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HP E2749A
Fibre Channel
Interface Module

Product Overview



- **High speed data transfer to and from VXI local bus and VXI Bus**
- **Long distance communication to 500 meters**
- **Supports ANSI Standard FC-AL (Fibre-Channel arbitrated loop) connection of up to 126 devices**
- **Single wide, C size**

High speed data transfer to and from a VXI mainframe

This VXI module provides high-speed, broadband data transfer from a VXI mainframe to a PC, a VME system, or another VXI mainframe. Now you can transfer data at 41 Mbytes/sec, depending on the application. For example, the HP E2749A can transfer full-speed 16-bit data from an HP E1437A sampling at 20 Msamples/sec, the equivalent of 40 Mbytes/sec.

The module occupies a single-wide C-size slot in a VXI mainframe and is available with either coaxial copper (standard) or optical (option 001) front panel connectors.

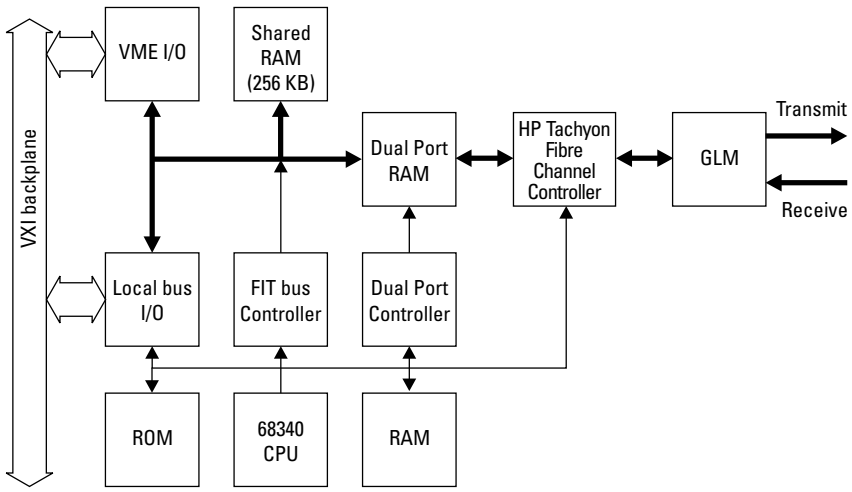
The HP E2749A supports Systran Corporation's FibreXpress Lightweight Protocol (FXLP). Compatible network interface products for PCs and VME systems are available from Systran Corporation. Each device that will transmit or receive data must include a Fibre Channel interface card.

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Internally, the HP E2749A includes an HP Tachyon Fibre Channel Controller chip, an interface between the HP Tachyon chip and the local VXI (P2) and VXI/VME (P1) buses, and a lightweight protocol implementation (figure 1). The module receives and transmits data through a Gigabit Link Module (GLM). The GLM has either coaxial copper (standard) or optical (optional) connectors.

Data to be transferred from VXI over Fibre Channel can come from either the VXI local bus, the VXI/VME bus, via VME shared memory, or any combination of these sources, under control of the programmable sequencer built into the HP E2749A. Dedicated hardware in the HP E2749A moves this data into a high-speed, dual-port memory. From dual-port memory, the data goes to the HP Tachyon Fibre Channel controller chip, where data is encoded from 8-bit internal bytes into 10-bit Fibre Channel transmission characters. The encoded data passes through the GLM to Fibre Channel.

