

**The RAID System:**

- ◆ Combines hard disk drives to a powerful storage array
- ◆ De facto standard in server
- ◆ Creates redundancy for HDDs
- ◆ Increases data availability
- ◆ Decreases data loss

**The Host Bus Adapter:**

- ◆ Connects SATA and/or ATA 133 HDDs to the PC or Server
- ◆ Capacity expansion, managed by the operating system
- ◆ Makes it possible to use a Software-RAID tool over the operating system
- ◆ ROHS compliant

**The RAID Controller:**

- ◆ PC-card for a PCI or PCI-e system bus
- ◆ Supports SAS/SATA 3.0 Gb/s HDD's
- ◆ Supports HotSwap and HotSpare
- ◆ Easy to configure via Promise Array Management (PAM)
- ◆ Also configurable via CLI (Command Line Interface)
- ◆ Compatible with Promise's SAS/SATA Drive Enclosures (SuperSwap)

**Hardware IOP RAID 5/6 Controller:**

- ◆ High data availability through RAID 5/6
- ◆ Single / double parity
- ◆ Proven Perfect RAID Engine
- ◆ Online Capacity Expansion (OCE)
- ◆ RAID Level Migration
- ◆ Predictive Data Migration
- ◆ High Performance
- ◆ Own CPU
- ◆ Own internal Cache
- ◆ Developed for i.e. Server-Applications, Databases, Disk to Disk Backup, Video Streaming
- ◆ Awarded by Intel Corp. with the Technical Innovation Award (TIA)
- ◆ ROHS compliant

**RAID 0/1 and Software RAID 5 Controller:**

- ◆ RAID 1 & RAID 5 for high data availability
- ◆ Easy to use
- ◆ Cost effective solution
- ◆ Designed for PCs and Entry Level Server
- ◆ ROHS compliant

**Promise Technology:**

- ◆ Market leader in SATA RAID
- ◆ Originator of ATA and SATA RAID Technology
- ◆ A global company
- ◆ ISO certified
- ◆ Developer and manufacturer of SAS and SATA RAID Storage Systems
- ◆ Developer and manufacturer of SAS and SATA RAID Controllers
- ◆ ATA and S+ATA Host Bus Adapter
- ◆ 3 year product warranty



## Entry Level and High Performance RAID Controllers from Promise Technology

Controller cards for storage expansion in PC- and server systems



### Host Bus Adapter - non RAID

HBA is a board which will be mounted into a PC or Server into the PCI bus of the motherboard. Managed by the OS a Host Bus Adapter is offering up to 4 ATA or SATA Interfaces for connection of up to 4 SATA or ATA hard disk drives.



### Software RAID Controller - FastTrak TX

This board is optimized for entry level server and standard PC workstation environment. Up to 4 SAS, SATA or ATA hard disk drives can be connected to this RAID controller while RAID 0, 1, 5, 10 are securing data availability over disk arrays.

### Hardware IOP RAID Controller - SuperTrak EX

An own IOP processor onboard of the RAID controller offload the centralized CPU of a server system with needed calculation of RAID parities and I/O processes. Up to 256 hard disk drives can be managed with SuperTrak RAID controller by given a huge capacity, a high performance and a high data availability. RAID level 0, 1, 5, 6, 10, 50, 60 are supported.

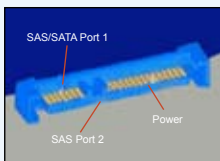


### Drive Enclosures - SuperSwap

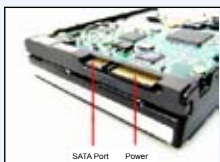
Drive enclosures connected to Promise's RAID controller are designed for the easy exchange of a hard disk drive while offering drive carriers which can be hot swapped. Up to 4 SAS or SATA hard disk drives can be mounted into SuperSwap enclosures.

## SAS/SATA Interface:

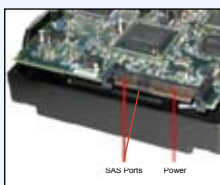
Backside of a SAS or SATA hard disk drive



Backside of a SATA hard disk drive



Backside of a SAS hard disk drive



## SATA internal Point to Point connector:

SATA data cables are used for the point-to-point connection between a RAID controller and SAS or SATA hard disk drives. For the connection to Promise's SuperSwaps SATA intern cables are required.



## SASx4 internal SFF8087 connector:

SFF8087 to SFF8087 internal SASx4 cables are used mainly for the connection between a RAID controller and server chassis backplanes. A single backplane needs one cable; dual backplanes needs two cables.



