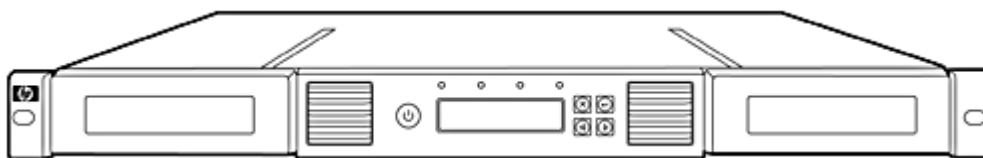


### Overview

The HP StorageWorks 1/8 G2 Tape Autoloader provides a cost-effective, easy-to-install, unattended backup that is ideal for an entry-level or remote office automated backup solution. The HP 1/8G2 autoloader combines incredible storage density and tape library features into a compact 1U form factor. Capable of up to 24TB of compressed capacity in only a 1U form factor, the autoloader is well equipped to offer room for uncertain data growth. Web-based remote management offers the capability to quickly and easily access, configure, monitor, and troubleshoot the autoloader that will reduce dependencies on local IT staff while allowing multiple sites to be supported centrally. Protect confidential business information with native encryption, ensuring that if a tape is lost or stolen your data is protected from unauthorized access. Proactively monitor utilization, operational performance, as well as life and health information for both the drive and media with TapeAssure. In addition, All 1/8 G2 Tape Autoloaders include HP Data Protector Express Single Server Edition software for Windows, Linux and NetWare.



### What's New

- Integration of the HP StorageWorks LTO-5 Ultrium 3000 SAS Tape Drive.
- Proactively monitor drive and media utilization, operational performance, life and health information for drive and media with TapeAssure.

### Key Features

- Exceptional storage density value
- Easy to install, manage and use integrated solution
- Protect and secure your data with native autoloader encryption
- Predictive and proactive monitoring with Tape Assure
- Integrated web-based remote management
- Flexible tape technology and interface choices to suit your needs
- Easy to use and manage
- Customer serviceable and replaceable components
- Complete solution in the box

### Overview

#### Customer benefits

- The HP StorageWorks 1/8 G2 Tape Autoloader packs the maximum amount of storage into the minimum amount of space. LTO-5 Ultrium 3000tape technology delivers 24 TB of compressed capacity (2:1) in a 1U form factor.
- Standard bar code reader provides faster inventory times and facilitates tracking of media. Reduce installation time with rack-ready units; optional rack kits are available for rack-mounting. The unit can also be used on a desktop by simply installing the enclosed rubber feet.
- Choose from a range of one drive, eight slot LTO-based configurations to best suit your needs. The 1/8 G2 models include LTO-5 Ultrium 3000 SAS, LTO-4 Ultrium 1760 SAS or SCSI, LTO-3 Ultrium 920 SAS or SCSI, and LTO-2 Ultrium 448 SCSI.
- For dedicated import/export of media cartridges, each autoloader includes one mail slot. The autoloader also includes two removable 4-slot magazines for bulk loading of media, and provides a convenient bulk storage unit for moving media offsite.
- Integrated web-based remote management capability allows a remote administrator to control, configure, monitor and troubleshoot the device, thus relieving the customer of costly onsite IT resources.
- Provides highest level of encryption security, with compression, for strong backup data privacy to secure confidential information and address compliance quickly. Encryption key management support via HP Data Protector software and other ISV backup applications.
- Easy to manage modular design of tape autoloader allows for quick service or repair of unit to reduce downtime and maximize efficiency.
- Includes HP Data Protector Express Single Server Edition software for Windows/Linux/NetWare.

Family Comparison	1/8 G2 LTO-5 Ultrium 3000 Tape Autoloader	1/8 G2 LTO-4 Ultrium 1760 Tape Autoloader	1/8 G2 LTO-3 Ultrium 920 Tape Autoloader	1/8 G2 LTO-2 Ultrium 448 Tape Autoloader
Drive Technology	Ultrium 3000	Ultrium 1760	Ultrium 920	Ultrium 448
Capacity (compressed 2:1)	24 TB	12.8 TB	6.4 TB	3.2 TB
Maximum Data Transfer (compressed 2:1)	1.0 TB/hr	576 GB/hr	432 GB/hr	172.8 GB/hr
Interface	6Gb/sec SAS	3Gb/sec SAS Ultra320 LVD SCSI	3Gb/sec SAS Ultra320 LVD SCSI	Ultra160 LVD SCSI



### Product Highlights

#### Easy Installation

The 1/8 G2 Tape Autoloader ships as a rack-ready unit. A separate 1/8 G2 Tape Autoloader Rack Kit must be purchased to allow installation in a variety of HP racks which include the 10000 series, 9000 series, 5000 series and System/E racks.

A set of rubber feet are included in the box if you choose to use the unit on a tabletop or desk. For additional structural rigidity, HP recommends the purchase of the 1/8 G2 Rack-to-Tabletop conversion kit which has a maximum load of 33 pounds (15 kilograms) and fully encloses the unit.

#### Software in the Box

The 1/8 G2 Tape Autoloader includes HP StorageWorks Data Protector Express Single Server Edition backup/recovery software and the HP StorageWorks Data Protector Express Bare Metal Disaster Recovery option. Data Protector Express Single Server Edition is an easy-to-use backup application to protect a single Windows, Linux or NetWare server. With support for hardware data encryption, HP LTO-4 Ultrium Tape Drives are able to provide a safe and secure backup without the performance hit other methods to tape encryption might provide. The HP Data Protector Express Bare Metal Disaster Recovery (BMDR) option provides automated system recovery of that server following a major hardware or software failure.

As well as getting the Data Protector Express Single Server Edition software as part of the HP StorageWorks 1/8 G2 Tape Autoloader solution, purchasers can also upgrade to the class-leading Data Protector Express backup/recovery software. This is a special SKU, only available for new customers of HP StorageWorks tape products that gives a significant discount off Data Protector Express to recognize the value of the in-box software. Upgrading to Data Protector Express allows network backup of servers and Windows desktops, extends the disk-to-disk backup capacity and capability and permits the additions of agents and extensions to increase scale and performance of the backup infrastructure. For more information about the in-box software please visit:

<http://www.hp.com/go/dataprotectorexpress/sse>.

