



SymplyPRO SAS User Guide

Thank you for purchasing SymplyPRO SAS



SymplyPRO SAS



SymplyPRO SAS XTH



SymplyPRO SAS XTF



SymplyPRO SAS 1U Rackmount



SymplyPRO SAS 2U Rackmount

If you have any support questions that are not addressed in this document, then please check our extensive FAQs or submit a support ticket on our support site.

Your feedback is important to us, so please let us know what you think of our products via email hello@gosymply.com

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CE Statement

Herewith confirmed to comply with the EMC requirements set out in the Directive 2014/30/EU of the European Parliament and of the Council of April 20, 2016 on the approximation of the laws of the Member States relating to electromagnetic compatibility. For the evaluation regarding the electromagnetic interference, the following EMC standards were applied :

EMI : Class B	EMS :
EN 55032:2015	EN 55035:2017
EN 61000-3-2:2014	EN 61000-4-2:2009
EN 61000-3-3:2013	EN 61000-4-3:2006+A2:2010
	EN 61000-4-4:2012
	EN 61000-4-5:2014
	EN 61000-4-6:2014
	EN 61000-4-8:2010
	EN 61000-4-11:2004

Document Revision

Title: SymplyPRO SAS User Guide

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About: This user guide covers installation, operation and troubleshooting for the SymplyPRO SAS, SymplyPRO SAS XTH and XTF, SymplyPRO SAS 1U and 2U Rackmount.

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UKCA Statement

Herewith confirmed to comply with the EMC requirements set out in the Electromagnetic Compatibility Regulations 2016 apply on the market in Great Britain from 1 January 2021. For the evaluation regarding the electromagnetic interference, the following EMC standards were applied:

EMI : Class B

EN 55032:2015

EN 61000-3-2:2014

EN 61000-3-3:2013

EMS :

EN 55035:2017

EN 61000-4-2:2009

EN 61000-4-3:2006+A2:2010

EN 61000-4-4:2012

EN 61000-4-5:2014

EN 61000-4-6:2014

EN 61000-4-8:2010

EN 61000-4-11:2004

CE Mark



The CE mark is a mandatory conformity mark on many products placed on the single market in the European Economic Area (EEA). The CE marking certifies that a product has met EU consumer safety, health or environmental requirements.

FCC Statement

This equipment has been tested and found to comply with the limits for a Class A or Class B digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in industrial environment for Class A device or in residential environment for Class B device. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the manufacturer's instruction manual, may cause harmful interference with radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case you will be required to correct the interference at your own expense.



Perchlorate warning

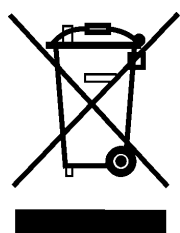
California Best Management Practices Regulations for Perchlorate Materials: This Perchlorate warning applies only to products containing CR (Manganese Dioxide) Lithium coin cells. "Perchlorate Material-special handling may apply. www.dtsc.ca.gov/hazardouswaste/perchlorate".

Recycling and Disposal



NOTE

Disposal of waste equipment by users in private household in the European Union and Norway.



This symbol on the product or on its packaging indicates that this product must not be disposed of with your other household waste. Instead, it is your responsibility to dispose of your equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at this time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city office, your household waste disposal service or the shop where you purchased the product.

Warnings and Symbols



IMPORTANT

All safety and operating instructions should be read before this product is operated and should be retained for future reference. This unit has been engineered and manufactured to assure your personal safety. Improper use can result in potential electrical shock or fire hazards. In order not to defeat the safeguards, observe the following basic rules for its installation, use and servicing.



DANGER

High voltage!

Risk of electric shock.

Do not remove cover (or back). No user-serviceable parts inside.
Refer servicing to qualified service personnel.



39 - 66 lbs
18 - 30 kg

DANGER

A danger condition due to the weight of the unit. Weight symbols are accompanied by an approximation of the product's weight.



CAUTION

A discharge of static electricity can damage static-sensitive devices or micro circuitry. Proper packaging and grounding techniques are necessary precautions to prevent damage.



NOTE

Provides additional information.

Electrostatic Discharge

To prevent damaging the system, be aware of the precautions you need to follow when setting up the system or handling parts. A discharge of static electricity from a finger or other conductor may damage system boards or other static-sensitive devices. This type of damage may reduce the life expectancy of the device.

Preventing Electrostatic Damage

To prevent electrostatic damage, observe the following precautions:

- Avoid hand contact by transporting and storing products in static-safe containers.
- Keep electrostatic-sensitive parts in their containers until they arrive at static-free workstations.
- Place parts on a grounded surface before removing them from their containers.
- Avoid touching pins, leads, or circuitry.
- Always be properly grounded when touching a static-sensitive component or assembly. See the next section.

Grounding Methods

There are several methods for grounding. Use one or more of the following methods when handling or installing electrostatic-sensitive parts:

- Use a wrist strap connected by a ground cord to a grounded workstation or computer chassis. Wrist straps are flexible straps with a minimum of 1 megohm (± 10 percent) resistance in the ground cords. To provide proper ground, wear the strap snug against the skin.
- Use heel straps, toe straps, or boot straps at standing workstations. Wear the straps on both feet when standing on conductive floors or dissipating floor mats.
- Use conductive field service tools.
- Use a portable field service kit with a folding static-dissipating work mat.

If you do not have any of the suggested equipment for proper grounding, have an authorized reseller install the part.



NOTE

For more information on static electricity, or assistance with product installation, contact your authorized reseller.

Introduction

SymplyPRO SAS is designed with professionals in mind. Comprising space-effective single desktop designs and innovative dual-drive desktop, along with 1U and 2U rack mounted systems featuring Symply CableLess technology, making them highly serviceable and upgradeable.

Each SymplyPRO SAS utilizes a robust and stylish metal alloy enclosure. And it's not only rugged – it's compact and full-featured. With a premium power supply and cooling system, SymplyPRO SAS designed for years of trouble-free service. Configurations are available to meet every need and budget from single and dual Half-Height LTO-7, LTO-8 and LTO-9 drives to the latest Full-Height LTO-9 drives with 18TB raw capacity and read/write speeds up to 400MB/s native providing enterprise performance and reliability.

SymplyPRO SAS comprises the following models:

- SymplyPRO SAS
- SymplyPRO SAS XTH
- SymplyPRO SAS XTF
- SymplyPRO SAS 1U Rackmount
- SymplyPRO SAS 2U Rackmount

The SymplyPRO SAS product family has undergone qualifications with industry leading storage, network infrastructure, leading ISVs and features Linear Tape File System (LTFS) support. LTFS provides an open standard for both backup and archive applications. LTFS allows organizations to easily protect and interchange data using LTO cartridges.

This document will guide you in the process of installing and operating of the SymplyPRO SAS products.

What is SAS?

Serial Attached SCSI (SAS) is SAS is a point-to-point serial protocol that is an evolution of the parallel SCSI interface and uses the same SCSI command set. It is a high performance protocol designed for enterprise-level storage solutions such as hard disk and LTO systems.



NOTE

Although SAS cables are available up to 5m, Symply recommend keeping cable lengths $\leq 3\text{m}$.

Host System Requirements

mac SAS Host Requirements

Requirement	Version
Apple Hardware	Intel or Apple Silicon Available PCIe slot or Thunderbolt Expansion Chassis
Operating System	macOS 11 and later Driver support for the chosen SAS HBA.
SAS Host Bus Adapter	Suitable HBA that supports LUN scanning and TLR
IBM ITFS Software	2.4.5.1 10503 ¹
MacFUSE (required for LTFS)	Vendors latest version ¹

¹ Required for LTFS support



NOTE

- Some host adapters that are also RAID controllers do not support tape drives. It is important that the host adapters support TLR.
- Symply recommend ATTO SAS HBAs, they are available from Symply and our authorized resellers.
- For SAS cable information see the User Guide Appendix

Windows SAS Host Requirement

Requirement	Version
Windows Hardware	Suitable hardware with available PCIe slot
SAS HBA	Suitable HBA that supports LUN scanning and TLR
Operating System	Microsoft Windows 11 and 10 Windows Server 2022, 2019, and 2016 Driver support for the chosen SAS HBA.
IBM ITFS Software	2.4.5.1 10503 ¹

¹ Required for LTFS support



NOTE

- Some host adapters that are also RAID controllers do not support tape drives. It is important that the host adapters support TLR.
- Symply recommend ATTO SAS HBAs, they are available from Symply and our authorized resellers.
- For SAS cable information see the User Guide Appendix

Linux SAS Host Requirements

Requirement	Version
Linux Hardware	Suitable hardware with available PCIe slot
SAS HBA	Suitable HBA that supports LUN scanning and TLR
Operating System	Rocky Linux 8/9, CentOS 7, OpenSUSE LEAP 42/15, Red Hat Enterprise Linux 7/8/9, SUSE Linux Enterprise Server 12/15, and Ubuntu 20.04/22.04 LTS. Driver support for the chosen SAS HBA.
IBM ITFS Software	Version 2.4.5 ¹

¹ Required for LTFS support



NOTE

- Some host adapters that are also RAID controllers do not support tape drives. It is important that the host adapters support TLR.
- Symply recommend ATTO SAS, Fibre Channel and Ethernet Host Adapters, they are available from Symply and our authorized resellers.

SymplyPRO SAS Overview

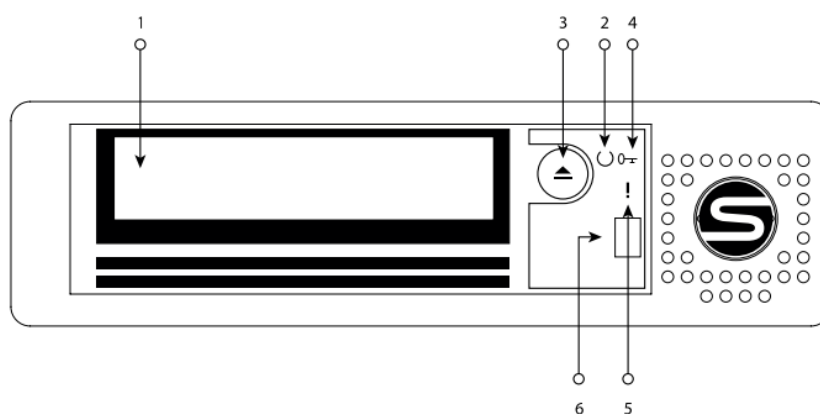
This chapter details all the current SymplyPRO SAS Desktop and Rackmount products. If you cannot see your part number here, please consult the legacy part number section in the User Guide appendix.

SymplyPRO SAS, SymplyPRO SAS XTH, SymplyPRO SAS XTF Part Numbers

Part Number	Description
SYSAS-DS1L7HH1	SymplyPRO SAS Desktop LTO-7 Half-Height SFF-8088 Interface; Data & Cleaning Tape; 2m Cable, 3 Year Warranty
SYSAS-DS1L8HH1	SymplyPRO SAS Desktop LTO-8 Half-Height SFF-8088 Interface; Data & Cleaning Tape; 2m Cable, 3 Year Warranty
SYSAS-DS2L9HH1	SymplyPRO SAS Desktop LTO-9 Half-Height SFF-8644 Interface; Data & Cleaning Tape; 2m Cable, 3 Year Warranty
SYSAS-DS2L7H2B	SymplyPRO XTH SAS Desktop 1xLTO-7 Half-Height SFF-8644 Interface; Data & Cleaning Tape; 2m Cable 3 Year Warranty
SYSAS-DS2L8H2B	SymplyPRO XTH SAS Desktop 1xLTO-8 Half-Height SFF-8644 Interface; Data & Cleaning Tape; 2m Cable 3 Year Warranty
SYSAS-DS2L9H2B	SymplyPRO XTH SAS Desktop 1xLTO-9 Half-Height SFF-8644 Interface; Data & Cleaning Tape; 2m Cable 3 Year Warranty
SYSAS-DS2L9F1B	SymplyPRO XTF SAS Desktop LTO-9 Full-Height SFF-8644 Interface; Data & Cleaning Tape; 2m Cable 3 Year Warranty

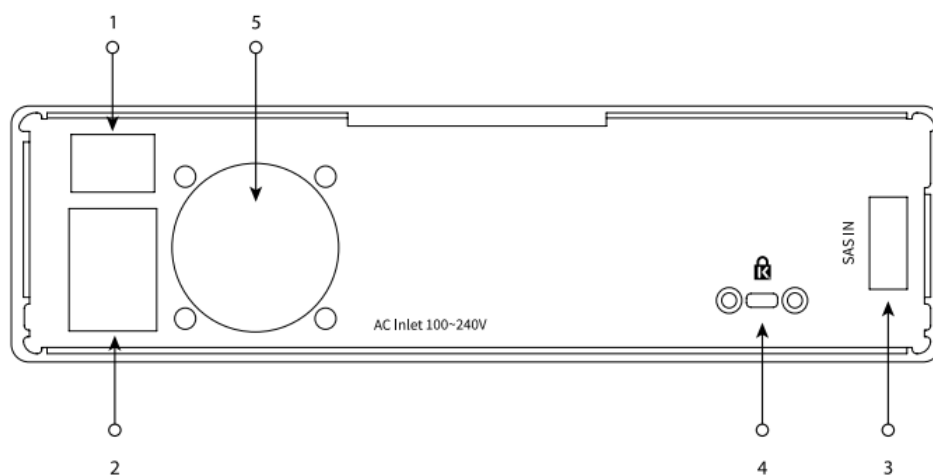
SymplePRO SAS Hardware

SymplePRO SAS Front View:



