

NA338TB3

2U 16 bay (2.5") Thunderbolt™ 3 Storage and PCIe Expansion



User Manual

First edition, Nov. 2020

SAFETY PRECAUTIONS

Please read this section carefully before proceeding. These precautions explain the correct and safe use of the storage, thereby helping prevent injury to you or others, and also help you minimize the risk of damaging the device.

Warnings

Always follow the basic warnings listed here to avoid the risk of serious injury from electrical shock, short-circuiting, fire, and other hazards. These warnings include, but are not limited to:

- With the exception of the user-swappable parts, do not attempt to disassemble or modify the enclosure. If this device appears to be malfunctioning, contact Netstor.
- Do not drop the enclosures or any of its drive modules; dropping or mishandling of the enclosure or drive modules may result in a malfunction.
- Do not insert your fingers or foreign objects inside the enclosure; take particular care when small children are present.
- Do not expose the device to rain, use it near water or containers that contain liquids which might spill into any openings, or in damp or wet conditions.
- If unusual smells, sounds, or smoke come from the device, or if liquids enter it, switch it off immediately and unplug it from the electrical outlet.
- Follow the instructions in this manual carefully; contact Netstor for additional advice not covered in this user's manual.

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1. Overview

1.1 Overview

The Netstor NA338TB3 storage enclosure accommodates up to sixteen high-speed SSDs or 2.5" HDDs for mass data storage. Based on the latest Thunderbolt 3 technology and PCIe architecture, the creative, innovative design of the NA338TB3 features highest RAID level data protection and PCIe expansion to the Thunderbolt 3 computer through the present-day blazing-fast Thunderbolt 3 (40Gbps) interface.

1.2 Package Checklist

Before installing the unit, verify the package contains the following items.

A Enclosure x 1



B 2.5" drive tray x 16 (already installed in chassis)



C Thunderbolt 3 (40Gbps) cable (2 meters) x 1



D Internal HD mini-SAS cable x 4



E Power cord x 1



F Drive mounting screw x 64



G Key for drive tray x 2



Notify your sales representative if any of the above items is missing or damaged.

2. Panel Layout

1. Drive Power LED

- White - Power On Indicator

2. Drive Status LED

- Flash Blue - Drive Accessing Indicator
- Red - Drive Failure Indicator

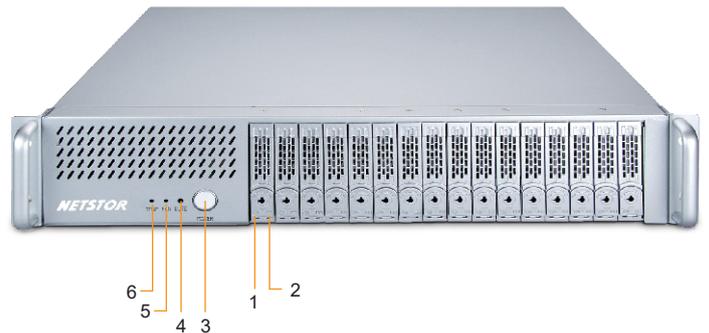
3. Power on button

- Blue – power on

When Mac mini is inside the Netstor unit, press and hold the power button for three seconds until the LED button shows blue light; the built-in solenoid actuator at rear of enclosure will push Mac mini's power button to have Mac mini and whole system power on.

Note:

The NA338TB3 chassis supports SGPIO. When any SSD/HDD fails, the red LED indicator on the tray will light. The SGPIO function will be effective when the RAID card supports SGPIO function (for example, Areca's RAID card).



