



**QNAP**

# **TS-hx77XU-RP**

**TS-h977XU-RP**  
**TS-h1277XU-RP**

**用户指南**

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# 1. 前言





## 关于本指南

本指南提供有关 QNAP TS-hx77XU-RP NAS 的信息以及有关硬件安装的分步说明。此外，还提供了有关基本操作和故障排除信息的说明。

## 受众

本文档的目标读者为用户和存储管理员。本指南假定用户已对存储和备份概念有基本了解。

## 文档约定

符号	描述
	注释，提供默认配置设置和其他补充信息。
	重要注释，提供有关所需配置设置的信息以及其他关键信息。
	提示，提供有关执行任务或配置设置的建议或备选方法。
	警告，提供警告信息，如果忽略此信息，可能会导致潜在损失、伤害甚至死亡。

## 2. 产品概述

本章提供有关 QNAP TS-hx77XU-RP NAS 的基本信息。

### 关于 TS-hx77XU-RP

TS-hx77XU-RP NAS 配有 AMD Ryzen™ 处理器，是一款适用于存储、备份、共享和数据集中管理的强大解决方案。借助功能强大的新款 AMD Ryzen™ 处理器，TS-hx77XU-RP 可以在基于 NAS ZFS 文件的 QNAP 操作系统 QuTS hero 上运行。TS-hx77XU-RP 特别配备了多用 PCIe 扩展卡插槽，最高可扩展至 64 GB 内存，可适应您不断变化的业务需求。每个 TS-hx77XU-RP 还特有四个网络端口（两个 10GbE SFP+ 和两个 1GbE RJ45）用于增加带宽和吞吐量，以及预安装的双端口 10Gbase-T RJ45 网络扩展卡。TS-hx77XU-RP 可以利用其 AES-NI 加密引擎来提高加密文件传输的性能。

### 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>。

订购部件号	硬盘架	内存	电源
TS-h977XU-RP-3700X-32G	9	AMD Ryzen™ 7 3700X	冗余
TS-h1277XU-RP-3700X-32G	12	AMD Ryzen™ 7 3700X	冗余
TS-h1277XU-RP-3700X-128G	12	AMD Ryzen™ 7 3700X	冗余

组件	TS-h977XU-RP-3700X-32G	TS-h1277XU-RP-3700X-32G	TS-h1277XU-RP-3700X-128G
处理器			
CPU	AMD Ryzen™ 7 3700X		
频率	8 核/16 线程 3.4 GHz 基本/睿频 4.4 GHz		
架构	x86 64 位		
加密引擎	AES-NI		
内存			
预安装内存	32 GB RAM: 2 x 16 GB UDIMM DDR4		128 GB RAM: 4 x 32 GB UDIMM DDR4
内存插槽	4 x Long-DIMM DDR4		
	<div style="display: flex; align-items: center;"> <div style="text-align: center; margin-right: 10px;"> </div> <div> <p><b>重要</b></p> <ul style="list-style-type: none"> <li>• 请仅使用 QNAP 内存模块，以保证系统性能和稳定性。对于有多个内存插槽的 NAS 设备，请使用规格相同的 QNAP 模块。</li> <li>• 使用不受支持的模块可能导致性能下降、引发错误或使操作系统无法启动。</li> </ul> </div> </div>		
最大内存	64 GB RAM: 4 x 16 GB		128 GB RAM: 4 x 32 GB
闪存	5 GB（双重引导操作系统保护）		
存储			

组件	TS-h977XU-RP-3700X-32G	TS-h1277XU-RP-3700X-32G	TS-h1277XU-RP-3700X-128G
硬盘架	<ul style="list-style-type: none"> <li>4 x 3.5 英寸 SATA 6 Gbps</li> <li>5 x 2.5 英寸 SATA 6 Gbps</li> </ul>	12 x 3.5 英寸 SATA 6 Gbps	
	 <b>注</b> 硬盘架向后兼容 SATA 3 Gbps 硬盘。		
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 机械硬盘</li> <li>2.5 英寸 SATA 固态硬盘</li> </ul> 2.5 英寸硬盘架： <ul style="list-style-type: none"> <li>2.5 英寸 SATA 机械硬盘</li> <li>2.5 英寸 SATA 固态硬盘</li> </ul>  <b>重要</b> 2.5 英寸硬盘托盘仅支持最大高度为 9.5 mm 的硬盘。		
SSD 缓存加速支持	<ul style="list-style-type: none"> <li>3.5 英寸硬盘架：1 至 4</li> <li>2.5 英寸硬盘架：5 至 9</li> </ul>	3.5 英寸硬盘架：1 至 12	
	可选：M.2 SSD 扩展卡上的 M.2 SSD 插槽		
热插拔	支持		
网络			
10 Gb 以太网端口	<ul style="list-style-type: none"> <li>2 x 10GbE SFP+ SmartNIC</li> <li>2 x 10GbaseT RJ45</li> </ul>		
千兆位以太网端口	2 x GbE RJ45		
外部 I/O 端口和扩展插槽			
PCIe 插槽	1 x PCIe 3.0 x16	<ul style="list-style-type: none"> <li>2 x PCIe 3.0 x4</li> <li>2 x PCIe 3.0 x8</li> </ul>  <b>注</b> 某些 PCIe 插槽长度受相邻 PCIe 插槽中是否安装扩展卡的影响。有关详细信息，请参见 <a href="#">更换扩展卡</a> 。	
	 <b>提示</b> 有关兼容扩展卡的列表，请转到 <a href="https://www.qnap.com/compatibility">https://www.qnap.com/compatibility</a> 。		
USB 端口	<ul style="list-style-type: none"> <li>4 x USB 3.2 Gen 1 A 型</li> <li>1 x USB 3.2 Gen 2 (10Gbps) 5V/1A A 型</li> </ul>	<ul style="list-style-type: none"> <li>4 x USB 3.2 Gen 1 A 型</li> <li>1 x USB 3.2 Gen 2 (10Gbps) 5V/3A C 型</li> <li>1 x USB 3.2 Gen 2 (10Gbps) 5V/1A A 型</li> </ul>	
HDMI 端口	可选：PCIe 扩展卡		
界面			

组件	TS-h977XU-RP-3700X-32G	TS-h1277XU-RP-3700X-32G	TS-h1277XU-RP-3700X-128G
显示面板	单色背光 LCD 显示屏		
按钮	<ul style="list-style-type: none"> <li>• 电源</li> <li>• 重置</li> </ul>		
尺寸			
外形规格	1U 机架式	2U 机架式	
尺寸（高 x 宽 x 深）	43.3 x 482.6 x 505.54 mm （1.70 x 19.00 x 19.90 英寸）	88.3 x 482 x 562 mm （3.48 x 18.98 x 22.13 英寸）	
净重	8.62 kg（19.00 磅）	13.73 kg（30.27 磅）	
其他			
导轨兼容性	RAIL-B02   <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="http://shop.qnap.com">http://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。</li> </ul>		
电源单元	<ul style="list-style-type: none"> <li>• TS-h977XU-RP: 2 x 300W, 100-240V AC, 50/60 Hz</li> <li>• TS-h1277XU-RP: 2 x 300W, 100-240V AC, 50/60 Hz</li> </ul>		
系统电池	CR2032 锂电池（3V, 225 mAh）   <b>重要</b> 请按当地法规或电池制造商的指示处置使用过的电池。		
噪声声级	43.8 dB(A)	37.2 dB(A)	
	 <b>注</b> 噪声声级在距 NAS 一米以内的旁观者位置测得。测试 NAS 安装了最大数量的硬盘以低速运行。		
风扇	系统: 3 x 40 mm, 12V DC 风扇	系统: 2 x 70 mm, 12V DC 风扇	
工作温度	0°C 至 40°C（32 至 104°F）		
相对湿度	<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>		

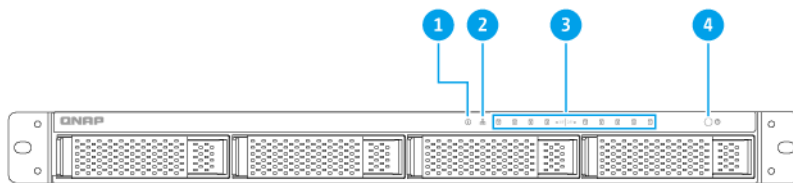
## 包装内容

项目	数量
TS-hx77XU-RP	1
电源线	2
以太网线	<ul style="list-style-type: none"> <li>• 2 x 1GbE（黑色 Cat5e）</li> <li>• 1 x 10GbE（蓝色 Cat6a）</li> </ul>
适用于 2.5 英寸硬盘的螺丝	<ul style="list-style-type: none"> <li>• TS-h977XU-RP: 36</li> <li>• TS-h1277XU-RP: 36</li> </ul>

项目	数量
适用于 3.5 英寸硬盘的螺丝	<ul style="list-style-type: none"> <li>• TS-h977XU-RP: 16</li> <li>• TS-h1277XU-RP: 48</li> </ul>
快速安装指南 (QIG)	1

## 组件

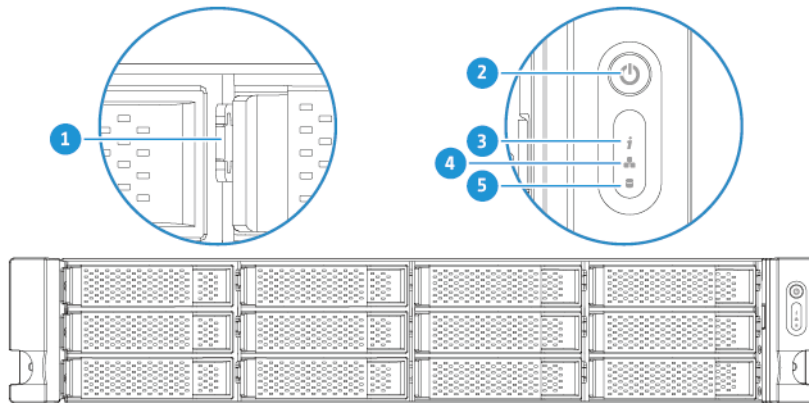
### 前面板



### TS-h977XU-RP

1	状态 LED	3	硬盘 LED
2	LAN LED	4	电源按钮

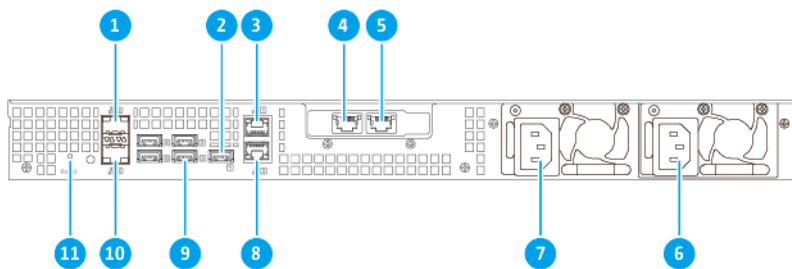




TS-h1277XU-RP

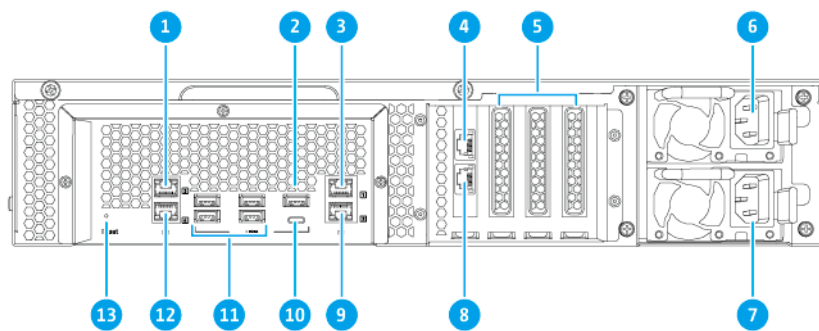
1	硬盘 LED	4	LAN LED
2	电源按钮	5	扩展单元 LED
3	状态 LED	-	-

后面板



TS-h977XU-RP

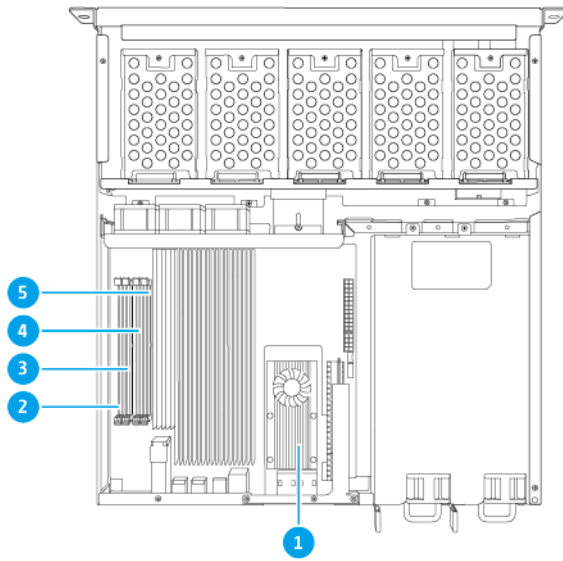
编号	组件	编号	组件
1	以太网端口 3 (10GbE SFP+)	7	电源单元 1
2	USB 3.2 Gen 2 A 型端口	8	以太网端口 2 (GbE RJ45)
3	以太网端口 1 (GbE RJ45)	9	USB 2.0 A 型端口
4	以太网端口 6 (10GBase-T RJ45)	10	以太网端口 4 (10GbE SFP+)
5	以太网端口 5 (10GBase-T RJ45)	11	重置按钮
6	电源单元 2	-	-



