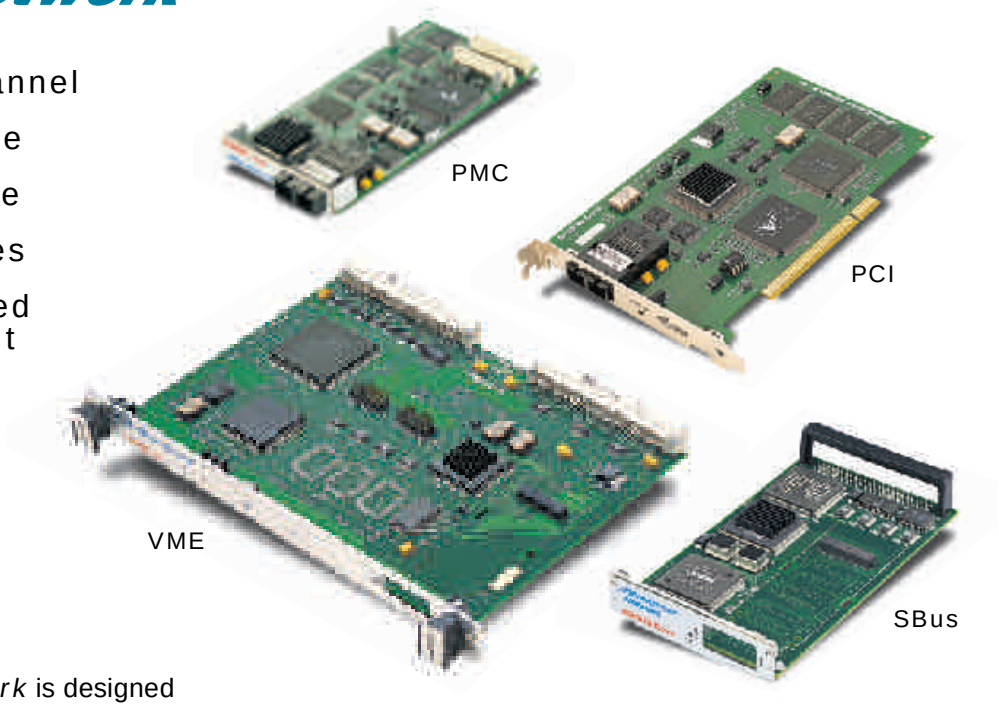
Short Form Catalog

Family of Networking Products

FibreXpress™ Network

- ANSI Standard Fibre Channel
- 1.062 Gbit/sec. Baud Rate
- 100 MByte/sec. Data Rate
- Class 1, 2, and 3 Services
- Arbitrated Loop, Switched Fabric, and Point-to-Point Topologies



Introduction

Systran Corp.'s *FibreXpress Network* is designed to maximize the superior communication and interconnect capabilities of ANSI standard Fibre Channel. This makes FibreXpress the right choice for all types of image processing, advanced digital signal processing, and mass storage applications demanding high-throughput, low-latency, real-time data transfers.

Combining the delivery and repeatability of a channel with the connectivity and protocol multiplexing of a network, Fibre Channel delivers the high-speed data transfers and interconnect versatility required by today's – and tomorrow's – data-intensive applications:

Digital signal processing
High-speed data acquisition
Particle physics
Medical imaging
Range and telemetry systems
Simulation systems
Workstation clustering
Network backbones
Video production

Advanced Architecture

Systran's FibreXpress Network Interface Card (NIC) design enables ultra-efficient interaction among the adapter's host interface, SRAM buffer, and intelligent Fibre Channel ASIC. The host bus interface includes both memory-mapped and multi-channel DMA access to the SRAM buffer and provides either polling or interrupt event notification. The on-board SRAM buffer is available in either 512 KB (VME, SBus) or 1 MB (PCI, PMC).

