



**QNAP**

# 外接 RAID 裝置

TR-002

TR-004

使用手冊

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# 1. 前言





## 關於本手冊

本手冊涵蓋 QNAP TR-002 和 TR-004 外接 RAID 裝置的相關資訊，以及安裝硬體的逐步指示。此外，本手冊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。本手冊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-002 和 TR-004 外接 RAID 裝置的基本資訊。

### 關於 QNAP 外接 RAID 裝置

QNAP 外接 RAID 裝置的用途在於擴充 NAS 或電腦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-002 和 TR-004 的模式開關可讓您輕鬆切換 RAID 設定，而其 USB 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 產品保固服務條款](#)。

元件	TR-002	TR-004
訂購資訊		
訂購料號	TR-002	TR-004
儲存		
硬碟插槽	2 x 3.5 吋 SATA 6 Gbps	4 x 3.5 吋 SATA 3 Gbps
	<b>注意</b> TR-004 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>	
硬碟托盤類型	金鑰鎖	
熱抽換	是	
外接 I/O 埠和擴充插槽		
USB 連接埠	1 x USB 3.1 Gen 2 (10 Gbps) Type-C	1 x USB 3.0 Type-C
	<b>重要</b> <ul style="list-style-type: none"> <li>• 此連接埠僅可用於連接 RAID 裝置與 NAS 或電腦。</li> <li>• 為了讓系統偵測到 RAID 裝置，RAID 裝置必須至少安裝一個磁碟機。</li> </ul>	
網路介面		
按鈕	<ul style="list-style-type: none"> <li>• 退出</li> <li>• 設定</li> <li>• USB 單鍵備份</li> </ul>	

元件	TR-002	TR-004
交換器	<ul style="list-style-type: none"> <li>• 電源</li> </ul> <div style="display: flex; align-items: center;"> <p><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。</p> </div> <ul style="list-style-type: none"> <li>• 模式</li> </ul>	
尺寸		
外型	直立式	
尺寸 (高 x 寬 x 深)	169 x 102 x 219 mm (6.65 x 4.02 x 8.62 in)	169 x 160.2 x 219 mm (6.65 x 6.31 x 8.62 in)
淨重	1.37 kg (3.02 lbs)	1.85 kg (4.08 lbs)
其它		
電源供應器	至少 36W 變壓器 (12V DC)，100-240V AC，50/60 Hz	至少 60W 變壓器 (12V DC)，100-240V AC，50/60 Hz
	<div style="display: flex; align-items: center;"> <p><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正確接地的電源插座。</p> </div>	
風扇	系統：1 x 7 cm，12V DC 智慧型風扇	系統：1 x 12 cm，12V DC 智慧型風扇
	<div style="display: flex; align-items: center;"> <p><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。</p> </div>	
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	



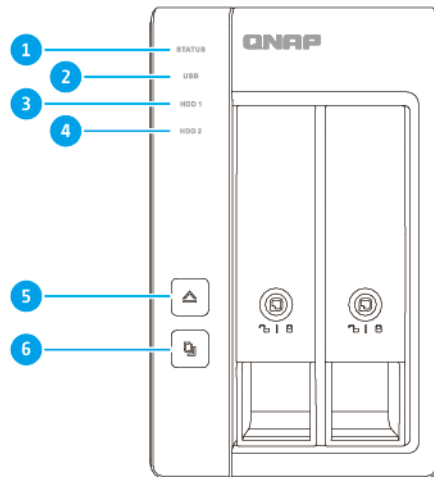
#### 提示

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

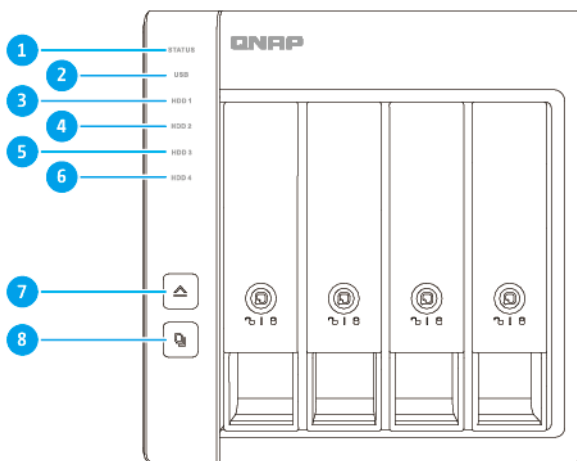
項目	數量
外接 RAID 裝置	1
AC 電源變壓器	1
電源線	1
USB Type-C 轉 Type-A 接頭纜線	1
硬碟托盤鑰匙	2
USB 連接線固定夾	1
2.5 吋硬碟用螺絲	<ul style="list-style-type: none"> <li>• TR-002：6</li> <li>• TR-004：12</li> </ul>
3.5 吋硬碟用螺絲	<ul style="list-style-type: none"> <li>• TR-002：8</li> <li>• TR-004：16</li> </ul>
快速安裝手冊 (QIG)	1

## 元件 前面板



**TR-002**

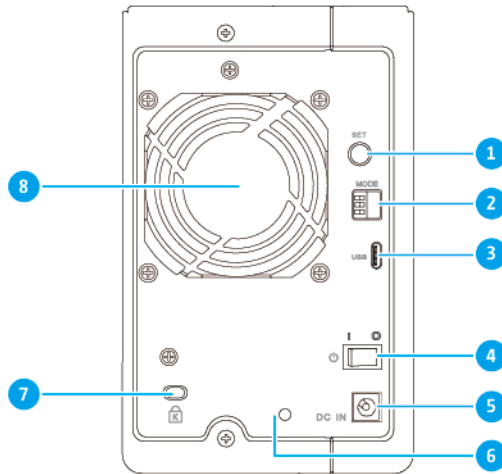
編號	元件	編號	元件
1	狀態 LED 燈	4	硬碟 2 LED 燈
2	USB LED 燈	5	退出按鈕
3	硬碟 1 LED 燈	6	USB 單鍵備份按鈕