Figure 1:
HP E2749A
block diagram



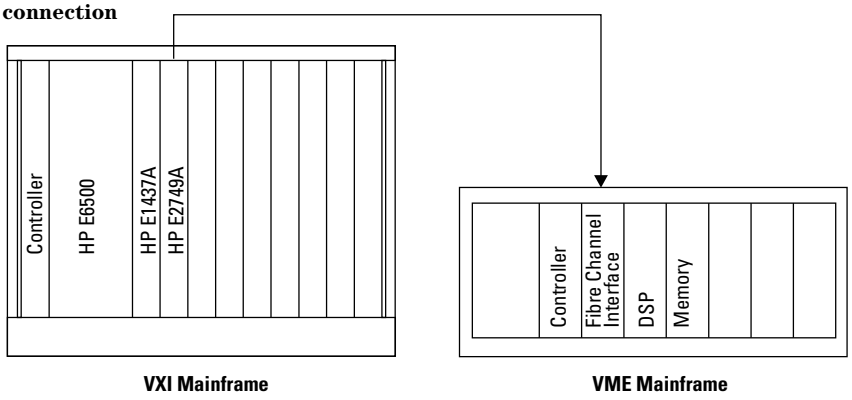
Data coming into the HP E2749A from Fibre Channel enters through the GLM to the HP Tachyon chip. The HP Tachyon chip decodes the 10-bit Fibre Channel characters to 8-bit internal bytes, then transfers the data to dual-port memory. From dual-port memory, the data goes to the VXI local bus, the VXI/VME bus, or VME shared memory.

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Direct communication between VXI and VME

Join VXI's advanced tuners and digitizers with VME's advanced DSP using the HP E2749A (see figure 2). A wide selection of high quality VXI tuners and digitizers are available with functions and performance not currently available in VME. Transfer data from a VXI mainframe to a VME system with the HP E2749A at a maximum rate of 41 Mbytes/sec.

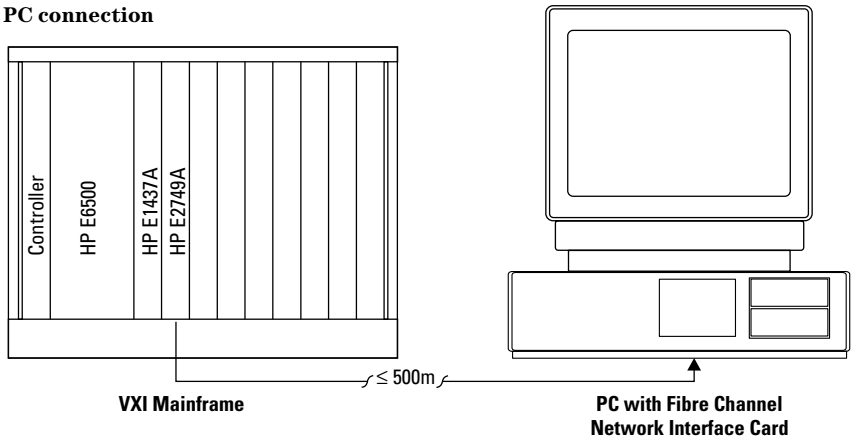
Figure 2: VXI/VME connection



Data transfer to a remote computer

Another advantage of Fibre Channel is long distance operation. Sometimes you collect data at one location and need to transfer the data to a remote computer for processing. The HP E2749A supports optical cables up to 500 meters in length. You can collect and digitize the data with the VXI mainframe and its controller, then transfer the data via Fibre Channel to an FXLP-compatible computer up to 500 meters away (figure 3).

Figure 3: VXI/remote PC connection



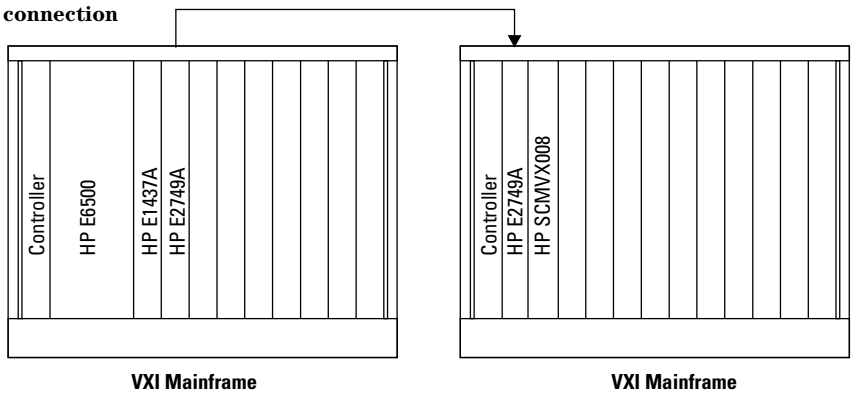
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Data transfer between VXI mainframes

