



**QNAP**

# 外接 RAID 裝置

TR-004U

使用者指南

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# 1. 前言





## 關於本指南

本指南涵蓋 QNAP TR-004U 外接 RAID 裝置的相關資訊，以及安裝硬體的逐步指示。此外，本指南也提供基本操作說明與疑難排解資訊。

## 適用對象

本文件的適用對象為消費者與儲存空間管理員。本指南預設使用者對於儲存與備份概念有基本的認識。

## 慣用符號

符號	說明
	注意事項。用於提供預設組態設定與其他補充資訊。
	重要注意事項。用於提供必要組態設定及其他重要資訊。
	提示。用於提供任務執行或組態設定的建議或替代方式。
	警告。忽略此類資訊可能導致潛在損失、受傷甚至死亡事故。

## 2. 產品概觀

本章介紹 QNAP TR-004U 外接 RAID 裝置的基本資訊。

### 關於 TR-004U

TR-004U 是一款外接 RAID 裝置，用途在於擴充 NAS 或伺服器的容量並提高實用性。其支援 RAID、JBOD 和埠倍增器模式，可增加不同平台的相容性和安全性。TR-004U 的模式開關可讓您輕鬆切換 RAID 設定，而其 USB 3.0 Type-C 連接埠則確保資料傳輸既快速又有效率。

### 硬體規格






#### 警告

如果您的 QNAP 產品有硬體瑕疵，請將產品寄回 QNAP 或 QNAP 授權服務中心進行維修或換貨。只要您或未經授權的第三方嘗試修復產品或執行產品維修流程，皆會導致產品保固失效。

對於因未獲授權進行修改或安裝不支援之第三方應用程式所導致的任何損害或資料遺失，

QNAP 一概不予負責。

如需詳細資訊，請參見 [QNAP 保固條款與條件](#)。

元件	TR-004U
訂購資訊	
訂購料號	TR-004U
儲存	
硬碟插槽	4 x 3.5 吋 SATA 3 Gbps   <b>注意</b> TR-004U 與 SATA 6 Gbps 硬碟相容。
硬碟相容性	<ul style="list-style-type: none"> <li>• 3.5 吋 SATA 硬碟</li> <li>• 2.5 吋 SATA 硬碟</li> <li>• 2.5 吋 SATA 固態硬碟</li> </ul>
熱抽換	是
外接 I/O 埠和擴充插槽	
USB 連接埠	1 x USB 3.0 Type-C   <b>重要</b> 此連接埠僅可用於連接 RAID 裝置與 NAS 或伺服器。
網路介面	
按鈕	設定
交換器	<ul style="list-style-type: none"> <li>• 電源</li> </ul>  <b>重要</b> QNAP 建議在關閉 RAID 裝置電源後，至少等待兩秒再重新開啟電源。 <ul style="list-style-type: none"> <li>• 模式</li> </ul>
尺寸	

元件	TR-004U
外型	1 U 機架式
尺寸 (高 x 寬 x 深)	44 x 439 x 291 mm (1.7 x 17.3 x 11.4 in)
淨重	4.04 kg (8.91 lbs)
其他	
滑軌相容性	RAIL-B02   <b>注意</b> <ul style="list-style-type: none"> <li>RAID 裝置不含機架滑軌，必須另外購買。如需詳細資訊，請聯絡授權經銷商或前往 <a href="http://shop.qnap.com">http://shop.qnap.com</a>。</li> <li>如需安裝機架滑軌的相關資訊，請參見機架滑軌包裝中的安裝指南。</li> </ul>
電源供應器	100W · 100-240V AC · 50/60 Hz · 開放式架構   <b>警告</b> 為了降低走火或觸電風險，務必只將電源線連接至適當的接地電源插座。
噪音值	23.1 dB(A)   <b>注意</b> 從旁觀者位置（距測試裝置一公尺內）測試噪音值。在測試用的裝置中安裝最多數量的硬碟，並以低速運行。
風扇	系統：2 x 4 cm · 12V DC 智慧型風扇   <b>警告</b> 請勿在裝置連上電源時觸碰風扇，以免受傷或損壞元件。
操作溫度	0°C 到 40°C (32°F 到 104°F)
相對濕度	<ul style="list-style-type: none"> <li>不凝結相對溼度：5% 至 95%</li> <li>濕球溫度：27°C (80.6°F)</li> </ul>
安全鎖	Kensington 安全鎖

**提示**

型號規格如有變更，恕不另行通知。若要查看最新規格，請前往 <https://www.qnap.com>。

**包裝內容**

項目	數量
TR-004U	1
電源線	1
USB Type-C 轉 Type-A 接頭纜線	1
硬碟托盤鑰匙	2
USB 連接線固定夾	1

項目	數量
3.5 吋硬碟用螺絲	16
2.5 吋硬碟用螺絲	12
把手套組	<ul style="list-style-type: none"> <li>• 2 個把手</li> <li>• 2 個角形托座</li> <li>• 8 顆螺絲</li> </ul>
快速安裝手冊 (QIG)	1

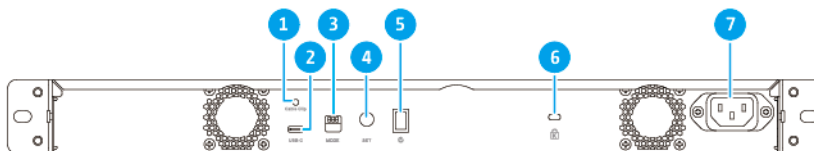
## 元件

### 前面板



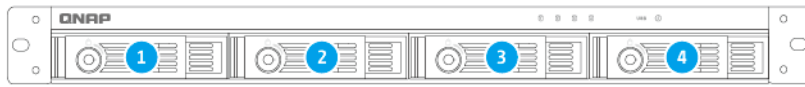
編號	元件	編號	元件
1	硬碟 LED 燈	3	狀態 LED 燈
2	USB LED 燈	-	-

### 背面板



編號	元件	編號	元件
1	USB 連接線固定夾插槽	5	電源開關
2	USB 3.0 Type-C 連接埠	6	Kensington 安全鎖
3	模式切換	7	電源輸入
4	設定按鈕	-	-

## 硬碟編號



## 安全資訊

以下指示幫助確保人身安全及環境安全。執行任何操作前，請仔細閱讀本安全指示。

### 一般指示

- 裝置應放置在實施進出管制的場所，控管方式包括工具、鎖鑰或其他安全機制。
- 唯有具技能且獲得授權的合格裝置管理員能夠存取裝置；合格裝置管理員必須熟悉所有管制方法、安全注意事項、安裝及保養程序。
- 為避免受傷或元件損壞，在觸碰硬碟及其他內部系統元件前，請先確認其是否已經冷卻。
- 請遵守靜電放電 (ESD) 程序以防止潛在傷害或元件損壞。

### 電源

- 為了降低走火或觸電風險，務必只將電源線連接至適當的接地電源插座。



具有備援電源供應器的裝置可能配備一條或以上電源供應器 (PSU) 的電源線。為防止嚴重傷害事故發生，在安裝或更換系統元件前，所有 PSU 電源線必須由經訓練之維修技術人員從裝置拔除。

### 系統電池

- 更換電池時，請務必使用相同類型的電池，以免電池爆炸造成受傷或元件損壞。
- 請遵照當地法規或電池製造商的指示妥善處置廢棄電池。

### 移動零件



**移動之風扇葉片：**裝置連接至電源時，請使身體部位遠離移動中之風扇葉片。



**移動元件：**使身體部位遠離其他移動元件。



## 安裝需求

類別	項目
環境	<ul style="list-style-type: none"> <li>室溫：0°C 到 40°C ( 32°F 到 104°F )</li> <li>不凝結相對溼度：5% 到 95%</li> <li>濕球溫度：27°C (80.6°F)</li> <li>平坦且防靜電的表面，不受陽光直射，亦不與液體或化學物質接觸</li> </ul>
硬體和週邊設備	<ul style="list-style-type: none"> <li>NAS 或伺服器</li> <li>儲存硬碟 如需相容硬碟的詳細資訊，請前往：<a href="https://www.qnap.com/compatibility/">https://www.qnap.com/compatibility/</a>。</li> <li>USB 接頭纜線</li> </ul>
工具	<ul style="list-style-type: none"> <li>1 號或 2 號十字螺絲起子</li> <li>防靜電腕帶</li> </ul>