The intelligent Fibre Channel ASIC features hardware assists for both IP and SCSI FCP protocols and sophisticated queue management capabilities. As a result, burst throughputs of 100 MBytes/sec. and sustained throughputs of 50-75 MBytes/sec. can be achieved, limited only by the speed of the host system.

Host Bus and Network Media

FibreXpress NICs are available for all popular bus architectures, including PCI, PMC, VME64, and SBus, providing maximum flexibility in the selection of computer hardware. All NICs are single-slot designs that minimize demands on precious backplane resources. Two 1 MB PMC and two 1 MB PCI versions are available with built-in network media support for copper and 850 nm optics, at 1.062 Gbit/sec. speed. The VME, SBus, and PCI 512K NICs support direct interface to copper and optical cables through the industry standard 80-pin Gigabit Link Module (GLM).

Fibre Channel truly is the "next generation" in high-performance system interconnects...and Systran's FibreXpress Network is your link to bringing the power of Fibre Channel to *your application!*

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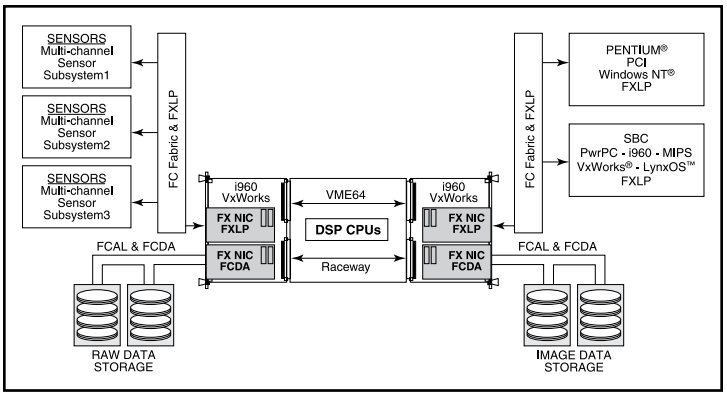
Systran

Applications

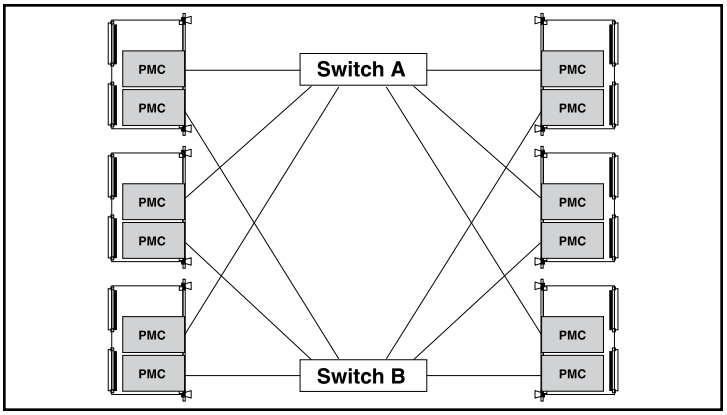
Image Processing Application

New and emerging distributed DSP-based image processing systems must handle continuous data flow at enormous rates. FibreXpress ANSI standard Fibre Channel compliant hardware and software products are specifically designed to address the data flow requirements of advanced radar, sonar, medical, and other DSP-based imaging systems. A typical DSP architecture is shown in the diagram.



Avionics Application

New and emerging distributed avionics systems must handle continuous high data flow with low-latency precision. FibreXpress ANSI standard Fibre Channel compliant hardware and software products are specifically designed to address the high-speed, low-latency data transfers and interconnect versatility required by today's–and tomorrow's–avionics systems. A typical avionics system is shown in the diagram.



Specifications

ANSI Fibre Channel Standard:
FC-PH Revision 4.3
FC-AL Revision 4.3

Fibre Channel Topologies:
Point-to-Point
Arbitrated Loop
Switched Fabric

Electrical Requirements:
+5 VDC, 1.6 Amp. (typ.)