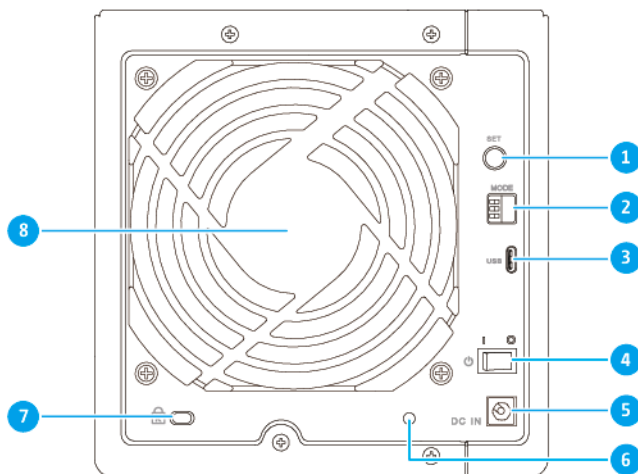
**TR-004**

編號	元件	編號	元件
1	狀態 LED 燈	5	硬碟 3 LED 燈
2	USB LED 燈	6	硬碟 4 LED 燈
3	硬碟 1 LED 燈	7	退出按鈕
4	硬碟 2 LED 燈	8	USB 單鍵備份按鈕

## 後面板



### TR-002



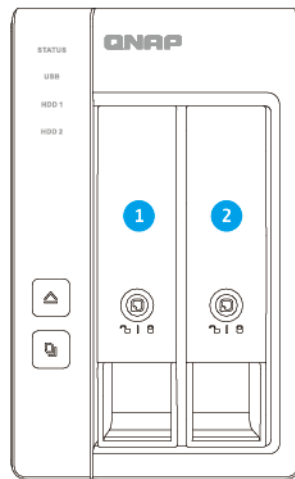
### TR-004

編號	元件	編號	元件
1	設定按鈕	5	電源輸入

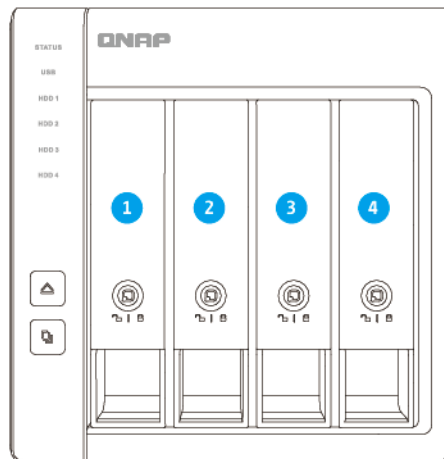


編號	元件	編號	元件
2	模式切換	6	USB 連接線固定夾插槽
3	<ul style="list-style-type: none"> <li>• TR-002：USB 3.1 Gen 2 Type-C 連接埠</li> <li>• TR-004：USB 3.0 Type-C 連接埠</li> </ul>	7	Kensington 安全鎖
4	電源開關	8	系統風扇

## 硬碟編號



### TR-002



### TR-004

## 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正確接地的電源插座。
- 為防止嚴重傷害事故發生，在安裝或更換系統元件前，經訓練的維修技術人員必須先從裝置上拔除所有電源供應器的電源線。

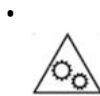
## 系統電池

- 本產品包含鈕扣電池。
- 如果吞下鈕扣型鋰電池可能會在 2 小時內造成嚴重或致命的傷害。
- 請將電池放在兒童接觸不到的地方。
- 如果您認為電池可能已被吞下或位於身體的任何部位，請立即就醫。
- 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使元件損壞。
- 請遵照當地法規或電池製造商的指示妥善處置廢棄電池。

## 移動的零件



**轉動的風扇葉片：**裝置連接至電源時，請使身體部位遠離正在轉動的風扇葉片。



**移動的元件：**使身體部位遠離正在移動的其他元件。

- 該裝置不適合在兒童可能出現的地方使用。

## 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>

類別	項目
硬體和週邊設備	<ul style="list-style-type: none"> <li>• NAS 或電腦</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

1. 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](#)。
2. 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 3.5 吋托盤上安裝 2.5 吋硬碟](#)
3. 連上電源線。
4. 連接 RAID 裝置與您的 NAS 或電腦。  
如需詳細資訊，請參見下列主題：
  - [連接 RAID 裝置與 NAS](#)
  - [連接 RAID 裝置與電腦](#)
5. 開啟 RAID 裝置的電源。
6. 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、連接 RAID 裝置與 NAS 或電腦，以及裝上 USB 連接線固定夾。

