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QuickSpecs

Compaq 3X-DEFPA-*C Universal 32 bit PCI to FDDI NIC Family

Models

Compaq 3X-DEFPA-AC Unversal PCI to FDDI SAS with MMF NIC

3X-DEFPA-AC Single for Alpha
134713-B21 Single for Intel

Compaq 3X-DEFPA-DC Universal PCI to FDDI DAS with MMF NIC

3X-DEFPA-DC Single for Alpha
134714-B21 Single for Intel

Compaq 3X-DEFPA-MC Universal PCI to FDDI DAS with CAT 5 UTP NIC

3X-DEFPA-MC Single for Alpha
134716-B21 Single for Intel

Compaq 3X-DEFPA-UC Universal PCI to FDDI SAS with CAT 5 UTP NIC

3X-DE600-AA Single for Alpha
134717-B21 Single for Intel

Overview

The DEFPA families of FDDI NICs from Cabletron Systems include support for Multi-Mode-Fiber (MMF) and CAT 5 Unshielded Twisted Pair (UTP) copper media types, in both Single Attachment Station (SAS) and Dual Attachment Station (DAS) configurations. The MMF options utilize "duplex SC" connectors, and the UTP options utilize RJ45 connectors.

The ***3X-DEFPA-*C Family*** of FDDI NICs will supersede the ***DEFPA-*B Family*** in all applications. The 3X-DEFPA-*C is fully compatible with the DEFPA-*B and, with the exception of Windows NT on Alpha, can be used with all of the drivers currently supported by Compaq (see table below) for the DEFPA-*B.

All of the 3X-DEFPA-*C NICs provide a Universal PCI bus interface that implements both 3.3 and 5.0 Volt bus signaling, and require a single PCI "BusMaster" capable slot.

3X-DEFPA-AC *Universal* PCI to Single Attachment Station **(SAS)** FDDI Controller using duplex optics with **"SC"** connectors (LCF-PMD), and supporting up to **2KM** of multi-mode fiber **(MMF)** between stations. This SAS adapter supports high performance full-duplex operation when connected point-to-point with a cooperating full-duplex FDDI switch or adapter.

3X-DEFPA-DC *Universal* PCI to Dual Attachment Station **(DAS)** FDDI Controller using a pair of duplex optics with **"SC"** connectors (LCF-PMD), and supporting up to **2KM** of multi-mode fiber **(MMF)** between stations. This DAS adapter: (1) supports high performance full-duplex operation when connected point-to-point with a cooperating full-duplex FDDI switch or adapter; (2) auto-configures to support high availability "dual-homed" configurations. In addition, the -DC option includes support (RJ12) for connecting an optional, external 3rd party, Optical Bypass Relay **(OBR).**

3X-DEFPA-MC *Universal* PCI to Dual Attachment Station **(DAS)** FDDI Controller using a pair of ANSI copper **TP-PMDs** (RJ45) and supporting up to **100M** of **CAT 5** Unshielded Twisted Pair **(UTP)** copper cable between stations. This DAS adapter: (1) supports high performance full-duplex operation when connected point-to-point with a cooperating full-duplex FDDI switch or adapter; (2) auto-configures to support high availability "dual-homed" configurations.

3X-DEFPA-UC *Universal* PCI to Single Attachment Station **(SAS)** FDDI Controller using the ANSI copper **TP-PMD** (RJ45) and supporting up to **100M** of **CAT 5** Unshielded Twisted Pair **(UTP)** copper

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cable between stations. This SAS adapter supports high performance full-duplex operation when connected point-to-point with a cooperating full-duplex FDDI switch or adapter.

Performance

Full-Duplex Operation

The 3X-DEFPA-*C family of FDDI NICs uniquely provide the ability to auto-negotiate to operate in full-duplex mode when connected point-to-point with another DEFPA, or cooperating FDDI switch. Full-Duplex mode eliminates the token, and allows the DEFPA to simultaneously transmit and receive packets without the latency associated with token rotation. Full-Duplex mode allows the DEFPA to sustain aggregate data rates in excess of 100Mbps.