## 設定 RAID 裝置

- 將 RAID 裝置放置在符合需求的環境。  
如需詳細資訊，請參見：[安裝需求](#)。
- 將 RAID 裝置安裝到機架上。  
如需詳細資訊，請參見下列主題：
  - [機架滑軌](#)
  - [安裝把手](#)
- 安裝硬碟。  
如需詳細資訊，請參見下列主題：
  - [在 3.5 吋托盤上安裝 3.5 吋硬碟](#)
  - [在 2.5 吋托盤上安裝 3.5 吋硬碟](#)
- 連上電源線。
- 連接 RAID 裝置與您的 NAS 或伺服器。  
如需詳細資訊，請參見下列主題：
  - [連接 RAID 裝置與 NAS](#)
  - [連接 RAID 裝置與伺服器](#)
- 開啟 RAID 裝置的電源。
- 選擇性: 編輯 RAID 設定。  
如需詳細資訊，請參見：[RAID 設定](#)。

### 3. 硬體安裝

本節介紹如何安裝硬碟與把手，以及如何將 RAID 裝置連接至 NAS 或伺服器。

#### 硬碟安裝

TR-004U 與 3.5 吋 和 2.5 吋硬碟以及 2.5 吋固態硬碟相容。

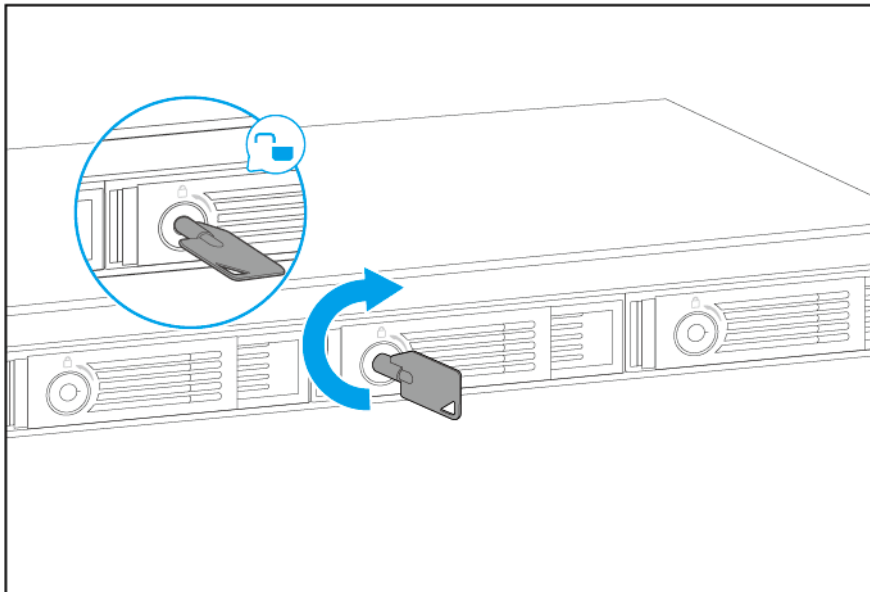
#### 在 3.5 吋托盤上安裝 3.5 吋硬碟



##### 警告

- 除非 RAID 裝置處於 [ 獨立 ] 或 [ 軟體控制 ] 模式，否則安裝硬碟會刪除硬碟中的所有資料。
- 請遵守靜電放電 (ESD) 程序以防止元件損壞。