Number	Description
1	Half-Height LTO Drive Mechanism
2	Ready Light (Green)
3	Eject Cartridge Button
4	Key Symbol = Encryption Light (Amber)
5	Exclamation Symbol = Fault Light (White)
6	Single-Character Display (SCD) = Error Codes

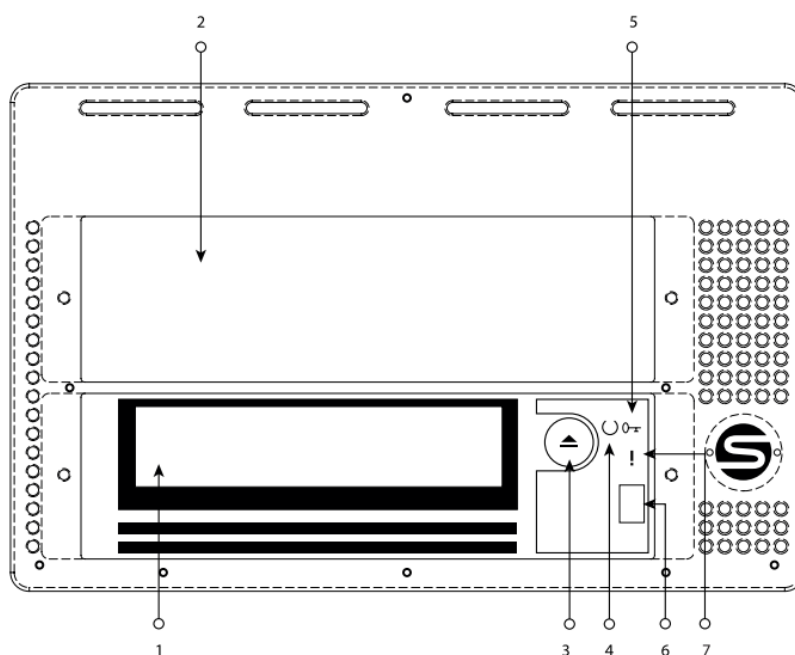
SymplePRO SAS Rear View:



Number	Description
1	Power Switch (On/Off)
2	Power Inlet
3	SAS Port (SFF-8088 or SFF-8644 depending on model)
4	Kensington Lock
5	Cooling Fan

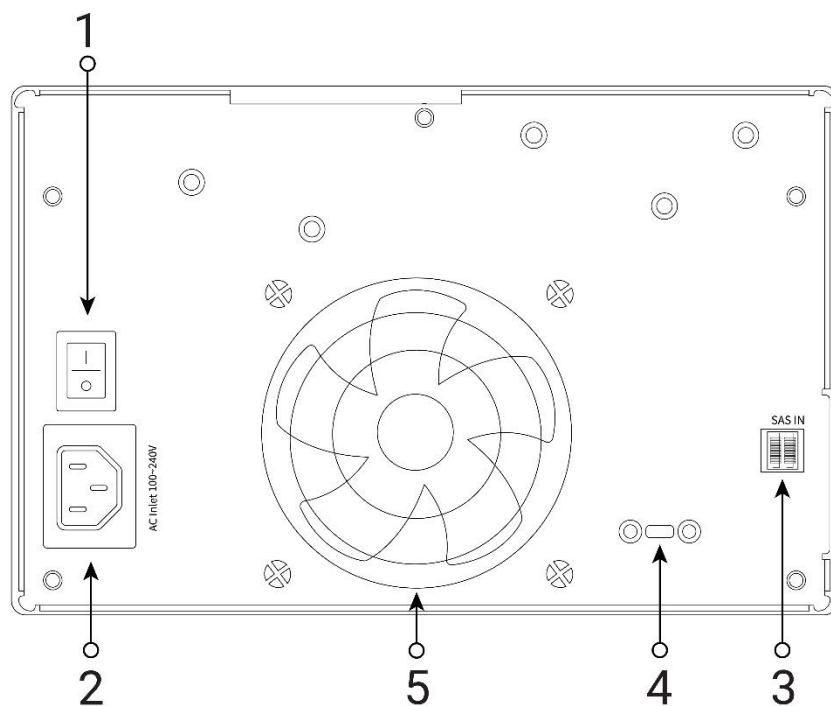
SymplyPRO SAS XTH Hardware

SymplyPRO SAS XTH Front View:



Number	Description
1	Lower Drive Bay with Half-Height LTO Drive Mechanism
2	Upper Drive Bay
3	Eject Cartridge Button
4	Ready Light (Green)
5	Key Symbol = Encryption Light (Amber)
6	Single-Character Display (SCD) = Error Codes
7	Exclamation Symbol = Fault Light (White)

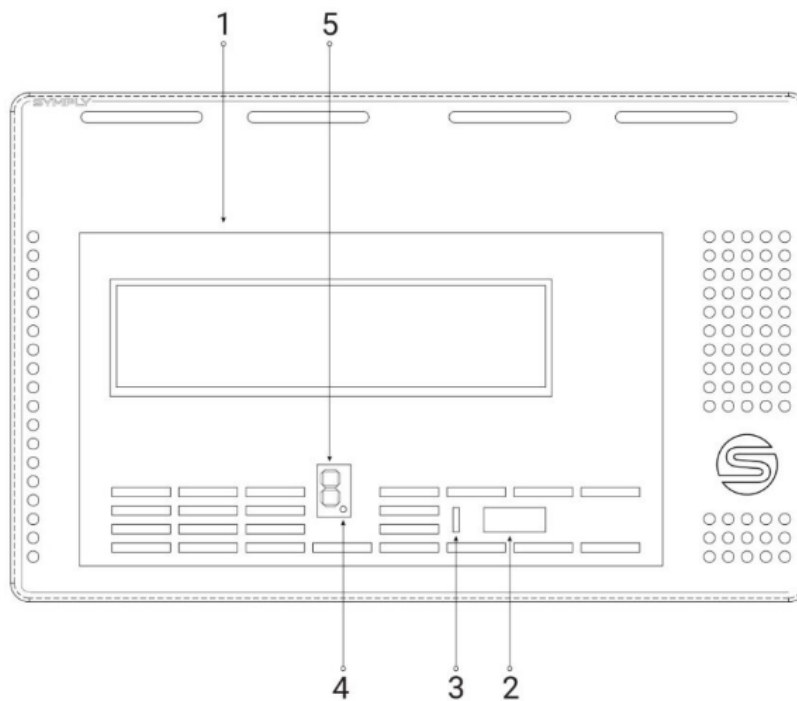
SymplePRO SAS XTH Rear View:



Number	Description
1	Power Switch (On/Off)
2	Power Inlet
3	SAS Port (SFF-8088 or SFF-8644 depending on model)
4	Kensington Lock
5	Cooling Fan

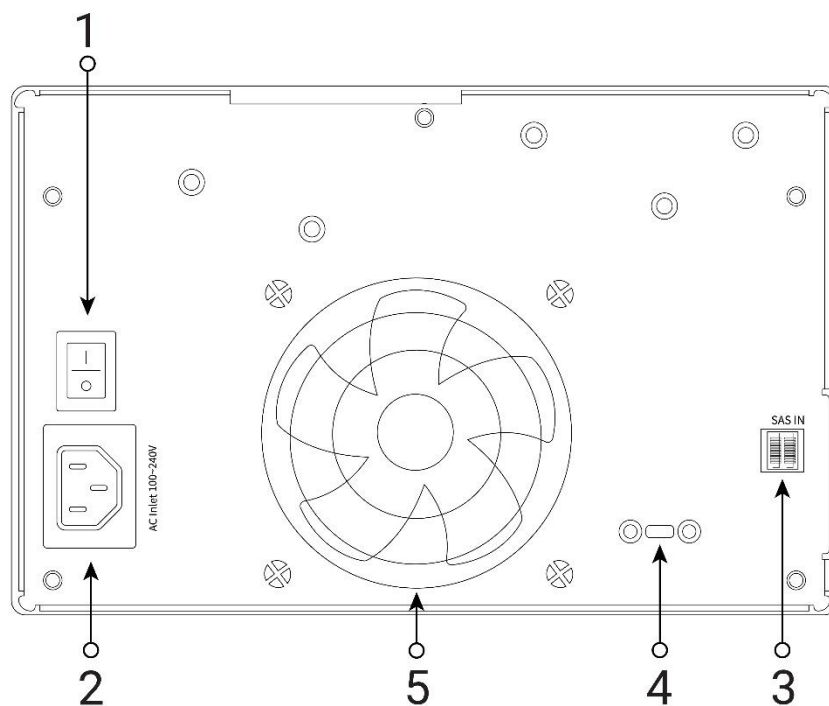
SymplyPRO SAS XTF Hardware

SymplyPRO SAS XTF Front View:



Number	Description
1	Full Height LTO Drive
2	Eject Cartridge Button
3	LED Indicator
4	Single-Character Display (SCD) Dot
5	Single-Character Display (SCD)

SymplePRO SAS XTF Rear View:



Number	Description
1	Power Switch (On/Off)
2	Power Inlet
3	SAS Port (SFF-8088 or SFF-8644 depending on model)
4	Kensington Lock
5	Cooling Fan

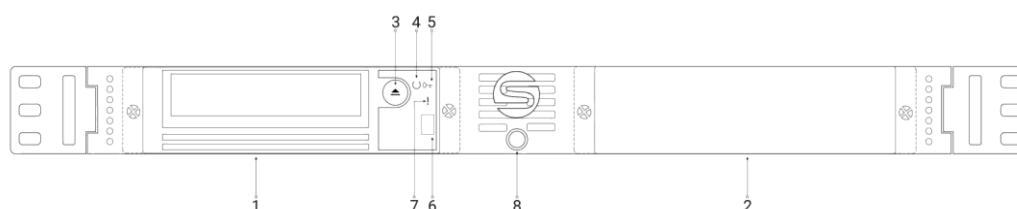
*

SymplyPRO SAS 1U and 2U Rackmount Part Numbers

Part Number	Description
SYSAS-RS1L7HH2	SymplyPRO SAS 1U Rackmount 1xLTO-7 Half-Height SFF-8088 Interface; Data & Cleaning Tape; 2m Cable, 3 Year Warranty
SYSAS-RS1L8HH2	SymplyPRO SAS 1U Rackmount 1xLTO-8 Half-Height SFF-8088 Interface; Data & Cleaning Tape; 2m Cable, 3 Year Warranty
SYSAS-RS2L9H2B	SymplyPRO SAS 1U Rackmount 1xLTO-9 Half-Height SFF-8644 Interface; Data & Cleaning Tape; 2m Cable, 3 Year Warranty
SYSAS-RS2L9F2B	SymplyPRO SAS 2U Rackmount 1xLTO-9 Full-Height SFF-8644 Interface; Data & Cleaning Tape; 2m Cable 3 Year Warranty

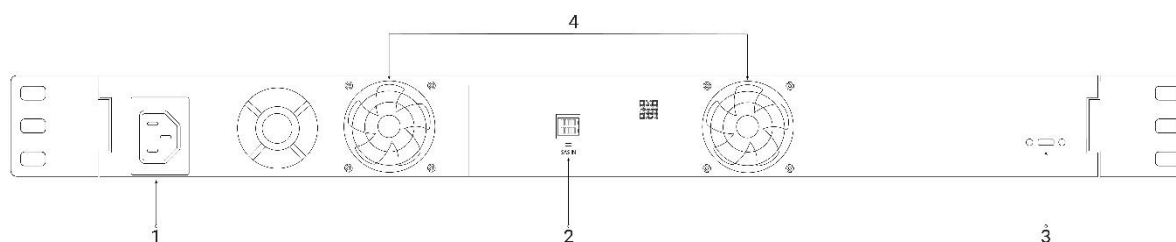
SymplyPRO SAS 1U Rackmount Hardware

SymplyPRO SAS 1U Rackmount Front View:



Number	Description
1	Left Drive Bay with Half-Height LTO Drive Mechanism
2	Right Drive Bay
3	Eject Cartridge Button
4	Ready Light (Green)
5	Key Symbol = Encryption Light (Amber)
6	Single-Character Display (SCD) = Error Codes
7	Exclamation Symbol = Fault Light (White)
8	Power Button

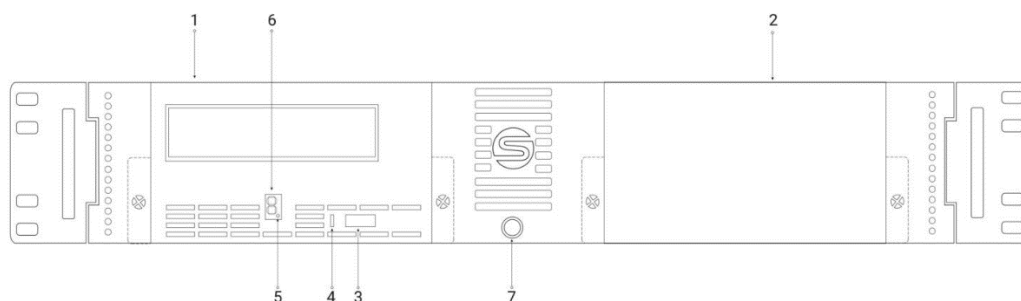
SymplyPRO SAS 1U Rackmount Rear View:



Number	Description
1	Power Inlet
2	SAS Port (SFF-8088 or SFF-8644 depending on model)
3	Kensington Lock
4	Cooling Fans

