Tiger Box Expansion Chassis 4U24 Assembly Guide

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Congratulations on your purchase of Tiger Box Expansion Chassis 4U24, the easiest way to expand the storage capacity of your Tiger Box all-in-one shared storage appliance. This manual describes how to install and connect the expansion chassis at your site - from unpacking the appliance and connecting it to Tiger Box to powering it on.

Before proceeding, make sure that you have read carefully all instructions, paying special attention to the following symbols used in this guide:

⚠️ SAFETY WARNING

⚠️ IMPORTANT NOTE

💡 TIP

You can find the most up-to-date version of this manual at the following address: https://www.tiger-technology.com/software/tiger-store/docs/

Product Overview

Tiger Box Expansion Chassis 4U24 is a natural addition to Tiger Technology's all-in-one shared storage appliance, allowing you to easily expand the storage capacity of your Tiger Box. It features the same physical characteristics as Tiger Box 4U24 and is comprised of 24 enterprise-class drives (drive capacity depends on specific configuration). When connected to a Tiger Box appliance, the drives appear to all Windows, Apple Mac and Linux clients as a separate RAID 5 volume. Utilizing the smart storage pooling feature of Tiger Store software, which runs on all Tiger Technology appliances, you can unite the main chassis volume and the volume(s) of all connected expansion chassis into a single virtual volume - the storage pool - that users can access through a universal mount point. The pool size equals the sum of the capacity of all volumes that comprise it and presents their existing folder structures as one merged folder structure. For more details, refer to the latest Tiger Store Administration Guide.

The expansion chassis is shipped fully configured to you. To deploy it you should simply:

1. Rack-mount the expansion chassis or install it on a table top (see "Installing The Expansion Chassis" on page 6).

2. Connect the expansion chassis to the main storage (see "Connect The Expansion Chassis to Tiger Box" on page 7)

3. Connect the expansion chassis to the power source and turn it on (see "Connecting The Expansion Chassis to The Power" on page 7).

Tiger Box Expansion Chassis 4U24 Features

• 4RU, 19'' rack-mount chassis with excellent anti-vibration mechanical design and thermal solution.

• RAID 5 shared storage comprised of 24 hot swappable drives (a failed RAID drive can be replaced while the system is operating and no data on the volume will be lost).

• Redundant power supply (a failed power module can be replaced while the system is operating).

• 3 x 5000 RPM hot-swap PWM cooling fan(s).

• 2 x 5000 RPM Rear hot-swap exhaust PWM fans & air shroud.

Package Content

The palletized package you have received weighs approximately 44 kg (96 lbs) and has the following dimensions:

It must contain the following:

• 1 x 4RU, 19" rack-mount chassis with 24 x 3.5"or 2.5" disks each installed in a hot-swappable drive carrier.

• (*optional*) 1 x 3.5" or 2.5" spare disk installed in a hot-swappable drive carrier for online recovery of a failed RAID disk.

• 1 x rack-mount rails kit.

• 2 x power cables.

• 1 x External MiniSAS HD to External MiniSAS HD 2m cable.

> Note: *The cable provided in your shipment is suitable for connecting the expansion chassis to a Tiger Box appliance or another expansion chassis, which uses a MiniSAS HD port.*

• Tiger Box reset tool (used for pressing the shut down and reset buttons at the front of the appliance).

⚠ **Important**: *If any of the components listed above is missing from your shipment, please contact your reseller or Tiger Technology support immediately.*

⚠ **Important**: *Check if both warranty stickers at the back of the chassis are intact. If a warranty sticker is damaged, immediately contact Tiger Technology at support@tiger-technology.com.*

Hardware Overview

Note: *The pictures used to illustrate the product in this manual may differ from the Tiger Box Expansion Chassis you have received depending on the model.*

Technical Characteristics

Description	Specification
Chassis dimensions	Height 7" (178mm) Width 17.2" (437mm) Depth 26" (660mm)
Net weight (without drives installed)	approx. 27.22 kg/60 lbs
Gross weight (with RAID drives installed)	approx. 36.29 kg/80 lbs
Power Consumption Max	800W: 100-127V a.c./12-9A/50-60Hz 1000W: 200-240V a.c./7.2-6A/50-60Hz
Power Supply Unit	High-efficiency 800W with Input 100 - 127Vac or 1000W with Input 200 - 240Vac (1+1) Redundant Hot Swappable Power Supply W/ PFC, AC 100 ~ 240V Full Range, 50Hz ~ 60Hz
Temperature Range	Operating: 5°C - 35°C (41°F - 95°F) Non-operating: -40°C - 70°C (-40°F - 158°F)
Humidity Range	8% - 90% (non-condensing)