If the HP StorageWorks 1/8 G2 Tape Autoloader is for a large environment that requires UNIX support and/or enterprise class application and feature support then HP Data Protector Software is the recommended backup/recovery software. For more information and evaluation software please visit:

<http://www.hp.com/go/dataprotector>.

**NOTE:** HP Data Protector Express Software, Single Server Edition and HP OpenView Storage Data Protector, Single Server Edition are NOT compatible. Tape cartridges should NOT be shared between autoloaders and libraries running Data Protector and Data Protector Express.

#### Manageability

The 1/8 G2 Tape Autoloader allows web-based remote manageability; the unit can be monitored and managed from across the room or across the globe. Functions included in the management tool include:

- Status information on the drive and system
- System configuration operations and reporting
- System error and status logs
- Library and drive firmware upload capabilities
- Diagnostic tests and information
- Cartridge movement for maintenance and management purposes
- Cleaning cartridge support
- Security and access control
- SNMP support for IP communications



### Product Highlights

#### Proven Reliability

With a rating of 2,000,000 robot load/unload cycles, the 1/8 G2 Tape Autoloader provides necessary high reliability for today's demanding environment. To improve reliability and longevity, all HP Ultrium products feature Data Rate Matching (DRM). This allows the tape drive to dynamically and continuously adjust the speed of the drive, from 7 MB/s to 140 MB/s, to match the speed of the host or network. This increases performance, reduces mechanical wear on the tape drive and extends tape life.

#### Encryption

The HP Secure Advantage portfolio is expanding to include a new offering intended for data protection in small to medium businesses. The HP StorageWorks 1/8 G2 & MSL Encryption Kit provides a library-enabled encryption solution that greatly enhances data privacy, confidentiality, and integrity of your critical business data while supporting compliance requirements. While there are a wide range of encryption solutions available, the HP StorageWorks 1/8 G2 & MSL Encryption Kit is intended to be an easy and affordable library-enabled solution for small businesses.

Protect the confidentiality and integrity of your data:

The encryption kit includes two USB key server tokens, product documentation, and firmware support. One encryption kit is needed per library or autoloader and it must be physically accessible so that the USB token can be inserted into the automation device. One of the two tokens will plug into the USB port in the autoloader or library and will generate and maintain encryption keys for the LTO-5 and LTO-4 drives/libraries. The USB key server token uses a hardware random number generator, a cryptographic module running on FIPS 140-2 Level 3 validated hardware, password authentication, and digital envelopes for strong encryption keys and security operations. The second USB token is intended to provide a backup to the first. The keys are transferred securely token-to-token for backup or export, with no exposure to insecure PCs, servers, or networks. The encryption kit provides a self-contained solution for MSL libraries with no additional software, PCs, or servers required or involved.

Protect IT resources and meet compliance requirements:

With the HP StorageWorks 1/8 G2 & MSL Encryption Kit, users can enable or disable encryption, configure the USB key server tokens, restore encrypted data, as well as a variety of other tasks. In addition, the LTO-5 and LTO-4 tape drives use the Advanced Encryption Standard (AES) with the longest and most secure keys -- 256 bits. AES-256 encryption is implemented using the Galois Counter Mode (GCM). This method adds Message Authentication Codes to ensure the integrity as well as privacy of the backup data stored on tape. The HP LTO-5 and LTO-4 Ultrium Tape Drives are designed to be compliant with the emerging standard for tape media security (IEEE 1619.1).

#### Serviceability

Modular in construction, the 1/8 G2 Tape Autoloader has easily replaceable components minimizing the Mean-Time-to-Repair on the unit. Replaceable components include the tape drive, the magazines, and the chassis (includes robot, power supply, and controller board). HP StorageWorks Library and Tape Tools (L&TT) provides easy access to the 1/8 G2 Tape Autoloader error log, generates support tickets, and enables firmware downloads. L&TT can be downloaded for free at:

<http://www.hp.com/support/tapetools>



### Product Highlights

**LTO Ultrium Technology** HP StorageWorks LTO (Linear Tape Open) Ultrium Tape Drives use best of breed technology. By taking the best features from other tape technologies and combining them into a single new technology, Ultrium tape drives are in a league of their own. Inclusion of innovative features such as Adaptive Tape Speed (ATS) ensure that Ultrium drives can meet the performance and reliability demands of a library environment. LTO technology is an open industry standard format; thus data written on HP StorageWorks Ultrium Tape Drives can be interchanged directly with Ultrium Tape Drives from other vendors.

### Data Rate Matching

Data Rate Matching combines sophisticated buffer management with the HP exclusive variable Adaptive Tape Speed technology, to allow the tape drive to match its transfer rate to the host speed dynamically and continuously across the wide range of transfer rates. This feature ensures that the tape drive continues to stream data regardless of the environment, and brings three big advantages:

- It optimizes performance and maximizes overall efficiency, allowing the drive to respond immediately to any speed changes from the host.
- It minimizes rewinding and repositioning of the tape, significantly reducing physical wear and increasing reliability.
- It minimizes the power requirements for the drive by reducing the number of repositions needed.

LTO Ultrium Tape Drive	ATS data transfer rate range (native)
HP LTO-5 Ultrium 3000	47 to 140 MB/s
HP LTO-4 Ultrium 1760	33 to 80 MB/s
HP LTO-3 Ultrium 920	26 to 60 MB/s
HP LTO-2 Ultrium 448	10 to 24 MB/s

### HP Ultrium WORM

Critical to the success of data retention policies in highly regulated environments is the ability to store and manage data in an unalterable state. Following stringent guidelines set forth by regulatory agencies such as the SEC and HIPPA, IT organizations must now integrate new solutions and policies that can verify the integrity of stored data for periods that can extend well beyond seven years. The LTO-5, LTO-4, and LTO-3 Ultrium tape drives feature the ability to archive and store data in a non-rewriteable format that meets the most stringent regulatory guidelines. Using a combination of integrated fail-safe features in the drive firmware, cartridge memory, and tape formatting, the LTO-5, LTO-4, and LTO-3 Ultrium can archive large amounts of data for periods of up to 30 years in a secure, untampered state. Since all LTO-5, LTO-4, and LTO-3 Ultrium tape drives include support for both rewritable and WORM media, IT organizations can now easily integrate a secure, long-term archiving solution into their current data protection strategy. As compared to other technologies that feature support for WORM storage, the LTO-5, LTO-4 and LTO-3 Ultrium tape drives offer the advantages of:

