

## ► Dual Gigabit Ethernet Adapter

The Dual Gigabit Ethernet Adapter provides dual 10/100/1000 Mbit/s Ethernet communications links on either copper or fibre media and is available in the following industry standard compliant formfactors :

- PMC
  - Air-cooled PMC adapter with frontpanel I/O (IEEE Std 1386.1-2001)
  - Conduction-Cooled PMC (CCPMC) adapter with backplane I/O (ANSI/VITA 20-2001)
  - Conduction-Cooled PMC adapter with frontpanel I/O (requires modification to host carrier)
- PCI-104 (PCI-104 v2.0)
- PCI (PCI Local Bus Specification Rev. 2.3)

1. CCPMC
2. PMC
3. PCI
4. PCI-104



1.



3.



2.



4.

### Architecture

The Dual Gigabit Ethernet Adapter uses a custom intelligent ASIC for the control of the Gigabit Ethernet MACs (Media Access Controllers). The ASIC removes protocol processing overhead from the host processor, ensuring a higher net data throughput.

The ASIC supports two distinctly different operational modes, being : Dual Net and Redundant Link Management Technology (RLMT) modes. In Dual Net mode the adapter provides two independent Gigabit Ethernet network interfaces, useful for maximising I/O connectivity and the available network bandwidth. In RLMT mode the adapter provides a single Gigabit Ethernet network interface, using one of its two channels as the default (primary) network link and the other (secondary) as a standby. In the event of the primary link failing, the ASIC automatically switches to the secondary link without any user intervention.

The ASIC also incorporates Virtual Cable Tester (VCT) technology for advanced cable diagnostics. VCT enables the system to pinpoint the location of cabling issues down to a meter or less, reducing network installation and support costs.

### Features

- An advanced ASIC removes protocol processing overhead from the host processor, maximising the net data throughput
- User configurable in either Dual Net or Redundant Link Management (dual redundant) modes of operation
- RLMT implemented in hardware manages unattended and automatic failure recovery of downed links in real time
- Automatic MDI/MDIX crossover at all speeds
- High data transmission rate
- Compliant to IEEE 802.3 (Ethernet), IEEE 802.3u (Fast Ethernet) and IEEE 802.3ab (Gigabit Ethernet)



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### I/O Media Types

Frontpanel versions of the adapter supports all of the following I/O media types :

- 1000BASE-SX : Gigabit Ethernet using multimode fibre media and a 850 nm wavelength, over distances of at least 200 m
- 1000BASE-LX : Gigabit Ethernet using singlemode fibre media and a 1 270 to 1 355 nm wavelength, over distances of at least 2 km
- 1000BASE-T (IEEE 802.3ab) : Gigabit Ethernet using Category 5, 5e or 6 copper cable, over distances of up to 100 m

### Applications

- Distributed real-time applications in harsh environments
- Mission-critical applications
- Avionics, Vetronics
- High-speed sensor integration
- High-performance multimedia applications
- Distributed digital voice and video applications

Specifications	
<b>Bus Interface</b>	64-bit, 33 MHz PCI-bus (32-bit compatible) Electrically : PCI Rev. 2.3
<b>No. of Interfaces</b>	2 x 10/100/1000Base-T copper, 2 x 1000Base-T fibre, full duplex or half duplex support
<b>LAN Controller</b>	Custom ASIC
<b>I/O Addresses</b>	Automatically assigned to the slot by PCI Rev. 2.3 Plug-and-Play
<b>I/O Options</b>	10/100/1000 BASE-T copper (all formfactors) 1000 BASE-T fibre (not available on the CCPMC adapter)
<b>Interrupts</b>	User-programmable interrupts
<b>DMA</b>	Automatic depending on PCI slot (bus master)
<b>Power</b>	Universal Card (+3,3 V and +5 V compatible) 650 mA @ 5 V
<b>Software</b>	Various software drivers offered including for VxWorks, Linux, Solaris, Windows 2000, Windows XP and Windows 2003 operating systems as standard; others are costed options
<b>Protocols</b>	- MAC - IP - TCP/IP - UDP/IP
<b>Supporting Tools</b>	Sample driver usage software (C/C++ source code)
<b>Standard Compliance</b>	- IEEE 802.3 (Ethernet), IEEE 802.3u (Fast Ethernet) and IEEE 802.3ab (Gigabit Ethernet) - Compliant to IEEE 802.3x (flow control support) - IEEE 802.1p support (QoS)

