Mercury Pro LTO

Assembly Manual & User Guide

Thunderbolt 3   Longevity   Mac   DisplayPort 1.4

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INTRODUCTION

1.1 System Requirements

Operating System
- Mac: macOS 10.14.6 or later
  - SAS driver and myLTO software required, please see Section 2.2.

Hardware
- Mac with a Thunderbolt 3 port

Supported Storage Media
- (1) LTO Cartridge
  - LTO-8 Ultrium cartridges (Read / Write)
  - LTO-7 Ultrium cartridges (Read / Write)
- (1) 2.5 or 3.5-inch SATA or SAS drive

1.2 Package Contents

| OWC Mercury Pro LTO | Thunderbolt 3 cable | Power supply and cable | LTO-8 12TB Data cartridge & Cleaning cartridges | myLTO software license | Quick Start Guide |

1.3 About This Manual
The images and descriptions may vary slightly between this manual and the unit shipped. Functions and features may change depending on the firmware version. The latest product details and warranty information can be found on the product web page. OWC's Limited Warranty is not transferable and subject to limitations.

General Use Precautions

- To avoid damage, do not expose the device to temperatures outside: 41º — 95º F (operating) or -4º — 140º F (non-operating)

- After properly unloading any mounted cartridge, always unplug the device from the electrical outlet if there is a risk of lightning or if it will be unused for an extended period of time. Otherwise, there is an increased risk of electrical shock, short-circuiting or fire.

- Do not use the device near other electrical appliances such as televisions, radios or speakers. Doing so may cause interference which will adversely affect the operation of the other products.

- Do not place the device near sources of magnetic interference, such as computer displays, televisions or speakers. Magnetic interference can affect the operation and stability of hard drives.

- Do not place objects on top of the device.

- Protect your device from excessive exposure to dust during use or storage. Dust can build up inside the device, increasing the risk of damage or malfunction.

- Do not block any ventilation openings on the device. These help to keep the device cool during operation. Blocking the ventilation openings may cause damage to the device and cause an increased risk of short-circuiting or fire.

Safety Precautions

- Read this user guide carefully and follow the recommended steps for assembly.

- Do not attempt to disassemble or modify the device. To avoid any risk of electrical shock, fire, short-circuiting or dangerous emissions, never insert any metallic object into the device. If it appears to be malfunctioning, please contact technical support.

- Never expose your device to rain or use it near water or in damp or wet conditions. Never place objects containing liquids on the drive, as they may spill into its openings. Doing so increases the risk of electrical shock, short-circuiting, fire or personal injury.

1.4 Front View

1. IBM Ultrium 8 drive – see Section 1.5 for details.

2. Power LED – LED will display as white if there is power but no data connection, and as blue if there is both power and a data connection.

    - Please do not power off the Mercury Pro LTO or disconnect the Thunderbolt 3 cable from the host during use. Doing so will likely result in data loss and/or damage to the tape. If you need to disconnect from the host and/or power off the device, please use the myLTO software to make sure all transfers are complete and then unmount the tape volume via the Deck Controls. Please see the online manual for more details on myLTO.

1.5 IBM Ultrium 8 Front Panel

1. Unload Cartridge button – used to rewind and then eject cartridges, as well as to put the device into Maintenance mode, force a memory dump, or reset the drive.

2. Ready light (green) – used in conjunction with the other status lights, display and SCD dot to provide drive status information.

3. Encryption light (white) – used in conjunction with the other status lights, SCD, and SCD dot to provide drive status information.

4. Fault light (amber) – used in conjunction with the other status lights, SCD, and SCD dot to provide drive status information.

5. Single Character Display (SCD) – used in conjunction with the status lights and SCD dot to provide drive status information.

6. SCD dot – used in conjunction with the status lights, and SCD to provide drive status information.

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1.6 Rear View

1. DisplayPort – connect to a DisplayPort-compatible screen. Compatible with DisplayPort 1.4 and earlier.

2. (2) Thunderbolt 3 ports – if using a laptop, connect to the 85W port to benefit from Power Delivery (i.e. laptop charging). If using any other host type, connect to either port and use the remaining port to connect an additional Thunderbolt 3 or USB-C device.

3. Security slot – connect a security tether here.

4. Power switch – power on the device here.

5. AC IN – connect the included power cable here.

6. Maintenance port – connect an Ethernet patch cable for Maintenance mode operations here. Do not connect this to a local network (LAN). It is for device maintenance only. To learn more please visit this page.

1.7 Usage Notes

General Notes and Recommendations

- Installing the myLTO application (license included) and an accompanying SAS driver is required before use. If you have not downloaded and run the installer please see Section 2.2. Before using myLTO we encourage you to review the myLTO online manual to get familiar with the overall process, including important steps like formatting new tape cartridges.