Operating Temperature:
0° to 50° C (32° to 122° F)

Storage Temperature:
-40° to +70° C (-40° to 158° F)

Operating Humidity:
5% to 95% (non-condensing)

Copper:

Data Rate:	1062.1 Mbit/sec.
Cable:	Twinax
Connector:	9-pin D-SUB (GLM) dual 1 x 3 differential (PCI/PMC)
Distance:	30 meters (D-Sub Duplex Cable) 10 meters (1 x 3 differential Simplex Cable)

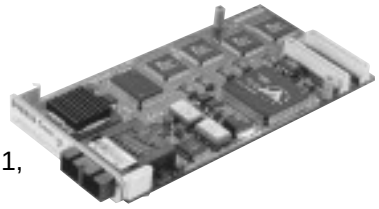
Shortwave Laser:

Wavelength:	850 nm
Data Rate:	1062.1 Mbit/sec.
Cable:	50/125 µm MM fiber
Connector:	dual SC
Distance:	300 m

Longwave Laser:

Wavelength:	1300 nm
Data Rate:	1062.1 Mbit/sec.
Cable:	9/125 µm SM fiber
Connector:	dual SC
Distance:	10 km

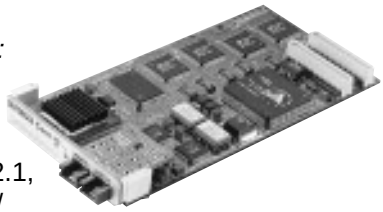
PMC (Fiber Optic)



Hardware Compatibility:
PMC IEEE P1386.1/ Draft 2.0 PCI Local Bus Specification Version 2.1, and CMC IEEE P1386/ Draft 2.0

Physical Dimensions:
2.915″ x 5.866″ (74.041 mm x 148.996 mm)

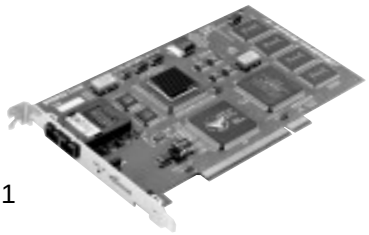
PMC (Copper)



Hardware Compatibility:
PMC IEEE P1386.1/ Draft 2.0 PCI Local Bus Specification Version 2.1, and CMC IEEE P1386/ Draft 2.0

Physical Dimensions:
2.915″ x 5.866″ (74.041 mm x 148.996 mm)

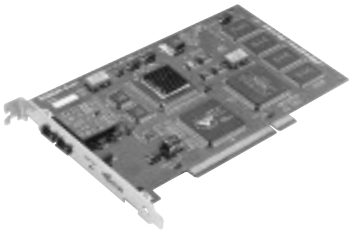
PCI (Fiber Optic)



Hardware Compatibility:
PMC IEEE P1386.1/ Draft 2.0 PCI Local Bus Specification Version 2.1

Physical Dimensions:
4.200″ x 6.860″ (106.680 mm x 174.244 mm)

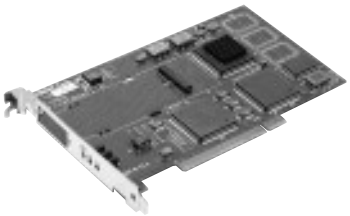
PCI (Copper)



Hardware Compatibility:
PMC IEEE P1386.1/ Draft 2.0 PCI Local Bus Specification Version 2.1

Physical Dimensions:
4.200″ x 6.860″ (106.680 mm x 174.244 mm)

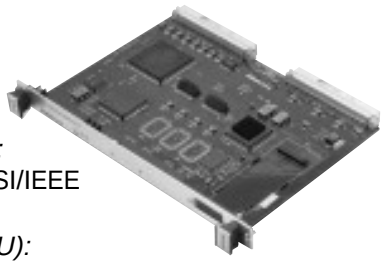
PCI (512 KB Buffer)



