



QNAP

TS-h2490FU

使用者指南



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1. 前言





關於本指南

本指南涵蓋裝置的相關資訊以及安裝硬體的步驟指示。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儲存裝置管理員。本指南預設使用者具有相關知識概念，且有能力安裝、維護儲存裝置並排解有關伺服器、伺服器元件和儲存系統的相關問題。本指南亦預設使用者受過相關訓練，能夠識別各種危險跡象，在發生危險時也知道該如何處理，以避免受傷及資料/資產受損。

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 裝置的基本資訊。

關於 TS-h2490FU

TS-h2490FU 全快閃記憶體採用第 2 代 AMD EPYC™ 7002 系列處理器，專為企業級解決方案提供可擴充的平台。其配備 24 顆 U.2 NVMe 固態硬碟，可提供高達 472K/205K 隨機讀寫 IOPS，並具有超低延遲性能。這款 ZFS NAS 具備極高可靠度，支援即時重複資料刪除與壓縮、近乎無限的快照以及即時 SnapSync。TS-h2490FU 相當適用於 I/O 密集型與延遲敏感應用，可消除資料中心、虛擬化與關鍵任務作業的生產力瓶頸。

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](#)。





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>。

訂購料號	CPU	記憶體	電源供應器
TS-h2490FU-7232P-64G	AMD EPYC™ 7232P	64 GB	備援
TS-h2490FU-7302P-128G	AMD EPYC™ 7302P	128 GB	備援

元件	TS-h2490FU-7232P-64G	TS-h2490FU-7302P-128G
處理器		
CPU	AMD EPYC™ 7232P	AMD EPYC™ 7302P
頻率	8 核心/16 執行緒 3.1 GHz 基頻/3.2 GHz 超頻	16 核心/32 執行緒 3.0 GHz 基頻/3.3 GHz 超頻
架構	x86 64 位元	
加密引擎	AES-NI	
記憶體		
預載記憶體	64 GB RAM : 8 x 8 GB RDIMM DDR4 ECC	128 GB RAM : 8 x 16 GB RDIMM DDR4 ECC

元件	TS-h2490FU-7232P-64G	TS-h2490FU-7302P-128G
記憶體插槽	16 x DDR4 Long-RDIMM  重要 <ul style="list-style-type: none"> • 僅限使用 QNAP 記憶體模組以維護系統效能和穩定性。若是具有一個以上記憶體插槽的 NAS 硬碟，請使用規格相同的 QNAP 記憶體模組。 • 使用不支援的記憶體模組會導致效能降級、產生錯誤，或造成作業系統無法啟動。 • 您每次只能使用一種雙行記憶體模組 (DIMM)。請勿將 RDIMM (寄存式雙列直插式記憶體模組) 與 LRDIMM (低負載雙列直插式記憶體模組) 記憶體搭配使用。 	
最大記憶體	4 TB RAM : 16 x 256 GB	
快閃記憶體	5 GB (雙啟動作業系統防護)	
儲存空間		
硬碟插槽	24 x 2.5 吋 U.2 PCIe NVMe	
硬碟相容性	2.5 吋插槽： 2.5 吋 U.2 NVMe Gen 3.0 x 4 固態硬碟  提示 <ul style="list-style-type: none"> • 請前往 https://www.qnap.com/compatibility 以查看相容的硬碟機型清單。 	
SSD 快取加速技術支援	支援。	
熱抽換	支援。	
網路		
25 Gigabit 乙太網路埠	2 x 25 GbE SmartNIC SFP28	4 x 25 GbE SmartNIC SFP28
2.5 Gigabit 乙太網路埠	2 x 2.5 GbE RJ45	
外接 I/O 埠和擴充插槽		
PCIe 插槽	<ul style="list-style-type: none"> • 2 x PCIe 4.0 x4 • 2 x PCIe 4.0 x8 • 1 x PCIe 4.0 x16  提示 請前往 https://www.qnap.com/compatibility 查看相容的擴充卡清單。	
USB 連接埠	2 x USB 3.2 Gen 1 Type-A	
介面		
按鈕	<ul style="list-style-type: none"> • 電源 • 重設 	
尺寸		
外型	2U 機架式	
尺寸 (高 x 寬 x 深)	88.3 x 481 x 510.2 mm (34.76 x 18.93 x 20.09 in)	

元件	TS-h2490FU-7232P-64G	TS-h2490FU-7302P-128G
淨重	15.2 kg (33.51 lbs)	
其他		
滑軌相容性	RAIL-A03-57  注意 <ul style="list-style-type: none"> 您可以在機架滑軌的包裝中找到安裝資訊。 如需詳細資訊，請瀏覽：http://srcqnap.qnap.com.tw/en/product/rail-kit。 	
電源供應器	2 x 1100W · 200-240V AC · 50/60 Hz	
系統電池	CR2032 鋰電池 (3V · 225 mAh)	
噪音值	53.5 dB(A)  注意 從旁觀者位置 (距 NAS 一公尺內) 測試噪音值。在測試用的 NAS 中安裝最多數量的硬碟，並以低速運行。	
風扇	系統：4 x 60 mm · 12V DC 風扇	
操作溫度	0°C 到 35°C (32°F 到 95°F)	
相對濕度	<ul style="list-style-type: none"> 不凝結相對溼度：5% 至 95% 濕球溫度：27°C (80.6°F) 	

**提示**

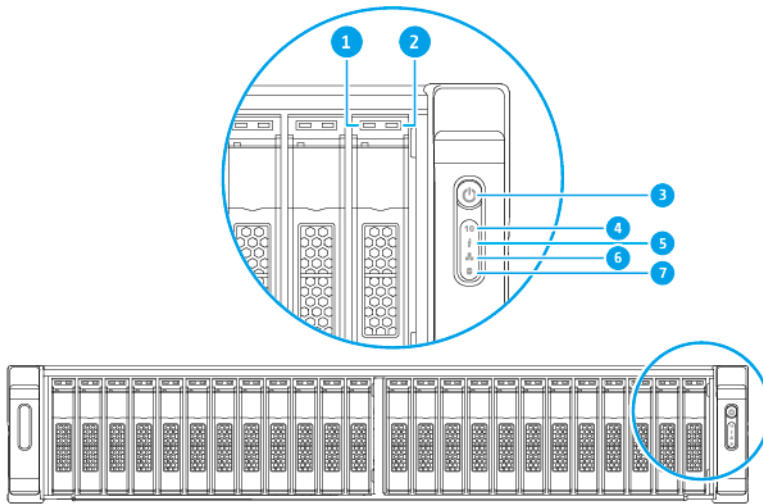
請前往 <https://www.qnap.com/compatibility>，查看相容硬碟型號及擴充卡清單。

包裝內容

項目	數量
TS-h2490FU	1
電源線	2
乙太網路線	1 x Cat 5e
2.5 吋硬碟用螺絲	96
快速安裝手冊 (QIG)	1

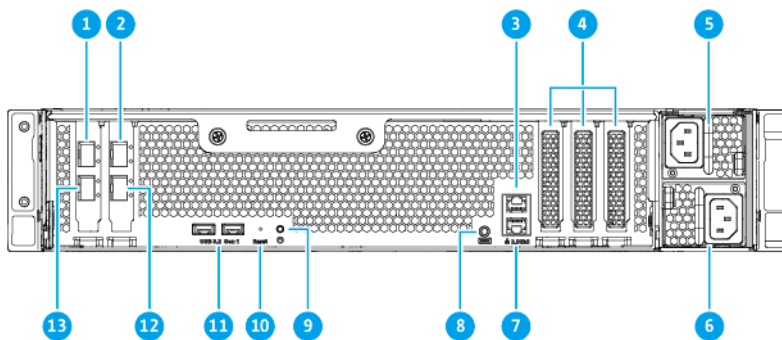
元件

前方面板




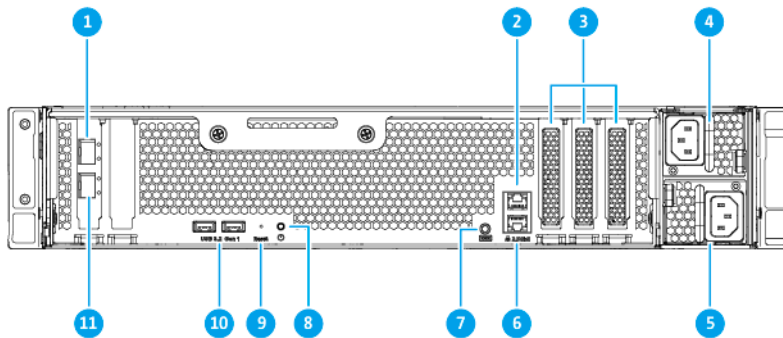
編號	元件	編號	元件
1	硬碟活動 LED 燈	5	系統狀態 LED 燈
2	硬碟狀態 LED 燈	6	2.5 Gigabit 乙太網路 LED 燈
3	電源按鈕	7	擴充設備 LED 燈
4	10 Gigabit 乙太網路 LED 燈	-	-

背部面板




TS-h2490FU-7302P-128G

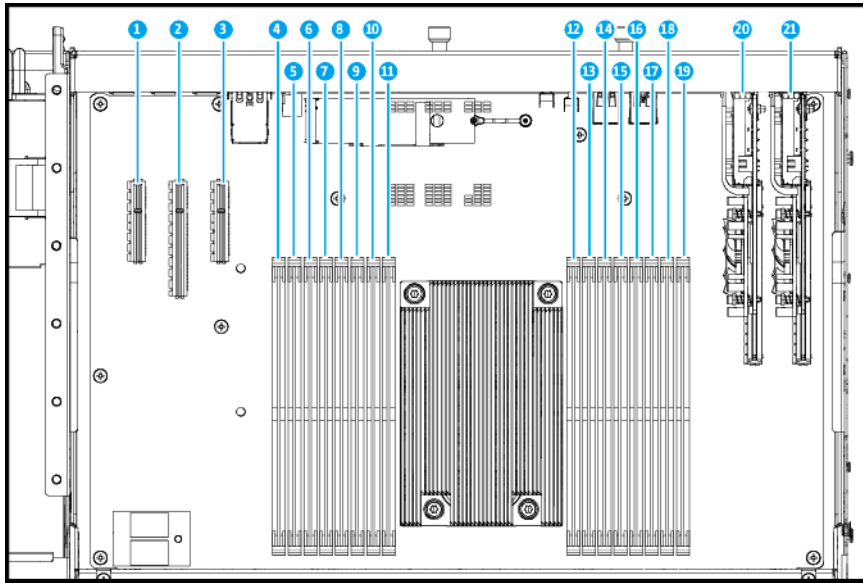
編號	元件	編號	元件
1	乙太網路埠 1 (25 GbE SFP28)	8	COM 埠  注意 此連接埠僅供工程用途。
2	乙太網路埠 3 (25 GbE SFP28)	9	電源按鈕
3	乙太網路埠 5 (2.5 GbE RJ45)	10	重設按鈕
4	PCIe 短蓋	11	USB 3.2 Gen 1 Type-A 連接埠
5	電源供應器 1	12	乙太網路埠 4 (25 GbE SFP28)
6	電源供應器 2	13	乙太網路埠 2 (25 GbE SFP28)
7	乙太網路埠 6 (2.5 GbE RJ45)	-	-





