

AO424ELF Product Specification



High Performance Simultaneous Data Acquisition

Table of Contents

| | |
|--|---|
| 1 Product Description..... | 3 |
| 1.1 Product Variants..... | 3 |
| 1.2 Applications..... | 3 |
| 1.3 Overview..... | 3 |
| 1.4 Glossary..... | 4 |
| 2 Physical..... | 5 |
| 2.1 Dimensions..... | 5 |
| 2.2 Appearance..... | 5 |
| 3 Interface Specification..... | 6 |
| 3.1 Front Panel Connector..... | 6 |
| 3.1.1 Pinout..... | 6 |
| 4 AO424ELF Electrical Specification..... | 7 |
| 5 AO424ELF Specification..... | 8 |

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, 500kSPS/channel.
- § Special Build : MOQ or longer lead time may apply.

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

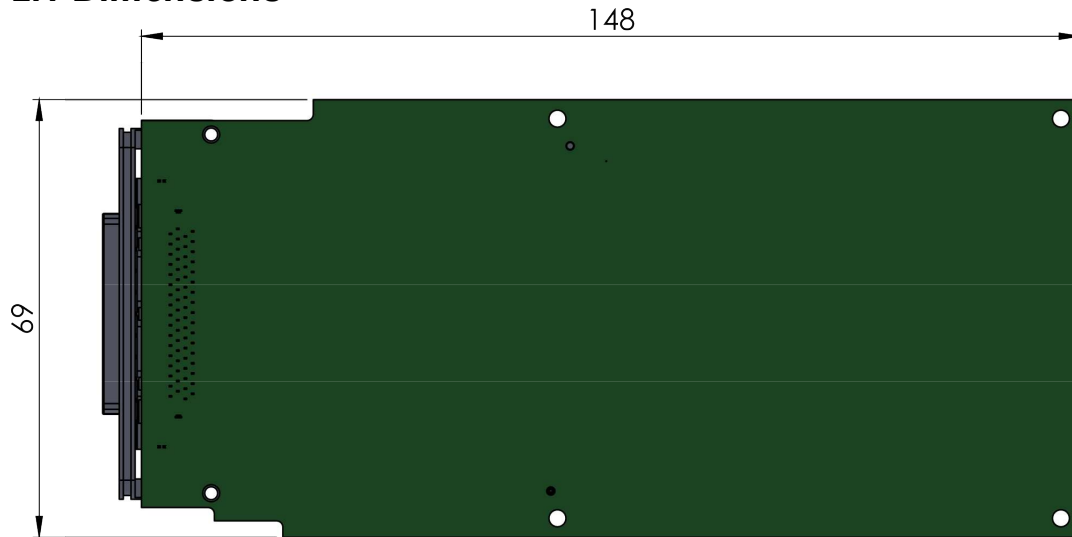
D-TACQ supplies a complete working Intelligent Digitizer appliance including programmable logic and microprocessor system running Linux.

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).

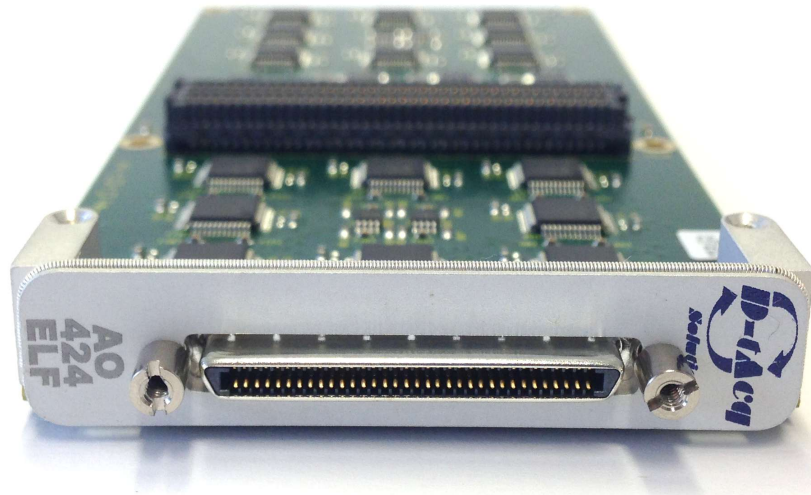
2 Physical

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 |