

***** USER'S MANUAL *****

FCC ID : NKF-INDEX2

Federal Communications Commission (FCC) Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio / TV technician for help.

Warning : A shielded-type power cord is required in order to meet FCC emission limits and also to prevent interference to the nearby radio and television reception. It is essential that only the supplied power cord be used.

Use only shielded cables to connect I/O devices to this equipment.

You are cautioned that changes or modifications not expressly approved by the party responsible for compliance could void your authority to operate the equipment.

EX2 *Industrial*

19" Rack Mount Ultra 2 SCSI to IDE

Disk Array system

User's Guide

Version 6.61A

Oct. 2000

Chapter 1 : " Introduction "

This chapter will introduce you to your new Disk Array's features and provide information on general RAID concept.

Features

This section provides an overview of the features. For more detailed information, please refer to the technical specifications appendix at the end of this manual.

Your Disk Array includes the following features :

Easy Operation

As everyone knows, conventional Disk Arrays are designed for experienced computer specialists. To solve complicated and time consuming operating procedures, we came up with a revolutionary idea :

-- Innovative Plug And Play RAID --

As compared to a conventional Disk Array's long-winded setup procedures, your Disk Array can be ready to go after using the simple step by step built-in setup program.

Ultra High performance

Your Disk Array combines an extremely high speed microprocessor with the latest chip set, SCSI hardware technology, perfect firmware and an artistic design. The result is one of the fastest, most reliable Disk Array systems on the market.

- Supports virtually all popular operating systems ,platforms and network environments because it works independently from the O.S.
- Ultra 2 LVD SCSI channel interface to your Host computer, up to 80MB data transfer rate provides the processing and access power for you to handle complex and large files.
- Selective SCSI ID 0 ~ 14 , support with active termination.
- Tagged-command queuing : allows processing of up to 255 simultaneous data requests.
- Selective RAID levels 0, 1, 0+1, 3 or 5.
- Build-in 32MB cache memory, expandable up to 256MB.
- Serial communication port (Terminal Port) permits array controller operation through a standard VT100 terminal (or equivalent).

Solid reliability

- Automatic failed disk drive detection.
- Auto rebuild : when a replacement disk installed (or by using hot spare disk), The system provides automatic data rebuild without any commands or functions keyed in. (Transparent to Host)

Efficient maintenance

- An LCD status panel displays a comprehensive readout of the operating status, and the HDD LED indicators on each HDD tray display the individual HDD status.
- When disk failure occurs on a member disk of the disk array, the built-in buzzer sounds simultaneously and LCD status panel also points out the location of the failed hard disk drive. In the meantime the LED HDD status indicator will light up " Red "on the failed HDD tray , according the LED indicator on the HDD tray you can perform quick, efficient and correct maintenance.
- Hot Swap : allows you can remove and install the " Hot Swap " parts without interrupting data access while the system is on.
- The " Hot Swap " parts include the Hard Disk Drive, Redundant Power Supply Unit and Cooling Fan.

General RAID Concepts

Correct installation of the disk array requires an understanding of RAID technology and the concepts described in this section.

Definition

RAID is an acronym of Redundant Array of Independent Disks . A RAID is a Disk Array in which part of the storage capacity is used to record redundant information about the user data stored on the remainder of the storage capacity. The redundant information enables regeneration of user data in the event that one of the Array's member Disks or the access path to it fails.

Benefits of RAID

1. Secure Data

RAID is an emerging storage technology with the potential to revolutionize the data storage technology. A typical RAID unit contains a set of disk drives, typically two to six, which appear to the user to be equivalent to a single large capacity disk drive. The remarkable benefit of disk array is that if any single disk in the RAID fails, the system and array still continues to function without loss of data. This is possible because the redundancy data is stored on separate disk drives and the RAID can reconstruct the data that was stored on the failed disk drive.

2. Increases system performance

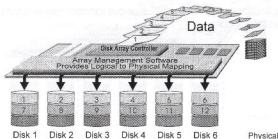
As the effective seek time for finding data on a disk can potentially be reduced by allowing multiple simultaneous access of different data on different disks. Utilizing parallel reads and writes of the data spread across the disks in the array, the data transfer rate can be increased significantly over that of a single disk.

3. Easy maintenance

RAID system maintenance is typically simplified because it is easy to replace individual disks and other components while the system continues to function. (Hot swap support)

RAID Levels

RAID Level 0 : " Disk Striping " High I/O Performance



- Improved I/O performance is the major reason for using RAID level 0.

No protection is provided against data loss due to member disk failures. A RAID level 0 array by itself is thus an unsuitable storage medium for data that can not easily be reproduced, or for data that must be available for critical system operation. It is more suitable for data that can be reproduced or is replicated on other media.

A RAID level 0 array can be particularly useful for :

- Storing program image libraries or runtime libraries for rapid loading, these libraries are normally read only.
- Storing large tables or other structures of read only data for rapid application access. Like program images, the data should be backed up on highly reliable media, from which it can be recreated in the event of a failure.
- Collecting data from external sources at very high data transfer rates.