



AH401D

4-channel Charge Integration Picoammeter

The AH401D is the new compact high-resolution charge integrating picoammeter from CAENels. Able to simultaneously sample 4-channel inputs, it has been designed to achieve an extreme sensitivity range with the best low-noise performance for this class of instruments.

Features

- From 50 pA to 2 μ A current range
- 20 bit A/D converter with noise reduction digital filter
- Less than 7 ppm@200 pC full-scale range noise
- 4-channel simultaneous sampling
- Lightweight and compact design
- Ethernet 10/100 standard interface

Applications

- Ion Chambers Reading
- pH - metering
- Ultra-Low Current Measurements
- Beam Position Monitoring
- Diamond Detectors Readout
- Radiation Monitoring

The AH401D is a compact 4-channel low noise picoammeter. It is composed of an extremely sensitive charge-integration input stage for low-current sensing, combined with a 20-bit sigma-delta AD converter with an integrated noise reduction digital filter.

This device is suited for very low current measurements, with 8 selectable input ranges spanning from 50 pA (with a 50-aA resolution) up to 2 μ A (with a 2-pA resolution). Integration time is user selectable and ranges from 1ms up to 1s. Each input channel has two integrator stages so that the current-to-voltage conversion can be performed continuously during ADC conversion, avoiding any dead time in the data output. The simultaneous sampling of the 4 independent channels make this instrument ideal for beam position monitor applications or multichannel acquisition.

The new AH401D is housed in a light and extremely compact box that can be placed close to the signal sources in order to reduce cable lengths and minimize possible noise pick-up. Low temperature drift, good linearity and very low noise allow very high-precision current measurements.

The picoammeter can be remotely controlled via a standard Ethernet 10/100 communication interface: integration time, range, data format, type of acquisition and many other parameters can be easily set and monitored.

The AH401D has an external TRIGGER input signal in order to synchronize the acquisition of the picoammeter with external events (e.g. laser triggering). Furthermore, digital samples can be transferred either using ASCII format or RAW binary data format for fast data transmission.

About CAENels

CAENels is a dynamic company that provides power supplies and state-of-the-art dedicated electronic systems to the particle accelerator community - e.g. synchrotron light sources and Free Electron Laser (FEL) facilities.

- Magnet Power Supply Systems
- Beamline Electronic Instrumentation
- Precision Current Transducers
- High-Voltage Dedicated Systems

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Technical Specifications

Input Channels	4
Current Measuring Range	from 50 pA to 2 μ A
Current Polarity	positive
Data rate	up to 1 ksamples/s
Integration Time	from 1ms to 1s
Resolution Bits	20
Noise (@1ms, 200pCFS)	<7ppm
Communication Interface	Ethernet 10/100 TCP-IP and UDP
I/O Signal	TRIGGER input, CONV output
Supply Voltage	9 V
Dimensions	155 x 165 x 50 mm
Weight	500 g
Input Connectors	BNC



AH401D Rear view