TS-h2490FU-7232P-64G

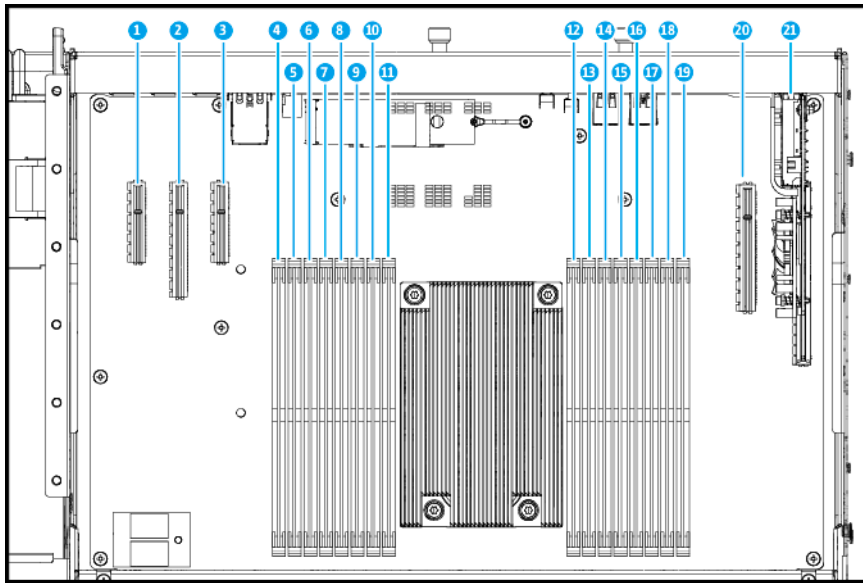
編號	元件	編號	元件
1	乙太網路埠 1 (25 GbE SFP28)	7	COM 埠  注意 此連接埠僅供工程用途。
2	乙太網路埠 5 (2.5 GbE RJ45)	8	電源按鈕
3	PCIe 短蓋	9	重設按鈕
4	電源供應器 1	10	USB 3.2 Gen 1 Type-A 連接埠
5	電源供應器 2	11	乙太網路埠 2 (25 GbE SFP28)
6	乙太網路埠 6 (2.5 GbE RJ45)	-	-

系統板



TS-h2490FU-7302P-128G

編號	元件	編號	元件
1	PCIe 插槽 1 (PCIe 4.0 x4)	12	記憶體插槽 9
2	PCIe 插槽 2 (PCIe 4.0 x8)	13	記憶體插槽 10
3	PCIe 插槽 3 (PCIe 4.0 x4)	14	記憶體插槽 11
4	記憶體插槽 1	15	記憶體插槽 12
5	記憶體插槽 2	16	記憶體插槽 13
6	記憶體插槽 3	17	記憶體插槽 14
7	記憶體插槽 4	18	記憶體插槽 15
8	記憶體插槽 5	19	記憶體插槽 16
9	記憶體插槽 6	20	PCIe 插槽 4 (PCIe 4.0 x8)  注意 此插槽已預先安裝 25 GbE SFP28 網路卡。
10	記憶體插槽 7	21	PCIe 插槽 5 (PCIe 4.0 x16)  注意 此插槽已預先安裝 25 GbE SFP28 網路卡。
11	記憶體插槽 8	-	-



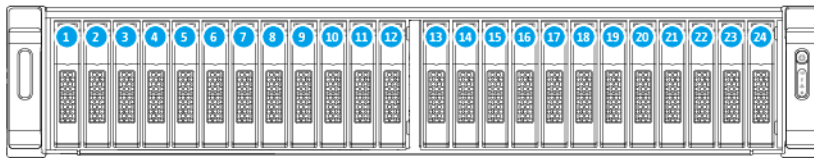
TS-h2490FU-7232P-64G

編號	元件	編號	元件
1	PCIe 插槽 1 (PCIe 4.0 x4)	12	記憶體插槽 9
2	PCIe 插槽 2 (PCIe 4.0 x8)	13	記憶體插槽 10
3	PCIe 插槽 3 (PCIe 4.0 x4)	14	記憶體插槽 11
4	記憶體插槽 1	15	記憶體插槽 12
5	記憶體插槽 2	16	記憶體插槽 13
6	記憶體插槽 3	17	記憶體插槽 14
7	記憶體插槽 4	18	記憶體插槽 15
8	記憶體插槽 5	19	記憶體插槽 16
9	記憶體插槽 6	20	PCIe 插槽 4 (PCIe 4.0 x8)
10	記憶體插槽 7	21	PCIe 插槽 5 (PCIe 4.0 x16)
11	記憶體插槽 8	-	-

**注意**

此插槽已預先安裝 25 GbE SFP28 網路卡。

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正確接地的電源插座。



具有備援電源供應器的裝置可能配備一條或多條電源供應器 (PSU) 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。

安裝需求

類別	項目
環境	<ul style="list-style-type: none"> 室溫：0°C 到 40°C (32°F 到 104°F) 不凝結相對溼度：5% 至 95% 濕球溫度：27°C (80.6°F) 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 沒有物體會阻礙 NAS 通風或者對 NAS 或電源線產生壓力
硬體和週邊設備	<ul style="list-style-type: none"> 儲存硬碟 請前往 https://www.qnap.com/compatibility 以查看相容的硬碟機型清單。 網路線
工具	<ul style="list-style-type: none"> 1 號或 2 號十字螺絲起子 防靜電腕帶

設定 NAS



重要

設定 NAS 或安裝 NAS 元件前，請詳閱[安全資訊](#)中所有安全要求及資訊。

- 將 NAS 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](#)。
- 安裝硬碟。
如需詳細資訊，請參見下列主題：
 - 在 2.5 吋托盤上安裝 2.5 吋固態硬碟

請前往 <http://www.qnap.com/compatibility>，查看相容硬碟及擴充卡清單。

- 安裝擴充卡。
如需詳細資訊，請參見：[更換擴充卡](#)。
- 連接擴充設備。
如需詳細資訊，請參見下列主題：
[連接 SAS 擴充設備](#)。

[連接 USB 擴充設備。](#)

5. 連接電源線與所有適用的網路線。
6. 開啟 NAS。
如需詳細資訊，請參見：[前方面板](#)。
7. 安裝 QuTS hero。
如需詳細資訊，請參見：[QuTS hero 安裝](#)。
8. 登入 QuTS hero。
若 QuTS hero 在 NAS 中找到未使用的硬碟，將會要求您初始化這些硬碟。按一下 [初始化] 可開始此程序。

3. 安裝與設定

本章介紹特定硬體及韌體的安裝與設定步驟。

硬體安裝

本節介紹安裝硬碟、記憶體模組以及擴充卡的相關資訊。

硬碟安裝

TS-h2490FU 與 2.5 吋 U.2 NVMe PCIe 固態硬碟相容。

在 2.5 吋托盤上安裝 2.5 吋固態硬碟



警告

- 安裝硬碟會刪除硬碟上的所有資料。
- 請遵守靜電放電 (ESD) 程序以防止元件損壞。

•



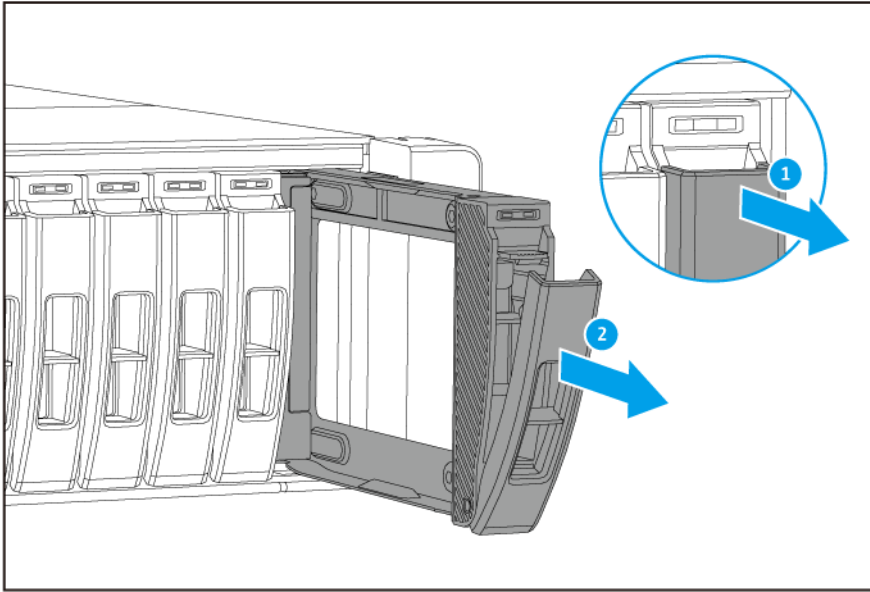
轉動的風扇葉片：使雙手及身體其他部位遠離正在轉動的風扇葉片。

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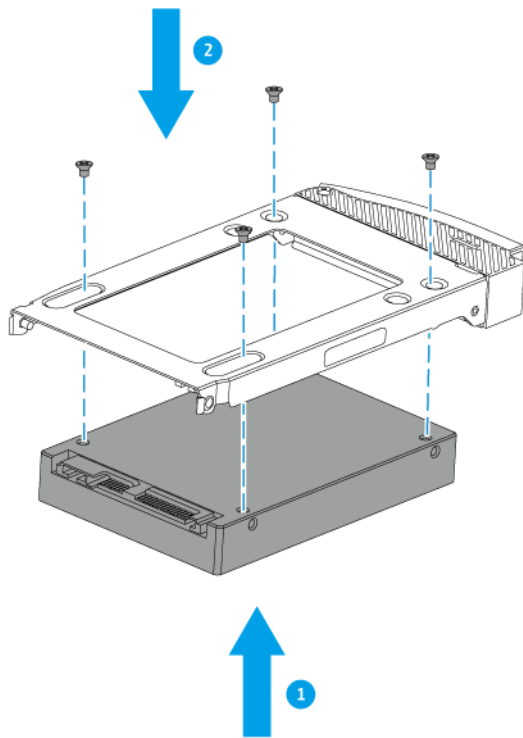
其他移動的元件：使雙手及身體其他部位遠離正在移動的其他元件。