Bus-mastering

The 3X-DEFPA-*C uses linked-list, scatter/gather, bus-mastering technology to maximize throughput and optimize host system utilization.

Large One Megabyte Packet Buffer

In heavily loaded, directed address, high-end server operating environments, the DEFPA's large, one megabyte packet buffer allows it to survive most extended host CPU bus latency occurrences without dropping or aging out packets.

Security/Reliability

Network Fault Tolerance

FDDI, by design, provides automatic fail-over mechanisms at the hardware level. For example, with its dual-counter-rotating ring architecture, FDDI will automatically recover from any single point failure in the ring (NIC, Port, or Media). In addition, a DAS NIC can be connected in a "dual-homed" configuration where each of its two ports are connected to different Wiring Concentrators or Switches in the same network. One of the port connections operates as the primary/active connection, and the other port operates as the back-up / hot-stand-by connection. On-board FDDI Station Management (SMT) constantly monitors the quality of the links, and in the event of a primary link failure, automatically transfers operation to the secondary link. This transfer is normally a sub-second event and transparent to most applications. The on-board SMT continues to monitor the links, and when the failed link quality returns to normal, the hardware automatically transfers operation back to the primary link. The dual-homed configuration provides sub-second fail-over for link and network box failures.

In the event of a NIC failure, higher level driver and/or protocol levels within the host CPU manage the fail-over to a back-up NIC. Tru64 UNIX NetRain or OpenVMS Cluster utilities manage the NIC to NIC fail-over.

Ease of Use

Plug and Play

The 3X-DEFPA-*C features a robust PCI Plug-and-Play capability and PCI 2.2 support for conflict-free auto configuration.

Auto-negotiation

The 3X-DEFPA-*C will automatically negotiate to operate in either half (normal token rotation mode) or full-duplex (no token) mode, and to configure itself for SAS, DAS, or dual-homed (auto port fail-over) operation.

Troubleshooting

LEDs indicate link status, configuration, and network activity for "at-a-glance" troubleshooting.

World Class Compaq Reliability

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Designed with quality and investment protection in mind, the 3X-DEFPA-*C family of FDDI NICs meet all of Compaq's demanding design and manufacturing standards. Surface-mount technology, ASIC-based hardware, state-of-the-art manufacturing facilities, a top-notch quality inspection, and testing provide the reliability and quality you expect from a Compaq product.

Warranty

Compaq supports this product with a Three Year Warranty. Technical support is available at your fingertips 24 hours a day, 7 days a week. 3 Years Parts Only, with advanced exchange. Year 2000 Compliant. Note: Certain restrictions and exclusions apply. Contact 800-OK-COMPAQ for details.

Specifications

New Universal PCI Features

- PCI Universal I/O Bus drivers capable of supporting either +5V or +3.3V PCI bus signal levels using the PCI Vi/o power rail.
- Serial ROM (SROM) interface - for programming configuration space register values at boot/power up (including Subsystem Vender ID and Subsystem I.D).
- PCI Local Bus V2.2 compliant. This includes some changes and additions to the Configuration Space Header.
- "New Capabilities" - adds bit and byte pointer in Configuration Space. Non-default values may be programmed via SROM
- Power Management supports "D0" and "D3" states. All non-default register values may be programmed via SROM.
- Vital Product Data (VPD) in SROM.
- Support for PCI Memory Read Line and Memory Read Multiple commands.
- PCI Hot-Plug Support

