



StorageWorks Tape Devices
V2.3—12 December 1997
DIGITAL Systems and Options Catalog

TZS20 AIT Tape Drive

TZ89 High Capacity DLT Tape Drive

TL891 Automated DLT Tape Mini-Library

TL89x DLT Automated Tape Libraries

TZ88 DLT Cartridge Tape Drives

TZ887/TZ885 Loader

TL812 DLT Automated Tape Library

TL822 DLT Automated Tape Library

TL826 DLT Automated Tape Library

TLZ09 DAT Tape Drive and TLZ9L Loader

TLZ10 DAT Tape Drive

TKZ9E 8mm Helical Scan Tape Drive

TKZ6x IBM 3480/3490/3490E Compatible Tape Drive Family

TKZ90 IBM 3590 Format Compatible Tape Drive

TSZ07 Reel-to-Reel Tape Drive

TZK11 QIC Tape Drive

TZK20 QIC Tape Drive

Flexible/Optical Media Specifications Chart

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StorageWorks TZS20 Advanced Intelligent Tape Drive

DIGITAL TZS20 AIT tape drive uses an industry-standard technology called Advanced Intelligent Tape (AIT) technology. AIT technology has greater storage capacity in a smaller form factor. With excellent price performance in a small form factor, AIT is designed for server environments and is positioned between DAT and DLT tape technologies.

Incorporating AIT technology, the TZS20 tape drive is designed for efficient storage of large volumes of data. It has a compressed recording capacity of over 50 GB, a data transfer speed of up to 6 MB per second, and unsurpassed head and media life. The TZS20 drive uses Advanced Metal Evaporated (AME) tape formulation for exceptional recording density, long tape life, and long intervals between head maintenance.

Features

- Efficient tape format
 - Incorporates recording technology proven in the broadcast industry
 - Tape encoding standard designed to optimize media and head performance
- Low tape tension
 - AIT tape tension is maintained at less than half that of other helical scan technologies
 - Control system continually senses and adjusts tension fluctuations, reducing wear to tape and head
 - TZS20 uses ball bearing roller guides for gentle tape handling and enhanced media and tape mechanism reliability
- Automatic head cleaning
 - TZS20 uses AME tape, which has exceptional abrasion resistance, for virtually contamination-free operation in a typical computer room environment
 - The drive continually monitors contamination buildup and automatically activates its patented active head cleaner to remove contamination without host application or operator intervention
- High-speed SCSI
 - AIT incorporates industry standard Fast-wide SCSI technology to maximize host-drive data transfer
 - Attains 3 MB (native) and 6 MB (compressed) sustained data transfer rates and supports a burst rate up to 20 MB/
- AME-1 tape
- Choice of packaging
 - AIT technology is compact and available in 5.25-inch internal, 3.5-inch StorageWorks System Building Block, and tabletop models

Software Supported

- DIGITAL UNIX V3.2g and V4.0b
- DIGITAL OpenVMS Alpha V6.2-1H3 and V7.1
- Windows NT 4.0 (Windows NT driver included)

Adapters Supported

- DWZZA-VA, DWZZA-AA, DWZZA-MA
- DWZZB-VA, DWZZB-AA, DWZZB-MA
- KZPAA-AA, KZPSA-BB

Controllers Supported

- DIGITAL OpenVMS Alpha V6.2-1H3 and V7.1
 - HSD30 V3.1, HSD50 V5.0
 - HSJ40 V3.1, HSJ50 V5.1
- DIGITAL UNIX V3.2g and V4.0b
 - HSZ40 V3.1, HSZ50 V5.1

StorageWorks TZS20 Advanced Intelligent Tape Drive (*continued*)

Ordering Information

TZS20 AIT Internal Drive

TZS20-LK Internal factory/field installed drive, 5.25-inch half-height, 274 white, wide SCSI-2, 25/50 GB, 180/360 MB/minute, TZS2X-CA data tape, TZS2X-HA cleaning cartridge, manual

TZS20 AIT Tabletop Drive

DS-TZS20-DB Tabletop drive, wide, 277 blue-gray, wide SCSI-2, 25/50 GB, 180/360 MB/minute, TZS2X-CA data tape, TZS2X-HA cleaning cartridge, 68-pin HD SCSI single-ended terminator, manual, power cord, auto-sense power supply, 120-240V (SCSI cable not included)

TZS20 AIT StorageWorks Building Blocks

DS-TZS20-VW Tape drive in StorageWorks 3.5-inch carrier, wide, 277 blue-gray carrier/bezel, TZS2X-CA data cartridge, TZS2X-HA cleaning cartridge, manual

AIT Media

TZS2X-CA Quantity 1, AIT (8mm) media
TZS2X-CB Quantity 5, AIT (8mm) media
SWXMP-EB Quantity 50, AIT (8mm) media
TZS2X-HA Quantity 1, AIT cleaning cartridge

Specifications

Physical Characteristics	5.25-inch Embedded Drive	Tabletop Drive
Height	4.1 cm (1.6 in)	5.8 cm (2.3 in)
Width	14.6 cm (5.8 in)	18.9 cm (7.4 in)
Depth	15.5 cm (6.1 in)	26.2 cm (10.3 in)
Weight	1.0 kg (2.2 lb)	2.2 kg (4.9 lb)
Media	AIT-1 Format Advanced ME media	
Capacity per cartridge	25 GB native 50 GB compressed (2:1 compression)	
Data compression algorithm	ALDC	
Encoding/decoding	8-10 modulation, PRML (Class 1)	
Linear recording density	116,000 bpi	
Buffer Size	4 MB	
Transfer Rate	3 MB/s sustained (native) 6 MB/s sustained (compressed)	
Interface	SCSI-2 fast and wide	
SCSI connector (tabletop only)	68-pin high density SCSI-2	
Burst transfer rate	Asynchronous -- 12 MB/s (maximum) Synchronous -- 20 MB/s (maximum)	
Recording block length	Variable or fixed	
Search time	Less than 130 seconds with a 170 meter tape	
Search speed	225 MB per second (native) 450 MB per second (compressed, 1:2)	
Uncorrected error rate	Less than 1 in 10 ¹⁷ bits	
MTBF ¹	200,000 hours power on at 20 percent duty cycle	
Head life	30,000 hours	

StorageWorks TZS20 Advanced Intelligent Tape Drive (continued)

Specifications (continued)

Operating temperature	5°C to 40°C (41°F to 104°F)
Operating Humidity	10 percent to 90 percent (non condensing) 26°C (79°F) maximum wet bulb temperature
Storage temperature	-40°C to 70°C (-40°F to 158°F)
Power consumption (internal)	21 watts (maximum), 12 watts (average)
Power consumption (tabletop)	30 watts (maximum), 22 watts (average)
	100-120 VAC/220-240 VAC Autosensing power supply

Accessories (all models)

Media cartridge	One TZS2X-CA
Cleaning cartridge	One TZS2X-HA
User's Manual	One EK-TZS20-UG

Additional tabletop accessories

SCSI wide active terminator	12-41768-01
SCSI cable required	
50-pin LD host	BN21M-01
50-pin HD host	BN21N-01
68-pin HD host	BN31G-01

1. DIGITAL does not warranty that the predicted MTBF is representative of any particular unit. Failure rates are derived from a statistical test sample. Actual figures will vary in individual units.

StorageWorks TZ89 High Capacity/High Performance DLT Tape Drive

DIGITAL TZ89 digital linear tape (DLT) drive extends the DIGITAL DLT family to higher levels of capacity, with up to 70 GB of capacity per cartridge -- 75 percent more than the DIGITAL TZ88 or DLT 4000 drives. The TZ89 drive provides high-end workstations as well as network servers and systems with enhanced unattended backup/restore and archival capabilities. These capabilities, combined with the high reliability and industry-leading data integrity of the DLT medium, make the TZ89 a true heavy-duty tape drive for Hierarchical Storage Management (HSM), image/multimedia storage, archiving, near-online storage, and unattended backup applications.

TZ89 drive uses Compac/DLTtapeIV media and is Read and Write compatible with Compac/DLTtapeIII and Compac/DLTtapeIII XT media, providing investment protection. The TZ89 design includes a quad-channel read/write head, Lempel-Ziv (DLZ) high-efficiency data compression, and tape mark directory to maximize data throughput and minimize data access time.

TZ89 is a full-height, 5.25-inch drive capable of storing up to 35 GB native (70 GB at 2:1 compression) of data when using Compac/DLTtape IV media. It is available as a tabletop device or can be mounted in a StorageWorks cabinet. The TZ89 provides full data interchange capabilities to the Tx85, Tx86, and Tx87 subsystems. It is not compatible with older tape formats, such as the TZ30, TK50, and TK70 products.

Features

- .. 35/70 GB 5.25-inch full-height, fast wide single-ended SCSI-2 DLT drive
- .. Industrial-strength tape drive for hierarchical storage management, image/multimedia storage, archiving, near-online storage, and unattended backup applications
- .. Available in both tabletop and DIGITAL StorageWorks cabinet configurations
- .. Up to 75 percent more data storage than the TZ88 or DLT 4000 drives
- .. Provides more than 3 times the data storage and retrieval performance of the TZ88 or DLT 4000 drives
- .. Enhances unattended backup/restore and archiving for high-end workstations and network servers

Software Supported

- .. OpenVMS V6.2-1H3, V7.1
- .. DIGITAL UNIX V4.0a
- .. Windows NT V4.0 with Service Pack 2
- .. IBM AIX V3.2, V4.1x
- .. Sun Solaris V5.4, V5.5
- .. Novell NetWare V3.12, V4.1¹

1. Novell NetWare native backup is not supported. Third party backup software is required.

Hardware Supported

- .. AlphaStation 255, 400, 500, 600
- .. AlphaServer 1000, 1000A, 2000, 2100, 2100A, 4000, 4100, 8200, 8400
- .. VAXstation 4000-96
- .. MicroVAX 3100-40/85/88/96/98
- .. VAX 4000-108, 7000-800¹

1. Tape drives are supported on VAX7000-800 systems via HSD, HSJ, and HSZ controllers only.

Controllers, Adapters, Converters Supported

- .. HSJ30/40/50, HSD30/50, HSZ40/50 - Controllers¹
- .. KZPAA, KZPSA, KZPDA, KFTIA - Adapters
- .. DWZZA, DWZZB - Signal converters²

1. These controllers use DIGITAL StorageWorks Hierarchical Storage Operating Firmware (HSOF V3.1/V5.1) when used with DIGITAL OpenVMS systems. Consult the HSOF SPD for details of device/controller support.
 2. DWZZx-xx adapter is required to attach drive to each differential SCSI controller or adapter.

Supported Third-Party Applications

- .. Cheyenne ARCserve for Windows NT, NetWare
- .. Seagate Backup Exec for Windows NT, NetWare
- .. Seagate Palindrome Storage Manager for Windows NT

StorageWorks TZ89 High Capacity/High Performance DLT Tape Drive *(continued)*

Ordering Information

DS-TZ89N-VW	35/70 GB TZ89 fast wide single-ended SCSI-2 DLT Drive (System Building Block)
DS-TZ89N-TA¹	35/70 GB TZ89 fast wide single-ended SCSI-2 DLT Drive (tabletop)

1. DS-TZ89N-TA is configured with a 68-pin high-density female connector. Order a cable with a 68-pin high-density male connector and the appropriate connector to match system controller/adapter.

Note: DS-TZ89N-xx drives run in slow/narrow mode only when connected to VAXstation 4000, MicroVAX 3100, and VAX 4000 systems.

Specifications

Physical Characteristics

Height	124 mm (4.87 in)
Width	229 mm (9.0 in)
Depth	325 mm (12.75 in)
Weight	7 kg (15 lb)

Power consumption

Typical	37 W
Line voltage	100 to 240 VAC single-phase
Line frequency	50 to 60 Hz

Temperature

Operating	10C to 40C (50F to 104F)
Non-operating	-40C to 66C (-40F to 151F)

Humidity

Operating	20% to 80% (non-condensing)
Non-operating	10% to 95% (non-condensing)
Altitude	40,000 ft maximum

Performance

Formatted Capacity	
Native	35 GB
Compressed	70 GB
Sustained Transfer Rate -- Native ¹	5.0 MB/second

Reliability

Mean Time Between Failure (MTBF)	200,000 hr
Head life	30,000 tape motion hr (continuous operation)
Interface	Fast/Wide, Single-ended SCSI-2 with 68-pin high-density female connector

Certification

Safety	UL1950, CSA C22.2 #220, TUV EN60950
Emissions ²	FCC Class A and B, EN55022/B and EN55082/B, CISPR 22/A and B, VCCI/Class 1 and 2, CEmark Class A and B
Media	Read/Write compatibility with Compac/DLTtapeIII, Compac/DLTtapeIIIXT, and Compac/DLTtapeIV

1. Performance specifications refer to the tape drive only. Actual system performance is a function of the system platform, operating system, and configuration.

2. DS-TZ89N-VW meets FCC and CE Class A certification only.

TL891 Automated DLT Tape Mini-Library

The DIGITAL TL891 automated tape mini-library provides a low-cost, high-performance, reliable entry-level automated mass storage for departmental data management applications. It uses high-performance TZ89 tape drives for unsurpassed data integrity and high capacity (up to 70 GB compressed per cartridge).

The fully automated TL891 storage mini-library also includes robotic hardware and firmware, DIGITAL Media Robot Utility (MRU) software, barcode reader, barcode labels, cleaning cartridge and one DLTtape IV data cartridge. The OpenVMS Storage Management Software product suite is included with the MRU software. Loaner licenses for these products are available through the Software Loan Program.