1. 關閉 NAS 電源。
2. 取出硬碟托盤。
 - a. 拉把手以鬆開托盤。
 - b. 將托盤拉出。



3. 在托盤上安裝硬碟。

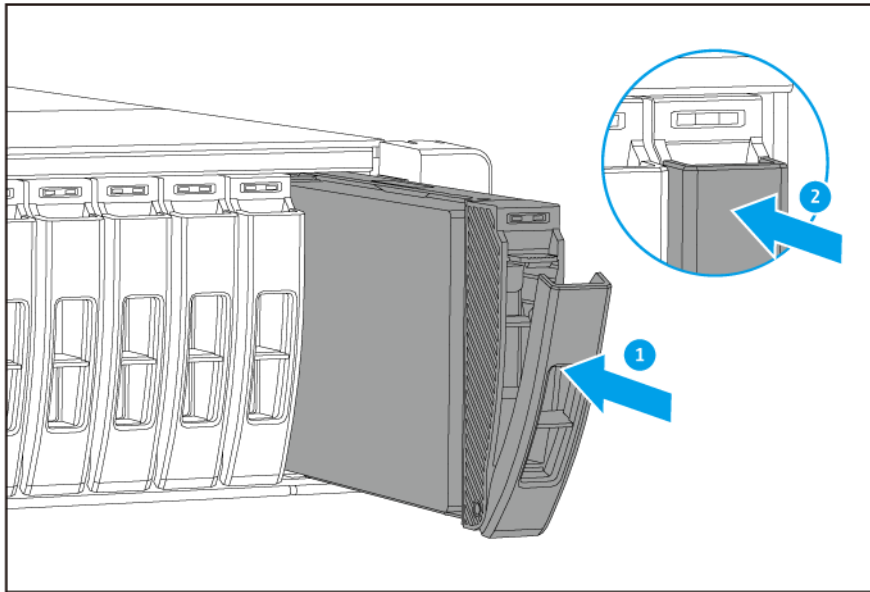
- a. 將硬碟放在托盤上，讓硬碟底部的孔洞與托盤底部的孔洞對齊。



- b. 鎖上螺絲。

4. 將托盤裝入插槽。

- a. 將托盤插入插槽。



b. 推入把手。

5. 開啟 NAS。

更換記憶體模組

TS-h2490FU 具有 16 個記憶體插槽。您可以升級記憶體模組以增加 NAS 的記憶體容量。為確保取得最佳效能，請同時更換 8 個插槽的記憶體模組。

僅限使用 QNAP 記憶體模組以維護系統效能和穩定性。您可向授權經銷商購買 QNAP 記憶體模組。



重要

QNAP 建議以 8 個為一組安裝記憶體模組。

- 確認 8 個模組皆相同。
- 按順序安裝記憶體模組組合，並依照文中指示裝在指定插槽。
- 將記憶體模組以 8 個或 16 個為一組進行安裝。安裝 8 個記憶體模組時，請將記憶體安裝在插槽 1、3、5、7、10、12、14 和 16。