#### 硬碟安裝

QNAP 外接 RAID 裝置與 3.5 吋和 2.5 吋硬碟以及 2.5 吋固態硬碟相容。

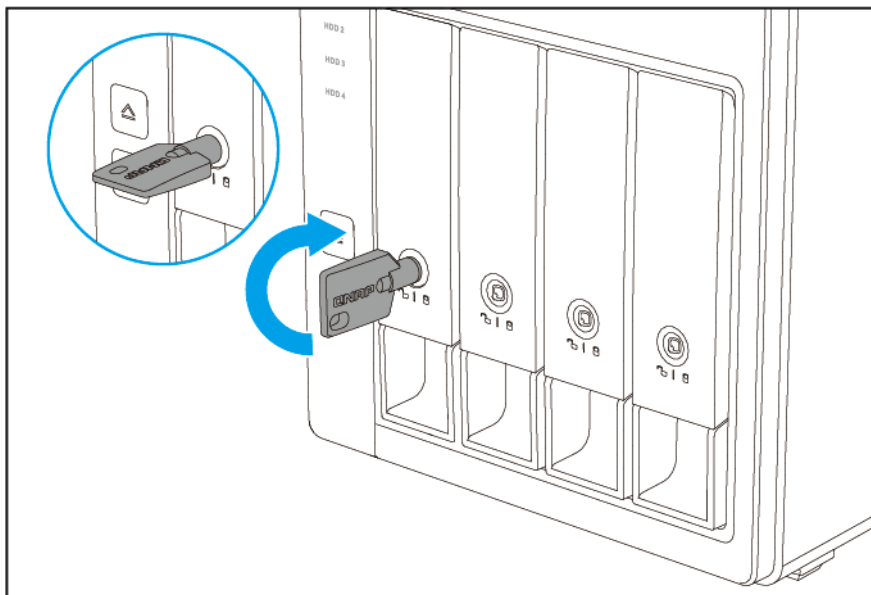
#### 在 3.5 吋托盤上安裝 3.5 吋硬碟



#### 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

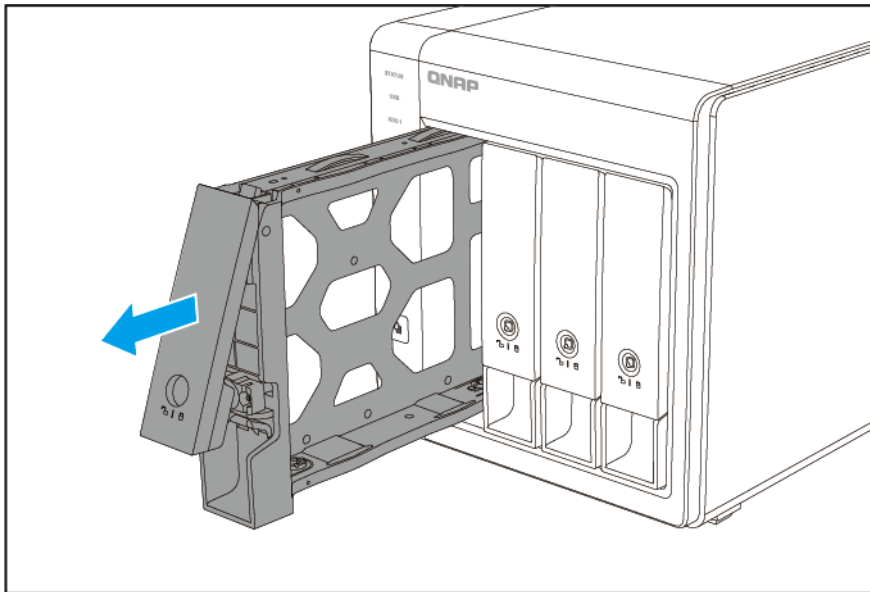
預先安裝的硬碟托盤會變成解鎖狀態。



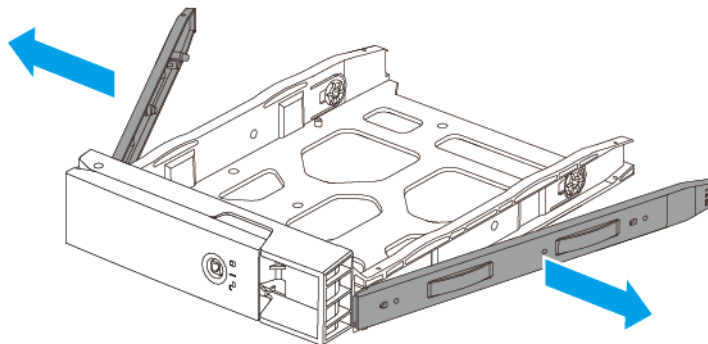
#### 重要

確實將硬碟托盤鑰匙放置在安全位置。

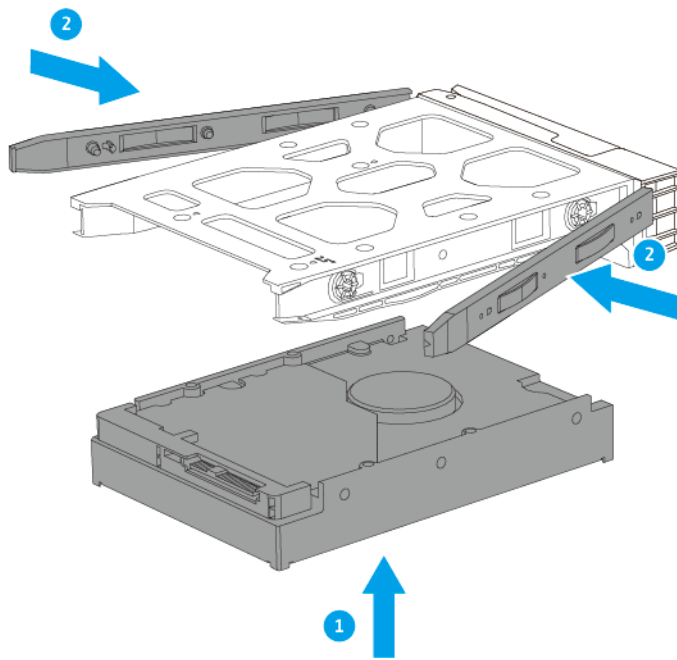
- b. 拉把手以鬆開托盤。
- c. 將托盤拉出。



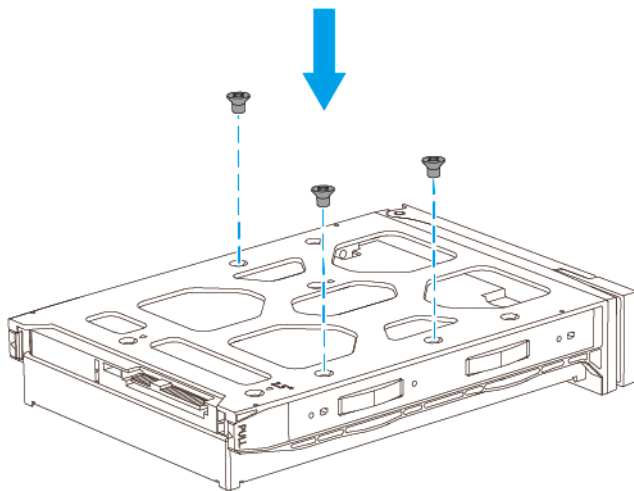
