CreoScitex™

EUROPEAN PRODUCT SUPPORT

Qualstar AIT-II Libraries

Release Notes



Company Confidential

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Section

1

Introduction

Overview

The new Qualstar AIT-II Libraries series are comprehensive tape libraries available for automated enterprise class backup, archive and retrieve without operator intervention.

The Qualstar AIT-II (TLS-4000) libraries products form a family of automated tape library systems which use eight millimeter (8mm) data cartridges in models which can house up to 2 to 6 AIT-II tape drives and accommodate from 22 to 360 cartridges. Data capacities range from 50 gigabytes to over 36 terabytes, depending on the number of data cartridges and the cartridge tape drive format. Model-dependent features include two to six drives, an I/O Port and a barcodereader. The entire system (drives and media changer) is under host control via the industry standard SCSI SPI-2 interface.

The Qualstar AIT-II (TLS-4000) contains a high-performance robotics system for moving cartridges, removable magazines for cartridge storage, fixed slots for storing cleaning tapes, and multiple tape drive mounting locations. An I/O Port for inserting and removing cartridges under secured host system control is supported in all models. Separate, high-efficiency, power supplies are used for the tape drives and the changer. All units operate on any internationally available AC power source(s), with the power cable and a SCSI interface cable(s) being the only connections required. The entire cabinet is pressurised and cooled by filtered air to ensure an optimum operating environment.

The TLS-4000 family was designed for reliability. There are no belts or pulleys to stretch or wear out in this three-axis mechanism. Instead, brush-less motors operate precision lead screws. Digital closed-loop servo systems and magnetic position sensors assure fast, smooth, trouble-free cartridge handling. The servos automatically calibrate themselves, thus eliminating all electrical adjustments. The TLS even informs the operator when its time to replace the air filter.

Preventive maintenance is reduced to cleaning and replacing the air filter, when so prompted by the control panel display.

Available models

Model	Drives AIT-II	Slots	Total capacity
Desktop Single Drive	1	N/A	100MB/tape
TLS-4222i	2	22	2.2 TB
TLS-4480	4	84	8 TB
TLS-46120	4	126	12 TB
TLS-412180	6	180	18 TB
TLS-412360	6	360	36 TB



Features

- Key-locked access door with a large window
- No mechanical or electrical adjustments required
- Barcode reader for fast media recognition and inventory
- Automated I/O Port for inserting and removing cartridges.
- All brushless DC motors
- No belts or pulleys
- Back-lighted 80-character display
- Control panel menu system for use in system configuration, operation and maintenance
- Pressurised, filtered, forced air cooling with redundant fans
- Simple system integration to any host computer through a SCSI interface
- Inventory Sentry **(**minimises offline time)
- Pre-wired cartridge tape drive mounting slots
- Maintenance-friendly by design
- Self-calibrating, all-digital servo control system
- Operating firmware updateable via the SCSI interface
- Automatic input voltage range switching (100 – 120 VAC or 200 – 240 VAC)
- High degree of spare parts commonality among all models
- Simultaneous Random and Multi-Sequential (Multiple Stacker) operating modes
- Automated tape drive cleaning
- Non-volatile RAM stores system data when power is removed

Host Adapter

The PCI Dual Channel Ultra-2 SCSI (LVD) Host Adapter enables connection to external LVD SCSI devices such as Raids and tape Libraries. Each of the two Channels operaters independently as an external LVD channel or single-ended channel.

The PCI Dual Channel Ultra 2 SCSI (LVD) Host Adapter delivers upto 40MB/s pre-channel. The high-Density D-shell (VHDCI) connector connection to standard 16-bit type connectors providing consistion high-performance.

The LVD Ultra2-SCSI interface is only support the F50 or TigerII platforms

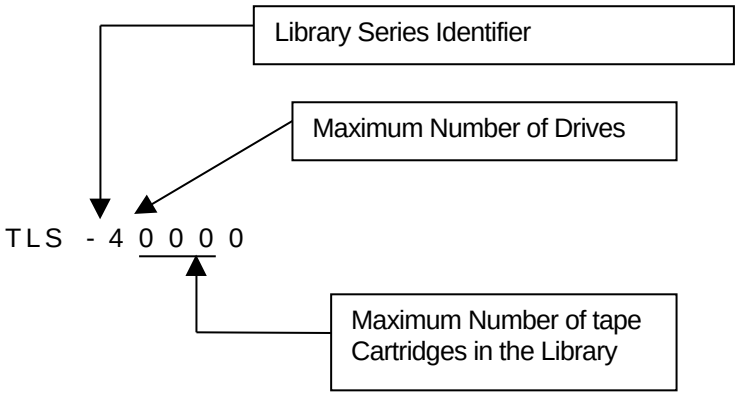
Connection

The Qualstar AIT-II libraries connect to a Timna Server or Timna Data Management Server either to a F50 or TigerII (43P-150) Platforms.