如需插槽順序的詳細資訊，請參閱下表。

模組組合	插槽編號
第一種組合	插槽 1、3、5、7、10、12、14 和 16
第二種組合	插槽 2、4、6、8、9、11、13 和 15



警告

- 請遵守靜電放電 (ESD) 程序以防止元件損壞。

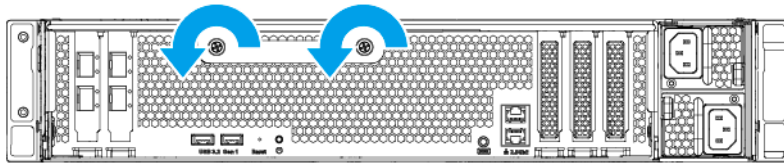


轉動的風扇葉片：使雙手及身體其他部位遠離正在轉動的風扇葉片。

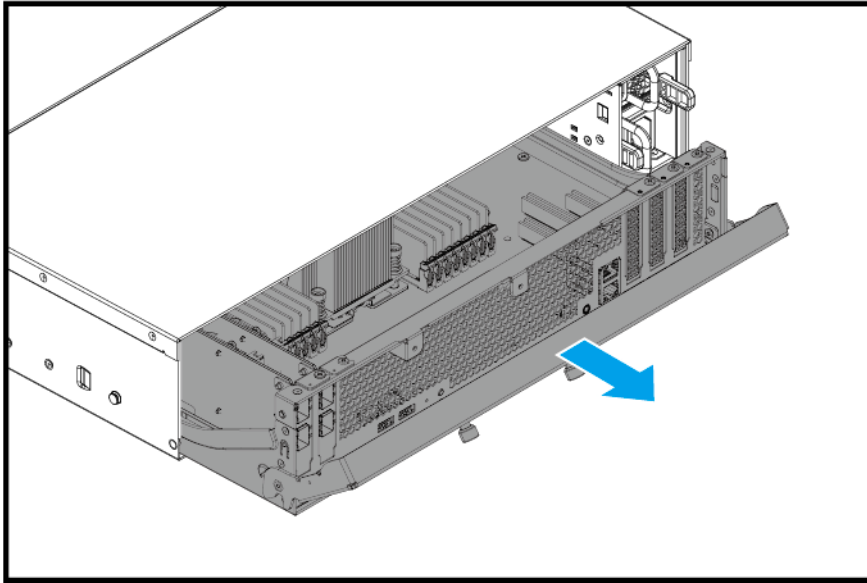


其他移動的元件：使雙手及身體其他部位遠離正在移動的其他元件。

1. 關閉裝置的電源。
2. 從電源插座拔下電源線。
3. 中斷所有連接線和外接裝置的連線。
4. 取下機殼蓋。
 - a. 鬆開螺絲。



- b. 將控制器抽出機殼。

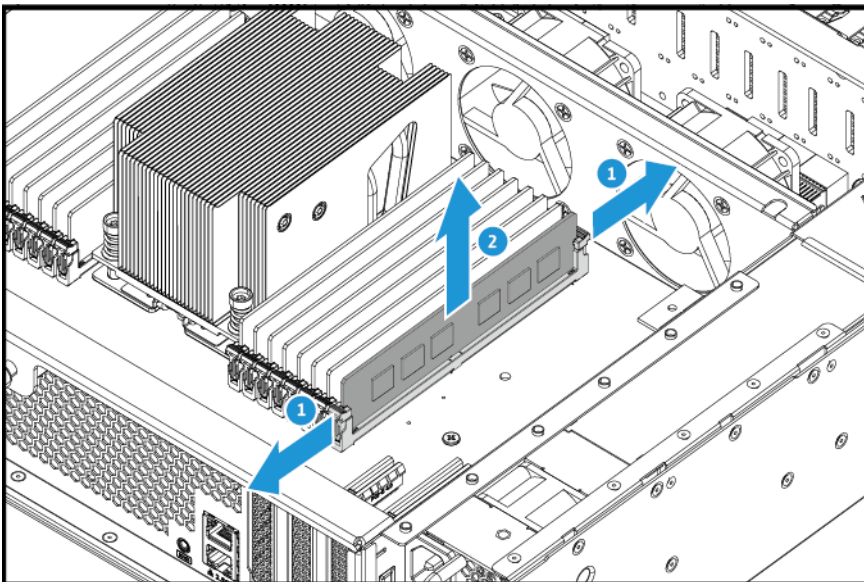


5. 取下現有的記憶體模組。
 - a. 將固定夾同時往外推以鬆開記憶體模組。
 - b. 確認記憶體模組已向上傾斜且完全從插槽鬆脫。

**警告**

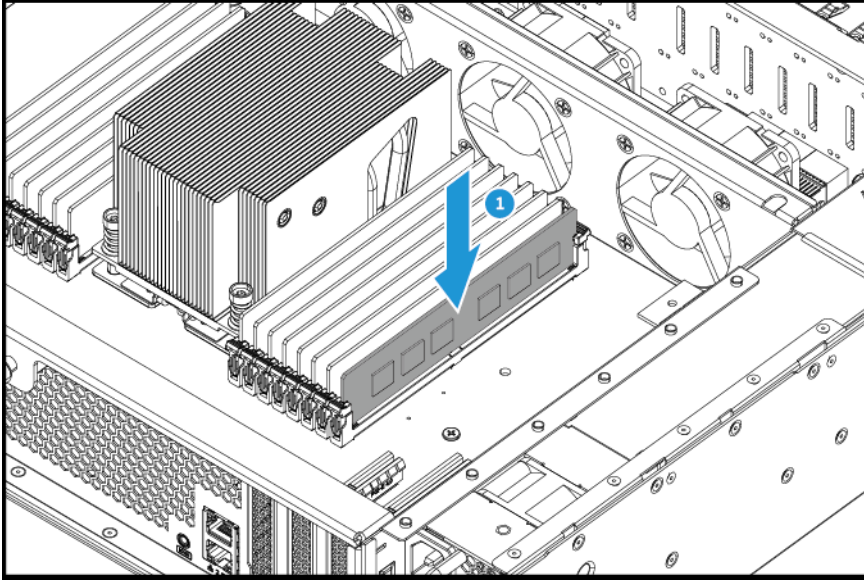
若嘗試取下未完全鬆脫的記憶體模組，可能會損壞記憶體模組與主機板。

- c. 握住模組的邊緣。
- d. 小心地將模組滑出插槽。

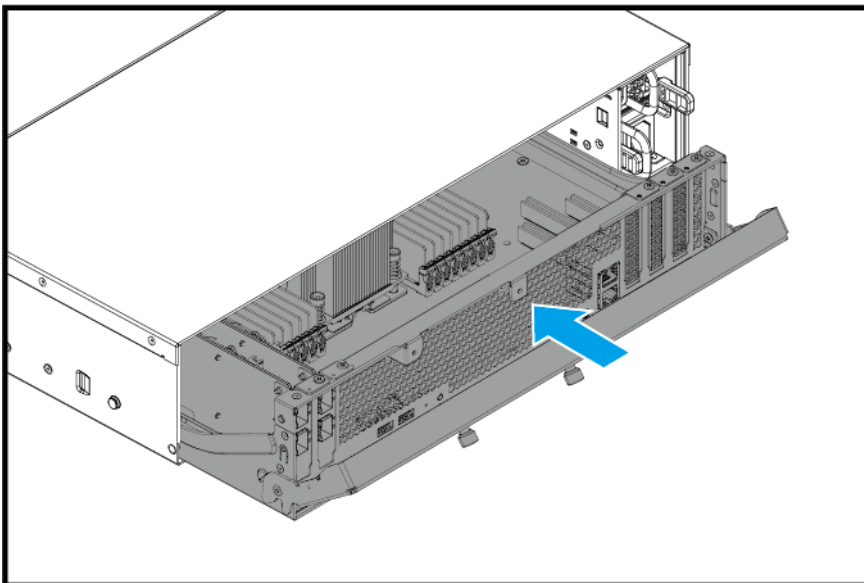
**警告**

- 請勿觸碰內部元件，尤其是金屬接頭。

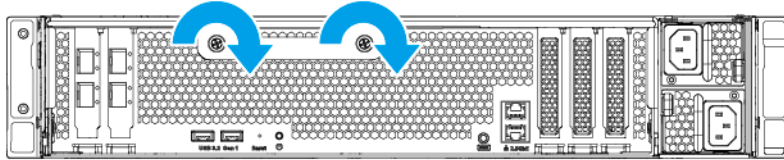
- 請勿彎折記憶體模組。
6. 安裝新的記憶體模組。
- a. 將接口與插槽的凸出部分對齊。
 - b. 將記憶體模組插入插槽。



- c. 確認金屬接頭已完全插入插槽。
 - d. 小心按下記憶體模組，直到固定夾正確扣住記憶體模組。
7. 裝上機殼蓋。
- a. 將殼蓋放在裝置上。
 - b. 將裝置插入機殼。



- c. 鎖緊螺絲。



8. 連上所有連接線和外接裝置。
9. 開啟裝置。
10. 確認裝置可辨識記憶體模組。
 - a. 請以管理員身分登入 QuTS hero。
 - b. 前往 [控制台] > [系統] > [系統狀態] > [硬體資訊]。
 - c. 查看 [記憶體總容量] 的值。

更換擴充卡

TS-h2490FU 系列支援特定的擴充卡，其中部分需要使用 QNAP PCIe 固定片。在公司網站所購買的 QNAP 品牌擴充卡會隨附 TS-h2490FU 系列適用的必要固定片。



警告

- 僅限合格人員可執行下列步驟。未遵照指示操作可能導致嚴重傷害或死亡。
- 請遵守靜電放電 (ESD) 程序以防止元件損壞。

•



轉動的風扇葉片：使雙手及身體其他部位遠離正在轉動的風扇葉片。

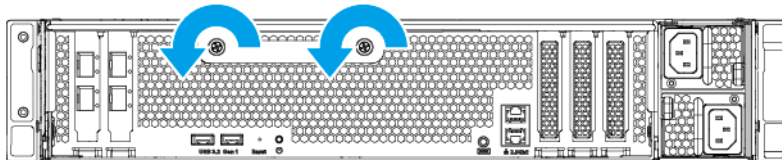
•



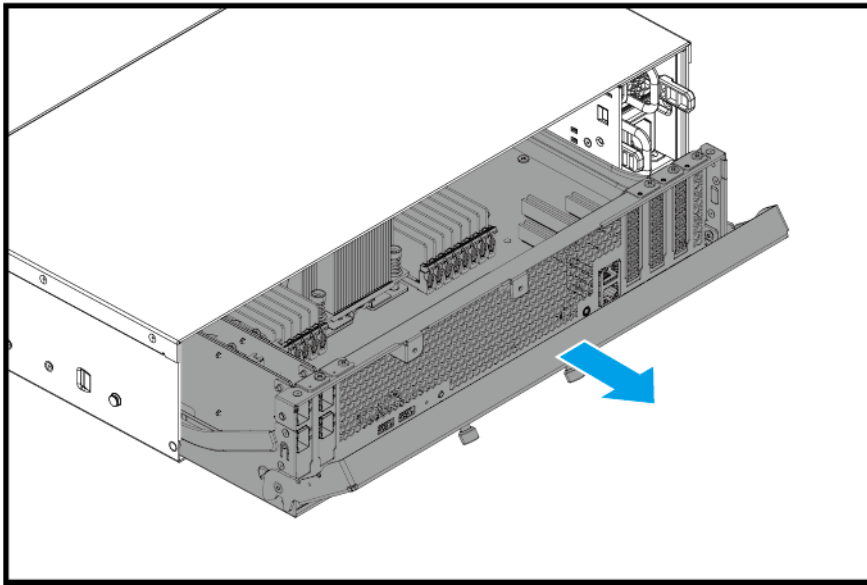
其他移動的元件：使雙手及身體其他部位遠離正在移動的其他元件。

**重要**

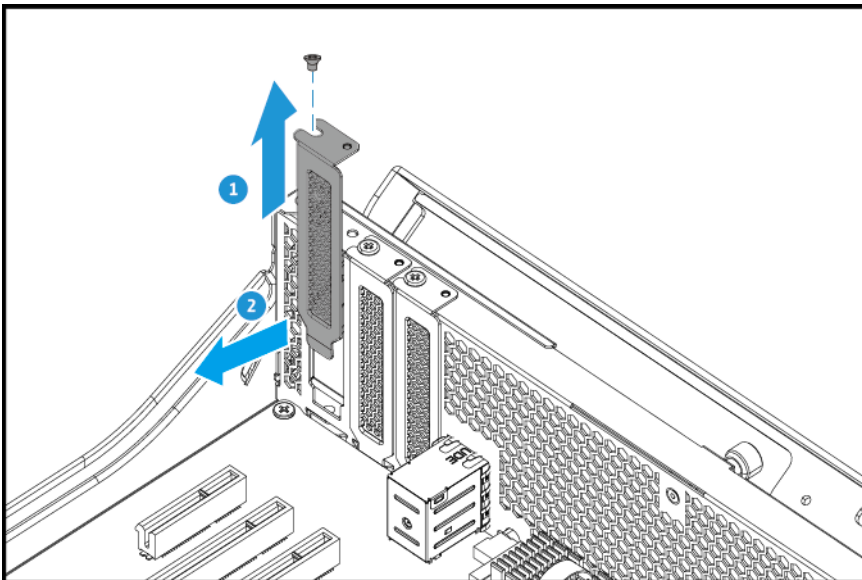
- 雙埠 25GbE SFP28 網路擴充卡已預先安裝於 TS-h2490FU-7302P-128G 的 PCIe Gen 4.0 x8 插槽 4 和 5。
 - 一個雙埠 25GbE SFP28 網路擴充卡已預先安裝於 TS-h2490FU-7232P-64G 的 PCIe Gen 4.0 x8 插槽 5。
 - 如果擴充卡安裝在插槽 3，插槽 2 的速度將從 x8 降到 x4。
 - 如果擴充卡安裝在插槽 4，插槽 5 的速度將從 x16 降到 x8。
 - 如需擴充卡插槽編號的詳細資訊，請參見：[系統板](#)。
1. 關閉裝置的電源。
 2. 從電源插座拔下電源線。
 3. 中斷所有連接線和外接裝置的連線。
 4. 取下機殼蓋。
 - a. 鬆開螺絲。



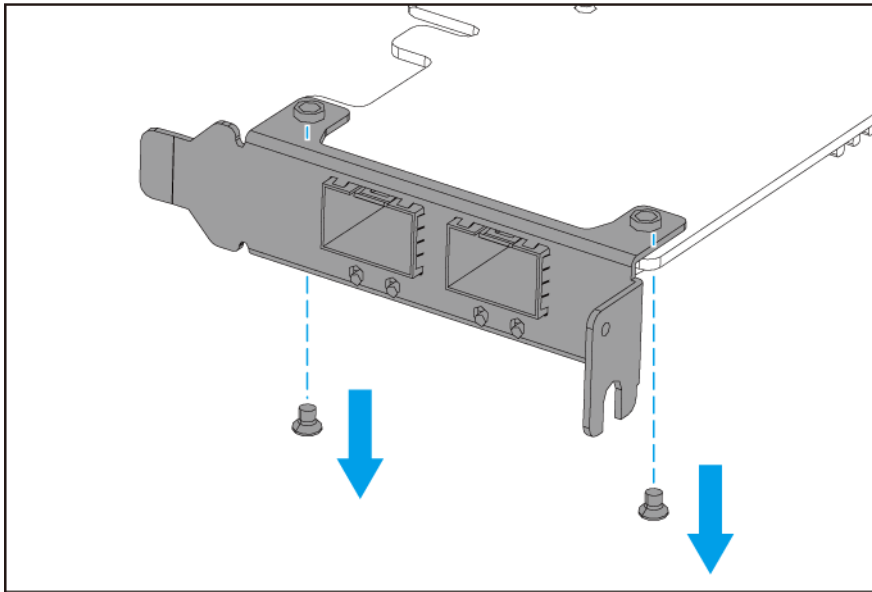
- b. 將控制器抽出機殼。



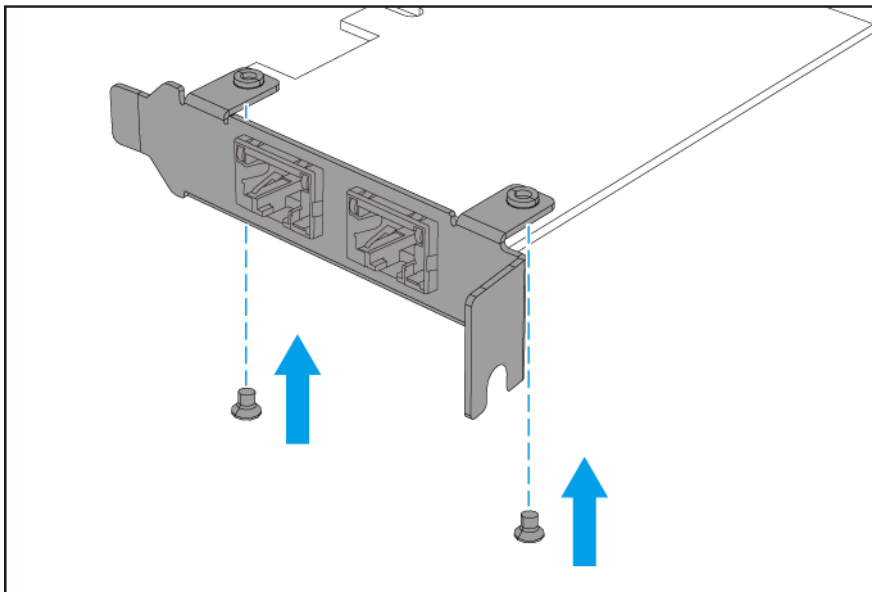
5. 取下 PCIe 蓋。
 - a. 取下用於固定殼蓋和檔板的螺絲。
 - b. 將殼蓋從插槽抽出。