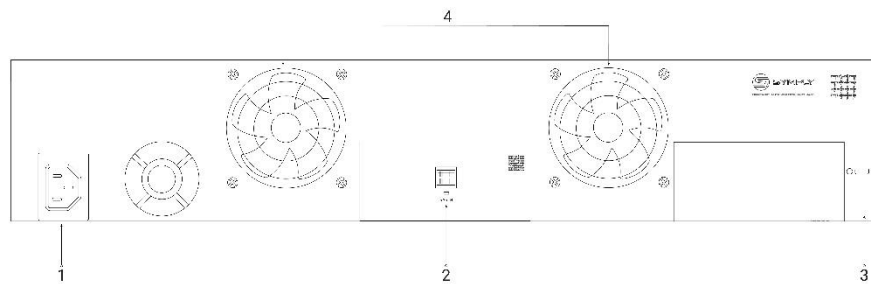
SymplyPRO SAS 2U Rackmount Hardware

SymplyPRO SAS 2U Rackmount Front View:



Number	Description
1	Full Height LTO Drive installed in Left-Hand Bay
2	Full Height LTO Drive Blanking Plate in Right Had Bay
3	Eject Cartridge Button
4	LED Indicator
5	Single-Character Display (SCD) Dot
6	Single-Character Display (SCD)
7	Power Button

SymplyPRO SAS 2U Rackmount Rear View:



Number	Description
1	Power Inlet
2	SAS Port (SFF-8088 or SFF-8644 depending on model)
3	Kensington Lock
4	Cooling Fans

SymplyPRO SAS Upgrade Drive Part Numbers

Part Number	Description
SYLTO-iSCL7HH1	SymplyPRO LTO-7 Half-Height Drive Upgrade for Desktop XTH Enclosures includes Data Tape and 3 Year Warranty
SYLTO-iSCL8HH1	SymplyPRO LTO-8 Half-Height Drive Upgrade for Desktop XTH Enclosures includes Data Tape and 3 Year Warranty
SYLTO-iSCL9HH1	SymplyPRO LTO-9 Half-Height Drive Upgrade for Desktop XTH Enclosures includes Data Tape and 3 Year Warranty
SYLTO-iSRL7HH1	SymplyPRO LTO-7 Half-Height Drive Upgrade for 1U Rackmount Enclosures includes Data Tape and 3 Year Warranty
SYLTO-iSRL8HH1	SymplyPRO LTO-8 Half-Height Drive Upgrade for 1U Rackmount Enclosures includes Data Tape and 3 Year Warranty
SYLTO-iSRL9HH1	SymplyPRO LTO-9 Half-Height Drive Upgrade for 1U Rackmount Enclosures includes Data Tape and 3 Year Warranty
SYLTO-iSCL9FH1	SymplyPRO LTO-9 Full Height Drive Upgrade for 2U Rackmount Enclosures includes Data Tape and 3 Year Warranty

SymplyPRO Physical Specification

Model	Form Factor	No. Drives	Host Interface
SymplyPRO SAS	Desktop	1 Half-Height	Single SAS Port
SymplyPRO SAS XTH	Desktop	1 or 2 Half-Height	Single SAS Port
SymplyPRO SAS XTF	Desktop	1 Full-Height	Single SAS Port
SymplyPRO SAS 1U Rack	1U Rack	1 or 2 Half-Height	Single SAS Port
SymplyPRO SAS 2U Rack	2U Rack	1 or 2 Full-Height	Single SAS Port

Model	Dimensions (D x W x H)	Weight	Power
SymplyPRO SAS	26.3 x 21.1 x 2.9 cm	2.9 KG	50W Internal (110V ~ 240V)
SymplyPRO SAS XTH	30.0 x 21.1 x 13.6 cm	5.5 KG	300W Internal (110V ~ 240V)
SymplyPRO SAS XTF	30.0 x 21.1 x 13.6 cm	5.5 KG	200W Internal (110V ~ 240V)
SymplyPRO SAS 1U Rack	43.5 x 48.2 x 4.4 cm	6.1 KG	300W Internal (110V ~ 240V)
SymplyPRO SAS 2U Rack	43.5 x 48.2 x 8.8 cm	10.2 KG	300W Internal (110V ~ 240V)

SymplyPRO SAS Environmental Specifications

Environmental Factor	Recommended	Allowable	Non-Operating
Dry-Bulb Temperature	LTO-9: 15 to 25 °C (59 to 77 °F) LTO-7 and LTO-8: 16 to 25 °C (61 to 77 °F)	LTO-9: 15 to 30 °C (59 to 86 °F) LTO-7 and LTO-8: 16 to 30 °C (61 to 86 °F)	-23°C to 49°C (-40°F to 140°F)
Relative Humidity	LTO-9: 20 to 50% (non-condensing) LTO-7 and LTO-8: 20 to 50% (non-condensing)	LTO-9: 20 to 50% (non-condensing) LTO-7 and LTO-8: 20 to 50% (non-condensing)	5 to 80% (non-condensing)
Maximum Temperature Change	5 °C / hour	5 °C / hour	n/a
Maximum Humidity Change	5% / hour	5% / hour	n/a
Temperature Limitation for Humidity Conditions	LTO-9: Max Dew Point 22 °C (72 °F) LTO-7 and LTO-8 Wet Bulb Temperature <= 26 °C (79 °F)		
Maximum Altitude	3,048 m (10,000 ft)	3,048 m (10,000 ft)	12,192 m (40,000 ft)

LTO Performance & Capacity

LTO Drive Type	Media Type	Performance Native	Performance Compressed*	Capacity Native	Capacity Compressed*
LTO-9 Full Height	LTO-9	400MB/Sec	1000MB/Sec	18 TB	45 TB
LTO-9 Full Height	LTO-8	360MB/Sec	900MB/Sec	12 TB	30 TB
LTO-9 Half Height	LTO-9	300MB/Sec	500MB/Sec	18 TB	45 TB
LTO-8 Half Height	LTO-8	300MB/Sec	500MB/Sec	12 TB	30 TB
LTO-7 Half Height	LTO-7	300MB/Sec	500MB/Sec	6 TB	15 TB

*Assumes 2:5:1 Compression Ratio

LTO Reliability

	Half-Height	Full-Height
MTBF (Hours)	250,000 @ 100% duty cycle	250,000 @ 100% duty cycle
MSBF	100,000 cycles	100,000 cycles
Load / Unload Cycles	80,000 cycles	300,000 cycles

SymplyPRO and Data Cartridge Acclimatization Time

Acclimatization time is required if the temperature of the SymplyPRO drive when opened is different from the temperature of the environment it will be operated in. The recommended initial acclimation time is four hours after the drive has been unpacked.

If there is no danger of condensation (the air is dry), then the drive temperature may be increased more quickly by powering the drive on for a half hour before using the tape drive. If the SymplyPRO drive is hotter than the maximum allowed operating temperature (35°C / 95°F) there is a danger that the tape may adhere to the read/write head. In this case the SymplyPRO Ethernet LTO drive should be allowed to cool to within the operating temperature range.

It is recommended that the SymplyPRO product and LTO data cartridges are stored together for 24hrs before use in the environment that they will be used in. This will ensure the correct acclimatization.

LTO Drive and Data Cartridge Compatibility Guide

	LTO-5 Data Cartridge	LTO-6 Data Cartridge	LTO-7 Data Cartridge	LTO-8 Data Cartridge	LTO-9 Data Cartridge
SymplyPRO LTO-7	Read Only	Read & Write	Read & Write	n/a	n/a
SymplyPRO LTO-8	n/a	n/a	Read & Write	Read & Write	n/a
SymplyPRO LTO-9	n/a	n/a	n/a	Read & Write	Read & Write

LTO-9 Media Optimization

LTO-9 media Optimization, is also referred to as Characterization, is a feature introduced for LTO-9 tape drives with LTO-9 media. Due to the increased number of tracks used in writing data to LTO-9 media, there needs to be greater precision in the writing process. Media optimization creates a referenced calibration for each cartridge that enables the tape drive's intelligent alignment to optimize data placement. LTO-9 media optimization enhances LTO tape long-term media durability. Note that media optimization is not required for LTO-9 tape drives using LTO-8 media.

- The process of media optimization will be performed on the first load only of LTO-9 media during initialization.
- Media optimization is a one-time operation that can be completed on any drive, enabling the media to be used across all tape drives without further optimization.
- Media optimization averages 40 minutes per first load of a cartridge to a tape drive. Although most media optimization will complete within 60 minutes some media optimization may take up to two hours.
- The differing amount of time taken for the one-time optimization to complete has no impact on the performance or functionality of the data cartridge.
- Interruption of the media optimization process is not recommended.
- All LTO-9 media supplied by Symply in-the-box with our LTO-9 product is pre-optimized to save you time.
- Symply offer LTO-9 media for purchase via our network of resellers, this is available with or without pre-optimization performed.

About Linear Tape File System (LTFS)

LTFS makes viewing and accessing tape files easier than ever before. The LTFS format is used with LTO data tapes to allow you to share your data with others as it is supported on the Mac, Windows and Linux operating systems and doesn't use a proprietary data format. With LTFS, the LTO data tape is partitioned in two. One partition holds the content and the other holds the content's index so the tape can be self-describing to improve archive management.



IMPORTANT

* ? < > " | \ are illegal characters in LTFS and are not usable in file names, folder names, or file extensions. Most commercially available LTFS software will handle these illegal characters for you. However, to keep your archives software independent it is best to remove any illegal characters from file and folder names prior to writing them to tape.

IBM Spectrum® Archive

The IBM Spectrum Archive is a linear tape file system (LTFS) is a file system that works with LTO Generation tape technology to access data stored on an IBM tape cartridge. IBM Spectrum Archive uses the file system's format and resources of the operating system (OS) on which it is running to graphically display the contents of a tape cartridge in the OS's graphical user interface (GUI) format; typically, a folder/tree structure. Using the host operating system's graphical file manager, reading data on a LTO tape cartridge is as easy as dragging and dropping. Users can run any application designed for disk files against tape data without concern for the fact that the data is physically stored on tape.

For the latest compatibility information on IBM Spectrum Archive please refer to the IBM website:

<https://www.ibm.com/docs/en/spectrum-archive-sde>

**NOTE**

The mac and Window OS, IBM SDE version 2.4.5.1 is the final release from IBM for these respective platforms.

SymplyPRO SAS Installation

Unpacking the SymplyPRO SAS

Carefully unpack the SymplyPRO SAS and retain the packaging. Please inspect the unit for shipping damage. If there is damage, do not install the unit, please report the damage immediately by contacting your place of purchase.

Caution should be used whenever lifting the SymplyPRO SAS in and out of the shipping carton, make sure that the working area around you is free from obstructions.



NOTE

Please retain SymplyPRO SAS shipping carton and packaging for Warranty Purposes. If you need to return the unit for service, please make sure you do so in the original or equivalent packing material, or the warranty may be invalidated.

SymplyPRO SAS, XTH and XTF– What's in the box?

Item	QTY	Description
SymplyPRO SAS	1	SymplyPRO SAS with One LTO Drive Pre-Installed
LTO Data Cartridge	1	SymplyLTO Media - Ultrium Data Cartridge Tape
SYMED-IBM-35L2086	1	SymplyLTO Media - Ultrium Universal Cleaning Cartridge
SAS Cable	1	Symply 2m SAS cable
Power Cable	1	2 m (6.5 ft) IEC power cord for local region
Welcome Card	1	Information Card Please Read Carefully
Shipping Carton	1	Please retain shipping carton and packaging for warranty purposes

SymplyPRO SAS 1U and 2U Rackmount – What's in the box?

Item	QTY	Description
SymplyPRO SAS Rack	1	SymplyPRO Rack with One LTO Drive Pre-Installed
LTO Data Cartridge	1	SymplyLTO Media - Ultrium Data Cartridge Tape
SYMED-IBM-35L2086	1	SymplyLTO Media - Ultrium Universal Cleaning Cartridge
SAS Cable	1	Symply 2m SAS cable, version depends on model
Rack-Kit	1	Rackmount Kit
Power Cable	1	2 m (6.5 ft) IEC power cord for local region
IEC Cable	1	2 m (6.5 ft) IEC to IEC power cord
Welcome Card	1	Information Card Please Read Carefully
Shipping Carton	1	Please retain shipping carton and packaging for warranty purposes

Situating your SymplyPRO SAS

It is important that the SymplyPRO SAS is located in a clean environment away from sources of dust. The unit should be orientated in a horizontal position with enough space around the unit for airflow and to insert and eject the data cartridge. If the unit is the rackmount 1U or 2U appliance, please refer to the racking instructions.

The unit should also be kept away from:

- Areas with high-traffic footfall, especially if the floor is carpeted.
- Areas with moving air such as air conditioners, open windows, fans, and doorways.
- The unit should be located off the floor.



CAUTION

The power source must be connected to a protective earth ground and comply with local electrical codes. Improper grounding may result in an electrical shock or damage to the unit. Failure to do so may cause injury or damage the unit. If you are using a rack, be careful not to exceed the power capabilities of the rack

Before Powering on SymplyPRO SAS

Before powering on the system, ensure that none of the ventilation holes are blocked, that there are no obstructions around the system blocking airflow, that the environment is within the specified operating conditions and that acclimatization time has been allowed.

- 1) Connect the host computer to the SAS port on the SymplyPRO SAS.
- 2) Ensure the LTO drives in the XTH, 1RU and 2RU are correctly installed.
- 3) Power on the SymplyPRO SAS.