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Characteristics		
Formfactor	Dimensions	Weight
PMC	149,0 mm x 74,0 mm x 13,5 mm	105 g +/- 10 g
CCPMC	143,7 mm x 74,0 mm x 13,5 mm	65 g +/- 10 g
PCI-104	95,9 mm x 90,2 mm x 23,8 mm	90 g +/- 10 g
PCI	167,7 mm x 64,5 mm x 10 mm	85 g +/- 10 g

Reliability				
<b>MTBF</b>	Figures according to MIL-HDBK-217F, Parts Stress Method			
	Ground, Mobile Naval, Sheltered Airborne, Inhabited Cargo	T <sub>j</sub> = 65 C T <sub>j</sub> = 60 C T <sub>j</sub> = 75 C	T <sub>a</sub> = 45 C T <sub>a</sub> = 40 C T <sub>a</sub> = 55 C	25 000 hrs 35 000 hrs 25 000 hrs

Environmental Specifications			
	Commercial Grade	Industrial Grade	Ruggedised/Conduction-Cooled Grade
<b>Temperature</b> - 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
<b>Humidity</b>	0% - 90%	0% - 95%	0% - 95%
<b>Shock</b>	N/A	30 g peak for 11 ms	40 g peak for 11 ms
<b>Vibration</b> - Sine - Random	2 g (peak) 10 Hz to 100 Hz 0,04 g <sup>2</sup> /Hz at 15 Hz to 2 kHz	10 g (peak) 5 Hz to 2 kHz 0,1 g <sup>2</sup> /Hz at 15 Hz to 2 kHz	10 g (peak) 5 Hz to 2 kHz 0,1 g <sup>2</sup> /Hz at 15 Hz to 2 kHz



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Part Selector				
Part Designation	Formfactor	Grade	I/O Connector Type	I/O Media Type
CCII/GNET/PMC/2P/SX/FP/COM CCII/GNET/PMC/2P/SX/FP/IND CCII/GNET/PMC/2P/SX/FP/RGD	PMC PMC PMC	Commercial Industrial Ruggedised	SFF/LC Connector SFF/LC Connector SFF/LC Connector	Fibre, Multimode Fibre, Multimode Fibre, Multimode
CCII/GNET/PMC/2P/LX/FP/COM CCII/GNET/PMC/2P/LX/FP/IND CCII/GNET/PMC/2P/LX/FP/RGD	PMC PMC PMC	Commercial Industrial Ruggedised	SFF/LC Connector SFF/LC Connector SFF/LC Connector	Fibre, Singlemode Fibre, Singlemode Fibre, Singlemode
CCII/GNET/PMC/2P/RJ/FP/COM CCII/GNET/PMC/2P/RJ/FP/IND CCII/GNET/PMC/2P/RJ/FP/RGD	PMC PMC PMC	Commercial Industrial Ruggedised	RJ-45 Connector RJ-45 Connector RJ-45 Connector	UTP, Frontpanel, Copper UTP, Frontpanel, Copper UTP, Frontpanel, Copper
CCII/GNET/PMC/2P/BP/CC	CCPMC	Conduction-Cooled		UTP, Backplane
CCII/GNET/PC104/2P/RJ/COM CCII/GNET/PC104/2P/RJ/IND CCII/GNET/PC104/2P/RJ/RGD CCII/GNET/PC104/2P/SX/COM CCII/GNET PC104/2P/SX/IND CCII/GNET/PC104/2P/SX/RGD	PCI-104 PCI-104 PCI-104 PCI-104 PCI-104 PCI-104	Commercial Industrial Ruggedised Commercial Industrial Ruggedised	RJ-45 Connector RJ-45 Connector RJ-45 Connector SFF/LC Connector SFF/LC Connector SFF/LC Connector	Copper, UTP Copper, UTP Copper, UTP Fibre, Multimode Fibre, Multimode Fibre, Multimode
CCII/GE/PCI/SX/RGD CCII/GE/PCI/LX/RGD CCII/GE/PCI/RJ/RGD	PCI PCI PCI	Ruggedised Ruggedised Ruggedised	SFF/LC Connector SFF/LC Connector RJ-45 Connector	Fibre, Multimode Fibre, Singlemode UTP, Copper