Hardware Compatibility:
PMC IEEE P1386.1/ Draft 2.0 PCI Local Bus Specification Version 2.1

Physical Dimensions:
4.200″ x 7.000″ (106.680 mm x 177.800 mm)

VME6U/9U



Hardware Compatibility:
VMEbus Rev. C.3, ANSI/IEEE Standard 1014-1987

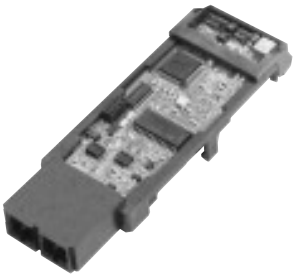
Physical Dimensions (6U):
9.187″ x 6.299″ (233.000 mm x 160.000 mm)

SBus

Hardware Compatibility:
SBus Specification IEEE Standard 1496-1993

Physical Dimensions:
3.299″ x 5.825″ (83.795 mm x 147.955 mm)

Gigabit Link Modules (GLM)



FibreXpress GLMs provide flexible support for a variety of speed and media options. FibreXpress options include copper, shortwave laser, or longwave laser at 1.062 Gbit/sec. Other standard GLMs may be used.

Interface Cables

FibreXpress fiber optic and coax cables are available in a variety of standard and custom lengths. Contact a Systran Account Manager for details on price and availability.

Fibre Channel Ultra Balanced Twin-ax Cable:
Simplex, 1x3 Differential Connectors, Commercial Grade
Duplex, 9-pin D-SUB to 1x3 Differential Pair, Commercial Grade
Duplex, 9-pin D-SUB Connectors, Commercial Grade

Fibre Channel 50/125 µm Multi-mode Optical Cable:
Duplex, Dual SC Connectors, Commercial Grade

Doc. F-T-SH-FCSFCTLG-A-0-B3 (1/15/98) 8M

FibreXpress™ Software

- Application-specific drivers maximize data throughput
- Support for a variety of computing platforms and operating systems
- Drivers provide a direct link to application for improved performance

Software Drivers

Two FibreXpress protocol drivers are available: the Fibre Channel Direct Attach (FCDA) disk device driver and Systran's FibreXpress Lightweight Protocol (FXLP) device driver.

FCDA is a Fibre Channel Association profiled device driver assuring interoperability with other Fibre Channel products. The driver is designed for private-loop, mass-storage SCSI communication. With the FCDA device driver, FibreXpress network interface cards interface directly to mass-storage devices, providing performance characteristics not found in any other mass storage interface. Applications generally access the disk through the OS file system. However, for real-time systems, the application may link directly to the driver to dramatically improve performance to the storage system.

FXLP was designed for computer-to-computer communication in data-intensive image processing applications. It allows an application to be linked directly to the device driver, bypassing the TCP-IP protocol stack to achieve high-throughput, low-latency data communication that cannot be achieved with TCP-IP. FXLP loosely follows the sockets paradigm which allows an application to set up a virtual channel to a specific destination, then send and receive data at the highest possible throughput.