NOTE

- When powered on the SymplyPRO SAS, the LTO drive(s) will perform a hardware Power On Self-Test (POST) the LTO drive(s). During the POST, the Single Character Display (SCD) on the LTO drive flashes several segmented characters. Each character represents a test performed during POST. When POST finishes, the SCD will momentarily light all segmented characters and will then go blank.
- POST takes approximately 20 seconds, and the Status LED light will also appear Green on the rear of the SymplyPRO SAS.



IMPORTANT

Never power off or remove power from the SymplyPRO SAS while a data cartridge is loaded. If the SymplyPRO SAS is powered off while a data cartridge is installed, then when the system is powered on again, the system will perform a much more intensive POST while the system verifies the integrity of the data on the tape. This extended POST process can take up to 10 minutes, at the end the data cartridge will be ejected.

Before Powering Off SymplyPRO SAS

Check that all LTO operations have been completed and the LTO cartridge(s) have been ejected from the LTO drive(s).



IMPORTANT

Do not disconnect the SAS data cables from the SymplyPRO SAS while the LTO drives are in operation and being controlled by applications on the host computer.

Installing Drivers

macOS SAS Installation

You will need:

- SymplyPRO SAS Models:
 - SymplyPRO SAS
 - SymplyPRO SAS XTH
 - SymplyPRO SAS XFH
 - SymplyPRO SAS 1U Rackmount
 - SymplyPRO SAS 2U Rackmount
- An Apple computer with spare PCIe slot installed with a SAS HBA which is compatible with the version of macOS.
- Or an Apple computer with a SAS HBA installed in a Thunderbolt expansion system, the SAS HBA requires drivers compatible with macOS.
- A SAS cable to connect from the SymplyPRO SAS to the SAS HBA.
- Power Cord.
- If you are using the current ATTO 12Gb GT HBA you can download the latest driver and ATTO Configuration Tool from [\[ATTO 12Gb SAS GT\]](#).

Installation:

- 1) Prepare your Mac for installation:

Macs equipped with either a T2 Security Chip or are Apple Silicon based Macs ship by default with a Security Policy that blocks Third Party Kernel Extensions which are currently required for most SAS HBAs. Follow the [\[instructions in this article\]](#) to modify the Security Policy in Recovery Mode using the Startup Security Utility to enable your Mac to communicate with your Symply products.

- 2) Install the SAS driver for your chosen HBA
- 3) Download and install [\[IBM LTFS Software\]](#) Single Drive Edition (SDE), required for LTFS support.

Alternatively, if you are using an ATTO SAS HBA, skip Step 2 and 3 to Step 4.

- 4) Install [\[SymLpyATOM\]](#):

We've created a combined installer for our support and maintenance utility - SymplyATOM - the combined installer will install all the necessary software and device drivers to support all of our Symply products. The installer also sets the preferences for SymplyATOM, there should be no need to modify SymplyATOM's preferences after running this installer.

The [\[SymplyATOM installation\]](#) article includes a video walkthrough and links to how to use SymplyATOM for support and maintenance tasks.



NOTE

- SymplyPRO SAS ships with a 2m cable depending on the model either:
 - SFF-8644 –to- SFF-8088
 - SFF-8644 –to- SFF 8644
- The maximum supported length for a SAS cable is 5m, but Symply recommends = < 3m
- Symply recommend ATTO SAS HBAs, these are available from Symply authorized resellers.

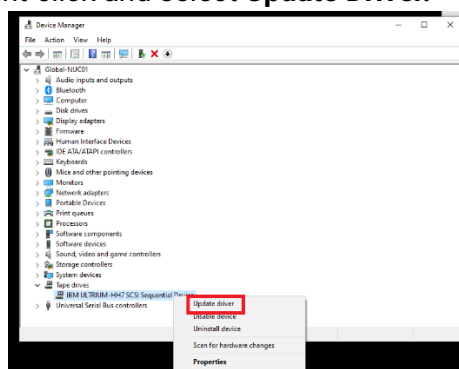
Windows OS SAS Installation

You will need:

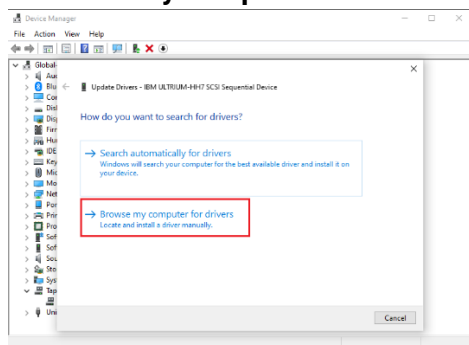
- SymplyPRO Thunderbolt model:
 - SymplyPRO SAS
 - SymplyPRO SAS XTH
 - SymplyPRO SAS XFH
 - SymplyPRO SAS 1U Rackmount
 - SymplyPRO SAS 2U Rackmount
- A suitable host computer with a SAS HBA installed which is compatible with the operating system.
- SAS cable to connect from the SymplyPRO SAS to the SAS HBA.
- Power Cord.
- If you are using the current ATTO 12Gb GT HBA you can download the latest driver and ATTO Configuration Tool from [[ATTO 12Gb SAS GT](#)]

Installation:

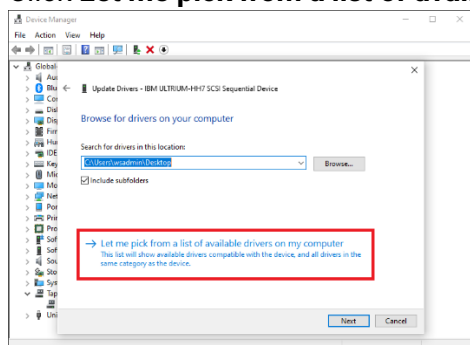
- 1) Download and install the SAS driver and any other utility required for your chosen HBA.
- 2) Download and install [[IBM LTFS Software](#)] Single Drive Edition (SDE), required for LTFS support.
- 3) For Windows 10 or Windows 11. Open the Device Manager.
 - a) Under the **Other devices** category, you will see **IBM ULTRIUM-XXX SCSI Sequential Device**.
 - b) Right-click and select **Update Driver**.



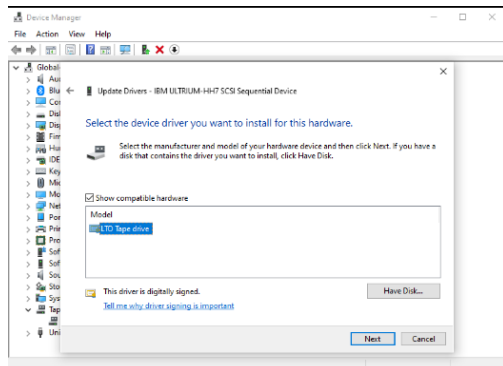
c) Click **Browse my computer for drivers**.



d) Click **Let me pick from a list of available drivers on my computer**.

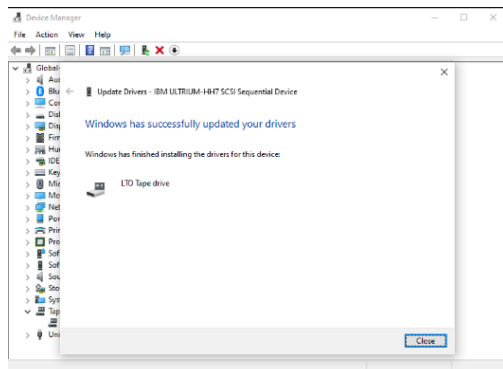


e) Select **LTO Tape drive** (or **Cassette Drive**) click **Next**.

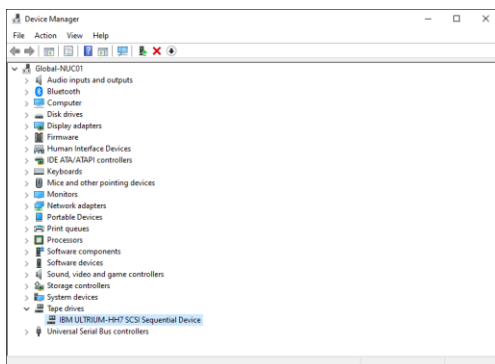


f) When a warning is displayed select "Yes" to continue.

g) The Windows LTO driver will install.



- h) Close the dialog box and check that the drive is now displayed in the "Tape Drive" section of the Device Manager.



NOTE

For Windows Server you will need to download and install the IBM LTO Tape driver for the relevant version of Windows Server. These can be downloaded from the Symply support website. Follow the instructions in the installer.

- 4) For Windows Server 2016, 2019 & 2022, you will need to download and install the IBM LTO Tape driver for the relevant server OS.

OS	IBM Driver
Windows Server 2022	[2022 Driver]
Windows Server 2019	[2019 Driver]
Windows Server 2016	[2016 Driver]

- With the SymplyPRO SAS connected to the host computer, download and unzip the installer
- Run as "Administrator"
- Follow the on-screen installation instructions.



NOTE

- SymplyPRO SAS ships with a 2m cable depending on the model either:
 - SFF-8644 –to- SFF-8088
 - SFF-8644 –to- SFF 8644
- The maximum supported length for a SAS cable is 5m, but Symply recommends = < 3m
- Symply recommend ATTO SAS HBAs, these are available from Symply authorized resellers.

Linux OS SAS Installation

You will need:

- SymplyPRO SAS Models:
 - SymplyPRO SAS
 - SymplyPRO SAS XTH
 - SymplyPRO SAS XFH
 - SymplyPRO SAS 1U Rackmount
 - SymplyPRO SAS 2U Rackmount
- A suitable host computer with a SAS HBA installed that is compatible with the operating system.
- SAS cable to connect from the SymplyPRO SAS to the SAS HBA.
- Power Cord.
- If you are using the current ATTO 12Gb GT HBA you can download the latest driver and ATTO Configuration Tool from [[ATTO 12Gb SAS GT](#)].

Installation:

- 1) Download and install the SAS driver and other required utility for the chosen HBA.
- 2) Download and install [[IBM LTFS Software](#)] Single Drive Edition (SDE), required for LTFS support.



NOTE

- SymplyPRO SAS ships with a 2m cable depending on the model either:
 - SFF-8644 –to- SFF-8088
 - SFF-8644 –to- SFF 8644
- The maximum supported length for a SAS cable is 5m, but Symply recommends = < 3m
- Symply recommend ATTO SAS HBAs, these are available from Symply authorized resellers.

Operating the LTO Tape Drive

This chapter covers the operation of the tape drive, loading media, maintenance for the tape drive and best practice for media handling. It is also best practise to use a dedicated backup or archive application to control the tape drive.



NOTE

Make sure to disable all Energy Saving features on the host computer when using LTO devices to provide the best performance and avoid data loss and/or corruption.

Software Partners

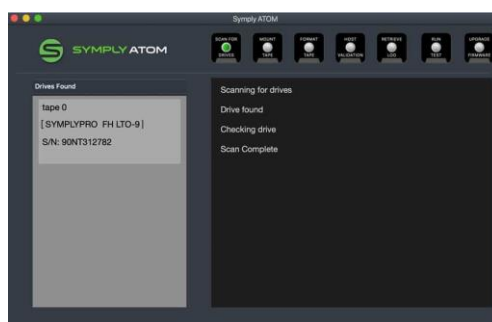
SymplyPRO SAS has undergone extensive testing with the leading software backup and archive software providers on the market. Using purpose built commercial software applications that utilise either LTFS, TAR and/or other tape formats provides a much better user experience than command line driven LTFS commands. After all you have invested in LTO technology to backup and archive valuable data, it makes sense to use the best available tools.

Symply is partners with and recommend Archiware P5, Hedge Canister, Imagine Products Inc., storageDNA, Tiger Technology Bridge, XenData, and YoYotta. In addition, since Symply partner with IBM for tape drive technology the SymplyPRO SAS range has is compatible with software packages that are approved for use with IBM standalone drives.

SymplyATOM (Admin Tape Operation and Management)

SymplyATOM is a free macOS tool, designed to work with the SymplyPRO LTO family of products. It is intended to provide casual and expert-level users equal access to the essential features for diagnostic control, log gathering and updating firmware of the SymplyPRO LTO products.

ATOM also supports the latest version of LTFS for the macOS to provide basic tools for formatting, mounting and unmounting LTFS tapes. ATOM can support up to two (2) LTO drives from LTO generation 6 upwards and is free to download from our support portal.



While ATOM can be used to format LTO tapes with LTFS and mount and unmount the formatted tape, Symply strongly recommend using a commercial backup or archive applications, that will give the user the benefits of a catalogue or database, better data transfer speeds, management of LTFS illegal characters, and dedicated support.



NOTE See the Appendix for our LTFS best practice guide.

Loading and Unloading LTO Data Cartridge in the SymplyPRO

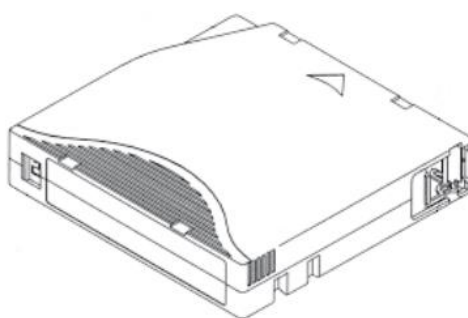
Make sure the SymplyPRO has completed its Power On Self-Test (POST). When the system is ready the Green Ready Light is illuminated. Do not try to insert a data cartridge if the POST has not been completed and the ready light is illuminated.