1. 關閉 RAID 裝置的電源。
2. 取出硬碟托盤。
  - a. 選擇性: 將托盤解鎖。



##### 注意

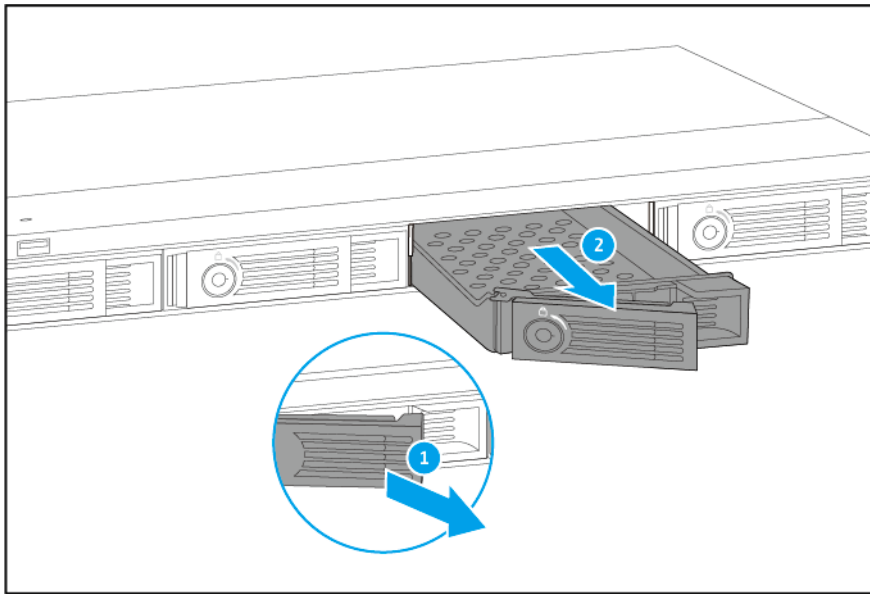
預先安裝的硬碟托盤會變成解鎖狀態。



##### 重要

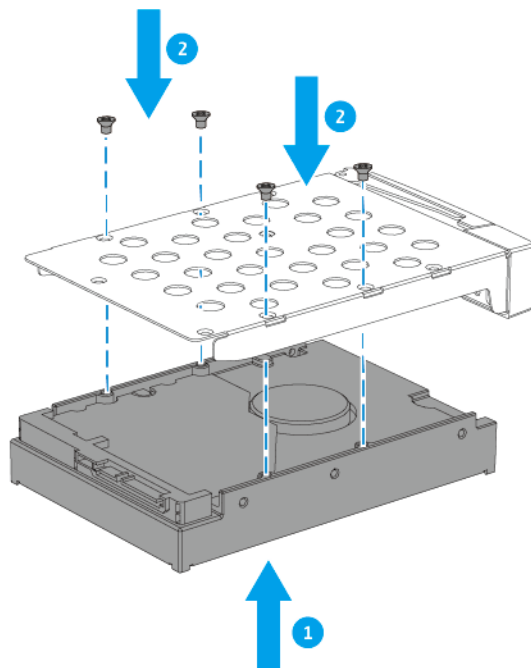
確實將硬碟托盤鑰匙放置在安全位置。

- b. 拉把手以鬆開托盤。
- c. 將托盤拉出。



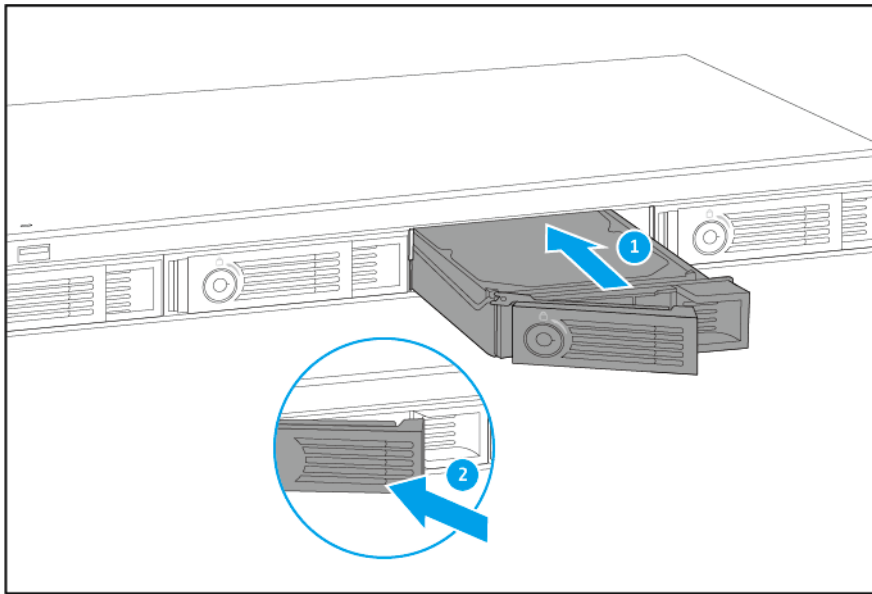
**3. 在托盤上安裝硬碟。**

- a. 將硬碟放在托盤上，讓硬碟兩側的孔洞與托盤兩側的孔洞對齊。
- b. 鎖上螺絲。

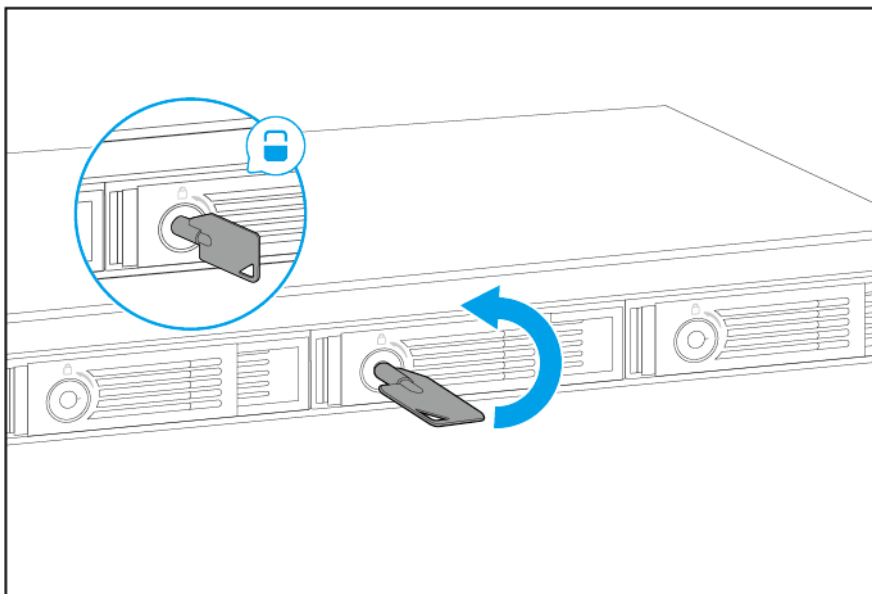


**4. 將托盤裝入磁碟插槽。**

- a. 將托盤插入插槽。
- b. 推入把手。



c. 選擇性：將托盤上鎖。



5. 開啟 RAID 裝置的電源。



**重要**

可能需要長達 30 秒的時間，RAID 裝置才能偵測到新安裝的硬碟。