The AIT-II Library is controlled via Legato for daily Backup's, Archives and Retrieves.

Two Libraries can be connected together ie. Qualstar AIT Library and DLT Library to the same server.

Model Identification

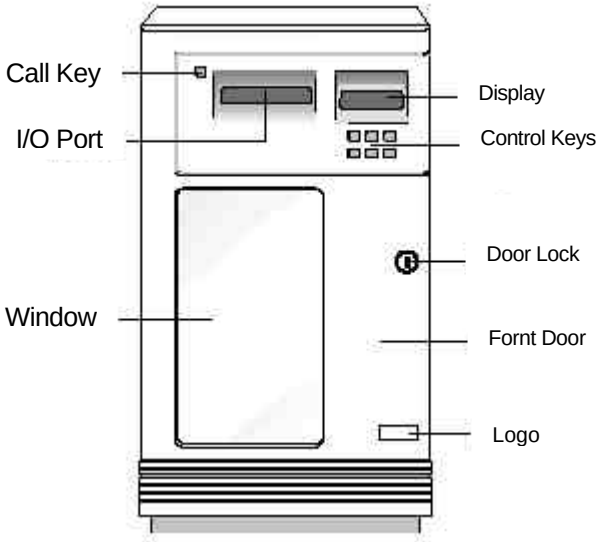


Section
2

AIT-II Jukebox description

Front View

The entire front of the cabinet is a cast aluminum door with a large window that can be locked with a key for security purposes. The Control Panel and I/O Port are found at the top of the door. The door has an interlock switch that prevents or halts robotic movement when the door is opened.



Controls and Indicators

The control panel is located at the top of the TLS and contains a four-line, 80 character display and six momentary push-button switches. An audible alarm alerts the operator to error conditions and the indication to replace the Filter

The multi-purpose display shows the following information, depending upon the selected mode of operation:

- Model number, identification number and firmware revision
- Operational status
- SCSI command display
- SCSI command history log which stores the most recent commands and status
- Error conditions
- Extensive menu system for configuration, maintenance, operation and other special functions

The seven push-button switches are used to manually control the TLS by means of the menu system and are identified (See Table below)

Name	FUNCTION
▲	Scrolls up through menu items.
▼	Scrolls down through menu items.
ENTER	Accepts the currently displayed menu choice.
EXIT	Exits the present menu and returns to the previous menu level.
✻	Provides robotic control commands.
MENU	Always takes you to the Top Menu.
CALL	Opens the I/O Port for cartridge insertion/removal.

Cartridge Handling System

Figure below shows some of the major internal components of the TLS. Library

The front door provides easy access to the cartridge bay and changer robotics and can be locked with a key to prevent unauthorized access. Opening the door disables the robotics but not the cartridge tape drives.

Cartridges are stored in ten-cartridge magazines, which are easily removed and replaced. A positive locking system assures the magazines are securely fastened.

The Library has a rotating platform called a carousel. Depending upon the model, a carousel can have two, four or six sides, called faces. The control system rotates the carousel

The TLS Library also contains additional fixed locations to store cleaning cartridges or more data cartridges.