- A single drive to support all backup and archiving needs
- Two distinctive tape cartridges to easily distinguish and manage both rewriteable and WORM data cartridges
- A specially designed WORM data cartridge with multiple integrated fail-safe features to prevent accidental or intentional overwriting of data
- High-capacity, low-cost HP WORM media that can store up to 3.0 TB of data on a single data cartridge
- Support from many backup and archiving software vendors, providing the most comprehensive and mainstream support in the industry
- The LTO open standard that offers greater choice and compatibility across all third- and fourth-generation LTO Ultrium products



### Product Highlights

**NOTE:** While all HP LTO-5, LTO-4 and LTO-3 Ultrium tape drives support LTO Ultrium WORM media, some third, fourth and fifth -generation LTO Ultrium tape drives from other manufacturers may not include read and write support for LTO Ultrium WORM media. For non-HP third- and fourth-generation LTO Ultrium tape drives, please check the manufacturers' specifications to ensure this support is provided if you are using your WORM media. If WORM support is not provided, the drive will eject the WORM tape cartridge immediately upon insertion into the tape drive.

#### HP StorageWorks Library and Tape Tools

The 1/8 G2 Tape Autoloader is supported on The HP industry-leading diagnostic tool - HP StorageWorks Library and Tape Tools (L&TT). L&TT is a single, convenient program that's a snap to install and simple to operate. L&TT's intuitive user interface eliminates the need for training and deploys in less than five minutes. This robust diagnostic tool is designed for both the experienced professional and the untrained administrator. It ensures product integrity through self-diagnostics and fast resolution to device concerns. Additional information on L&TT plus download information can be found at: <http://www.hp.com/support/tapetools>.

#### HP Storage Media

HP recommends that you use HP-branded cartridges in the 1/8 G2 Tape Autoloader to assure the highest level of protection for your valuable data. The test program for HP media is the most thorough and comprehensive in the industry.

All HP cartridges must satisfy an exhaustive battery of additional tests that relate directly to real life situations, where real data and real businesses are at stake. The benefit of the HP brand specification for media is consistent quality. Through the testing of thousands of HP drives and HP cartridges, the ideal formulation for backup performance is defined and then continuously monitored. This hugely resource-intensive process is unique to HP and affords deep insight into the HP+HP backup solution for a wide range of environments and duty cycles. Your best choice for ease of support and maximum dependability is to use HP-branded Ultrium cartridges at all times.

#### Factory Express Portfolio for Servers and Storage

HP Factory Express offers configuration, customization, integration and deployment services for HP servers and storage products. Customers can choose how their factory solutions are built, tested, integrated, shipped and deployed. Customization must comply with all relevant product specifications and factory supported configurations.

Factory Express offers service packages for simple configuration, racking, installation, complex configuration and design services as well as individual factory services, such as image loading, asset tagging, and custom packaging. HP products supported through Factory Express include a wide array of servers and storage: HP Integrity, HP ProLiant, HP ProLiant Server Blades, HP BladeSystem, and HP 9000 servers as well as MSA, VA7xxx, EVA, and XP disk arrays, rackable tape libraries and configurable network switches.

Type of service support varies by platform and product family. For more information on Factory Express services for your specific server model or storage device please contact your sales representative or go to: <http://www.hp.com/go/factory-express>.



### Compatibility

The HP extensive compatibility testing program assures that your HP StorageWorks 1/8 G2 Tape Autoloader works with leading servers, operating systems, and backup applications - and not just those sold by HP. The 1/8 G2 Tape Autoloader works seamlessly in many environments, making them especially suitable if you have a mixed system environment. For the latest list of servers, workstations, operating systems, and backup software that support the 1/8 G2 Tape Autoloader, check the HP StorageWorks Enterprise Backup Solution compatibility matrix at: <http://www.hp.com/go/ebs>.

**NOTE:** The 1/8 G2 Tape Autoloader requires an HBA with multiple LUN support and should not be used with RAID or Array controllers.

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#### Server Compatibility

The 1/8 G2 Tape Autoloader is supported on a wide range of HP systems. For details of which 1/8 G2 Tape Autoloader works with which systems, including third-party systems, reference the EBS compatibility matrix at: <http://www.hp.com/go/ebs> for the latest hardware compatibility information.

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#### OS Support

Reference the EBS compatibility matrix for the most up-to-date OS compatibility information at: <http://www.hp.com/go/ebs>.

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#### Software Support

Reference the EBS compatibility matrix for the most up-to-date software compatibility information at: <http://www.hp.com/go/ebs>.



### Service and Support, HP Care Pack, and Warranty Information

**Warranty** The warranty for this product consists of 1-year parts exchange, next business day.

#### **For increased uptime, productivity and ROI -HP Care Pack packaged services for Storage**

These days, you need to get the most out of your storage investment-you can't afford not to. When you buy HP storage products and solutions, it's also a good time to think about what levels of service and support you may need. To help take the worry out of deploying, designing, maintaining, and managing your environment, we've designed a portfolio of service options that are as flexible, reliable and scalable as your storage. Unlike storage-only vendors, we take a holistic approach to your entire environment, bridging storage, servers, blades, software and network infrastructures with our HP Care Pack packaged services for Storage.

#### **Protect your business beyond the warranty**

When it comes to robustness and reliability, standard warranties on today's computing equipment have matured just as the technologies have matured. Good news on some fronts-but also a source of potential problems and subsequent consequences that come from depending on standard warranties alone. Standard warranty protects against product defects and some causes of downtime- but not the business. By using a standard approach to warranty uplifts, such as HP Care Pack Services, you can reduce downtime risks and be more certain of operational consistency for both mission-critical and standard business computing. Simply put, HP Care Pack Services normalize the warranty of combined products - helping you proactively guard against unplanned downtime.