Interface Card	Hardware Platform	Host OS	Application Interface	Order Number	Product Description
PMC	i960	VxWorks® 5.3	FCDA Driver	FSD2-PMVR1EC0-00 FED2-PMVR1E0E-00	Single Computer S/W License Doc. & Media kit, Binaries
PMC	i960	VxWorks 5.3	FXLP Driver	FSD3-PMVR1EC0-00 FED3-PMVR1E0E-00	Single Computer S/W License Doc. & Media kit, Binaries
PMC	MIPS	VxWorks 5.2	FCDA Driver	FSD2-PMVM1EC0-00 FED2-PMVM1E0E-00	Single Computer S/W License Doc. & Media kit, Binaries
PMC	MIPS	VxWorks 5.2	FXLP Driver	FSD3-PMVM1EC0-00 FED3-PMVM1E0E-00	Single Computer S/W License Doc. & Media kit, Binaries
PMC	PowerPC	VxWorks 5.3	FCDA Driver	FSD2-PMVP1EC0-00 FED2-PMVP1E0E-00	Single Computer S/W License Doc. & Media kit, Binaries
PMC	PowerPC	VxWorks 5.3	FXLP Driver	FSD3-PMVP1EC0-00 FED3-PMVP1E0E-00	Single Computer S/W License Doc. & Media kit, Binaries
PCI	Pentium® PC	Windows NT®	FCDA Driver	FSD2-PCWE1EC0-00 FED2-PCWE1E0E-00	Single Computer S/W License Doc. & Media kit, Binaries
PCI	Pentium PC	Windows NT	FXLP Driver	FSD3-PCWE1EC0-00 FED3-PCWE1E0E-00	Single Computer S/W License Doc. & Media kit, Binaries

Network Transparent Switch

Patent Pending

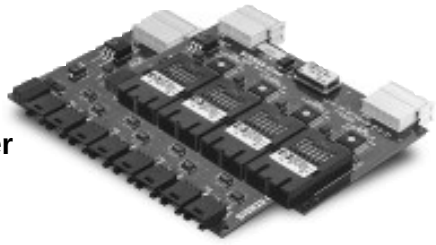
- Full crossbar electronic matrix switch
- Supports copper or optical media
- Up to 32 non-blocking copper or optical ports
- Any combination of point-to-point, arbitrated loop or broadcast communication links between ports
- Remote location control of network topology via RS232 or a modem
- Support for other types of networks through network specific port cards
- Installs into 4-disk drive bay

The FibreXpress Network Transparent Switch (NTS) base unit is a full 32x32 crossbar switch, designed to support up to 32 I/O ports connected to digital signals with baud rates up to 1.5 Gb/s. The switch is called “transparent” because it does not engage in any protocol disassembly or any encoding or decoding of input data streams. Therefore, the NTS is transparent to the network protocol whose data streams are being directed, routed, or channeled by the switch.

The NTS can support any combination of point-to-point, multiple loops, or broadcast connections between ports simultaneously. Configurations can be changed on-the-fly without effect on other connected and operating ports. Each port is provided a status line to the internal controller which allows the port circuitry to request a predefined change to a secondary connection or “automatic reconfiguration.” For example, a Fibre Channel port can be automatically dropped from a loop if the node is indicating a powered-down or otherwise inactive state to the NTS port.

The NTS base unit is designed to accept up to eight “port cards” with up to four I/O ports per card. Different types of port cards provide the specific media connectors, signal conversion, and conditioning required for a specific type of network or digital signal to be switched. The NTS can be populated with multiple port card types.

Full-Speed Fibre Channel NTS Port Cards 1.0625 Gb/s — Short Wave Laser or Copper



The full-speed, 1.0625 Gb/s, 4-port NTS port card is specifically designed to operate with full-speed Fibre Channel signals. Each input port has signal detection circuitry which is indicated via a front panel LED and reported to the NTS controller via the status line. Output port signals are retimed to remove noise and line jitter, allowing signals to pass through up to five cascaded switches error free. Port cards are available for either non-OFC Short Wave Laser or copper Fibre Channel connections.

Multi-Speed General Purpose NTS Port Cards 133 MHz up to 1 GHz — Short Wave Laser or Copper

The multi-speed, general-purpose, 4-port NTS port card is designed to operate with signals of any encoding or baud rate (up to 1 GHz) from any electrically compatible Fibre Channel transceiver. There is no retiming circuitry. This allows the port cards to operate with a wide range of baud rates and various types of encoders such as SMPTE video, SONET, and FDDI. Port cards are available for both non-OFC short wave laser or copper connections.

