

ACQ437ELF Product Specification



High Performance Simultaneous Data Acquisition

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1 Product Description

1. *ACQ437ELF* is a 16 channel, 24 bit simultaneous analog input module with variable gain per channel.
2. Standard configuration : 16 channels, 128kSPS/channel.
3. Extended module with *ELF* connector and *ELF* front panel.
4. 2-wire Differential inputs, high quality differential amplifier front end with switched input voltage ranges.

1.1 Product Variants

- *ACQ437ELF-16-10* : 24 bit resolution, 128kSPS/channel, 16 channels, 4 ranges $\pm 1V$, $\pm 2V$, $\pm 5V$, $\pm 10V$
- *ACQ437ELF-16-5* : 24 bit resolution, 128kSPS/channel, 16 channels, 4 ranges $\pm 0.5V$, $\pm 1V$, $\pm 2.5V$, $\pm 5V$

1.2 Applications

- Instrumentation applications, control and monitoring.
- Wind tunnel turbulence modelling.
- Acoustic and seismic applications.

1.3 Overview

The *ELF* module standard, based on the same front panel and connector footprint at *FMC*, 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 site *ELF* carrier, Z7020
- D-TACQ *ACQ1002* : D-TACQ dual site *ELF* carrier, Z7020
- D-TACQ *ACQ2006* : D-TACQ 6 site *ELF* carrier, Z7020
- D-TACQ *ACQ2106* : D-TACQ 6 site *ELF* carrier, Z7030

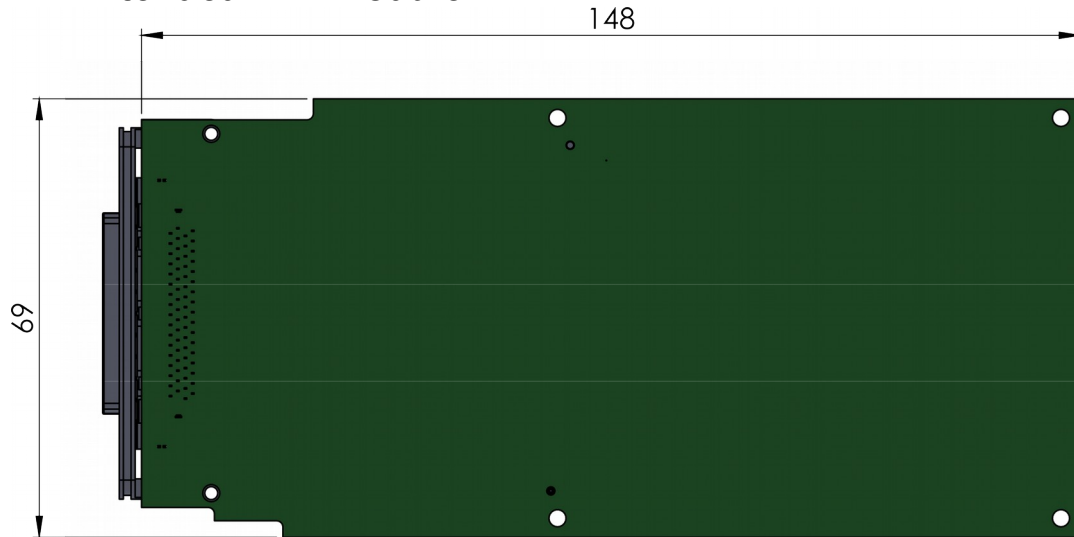
D-TACQ supplies a complete working Intelligent Digitizer appliance including programmable logic and microprocessor system running Linux.