**在 2.5 吋托盤上安裝 3.5 吋硬碟**

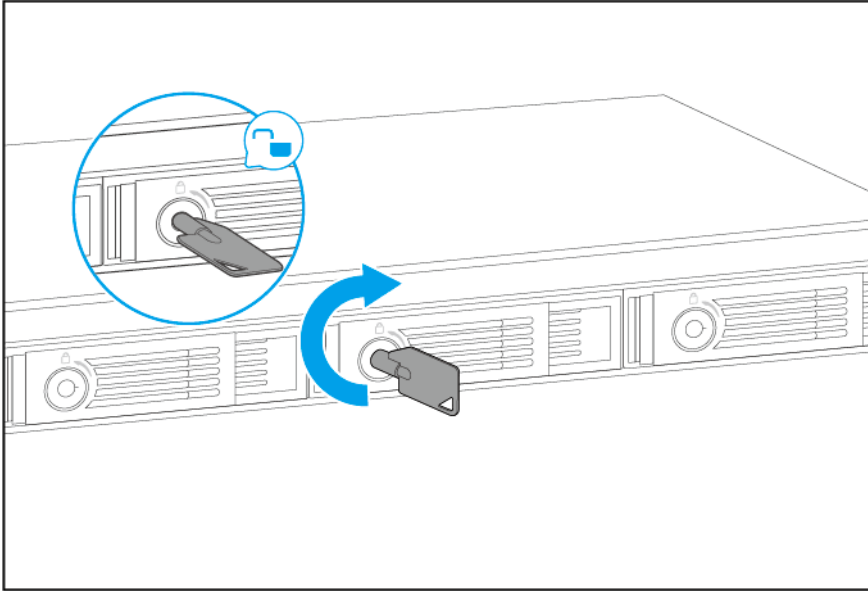


**警告**

- 除非 RAID 裝置處於 [ 獨立 ] 或 [ 軟體控制 ] 模式，否則安裝硬碟會刪除硬碟中的所有資料。

- 請遵守靜電放電 (ESD) 程序以防止元件損壞。

1. 關閉 RAID 裝置的電源。
2. 取出硬碟托盤。
  - a. 選擇性: 將托盤解鎖。

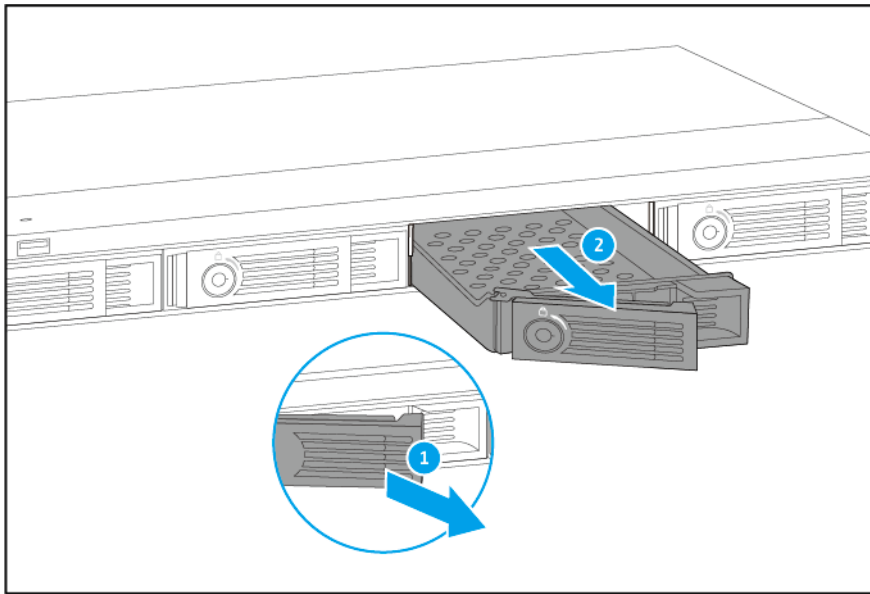
**注意**

預先安裝的硬碟托盤會變成解鎖狀態。

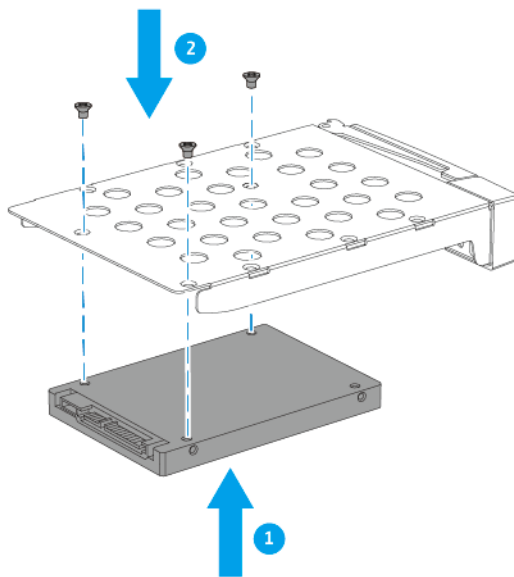
**重要**

確實將硬碟托盤鑰匙放置在安全位置。

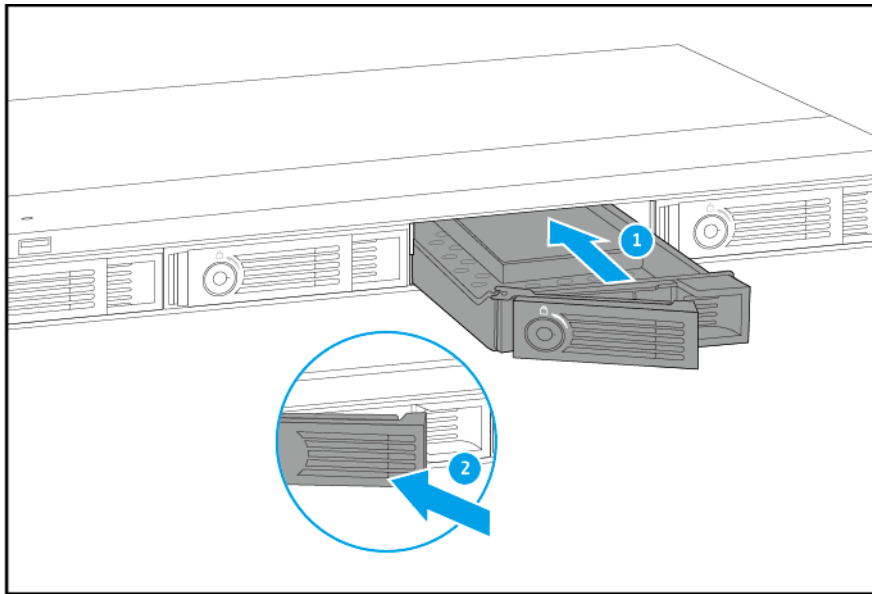
- b. 拉把手以鬆開托盤。
- c. 將托盤拉出。



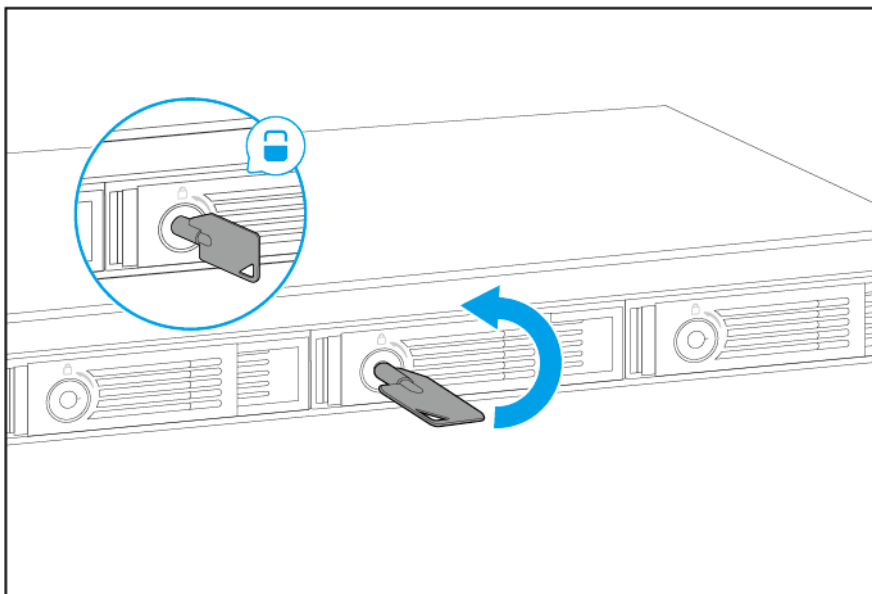
3. 在托盤上安裝硬碟。
  - a. 將硬碟放在托盤上，讓硬碟兩側的孔洞與托盤兩側的孔洞對齊。
  - b. 鎖上螺絲。