This product is ideal for data applications for DIGITAL systems, platforms, clusters, and networks. The TL891 mini-library is supported via DIGITAL Storage Management Software or third party application software on DIGITAL Alpha systems running DIGITAL UNIX, OpenVMS, or Windows NT operating systems and VAX systems running OpenVMS.

Features

- .. Provides up to 700 GB of data storage (compressed) with one or two TZ89 drives.
- .. Features 10 data media slots.
- .. Provides a sustained transfer rate of up to 10 MB per second (native with optional second drive).
- .. Configured to mount in industry-standard RETMA cabinets, DIGITAL StorageWorks SW5XX, and SW8XX cabinets, or as a tabletop device.
- .. Multiple TL891 mini-libraries can be mounted in a single RETMA or SWXXX cabinet, providing storage capacity and performance flexibility to meet the storage needs of Windows NT and DIGITAL UNIX server environments.

Operating System Supported

- .. OpenVMS V6.2-1H3 and OpenVMS V7.1 on DIGITAL VAX¹ Systems.
 - .. OpenVMS V6.2-1H3, OpenVMS V7.1, and DIGITAL UNIX V4.0x on AlphaStation² 500,600 and AlphaServer² 800, 1000, 1000A, 2000, 2100, 2100A, 4000, 4100, 8200, 8400.
1. VAX system support is provided via HSOF, HSD, HSJ, or HSZ controllers and DIGITAL applications. For a complete list of supported VAX systems, consult the HSOF and DIGITAL application software SPDs.
 2. AlphaStation and AlphaServer support is provided via SCSI adapters and DIGITAL applications. For a complete list of supported Alpha workstations and servers, consult the DIGITAL application software SPDs and Alpha systems in the *DIGITAL Systems and Options Catalog*.

Additional Software Supported

- .. Supported DIGITAL OpenVMS applications
 - Storage Library System for OpenVMS (SLS) V2.9
 - Archive/Backup System for OpenVMS (ABS) V2.1A
 - Hierarchical Storage Management for OpenVMS (HSM) V2.1
 - DIGITAL Media Robot Utility (MRU) V1.2
 - Sequential Media Filesystem V1.3
- .. Supported DIGITAL UNIX applications
 - NetWorker Save and Restore for DIGITAL UNIX (NSR) V4.3
 - DIGITAL Media Robot Utility (MRU) V1.2
- .. Supported Microsoft Windows NT applications
 - DIGITAL NetWorker for Windows NT V4.3
 - DIGITAL Media Robot Utility (MRU) V1.2

Controllers Supported

- .. HSJ30/40, HSD30 with HSOF V3.1
- .. HSJ50, HSD50, HSZ50 with HSOF V5.1

Adapters Supported

- .. KZPSA, KZPDA, KFTIA

SCSI converters Supported³

- .. DWZZB
3. Each TL891 tape mini-library has a differential SCSI-2 interface with a 68-pin high density connector. A DWZZX-xx and appropriate 68-pin high density external SCSI-2 cable are required to attach the tape library to a single-ended SCSI controller or adapter.

TL891 Automated DLT Tape Mini-Library (*continued*)

Ordering Information

Up to four DS-TL891-NE units can be mounted in a DIGITAL SW500 or SW800 cabinet. RETMA cabinet configurations are dependent on the particular cabinet being used

DS-TL891-NE	350/700 GB, 10 Slot Rackmount Mini-library with one TZ89 Drive
DS-TL891-NT	350/700 GB, 10 Slot, Tabletop, Mini-library with one TZ89 Drive
DS-TL892-UA	Add-on TZ89 Drive for DS-TL891-XX

Specifications

Capacity	
- Cartridges	10 slots
- Data	350 GB (uncompressed)
- Number of drives	1 or 2
Performance	
- Sustained transfer rate ¹	5.0 MB per second per drive (uncompressed)
- Cartridge swap time (avg.)	10 seconds
Interface	
	Fast Wide Differential SCSI-2 with 68-pin high-density female connectors
Environmental	
- Temperature	10° to 40°C (50° to 104°F) operating, -40° to 60°C (-40° to 140°F) non-operating
- Humidity	15 percent to 85 percent noncondensing operating, 10 percent to 95 percent non-condensing nonoperating
- Altitude	3.0 km (10,000 ft) operating and non-operating
Size	
	17.7 cm (6.97 in) high, 43.18 cm (17.0 in) wide, 60.35 cm (23.75 in) deep
Weight	22 kg (48 lb) with one drive 28 kg (62 lb) with two drives
Power	115-240 VAC 50/60 Hz single phase switchable, 50 to 60 Hz, IEC 320 male connector
Agency approvals	FCC Class A, UL1950, CSA950, TUV EN 60 950, CE Class A
MTBF	280,000 hours
MSBF ²	500,000 cartridge exchange cycles
MTTR	less than 30 minutes

1. Performance statistics (sustained transfer rate) reflect only the drive capabilities; actual drive and library performance is a function of the system configuration and its application.
2. Mean swaps between failures.

StorageWorks TL89x Automated DLT Tape Libraries

DIGITAL has added three new members to its TL8xx family of DIGITAL Linear Tape (DLT) automated tape libraries.

- .. TL894 automated tape library provides up to 3.36 TB of data storage (compressed) with four TZ89 drives.
- .. TL893 automated tape library provides up to 18.48 TB of data storage (compressed) with three TZ89 drives.
- .. TL896 automated tape library provides up to 12.32 TB of data storage (compressed) with six TZ89 drives.

Both the TL893 and TL896 are data center cabinets with a footprint of less than one square meter. They are targeted at high-performance/high-capacity enterprise systems market. The fully automated TL89x storage libraries also include robotic hardware and firmware, and Media Robot Utility (MRU) software. The TL893 and TL896 data center libraries are configurable in up to five interconnected libraries accessible as a single SCSI logical unit.

All three TL89x libraries use high-performance TZ89 tape drives for unsurpassed data integrity and high capacity (up to 70 GB compressed per cartridge). The TZ89 drives provide support for the following three media types: DLT/CompacTapeIII, DLT/CompacTapeIIIXT, and DLT/CompacTapeIV.

These products are ideal for data applications for DIGITAL systems, platforms, clusters, and networks. All three TL89X libraries are supported on DIGITAL Alpha systems running DIGITAL UNIX, OpenVMS, or Microsoft Windows NT operating systems and VAX systems running OpenVMS.

Features

- .. Provides low-cost, high-capacity, high-performance, and reliable automated mass storage for departmental and enterprise data management applications.
- .. Integrates automated backup, archiving, and hierarchical storage management for departmental operations, while keeping pace with larger-scale enterprise-wide mass storage schemes.
- .. Based on industry-leading DIGITAL Linear Tape (DLT) technology — an ANSI standard.

Hardware Support

- .. Controllers
 - HSJ30/40, HSD30 with HSOF V3.1
 - HSJ50, HSD50, HSZ50 with HSOF V5.1
- .. Adapters
 - KZPSA, KZPDA, KFTIA, P2SE
- .. SCSI converters¹
 - DWZZB
- .. Supported OpenVMS applications
 - Storage Library System for OpenVMS (SLS) V2.8a
 - Archive/Backup System for OpenVMS (ABS) V2.1
 - Hierarchical Storage Management for OpenVMS (VHSM) V2.1
 - Media Robot Utility (MRU) V1.1
- .. Supported DIGITAL UNIX applications
 - DIGITAL Networker Save and Restore (NSR) V4.2c
 - Media Robot Utility (MRU) V1.1
- .. Supported Microsoft Windows NT applications
 - DIGITAL NetWorker for Windows NT V4.3

1. Each TL89x tape library has a differential SCSI-2 interface with a 68-pin high density connector. A DWZZX-xx and appropriate 68-pin high density external SCSI-2 cable are required to attach the tape library to a single-ended SCSI controller or adapter.

Software Support

- .. OpenVMS V6.2-1H3 and OpenVMS V7.1 on VAX Systems.
- .. OpenVMS V6.2-1H3, OpenVMS V7.1, and DIGITAL UNIX V4.0x on AlphaStation 500,600 and AlphaServer 1000, 1000A, 2000, 2100, 2100A, 4000, 4100, 8200, 8400

Note: VAX system support is provided via HSOF, HSD, HSJ, or HSZ controllers and Digital applications. For a complete list of supported VAX systems, consult the HSOF and Digital application software SPDs

Note: AlphaStation and AlphaServer support is provided via SCSI adapters and DIGITAL applications. For a complete list of supported Alpha workstations and servers, consult the DIGITAL application software SPDs

StorageWorks TL89x Automated DLT Tape Libraries (*continued*)

Ordering Information

TL894, TL893 and TL896 Automated Tape Libraries

DS-TL894-BA	52 cartridge tape library with 4 TZ89 drives
DS-TL893-BA	264 cartridge tape library with 3 TZ89 drives
DS-TL893-AC	264 cartridge tape library add-on
DS-TL896-BA	176 cartridge tape library with 6 TZ89 drives
DS-TL896-AC	176 cartridge tape library add-on

TL894, TL893 and TL896 Upgrade Kits

DS-TL894-UA	TL810/812-to-TL894 upgrade kit
DS-TL893-UA	TL820/822-to-TL893 upgrade kit
DS-TL896-UA	TL826-to-TL896 upgrade kit
DS-TL89x-UB	Expansion to standalone TL89x library kit

Specifications TL894

Capacity

Cartridges	48 slots for data storage, 4 for cartridge input/output
Data	1.68 TB (uncompressed)
Number of drives	4

Performance ¹

Sustained transfer rate	5.0 MB/s per drive (uncompressed)
Cartridge swap time (avg.)	18 s
Interface	Fast Differential SCSI-2 with 68-pin high-density female connectors

Environmental

Temperature	15° to 32°C (59° to 90°F) operating, -40° to 66°C (-40° to 151°F) non-operating
Humidity	20% to 80% non-condensing operating, 95% non-operating
Altitude	2.0 km (6562 ft) operating, 3.658 km (12,000 ft) non-operating
Size	112 cm (44 in) high, 54.6 cm (21.5 in) wide, 79.1 cm (31.12 in) deep
Weight	170 kg (380 lb) with drives and cartridges
Power	120/230 VAC 50/60 Hz single phase switchable 90 to 132V or 180 to 264V, autoranging, at 47 to 63 Hz, IEC 320 male connector
Agency approvals	FCC Class A, UL1950, CSA950, TUV, CE Class A
MTBF	170,000 hr
MSBF ²	1,000,000 cartridge exchange cycles
MTTR	less than 30 min

- Note that performance statistics (sustained transfer rate) reflect only the drive capabilities; actual drive and library performance is a function of the system configuration and its application.
- Mean swaps between failures

StorageWorks TL89x Automated DLT Tape Libraries (*continued*)

DIGITAL TL893 and TL896

Capacity

Cartridges slots	264 slots (TL893) 176 slots (TL896)
Data storage	9.24 TB (uncompressed) (TL893) 6.16 TB (uncompressed) (TL896)
Number of drives	3 (TL893) 6 (TL896)

Performance¹

Sustained transfer rate	5.0 MB/s per drive (uncompressed)
Cartridge swap time (avg.)	15 s
Interface	Fast Differential SCSI-2 with 68-pin high density female connectors

Environmental

Temperature	15° to 32°C (59 to 90°F) operating, -40° to 66°C (-40° to 151°F) non-operating
Humidity	20% to 80% non-condensing operating, 5% to 95% non-operating
Altitude	2.4 km (8,000 ft) operating, 4.9 km (16,000 ft) non-operating
Size	200.66 cm (79 in) high, 71.76 cm (28.25 in) wide, 119.38 cm (47 in) deep
Weight	420 kg (920 lb) with drives and cartridges
Power	120/230 VAC 50/60 Hz single phase switchable 90 to 132 V or 180 to 264 V, autoranging, at 47 to 63 Hz, IEC 320 male connector
Agency approvals	FCC Class A, UL1950, CSA950, TUV, CE Class A
MTBF	80,000 hr
MSBF ²	500,000 cartridge exchange cycles
MTTR	less than 30 min

- Note that performance statistics (sustained transfer rate) reflect only the drive capabilities; actual drive and library performance is a function of the system configuration and its application.
- Mean swaps between failures.

StorageWorks TZ88 DLT Cartridge Tape Drives

DIGITAL Linear Tape Drive (DLT) family cartridge tape drives are industry-leading 5.25-inch streaming linear recording tape devices, designed for systems requiring high performance, high data integrity, and unattended backup. The performance and capacity of DLT cartridge tape drive subsystem is unrivaled. With a sustained transfer rate of up to 3.0 Mbytes per second and up to 40 Gbytes of formatted capacity (2 to 1 compression), TZ88 tape drives can complete full backups in under an hour. A 2 MB adaptive cache matches speed of the tape subsystem to system performance, minimizing repositioning delays, and a dual-channel read/write head design provides a high data transfer rate.

Extensive error detection and correction make the data integrity of DLT cartridge tape subsystem comparable to that of magnetic disks. Other advanced data integrity features include a custom 64-bit CRC on each 4 KB of data on media; a powerful custom Reed Solomon ECC and parity checking on cache buffer. These features combine to produce undetected errors of less than 1 in 10 (27) bits and unrecovered read errors of less than 1 in 10 (17) bits.

Extensive diagnostic and troubleshooting features include serial EIA-422 ports on subsystem and controllers for off-line troubleshooting and POST (power on self-test) error reporting, embedded diagnostic and self-test software, and LEDs for indication of operating and fault information.

TZ88 is read/write compatible with the TZ85, TZ86, TZ87 and TZ88. TZ88 uses DLT/CompacTape IV media and is read/write compatible with, DLT/CompacTape III, and DLT/CompacTape IIIXT media.

