

AO424ELF Product Specification



High Performance Simultaneous Data Acquisition

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1 Product Description.

1. **AO424ELF** is a standard D-TACQ product, 32 channels simultaneous analog output.
2. Standard configuration: 32 channels, 16 bit resolution, 500kSPS/channel
3. Complies with *D-TACQ ELF* standard.
4. +/-10V,+ /-5V 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 operating modes.

1.1 Product Variants

- **AO424ELF-32** : 32 channels, 16 bit resolution, 500kSPS/channel.
- **AO424ELF-16** : 16 channels, 16 bit resolution, 1000kSPS/channel.
-LL versions have a filter at 250kHz:
- **AO424ELF-32-LL** : 32 channels, 16 bit resolution, 500kSPS/channel.
- **AO424ELF-16-LL** : 16 channels, 16 bit resolution, 1000kSPS/channel.

1.2 Applications

- Instrumentation applications, control and monitoring.

1.3 Overview

The *ELF* module standard, based on the same front panel and connector footprint as *FMC*, adds user IO to carrier modules fitted with *FPGA* resource. D-TACQ recommends carriers 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
- D-TACQ **MTCA-RTM2** : 2 slot ELF carrier, MTCA.4 compatible.

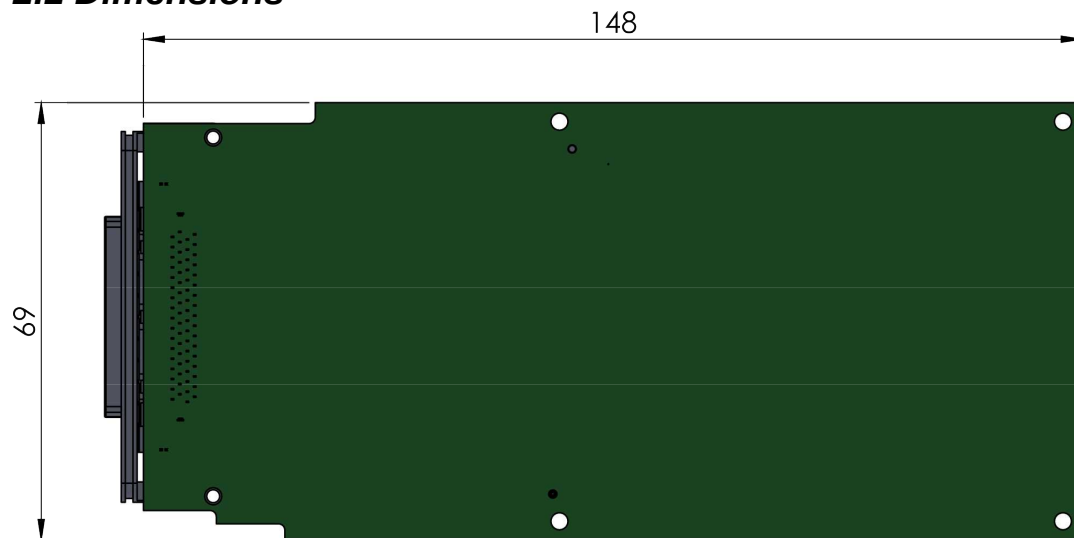
D-TACQ supplies a complete working Intelligent Digitizer appliance including programmable logic and microprocessor system running Linux.

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).

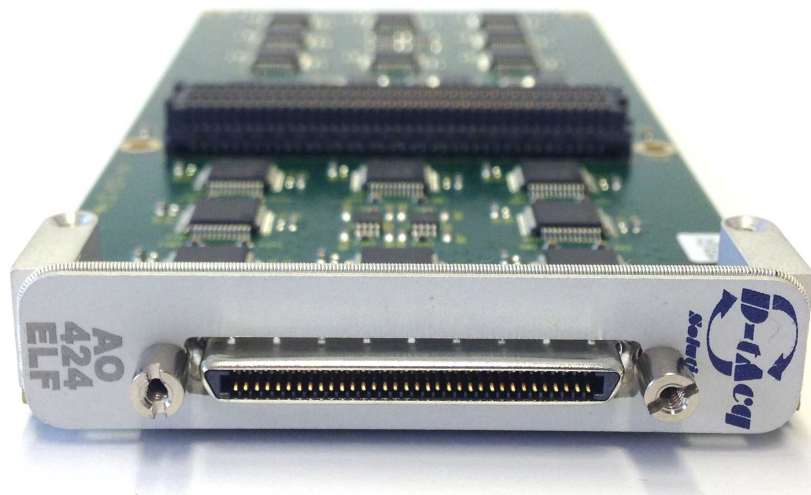
2 Physical

2.1 Dimensions



- Single ELF Formfactor.
- VHDCI connector

2.2 Appearance



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	A001	37	0V
4	A002	38	0V
5	A003	39	0V
6	A004	40	0V
7	A005	41	0V
8	A006	42	0V
9	A007	43	0V
10	A008	44	0V
11	A009	45	0V
12	A010	46	0V
13	A011	47	0V
14	A012	48	0V
15	A013	49	0V
16	A014	50	0V
17	A015	51	0V
18	A016	52	0V
19	A017	53	0V
20	A018	54	0V
21	A019	55	0V
22	A020	56	0V
23	A021	57	0V
24	A022	58	0V
25	A023	59	0V
26	A024	60	0V
27	A025	61	0V
28	A026	62	0V
29	A027	63	0V
30	A028	64	0V
31	A029	65	0V
32	A030	66	0V
33	A031	67	0V
34	A032	68	0V

4 AO424ELF Electrical Specification.

#	Parameter	Value
1	Number of Channels	32
2	Sample Rate	Up to 500 kHz, per channel simultaneous
3	Resolution	16 bits
4	Coupling	DC, Single-ended
5	Maximum output current	20mA per channel, 200mA Total
6	Output Voltage Range	± 10 V, ± 5 V ranges
7	Output Impedance	50 Ω
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
13	THD	92 dB
14	SINAD	87 dBc
15	SFDR	93 dBc
16	SNR	88 dB
17	Full Power BW	50kHz Standard [250kHz, 5kHz Options]
	Crosstalk	<90 dB @ 1 kHz FS Output
	Temperature Stability	<25 ppm/C

5 AO424ELF 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	FMC Socket	Standard ELF D-TACQ Ultra Low Pin Count ULPC