- Supports LTO-8 and LTO-7 media only. Will not work with earlier generation cartridges.

- Unlike HDDs, SSDs, and other types of formatted external media, LTO volumes will not automatically appear in the Finder OR in the myLTO software. Once the cartridge is fully loaded and is silent, click the Deck Controls button (LTO tape icon), then click 'Mount'. Any formatted media present will be recognized and mount after several seconds. You can also use the Deck Controls to manually unmount an LTO volume once all of your transfers are complete. See the Data Protection Notes on the next page for more information.

- LTO drives do not run as quietly as optical drives, HDDs, or SSDs. As part of the normal process of mounting and unmounting tapes, and formatting and writing to tapes, you will hear different noises, some louder than others.

- When the computer goes into Sleep mode, the LTO drive and any SATA or SAS drive that is installed, will stay powered on as long as the power switch is in the ON position. For this reason, the Mercury LTO Pro may not be totally silent during Sleep.

- The various status lights, SCD, and SCD dot on the LTO-8 Ultrium's front panel are an important part of using this drive. These may be displayed in combination to create different status conditions, display error notifications, and more. We strongly encourage you to review and bookmark the following links before using the drive, and to review them periodically.
- IBM Product Support TOC:
  https://www.ibm.com/support/knowledgecenter/STZREP/lto_kchome.html
- Status Light / SCD codes:
  https://www.ibm.com/support/knowledgecenter/STZREP/con_LTOdrive_statuslight.html
- Using the Cleaning Cartridge:
  https://www.ibm.com/support/knowledgecenter/STZREP/tsk_LTOdrive_cleaning.html

Notes and Recommendations – Data Protection

- Please do not power off the Mercury Pro LTO or disconnect the Thunderbolt 3 cable from the host during use. Doing so will likely result in data loss and/or damage to the tape.
- If you need to disconnect from the host and/or power off the device, please use the myLTO software to make sure all transfers are complete and then unmount the tape volume via the Deck Controls (click the white tape icon in the toolbar). The cartridge can then be ejected either via any of the available methods:
  - Right-click in myLTO sidebar > Show in Finder > click Eject button
  - Eject button on the front of the device.
  - Note that the mechanical process of ejecting the tape can take 20-30 seconds.
- IMPORTANT: Do not hold down the Unload Cartridge button for more than 5 seconds unless directed to by an OWC Technical Support representative. This may cause an LTO drive to perform a factory reset.
- Once you've filled or written everything to a given LTO cartridge, it is a good idea after you rewind and eject the media, to flip the physical write protection switch on the cartridge to prevent any damage or changes to the media when using it to restore files.
- By default, the myLTO software will write or update a progressive Index file approximately every 10 minutes. We recommend that you do not disable this option.
- Within the Deck Control dialog (see latest myLTO manual for more information) we also recommend you check the option to "Automatically unmount tapes upon completion" prior to backing up a large amount of data. This will allow you to walk away from the backup for a prolonged period or overnight, without risking damage to the tape media that can result from situations like power outages or unexpected system updates that interrupt the LTO drive's processes. For small-scale backups, this step is not necessary.
- LTO hardware is designed to automatically skip bad sections of tape. To do this it checks each file as it's written. If the check fails myLTO will mark that whole file as 'bad' and attempt to re-write it. This process can make it difficult to predict the exact amount of available tape capacity at any given time.
- If you fill the tape completely the drive automatically switches to Read Only mode to prevent additional files from being written (which can cause data corruption). For this reason, myLTO always calculates and reserves a small percentage of free space. To maximize tape capacity, break the full backup down into 3 or more smaller sessions.

Notes and Recommendations – Performance
- Whenever possible use a source drive that is as fast or faster than the LTO drive to feed it data; this will help avoid the potential for pauses or restarts when writing data, that can happen when (for example) a slow drive enclosure is used as a source. Note that modern LTO drives typically operate at or just above 300 MB/s.
- By using the DisplayPort feature, the overall performance of the drive may decrease somewhat, as the DisplayPort shares bandwidth with the Thunderbolt 3 ports. The same is true if you connect a display to one of the available Thunderbolt 3 ports (this can be done with either a native Thunderbolt 3 display or with a Thunderbolt 3 display adapter).
- Thunderbolt 3 is backwards compatible with Thunderbolt 2 and Thunderbolt, but speeds can be impacted depending on where in the chain a device is connected. If mixing Thunderbolt 3 with Thunderbolt 2 and/or Thunderbolt devices, use the device order shown below, if possible. Computer > Thunderbolt 3 devices > Thunderbolt 2 devices > Thunderbolt devices

2.1 Installing a SATA or SAS drive (optional)

The OWC Mercury Pro LTO provides an internal storage bay for additional backup use or other purposes. The storage bay uses a standard ThunderBay drive tray, which accepts both 3.5-inch and 2.5-inch SATA or SAS drive form factors. Please follow the steps below to install a drive.