3. 在托盤上安裝硬碟。
  - a. 取下硬碟托盤兩側的固定面板。



- b. 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。
    - c. 裝上固定面板。



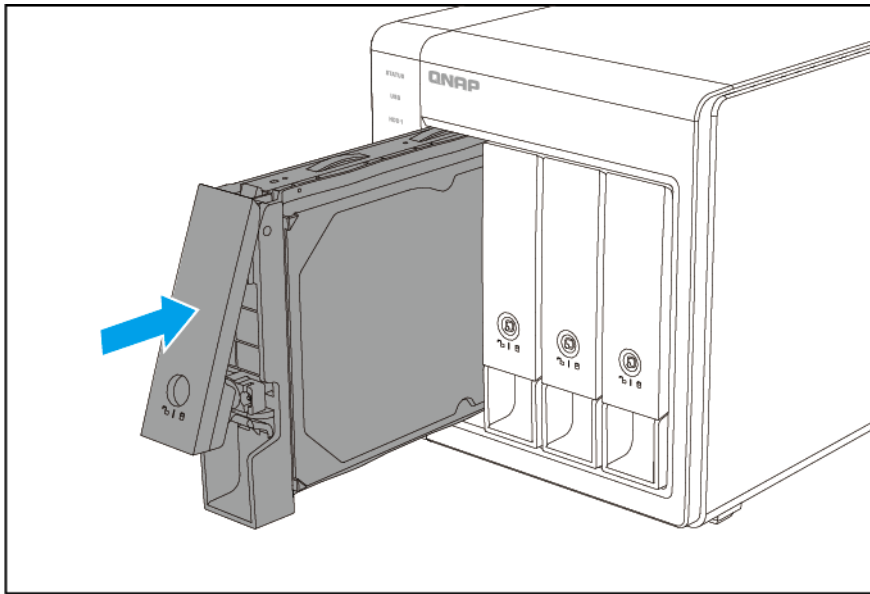
d. 選擇性: 鎖上螺絲, 使硬碟更加穩固。



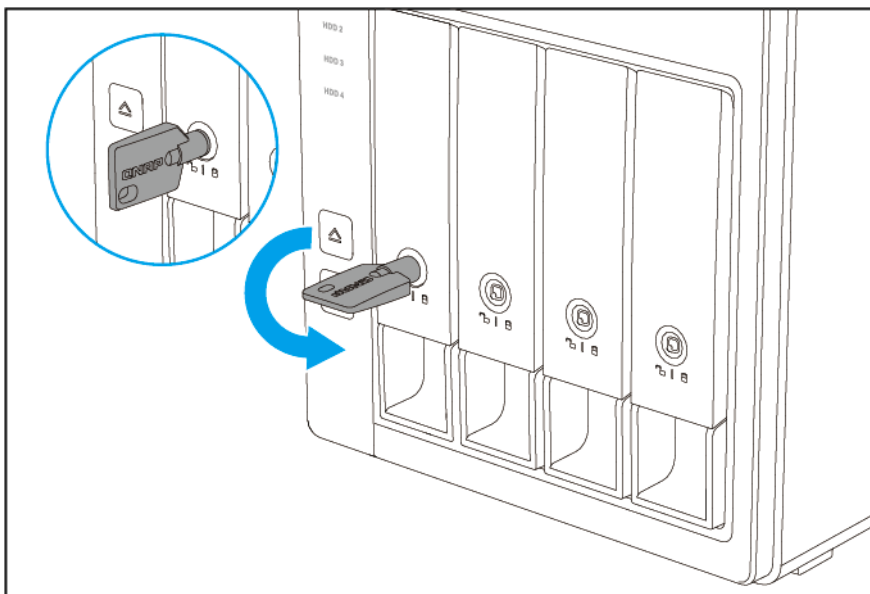
**重要**

QNAP 建議您先鎖上硬碟托盤的螺絲再移動。

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 3.5 吋托盤上安裝 2.5 吋硬碟

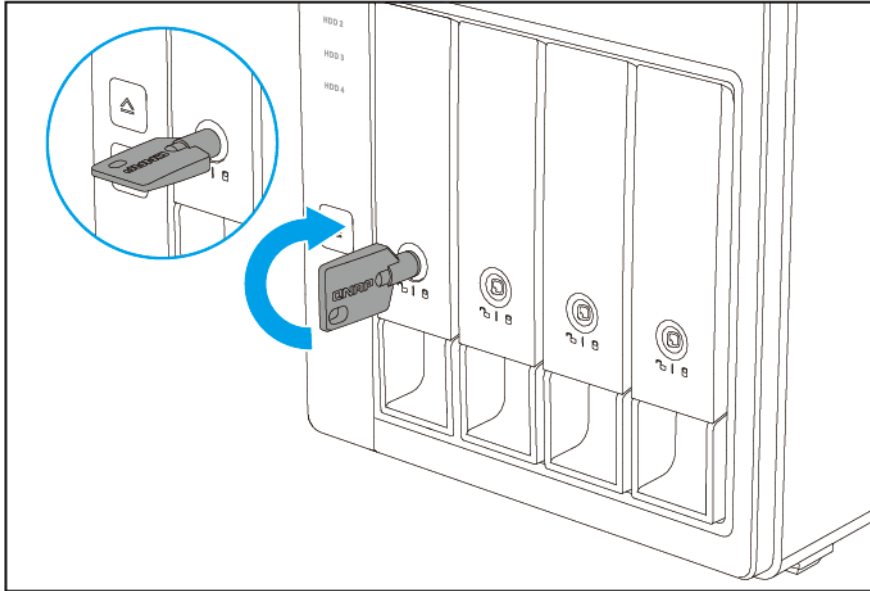