Before inserting the data cartridge, check that it is compatible with the LTO generation tape drive, see LTO Drive and Data Cartridge Compatibility Guide.

! IMPORTANT

Do not insert a damaged tape cartridge into the drive. A damaged cartridge can interfere with the reliability of a drive and may void the warranties of the drive and the cartridge. Before inserting a tape cartridge, inspect the cartridge case, cartridge door, leader pin, and write-protect switch for damage.

Insert the compatible LTO tape into the drive in the direction of the arrow on the top of the data cartridge.



The drive will grab the data cartridge and move it into the LTO mechanism. If an incompatible data cartridge is inserted the Single-Character Display (SCD) will display the error code J. If this occurs, press the Eject cartridge button.

**NOTE**

If the cartridge is already in an ejected position and you want to reinsert it, remove the cartridge then insert it again.

In normal operation, to eject the cartridge press the cartridge eject button. Note that this operation will fail if the data cartridge is in use, for example if the tape is currently mounted. You will need to unmount the tape from your computer before trying to eject the cartridge from the drive. It is best practice to use a backup or archive application to control SymplyPRO and by extension tape in the drive. If you are not controlling the tape drive with an application, always make sure the tape is unmounted from the OS before the cartridge is ejected.

**NOTE**

Leaving an LTO data cartridge in the SymplyPRO for long periods of time without use can damage both the data cartridge and the tape drive mechanism.

**IMPORTANT**

Do not power the SymplyPRO off with a data cartridge in the tape drive mechanism. This can damage both the data cartridge and the LTO mechanism. If the SymplyPRO is powered off with a cartridge inside it will take longer to complete the Power On Self-Test (POST) when the SymplyPRO is turned back on.

Using and Maintaining Tape Cartridges



CAUTION

Do not degauss LTO data cartridges! These data cartridges are pre-recorded with a magnetic servo signal. This signal is required to use the cartridge with the LTO tape drive. Keep magnetically charged objects away from the cartridge.

To ensure the longest possible life for your data cartridges, follow these guidelines:

- Use only the data cartridges designated for your device.
- Clean the tape drive when the Clean drive indicates with a "C"
- Do not drop a cartridge. Excessive shock can damage the internal contents of the cartridge or the cartridge case itself, making the cartridge unusable. Always check the cartridge for damage if it has been dropped and ensure the cartridge leader pin is correctly located.
- Do not expose data cartridges to direct sunlight or sources of heat, including portable heaters and heating ducts.
- The operating temperature range for data cartridges is 10 to 30° C. The storage temperature range is -40 to +60° C in a dust-free environment in which relative humidity is always between 20 percent and 80 percent (non-condensing).
- If the data cartridge has been exposed to temperatures outside the specified ranges, stabilize the cartridge at room temperature for the same length of time it was exposed to extreme temperatures or 24 hours, whichever is less.
- Do not place data cartridges near sources of electromagnetic energy or strong magnetic fields such as computer monitors, electric motors, speakers, or X-ray equipment. Exposure to electromagnetic energy or magnetic fields can destroy data and the embedded servo code written on the media by the cartridge manufacturer, which can render the cartridge unusable.
- Place identification labels only in the designated area on the cartridge.

Labeling Tape Cartridges

Having a barcode label on each tape cartridge enables the operator or tape library to easily identify tape cartridge. It is highly recommended to use barcode labels on your tape cartridges.

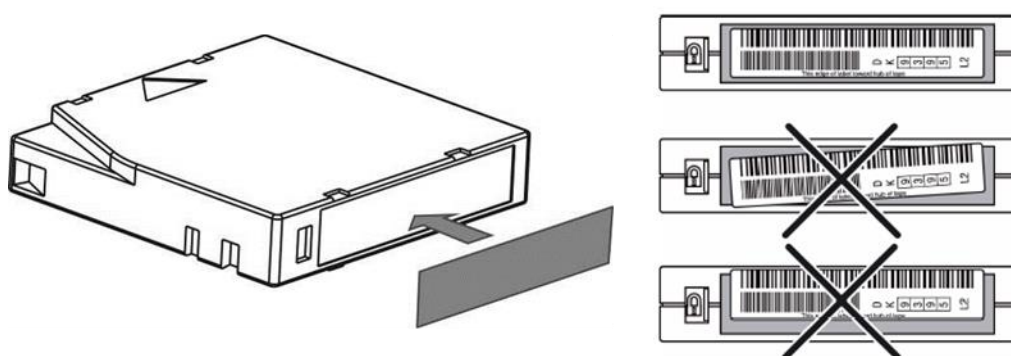
A correct barcode label includes the media ID in the last two characters of the barcode. A tape library will not load an incompatible cartridge, based on the barcode media ID, into a tape drive. For example, a library will not load a cartridge labelled as LTO-7 into an LTO-9 tape drive. This saves the time needed to load the cartridge and have the tape drive reject it.



IMPORTANT

Misusing and misunderstanding barcode technology can result in backup and restore failures. Use only high-quality labels. Self-printed labels are not recommended as they are often a source of barcode reading issues.

LTO tape cartridges have a recessed area located on the face of the cartridge next to the write-protect switch. Use this area for attaching the adhesive-backed bar code label. Only apply labels as shown:

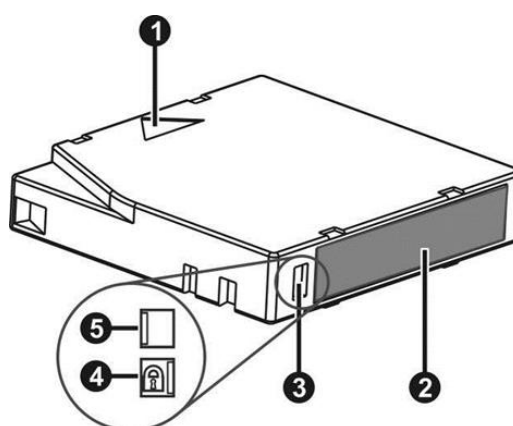


IMPORTANT

- The barcode label should only be applied as shown, with the alphanumeric portion facing the hub side of the tape cartridge.
- Never apply any label, anywhere else on the tape cartridge. This will cause the cartridge to jam in a tape drive.
- Never apply multiple labels onto a cartridge because extra labels can cause the cartridge to jam in a tape drive.

Write Protecting Tape Cartridges

All LTO data cartridges have a write protection feature. This is a RED tab that displays a lock symbol when it is moved to the write protected position. Once this is set the data cartridge can only be read from, so it is a very useful feature that prevents accidental overwriting or formatting of a data cartridge. It is generally considered best practice to write protect each cartridge after you have finished a backup or archiving task.



Number	Description
1	Insertion Arrow
2	Barcode Label Area
3	Write-Protection Switch
4	Write-Protected
5	Write-Enabled

If an application tries to write to a data cartridge with this feature enabled the Single-Character Display (SCD) on the front of the SymplyPRO will display the error code P.

Read and Write Compatibility

Ultrium Read/Write Compatibility:

Number	LTO-7 Drive	LTO-8 Drive	LTO-9 Drive
LTO-5 Media	Read Only	Incompatible	Incompatible
LTO-6 Media	Read & Write	Incompatible	Incompatible
LTO-7 Media	Read & Write	Read & Write	Incompatible
LTO-8 Media	Incompatible	Read & Write	Read & Write
LTO-9 Media	Incompatible	Incompatible	Read & Write

Cleaning the SymplyPRO LTO drive mechanism.

It is important to remember not to use the SymplyPRO system in dusty and dirty environments as this can cause damage to the LTO data cartridges and the LTO mechanism itself. In normal operation the drive heads will need to be cleaned periodically, when cleaning is required the Single-Character Display (SCD) on the front of the SymplyPRO will display the error code "C".

**NOTE**

This is a capital "C" not a lowercase "c" which indicates an LTO-9 tape optimization is in progress.

The SymplyPRO ships with a cleaning cartridge. When and only when the SCD displays C, you should insert the cleaning cartridge into the mechanism, only ever in the direction of the arrow on the top of the cleaning cartridge. The SymplyPRO will automatically start the cleaning process and the cleaning cartridge will be ejected when the cleaning is complete. In the unlikely event that after the cleaning has completed the SCD still shows a C error code then raise a support ticket. Do not use the cleaning cartridge again.

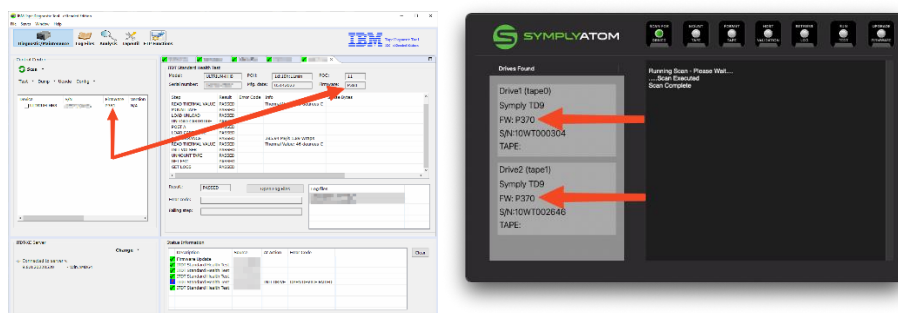
It is important to clean the SymplyPRO system when prompted to do so, but it is equally important only to do this when prompted by the SymplyPRO. Cleaning the drive without being prompted to so will actually reduce the lifespan of the LTO mechanism and may invalidate your warranty.

Cleaning cartridges have a finite life span. Cleaning cartridges supplied with the SymplyPRO will last for a maximum of 50 cleaning cycles. If you need additional cleaning cartridges, they can be purchased via Symply authorized resellers.

Upgrading the LTO Firmware

It is important to keep the firmware of your LTO drive up-to-date as changes are made to keep it working as trouble-free as possible. You can use either SymplyATOM or IBM's ITDT to check and update your SymplyPRO drives firmware.

The pictures below show where the firmware version is displayed in ITDT and SymplyATOM



Symply provide the latest versions of on the support portal [[LTO Firmware Downloads](#)]

If you are using macOS you can use [[SymplyATOM](#)] to upload the new firmware, if you are using Windows or Linux you can use [[IBM's ITDT](#)] application, both applications are available to download from this support portal.



NOTE

Pay careful attention to which firmware you download and install, **ONLY** install the LTO firmware for drive you have.

Using SymplyATOM to upgrade the LTO Firmware

- 1) Open the SymplyATOM application.
- 2) Click **Scan For Drives**.
- 3) On the left-hand side panel, select the drive that you wish to update the firmware on.



- 4) Click the **Upgrade Firmware** button navigate to the downloaded firmware file and click **OK** to proceed with the update.

During the firmware update process the SCD (Single Character Display) presents a series of random characters. The SCD briefly displays 8, then becomes blank when the firmware download and update is complete and there are no errors.

The Ready light and the Fault light flash briefly during the firmware download and update. The Ready light turns On after the firmware download and update are complete.

If an error occurs during the firmware download or update process, and error code will be displayed on the SCD.



NOTE

You cannot perform a firmware update if the drive has an error displayed on the SCD.



NOTE

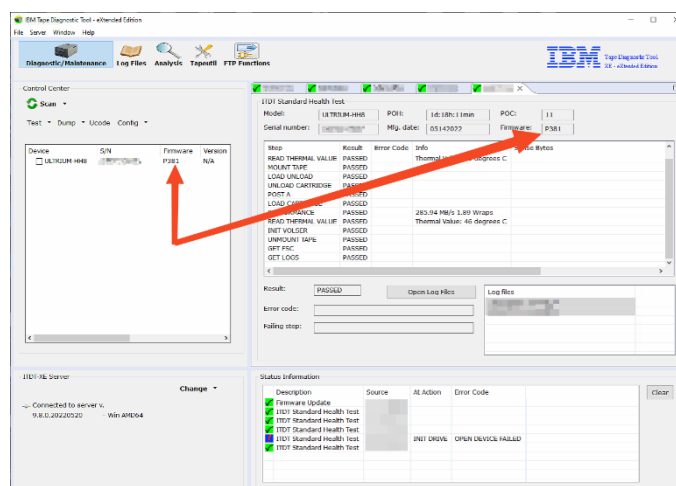
The current version of ITDT for macOS & SymplyATOM may display an 'error_code_60' when completing a firmware upgrade. Click the SCAN FOR DRIVES (or ITDT scan) to check that the firmware upgrade was successful.

Using ITDT to upgrade the LTO Firmware

IBM Tape Diagnostic Tool (ITDT) offers multiple functional capabilities that simplify the task of testing and maintaining the tape products.