1. Turn the case over and set it on a work surface so that the bottom of the device faces up. Remove the four screws at the locations shown and set them aside.

2. Set the case upright on the work surface. Push the back of the case so the inner chassis slides out the front, as shown below, then pull the chassis the rest of the way out, setting the outer case aside.

3. Locate the drive tray (red arrow - below left) and loosen the thumbscrew (red circle) until there is no resistance.

4. Pull the drive tray up and out of its slot.

5. Set the drive tray on the work surface as shown. Note: the highlighted screw holes are for 2.5-inch drives. The holes for 3.5-inch drives are highlighted in green (Step 7)

6. Place the drive inside the drive tray (a 3.5-inch SATA drive is shown here). The label should face up and the SATA connectors should match up with the cut-out on the back of the tray.

7. Fasten the drive into the drive tray using six of the included screws (three per side).

8. Align the drive tray with its slot and carefully lower the drive until its connector is fully seated. Minimal force is required. If you feel resistance remove the tray, re-align it and try again.

9. Press down on the thumbscrew you loosened in Step 3 and turn clock-wise it until you feel some resistance. Do not over-tighten the screw.

10. Pick up the inner-chassis, re-align it with the outer case, then carefully slide it back into place.

11. Turn over the enclosure and carefully set it on the work surface so that the case screw holes face up, then re-affix the four screws that you removed in Step 1.

This concludes the SATA / SAS drive installation process.

2.2 Installing the myLTO application and SAS driver

Installation of the myLTO application, the Mercury LTO SAS driver, and related components are required before use and will require a restart at the end. The included software helps to streamline the process of backing up your data to tape and to managing the tape system as a whole.


- Step 1 – Download the 'Mercury Pro LTO ...' .dmg file here.
- Step 2 – Open the .dmg file. A window should open that looks similar to this one.

- Step 3 – Launch the 'Mercury Pro LTO...' .pkg file. This will open a standard macOS installer dialog. Click 'Continue' to proceed, reading the information and following the prompts as you go.

- Step 4 – When you reach the license screen, review the Software License Agreement, click Continue, and if you agree to the terms click 'Agree'. This is required to continue with the installation.

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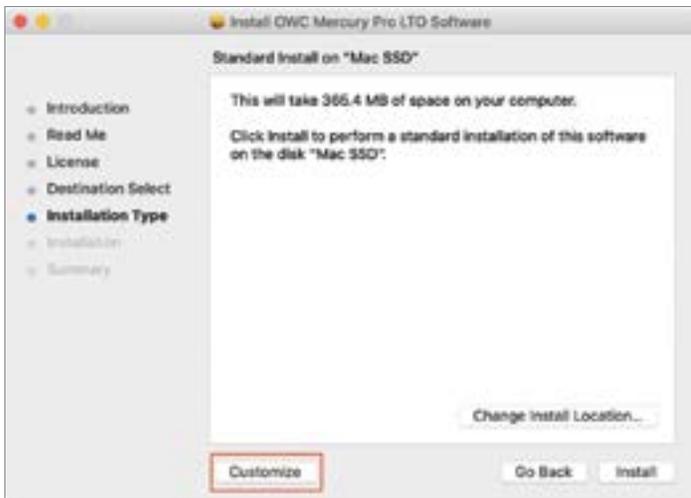
- Step 5 – Unless you have a specific reason, accept the default install location, then on the same screen, two installation types are selectable. 'Standard' (default) and 'Custom' (button highlighted).
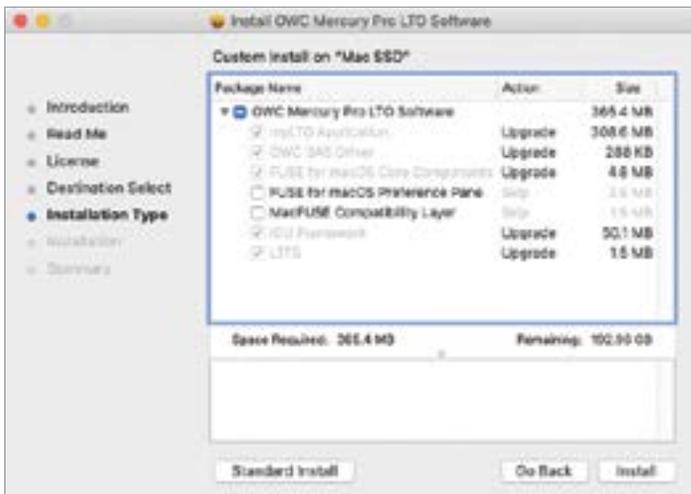
- Step 5a – If you select 'Customize', you will see that by default two items that are available, are inactive. You can select each item to read its description and determine whether each is needed. Once you've made your selections (either a Standard install or a Custom one) click 'Install' to continue.
- Step 6 - You will be asked for administrator credentials; supply them and then click 'Install Software'.
- Step 7 – you will be warned that a restart is required, click 'Continue Installation'.
- Step 8 – A Progress meter will be displayed as the components are installed.