4. Mute Button

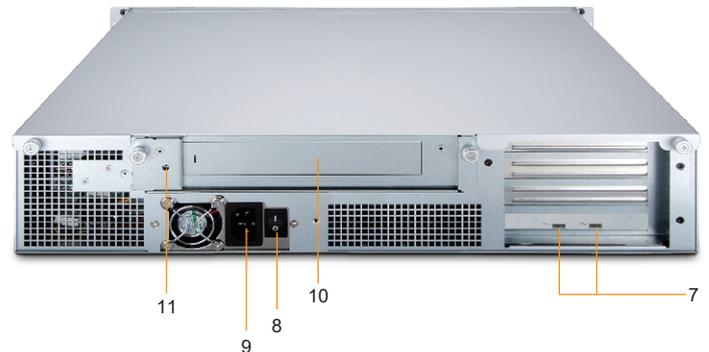
- Reset for buzzer beeping

5. Fan Status LED

- Normal – Green
- Failure – Red (too slow RPM or stop)

6. Temperature LED

- Normal – Green
- Over 50°C – Red



7. Thunderbolt 3 connectors

- Connecting Thunderbolt 3 cables to host and downstream device

8. PSU power button (“I” for enable, “O” for disable)

9. Power cord receptacle

- Connecting Thunderbolt 3 cables to host and downstream device

10. Removable integrated plate drawer for Mac mini

11. Manually power on hole

- To power on Mac mini manually by inserting stick to the hole

3. Enclosure Setup

The enclosure setup includes three parts. First, the RAID card installation and PCIe expansion. Second, the SSDs or 2.5" HDDs installation for storage. Third, Mac host connection.

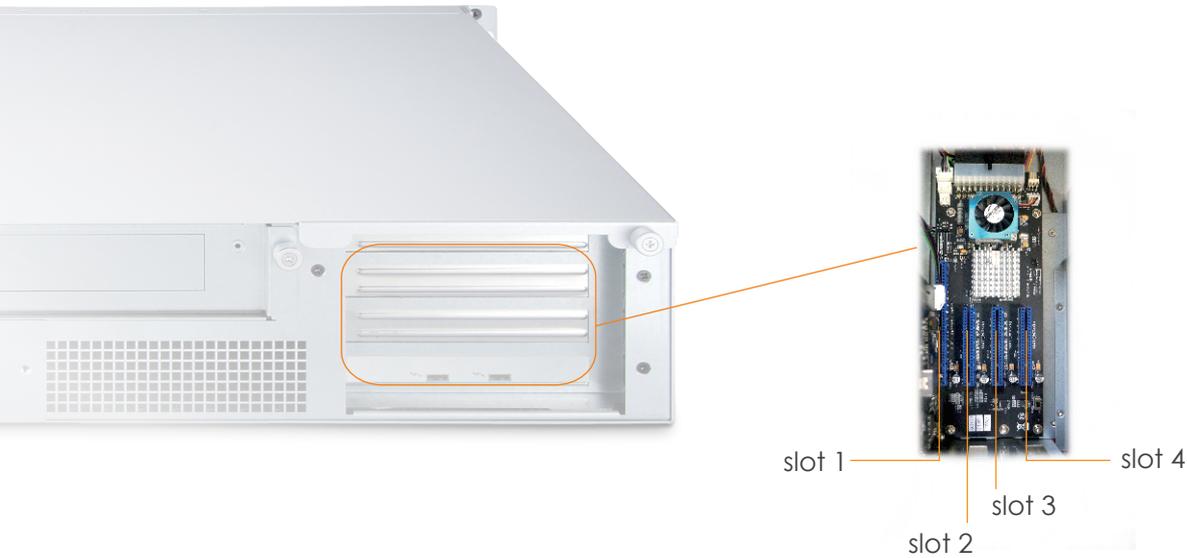
3.1 RAID card installation and PCIe expansion

1. Place NA338TB3 chassis on a level surface of a stable table.
2. Open the chassis by removing the top cover.
3. In order to have the PCIe expansion unit be turned to the upright position for the RAID/third-party PCIe card installation, unscrew the three black screws at rear right side of NA338TB3 chassis as well as unscrew the black screw at the front side of PCIe expansion unit. After unscrewing, manually turn the PCIe expansion unit for the upright position.