6. 選擇性: 將 QNAP 固定片裝至擴充卡。
 - a. 取下現有固定片的所有螺絲。



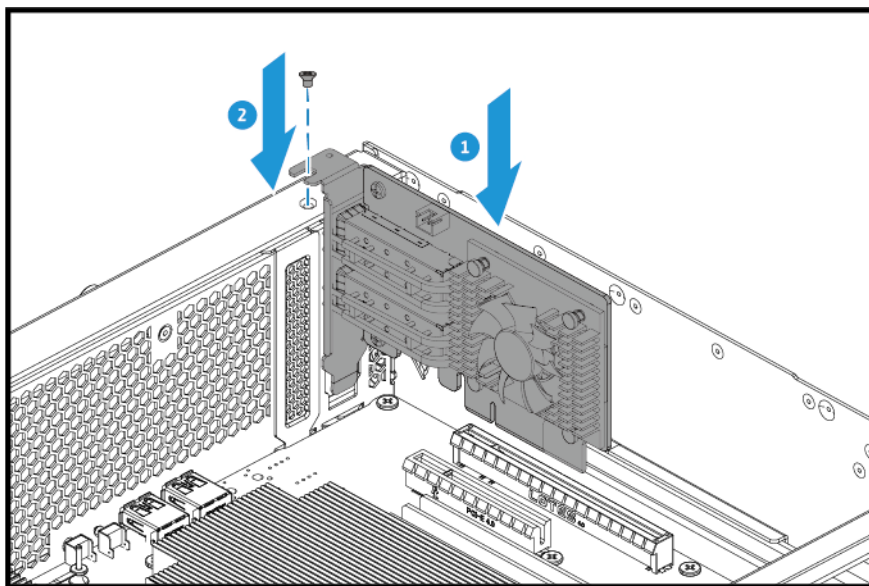
- b. 小心地將固定片與擴充卡分開。
- c. 利用相同的螺絲將 QNAP 固定片裝至擴充卡。



- d. 確認固定片是否牢固不動。

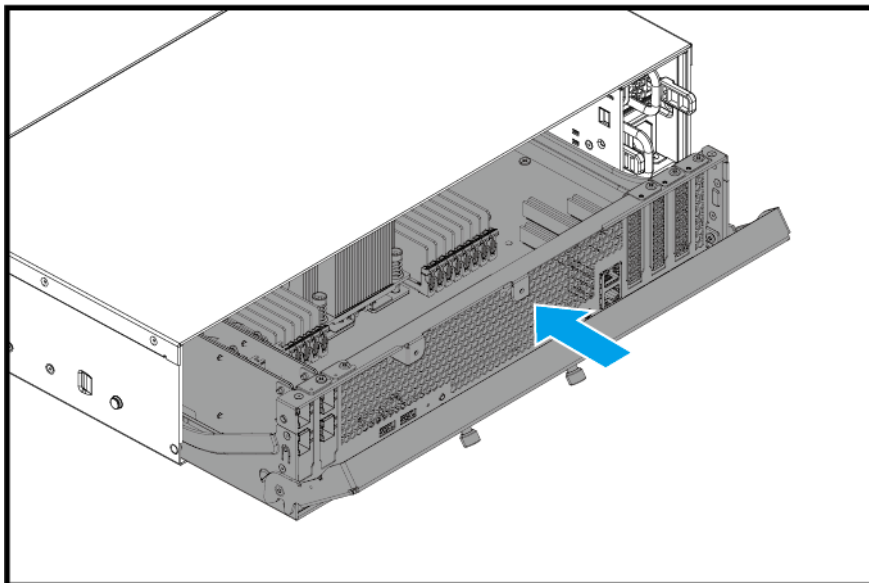
7. 安裝擴充卡。

- a. 握住擴充卡的邊緣。
- b. 將擴充卡插入插槽。
- c. 鎖上螺絲。

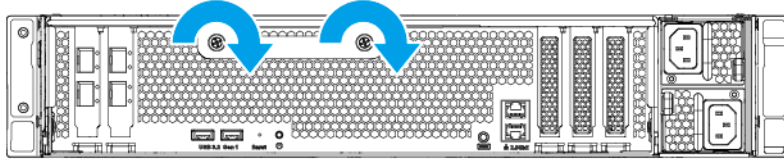


8. 裝上機殼蓋。

- a. 將殼蓋放在裝置上。
- b. 將裝置插入機殼。



- c. 鎖緊螺絲。



9. 連上所有連接線和外接裝置。
10. 將電源線插入電源插座。
11. 開啟 NAS。

熱抽換備援電源供應器

1. 關閉儲存控制器的電源。
2. 從電源插座和您要更換的電源供應器 (PSU) 拔下電源線。

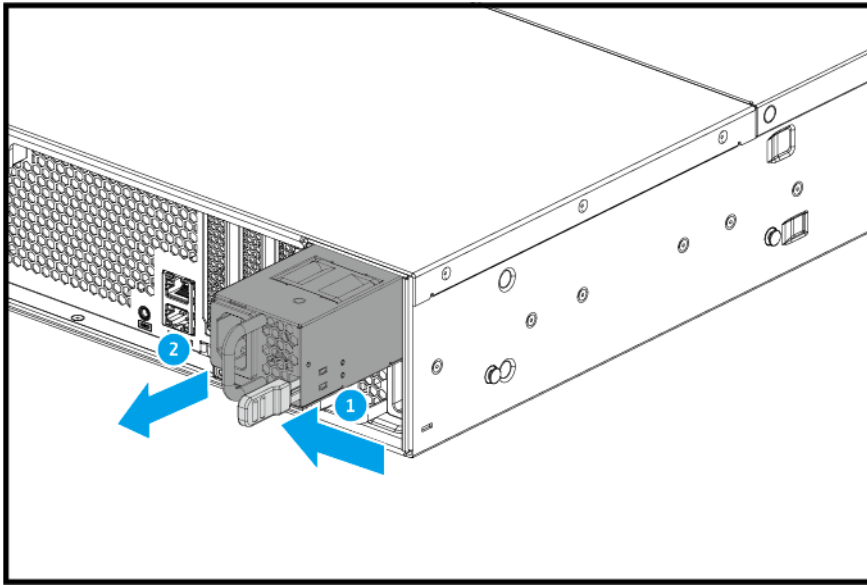


警告

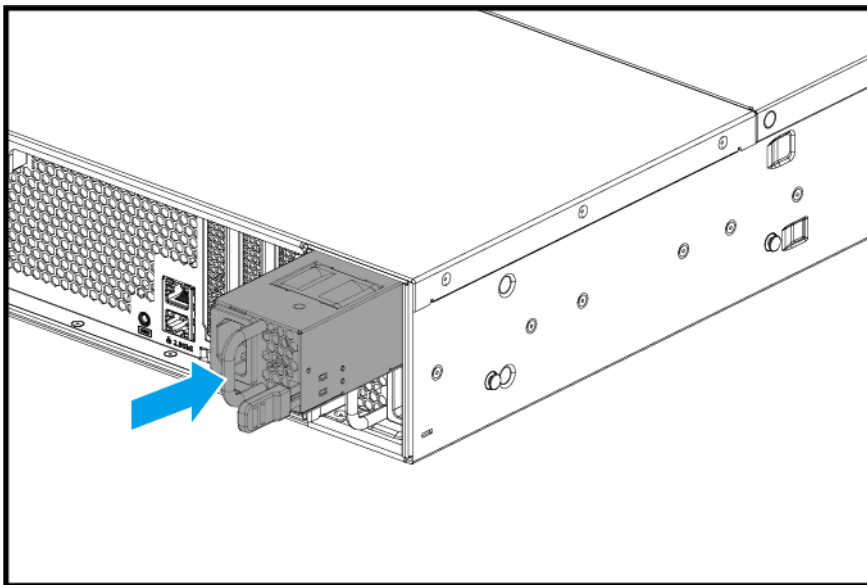


NAS 至少配備一條電源供應器 (PSU) 的電源線。為防止嚴重傷害事故發生，在安裝或替換系統元件前，應由受過訓練的技術人員拔下所有 PSU 電源線。

3. 朝把手方向按住門門，然後拉出電源供應器。



4. 插入新的電源供應器。



5. 將電源線連上電源供應器並插入電源插座。
6. 開啟儲存控制器的電源。
7. 啟用電源供應器故障警訊。
- 請以管理員身分登入 QuTS hero。
 - 前往 [控制台] > [系統] > [硬體] > [一般]。
 - 選擇 [啟動備援電源模式]。
 - 按一下 [套用]。