- IMPORTANT: If your Mac has the Apple System Integrity Protection (SIP) active by default, during the install progress, a macOS dialog box will appear (similar to the one shown left), noting that an OWC system extension was blocked. It is important to immediately click 'Open Security Preferences' and follow the additional steps on Page 11.

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- This should open the Security & Privacy panel (shown left). (1) Click the lock icon and supply your administrator credentials, then click the 'Allow' button (2). Afterward you can close System Preferences.

- These steps need to occur before the installer progress finishes (this should not be a problem as the installation usually takes 1-2 minutes to complete). If it happens that the installation is completed first, please see Section 3.3 to contact our support team for assistance.

- 9. Once the above steps are complete, restart the Mac when prompted. You may be asked if you want to keep the installer archive or move it to the trash. Choose to keep it.

2.3 Inserting LTO Media

When you are ready to insert a compatible LTO cartridge into the enclosure, make sure the label is facing to the right as you insert the media and that the arrow symbol embedded on the cartridge is pointing towards the back of the Mercury LTO. It does not matter whether you insert the cartridge first and then launch myLTO or launch the app first, as the volumes do not mount automatically.

2.4 Activating myLTO Software

The first time you run the myLTO software on a given host, you will be asked to agree to an additional license agreement; afterward you will see the Activate myLTO screen (shown below). Note that your myLTO serial number is located on a printed card inside the retail box. Using that, follow the steps below. An internet connection is required.
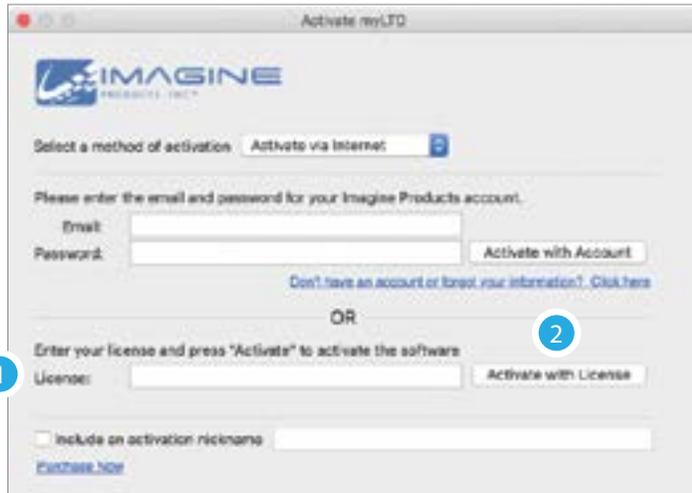
- Step 1 – Unless you already have a myLTO account from previous devices, enter the serial number from the included license card in the 'License' field (1), then click the 'Activate with License' button (2).
- Step 2 – Supply administrator credentials when requested then press Return or Enter. Once completed a small dialog box should appear with the words 'Activation Success' and your serial number. Click OK to proceed.
- IMPORTANT: While the application's interface is relatively simple, please review the myLTO online manual before using the application for the first time, to get familiar with the process of formatting, mounting, and unmounting drives, as well as setting up your source volume or folder and destination volume.
- Step 3 – Once the activation is complete, you will be notified again that an extension was blocked (similar to what is shown left). Click 'Open System Preferences' to continue.

- Step 4 – This will open the Security & Privacy panel. Click the lock icon and supply your administrator credentials, then click the 'Allow' button. Afterward you can close System Preferences and begin using myLTO.

