

MagStor



TRB3-HLX Manual

Updated July 12th 2019

Contents(Links)

About This Manual

Symbology	2
Other Resources	2
Quickstart Guide	3
Purchasing extra media	5
Technical Support	5
Requesting changes to the manual	5

Unboxing

What's in the box?	6
Thunderbolt™ 3	7
Front Panel	8
Environmental Tolerance	8

Software and Drivers

LTFS Software (MacOS)	9
-----------------------	---

Tape Drive Operation

Power On/Off	10
Inserting/Removing Tape	10
Write Protection	11
Compatible Tapes	11
Cleaning your tape drive	11
HDD Dock (Single Drive Thunderbolt™ 3 Units)	12
Inserting/Removing Drive	12
Maximizing Speed	13

Troubleshooting

Normal operation	14
Problems and Solutions	14
Front Panel Fault Codes	16

Warranty

Terms	17
-------	----

About This Manual

Symbology



This is a useful tip.



This is not recommended or you should be aware of this.



Do not do this. It is dangerous and could damage the equipment.

Other Resources

This is the Operation Manual for Thunderbolt™ 3 MagStor devices. Below are links to more resources if you have any further questions. Thanks for your purchase!

- [Quickstart Guide + PC](#)
- More specific instructions for installing the needed software for your Mac or PC.
- [MagStor.com](#)
- Live Chat
- [MagStor Shop](#)
- Tape Drives - Tape Libraries - Tape Media/Cartridges
- [Technical support portal and FAQ](#)
- Submit support tickets - Read about common problems

Special Thanks

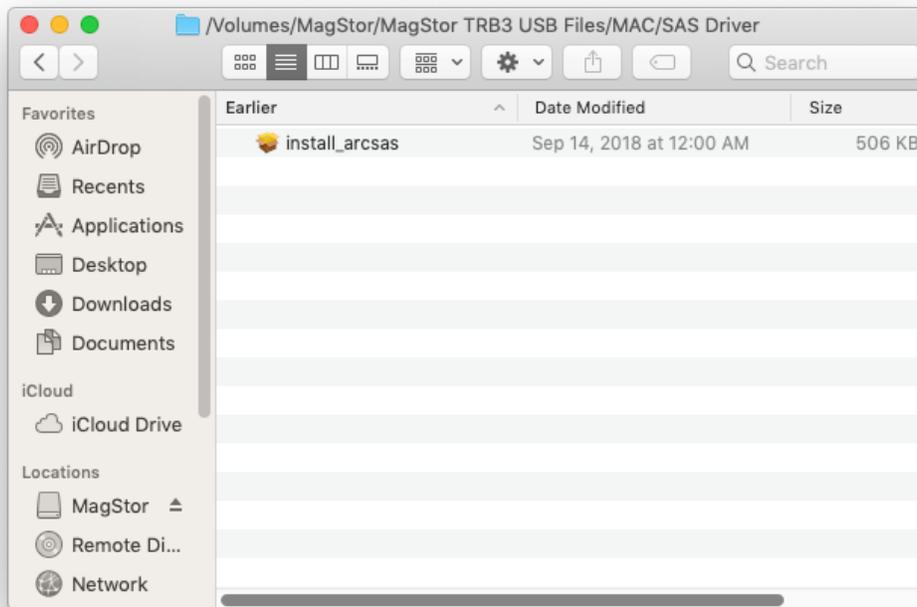
Every purchase lets us continue providing easier, friendlier, and more affordable tape solutions.

Thank you!

