EUT:PCI ULTRA SCSI CARD

FCC ID:KQ53194UP-1

DOMEX TECHNOLOGY CORP.

USER'S MAUNAL

EXHIBIT D

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The DMX3194U Plus series PCI-UltraSCSI host adapter

The DMX3194U Plus series host adapters are high-performance PCI bus master UltraSCSI host adapters which provide the interface between the UltraSCSI bus and the PCI local bus. In this *Installation Guide* we use the term DMX3194U Plus to refer to the DMX3194U Plus, host adapter model. The DOMEX Technology DMX3194U Plus supports 32-bit data transfers across the PCI bus at speeds up to 133 MBytes per second. The SmartSCSI™ Setup Utility program enables integration of the DMX3194U Plus into most platforms and operating systems. The DMX3194U Plus complies with plug and play applications on systems using the PCI bus standard.

The DMX3194U Plus host adapter will support asynchronous SCSI bus transfers to a maximum rate of 5 MBytes per second and synchronous ultra SCSI bus transfers to a rate of 20 MBytes per second. The DMX3194U Plus utilizes full support of UltraSCSI standards defined by the SCSI-3 specification.

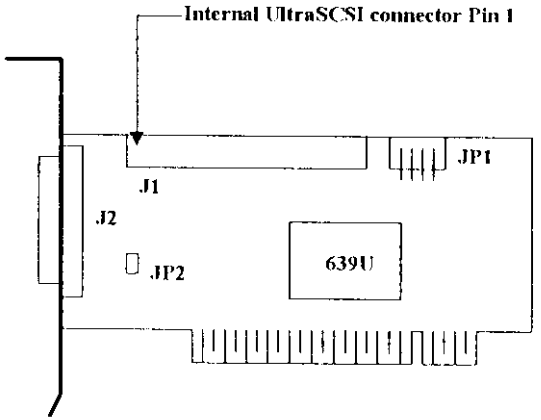

figure 1- DMX3194U Plus Host Adapter

Host adapter and the SCSI bus

The DMX3194U Plus is a bus mastering host adapter which works with the host computer to provide a means of control for the SCSI bus. By daisy chaining peripheral devices together, up to seven devices can be linked with the DMX3194U Plus. The host adapter can be placed in any physical position on the bus.

SCSI bus preparation

Each peripheral device that will be attached to the SCSI bus is either an internal or external device. Each peripheral will have a specific device ID, commonly referred to as a SCSI ID, which is set at the factory. Please refer to your peripheral documentation to determine switch or jumper settings for SCSI ID's. No two devices can have the same ID; the device ID uniquely defines the device to the SCSI bus.

SCSI bus termination

The SCSI bus structure has a length limitation as well as a requirement for termination at each end of the SCSI cable. The cable is designed to connect in a daisy chain fashion. No branching is permitted in the SCSI bus. The first and last physical SCSI device on the SCSI bus must be terminated (see Figure 2).

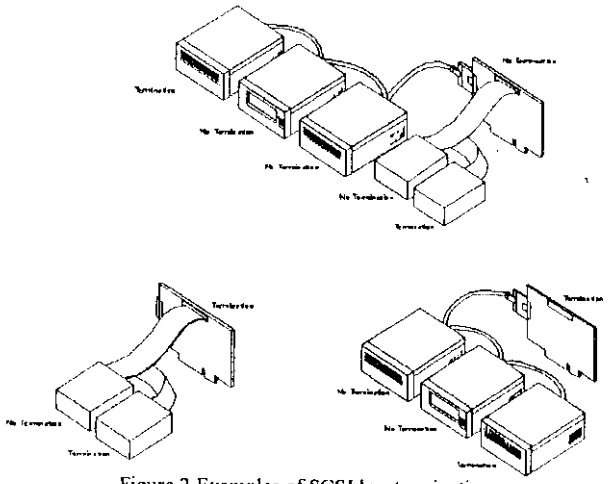

Figure 2 Examples of SCSI bus termination

The DMX3194U Plus host adapter's auto-termination is software controlled SmartSCSI™ Setup Utility. This feature allows the operator to switch on or auto-termination. If auto-termination is switched off, the operator can ma adjust termination for the host adapter. There are three ways to manually terminating the DMX3194U Plus on the SCSI bus (see Table-1).