## TS-h1277XU-RP

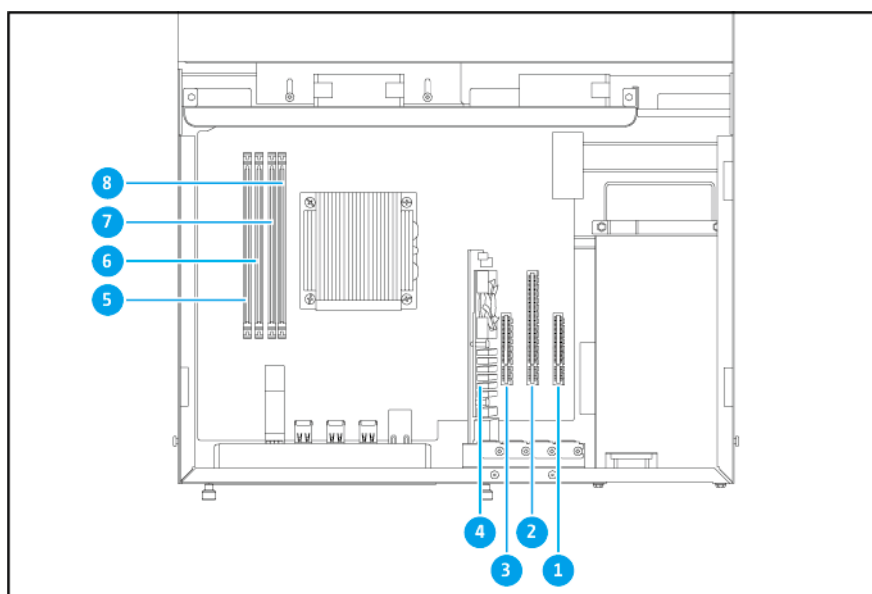
编号	组件	编号	组件
1	以太网端口 3 (10GbE SFP+)	8	以太网端口 5 (10GBase-T RJ45)
2	USB 3.2 Gen 2 A 型端口	9	以太网端口 2 (GbE RJ45)
3	以太网端口 1 (GbE RJ45)	10	USB 3.2 Gen 2 C 型端口
4	以太网端口 6 (10GBase-T RJ45)	11	USB 2.0 A 型端口
5	PCIe 全高盖板	12	以太网端口 4 (10GbE SFP+)
6	电源单元 1	13	重置按钮
7	电源单元 2	-	-

## 系统主板

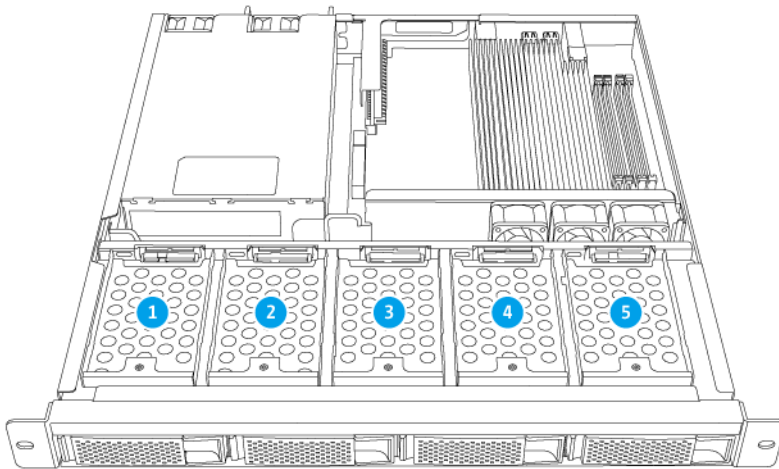


### TS-h977XU-RP

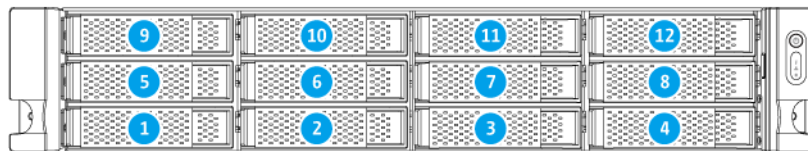
编号	组件	编号	组件
1	PCIe 3.0 x16 插槽 1	4	内存插槽 3
	 <b>注</b> 此 PCIe 插槽安装了双端口 10Base-T 扩展卡。		
2	内存插槽 1	5	内存插槽 4
3	内存插槽 2	-	-







**TS-h977XU-RP 2.5 寸托盘**



**TS-h1277XU-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>
硬件和外围设备	<ul style="list-style-type: none"> <li>• 存储硬盘 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>。</li> <li>• 网线</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>

## 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

- NAS 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 NAS，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。



设备可能有一条或多条冗余电源单元 (PSU) 线。为避免受到严重伤害，安装或更换系统组件前，必须由经培训的维修技师拔下所有 PSU 线。

### 系统电池

- 为避免潜在的电池爆炸、导致人员受伤或组件受损，请确保使用同型电池更换现有电池。
- 请按当地法规或电池制造商的指示正确处置使用过的电池。

## 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。

## 设置 NAS



### 重要

在设置 NAS 或安装 NAS 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 NAS 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. 可选: 更换内存模块。  
有关详细信息，请参见[更换内存模块](#)。
3. 可选: 更换扩展卡。  
有关详细信息，请参见[更换扩展卡](#)。
4. 将 NAS 安装在机架上。
5. 安装硬盘。  
有关详细信息，请参见以下主题：
  - 在 3.5 英寸托盘上安装 3.5 英寸硬盘
  - 在 3.5 英寸托盘上安装 2.5 英寸硬盘或固态硬盘
  - 在 TS-h977XU-RP 的 2.5 英寸托盘上安装 2.5 英寸固态硬盘
6. 连接电源线和所有适用的线缆。
7. 启动 NAS 电源。
8. 安装 QuTS hero。  
有关详细信息，请参见 [QuTS hero 安装](#)。
9. 登录 QuTS hero。

## 3. 安装和配置

本章提供了具体的硬件和固件安装与配置步骤。

### 硬件安装

本节提供有关安装硬盘、内存模块和扩展卡的信息。

### 硬盘安装

TS-hx77XU-RP 兼容 3.5 英寸硬盘、2.5 英寸硬盘以及 2.5 英寸固态硬盘。

#### 在 3.5 英寸托盘上安装 3.5 英寸硬盘



#### 警告

- 安装硬盘和安装 QuTS hero 将删除硬盘上的所有数据。

- 



**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。

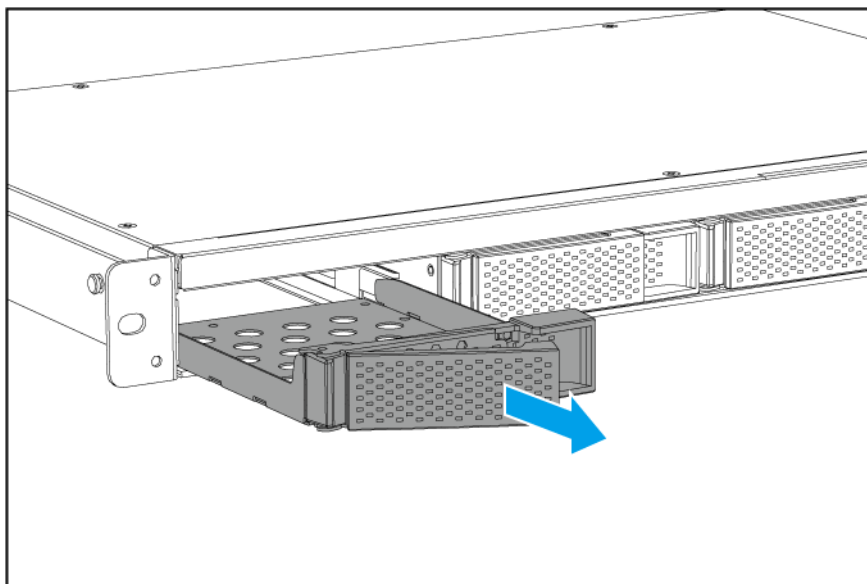
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**其他运动的组件：**使您的双手和身体其他部位远离正在运动的其他组件。

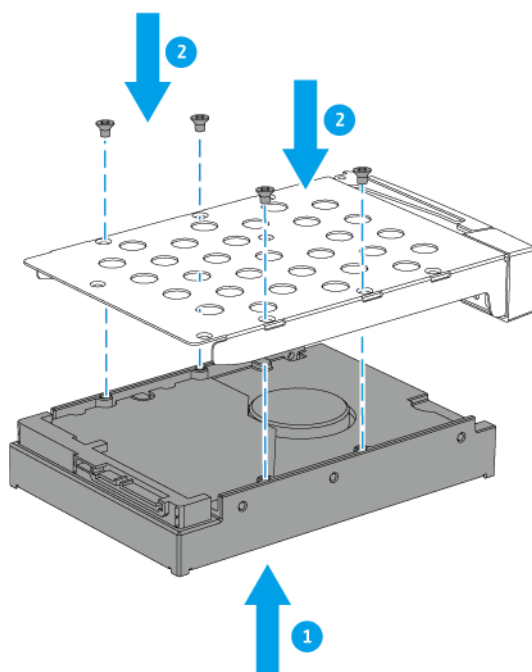
1. 关闭 NAS 电源。
2. 取下硬盘托盘。
  - a. 拉动手柄以松开托盘。
  - b. 拉出托盘。





**3. 将硬盘安装到托盘上。**

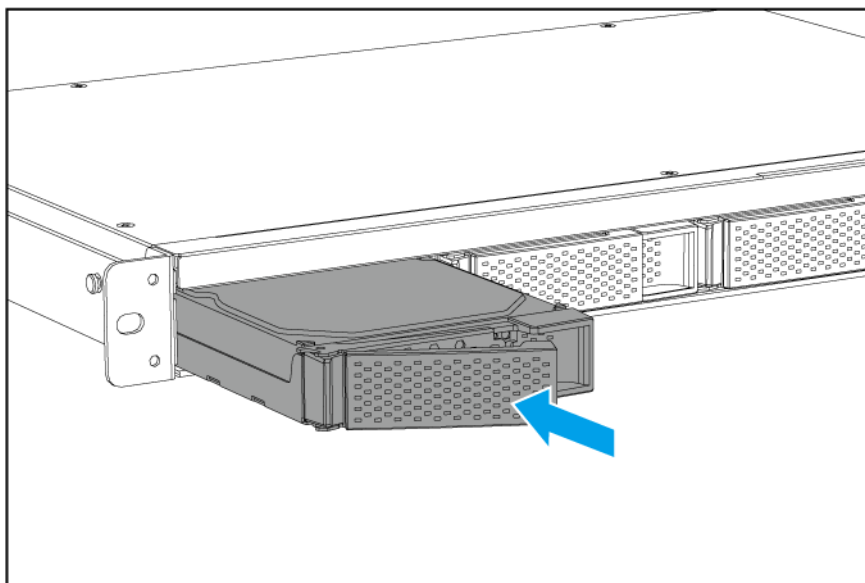
- a. 将硬盘放在托盘上，使硬盘底部的孔与托盘底部的孔对齐。
- b. 安装螺丝。



**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 NAS 电源。

### 在 3.5 英寸托盘上安装 2.5 英寸硬盘或固态硬盘



#### 警告

- 安装硬盘和安装 QuTS hero 将删除硬盘上的所有数据。

•



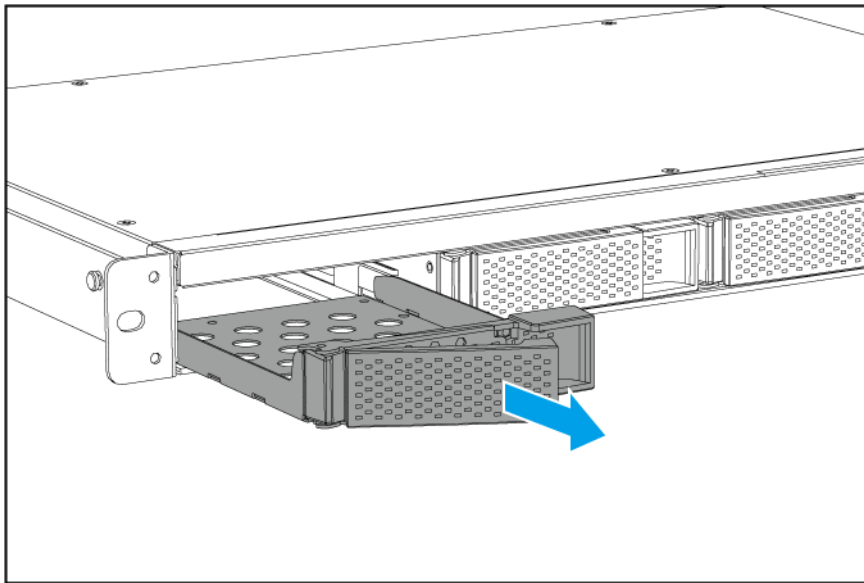
**转动的风扇叶片：**使您的双手和身体其他部位远离正在转动的风扇叶片。

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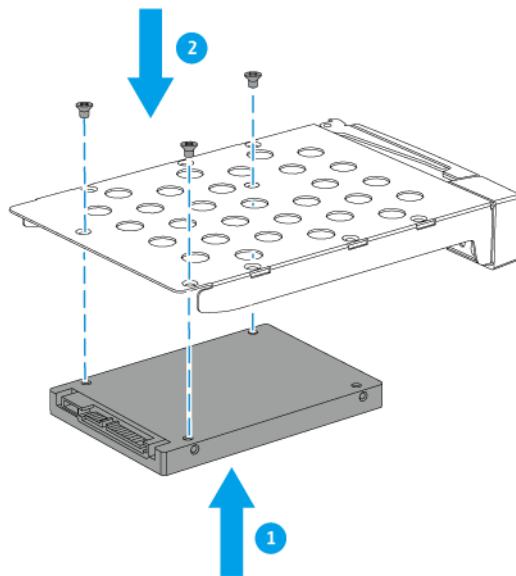