#### 警告

- 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。

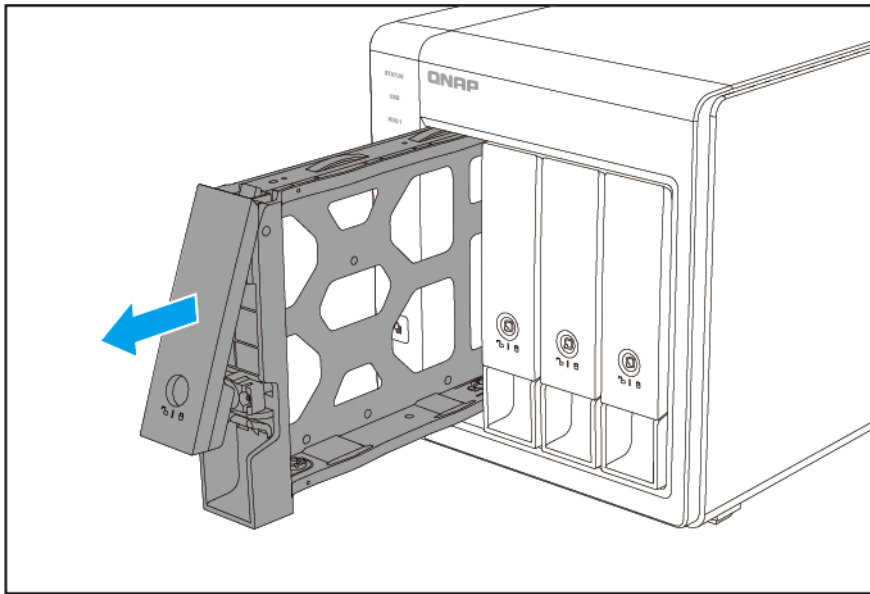


**注意**  
預先安裝的硬碟托盤會變成解鎖狀態。

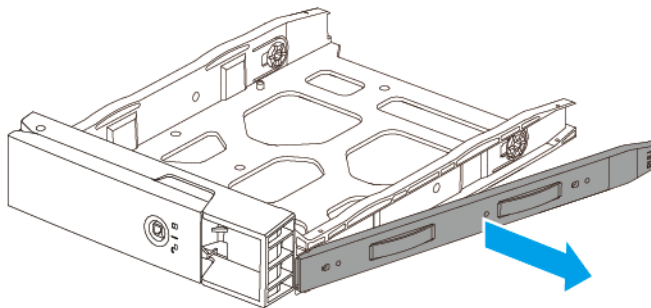
**重要**  
確實將硬碟托盤鑰匙放置在安全位置。

- b. 拉把手以鬆開托盤。
- c. 將托盤拉出。

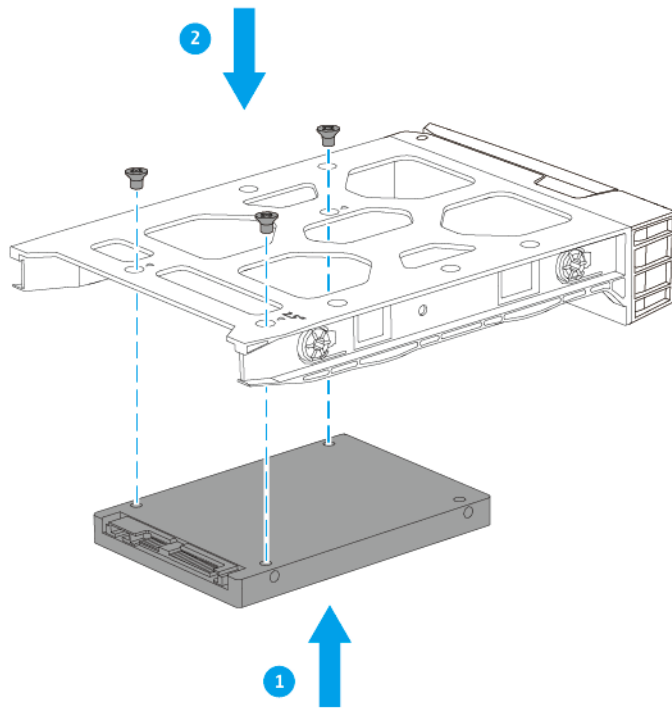




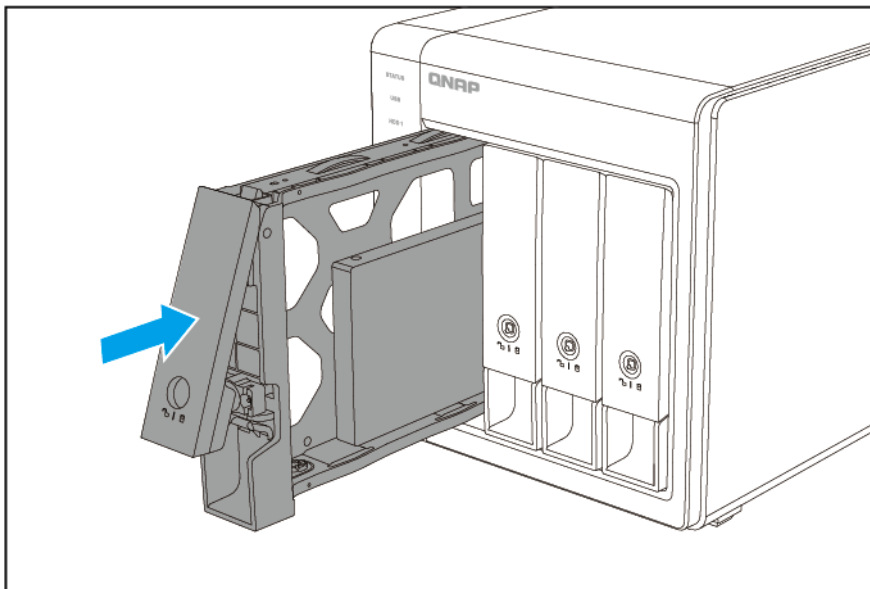
3. 在托盤上安裝硬碟。
  - a. 取下硬碟托盤右側的固定面板。



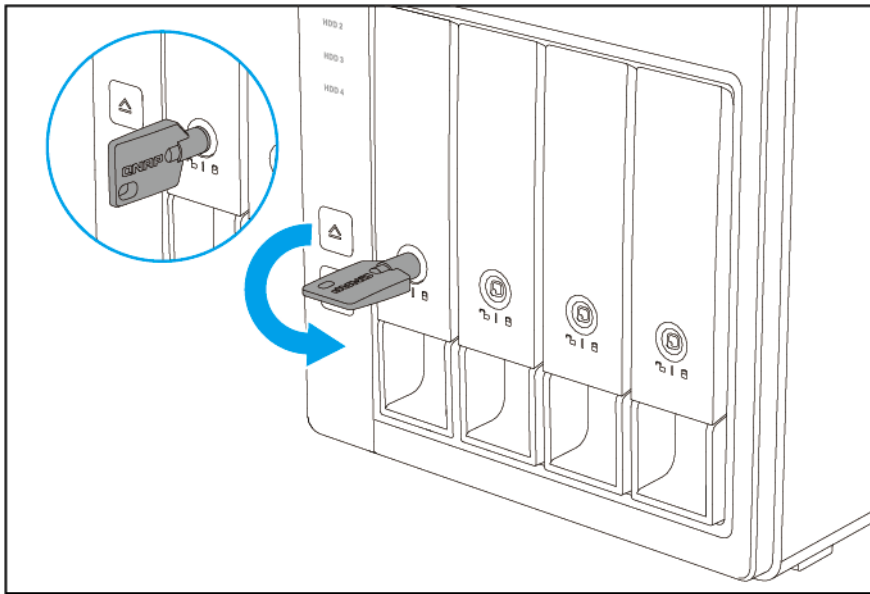
- b. 將硬碟放在托盤上，讓硬碟兩側的孔洞與托盤兩側的孔洞對齊。
    - c. 鎖上螺絲。