#### **Extending warranties with HP Care Pack Services**

For cost-effective upgrading or extending your standard warranty, HP Care Pack Services offer a suite of standard reactive hardware and software support services that are sold separately, or combined as with our Support Plus and Support Plus 24 services. The portfolio also provides a combination of proactive and reactive services, such as Proactive 24 Service and Critical Service. In addition, with HP Proactive Select we offer an innovative approach to service delivery that gives you the flexibility to acquire the specific proactive services you need today, then add services as your needs evolve. HP Proactive Select offers a broad set of technical or per-event type service options - including server, storage, and network, SAN device, and software, environment, installation and education services. Services that you can mix and match depending on your specific requirements, from preliminary planning and equipment delivery to installation, configuration, integration, and testing, through every level of ongoing support. Our HP Care Pack packaged services for Storage assures help when you need it most. And for many products, post-warranty HP Care Pack Services are available when your original warranty has expired.

#### **HP Storage Services: Offering reliability, flexibility and value-just like your storage**

HP Storage Services offers a full spectrum of customer care, from technology support to complex migrations to complete completely managed services. HP Factory Express provides customization, integration and deployment services for turnkey solutions. HP Education offers flexible, comprehensive training on storage networking, disk storage systems, and storage software to help your IT staff get the most out of your investments. And HP Financial solutions extend innovative financing and asset management programs to cost-effective buy, manage and eventually retire your older equipment.

HP Storage Services, the trusted business technology experts who manage your technology in action, because when technology works, business works. <http://www.hp.com/hps/storage>

**NOTE:** Care Pack Services availability may vary by product and country.

HP Care Pack Services are sold by HP and HP Authorized Service Partners:

- Services for customers purchasing from HP or an enterprise reseller are quoted using HP order configuration tools.
- Customers purchasing from a commercial reseller can find HP Care Pack Services at <http://www.hp.com/go/lookuptool>



*Service and Support, HP Care Pack, and Warranty Information*

### Recommended HP Care Pack Services for optimal satisfaction with your HP product.

#### Recommended Services 3-Year HP Support Plus 24

For a higher return on your storage investment, HP Support Plus 24 provides integrated hardware and software support services designed specifically for your technology. Available 24x7, this 3-year combined reactive support option delivers onsite hardware support and over-the-phone software support around-the-clock. Leverage the full strength of HP Technology Services - customers can trust the services professionals at HP to work collaboratively with them, putting our strategic and technical know-how to work across their entire infrastructure.

- Improve uptime with responsive hardware and software services
- Enjoy consistent service coverage across geographically dispersed sites
- Update HP software at a predictable cost
- Increase customer satisfaction-with no interoperability gaps

<http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-6638EN.pdf>

#### HP Install Storage Autoloader/Tape Drive Array Service

For smooth startup and better business outcomes, HP Install Storage Autoloader/Tape Drive Array Service- this service provides initial hardware installation into your server technology environment (system configuration is not included). Leverage the full strength of HP Technology Services - customers can trust the services professionals at HP to work collaboratively with them, putting our strategic and technical know-how to work across their entire infrastructure.

- Allows your IT resources to stay focused on their core tasks and priorities
- Reduces implementation time, impact and risk to your storage environment

<http://h71028.www7.hp.com/ERC/downloads/5981-9356EN.pdf>

#### HP Proactive Select Service

HP Proactive Select Service improves your IT performance and manageability through the use of cost effective flexible services. HP provides technical expertise and best practices to accelerate ROI of your technology investment. Selectable proactive services span a wide range of technology and process services - a flexible way to purchase proactive services that fit your particular environment and situation.

HP Proactive Select Service is technology agnostic and purchased in addition to your choice of underlying reactive support.

- Access to a list of flexible and customizable proactive service activities
- Enhance customers' in-house IT team with complementary assistance from HP
- Improved time to solution
- Reduce business risk and project costs by accessing HP specialists
- Simplify IT operational procedures by leveraging HP best practices

<http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA2-3842ENN.pdf>



### Service and Support, HP Care Pack, and Warranty Information

#### eSupport

HP eSupport is a portfolio of technology-based services that assist you with managing your business environment - from the desktop to the data center.

#### Support Portal

The HP support portal provides one-stop access to the information, tools and services you need to manage the daily operations of your IT environment.

Features include:

- Access to self-solve tools (including search technical knowledge base)
- Efficient logging and tracking of support cases
- Collaboration with other business and IT professionals
- Download of patches and drivers
- Access to diagnostic tools
- Proactive notification of relevant information

Access to certain features of the support portal requires an HP service agreement. To access the support portal, visit <http://www.hp.com/support>

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#### Customer Technical Training

Consider education as an integral part of your strategy to get the best return on investment for your HP storage solution. HP offers a variety of training courses on storage software, networking, archiving and disk storage systems. Our classes are available in many delivery modalities from traditional instructor-led courses at one of our 80 training centers worldwide to on-site training customized to your needs or online. [www.hp.com/learn/storage](http://www.hp.com/learn/storage)

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#### HP Services Awards

HP Services continues to be recognized for service and support excellence by customers, partners, industry organizations and publications around the world. Recent honors and award reflect our services team's dedications, technical expertise, professionalism and uncompromising commitment to customer satisfaction. For a list of all our awards, please visit <http://h20219.www2.hp.com/services/cache/433028-0-0-225-121.htm>

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#### Additional Services Information

For more information about HP Care Pack Services for Storage, please visit: <http://www.hp.com/hps/storage>

If you have specific questions, contact your local HP representative. Contact information for a representative in your area can be found at "Contact HP" <http://www.hp.com>



### Configuration Information

**NOTE:** The HP StorageWorks 1/8 G2 Tape Autoloader comes standard as a one drive, 8-slot unit (includes both a right and left 4-slot magazine) which is shipped rack-ready. The separate 1/8 G2 Tape Autoloader Rack Kit must be purchased to complete the rack installation. Each library includes a US power cord (C13, 10A) and PDU power cord (C13/C14, 10A). For additional or specific regional power cord requirements, a separate power cord must be ordered.