Front View

Note: *Your Expansion Chassis is shipped to you with its front panel bezel already installed and to view the front panel you need to remove the bezel, following the steps in "Installing and Removing The Front Panel Bezel" on page 6.*

Apart from the 24 drive bays for the drives comprising the shared storage, the expansion chassis's front panel features the following elements:

• LED indicators for monitoring system activity (see "Monitoring the Chassis Activity" on page 8).

• system reset button

• system power button

Rear View

The back of the expansion chassis features the following elements:

• 2 x power supply modules.

• 4 x MiniSAS ports, for connecting the expansion chassis to a Tiger Box appliance or to another expansion chassis.

Site Installation

Unpacking The Expansion Chassis

⚠️ **Important**: *Do not throw away any of the packaging components, until you ensure that the expansion chassis works properly and there is no need to return any part.*

1. Cut the straps of the box, cut or remove the tape and open the flaps.

2. Take out the rack-mount rails kit.

3. Take out the box, containing the power cables and the External MiniSAS HD to External MiniSAS HD cable.

4. Take out the two foam protectors and take the appliance out of the box and place it on a surface, ensuring that the system remains stable.

> ⚠️ **Important**: *The Tiger Box expansion chassis weighs approximately 80 lbs (36.29 kg). Attempting to move it without assistance could cause personal injury. Request assistance and use proper lifting techniques when lifting the chassis.*

Installing The Expansion Chassis

The same physical, electrical, and thermal requirements are valid for the Tiger Box expansion chassis 4U24 as for Tiger Box 4U24 (refer to Tiger Box 4U24 3.0 Assembly Manual for more information). You should also consider the SAS cable length limitation - the one provided in the shipment is 2m long, to install the expansion chassis at a greater distance from the main Tiger Box/Tiger Box1 appliance, you should use a longer cable.

Rack-mounting The Expansion Chassis

You can mount the expansion chassis in a standard, 19-inch-wide, four-post video rack.

A rack-mount rails kit is included in your shipping. If you are installing the expansion chassis in a rack, follow the instructions supplied in the rack-mount rails kit to install the appliance.

> 💡 **Tip**: *Install the heaviest devices in the lowest position in the rack.*

Installing The Expansion Chassis on a Table Top

If you do not plan to install your expansion chassis in a rack, and you opt for tabletop installation, ensure that:

• the surface is clean and in a safe location;

• the expansion chassis is installed off the floor (dust that accumulates on the floor is drawn into the interior of the appliance by the cooling fans. Excessive dust inside the appliance can cause overheating and component failures);

• there must be at least 50cm (19 inches) of clearance at the front and rear of the chassis for installing and replacing the RAID drives, or accessing equipment;

• the expansion chassis receives adequate ventilation (it is not being installed in an enclosed cabinet where ventilation is scarce);

Installing and Removing The Front Panel Bezel

The Tiger Box expansion chassis 4U24 is shipped with a bezel, which covers the front panel.

You may have to remove the bezel in order to:

• monitor RAID drives activity (see steps on page 8)

• replace a failed RAID drive (see steps on page 9)

• power on/off or restart the expansion chassis

> 💡 **Tip**: *You can install/remove the bezel at any time without having to turn off or dismount the appliance from the rack.*

To remove the bezel:

1. Loosen the thumb screws on either side of the bezel.

2. Gently pull away the bezel from the front panel of the expansion chassis.

To install the bezel:

1. Insert the tabs on each end of the bezel into the flanges on each side of the expansion chassis' front panel.

2. Screw the two thumb screws on either side clockwise.

Connect The Expansion Chassis to Tiger Box

To make the expansion chassis' storage available to client computers, you should first connect it to the main Tiger Box storage via the SAS cable provided in the shipment. You can directly connect up to two expansion chassis to Tiger Box 3U/4U and just one expansion chassis to Tiger Box 1U.