## SASx4 external SFF8088 connector: (MiniSAS)

The MiniSAS to MiniSAS (SFF8088 to SFF8088) cable is the most used external interface for the interconnection of storage systems as well as to the host.



## SuperTrak Hardware IOP RAID Controller

- ◆ IOP Processor onboard
- ◆ supports up to 256 hard disk drives
- ◆ up to 512 MB RAM, BBU optional
- ◆ low profile form factor
- ◆ supports server chassis
- ◆ Predictive Data Migration included

**Applications:** Databases, video editing, data silos, data centers, ERP, CRM, ECM, DMS, virtualization environment



Product SuperTrak	RAID Level	Channels/ports	SFF 8088 ext.	SFF 8087 int.	SATA int.	Hard disk drives	PCI Express	Memory
EX8658*	1,5,6,10, 50,60	two SASx4 ext.	2	-	-	up to 256 ext.	x8	512 MB
EX8654*	1,5,6,10, 50,60	one SASx4 ext. one SASx4 int.	1	1	-	up to 128 ext. up to 128 int.	x8	256 MB
EX8650	1,5,6,10, 50,60	two SASx4 int.	-	2	-	up to 256 int.	x8	256 MB
EX4650	1,5,6,10, 50,60	one SASx4 int.	-	1	-	up to 128 int.	x8	128 MB
EX16350	1,5,6,10, 50,JBOD	16 SATA	-	4	-	up to 16 int.	x8	256 MB
EX12350	1,5,6,10, 50,JBOD	12 SATA	-	3	-	up to 12 int.	x8	256 MB
EX8350	1,5,6,10, 50,JBOD	8 SATA	-	-	8	up to 8 int.	x4	128 MB
EX4350	1,5,6,10, 50,JBOD	4 SATA	-	-	4	up to 4 int.	x4	64 MB

\* available from Q2/2008

## FastTrak Software RAID Controller

- ◆ PCI-e x1 or PCI interface
- ◆ RAID 0,1, or software RAID 5
- ◆ low profile form factor (SAS/SATA)
- ◆ supports all main operating systems

**Applications:** Entry level server, POS system, business PC, SOHO server

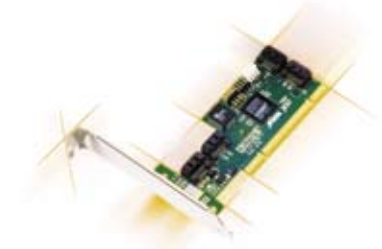


Product	RAID Level	Channels/No of HDDs	Interface
FastTrak TX4650	RAID 5 and 0,1,10, JBOD	4 SAS/SATA	PCI-e x1
FastTrak TX2650	RAID 0,1, JBOD	2 SAS/SATA	PCI-e x1
FastTrak TX4310	RAID 5 and 0,1,10, JBOD	4 SATA	PCI
FastTrak TX2300	RAID 0,1, JBOD	2 SATA	PCI
FastTrak TX2000	RAID 0,1,10 JBOD	2 ATA 133 (up to 4 ATA HDDs)	PCI

## Host Bus Adapter, non RAID

- ◆ supported by all main operating systems
- ◆ supports eSATA as external SATA interface
- ◆ low profile form factor (SATA)
- ◆ PCI interface

**Applications:** Extension of LINUX/UNIX NAS server, WIN server or PC

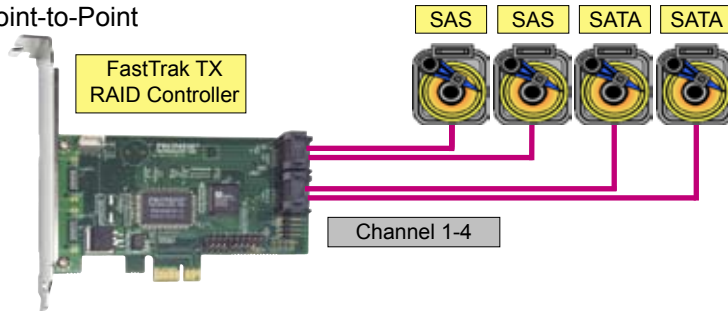


Product	FormFactor	Interfaces intern	Interfaces extern	Channels/No of HDDs	Interface
SATA300 TX4302	Low Profile	2 SATA	2 eSATA	4 SATA	PCI
SATA300 TX4	Low Profile	4 SATA	no	4 SATA	PCI
SATA300 TX2plus	Low Profile	2 SATA, 1 ATA	no	2 SATA, 2 ATA	PCI
Ultra133 TX2	Full Height	2 ATA	no	2 ATA	PCI