SCSI Devices Configuration	Host Adapter Termination
Internal devices only [1]	On
External devices only [1]	On
Internal and external devices [2]	Off

Table 1 - DMX3194U Plus possible termination settings

[1] Assumption: Host adapter is at the end of the SCSI bus.
[2] Assumption: Host adapter is in the middle of the SCSI bus

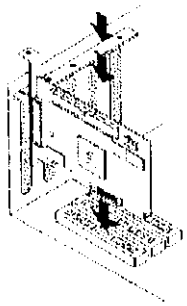

Figure 4 - Inserting the DMX3194U Plus into a PCI slot

4. Installation of internal SCSI cables

The DMX3194U Plus have one 50-pin internal Ultra SCSI bus connector; the internal connectors may be used simultaneously or singularly, depending on your bus configuration. Installation of internal SCSI cables must be performed before replacing the system covers. The internal ribbon cable is made with multiple connectors attached and used to daisy chain the host adapter with two or more devices. It is important that the cable installed correctly for proper operation. The cable has a colored stripe running the length of the cable, on the edge distinguishing the pin one side of the connector. These identifying markings must match when mated on the host adapter board.

When attaching Ultra SCSI devices, use the 50-pin Ultra SCSI cable connector on the host adapter. This connector has a triangle marking that identifies pin-one. Align the internal cable into the host adapter and the other cable connectors in a similar fashion into the other SCSI device connectors as described in the appropriate manufacturer instructions.

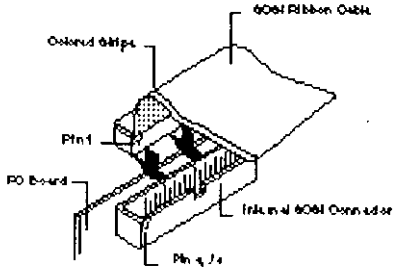

Figure 5 - Connecting the 50-pin internal flat ribbon cable

Installation of external SCSI cables

Installation of external SCSI cables can be performed after the cover has b closed. The cable is limited in length to a total of six meters including internal cabling. The external cable can be daisy chained to include up seven or fifteen devices with the DMX3194U Plus in combination w internal devices. The external cable is designed to be inserted only one requiring termination at the end peripheral device on the bus (see figure 6).

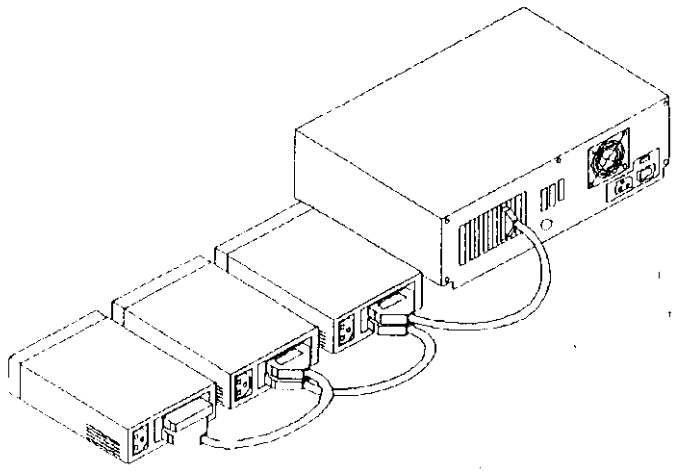

Figure 6 External cable connection

Low-level format

A low-level format will erase any data that is stored on the target disk. Before attempting to perform a low-level format be sure the data on the target disk has been backed up. A low-level format can be achieved via the SmartSCSI™ Setup Utility for the DMX3194U Plus.

The low level format sets the media to a state which is easily recognized by the host adapter on the SCSI bus. Once this format is completed, you will need to partition the drive. Refer to your operating system documentation for further information on partitioning drives.

Running the SmartSCSI™ Setup Utility

To start the SmartSCSI™ Setup Utility, verify that all devices attached to the SCSI bus are powered up when the host computer system is turned on. Once the power switch has been turned on and the system begins its on screen power up sequence, the DOMEX Technology banner, shown below, will be displayed for a brief period. During this time the DOMEX Technology SmartSCSI™ Setup Utility is accessible by pressing the "Control" key and the "I" key at the same time. The following message when displayed on your system monitor indicates that the host system is ready to accept your keyboard input.

!!! Press <Ctrl> <I> for SmartSCSI Setup Utility !!!

Main menu options

The main menu provides up to five possible setup options for meeting your system configuration.