Another HP E2749A application is transferring data between two VXI mainframes. You could transfer the data between mainframes over the VXIbus or MXIbus, but the Fibre Channel transfer rate is much faster. Figure 4 shows a typical VXI to VXI configuration.

Note: If you transfer data between VXI mainframes, each mainframe must include a controller in slot 0.

Figure 4: VXI/VXI connection



Arbitrated loop connections for greater flexibility

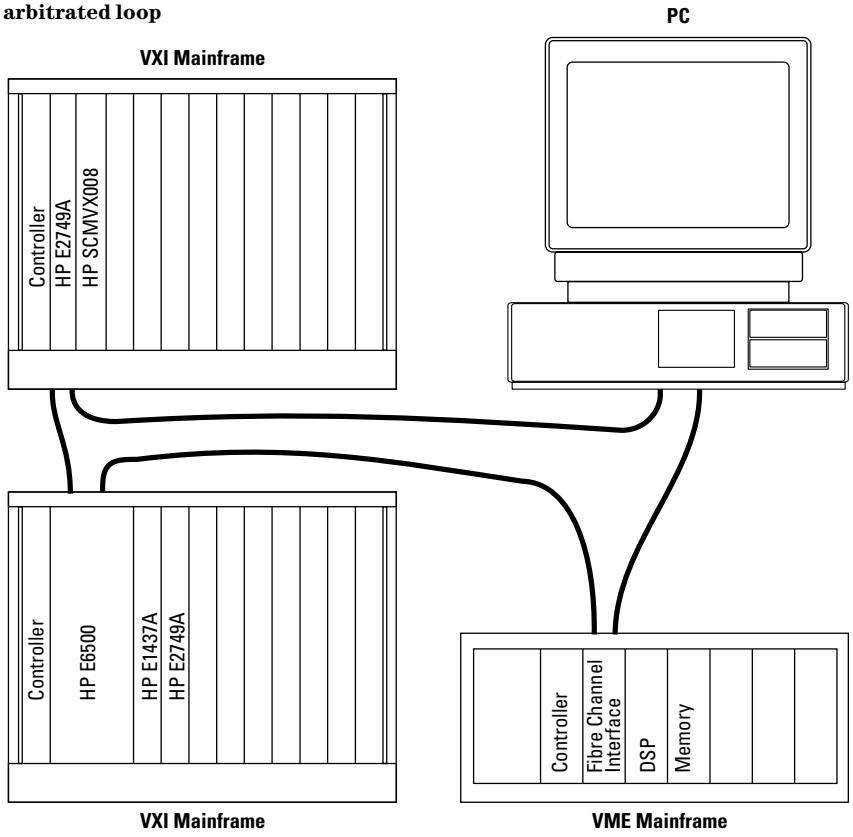
All the connections described previously are point-to-point, the simplest Fibre Channel topology. The Fibre Channel arbitrated loop is a more flexible topology, connecting up to 127 devices without hubs or switches. For example, an arbitrated loop might include a personal computer, a VME mainframe, and two VXI mainframes (figure 5). With this configuration you can transfer data from any

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device on the loop to any other device on the loop. This flexibility might come at the cost of speed—the connection between the two loop devices involved in the data transfer must be negotiated and established before the transfer occurs.