4. 將托盤裝入磁碟插槽。
  - a. 將托盤插入插槽。
  - b. 推入把手。



c. 選擇性：將托盤上鎖。



5. 開啟 RAID 裝置的電源。



**重要**

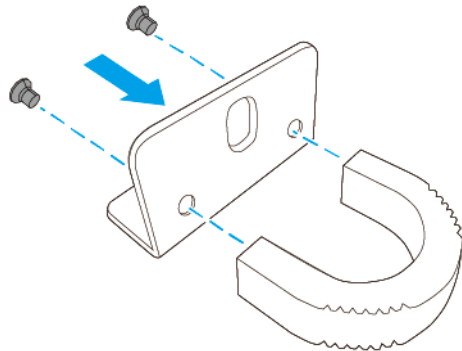
可能需要長達 30 秒的時間，RAID 裝置才能偵測到新安裝的硬碟。

## 安裝把手

安裝把手後，即可輕鬆且穩固地拿取 RAID 裝置。

1. 關閉 RAID 裝置的電源。
2. 將把手安裝到角形托座上。

- a. 將把手開口對齊角形托座上的圓頭螺絲洞。
- b. 鎖上螺絲，將把手鎖定在角形托座上。

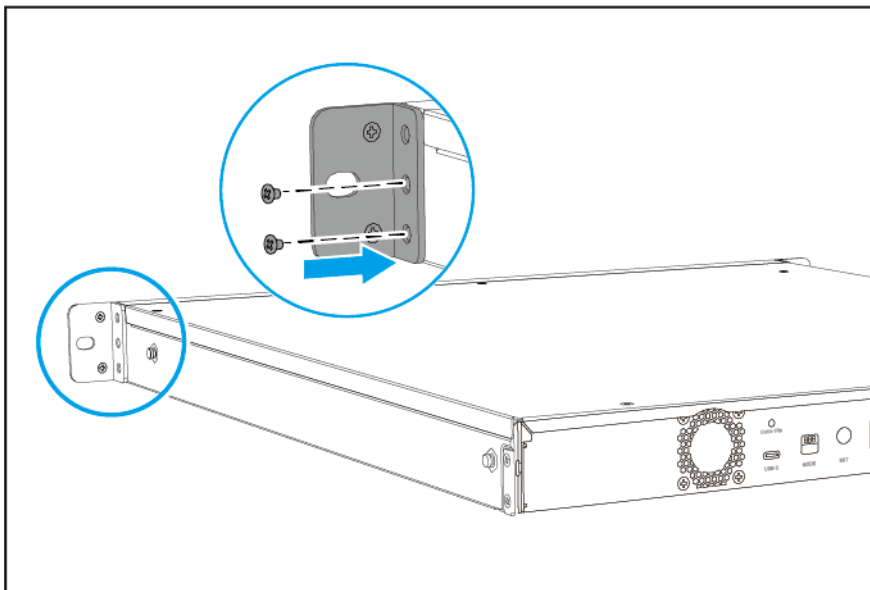


3. 在 NAS 上安裝角形托座。
  - a. 將角形托座上的孔洞對齊機殼的孔洞。



**注意**  
請確定把手與前面板面對相同的方向。

- b. 鎖上螺絲。



4. 在機殼的另一側安裝第二個把手。
5. 開啟 RAID 裝置的電源。

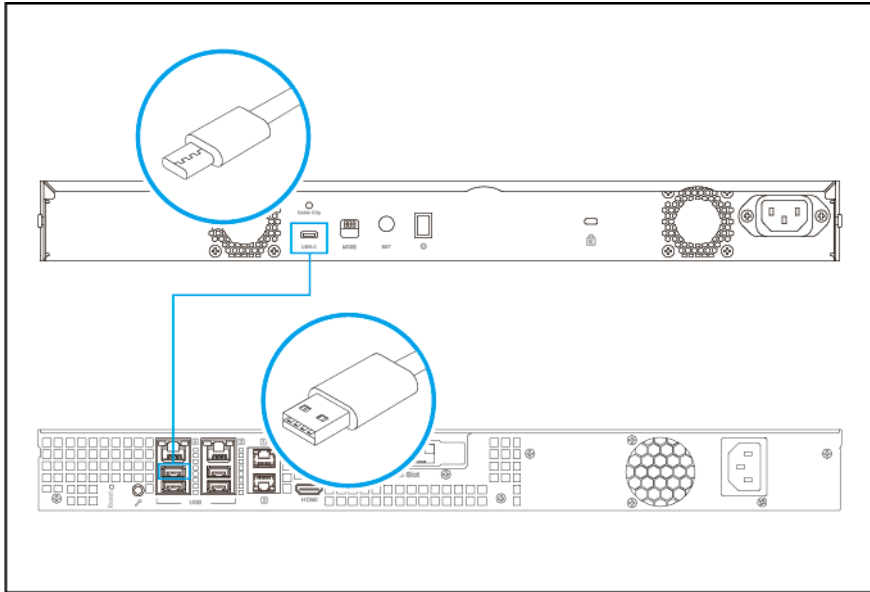
## 連接 RAID 裝置與 NAS

QNAP NAS 最多可支援兩台外接 RAID 裝置。

1. 連接 RAID 裝置與 NAS。



- a. 將 USB 連接線接至 RAID 裝置上的 USB 3.0 Type-C 連接埠。
- b. 將 USB 連接線接至 NAS 上的 USB 連接埠。

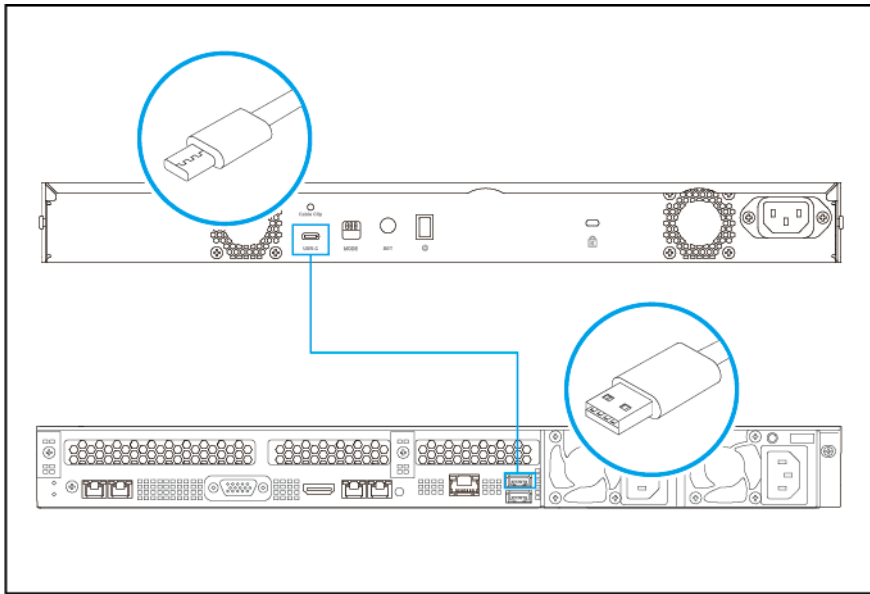


- c. 選擇性: 將第二台 RAID 裝置與 NAS 連接。
2. 開啟 RAID 裝置的電源。
  3. 確認 NAS 可辨識 RAID 裝置。
    - a. 以管理員身份登入 QTS。
    - b. 前往 [ 主選單 ] > [ 儲存與快照總管 ] > [ 總覽 ] > [ 儲存空間 ]。
    - c. 確認畫面列出 RAID 裝置。

## 連接 RAID 裝置與伺服器

一台 Windows、macOS 或 Linux 伺服器可支援不限數量的 RAID 裝置。然而，QNAP 建議最多連接四個 RAID 裝置。

1. 連接 RAID 裝置與伺服器。
  - a. 將 USB 連接線接至 RAID 裝置上的 USB 3.0 Type-C 連接埠。
  - b. 將 USB 連接線接至伺服器上的 USB 連接埠。



- c. 選擇性: 連接額外 RAID 裝置與伺服器。
2. 開啟 RAID 裝置的電源。
  3. 確認伺服器可辨識 RAID 裝置。
    - a. 前往伺服器的硬碟管理工具程式，或開啟 Windows 或 macOS 中的 QNAP External RAID Manager。
    - b. 確認畫面列出 RAID 裝置。

## 裝上 USB 連接線固定夾

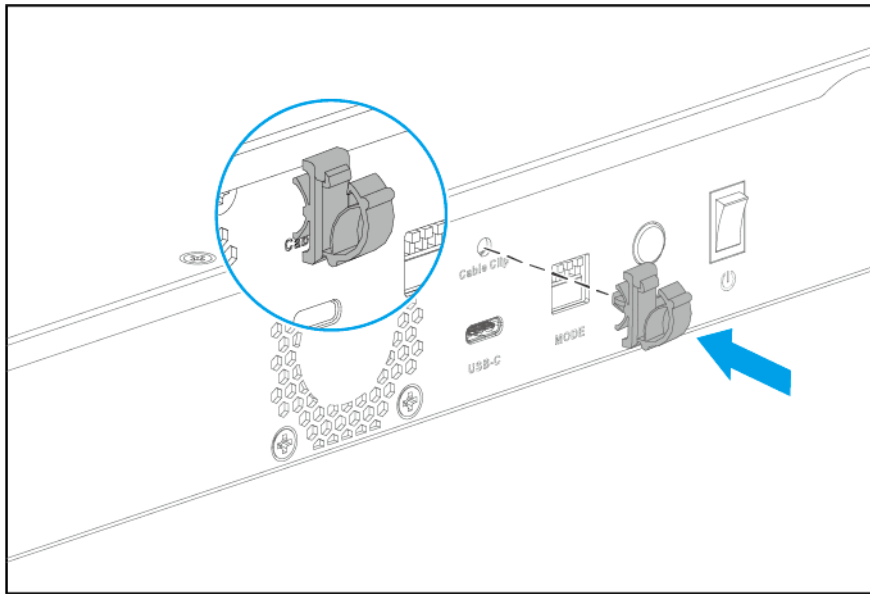


### 重要

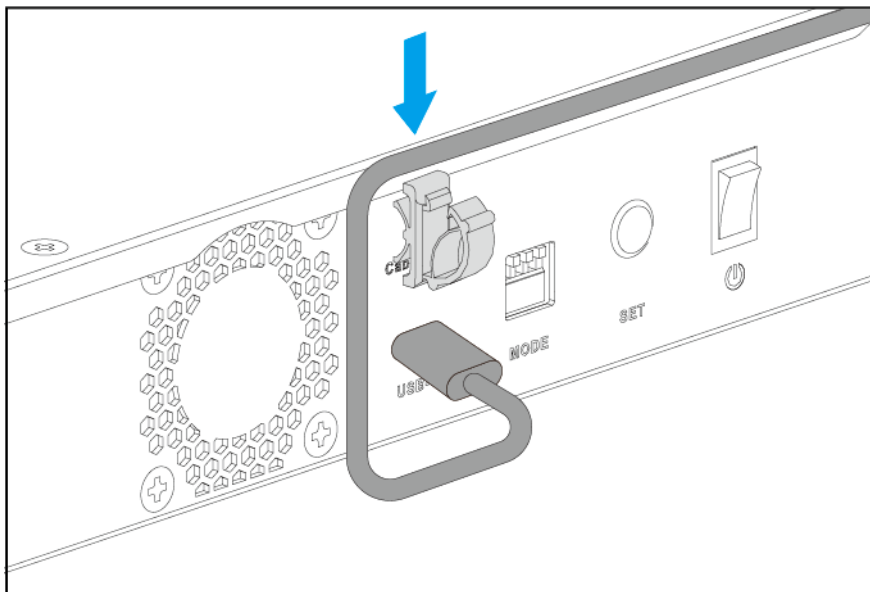
USB 連接線固定夾可讓連接線固定在 RAID 裝置周遭，避免連接線或任何附近元件意外受損。

