

► Universal Fibre Hub

The Universal Fibre Hub (UFH) is a multi-format input / output (I/O) signal concentrator and data redistribution unit. It is highly configurable and is suitable for use in a wide range of I/O monitoring and control applications. It has exceptional utility in systems which use a wide variety of different and remote sensors and actuators which need to be connected to a central node, more often than not in difficult electromagnetic environments.

The device is a standalone host system with a rich feature list, including an array of analog to digital converter (ADC) inputs, digital to analog converter (DAC) outputs, digital I/Os (DIO), UART serial I/O channels, USB host interfaces, a CAN interface, SATA Interfaces, a PMC and XMC sites and more.

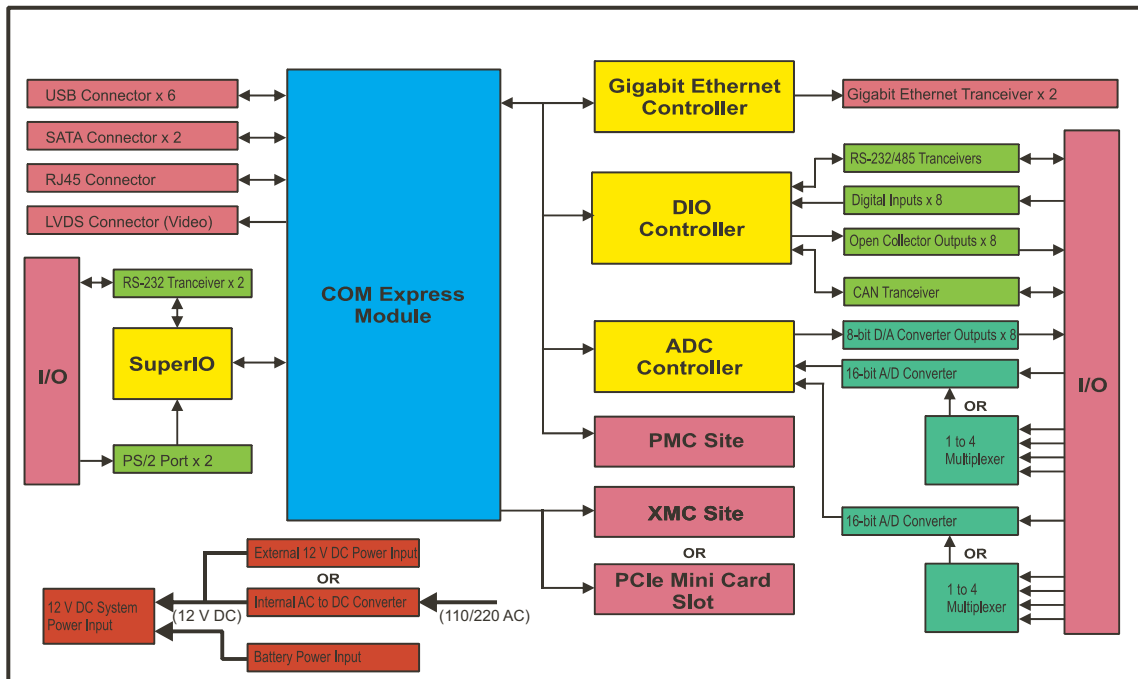
The UFH can be supplied with a variety of enclosure types including plastic, aluminium and stainless steel, rated at IP66 or above.

Architecture

The UFH incorporates a COM Express module that provides the primary processing unit and various host interfaces such as USB, SATA and PCI Express (PCIe). Multiple FPGA controllers provide the digital, analog, CAN and UART I/O. The digital outputs can also be pulse-width modulated (PWM) outputs.

Two of the three onboard Gigabit Ethernet interfaces are configurable for use with either fibre optic or copper media types, while the third interface is copper only. The single-lane PCIe XMC or 32-bit 33 MHz PMC site offers I/O and processing expansion capabilities through the use of a third-party XMC or PMC adapter. One example of this would be the use of a C²I² Systems Dual 10 Gigabit Ethernet XMC adapter to connect to a 10 Gbit/s fibre backbone.

A single-lane PCIe Mini Card slot is also available.