4. Three PCIe slots at rear of PCIe expansion unit are covered by removable L-shape metal brackets. After unscrewing the screw of the L-shape metal bracket, the PCIe slot is ready for the third-party PCIe card installation.

5. The layout of the PCIe slots within the PCIe expansion unit is as follows:



Slot 1 : Thunderbolt 3 target card (already fixed in the unit)

Slot 2 : PCIe x8 slot (open-type; supports PCIe card x16/x8/x4/x1)
RAID card is recommended to be installed in this slot

Slot 3 : PCIe x8 slot (closed-type; supports PCIe card x8/x4/x1)

Slot 4 : PCIe x8 slot (open-type; supports PCIe card x16/x8/x4/x1)

※ PCIe expansion slot board LEDs Status

6. Connect the internal data cable between the rightmost HD mini-SAS connector on backplane and the HD mini-SAS connector Channel 1~4 on RAID card, and connect the rest internal data cables subsequently to the leftmost HD mini-SAS connector on backplane and the HD mini-SAS connector Channel 13~16 on RAID card.



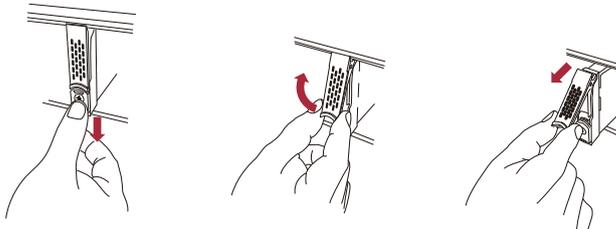
7. Install RAID card and other third-party PCIe cards into the proper PCIe slots within NA338TB3 and tighten them with screws on third-party PCIe cards' brackets.



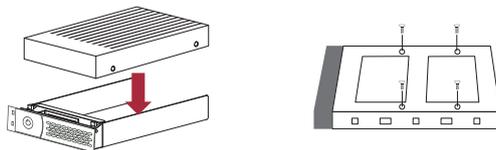
8. When RAID card and the other third-party PCIe cards are installed properly, restore the PCIe expansion unit from upright position to the original horizontal position. And screw the four black screws back to the unit.

3.2 SSDs or 2.5" HDDs installation for storage

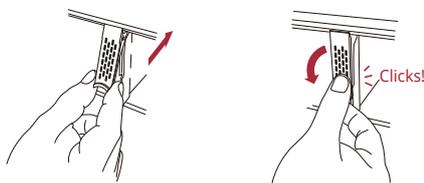
1. Take out the drive trays in front of the NA338TB3 chassis.



2. Place each SSD or 2.5" HDD in the drive tray, and fix the drive with the four mounting screws to the tray.



3. Insert the drive trays with SSDs/HDDs back to the NA338TB3 chassis.



3.3 Mac host connection

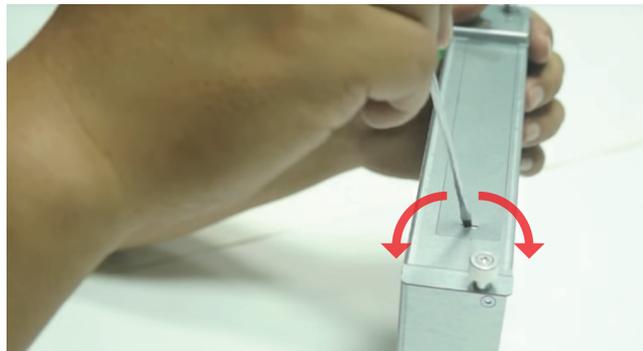
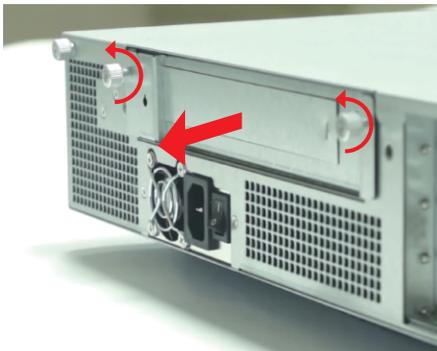
Users and producers can choose to connect Mac to NA338TB3 externally or internally for work. For the external connection, connect any Thunderbolt 3 Mac computer to NA338TB3 externally for production. On the other hand, for the internal application, embed a Thunderbolt 3 Mac mini in the built-in removable plate drawer for operation.

