ACQ425ELF
Product Specification

High Performance Simultaneous Data Acquisition

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1 Product Description

1. ***ACQ425ELF*** is a 16 channel simultaneous analog input module.
2. Standard configuration : 16 channels, 2000kSPS/channel.
3. Extended module with *FMC* connector and *FMC* front panel.
4. 2-wire Differential inputs, high quality differential amplifier front end with switched input voltage ranges.

1.1 Product Variants

- ***ACQ425ELF-16-1000*** : 16 channels, 16 bit resolution, 1000kSPS/channel.
- ***ACQ425ELF-16-1000-18*** : 16 channels, 18 bit res, 1000kSPS/channel.§
- ***ACQ425ELF-16-2000*** : 16 channels, 16 bit resolution, 2000kSPS/channel.

§ Special build, MOQ 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 modules 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

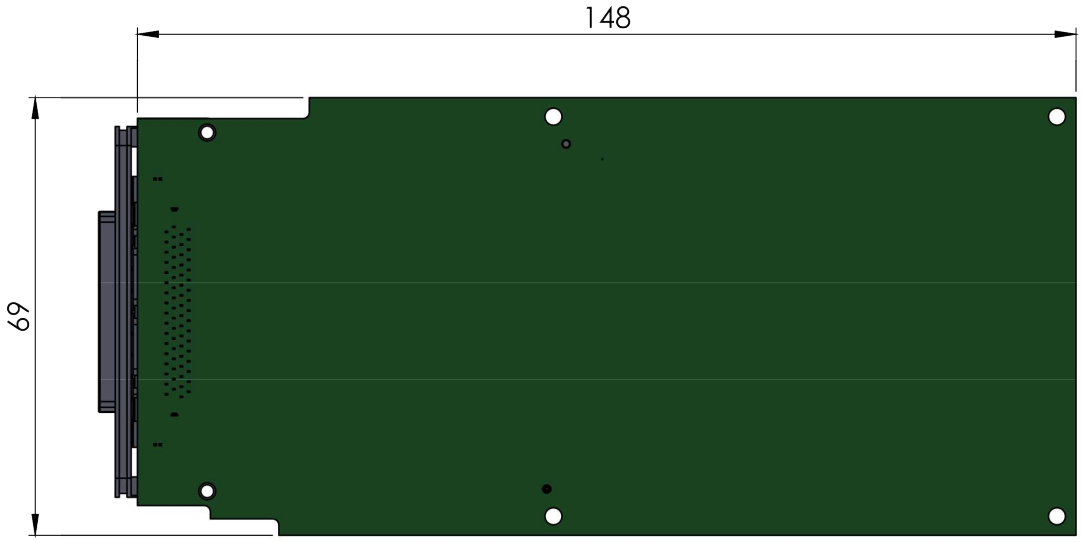
D-TACQ supplies a complete working Intelligent Digitizer appliance including programmable logic and microprocessor system running Linux.

1.4 Glossary

- *FMC*: VITA57 FPGA Mezzanine Card.
- Xilinx ZYNQ System-on-chip.
- *LPC* : *FMC* Low pin count wiring standard.
- *ULPC*: *FMC* Ultra low pin count (D-TACQ).
- ELF: D-TACQ extension to FMC, elongated card with provision for dedicated analog power supply rails.

2 Physical

2.1 Extended FMC Module



2.2 Appearance

3 ACQ425ELF Interface Specification.

3.1 Front Panel Connector

- 68 Pin VHDCI
- Pinout compatible with D-TACQ BNCPANEL-S2, SMAPANEL-S2, BNCPANEL-16.

3.1.1 Pinout.

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

4 ACQ425ELF Electrical Specification.

#	**Parameter**	**Value**
1	Number of Channels	16
2	Sample Rate	-1000: 1MHz / -2000: 2MHz per channel simultaneous
3	Resolution	16 bits [18 bit]
4	Coupling	DC, Differential Input
5	Input Impedance	1M
6	Input Voltage Range	±10, ±5, ±2.5, ±1.25 V software selectable ranges. High Gain Option, 4 ranges: 0, 20, 40, 60 dB
7	Input Voltage Withstand	±30V
8	Offset Error	0.01% FS with numerical calibration
9	Gain Error	0.01% FS with numerical calibration
10	INL	16 bit ±0.5 LSB 18 bit ±0.2 LSB
11	DNL	16 bit ±0.1 LSB 16 bit ±0.1 LSB
12	CMRR	>80dB FS @ 1 kHz
13	THD	-98 dB* at gain 1
14	SINAD	-93 dB* at gain 1
15	SFDR	100 dBc*
16	SNR Gain *1 Gain *2 Gain *4 Gain *8	 94.46 dB* 94.12 dB* 92.36 dB* 89.61 dB*
17	Full Power BW	-1000: 500kHz -2000: 1MHz
18	Small Signal BW	-1000: 1MHz -2000: 2MHz
	Crosstalk	<90 dB @ 1 kHz FS Input
	Temperature Stability	<25 ppm/C

Typical values

* Typical values measured at full scale with a 9.76kHz input

** bandwidth reduced to 60KHz with high gain 60dB selected.

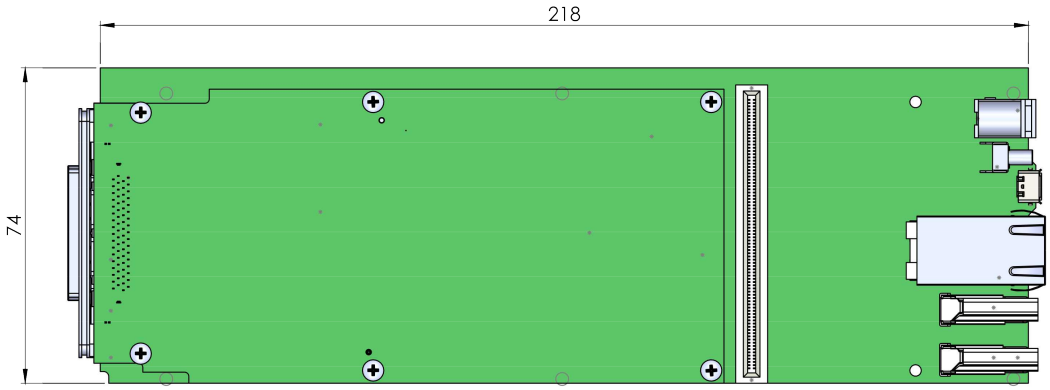
5 ACQ425ELF Specification

#	**Parameter**	**Value**
1	Form Factor	D-TACQ Standard ELF
2	Power source	D-TACQ ELF Module – Please contact us if details are required.
3	Environmental	0°C-50°C Operational -10°C-85°C Non-Operational
4	ELF Socket	Standard ELF D-TACQ Ultra Low Pin Count ULPC

6 Full Customer Appliance Scenario

6.1 Example 1: Fitted to ACQ1001 Carrier

- Uses D-TACQ ACQ1001Q-ELF carrier.
- Low cost, small form-factor networked appliance with Gigabit Ethernet
- Stand-alone device with local data storage.
- Carrier fits extended size module e.g. ***ACQ425ELF***. Compatible with D-TACQ FMC Modules.



6.2 Example 2: Fitted to ACQ2006 Carrier, 96 channels in 1U

- 1U appliance with 6 x ACQ425ELF modules.
- 96-channel networked appliance based on ACQ2006 carrier.
- Fiber optic, PCIe comms upgrade with ACQ2106 or ACQ2206 carrier.
- Mixed IO is of course possible – e.g. ACQ425ELF + AO420FMC.