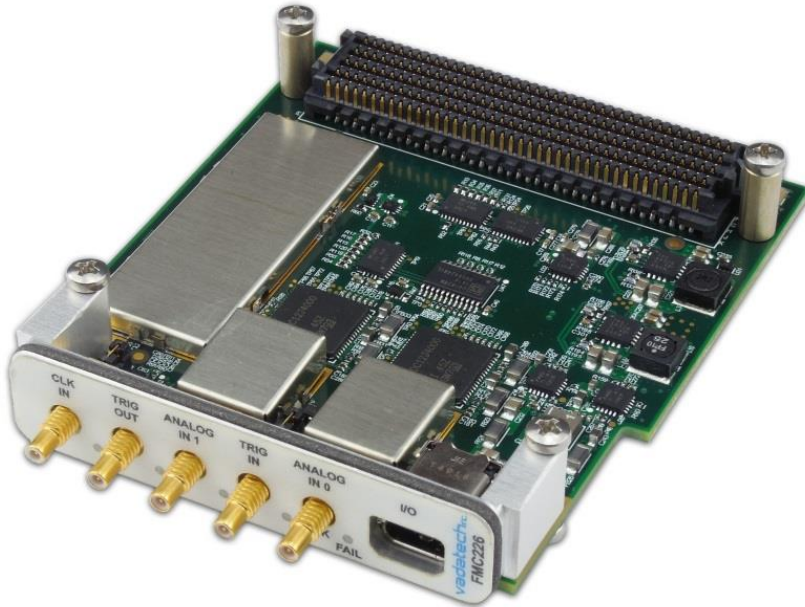


## FMC226 –Dual ADC, 12-bit @ 4.0 GSPS, FMC

FMC, High Speed ADC



### KEY FEATURES

- FPGA Mezzanine Card (FMC) per VITA 57
- Dual Texas Instruments ADC12J4000 ADC
  - Four JESD204B lanes per ADC are routed to the FMC connector
  - Usable output bandwidth of 800 MHz at 4x decimation and 4000 MSPS
  - Usable output bandwidth of 100 MHz at 32x decimation and 4000 MSPS
- Supported by DAQ Series™ data acquisition software
- Excellent dynamic performance
- Front panel interface includes CLK In, Trig In, Analog In, and GPIO
- Ultra Low-Noise wide-band PLL



### Benefits of Choosing VadaTech

- Array of FMC's and FMC carriers available from VadaTech
- High dynamic range for versatility in video/broadcast requirements
- Ideal for Broadband communications systems, Wireless infrastructure, LTE, ATE, RADAR/Jamming
- Electrical, mechanical, software, and system-level expertise in house
- Full system supply from the industry leader
- AS9100 and ISO9001 certified company

The FMC226 is an FPGA Mezzanine Carrier (FMC) per VITA 57 specification. The board has dual ADC with 12-bit resolution at 4.0 GSPS.

The FMC226 utilizes a dual TI ADC12J4000 ADC providing 12-bit conversion rates of up to 4.0 GSPS. The analog input, clock input and trigger inputs of the FMC226 are routed via SSMC connectors. The internal clock frequency is programmable and the clock is capable of locking to an external reference.

## DATA ACQUISITION

VadaTech offers a wide range of FPGA AMCs, RTMs, FMC Carriers and FMCs that can be combined to build a Data Acquisition (DAQ) sub-system. The DAQ Series software, when used with a supported hardware configuration, provides all that is needed to configure the system, acquire data and transfer it to a host processor. It also includes a user-configurable Graphical User Interface (GUI) which includes real-time display of acquired data. The host can be within the MTCA system or, via PCI113 or PCI123, in a separate PC. Full documentation is provided to allow users to customise system behaviour or develop their own application on the AMC/FMC hardware.

