

## ► Universal Fibre Hub (CompactPCI Configuration)

The Universal Fibre Hub (UFH) is a multi-format I/O signal concentrator and redistribution unit. It is highly configurable and is suitable for use in a wide range of I/O monitoring and control applications.

The device is a single board computer in the CompactPCI (3U) formfactor and has a rich feature list, including an array of analogue and digital I/Os, UART serial I/O channels, USB host interfaces, CAN interfaces and an ATA (hard disk drive) or Compact Flash (memory card) interface.

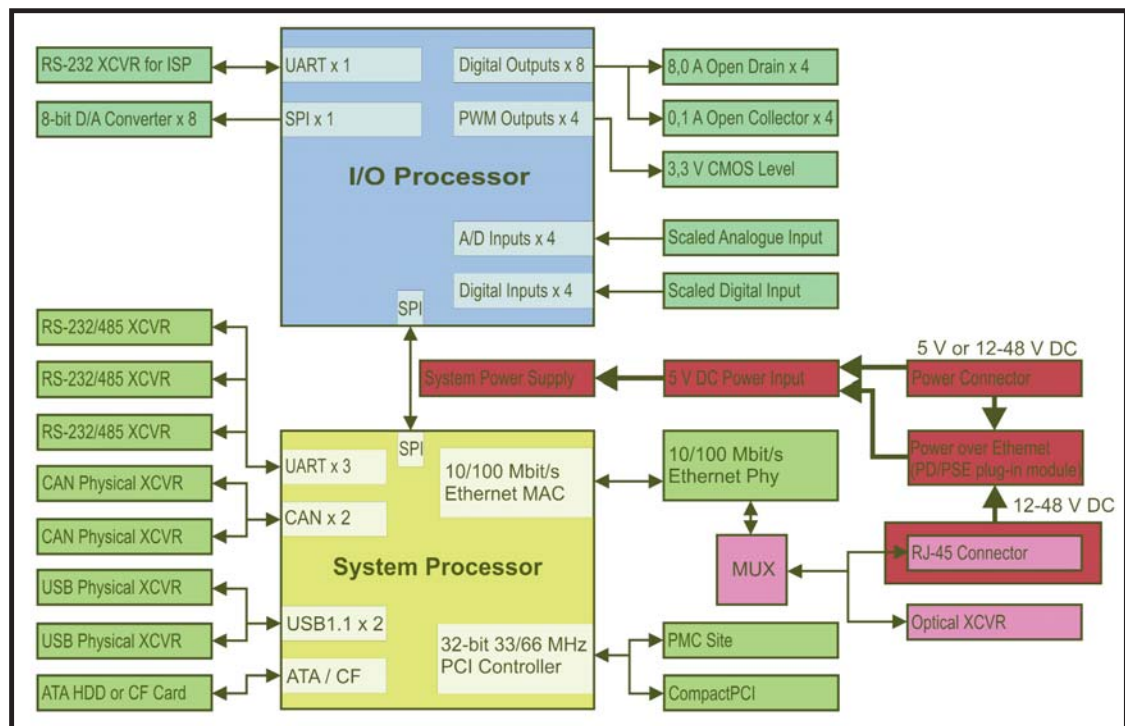
The UFH is also available as a standalone unit for use in smaller embedded applications.

### Architecture

The UFH incorporates two processor domains. Digital and analogue I/O processing is off-loaded to an onboard I/O Processor (16-bit RISC Microcontroller), whilst serial I/O, data communications and other higher level functions are handled by the System Processor (32-bit PowerPC Microprocessor).

It has an onboard 10/100 Mbit/s Fast Ethernet interface which is configurable for use with either fibre optic or copper media types. The UFH also features an onboard 32-bit 33/66 MHz PMC site, which offers I/O and processing expansion capabilities through the use of a third party PMC adapter. One example of this would be the use of a C²I² Systems Dual Gigabit Ethernet PMC adapter, which provides a dual redundant Gigabit Ethernet link via either fibre optic or copper media.

The UFH can be connected as System Board to a compatible 32-bit CompactPCI backplane and can manage up to five CompactPCI Peripheral Boards, providing excellent scalability.