### Step 1 – Base Configuration

Select one:

Model Name	Model Description	Part Number
HP StorageWorks 1/8 G2 Tape Autoloader	HP 1/8 G2 LTO-5 Ultrium 3000 SAS Tape Autoloader	BL536A
	HP 1/8 G2 LTO-4 Ultrium 1760 SAS Tape Autoloader	AK377A
	Smart Buy - HP 1/8 G2 Ultrium LTO-4 1760 SAS Autoloader	AK377SB
	Contents: Part Number AK377A 1/8 G2 Ultrium LTO-4 1760 SAS Autoloader More info on HP Smart Buys go to: <a href="http://www.hp.com/go/smartbuy/storage">http://www.hp.com/go/smartbuy/storage</a>	
	HP 1/8 G2 LTO-4 Ultrium 1760 SCSI Tape Autoloader	AJ816A
	HP 1/8 G2 LTO-3 Ultrium 920 SAS Tape Autoloader	AH558A
	HP 1/8 G2 LTO-3 Ultrium 920 SCSI Tape Autoloader	AH165A
	HP 1/8 G2 LTO-2 Ultrium 448 SCSI Tape Autoloader	AH164A
	Kit Contents (for each autoloader):	

- **SCSI models:**

- (1) 1.83M US Power Cord, C13, 10A
- (1) 2.5M PDU Power Cord, C13/C14, 10A
- (1) 6' VHDCI to HDTS68 SCSI cable
- (1) RJ-45 Ethernet cable
- (1) HDTS68 SCSI terminator
- Set of six rubber feet (for tabletop use)
- HP Data Protector Express Software CD (for use in downloading the Single Server Edition for Windows/Linux/NetWare)
- Documentation kit including User & Service Guide (CD) and Getting Started Poster

- **SAS models:**

- (1) 1.83M US Power Cord, C13, 10A
- (1) 2.5M PDU Power Cord, C13/C14, 10A
- (1) 2M External Infiniband (SFF8470) to Mini SAS (SFF8088) 1x SAS Cable
- (1) RJ-45 Ethernet cable
- Set of six rubber feet (for tabletop use)
- HP Data Protector Express Software CD (for use in downloading the Single Server Edition for Windows/Linux/NetWare)
- Documentation kit including User & Service Guide (CD) and Getting Started Poster



### Configuration Information

Model Name	Model Description	Part Number
HP StorageWorks 1/8 G2 Tape Autoloader Smart Buy Bundle	<p>HP Smart Buy 1/8 G2 Ultrium 920 Tape Autoloader Bundle</p> <p><b>Bundle includes:</b></p> <ul style="list-style-type: none"> <li>(1) AH165A HP 1/8 G2 Ultrium 920 Tape Autoloader</li> <li>(8) C7973A HP Ultrium 800GB RW Data Cartridge</li> <li>(1) AH166A HP 1/8 G2 Tape Autoloader Rack Kit</li> <li>(1) E7742A C13/C14 Jumper Power Cord 2.5M</li> <li>(1) E7743A 120V US IEC Jumper Cord, 90".</li> </ul> <p>More info on HP Smart Buys go to: <a href="http://www.hp.com/go/smartbuy/storage">http://www.hp.com/go/smartbuy/storage</a></p>	AG677A
HP StorageWorks 1/8 G2 Tape Autoloader Smart Buy Bundle	<p>HP Smart Buy 1/8 G2 Ultrium 448 Tape Autoloader Bundle</p> <p><b>Bundle includes:</b></p> <ul style="list-style-type: none"> <li>(1) AH164A HP 1/8 G2 Ultrium 448 Tape Autoloader</li> <li>(8) C7972A HP Ultrium 400GB Data Cartridge</li> <li>(1) AH166A HP 1/8 G2 Tape Autoloader Rack Kit</li> <li>(1) E7742A C13/C14 Jumper Power Cord 2.5M</li> <li>(1) E7743A 120V US IEC Jumper Cord, 90"</li> </ul> <p>More info on HP Smart Buys go to: <a href="http://www.hp.com/go/smartbuy/storage">http://www.hp.com/go/smartbuy/storage</a></p>	AG679A
HP StorageWorks 1/8 G2 Tape Autoloader Smart Buy Bundle	<p>HP Smart Buy 1/8 G2 Ultrium 232 Tape Autoloader Bundle</p> <p><b>Bundle includes:</b></p> <ul style="list-style-type: none"> <li>(1) AH163A HP 1/8 G2 Ultrium 232 Tape Autoloader</li> <li>(8) C7971A HP Ultrium 200GB Data Cartridge</li> <li>(1) AH166A HP 1/8 G2 Tape Autoloader Rack Kit</li> <li>(1) E7742A C13/C14 Jumper Power Cord 2.5M</li> <li>(1) E7743A 120V US IEC Jumper Cord, 90"</li> </ul> <p>More info on HP Smart Buys go to: <a href="http://www.hp.com/go/smartbuy/storage">http://www.hp.com/go/smartbuy/storage</a></p>	AG678A

### Step 2 – Required Options

Select each required option with quantities specified:

Power Cord	Description	Quantity	Part Number
	<p>Power Cord, US, C13, 10A, 1.83m</p> <p><b>NOTE:</b> This cord ships standard with each 1/8 G2 Tape Autoloader; can be used to connect the rack-mounted device to PDUs with NEMA 5-15R receptacles.</p>	1 each	AF556A
	<p>PDU Power Cord, C13/C14, 10A, 2.5m</p> <p><b>NOTE:</b> This cord ships standard with each 1/8 G2 Tape Autoloader; can be used to connect the rack-mounted device to PDUs with IEC-320 receptacles.</p> <p><b>NOTE:</b> One power cord is required.</p> <p><b>WARNING:</b> This product can ONLY be used with an HP approved power cord for your specific geographic region. Use of a non-HP approved power cord may result in: 1) not meeting individual country specific safety requirements; 2) insufficient conductor ampacity that could result in overheating with potential personal injury and/or property damage; and 3) an unapproved power cord could fracture resulting in the internal contacts being exposed, which potentially could subject the user to a shock hazard. HP disclaims all liability in the event a non-HP approved power cord is used.</p>	1 each	142257-002