- Scan Bus
- Device Setup
- Adapter Setup
- BIOS Setup
- Disk Utility

Scan Bus

This option scans the SCSI bus. All device ID's are displayed on the scr including SCSI ID's without devices attached. This allows for a be definition of location and priority on the SCSI bus.

- A device ID should only be changed if it conflicts with anot device address on the same bus. Refer to your periph documentation for changing SCSI ID's.
- The best ID for a bootable hard disk is SCSI ID 0.

Device Setup

All device ID's for the DMX3194U Plus are displayed on screen, includ SCSI ID's without devices attached. This allows for a better definition location and priority on the SCSI bus.

Asynchronous Transfer. Use this option to set the synchronous d transfer mode. The DMX3194U Plus host adapter will transfer data a maximum rate of 5 MBytes per second in asynchronous mode and 20 MB per second in synchronous mode. Use this option to set the synchronous d transfer mode. The default setting for this option is for synchron operation. (no)

MS-DOS/Windows 3.1x Driver Installation

Overview

The DOMEX Technology ASPI driver will support extended SCSI command functions for MS-DOS 3.30 or later. The on-board BIOS initialized during the power up boot routine only supports MS-DOS hard disk operation. If peripherals other than disks are used, such as CD-ROM or tape, the DOMEX Technology ASPI driver will need to be installed in addition to third party applications.

Installation

The installation procedure guides you through the installation of the DOMEX Technology DOS ASPI and the ASPI for Windows 3.1x drivers. The installation procedure described here requires some experience in MS-DOS or Windows 3.1x system setup and administration. The device driver is transferred from the DOMEX TECHNOLOGY DMX3194U Plus DRIVER DISK 1 to the hard drive where it is automatically initialized during the system boot routine.

The DOMEX TECHNOLOGY DMX3194U Plus DRIVER DISK 1 contains two installation programs that perform the same task. If you have completed installing the DOMEX Technology ASPI driver using the MS-DOS based installation routine described in this *User's Manual*, it is not necessary to repeat the procedure for a Windows 3.1x environment on the same system.

Installing the DOMEX Technology ASPI driver to an existing MS-DOS system

The ASPI driver is found on the DOMEX TECHNOLOGY DMX3194U Plus DRIVER DISK 1. It is important that the SCSI bus hardware, and operating system are installed correctly before proceeding further. If you need help installing the MS-DOS operating system, please refer to the MS-DOS manual before proceeding.

1. Turn on host system and boot into MS-DOS.
2. Insert the **DOMEX TECHNOLOGY DMX3194U Plus DRIVER DISK 1** into your floppy drive.
3. At the MS-DOS prompt, change to your active floppy drive (e.g., type **A: <ENTER>**).

4. Type **DOSSETUP <ENTER>**

   - A series of screens will guide you through the installation of the AS device drivers.

5. The first screen sets the installation drive and directory that the ASPI driv will be installed on. Follow the on-screen directions and/or options continue the installation.
6. To activate the device driver, reboot the system by pressing **<CTRL> <ALT> + <DEL>.**

If a CD-ROM, tape drive, scanner, or optical drive is installed on your system, a th party device driver is needed. A driver may be provided by the manufacturer and used in addition to the DOMEX Technology ASPI driver to provide proper support that device. Please refer to your peripheral device manufacturer documentation additional information.

Installing the DOMEX Technology ASPI driver to an existing Windows 3.1x system

The ASPI for Windows 3.1x driver is found on the DOMEX TECHNOLOG DMX3194U Plus DRIVER DISK 1. It is important that the SCSI bus hardware, a operating system are installed correctly before proceeding further. If you need h installing Windows 3.1x, please refer to the Microsoft Windows manual bef proceeding.

1. Turn on host system and boot into MS-DOS and Windows 3.1x operating system.
2. Insert the **DOMEX TECHNOLOGY DMX3194U Plus DRIVER DISK** into your floppy drive.
3. Use your installed mouse or the appropriate key strokes to select **RUN...** fr the Windows PROGRAM MANAGER. Execute the following steps:

   - Type **A:\SETUP <ENTER>.** A series of screens will guide y through the installation of the ASPI for Windows device drivers.
   - Choose **CONTINUE** to continue the installation sequence.
   - Choose **CONTINUE** to accept the Host Adapter selection.