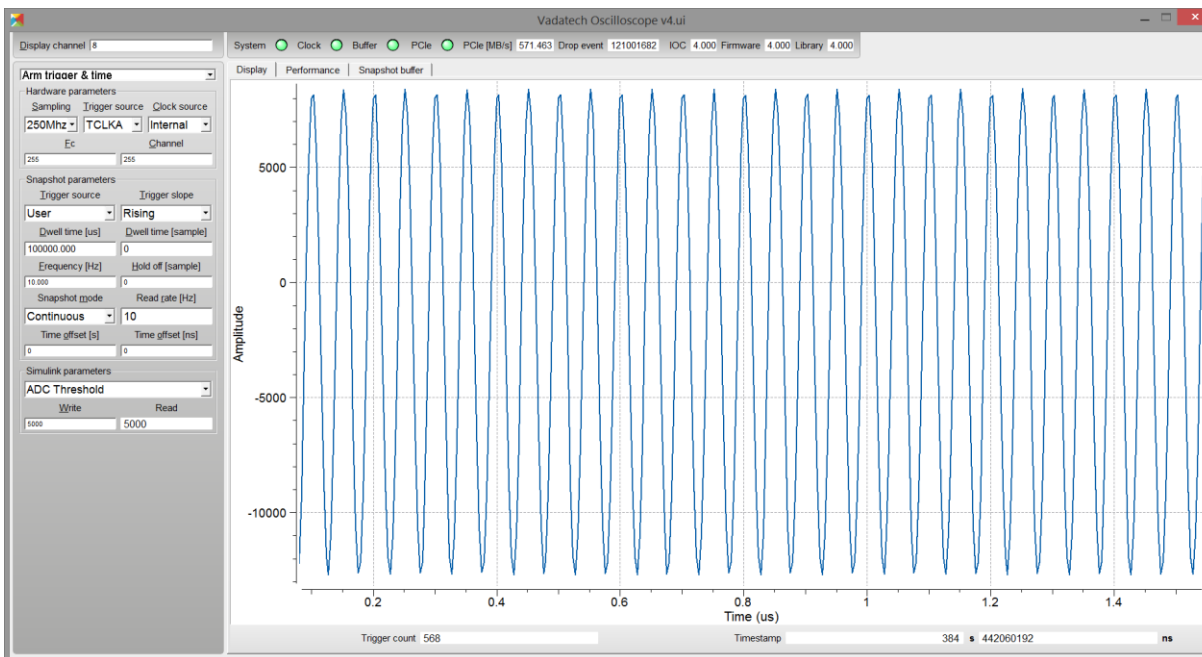


Figure 1: Typical User Interface Display

The DAQ includes data acquisition software that allows users to get up and running quickly and easily, while providing a high level of performance and allowing the user to extend functionality by adding their own FPGA code. Please contact VadaTech sales for the latest information on supported combinations of VadaTech hardware. (Note that the DAQ Series software is not currently supported for 3rd party hardware).

The DAQ Series software provides ability to easily implement system modelling and automatic code generation from Simulink® and MATLAB® (The Mathworks, Inc.) into Vivado FPGA project via System Generator® (Xilinx). This allows the programmer to interface with the hardware, program the FPGA at high level and benefit from:

- Vivado integration
- DSP modelling
- Bit and cycle accurate floating and fixed-point implementation
- Automatic code generation of VHDL or Verilog from Simulink
- Hardware co-simulation

Components provided in the DAQ software include:

- System libraries to configure clocking and triggers
- Sequencer to configure the acquisition (duration, start, stop)
- High-performance DMA firmware for acquiring ADC outputs and transferring to host processor
- Linux driver for host processor (e.g. AMC72x)
- EPICS channel access client API
- Pre-configured GUI (based on Qt Creator)

# FMC226 – Dual ADC, 12-bit @ 4.0GSPS, FMC

This software set allows the user to acquire, transfer and display data without the need for any user programming of the hardware. Status information is included in the GUI display, to ease integration and debugging activity.

The data acquisition software provided as part of the DAQ can be used as-delivered without the user needing to develop any FPGA code.

*Note that VHDL source code is not provided for the DMA engine and memory block (provided as Netlists).*

Full source code is provided for the libraries, sequencer, Linux driver and GUI, allowing users to easily customize or brand to their own requirements.