**其他运动的组件：**使您的双手和身体其他部位远离正在运动的其他组件。

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

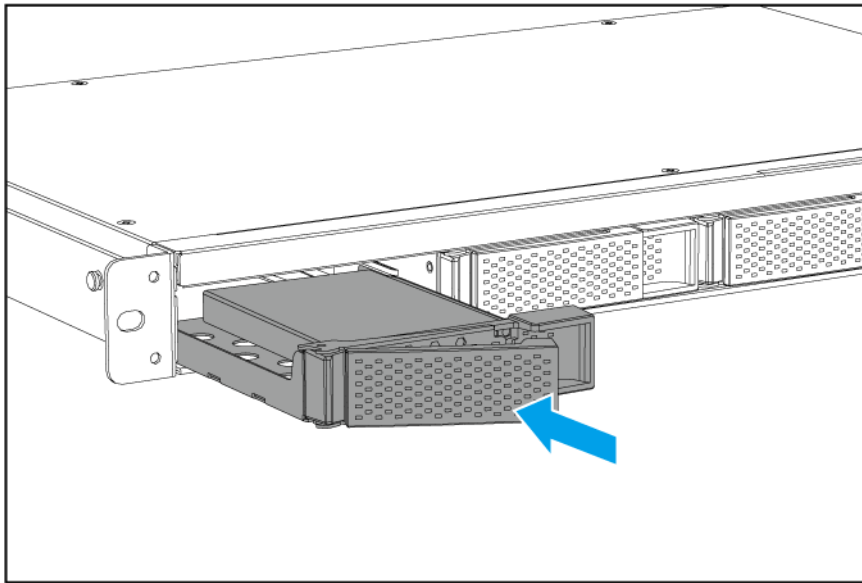


3. 将硬盘安装到托盘上。
  - a. 将硬盘放在托盘上，使硬盘底部的孔与托盘底部的孔对齐。
  - b. 安装螺丝。



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 NAS 电源。

### 在 TS-h977XU-RP 的 2.5 英寸托盘上安装 2.5 英寸固态硬盘



#### 警告

- 安装硬盘和安装 QuTS hero 将删除硬盘上的所有数据。

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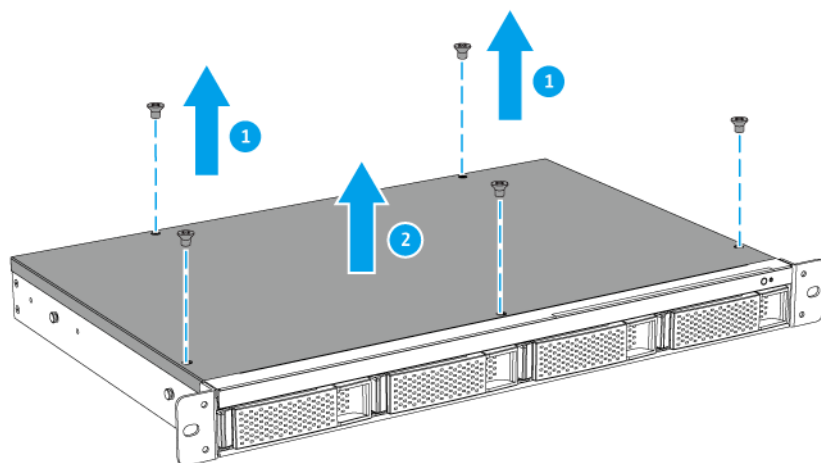
**转动的风扇叶片：**使您的双手和身体其他部位远离正在转动的风扇叶片。

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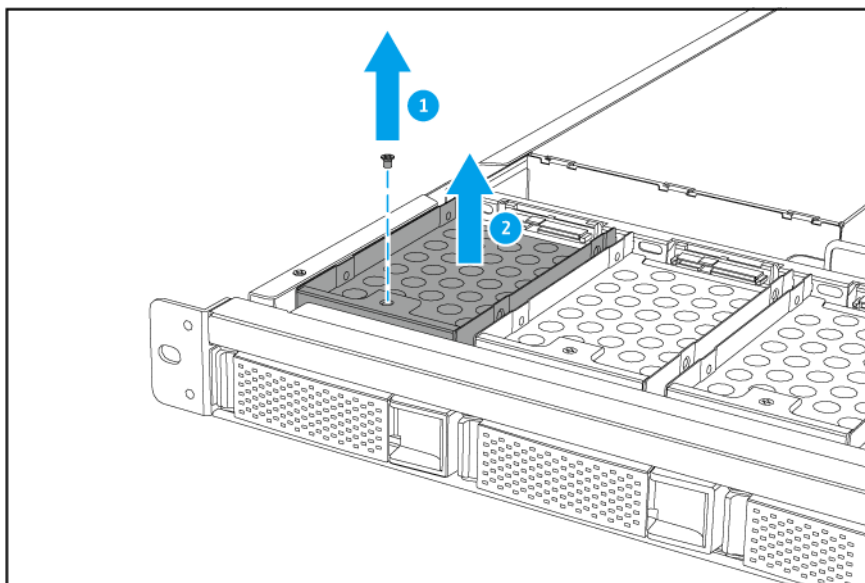
**其他运动的组件：**使您的双手和身体其他部位远离正在运动的其他组件。

1. 关闭 NAS 电源。
2. 取下外壳盖。
  - a. 取下螺丝。
  - b. 提起盖板。



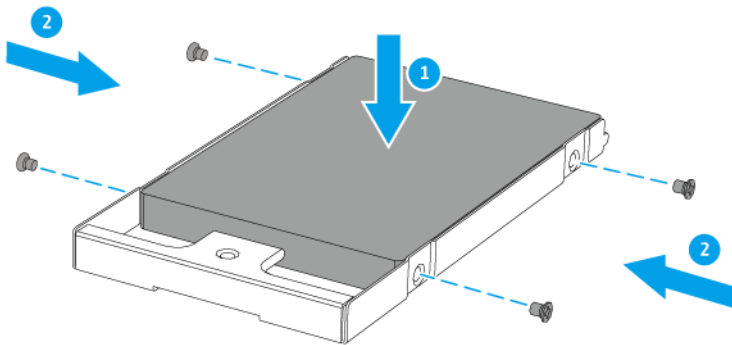
**3. 取下硬盘托盘。**

- a. 取下螺丝。
- b. 拉出托盘。



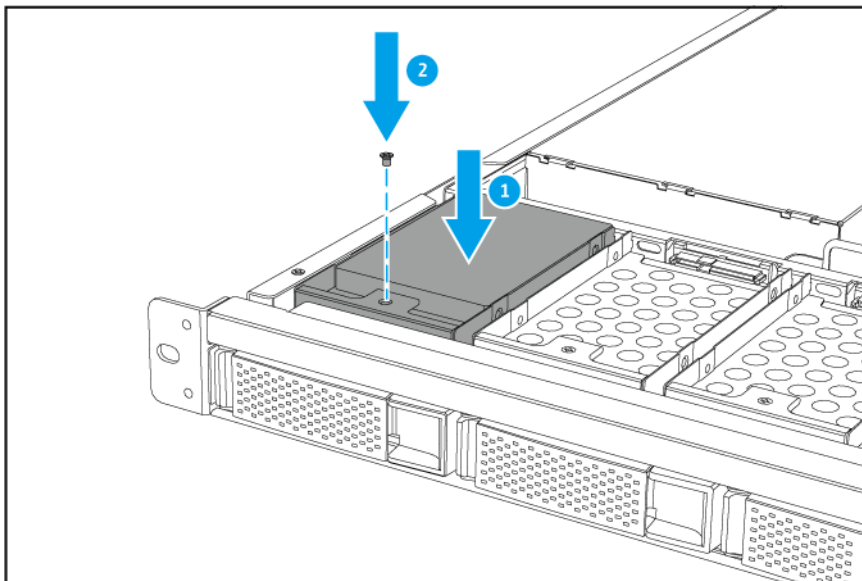
**4. 将硬盘安装到托盘上。**

- 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。



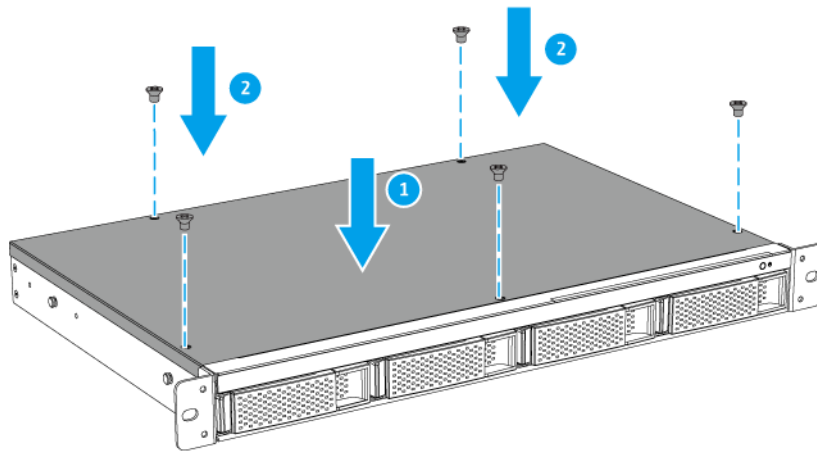
**5. 将托盘装入硬盘架。**

- a. 将托盘插入硬盘架。
- b. 安装螺丝。



**6. 安装外壳盖。**

- a. 将盖板放在 NAS 上。
- b. 安装螺丝。



7. 启动 NAS 电源。

## 更换内存模块

TS-hx77XU-RP 有四个内存插槽。您可以通过升级内存模块来增加 NAS 的内存容量。

只能使用类型 and 容量均相同的 QNAP 模块，以保持系统性能和稳定性。可以从授权经销商处购买 QNAP 内存模块。

### 在 TS-h977XU-RP 上更换内存模块



#### 重要

QNAP 建议成对安装模块。

- 确保每对模块都完全相同。
- 按顺序在指定的插槽中安装每对模块。
- 以两个或四个为一组安装内存模块。安装两个内存模块时，请将内存安装在插槽 1 和 3 中。安装四个模块时，请将内存安装在插槽 1、3、2 和 4 中。

有关插槽编号的详细信息，请参见[系统主板](#)。



#### 警告

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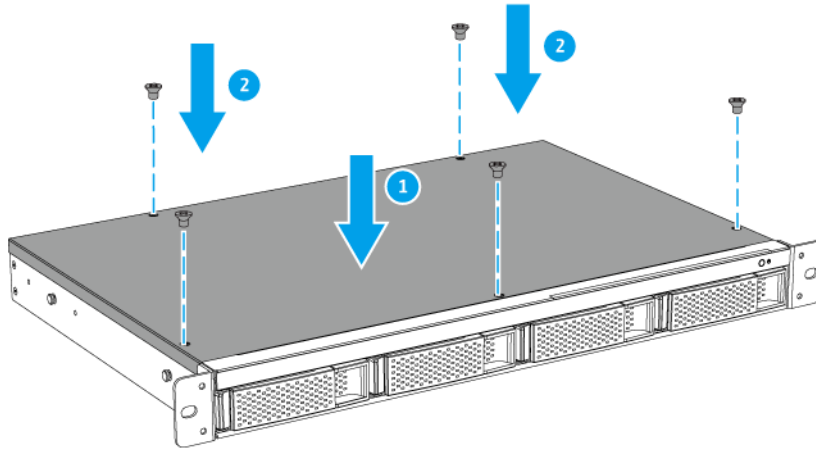
**转动的风扇叶片：**使您的双手和身体其他部位远离正在转动的风扇叶片。

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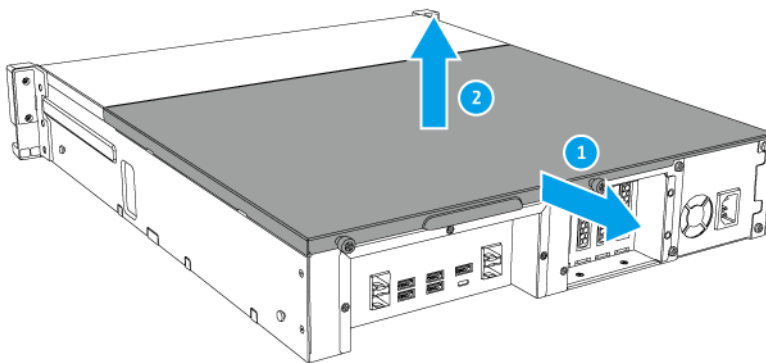