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。

## 連接 RAID 裝置與 NAS

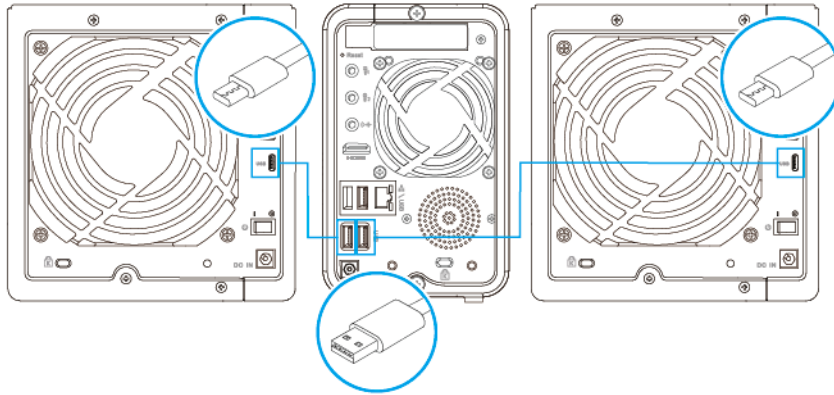
QNAP NAS 最多可支援兩台外接 RAID 裝置。



#### 警告

若在短時間內，重複將外接裝置與主機裝置中斷連接再重新連接，可能會發生開機失敗。QNAP 建議您等待 10 秒後，再將外接裝置重新連接至主機裝置。

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. 請以管理員身分登入 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 裝置與電腦

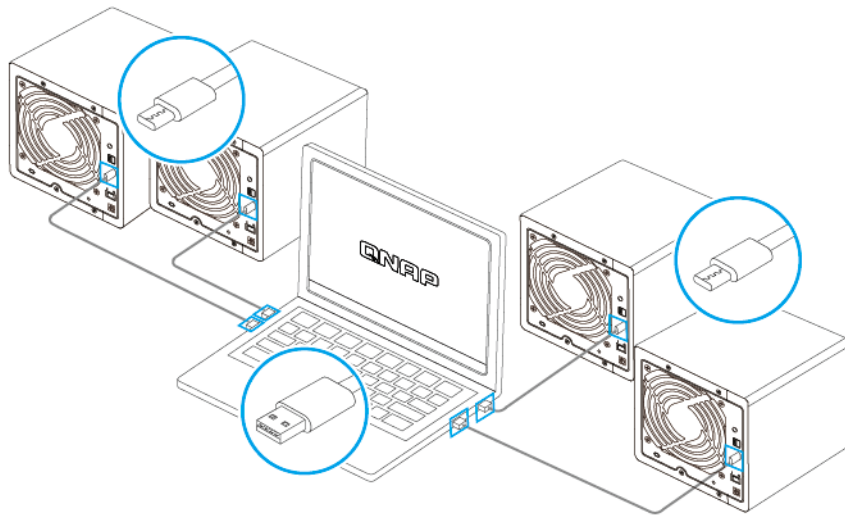
一台 Windows、macOS 或 Linux 電腦可支援不限數量的 RAID 裝置。然而，QNAP 建議一次最多連接四台 RAID 裝置。



### 警告

若在短時間內，重複將外接裝置與主機裝置中斷連接再重新連接，可能會發生開機失敗。QNAP 建議您等待 10 秒後，再將外接裝置重新連接至主機裝置。

1. 連接 RAID 裝置與電腦。
  - a. 將 USB 連接線接至 RAID 裝置上的 USB 3.0 Type-C 連接埠。
  - b. 將 USB 連接線接至電腦上的 USB 連接埠。
  - c. 選擇性: 連接額外 RAID 裝置與電腦。



2. 開啟 RAID 裝置的電源。
3. 確認電腦可辨識 RAID 裝置。
  - a. 前往電腦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