## BLOCK DIAGRAM

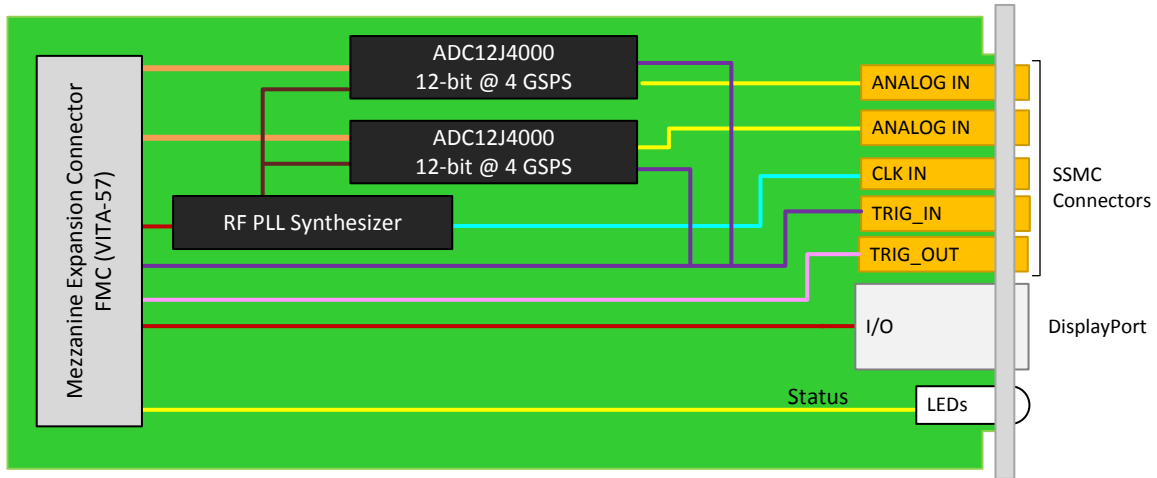


Figure 2: FMC226 Functional Block Diagram

## FRONT PANEL

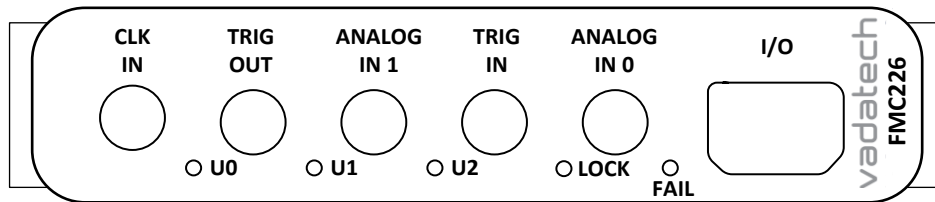


Figure 3: FMC226 Front Panel

## SPECIFICATIONS

Architecture		
Physical	Dimensions	Single module
		Width 2.71" (69 mm)
		Depth 3.01" (76.5 mm)
Type	FMC	Dual Port ADC
		Single FMC
Standards		
FMC	VITA-57	ANSI/VITA 57.1-2008
Configuration		
Power	FMC226	6 W
Environmental	Temperature	Operating Temperature: -5° to 55° C (air flow requirements >400 LFM) industrial and extended versions available
		Storage Temperature: -40° to +85° C
	Vibration	1G, 5 to 500 Hz on each axis
	Shock	30Gs each axis
	Relative Humidity	5 to 95 percent, non-condensing
Front Panel	Interface Connectors	SSMC and DisplayPort
	LEDs	Status
Conformal Coating		Humiseal 1A33 Polyurethane (Optional)
		Humiseal 1B31 Acrylic (Optional)
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 ISO9001:2000 and AS9100B:2004 standards	
Warranty	Two (2) years	

### INTEGRATION SERVICES AND APPLICATION-READY PLATFORMS

VadaTech has a full ecosystem of ATCA and  $\mu$ TCA products including chassis platforms, shelf managers, AMC modules, Switch and Payload Boards, Rear Transition Modules (RTM), 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.

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# FMC226 – Dual ADC, 12-bit @ 4.0GSPS, FMC

## ORDERING OPTIONS

### FMC226 – A00 – 000 – G0J

#### A = Front Panel Clock Input

- 0 = Square wave
- 1 = Sinewave

#### G = FMC Board Spacing

- 0 = 10 mm (per VITA-57 specification)
- 1 = 17.5 mm \*

#### J = Conformal Coating

- 0 = Commercial (–5° to +55° C), No coating
- 1 = Commercial (–5° to +55° C), Humiseal 1A33 Polyurethane
- 2 = Commercial (–5° to +55° C), Humiseal 1B31 Acrylic
- 3 = Industrial (–20° to +70° C), No coating
- 4 = Industrial (–20° to +70° C), Humiseal 1A33 Polyurethane
- 5 = Industrial (–20° to +70° C), Humiseal 1B31 Acrylic
- 6 = Extended (–40° to +85° C), Humiseal 1A33 Polyurethane\*\*
- 7 = Extended (–40° to +85° C), Humiseal 1B31 Acrylic\*\*

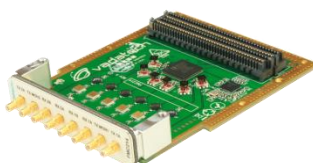
\* For use with carriers that require higher mating clearance, such as VadaTech AMC595. Requires full size AMC

\*\* Edge of module for conduction cooled boards

## RELATED PRODUCTS



AMC515 Virtex-7  
FPGA



FMC214 Wideband  
Transceiver



FMC210 ADC  
FMC

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