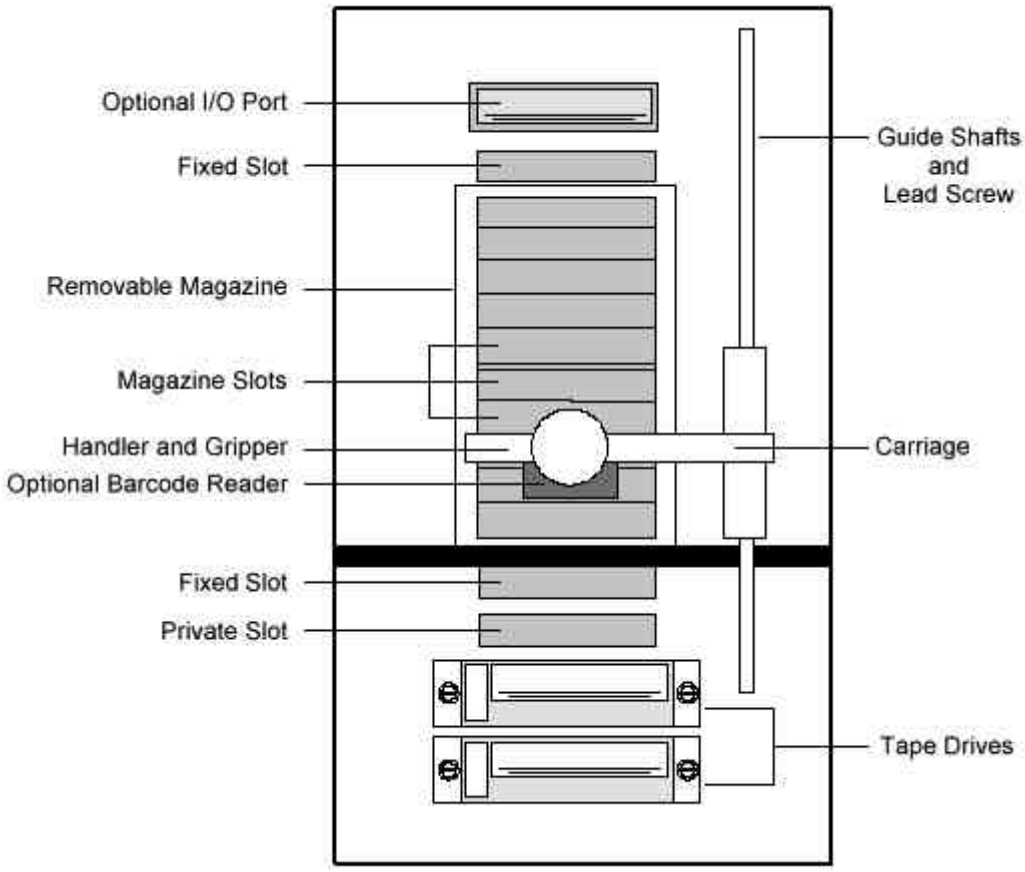
The changer robotics consists of a carriage which moves data cartridges up and down between the tape drives and the magazines, and a carriage-mounted loader which moves the cartridges in and out of the drives and magazines.

The robotics is self-aligning and does not require electrical or mechanical adjustment after cartridge tape drives are added or exchanged.

A brushless DC motor turns a precision nut around a stationary lead screw to drive the carriage in the vertical axis. As the nut turns, the carriage moves up or down the lead screw. Linear ball bearings on two hardened shafts provide lateral and torsional support. Magnetic sensors provide position and velocity feedback to the digital motion servo, while an optical sensor provides absolute position information. This unique design produces optimum positioning accuracy, reliability and long life.

The carriage-mounted loader is driven by a brushless DC motor turning a precision lead screw. Magnetic sensors provide position and velocity feedback, while an optical sensor provides absolute position information. A solenoid releases the spring-loaded cartridge gripping mechanism.

continue…Cartridge Handling System



Major internal components of the TLS. Library

Cartridge Inventory Security

The Inventory Sentry™ utilizes an infrared beam that passes (vertically) in front of all cartridge storage locations and tape drives. This allows the front door to be opened to inspect the inventory and if the inventory is not disturbed, closing the door immediately returns the TLS to operational status.

If the beam is broken while the cabinet door is open, by someone moving a cartridge for example, the TLS inventory status is invalidated. When the door is closed, the TLS will automatically rescan the cartridge inventory (and barcode labels if present) and update its internal inventory database before becoming operational.

