DIO432FMC
Product Specification

High Performance Simultaneous Data Acquisition

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1 Product Description

1. ***DIO432FMC*** is a 32 channel simultaneous digital input/output module.
2. Standard configuration: 32 channels, 700kSPS/channel.
3. Byte-wide direction control.
4. Complies with *VITA57 FMC* standard, *LPC* version.
5. Single-ended I/O on VHDCI connector.
6. Immediate (asynchronous) or Clocked (synchronous) update modes.
7. Optional open-collector outputs capable of switching up to 50V.
8. Compliant with D-TACQ *ELF* sites.

1.1 Product Variants

- ***DIO432FMC*** : 32 channels, 700kSPS/channel, FMC compliant
- ***DIO432PMOD*** : 32 channels, 700kSPS/channel, PMOD connector

1.2 Applications

- High speed control and diagnostics.

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 ***ACQ1001*** : D-TACQ single 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.

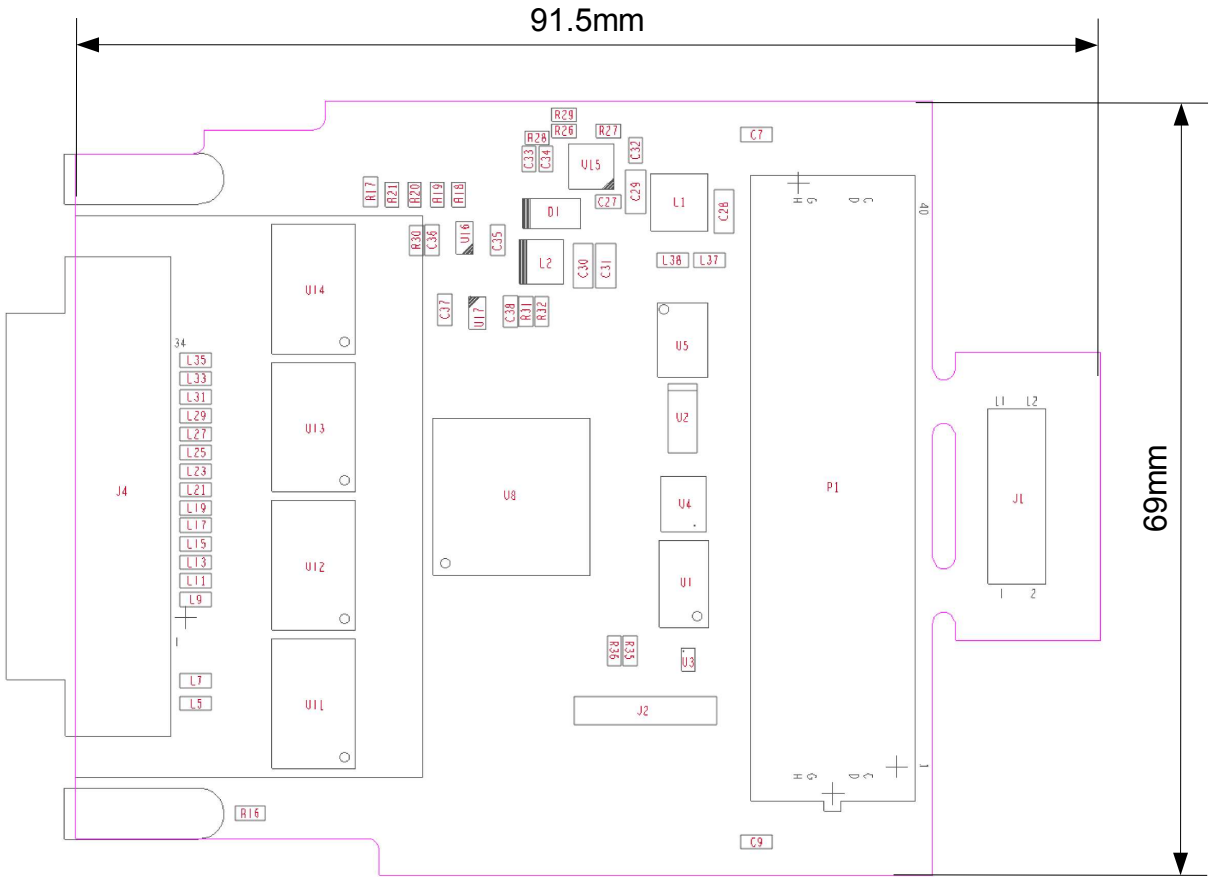
1.4 Glossary

- *FMC*: VITA57 FPGA Mezzanine Card.
- Xilinx ZYNQ Soc
- *FPGA* : Field Programmable Gate Array.
- *LPC* : *FMC* Low pin count wiring standard.
- *ULPC*: *FMC* Ultra low pin count (D-TACQ).
- ULPC+ D-TACQ Ultra low pin count with LVDS
- Extended, ELF : *FMC* Extended size module (D-TACQ).

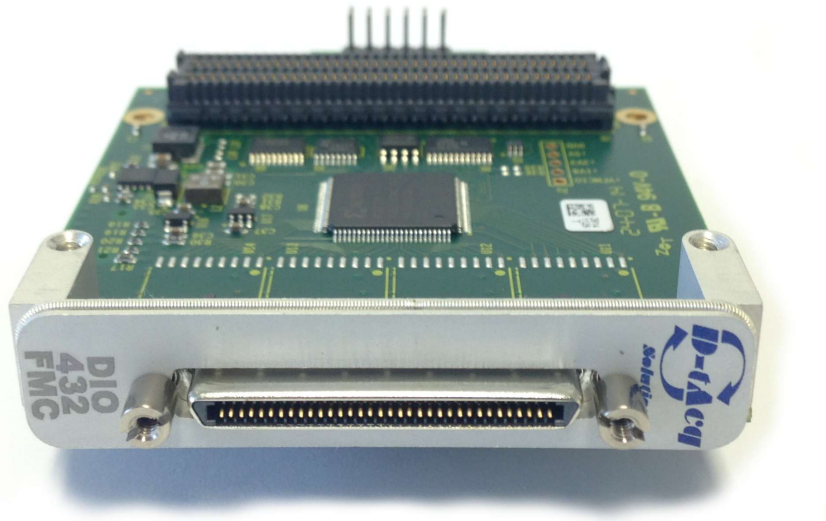
2 Physical

2.1 DIO432FMC Dimensions

2.2 DIO432PMOD Dimensions



2.3 Appearance



3 Interface Specification.