To connect the expansion chassis to a Tiger Box appliance:

1. Plug one end of the SAS cable in the SAS port at the back of the expansion chassis.
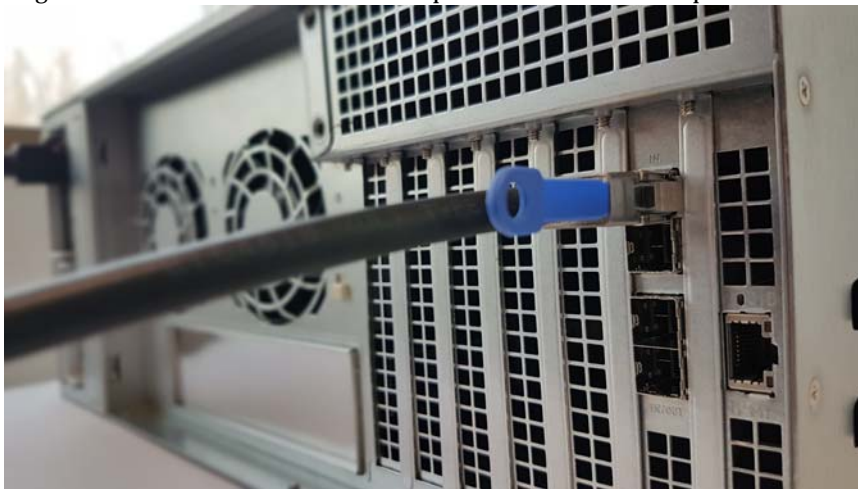
2. Plug the other end of the SAS cable in the available SAS ports on the Tiger Box appliance.

Note: *To connect the expansion chassis to a Tiger Box appliance, which uses a MiniSAS port, you must use a External MiniSAS to External MiniSAS HD cable.*

Should you decide to connect more expansion chassis (more than two with Tiger Box3U/4U or more than one with Tiger Box 1U), you should plug the other end of the SAS cable in the SAS port of one of the already connected expansion chassis.

Connecting The Expansion Chassis to The Power

Your expansion chassis is shipped to you with two power supply modules, installed in the rear of the appliance. These modules supply redundant power to the expansion chassis - should a power supply module fail, you can replace it while the appliance is operating. You can replace a failed power module only with a power module of the same model.

To connect the expansion chassis to the power supply:

1. Plug the power cord in the power socket of the power supply module.

2. Connect the power cord to the power outlet.

   If the expansion chassis is properly connected, the power module LED indicator will display solid green light. If there's problem with the module installation, its LED indicator is amber (solid or blinking) or there is no light at all.

Powering On The Expansion Chassis

Once you have deployed the expansion chassis, you are ready to power it on. If the Tiger Box/Tiger Box1 appliance to which it is connected is also turned on, the expansion chassis RAID becomes immediately available in the web interface of Tiger Store and can be accessed by connected client computers.

Use the power on/off button at the front panel of the expansion chassis to turn it on or off.

Note: *If the front panel bezel is installed, to power on/off or restart the expansion chassis you must first remove the bezel, following the steps in"Installing and Removing The Front Panel Bezel" on page 6.*

To power on/off the expansion chassis:

Press continuously the power button ⏻ on the front panel of the appliance, until the power status LED's light goes on/off.

Hardware Monitoring

Monitoring the Chassis Activity

The LEDs on the front panel of the expansion chassis allow you to monitor the chassis activity. You can monitor the activity without removing the front panel bezel:

Indicator	LED color	Status	Description
power fail LED	red	solid	power supply error
information LED	red	solid	an overheat condition has occurred
	red	slow blinking (once a second)	fan failure, check for an inoperative fan.
	red	fast blinking (more than 4 times a second)	power failure, check for a non-operational power supply.
	blue	solid	The UID button at the back of the appliance is pressed. To turn off the LED, continuously press the UID button again.
inactive LED	-	-	-
IPMI port activity LED	green	blinking	there is activity on the IPMI port
	-	-	offline or no activity
Appliance HDD LED	green	blinking	appliance flash drive activity
Power LED	green	solid	The system is operating and power is properly supplied to the system power units.