**其他运动的组件：**使您的双手和身体其他部位远离正在运动的其他组件。

1. 关闭 NAS 电源。
2. 从插座上拔下电源线。
3. 拔掉所有线缆和外接部件。
4. 取下外壳盖。
  - a. 取下螺丝。



- b. 将盖板向后滑动。
- c. 从 NAS 上提起盖板。



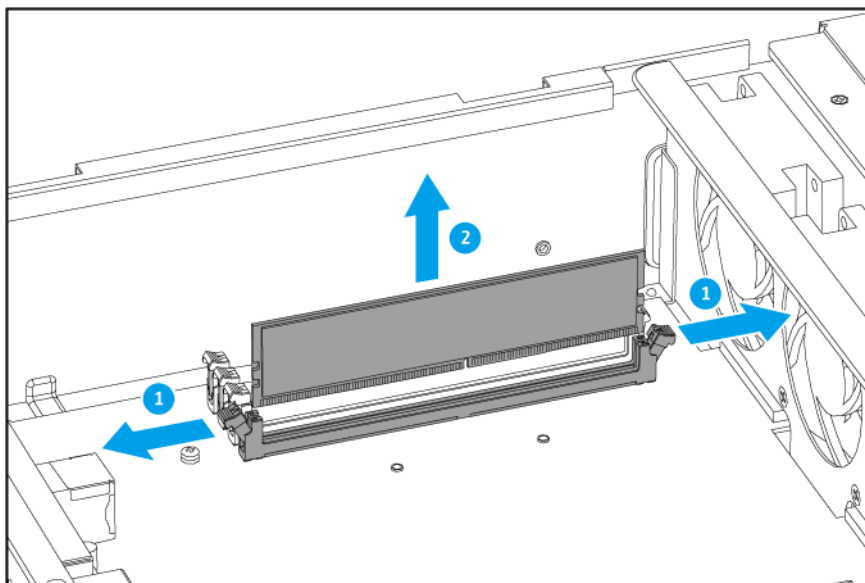
5. 取下现有模块。
  - a. 同时向外推动固定夹以释放模块。



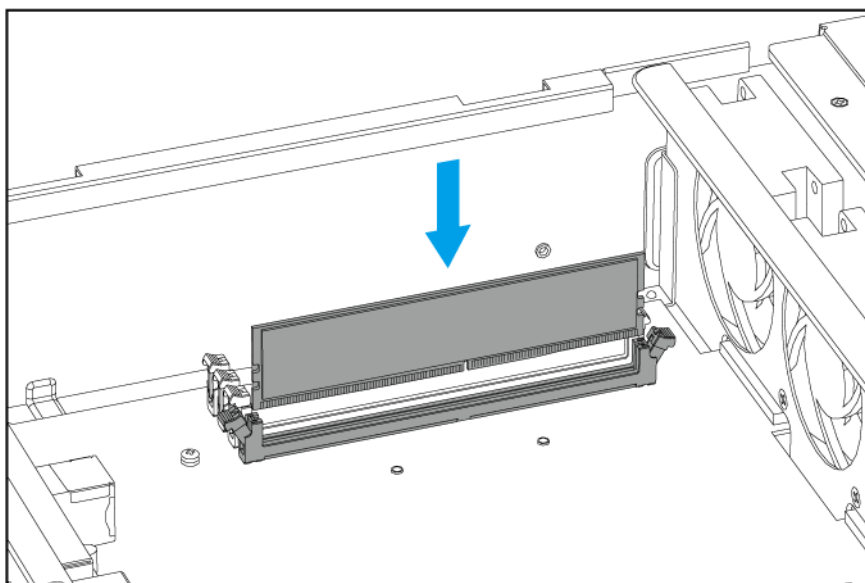
**警告**

如果尝试在模块尚未完全脱离时将其取出，可能会损坏模块和主板。

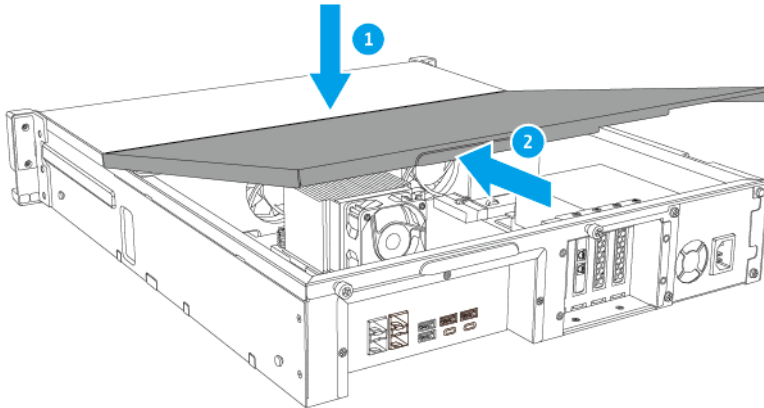
- b. 握住模块边缘。

**6. 安装新模块。**

- a. 将凹口与插槽内的凸起对齐。
- b. 将模块插入插槽中。
- c. 确认金属接头已完全插入插槽中。
- d. 小心地向下按压模块，直到固定夹将模块锁定到位。

**7. 安装外壳盖。**

- a. 将盖板放在 NAS 上。
- b. 将盖板向前滑动。



8. 连接所有线缆和外接部件。
9. 启动 NAS 电源。
10. 确认 NAS 能够识别该模块。
  - a. 以管理员身份登录 QuTS hero。
  - b. 转到**控制台** > **系统** > **系统状态** > **硬件信息**。
  - c. 检查内存总容量值。

### 在 TS-h1277XU-RP 上更换内存模块



#### 重要

QNAP 建议成对安装模块。

- 确保每对模块都完全相同。
- 按顺序在指定的插槽中安装每对模块。
- 以两个或四个为一组安装内存模块。安装两个内存模块时，请将内存安装在插槽 1 和 3 中。安装四个模块时，请将内存安装在插槽 1、3、2 和 4 中。

有关插槽编号的详细信息，请参见[系统主板](#)。



#### 警告

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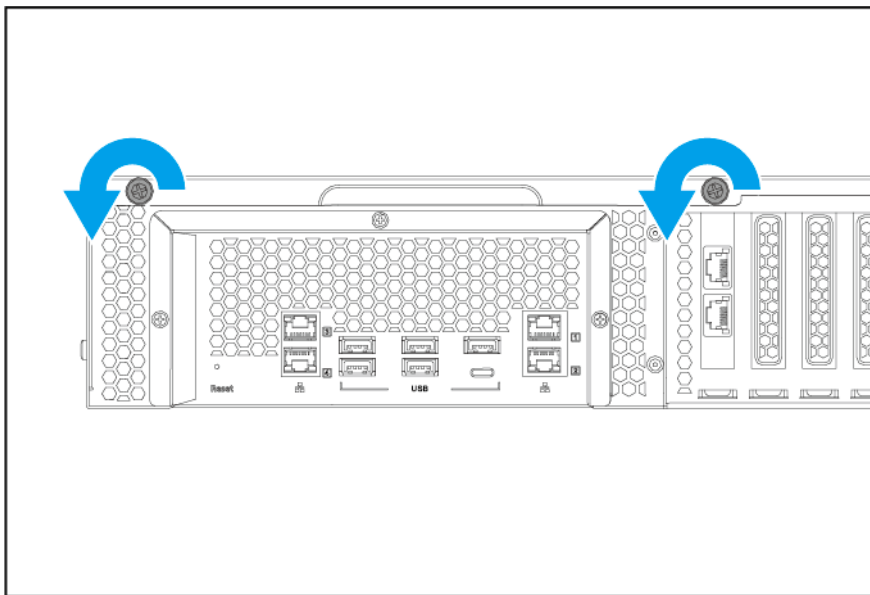


**转动的风扇叶片：**使您的双手和身体其他部位远离正在转动的风扇叶片。

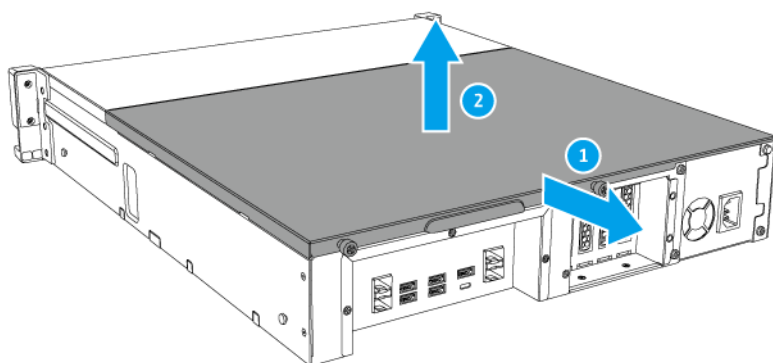


**其他运动的组件：**使您的双手和身体其他部位远离正在运动的其他组件。

1. 关闭 NAS 电源。
2. 从插座上拔下电源线。
3. 拔掉所有线缆和外接部件。
4. 取下外壳盖。
  - a. 松开螺丝。



- b. 将盖板向后滑动。
  - c. 从 NAS 上提起盖板。



### 5. 取下现有模块。

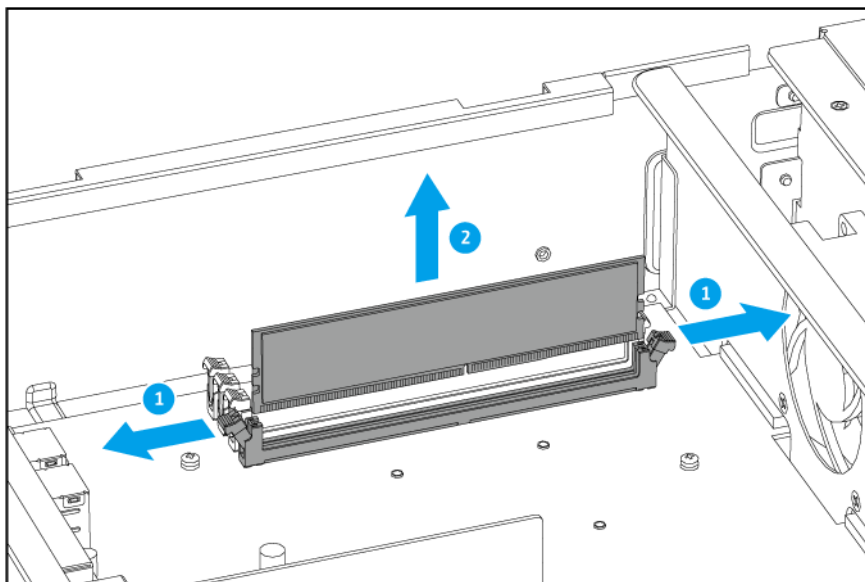
- a. 同时向外推动固定夹以释放模块。



#### 警告

如果尝试在模块尚未完全脱离时将其取出，可能会损坏模块和主板。

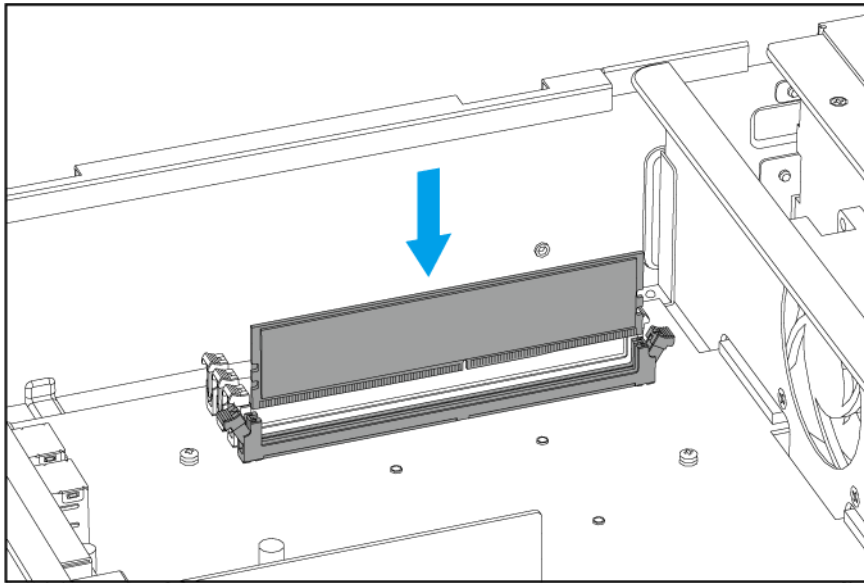
- b. 握住模块边缘。



### 6. 安装新模块。

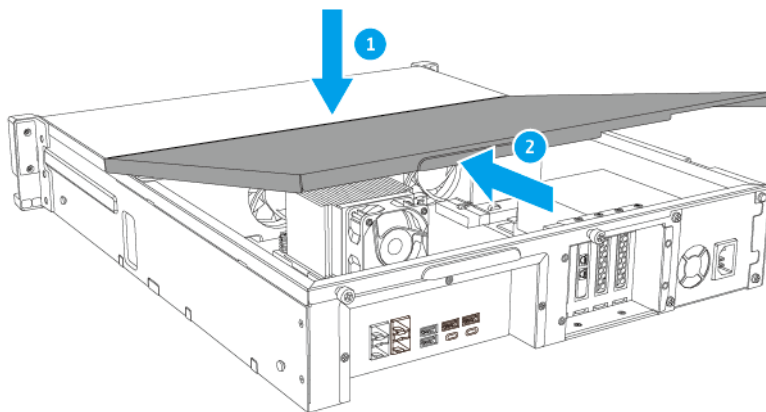
- a. 将凹口与插槽内的凸起对齐。
- b. 将模块插入插槽中。
- c. 确认金属接头已完全插入插槽中。

- d. 小心地向下按压模块，直到固定夹将模块锁定到位。

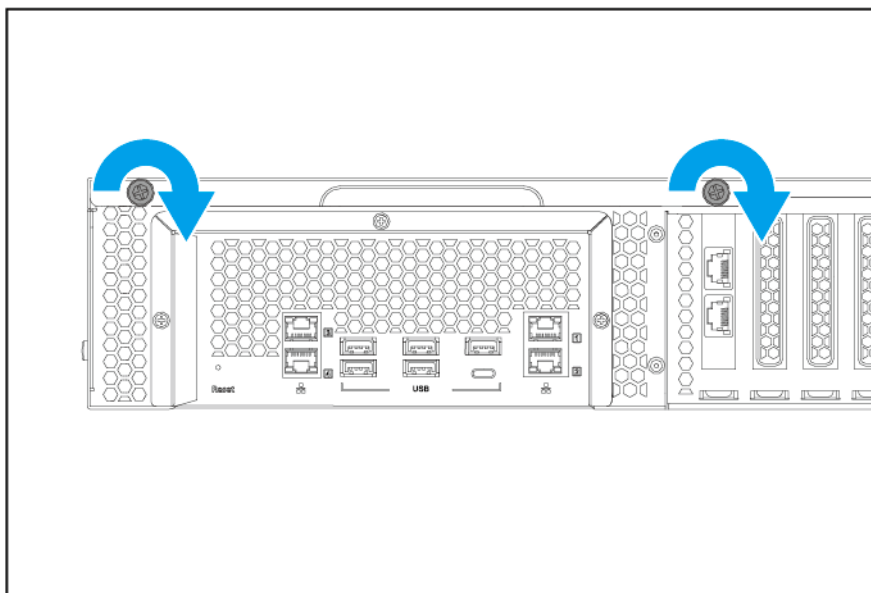


7. 安装外壳盖。

- a. 将盖板放在 NAS 上。
- b. 将盖板向前滑动。



- c. 拧紧螺丝。



8. 连接所有线缆和外接部件。
9. 启动 NAS 电源。
10. 确认 NAS 能够识别该模块。
  - a. 以管理员身份登录 QuTS hero。
  - b. 转到控制台 > 系统 > 系统状态 > 硬件信息。
  - c. 检查内存总容量值。

