

FMC160

The FMC160 is an FPGA Mezzanine Module per VITA 57 specification providing a complete timing solution. The FMC160 has 1PPS, Sine Wave clock, IRIG-B input, IRIG-B out and a GbE.

The module can take its upstream time/frequency from one of:

- GPS (freq and time + location/velocity/other metadata)
- IEEE1588 PTP (freq and time)
- IRIG-B AM/DCLS/Manchester (freq and time)
- 1PPS (freq only)
- Sine Wave Clock In (freq only)
- Synchronous Ethernet (freq only, can be combined with IEEE1588 PTP)
- Carrier board 1PPS via FMC connector (freq only)

The module can provide its downstream time/frequency to all of:

- IEEE1588 PTP (freq and time)
- IRIG-B AM/DCLS/Manchester (freq and time)
- 1PPS (freq only, can be combined with NMEA for freq and time)
- NMEA (time only, can be combined with 1PPS for freq and time)
- Clock Out (freq only)
- Synchronous Ethernet (freq only)
- Carrier board Host interface and clocks via FMC connector

The standard firmware on the FMC160 interfaces to the carrier FPGA through SPI for obtaining time/location/velocity metadata. But additional hardware interfaces are available such as PCIe, Ethernet, Aurora, etc. Contact VadaTech if you have an interest in interfacing to the FMC160 via these additional protocols via the FMC connector.

The module has an on board 5 x DPLL. The DPLL synchronizes 1Hz to 750MHz, providing frequency with jitter cleaning of noisy references. Complies with ITU-T G.8286, G.813, G. 812 and Telcordia GR-253/GR-1244. The module will automatically holdover upon loss of reference while still providing its time/frequency outputs to the rest of the system. The DPLL allows for fast lock to 1HZ input taking only 3 to 60 seconds depending on the reference input compared to 10 minutes or more for previous solutions.

The FMC160 provides standard NMEA format via RS-232 for external devices.

The FMC160 provides synchronized clock to the carrier thru its CLK0 and CLK1. The FMC160 has CLK2 and CLK3 routed to the DPLL as an input reference option. The Module also routes from the DPLL to the LA00/LA17 clock pins.

The FMC160-resident firmware binaries are provided by VadaTech and customer development is not expected for the FMC160 itself. Customer development is expected for the FPGA on the FMC carrier board, but reference design source code will be made available to provide an example of how to interface to the FMC160 host interface (SPI + Clocks/1PPS). The module also interfaces to the carrier with SERDES on DP0/1 as well as DP4/5.



Figure 1: FMC160



Figure 2: FMC160 Front View

Block Diagram

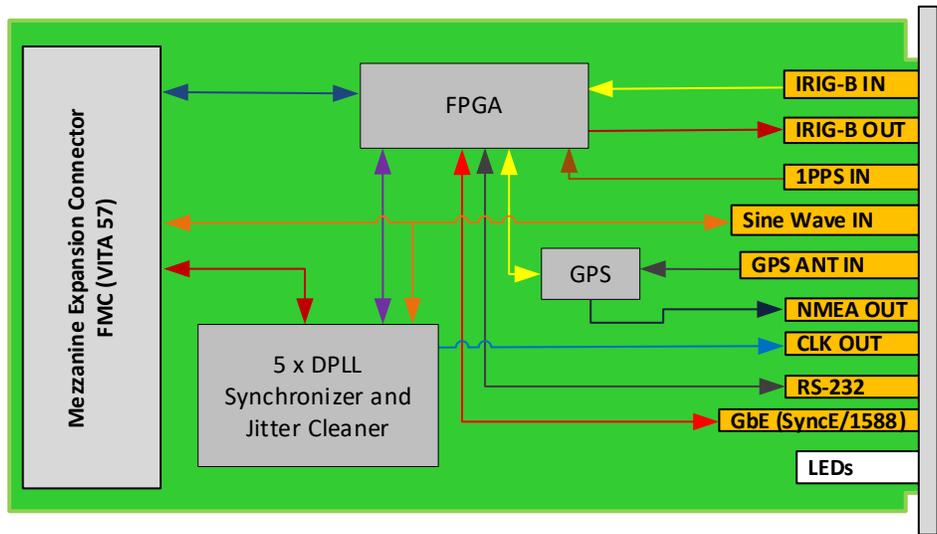


Figure 1: FMC160 Functional Block Diagram

Specifications

Architecture		
Physical	Dimensions	Single Module Width: 2.71" (69 mm) Depth: 3.01" (76.5 mm)
Type	FMC	IRIG-B In/Out; GPS; IEEE1588; SyncE; Grand Master clock; 1PPS
Standards		
FMC	Type	ANSI/VITA 57.1 – 2008
Configuration		
Power	FMC160	5W
Environmental	Temperature	See Ordering Options Storage Temperature: -40° to +85°C
	Altitude	40,000 ft non-operating
	Vibration	Operating 9.8 m/s ² (1G), 5-500 Hz
	Shock	Operating 30Gs each axis
	Relative Humidity	5 to 95% non-condensing
Front Panel	Interface Connectors	RJ-45, MMCX and Micro USB for RS-232
	LEDs	Status
Software Support	Operating System	Agnostic
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

FMC160 – 000-000-0HJ

		H = Operating Temperature 0 = Commercial 1 = Industrial
		J = Conformal Coating 0 = None 1 = Humiseal 1A33 Polyurethane 2 = Humiseal 1B31 Acrylic

Related Products

VPX592



- 3U FPGA carrier for FPGA Mezzanine Card (FMC) per VITA 46 and VITA 57
- Xilinx Kintex UltraScale™ XCKU115 FPGA
- 20 GB of DDR4 Memory (2 banks of 64-bit wide, and single bank of 32-bit wide)

FMC214



- Dual complete transceiver signal chain solution using Analog Devices AD9361 transceiver
- Frequency range 70 MHz to 6 GHz with instantaneous bandwidth from 200 kHz to 56 MHz
- MIMO transceiver is Time Domain Duplex (TDD) and Frequency Domain Duplex (FDD) compatible

AMC585



- Xilinx UltraScale+ XCZU19EG FPGA
- Single FMC+ (VITA 57.4) site
- MPSoC with block RAM and UltraRAM

Contact

VadaTech Corporate Office

198 N. Gibson Road, Henderson, NV 89014

Phone: +1 702 896-3337 | Fax: +1 702 896-0332

Asia Pacific Sales Office

7 Floor, No. 2, Wenhua Street, Neihu District, Taipei 114, Taiwan

Phone: +886-2-2627-7655 | Fax: +886-2-2627-7792

VadaTech European Sales Office

VadaTech House, Bulls Copse Road, Southampton, SO40 9LR

Phone: +44 2380 016403

info@vadatech.com | www.vadatech.com

Choose VadaTech

We are technology leaders

- First-to-market silicon
- Constant innovation
- Open systems expertise

We commit to our customers

- Partnerships power innovation
- Collaborative approach
- Mutual success

We deliver complexity

- Complete signal chain
- System management
- Configurable solutions

We manufacture in-house

- Agile production
- Accelerated deployment
- AS9100 accredited



vadatech
THE POWER OF VISION

Trademarks and Disclaimer

The VadaTech logo is a registered trademark of VadaTech, Inc. Other registered trademarks are the property of their respective owners. AdvancedTCA™ and the AdvancedMC™ logo are trademarks of the PCI Industrial Computers Manufacturers Group. All rights reserved. Specification subject to change without notice.

© 2019 VadaTech Incorporated. All rights reserved.
DOC NO. 4FM737-12 REV 01 | VERSION 1.0 – FEB/23