Features

- .. SCSI interface (TZ devices)
- .. Extensive embedded diagnostic/self-test software
- .. Up to 3.0 MB/s sustained transfer rate (compressed 2:1)
- .. Up to 40 GB capacity per cartridge (compressed 2:1)
- .. Tabletop enclosure or 5.25-inch StorageWorks carrier
- .. Read/write compatible with TZ85, TZ86, TZ87

Software Support

Most common tape functionality, such as COPY, MOUNT, INIT, BACKUP, TAR, and DUMP will function normally on OpenVMS V6.2 or later, DIGITAL UNIX V3.2 or later, and Windows NT 3.51 or later for SCSI-based drives.

Ordering Information

See system ordering menus for specific variants and quantities supported.

TZ88N-TA	TZ88N half-inch cartridge tape drive in tabletop enclosure. Includes media and documentation
TZ88N-VA	TZ88N half-inch cartridge tape drive in StorageWorks 5.25-inch carrier. Includes media and documentation.

Specifications

Physical Characteristics

Height	14.52 cm (5.72 in)
Width	23.49 cm (9.25 in)
Length	33.22 cm (13.08 in)
Weight	7.7 kg (16.9 lb)

Power Requirements

Nominal voltage	120 V ac/230 V ac
Minimum voltage	90 V ac/180 V ac
Maximum voltage	135 V ac/270 V ac
Power consumption	27 W maximum, 25 W typical
Line type	Single-phase ac, NEMA#515, IEC#320
Single cartridge capacity	20 GB (native)/ 40 GB (compressed)
Drive transfer rate	1.5 MB/s (native)/ 3.0 MB/s (compressed)
Compatibility	VAX and Alpha platforms, OpenVMS, DIGITAL UNIX, and Windows NT operating systems
Interface	SCSI-2 (Single-ended) (50-pin low density female connectors)

StorageWorks TZ887/TZ885 Loader

DLT loaders—TZ887 or TZ885—combine DLT cartridge tape drive and an automatic cartridge loader to provide highly reliable unattended backup for SCSI systems. Five or seven cartridges are inserted into the removable magazine. An internal, elevator-like mechanism moves to each of the storage slots to load and unload cartridges.

DLT loaders are offered in full-rack enclosure for inclusion in StorageWorks Cabinets.

Features

- .. Incorporates 40 GB TZ88N cartridge tape drives
- .. Maximum capacity:
 - TZ885—up to five cartridges for maximum 200 Gbyte unattended backup
 - TZ887—up to seven cartridges for maximum 280 Gbyte unattended backup
- .. TZ885/TZ887 read/write compatibility with Compaq Tape III, IIIXT, IV media
- .. Available in tabletop enclosure and rackmount variants
 - TZ885-NT, TZ887-NT tabletop enclosure
 - TZ885-NE, TZ887-NE rackmount variant

Software Support

- .. DIGITAL UNIX V3.2 or later, OpenVMS V6.2 or later for VAX and Alpha systems, Microsoft Windows NT for DIGITAL Alpha systems (require Robotics and Media Management Software)
- .. OpenVMS VAX and Alpha supported Storage Management Solutions include the following DIGITAL products:
 - Storage Library System for OpenVMS (SLS) V2.7, or later
 - Hierarchical Storage Management for OpenVMS (VHSM) V1.2A, or later
 - Archive Backup for OpenVMS V1.1 with MDMS V2.7, or later
 - Sequential Media File System V1.2 with MDMS V2.7, or later (requires OpenVMS V6.2, or later on Alpha systems)
 - Media Robot Utility V1.0, or later

Note: The above applications incorporate the Media and Device Management Services (MDMS).

- .. DIGITAL UNIX Alpha supported Storage Management Solutions include the following DIGITAL products:
 - NetWorker Save and Restore V3.2A or later
 - Media Robot Utility (MRU) V1.1, or later

Controller and HSOFF Support

- .. HSOFF V2.7 or later firmware for HSJ30/40 and HSD30 controllers
- .. HSOFF V3.0 or later firmware for HSJ30/40, HSD30, and HSZ40
- .. HSOFF V5.0 or later firmware for HSJ50, HSD50, and HSZ50

Note: Software applications may require different levels of operating system support. Refer to applications SPDs for details of supported platforms and operating system versions.

Ordering Information

TZ887-NT	140/280 GB tabletop seven cartridge loader SCSI tape subsystem. Includes magazine, seven data cartridges, power cord, and documentation. 110/220 V power selectable
TZ887-NE	140/280 GB rackmount seven cartridge loader SCSI tape subsystem for mounting in SW500/SW800 cabinets; includes mounting brackets and cable, 120/240 V power selectable
TZ885-NT	100/200 GB tabletop five cartridge loader SCSI tape subsystem. Includes magazine, five data cartridges, power cord, and documentation. 110/220 V power selectable
TZ885-NE	100/200 GB rackmount five cartridge loader tape subsystem for mounting in SW500/SW800 cabinets; includes mounting brackets and cable, 120/240 V power selectable

Upgrade Kit

TZ887 upgrades will upgrade Tx857/867 to SCSI TZ887. Only loaders with revisions EO3 or greater can use this upgrade package. Contact a DIGITAL Customer Service Representative to determine loader revision.

TZ887-UN	TZ887 upgrade kit includes TZ88 drive, replaces Tx8* drive in an existing Tx8*7 tape subsystem
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StorageWorks TZ887/TZ885 Loader (*continued*)

Specifications

Physical Characteristics TZ887

Height	2.65 cm (10.42 in.)
Width	22.2 cm (8.74 in.)
Length	68.6 cm (27.0 in.)
Weight	25 kg (55 lb)

Power Requirements

Nominal voltage	120 Vac/230 Vac
Minimum voltage	90 Vac/180 Vac
Maximum voltage	135 Vac/270 Vac
Power consumption	83.5 W maximum, 82 W typical
Dissipation (maximum watts x 3.41)	285 Btu's
Line type	Single-phase, ac, NEMA#515, IEC#320
Interface	SCSI-2 (single ended) 50-pin, low density, female connectors

Physical Characteristics TZ885

Tabletop

Rackmount

Width	30.0 cm (11.8 in)	29.5 cm (11.6 in)
Height	41.4 cm (16.3 in)	41.4 cm (16.3 in)
Length	26.7 cm (10.5 in)	25.4 cm (16.2 in)
Weight	15.9 kg (35 lb)	12.27 kg (27 lb)

Power Requirements

Nominal voltage	120/230 V ac
Minimum voltage	90/180 V ac
Maximum voltage	135/270 V ac
Power consumption	100 W maximum, 40 W typical
Line type	Single phase, ac, NEMA 515, IEC 320
Voltage	100 to 240 VAC
Interface	SCSI+2 (single ended) 50-pin, low density, female connectors

Physical Characteristics Magazine

Width	13.25 cm (5.217 in)
Height	21.89 cm (8.622 in)
Length	11.8 cm (4.646 in)
Weight (empty)	0.59 cm (1.3 lb)
Weight (fully loaded)	2.04 cm (4.5 lb)

StorageWorks TL812 DLT Automated Tape Library

TL812 is a mid-range automated tape library based on DLT technology. With a capacity of 48 cartridges for data storage and 4 TZ88 drives, the TL812 library offers a range of data storage capacity from 0.96 to 1.92 Tbytes. This storage library includes robotic hardware and firmware necessary to store and move up to 52 DLT cartridges, 4 of which are contained in a built-in four-cartridge load port (import/export).

TL812 provides a faster access automated tape library ideal for data-center applications for DIGITAL systems, platforms, clusters, and networks. The unsurpassed speed, capacity, and reliability of DLT technology (ANSI standard), integrated with highly reliable proven robotics design, provide a high capacity, high performance, quality product for departmental storage needs.

Combined with the DIGITAL Storage Management software application solutions, or third party applications, the TL812 tape library makes backup, archive, and hierarchical storage management operations easy, quick, reliable, and cost effective.

Features

- .. Extends benefits of automated storage management to department and client/server applications.
- .. Boosts productivity and lowers costs for data-center management and operations.
- .. Integrates automated backup and archiving, and hierarchical storage management to department operations.
- .. Provides cost effective and reliable storage for Hierarchical Storage Manager applications.
- .. Provides near-on-line storage in huge capacities but with a small footprint for data-center, network, and server applications.
- .. Each library is configured for four SCSI-2 buses. Internal cabling modifications can be made on site to support systems with less than four SCSI-2 controllers.

Software Support

- .. DIGITAL UNIX, OpenVMS for VAX and Alpha systems, Microsoft Windows NT for DIGITAL Alpha systems (require Robotics and Media Management Software)
- .. OpenVMS VAX and Alpha supported Storage Management Solutions include the following DIGITAL products:
 - Storage Library System for OpenVMS (SLS) V2.7, or later
 - Hierarchical Storage Management for OpenVMS (VHSM) V1.2A, or later
 - Archive Backup for OpenVMS V1.1 with MDMS V2.7, or later
 - Sequential Media File System V1.2 with MDMS V2.7, or later (requires OpenVMS V6.2, or later on Alpha systems)
 - Media Robot Utility V1.0, or later

Note: The above applications incorporate the Media and Device Management Services (MDMS).

- .. DIGITAL UNIX Alpha supported Storage Management Solutions include the following DIGITAL products:
 - NetWorker Save and Restore V3.2A or later
 - Media Robot Utility (MRU) V1.1, or later

Controller and HSOF Support

- .. HSOF V2.7 or later firmware for HSJ30/40 and HSD30 controllers
- .. HSOF V3.0 or later firmware for HSJ30/40, HSD30, and HSZ40
- .. HSOF V5.0 or later firmware for HSJ50, HSD50, and HSZ50

Note: Software applications may require different levels of operating system support. Refer to application SPDs for details of supported platforms and operating system versions.

Ordering Information

- .. Each library is configured for four SCSI-2 buses. Internal cabling modifications can be made on site to support systems with less than four SCSI-2 controllers.
- .. TL812 ships with four TZ88 drives installed in system, one cleaning cartridge, one DLT data cartridge, and Media Robot Utility (MRU) Software.
- .. Application software and appropriate external cabling for adapters and controllers must be ordered separately.

TL812-BA TL812 Automated Tape Library

StorageWorks TL812 DLT Automated Tape Library (continued)
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Specifications**Physical Characteristics**

Height	1.10 m (43.3 in)
Width	0.58 m (23 in)
Depth	0.81 m (31.9 in)
Weight	171 kg (378 lb) with 52 cartridges and DLT tape drives

Power Requirements

Power	115V/230V, 50Hz/60Hz (nominal) IEC 320 male connector
Drives	4 DLT TZ88 tape drives
Library cartridge capacity	52 tape cartridges (48 for data storage, 4 for import/export)
Single cartridge capacity	20 GB (native)/ 40 GB (compressed)
Single drive transfer rate	1.5 MB/s (native)/ 3.0 MB/s (compressed)
Compatibility	VAX and Alpha platforms, OpenVMS, DIGITAL UNIX, and Windows NT operating systems with application software
Interface	SCSI-2 (Differential) (50-pin low density female connectors)

StorageWorks TL822 DLT Automated Tape Library

TL822 Digital Linear Tape (DLT) library provides up to 10.56 TB of storage for unattended backup operations, archiving, hierarchical storage management, large-scale data storage, and video-on-demand applications.

With significantly greater storage capacity than the IBM 3480-compatible ATL subsystems, in a smaller footprint, the TL822 provides users with the ability to automate large-scale backup and archiving and hierarchical storage management operations at a fraction of the cost of other technologies.

The performance and capacity of the TL822 subsystem are suited to the implementation of large-scale archival, hierarchical storage management and near-line storage. TL822 uses three high performance TZ88 tape drives for unsurpassed data integrity, and high capacity (up to 40 Gbytes compressed per cartridge)

The TL822 is a high capacity, 264-cartridge automated tape library designed to provide high capacity storage and robotic access for the DIGITAL DLT series of tape drives. Housed in a 200 cm (79 in) tall cabinet, each 72 cm (28 in) wide tower contains up to 264 DLT tape cartridges and three differential SCSI-2 DLT drives. A single TL822 can provide 5.28 TB of storage capacity, or approximately 10.56 TB using TZ88 drive's hardware data compression. Up to five TL822 towers can be connected together with their robots supported by one differential SCSI-2 multi-unit controller as a single logical unit.

Features

- .. Based on industry-leadership DLT tape technology
- .. High capacity and performance in small 0.836 sq m (9 sq ft) footprint
- .. Lowers entry-price for large-scale unattended backup and archiving
- .. Expandable up to five TL822/TL826 libraries controlled as a single logical unit

Software Support

- .. DIGITAL UNIX, OpenVMS VAX and Alpha systems, Windows NT Alpha systems (require Robotics and Media Management Software).
- .. OpenVMS VAX and Alpha supported Storage Management Solutions include the following DIGITAL products:
 - Storage Library System for OpenVMS (SLS) V2.6, or later
 - Hierarchical Storage Management for OpenVMS (VHSM) V1.2A, or later
 - Archive Backup for OpenVMS (PAB) V1.1, or later
 - Sequential Media File System (SMF) V1.2 (requires OpenVMS V6.2 on Alpha systems)
 - Media Robot Utility (MRU) V1.0, or later

Note: The above applications incorporate the Media and Device Management Services (MDMS)

- .. DIGITAL UNIX Alpha supported Storage Management Solutions include the following DIGITAL products:
 - NetWorker Save and Restore (NSR) V3.2
 - Media Robot Utility (MRU) V1.1, or later
- .. Windows NT Alpha systems
 - NetWorker Save and Restore for Windows NT 4.3 Alpha systems

Controller and HSOF Support

- .. HSOF V2.7 or later firmware for HSJ30/40 and HSD30 controllers.
- .. HSOF V3.0 or later firmware for HSJ30/40, HSD30, and HSZ40.
- .. HSOF V5.0 or later firmware for HSJ50, HSD50, and HSZ50

Note: Software applications may require different levels of operating system support. Refer to applications SPDs for the application minimum requirements.