Microsoft Windows 95 Driver Installation

Overview

The DOMEX Technology DMX3194U Plus will support Microsoft Windows 95 with the addition of a software driver. The installation procedure described here requires some experience in Windows 95 system setup and administration. The device driver is transferred from the DOMEX TECHNOLOGY DMX3194U Plus DRIVER DISK 1 to the hard drive where it is automatically initialized during the system boot routine.

The following files are used for installation and will be found on the DOMEX Technology DMX3194U Plus DRIVER DISK 1:

DMX3194.MPD	DMX3194U Plus SCSI Host Adapter Windows 95 miniport driver.
DMX3194.INF	Windows 95 installation information file.

Installation

The DMX3194U Plus driver developed for Windows 95 is loaded during the system boot routine and will remain resident on the drive. This is accomplished by following one of the three installation procedures listed:

- New Windows 95 installation.
- Adding the DOMEX Technology Windows 95 device driver to an existing Windows 95 system.
- Updating DMX3194.MPD device driver

The procedures described to make changes to the system have distinct differences. It is strongly suggested that the selected procedure be read and understood before proceeding with the system configuration changes. Please read the instructions carefully.

New Windows 95 installa.ion

These instructions will guide you through the installation of the DOMEX Technology host adapter driver while installing Windows 95. Windows 95 will be installed from either a CD-ROM or floppy diskettes. It is important that the hardware and DOS 4.01 or higher have been installed successfully before proceeding further. If installing from a SCSI CD-ROM drive, it is important that the DOMEX Technology ASPI driver, and CD-ROM driver be installed before proceeding further.

Access the Windows 95 CD-ROM either from the DOS prompt or from Microsoft

Windows 3.x File Manager. Execute the SETUP.EXE program and follow the instructions on your screen. If you are installing from floppy diskette, insert the Windows 95 Setup Disk 1 in your floppy disk drive and boot your system.

1. Once a Windows 95 session is established, use your installed mouse or the appropriate key strokes to select **MY COMPUTER** from the MAIN DESKTOP. Execute the following steps:

   - Select **CONTROL PANEL** from within the MY COMPUTER group.

2. Select **SYSTEM** from within the CONTROL PANEL group,

   - Select **DEVICE MANAGER** tab from within the SYSTEM group
   - Select the **OTHER DEVICES** category from within the DEVICE MANAGER listing.
   - Select the **PCI-SCSI Bus Controller** sub-category from within the OTHER DEVICES listing.

   - In the DOMEX Technology PCI-SCSI Bus Controller Properties window select the **DRIVER** tab, then select **"CHANGE DRIVER..."**.
   - In the SELECT HARDWARE TYPE window, select **SCSI CONTROLLERS**.

   - In the SELECT DEVICE window, select **"HAVE DISK..."**.

3. In the INSTALL FROM DISK window that is displayed, enter the DOMEX Technology Driver path name:

   - Insert DOMEX TECHNOLOGY DMX3194U Plus DRIVER DISK 1 into drive A:
   - Type: **A:\WIN95**, select **"OK"**

4. Select **DOMEX TECHNOLOGY DMX3194U Plus Host Adapter**, select **"OK"**, then **"OK"** again to install the DMX3194.MPD driver onto your hard disk drive.

5. This completes loading the Host Adapter Driver, follow the on-screen directions to complete the Windows 95 installation. Exit and reboot the system to activate the device driver.

6. It is highly recommended that you verify your Windows 95 device driver has been properly installed by selecting **MY COMPUTER** from the desktop. Then select **CONTROL PANEL**.

7. This completes updating the Host Adapter Driver. Follow the on-screen [illegible]

[illegible] CONTROL PANEL.

- Select **SYSTEM** from within the CONTROL PANEL group,
- Select **DEVICE MANAGER** from within the SYSTEM group,
- Select SCSI CONTROLLER from within the DEVICE MANAGER listing, and
- Select DMX3194U Plus SCSI HOST ADAPTER from within the SCSI CONTROLLER listing. If "This device is working properly" is displayed on your screen, the driver has been correctly installed.

Microsoft Windows NT Driver Installation

Overview

The DOMEX Technology DMX3194U Plus host adapter will support Windows-NT v3.5x/4.0 with the addition of a software driver. A software driver allows the host computer the ability to transfer data over the SCSI bus. The device driver for Windows-NT is copied from the DOMEX Technology driver installation diskette to your hard drive where it is loaded onto the computing system during installation.