Partial list of Systran Corporate Clients

AAI Corp.
ADE (India)
AIDC (Taiwan)
AP Labs
ARS Electronica Center (Austria)
ASCOM
Adaptive Optics Associates
Aeronautical Development Establishment Honda (Japan)
Aerospatiale (France)
AeroVironment®
Agency for Defense Development (Korea)
Alcoa
Alenia (Italy)
Allied Signal
Applied Dynamics International
Argonne National Laboratory
Army Research Laboratory
Ascom (Switzerland)
Atlas Electronics (Germany)
Aydin Corp.
BBN
Ball Aerospace
Barrow Neurological Institute
Bell Helicopter Textron
Bell South Telecommunications
Boeing Commercial
Boeing Computer Services
Boeing Defense & Space
Boeing Military Airplanes
Bose Corp.
British Aerospace
CAE
CAE Electronics (Canada)
CAE-Link
CAE MRAD (Australia)
CASA (Spain)
CERN (Switzerland)
CHESS (Netherlands)
CSA
Calspan Corp.
Carolina Power & Light
Charles Stark Draper Labs
Chrysler Corp.
Chung-Swan Institute of Science and Technology MTT (Taiwan)
Coastal Systems Station
Computer Sciences Corp.
Computing Devices International
Concurrent Computer
Contraves USA
DASA
DRA (U.K.)
Daewoo Heavy Industries Ltd. (Korea)
Daimler-Benz Aerospace (Germany)
Dynamic Research
Dyncorp
EASAMS (Australia)
EG&G
ESG (Germany)
Eaton Corp.
Elbit (Israel)
Encore Computer Corp.
Ericsson Microwave Systems
E-Systems
Evans & Sutherland
EXITECH Corp.
Fermi Labs
Finnair (Finland)
FlightSafety International
Fokker Control Systems (Netherlands)
Ford Motor Co.
GE Aerospace
GE Aircraft Engines
GEC Marconi
Gemini Technology
General Motors Corp.
General Physics
Georgia Tech
Grumman Aerospace
Harris CSD
Harris RSA
Harris Computer Systems (France)
Heurikon
Hewlett-Packard®
Hitachi Zosen (Japan)
Honeywell
Honeywell Space & Satellite Systems
Hughes
Hughes Aircraft
Hughes Training
IBM™
IIT Research Institute
Indra (Spain)
Integrated Microcomputer Systems
Interstate Electronics
JTT Defense
Jet Propulsion Laboratory
KDN (Korea)
Kaiser Aluminum
Kawasaki Heavy Industries (Japan)
Komatsu TEC
Korea Electric Power Data Network Company Ltd. (Korea)
Krauss-Maffei (Germany)
LBE Technologies
Lawrence Livermore National Labs
Lear Astronics
Lear-Siegler
Link-Miles (U.K.)
Litton Amerecon
Litton Guidance & Control Systems
Lockheed Aeronautical
Lockheed Austin
Lockheed ESC
Lockheed Ft. Worth
Lockheed Martin
Lockheed Missiles & Space
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MIT Lincoln Labs
MODCOMP®
MTS Systems
MacAulay-Brown
Marconi (U.K.)
Martin Marietta
Massachusetts Institute of Technology
Ministry of Transport (Japan)
Mitsubishi Electric Corp. (Japan)
Motorola GSTG
NASA
NATC
NLR (Netherlands)
NRL
NTSC
NUSC
NWC
Naval Air Warfare Center
Naval Surface Warfare Center
Northrop Grumman
Oerlikon-Contraves (Switzerland)
PSE&G Nuclear Training
Phillips Labs
Pratt & Whitney
Raytheon Co.
Rediffusion (U.K.)
Reflectone
Rockwell
Rockwell Collins
Rockwell International
Rockwell Power Systems
S3 Technologies
SAAB Aircraft (Sweden)
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Tokyo Electric (Japan)
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University of Illinois
University of Massachusetts
University of Washington
Veda Inc.
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Vitro Services
WYLE Laboratories
Whittaker Communications
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