Data is transmitted from the source Fibre Channel module to Fibre Channel and received by the destination Fibre Channel module. For example, you might want to transfer data from the HP E1437A module in the lower VXI mainframe to the VME DSP module for post-processing. The HP E1437A data would pass through the HP E2749A module in the VXI mainframe, onto the arbitrated loop, and through the VME Fibre Channel module to the DSP module.

Figure 5:
Fibre Channel arbitrated loop



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Specifications

General Specifications

Emissions, Rad & Cond	CISPR 11, Group 1, Class A
Immunity standards	
IEC 1000-2-3 ESD	8 kVAD, 4 kVCD
IEC 1000-2-3 Radiated immunity	3 V/m
IEC 1000-2-4 Fast transients	I/O 500 V
Safety	Option 001 includes a class 1 laser device per IEL 825-1. Device is eye safe. Complies with 21 Code of Federal Regulations (CFR, USA), chapter 1, subpart J.
GLM interface	The GLM used in the HP E2749 meets the industry standard defined within the ANSI X3.230-1994 and X3T11/ Project 1119D/Rev 8.3 standards, and is FCSI-301-Rev 1.0 compatible.
VXI bus standards	VXI (Rev. 1.4); Message-based servant; A16/A24/A32, D08/D16/D32 Master; A16/A24, D08/D16 Slave Interrupter/ handler

VXI power requirement	**dc**	**dynamic current**
+ 5.0 V	3.7A	0.60 A
- 5.2 V	0.6 A	0.01 A
- 2.0 V	0.14 A	0.07 A
+12.0 V	0.00 A †	0.00 A
-12.0 V	0.00 A	0.00 A
+24.0 V	0.00 A	0.00 A
-24.0 V	0.00 A	0.00 A
+ 5.0 V Standby	0.00 A	0.00 A

† The HP E2749A will consume up to 60 mA (20 mA typ) of +12 while programming ROMS.

VXI cooling requirement (10°C rise)	1.75 liter/second, 0.1 mm H2O
Weight	
Net	1.1 kg (2.5 lbs)
Shipping	4.3 kg (9.4 lbs)
Dimensions	Single slot, C-size VXI module
Maximum cable length	
Optical (850 nm multimode laser, µ50 mm core diameter)	500 m
Coaxial copper (150Ω STP connector)	30 m

Environmental

Operating restrictions	
Ambient temperature	0°to 55°C
Humidity, non-condensing	< 80% RH at 40°C
Maximum altitude	2300 meters (7,500 feet)
Storage and transport restrictions	
Ambient temperature	-40°to 75°C
Humidity, non-condensing	5% RH, 95% RH at 65°C
Maximum altitude	4600 meters (15,000 feet)

Performance Benchmarks

Data Transmit Rate	Greater than 41Mbytes/sec. Read data from E1437 A/D module over Local Bus (16-bit data, 8Mhz span, 20.48 Msamples/sec.), and transmit out Fibre channel.
Data Receive Rate	Greater than 21 Mbytes/sec. Receive data from Fibre Channel and output to Local Bus .

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Ordering information

HP E2749A	Fibre Channel Interface Module
Option 001	Optical GLM
Option 010	2-meter optical cable
Option 011	2-meter coaxial copper cable
Option 0B0	delete manual
Option 0B1	add manual

Compatible products

For information on compatible Fibre Channel interface products, contact Systran Corporation, 800-252-5601. Systran Corporation also has a Web site at: www.systran.com

Systran FibreXpress products are available on the following systems:

Processor	Operating System	Bus Interface
i960	VxWorks 5.3	PMC
MIPS	VxWorks 5.2	PMC
PowerPC	VxWorks 5.2	PMC
Pentium® PC	Windows NT®	PCI
Sun Sparc	Solaris 2.4/2.5	SBus

Warranty Information

The HP E2749A comes with a 3-yr warranty. During that period, the unit will either be replaced or repaired, at HP's option, and returned to the customer without charge. There is an option available at extra cost which extends the repair support to five years.

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Printed in U.S.A. 7/97
5966-0313E

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