

# FMC144

## Quad 16-bit A/D & Quad 16-bit D/A

### *FMC144 AC or DC-Coupled, High-Pin Count FMC ADC/DAC Card*

#### FEATURES:

- Four-channel, 16-bit A/D up to 370 MSPS
- Four-channel, 16-bit D/A up to 2.5 GSPS
- VITA 57.1-2010 compliant
- JESD204B serial interface
- Conduction-cooled – Standard Option
- AC or DC-coupled analog signals
- 10 SSMC/MMCX front panel connectors
- Clock source, sampling frequency, and calibration through SPI communication busses
- Flexible clock tree enables:
  - Internal clock source
  - External sampling or reference clock
- Power-down modes to switch off unused functions for system power savings
- Mil-I-46058c Conformal Coating Compliant (optional)
- HPC (high-pin count) compatible

The FMC144 is an analog-to-digital (A/D) and digital-to-analog (D/A) FMC daughter card that provides four 16-bit A/D channels at 370MSPS and four 16-bit D/A channels at 2.5GSPS which can be clocked by an internal clock source (optionally locked to an external reference) or by an externally-supplied sample clock. A trigger input is also available for customized sampling control. The FMC144 is mechanically and electrically compliant to the FMC standard (ANSI/VITA 57.1-2010). It offers front panel analog I/O access and can be used in a conductioncooled environment.

The design is based on Texas Instrument's ADC16DX370 dual-channel 16-bit 370MSPS ADC and DAC38J84 quad-channel 16-bit 2.5GSPS DAC. The analog signal inputs are either AC or DC-coupled and connected to

MMCX/SSMC coax connectors on the front panel. The FMC144 allows flexible control of sampling frequency and offset correction through serial communication busses. The card is equipped with power supply and temperature monitoring and offers several power-down modes to switch off unused functions. The FMC144 is ideal for applications where limited space is available such as RADAR/SONAR, wireless telecommunications, and aerospace test and measurement instruments. The FMC144 also features a JESD204B serial interface to provide a simplified high-speed interface between the data converters and the FPGA with a minimum of digital IO on the board. This module therefore delivers high-bandwidth connectivity suited for a wide range of calculation-heavy FPGA-based applications such as beamforming, direction finding, and software-defined radio (SDR).

ANSI/VITA 47	Air-cooled		Conduction-cooled	
	EAC4	EAC6	ECC1	ECC4
Operating temperature	0C to +55C	-40C to +70C	0C to +55C	-40C to +85C
Storage temperature	-40C to +85C	-50C to +100C	-40C to +85C	-55C to +105C
Humidity	95%	95%	95%	95%
Operating vibration	5Hz to 100Hz PSD = 0.04g <sup>2</sup> /Hz 100 Hz to 1000 Hz PSD = 0.04 gs <sup>2</sup> /Hz 1000 Hz to 2000 Hz PSD decreasing at 6 dB/octave	5Hz to 100H PSD = 0.04g <sup>2</sup> /Hz 100 Hz to 1000 Hz PSD = 0.04 gs <sup>2</sup> /Hz 1000 Hz to 2000 Hz PSD decreasing at 6 dB/octave	5 Hz to 100 Hz PSD increasing at 3 dB/octave 100 Hz to 1000 Hz PSD = 0.1 g <sup>2</sup> /Hz 1000 Hz to 2000 Hz PSD decreasing at 6 dB/octave	5 Hz to 100 Hz PSD increasing at 3 dB/octave 100 Hz to 1000 Hz PSD = 0.1 g <sup>2</sup> /Hz 1000 Hz to 2000 Hz PSD decreasing at 6 dB/octave
Operating shock	20g, 11 millisecond, half-sine or 20g, 11 millisecond, terminal sawtooth shock pulses in all three axes	20g, 11 millisecond, half-sine or 20g, 11 millisecond, terminal sawtooth shock pulses in all three axes	40g, 11 millisecond shock half-sine or 40g, 11 millisecond, terminal sawtooth shock pulses in all three axes	40g, 11 millisecond shock half-sine or 40g, 11 millisecond, terminal sawtooth shock pulses in all three axes
Operating altitude	-1500 ft to 60,000 ft (with airflow)	-1500 ft to 60,000 ft (with airflow)	-1500 ft to 60,000 ft	-1500 ft to 60,000 ft
Conformal coating	Optional	Optional	Optional	Optional