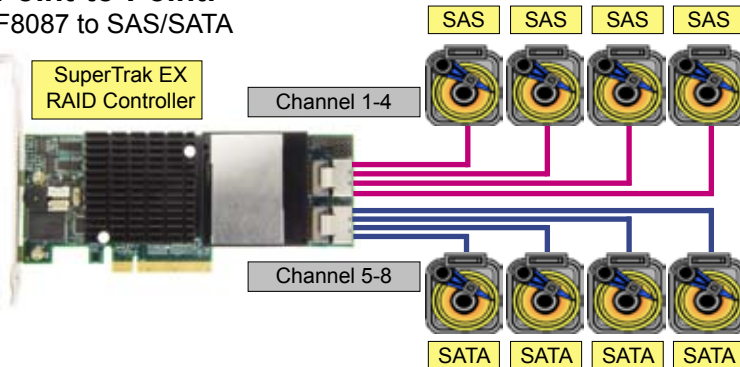
## SAS/SATA Point-to-Point:

Cable: SATA Point-to-Point



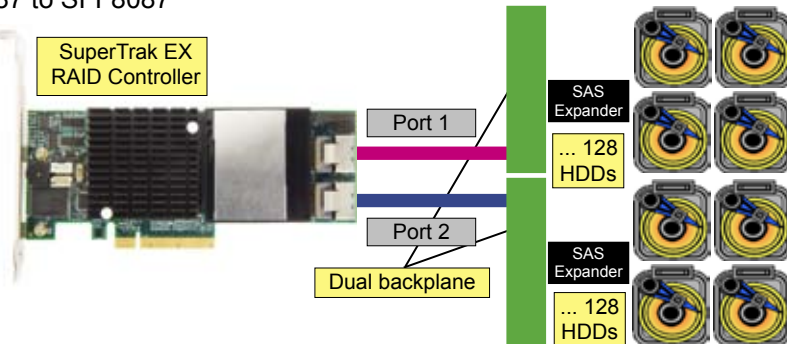
## SAS/SATA Point-to-Point:

Cable: 1-4 SFF8087 to SAS/SATA



## SAS/SATA Multilane to Backplane:

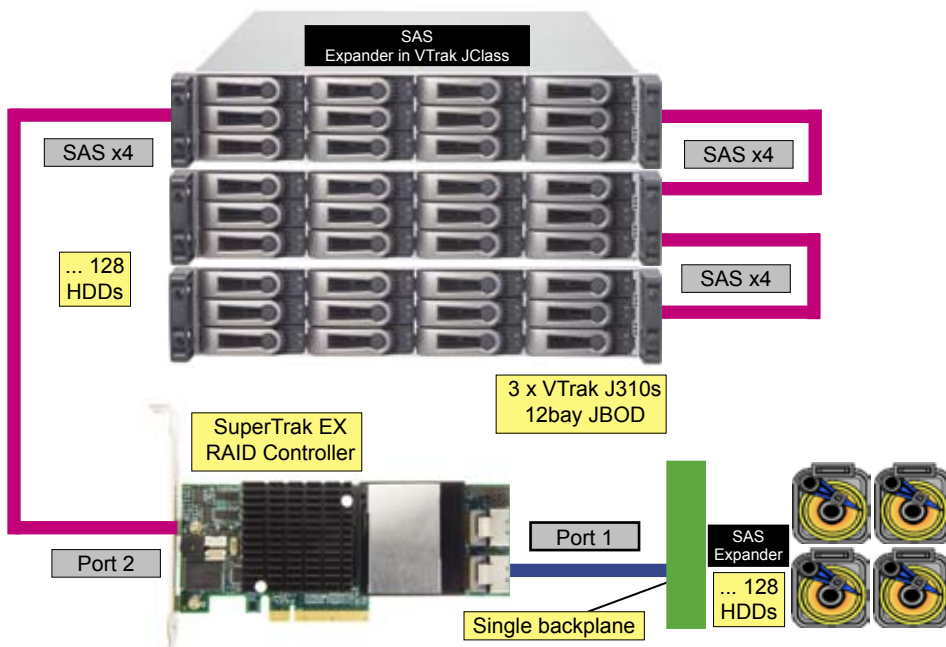
Cable: SFF8087 to SFF8087



## SAS/SATA Intern/Extern:

Cable int.: SFF8087 to SFF8087

Cable ext.: MiniSAS to MiniSAS, SFF8088 to SFF8088



### PerfectRAID:

PerfectRAID is a Promise's patented RAID data protection technology, a suite of data protection and redundancy features built into every Promise RAID product. PerfectRAID incorporates robust data handling and error management features including write hole prevention, read and write checks, full SMART support and multi-dead drive prevention. PerfectRAID features are also carefully matched with Promise's resilient RAID Engine Core to deliver substantial data protection. On top of the core protection techniques, the Promise RAID Controller takes advantage of advanced PerfectRAID features including Bad Block Remapping and Media Patrol. These features scan the system's drive media to ensure that even bad physical drives do not impact.