1.4 Glossary

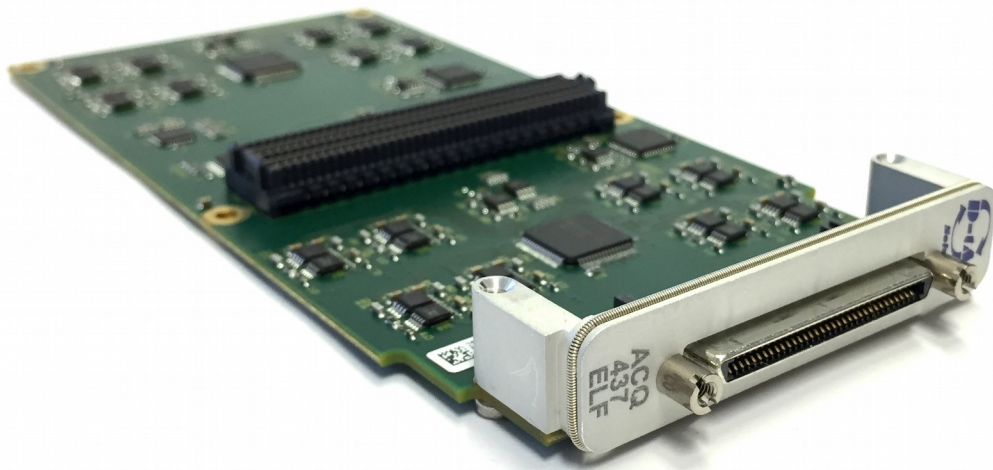
- FMC: [VITA57 FPGA Mezzanine Card](#).
- ELF: D-TACQ extension to FMC, elongated card with provision for dedicated analog power supply rails.
- [Xilinx ZYNQ Soc](#)
- LPC : FMC Low pin count wiring standard.
- ULPC: FMC/ELF Ultra low pin count (D-TACQ).

2 Physical

2.1 Extended ELF Module



2.2 Appearance



3 Interface Specification.

3.1 Front Panel Connector

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

3.2 16 Channel Pinout

Pin No.	Signal	Pin No.	Signal
1	0V	35	0V
2	0V	36	0V
3	Analog In 1+	37	Analog In 1-
4	0V	38	0V
5	Analog In 2+	39	Analog In 2-
6	0V	40	0V
7	Analog In 3+	41	Analog In 3-
8	0V	42	0V
9	Analog In 4+	43	Analog In 4-
10	0V	44	0V
11	Analog In 5+	45	Analog In 5-
12	0V	46	0V
13	Analog In 6+	47	Analog In 6-
14	0V	48	0V
15	Analog In 7+	49	Analog In 7-
16	0V	50	0V
17	Analog In 8+	51	Analog In 8-
18	0V	52	0V
19	Analog In 9+	53	Analog In 9-
20	0V	54	0V
21	Analog In 10+	55	Analog In 10-
22	0V	56	0V
23	Analog In 11+	57	Analog In 11-
24	0V	58	0V
25	Analog In 12+	59	Analog In 12-
26	0V	60	0V
27	Analog In 13+	61	Analog In 13-
28	0V	62	0V
29	Analog In 14+	63	Analog In 14-
30	0V	64	0V
31	Analog In 15+	65	Analog In 15-
32	0V	66	0V
33	Analog In 16+	67	Analog In 16-
34	0V	68	0V

4 ACQ437ELF Electrical Specification.

#	Parameter	Value
1	Number of Channels	16
2	Sample Rate High Speed Mode High Resolution Mode	Per channel simultaneous 128 kHz 52 kHz
3	Resolution	24 bits
4	Coupling	DC, Differential Input
5	Input Impedance	1M Ω
6	Input Voltage Range -10 Input Voltage Range -5	$\pm 1V, \pm 2V, \pm 5V, \pm 10V$ $\pm 0.5V, \pm 1V, \pm 2.5V, \pm 5V$
7	Input Voltage Withstand	$\pm 30V$
8	Offset Error	0.01% FS with numerical calibration
9	Gain Error	0.01% FS with numerical calibration
10	INL	$\pm 0.002\%$ FS
11	CMRR	>100dB FS @ 60 Hz (Typical) >80dB FS @ 50 kHz
12	THD	-106 dB*
13	SFDR	107 dBc*
14	SNR Gain *1 Gain *2 Gain *5 Gain *10	108.15 dB* 107.26 dB* 104.98 dB* 102.08 dB*
15	Analog Input BW	80kHz
16	Crosstalk	<90dB @ 1kHz FS Input
17	Digital Filter:Pass Band Digital Filter:3dB Digital Filter:Stop Band Digital Filter:Attenuate	0.453 Fsample 0.490 Fsample 0.547 Fsample 95 dB
19	Gain range control	Per channel, software control

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

5 ACQ437ELF 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