation of a covered work occurring solely as a consequence of using peer-to-peer transmission to receive a copy likewise does not require acceptance. However, nothing other than this License grants you permission to propagate or modify any covered work. These actions infringe copyright if you do not accept this License. Therefore, by modifying or propagating a covered work, you indicate your acceptance of this License to do so.

**11. Automatic Licensing of Downstream Recipients.**

Each time you convey a covered work, the recipient automatically receives a license from the original licensors, to run, modify and propagate that work, subject to this License. You are not responsible for enforcing compliance by third parties with this License.

An "entity transaction" is a transaction transferring control of an organization, or substantially all assets of one, or subdividing an organization, or merging organizations. If propagation of a covered work results from an entity transaction, each party to that transaction who receives a copy of the work also receives whatever licenses to the work the party's predecessor in interest had or could give under the previous paragraph, plus a right to possession of the Corresponding Source of the work from the predecessor in interest, if the predecessor has it or can get it with reasonable efforts.

You may not impose any further restrictions on the exercise of the rights granted or affirmed under this License. For example, you may not impose a license fee, royalty, or other charge for exercise of rights granted under this License, and you may not initiate litigation (including a cross-claim or counterclaim in a lawsuit) alleging that any patent claim is infringed by making, using, selling, offering for sale, or importing the Program or any portion of it.

**12. Patents.**

A "contributor" is a copyright holder who authorizes use under this License of the Program or a work on which the Program is based. The work thus licensed is called the contributor's "contributor version". A contributor's "essential patent claims" are all patent claims owned or controlled by the contributor, whether already acquired or hereafter acquired, that would be infringed by some manner, permitted by this License, of making, using, or selling its contributor version, but do not include claims that would be infringed only as a consequence of further modification of the contributor version. For purposes of this definition, "control" includes the right to grant patent sublicenses in a manner consistent with the requirements of this License.

Each contributor grants you a non-exclusive, worldwide, royalty-free patent license under the contributor's essential patent claims, to make, use, sell, offer for sale, import and otherwise run, modify and propagate the contents of its contributor version.

In the following three paragraphs, a "patent license" is any express agreement or commitment, however denominated, not to enforce a patent (such as an express permission to practice a patent or covenant not to sue for patent infringement). To "grant" such a patent license to a party means to make such an agreement or commitment not to enforce a patent against the party.

If you convey a covered work, knowingly relying on a patent license, and the Corresponding Source of the work is not available for anyone to copy, free of charge and under the terms of this License, through a publicly available network server or other readily accessible means, then you must either (1) cause the Corresponding Source to be so available, or (2) arrange to deprive yourself of the benefit of the patent license for this particular work, or (3) arrange, in a manner consistent with the requirements of this License, to extend the patent license to downstream recipients. "Knowingly relying" means you have actual knowledge that, but for the patent license, your conveying the covered work in a country, or your recipient's use of the covered work in a country, would infringe one or more identifiable patents in that country that you have reason to believe are valid.

If, pursuant to or in connection with a single transaction or arrangement, you convey, or propagate by procuring conveyance of, a covered work, and grant a patent license to some of the parties receiving the covered work authorizing them to use, propagate, modify or convey a specific copy of the covered work, then the patent license you grant is automatically extended to all recipients of the covered work and works based on it.

A patent license is "discriminatory" if it does not include within the scope of its coverage, prohibits the exercise of, or is conditioned on the non-exercise of one or more of the rights that are specifically granted under this License. You may not convey a covered work if you are a party to an arrangement

with a third party that is in the business of distributing software, under which you make payment to the third party based on the extent of your activity of conveying the work, and under which the third party grants, to any of the parties who would receive the covered work from you, a discriminatory patent license (a) in connection with copies of the covered work conveyed by you (or copies made from those copies), or (b) primarily for and in connection with specific products or compilations that contain the covered work, unless you entered into that arrangement, or that patent license was granted, prior to 28 March 2007.

Nothing in this License shall be construed as excluding or limiting any implied license or other defenses to infringement that may otherwise be available to you under applicable patent law.

**13. No Surrender of Others' Freedom.**

If conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot convey a covered work so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not convey it at all. For example, if you agree to terms that obligate you to collect a royalty for further conveying from those to whom you convey the Program, the only way you could satisfy both those terms and this License would be to refrain entirely from conveying the Program.

**14. Use with the GNU Affero General Public License.**

Notwithstanding any other provision of this License, you have permission to link or combine any covered work with a work licensed under version 3 of the GNU Affero General Public License into a single combined work, and to convey the resulting work. The terms of this License will continue to apply to the part which is the covered work, but the special requirements of the GNU Affero General Public License, section 13, concerning interaction through a network will apply to the combination as such.

**15. Revised Versions of this License.**

The Free Software Foundation may publish revised and/or new versions of the GNU General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies that a certain numbered version of the GNU General Public License "or any later version" applies to it, you have the option of following the terms and conditions either of that numbered version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of the GNU General Public License, you may choose any version ever published by the Free Software Foundation.

If the Program specifies that a proxy can decide which future versions of the GNU General Public License can be used, that proxy's public statement of acceptance of a version permanently authorizes you to choose that version for the Program.

Later license versions may give you additional or different permissions. However, no additional obligations are imposed on any author or copyright holder as a result of your choosing to follow a later version.

**16. Disclaimer of Warranty.**

THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

**17. Limitation of Liability.**

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MODIFIES AND/OR CONVEYS THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE

PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

#### 18. Interpretation of Sections 16 and 17.

If the disclaimer of warranty and limitation of liability provided above cannot be given local legal effect according to their terms, reviewing courts shall apply local law that most closely approximates an absolute waiver of all civil liability in connection with the Program, unless a warranty or assumption of liability accompanies a copy of the Program in return for a fee.

END OF TERMS AND CONDITIONS

### CE 声明



本设备符合 CE 合规性 A 类标准。

### UKCA 声明



此设备符合在英国销售产品的 UKCA 要求。

### FCC 声明

#### FCC A 类声明



此设备符合 FCC 规则的第 15 部分的要求。运行需满足下面两个条件：

1. 本设备不会产生有害干扰。
2. 本设备必须承受受到的干扰，包括可能导致运行异常的干扰。



#### 注

经测试，本设备符合 FCC 规则第 15 部分中针对 A 类数字设备的限制标准。这些限制标准旨在提供合理的保护，以防止在商业环境中运行设备时产生有害干扰。本设备会产生、使用并可发出射频能量，如果不按说明手册安装和使用，可能会对无线电通信产生有害干扰。在住宅区运行本设备可能会造成有害干扰，用户需自付费用消除干扰。



#### 重要

若未经 QNAP Systems, Inc. 批准对本设备进行改动，可能会导致用户失去 FCC 授予的操作本设备的资格。

### VCCI 声明



この装置は、クラス A 情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

VCCI-A

### BSMI 声明



D33B77  
RoHS

警告：為避免電磁干擾，本產品不應安裝或用於住宅環境。

### 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
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

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)
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。						