### Related Options

Factory Racking	Factory integrate the 1/8 G2 Tape Autoloader with other HP products such as HP ProLiant Servers.	#0D1
	<b>NOTE:</b> #0D1 will appear after the 1/8 G2 Tape Autoloader part number on the sales order if HP factory integration is indicated.	
	HP Factory Rack Mount Shelf Kit	AB469A
	<b>NOTE:</b> Required to safely ship the 1/8 G2 Tape Autoloader via the factory integration option (#0D1); shelf can be removed after the rack is received at the customer site.	
Rack Kit	HP 1/8 G2 Tape Autoloader Rack Kit	AH166A
	<b>NOTE:</b> Required to install the unit in a standard 19-inch rack; includes rails and rackmount instructions.	
Rack-to-Tabletop Conversion Kit	HP 1/8 G2 Rack-to-Tabletop Conversion Kit	AH199A
	<b>NOTE:</b> For use in converting the rack-ready 1/8 G2 Tape Autoloader into a structurally rigid and fully enclosed tabletop model; maximum load up to 33 pounds (15 kilograms).	
Magazine Kit	HP 1/8 G2 Right Magazine Kit	AH167A
	<b>NOTE:</b> For use only on the right side of the 1/8 G2 Tape Autoloader; additional 4-slot magazine.	
	HP 1/8 G2 Left Magazine Kit	AH862A
	<b>NOTE:</b> For use only on the left side of the 1/8 G2 Tape Autoloader; additional 4-slot magazine which includes an import/export slot.	
Encryption	HP 1/8 G2 & MSL Tape Library Encryption Kit	AM495A
	<b>NOTE:</b> For use with new or installed LTO-5 or LTO-4 Ultrium 1/8 G2 Tape Autoloaders and MSL2024/4048/8048/8096 Tape Libraries. The encryption token will generate and retain encryption keys for HP LTO-5 or LTO-4 Ultrium tape drives in the autoloader or library.	



### Related Options

Rack Cabinets	10622 (22U) Universal Rack Cabinet - Shock Pallet	AF022A
	10636 (36U) Universal Rack Cabinet - Shock Pallet	AF012A
	10636 (36U) Universal Rack Cabinet with extension - Shock Pallet	AF014A
	10642 (42U) Universal Rack Cabinet - Shock Pallet	AF002A
	10642 (42U) Universal Rack Cabinet with extension - Shock Pallet	AF004A
	<p><b>NOTE:</b> The 1/8 G2 Tape Autoloader is certified to ship in HP 10000 series racks which include a shock pallet. It is mandatory to use a shock pallet in order to ship racks with equipment installed.</p>	
	5642 (42U) Rack Cabinet	358254-B21
<p><b>NOTE:</b> This rack ships unassembled and boxed on a standard size pallet. It is an industry standard 19" wide rack with side panels and rear doors; it does not ship with the front door or casters.</p> <p><b>NOTE:</b> For additional HP ProLiant rack information, visit:  <a href="http://h18004.www1.hp.com/products/servers/proliantstorage/racks/index.html">http://h18004.www1.hp.com/products/servers/proliantstorage/racks/index.html</a></p>		
SAS Host Bus Adapters	HP StorageWorks SC44Ge SAS Host Bus Adapter	416096-B21
	<p><b>NOTE:</b> Serial-attached SCSI (SAS) HBA that enables HP StorageWorks MSL Tape Libraries to connect with HP ProLiant G5 servers. PCI-Express SAS HBA with one external SFF8470 port.</p>	
	HP P212 Smart Array Controller Zero Memory	462828-B21
	<p><b>NOTE:</b> Recommended for ProLiant G6 or G7 SAS tape automation connect. 256MB or larger write cache recommended for more than two tape drives.</p>	
	HP P212 Smart Array Controller : 256MB Memory	462834-B21
	<p><b>NOTE:</b> Recommended for ProLiant G6 SAS tape automation connect.</p>	
	HP P411 Smart Array Controller 256MB	462830-B21
	<p><b>NOTE:</b> Recommended for ProLiant G6 SAS tape automation connect.</p>	
HP P411 Smart Array Controller 512MB	462832-B21	
<p><b>NOTE:</b> Recommended for ProLiant G6 SAS tape automation connect.</p>		
HP P700m Smart Array Controller 256MB	507925-B21	
<p><b>NOTE:</b> For direct connection of the 1/8 G2 Autoloader to HP ProLiant BladeServers, the P700 controller is used to connect the BladeServer to the SAS switch. The autoloader is connected to the same SAS switch. The supported SAS switches are the HP StorageWorks 3Gb SAS BL Switch - Single Pack (AJ864A) and the HP StorageWorks 3Gb SAS BL Switch - Dual Pack (AJ865A).</p>		
HP P700m Smart Array Controller 512MB	508226-B21	
<p><b>NOTE:</b> For direct connection of the 1/8 G2 Autoloader to HP ProLiant BladeServers, the P700 controller is used to connect the BladeServer to the SAS switch. The autoloader is connected to the same SAS switch. The supported SAS switches are the HP StorageWorks 3Gb SAS BL Switch - Single Pack (AJ864A) and the HP StorageWorks 3Gb SAS BL Switch - Dual Pack (AJ865A).</p>		
SCSI Host Bus Adapters	HP SC11Xe SCSI Host Bus Adapter	412911-B21
	<p><b>NOTE:</b> Single channel PCI-Express (PCI-e) SCSI Ultra 320 HBA that enables HP StorageWorks MSL Tape Libraries to connect to HP ProLiant servers.</p>	
	HP StorageWorks U320e SCSI Host Bus Adapter	AH627A
<p><b>NOTE:</b> Dual channel PCI-Express (PCI-e) SCSI Ultra320 HBA that enables HP StorageWorks MSL Tape Libraries to connect with HP ProLiant servers.</p>		



### Related Options

Reference the EBS compatibility matrix for the most up-to-date HBA compatibility information at: <http://www.hp.com/go/ebs>.