## 更换扩展卡

TS-hx77XU-RP 支持精选的扩展卡，其中一些需要 QNAP PCIe 支架。从公司网站购买的 QNAP 品牌扩展卡随附有适合所有 QNAP NAS 型号的支架。

### 在 TS-h977XU-RP 上更换扩展卡



**注**  
PCIe 3.0 x4 插槽预装了双端口 10GBase-T 网络扩展卡。



**警告**

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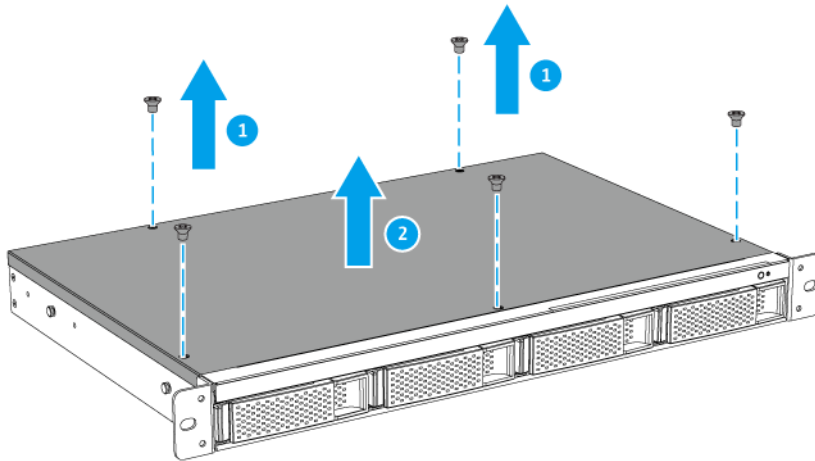
**转动的风扇叶片：**使您的双手和身体其他部位远离正在转动的风扇叶片。

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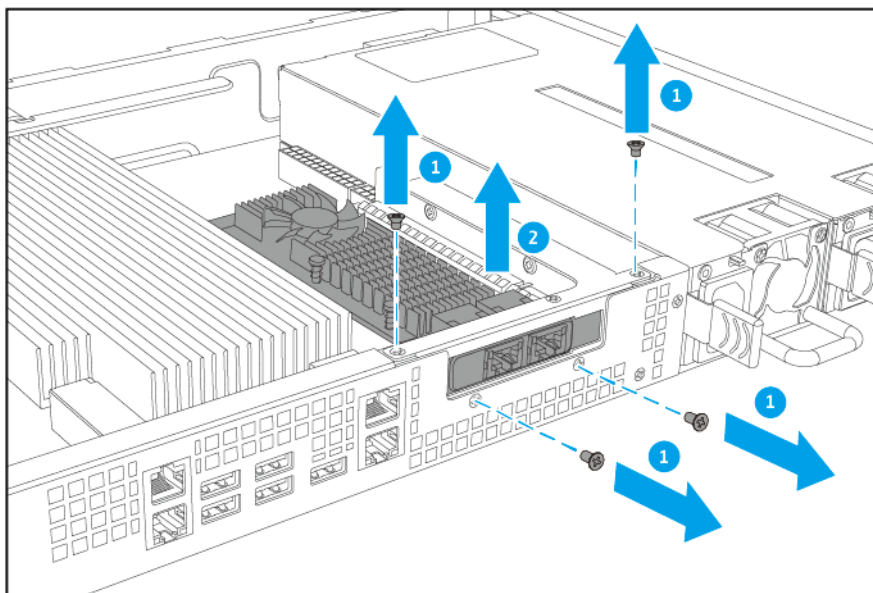
**其他运动的组件：**使您的双手和身体其他部位远离正在运动的其他组件。

1. 关闭 NAS 电源。
2. 从插座上拔下电源线。
3. 拔掉所有线缆和外接部件。
4. 取下外壳盖。
  - a. 取下螺丝。
  - b. 提起盖板。

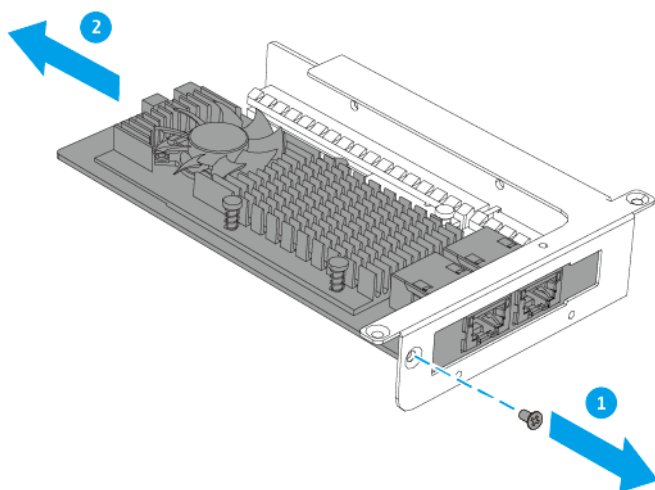
**警告**

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。

5. 取下 PCIe 模块。
  - a. 取下模块的螺丝。
  - b. 将模块从机箱上取下。

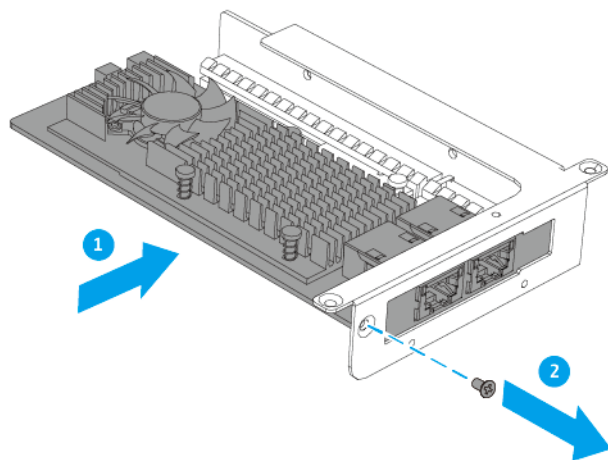


6. 取下现有扩展卡。
- a. 取下将 PCIe 支架固定到机箱的螺丝。
  - b. 握住扩展卡边缘。
  - c. 小心将扩展卡拔出插槽。



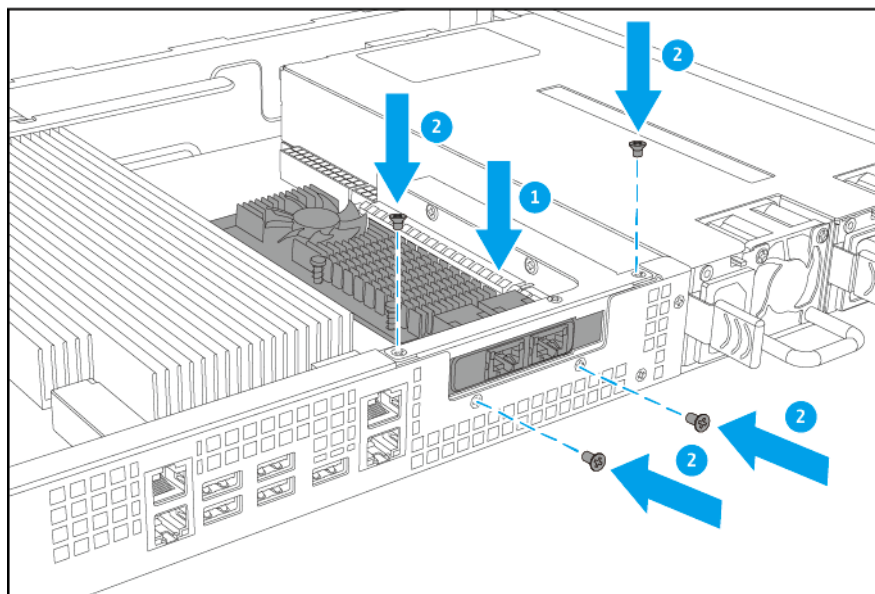
7. 安装新的扩展卡。
- a. 握住卡片边缘。
  - b. 将其插入插槽中。
  - c. 安装螺丝。





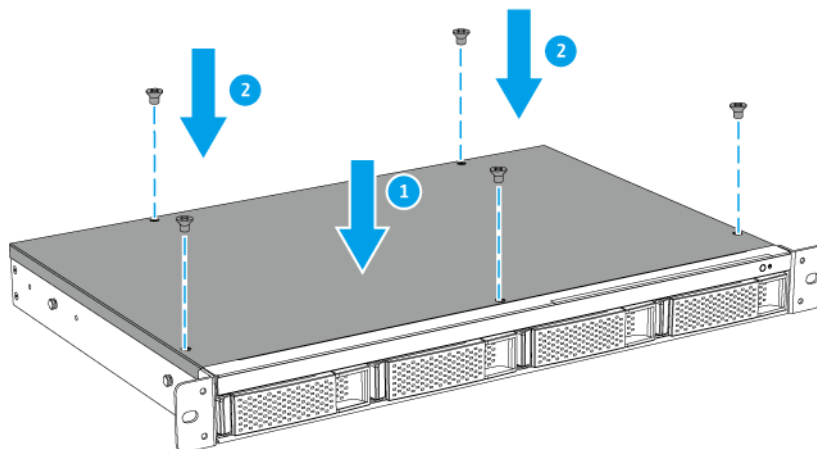
## 8. 安装 PCIe 模块。

- a. 将 PCIe 模块与系统主板对齐。
- b. 将 PCIe 模块连接器插入到系统主板插槽。
- c. 安装螺丝。



## 9. 安装外壳盖。

- a. 将盖板放在 NAS 上。
- b. 安装螺丝。



10. 连接所有线缆和外接部件。
11. 将电源线连接到插座。
12. 启动 NAS 电源。

### 在 TS-h1277XU-RP 上更换扩展卡



#### 注

- PCIe 3.0 x8 插槽 4 预装了双端口 10Gbase-T 网络扩展卡。
- 如果有扩展卡安装在插槽 1 中，插槽 2 的速度会从 x8 下降到 x4。
- 如果有扩展卡安装在插槽 3 中，插槽 4 的速度会从 x8 下降到 x4。



#### 警告

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**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。

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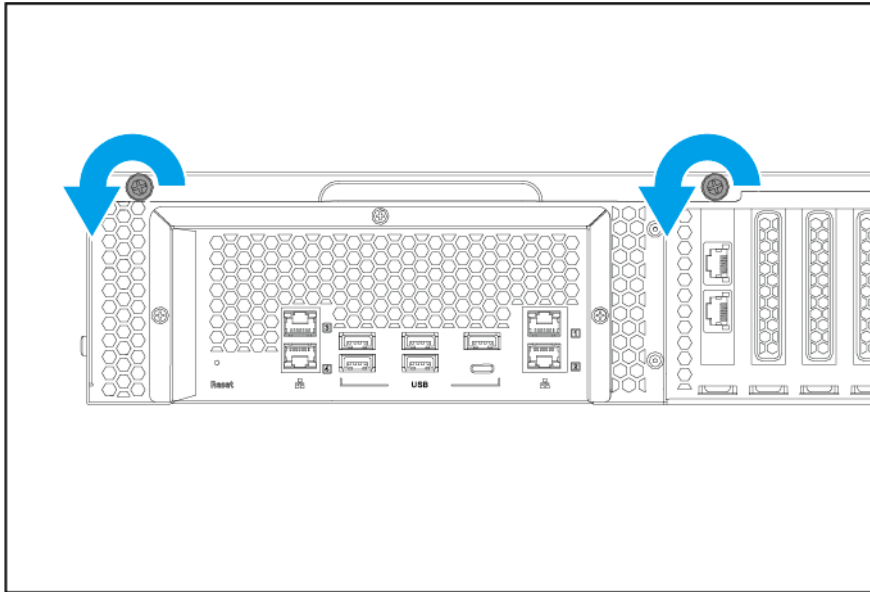