3.3.1 External connection with Mac

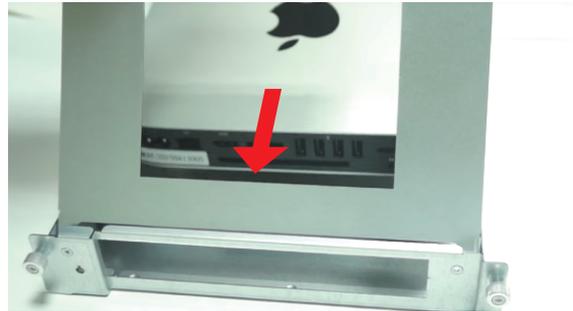
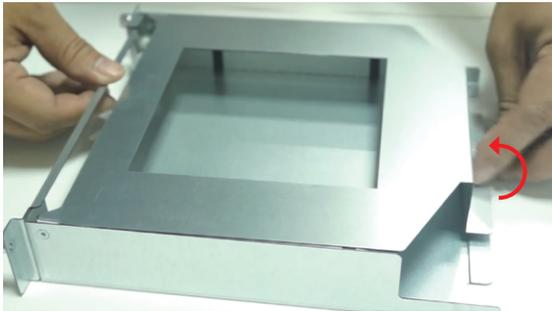
1. Arrange a Thunderbolt 3 Mac computer near the NA338TB3.
2. Connect NA338TB3 and Mac computer by Thunderbolt 3 cable.

3.3.2 Embedded Mac mini installation

1. After loosening the two thumbscrews on the removable integrated plate drawer, pull the drawer out of the NA338TB3 chassis. Use a tool to bend the metal board on the vertical side of the plate drawer to detach the metal board from drawer.



2. Loosen the thumbscrew on plate drawer's cover, and place Mac mini into the drawer case. Close and tighten the thumbscrew to fasten Mac mini with the plate drawer.



3. Insert the drawer with Mac mini back to the NA338TB3 storage enclosure, and tighten the two thumbscrews on the removable integrated plate drawer.

4. Connect NA338TB3 and Mac mini by Thunderbolt 3 cable.

4. Operation and Verification

4.1 Connection and System Power On/Off

This section will give info on connection between host computer and Netstor unit, and will also guide you how to power on/off the system. For embedded Mac mini application, see section 4.1.1. As for host computer connecting to Netstor unit externally, please refer to section 4.1.2.

4.1.1 Embedded Mac mini Application

1. After the NA338TB3 storage enclosure is connected to the power source by the power cord, turn the power switch of NA338TB3's PSU at rear of the chassis to "I" position to enable the power supply unit.



2. As the embedded Mac mini is connected to Netstor unit by Thunderbolt 3 cable, press and hold the LED power button in front of NA338TB3 for three seconds until the LED button shows blue light. The built-in solenoid actuator at rear of enclosure will push Mac mini's power button to have Mac mini and whole system be powered on.



3. As the embedded Mac mini is connected to Netstor unit by Thunderbolt 3 cable, while shutting down Mac mini through macOS, the entire NA338TB3 system will be powered off simultaneously.

Note:

When using the embedded Mac mini within the Netstor unit, if the user wants to force shut down Mac mini due to macOS crash, press and hold the power button in front of NA338TB3 for seven seconds to allow solenoid actuator to push and hold Mac mini's power button for shutting down.

4.1.2 Mac/PC Connected to Netstor Unit Externally

1. After the NA338TB3 storage enclosure is connected to the power source by the power cord, turn the power switch of NA338TB3's PSU at rear of the chassis to "I" position to enable the power supply unit.