Cable Kits (SCSI, SAS, FC)	6 ft VHDCI/HDTS68 SCSI Cable Kit	341176-B21
	12 ft VHDCI/HDTS68 SCSI Cable Kit	341177-B21
	2m External Infiniband (SFF8470) to 4 Mini SAS (SFF8088) 1x SAS Cable Kit <b>NOTE:</b> One cable is required for every four autoloaders or every four library drives. Use this cable to connect HP StorageWorks MSL SAS Tape Libraries to HP SAS controllers with Infiniband (SFF8470) connectors.	AH587A
	2m External mini-SAS to 4x1 mini-SAS Cable Kit <b>NOTE:</b> One cable is required for every four autoloaders or every four library drives. Use this cable to connect HP StorageWorks MSL SAS Tape Libraries to Mini-SAS (SFF8088) ports.	AN975A
	4m External mini-SAS to 4x1 mini-SAS Cable Kit <b>NOTE:</b> One cable is required for every four autoloaders or every four library drives. Use this cable to connect HP StorageWorks MSL SAS Tape Libraries to Mini-SAS (SFF8088) ports.	AN976A
	2m SFF8088-to-SFF8088 1x SAS Cable Kit <b>NOTE:</b> One SAS autoloader only. Use this cable to connect HP StorageWorks SAS external tape devices to HP SAS controllers with external Mini-SAS (SFF8088) connectors.	AE470A
	4m SFF8088-to-SFF8088 1x SAS Cable Kit <b>NOTE:</b> One SAS autoloader only. Use this cable to connect HP StorageWorks SAS external tape devices to HP SAS controllers with external Mini-SAS (SFF8088) connectors.	AE465A

Controller/HBA & Cable Recommendation Matrix	Recommended HBA/ Controller for tape automation	HBA/ Controller Product Number	Recommended Cables	Cable Product Number
SAS	HP StorageWorks SC44Ge SAS Host Bus Adapter <b>NOTE:</b> Recommended for Proliant G5 SAS tape automation connect.	416096-B21	2m SFF8470-to-4 SFF8088 1x SAS Cable Kit	AH587A
	HP P212 Smart Array Controller Zero Memory <b>NOTE:</b> Recommended for Proliant G6 SAS tape automation connect. 256MB or larger write cache recommended for more than two tape drives.	462828-B21	For one autoloader: <ul style="list-style-type: none"> <li>● AE470A -- 2m SFF8088-to-SFF8088 1x SAS Cable Kit <b>NOTE:</b> one SAS tape drive only.</li> <li>● AE465A -- 4m SFF8088-to-SFF8088 1x SAS Cable Kit <b>NOTE:</b> one SAS tape drive only.</li> </ul>	
	HP P212 Smart Array Controller 256MB Memory <b>NOTE:</b> Recommended for Proliant G6 SAS tape automation connect.	462834-B21	For two or more autoloaders or tape drives: <ul style="list-style-type: none"> <li>● AN975A -- 2m SFF8088-to-4 SFF8088 1x SAS Cable Kit</li> </ul>	



### Related Options

HP P411 Smart Array Controller 462830-B21  
256MB

**NOTE:** Recommended for ProLiant G6 SAS tape automation connect.

HP P411 Smart Array Controller 462832-B21  
512MB

**NOTE:** Recommended for ProLiant G6 SAS tape automation connect.

HP P700m Smart Array Controller 507925-B21  
256MB

**NOTE:** Recommended for C series blade enclosure tape automation connect.

HP P700m Smart Array Controller 508226-B21  
512MB

**NOTE:** Recommended for C series blade enclosure tape automation connect.

### SCSI

HP SC11Xe SCSI Host Bus Adapter 412911-B21

**NOTE:** Single channel PCI-Express (PCI-e) SCSI Ultra 320 HBA.

6 ft VHDCI/HDTS68 SCSI Cable Kit 341176-B21

12 ft VHDCI/HDTS68 SCSI Cable Kit 341177-B21

HP StorageWorks U320e SCSI Host Bus Adapter AH627A

**NOTE:** Dual channel PCI-Express (PCI-e) SCSI Ultra 320 HBA.

6 ft VHDCI/HDTS68 SCSI Cable Kit 341176-B21

12 ft VHDCI/HDTS68 SCSI Cable Kit 341177-B21

Controller information (both SAS and SCSI) are located in two locations:

Smart Array: <http://h18004.www1.hp.com/products/servers/proliantstorage/arraycontrollers/index.html>

HBA: <http://h18004.www1.hp.com/products/servers/proliantstorage/adapters/index.html>

Reference the EBS compatibility matrix for the most up-to-date HBA compatibility information at:

<http://www.hp.com/go/ebs>

You may also visit: [www.hp.com/go/ProLiant](http://www.hp.com/go/ProLiant), and click on the Storage link

### Media

HP LTO5 Ultrium 3TB RW Data Cartridge (1 pack) C7975A

HP LTO5 Ultrium 3TB WORM Data Cartridge (1 pack) C7975W

HP LTO4 Ultrium 1.6TB RW Data Cartridge (1 pack) C7974A

HP LTO4 Ultrium 1.6TB WORM Data Cartridge (1 pack) C7974W

HP Ultrium 800GB RW Data Cartridge (1 pack) C7973A

HP Ultrium 800GB WORM Data Cartridge (1 pack) C7973W

HP Ultrium 400GB Data Cartridge (1 pack) C7972A

HP Ultrium 200GB Data Cartridge (1 pack) C7971A



### Related Options

HP Ultrium Universal Cleaning Cartridge (1 pack)	C7978A
HP LTO5 Ultrium RW Bar Code Labels (100 pack)	
HP LTO5 Ultrium WORM Bar Code Labels (100 pack)	
HP LTO4 Ultrium RW Bar Code Labels (100 pack)	Q2009A
HP LTO4 Ultrium WORM Bar Code Labels (100 pack)	Q2010A
HP Ultrium 3 RW Bar Code Labels (100 pack)	Q2007A
HP Ultrium 3 WORM Bar Code Labels (100 pack)	Q2008A
HP Ultrium 2 Bar Code Labels (100 pack)	Q2002A
HP Ultrium 1 Bar Code Labels (100 pack)	Q2001A

#### Custom labeled Data Cartridges

**NOTE:** Custom labeled products allow customers to customize a specific sequence printed on each label.

HP LTO-5 Ultrium 3TB RW Custom Labeled Data Cartridge (20 pack)	C7975AL
HP LTO-5 Ultrium 3TB RW Eco Pack (no case) Data Cartridge (20 pack)	C7975AC
HP LTO-5 Ultrium 3TB WORM Custom Labeled Data Cartridge (20 pack)	C7975WL
HP LTO4 Ultrium 1.6TB RW Custom Labeled Data Cartridge (20 pack)	C7974AL
HP LTO4 Ultrium 1.6TB WORM Custom Labeled Data Cartridge (20 pack)	C7974WL
HP Ultrium 800GB RW Custom Labeled Data Cartridge (20 pack)	C7973AL
HP Ultrium 800GB WORM Custom Labeled Data Cartridge (20 pack)	C7973WL
HP Ultrium 400GB Custom Labeled Data Cartridge (20 pack)	C7972AL
HP Ultrium 200GB Custom Labeled Data Cartridge (20 pack)	C7971AL

