

ACQ435FMC Advance Product Specification



High Performance Simultaneous Data Acquisition

Preliminary Product Information

Subject to Change

CONFIDENTIAL

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1 Product Description

1. *ACQ435FMC* is a 32 channel, 24 bit simultaneous analog input module.
2. Standard configuration : 32 channels, 128kSPS/channel.
3. Extended module with *FMC* connector and *FMC* front panel.
4. 2-wire Differential inputs, high quality instrument amplifier front end with switched input voltage ranges.

1.1 Product Variants

- *ACQ435FMC-32* : 32 channels, 24 bit resolution, 128kSPS/channel.
- *ACQ435FMC-24* : 24 channels, 24 bit resolution, 128kSPS/channel.
- *ACQ435FMC-16* : 16 channels, 24 bit resolution, 128kSPS/channel.

For 8 channel applications, consider *ACQ430FMC*.

1.2 Applications

- Instrumentation applications, control and monitoring.
- Acoustic and seismic applications.

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 modules include

- D-TACQ *ACQ10001* : D-TACQ single slot *FMC* carrier, Z7010
- D-TACQ *ACQ20006* : D-TACQ 6 slot *FMC* carrier, Z7020
- *Xilinx ZC702* evaluation board with 2 *FMC* slots.
- *Xilinx Zedboard* with 1 *FMC* Slot.

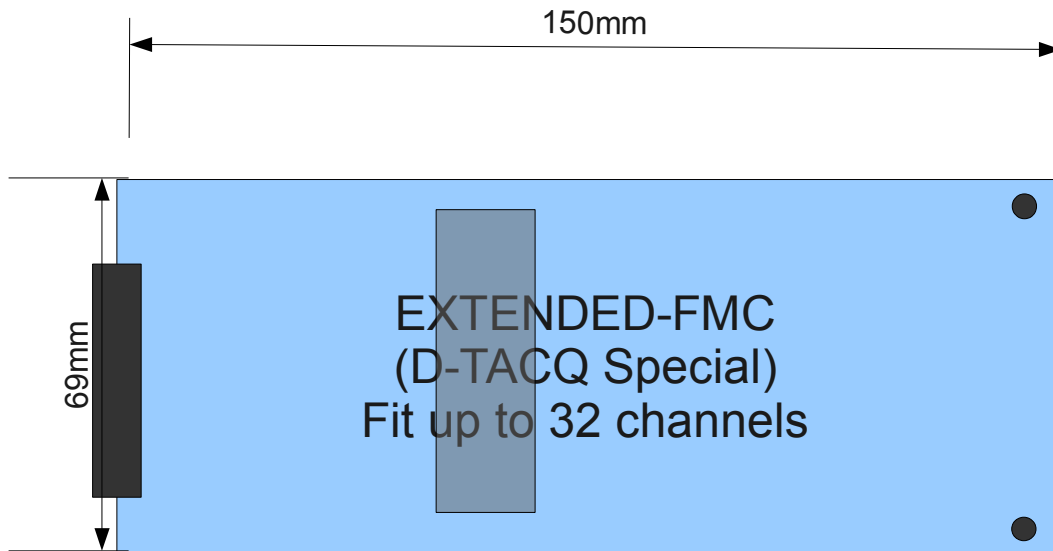
D-TACQ supplies a complete working Intelligent Digitizer appliance including programmable logic and microprocessor system running Linux.