Notes For Uninstalling myLTO

If you find yourself in a scenario where you have been advised to uninstall and then re-install the application, you can attempt the following steps.
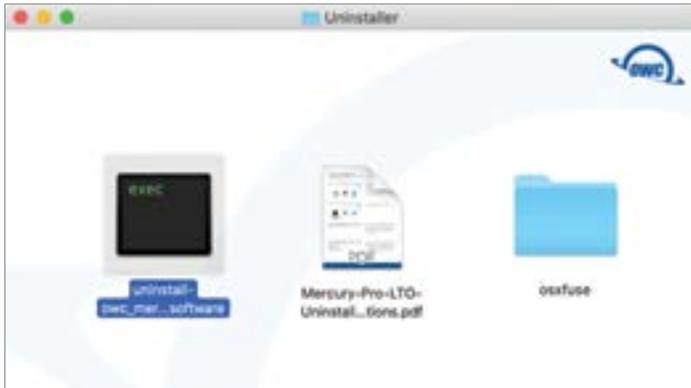
- Step 1 – Quit the myLTO application if it's already running (make sure no data transfers are occurring).

- Step 2 – Open the 'OWC Mercury Pro LTO...' .dmg file that you downloaded earlier. Open the 'Uninstaller' folder. A window should open that looks similar to the one to the left. Locate the file named 'uninstall-owc_mercury_pro_lto...'; it will be used in the next step.
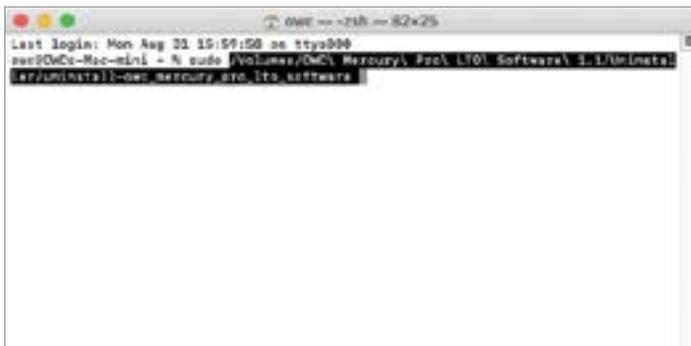
- Step 3 – Open the Terminal application (found in Applications > Utilities).

  At the prompt, type sudo and then press the space bar one time. Next drag and drop the file 'uninstall-owc_mercury_pro_lto_software' onto the Terminal window. You should see the file name and file path appear after the sudo command, separated by a space (example at left). When ready press Return or Enter.

- Step 4 – The Terminal app will prompt you for an administrator password. Type your password. NOTE: the Terminal app does not supply visual feedback to show the characters being typed but they are. When ready press Return or Enter.

- Step 5 – You will see several line items describing each component as it is uninstalled. The last line will ask, 'Are you ready to restart… (y/n)?'. When ready, type 'y' and press Return or Enter. Your Mac will restart and the Mercury Pro LTO software uninstall process will be complete.

SUPPORT RESOURCES

3.1 IBM Support Resources for LTO 8 Ultrium Drive

The full range of device support information including items relating to general usage, status and error codes, managing LTO media, use of cleaning cartridges, and many others can be found here. If you're having trouble and are seeing multiple LED indicators on the front panel, please check these resources first before contacting support; in many cases the answer you need may be found there.
https://www.ibm.com/support/knowledgecenter/STZREP/lto_kchome.html

3.2 Troubleshooting

If you're having trouble connecting your Mercury Pro LTO to the Mac, first check that the power cable is connected to the back of the device and a working power source, and that the device will power on (does not need to be connected to the host — please switch the device on and check the Power LED on the front of the device to verify).

If the power is working but you're still having trouble, verify that the included Thunderbolt 3 cable is fully seated in the device and host ports. If that does not result in the device being recognized, you may want to try a different Thunderbolt 3 cable and/or connecting to a different Mac with Thunderbolt 3 ports.

IMPORTANT: Remember that by design LTO volumes on a given tape will not automatically mount or appear in the Finder the way other external media do in macOS. LTO volumes have to be mounted and unmounted from the Deck Controls in the myLTO application (click the white disk icon in the toolbar).

If you're still having trouble making a basic connection between the host and device, please contact our customer support team for assistance.

3.3 Contacting Technical Support

Phone: M–F, 8am–8pm CT
(866) 692-7100 (N. America) | +1 (815) 338-4751 (Int'l)

Email: Answered within 48 hours
www.owc.com/support

Chat: M–F, 8am–8pm, Sat 9am–5pm CT
www.owc.com/support

Changes:

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FCC Statement:

Warning! Modifications not authorized by the manufacturer may void the user's authority to operate this device. NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference with radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.

Warranty:

The Mercury Pro LTO has a 3 Year OWC Limited Warranty if it was bundled with drives. Mercury Pro LTO enclosures that do not ship with drives have a 1 Year OWC Limited Warranty. For up-to-date product and warranty information, please visit the product web page.

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