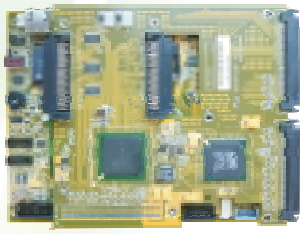
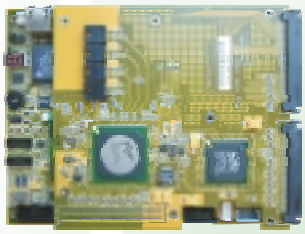
IFT 6330-12 Series
12-Bay ATA RAID Subsystem

SCSI-to-ATA
Fibre-to-ATA

IFT 7250F
12-Bay RAID Controller



7250F-12U3D



7250F-12F2D

OVERVIEW

The IFT-6330 12-bay rackmount subsystem supports SCSI-to-ATA and Fibre-to-ATA solutions. It is an ideal alternative to SCSI or Fibre RAID subsystems with the same protection to data and high performance.

The IFT-7250F RAID controller inside the 6330 subsystem is powered by Infortrend's proprietary ASIC featuring a 133MHz memory bus and two 64-bit, 66MHz PCI buses around its XOR engine. Calculation of parity and distribution of data can be processed in parallel at raging speed among CPU, memory, and drives. Advanced firmware algorithms and the L2-enabled CPU further accelerate IO turnarounds in term of the reduced response time and optimized access patterns.

The IFT-6330 supports massive capacity with 12 hot-swappable trays in a standard 19-inch equipment rackmount enclosure.

Supported RAID levels are: 0, 1 (0+1), 3, or 5. Except RAID level 0, the system allows one HDD failure without impact on the existing data and failed drive rebuild is transparent to the host. System operation is constantly protected by redundant cooling fans and power supplies. System information is easily accessible via the control panel, RAIDGuide Manager, or VT100 terminal emulation.

MODELS

SUBSYSTEM	HOST CHANNEL
6330-12U3D	Dual Ultra160
6330-12F2D	Dual 2G Fibre

BOARD-ONLY	HOST CHANNEL	SYSTEM BACKPLANE
7250F-12U3D	Dual Ultra160	9230A-3UB12
7250F-12F2D	Dual 2G Fibre	

2G FC MODULE	Dual channel converter board; 3-pin to SFP
IFT-9237D	**Link cable:** IFT-9221RF23P

Infortrend®

KEY FEATURES

- **PowerPC** 64-bit high frequency CPU with 256KB embedded L2 cache
- 128/256/512MB SODIMM cache memory available, addressable to 1GB
- **Two Ultra160**-Wide LVD SCSI ports; Sustained Transfer rate up to 160MB/sec for each **OR One or Two 2Gbps** FC Fibre Channel; Sustained Transfer rate up to 200MB/sec for each
- Support 12 ATA-133 hard drives
- Supports 3.5" x 1" high ATA drives
- RAID levels: 0, 1 (0+1), 3, 5
- Multiple Logical Drive configurations and each with a different RAID level
- Auto rebuild, hot spare, and hot swap capability
- Online expansion
- Configurable optimization mode: ransom or sequential
- Built-in RTC (Real Time Clock)
- Multi-host support
- Bad Block Handling: for managing bad blocks during rebuild and the manual Media Scan function for drive maintenance
- User-friendly RAIDGuide GUI Manager on Window 2000 and NT
- VT100 terminal emulation for system setup and status report through a serial port
- 350W Redundant and hot-swappable power supplies
- Redundant cooling fans
- 3U 19" rackmount enclosure
- Controller kit for SI/ODM's building a 12-bay RAID subsystem

High Performance

Amply equipped with a 64-bit 133MHz memory bus and two independent PCI buses, the subsystem incorporates Infortrend's proprietary ASIC with a state-of-the-art, 64-bit PowerPC processor. The load-balanced bus bandwidth makes the subsystem's high data throughput more than sufficient for small-to-medium sized servers or workstations.

Data In/Out can be distributed at the burst rate up to 533MB/sec between the host and devices, and the system's overall sustained performance reaches 200MB/sec (reads with two 2Gbps Fibre).