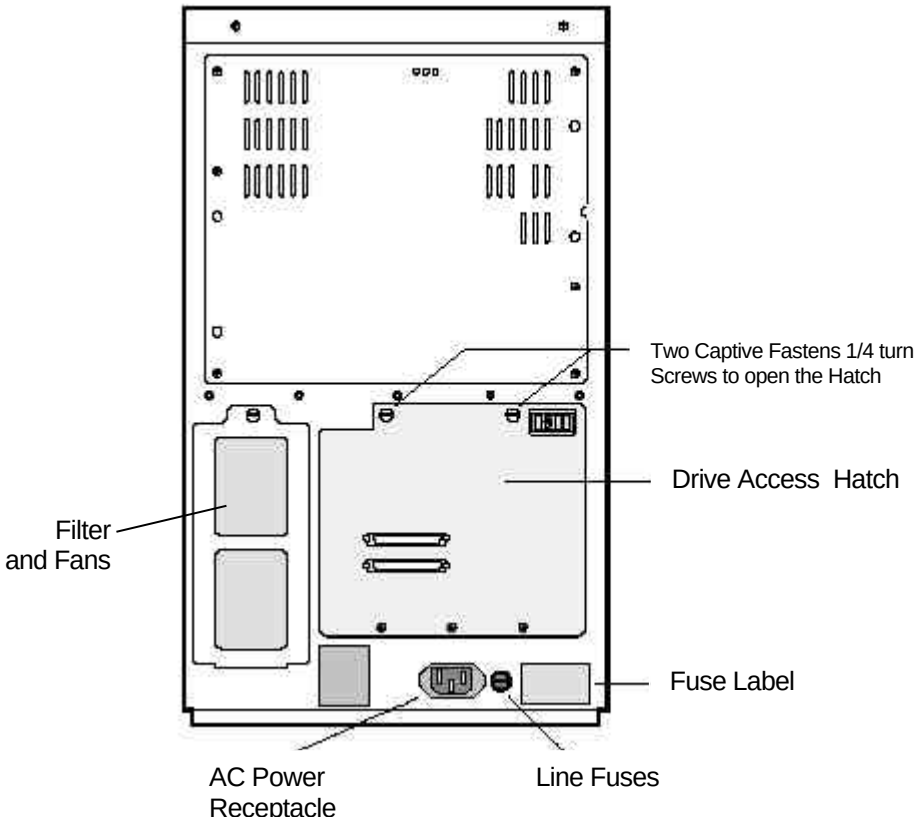
Data Cartridge Magazines

Bulk access is available by removing an entire 10 cartridge magazine. Magazines easily mount and dismount without the use of tools. All robotics are disabled when the door is opened for magazine removal or installation. A dust cover is included with each magazine for storage outside the TLS.

Note:- All Magazines must be present doing operation via the Host System / Legato

Rear View

The AC power receptacle, line fuse, AC power switch and SCSI connectors are mounted on the TLS rear panel. TLS systems operate over a range 100–120 VAC or 200–240 VAC, 50 Hz or 60 Hz. No changes to the TLS are required to operate over this range.



I/O Port

The I/O Port provides an automated and secured means of inserting or removing cartridges, one at a time, from the library. A Call button allows the user to request access to the I/O Port. The I/O Port automatically retracts when a data cartridge is fully inserted.

The disposition of cartridges into or out of the I/O Port is handled either automatically by the host Ripro Server or manually by using the menu system. The host system software (Legato) can assume complete control of the I/O Port for enhanced data security and can prevent access to the media via the control panel.

The I/O Port is operated by a lead screw and is monitored by optical sensors to insure proper data cartridge insertion by the user

Barcode Reader

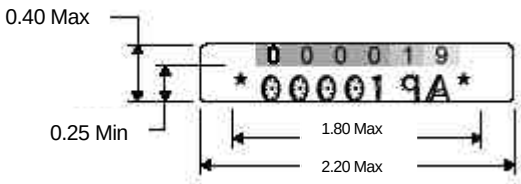
A barcode Reader is intended for use in systems where each cartridge is identified by a barcode label. Preprinted barcode labels are both human- and machine-readable.

The barcode reader consists of a charge-coupled sensor (similar to that used in a video camera) and associated electronics. It is mounted under the carriage. The barcode reader can scan all cartridges in the TLS, as well as cartridges introduced into the I/O Port. The changer must move cartridges in some upper slots, including the I/O Port, to a temporary location before their barcode labels can be read. Barcode data is stored internally in the changer's non-volatile RAM (the internal inventory database) and is available to the Ripro Server upon request via Legato.

Barcode Labels

All barcode labels must conform to ANSI/AIM BCI-1995, Uniform Symbology Specification Code 39. The nominal narrow element width (X value) should be between 0.010 inches and 0.020 inches. The nominal wide-to-narrow ratio (N value) should be between 2.5 and 3.0. There must be a minimum of 0.20 inches of quiet zone at each end of the barcode. The use of higher or lower densities is not recommended, as barcode reading reliability may be affected. The barcode may be left- or right reading.

AIT barcode labels may contain from two to six characters, plus a modulus check character. The labels should conform to the Figure below.



