FX/2800 Supercomputer Peripherals

High-Performance Peripherals For Standards-Based Supercomputing

ALLIANT
Computer Systems Corporation

Supercomputer Peripherals

The Alliant FX/Series™ is a family of compatible, field upgradable systems based upon a proven parallel architecture. The third generation FX/2800™ provides Alliant's highest computing performance capacity at over 1.1GFLOPS, 672 Whetstone MIPS and 1,148 Dhrystone MIPS.

Input/output on the FX/2800 is performed by the Input/Output Module (IOM) which includes one Intel i860™ RISC processor and two 20MB/sec. I/O channels. The I/O channels support either an industry-standard VMEbus or an Alliant Image Memory Subsystem for visualization. The flexibly configured FX/2800 can support multiple IOMs, providing a wide-range of peripheral devices.

Supercomputing peripherals for the FX/2800 include disk subsystems, magnetic tape subsystems, network controllers, asynchronous communications interfaces, line printers and real-time interfaces.

Disk Storage Systems

Fixed Disk Subsystem – P118

The fixed disk subsystem consists of a five inch high chassis holding two 803MB (formatted) sealed Winchester-technology drives. The rack-mountable chassis connects to a high performance VMEbus disk controller which provides a 128KB onboard buffer, as well as disk read-ahead, scatter/gather read/write operations, and onboard diagnostics.

By using multiple VMEbus disk controllers, Alliant's Concentrix® operating system supports "disk striping" for peak disk-to-memory transfer rates of more than 30MB/sec.

Removable Disk – SP-P100V

When applications demand data security, the removable disk subsystem supports two 550MB disk drives in only 10.5 inches of vertical rack space. Each disk drive can be physically removed from its enclosure when not in use. The subsystem provides visual and audio signals for safe removal of the media.

WORM Optical Disk – SP-P200

For low-cost storage of archival materials, a Write-Once, Read-Many (WORM) optical disk system provides 2.4GB of capacity on a single disk. The WORM system uses advanced laser technology to encode digital data on the surface of a standard 12 inch video disk. These high-capacity disks are well suited for long-term storage of data while providing high-performance access times.

Rewritable Optical Disk – SP-RWO

The Rewritable Optical Disk system provides 650MB of storage per 5.25 inch video disk for optical storage applications that require read/write capability. Based upon magneto-optical technology, the system can rewrite the digital data stored on the optical disk surface. Since it is rewritable, this disk is suitable for use as a Concentrix file system storage devices.

Disk Storage Subsystems Specifications

	P118	SP-P100V	SP-P200	SP-RWO
Capacity Formatted	803MB	550MB	2.4GB	650MB
Data Rate (Mb/Sec)	2.5	2.5	0.6	0.7
Positioning Time (Msec)				
Track–to–Track	4	5	3	20
Average	16	20	150	95
Maximum	33	40	250	185
Average Latency (Msec)	8.3	8.3	27	12.5
Rotational Speed (RPM)	3,600	3,600	1,122	2,400
Physical Dimensions				
Height (in.)	5.0	10.4	6.8	5.0
Width (in.)	19.0	19.0	17.6	8.4
Depth (in.)	15.0	26.3	24.0	12.3
Weight (lbs.)	100	145	55	14.1

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Magnetic Tape Storage Subsystems Specifications

	P121 /P504	P505	P211
Densities (BPI)	43,200	1600/3200/6250	800/1600/6250
Transfer Rate			
8 mm	250KB	–	–
800 bpi	–	–	100KB
1600 bpi	–	160KB	200KB
3200 bpi	–	160KB	–
6250 bpi	–	437KB	780KB
Threading	Auto	Auto	Auto
Access Time	900 usec	6 msec	1.5 msec
Dimensions			
Height (in.)	4.5	14.0	55.1
Width (in.)	8.6	17.0	39.4
Depth (in.)	14.0	24.5	29.7
Weight (lbs.)	16	100	860

Magnetic Tape Storage Systems

8 Millimeter Tape Drive – P121/P504

The 8mm helical-scan tape drive is the standard magnetic tape media for FX/2800 systems. The drive accepts standard 8-mm video tape cartridges, each with a capacity of 2GB of data. Data reliability is achieved using read after-write error checking along with error correction circuitry. These provide an error rate of less than 1 error in 1000 billion bits. The 8mm drive can sustain a data transfer rate of 250KB/sec. The P121 requires 5.25 inch of vertical rack space. The P504 option includes a cabinet.

9-Track GCR Tape Drive – P209

For medium-performance 9-track tape applications, the GCR Tape Drive supports 1600, 3200, and 6250 BPI data densities at 100, 50, and 70 inches-per-seconds speeds. The front-load drive accepts all standard 9-track tapes with a minimum of vertical rack-mount space. The P505 includes a cabinet.

High-Performance 9-Track Tape Drive – P211

The high-performance 9-track tape drive provides 800, 1600, and 6250 BPI data densities operating at 125 inches-per-second for a maximum transfer rate of 780KB /sec.The subsystem is mounted in a stand-alone cabinet.

Network Controllers

Ethernet Controller

The VMEbus Ethernet™ Controller is an IEEE 802.3 compliant network interface, operating at 10M bits/sec. Concentrix software supports both Department of Defense TCP/IP and DECnet™ protocols. Alliant's software products for Ethernet include FTP, Telnet, DECnet virtual terminal, DECnet Batch, the Network File System™ (NFS), and the Network Computing System™ (NCS™).

UltraNet Controller

UltraNet® provides the highest available performance for super computing networks with a 100MB/sec. data transmission rate. This fiber-optic system supports both bulk data transfer and interactive usage via TCP/IP protocols.

Serial Communications Controller

The serial communications controller supports the connection of asynchronous terminals, printers, and modems via a VMEbus controller. Each intelligent controller provides 16 RS-232C connections with full modem control, operating at speeds up to 19.2K baud.

Line Printers

For hard-copy output, both 600 and 1200 line-per-minute printers are offered. The printers, utilizing band printing techniques, are interfaced via a standard Dataproducts interface.

Real-Time Interfaces

Alliant provides a number of interfaces for connection to external device for real-time computing applications. These interfaces connect the FX/2800 system to avionics, graphics, analog and digital I/O subsystems.

DR11-W Parallel Interface

A high-performance 16-bit parallel interface, the DR11-W interface emulates the DEC™ standard for parallel data transfers. The device can deliver data at 6MB/sec. on system output and 4MB/sec. on input.

VME-IEEE-488 Instrument Control Interface

The VME-IEEE-488 interface allows the FX/2800 to connect to various scientific and engineering devices that comply with the IEEE-488 standard. The interface can function as a "talker", a "listener" and a "controller" with data transfer rates of 500KB/sec.

VME-HSD Parallel Interface

The VME-HSD parallel interface supports the connection of FX/2800 systems to computers and I/O devices that follow the Gould HSD standard. A 32-bit parallel interface, the VME-HSD, transfers data at a rate of 3.2MB/sec.

Mil-STD-1553B Avionics Bus Interface

The Mil-STD-1553B interface connects the VMEbus of the FX/2800 to this dual-redundant serial military avionics bus.The interface provides simultaneous emulation of one bus controller and up to 31 remote terminals, thus providing flexibility for simulation and training applications.

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