

AO420FMC Product Specification



High Performance Simultaneous Data Acquisition

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1 Product Description.

1. **AO420FMC** is a standard D-TACQ product, 4 channels simultaneous AO with regular buffered output on SMA or LEMO 00 connector.
2. Standard configuration: 4 channels, 16 bit resolution, 1MSPS/channel
3. Complies with *VITA57 FMC* standard, *LPC* version.
4. +/-10V per channel 20mA drive.
5. Standard reconstruction filter at 50kHz. Also available in a Low-Latency Control configuration at 250kHz. Please contact D-TACQ for custom options.
6. DC and AWG modes.
7. 18- and 20- bit variants available as special build.
8. Compliant with D-TACQ *ELF* sites.

1.1 Product Variants

- **AO420FMC-4-16** : 4 channels, 16 bit resolution, 1000kSPS/channel.
- **AO420FMC-4-18** § : 4 channels, 18 bit resolution, 1000kSPS/channel.
- **AO420FMC-4-20** § : 4 channels, 20 bit resolution, 1000kSPS/channel.
- § Special Build : MOQ and/or longer lead time may apply.

1.2 Applications

- Instrumentation applications, control and monitoring.

1.3 Overview

The FMC module standard adds user IO to carrier modules fitted with FPGA resource. D-TACQ recommends modules based on the Xilinx ZYNQ system on chip, combining FPGA resource with a dual-core ARM Cortex A9 and gigabit Ethernet.

Compatible carriers include:

- D-TACQ **ACQ1001** : D-TACQ single slot FMC carrier, Z7020
- D-TACQ **ACQ1002** : D-TACQ dual slot FMC carrier, Z7020
- D-TACQ **ACQ2006** : D-TACQ 6 slot FMC carrier, Z7020
- D-TACQ **ACQ2106** : D-TACQ 6 slot FMC carrier, Z7030
- Xilinx ZC702 evaluation board with 2 FMC slots.
- Xilinx Zedboard with 1 FMC Slot.

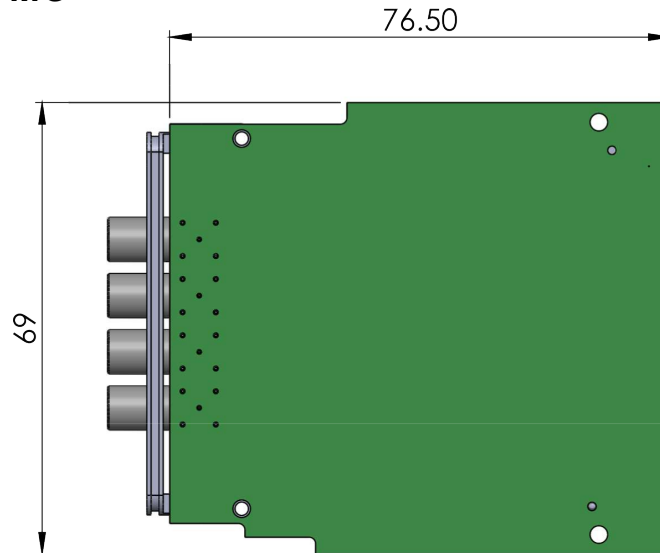
D-TACQ supplies a complete working Intelligent Digitizer appliance including programmable logic and microprocessor system running Linux. Evaluation boards are useful for evaluation, but for production use D-TACQ recommends use of a production-quality carrier such as ACQ1001.

1.4 Glossary

- *FMC*: [VITA57 FPGA Mezzanine Card](#).
- [Xilinx ZYNQ Soc](#)
- *FPGA* : Field Programmable Gate Array.
- *LPC* : *FMC* Low pin count wiring standard.
- *ULPC*: *FMC* Ultra low pin count (D-TACQ).
- Extended, ELF : *FMC* Extended size module (D-TACQ).

2 Physical

2.1 AO420FMC



- Single FMC Form Factor.
- Single SMA or LEMO per channel output
- Front panel CLK input (optional), or use internal clock on D-TACQ FMC Carriers.

2.2 Appearance



3 Front Panel Connectors

Floating SMA or Single Pin Lemo (SPL) for each channel.

Optional CLK input on SPL. Internal CLK available on D-TACQ FMC Carriers.

4 AO420FMC Electrical Specification

#	Parameter	Value
1	Number of Channels	4
2	Sample Rate	Up to 1000 kHz, per channel simultaneous
3	Resolution	16 bits [18 bit]
4	Coupling	DC, Single-ended Output
5	Maximum output current	20mA
6	Output Voltage Range	±10 V
7	Output Impedance	33Ω
8	Offset Error	0.01% FS with numerical calibration
9	Gain Error	0.01% FS with numerical calibration
10	INL	±2 LSB
11	DNL	±1 LSB
12	THD	92 dB
13	SINAD	89 dBc
14	SFDR	95 dBc
15	SNR	90 dB
16	Full Power BW	50kHz Standard [250kHz, 5kHz Options]
	Crosstalk	<95 dB @ 1 kHz FS
	Temperature Stability	<25 ppm/C

5 AO420FMC Specification

#	Parameter	Value
1	Form Factor	Standard FMC
2	Power source	External DC 12V (0V output), 220mA External DC 3.3V, 100 mA
3	Environmental	0°C-50°C Operational -10°C-85°C Non-Operational
4	FMC Socket	Standard FMC, Low Pin Count LPC
5	Digital Signal IO	CLK, TRG inputs 5V TTL

6 Full Customer Appliance Scenario

6.1 4-Channel Micro Appliance

- Uses D-TACQ ACQ1001 carrier
- Low cost, small form-factor networked appliance with Gigabit Ethernet
- Stand-alone device with local data storage.
- “AWG on a Fiber” using ACQ1102 carrier.