Note. Please see page 21 for part numbers for labels.

Cooling System

Dual redundant fans mounted on the rear panel draw outside air through filters into the cabinet for cooling. The resulting inside positive pressure prevents dust and debris from entering the unit. Air is exhausted through vents at the top and rear of the enclosure.

The Air Filter is expected to be replaced every three month by the Customer

SCSI LVD/SE Interface

The standard SCSI control-interface to the MC is both Low Voltage Differential (LVD) and Single-Ended (SE) capable, the tape drives are also in both of these interface types

All TLS-4000 SCSI cabling consists of high-performance twist-n-flat, 68 conductor. Ultra SCSI cable to provide for the highest possible data transfer rates. (Maximum 20MB/S)

Section

3

Site Preparation, Installation and Support

Site Preparation

The Qualstar library has to be connected to an UPS (uninterrupted power supply) to prevent uncontrolled power cuts and surges, which could course data lost. Recommendation UPS, Prestige on-line 3 or 6 KVA.

System dimensions, and cables lengths must be taken into consideration before installation. (LVD SCSI cable is 6 feet long).

Legato 5.1 plus patch must be installed to be able to configure the unit and to operate it properly (Legato 5.1 PN. is 510K52207)

The Operating System has to be greater then AIX 4.2.1 to support LVD host adapter.

The firmware on all platforms must meet the required levels. New Firmware required and Software Drivers will be available in the LVD installation kit.

Installation

The Qualstar AIT II library arrives pre-configured with CreoScitex specification and Installation and Operation manuals.

The Installation and configuration of the library should take three hours not including customer training (Legato configuration is not included). Only an engineer already trained can perform installation, setup and operation. The Engineer should follow carefully the installation procedure.

Each library controller is connected to a dedicated LVD Ultra2-SCSI board.

Only one library can be connected to the SCSI chain. If a second unit need to be connected a second interface board must be used.

Note – Enable codes are needed for the networker and Autochanger

Configuration and Set-up

The units main purpose is to guarantee a fast, unattended, scheduled backup with Legato, plus Archive and Retrieve via Timna Data Management software, also incurs the possibility to clone tapes.

Legato version 5.1 is used to configure and control the Qualstar AIT II library

The units are LVD Ultra2-SCSI devices, therefore cable-length is very important.

The document with the parameters and instructions are published on the Technical Info Centre – Support Zone.

Model	**Library SCSI –ID**	**Drives SCSI –ID**
Single Drive	N/A	Any
TLS-4222i	6	4, 5
TLS-4480	6	2,3,4, 5
TLS-46120	6	2,3,4, 5
TLS-412180	6	0,1,2,3,4, 5
TLS-412360	6	0,1,2,3,4, 5

Note

- Make sure that the Lowest SCSI Id is configured on the top Drive “D1” and so on, to the highest SCSI Id (5) is on the bottom drive “Dn”.
- Legato device setting must be 8mm tape device , Volume Default Capacity is 100GB and Cleaning usage is 36 times
- AIX setting for the AIT-II drives

  smit devices → SCSI Adapter → Change / Show Characteristics of a SCSI Adapter → (select the SCSI Adpater connected to the Library) “scsi1 Available 20-58 Wide/Ultra-2 SCSI I/O Controller “

  ```
  Maximum sysnchronous data transfer rate (mHz)      [20]
  ```

  smit chgtpe (Select each of the AIT-II tape drives)

  ```
  Block size (0=variable length)                     [0]

  Set timeout for the Read and Write command         [900]
  ```

- The Firmware of the AIT-II drives must be version 108E (If not upgrade the firmware)
- See Appendix B on LVD-Adapter Installation Limitation

Support level

Customer:

Customer is expected to replace the filters once every 3 months, or more often if the environment conditions require so.

Note *: The "filter-needs-replacement" alarm is set upon installation or via the customer*

Engineer on -site:

In case of a problem that can not be solved via phone or remote support, or in case the problem was identified as failed component, engineer should be on-site.

If the engineer can not resolve the problem he should open a PS call for support form the Product Specialist.

Dealers:

Self-supporting, should act the same as CreoScitex engineer. If supported by CreoScitex, CreoScitex engineer should be involved.

Service Centers support:

DU-Product Support will support Local Service Centers. In case a problem will not be solved, DU-Product Support Specialist will call CSI support.

