



# Picoammeter



## HIGHLIGHTS

### FEATURE

### BENEFIT

Especially suited for applications where multi-channel fast acquisition is a concern, i.e. feedback systems

This device performs current measurement from  $\pm 2.5$  nA (with a resolution of 298 aA) up to  $\pm 11$  mA (resolution of 1.35 nA) with sampling frequencies of up to 26 kHz (for 1 channel and a 16-bit resolution) and 6.5 kHz (4 channels, 16 bit/sample)  
Housed in a light and extremely compact box

Extremely low current measurements  
Bipolar current measurements

Low temperature drifts, good linearity and very low noise  
Modular communication capability

Can be placed close to the signal sources in order to reduce cable lengths and minimize possible noise pick-up  
High-precision current measurements

Buffered voltage monitors that are proportional to the measured input current  
High voltage (30 V) output

Allows the user to freely select the type of communication interface, allowing control of the instrument with different types of programming languages and/or operating systems  
Allows direct analogue monitoring on the oscilloscope  
Detector biasing

## APPLICATIONS

- Ultra-low current measurements
- Beam position monitoring
- Si and Diamond detectors readout
- Ion chamber readout



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## HOW DOES IT WORK?

A compact user friendly AH501B Picoammeter covers the whole acquisition, counting and digitization chain. To a great extent this simplifies and streamlines the read out at high speed and with extremely low noise X-ray detectors.

It is composed of a particular transimpedance input stage for current sensing combined with several analogue signal conditioning and filtering stages with state-of-the-art electronics.

Acquisition of samples from the AH501B may be performed using either "continuous" or "on demand" transmission modes:

- "Continuous" mode: data are continuously sampled and transmitted, without external intervention, to the host device, allowing for real time data acquisition
- "On demand" mode: data are sampled and transmitted only on a specific remote command request.

The external TRIGGER/GATE input signal is available for the purpose of synchronizing the acquisition of the picoammeter with external events (i.e. laser triggering). Furthermore, digital samples can be transferred using either the ASCII format or the RAW binary data format for fast data transmission.

The AH501B is available in different configurations: analogue cut-off frequency (the standard value is 1 kHz but it has been successfully tested up to 10 kHz), communication interface (xPiggy) and input connectors (SMA or BNC).

The availability of trigger input and output signals on an RJ11 connector allows for the synchronization of the acquisition to external events.

## SPECIFICATIONS

<b>Input channels</b>	4
<b>Input connectors type</b>	SMA or BNC
<b>Effective current measuring range</b>	From $\pm 2.5$ nA to $\pm 11$ mA
<b>Resolution bits</b>	16 or 24
<b>Data transfer</b>	Up to 26 ksamples/sec (1 ch. 16 bit)
<b>Analogue cut-off</b>	Configurable (tested up to 10 kHz)
<b>Polarity</b>	Bipolar
<b>Communicati on modules</b>	Ethernet TCP-IP and UDP, USB 2.0, R-S232
<b>Supply voltage</b>	From $\pm 6$ V to $\pm 9$ V
<b>Supply current</b>	From 270 to 410 mA depending on comm. module
<b>Dimensions</b>	160 x 108 x 45 mm
<b>Weight</b>	500 g
<b>Weight</b>	420 g

## DELIVERABLES

- AH501B Picoammeter
  - Preinstalled Ethernet communication module
- Other compatible modules are: RS232, RS422/485, USB and Ethernet (TCP/IP and UDP)
- Power supply integration PS-2209
  - Oscilloscope LabView Software

## AH501B BLOCK DIAGRAM