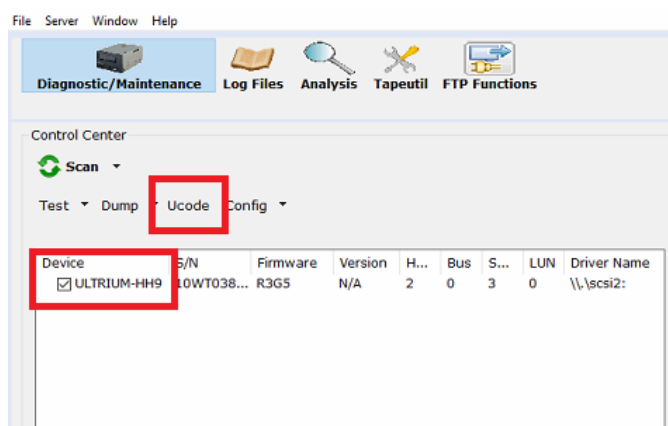
To determine the firmware version:

1. Open **ITDT**
2. Click on the **Scan** button to discover all attached LTO drives

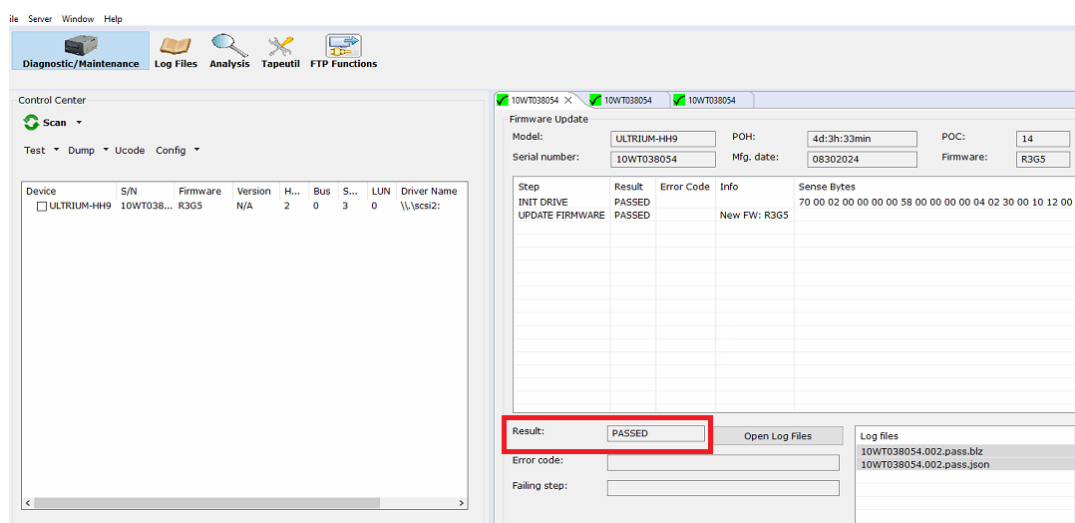


Updating the LTO firmware:

1. Stop all backup and archive operations and eject a tape cartridge if it is in the drive.
2. Open **ITDT**
3. Click on the **Scan** button to discover all attached LTO drives
4. **Click** on the drive that you wish to update
5. Select **Ucode**



6. Navigate to the firmware file (*.ssp_hh.fmrz)
7. Click **Open**
8. The firmware update process will start automatically, the process will take approximately 3 minutes. If successful ITDT will report the result as "PASSED"

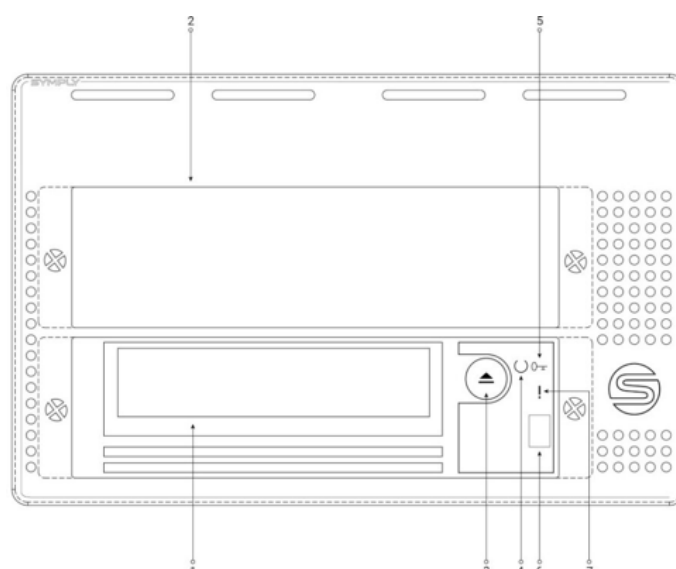


Upgrading the SymplyPRO SAS XTH, SAS 1U or 2U chassis with a Second LTO Drive.

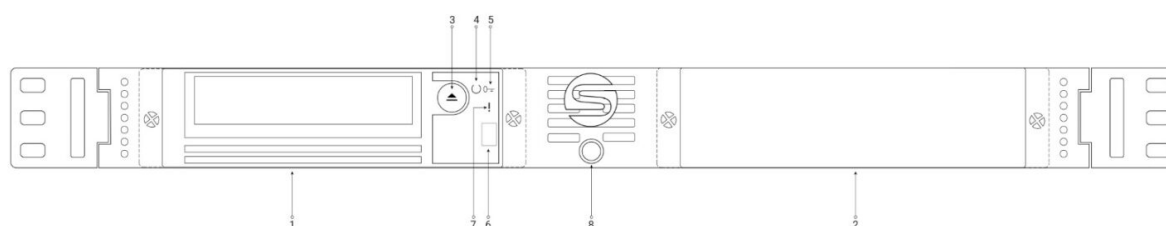

CAUTION

A discharge of static electricity can damage static-sensitive devices or micro circuitry. Proper packaging and grounding techniques are necessary precautions to prevent damage.

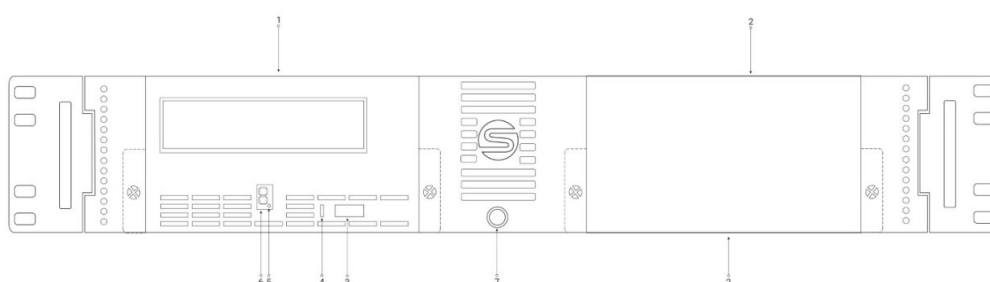
The SymplyPRO SAS XTH, SymplyPRO SAS 1U Rackmount and SymplyPRO SAS 2U Rackmount are all dual drive systems and are designed to be upgraded in the field with minimal downtime. As standard these modules all ships in a default configuration with a single LTO drive installed in the Lower Bay (in the XTH), or Left-Hand Side Bay (in the 1U and 2U) and a blanking plate installed in the spare bay.

SymplyPRO SAS XTH:


Number	Description
1	Lower Drive Bay with Half-Height LTO Drive Mechanism
2	Upper Drive Bay
3	Eject Cartridge Button
4	Ready Light (Green)
5	Key Symbol = Encryption Light (Amber)
6	Single-Character Display (SCD) = Error Codes
7	Exclamation Symbol = Fault Light (White)

SymplyPRO SAS 1U Rackmount:

Number	Description
1	Left Drive Bay with Half-Height LTO Drive Mechanism
2	Right Drive Bay
3	Eject Cartridge Button
4	Ready Light (Green)
5	Key Symbol = Encryption Light (Amber)
6	Single-Character Display (SCD) = Error Codes
7	Exclamation Symbol = Fault Light (White)
8	Power Button

SymplyPRO SAS 2U Rackmount:

Number	Description
1	Full Height LTO Drive installed in Left-Hand Bay
2	Full Height LTO Drive Blanking Plate in Right Had Bay
3	Eject Cartridge Button
4	LED Indicator
5	Single-Character Display (SCD) Dot
6	Single-Character Display (SCD)
7	Power Button

SymplyPRO LTO Upgrade Part Numbers

These are the part number options for upgrading the SymplyPRO SAS XTH, SymplyPRO SAS 1U Rackmount, and SymplyPRO SAS 2U Rackmount.

Part Number	LTO Gen	Product	Description
SYLTO-iSCL7HH1	7	XTH	Symply LTO-7 Half Height Drive upgrade for Desktop XTH enclosures Includes Data Cartridge and 3 Year Warranty
SYLTO-iSCL8HH1	8	XTH	Symply LTO-8 Half Height Drive upgrade for Desktop XTH enclosures Includes Data Cartridge and 3 Year Warranty
SYLTO-iSCL9HH1	9	XTH	Symply LTO-9 Half Height Drive upgrade for Desktop XTH enclosures Includes Data Cartridge and 3 Year Warranty
SYLTO-iSRL7HH1-	7	1RU	Symply LTO-7 Half Height Drive upgrade for 1RU enclosures Includes Data Cartridge and 3 Year Warranty
SYLTO-iSRL8HH1-	8	1RU	Symply LTO-8 Half Height Drive upgrade for 1RU enclosures Includes Data Cartridge and 3 Year Warranty
SYLTO-iSRL9HH1-	9	1RU	Symply LTO-9 Half Height Drive upgrade for 1RU enclosures Includes Data Cartridge and 3 Year Warranty
SYLTO-iSRL9FH1-	9	2RU	Symply LTO-9 Full Height Drive upgrade for 2RU enclosures Includes Data Cartridge and 3 Year Warranty

Avoiding damage to Symply LTO Drive upgrade (SYLTO)

To avoid static electricity, and other damage when handling the drive, please take the following precautions.

- Prepare the SymplyPRO for receiving the upgrade or replacement drive before removing the new drive from its static-protective packaging.
- Limit your movements. By limiting your movements, this limits static electricity buildup around you.
- Handle the drive carefully ensuring there is enough space in the area around the SymplyPRO.
- Never touch the exposed circuitry of the upgrade drive.
- Ideally the upgrade drive should be removed from its static-protective packaging and installed directly into the SymplyPRO.
- Do not place the upgrade drive on the metal cover of the SymplyPRO or any other metal surfaces.
- If you have to set the upgrade drive down, do so on a level surface, and on the packing, it was shipped in.

Unpacking the Symply LTO upgrade drive (SYLTO)

Carefully unpack the Symply LTO Drive upgrade and store the packaging for future transport. If you need to return the unit for service, please make sure you do so in the original or equivalent packing material, or the warranty may be invalidated.

Please inspect the unit for shipping damage. If there is damage, do not install the unit, please report the damage immediately by contacting your place of purchase.

Installing the Symply LTO upgrade drive (SYLTO)

This upgrade can be performed with the SymplyPRO powered ON or OFF.

- Remove the drive blanking plate from the Upper LTO Bay and retain for future use.
- Carefully remove the Symply LTO Drive upgrade from its static-protective packaging.
- Ensuring the Symply LTO Drive upgrade is oriented the correct way up (with serial number label visible on the top of the drive). Carefully insert the Symply LTO Drive upgrade into available Bay of the SymplyPRO, sliding the drive, until the drive connects with the backplane of the SymplyPRO.
- Tighten the thumbscrews on the newly installed drive to secure it in place.
- If the SymplyPRO was powered on during this process, the LTO drive would have initialized and carried out POST checks as soon as it was connected to the backplane of the system.
- If the SymplyPRO was powered OFF during the upgrade, it can now be powered on if desired.

If you have a problem, please, check out our FAQs, or submit a support ticket.

Matching Firmware on Upgraded Systems

It would be considered best practice to make sure the firmware on the two LTO drives in a SymplyPRO are matching.

The Symply LTO Drive upgrades ship from Symply with the latest firmware available at the time. As new firmware becomes available it will be posted to the Symply support pages. The firmware can be upgraded on the SymplyPRO via our SymplyATOM software application for macOS or the IBM ITDT application for Windows and Linux.

1U and 2U Rack Kit Installation Guide

This chapter details how to rackmount the SymplyPRO 1U and 2U chassis.

 WARNING	Product Weight: Remove the LTO drives from the SymplyPRO 1U or 2U Rackmount before trying to install in the rack cabinet. Risk of Personal Injury: Before moving or lifting the SymplyPRO 1U or 2U Rackmount: • Observe local health and safety requirements and guidelines for manual material handling. • Remove all tape drives to reduce the weight • Obtain adequate assistance to lift and stabilize the module during installation or removal. Risk of damage to devices: When placing a SymplyPRO 1U or 2U Rackmount into or removing from a rack: • Extend the rack's levelling jacks to the floor. • Ensure that the full weight of the rack rests on the levelling jacks. • Install stabilizing feet on the rack. • Extend only one rack component at a time.
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Required Tools

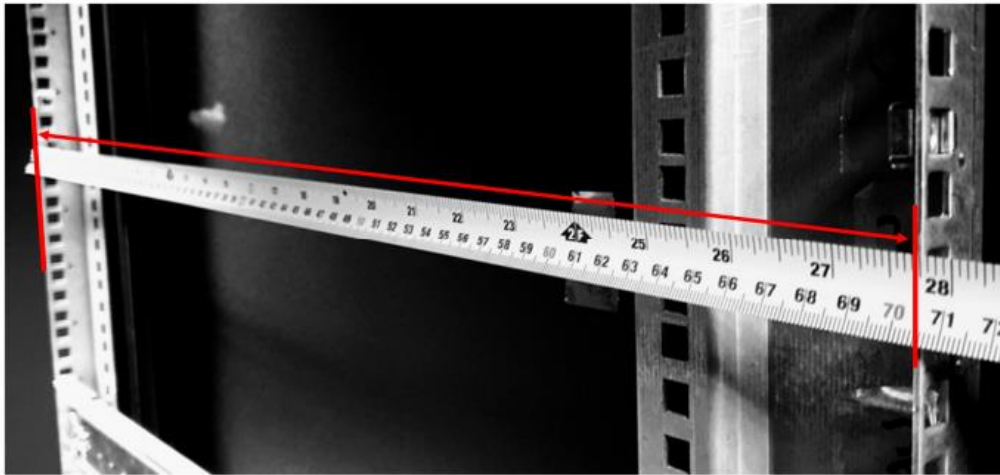
- Screwdriver PH2
- Tape Measure 1m (3.3ft) in length

What is in the rack-kit?