Monitoring RAID Drives Activity

Note: *To monitor RAID drives activity, you should remove the front panel bezel.*

You can monitor the activity of the RAID drives using the LED indicators on the top of each HDD carrier:

Indicator		LED color	Status	Description
	Activity LED	blue	blinking	I/O activity
		blue	solid	SAS RAID drive is idle
		-	-	SATA RAID drive is idle
	Status LED	red	solid	Drive failure
		red	slow blinking (once a second)	Drive is rebuilding.
		red	two blinks followed by a pause	Drive operates as a hot spare.

⚠️ **Important:** *To diagnose RAID drive failure it is advisable to regularly check the RAID status in the Storage page of Tiger Store's web UI (refer to the Tiger Store Administration Guide). Degraded RAID status indicates that a drive has failed and needs to be replaced with the spare drive, following the steps described in "Replacing a Failed Drive" on page 9.*

Monitoring The Power Supply

You can monitor the activity of the power modules using their LED indicator:

Indicator	LED color	Status	Description
	green	solid	power supply is on
power module LED	amber	solid	power supply is plugged in and turned off, or the system is off but in an abnormal state.
		blinking	power supply temperature has reached 63°C. The system will automatically power-down when the power supply temperature reaches 70°C and restart when the power supply temperature goes below 60°C.

Post Installation Maintenance

Replacing a Failed Drive

You can replace a failed hard disk, while the Tiger Box expansion chassis is operating and no data on the storage will be lost. If your order includes a spare drive, it is

shipped to you pre-installed in a drive carrier and is ready to replace the one that has failed.

You can also replace a failed drive with a drive not included in your shipment. In this case the new drive must be exactly the same size and make as the one that has failed. Additionally, you should uninstall the failed drive from its drive carrier and then install the replacement drive in the carrier.

⚠️ **Important**: *Periodically check the RAID status in the Storage page of Tiger Store's web UI. Degraded RAID status indicates that a drive has failed and needs to be replaced. If more than one RAID drive fails, the RAID will become inaccessible and data loss is possible.*

To replace a failed RAID disk with the spare drive:

⚠️ **Important**: *To prevent electrostatic discharge (ESD), touch grounded metal before touching any of the expansion chassis components. You can also prevent ESD when inserting the drive carrier into the enclosure, by holding the chassis with the other hand.*

1. Remove the front panel bezel.

2. Find the failed drive - its HDD status LED indicator (the left indicator) is red.

3. Press the lever button on the front of the drive carrier to release the lever and gently pull out the drive carrier.

⚠️ **Important**: *If by accident you pull out other than the failed drive, the RAID becomes offline. Insert back the healthy drive and wait until the RAID is again online. After that find the failed drive and proceed with the steps.*

4. (*if your order does not include a spare drive*) Uninstall the failed drive from its drive carrier and then install the replacement drive in the carrier.

5. (*if your order includes a spare drive*) Take out the drive carrier from its antistatic bag.

⚠️ **Important**: *Handle the hard drive by the sides only, making sure you don't touch the printed circuit board or the connectors.*

6. Press the lever release button on the front of the drive carrier.

The lever opens.

7. Find the label on the drive that specifies its corresponding drive bay and then slide the drive carrier into the corresponding slot until the lever makes contact with the enclosure.

8. Push the lever to finish sliding the drive carrier into the drive bay. To ensure that the lever is locked, you must hear a clicking sound.

9. To check that the drive carrier is properly installed and makes full contact with the drive bay, try to pull it out without unlocking the lever.

⚠️ **Important**: *If the drive carrier can be pulled out, repeat the steps for installing it from the beginning.*

10. When the HDD status LED of the drive stops blinking, rebuild the RAID, following the steps described in the Tiger Store Administration Guide.

⚠️ **Important**: *Make sure you order an additional spare drive in case another RAID drive fails in the future.*

Replacing a Failed Power Module

Your Tiger Box Expansion Chassis is shipped to you with two power supply modules, installed in the rear of the appliance. These modules supply redundant power to the expansion chassis - should a power supply module fail, you can replace it while the expansion chassis is operating. You can replace a failed power module only with a power module of the same model.

To replace a failed power module:

1. Find the failed power module (the light of its LED indicator is solid red).

2. Unplug its power cable from the module's socket.

3. Lift the lever of the power module and pushing down the tab of the module with the finger, slide out the unit from the expansion chassis.

4. Slide in the new power module and hear the side tab click into the bay.

5. Push back the lever of the power module to lock it.

6. Plug the power cable in the module's socket and power on the expansion chassis.