將此固定夾裝到 RAID 裝置後，就不應把它卸下。

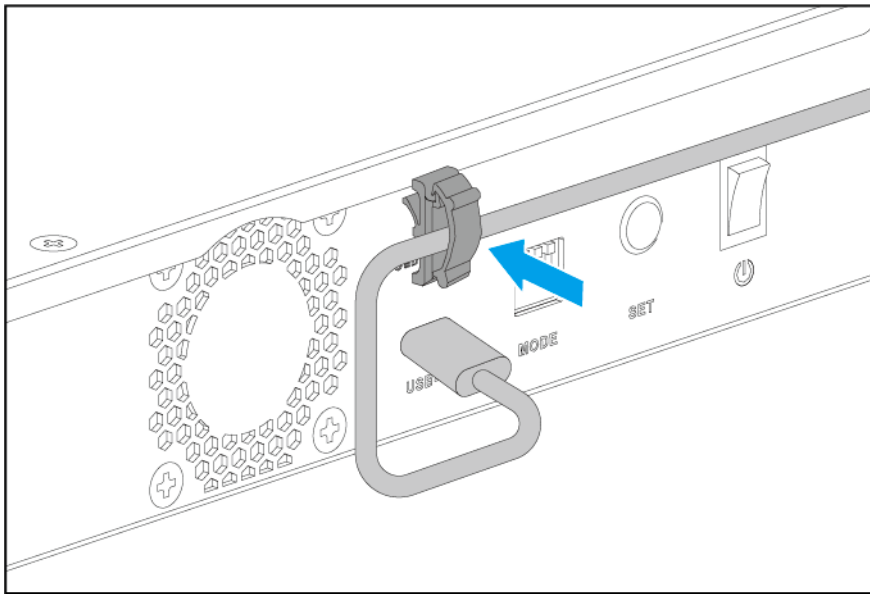
1. 將連接線固定夾插入固定夾插槽中。



2. 將連接線置入固定夾。

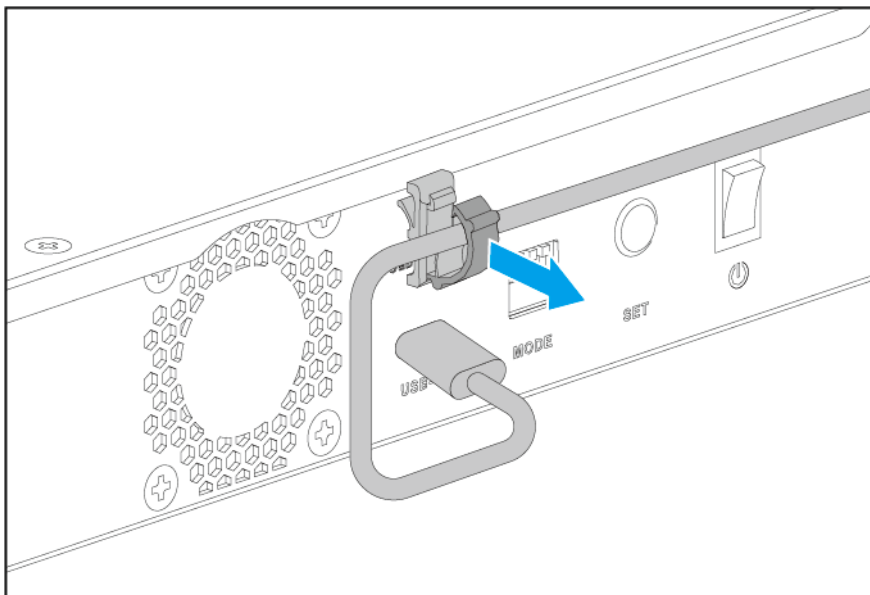


3. 將固定夾扣上以固定連接線。

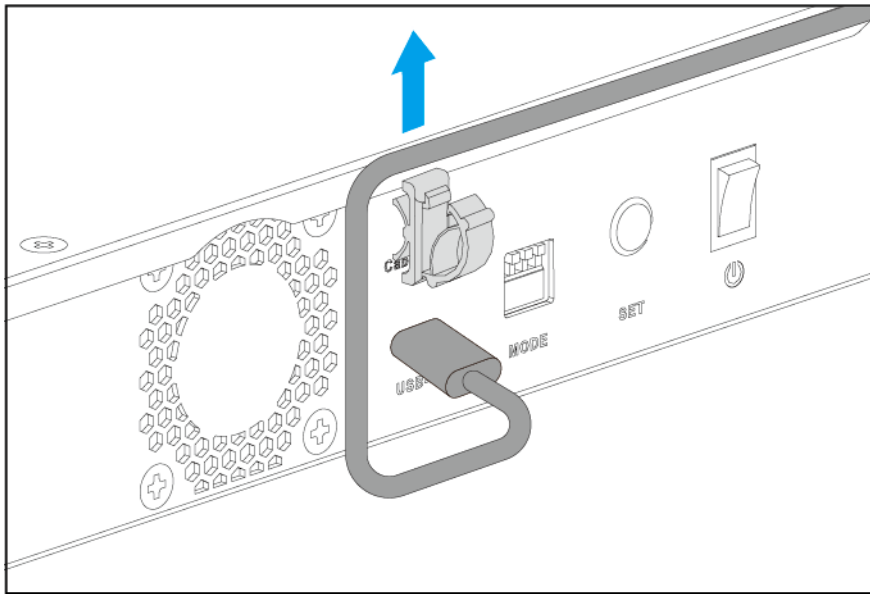


### 從 USB 連接線固定夾取下 USB 連接線

1. 鬆開連接線固定夾。



2. 將連接線從固定夾取下。



## 機架滑軌

TR-004U 與下列型號相容：

- RAIL-B02

RAID 裝置不含機架滑軌，必須另外購買。如需詳細資訊，請聯絡授權經銷商或前往 <http://shop.qnap.com>。

您可以在機架滑軌的包裝中找到安裝資訊。

## 4. RAID 設定

本節介紹編輯 RAID 設定的相關資訊。



### 重要

發生以下情況時，RAID 裝置連線會中斷，導致正在寫入磁碟的資料遺失不見。

- 在其他 RAID 群組或硬碟使用中時，建立或刪除 RAID 群組
- RAID 群組故障（不含降級模式），或者當其他 RAID 群組使用中時，新增或移除 RAID 群組
- RAID 裝置處於 [ 獨立 ] 模式時，插入或取下磁碟
- 按住 [ 設定 ] 按鈕至少三秒，直到 RAID 裝置發出嗶聲

### 支援的 RAID 類型

QNAP 外接 RAID 裝置支援多種 RAID 類型。



### 重要

- 當 RAID 群組是由容量不同的硬碟組成，所有硬碟皆會以最小硬碟的容量運作。例如，假設 RAID 群組由五個 2 TB 硬碟與一個 1 TB 硬碟組成，總容量為 6 TB。
- 同一 RAID 群組內僅可使用一種硬碟類型（HDD 或 SSD）。您無法在同一 RAID 群組內結合使用不同類型的硬碟。
- QNAP 建議您為不同容量與類型的硬碟分別建立各自的 RAID 群組。



### 注意


RAID 裝置不支援容量擴充或 RAID 層級遷移。

RAID 類型	硬碟數量	描述
JBOD ( 簡單磁碟綁定 )	2 個或以上	<ul style="list-style-type: none"> <li>• JBOD 以線性方式合併磁碟。系統會在一個磁碟寫滿資料後，再寫入下一個硬碟。</li> <li>• JBOD 允許使用所有的磁碟容量，但不提供任何磁碟故障保護或效能優勢。</li> <li>• 除非您有必須使用 JBOD 的特殊理由，否則應改用 RAID 0。</li> </ul>
RAID 0	2 個或以上	<ul style="list-style-type: none"> <li>• 使用等量配置方式合併硬碟。</li> <li>• RAID 0 的讀寫速度最快，且可使用全部硬碟容量。</li> <li>• RAID 0 不提供硬碟故障保護。此 RAID 類型必須搭配適當資料備份機制。</li> <li>• 建議將 RAID 0 用於高效能的應用程式（例如影像編輯）。</li> </ul>

RAID 類型	硬碟數量	描述
RAID 1	2	<ul style="list-style-type: none"> <li>將相同的資料副本儲存於兩個硬碟。若其中一個硬碟故障，仍可從另一個硬碟讀取資料。</li> <li>硬碟容量少了一半，但可提供高度的資料安全保障。</li> <li>如果您有兩個硬碟，建議使用 RAID 1。</li> </ul> <p> <b>重要</b> 刪除 RAID 1 群組不會格式化磁碟。</p>
RAID 5	3 個或以上	<ul style="list-style-type: none"> <li>等量合併所有硬碟的資料和同位檢查資訊。</li> <li>同位檢查佔用一個硬碟的容量。這表示若有一個硬碟故障，系統可將它取代並回復其中的資料。</li> <li>等量會讓讀取速度隨著硬碟遞增而加快。</li> <li>若想兼顧資料安全與運作速度，建議使用 RAID 5。</li> </ul>
RAID 10	4	<ul style="list-style-type: none"> <li>每兩個硬碟配成一對，且使用 RAID 1 配對以保障資料安全。接著使用 RAID 0 將成對的硬碟等量合併。</li> <li>RAID 10 提供絕佳的隨機讀寫速度和硬碟故障保護功能，但少了一半的硬碟總容量。</li> <li>建議將 RAID 10 用於應用程式或資料庫儲存。</li> </ul>