安裝擴充設備

TS-h2490FU 支援 SAS 擴充設備和 USB 擴充設備。如需詳細資訊，請參見下方表格。

您可以向 QNAP 或授權經銷商購買儲存擴充配件。

如需詳細資訊，請瀏覽：<https://shop.qnap.com/>。

如需相容擴充設備清單以及適用擴充設備的數量上限，請前往：<http://www.qnap.com/go/compatibility-expansion>。

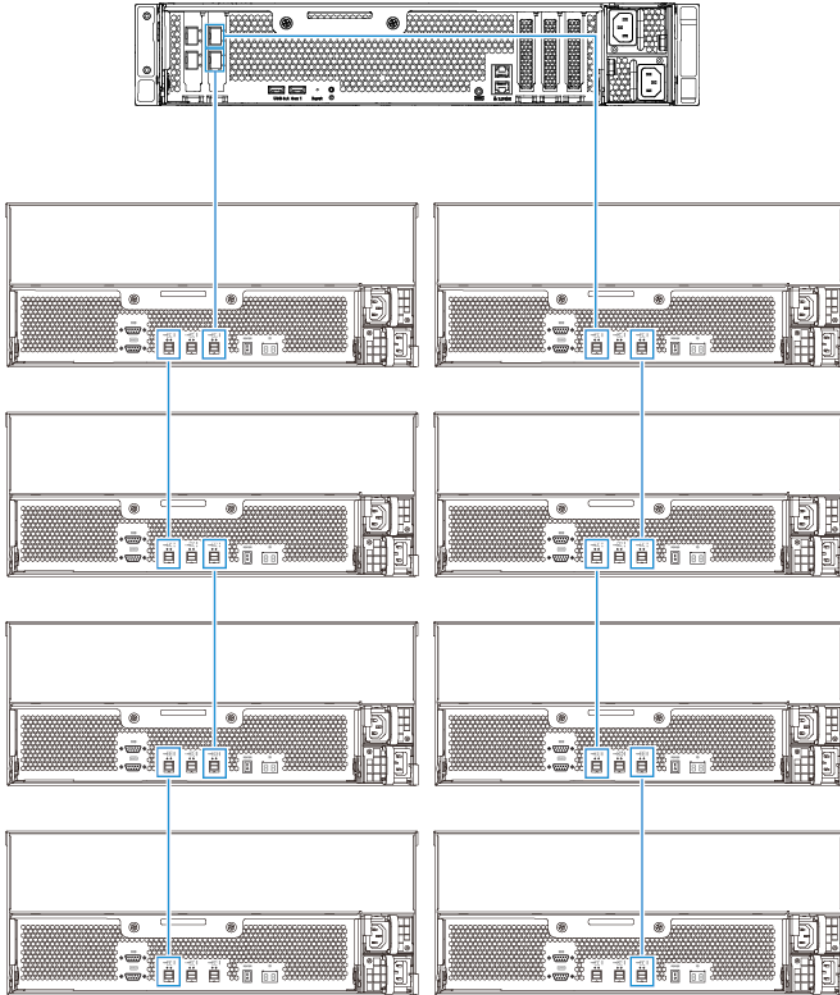
擴充設備型號	說明	必要配件
REXP-1620U-RP	<ul style="list-style-type: none"> • 使用 SAS 12 Gbps (SFF-8644) 介面 • 支援 SAS/SATA HDD/SSD 	<ul style="list-style-type: none"> • SAS-12G2E 儲存擴充卡 • Mini-SAS SFF-8644 連接線 • RAIL-A03-57
REXP-1220U-RP	<ul style="list-style-type: none"> • 使用 SAS 12 Gbps (SFF-8644) 介面 • 支援 SAS/SATA HDD/SSD 	<ul style="list-style-type: none"> • SAS-12G2E 儲存擴充卡 • Mini-SAS SFF-8644 連接線 • RAIL-A03-57
REXP-1610U-RP	<ul style="list-style-type: none"> • 使用 SAS 6 Gbps (SFF-8644) 介面 • 支援 SATA/HDD/SSD 	<ul style="list-style-type: none"> • SAS-12G2E 儲存擴充卡 • Mini-SAS SFF-8644 連接線 • RAIL-A03-57
REXP-1210U-RP	<ul style="list-style-type: none"> • 使用 SAS 6 Gbps (SFF-8644) 介面 • 支援 SATA/HDD/SSD 	<ul style="list-style-type: none"> • SAS-12G2E 儲存擴充卡 • Mini-SAS SFF-8644 連接線 • RAIL-A03-57
TR-002	<ul style="list-style-type: none"> • 使用 USB 3.2 Gen 2 Type-C 介面 • 支援 SATA 硬碟 	<ul style="list-style-type: none"> • USB 3.2 Gen 2 Type-A 轉 Type-C 連接線
TR-004	<ul style="list-style-type: none"> • 使用 USB 3.2 Gen 1 Type-C 介面 • 支援 SATA 硬碟 	<ul style="list-style-type: none"> • USB 3.2 Gen 1 Type-A 轉 Type-C 連接線
TR-004U	<ul style="list-style-type: none"> • 使用 USB 3.2 Gen 1 Type-C 介面 • 支援 SATA 硬碟 	<ul style="list-style-type: none"> • USB 3.2 Gen 1 Type-A 轉 Type-C 連接線 • RAIL-B02
TL-D800C	<ul style="list-style-type: none"> • 使用 USB 3.2 Gen 2 Type-C 介面 • 支援 SATA 硬碟 	<ul style="list-style-type: none"> • USB 3.2 Gen 2 Type-A 轉 Type-C 連接線
TL-R1200C-RP	<ul style="list-style-type: none"> • 使用 USB 3.2 Gen 2 Type-C 介面 • 支援 SATA 硬碟 	<ul style="list-style-type: none"> • USB 3.2 Gen 2 Type-A 轉 Type-C 連接線 • RAIL-B02

連接 SAS 擴充設備

若要連接裝置至 SAS 擴充設備，裝置必須安裝儲存擴充卡。

如需必要配件的詳細資訊，請參見：[安裝擴充設備](#)。

1. 在 PCIe 插槽安裝儲存擴充卡。
如需詳細資訊，請參見：[更換擴充卡](#)。
2. 請按照下列拓樸圖，將擴充設備連接到裝置。



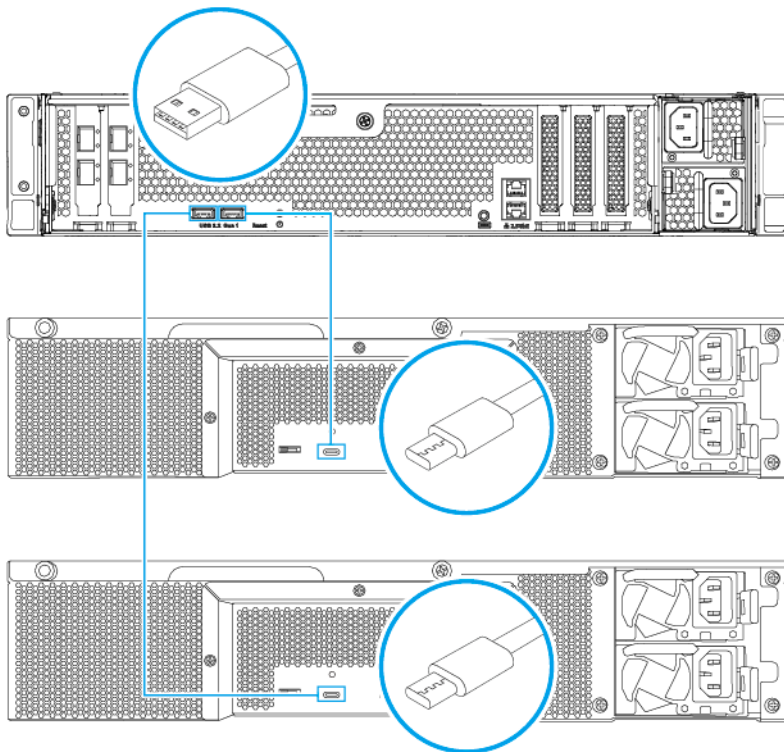
QNAP 建議您一律使用雙路徑設定，以免儲存裝置因擴充設備故障或連接線斷線而停機。只有在無法使用雙路徑設定時，才應改用單路徑設定。

3. 開啟擴充設備的電源。
4. 確認裝置可辨識所有擴充設備。
 - a. 請以管理員身分登入 QuTS hero。
 - b. 前往 [主選單] > [儲存與快照總管] > [總覽] > [系統]。
 - c. 確認畫面列出擴充設備。

連接 USB 擴充設備

若要將 TS-h2490FU 連接到 USB 擴充設備，需要使用 USB Type-A 轉 USB Type-C 或 USB Type-C 轉 USB Type-C 連接線。如需必要配件的詳細資訊，請參見：[安裝擴充設備](#)。

1. 將擴充設備連接至 NAS。
 - a. 將 USB 連接線接至擴充設備上的 USB Type-B 或 USB Type-C 連接埠。
 - b. 將 USB 連接線接至 NAS 上的 USB 3.2 Gen 1 Type-A 連接埠。



2. 開啟擴充設備的電源。
3. 確認 NAS 可辨識所有擴充設備。
 - a. 使用管理員帳號登入 QTS。
 - b. 前往 [主選單] > [儲存與快照總管] > [總覽] > [系統]。
 - c. 確認畫面列出擴充設備。

QuTS hero 安裝

TS-h2490FU 使用 QNAP QuTS hero 作業系統。您可以使用下列其中一種方式安裝 QuTS hero：

方法	說明	需求
Qfinder Pro 安裝 (建議使用)	<p>如果 NAS 已連接您的區域網路，您可以執行下列操作：</p> <ul style="list-style-type: none"> • 使用 Qfinder Pro 定位 NAS。 • 完成 [智慧安裝導引] 精靈中的步驟。 <p>如需詳細資訊，請參見：使用 Qfinder Pro 安裝 QuTS hero。</p>	<ul style="list-style-type: none"> • 電腦 • 網路線 • Qfinder Pro 安裝程式
雲端安裝	<p>如果 NAS 已連接網際網路，您可以執行下列操作：</p> <ul style="list-style-type: none"> • 掃描 NAS 上的 QR 碼。 • 登入 myQNAPcloud 帳號。 • 使用 myQNAPcloud Link 遠端存取您的 NAS。 • 完成 [智慧安裝導引] 精靈中的步驟。 <p>如需詳細資訊，請參見：使用 Cloud Key 安裝 QuTS hero。</p>	<ul style="list-style-type: none"> • 電腦或行動裝置 • 網路線 • myQNAPcloud 帳號 • Cloud Key

