AMC004

Time and Frequency with GPS, AMC

AMC004

Key Features

- AMC.1 PCIe x1, AMC.4 SRIO x1
- Accepts active +3.3V GPS antenna
- 100 ns precision UTC timestamps, system status and GPS positions via PCIe/SRIO
- TSIP data Broadcast/Unicast via Ethernet w/bonding/failover
- Almanac/Ephemeris/Last position backup
- 1 PPS PCIe/SRIO interrupt, time events, time trigger for overall system synchronization
- 1 PPS signal output to the front panel SMB and to the rear
- Optional PPS IN when GPS not available

Benefits

- Disciplined clock output to the front panel SMB and to the rear
- Provides re-generated 1PPS signal even during holdover
- Flexible clock input/output routing
- Stratum 3 oscillator with automatic holdover
- Electrical, mechanical, software, and system-level expertise in house
- Full system supply from industry leader
- AS9100 and ISO9001 certified company

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The AMC004 provides a complete GPS bus-level timing solution to a MTCA/ATCA system. The onboard GPS receiver is used to discipline the local oscillator and cancel out any oscillator drift or aging. Precision UTC timestamps and GPS location/time/status are all made available via PCIe/SRIO registers to the host CPU/application. Time trigger output and time event interrupts synchronized to GPS UTC are available under host control. GPS location/time/status data Broadcast/Unicast output via backplane Ethernet with selectable bonding/failover behaviour.

The disciplined clock, 1PPS, divided-down clock, and time trigger may be output in any combination to the TCLKA/TCLKB/TCLKC/TCLKD backplane channels. PPS IN synchronization pulse usually comes from the onboard GPS but can alternatively come from the front/back inputs if the GPS signal is not available.

A back-up battery or SuperCap provides non-volatile storage of the Almanac, Ephemeris, and Last position data to enable rapid “warm start” re-acquisition usually within 35 seconds.

The module has a serial port in the front that enables advanced configuration and monitoring support. Locking/holdover status is also available via IPMI sensors. A secondary serial port enables NMEA data in/out.

See Synchronized DAQ for a description of how phase coherent acquisition can be achieved using this product.