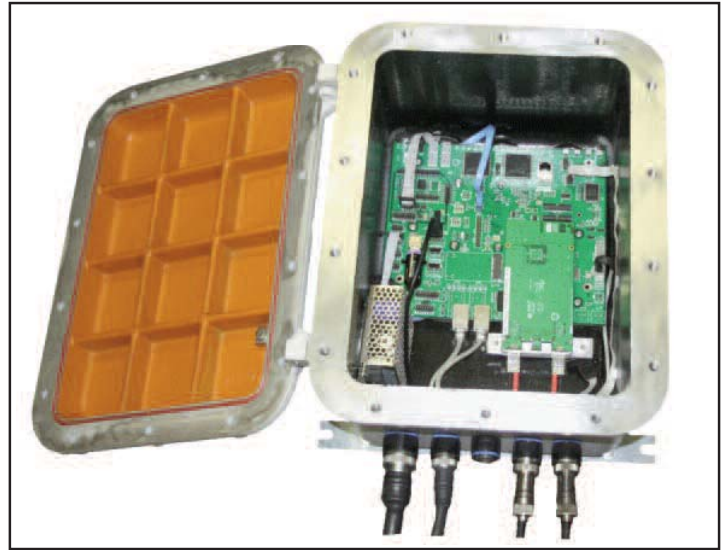


Universal Fibre Hub : Functional Block Diagram

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Features

- Type 10 COM Express module with Intel Atom processor
- 32-bit 33 MHz PCI PMC site
- single-lane PCIe XMC site or single-lane PCIe Mini Card slot
- two SATA channels
- six USB 2.0 channels
- one 1 Mbit/s CAN interface
- two fibre or copper media Gigabit Ethernet interfaces
- one copper only Gigabit Ethernet interface
- one LVDS (video output) connector
- four RS-232 channels
- two RS-422 / RS-485 channels
- PS/2 keyboard and mouse interfaces
- eight isolated digital inputs
- two isolated 16-bit 250 kS/s ADC modules (each are configurable as one dedicated full speed channel with programmable gain, two or four multiplexed channels with fixed gain, or four multiplexed channels with programmable gain at a reduced performance)
- eight isolated open collector digital outputs
- eight isolated 8-bit digital to analog outputs



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Specifications

CPU and Memory (Standard)	Commercial Grade : Intel E620T, 600 MHz, 1 Gbyte DDR2, 800 MHz Industrial and Ruggedised Grade : Intel E660T, 1,3 GHz, 1 Gbyte DDR2, 800 MHz
PCIe Interface	Single-lane XMC site or PCIe Mini Card
PCI Interface	32-bit, 33 MHz PMC site Electrically : PCI Rev. 2.2, 3,3 V signalling Breakout connector for PMC rear I/O
SATA Interface	Two SATA channels, up to 3 Gbit/s
Ethernet Interface	Two Gigabit Ethernet interfaces using either copper or fibre media One Gigabit Ethernet interface using copper media only
USB Host Interface	Six USB 2.0 host interfaces
CAN Interface	Single CAN V2.0 (Part A and B) interface, with maximum bit rate of 1 Mbit/s
Serial I/O Interface	Four RS-232 and two RS-422 / RS-485 UART serial I/O channels, with a maximum bit rate of 1 Mbit/s each
Digital Inputs	Eight isolated digital inputs, 0 - 35 V range, 2 500 V RMS isolation
Analog Inputs	Two isolated 16-bit 250 kS/s analog to digital converter modules, 2 500 V RMS isolation Independently configurable as : - one 250 kS/s single-ended or differential channel with programmable gain - two 125 kS/s single-ended channels with a fixed gain - four 62,5 kS/s single-ended channels with a fixed gain - four 10 kS/s single-ended or differential channels with programmable gain (0,2 µV/s maximum slew rate applies to channels with programmable gain)
Digital Outputs	Eight isolated digital 100 mA open collector BJT outputs, 2 500 V RMS isolation
Analog Outputs	Eight isolated 8-bit digital to analog outputs, 0 - 5 V range, 2 500 V RMS isolation
Keyboard / Mouse	PS/2



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Characteristics		
Physical	Dimensions	Weight
	380 mm x 280 mm x 180 mm (minimum, dependent on enclosure)	3 kg to 19 kg (dependent on enclosure)
Input Power	100 to 240 V AC 50/60 Hz : 1,3 A (50 Watt) or 12,0 V DC +/- 0,5 V : 4,2 A (50 Watt) (including PMC adapter with 7,5 Watt power consumption)	
Software	Support for Linux. VxWorks, Windows and others are costed options.	

Reliability			
MTBF	Figures according to MIL-HDBK-217F, Parts Stress Method		
	Commercial Grade	Ground Benign, Controlled, 25 C	120 000 hours
	Industrial Grade	Ground, Mobile, 45 C	22 000 hours
		Naval, Sheltered, 40 C	40 000 hours
Airborne, Inhabited Cargo, 55 C		25 000 hours	
Ruggedised Grade	Ground, Mobile, 45 C	30 000 hours	
	Naval, Sheltered, 40 C	50 000 hours	
	Airborne, Inhabited Cargo, 55 C	35 000 hours	

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 g²/Hz 15 Hz to 2 kHz	10 g (peak) 5 Hz to 2 kHz 0,1 g²/Hz 15 Hz to 2 kHz	10 g (peak) 5 Hz to 2 kHz 0,1 g²/Hz 15 Hz to 2 kHz

Part Selector		
Part Designation	Type	Grade
CCII/UFH/SA/004/COM	Standalone	Commercial
CCII/UFH/SA/004/IND	Standalone	Industrial
CCII/UFH/SA/004/RGD	Standalone	Ruggedised