#### Non-Custom Labeled Data Cartridges

**NOTE:** Non-Custom labels will come pre-labeled with a pre-determined number sequence.

HP LTO5 Ultrium 3TB RW Non-Custom Labeled Data Cartridge (20 pack)	C7975AN
HP LTO4 Ultrium 1.6TB RW Non-Custom Labeled Data Cartridge (20 pack)	C7974AN
HP Ultrium 800GB RW Non-Custom Labeled Data Cartridge (20 pack)	C7973AN
HP Ultrium 400GB Non-Custom Labeled Data Cartridge (20 pack)	C7972AN
HP Ultrium 200GB Non-Custom Labeled Data Cartridge (20 pack)	C7971AN

#### Storage Media Kits

**NOTE:** Kit includes 20 HP Ultrium data cartridges, one HP Ultrium Universal cleaning cartridge, 20 colored labels, a protective carrying case that can be used to securely store or transport data cartridges, one copy of "The Essentials of Successful Tape Backup", and one copy of HP StorageWorks Data Protector Express Evaluation Software (60 day free trial).

HP Ultrium 800GB Storage Media Kit	C8017A
HP Ultrium 400GB Storage Media Kit	C8014A
HP Ultrium 200GB Storage Media Kit	C8013A



### Related Options

#### HP Care Pack Options

#### Same Day Response

Warranty upgrade to 1-year, 13x5, 4 hour response/onsite, electronic	U6364E
Warranty upgrade to 1-year, 24x7, 4 hour response/onsite, electronic	U6365E
Warranty upgrade to 1-year, 24x7, call-to-repair, 6 hour response/onsite, electronic	U6366E
Warranty upgrade to 3-year, 13x5, 4 hour response/onsite, electronic	H5526E
Warranty upgrade to 3-year, 24x7, 4 hour response/onsite, electronic	H4624E
Warranty upgrade to 3-year, 24x7, call-to-repair, 6 hour response/onsite, electronic	U6367E
Warranty upgrade to 5-year, 13x5, 4 hour response/onsite, electronic	U9376E
Warranty upgrade to 5-year, 24x7, call-to-repair, 6 hour response/onsite, electronic	U9377E

#### Next Business Day Response

Warranty upgrade to 3-year next business day/parts exchange, electronic	H2698E
Warranty upgrade to 3-year next business day/onsite, electronic	H4619E

#### Hardware Services

Installation services, electronic	U2090E
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**NOTE:** In order to maximize ROI and product uptime, and minimize the cost of ownership, Hewlett-Packard recommends the 3-year, 24 x 7 service options. These offerings will ensure that any product issue can be tackled when they occur (most back up issues will occur outside standard business hours) and that the service coverage regarding period, covers the minimum expected life of the host system.



# QuickSpecs

### Technical Specifications

		1/8 G2 LTO-5 Ultrium 3000 Tape Autoloader	1/8 G2 LTO-4 Ultrium 1760 Tape Autoloader	1/8 G2 LTO-3 Ultrium 920 Tape Autoloader	1/8 G2 LTO-2 Ultrium 448 Tape Autoloader
<b>Drive Technology</b>		Ultrium 3000	Ultrium 1760	Ultrium 920	Ultrium 448
<b>Number of Drives</b>		1	1	1	1
<b>Number of Slots</b>		8	8	8	8
<b>Drive Interface</b>		6Gb/sec SAS	3Gb/sec SAS Ultra320 LVD SCSI	3Gb/sec SAS Ultra320 LVD SCSI	Ultra160 LVD SCSI
<b>Capacity</b>	Native	12 TB	6.4 TB	3.2 TB	1.6 TB
	Compressed (2:1)	24TB	12.8 TB	6.4 TB	3.2 TB
<b>Maximum Transfer Rate</b>	Native	504 GB/ hr	288 GB/hr	216 GB/hr	86.4 GB/hr
	Compressed (2:1)	1 TB/hr	576 GB/hr	432 GB/hr	172.8 GB/hr
<b>Dimensions</b>	Out-of-Box (HxWxD)	1.7 x 19 x 31.9 in (4.4 x 48.2 x 80.9 cm)			
	Shipping (HxWxD)	10 x 23 x 39 in (25 x 58 x 99 cm)			
<b>Weight</b>	Out-of-Box	25.4 lb (11.5 kg)			
	Shipping	33.7 lb (15.3 kg)			
<b>Reliability</b>	MSBF (mean swaps between failures)	2 Million robot load/unload cycles			
	MTBF (mean time between failures)	100,000 hours (based on 1M MSBF)			
<b>Cartridge Swap Time</b>		34 seconds average (drive to slot, slot to drive)			
<b>Initialization Time</b>		76 seconds			
<b>Inventory Time</b>		52 seconds (with bar code labeled cartridges)			
<b>Connectors</b>		Mini-SAS (located on back of 1/8 G2 SAS models only) 68-pin HDTs (located on back of 1/8 G2 SCSI models only)  (1) RJ-45 (located on back of 1/8 G2) (1) USB port (located on back of 1/8 G2)			
<b>LED Indicators</b> (on front panel)		Ready LED (Green): shows ready status information Clean LED (Amber): shows fault status information Attention LED (Amber): shows fault status information Error LED (Amber): shows fault status information			
<b>Management Interface</b>		10/100 Mbytes/second, auto-configuring interface. RJ-45 connection. Https configurable.			
<b>Power</b>		80 Watts (max)			
<b>Input Requirements</b>		100 to 240 VAC, 50 to 60 Hz			
<b>Relative Humidity</b> (non-condensing)		Operating		20% to 80%	
		Shipping		20% to 90%	



### Technical Specifications

Temperature Range (wet bulb)	Operating	50° to 95° F (10° to 35° C)
	Shipping	-40° to 140° F (-40° to 60° C)
Altitude	Operating	10,000 ft (3,048 m)
	Shipping	35,000 ft (10,668 m)

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The only warranties for HP products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

For tape drives and media, 1 GB = 1 billion bytes. Actual formatted capacity is less.

