

FMC230

MIMO 300 MHz to 6 GHz Versatile Wideband Transceiver FMC



FMC230

Key Features

- Utilizing Analog Devices AD9371 or AD9375
- Complete transceiver signal chain solution
- Frequency range 300 MHz to 6 GHz
- Tx synthesis bandwidth (BW) up to 250 MHz
- Rx bandwidth: 8 MHz to 100 MHz
- Supports Time Division Duplex (TDD) and Frequency Division Duplex (FDD) operation
- On-board clocking or external clock with multi-transceivers synchronization capability

Benefits

- High density transceiver with intensive data processing capability
- Flexible clocking
- Observation channels for implementation of error correction functions
- Sniffer Receiver channels can monitor different frequency bands



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FMC230

The FMC230 is a FPGA Mezzanine Card (FMC) per VITA 57.1 standard, offering small footprint and low power dual fully featured wideband transceivers.

The FMC230 utilizes single AD9371 or AD9375. The AD9371/AD9375 is a highly integrated, wideband radio frequency transceiver offering dual channel transmitter (TX) and receivers (RX) with integrated synthesizer, and digital signal processing functions. Each complete Rx and Tx subsystem includes dc offset correction, Quadrature Error Correction (QEC), and programmable digital filters.

The AD9375 further provides a fully integrated Digital Pre-Distortion (DPD) actuator and adaptation engine.

The FMC230 operates within the 300 MHz to 6.0 GHz frequency range, covering most licensed and unlicensed bands. The clocking is via the front panel or an internal clock. The FMC230 is an ideal choice for the development and/or deployment of advanced RF solutions. This Multiple Input Multiple Output (MIMO) module is the most versatile FMC in the market.