Ordering information

- .. Library cabinet is configured with three SCSI-2 buses. Internal library cabling modifications can be made on-site to support systems with less than three SCSI-2 controllers.
- .. TL822 Library includes Media Robot Utility (MRU) software.
- .. First unit ordered must be TL822-BA.

StorageWorks TL822 DLT Automated Tape Library (*continued*)

Ordering information (*continued*)

TL822-BA	DLT tape library with three TZ88 drives and Inport/Outport Device
TL822-AC	DLT library expansion cabinet with three TZ88 drives and attachment kit
TL82X-BA	Cartridge bin pack for TL822, holds 11 cartridges

Note: TL822-AC is an add-on library and requires a base library unit. Check applications for support of add-on libraries.

Specifications

TL822 Tape Library Unit Specifications

Drives	3 DLT TZ88 tape drives
Library cartridge capacity	264 tape cartridges
Single cartridge capacity	20 GB (native)/ 40 GB (compressed)
Single drive transfer rate	1.5 MB/s (native)/ 3.0 MB/s (compressed)
Compatibility	VAX and Alpha platforms, OpenVMS, DIGITAL UNIX, and Windows NT operating systems with application software
Interface	SCSI-2 (Differential) (50-pin low density female connectors)

Physical Characteristics

Height	200 cm (79 in)
Width	72 cm (36 in)
Depth	120 cm (47 in)
Weight	356 kg (784 lbs) with drives, unloaded

Power Requirements

Power	90–132 and 176–264V autoranging, 47 to 63 Hz
MSBF	600,000 swaps

Note: These performance statistics reflect only the drive capabilities; actual drive performance is a function of the system configuration and its application.

StorageWorks TL826 DLT Automated Tape Library

TL826 Digital Linear Tape (DLT) library provides up to 7.04 Tbytes of storage for unattended backup operations, archiving, hierarchical storage management, large-scale data storage, and video-on-demand applications.

With six TZ88 DLT drives, TL826 provides users with increased performance and sufficient capacity to automate storage management operations. The TZ88 tape drive offers unsurpassed data integrity and high capacity-up to 40 Gbytes compressed per cartridge. The extensible nature of the units, combined with future growth in drive capacity, provide a scaleable solution for application and system growth.

The TL826 is a high capacity, 176 cartridge automated tape library designed to provide high capacity storage and robotic access for DIGITAL DLT series of tape drives. Housed in a 7200 cm (9 in) tall cabinet, each 72 cm (28 in) wide tower contains up to 176 DLT tape cartridges and six differential SCSI-2 DLT drives. A single TL826 can provide 3.52 Tbytes of storage capacity, or approximately 7.04 Tbytes using the TZ88 drives hardware data compression. Up to five TL826 towers can be connected together with their robots supported by one differential SCSI-2 multi-unit controller as a single logical unit.

Features

- .. Based on industry leadership DLT tape technology
- .. High capacity and performance in small 0.836 sq m (9 sq. ft) footprint

Software Support

- .. DIGITAL UNIX, OpenVMS for VAX and Alpha systems, Microsoft Windows NT for DIGITAL Alpha systems (require Robotics and Media Management Software)
- .. OpenVMS VAX and Alpha supported Storage Management Solutions include the following DIGITAL products:
 - Storage Library System for OpenVMS (SLS) V2.7, or later
 - Hierarchical Storage Management for OpenVMS (VHSM) V1.2A, or later
 - Archive Backup for OpenVMS V1.1 with MDMS V2.7, or later
 - Sequential Media File System V1.2 with MDMS V2.7, or later (requires OpenVMS V6.2, or later on Alpha systems)
 - Media Robot Utility V1.0, or later

Note: The above applications incorporate the Media and Device Management Services (MDMS)

- .. DIGITAL UNIX Alpha supported Storage Management Solutions include the following DIGITAL products:
 - NetWorker Save and Restore V3.2A or later
 - Media Robot Utility (MRU) V1.1, or later

Controller and HSOF Support

- .. HSOF V2.7 or later firmware for HSJ30/40 and HSD30 controllers.
- .. HSOF V3.0 or later firmware for HSJ30/40, HSD30, and HSZ40.
- .. HSOF V5.0 or later firmware for HSJ50, HSD50, and HSZ50

Note: Software applications may require different levels of operating system support. Refer to application SPDs for details of supported platforms and operating system versions.

Ordering Information

- .. Library cabinet is configured with six SCSI-2 buses. Internal library cabling modifications can be made on site to support systems with less than six SCSI-2 controllers.
- .. TL826 Library includes Media Robot Utility (MRU) software
- .. First unit ordered must be TL826-BA.
- .. TL826-AC is an add-on library and requires a base library unit. Check applications for support of add-on libraries.

TL825-BA	DLT tape library with six TZ88 drives and Inport/Outport Device
TL826-AC	DLT library expansion cabinet with six TZ88 drives and attachment kit
TL82X-BA	Library Cartridge Holder (holds 11 cartridges)

StorageWorks TL826 DLT Automated Tape Library (continued)
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Specifications**TL826 Tape Library Unit**

Drives	6 DLT TZ88 tape drives
Library cartridge capacity	176 tape cartridges
Single cartridge capacity	20 GB (native)/ 40 GB (compressed)
Single drive transfer rate	1.5 MB/s (native)/ 3.0 MB/s (compressed)
Compatibility	VAX and Alpha platforms, OpenVMS, DIGITAL UNIX, and Windows NT operating systems with application software
Interface	SCSI-2 (Differential) (50-pin low density female connectors)

Physical Characteristics

Height	200 cm (79 in)
Width	72 cm (28 in)
Depth	120 cm (47 in)
Weight	356 kg (784 lbs) with drives, unloaded

Power Requirements

Power	90-132 and 176-264V autoranging, 47 to 63 Hz
MSBF	600,000 swaps

Note: Performance statistics reflect only the drive capabilities; actual drive performance is a function of the system configuration and its application

StorageWorks TLZ09 DAT Drive and TLZ9L Loader

TLZ09 is a DDS-2 DAT tape drive for backup, archiving, and data interchange applications. Based on DDS-2 standard, TLZ09 provides up to 8 Gbytes of unattended backup capability with a sustained transfer rate of up to 1,550 Kbytes/per second. It is up to 90% faster than other DDS-2 DAT drives. It is offered as an embedded device, in a 3.5-inch or 5.25-inch, half-height form factor, as a StorageWorks System Building Block or as a tabletop model. It is read and write compatible with media used in TLZ04, TLZ06, TLZ07 tape drives and TLZ6L, TLZ7L, and TLZ9L tape loaders and other DDS, DDS-DC, and DDS-2 compliant tape drives.

TLZ9L DAT tape loader supports a standard 8 cartridge magazine with up to 64 Gbytes of capacity. Based on the TLZ09, it achieves a sustained transfer rate up to 1,550 KB per second. With high capacity and high performance, it is ideal for unattended server backup and archiving applications. Like the TLZ09, it is read-write compatible with all DDS, DDS-DC and DDS-2 compliant media.

Both TLZ09 and TLZ9L are third-generation DAT drives with hardware data compression and read-after-write verification to provide reliable data recording on 60, 90 or 120 meter data cassettes. DIGITAL Data Storage (DDS) recording format implements 10 distinct error-handling techniques, including three levels of error correction code (ECC) to ensure superlative data reliability.

Both TLZ09 and TLZ9L implement the DDS-2 media recognition system which identifies a striped tape leader on data-grade tapes. The system eliminates performance and service issues related to inadvertent use of audio-grade media cartridges.

Data compression is software selectable on the TLZ09 and TLZ9L. It can be turned off to read and write to 60 or 90 meter DAT tapes for interchange with the TLZ04 or TLZ06 tape drives. However, data compressed and recorded on 60 meter DAT cassettes cannot be read by the TLZ04 drive. The TLZ04 will **not** handle 90 or 120 meter DAT cartridges, and the TLZ06 will **not** handle 120 meter DAT cartridges.

Features TLZ09 DAT tape drive and TLZ9L DAT tape loader

- .. Fast back up. 775/1550-KB/s transfer rate. Up to 90% faster than comparable products
- .. Up to 8 GB capacity per cassette
- .. TLZ9L has up to 64 GB capacity per magazine
- .. Read and write compatible with TLZ04, TLZ06, TLZ07, TLZ6L, and TLZ7L
- .. Industry-standard DDS, DDS-DC and DDS-2 formats for industry-wide data interchange
- .. Compatible with DIGITAL UNIX, OpenVMS-Alpha, OpenVMS VAX, Windows NT and StorageWorks solutions

Operating System Support TLZ09

- .. OpenVMS VAX V5.5-2, V5.5-2H4, V6.0, V6.1 (requires MK driver enhancement kit [QA-MT1AA-Up.6.1])
- .. OpenVMS Alpha V6.2
- .. DIGITAL UNIX V3.2
- .. Windows NT 3.51 (with service pack 5) and Windows NT 4.0

Operating System Support TLZ9L

- .. OpenVMS VAX V5.5-2, V5.5-2H4, V6.0, V6.1 (requires MK driver enhancement kit [QA-MT1AA-Up.6.1])
- .. OpenVMS Alpha V1.5 and V6.1 (requires MK driver enhancement kit [QA-MT1AA-Up.6.1])
- .. DIGITAL UNIX V2.0
- .. Windows NT support requires media management application

Support TLZ9L

- .. Storage Library System V2.5
- .. Hierarchical Storage Management V1.1
- .. NetWorker Save and Restore V3.0
- .. Archive Backup V1.0
- .. Sequential Media File System V1.0

Storage Controllers Support

See the Controller Software Product Description for controller support information.

StorageWorks TLZ09 DAT Drive and TLZ9L Loader (*continued*)

Ordering Information

- .. One TLZ04-HA media cartridge and one TLZ07-CA cleaning cartridge included with all TLZ09 models. TLZ9L includes one TLZ9L-08 magazine, one TLZ04-HA cleaning cartridge and eight TLZ07-CA media tapes.
- .. See system ordering menus for specific variants and quantities supported.

TLZ09 Tape Drive

TLZ09-DB	8 GB 4 mm DAT tabletop tape drive with 3-foot SCSI cable (BN23G-01) for 50 pin HD host SCSI port and one SCSI terminator. Supported on AlphaServers 8400, 8200, 4100, 4000, 2100, 2100A, 2000, 1000, 400, AlphaStations 600, 400, 255, 250, 200, DEC4000-700/600, VAXstation 4000-60/96/98
TLZ09-DC	8 GB 4 mm DAT tabletop tape drive with 3 foot SCSI cable (BN23G-01) and adapter (BN36A-0B) for 68 HD host SCSI port and one SCSI terminator. Supported on AlphaStation 500
TLZ09-DD	8 GB 4 mm DAT tabletop tape drive with 3-foot (BN31H-01) cable for 50 pin LD host SCSI adapter and one SCSI terminator. Supported on VAX 4000 systems, MicroVAX 3100-30/40/80/85/90/96, and DEC 3000 systems.
TLZ09-HF	8 GB 4 mm DAT Internal tape drive. Supported on MicroVAX 3100, VAXstation 4000-60/90/96, VAX 4000 106A (5.25" 068 Gray)
TLZ09-LG	8 GB 4 mm DAT Internal tape drive. Supported on AlphaServer 8400, 8200, 2100, 2000 (5.25" 068 gray)
TLZ09-LK	8 GB 4 mm DAT Internal tape drive. Supported on AlphaServer 4100,4000, VAX 4000-108, MicroVAX 3100-88/98 (5.25" white)
TLZ09-VA	8 GB 4 mm DAT tape drive in a 3.5-inch StorageWorks carrier
SWXTA-CT	8 GB 4 mm DAT tabletop tape drive. Supported by StorageWorks RA210,230,310,410,450, ESA-2

TLZ9L Tape Loader

TLZ9L-DB	64 GB, 4 mm SCSI DAT loader. Tabletop. Includes 1 meter SCSI cable (BN23G-01) and one SCSI terminator.
TLZ9L-LG	64 GB, 4 mm SCSI DAT tape loader, internal, factory / field. 217 gray and 277 blue bezels
TLZ9L-VA	64 GB, 4 mm SCSI DAT tape loader in snap-in 5.25 inch SPB StorageWorks carrier

Media

TLZ04-HA	Cleaning cartridge for TLZ04, TLZ06, TLZ07, TLZ09
TLZ04-CB	Five-pack of 60-m data cartridges for TLZ04, TLZ06, TLZ07, TLZ09
TLZ06-CB	Five-pack of 90-m data cartridges for TLZ04, TLZ06, TLZ07, TLZ09
TLZ07-CA	Single 120-m data cartridge for TLZ07, TLZ09
TLZ07-CB	Five-pack of 120-m data cartridges for TLZ07, TLZ09
SWXMP-DC	100 pack of 120-m data cartridges for TLZ07, TLZ09

KZQSA Adapter (required for the following systems)

KZQSA-AA	Adapter for BA23 MicroVAX II systems
KZQSA-BA	Adapter for BA123 MicroVAX II systems
KZQSA-SA/SF	TLZ07 adapter for BA200/BA400 MicroVAX 3000 and VAX 4000 systems; factory/field installed

Power Cords (240 V devices require a country-specific power cord.)