**其他运动的组件：**使您的双手和身体其他部位远离正在运动的其他组件。

1. 关闭 NAS 电源。
2. 从插座上拔下电源线。
3. 拔掉所有线缆和外接部件。

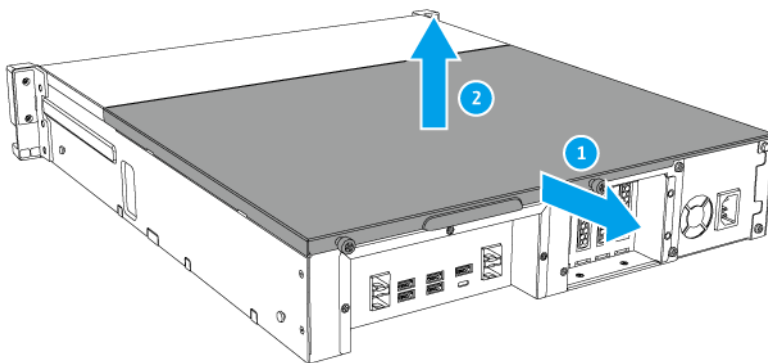
#### 4. 取下外壳盖。

##### a. 松开螺丝。



##### b. 将盖板向后滑动。

##### c. 从 NAS 上提起盖板。

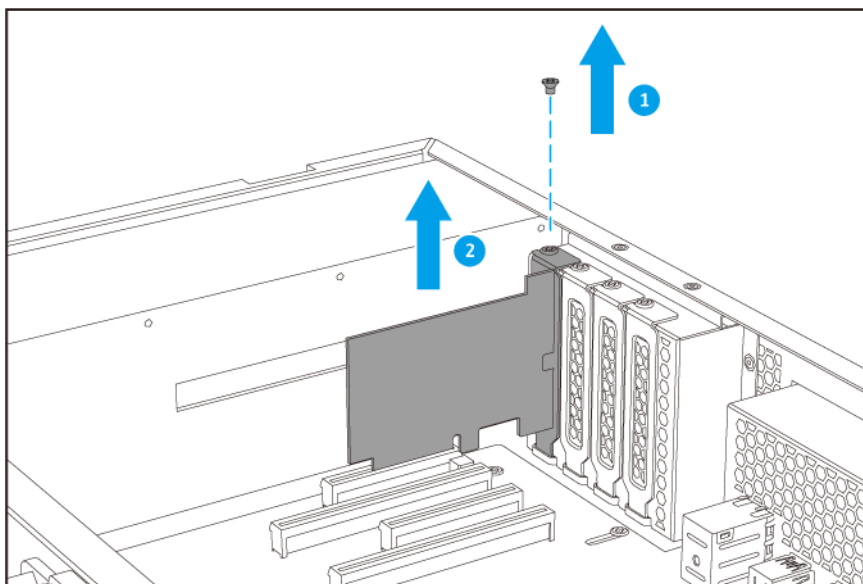


#### 5. 取下现有扩展卡。

##### a. 取下将 PCIe 支架固定到机箱的螺丝。

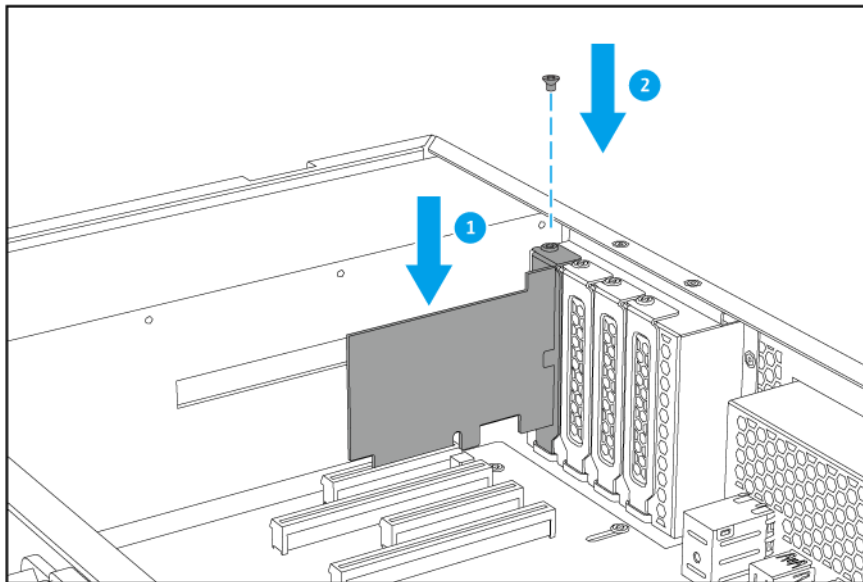
##### b. 握住卡片边缘。

##### c. 小心将扩展卡拔出插槽。



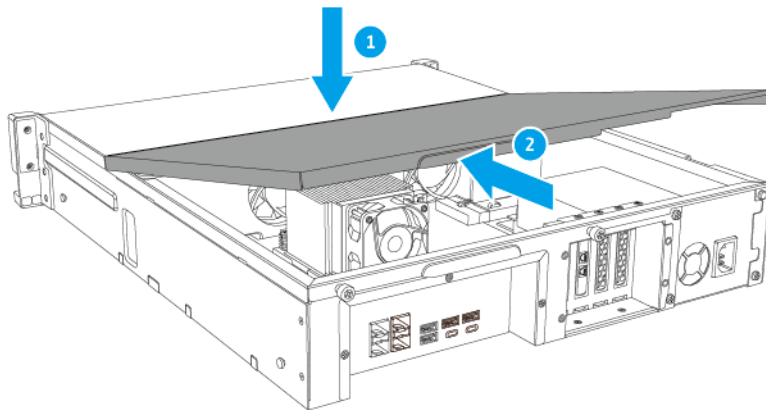
**6. 安装新的扩展卡。**

- a. 握住卡片边缘。
- b. 将其插入插槽中。
- c. 安装螺丝。

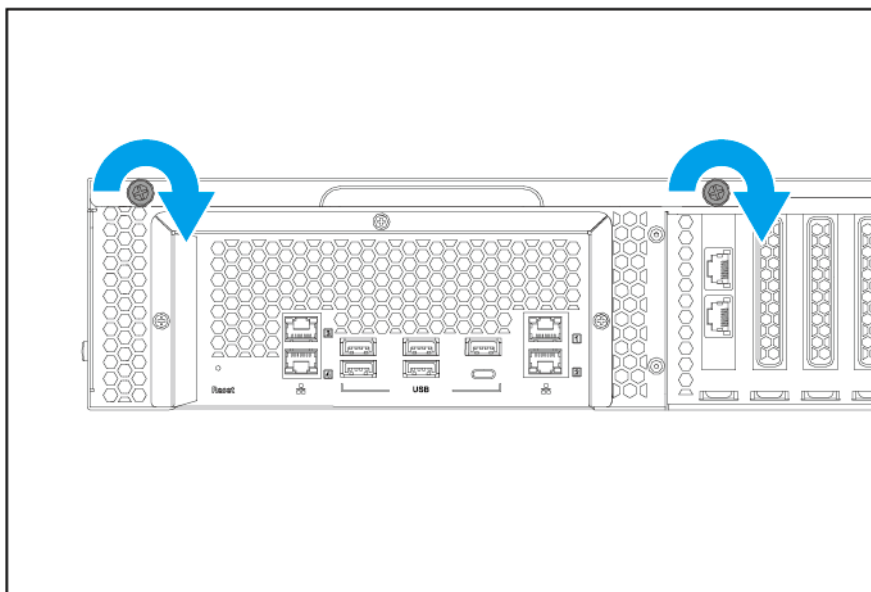


**7. 安装外壳盖。**

- a. 将盖板放在 NAS 上。
- b. 将盖板向前滑动。



c. 拧紧螺丝。



8. 连接所有线缆和外接部件。
9. 将电源线连接到插座。
10. 启动 NAS 电源。

### 热插拔冗余电源单元

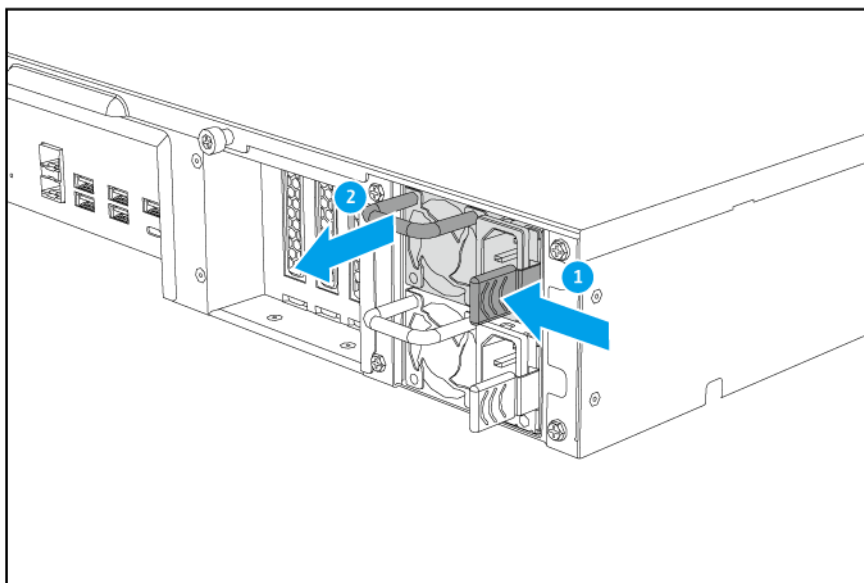
配有冗余电源单元 (PSU) 的 NAS 设备支持热插拔。



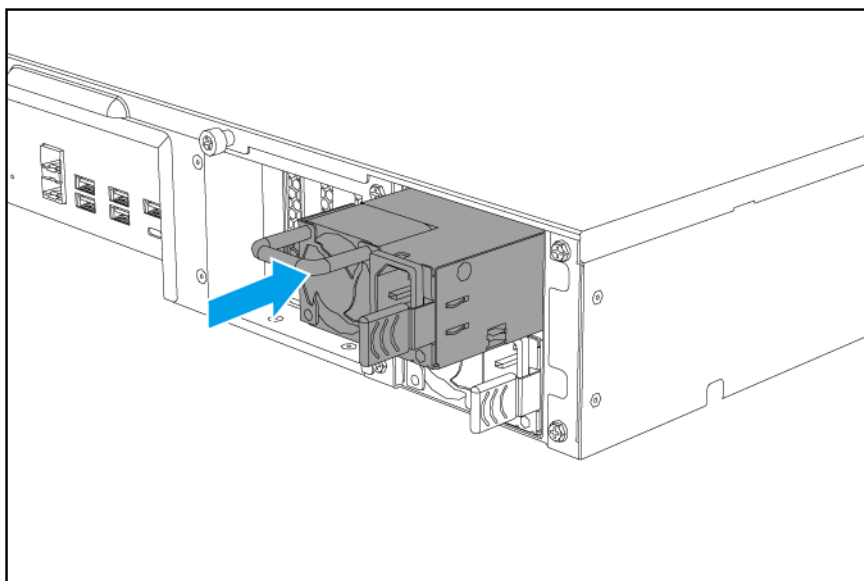


NAS 可能有一条或多条冗余电源单元 (PSU) 线。为避免受到严重伤害，安装或更换系统组件前，必须由经培训的维修技师拔下所有 PSU 线。

1. 关闭 NAS 电源。
2. 从插座和要更换的 PSU 上拔下电源线。
3. 向手柄方向紧按门锁并拉出 PSU。



4. 插入新 PSU。



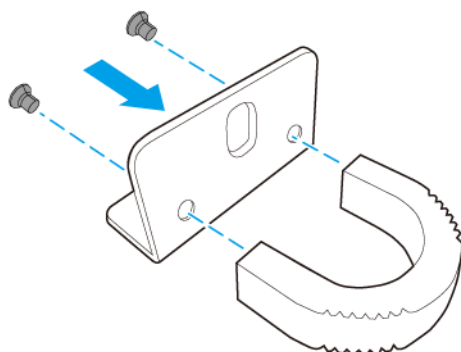
5. 将电源线连接到 PSU 和插座。

6. 启动 NAS 电源。
7. 启用 PSU 故障警报。
  - a. 以管理员身份登录 QuTS hero。
  - b. 转到**控制台 > 系统 > 硬件 > 一般设置**。
  - c. 选择**启用冗余电源模式**。
  - d. 单击**全部应用**。

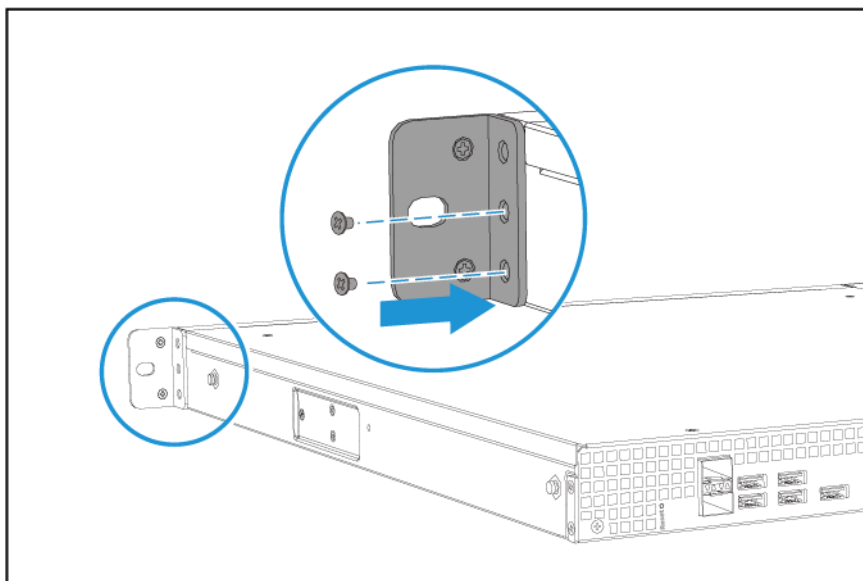
## 在 TS-h977XU-RP 上安装手柄

安装手柄可以便于拿取和将 NAS 更牢固地固定在机架上。TS-h977XU-RP 的手柄需要人工安装。

1. 关闭 NAS 电源。
2. 将手柄安装到角码上。
  - a. 将手柄上的开孔对准角码上的螺丝孔。
  - b. 装上螺丝，将手柄固定在角码上。



3. 将角码安装到 NAS 上。
  - a. 将角码上的孔对准机箱左侧的孔。
  - b. 确保手柄与前面板朝向一致。
  - c. 装上螺丝，将角码固定到机箱上。