DEFPA Family Common Features

- Delivers full speed 32 bit PCI DMA bus transfers at up to 132 MegaBytes/Sec
- Bus-Master, linked-list, scatter/gather, dual-DMA engines
- On-Board FDDI SMT V7.3 Processing using a Motorola 68K
- DMA burst size adjustable to match host PCI bridge FIFO (4 -> 16 long words)
- 928KBytes of Packet RAM
- Allows multiple options to be installed in a host system (requires 128 Bytes of I/O address space per controller)
- 62 User Programmable Multi-Cast Addresses
- PHY LED per port (1 for SAS, 2 for DAS) – Yellow/Green indicating diagnostic status and FDDI PHY state. On the DAS adapter it also indicates "A" port backup status when connected "dual-homed".
- On-board FLASH ROM (256Kbytes) holds the adapter's functional code and diagnostics, and can be updated in the field using a host CPU load utility.
- DAS options support "Dual-Homing" for use in high availability configurations.
- Auto-Configuration to Operate in FDDI Full Duplex Technology (FFDT) mode when connected point-to-point with a cooperating FFDT adapter, or FDDI Switch (Digital's GIGAswitch/FDDI for example). This allows aggregate data rates in excess of 100 Megabits/Sec. (Note: Auto-configuration must be turned on by the host CPU driver.)

Compliance

PCI I/O Bus Standards
PCI 2.2 and 2.1

ANSI FDDI Standard Compliance
X3.229-1994 SMT V7.3
ANSI X3.166-1990 FDDI PMD
ANSI X3.148-1988 FDDI PHY
ANSI X3.139-1987 MAC

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ANSI X3.237 TP-PMD Interoperable Draft Standard V2.0

Safety
UL 1950, CSA C22.2 No. 950, EN60950, IEC 60950

Radiated Emissions
FCC PART 15 Class B, CSA C108.8 Class B, EN55022 Class B, VCCI V-3 Class B, EN50082-1
AS/NZS 3548 and 89/336/EEC

Power and Environmental Specifications	**Operating**	Temperature	F/–10° to 40°C
		Humidity	8% to 80% (non-condensing)
	Non-operating	Temperature	F/–40° to 85°C
		Humidity	0 to 95% (non-condensing)

3X-DEFPA Option Size and Measured Power Requirements

Option	Slots	Size	+5 Vdc Amps	+12 Vdc Amps	Total Watts	Weight[4]
-AC	1	Short[1]	1.1	0.001[3]	5.02	0.28 lbs
-DC	1	Short[1]	1.5[2]	0.001[3]	7.52	0.32 lbs
-UC	1	Short[1]	1.1	0.001[3]	5.02	0.26 lbs
-MC	1	Short[1]	1.4	0.001[3]	7.02	0.30 lbs

Notes:

1. Module Height = 4.20 in. from bottom of bus connector to top of module, Depth = 6.95 in. from front of bracket to back edge of module.
2. When an external OBR is used, this value will be increased by that required to drive the OBR (+500 Milliamps Max)
3. 0.060 Amps required during FLASH programming, and diagnostic error logging.
4. Approximate unpackaged weight - adapter only.

Operating System Support

ALPHA min Rev	INTEL	
Digital UNIX V3.2[1]	NetWare SFT III MSL[2,3]	WFW 3.11 (NDIS 3)[2]
OpenVMS V6.2[1]	NetWare 5 ODI Server	OS/2 (NDIS 3)[2]
	NetWare DOS ODI Client	SCO UnixWare 7
	NetWare 3 ODI Server[2]	SCO Open Server[2]
	NetWare 4 ODI Server	WNT (NDIS 4)
	NetWare OS/2 ODI Client[2]	Windows 95/98 (NDIS 3 & 4)
	DOS (NDIS 3)[2]	Windows 2000[4]
	Windows 3.1 (NDIS 3)[2]	DOS based diagnostic "INSTVER"
	PATHWORKS (NDIS 3)[2]	
NICWORKS/FDDI	NICWORKS/FDDI	

Notes:

1. Distributed as a component of the Operating System, NOT included in the driver kit shipped with the adapter.
2. Not actively supported. Available in V2.9 SW kit on Web only.
3. Not supported by Netware 5.
4. Windows 2000 will be supported.

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