The following files are used for installation and may be found on the DOMEX TECHNOLOGY DMX3194U Plus DRIVER DISK 1:

DMX3194.SYS	DMX3194U Plus SCSI Host Adapter Windows-NT miniport driver.
README.TXT	Script file for installing DMX3194.SYS during the text setup phase
OEMSETUP.INF	Script file for installing DMX3194.SYS during the windows phase.

Installation

The DMX3194U Plus driver developed for Windows-NT will be installed on the hard drive used for system initialization. The driver is loaded during the system boot routine and will remain resident on the drive. This is accomplished by following one of the four installation procedures listed:

- New Windows-NT installation
- Adding or updating the DMX3194U Plus Host Adapter Driver to an existing Windows-NT System

The procedures described to make changes to the system have distinct differences. It is strongly suggested that the selected procedure be read and understood before proceeding with the system configuration changes. Please read the instructions carefully.

New Windows-NT installation

These instructions will guide you through the installation of the DOMEX Technology host adapter driver while installing Windows-NT 4.0. Windows-NT will be installed from either floppy diskettes or CD-ROM. The Windows-NT driver will be found on the DOMEX TECHNOLOGY DMX3194U Plus DRIVER DISK 1. It is important that

Installing a new Windows NT system and DOMEX Technology driver without floppy disks

For computer systems installing or upgrading to Windows NT from a floppyless setup such as a share on your network, these instructions will guide you through the DMX3194U Plus host adapter driver installation. The Windows-NT driver will be found on the DOMEX TECHNOLOGY DMX3194U Plus DRIVER DISK 1. It is important that the hardware has been installed successfully before proceeding further.

1. Execute a floppyless setup as described by the *Windows NT System Administrator's Guide*.

2. When SETUP begins to load, the screen will turn from black to blue with the text "SETUP IS INSPECTING YOUR COMPUTER'S HARDWARE CONFIGURATION..." at the top.

    - Press the **F6** key to interrupt this process. You will have two seconds in which to press this key.

    - Follow the instructions on the screen until you are asked to specify a SCSI driver.

3. Insert the DOMEX TECHNOLOGY DMX3194U Plus DRIVER DISK 1 into your local floppy disk drive, and press **<ENTER>**.

    - Select: DMX3194U Plus SCSI Host Adapter

4. The DOMEX Technology host adapter driver is now installed

The on-screen instructions will continue for a complete installation of Windows-NT. Refer to your *Windows NT System Administrator's Guide* for completion of the operating system installation procedure.

Troubleshooting

In the following section you will find commonly asked questions and answers to problems encountered during the installation of the DMX3194U Plus.

Question: Why isn't the DMX3194U Plus banner "!!! Press <CRTL><I> f SmartSCSI Setup Utility !!!" displayed when I power up the host system?

Answer: Verify that all cabling to the host adapter is installed correctl refer to the hardware installation section of this manual.

Question: Why I change a MO (Magneto Optical)) Diskette on MS-Windows 95 MS-Windows NT but the contents of diskette always display the first diskette?

Answer: Press <CRTL><I> while power up the host system to entry SC Setup Utility, use arrow key to select "BIOS Setup" then press <Enter>, t sub-screen will display press function key <F8> to "Load Default" use arr key to "Yes" and press <Enter>. Press <ESC> key to quit SCSI Setup Utili reboot your host system.

Question: On boot-up the message "SCSI BIOS Installed" is displayed, but my syst hangs.

Answer: Verify that the CMOS interrupt structure is set to INTA and t CMOS IRQ level matches the jumper settings on the motherboard. Refer your PC user manual.

Question: On boot-up, not all the peripherals are scanned and recognized.

Answer: Verify that each of the SCSI devices on the bus has its own distir SCSI ID number and all peripherals are receiving power. Refer to yo peripheral manual for information regarding changing SCSI ID's.

Verify the SCSI Termination is set correctly. Make sure the last peripheral the SCSI bus has termination. See the peripheral manual for pro termination information.

After the above steps are executed, if you are still not recognizing all attach peripherals, configure the host adapter to operate in an Asynchronous Trans mode by changing its setting under the SCSI Devices Setup section of t

Drives with Multiple Operating Systems.

It is mandatory that the same head mapping be used across multiple operating systems on one drive. However you can use different head mappings on different drives with the exception of SCO UNIX. It is recommended that you enable "DOS Space > 1GB" option if the capacity of your SCSI hard disk has more than 1 GByte.

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