RAIDGuide Manager

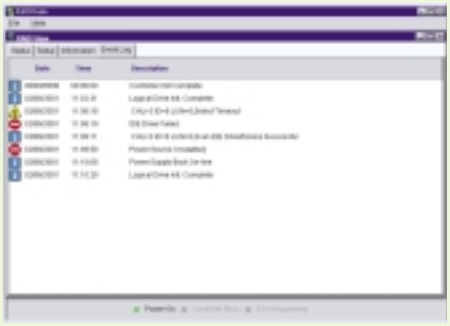
RAIDGuide is an easy-to-use, Java-based GUI RAID management software designed specifically for use with Infortrend's SCSI-to-ATA and Fibre-to-ATA RAID subsystems and controller boards. Operating under Java 2.0 (Java Run-time Environment 1.2 or 1.3), RAIDGuide provides a complete management interface to the disk array and a constant real-time report of the current RAID status, errors, events, and capacity.

RAIDGuide permits ATA RAID managers to quickly locate and rectify problematic hardware without downtime or data loss. Many RAID controller functions, such as password management and firmware upgrades can be handled through the software console. The information window provides information about all installed hard drives and the key elements of the RAID controller such as cache size.

The dual independent PCI bus design virtually eliminates all imminent bottlenecks on IO traffic, providing sufficient throughput for a wide range of applications on Disk-to-Disk Backup, CCTV storage, VOD, SCSI-based PCs, single-user workstations, NT, Linux, or Unix-based servers.

High Data Availability

The system provides full-featured RAID protection in the levels of 0, 1 (0+1), 3, and 5. Data availability is guaranteed by a long list of sophisticated firmware functions: dedicated/global hot spares, remote and real-time monitoring, automatic drive failure detection, automatic failed drive rebuild, and online expansion.



Controller environmental conditions and current cache data status window, and RAID manual and auto setup, and RAID expansion are also supported from within RAIDGuide.

RAID managers can be notified of events occurred at virtually anywhere by the powerful event notification utility, NPC (Notification Processing Center). A variety of notification methods are available: e-mail, SNMP traps, LAN broadcast, fax, and pager.

RAIDGuide makes array management an easy matter of point-and-click from the local host via Java-enabled browser.

Bad Block Handling
The occurrence of bad blocks on more than one drive usually leads to unrecoverable loss of data. To prevent data loss by this situation, two options are implemented: "Media Scan" and "Bad Block Handling in Degrade Mode." The Media Scan can be performed regularly to examine drives and data can be reconstructed onto good sectors if any bad blocks found during the process. If bad blocks are encountered on yet another drive during the rebuild process, the block LBA (Logical Block Address) of those bad blocks will be indicated and the rebuild process can continue with the unaffected sectors, salvaging most of your precious data.
Special algorithms have been implemented to ensure system performance when drives are being scanned.

SAN Ability
The LUN filtering function is available for controlling access to data in SAN environments. Up to 128 filter entries are supported and multiple entries can be mapped to each logical unit. Various functions; like host port auto-identification, filter type selection, entry naming, and access mode configuration; make setting the shared storage an easier task.

Redundant Power Supply
Two 350W, hot-swappable power supplies provide fault-tolerance to power source. With two power supplies installed, both will share the current consumption needs of the whole system. If one should fail, an alarm will sound and the remaining power supply will take over the full load until the faulty unit is replaced. The hot-swap feature ensures that the system remains operational while replacement is taking place. Power-supply modules are equipped with their own independent cooling fans.

Cooling Fan
Two cooling fans are installed for drive and controller cooling. The cooling fans can adjust the RPM through various temperature. The system's ventilation is from front to back. Specially designed airflow passages dissipate heat from the hard disks and the controller.

Enclosure Fault Management
The system can monitor the operating status of enclosure components, including that of fans, power supplies, and disk drives. Component failures are locally indicated on the LCD control panel, by the sounding alarm, or through the RAIDGuide manager software. The RAIDGuide's sub-module, NPC, can be used to notify system administrators remotely via e-mail, pager, fax, SNMP traps, or LAN broadcast.