Quickstart guide

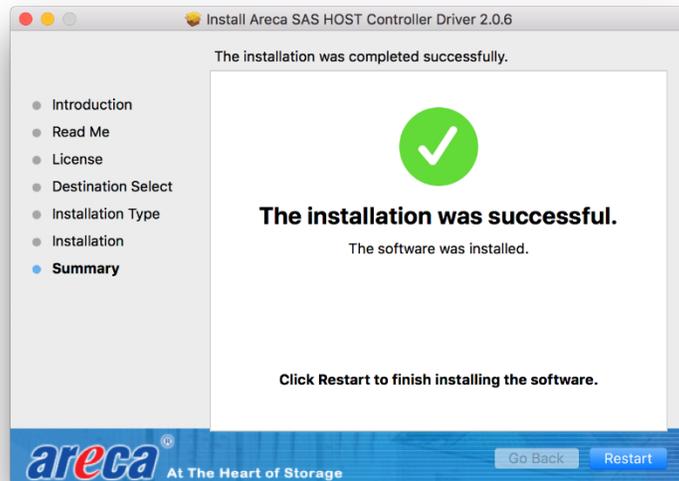
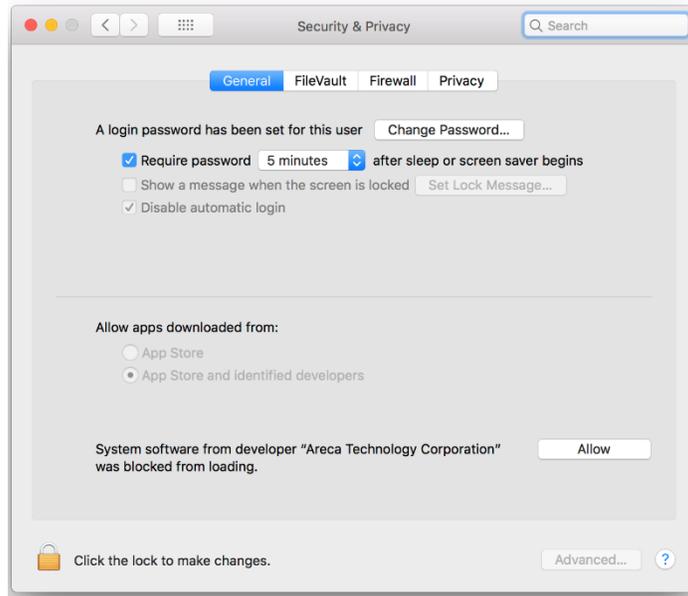
Installing drivers on your Mac

1. Plug in, Power on and connect your MagStor to your Mac.
2. Plug the included USB Flash Memory Stick into the Mac
3. Navigate to **Flash Drive > MagStor TRB3 USB Files > MAC > SAS Driver**



4. Install the Driver. It is likely that your mac will not immediately allow the driver to be installed. If you are given the option, select Open **Security Preferences** and select **"Allow"**, otherwise click on your desktop and then using the menu at the top of the screen navigate to...

[**⌘ > System Preferences... > [grid icon] > [shield icon] Security & Privacy**] and select



5. Continue with and complete the installation. **Congratulations! Your MagStor is ready!**

Optional: For **MagStor LTFs Companion** Install FUSE, ICUFramework, and the LTFsSde within the LTFSC.dmg located on your MagStor flash drive.



IBM Spectrum Archive SDE and EE cannot be installed at the same time.



Check for updates at <https://magstor.com/pages/magstor-ltfs-companion>.

Purchasing extra media

Additional LTO media / cartridges can be purchased in the [shop](#) at www.MagStor.com.



LTO drives are backwards compatible two generations for reading and one generation for writing.



LTO-8 Drives are the exception. They can read and write one generation back.

Technical Support

If the [troubleshooting](#) section of the manual does not solve your problem, technical assistance can be found at the MagStor [support portal](#), or through our live chat system at MagStor.com. We appreciate your business and will do our best to resolve your issue in a timely manner.

Requesting changes to the manual

We strive to make MagStor the best product available. If you have any suggestions for improving this manual or our product please send an email to feedbackinfo@MagStor.com with your request. We appreciate your feedback and will do our best to meet your expectations.

Unboxing

What's in the box?

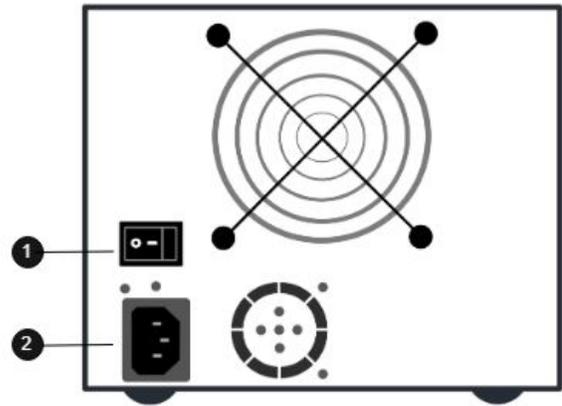
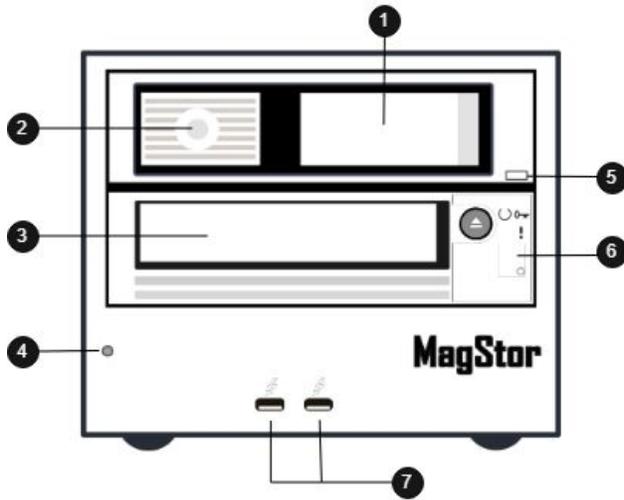
MagStor Thunderbolt™ 3 **Single** Drive