使用 Qfinder Pro 安裝 QuTS hero



警告

安裝 QuTS hero 會刪除硬碟上的所有資料。繼續操作前請先備份資料。



注意

您可以隨時回復到 QTS 作業系統。如需詳細資訊，請參見：《QuTS hero 使用者指南》。

1. 開啟裝置。
2. 將裝置連接至區域網路。
3. 在連接相同區域網路的電腦上執行 Qfinder Pro。



注意

若要下載 Qfinder Pro，請前往：<https://www.qnap.com/utilities>。

4. 在清單中找到 NAS，然後按兩下它的名稱或 IP 位址。
[智慧安裝導引] 隨即在預設的網頁瀏覽器中開啟。
5. 按一下 [啟動智慧安裝導引]。
[安裝韌體] 視窗隨即出現。
6. 使用下列其中一種方法安裝韌體：

安裝方法	步驟
自動	按一下 [開始]。 自動搜尋並安裝可用的韌體更新。

安裝方法	步驟
手動安裝	<ol style="list-style-type: none"> a. 按一下 [手動安裝] 。 [安裝韌體] 視窗隨即出現。 b. 按一下 [瀏覽] 。 [上傳檔案] 視窗隨即出現。 c. 選取檔案。 d. 按一下 [開啟] 。 開始安裝韌體。
略過	<ol style="list-style-type: none"> a. 按一下 [略過] 。 略過韌體安裝。

7. 指定下列資訊

- **NAS 名稱**：指定 1 到 14 個字元的名稱。名稱支援使用英文字母 (A 到 Z、a 到 z)、數字 (0 到 9) 以及連字號 (-)，但不能以連字號做結尾。
- **密碼**：指定 1 到 64 個字元的管理員密碼。密碼支援使用所有 ASCII 字元。

8. 按一下 [下一步] 。

9. 指定時區、日期和時間。



提示

QNAP 建議連接至 NTP 伺服器，以確保 NAS 符合國際標準時間 (UTC) 的標準。

10. 按一下 [下一步] 。

[編輯網路設定] 畫面隨即出現。

11. 選擇 [自動取得 IP 位址 (DHCP)] 。

12. 按一下 [下一步] 。

[跨平台檔案傳輸服務] 畫面隨即出現。

13. 選擇將用於存取 NAS 共用資料夾的裝置類型。

14. 按一下 [下一步] 。

15. 檢視設定值。

16. 按一下 [套用] 。

確認訊息隨即顯示。



警告

按一下 [是] 後，系統會在安裝 QuTS hero 前刪除硬碟的所有資料。

17. 按一下 [是] 。

- **QuTS hero** 安裝進度欄隨即出現。
- **QuTS hero** 已安裝。



注意

完成 QuTS hero 安裝可能需要幾分鐘。

18. 選擇性: 按一下 [前往 NAS 管理] 。

**提示**

按一下 [**前往 NAS 管理**] 以設定更多進階 QuTS hero 配置和設定。如需詳細資訊，請參見《QuTS hero 使用者指南》。

使用 Cloud Key 安裝 QuTS hero**警告**

安裝 QuTS hero 會刪除硬碟上的所有資料。繼續操作前請先備份資料。

**注意**

您可以隨時回復到 QTS 作業系統。如需詳細資訊，請參見：《QuTS hero 使用者指南》。

1. 開啟裝置。
2. 將裝置連上網際網路。
3. 使用下列其中一種方式前往 QNAP 雲端安裝頁面：
 - 使用電腦前往 <http://install.qnap.com/>。
 - 使用行動裝置掃描 NAS 上的 QR 碼。

該網頁列出區域網路內所有未初始化的 QNAP NAS 裝置。

4. 在清單中找到 NAS，然後按一下 [**初始化**]。

**注意**

如果未列出您的 NAS，請按照網頁上的指示指定 NAS 的 Cloud Key。

安裝精靈隨即在預設的網頁瀏覽器中開啟。

5. 建立帳號或登入 myQNAPcloud。

**注意**

建立帳號之後，必須返回此頁面完成安裝步驟。

6. 指定 NAS 的 myQNAPcloud 裝置名稱。

**注意**

- 遠端存取 NAS 時，需要用到 myQNAPcloud 裝置名稱。
- 基於安全考量，NAS 將於初始化後停用 myQNAPcloud Link 遠端連線服務。日後若要再度啟用，請透過區域網路連接至 QuTS hero，然後安裝 myQNAPcloud Link。

7. 按一下 [**下一步**]。
[**智慧安裝導引**] 隨即在預設的網頁瀏覽器中開啟。

8. 您可以執行下列動作。
 - 若要取得最新提供的版本，請按一下 [**開始**]。
安裝精靈隨即開始下載最新版本；下載完畢後，NAS 會重新啟動。如果沒有較新的版本，安裝精靈將自動顯示 [**智慧安裝導引**]。
 - 若要安裝「開箱即用」(out-of-the-box) 的版本，請按一下 [**略過**]。

9. 按一下 [**啟動智慧安裝導引**]。
[**安裝韌體**] 視窗隨即出現。

10. 使用下列其中一種方法安裝韌體：

安裝方法	步驟
自動	按一下 [開始] 。 自動搜尋並安裝可用的韌體更新。
手動安裝	<p>a. 按一下 [手動安裝] 。 [安裝韌體] 視窗隨即出現。</p> <p>b. 按一下 [瀏覽] 。 [上傳檔案] 視窗隨即出現。</p> <p>c. 選取檔案。</p> <p>d. 按一下 [開啟] 。 開始安裝韌體。</p>
略過	按一下 [略過] 。 略過韌體安裝。

11. 指定下列資訊

- **NAS 名稱**：指定 1 到 14 個字元的名稱。名稱支援使用英文字母 (A 到 Z、a 到 z)、數字 (0 到 9) 以及連字號 (-)，但不能以連字號做結尾。
- **密碼**：指定 1 到 64 個字元的管理員密碼。密碼支援使用所有 ASCII 字元。

12. 按一下 [下一步] 。

13. 指定時區、日期和時間。

**提示**

QNAP 建議連接至 NTP 伺服器，以確保 NAS 符合國際標準時間 (UTC) 的標準。

14. 按一下 [下一步] 。
[編輯網路設定] 畫面隨即出現。

15. 選擇 [自動取得 IP 位址 (DHCP)] 。

16. 按一下 [下一步] 。
[跨平台檔案傳輸服務] 畫面隨即出現。

17. 選擇將用於存取 NAS 共用資料夾的裝置類型。

18. 按一下 [下一步] 。

19. 檢視設定值。

20. 按一下 [套用] 。
確認訊息隨即顯示。**警告**

按一下 [確認] 後，系統會在安裝 QuTS hero 前刪除硬碟的所有資料。

21. 按一下 [確認] 。
QuTS hero 已安裝。

22. 選擇性: 按一下 [前往 NAS 管理] 。


**提示**

按一下 [**前往 NAS 管理**] 以設定更多進階 QuTS hero 配置和設定。如需詳細資訊，請參見《QuTS hero 使用者指南》。

4. 基本操作

本章介紹 NAS 的基本操作。

電源按鈕

操作	使用者動作	結果
開啟電源	按一下按鈕。	裝置開機。
關閉電源	按住按鈕 1.5 秒。	裝置關機。
強制關機	按住按鈕 5 秒。	裝置關機。  重要 請在裝置沒有回應時才使用此方法。

重設按鈕

操作	使用者動作	結果
系統基本重設	按住按鈕 3 秒。	<p>以下設定將回復至預設值：</p> <ul style="list-style-type: none"> 系統管理員密碼：預設密碼為第一個 MAC 位址 (不包含特殊字元)。例如，若第一個 MAC 位址為 00-08-9B-F6-15-75，則管理員密碼為 00089BF61575。 <p> 注意 您可以透過 Qfinder Pro 找到第一個 MAC 位址。黏貼至裝置的標籤亦將位址列為 MAC1。</p> <ul style="list-style-type: none"> TCP/IP 設定： <ul style="list-style-type: none"> 透過 DHCP 自動取得 IP 位址設定 停用 Jumbo Frame 若已啟用 Port Trunking (僅適用於支援多 LAN 的型號)，系統將重設為「Active Backup (網路容錯)」模式。 系統通訊埠：8080 (系統服務埠) 安全等級：低 (接受所有連線) LCD 面板密碼：(空白) VLAN：已停用
系統進階重設	按住按鈕 15 秒。	<p>回復為出廠預設值。</p> <ul style="list-style-type: none"> 若要在系統進階重設後取得舊有資料，請在 NAS 上重建先前的資料夾結構。

LED 燈號

LED 燈號指示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，且裝置已連線至網路或主機的狀態下。



注意

10 GbE LED 只有在安裝 10 GbE 網路擴充卡時才能使用。

如需 LED 燈號的位置資訊，請參見：[元件](#)。

LED	狀態	說明
系統狀態	綠燈與紅燈每 0.5 秒交錯閃爍	<ul style="list-style-type: none"> • 硬碟正在格式化。 • 裝置正在初始化。 • 作業系統正在更新。 • RAID 重建作業正在進行。 • 線上 RAID 容量擴充正在進行。 • 線上 RAID 組態遷移正在進行。 • 韌體正在更新。 <p> 重要 請勿在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>
	紅燈	<ul style="list-style-type: none"> • 硬碟無效。 • 共用資料夾容量已滿。 • 共用資料夾容量將滿。 • 系統風扇異常。 • 資料存取 (讀寫) 錯誤。 • 硬碟壞軌。 • 裝置處於降階唯讀模式 (RAID 5 或 RAID 6 有兩個硬碟故障，但資料仍可讀取)。 • 硬體自我檢查發生錯誤。
	紅燈每 0.5 秒閃爍	裝置處於降階模式 (RAID 1、RAID 5 或 RAID 6 有一個硬碟故障)。
	綠燈	裝置已就緒。
	綠燈每 0.5 秒閃爍	<ul style="list-style-type: none"> • 裝置未設定。 • 硬碟未格式化。
	熄滅	<ul style="list-style-type: none"> • 所有硬碟處於待命模式。 • 裝置已關機。
硬碟活動	紅燈閃爍	資料存取中並發生讀寫錯誤。
	紅燈	硬碟讀寫錯誤。
	綠燈閃爍	正在存取資料。
	綠燈	硬碟已就緒
	熄滅	偵測不到硬碟。
硬碟狀態	綠燈	硬碟已就緒
	紅燈	硬碟讀寫錯誤。
	紅燈每秒閃爍五次	作業系統正在尋找硬碟。
	熄滅	偵測不到硬碟。