2. The NA338TB3 is designed to be powered on/off simultaneously with the Thunderbolt 3 host computer, so when computer is connected to Netstor unit externally by Thunderbolt 3 cable, power on the host computer first, and then NA338TB3 will be powered on automatically. (NA338TB3 also supports hot-plug and hot-unplug for powering on and off)



3. As computer is connected to NA338TB3 unit externally by Thunderbolt 3 cable, while shutting down the host computer through operating system, the NA338TB3 unit will be powered off simultaneously as well.

4.2 Verification

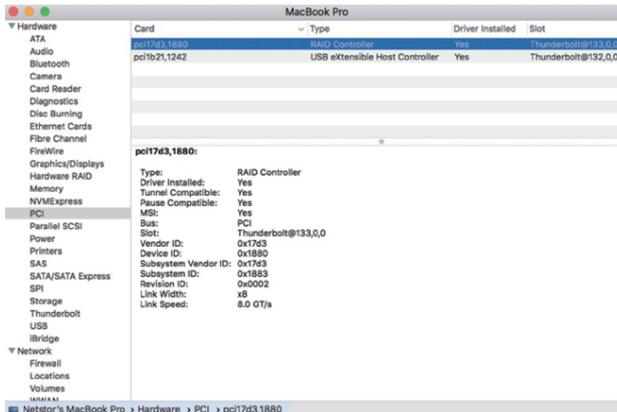
This section will provide you with the information on identifying Netstor unit and the RAID controller card within being recognized by the host computer. For the macOS operating system, see section 4.2.1. As for the Windows operating system, please refer to section 4.2.2.

4.2.1 Verification Steps for macOS

1. Verify Netstor Thunderbolt 3 card is recognized by the Mac computer. At macOS's desktop, click the Apple icon on top left of the screen, select **About This Mac**, and click on **System Report**. As the pane of System Information pops up, select **Thunderbolt** in the left-hand column. At this time, if **NA338TB3** can be selected to see its info, then the Netstor Thunderbolt 3 card is recognized properly by the Mac computer.



2. Verify the RAID card and the third-party PCIe cards that are installed in the NA338TB3 storage enclosure. After the verification of Netstor Thunderbolt 3 card, click **PCI** in the left-hand column within the pane of macOS's System Information, and at this moment the RAID card and all the third-party PCIe cards installed in the NA338TB3 will be shown in the information area within the pane. (For RAID card, from starting up, it will take more time for its info to be shown.)

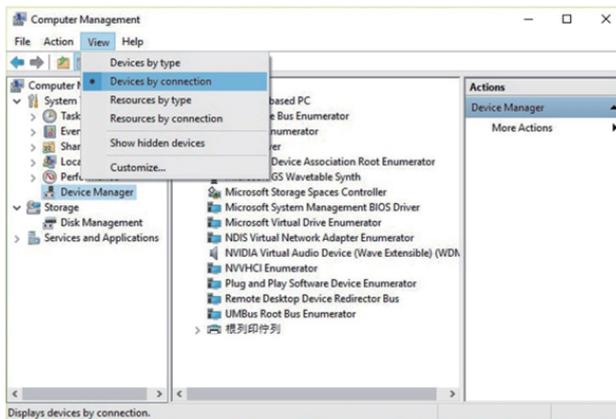


3. Verify the macOS drivers for the RAID card and the third-party PCIe cards are installed on the macOS operating system. When seeing RAID card and all the third-party PCIe cards listed in PCI section at macOS's System Information, there will be an item **Driver Installed** that indicates the status of RAID card and third-party PCIe card's driver. If it shows "No" for the status, find and install RAID card's and third-party PCIe card's Thunderbolt-aware macOS driver, and then the status will become "Yes" to mean RAID card's and third-party PCIe card's macOS driver has been installed correctly.