Item	Description
MagStor TRB3-HL Series Drive	Thunderbolt™ 3 desktop unit w/ Drive & HDD Dock
USB drive (Thunderbolt™ 3 + USB 3.0)	Contains drivers and LTFs software
Thunderbolt™ 3 cable	2 meter long Active cable
US power cable	6 Foot 10A 125V, VW-1 & FT2 Flame Safety Rated
HDD Dock Keys	Two keys for HDD dock lock

MagStor Thunderbolt™ 3 **DUAL** Drive

Item	Description
MagStor TRB3-HL-DUAL Series Drive	Thunderbolt™ 3 desktop unit with two drives
USB drive (Thunderbolt™ 3 + USB 3.0)	Contains drivers and LTFs software
Thunderbolt™ 3 cable	2 meter long Active cable
US power cable	6 Foot 10A 125V, VW-1 & FT2 Flame Safety Rated

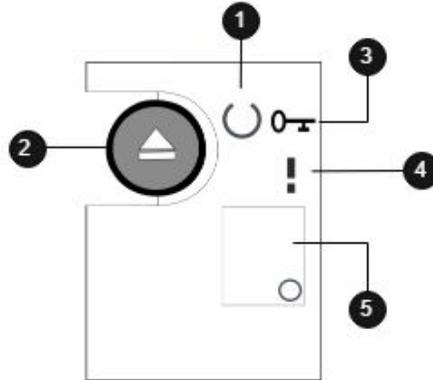
Thunderbolt™ 3 MagStor



Number	MagStor (Front)
1	HDD Dock (or second drive)
2	Dock Handle and Lock
3	LTO Drive
4	MagStor Activity Light
5	HDD Connection Light
6	Front Panel
7	Thunderbolt™ 3 Ports

Number	MagStor (Back)
1	Power Supply On/Off Switch
2	Power Cable Port

Front Panel



Number	Front Panel (Tape Drive)
1	Ready Light (Green)
2	Cartridge Unload Button
3	Encryption Light (Amber)
4	Fault Light (White)
5	Single Character Display (see Front Panel Fault Codes)

Environmental Tolerance

Environmental Tolerance		
Activity	Operating	Shipping & Storage
Temperature	10 - 38°C (50 - 100°F)	-40 to 60°C (-40 to 140°F)
Relative Humidity	20 - 80%	10 - 90%



Do not use or store the tape drive in dusty or wet areas. Running the drive in this environment may damage the drive or media. This may also void the warranty.

Software and Drivers

The MagStor tape drive cannot be recognized by the computer without the installation of drivers. These drivers come with the Thunderbolt™ 3 configuration.



This software (install arcsas.pkg) can be found on the USB + Thunderbolt™ 3 flash drive that came with your Thunderbolt™ 3 MagStor.

Flash Drive > MagStor TRB3 USB Files > MAC > SAS Driver

LTFS Software (MacOS)

The Linear Tape File System (LTFS) simplifies the use of tape drives on modern systems. Software is required for this system to function. MagStor ships with the MagStor LTFS Companion for this purpose. The MagStor LTFS Companion is designed to be an out of the box solution for utilizing LTFS with MacOS. It provides the ability to use LTFS for free on any Mac for small read/write jobs, but has limited functionality and safeguards. Updates and other information pertaining to the companion can be found at the [LTFS companion page](#).

Premium third party software packages that provide enhanced features such as verification, pre move file checking and progress indicators are available for purchase at the [Magstor shop](#). **It is MagStors recommendation that you use one of these software packages for mission critical file archiving.** These software suites provide features which greatly decrease the odds of data loss by both operating system and user error, and are supported by full time developers.



The MagStor LTFS Companion is compatible with macOS 10.11 and beyond. Check for updates at <https://magstor.com/pages/magstor-ltfs-companion>.



MagStor LTFS Companion for Mac does not perform data verification and relies on the MacOS to transfer files correctly and completely. For larger jobs it is recommended you use software with verification for safety and peace of mind.