## 儲存模式

RAID 裝置支援 NAS 裝置與伺服器使用不同儲存模式。

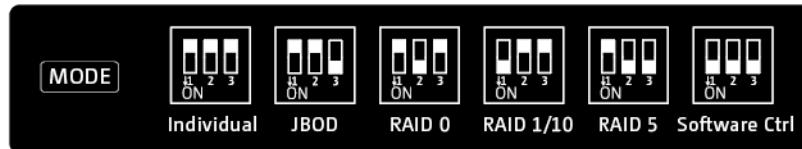
儲存模式	描述
NAS 儲存空間	<p>建立儲存池或靜態磁碟區，藉此為 QNAP NAS 增加儲存容量。</p> <p> <b>重要</b> 使用 NAS 擴充模式的注意事項：</p> <ul style="list-style-type: none"> <li>RAID 裝置必須設為軟體控制模式。如需詳細資訊，請參見：<a href="#">模式開關</a>。</li> <li>RAID 裝置不可設為獨立模式。</li> <li>RAID 裝置不可包含一個以上的 RAID 群組。</li> <li>RAID 裝置不可用於擴充現有儲存池或靜態磁碟區。</li> </ul>
外部儲存空間	使用 RAID 裝置作為 NAS 或者 Windows、macOS 或 Linux 伺服器的外接硬體 RAID 裝置。

## 儲存模式和平台支援

設定	NAS 儲存模式	外接儲存裝置模式
軟體控制	必要	是
獨立	否	是
JBOD	是	是

設定	NAS 儲存模式	外接儲存裝置模式
RAID 0/1/5/10	是	是
多個 RAID 群組	否	是

## 模式開關




您可以使用 RAID 裝置背面板的模式開關來手動編輯 RAID 設定；操作方法是將開關切換為上圖所示的對應位置。



### 重要

- QNAP 建議同一 RAID 群組僅使用一種硬碟類型 (HDD 或 SSD)。如果 RAID 群組由不同類型的硬碟組成，就會以當中最慢硬碟的速度來運作。
- 若 RAID 群組是由容量不同的硬碟組成，則所有硬碟皆以最小硬碟的容量運作。

設定	描述
獨立	NAS 或伺服器會將每個已安裝的硬碟視為獨立的外接磁碟。硬碟不會合併為單一配置磁碟區或 RAID 群組。 此種組態設定又稱為埠倍增器。
<ul style="list-style-type: none"> <li>• JBOD</li> <li>• RAID 0</li> <li>• RAID 1/10</li> <li>• RAID 5</li> </ul>	QNAP 外接 RAID 裝置為這些 RAID 類型提供硬體 RAID 支援。 如需詳細資訊，請參見： <a href="#">支援的 RAID 類型</a> 。
軟體控制	<p>此為原廠預設模式。 此模式可讓您使用 Windows 或 macOS 電腦上的 QNAP External RAID Manager 或 QNAP NAS 的 [ 儲存與快照總管 ] 來編輯 RAID 設定。 請前往 <a href="http://www.qnap.com/download">http://www.qnap.com/download</a> 下載 QNAP External RAID Manager 以及支援文件。</p> <p> <b>重要</b></p> <ul style="list-style-type: none"> <li>• RAID 裝置至少需安裝一個磁碟，QNAP External RAID Manager 才可以辨識該 RAID 裝置。</li> <li>• 請勿同時使用 QNAP External RAID Manager 與其他 RAID 管理軟體。這麼做會影響 QNAP External RAID Manager 的回應時間。</li> </ul>

## 使用模式開關編輯 RAID 設定



## 從獨立模式切換為 RAID 模式或軟體控制模式



### 警告

除非您正在 [ 軟體控制 ] 模式來回切換，否則編輯 RAID 設定會刪除硬碟上的所有資料。

1. 確定模式開關設為 [ 獨立 ]。  
如需詳細資訊，請參見：[模式開關](#)。
2. 將模式開關設為 [ 軟體控制 ] 或所需的 RAID 模式。
3. 按住 [ 設定 ] 按鈕 3 秒。  
RAID 裝置會發出一次嗶聲。



### 注意

切換為 [ 軟體控制 ] 模式時，無需按 [ 設定 ] 按鈕。

4. 確認設定已套用。
  - a. 開啟伺服器上的 [ **QNAP External RAID Manager** ] 或前往 QTS 中的 [ **儲存與快照總管** ]。
  - b. 確認設定已變更。

方法	使用者動作
QNAP External RAID Manager	<ol style="list-style-type: none"> <li>1. 開啟伺服器上的 [ <b>QNAP External RAID Manager</b> ]。</li> <li>2. 找出 RAID 群組，然後確認狀態已變更為您要的設定。</li> </ol>
儲存與快照總管	<ol style="list-style-type: none"> <li>1. 以管理員身份登入 QTS。</li> <li>2. 前往 [ 主選單 ] &gt; [ 儲存與快照總管 ] &gt; [ 儲存空間 ] &gt; [ 磁碟/VJBOD ]。</li> <li>3. 找出 RAID 群組，然後確認狀態已變更為您要的設定。</li> </ol>

## 從 RAID 模式或軟體控制模式切換為其他模式



### 警告

除非您正在 [ 軟體控制 ] 模式來回切換，否則編輯 RAID 設定會刪除硬碟上的所有資料。

1. 請確認模式開關設為 [ 軟體控制 ] 或 RAID 模式。
2. 將模式開關設為 [ 獨立 ]。
3. 按住 [ 設定 ] 按鈕 3 秒。  
RAID 裝置會發出一次嗶聲。



### 提示

如果您要讓 RAID 裝置維持 [ 獨立 ] 模式，請暫停操作。

4. 將模式開關設為 [ 軟體控制 ] 或所需的 RAID 設定。
5. 按住 [ 設定 ] 按鈕 3 秒。  
RAID 裝置會發出一次嗶聲。



### 注意

切換為 [ 軟體控制 ] 模式時，無需按 [ 設定 ] 按鈕。

6. 確認設定已套用。

- a. 開啟伺服器上的 [ **QNAP External RAID Manager** ] 或前往 QTS 中的 [ **儲存與快照總管** ] 。
- b. 確認設定已變更。

方法	使用者動作
QNAP External RAID Manager	<ol style="list-style-type: none"> <li>1. 開啟伺服器上的 [ <b>QNAP External RAID Manager</b> ] 。</li> <li>2. 找出 RAID 群組，然後確認狀態已變更為您要的設定。</li> </ol>
儲存與快照總管	<ol style="list-style-type: none"> <li>1. 以管理員身份登入 QTS 。</li> <li>2. 前往 [ 主選單 ] &gt; [ 儲存與快照總管 ] &gt; [ 儲存空間 ] &gt; [ 磁碟/VJBOD ] 。</li> <li>3. 找出 RAID 群組，然後確認狀態已變更為您要的設定。</li> </ol>

## 5. 基本操作

本章說明外接 RAID 裝置的基本操作。


### 設定按鈕


[ 設定 ] 按鈕位在外接 RAID 裝置的背面板，可用於編輯 RAID 設定。如需詳細資訊，請參見：[模式開關](#)。

### LED 燈號

LED 燈號指示外接 RAID 裝置開機時的系統狀態與相關資訊。下列 LED 燈號資訊僅適用於已正確安裝硬碟且 RAID 裝置已連線的情況。

如需 LED 燈號的位置資訊，請參見：[元件](#)。

LED 燈號	狀態	說明
系統狀態	綠燈	RAID 裝置已就緒。
	紅燈	<ul style="list-style-type: none"> <li>• 硬碟無效。</li> <li>• 磁碟區容量已滿。</li> <li>• 磁碟區容量將滿。</li> <li>• 系統風扇異常。</li> <li>• 資料存取 ( 讀寫 ) 錯誤。</li> <li>• 硬碟壞軌。</li> <li>• RAID 裝置處於降階唯讀模式 ( RAID 5 有兩個硬碟故障，但資料仍可讀取 )。</li> <li>• RAID 裝置處於降階模式 ( RAID 1 或 RAID 5 有一個硬碟故障 )。</li> <li>• 硬體自我檢查錯誤</li> </ul>
	紅燈每 2 秒閃爍	RAID 裝置處於待命模式，但系統異常。
	綠燈每 2 秒閃爍	所有硬碟處於待命模式。
	綠燈每秒閃爍	RAID 裝置尚未設定。
	綠燈與紅燈每 0.5 秒交錯閃爍	<ul style="list-style-type: none"> <li>• 硬碟正在格式化。</li> <li>• 裝置韌體更新中。</li> </ul> <div style="display: flex; align-items: center;">  <div> <p><b>重要</b></p> <p>請勿在裝置韌體更新期間拔下電源線或 USB 連接線，也不要強制結束應用程式。</p> </div> </div> <ul style="list-style-type: none"> <li>• RAID 重建作業進行中。</li> </ul>
	關閉	RAID 裝置關機。