Part	Quantity
Rear Rack Rail Bracket	2
Rear Rack 'L' Bracket	2
6mm Screws	26
Cage Nuts	8
Washers	8
16mm Screws	8

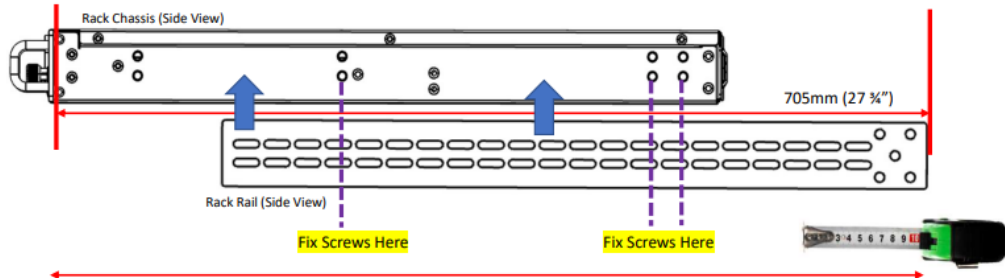
Racking Instructions

- 1) Measure the internal distance between front and rear rack strip in your 19" rack cabinet.



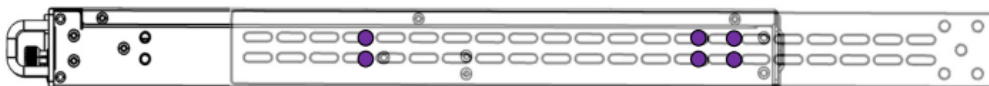
Picture 1: Example 705 mm (27 3/4")

- 2) Align the Rack Rail up against the side of the SymplyPRO 1U or 2U Rackmount product and set the end of 'Rack Rail' to the measurement as per (Picture 1) above.

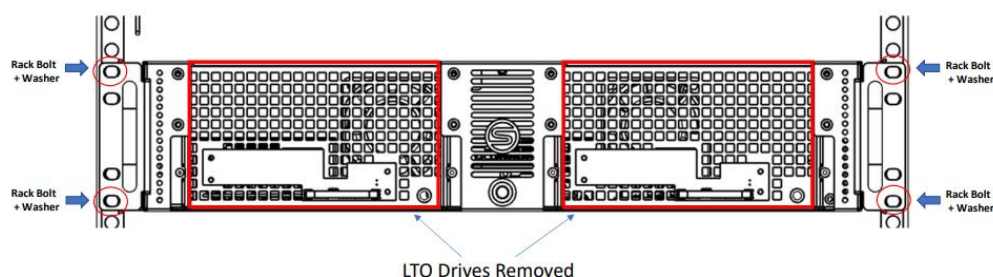


- 3) Once Distance between inside of Front Rack Ear and end of Rack Rail has been determined (the measurement from Picture 1) then use 6 x 6mm screws to fix "Rack Rail" firmly to the side of the SymplyPRO Rackmount Chassis. The measurement can be +/- 2mm as the Rear 'L' bracket has a 2mm slide movement built in.

The side of the rack should now look like the image below. Repeat process (2) & (3) for the Left-Hand side.

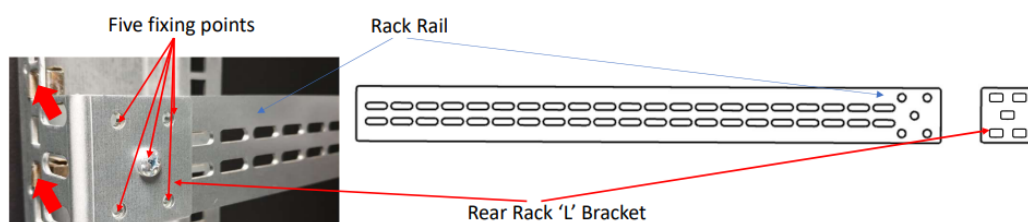


- 4) Making sure that the LTO drives are removed from the SymplePRO 1U or 2U Rackmount before attempting to install the SymplePRO Rackmount into the Rack Cabinet. Secure the SymplePRO Rackmount in place in the front of the rack cabinet using the 4 of 16mm the rack screw, washers and cage nuts. Shown below in Picture 2.



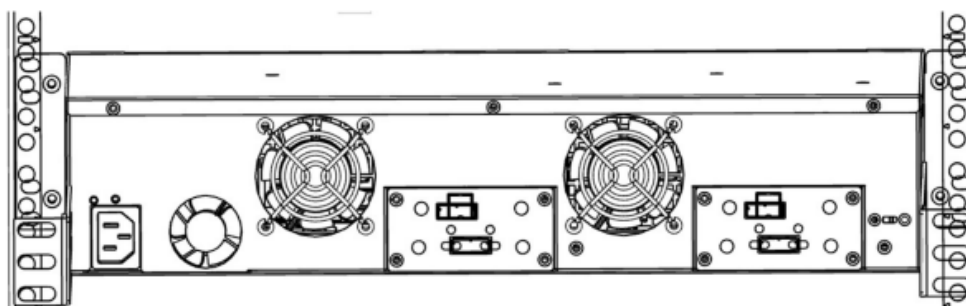
Picture 2: Rack Chassis (Front View) – 2RU Shown – Same for 1RU Chassis

- 5) Now with the SymplePRO Rackmount fixed into the front of the rack cabinet, fix the rear rack 'L' Brackets to the left- and right-hand sides of SymplePRO rack rails, securing them in place with the 5 x 6mm screws (see Picture 3 below – labelled fixing points).



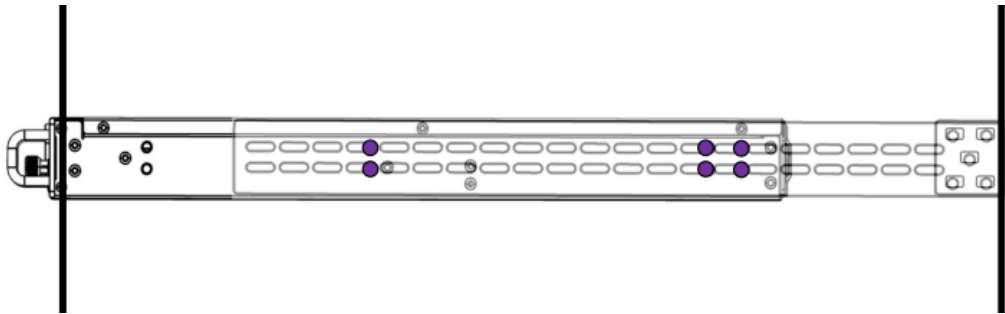
Picture 3: Shows the five fixing points for "L" Bracket

- 6) Now the secure the 'L' Brackets to the rear rack strips of the rack cabinet using 2 x 16mm screws, washers and cage nuts on each side (see Picture 3 above – larger red arrows).



Picture 4: Rack Chassis (Rear View) – 2U Shown – Same for 1U Chassis

- 7) Below will be a side view of how the SymplyPRO 1U Rackmount should look like when installed correctly in the rack cabinet. The 1U and the 2U racks have the same fixings.



Picture 5: show the correctly fitted SymplyPRO 1U Rackmount in a rack cabinet.

Appendix

LTFS Best Practices

- Always make at least two archive copies and keep them in different locations to protect against loss or damage.
- Once you have written the LTO tape we recommend sliding the tab on the LTO tape cartridge to closed, this will write protect the tape.
- Make sure to disable all Energy Saving features on the host computer when using LTO devices to provide the best performance and avoid data loss and/or corruption.
- If you have intermittent power, make sure both the computer and tape drive are on an Uninterruptible Power Supply (UPS).
- Do not unplug the Thunderbolt cable while the system is in use as this can lead to data corruption.
- **Type-M (also known as M8):** We do not recommend using Type-M for archiving, the tapes are only readable in an LTO-8 drive (not in an LTO-7 or LTO-9 drive). The format was a short-term solution to historical availability problems with LTO-8 media.
- **Compression:** Using tape compression is recommended internally the LTO drive will compress files that are uncompressed. The compression is lossless and varies from 1:1 to 2.5:1. Note that the LTFS application you are using needs to support compression. Typically, only text documents, spreadsheets and other office type documents can be compressed to the 2:5:1, it is unlikely that you will see the advertised compressed capacities of data cartridges.
- **Source media:** The speed of the source media may affect the performance of the tape drive. Data sources such as slower NAS systems or USB connected drives might not perform to the recommended minimum sustained speed of 100MB/sec to allow the SymplyPRO drives to function optimally.

If the connection to the SymplyPRO drive is too slow, the drive will run out of data and the tape will have to keep rewinding and start writing again. This is sometimes called “Shoe Shining”, and you will be able to hear the behaviour if you listen to the sound the tape drive is making. Shoe Shining will mean the average transfer time to the LTO drive will drop drastically. This behaviour will not damage the LTO data cartridge, but if it is a constant issue it will increase the wear on the LTO drive heads in the mechanism and reduce the life-span of the LTO drive.

- **TAR / PAX Format:** TAR and PAX are both older methods of storing files as a bundle on a LTO tape. There is no directory like LTFS and so the tapes cannot be mounted on the desktop as they can be with LTFS. The SymplyPRO family is compatible with applications that use these formats, but they are rare these days.
- **WORM Tapes:** LTFS does not support WORM (Write Once Read Many times), but the SymplyPRO family does support WORM media if you have an application that supports this feature of LTO.

LTFS Best Practices (Continued)

- **LTFS Formatting and Labels:** LTFS tapes must be formatted with a unique six character label that should match the barcode label on the tape for ease of tracking media.
 - The code can have the letters A-Z and numbers 0-9. For example: 123456, ABCDEF, SY1234 etc
 - After formatting an LTFS tape you cannot change the label. To change the label you have to reformat the LTFS tape.
 - The tape barcode label is eight characters. This comprises the user selectable six characters followed by the LTO generation identifier L5, L6, L7, L8, and L9. For example: 123456L8, ABCDEF**L9**, SY1234**L7** etc.
 - We recommend not to use / * ? < > " | \ : characters or spaces in file and directory naming as these are not supported across all operating systems. This is best practice for file and path naming.
 - We recommend to keep the file names less than 250 characters and a path name of less than 1024 characters.
- **Deleting files from LTFS tapes:** If files or folders are deleted from the LTFS tape using Windows Explorer, the macOS Finder, or via command line they will be removed from the tape directory. Note, however, that deleted space is not recovered in this process. Once any changes are made to the LTFS tape it is recommended the tape is unmounted. If a large number of files need to be removed from the LTFS tape it is best to reformat the tape and start again. But make sure you have copies of the tape media you need first.
- **Moving files from LTFS tapes:** Files can be moved using the OS (Finder/Explorer), and files and folders can be renamed. However, folders cannot be moved on tape. Once any changes are made to the LTFS tape it is recommended the tape is unmounted.
- **Cleaning SymplyPRO drives:** It is important to remember not to use the LTO drives in dusty and dirty environments, this can cause damage to the LTO data cartridge and the LTO mechanisms. In normal operation the drive heads will need to be cleaned periodically, when cleaning is required the tape drive will display "C" on the front display. When this happens simply insert an approved cleaning cartridge into the tape drive and the cleaning process will start automatically.

It is important not to clean the LTO mechanism routinely, only do so when you are prompted to do so by the "C" message on the front of the tape drive. If you clean the LTO mechanism without being prompted this will damage the LTO drive head over time and void the warranty.

LTFS Best Practices (Continued)

- **LTO cartridge health and errors:** LTO cartridges are designed to be read and re-written hundreds of times in their lifetime. For most archive applications there should never be any issues.

When an LTFS tape is mounted by some LTFS applications, the application queries the tape and gets the information regarding any errors on the tape media, as described here.

- **Recovered Write Errors:** This is when the LTO drive rewrites data when retries have occurred. This can have the effect of slightly reducing the amount of capacity available on the tape and can commonly occur on new LTO media. It is nothing to be concerned about if the rates are low, but large counts in the hundreds or thousands can indicate poor tape quality or a potential problem with the tape drive.
- **Recovered Read Errors:** This indicates that the tape drive has had to retry a read again. It is nothing to be concerned about if the rates are low, but large counts in the hundreds or thousands can indicate poor tape quality or a potential problem with the tape drive.
- **Permanent Read and Write Errors:** These happen when the tape drive fails to read or write to the LTO tape. These errors can be caused if an LTO drive is powered off or disconnected while a tape is loaded. They can also be caused by a faulty tape drive, or damage to the tape itself caused by improper handling.

**NOTE**

When using LTO-9 drives you will see a higher number of Recovered Write and Read Errors than you maybe used to if you have used previous generations of LTO.