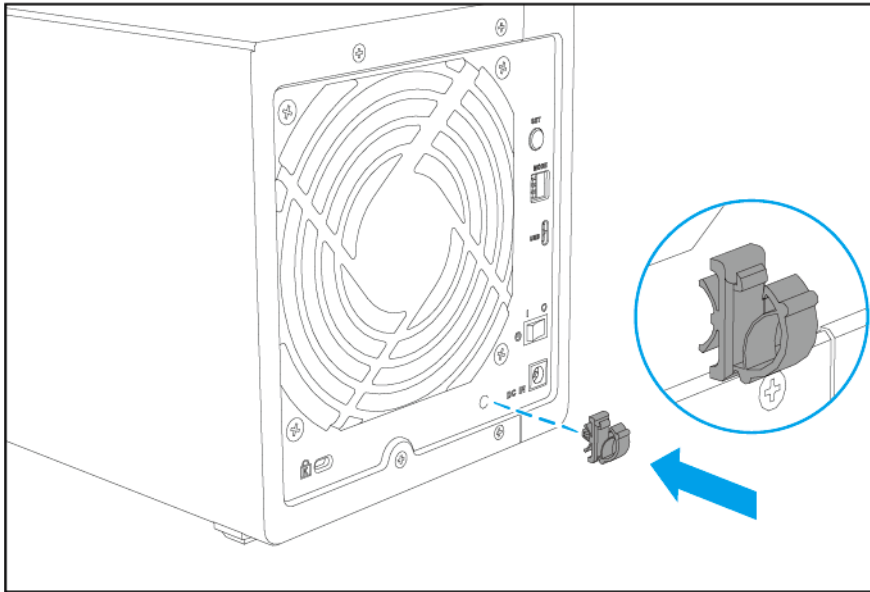


#### 重要

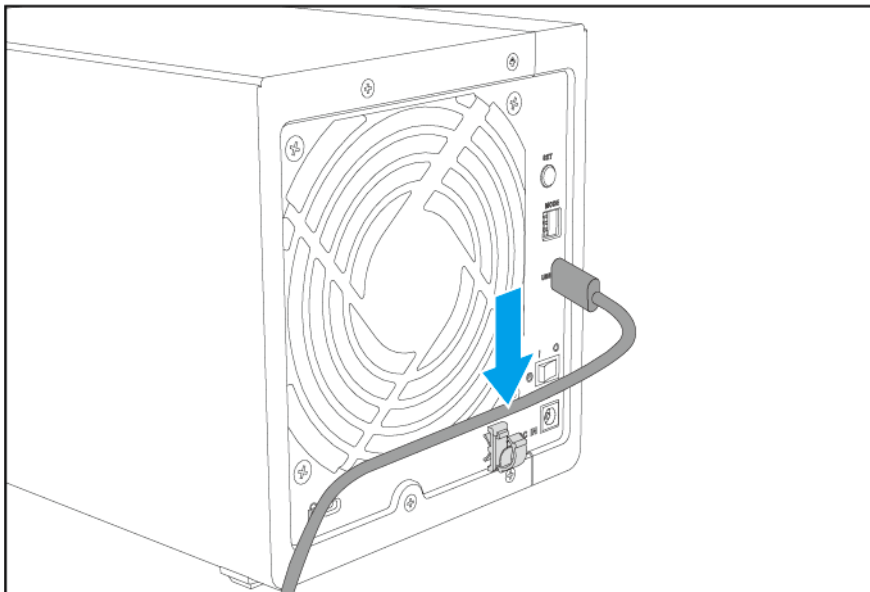
USB 連接線固定夾可讓連接線固定在 RAID 裝置周遭，避免連接線或任何附近元件意外受損。

將此固定夾裝到 RAID 裝置後，就不應把它卸下。

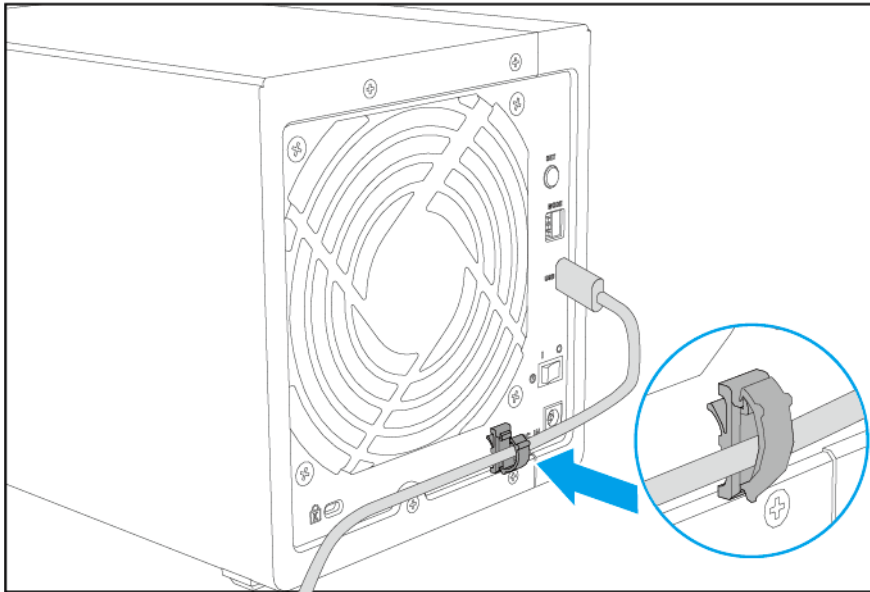
1. 將連接線固定夾插入固定夾插槽中。



2. 將連接線置入固定夾。

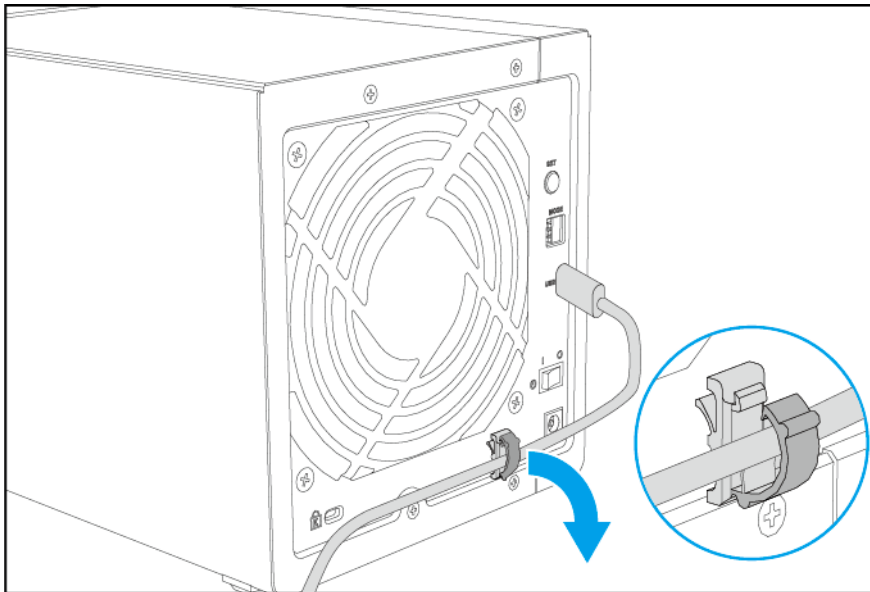


3. 將固定夾扣上以固定連接線。

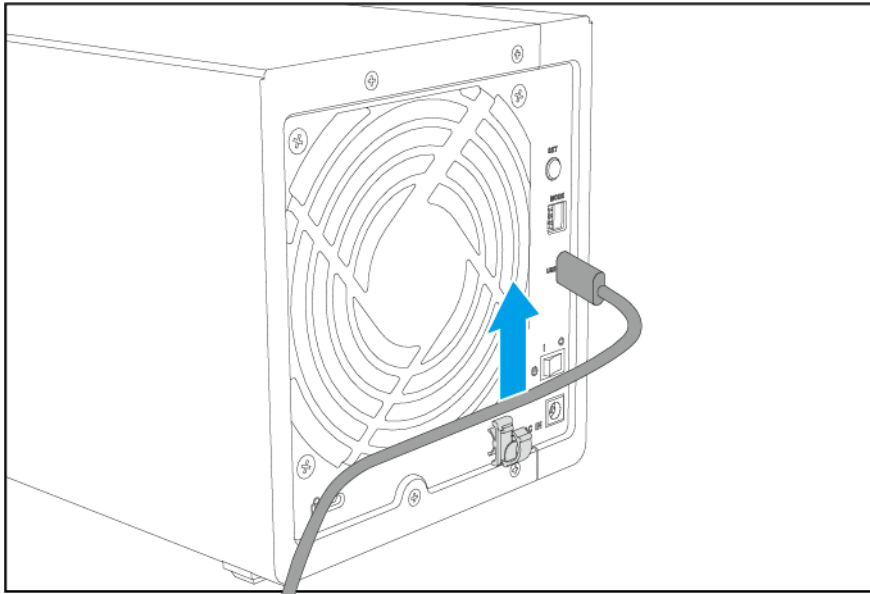


### 從 USB 連接線固定夾取下 USB 連接線

1. 鬆開連接線固定夾。



2. 將連接線從固定夾取下。





## 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	相容性列表
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>	<ul style="list-style-type: none"> <li>• TR-002</li> <li>• TR-004</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>	<ul style="list-style-type: none"> <li>• TR-002</li> <li>• TR-004</li> </ul>