# FMC144 Quad 16-bit A/D & Quad 16-bit D/A *FMC144 AC or DC-Coupled, High-Pin Count FMC ADC/DAC Card*

## Specifications

### Application

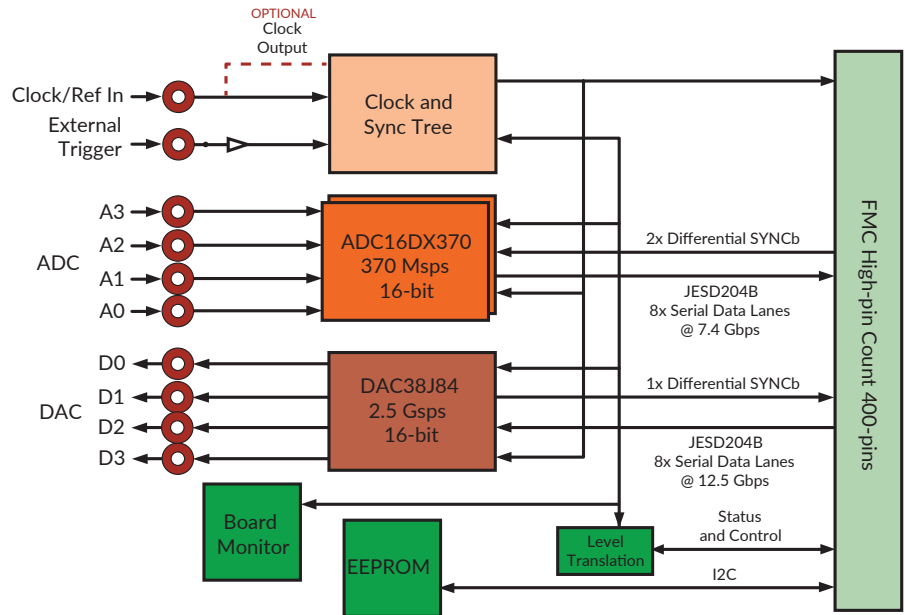
- Software-defined radio (SDR)
- Direct RF Down Conversion
- RADAR/SONAR Electronic Warfare
- Beamforming
- Direction finding
- Ultra Wideband Satellite Digital Receiver
- Wireless communication transceivers and base stations
- Medical equipment
- Aerospace and test measurement instruments

### Support

- 4FM GUI offers multiple functions including the ability to monitor voltage and temperature; perform memory tests; measure the PCIe bandwidth; update FPGA firmware; and access StellarIP
- StellarIP is available for this product. A simple way to design FPGA firmware with automated code and bitstream generation
- Data analyzer makes it possible to display digitized data real time
- This module can be used on any VITA 57.1-compliant carrier card that offers Gigabit lanes.
- User Manual
- Performance Report
- Support provided on Abaco Systems's support forum private boards
- Reference designs available for multiple FPGA carriers

AS9100 Certified

## Block diagram



## Ordering information

Build your partnumber online on the product page [www.abaco.com](http://www.abaco.com)

Compatible with all Abaco Systems FMC carrier hardware and most Xilinx design kits. For a full compatibility matrix look at the product page on our website: [www.abaco.com](http://www.abaco.com)

Talk to us about your algorithmic requirements, Abaco Systems is a full-service firmware and software development house. We are a specialist at high performance FFT and Video Processing. Check with us, we may have IP Cores that meet requirements for your application, right off the shelf.



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