BN19P-2E	United States (standard)
BN19A-2E	United Kingdom/Ireland
BN19C-2E	Austria, Belgium, Finland, France, Germany, Holland, Norway, Portugal, Spain, Sweden
BN19E-2E	Switzerland
BN19H-2E	Australia/New Zealand
BN19K-2E	Denmark
BN19M-2E	Italy
BN19S-2E	India
BN18U-2E	Israel

StorageWorks TLZ09 DAT Drive and TLZ9L Loader (*continued*)

Specifications	TLZ09	TLZ9L
Capacity per cartridge	8 GB (120m tape)	8 GB (120m tape)
Capacity per magazine		8 cartridges per magazine Up to 64 Gigabytes per magazine
Buffer Size	1 MB	1 MB
Transfer Rate	775/1550 KBs sustained	775/1550 KBs sustained
Burst transfer rate	Asynchronous —5 MB/s (maximum) Synchronous —10 MB/s (maximum)	Asynchronous – 5 MB/s(maximum) Synchronous 10 MB/s (maximum)
Recording block length	Variable or fixed	Variable or fixed
Access time	Less than 40 seconds with a 120 meter tape	Less than 40 seconds with a 120 meter tape
Search time	Approximately 100 times nominal read/write speed	Approximately 100 times nominal read/write speed
Magazine initialize time		90 seconds (typical)
Swap time		50 seconds (typical)
Move		32 seconds minimum to 85 seconds maximum
Uncorrected error rate	Less than 1 in 10 ¹⁵ bits	Less than 1 in 10 ¹⁵ bits
MTBF (1)	200,000 hours power on at 20% duty cycle	180,000 hours power on at 20% duty cycle Greater than 160,000 swaps
Operating temperature	5 to 40 ° C / 41 to 104 ° F	10 to 40 ° C / 50 to 104 ° F
Operating humidity	20 to 80 percent (non condensing) 26° C / 79° F maximum wet bulb temperature	20 to 80 percent (non condensing) 26° C / 79° F maximum wet bulb temperature
Power consumption (internal)	17 W (maximum), 10 W (average)	32.5 W (maximum), 8.4 W (average)
Accessories (all models)		
Media cartridge	1 TLZ07-CA	8 TLZ07-CA
Cleaning cartridge	1 TLZ04-HA	1 TLZ04-HA
Users Manual	1 EK-TLZ09-OM	1 EK-TLZ09-OM
Magazine		1 TLZ9L-08
Media Robot Utility CD-ROM		included
	TLZ09	TLZ9L
Additional tabletop accessories		
SCSI terminator	H8860-AA	H8860-AA
SCSI cable included	TLZ09-DB BN23G-01	TLZ09-DB -BN23G-01
for 50 pin HD host	TLZ09-DC BN23G-01 + BN36A-0B	
for 68 pin HD host	TLZ09-DD BN19J-03	
for 50 pin LD host		
SCSI connector (tabletop only)	50-pin low density SCSI-2	50-pin low density SCSI-2

Format and Compatibility

Note: When DDS-media is used, tape drive and loader default to DDS-1 format and operation.

Recording Format	DDS-2 (120m tape)	DDS-2 (120m tape)
Write/Read	DDS-1 (90/60m tape)	DDS-1 (90/60m tape)
Write/Read	DDS-DC (90/60m tape)	DDS-DC (90/60m tape)

Physical Characteristics TLZ09 Tape Drive

TLZ09	3.5-inch Embedded	5.25-inch Embedded	Tabletop
Height	4.1 cm (1.6 in)	4.1 cm (1.6 i.)	52 cm (2.1 in)
Width	10.1 cm (4.0 in)	14.6 cm (5.7 in)	16 cm (6.3 in)
Depth	146 cm (5.8 in)	146 cm (5.8 in)	30 cm (11.8 in)
Weight	0.7 kg (1.5 lb)	0.9 kg (2.0 lb)	2.2 kg (4.9 lb)

Physical Characteristics TLZ9L Tape Loader

TLZ9L	5.25-inch Embedded	Tabletop
Height	8.3 cm (3.25 in)	10.9 cm (4.3 in)
Width	14.6 cm (5.75 in)	21.1 cm (8.3 in.)
Depth	24.2 cm (9.5 in)	29.6 cm (11.7 in)
Weight	2.4 kg (5.3 lb)	5.0 kg (11 lb)

StorageWorks TLZ10 4mm DAT Drive

TLZ10 is a midrange tape drive designed for file and print servers, application servers, workstations, and data centers. It competes with Quarter Inch Cartridge (QIC), 8 mm drives, and 4 mm DAT subsystems. DAT technology is superior in capacity and has a lower cost per MB than QIC. The DDS-3 compliant TLZ10 tape drive is over 50 percent faster than the TLZ09 DDS-2 (Digital Data Storage) drive. It has a transfer rate of 1.18 MB per second native and 2.36 MB per second compressed. With up to 12 GB of uncompressed capacity, it is ideal for unattended backup and archiving applications. This Digital Audio Tape (DAT) product is read/write compatible with the media used in the TLZ04, TLZ06, TLZ6L loader, TLZ07, TLZ7L loader, TLZ09, TLZ9L loader and other DDS, DDS-DC, and DDS-2, DDS-3 compliant DAT tape drives.

Features

- .. TLZ10 is available as system-installed tape drive, tabletop, and StorageWorks system building block (SBB) versions.
- .. The high speed of the TLZ10 allows backup of 24 GB of data in less than 2.8 hours in compressed mode.
- .. TLZ10 supports industry-standard DDS-3 format, which provides native capacity of 12 GB and compressed capacity of 24 GB.
- .. DIGITAL's rigorous qualification and testing process ensures correct SCSI compliance and compatibility with OpenVMS, Digital UNIX, and Windows NT* systems, and with StorageWorks products for Sun Solaris*, Hewlett Packard*, and Novell* environments.
- .. TLZ10 can read and write DDS-3, DDS-2, DDS-DC, and DDS-1 media, ensuring investment protection as well as data interchange with earlier drives.
- .. TLZ10 uses an automatic head cleaner that cleans head during operation, greatly improving data reliability. MTBF is rated at 225,000 hours (20 percent duty cycle).
- .. TLZ10 supports the DDS media recognition system, preventing inadvertent use of non data-grade media cartridges when enabled.
- .. TLZ10 is optimized for operation with OpenVMS, Digital UNIX, and Windows NT systems -- Change a jumper setting and it becomes a tape for PC environments.
- .. Suitable for multi-vendor computing environments

* See DIGITAL Business Link Web site at <http://www.businesslink.DIGITAL.com> for availability.

Operating System Support

See individual system ordering menus for specific variants and quantities supported.

TLZ10 is supported under the following systems with minimum Operating System Revisions:

- .. AlphaServer 8400 and 8200 running OpenVMS Alpha V6.2, DIGITAL UNIX V3.2G, and Windows NT with DIGITAL drivers.
- .. AlphaServer 4100, 4000, 2100, 2100A, 2000, 1000A, 800, 300 running OpenVMS Alpha V6.2, DIGITAL UNIX V3.2G, and Windows NT 4.0.
- .. MicroVAX 3100 40/85/96, 88/98 running OpenVMS V5.5-2, requires STABACKIT COM Vx46
- .. VAX 4000 Models 106A, 108, 600, 700, 705A with OpenVMS V5.5-2.
- .. DIGITAL Personal Workstations i-Series and a-Series running Windows NT 4.0; Digital Personal Workstation au-Series running DIGITAL UNIX 4.0

Third party Software Support

TLZ10 supports third-party software products from the following companies.

- .. Seagate, Legato, Cheyenne, Palindrome

Storage Adapters and Converts Supported

- .. KZPAA, KZPBA, KZPDA, KZPSA
- .. KZPSC and KZPAC on Windows NT only
- .. DWZZA, DWZZB, DWZZC

StorageWorks TLZ10 4mm DAT Drive (*continued*)

Controller Support

Tabletop variant DS-TLZ10-DB and System Building Block variant DS-TLZ10-VA are supported on the following controllers under DIGITAL UNIX 3.1 and OpenVMS 5.1 or higher.

.. HSD10, HSD30, HSD50, HSD52, HSJ30, HSJ40, HSJ50, HSJ52, HSJ54

Ordering Information

TLZ10 variants include one TLZ10 data tape and one cleaning cartridge. Tabletop variants require a SCSI cable.

TLZ10 Internal Drives

TLZ10-LK	12/24 GB DAT (4mm) internal narrow SCSI tape drive. 5.25" half-height, 274 white, 70/140 MB/min. Includes one TLZ10-CA data tape, one TLZ04-HA cleaning cartridge, and documentation. Factory/Field installed.
TLZ10-LG	12/24 GB DAT (4mm) internal narrow SCSI tape drive. 5.25" half-height, 217 grey, 70/140 MB/min. Includes one TLZ10-CA data tape, one TLZ04-HA cleaning cartridge, and documentation. Factory/Field installed.
TLZ10-HF	12/24 GB DAT (4mm) internal narrow SCSI tape drive. 5.25" half-height, 217 grey, 70/140 MB/min. Includes one TLZ10-CA data tape, one TLZ04-HA cleaning cartridge, VAX mounting hardware, and documentation. Factory/Field installed.

TLZ10 Tabletop Drives

DS-TLZ10-DB	12/24 GB DAT (4mm) Tabletop narrow SCSI tape drive, 274 white, 70/140 MB/min. Includes one TLZ10-CA data tape, one TLZ04-HA cleaning cartridge, 50-pin LD SCSI single-ended active terminator, documentation, power cord, and autosense power, 120-240V. Requires SCSI cable.
BN23G-01	1 M 50-pin high density SCSI cable for connection to high density host SCSI controller
BN31W-01	1 M 68-pin high density SCSI cable for connection to high density host SCSI controller
BC09D-03	1 M 50-pin low density SCSI cable for connection to log density host SCSI controller

TLZ10 StorageWorks Building Block

DS-TLZ10-VA is supported in BA356 and BA370 StorageWorks shelves.

DS-TLZ10-VA	12/24 GB DAT (4mm) narrow SCSI tape drive in StorageWorks snap-in carrier, 277 Blue carrier bezel, 70/140 MB/min. Includes one TLZ10-CA data cartridge, one TLZ04-HA cleaning cartridge, and documentation.
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StorageWorks TLZ10 4mm DAT Drive (*continued*)

Specifications

Physical Characteristics	3.5-inch embedded	Tabletop
Height	4.1 centimeters (1.62 inches)	5.1 centimeters (2 inches)
Width	10.1 centimeters (4 inches)	16 centimeters (6.25 inches)
Depth	14.6 centimeters (5.7 inches)	30 centimeters (11.8 inches)
Weight	0.6 kilograms (1.4 pounds)	2.2 kilograms (4.85 pounds)
Capacity (formatted)	12/24 GB (125 M tape)	
Buffer size	2 MB	
Transfer rate	1.18/2.36 MB per second sustained, 70/140 MB per minute sustained	
Burst transfer rate	Asynchronous—5 MB per second (maximum) Synchronous—10 MB per second (maximum)	
Recording block length	Variable or fixed	
Average access time	Less than 40 seconds with 125 M tape	
Search speed	Approximately 100 times nominal read/write speed	
Uncorrected error rate	Less than 1 in 10 ¹⁵ bits	
MTBF ¹	225,000 hours power on at 20 percent duty cycle	
Operating temperature (media dependent)	DDS-1/-2 41° to 113° F 5° to 45° C	DDS-3 59° to 131° F 15° to 55° C
Operating humidity (media dependent)	DDS-1/-2—20 to 80% (non-condensing) DDS-3—10 to 80% (non-condensing) @ 26° C maximum wet bulb temperature	
Power consumption	Brick 7.4 watts (average) Tabletop 22 watts 100-240 VAC, autosensing power supply	
Format and compatibility (write/read)	DDS-1 (90/60m tape) ² DDS-DC (90/60m tape) DDS-2 MP+ (120m) DDS-3 MP++ (125m)	

1. Digital does not warrant that the predicted MTBF is representative of any particular unit. Failure rates are derived from a statistical test sample. Actual figures will vary in individual units.
2. When DDS-1 or DDS-2 media is used in a TLZ10, the drive defaults to DDS-1 or DDS-2 format and operation.

StorageWorks TKZ9E 8 mm Helical Scan Tape Drive

TKZ9E is an industry-standard 8 mm helical scan tape drive which supports 2.3, 5.0, 7.0, 10.0 and 14.0 GB modes. Push buttons on front panel allow user to select a range of densities and compression modes to ensure compatibility with previous DIGITAL 8 mm tape drives, such as the TKZ08, TLZ08, TKZ09, TKZ15, and Exabyte EXB8200/8500/8505-based tape drives.

The display panel, with two numeric/alphanumeric LED displays and eleven LED indicators, provides operator information on the quality of tape being used, how much tape is left on cartridge, and whether loaded tape cartridge was written in compressed mode. Both tabletop and StorageWorks System Building Block variants are available.