Figure 1: FMC230

Block Diagram

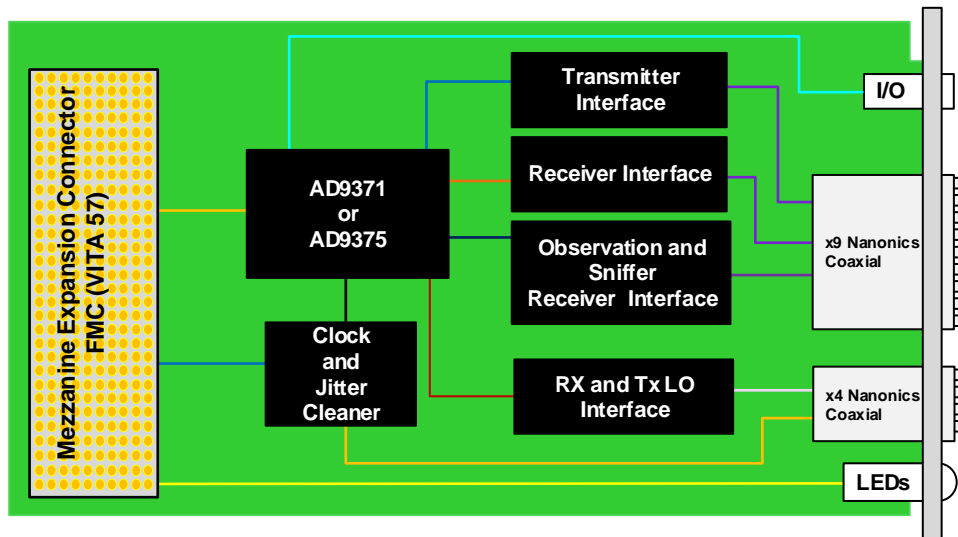


Figure 2: FMC230 Functional Block Diagram

Front Panel

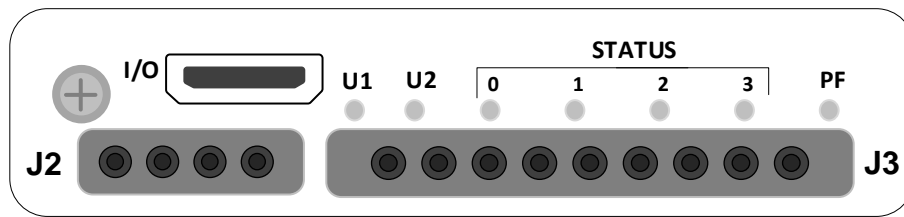


Figure 3: FMC230 Front Panel

Supported Software

The FMC230 is compatible with Analog Devices design tools for AD9371 or AD9375

The screenshot displays the AD9371 Transceiver Evaluation Software interface. The main window shows a detailed block diagram of the transceiver's internal architecture, including Main Transmit Paths, Main Receive Paths, a Sniffer Receive Path, and various control blocks like the Microcontroller and Clock Generation. The interface includes a menu bar (Connect, Program, Device, File, Tools, Help) and a toolbar with options like Config, Iron Python Script, Receive Data, Transmit Data, ObsRx Sniffer Data, and TDD/FDD Switching. A sidebar on the left shows the device tree with 'DaughterCard' and 'AD9371'. Below the diagram, there are several configuration panels:

- Device Clock:** 122.88MHz
- Rx Chnl:** RX1_RX2, **Tx Chnl:** TX1_TX2, **ObsRx Chnl:** OBSON
- Rx Profile:** Rx 100MHz, IQrate 153.6MSPS, Dec5
- Tx Profile:** Tx 100/250MHz, IQrate 307.2MSPS, Dec5
- Obs Profile:** ORX 240MHz, IQrate 307.2MSPS, Dec5
- Sniffer Profile:** SRx 20MHz, IQrate 38.4MSPS, Dec5

On the right side, there are PLL frequency settings:

PLL Type	Freq(MHz)
LO PLL	2500.000000
Tx PLL	2501.000000
Rx PLL	2501.000000
Sniffer PLL	2600.000000

At the bottom left, the status shows 'Zynq Platform: Disconnected'. At the bottom right, a green bar indicates 'Programmed Successfully' next to the Analog Devices logo.

Specifications

Architecture		
Physical	Dimensions	Single Module Width 2.71" (69 mm) Depth 3.01" (76.5 mm)
Type	FMC	MIMO
Standards		
FMC	VITA 57	ANSI/VITA 57.1-2008
Configuration		
Power	FMC230	6 W
Environmental	Temperature	See ordering options and environmental spec sheet Storage Temperature: -40° to +85°C
	Vibration	Operating 9.8 m/s ² (1 G), 5 to 500 Hz on each axis
	Shock	Operating 30 G on each axis
	Relative Humidity	5 to 95% non-condensing
Front Panel	Interface Connectors	9x Nanonics coaxial for Rx, Tx and listener interface 4x Nanonics for CLK, TRIG and LO interface 10 singled ended or 5 LVDS I/O via high density connector
	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 ISO9001:2000 and AS9100B:2004 standards	
Warranty	Two (2) years	

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

FMC230 – 0B0-000-G0J

		G = FMC Board Spacing 0 = 10 mm (per VITA 57 specification) 1 = 17.5 mm*
B = MIMO Device 0 = AD9371 1 = AD9375		
		J = Temperature Range and 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**

Notes: *For use with carriers that require higher mating clearance, such as VadaTech AMC595.

**Conduction cooled, temperature is at edge of module. Consult factory for availability.

Related Products

VT951



- MicroTCA rugged 1U 19" rackmount chassis platform
- Designed to meet MIL-STD-810F, MIL-STD-901D for shock/vibration
- Designed to meet MIL-STD-461E for EMI

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

AMC599



- Xilinx UltraScale™ XCKU115 FPGA
- Dual ADC @ 6.4 GSPS 12-bits or quad ADC at 3.2 GSPS
- Dual DAC (AD9162 or AD9164) @ 12 GSPS, 16-bits

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