I128-MICRO - 128 CHANNEL INTEGRATING ELECTROMETER

Key Features

- 128 fully parallel charge integrators.
- Dynamic range up to 1.5 µA or 350 pC for 256 channels.
- Extremely compact form factor.
- External conversion synchronization BNC connector.
- Ethernet interface with web server UI and JSON API.

I128-MICRO Front

I1280-MICRO Rear

Typical Applications

- Multi-layer Faraday cup readout.
- Multi-strip and pixelated detector readout.

PRODUCT SPECIFICATION

MECHANICAL

Weight	400 g (0.88 lbs)
Dimensions	125 x 80 x 35 mm (overall approximate; see figures)
Chassis Material	1 mm stainless steel
IP Rating	IP20 (protection against solid objects larger than 12.5 mm; no protection against water ingress)

MICROPROCESSOR

Processor	AM3358 ARM Cortex A8, 1 GHz
Memory	512 MB DDR3 RAM
Storage	32 GB micro-SD card
Operating System	Blackberry QNX real-time OS
Control System	Pyramid IGX modular real-time control system
Software API	Supports HTTP (JSON), WebSockets (JSON), EPICS, and more. See Programmer manual for full details.

128 ANALOG TO DIGITAL CONVERTER

Type	Simultaneous sampling unipolar charge integrator
Resolution	20-bit raw conversion, 32-bit sample averaging
Full-scale Current Ranges	Selectable from 75, 300, 600, 900, 1200, 1500, 1800, and 2100 nA
Full-scale Charge Ranges	Selectable from 12, 50, 100, 150, 200, 250, 300, and 350 pC
Negative Full-scale	-0.4% of the positive full-scale range.
Integration Frequency	Programmable from 1 Hz to 6,000 Hz
Conversion Frequency	Programmable from 1 Hz to 6,000 Hz
Sample Frequency	Programmable from 0.1 Hz to 6,000 Hz
Sample Filter	Block averaging, each conversion into sub-samples
ADC Channels	128 channels divided into two 68-pin VHDCI connectors.

OPERATING ENVIRONMENT

Temperature	10 to 45°C (optimal range: 15 to 25°C)
Humidity	Less than 70%, non-condensing
Vibration	Less than 0.1g across all axes (0.1 to 100 Hz)
Environment	Clean and dust-free environment

SHIPPING AND STORAGE ENVIRONMENT

Temperature	-10 to 50°C
Humidity	Less than 80%, non-condensing
Vibration	Less than 1g across all axes (0.1 to 100 Hz)

PHYSICAL INTERFACE SPECIFICATION

POWER INPUT (REAR PANEL)

Device Connector	Switchcraft 2.1 mm threaded jack L721
Mating Connector	Switchcraft S761K
Nominal Voltage	24 VDC
Voltage Range	9 - 36 VDC
Maximum Power	25 Watts

ETHERNET (REAR PANEL)

Device Connector	Shielded RJ45 Jack
Isolation	Magnetics, HIPOT test up to 1500 Vrms
Speed Rating	10/100 Base-T (IEEE 802.3)

HIGH DENSITY INTEGRATING VHDCI CONNECTORS (FRONT PANEL)

These inputs are suitable for direct pin-to-pin connection to Pyramid ionization chambers with VHDCI connectors and Pyramid MLFC devices using VHDCI screened male to male cables.

Connectors	Four 68-pin VHDCI (Sometimes called SCSI 5)
Contact Material	Gold Plated
Channel Count	64 channels and 4 ground pins per connector

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