SymplyPRO SAS Legacy Part Numbers

Part Number	Description	SAS Port
SYSAS-DS1LXHH2	SymplyPRO SAS XTH Desktop SAS with 1x Half Height Drive	SFF-8088
SYSAS-DS1L9FH1	SymplyPRO SAS XTF Desktop SAS with 1 x LTO-9 Full Height Drive	SFF-8088
SYSAS-DS1L9HH1	SymplyPRO SAS Desktop SAS with 1 x LTO-9 Half Height Drive	SFF-8088
SYSAS-RS1L9FH2	SymplyPRO SAS 2U Rackmount with 1 x LTO-9 Full Height Drive	SFF-8088

X = Drive Generation

Cables

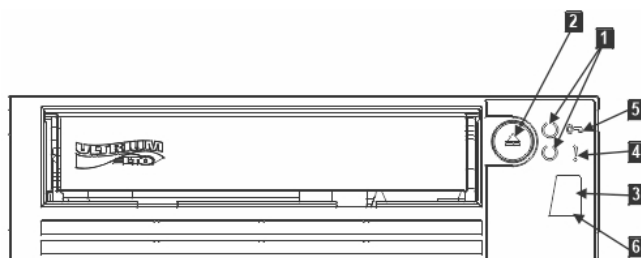
Symply provide high quality Thunderbolt and SAS cables that are qualified with the SymplyPRO modules.

Part Number	Description	Image
SYCBL-TB4A-0200BL	Symply Thunderbolt 4 Certified Braided Cable 2m (6.5ft) 40Gbps 100W Charging 5A Active Type-C	
SYCBL-ESAS-222-200A	2m SFF-8644 – SFF-8644	
SYCBL-ESAS-221-200A	2m SFF 8644 – SFF 8088	
SYCBL-ESAS-422-200A	2m SFF 8644 – x4 SFF 8644	
SYCBL-ESAS-22A-200A	2m SFF 8644 – x4 SFF 8088	
SYCBL-ESAS-2MA-200A	2m SFF 8644 – x2 SFF 8088 and 2xSFF-8644	

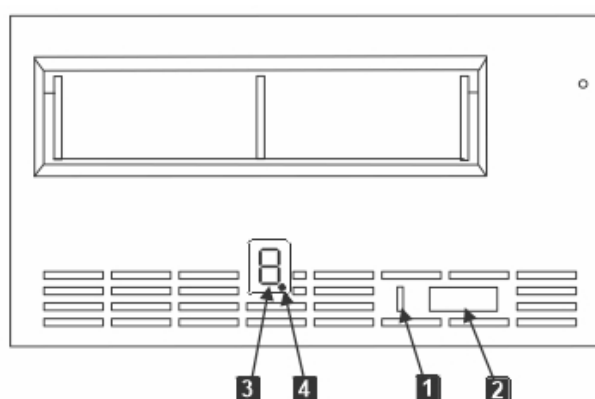
LTO Drive Status and Warnings

For more information and FAQs please visit www.support.gosymply.com

Single-Character Display (SCD) Information



Number	Description
1	Two status LED indicators (green)
2	Unload button
3	Single-Character Display (SCD)
4	Fault light (amber)
5	Encryption light (white)
6	Single-Character Display (SCD) Dot



Number	Description
1	LED indicator
2	Unload button
3	Single-Character Display (SCD)
4	Single-Character Display (SCD) Dot

Error code on Single-Character Display (SCD)

Error Code	Description
1	The SymplyPRO has detected system temperature outside the operational range. Please ensure that room temperature is between 15°C and 25°C (59°F to 77°F). Also check for a blocked fan or other obstructions blocking air flow. If the fan is operating correctly and room temperature is within parameters, please submit a support ticket at support.gosymply.com
2	The SymplyPRO has detected a problem with either the incoming power or an internal power issue. Please ensure the system is connected to clean wall power using the power cord supplied. To ensure incoming power is good, connect the system to a different outlet or power strip. Do not connect using extension cords. If the problem still persists please submit a support ticket
3 and 4	The SymplyPRO has detected an internal microcode or drive problem. Please power cycle the device, making sure to ejecting any data cartridge (if there is one in the drive) before turning off the power. Wait 20 seconds, then power back on. If the problem still persists, please submit a support ticket
5	The SymplyPRO has detected a drive error. The drive has determined that a tape path or read/write error occurred. To prevent damage to the drive or tape, the tape drive will not allow you to insert a cartridge if the current cartridge was successfully ejected. The error code may clear when you cycle power to the tape drive or place it in maintenance mode. Before power cycling please Retrieve Log. If the problem persists, please submit a support ticket.
6	The SymplyPRO has detected a drive or media error, but it cannot isolate the error to faulty hardware or to the tape cartridge. Ensure the tape cartridge is the correct media type. If the tape cartridge is the correct media type, then power cycle the drive and retry the operation that caused the error to occur. If the problem persists, please refer to Trouble Shooting section of the Symply Support site for further information https://support.gosymply.com/support/solutions/articles/80000849166-error-code-6
7	The SymplyPRO has detected a Media error due to a faulty tape cartridge or an invalid tape cartridge. Ensure the tape cartridge is the correct media generation. If the tape cartridge is the correct media type, retry the operation, or try another tape cartridge. If the problem persists, please refer to Trouble Shooting section of the Symply Support site for further information https://support.gosymply.com/support/solutions/articles/80000849181-error-code-7

Error Code	Description
8 or E	Internal Communication Error. The SymplyPRO drive has determined that there is either an internal or external SAS port interface problem. Error will clear after 10 seconds or power cycle. If the problem persists, please submit a support ticket
A	Drive Error. The SymplyPRO drive has determined that a drive hardware failure has occurred, most likely as a result of performance degradation. This may be linked to degraded data cartridges. The error condition will clear when the drive is powered off. Please try an alternative data cartridge. If the problem persists, please submit a support ticket
C	Drive needs to be cleaned. The SymplyPRO LTO drive has determined that the tape drive needs to be cleaned. When this message is displayed please insert the Cleaning Tape that was supplied along with the SymplyPRO into the tape drive. Once the Cleaning Tape has been inserted the cleaning process will start automatically. At the end of the process the Cleaning Tape will be ejected and the error will be cleared. It is possible that dirty or faulty tapes can cause the Cleaning Error to be displayed. If the Cleaning Error is coming on regularly it is likely that you have one or more bad or dirty tapes and they should be retired, and new media used. Do not routinely use a Cleaning Tape in the SymplyPRO as this will damage the tape heads over time and may void your warranty. Only insert a Cleaning Tape when prompted to do so by the SymplyPRO drive. If the Error C persist after the drive has been cleaned do not clean the drive again. Please submit a support ticket
J	Incompatible Media. The SymplyPRO LTO drive has determined that the drive has been loaded with a data cartridge that is not supported. For example, LTO-6 media loaded into an LTO-8 drive mechanism. Always make sure that you purchase your media from a trusted source. If the problem persists and you are confident you are using the correct media, please submit a support ticket
P	Write Protect. A write operation has been attempted on an LTO data cartridge that has write protection enabled. If you want to write to the LTO data cartridge, then unload the LTO cartridge (making sure the tape is unmounted from the OS) and disable write protection (move the red switch so the graphic lock sign is no longer visible). If the red switch is not covering the hole, but the drive is still reporting the error P, please submit a support ticket.
u	Microcode update is in progress. The SymplyPRO drive is in the process of uploading and flashing new firmware code to the tape drive. SymplyATOM and IBM ITDT applications allows you to upgrade firmware on the SymplyPRO tape drive, but please only do this when you have been instructed to do so by a member of the Symply Support Team.

Error Code	Description
c	Optimization (also called Characterization) is in progress on an LTO-9 tape drive with an LTO-9 data cartridge inserted. Media optimization will be performed on the first load of LTO-9 media during initialization. Media optimization averages 40 minutes per first load of a cartridge to a tape drive. Although most media optimization will complete within 60 minutes some media optimization may take up to two hours. Interruption of the media optimization process is not recommended. For further information please see https://support.gosymply.com/support/solutions/articles/80000977749-what-is-media-optimization-
e	The SymplyPRO has detected an Encryption Error. The drive detected a configuration or set-up error prior to an encryption operation. The problem may exist with the encryption key manager communication path. Check your software application that is using encryption. If the “e” error appears immediately after power-on, there could be a hardware failure if you are not using cryptographic software. Please submit a support ticket.
o	The SymplyPRO has detected Broken or Excessively slack tape in the LTO drive. The drive has encountered a condition where it cannot unload the tape or determine that the tape is in the path of the head. Do not power cycle the drive. Please refer to Trouble Shooting section of the Symply Support site for further information https://support.gosymply.com/support/solutions/articles/80000948603-error-code-o-lower-case-

Status Light Information LTO Drives

Display	Single-Character Display (SCD)	Ready LED (Green)	Fault LED (Amber)
Standby Operation	Blank	On	Off
Activity Operation (tape in movement)	Black	Flashing	Off
Maintenance	Solid character	Flashing	On
Executing Maintenance Selection	Flashing character	Off	On
Error	Solid Character	Off	Flashing
Power On, or Power Cycle	POST Display	Off	On

Display	Fault Light Status	Encryption Status Light	Single Character Display (SCD)	SCD Dot	Description
Off	Off	Off	Off	Off	The drive is powered off
Solid Green	Off	On or Off	Off	Off	The drive is powered on but is idle
Flashing Green @ 1Hz (one flash per second)	Off	On or Off	Off	Off	The drive is carrying out standard operations
Flashing Green @ 1Hz (one flash per second)	Off	Off	Off	Off	If the drive contained a data cartridge when powered off, the drive undergoes an extended POST process when turned back on as the tape rewinds slowly. This can take up to 10 minutes. The light stops blinking and becomes solid when the drive completes the recovery process and is ready for standard operations. To eject the cartridge, press the eject button.
Off	Solid Amber	Off	Displaying Error Code	On or Off	The drive is displaying an error code on the SCD. See SCD Error code table.

Display	Fault Light Status	Encryption Status Light	Single Character Display (SCD)	SCD Dot	Description
On or Off	On or Off	On or Off	Displaying random characters, then blank, then displaying random characters	On or Off	During power on or a drive reset, the SCD displays the following: 1) SCD will display random characters (no LEDs on) 2) SCD will display random characters (LEDs - green on, amber off) 3) SCD will display random characters (LEDs - green off, amber on) 4) SCD will display [8] (LEDs - green off, amber on) 5) SCD will go blank (LEDs - green on, amber off) after the power is turned on or after the drive is reset. If an error is detected during the POST process it is displayed on the SCD. See SCD Error code table
Off	On	Off	[0]	On/Off	The drive is entering or exiting from Maintenance mode
Off	On	Off	Flashing selected function	On/Off	The drive is running the selected function while in Maintenance mode

Display	Fault Light Status	Encryption Status Light	Single Character Display (SCD)	SCD Dot	Description
Off	Flashing Amber @ 1Hz (one flash per second)	Off	Displaying Error Code	Off	An error has occurred and the drive or media may require attention, or cleaning. See SCD Error code table.
Off	Flashing	Off	Displaying [C]	Off	The drive needs cleaning
Off	Flashing amber @ 2Hz (two flashes per second)	Off	Off	Off	The drive detected an error and is performing a recovery. It will be reset automatically
Off	On	Off	Flashing [C]	Off	The drive is requesting a cartridge to be loaded
Off	Flashing amber @ 2Hz (two flashes per second)	Off	Off	On	There is a drive memory dump in flash memory

Warranty Information

The SymplyPRO system comes with a limited three (3) year warranty, but with the option to purchase an upgrade to a five (5) year warranty at the time of purchase, or within thirty (30) days of the original purchase. Terms and conditions apply.

Warranty and technical support service can be accessed at www.support.gosymply.com

SYMPLY ("the Company") warrants its products will be free from defects in material and workmanship for three years from the date of purchase of the product.

This Limited Warranty only applies to the original purchaser of the product and is not transferable to subsequent owners.

This Limited Warranty is void if the product is subjected to abuse, misuse, abnormal, excessive or improper conditions (including, without limitation, attempts to utilize the product under any condition that exceeds its design capabilities, or any other use beyond the use specified in any product instructions), or if the product is altered or modified in any manner. This Limited Warranty does not cover damage to the product due to external causes (including, without limitation, accident, liquids, chemicals, oxidation, corrosion, or exposure to the elements), or problems caused by use of parts and components not supplied by the Company.

The sole remedy under this Limited Warranty is product repair, replacement, or refund of the purchase price, at the sole discretion of the Company. In order to make a claim the purchaser must ship the product to the Company at the purchaser's expense, together with proof of purchase and a description of the nature of the defect. The Company will not be held responsible for any product that is damaged or lost in transit to the Company.

PURCHASER AGREES THAT SYMPLY SHALL NOT BE LIABLE FOR ANY SPECIAL, INCIDENTAL, INDIRECT, SECONDARY OR CONSEQUENTIAL DAMAGES, OR FOR THE DAMAGE, INJURY, OR LOSS OF LIFE, PROPERTY OR OTHER PRODUCTS THE PURCHASER CONNECTS TO THE PRODUCT, OR LOSS OF REVENUE OR DATA, WHETHER BASED ON CONTRACT, TORT, PRODUCTS LIABILITY OR ANY OTHER LEGAL THEORY, EVEN IF THE DAMAGE, INJURY OR LOSS IS CAUSED BY THE NEGLIGENCE OR OTHER FAULT OF SYMPLY. THE FOREGOING WARRANTY IS THE ONLY WARRANTY MADE BY SYMPLY, AND SYMPLY MAKES NO OTHER WARRANTIES, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

This Limited Warranty shall be governed by the laws of England and the parties hereby submit to the exclusive jurisdiction of the English courts for that purpose. If any provision is declared void or unenforceable by a court of competent jurisdiction with respect to particular circumstances, such provision shall remain in full force and effect in all other circumstances. If any provision is declared entirely void or unenforceable by a court of competent jurisdiction all other provisions of these Terms and Conditions shall remain in full force and effect.