**Universal Fibre Hub (CompactPCI Configuration)  
Functional Block Diagram**



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### Features

- VxWorks and Linux operating systems supported
- 32-bit Freescale MPC5200B PowerPC Microprocessor as System Processor
- 16-bit Fujitsu MB96350 Series Microcontroller as I/O Processor
- 32-bit 33/66 MHz PCI : one PMC site and five cPCI Peripherals (on a compatible backplane)
- 32 Mbyte user / application Flash Memory
- One ATA or CompactFlash UDMA4 Interface
- 256 Mbyte 132 MHz DDR-SDRAM
- Two 1 Mbit/s isolated CAN Interfaces
- One 10/100 Mbit/s Fast Ethernet Interface, configurable for fibre or copper I/O media types
- Optional Power over Ethernet (PoE) modules, available as Powered Device (PD) or Power Sourcing Equipment (PSE)
- Three 1 Mbit/s UART Serial I/O Interfaces, configurable as either RS-232 or RS-485
- Two USB V1.1 Host Interfaces (Full Speed, 12 Mbit/s)
- Eight 8-bit D/A Outputs
- Four 10-bit A/D Inputs, also configurable as digital inputs
- Four dedicated Digital Inputs
- Four 6 A Open Drain MOSFET Outputs (with onboard LED indicators)
- Four 100 mA Open Collector BJT Outputs (with onboard LED indicators)
- Four programmable PWM Outputs

Specifications	
<b>System Processor</b>	Freescale MPC5200B Microprocessor, PowerPC e300 core @ 400 MHz
<b>I/O Processor</b>	Fujitsu MB96350 Series Microcontroller
<b>DDR-SDRAM</b>	256 Mbyte @ 132 MHz bus frequency
<b>Flash Memory</b>	32 Mbyte
<b>ATA / CompactFlash</b>	UDMA4
<b>Ethernet Interface</b>	Single 10/100 Mbit/s Fast Ethernet interface, configurable for use with either fibre optic or copper media
<b>USB Host Interface</b>	Dual USB V1.1 host interfaces, with a maximum bit rate of 12 Mbit/s
<b>CAN Interface</b>	Dual CAN V2.0 (Part A and B) interfaces, with a maximum bit rate of 1 Mbit/s
<b>Serial I/O Interface</b>	Three UART serial I/O channels, each configurable for either RS-232 or RS-485 operation, with a maximum bit rate of 1 Mbit/s
<b>Digital Inputs</b>	Four dedicated digital inputs
<b>Analogue Inputs</b>	Four 10-bit analogue to digital inputs (also configurable as digital inputs)
<b>Digital Outputs</b>	Four 100 mA Open Collector BJT outputs Four 6,0 A Open Drain MOSFET outputs
<b>Analogue Outputs</b>	Eight 8-bit digital to analogue outputs
<b>PWM Outputs</b>	Four programmable Pulse Width Modulation outputs
<b>PCI Bus Interface</b>	32-bit, 33/66 MHz Electrically : PCI Rev. 2.2; 3,3 V signalling Single 32-bit PMC site (with no PMC rear I/O) CompactPCI System Slot Board compatibility, with support for up to five cPCI Peripheral Boards



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Characteristics		
Physical	Dimensions	Weight
		176 mm x 132 mm
Power	20 W (5,0 V DC @ 4,0 A), including PMC adapter with 7,5 W power consumption	
Software	User defined, running on either VxWorks or Linux operating systems	

Reliability			
MTBF	Figures according to MIL-HDBK-217F, Parts Stress Method		
	Ground, Mobile Naval, Sheltered Airborne, Inhabited Cargo	T <sub>a</sub> = 45 C T <sub>a</sub> = 40 C T <sub>a</sub> = 55 C	22 000 hrs 40 000 hrs 25 000 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% to 90%	0% to 95%	0% to 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 <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

Part Selector		
Part Designation	Type	Grade
CCII/UFH/CPCI/001/COM	CompactPCI	Commercial
CCII/UFH/CPCI/001/IND	CompactPCI	Industrial
CCII/UFH/CPCI/001/RGD	CompactPCI	Ruggedised

Universal Fibre Hub (CPCI)

Board-Level