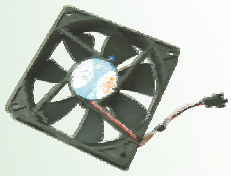
Setup and Status Monitoring
The system will automatically initialize based on the number of disk drives installed at start up. Manual configuration and monitoring can be done through the LCD control panel. The firmware also contains an embedded management program that can be accessed using a VT100 terminal connected to the RS-232C port. The later is a convenient platform-independent management utility.

IFT-7250F CONTROLLER BOARD (SI/ODM Solution)
An OEM board only solution - IFT-7250F controller is available for customers who design their own enclosure and want to take full advantage of the SCSI-to-ATA or Fibre-to-ATA controller's advanced functionality. The controller's sophisticated features, including environmental monitoring and fault management, can be easily integrated into SI/ODM systems. Modular ATA backplanes (with 1" drive pitch) and daughterboard options for different host types are available along with the controller board.

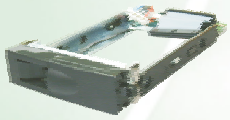
SUBSYSTEM SPARE PARTS
In order to facilitate customer service, Infortrend makes spare parts available for ATA subsystems:

Power Supply module:
IFT-9211R12

Cooling Fan:
IFT-9212B & IFT-9212



Drive Tray:
IFT-9215/30



Note: each of these spare parts items may have a minimum order requirement.

SPECIFICATIONS

Controller

- PowerPC 750CXe processor with 256KB embedded L2 cache
- Infortrend Proprietary IFT-500133 ASIC with XOR engine
- Standard 128MB cache memory in one SODIMM, ECC supported
- Other available memory sizes are 256MB and 512MB
- 12 ATA channels
- LCD controller panel interface
- System Fan speed/Voltage/Temperature self-monitoring
- One RS232 serial port
- 32KB NVRAM with RTC (Real Time Clock)
- Beeper

Host Interface

SCSI

- Dual port Ultra160 LVD SCSI
- Transfer rate up to 160Mbytes/sec
- Concurrent I/O command
- Tagged Command Queuing
- Automatic bad-sector reassignment

Fiber Channel

- Two 2Gbps Fiber channels
- LUN Filtering for access control

Drive Interface

- ATA-100, 133 applicable
- 12 hot-swap drive bays

RAID Operation

- RAID level 0, 1 (0+1), 3 and 5
- Multiple RAID selection
- Hot-spare drive operation
- Drive hot-swapping
- Automatic background rebuild
- Online drive expansion
- Bad block handling

Controls / Indicators

- Front LCD control panel for setup and configuration
- 3 drive LED indicators: power, busy, and attention
- Power and drive failure indication through LCD
- Built-in beeper / alarm mute button

Management Software

- RAIDGuide manager software for Windows 2000 / NT via in-band SCSI or in-band Fibre
- Firmware-embedded manager via RS-232C (platform independent)

Physical / Electrical

External Connection	* Four 68-pin SCSI, daisy chain capable connectors for two host SCSI ports, OR,Two SFP ports for dual channel Fibre connection * One DB-9 connector for RS-232C serial port (38400, n, 8,1) * One RJ45 connector for 10/100Mb Ethernet
Power Supply	2 redundant hot-swappable power supplies with PFC
Input	90-260VAC, 47-63Hz
Output	@5V (20A max), 12V (25A max), 350 watts
Cooling Fan	2 thermal fans in two separate modules, 12cm, 12V, 0.41A, 2250rpm, 36.8dbA at 30°C 9.2cm, 12V, 0.23A, 2600rpm, 35dbA at 30°C
Operating Temperature	5 to 40°C
Relative Humidity	10-95%, non-condensing
Altitude	Sea level to 10,000 ft

c UL us LISTED E185623 CE **FCC** certified

Dimensions

	System dimensions(inches)	Packed in carton
Rackmount	5.34H x 18.9W x 24.4D inches (rackmount configuration - 19" equipment cabinet size)	30.7"H x 23.42"W x 16.92"D
SI/ODM controller board only:	board dimensions: 7.4L x5.82W x 0.98H inches	

System Weight (w/o drives)

Net weight	Packed in carton
28.1Kg	30.1Kg

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