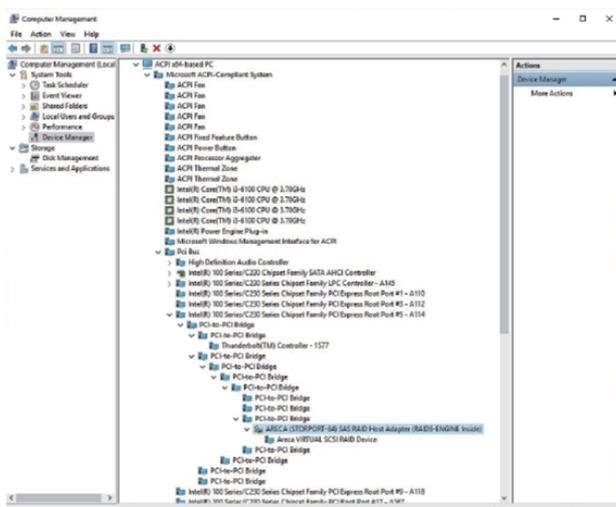
4. After identifying RAID card's driver status, follow the operation procedure provided by RAID card's manufacturer to set up the RAID volume.

4.2.2 Verification Steps for Windows

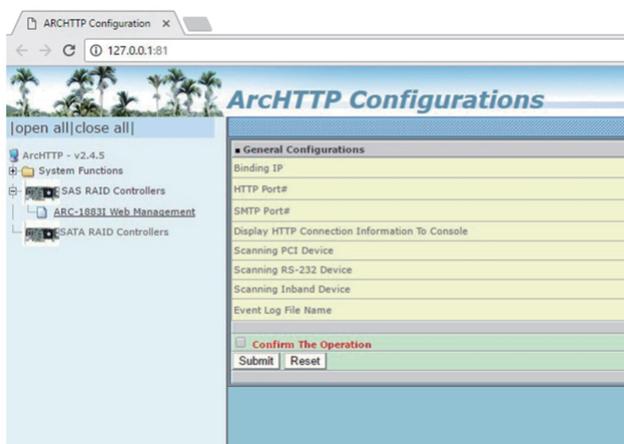
1. Verify NA338TB3 is recognized by the host computer. Right click **This PC** on the desktop of the Windows 10 operating system, and select **Manage**. After window of Computer Management pops up, select **Device Manager** in the left-hand column, and click **View** on the top menu bar, and then select **Devices by connection**.



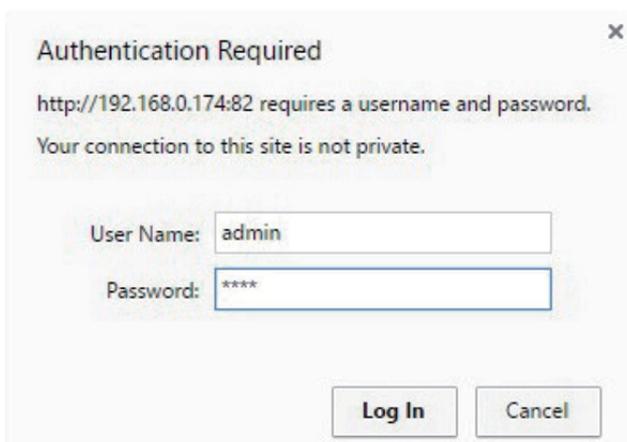
2. Click on **ACPI x64-based PC**, select **Microsoft ACPI-Compliant System**, and click on **PCI Express Root Complex**. Then items **Intel 100 Series Chipset Family PCI Express Root Port #X** will be shown. Find one of the items that shows PCI standard PCI-to-PCI bridge, open the PCI standard PCI-to-PCI bridge to the innermost tier, and the RAID controller card installed within the NA338TB3 chassis will be shown, meaning that the NA338TB3 storage is recognized by the host computer.



