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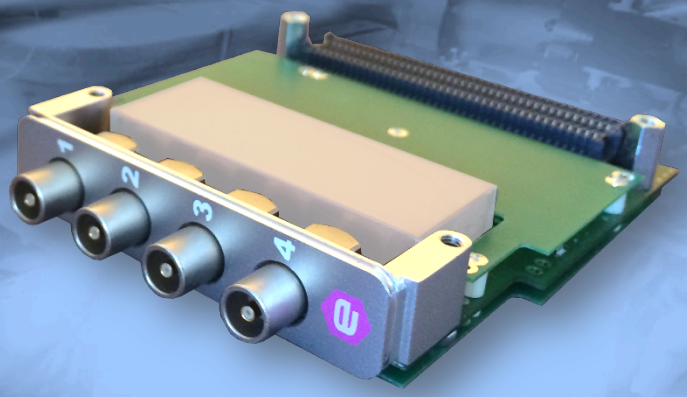
Gear For Science

Product Overview



FMC-Pico-1M4

4-channel 20 bit 1 MSPS
FMC Floating Ammeter

FMC – FPGA Mezzanine Card

The FMC-Pico-1M4 is a FPGA Mezzanine Card compatible with standard VITA 57.1 to be mounted on LPC and HPC carrier boards.

Four independent high-resolution bipolar current-input channels with 20 bit resolution.

Input channels are capable of floating up to ±300V respect to chassis ground.

Features

- FPGA Mezzanine Card
- VITA 57.1 Standard
- High resolution Multi-Channel current measurements up to ±1 mA (*configurable upon request*)
- 4 Bipolar Current-Input Channels
- Two independent full-scale ranges (±1 mA, ±1 µA)
- Up to 1 MSPS simultaneous and independent sampling
- Low conversion time delay
- 20-bit resolution
- Input channels floating up to ±300 V

Applications

- Photon Beam Position Monitors
- Multi-Channel Fast Current Acquisition
- Detector Readout

The FMC-Pico-1M4 is a standard FPGA Mezzanine Card (FMC - VITA 57.1) Low Pin Count (LPC) board that allows to monitor bipolar currents up to 1 mA with high sampling rate and high resolution.

The board resolution is 20-bit, obtained from independent, simultaneous sampling and low-delay Analog to Digital Converters (ADCs).

Each channel has two full-scale measuring ranges, up to ±1 mA and ±1 µA respectively and the current source can be floating up to ±300 V respect to the FMC ground. The floating capability of the inputs is perfectly suitable for applications where the detector or current source needs to be biased.

The analog front-end is designed in order to achieve low noise, low temperature dependence and very little unbalance between channels. The analog characteristics can be further improved by requesting a factory calibration of the channels - calibration data are stored in the on-board EEPROM memory that can be read via an I^2C bus on the FMC connector.

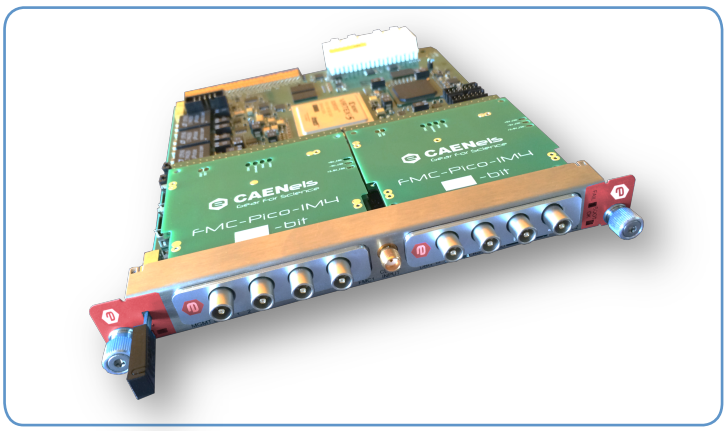
A metallic shield has the dual function of shielding the analog front end from external noise sources and also isolates the internal electronics that could be capable of floating up to ±300 V potential respect to the chassis ground.

A trigger signal can be fed on the FMC connector in order to start the conversion of data samples: this feature allows to synchronize the board acquisition to an external event - e.g. machine revolution frequency in storage rings.

Data readout can be performed via separate SPI links – i.e. one for each channel, sharing the same clock signal – or can be daisy-chained thus requiring less signals to be handled.

Please check the MTCA.4 section on the website www.caenels.com in order to check for news, updates and additional information on the FMC-Pico-1M4 cards and other MTCA.4 products.

Technical Specifications	FMC-Pico-1M4
Board Type	FPGA Mezzanine Card - FMC VITA 57.1
FMC Connector Type	High Pin Count - HPC
Number of Channels	4
Current Polarity	Bipolar
Full-Scale Current	RNG0: ± 1 mA RNG1: ± 1 µA
Maximum Sampling Rate - F_S	1 MSPS
Resolution	20 bit
Conversion Time- T_{CONV}	650 ns
Equivalent Input Noise @ 1MSPS	RNG0: < 10 nA_{RMS} RNG1: < 20 pA_{RMS}
Input Connectors	Triaxial - LEMO 00.650 Series
Bandwidth (-3 dB)	> 10 kHz
Temperature Coefficient - TC	10 ppm/°C
Unbalance of Input Channels	< 0.05 % without calibration
Differential TC	< 25 ppm/°C
Other Features	- signal ground floating up to ±500V - trigger / SoC signal on FMC connector - range selection on FMC connector - daisy-chain data readout capability - Factory calibration (on internal EEPROM) *upon request*



AMC-Pico-8 AMC-MTCA.4 Board

Ordering Options

FMCPICO1M420	FMC-Pico-1M4-20	FMC-Pico-1M4 - 4-channel 20-bit 1 MSPS FMC Floating Ammeter

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About CAENels

CAEN ELS is a leading company in the design of power supplies and state-of-the-art complete electronic systems for the Physics research world, having its main focus on dedicated solutions for the particle accelerator community.

- Magnet Power Supply Systems
- Beamline Electronic Instrumentation
- Precision Current Transducers
- MTCA.4 – MicroTCA for Physics

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