Highlights

- .. Backward tape compatibility with 8 mm helical scan tape drives
- .. Storage capacity: 7 GB (14 GB compressed, 2:1 typical)
- .. Supports 112 meter and extended-length (164 meter) tapes
- .. Interface: SCSI-2, Fast Narrow Single-Ended
- .. Sustained data rate: 500 (1000 compressed) Kbytes-per-second

Software Support

- .. DIGITAL UNIX, V3.2 minimum
- .. OpenVMS V5.5-2 minimum for OpenVMS VAX systems
- .. OpenVMS V6.2 minimum for OpenVMS Alpha systems

Adapter/Controller Support

- .. Most native single-ended SCSI ports
- .. PMAZC TurboChannel SCSI controller
- .. KZPAA PCI/SCSI controller
- .. KZPBA PCI/SCSI adapter
- .. KZPSA PCI/SCSI controller
- .. KZPDA PCI/SCSI adapter
- .. KZPSM PCI/SCSI adapter
- .. PB2HA EISA SCSI controller
- .. DWZZA differential to single-ended converter
- .. KZQSA Qbus SCSI controller
- .. KZMSA XMI SCSI controller
- .. AlphaServer 8200 and 8400 with KFTIA controller

Ordering Information

TKZ9E-TA	8 mm Tape Drive, SCSI, (8200/8500/8505-compatible), tabletop Unit, 120V ac power cord, and SCSI terminator, with One Cleaning Cartridge, two blank 112-meter tapes, and user documentation
TKZ9E-VA	8 mm Tape Drive, SCSI, (8200/8500/8505-compatible), 5.25" StorageWorks System Building Block, with one cleaning cartridge, two blank 112-meter tapes, and user documentation
TKZ8X-CB	Five, 112-meter, 8 mm Tape Cartridges

SCSI Cabling

TKZ9E-TA, tabletop variant uses a 50-pin low density, bail lock "champ" SCSI connector. SCSI cables must be ordered separately.

Power Cords

Note: The -TA tabletop variant includes a 120 V power cord. Select country specific power cord for all other voltages.

BN19A-2E	United Kingdom,Ireland
BN19C-2E	Austria, Belgium, Finland, France, Germany, Holland, Norway, Portugal, Spain, Sweden
BN19E-2E	Switzerland
BN19H-2E	Australia,New Zealand
BN19K-2E	Denmark
BN19M-2E	Italy
BN19S-2E	India
BN18U-2E	Israel

StorageWorks TKZ9E 8 mm Helical Scan Tape Drive (continued)
Specifications
Drive Specification

Physical block size	1024 data bytes +400 ECC bytes
Data Buffering	1 MB speed matching buffer
Transfer Rate	500 KB/s to 75 MB/s
Track Density	1640 tracks/in (8500/8505)
Track Width	.025 mm (.001 in)
Power	+5 VDC, +12 VDC/15 W typical

Physical Characteristics

TKZ9E	StorageWorks	Tabletop
Width	15.2 cm (6.00 in)	14.6 cm (5.75 in)
Depth	21.8 cm (8.60 in)	20.3 cm (8.00 in)
Height	11.4 cm (4.50 in)	8.3 cm (3.25 in)

TKZ6x IBM 3480/3490/3490E Compatible Tape Drive Family

The TKZ60 family consists of IBM compatible tape drives with a SCSI 2 interface that can be connected to most DIGITAL native SCSI ports and SCSI controllers.

TKZ60 series consists of IBM 3480/3490 compatible tape drives. TKZ60 series is TA90/91 compatible, available in rackmountable and tabletop configurations. A 19" RETMA mounting kit is available for rackmountable drive. Mounting kits for StorageWorks SW500/800 are not available. TKZ60 series is designed for customers who require sporadic data interchange on IBM 3480/3490 tape media.

TKZ61 series consists of IBM 3480/3490 compatible tape drives with integrated 10-cartridge loader. TKZ61 series is TA90/91 compatible and available in rackmountable, pedestal and tabletop configurations. Drive includes 19" RETMA cabinet mounting hardware. StorageWorks SW500/800 mounting kits are available. TKZ61 series is designed for customers who perform backups on IBM tape media and have significant IBM tape interchange requirements.

TKZ62 series consists of IBM 3480/3490/3490E compatible tape drives with integrated 10-cartridge loader. TKZ62 series is TA90/91/92 compatible and available in rackmountable, pedestal and tabletop configurations. Drive includes 19" RETMA cabinet mounting hardware. StorageWorks SW500/800 mounting kits are available. The TKZ62 series is designed for customers who perform backups on IBM tape media, have significant IBM tape interchange requirements, and need increased capacity per cartridge provided by the inclusion of 3490E 36-track capability. TKZ62 tape drive is unique in that it is the only IBM 3490E compatible tape drive that can read AND write in 3480/3490 18-track mode.

TKZ63 series has the same features as the the TKZ62 series but without an autoloader. The TKZ63 also includes a FWD SCSI variation for even faster data transfer. The TKZ63 series is designed for customers who require sporadic data interchange and must use IBM 3490E tape media. An optional mounting kit is available for RETMA 19" rack mounting.

TKZ64 series has the same features as the TKZ62 series but contains a 60-slot loader for very large data backups. When coupled with library software, it can also be used as a small library where slow response time is acceptable (there is only one drive mechanism). The TKZ64 is contained in its own free-standing cabinet.

TKZ60 Features

- .. TA90/91 read/write compatible
- .. Up to 400 MB per cartridge
- .. Single cartridge load only
- .. 1.5 MB/Sec max transfer rate
- .. IBM IDRC data compression
- .. Slow Narrow Single Ended and Slow Narrow Differential SCSI variants
- .. Autoranging power supply

TKZ61 Features

- .. TA90/91 read/write compatible
- .. Up to 400 MB per cartridge
- .. 10-cartridge integrated loader
- .. 3.0 MB/Sec max transfer rate
- .. IBM IDRC data compression
- .. Slow Narrow Single Ended and Fast Narrow Differential SCSI variants
- .. Autoranging power supply

TKZ62 Features

- .. TA90/91/92 read/write compatible
- .. Up to 2.4 GB per cartridge
- .. 10-cartridge integrated loader
- .. 3.0 MB/Sec max transfer rate
- .. IBM IDRC data compression
- .. Slow Narrow Single Ended, Fast Narrow Differential, and Fast Wide Differential SCSI variants
- .. Autoranging power supply

TKZ63 Features

- .. TA90/91/92 read/write compatible
- .. Up to 2.4GB per cartridge
- .. 3.0MB/SEc max transfer rate
- .. IBM IDRC data compression
- .. Slow Narrow Single Ended, Fast Narrow Differential, and FWD SCSI variants
- .. Autoranging Power Supply

TKZ64 Features

- .. TA90/91/92 read/write compatible
- .. Up to 2.4GB per cartridge
- .. 60-cartridge integrated loader
- .. 3.0MB/SEc max transfer rate
- .. IBM IDRC data compression
- .. Slow Narrow Single Ended, Fast Narrow Differential, and FWD SCSI variants
- .. Autoranging Power Supply

TKZ6x IBM 3480/3490/3490E Compatible Tape Drive Family *(continued)*

Hardware Support

- .. KZMSA on AlphaServer 8400 with XMI bus
- .. KZPBA PCI/SCSI adapter
- .. KZPSM PCI/SCSI adapter
- .. KZPDA PCI/SCSI adapter
- .. KZPAA and KZPSA controllers for PCI based systems
- .. HSJxx controllers for CI clusters
- .. HSD05 and HSD10 controllers for DSSI connections
- .. KZQSA adapter for Q-bus MicroVAX and VAX 4000 systems
- .. PMAZC Turbochannel/SCSI adapter
- .. PB2HA EISA/SCSI adapter
- .. AlphaServer 8200 and 8400 with KFTIA adapter
- .. DWZZA Differential to Single Ended Converter

Software Support

- .. TKZ60 series requires minimum of OpenVMS VAX V5.4-1, OpenVMS Alpha V1.0, RISC Ultrix V4.2A with CAM and DIGITAL UNIX V1.2
- .. TKZ60 requires HSOF firmware V2.0 minimum. TKZ61/62/63/64 requires HSOF firmware V2.7 minimum
- .. NetWorker Save and Restore on DIGITAL UNIX as of V2.2B
- .. TKZ61/62/63/64 series drives require minimum of OpenVMS VAX V5.5-2, OpenVMS Alpha V6.1, DIGITAL UNIX V2.0
- .. TKZ60/61/62/63/64 support on Alpha Windows NT requires V3.51 or V4.0 and layered software, QB-4STAA-SA or QB-4STAB-SA
- .. Media Robotic Utility (MRU) V1.1
- .. Storage Library System V2.8A
- .. Archive/Backup V2.1
- .. Sequential Media File System V1.2
- .. Hierarchical Storage Management V2.1

SW500/800 Mounting Kits

- TKZ6R-S1** Mounting kit for one TKZ61/62 drive in SW500/800 cabinet. Includes 1-drive bezel and mounting hardware
- TKZ6R-S2** Mounting kit for two TKZ61/62 drives in SW500/800 cabinet. Includes 2-drive bezel and mounting hardware
- TKZ6R-S3** Mounting kit for three TKZ61/62 drives in SW500/800 cabinet. Includes 3-drive bezel and mounting hardware

Metric Cab Mounting Kit

- TKZ6R-M1** Mounting kit for one TKZ61/62 drive in metric dimensioned cabinet. Includes 1-drive bezel and mounting hardware

TKZ6x Tape Drives

- TKZ60-EA** Rackmountable 3480/3490 compatible tape drive with IDRC data compression, manual loading, single ended SCSI, 120/240V. Includes one cleaning cartridge, one data cartridge, 120V power cord, and documentation. Requires TK60R-AA rackmount kit for 19" RETMA cabinets. One kit mounts up to two TKZ60 drives
- TKZ60-FA** Same as TKZ60-EA except for tabletop single-ended SCSI
- TKZ60-GA** Same as TKZ60-EA except for rackmount differential SCSI
- TKZ60-HA** Same as TKZ60-FA except for tabletop differential SCSI
- TKZ61-AA** Rackmountable, 3480/3490 compatible tape drive with IDRC data compression, integrated 10 cartridge loader, single ended SCSI, 120/240V. Includes one cleaning cartridge, one data cartridge, cabinet slide kit, 120V power cord, and documentation
- TKZ61-AB** Same as TKZ61-AA except for pedestal single-ended SCSI
- TKZ61-AC** Same as TKZ61-AA except for tabletop single-ended SCSI
- TKZ61-AD** Same as TKZ61-AA except for rackmount differential SCSI
- TKZ61-AE** Same as TKZ61-AB except for pedestal differential SCSI
- TKZ61-AF** Same as TKZ61-AC except for tabletop differential SCSI

TKZ6x IBM 3480/3490/3490E Compatible Tape Drive Family (continued)

TKZ6x Tape Drives (continued)

TKZ62-AA	Rackmountable, 3480/3490/3490E compatible tape drive with IDRC data compression, integrated 10 cartridge loader, single ended SCSI, 120/240V. Includes one cleaning cartridge, one data cartridge, cabinet slide kit, 120V power cord, and documentation.
TKZ62-AB	Same as TKZ62-AA except for pedestal single-ended SCSI
TKZ62-AC	Same as TKZ62-AA except for tabletop single-ended SCSI
TKZ62-AD	Same as TKZ62-AA except for rackmount differential SCSI
TKZ62-AE	Same as TKZ62-AB except for pedestal differential SCSI
TKZ62-AF	Same as TKZ62-AC except for tabletop differential SCSI
TKZ62-AG	Same as TKZ62-AA except Fast Wide Differential SCSI
TKZ62-AH	Same as TKZ62-AB except Fast Wide Differential SCSI
TKZ62-AI	Same as TKZ62-AC except Fast Wide Differential SCSI
TKZ63-AA	Tabletop 3480/3490/3490E compatible tape drive with IDRC data compression, single slot manual load, Fast Narrow single ended SCSI, 120/240V. Includes one data cartridge, one cleaning cartridge, 120V power cord, and documentation. Requires one TKZ6R-AB kit for 19" RETMA cabinet mounting.
TKZ63-BA	Same as TKZ63-AA except Fast Wide Differential SCSI
2T-TKZ64-AA	Free standing 3480/3490/3490E compatible 60-slot mini library, fast narrow differential SCSI, 120/240V. Includes one data cartridge, one cleaning cartridge, 120V power cord, and documentation.
2T-TKZ64-BA	Same as 2T-TKZ64-AA except Fast Wide Differential SCSI
TKZ6R-AB	TKZ63-AA/BA 19" cab mounting kit. One kit mounts up to two tabletop drives.
TK60U-AB	Upgrades early non-compression TKZ60 drives to IDRC data compression. Note: Only TKZ60 drives built after May, 1993 may be upgraded. Manufacture date can be found on TKZ60 serial number label
TK60R-AA	Mounting kit for up to two TKZ60 drives in a 19" RETMA cabinet
TK60K-BA	Box of four, 5-slot, magazines to hold data cartridges for early TKZ60 drives with front mounted loader mechanisms
TK60K-BB	Box of four, 10-slot, magazines to hold data cartridges for early TKZ60 drives with front mounted loader mechanisms

Media and Cleaning Cartridge

TA90K-30	IBM compatible 18-track data cartridge, quantity 30 (thirty)
TKZ6K-30	IBM compatible 36-track data cartridge, quantity 30 (thirty)
TA90K-HC	Cleaning cartridge

SCSI Cables and Power Cords

Both the Slow Narrow Single Ended and Fast Narrow Differential TKZ6x family variants use a 50-pin, low density, bail lock "Champ" SCSI connector. The Fast Wide Differential variants use a 68-pin, high density, connector with thumb screws. SCSI cables must be ordered separately.

All TKZ6x family tape drives include a 120 volt power cord. Select country specific power cord for all other voltages.

BN19H-2E	Australia/New Zealand
BN19C-2E	Austria, Belgium, France, Germany, Finland, Holland, Norway, Sweden, Portugal, Spain
BN19A-2E	U.K./Ireland
BN19K-2E	Denmark
BN19M-2E	Italy
BN19S-2E	India
BN18L-2E	Israel

TKZ6x IBM 3480/3490/3490E Compatible Tape Drive Family (continued)

Specifications

Tabletop Unit	TKZ60	TKZ61/62	TKZ63	2T-TKZ64
Height	11.74 cm (7.4 in)	17.71 cm (6.97 in)	25.9cm(10.2in)	132.8cm(52.3in)
Width	21.72 cm (9.2 in)	43.19 cm (17.0 in)	22.2cm(8.75in)	45.2cm(17.8in)
Depth	59.98 cm (22.4 in)	61.10 cm (24.05 in)	43.2cm(17.0in)	70.6cm(27.8in)
Weight	11.34 kg (25 lb)	27.22 kg (60 lb)	15.8cm(34.8lb)	102.1kg(225lb)
Power Consumption	150 W/hr	150 W/hr	150 W/hr	150W/hr

Note:For additional information reference TKZ6x Family Data Sheet, EC-F7837-36.