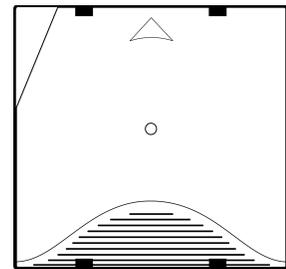
Tape Drive Operation

Power On/Off

Power on the MagStor by plugging it in and switching the power supply on/off switch to the 'I' symbol. Once you have a solid green ready light the drive is ready to receive a tape. If after a period of time the drive shows a fault code, reference the fault code section of the manual.

Inserting/Removing Tape

Once the drive is fully powered on with a solid green ready light, lightly insert a compatible LTO tape with the directional arrow on top and facing the drive until the drive grabs the tape. To eject the tape, press the cartridge unload button. This button will fail to function if the tape is currently mounted and you will need to unmount the tape before you can remove the cartridge.



On MacOS you can have LTFS mounted tapes show on your desktop by changing these settings.

Finder > Preferences > Show these items on the desktop:
Connected servers



Leaving a tape in the drive for long periods of time without use or while powered off can damage the media and drive. If the drive is powered off while a tape is inserted, it will take longer to initialize next use as it must rewind the tape.



Do not power off the drive while a tape is mounted. This can cause data loss.

Write Protection

On the underside of LTO tapes there is a red switch which displays a lock symbol when in the on position. When in the on position the tape is considered read-only and new data cannot be written to the tape. If you try to write to a tape with this feature enabled, the drive will display a P fault code. This also prevents accidental formatting.



Compatible Tapes

The tapes you can use are based on the version of the drive that you have. The version number is shown on the faceplate of the drive. As a rule of thumb all drives are backwards compatible two generations back for reading and one generation back for writing.



LTO-8 Drives are the exception. They can read and write one generation back.

Cleaning your tape drive

Some LTO tapes are designed for cleaning purposes and have a limited number of uses. When your tape drive displays the C fault code, it is time to use one. If you need extra, you can buy them in the [shop](#) at MagStor.com. Once inserted the cleaning tape will automatically do its job.



While cleaning your tape drive is important, it should only be done when the tape drive requests it with the C fault code. Doing so on a regular basis will cost you in cleaning tapes and reduce the operational life of the drive.



If you clean the drive and the C fault code remains, stop using the drive and contact [technical support](#). Further use or cleaning may damage the drive.

HDD Dock (Single Drive Thunderbolt™ 3 Units)

The HDD dock allows for fast access to 3.5 inch SATA hard drives.



It is safe to insert and remove hard drives while MagStor is powered on.



Removing a drive without unmounting first can lead to data loss.

It is not always clear when a drive is writing and some file systems become corrupt when removed without unmounting. Always be on the safe side and unmount your drive before removing it.

Inserting/Removing Drive

The HDD Dock is designed to work natively with SATA 3.5 inch hard drives, but will work with 2.5 inch drives mounted in a 2.5 to 3.5 adapter or caddy. To insert a drive, place the drive in the dock with the circuit board face down and SATA connection towards the dock. Insert the drive gently and close the dock door to seat the drive completely.



On MacOS you can have docked hard drives show on your desktop by changing these settings.

Finder -> Preferences -> Show these items on the desktop:
External disks

Maximizing Speed

Many setups can produce bottlenecks. The data transfer rate of your MagStor drive will be limited by the interfaces it is connected through and the device it is accessing. Attempting to transfer files over a busy network, no matter how fast, will result in slower speeds due to traffic.

To get the most out of your drive, be aware of the limitations of the hardware and interfaces in use. This is why MagStor uses Thunderbolt™ 3 technology and ships with an active top of the line Thunderbolt™ 3 cable. At 40Gb/s there is not much we can't handle. Below is a reference to help you get the most out of your drive.

Device	Rev. #	Max Gb/s	Max MB/s
LTO	8	2.88	360
	7	2.4	300
	6	1.28	160
Drive	SSD	4.4	550
	HDD	1.2	150

Interface	Rev. #	Max Gb/s	Max MB/s
Thunderbolt™	3	40	5000
	2	20	2500
	1	10	1250
USB	3.1	10	1250
	3.0	5	625
	2.0	0.48	60
SATA	3.2	16	2000
	3.0	6	750
	2.0	3	375
Ethernet	10 Gb	10	1250
	1 Gb	1	125



Beware the little b

There are 8 gigabits(**Gb**) in a gigabyte(**GB**). A 1 Gb connection is not a 1 GB connection. 1 Gb is 125 Megabytes(**MB**). Moving files from an external device, over a network, or from a disk based drive may reduce writing speed. Dual drives will be severely hindered without proper data flow. **Check for bottlenecks!**

Troubleshooting

Normal operation

When turned on, connected to a Mac, and 30 seconds have passed, the tape drive should present a solid green ready light on the front panel as well as a green connection light to the left of the Thunderbolt™ 3 ports. The HDD dock should show a solid blue light that flashes purple when the hard drive is being accessed.