4. 将第二个手柄安装到机箱的另一侧。
5. 启动 NAS 电源。

## 导轨套件

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 <http://shop.qnap.com>。

TS-hx77XU-RP 兼容以下导轨型号：

型号	兼容的导轨套件
<ul style="list-style-type: none"> <li>• TS-h977XU-RP</li> <li>• TS-h1277XU-RP</li> </ul>	RAIL-B02

安装信息位于导轨套件包中。

## 安装扩展单元

TS-hx77XU-RP 支持 SAS 扩展单元、USB 扩展单元和 SATA JBOD 扩展单元。有关详细信息，请参见下表。

您可以从 QNAP 或授权经销商处购买存储扩展配件。

有关详细信息，请转到 <https://shop.qnap.com/>。

有关兼容扩展单元的列表和最大可应用扩展单元数，请转到 <http://www.qnap.com/go/compatibility-expansion>。

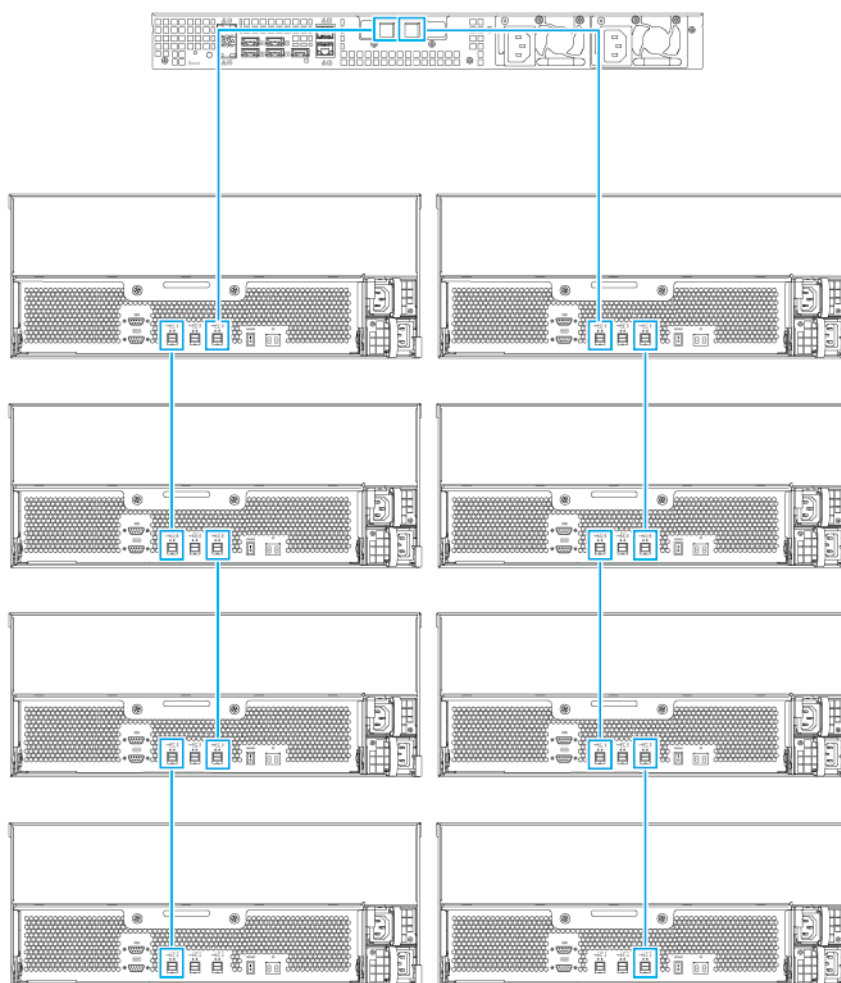


扩展单元型号	描述	所需配件
REXP-1620U-RP	<ul style="list-style-type: none"> <li>使用 SAS 12 Gbps (SFF-8644) 接口</li> <li>支持 SAS/SATA HDD/SSD</li> </ul>	<ul style="list-style-type: none"> <li>SAS-12G2E 存储扩展卡</li> <li>mini-SAS SFF-8644 线缆</li> <li>RAIL-A03-57</li> </ul>
REXP-1220U-RP	<ul style="list-style-type: none"> <li>使用 SAS 12 Gbps (SFF-8644) 接口</li> <li>支持 SAS/SATA HDD/SSD</li> </ul>	
REXP-1610U-RP	<ul style="list-style-type: none"> <li>使用 SAS 6 Gbps (SFF-8644) 接口</li> <li>支持 SATA/HDD/SSD</li> </ul>	
REXP-1210U-RP	<ul style="list-style-type: none"> <li>使用 SAS 6 Gbps (SFF-8644) 接口</li> <li>支持 SATA/HDD/SSD</li> </ul>	
TL-D400S	<ul style="list-style-type: none"> <li>使用 SAS 6 Gbps (SFF-8088) 接口</li> <li>支持 SATA/HDD/SSD</li> </ul>	<ul style="list-style-type: none"> <li>1 x SFF-8088 连接器线缆</li> <li>QXP-400eS-A1164 主机总线适配器</li> </ul>
TL-D800S		<ul style="list-style-type: none"> <li>2 x SFF-8088 连接器线缆</li> <li>QXP-800eS-A1164 主机总线适配器</li> </ul>
TL-D1600S		<ul style="list-style-type: none"> <li>4 x SFF-8088 至 SFF-8644 连接器线缆</li> <li>QXP-1600eS 主机总线适配器</li> </ul>
TL-R400S		<ul style="list-style-type: none"> <li>1 x SFF-8088 连接器线缆</li> <li>QXP-400eS-A1164 主机总线适配器</li> <li>RAIL-B02</li> </ul>
TL-R1200S-RP		<ul style="list-style-type: none"> <li>3 x SFF-8088 至 SFF-8644 连接器线缆</li> <li>QXP-1600eS 主机总线适配器</li> <li>RAIL-B02</li> </ul>
TR-002	<ul style="list-style-type: none"> <li>使用 USB 3.2 Gen 2 C 型接口</li> <li>支持 SATA</li> </ul>	USB 3.2 Gen 2 A 型至 C 型线缆
TR-004	<ul style="list-style-type: none"> <li>使用 USB 3.2 Gen 1 C 型接口</li> <li>支持 SATA</li> </ul>	USB 3.2 Gen 1 A 型至 C 型线缆
TR-004U		<ul style="list-style-type: none"> <li>USB 3.2 Gen 1 A 型至 C 型线缆</li> <li>RAIL-B02</li> </ul>
TL-D800C	<ul style="list-style-type: none"> <li>使用 USB 3.2 Gen 2 C 型接口</li> <li>支持 SATA</li> </ul>	USB 3.2 Gen 2 A 型至 C 型线缆
TL-R1200C-RP		<ul style="list-style-type: none"> <li>USB 3.2 Gen 2 A 型至 C 型线缆</li> <li>RAIL-B02</li> </ul>

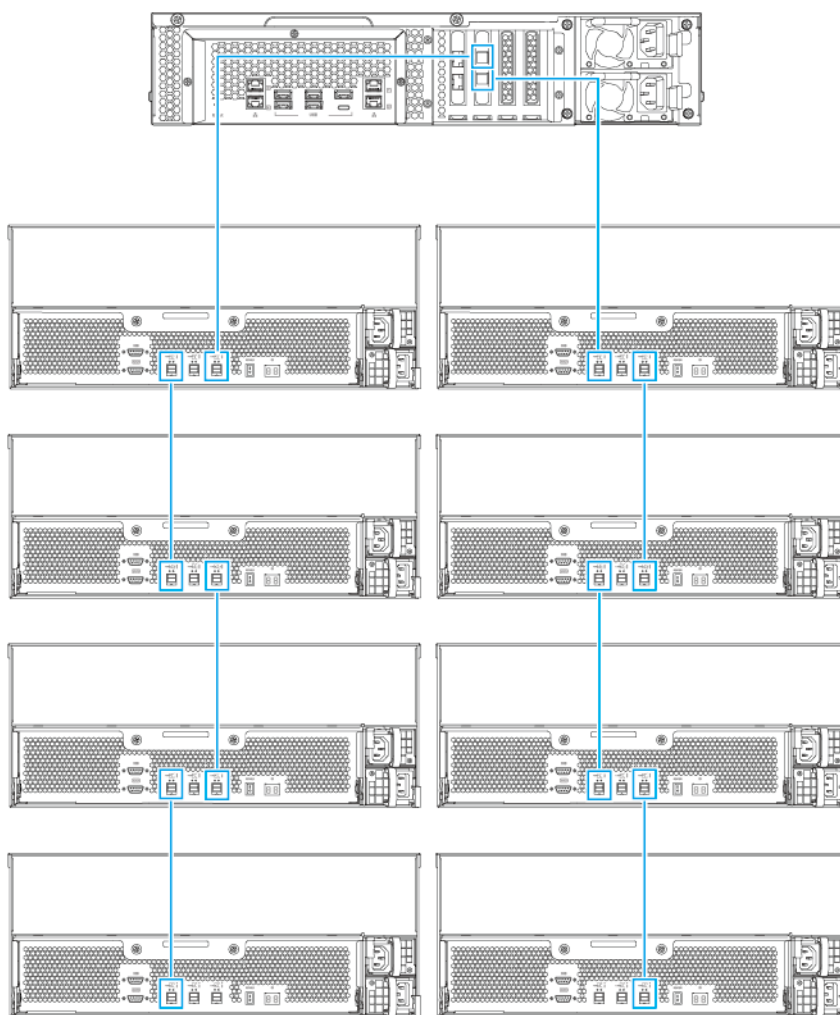
## 连接 SAS 扩展单元

要将 TS-hx77XU-RP 连接到 SAS 扩展单元，必须在 NAS 中安装存储扩展卡。有关所需配件的详细信息，请参见[扩展单元安装](#)。

1. 在 PCIe 插槽上安装存储扩展卡。  
有关详细信息，请参见[更换扩展卡](#)。
2. 按以下拓扑将扩展单元连接到 NAS。



TS-h977XU-RP



### TS-h1277XU-RP

3. 为扩展单元接通电源。
4. 确认 NAS 能够识别扩展单元。
  - a. 以管理员身份登录 QuTS hero。
  - b. 转到主菜单 > 存储与快照总管 > 总览 > 系统。
  - c. 确认扩展单元已列出。

### 连接 SATA JBOD 扩展单元

要将 TS-hx77XU-RP 连接到 SATA JBOD 扩展单元，必须在 NAS 中安装主机总线适配器。有关所需配件的详细信息，请参见[扩展单元安装](#)。

1. 关闭 NAS 电源。
2. 在 PCIe 插槽上安装主机总线适配器。



### 重要

将 SATA JBOD 设备连接到主机设备时，需要 QNAP QXP 主机总线适配器。第三方主机总线适配器与 QNAP JBOD 设备不兼容。

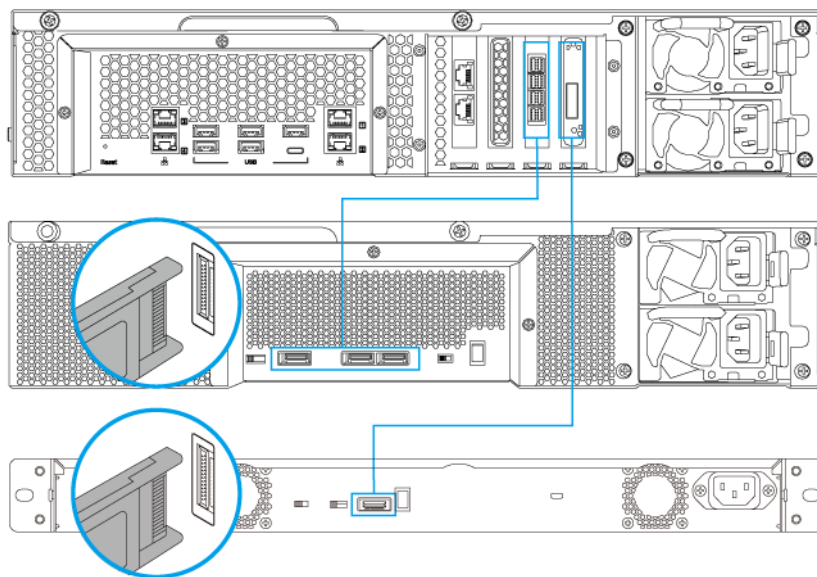
有关详细信息，请参见[更换扩展卡](#)。

3. 按以下拓扑将扩展单元连接到 NAS。



### 注

此图显示了将 NAS 连接到 JBOD 扩展单元 TL-R400S 和 TL-R1200S-RP。

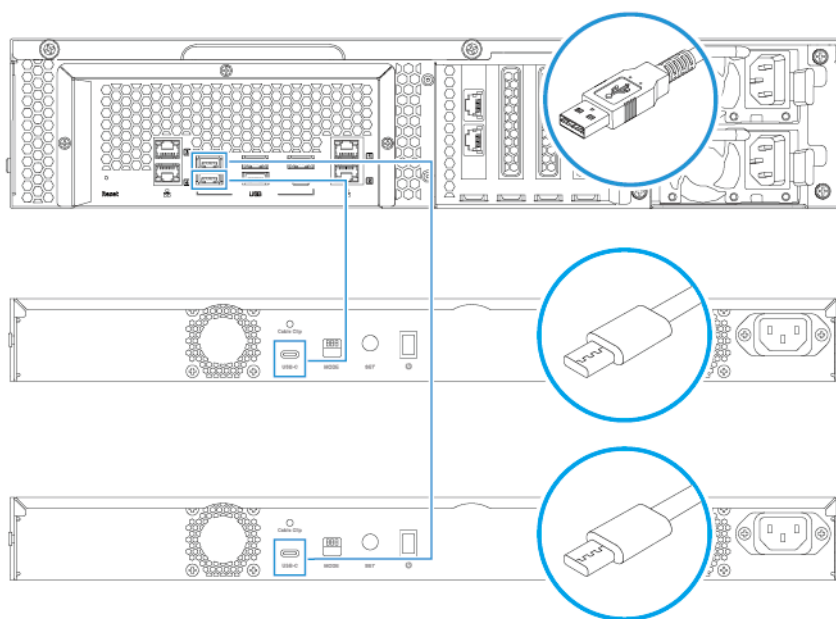


4. 启动 SATA JBOD 扩展单元电源。
5. 启动 NAS 电源。
6. 确认 NAS 能够识别扩展单元。
  - a. 以管理员身份登录 QuTS hero。
  - b. 转到主菜单 > 存储与快照总管 > 总览 > 系统。
  - c. 确认扩展单元已列出。