Figure 1: AMC004

Block Diagram

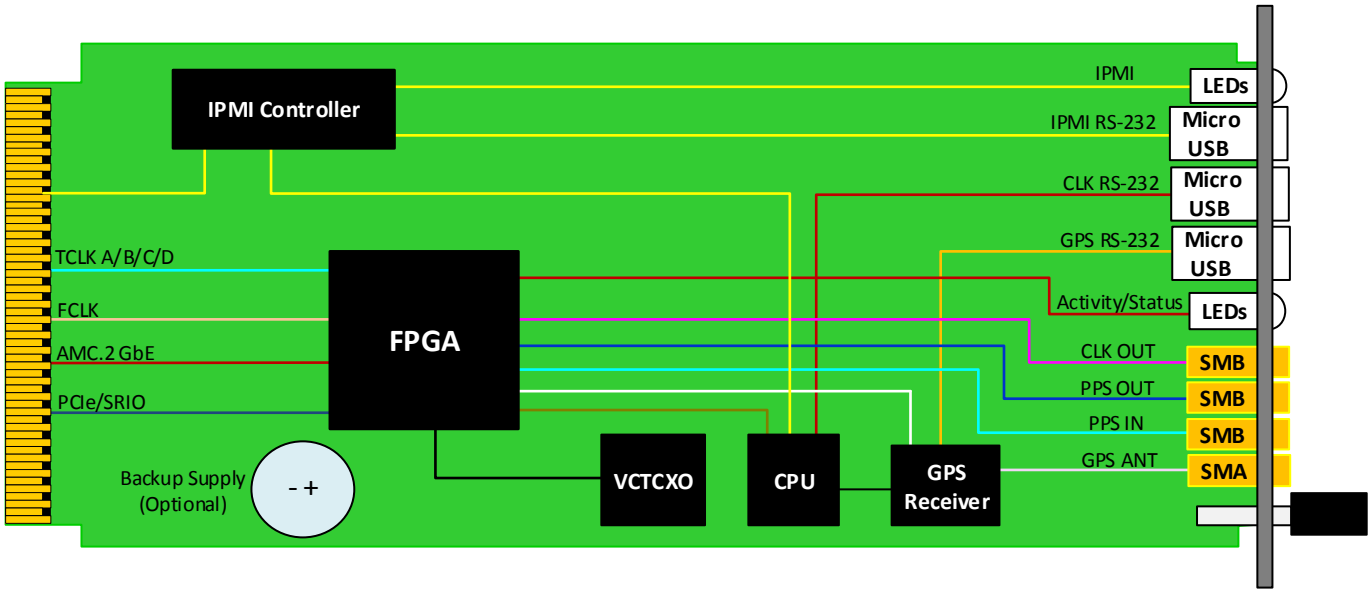

Figure 2: AMC004 Functional Block Diagram

Front Panel

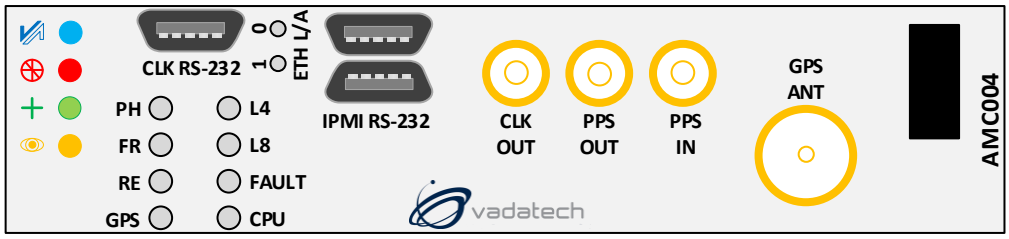

Figure 3: AMC004 Front Panel

Specifications

Architecture		
Physical	**Dimensions**	Single module, mid-size (full-size optional)
		Width: 2.89” (73.5 mm)
		Depth 7.11” (180.6 mm)
Type	**AMC Clock**	GPS clock
Standards		
AMC	**Type**	AMC.0, AMC.1, and/or AMC.4
Module Management	**IPMI**	IPMI v2.0
PCIe	**Lanes**	Dual x4 or single x8 as PCIe
Configuration		
Power	**AMC004**	2.5W
Environmental	**Temperature**	See Ordering Options and Environmental Spec Sheet
		Storage Temperature: –40° to +95°C
	Vibration	Operating 9.8 m/s^2 (1G), 5 to 500 Hz on each axis
	Shock	Operating 30G each axis
	Relative Humidity	5 to 95% non-condensing
Front Panel	**Interface Connectors**	SMA for GPS antenna
		3x Micro USB for RS-232 Ports
		3x SMB for clocks
	LEDs	IPMI management control
		Payload power, power good, reset, etc.
	Mechanical	Hot-swap ejector handle
Other		
MTBF	MIL Hand book 217-F@ TBD hrs	
Certifications	Designed to meet FCC, CE and UL certifications, where applicable	
Standards	VadaTech is certified to both the ISO9001:2015 and AS9100D standards	
Warranty	Two (2) years, see VadaTech Terms and Conditions	

INTEGRATION SERVICES AND APPLICATION-READY PLATFORMS

VadaTech has a full ecosystem of OpenVPX, ATCA and MTCA products including chassis platforms, shelf managers, AMC modules, Switch and Payload Boards, Rear Transition Modules (RTMs), Power Modules, and more. The company also offers integration services as well as pre-configured Application-Ready Platforms. Please contact VadaTech Sales for more information.

Ordering Options

AMC004 – ABC-D00-0HJ

A = Telecom/GPS Clock	D = Backup††	
1 = GPS TCVCXO* 10.00 MHz† 2 = GPS TCVCXO* 30.72 MHz† 3 = GPS TCVCXO* 50 MHz† 4 = Reserved	0 = No Battery 1 = Lithium Battery 2 = SuperCap 3 = Lithium Battery and SuperCap	
B = Fabric Interface		**H = Temperature Range**
1 = PCIe (AMC.1) Lane 4+GbE (AMC.2) Lanes 0/1 2 = SRIO (AMC.4) Lane 4+GbE (AMC.2) Lanes 0/1 3 = Reserved 4 = Only GbE (AMC.2) Lanes 0/1 5 = Reserved		0 = Reserved 1 = Commercial (–5° to +55°C) 2 = Industrial (–20° to +70°C)
C = Front Panel Height		**J = Conformal Coating**
1 = Reserved 2 = Mid-size 3 = Full-size		0 = No coating 1 = Humiseal 1A33 Polyurethane 2 = Humiseal 1B31 Acrylic

Notes:

*The Crystal Oscillator is Stratum-3; for lower cost solutions contact VadaTech Sales.

† Frequencies from 8 MHz to 52 MHz are available.

†† For applications that cannot use the Lithium Battery, SuperCap could be utilized

Related Products

AMC610

- Single-width, mid-size (option for full size)
- 4 Gigabit Ethernet Ports via RJ-45
- Onboard 2.5” disk with direct connect to Ports 2 and 3

UTC002

- 400 MHz CPU with 64 MB DDR for MicroTCA Carrier Management Controller (MCMC) and Shelf Manager
- Layer 2 managed GbE to each AMC (optional)
- Non-blocking PCIe Gen 3 (x4), to each slot with option for SRIO or 10GbE (Layer 2 managed)

UTC010

- Dual -36V DC to -75V DC input,
- 792W (available in 396W)
- Hot-swappable with support for power module redundancy

Contact

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