LED	狀態	說明
2.5 Gigabit 高速網路	綠燈	網路執行速度為 2.5 Gbps。
	橙燈	網路執行速度為 1 Gbps。
	熄滅	<ul style="list-style-type: none"> 網路執行速度為 10 Mbps。 無網路連線。
2.5 Gigabit 活動網路	橙燈	網路連線已建立。
	橙燈閃爍	使用者正在從網路存取裝置。
	熄滅	無網路連線。
10 Gigabit 乙太網路速度	綠燈	10 GbE 網路連線已建立。
	橙燈	網路執行速度低於 10 Gbps。
	熄滅	無網路連線。
10 Gigabit 乙太網路活動	橙燈	網路連線已建立。
	橙燈閃爍	正在傳送資料。
	熄滅	無網路連線。
擴充	橙燈	已連接一個擴充設備。
	熄滅	未偵測到擴充設備。

警示音

持續期間	頻率	說明
短嗶 (0.5 秒)	1	<ul style="list-style-type: none"> NAS 啟動中。 按住重設按鈕 3 秒鐘後，NAS 將重設配置。 按住重設按鈕 10 秒鐘後，NAS 將重設配置並重新啟動。 作業系統已更新。
	3	<ul style="list-style-type: none"> 偵測不到安裝的硬碟。

持續期間	頻率	說明
長嗶 (1.5 秒)	3 聲 (每 5 分鐘)	<ul style="list-style-type: none"> • 電源發生錯誤。 • 系統風扇異常。 • 風扇模組已移除。 • 無法將 NAS 資料複製到連接正面 USB 埠的外接硬碟。
	2	<ul style="list-style-type: none"> • 儲存池容量即將用盡。 • 儲存池容量已滿。 • 發生儲存池狀態錯誤。 • 共用資料夾容量將滿。 • 共用資料夾容量已滿。 • 共用資料夾狀態發生錯誤。 • 插入或抽出硬碟。
	1	<ul style="list-style-type: none"> • NAS 強制關機 (硬體關機) 。 • NAS 成功開機且可供使用。
長嗶聲及短嗶聲	1 次長嗶聲及 2 次短嗶聲	JBOD 擴充設備已移除。

5. NAS 遷移

您可以透過將所有硬碟從來源 NAS 安裝到目標 NAS，將資料和設定從目前的 NAS 遷移到另一個 NAS 機型，使遷移的干擾程度降到最低。遷移後，RAID 配置和其他設定將保留在目標 NAS 上。

NAS 遷移需求

您只能根據來源 NAS，將硬碟和系統設定遷移到特定的 NAS 機型。有關相容於直接 NAS 遷移的機型，請參閱：<https://www.qnap.com/en/nas-migration> 中的清單。

裝置應符合以下要求：

- 目標 NAS 必須在與來源 NAS 相同的 QuTS hero 版本上執行（或更高版本）。



重要

由於檔案系統不相容，因此不支援 QTS NAS 和 QuTS hero NAS 之間的系統遷移。



警告



在 QTS NAS 和 QuTS hero NAS 之間遷移硬碟可能會造成資料損毀。


- 目標 NAS 必須具有足夠的可用硬碟插槽，以容納要從來源 NAS 遷移的所有硬碟。

對於不支援 NAS 遷移的 NAS 機型，請參閱：[如何利用 HBS3 在 QTS 和 QuTS hero 之間遷移資料與資料夾權限](#)。

NAS 遷移後的狀態和設定變更

NAS 遷移之後，資料和設定的狀態會隨著改變。

資料和設定	NAS 遷移後
myQNAPcloud 註冊名稱	您的 myQNAPcloud 註冊名稱不會遷移。
加密共用資料夾	<p>如果您的 NAS 不支援檔案系統加密，加密共用資料夾就不會遷移。</p> <p> 警告 為避免資料遺失，請備份加密共用資料夾的加密金鑰並將其保存在安全的地方。您也可以選擇在遷移之前解密共用資料夾。</p>
共用資料夾	<p>所有共用資料夾及其中的檔案會被保留。</p> <p> 警告 為避免資料遺失，請在遷移之前將加密金鑰或加密共用資料夾的密碼備份並保存在安全的地方。</p> <p> 重要 遷移後，必須重新設定目標 NAS 上的資料夾權限。</p>
網路	<p>如果目標 NAS 上的網路連接埠數量或網路連接埠規格與來源 NAS 不同，以下網路和虛擬設定可能會變更並需要重新設定：Port Trunking、虛擬機器、Thunderbolt 等。</p>

資料和設定	NAS 遷移後
Windows AD 配置	Windows AD 必須重新配置。
授權	授權不會遷移。  警告 QNAP 建議在資料遷移前停用來源 NAS 的授權。
應用服務	如果目標 NAS 的記憶體少於來源 NAS 的記憶體，以下功能和應用服務可能無法執行：Virtualization Station、Qsirch 和快照。
服務	只能使用目標 NAS 所支援的服務。
多媒體功能	部分多媒體功能預設停用。

遷移 NAS



重要

在執行 NAS 遷移之前，請確保您了解所有要求以及遷移後可能發生的變化。如需詳細資訊，請參見下列主題。

- [NAS 遷移需求](#)
- [NAS 遷移後的狀態和設定變更](#)

1. 關閉來源 NAS 和目標 NAS 的電源。
2. 取出硬碟。



重要

QNAP 建議在安裝硬碟時遵照來源 NAS 硬碟的順序。要移除硬碟時，請記下硬碟托盤順序。

- a. 從來源 NAS 取出硬碟。
 - b. 從目標 NAS 取出硬碟托盤。
3. 安裝硬碟。
 - a. 將來源 NAS 硬碟安裝到目標 NAS 硬碟托盤上。
 - b. 將硬碟托盤插入目標 NAS。
 4. 打開目標 NAS 的電源。
 5. 在目標 NAS 上以管理員身份登入 QuTS hero。
目標 NAS 自動檢查最新的韌體更新。

6. 疑難排解

本章介紹基本的疑難排解資訊。

強制 Qfinder Pro 或 myQNAPcloud 定位 NAS

如果 Qfinder Pro 或 myQNAPcloud 在 QuTS hero 安裝的期間找不到 NAS，表示硬碟或資料發生問題。

1. 關閉 NAS 電源。
2. 移除所有硬碟。
3. 開啟 NAS。
4. 使用 Qfinder Pro 或 myQNAPcloud 定位 NAS。
5. 將硬碟重新插入。
6. 繼續執行 QuTS hero 安裝作業。

熱抽換故障硬碟

NAS 於下列情況支援硬碟熱抽換：

RAID 類型	硬碟數量	情況
RAID 1	2	一個硬碟故障
RAID 5	≥ 3	一個硬碟故障
RAID 6	≥ 4	一個或兩個硬碟故障
RAID 10	≥ 4 (必須是偶數)	在兩個不同組的硬碟中有一或兩個硬碟故障。
RAID 50	≥ 6	每個子群組有一個硬碟故障。
RAID 60	≥ 8	每個子群組有兩個硬碟故障。
三重鏡像	3 的倍數。(例如，3、6、9、12 個硬碟等。)	一或兩個硬碟故障。
RAID-TP	≥ 5	一、二或三個硬碟故障。

1. 登入 QuTS hero。
2. 前往 [主選單] > [儲存與快照總管] > [儲存空間] > [磁碟/VJBOD]。
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. 將裝置的故障硬碟拔出。
6. 等待 20 秒或等待裝置發出兩次嗶聲。
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。
NAS 會發出兩次嗶聲。
10. 前往 [主選單] > [儲存與快照總管] > [儲存空間]。

11. 找出新硬碟所在的共用資料夾，然後確認其狀態為〔重建中〕。

復原意外移除的正常硬碟

NAS 支援獨家 RAID 復原技術，若有硬碟意外斷線或遭到移除，使用者可以復原失效的 RAID 硬碟磁碟區。使用者可以從降級模式復原閒置中的 RAID 1、RAID 5、RAID 6、RAID 10、RAID 50、RAID 60、三重鏡像和 RAID-TP 磁碟區。

磁碟 / 磁碟群組	RAID 復原支援	硬碟數量	遭移除的硬碟最大數目
RAID 0	有	≥ 2	N/A
RAID 1	有	2	1
RAID 5	有	≥ 3	1
RAID 6	有	≥ 4	2
RAID 10	否	≥ 4 (必須是偶數)	在兩個不同組的硬碟中有一或兩個硬碟故障。
RAID 50	有	≥ 6	每個子群組有一個硬碟故障。
RAID 60	有	≥ 8	每個子群組有兩個硬碟故障。
三重鏡像	有	3 的倍數。(例如，3、6、9、12 個硬碟等。)	2
RAID-TP	有	≥ 5	3

支援和其他資源

QNAP 提供下列資源：

資源	URL
文件	https://docs.qnap.com
相容性列表	https://www.qnap.com/compatibility/
NAS 遷移相容性	https://www.qnap.com/en/nas-migration
擴充設備相容性	http://www.qnap.com/go/compatibility-expansion
服務入口網站	https://service.qnap.com
產品支援狀態	https://www.qnap.com/product/eol.php
下載	https://download.qnap.com
社群論壇	https://forum.qnap.com
QNAP 配件商店	https://shop.qnap.com/

7. 詞彙

Cloud Key

指定至每個 NAS 裝置的唯一 8 位數代碼

myQNAPcloud

提供各種遠端存取服務，例如 DDNS 與 myQNAPcloud Link

myQNAPcloud Link

讓您透過網際網路存取 NAS，無需配置複雜的連接埠轉址設定

Qfinder Pro

QNAP 應用工具可讓您定位和存取區域網路內的 QNAP NAS 裝置

QuTS hero

QNAP NAS 作業系統配備 ZFS 檔案系統

8. 聲明

本章介紹擔保、免責聲明、授權以及聯邦法規的相關資訊。

有限保固

QNAP 提供有限的產品保固服務。您購買的 QNAP 品牌硬體產品在材料和製造品質上受到瑕疵擔保，擔保期限為發票上所印日期起一 (1) 年或以上。("保固期")。請前往 www.qnap.com/warranty 深入瞭解您的法定權利，然 QNAP 得自行酌情隨時予以修改。

免責聲明

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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。						