Section
4

Training and Documentation

Customer Training

The Installation and Operation manuals from the library are delivered with the unit and should be handed over to the customer at the end of the installation.

It is the engineer's responsibility to train the customer:

- How to Power off and Power on.
- How to add and remove a media
- How to replace the filter
- Identify errors
- How to operate the LCD interface panel

The Local regional trainer is responsibility to give full training to the customer including Legato training

Engineer Training

Additional three days training course's are available in CSE for Service Field / Installation Engineers and Remote Support Engineers

As of Q2/2001 the Qualstar AIT-II library Raid will be part of the standard Ripro Server Training.

Supplied Document

The following documents are supplied with the product:

AIT Tape Drives Installation and Operation manual	501050 Rev. L
TLS-4000 Library Installation and Operation Manual	501370 Rev. B
TLS-4000 Library Technical Service Manual	500380 Rev. D

Legato 5.1 Installation Guide	399Z50081E
LVD Installation Manual	399Z1P350A

All Documentations are available on the Technical Info Centre – Support Zone.

Section

5

Logistics

Overview

Following is the content of a Qualstar AIT library kit

- Documentation for TLS-4000 (4222, 4480, 46120) Libraries:

  501370 TLS-4000 Installation and Operation Manual

  501380 TLS-4000 Technical Service Manual

  501050 AIT Tape Drives Installation and Operation Manual

- Documentation for TLS-412xxx (412180 and 412360) Libraries:

  501370 TLS-4xxxxx Installation & Operations Manual

  501300 TLS-412xxx Technical Services Manual

  501050 AIT Tape Drives Installation and Operation Manual

- Set of barcode labels:

  AIT 8mm barcode labels 6 digits, with check character. Numbered 0-179 or 0-539, depending on the number of slots in the library

- 5 SONY 50/100GB AIT2 8MM Tape Cartridges (***SDX2-50C***)
- 1 SONY Cleaning Cartridge for AIT 8MM Drives (***SDX-TCL***)
- LVD Ultra2-SCSI interface cable 6FT fast (738-1026-8)
- HD68 LVD/SE Multi mode Terminator (117-0011-9)

LVD interface kit (510K1P230 Kit LVD Interface) includes:

- 399Z1P350A INSTLL .HOST ADAPTER ON TIMNA (LVD-Installation Manual)
- 501V1P222 UPD_LVD_EV800_LPFC S/W
- 501V1P336 UPD FC+EV800 FOR AIX 4.2.1 S/W
- 510V1P332 S/W-PK,F50 FIRMWARE UPDATE
- 605B00301 IBM DUAL CH. ULTRA-2 SCSI ADPT

Product Options

Type	Vender Number	Sale Number	Decribtion
AIT II Desktop	637-0206-2	501R49370	AIT II Desktop Single Drive
TLS-4222i	900303	501R49361	2 Drives ,22 slots

requires: 501R44790 LEGATO AUTOCHANGER S/W 1-32SLOTS

TLS-4480	900307	501R49363	4 Drives, 84 slots

requires: 501R49312 LEGATO AUTOCHANGER S/W 1-128 SLOTS

TLS-46120	900309	501R49364	4 Drives, 126 slots

requires: 501R49312 LEGATO AUTOCHANGER S/W 1-128 SLOTS

TLS-412180	900310.	501R49365	6 Drives, 180 slots

requires: 501R49367 LEGATO AUTOCHANGER S/W 1-256 SLOTS

TLS-412360	900311	501R49372	6 Drives, 360 slots

requires: 501R49389 LEGATO AUTOCHANGER S/W UNLIMITED SLOTS

Options Accessories

Additional Accessory Kit are available, which can be ordered also separately

A. 510K1P407 SCITEX-A179 KIT

- 5X SONY 50/100GB AIT2 8MM Tape Cartridges
- 1 SONY Cleaning Cartridge for AIT 8MM Drives
- Barcode labels A000-A179

B. 510K1P408 SCITEX-A539 KIT

- 5 X SONY 50/100GB AIT2 8MM Tape Cartridges and
- 1 SONY Cleaning Cartridge for AIT 8MM Drives
- Barcode labels A000-A539

C. Additional Barcode labels are available:

- 606E10010 BAR CODE BCL FOR AIT (A000-A179)
- 606E10020 BAR CODE BCL FOR AIT (A000-A539)
- 606E10040 BAR CODE BCL FOR AIT (B000-B179)
- 606E10050 BAR CODE BCL FOR AIT (B000-B539)
- 606E10060 BAR CODE BCL FOR AIT (C000-C179)
- 606E10070 BAR CODE BCL FOR AIT (C000-C539)

