

# 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.

## 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

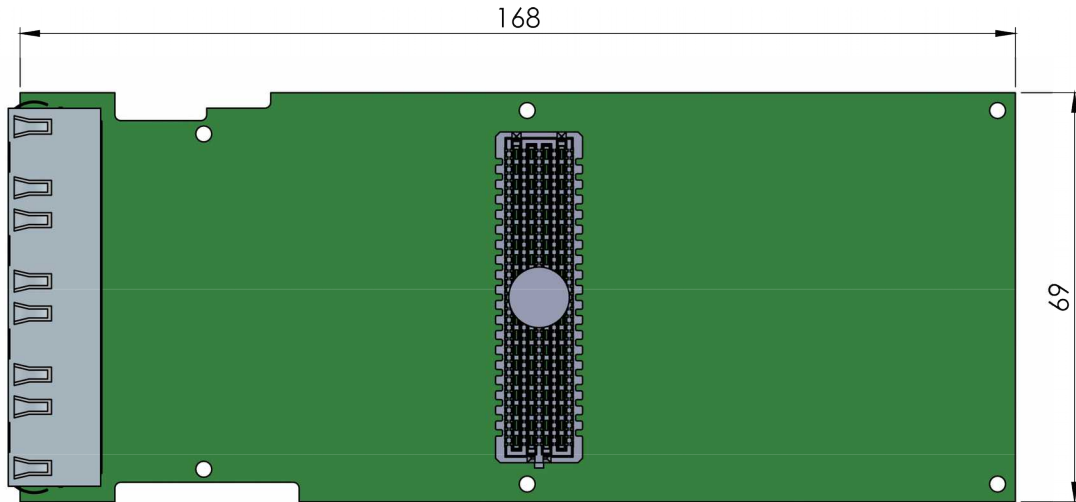
D-TACQ supplies a complete working Intelligent Digitizer appliance including programmable logic and microprocessor system running Linux.

## 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 Pinout 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: 500 kHz per channel simultaneous
3	Resolution	16 bits
4	Coupling	DC, Differential Input
5	Input Impedance	1M
6	Input Voltage Range	$\pm 10$ , $\pm 5$ , $\pm 2$ , $\pm 1$ V software selectable ranges.
7	Input Voltage Withstand	$\pm 100$ V 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 $\pm 0.5$ LSB 18 bit $\pm 0.2$ LSB
11	DNL	16 bit $\pm 0.1$ LSB 16 bit $\pm 0.1$ 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	250kHz
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

## 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