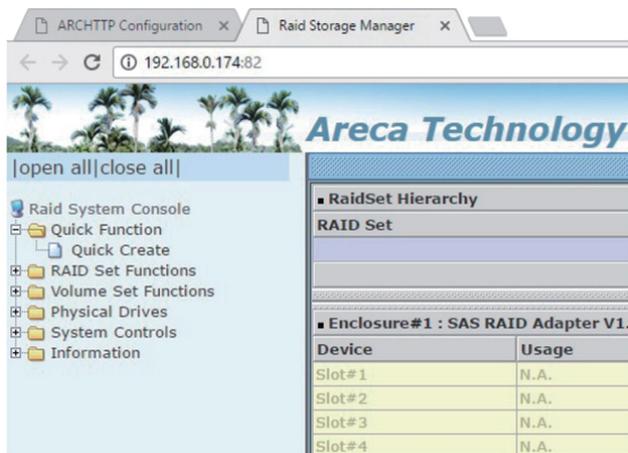
- Depending on RAID card's requirement (here take Areca's for instance), firstly install NA338TB3's RAID card Windows Thunderbolt-aware driver and the Windows GUI program on the Windows 10 operating system at your host computer.
- After installing the driver and the GUI program, launch the GUI program by selecting **ArcHttpSrvGUI** in All Programs in Windows Start to execute the application.
- After executing ArcHttpSrvGUI application, the web-based GUI will pop up. Select **SAS RAID Controllers**, and then select **ARC-188X Web Management** to enter the web-based GUI interface.



- Key in **admin** for user name and **0000** for password to log into the web-based GUI.



- After logging into the web-based GUI, for quick setup of a RAID volume, select **Quick Function** in the left-hand column, and then select **Quick Create**.



- After the RAID volume is created at the web-based GUI, on Windows 10's desktop, right click **This PC**, and select **Manage**. As window of Computer Management pops up, click on **Disk Management** in the left-hand column, and then a window will pop up. Select **GPT (GUID Partition Table)**, and click on OK.

- After selecting GPT (GUID Partition Table), the RAID volume will appear in the center bottom part of the window. Right click on the portion of the RAID volume, and select **New Simple Volume** to format the RAID volume.

- After the formatting is completed, the RAID volume drive will be shown in This PC at Windows 10, and is ready for use.

Note:

To eject the RAID volume drive at Windows operating system, click on the Safely Remove Hardware icon on the bottom right of the screen, and select Eject Areca ARC-188X SCSI Disk Device.

Note:

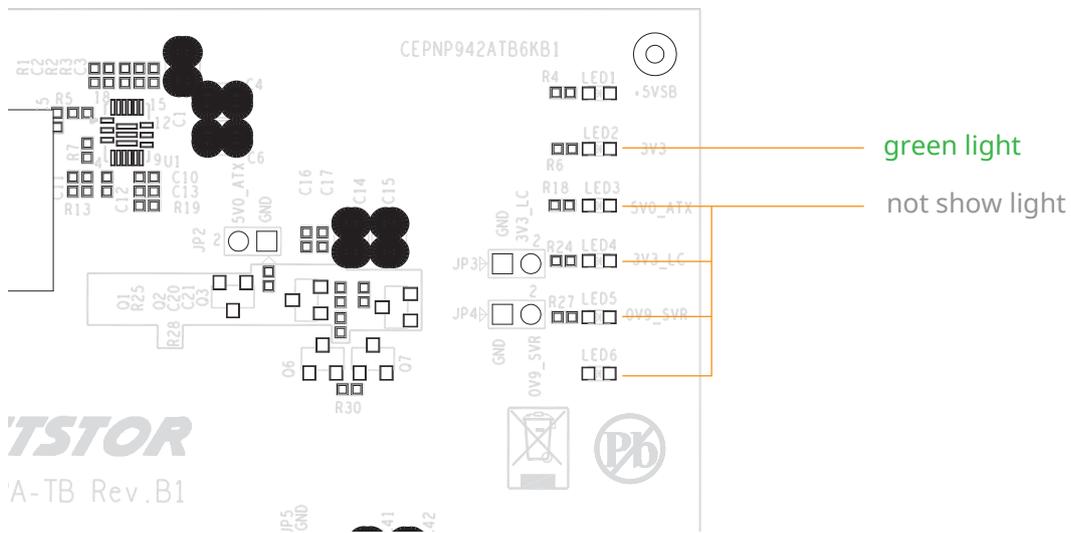
The NA338TB3 chassis does support SGPIO. As any HDD fails, the red LED indicator on the drive tray will illuminate. The SGPIO function will be effective when the SAS/SATA RAID controller card used in the Netstor unit supports the SGPIO function. (for example, Areca's RAID controller card)