### HotSwap

All RAID Controllers from Promise Technology support Hot Swap; that means a HDD can be exchanged while the system is active.

### HotSpare

During a HDD fallout the spare HDD will automatically be activated and integrated in the RAID array on the spot of the defect HDD.

### OCE - Online Capacity Expansion

While adding a HDD at a later time, the Online Capacity Expansion will add the HDD to the RAID array and hereby enlarging the net capacity. All this is executed while the system is running.

### RAID Level Migration

With all controllers from Promise Technology you have the possibility to change an existing RAID array into a new one without loss of data while the system is running.

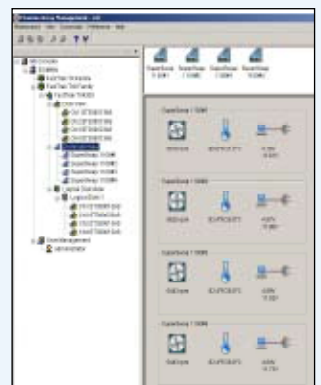
### Promise Array Manager:

The management of the whole RAID system will be done by a powerful software tool named Promise Array Manager (PAM).

- ◆ RAID arrays and level
- ◆ Logical and physical status of all HDDs



- ◆ HotSpare
- ◆ Alerts (e.g. email)
- ◆ Temperature, fans and voltages with combination of SuperSwap enclosures



## SuperSwap Disk Enclosures

### - simplified Hot Swap for SATA or SAS Drives

Hot Swap is an essential feature for the RAID storage system. SuperSwap in conjunction with FastTrak or SuperTrak RAID controller makes the storage system complete.



Product	Interfaces	HDD	Sensoric	HotSwap	Form
SuperSwap 4600 Color: beige or charcoal	SATA 3,0 Gb/s Serial SCSI (SAS) + int. Management	up to 4 x SATA or 4 x SAS	Fan, Voltage, Temperature	yes	5 1/4" 3 x HH
SuperSwap 1600 Color: beige or charcoal	SATA 3,0 Gb/s Serial SCSI (SAS) + int. Management	1 x SATA or 1 x SAS	Fan, Voltage, Temperature	yes	5 1/4" 1 x HH

## Battery Backup Units (BBU)

BBUs hold data in the controller cache with minimum 72 hours after a power failure.



BBU Plus  
for SuperTrak EX 4650/865x



BBU  
for SuperTrak EX 4350/8350/12350/16350

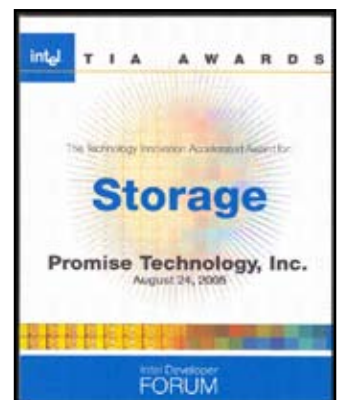
## Promise Technology - 20 years of Technology Innovation

SAS, SATA and ATA are the core techniques hold at Promise Technology who is the originator of ATA RAID and worldwide leader in SATA RAID with over 15 million controllers shipped. Using Serial ATA and SCSI (SAS) technology to design and manufacture fast, reliable cost-effective data protection, Promise is the preferred choice for SATA host bus adapters, RAID controllers and SAS/SATA external storage systems. Promise Technology maintains ongoing product development relationships with leading storage and server manufacturers. Headquartered in Milpitas, CA, the company is ISO-9001:2000 and ISO-14001:2004 certified and has offices and operations throughout Asia and Europe to support local business partners and customers. For further information, visit: [www.promise.com](http://www.promise.com).



## Promise Technology - Awarded Innovation!

For years Promise Technology got awards for excellent innovations at RAID controller. The latest one was from Intel Corp. at the Intel Development Forum. Out of more than 15 other vendors in the storage market the TIA-Award (Technology Innovation Award) was given to Promise Technology for the new SuperTrak EX RAID controller and its RAID 6 solution.



## Promise Technology - Contact us!

You reach us through:

- ◆ Worldwide hotline telephone support
- ◆ E-support via internet

Please refer to our website [www.promise.com](http://www.promise.com) for up-to-date information.

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