1.4 Glossary

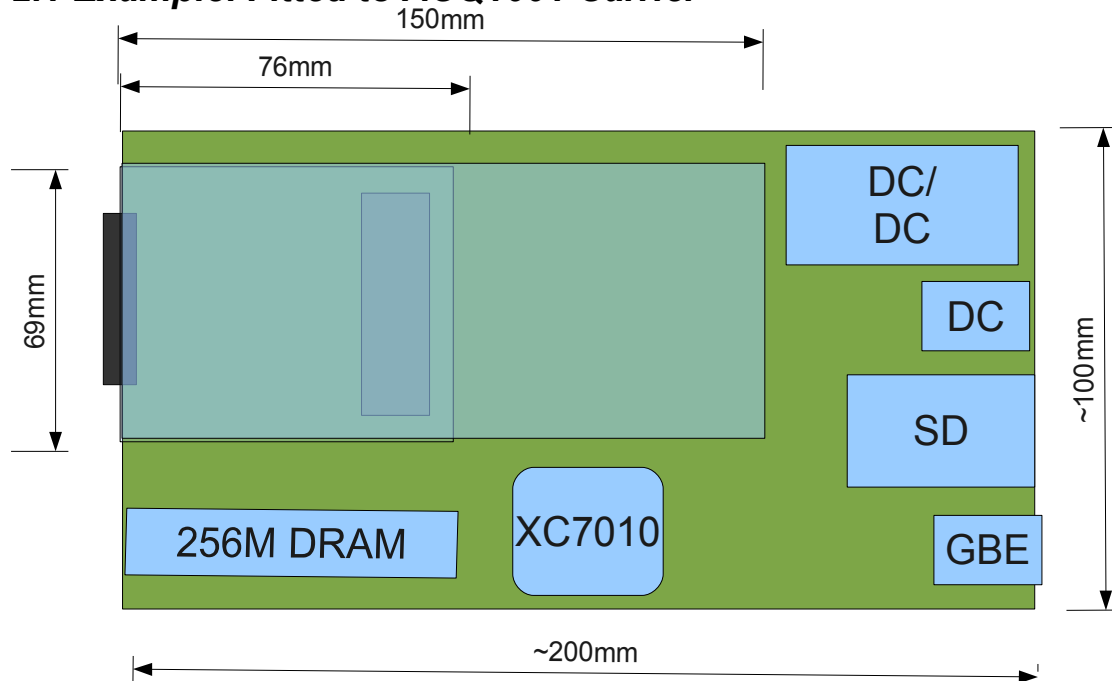
- FMC: [VITA57 FPGA Mezzanine Card](#).
- [Xilinx ZYNQ Soc](#)
- LPC : FMC Low pin count wiring standard.
- ULPC: FMC Ultra low pin count (D-TACQ).
- Extended, E : FMC Extended size module (D-TACQ).

2 Physical

Extended FMC Module



2.1 Example: Fitted to ACQ1001 Carrier



Carrier accomodates 1 x FMC eg *ACQ435FMC* or an extended size module.

3 Interface Specification.

3.1 Front Panel Connector

- 68 Pin VHDCI
- Pinout compatible with D-TACQ BNCPANEL, SMAPANEL.

3.1.1 Pinout.

Pin	Function	Pin	Function
1	0V	35	0V
2	0V	36	0V
3	AI01+	37	AI01-
4	AI02+	38	AI02-
5	AI03+	39	AI03-
6	AI04+	40	AI04-
7	AI05+	41	AI05-
8	AI06+	42	AI06-
9	AI07+	43	AI07-
10	AI08+	44	AI08-
11	AI09+	45	AI09-
12	AI10+	46	AI10-
13	AI11+	47	AI11-
14	AI12+	48	AI12-
15	AI13+	49	AI13-
16	AI14+	50	AI14-
17	AI15+	51	AI15-
18	AI16+	52	AI16-
19	AI17+	53	AI17-
20	AI18+	54	AI18-
21	AI19+	55	AI19-
22	AI20+	56	AI20-
23	AI21+	57	AI21-
24	AI22+	58	AI22-
25	AI23+	59	AI23-
26	AI24+	60	AI24-
27	AI25+	61	AI25-
28	AI26+	62	AI26-
29	AI27+	63	AI27-
30	AI28+	64	AI28-
31	AI29+	65	AI29-
32	AI30+	66	AI30-
33	AI31+	67	AI31-
34	AI32+	68	AI32-

4 ACQ435FMC Electrical Specification.

#	Parameter	Value
1	Number of Channels	32
2	Sample Rate	128 kHz, per channel simultaneous
3	Resolution	24 bits
4	Coupling	DC, Differential Input
5	Input Impedance	100K
6	Input Voltage Range	±6 V
7	Input Voltage Withstand	±30V
8	Offset Error	0.01 %FS
9	Gain Error	0.01 %FS
10	INL	±0.002% FS
11	CMRR	>60dB FS @ 1 kHz
12	THD	-106 dB
13	SINAD	102 dB
14	SFDR	107 dBc*
15	SNR	104 dB* * Typical values measured at full scale with a 9.76kHz input
16	Analog Input BW	80kHz
17	Crosstalk	<90dB @ 1kHz FS Input
18	Digital Filter:Pass Band	0.453 Fsample
	Digital Filter:3dB	0.490 Fsample
	Digital Filter:Stop Band	0.547 Fsample
	Digital Filter:Attenuate	95 dB

5 ACQ1001 FMC Carrier Specification.

#	Parameter	Value
1	Formfactor	approx 200mm x 100mm
2	Power source	External DC 12V, 1A
3	Power Consumption	12W Max
4	SOC Type	Z7010, dual-core ARM A9, Gigabit Ethernet
5	FPGA Resource	80 DSP Slices, 100 GMAC/s
6	FMC Socket	Standard FMC, Low Pin Count LPC Fits D-TACQ Extended modules
7	DRAM	256MB, soldered
8	Data IO	RS232, SD Card, USB OTG
9	Signal IO	CLK, TRG inputs, two digital outputs SMA or LEMO
10	Digital Expansion	PIM Socket
11	Digital IOS	10 on 10 way ribbon header.