

► Dual Fibre Channel Adapter

The Dual Fibre Channel (FC) Adapter offers dual 1/2/4 Gbit/s FC communication links on multimode or singlemode fibre media (frontpanel I/O PMC adapter), or dual 1 Gbit/s FC links over copper (backplane I/O Conduction-Cooled PMC adapter). This adapter provides optimal flexibility by supporting all Fibre Channel topologies, including Arbitrated Loop, with full duplex communications on both channels. It is available in the following industry standard compliant formfactors :

- PMC (IEEE Std 1386.1-2001)
- Conduction-Cooled PMC (CCPMC) (ANSI/VITA 20-2001)



Dual 4 Gbit/s Fibre Channel PMC



Dual 1 Gbit/s Fibre Channel CCPMC

Architecture

The Dual Fibre Channel Adapter uses a highly integrated ASIC with embedded RISC processors to handle all protocol processing and data transfers. This reduces overhead on the host processor, thus providing higher network data throughput. Data transfers from the adapter are controlled independently using single channel Bus Mastering or Scatter Gather Mode.

On the frontpanel I/O PMC adapter dual 4 Gbit/s SFF optical transceivers are used, providing reliable, high speed and long distance connectivity. Both channels independently support autonegotiation down to 1 or 2 Gbit/s, allowing for the integration of legacy and next generation devices.

The backplane I/O Conduction-Cooled PMC adapter provides dual Fibre Channel links over copper media at a fixed link speed of 1 Gbit/s per channel.

The adapter's Integrated Link Controller is Arbitrated Loop (FC-AL-2 R7.0) compliant and performs all Link operations. The Internal Controller monitors the Link State and strictly adheres to the Loop Port State Machine, ensuring maximum system interoperability.

Features

- Two independent channels
- 4 Gbit/s link speed on each channel using fibre media
- Auto-speed 1, 2 or 4 Gbit/s
- Data throughput (TCP)
 - 4 Gbit/s link : 600 Mbps in each direction per channel, 2 400 Mbps combined total
 - 2 Gbit/s link : 540 Mbps in each direction per channel, 2 160 Mbps combined total
 - 1 Gbit/s link : 470 Mbps in each direction per channel, 1 880 Mbps combined total
- Supports all fibre channel topologies with full-duplex communication
- Concurrent SCSI and IP protocol
- Auto-detect switch or loop connections
- 64-bit 133 MHz PCI-X, fully backwards compatible with 32-bit and 33/66/100 MHz bus
- Data transfer via Bus Mastering to/from PCI-bus
- ASIC design reduces costs and increases reliability



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Applications

- Distributed real-time applications in harsh environments
- High-Performance Multimedia Applications
- Mission-Critical Applications
- High-Speed Sensor Integration
- Avionics; Vetrionics
- Distributed Digital Voice and Video Applications
- Industrial Simulation
- Host Attach for mass storage sub-systems
- Storage Area Networks
- Server Clustering
- Embedded Raid

Specifications		
Bus Interface	64-bit/133 MHz PCI-X, backward compatible with 32-bit and 33/66/100 MHz busses Electrically : PCI Rev.2.3 and PCI-X Rev 1.0, 3,3 V signalling (5,0 V compatible)	
I/O Addresses	Automatically assigned to the slot by PCI Rev. 2.3 Plug-and-Play	
Interrupt	PCI INT A and B	
DMA	Automatic, depending on PCI slot	
LAN Controller	LSIFC949X	
Compliance	FC-PH, FC-AL2 R7.0, FC-FCP, FC-PLDA, FC-FLA	
	N_Port supporting :	NL_Port supporting :
	- 8 N_port (Point-to-Point) - 8 F_port (Fabric Attach)	- 8 NL_port (Private Loop) - 8 FL_port (Public Loop)
Protocols	- Fibre Channel - TCP/IP (over Fibre Channel) - SCSI (over Fibre Channel) - Custom protocols supported - IP and SCSI traffic can be intermixed	
I/O Options	PMC : Frontpanel, 1/2/4 Gbit/s on fibre media CCPMC : PMC Jn4 backplane, 1 Gbit/s on copper media	
Fibre Length	50 um/125 um MMF	150 m @ 4,25 Gbit/s 300 m @ 2,124 Gbit/s
	62,5 um/125 um MMF	70 m @ 4,25 Gbit/s 150 m @ 2,125 Gbit/s
Optical Wave Length	850 nm	
Power	5,0 V at 0,7 A	
Software Drivers	Various software drivers offered including for VxWorks, Windows 2000, Windows Server 2003, Windows XP, Solaris X86, Solaris SPARC, SUSE and Red Hat Linux operating systems as standard; others are costed options	
Software	OEM Hardware Diagnostic Program for DOS	
Options	Multimode SFF optical transceivers (short-haul fibre connections) Singlemode SFF optical transceivers (long-haul fibre connections)	

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Characteristics		
Formfactor	Dimensions	Weight
PMC (IEEE Std 1386.1-2001)	149,00 mm x 74,00 mm, conforming to CMC height envelope	110 g ± 10 g
CCPMC (ANSI/VITA 20-2001)	143,65 mm x 74,00 mm, conforming to VITA 20 height envelope	70 g ± 10 g

Reliability				
MTBF	Figures according to MIL-HDBK-217F, Parts Stress Method			
	Ground, Mobile Naval, Sheltered Airborne, Inhabited Cargo	T _j = 65 C T _j = 60 C T _j = 75 C	T _a = 45 C T _a = 40 C T _a = 55 C	23 000 hrs 33 000 hrs 29 000 hrs

Environmental Specifications			
	Commercial Grade	Industrial Grade	Ruggedised Grade
Temperature - Operating - Storage	0 C to +55 C -40 C to +85 C	-15 C to +75 C -50 C to +85 C	-40 C to + 85 C -60 C to +125 C
Humidity	0% - 90%	0% - 95%	0% - 95%
Shock	N/A	30 g peak for 11 ms	40 g peak for 11 ms
Vibration - Sine - Random	2 g (peak) 10 Hz to 100 Hz 0,04 g ² /Hz at 15 Hz to 2 kHz	10 g (peak) 5 Hz to 2 kHz 0,1 g ² /Hz at 15 Hz to 2 kHz	10 g (peak) 5 Hz to 2 kHz 0,1 g ² /Hz at 15 Hz to 2 kHz

Part Selector					
Part Designation	Formfactor	Grade	Attachment	Media	Connector
CCII/FC/PMC/4G/FP/COM	PMC	Commercial	Dual	Fibre	LC
CCII/FC/PMC/4G/FP/IND	PMC	Industrial	Dual	Fibre	LC
CCII/FC/PMC/4G/FP/RGD	PMC	Ruggedised	Dual	Fibre	LC
CCII/FC/PMC/1G/BP/CC	CCPMC	Ruggedised	Dual	Copper	PMC Jn4