TKZ90 IBM 3590 Format Compatible Tape Drive

TKZ90 is an IBM 3590 compatible 128-track format compatible tape drive providing very high data transfer rates coupled with exceptional levels of reliability and data integrity. The built-in LZ1 compression algorithm can increase the capacity per data cartridge to as much as 30 GB, thereby providing for very fast and cost effective backup of large database systems.

The rackmountable and cab mounted versions of the TKZ90 are supplied complete with an integrated automatic cartridge loader with removable 10-cartridge magazine, providing up to 300 GB of available storage. An additional separate slot allows individual data or cleaning cartridge to be loaded and unloaded without removing the magazine.

TKZ90 loader tape drive is available in rackmountable and cabinet mounted variations. A non-loader variant is also available for mounting in existing 3590 compatible tape libraries. Connectivity is via Fast Wide Differential SCSI-2 interface. Note that the TKZ90 can not read or write tape cartridges in the older IBM 3480, 3490 or 3490E tape formats.

Features

- .. Integrated 10-cartridge loader with removable magazine
- .. 4 MB dynamic data buffer
- .. Rackmountable and RETMA cab mounted versions
- .. Auto-ranging power supply
- .. IBM 3590 compatibility allows users to interchange data with other systems using IBM 3590 tape technology.
- .. High 9 MBS data transfer rate provides capability for very fast, unattended backup of large local databases or networked data in distributed, heterogeneous environments.
- .. New IBM 3590 tape provides high performance coupled with very high reliability, exceptional data integrity and low maintenance costs.
- .. Fast Wide Differential SCSI-2 interface provides maximum performance and maximum distance between tape drive and CPU system.
- .. 4 MB dynamic data buffer maximizes performance by keeping tape drive streaming while waiting for additional data.
- .. Random access cartridge selection allows TKZ90 to provide fast access to up to 300 GB of on-line tape storage at high data transfer rates thereby reducing storage and operator costs.
- .. Advanced drive and media diagnostics along with a LCD graphical operator display panel provide an operator friendly environment.

Software Supported

- .. OpenVMS Alpha V6.2 and V7.1
- .. DIGITAL UNIX V3.2F and V4.0A/B (Random loader operation requires separate library software.)

Adapters Supported

- .. KZPBA PCI/SCSI adapter
- .. KZPSA FWD PCI/SCSI adapter
- .. KFTIA FWD port on AlphaServer 8200/8400

CPU Requirements

AlphaServer 2100A, AlphaServer 4100/4000, AlphaServer 8200, AlphaServer 8400

Library software support

- .. Alexandria from Spectra Logic on DIGITAL UNIX V4.0A/B
- .. NetWorker Save and Restore V4.2x for DIGITAL UNIX

Ordering Information

- TKZ90-AA** 300 GB IBM 3590 compatible loader tape drive for mounting in 19" RETMA cabinets, 120/240V. Includes User/Installation Manual, one data cartridge, one cleaning cartridge, SCSI terminator, and 120V AC power cord. Other countries require country specific power cord. Requires TKZ9R-AA Mtg kit.
- TKZ90-AB** 30 GB, IBM 3590 compatible tape drive for mounting in existing 3590 libraries, 120/240V. Includes User/Installation Manual, one data cartridge, one cleaning cartridge, SCSI terminator, and 120V AC power cord. Other countries require country specific power cord.

TKZ90 IBM 3590 Format Compatible Tape Drive (*continued*)

Ordering Information (*continued*)

TKZ90-BA	IBM 3590 compatible tape drive with loader mounted in H9A10 19 inch RETMA 67 inch high gray cabinet, with two H7600-AA power controllers, 120 volt. Includes User/Installation Manual, one data cartridge, one cleaning cartridge and SCSI terminator. 38.5" of expansion space. Order TKZ90-AA to add second drive.
TKZ90-BB	IBM 3590 compatible tape drive with loader mounted in H9A10 19 inch RETMA 67 inch gray cabinet, with two H7600-DB power controllers, 240 volt. Includes User/Installation Manual, one data cartridge, one cleaning cartridge and SCSI terminator. 38.5" of expansion space. Order TKZ90-AA to add second drive.
TKZ90-CA	Same as TKZ90-BA, except blue cabinet.
TKZ90-CB	Same as TKZ90-BB, except blue cabinet.

Options

TKZ9K-30	Quantity 30, 10 GB TKZ90 Data Cartridge
TKZ9K-HC	Quantity 5, TKZ90 cleaning cartridge
TKZ9K-MG	Quantity 1, additional 10-slot TKZ90 cartridge magazine
TKZ9R-AA	19 inch RETMA rack mounting kit for TKZ90-AA. Mounts up to two TKZ90 drives

SCSI Cables

SCSI cables must be ordered separately for all variants. TKZ90 uses a 68-pin high density connector with two jackscrews.

Specifications

Physical Characteristics	TKZ90-AA	TKZ90-AB	TKZ90-BA/CA	TKZ90-BB/CB
Height	52.2 cm (20.6 in)	26.5 cm (10.5 in)	170.0 cm (66.9 in)	170.0 cm (66.9 in)
Width	23.0 cm (9.1 in)	22.3 cm (8.8 in)	60.0 cm (13.6 in)	60.0 cm (13.6 in)
Depth	98.8 cm (39.0 in.)	75.4 cm (29.8 in)	86.0 cm (33.9 in)	86.0 cm (33.9 in)
Weight	49.0 kg (109.0 lb.)	28.4 kg (63.0 lb)	247.5 kg (550.0 lb)	247.5 kg (550.0 lb)
Power	0.3 KVA	0.3 KVA	5.76 KVA	7.68 KVA
Performance				
Data transfer rate	9 MB/sec			
Max instantaneous SCSI rate	20 MB/sec			
Number of tracks	128			
Tape speed	79 inches/sec			
Recording technique	Interleaved serpentine longitudinal			
Data search rate	166 MB/sec			
Data buffer size	4 MB			
Capacity per cartridge	10GB native/30GB compressed			
Cartridge load time	14 sec			
Tape rewind time				
Full Cartridge	2 sec			
Maximum	60 sec			
Media type	Metal particle			

TSZ07 Reel to Reel Tape Device

TSZ07 is a dual-density 1600/6250-bit/inch magnetic tape drive that can be connected to most SCSI controllers and adapters to provide industry standard 9-track data interchange. For systems with a VAXBI bus a TSB07-xx variant is available that includes a VAXBI SCSI adapter for ease of ordering.

TSZ07 is available in a standard 48.3-cm (19 in) rackmount form, tabletop version, or top mounted in a 110 cm (43.3 in) cabinet which includes an H7600-type power controller and provides 55.9 cm (26 in) of cabinet expansion space.

Features

- .. Recording density 6250 bits/in (GCR), 1600 bits/in (phase encoded)
- .. Formatted capacity @ 6250 bits/in 140 MB *(2400-foot reel), @ 1600 bits/inch 40 MB (2400-foot reel)
- .. Read/write speed 2.54 meters/second (100 inches/second maximum)
- .. Maximum rewind speed 5.1 m/s (200 in/s)
- .. Maximum data transfer rate 625 KB/s
- .. Maximum SCSI transfer rate 4 MB/s (synchronous)
- .. Automatic loading and threading
- .. 8 character alphanumeric front panel display
- .. 1 MB cache memory
- .. Front loading with low profile 22.2 cm (8.75-in) height
- .. Auto ranging power supply
- .. Low acoustic noise level

Hardware Support

- .. KZPAA and KZPSA for PCI based systems
- .. KZMSA on AlphaServer 8400 with XMI bus
- .. KZPBA PCI/SCSI adapter
- .. KZPSM PCI/SCSI adapter
- .. KZPDA PCI/SCSI adapter
- .. HSJxx for CI clusters
- .. HSD05 and HSD10 for DSSI connection
- .. KZQSA for Q-bus systems
- .. PMAZC Turbochannel/SCSI controller
- .. PB2HA EISA/SCSI controller
- .. AlphaServer 8200 and 8400 with KFTIA controller
- .. DWZZA Differential to Single Ended Converter

Software Support

- .. HSOF V1.2 or later.
- .. TSZ07 requires OpenVMS V5.4-1 or higher, DIGITAL UNIX V2.0 or higher. Support for Alpha systems running Windows NT requires V3.51 or V4.0 and layered software QB-4STAA-SA or QB-4STAB-SA.

TSZ07 variants for connection to SCSI external ports and controllers

TSZ07-AA	1600/6250 bit/inch Slow Narrow Single Ended SCSI rackmountable 9-track magtape, requires country kit.
TSZ07-BA	1600/6250 bit/inch Slow Narrow Single Ended SCSI 9-track magtape mounted in H9A11 cabinet, includes 9-foot (2.7 meter) external BC06P-09 SCSI cable, tape drive to power controller ac power cord, and power controller with appropriate ac power cord attached. Some countries may require a country specific ac power plug.
TSZ07-BB	Same as -BA except 240V power controller.
TSZ07-CA	1600/6250 bit/inch Slow Narrow Single Ended SCSI tabletop 9-track magtape, requires country kit.
TSZ07-DA	Slow Narrow Differential SCSI rackmountable 9-track magtape, requires country kit.
TSZ07-EA	Slow Narrow Differential SCSI 9-track magtape in H9642 cabinet, includes 2.7 meter (9-foot) external BN06P-09 SCSI cable, tape drive to power controller ac power cord, and power controller with appropriate ac power cord attached. Some countries may require a country specific ac power plug.
TSZ07-EB	Same as TSZ07-EA except 240V power controller, requires two country specific power cords.
TSZ07-FA	Slow Narrow Differential SCSI tabletop 9-track magtape, requires country kit.

TSZ07 Reel to Reel Tape Device (*continued*)

Country kits

- .. TSZ07-AA, -CA, -DA, and -FA require a country kit which includes an ac power cord, one 1.8 meter (6-ft) SCSI cable (BC06P-06), hardware documentation, tape head cleaning kit, and 731.5 meter (2400-foot) reel of blank magnetic tape.

TSZK7-AA	United States, Canada, Mexico
TSZK7-AD	Denmark
TSZK7-AE	United Kingdom., Ireland
TSZK7-AG	Austria, Belgium, Finland, France, Netherlands, Norway, Portugal, Spain, and Sweden
TSZK7-AI	Italy
TSZK7-AJ	Japan
TSZK7-AK	Switzerland
TSZK7-AT	Israel
TSZK7-AZ	Australia, New Zealand
TSZK7-BJ	India

SCSI Cabling

Both the TSZ07 single ended and differential SCSI variants use a 50-pin, low density, bail lock "Champ" SCSI connector.

SW800 Mounting Kits

- .. TSZ07-AA and -DA variants can be mounted in StorageWorks SW800 cabinet. Up to two TSZ07 drives can be mounted in cabinet, drives must be mounted in top most positions *only*.

TSZ7R-S1	Mounting kit for mounting one TSZ07 magtape in SW800 cabinet. Includes replacement SW800 front door, one drive bezel, inch to metric adapter brackets, and mounting hardware
TSZ7R-S2	Mounting kit for mounting two TSZ07 magtapes in SW800 cabinet. Includes replacement SW800 front door, two drive bezel, inch to metric adapter brackets, and mounting hardware

Specifications

Physical Characteristics	TSZ07-AA and -DA	TSZ07-Bx, -Ex, and TSB07-Bx	TSZ07-CA, -FA
Height	22.8 cm (9.0 in)	110 cm (43.31 in)	26.9 cm (10.6 in)
Width	43.2 cm (17.0 in)	60 cm (23.62 in)	50.8 cm (20.0 in)
Depth	63.5 cm (25.0 in)	86 cm (33.86 in)	68.6 cm (27.0 in)
Weight	30.9 kg (66.0 lb)	115.9 kg (255 lb)	43.2 kg (95.0 lb)

StorageWorks TZK11 Quarter-Inch Cartridge (QIC) Tape Drive

TZK11 tape drive uses the QIC-2 GB format in an quarter-inch cartridge streaming tape drive, available as a 5.25-inch, half-height form factor embedded or standalone tabletop device. The TZK11 supports a variety of capacities and densities depending on the cartridge type used, as illustrated in the following table. The high available capacity and transfer rate make this drive suited to backup as well as data interchange.

Cartridge	System	Capacity	Format	Read	Write
DC9250	DIGITAL UNIX, OpenVMS	Up to 2.5 GB	QIC-2 GB	X	X
DC9000 (Magnus 2.0)	DIGITAL UNIX, OpenVMS	Up to 2.0 GB	QIC-2 GB	X	X
DC9000 (Magnus 1.2)	DIGITAL UNIX, OpenVMS	Up to 1.2 GB	QIC-1 GB	X	X
DC9000 (Magnus 1.0)	DIGITAL UNIX, OpenVMS	Up to 1.0 GB	QIC-1 GB	X	X
DC6525	DIGITAL UNIX, OpenVMS	Up to 525 MB	QIC 525	X	X
DC6320	DIGITAL UNIX, OpenVMS	Up to 320 MB	QIC 320	X	X
DC6150 or DC600XTD	DIGITAL UNIX	Up to 150 MB	QIC 150	X	X
DC6150 or DC600XTD	DIGITAL UNIX	Up to 120 MB	QIC 120	X	X
DC600A	DIGITAL UNIX	Up to 60 MB	QIC 24	X	

Features

- .. Up to 2.0 GB (formatted) tape capacity
- .. 300-KB/second transfer rate
- .. 5.25-inch half-height form factor
- .. Embedded and tabletop models
- .. Read/write speed: Variable
- .. Supported interface: SCSI-2

Software Support

DIGITAL UNIX, OpenVMS V5.5-2, OpenVMS Alpha V1.5, and SCO UNIX

Ordering Information

One data cartridge and one cleaning cartridge included in all models; also available in BA353 desktop expansion box.