4.3 Thunderbolt 3 Card LEDs Status

On the Thunderbolt 3 card within the NA338TB3 storage, there are totally five LEDs. From top to bottom, they are: LED 2 (for 3V3), LED 3 (for 5V0_ATX), LED 4 (for 3V3_LC), LED 5 (for 0V9_SVR), and LED 6 (for 0V9_USB). The following information shows what the LEDs illuminating status will be before NA338TB3 is powered on and after the Netstor unit is powered on.

Power-off:

Before NA338TB3 is powered on, only LED 2 will show green light, and the rest LED 3 through LED 6 will not show light.



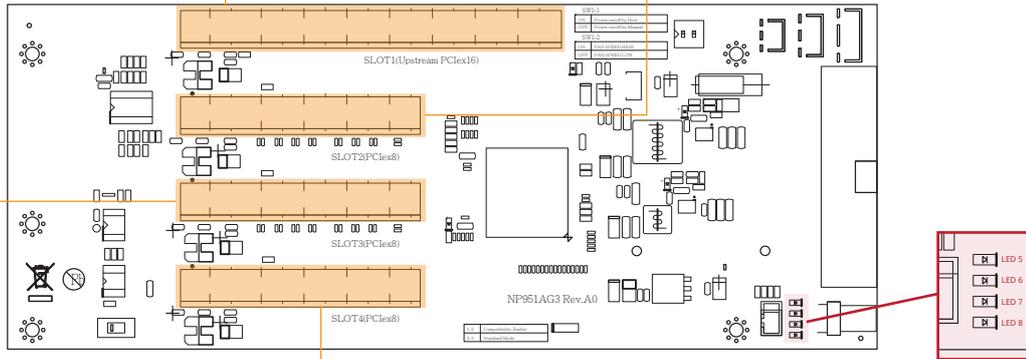
4.4 PCIe expansion slot board LEDs Status

Slot 1: Target card

- (already fixed in the chassis)

Slot 2: PCIe ×8 slot

- (open-type; supports PCIe card ×16/×8/×4/×1)
- RAID card is recommended to be installed in this slot as it's closest to backplane's connectors.



Slot 3: PCIe ×8 slot

- (closed-type; supports PCIe card ×8/×4/×1)

Slot 4: PCIe ×8 slot

- (open-type; supports PCIe card ×16/×8/×4/×1)

LED5 for SLOT1

As LED5 illuminates solid blue light, it indicates Thunderbolt target card in SLOT#1 is in Gen3 mode. As LED5 blinking blue light, Thunderbolt target card in SLOT#1 is in Gen2 mode.

LED6 for SLOT2

As LED6 illuminates solid blue light, it indicates the PCIe card in SLOT#2 is in Gen3 mode. As LED6 blinking blue light, PCIe card in SLOT#2 is in Gen2 mode.

LED7 for SLOT3

As LED7 illuminates solid blue light, it indicates the PCIe card in SLOT#3 is in Gen3 mode. As LED7 blinking blue light, PCIe card in SLOT#3 is in Gen2 mode.

LED8 for SLOT4

As LED8 illuminates solid blue light, it indicates the PCIe card in SLOT#4 is in Gen3 mode. As LED8 blinking blue light, PCIe card in SLOT#4 is in Gen2 mode.

If you have any questions, please contact your regional distributor,
or Netstor Technology, Taiwan.



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