LED 燈號	狀態	說明
硬碟	紅燈	硬碟讀寫錯誤。
	紅燈閃爍	資料存取中並發生讀寫錯誤。
	綠燈	可存取硬碟。
	綠燈閃爍	<ul style="list-style-type: none"> <li>正在存取資料。</li> <li>正在複製資料。</li> </ul>
	關閉	所有硬碟處於待命模式。
USB	藍燈	<ul style="list-style-type: none"> <li>RAID 裝置已連接至主機。</li> <li>資料複製完畢。</li> </ul>
	藍燈每秒閃爍	<ul style="list-style-type: none"> <li>正在複製資料。</li> <li>裝置韌體更新中。</li> </ul> <div style="border-left: 2px solid red; padding-left: 10px; margin-top: 10px;">  <p><b>重要</b> 請勿在裝置韌體更新期間拔下電源線或 USB 連接線，也不要強制結束應用程式。</p> </div>
	關閉	<ul style="list-style-type: none"> <li>RAID 裝置未連接至主機。</li> <li>主機退出 RAID 裝置。</li> <li>所有硬碟處於待命模式。</li> </ul>

## 警示音

期間	頻率	描述
短嗶 (0.5 秒)	1 聲	<ul style="list-style-type: none"> <li>RAID 裝置啟動中。</li> <li>RAID 裝置關閉中 (軟體關機)。</li> <li>RAID 設定被修改。</li> </ul>
	3	<ul style="list-style-type: none"> <li>系統風扇異常。</li> <li>系碟或硬碟過熱。</li> <li>硬碟進入降階模式。</li> <li>使用者嘗試將 RAID 裝置的資料複製到外接儲存裝置，但資料無法複製。</li> </ul>
長嗶 (3 秒)	3	<ul style="list-style-type: none"> <li>磁碟區容量將滿。</li> <li>磁碟區容量已滿。</li> <li>使用者開始硬碟重建程序。</li> <li>硬碟已安裝或移除。</li> </ul>
	1 聲	<ul style="list-style-type: none"> <li>RAID 裝置強制關機 (硬體關機)。</li> <li>RAID 裝置成功開機且可供使用。</li> </ul>

## 待命模式

RAID 裝置支援待命模式，有助於降低噪音和耗電量。RAID 裝置進入待命模式時，系統風扇和安裝的 HDD 會停止運轉，且系統處理程序也會暫停。一旦被喚醒，RAID 裝置會返回先前的系統狀態，所有暫停的處理程序也將繼續運作。

發生以下情況時，RAID 裝置進入待命模式：

- 主機進入休眠/待命模式或關機。  
只有在主機的 USB 電源設計支援休眠模式時，RAID 裝置才會進入休眠模式。
- USB 連接線中斷連線。



### 注意

RAID 裝置不會在 RAID 重建期間進入待命模式。若系統在 RAID 重建期間提示進入待命模式，RAID 裝置會先完成 RAID 重建後再進入待命模式。

## 6. 疑難排解

本章介紹基本的疑難排解資訊。

### 強制 [ 儲存與快照總管 ] 或 QNAP External RAID Manager 辨識外接 RAID 裝置

如果 [ 儲存與快照總管 ] 或 QNAP External RAID Manager 找不到 RAID 裝置，表示硬碟或資料可能損壞。

1. 關閉 RAID 裝置的電源。
2. 移除所有硬碟。
3. 開啟 RAID 裝置的電源。
4. 使用 [ 儲存與快照總管 ] 或 QNAP External RAID Manager 尋找 RAID 裝置。
5. 將硬碟重新插入。
6. 繼續編輯 RAID 設定。

### 熱抽換故障硬碟

NAS 支援熱抽換下列情況的硬碟：

- RAID 1：一個硬碟故障
- RAID 5：一個硬碟故障
- RAID 10：
  - 一個硬碟故障
  - 兩個硬碟故障（一個位於插槽 1 或 2，另一個位於插槽 3 或 4）

1. 登入 QTS。
2. 前往 [ 主選單 ] > [ 儲存與快照總管 ] > [ 儲存空間 ] > [ 外部儲存裝置 ]。
3. 找出故障的硬碟。
4. 準備一個新的硬碟，且容量至少與故障硬碟相同。
5. 將故障硬碟從 RAID 裝置取下。
6. 等待 30 秒或等到 RAID 裝置發出兩次嗶聲。
7. 將故障硬碟從硬碟托盤取下。
8. 將新的硬碟插入硬碟托盤。
9. 安裝新的硬碟。  
RAID 裝置會發出兩次嗶聲。
10. 等待 30 秒或等到 RAID 裝置發出兩次嗶聲。
11. 前往 [ 主選單 ] > [ 儲存與快照總管 ] > [ 儲存空間 ] > [ 儲存空間/快照 ]。
12. 找出新硬碟所在的磁碟區，然後確認其狀態為 [ 重建中 ]。

## 支援和其他資源

QNAP 提供下列資源：

資源	URL
文件	<a href="https://docs.qnap.com">https://docs.qnap.com</a>
服務中心	<a href="https://helpdesk.qnap.com">https://helpdesk.qnap.com</a>
下載	<a href="https://download.qnap.com">https://download.qnap.com</a>
社群論壇	<a href="https://forum.qnap.com">https://forum.qnap.com</a>

## 7. 詞彙

### **QTS**

QNAP NAS 作業系統

### **QNAP External RAID Manager**

此 Windows 與 macOS 工具程式可讓您檢視並設定 QNAP 外接 RAID 裝置

### **儲存與快照總管**

此 QTS 應用工具可讓您檢視並設定與 QNAP NAS 相連的 QNAP 外接 RAID 裝置



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Version 3, 29 June 2007

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## FCC 聲明

### FCC A 級聲明



本產品符合 FCC 規則第 15 部分。產品操作須遵守以下兩個條件：

1. 本產品不得造成有害干擾。
2. 本產品必須承受任何收到的干擾，包含可能造成額外操作的干擾。



#### 注意

本產品已通過測試並符合 FCC 規則第 15 部分 A 級數位裝置之限制。此等限制旨在此裝置於商業環境中操作時，提供免於有害干擾之合理保護所設計。本產品產生、使用、並可能放射無線電頻率能量，若未依據指示安裝及使用，可能對無線電通訊造成有害干擾。在住宅區操作本產品可能會造成有害干擾。在這種情況下，使用者必須自行解決干擾現象。



#### 重要

任何未經過威聯通科技股份有限公司同意而對此產品進行修改，可能會讓使用者根據 FCC 規範操作本設備的權力失效。

## CE 聲明



此 QNAP NAS 符合 CE 規範等級 A。

## SJ/T 11364-2006



本產品符合中國 RoHS 標準。以下表格標示此產品中某有毒物質的含量符合中國 RoHS 標準規定的限量要求。

本產品上會附有“環境友好使用期限”的標籤，此期限是估算這些物質“不會有洩漏或突變”的年限。本產品可能包含有較短的環境友好使用期限的可替換元件，像是電池或燈管，這些元件將會單獨標示出來。

部件名稱	有毒有害物質或元素					
	鉛 (Pb)	汞 (Hg)	鎘 (Cd)	六價鉻 (CR(VI))	多溴聯苯 (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

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)
金属螺帽	0	0	0	0	0	0
电缆组装	0	0	0	0	0	0
风扇组装	0	0	0	0	0	0
电力供应组装	0	0	0	0	0	0
电池	0	0	0	0	0	0

O: 表示该有毒有害物质在该部件所有物质材料中的含量均在 SJ/T11363-2006 标准规定的限量要求以下。

X: 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T11363-2006 标准规定的限量要求。

## VCCI 聲明



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

## 經濟部標準檢驗局聲明



D33B77  
RoHS

警告使用者：這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。