TZK11-DA	TZK11 tabletop, including 3-ft SCSI cable and terminator
TZK11-HF	TZK11 for MicroVAX 3100 Model 30/40/80/90 systems; field installed
TZK11-LG	TZK11 for AlphaServer 2100, 2000 (068 gray)
TZK11-MF	TZK11 for DEC 3000 Model 400/500/600/800 systems
TZK11-VA	TZK11 for StorageWorks BA356 modular storage shelf
TZK11-VU	TZK11 for StorageWorks BA356 modular storage shelf, second drive

Media and Cleaning Cartridge

TZK1X-CG	Single 2.5 GB QIC media cartridge (DC9250)
TZK1X-CH	5-pack, 2.5 GB QIC media cartridges (DC9250)
TZK1X-CE	Single 2.0 GB QIC media cartridge (DC9200)
TZK1X-CF	5-pack, 2.0 GB QIC media cartridges (DC9200)
TZK1X-CD	5-pack, 525 MB QIC media cartridges (DC6525)
TZK1X-CB	5-pack, 320 MB QIC media cartridges (DC6320)
TZK1X-HA	TZK10/TZK11 cleaning cartridge

Note: DIGITAL branded media is recommended.

Specifications

Physical Characteristics (Embedded)

Height	15.0 cm (5.9 in)
Width	4.4 cm (1.75 in)
Depth	21.8 cm (8.6 in)
Weight	1.1 kg (2.4 lb)

TZK20 Quarter-Inch Cartridge Tape Drive

TZK20 QIC tape drive is a compact 2.3 GB MiniQIC tape drive that is ideal for backup, data exchange, and archival storage in workstations and file and print servers. Its read-while-write capability checks data accuracy, so no verification pass is needed and back up time is cut in half.

TZK20 has a dual-channel head design. The first head reads and verifies data as it streams onto the tape. The second head immediately corrects data errors, eliminating the wear and tear of tape repositioning. TZK20 competes with Digital Audio Tape (DAT), but has a lower initial price.

All TZK20 drives include one year of onsite warranty. An extended warranty is available at the time of purchase. Extended DIGITAL warranties can be purchased in five-year increments, up to 24 hours a day, seven days a week DIGITAL service.

Features

- .. Compact 2.3 GB MiniQIC tape drive
- .. Ideal for backup, data exchange, and archival storage for workstations and small servers
- .. Read-while-write error detection assures accurate data without a verification pass
- .. Available in internal and tabletop packaging configurations

Software and Hardware support

- .. DIGITAL UNIX V3.2C
- .. DIGITAL UNIX V3.2D
- .. OpenVMS Alpha V6.2
- .. OpenVMS Alpha V6.2-1H1
- .. OpenVMS VAX V6.2

Note: TZK20 does not support booting of OpenVMS standalone backup on MicroVAX 3100 Model 40 and VAXstation 4000 Model 60 systems. TZK20 internal drive replaces the CD-ROM on AlphaStation 200 and 250 systems. The TZK20 is not supported on the same bus as a controller on AlphaStation 500 systems.

Adaptor support

- .. DWZZA signal converter (8-bit Fast Wide differential to Single-Ended SCSI)
- .. KZPAA (PCI based SCSI adaptor)

Ordering Information

Internal Drives

One blank tape, a cleaning cartridge, and documentation are included with each drive.

TZK20-HF TZK20 5.25-inch, 2.3 GB, 300 KB/second SCSI QIC tape drive with mounting kit

Tabletop Drives

One blank tape, a cleaning cartridge, documentation, cables and power cords are included with each drive.

TZK20-DB TZK20 tape drive for 50 pin high density host SCSI adaptor

TZK20-DC TZK20 tape drive for 68 pin high density host SCSI adaptor

TZK20-DD TZK20 tape drive for 50 pin high density host SCSI adaptor

Media

TZK2X-CD 5 QIC-wide data cartridges, 425-feet, 2.3 GB, 1800 Oe, QIC-3210-MC format

TZK2X-HA 1 Unit QIC-wide cleaning cartridge

TZK20 Quarter-Inch Cartridge Tape Drive

Specifications

Capacity (formatted)	2.3 GB (425 ft tape)
Buffer size	256 KB
Interface	SCSI, SCSI-2
Transfer rate	Asynchronous Data Transfer -- 300 KB/s sustained, 18 MB/min sustained
Burst transfer rate	Asynchronous -- 3 MB/s (maximum)
Recording block length	Variable or fixed
Average access time	54 s (425 ft tape)
Search speed	47.2 in/s
Uncorrected error rate	Less than 1 in 10 ¹⁵ bits
Error correction	Read-While-Write, Reed-Solomon Level Two
MTBF	200,000 Power-on hours Head life -- 50,000 hours at 10 percent duty cycle Greater than 15,000 load/eject cycles
Mean time to Repair	Less than 30 min
Operating temperature	10 C (50 F) to 40 C (104 F)
Operating humidity	20% to 80 % (non-condensing) 26 C maximum wet bulb temperature
Altitude	Up to 4 km (13,000 ft) operating Up to 13 km (30,000 ft) non-operating
Power consumption	12.1 W operating, 3.5 W standby 100 V ac-240 V ac, autosensing power supply

Regulatory conformance

Safety	UL1950, CSA 22.2 950, IEC 950 (EN 60950), GS mark
EMI/RFI	FCC class B, VDE 0875 Class B, CISPR Class B, EN55022, EN50082-1, CE mark, VCCI mark

Physical Characteristics

Height	3.5-inch internal -- 4.1 cm (1.62 in) 5.25-inch internal -- 4.3 cm (1.73 in) Tabletop -- 5.1 cm (2 in)
Width	3.5-inch internal -- 10.2 cm (4 in) 5.25-inch internal -- 15 cm (5.91 in) Tabletop -- 16 cm (6.25 in)
Depth	3.5-inch internal -- 15 cm (5.9 in) 5.25-inch internal -- 15.3 cm (6 in) Tabletop -- 30.7 cm (12 in)
Weight	3.5-inch internal -- 0.7 kg (1.5 lb) 5.25-inch internal -- 0.7 kg (1.5 lb) Tabletop -- 2.4 kg (5.2 lb)

FLEXIBLE/OPTICAL MEDIA SPECIFICATIONS CHART
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Option #	Media Type	Capacity MB (Note 1)	Tape Length (Note 2)	Form Factor (Note 3)	Shelf Life (Note 4)	Coercivity (Oe) (Note 5)	Durability (Passes) (Note 6)	Type Mat. (Note 7)	Environmental Conditions		
									Storage (Note 8)	Archival (Note 9)	Operating (Note 8)
RX02K-10	SDSS	0.512	N/A	8	20*	300	3,500,000	GFO	10-51/8-80		10-51/8-80
RX33K-10	HDDS	1.2	N/A	5.25	20*	650	4,000,000	CGFO	10-51/8-80		10-51/8-80
RX50K-10	HDDS	0.409	N/A	5.25	20*	300	3,000,000	GFO	10-51/8-80		10-51/8-80
RX23K-FM	HDDS	1.44	N/A	3.5	20*	725	4,000,000	CGFO	4-53/8-90		10-60/8-80
RV6XP-AA	WORM	6552	N/A	12	100	N/A	100,000	SSBT	-20-60/5-90		5-50/5-80
RWX1K-01	M/O	594	N/A	5.25	30*	N/A	40,000	TIC	-10-55/10-90	-10-55/10-90*	5-55/10-80
RWX5K-01	M/O	1200	N/A	5.25	30*	N/A	40,000	TIC	-10-55/10-90	-10-55/10-90*	5-55/10-80
RWX5K-02	WORM	1200	N/A	5.25	30*	N/A	40,000	TIC	-10-55/10-90	-10-55/10-90*	5-55/10-80
RWX6K-01	M/O	2300	N/A	5.25	30*	N/A	100,000	TbFeCo	-10-55/3-90	-10-55/3-90*	5-55/3-85
RWX6K-02	WORM	2300	N/A	5.25	30*	N/A	100,000	TbFeCo	-10-55/3-90	-10-55/3-90*	5-55/3-85
RWX6K-03	M/O	2600	N/A	5.25	30*	N/A	100,000	TbFeCo	-10-55/3-90	-10-55/3-90*	5-55/3-85
RWX6K-04	WORM	2600	N/A	5.25	30*	N/A	100,000	TbFeCo	-10-55/3-90	-10-55/3-90*	5-55/3-85
TUN24-SL	REEL	145	2400	10.25	20*	350	40,000	GFO	5-48/20-80	5-32/20-80	16-32/20-80
TUN24-AL	REEL	145	2400	10.25	20*	350	40,000	GFO	5-48/20-80	5-32/20-80	16-32/20-80
TU58-K	DC100A	0.262	140	3.5	5	310	5,000	CGFO	-40-45/20-80	-40-45/20-80	5-45/20-80
TK25-K	DC600A	60	600	5.25	10*	310	5,000	CGFO	-40-45/20-80	-40-45/20-80	5-45/20-80
TZK2X-CB	DC2120	120	307.5	3.5	10*	550	5,000	CGFO	-40-45/20-80	-40-45/20-80	5-45/20-80
TZK2X-CD	QIC-WIDE	2300	420	3.5	10*	1800	5,000	MP++	-5-45/20-80	15-45/30-70	5-57/20-80
PC4XT-BA	DC6150	150	620	5.25	10*	550	5,000	CGFO	-40-45/20-80	-40-45/20-80	5-45/20-80
TZK1X-CB	DC6320	320	620	5.25	10*	550	5,000	CGFO	-40-45/20-80	-40-45/20-80	5-45/20-80
TZK1X-CD	DC6525	525	1020	5.25	10*	550	5,000	CGFO	-40-45/20-80	-40-45/20-80	5-45/20-80
TZK1X-CH	DC9250	2500	1200	5.25	10*	900	5,000	CGFO	-5-45/10-80	-5-45/20-80	5-57/20-80
TLZ04-CB	DAT-60M	1300	196.9	2.9	10	1540	2,000	MP	5-32/20-60		5-45/20-80
TLZ06-CB	DAT-90M	2000	295.3	2.9	10	1540	2,000	MP	5-32/20-60		5-45/20-80
TLZ07-CB	DAT-120M	4000	393.7	2.9	10	1700	2,000	MP+	5-32/20-60		5-45/20-80
TKZ8X-CB	8 mm	5000	367.5	3.7	30*	1540	1,500	MP	5-32/40-60		5-45/20-80
TKZ6K-30	3490E	800	1100	4.3	15*	520	40,000	CD	5-32/5-80		16-32/20-80
TKZ9K-30	3590	10000	1100	4.3	20*	1600	40,000	MP	4-32/5-80		15-32/20-80
TA90K-30	3480	200	541	4.3	15*	520	40,000	CD	5-32/5-80		16-32/20-80
TK50-K	CT-I	95	600	4.2	20*	350	20,000	GFO	5-45/20-80	5-45/20-80	10-40/20-80
TK52-K	CT-II	296	600	4.2	20*	350	20,000	GFO	5-45/20-80	5-45/20-80	10-40/20-80
TK85K-01	CT-III	10,000	1167	4.2	20*	1540	500,000	MP	16-32/20-80	18-28/40-60	10-40/20-80
THXKD-01	CT-IV	20,000	1765	4.2	30*	1850	500,000	MP+	16-32/20-80	18-28/40-60	10-40/20-80
THXKE-02	CT-IIIxt	15,000	1765	4.2	20*	1540	500,000	MP	16-32/20-80	18-28/40-60	10-40/20-80

* Data in all items above denoted with "*" indicate information obtained from sources other than Digital Equipment Corporation, American National Standards Institute, or manufacturer's specifications. Information is intended for general reference only and is subject to change without notice. Digital Equipment Corporation assumes no responsibility for any errors that may appear in this document.

Notes:

- Maximum formatted capacity per unit in highest density qualified DIGITAL drive application without compression.
- Minimum length of recording area in feet.
- Diameter, width or other commonly referenced form factor dimension in inches, as applicable for device type.
- Minimum in years, provided item is stored as recommended in product documentation. Stated as "pre-recorded/post recorded (archival)" where distinction is made.
- Nominal value as measured in oersteds.
- Minimum number of passes—parameter is variously defined within the industry and may not be comparable between product types. Some general definitions are as follows:
 - (1) for diskettes - wear resistance in number of revolutions as defined in product-specific documentation.
 - (2) for optical devices - load/unload, spin/up down cycles.
 - (3) for tape products - number of tape-head or test passes as defined in product-specific documentation.
- Magnetic recording material, where: GFO = gamma ferric oxide, MP = metal particulate, CD = chromium dioxide, BF = barium ferrite, CGFO = cobalt-doped gamma ferric oxide, TA = tellurium alloy, TIC = magnetic alloy of terbium, iron and cobalt, SSBT = alloy of antimony, selenium, bismuth, tellurium.
- Maximum temperature/humidity range in C/%RH, non-condensing.
- Maximum temperature/humidity range in C/%RH, non-condensing; if field is blank, refer to "storage" figures.