D. Tapes:

- 457A10040 - AIT-2 8MM 50/100GB CARTRIDGE
- 457A10050 - AIT 8MM CLEAN CARTRIDGE

Spare Parts List

Description	CreoScitex Part No
AIT-II–LVD/SE Sony Drive	606A00180
AIT II Desktop Single Drive	606A00260
IBM DUAL CH. ULTRA-2 SCSI ADPT	605B00301
LVD-SCSI interface cable 6FT fast	607S00746
HD68 LVD/SE Multi mode Terminator	607S0047
Air Filter	607S00757
BAR CODE BCL FOR AIT (A000-A179)	606E10010
BAR CODE BCL FOR AIT (A000-A539)	606E10020
BAR CODE BCL FOR AIT (B000-B179)	606E10040
BAR CODE BCL FOR AIT (B000-B539)	606E10050
BAR CODE BCL FOR AIT (C000-C179)	606E10060
BAR CODE BCL FOR AIT (C000-C539)	606E10070
PS 110 Watts (Drives 4480,46120)	607S00753
PS 40 Watts (Drives 4222)	607S00754
PS Robotic	607S00756
Red Swap unit 4222	TBD
AIT-2 8MM 50/100GB CARTRIDGE	457A10040
AIT 8MM CLEAN CARTRIDGE	457A10050
JBX-Magazine (Hold 10 AIT tapes)	607S00759

Section
6

Appendix A

Qualstar Address

QUALSTAR CORPORATION
6709 Independence Avenue
Canoga Park, CA 91303
FAX: (818) 592-0116
Phone: (818) 592-2974 -*This is an strategic* partner number
www.qualstar.com -*general Qualstar site*
http://www.qualstar.com/146035.htm -*technical issues*

Section
7

Appendix B –

LVD – Adapter Installation Limitation

43P-150 Platforms

The Hardware Configuration of a 43P-150 platform has two PCI-Buses

Primary Bus	Slots 2 and 3
Secondary Bus	Slots 1,4 and 5

Limitation.

The LVD-Adapter must be installed in slots 2,3 or 4. Also the LVD-Adapter can NOT be installed in the same PCI-Bus as with the Graphic Adapter.

Installation.

Single Adapter (Timna Server Configuration)

The LVD-adapter must be installed in slot 4.

Note. It is important that the Graphic Card is installed in the Default slot 2.

Two Adapter installation (Timna Server Configuration)

The Video Card has to be moved to slot 1 (Same as the Brisque) and the two LVD-Adapters installed in slot 2 and slot 3.

F50 Platforms

The Hardware Configuration of a F50 platform has three PCI-Busses

First Bus	Slots 1 and 2
Second Bus	Slots 3,4 and 5
Third Bus	Slots 6,7,8 and 9

Installation / Limitation

The LVD-Adapter can NOT be installed in the same PCI-Bus as with the Graphic Adapter. Apart form that the adapter can be installed in any slots.

Software Limitations

After installation of the update software patch for the LVD Adapter, the Group Permission must be changed to “scitex” for the /scitex/version/temp director.

```
#Chgrp scitex /scitex/version/temp
```

Section
8

Appendix C

Technical Specification

Models	4222	4480	46120	412180	412360
Host Interface	Ultra2 SCSI (LVD) 68-pin				
Electrical / AC	10 to 120VAC or 200 to 240 VAC at 50Hz or 60Hz				
Watts -- Peak	266W	320W	373W	650W	650W
UPS -- KVA	0.3KVA	0.4KVA	0.46kva	0.55KVA	0.55KVA
BTU	909	1094	1275	1700	1700
Operating temperature	+5°C to +32°C				
Non-Operating temperature	-20°C to +60°C				
Temperature Gradient	1°C/Minute, 10°C/hour				
Relative Humidity	20% to 80%				
Height (in./cm)	22.7/57.7	38/94.5	41.6/105.7	51.6/131.1	51.6/131.1
Width (in./cm)	13/33	13.7/34.8	15.2/38.6	29.6/75.2	29.6/75.2
Depth (in./cm)	21.3/54.1	22.2/56.4	25.2/64	25.5/64	25.5/64
Weight (lb./Kg.)	60/27.2	89/40.4	104/47.2	263/119.3	263/119.3