Clicking on the desktop and navigating to [**Go > Utilities > System Information**] brings up a useful window for troubleshooting. When this window is selected You can navigate to [**File > Save**] to create a downloadable copy of this window.

Navigate to System Information. Under **Hardware > Thunderbolt** the device should show up within the system information window. What you see under Hardware > SAS will depend upon your setup.

Case 1: You have a single drive unit with no hard drive inserted in the dock.

Under **Hardware > SAS** you should see two SCSI devices.

Case 2: You have a DUAL drive unit or have a hard drive inserted in the dock.

Under **Hardware > SAS** you should see three SCSI devices. If you have a hard drive inserted you should see the name of the drive.

Problems and Solutions

Here are suggestions that may solve issues you are having. If you exhaust all possible solutions and are still stuck, contact customer support and we will assist you.

MagStor does not show up in the system information window.

1. Use a different Thunderbolt port on your Mac.
2. Reinstall the SAS driver that came with your Thunderbolt™ 3 MagStor.
3. Turn your MagStor off and back on.

Flashing green connection light on MagStor.

1. Check that Mac is awake.
2. Try a different Thunderbolt™ 3 port on the Mac.

Flashing green drive ready light for longer than 30 seconds. (Not connection light)

If the MagStor was shut off with a tape in the drive, it will take the drive time to rewind the tape. Give it 10 minutes and see if the error persists. If this does not resolve after 10 minutes, turn power off, wait 30 seconds, and turn the drive back on again. If this does not solve the issue, call support.

Drive error code P displayed.

This error code is displayed when the media you are attempting to write to is write protected. Look for a red 'lock' switch on the bottom of the tape and switch it to 'unlocked' or open. Check to make sure this was not done for a reason before writing to said tape.

Mac crashes during MagStor power on when hard drive is in dock.

1. Remove hard drive from dock and see if the issue persists.
2. If problem is not solved wait until MagStor is fully on to plug into Mac.

If software on your computer attempts to access the docked hard drive before the MagStor has fully powered on it can cause a kernel panic and crash your system. A temporary fix is to remove the hard drive when powering on. Finding the software that is attempting to access the drive will be required to avoid this issue in the future.

Drive error code 6 displayed.

1. Power drive off and back on.
2. Try a different tape.
3. If 6 is displayed with no tape inside, call support.

Drive error code C displayed.

1. Use a cleaning tape on the drive once.
2. If error persists call support.

Software related issues

If the drive is showing signs of normal operation outlined above but your software is not able to connect to the drive, the issue could be any number of things. We can attempt to help you, but our ability to do so will be more limited than the creators of the software themselves. It is recommended you contact the creators of the software you are using if the drive shows signs of normal operation.

Front Panel Fault Codes

Fault Code	Meaning
0	No fault
1	Temperature fault: Operating temperature out of range
2	Power fault: Power supplied out of range
3 - 5	Firmware or Hardware fault (If 5, contact customer support)
6 - 7	Drive or Media fault. Sometimes false positive. (See Compatible Tapes)
8	Interface fault
A	Degraded operation. May be caused by media.
C	Drive requires cleaning (See Cleaning your tape drive)
e	Encryption Error
J	Incompatible media or media format
P	Write operation to write protected media (see Write Protection)



The following codes do not apply to your configuration. If seen, contact support.

Error Code	Meaning
9	Tape Drive / RS-422 Connection
d	Fiber AL_PA conflict
E	Fiber port offline
F	Fibre channel error

Warranty

All MagStor Drives come with a limited 3 year warranty with the option of a 5 year warranty at the time of purchase, or within thirty(30) days of the original purchase. The terms of this warranty are detailed below. The full binding terms can be viewed at the link below.

<https://magstor.com/pages/warranty>

Terms

The supplier warrants that the product will conform to the suppliers specifications for the warranty period.

If a product is found to be defective, it can be returned to the supplier, and the supplier can repair or replace said product at its option. A repaired or replaced product will remain under warranty for the remainder of the original warranty or thirty (30) days, whichever is longer.

This warranty does not apply to any products that have...

1. Been altered by anyone other than the supplier.
2. Had their warranty sticker removed or damaged.
3. Been Used with products or software if such use results in the defect.
4. Been damaged by accident, abuse, misuse, environment, or negligence.
5. Been sold by anyone other than an authorized distributor.

The supplier does not warrant that the software or products will meet all of the purchaser's requirements or that the use of the software or products will be uninterrupted or error free.