RAID 類型	硬碟數量	描述	相容性列表
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>	<ul style="list-style-type: none"> <li>TR-002</li> <li>TR-004</li> </ul>
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>	TR-004
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>	TR-004

## 儲存模式

QNAP 外接 RAID 裝置支援 NAS 裝置與電腦的不同儲存模式。

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 電腦的外接硬體 RAID 裝置。

## 儲存模式和平台支援

組態	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
RAID 0/1/5/10	是	是
多個 RAID 群組	否	是

## 模式開關



您可以使用 RAID 裝置後方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

- 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。
- 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。

組態	描述
獨立	NAS 或電腦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>

組態	描述
軟體控制	<p>此為原廠預設模式。 此模式可讓您使用 Windows 或 Mac 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。

- 確定模式開關設為 [獨立]。  
如需詳細資訊，請參見：[模式開關](#)。
- 將模式開關設為 [軟體控制] 或所需的 RAID 模式。
- 按住 [設定] 按鈕 3 秒。  
擴充裝置會發出一聲嗶聲。



#### 注意

切換為 [軟體控制] 模式時，無需按 [設定] 按鈕。

- 確認設定已套用。
  - 開啟電腦上的 [QNAP External RAID Manager] 或前往 QTS 中的 [儲存與快照總管]。
  - 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>開啟電腦上的 [QNAP External RAID Manager]。</li> <li>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>以管理員身份登入 QTS。</li> <li>前往 [主選單] &gt; [儲存與快照總管] &gt; [儲存空間] &gt; [硬碟/VJBOD]。</li> <li>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。  
擴充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。  
擴充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. 開啟電腦上的 [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. 開啟電腦上的 [QNAP External RAID Manager]</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; [硬碟/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。

### 退出按鈕

按下 [退出] 按鈕後，外接 RAID 裝置或其分割區會與執行 QTS 4.3.6（或以上版本）的 QNAP NAS 或者執行 QNAP External RAID Manager 工具程式的 Windows 電腦中斷連線。

若執行 QNAP External RAID Manager 工具程式的是 macOS 電腦，則按下 [退出] 按鈕只會卸載磁碟區，不會使 RAID 裝置與電腦中斷連線。

### USB 單鍵備份按鈕

USB 單鍵備份按鈕可讓您在外接 RAID 裝置和 NAS（外接儲存模式）之間複製資料。

本功能支援增量備份。RAID 裝置僅複製上次備份後修改或新增的檔案。

僅當 RAID 裝置連接到具有 USB 單鍵備份按鈕且執行 QTS 4.4.1（或以上版本）的 NAS 裝置時，才可使用 USB 單鍵備份按鈕。

### 設定按鈕

[設定] 按鈕位在外接 RAID 裝置的後方面板，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	綠燈與紅燈每 0.5 秒交錯閃爍	RAID 重建作業進行中。
	紅燈	<ul style="list-style-type: none"> <li>• 硬碟無效。</li> <li>• 系統風扇異常。</li> <li>• RAID 裝置處於降階模式（RAID 1 或 RAID 5 有一個硬碟故障）。</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	RAID 裝置已就緒。
	綠燈每 1.5 秒閃爍	RAID 裝置處於待命模式。
	關閉	RAID 裝置關機。

LED 燈號	狀態	說明
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> <li>外部應用程式正在監控 RAID 裝置。</li> </ul>
	綠燈	硬碟可供存取。
	關閉	<ul style="list-style-type: none"> <li>RAID 裝置處於待命模式。</li> <li>偵測不到硬碟。</li> </ul>
USB	藍燈	RAID 裝置已連接至主機。
	關閉	<ul style="list-style-type: none"> <li>RAID 裝置未連接至主機。</li> <li>RAID 裝置處於待命模式。</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 裝置已就緒。</li> <li>RAID 設定被修改。</li> </ul>
長嗶 (2 秒)	3 次 (每隔 5 分鐘)	<ul style="list-style-type: none"> <li>系統風扇異常。</li> <li>系碟或硬碟過熱。</li> <li>RAID 群組處於降階模式。</li> <li>RAID 群組運作失敗。</li> </ul>
	3 次 (不重複)	<ul style="list-style-type: none"> <li>RAID 重建程序啟動。</li> <li>RAID 重建程序完成。</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 電源設計支援待命模式時，RAID 裝置才會進入待命模式。
- USB 連接線中斷連線。



### 注意

TR-002 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，TR-002 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 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 裝置電源。
2. 移除所有硬碟。
3. 開啟 RAID 裝置電源。
4. 將硬碟重新插入。
5. 使用儲存與快照總管或 QNAP External RAID Manager 尋找 RAID 裝置。
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]** > **[外接儲存裝置]**。
3. 找出故障的硬碟。
4. 準備一個新的硬碟，其容量不低於故障硬碟的容量。
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://download.qnap.com">https://download.qnap.com</a>
相容性列表	<a href="https://www.qnap.com/compatibility">https://www.qnap.com/compatibility</a>
NAS 遷移相容性	<a href="https://www.qnap.com/go/nas-migration">https://www.qnap.com/go/nas-migration</a>
擴充設備相容性	<a href="https://www.qnap.com/go/compatibility-expansion">https://www.qnap.com/go/compatibility-expansion</a>
服務入口網站	<a href="https://service.qnap.com">https://service.qnap.com</a>
產品支援狀態	<a href="https://www.qnap.com/go/product/eol.php">https://www.qnap.com/go/product/eol.php</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>
QNAP 配件商店	<a href="https://shop.qnap.com">https://shop.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 RAID 裝置

### 儲存與快照總管

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

## 8. 聲明

本章介紹擔保、免責聲明、授權以及聯辦法規的相關資訊。

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Version 3, 29 June 2007

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#### FCC B 級聲明



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D33B77  
RoHS

**SJ/T 11364-2006**

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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

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)
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
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