## 连接 USB 扩展单元

要将 TS-h977XU-RP 连接到 USB 扩展单元，需要 USB A 型至 USB C 型线缆或转接头。有关所需配件的详细信息，请参见[扩展单元安装](#)。

1. 将扩展单元连接到 NAS。
  - a. 将 USB 线缆连接到扩展单元上的 USB C 型端口。
  - b. 将 USB 线缆连接到 NAS 上的 USB 3.2 Gen 1 A 型端口。



2. 为扩展单元接通电源。
3. 确认 NAS 能够识别扩展单元。
  - a. 以管理员身份登录 QuTS hero。
  - b. 转到主菜单 > 存储与快照总管 > 总览 > 系统。
  - c. 确认扩展单元已列出。

## QuTS hero 安装

TS-hx77XU-RP 使用 QNAP QuTS hero 操作系统。可以使用以下任一方法安装 QuTS hero。

方法	描述	要求
Qfinder Pro 安装 (推荐)	如果 NAS 已连接到您的局域网，可以执行以下操作： <ul style="list-style-type: none"> <li>• 使用 Qfinder Pro 定位 NAS。</li> <li>• 完成“智能安装指南”向导中的步骤。</li> </ul>	<ul style="list-style-type: none"> <li>• 计算机</li> <li>• 网线</li> <li>• Qfinder Pro 安装程序</li> </ul>

方法	描述	要求
云安装	<p>如果 NAS 已连接到 Internet，可以执行以下操作：</p> <ul style="list-style-type: none"> <li>• 扫描 NAS 上的二维码。</li> <li>• 指定 Cloud Key。</li> <li>• 登录您的 myQNAPcloud 帐户。</li> <li>• 使用 myQNAPcloud Link 远程访问 NAS。</li> <li>• 完成“智能安装指南”向导中的步骤。</li> </ul>	<ul style="list-style-type: none"> <li>• 计算机或移动设备</li> <li>• myQNAPcloud 帐户</li> <li>• CloudKey</li> </ul>

## 使用 Qfinder Pro 安装 QuTS hero



### 警告

安装 QuTS hero 将删除硬盘上的所有数据。请先备份您的数据，然后再继续。



### 注

您可以随时恢复为 QTS 操作系统。有关详细信息，请参见《QuTS hero 用户指南》。

1. 启动 NAS 电源。
2. 将 NAS 连接到您的局域网中。
3. 在已连接到同一局域网的计算机上运行 Qfinder Pro。



### 注

要下载 Qfinder Pro，请转到 <https://www.qnap.com/utilities>。

4. 在列表中找到 NAS，然后双击名称或 IP 地址。  
智能安装指南将在默认 Web 浏览器中打开。
5. 单击启动智能安装指南。
6. 指定以下信息。
  - **NAS 名称：**指定 1 至 14 个字符的名称。名称支持字母（A 到 Z、a 到 z）、数字（0 到 9）和连字符 (-)，但不能以连字符结尾。
  - **密码：**指定 1 至 64 个字符的管理员密码。密码支持所有 ASCII 字符。
7. 单击下一步。
8. 指定时区、日期和时间。



### 提示

QNAP 建议连接到 NTP 服务器，以确保 NAS 遵循协调世界时 (UTC) 标准。

9. 单击下一步。
10. 选择自动获取 IP 地址(DHCP)。
11. 单击下一步。

12. 选择将用于访问 NAS 上共享文件夹的设备类型。
13. 单击**下一步**。
14. 检查设置。
15. 单击**应用**。  
此时会出现确认消息。

**警告**

单击**确认**后，将先删除硬盘上的所有数据，然后再安装 QuTS hero。

16. 单击**确认**。  
QuTS hero 即安装完毕。

## 使用 Cloud Key 安装 QuTS hero

**警告**

安装 QuTS hero 将删除硬盘上的所有数据。请先备份您的数据，然后再继续。

**注**

您可以随时恢复为 QTS 操作系统。有关详细信息，请参见《QuTS hero 用户指南》。

1. 启动 NAS 电源。
2. 将 NAS 连接到 Internet。
3. 使用以下方法之一转到“QNAP Cloud 安装”页面：
  - 在您的计算机上，转到 <http://install.qnap.com/>。
  - 使用移动设备扫描 NAS 上的二维码。

网页中会列出本地网络上所有尚未初始化的 QNAP NAS 设备。

4. 从列表中找到您的 NAS，然后单击**初始化**。

**注**

如果未列出您的 NAS，请按网页上的说明指定 NAS 上的 Cloud Key。

安装向导将在默认 Web 浏览器中打开。

5. 创建帐户或登录 myQNAPcloud。

**注**

创建帐户后，您必须返回此页面才能完成安装。

6. 为 NAS 指定 myQNAPcloud 设备名称。

**注**

- myQNAPcloud 设备名称用于远程访问 NAS。
- 因安全原因，在您的 NAS 上初始化 myQNAPcloud Link 远程连接服务后，会将其禁用。通过 LAN 连接到 QuTS hero，然后安装 myQNAPcloud Link 可启用此服务。

7. 单击**下一步**。  
**智能安装指南**将在默认 Web 浏览器中打开。

8. 单击**启动智能安装指南**。
9. 指定以下信息。
  - **NAS 名称**: 指定 1 至 14 个字符的名称。名称支持字母 (A 到 Z、a 到 z)、数字 (0 到 9) 和连字符 (-), 但不能以连字符结尾。
  - **密码**: 指定 1 至 64 个字符的管理员密码。密码支持所有 ASCII 字符。
10. 单击**下一步**。
11. 指定时区、日期和时间。

**提示**

QNAP 建议连接到 NTP 服务器, 以确保 NAS 遵循协调世界时 (UTC) 标准。

12. 单击**下一步**。  
此时会出现**配置网络设置**屏幕。
13. 选择**自动获取 IP 地址(DHCP)**。
14. 单击**下一步**。  
此时会出现**跨平台文件传输服务**屏幕。
15. 选择将用于访问 NAS 上共享文件夹的设备类型。
16. 单击**下一步**。  
此时会出现**摘要**窗口。
17. 检查设置。
18. 单击**应用**。  
此时会出现**确认**消息。

**警告**

单击**确认**后, 将先删除硬盘上的所有数据, 然后再安装 QuTS hero。


19. 单击**确认**。  
QuTS hero 即安装完毕。




## 4. 基本操作

本章介绍 NAS 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。	NAS 开机。
关闭电源	按住此按钮 1.5 秒钟。	NAS 关机。
强制关机	按住此按钮 5 秒钟。	NAS 关闭。  <b>重要</b> 仅当 NAS 无响应时才能使用此方法。

### 重置按钮

操作	用户操作	结果
基本系统重置	按住此按钮 3 秒钟。	<p>以下设置将重置为默认值：</p> <ul style="list-style-type: none"> <li>系统管理员密码：适配器 1 的 MAC 地址，无特殊字符。例如，如果适配器 1 的 MAC 地址为 11:22:33:44:55:66，则管理员密码将为 112233445566。</li> </ul> <p> <b>提示</b> 您可以使用 Qfinder Pro 找到适配器 1 的 MAC 地址。设备上粘贴的标签也会在 MAC1 下列出此地址。</p> <ul style="list-style-type: none"> <li>TCP/IP 配置： <ul style="list-style-type: none"> <li>使用动态 IP 地址</li> <li>禁用巨型帧</li> <li>如果启用端口中继（仅限多局域网型号），则端口中继模式将重置为“主动备份(故障转移)”。</li> </ul> </li> <li>系统端口：8080（系统服务端口）</li> <li>安全等级：低（允许所有连接）</li> <li>LCD 面板密码：（空白）</li> <li>VLAN：禁用</li> </ul>
高级系统重置	按住此按钮 15 秒钟。	<p>恢复默认出厂设置。</p> <ul style="list-style-type: none"> <li>要在高级系统重置后检索旧数据，请在 NAS 上重新创建先前的文件夹结构。</li> </ul>

## LED

开启 NAS 电源后，LED 指示灯会指示系统状态和相关信息。以下 LED 信息仅适用于硬盘已正确安装并且 NAS 已连接到网络的情况。

有关 LED 位置的详细信息，请参见[前面板](#)。

LED	状态	描述
系统状态	红绿交替闪烁，间隔 0.5 秒	<ul style="list-style-type: none"> <li>• 硬盘正在格式化。</li> <li>• NAS 正在初始化。</li> <li>• 操作系统正在更新。</li> <li>• RAID 正在重建。</li> <li>• 正在进行在线 RAID 容量扩展。</li> <li>• 正在进行在线 RAID 级别迁移。</li> </ul>
	红色	<ul style="list-style-type: none"> <li>• 硬盘无效。</li> <li>• 磁盘卷的容量已满。</li> <li>• 磁盘卷的容量即将被占满。</li> <li>• 系统风扇故障。</li> <li>• 访问（读/写）数据时出错。</li> <li>• 在硬盘上检测到坏扇区。</li> <li>• NAS 处于降级只读模式（RAID 5 或 RAID 6 中的两个成员硬盘出现故障，但仍可读取数据）。</li> <li>• 硬件自检发生错误。</li> </ul>
	闪烁红色，间隔 0.5 秒	NAS 处于降级模式（RAID 1、RAID 5 或 RAID 6 中的一个成员硬盘出现故障）。
	闪烁绿色，间隔 0.5 秒	<ul style="list-style-type: none"> <li>• NAS 正在启动。</li> <li>• NAS 未配置。</li> <li>• 硬盘未格式化。</li> </ul>
	绿色	NAS 已准备就绪。
	熄灭	所有硬盘都处于待机模式。
LAN	橙色	NAS 网络链路处于活动状态。
	闪烁橙色	正在访问 NAS。
	熄灭	没有网络链路。
硬盘	绿色	硬盘就绪。
	闪烁绿色	正在访问硬盘。
	红色	发生读/写错误。
	闪烁红色	QuTS hero 正在定位硬盘。
扩展单元	橙色	扩展单元已连接。
	熄灭	未连接任何扩展单元。

## 警告音

时长	频率	描述
短提示音 (0.5 秒)	1	<ul style="list-style-type: none"> <li>• NAS 正在启动。</li> <li>• NAS 正在关闭 (软件关闭)。</li> <li>• 用户已按下“重置”按钮。</li> <li>• 操作系统已更新。</li> </ul>
	3	用户尝试从前面的 USB 端口将 NAS 数据复制到外部存储设备，但无法复制数据。
长提示音 (1.5 秒)	3 (每 5 分钟)	系统风扇故障。
	2	<ul style="list-style-type: none"> <li>• 磁盘卷的容量即将被占满。</li> <li>• 磁盘卷的容量已满。</li> <li>• 硬盘处于降级模式。</li> <li>• 用户已启动硬盘重建过程。</li> <li>• 插入或抽出硬盘。</li> </ul>
	1	<ul style="list-style-type: none"> <li>• NAS 已通过强制关闭关机 (硬件关闭)。</li> <li>• NAS 已成功开机并准备就绪。</li> </ul>

## 5. 故障排除

本章介绍基本故障排除信息。

### 强制 Qfinder Pro 或 myQNAPcloud 定位 NAS

如果在 QuTS hero 安装过程中 Qfinder Pro 或 myQNAPcloud 无法定位 NAS，则硬盘或数据可能有故障。

1. 关闭 NAS 电源。
2. 取下所有硬盘。
3. 启动 NAS 电源。
4. 使用 Qfinder Pro 或 myQNAPcloud 定位 NAS。
5. 重新插入硬盘。
6. 继续安装 QuTS hero。

### 热插拔故障硬盘

在以下情况下，NAS 支持热插拔硬盘：

- RAID 1：一个成员硬盘有故障
- RAID 5：一个成员硬盘有故障
- RAID 6：一个或两个成员硬盘有故障

1. 登录 QuTS hero。
2. 转到主菜单 > 存储空间总管 > 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 NAS 中取下故障硬盘。
6. 等待 20 秒或 NAS 发出两声提示音。
7. 从硬盘托盘中取下故障硬盘。
8. 将硬盘插入硬盘托盘中。
9. 安装新硬盘。  
此时 NAS 会发出两声提示音。
10. 转到主菜单 > 存储空间总管 > 存储空间。
11. 找到包含新硬盘的卷，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://docs.qnap.com">https://docs.qnap.com</a>
服务门户	<a href="https://service.qnap.com">https://service.qnap.com</a>
下载	<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>

## 6. 术语表

### **CloudKey**

分配给每个 NAS 设备的唯一 8 位数代码

### **myQNAPcloud Link**

可用于通过 Internet 访问 NAS，而且不必配置复杂的端口转发设置

### **myQNAPcloud**

提供各种远程访问服务，如 DDNS 和 myQNAPcloud Link

### **myQNAPcloud ID**

用于注册 myQNAPcloud 帐户的电子邮件地址

### **Qfinder Pro**

一种 QNAP 实用工具，可用于查找和访问局域网中的 QNAP NAS 设备

### **QuTS hero**

采用 ZFS 文件系统的 QNAP NAS 操作系统

## 7. 声明

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Version 3, 29 June 2007

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## 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
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。