3.1 Front Panel Connectors

- 68-way VHDCI connector (MOLEX 71430-0019).
- Pinout compatible with D-TACQ BNCPANEL-S1, SMAPANEL-S1, LEMOPANEL-S1, PTBPANEL-S1.
- Compatible DIN-RAIL module TERM04 available, providing screw terminals for easy connectivity.

3.2 Channel Pinout

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

* External voltage clamp option available for open-collector variant protection for driving inductive loads. Can also be internally set to 5V or 12V.

Please contact D-TACQ for details.

4 DIO432FMC Electrical Specification

#	Parameter	Value
1	Number of Channels	32
2	Sample Rate	Up to 700kSPS per channel simultaneous
3	I/O Voltage Range	0-5V
4	Input Voltage High	> 3.5V
5	Input Voltage Low	< 1.5V
6	Input Voltage Withstand	-0.5 to 6.5V
7	Output Current High	-32mA, -100mA max per byte
8	Output Current Low	32mA, 100mA max per byte
9	Output Current Low*	500mA, 2.5A max per byte
10	Output Voltage High	> 3.8V
11	Output Voltage Low	< 0.55V
12	Output Voltage High*	50V

* Open-collector variant only.

4.1 I/O Buffers

More information on I/O characteristics can be found in the buffer datasheets:

- Push-Pull: Texas Instruments SN74LVC8T245
- Open-collector: Texas Instruments ULN2803A

5 DIO432FMC Specification

#	Parameter	Value
1	Form Factor	Standard FMC
2	Power source	External DC 12V, 200mA External DC 3.3V, 100 mA
3	Environmental	0°C-50°C Operational -10°C-85°C Non-Operational
4	FMC Socket	Standard FMC, Low Pin Count LPC