ACQ425BLF
Product Specification

High Performance Simultaneous Data Acquisition

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1 Product Description

1. ***ACQ425BLF*** 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

- ***ACQ425BLF-16-500*** : 16 channels, 16 bit resolution, 500kSPS/channel.
- ***ACQ425BLF-16-1000-18*** : 16 channels, 18 bit resolution, 1000kSPS/channel.
- ***ACQ425BLF-16-2000*** : 16 channels, 16 bit resolution, 2000kSPS/channel.

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 ***ACQ2106*** : D-TACQ 6 slot *FMC* carrier, Z7030

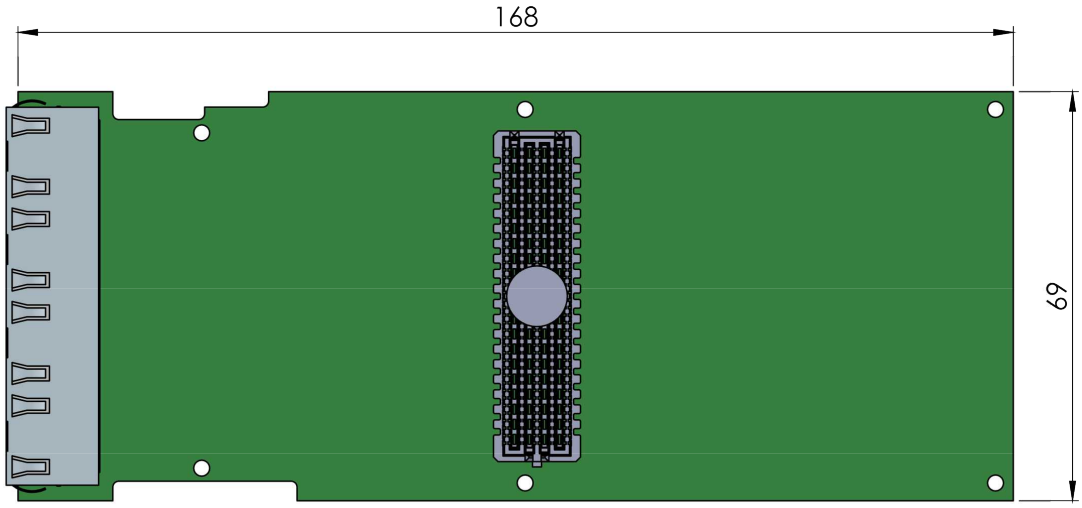
D-TACQ supplies a complete working Intelligent Digitizer appliance including programmable logic and microprocessor system running Linux.

1.4 Glossary

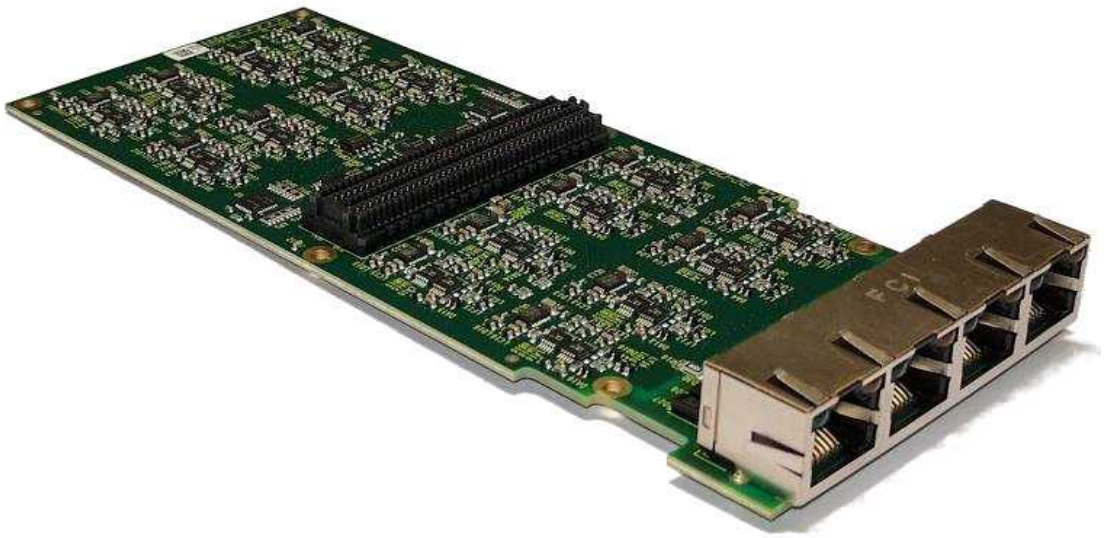
- *FMC*: VITA57 FPGA Mezzanine Card.
- Xilinx ZYNQ System-on-chip.
- *LPC* : *FMC* Low pin count wiring standard.
- *ULPC*: *FMC* Ultra low pin count (D-TACQ).
- ELF: D-TACQ extension to FMC, elongated card with provision for dedicated analog power supply rails.

2 Physical

2.1 BLF Extended FMC Module



2.2 Appearance



3 ACQ425BLF Interface Specification.

3.1 Front Panel Connector

- 4 X RJ45 Connector

3.1.1 RJ 45 Pinout.

The RJ45 Pinoput is designed to be compatible with standard 1000Base-T Gigabit Ethernet Cat 5E and above.

The Table below is for RJ45 Connector 1, the 3 other RJ45 connectors follow the same pinout.

Pin	Ethernet Function	ACQ425BLF Function
1	Bi-directional pair A +	Channel 1+
2	Bi-directional pair A -	Channel 1-
3	Bi-directional pair B +	Channel 2+
4	Bi-directional pair C +	Channel 3+
5	Bi-directional pair C -	Channel 3-
6	Bi-directional pair B -	Channel 2-
7	Bi-directional pair D +	Channel 4+
8	Bi-directional pair D -	Channel 4-

4 ACQ425BLF Electrical Specification.

#	**Parameter**	**Value**
1	Number of Channels	16
2	Sample Rate	500 kHz / 1000 kSPS / 2000 kSPS models -500 / -1000 / -2000 per channel simultaneous
3	Resolution	16 bits / 18 bits model -18
4	Coupling	DC, Differential Input
5	Input Impedance	1M
6	Input Voltage Range	±10, ±5, ±2, ±1 V software selectable ranges. alt. high gain version: 0, 20, 40, 60 dB
7	Input Voltage Withstand	±100V Not Continuous. Transient Voltage Suppression using 400W type Suppressors
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 *5 Gain *10	 94.46 dB* 94.12 dB* 92.36 dB* 89.61 dB*
17	Full Power BW	250kHz / 500kHz / 1000kHz **
18	Small Signal BW	1MHz
	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 ACQ425BLF Specification

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

6 Full Customer Appliance Scenario

6.1 Example 1: Fitted to ACQ2106 Carrier, 96 channels in 1U

- 1U appliance with 6 x ACQ425BLF modules.
- 96-channel networked appliance based on ACQ2106 carrier.
- Fiber optic, PCIe comms upgrade

6.1.1 Photograph of 96 channel system

6.1.2 Sketch of Internal Layout