

PDA8000 Photocurrent Measurement Modules



Modules for Optical Power Measurement

The PDA8000 is designed as a plug-in module for the PRO8000 chassis detailed on page 976. The module is recognized by the chassis when powered. All of the control functions of the photocurrent amplifier can be used in manual or remote modes.

The PDA8000 series single- or dual-channel photocurrent measurement modules enable high-precision measurement of photocurrents with 16-bit resolution. Seven measurement ranges are available; on the most sensitive 10 nA full scale setting, the resolution is 0.1 pA.

If your photodiode is calibrated, the photocurrent module can be used as a precise optical power meter with high resolution and a large dynamic range.

Introduction – Photocurrent Measurement Module

The PDA8000 photocurrent measurement module is an ideal companion for our other PRO8000 series plug-in modules.

It provides precise photocurrent measurements from a few pA to 10 mA. An oversampled 16-bit A/D converter is used to ensure a measurement resolution of $\pm 0.025\%$ of the full scale reading. These features, combined with the built-in, low noise photodiode bias, make this instrument an ideal photodiode current amplifier.

Calibrated Optical Power Measurements

Using the PDA8000, a photodiode can be calibrated to accurately measure optical power. A photodiode responsivity value can be entered on screen. This allows the direct entry of standard calibration data provided by photodiode manufacturers when a calibrated diode is purchased.

Computer Control IEEE-488.2

As with all of our PRO8000 compatible modules, the PDA8000 module commands can be accessed via an IEEE-488 interface. This includes access to the calibration factor, the photodiode bias voltage, all of the measurement control parameters, and the measurement results.

PDA8000 Measurement Range

Measurement Range	Resolution	Accuracy
10 mA	0.1 μ A	$\pm 0.025\%$ Full Scale
1 mA	10 nA	$\pm 0.025\%$ Full Scale
100 μ A	1 nA	$\pm 0.025\%$ Full Scale
10 μ A	0.1 nA	$\pm 0.025\%$ Full Scale
1 μ A	10 pA	$\pm 0.025\%$ Full Scale
100 nA	1 pA	$\pm 0.25\%$ Full Scale
10 nA	0.1 pA	$\pm 0.8\%$ Full Scale

Precision Optical measurements

The variable photodiode bias allows for operating in either a photovoltaic or photoconductive mode. The bias also reduces the junction capacitance of the diode, thus improving the linearity of the detector when making long-term measurements. Additionally, there is a front panel trim-pot that is used to null out the photodiode dark currents that are found in semiconductor optical sensors.



PRO800 with PDA8000-2
and ITC8022 Modules
(Sold Separately)

Features

- Seven Current Measurement Ranges from 10 nA to 10 mA with 16-Bit Resolution
- Resolution of 0.1 pA on the 10 nA scale
- Accuracy is $\pm 0.025\%$ of Full Scale Reading
- Single- and Dual-Channel Modules

Photocurrent Module Specification

- **Photodiode Current Range:** 10 nA to 10 mA
- **Photodiode Polarity:** Selectable
- **Setting Range of Bias Voltage (Can be Switched Off):** 0.1 to 10 V
- **Setting Range of Sensitivity for Power Display:** Programmable
- **Input Impedance:** Virtual Ground
- **Temperature Coefficient:** ≤ 50 ppm/ $^{\circ}$ C

General Data

- **Module Width:** 1 Slot
- **Photodiode Connectors:**
PDA8000-1 BNC (1x)
PDA8000-2 BNC (2x)

All data are valid at 23 ± 5 $^{\circ}$ C and $45 \pm 15\%$ relative humidity.

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ITEM#	\$	£	€	RMB	DESCRIPTION
PDA8000-1	\$ 918.00	£ 636.40	€ 815,10	¥ 7,751.70	Photocurrent Measurement Module, 1 Channel
PDA8000-2	\$ 1,041.00	£ 721.70	€ 924,30	¥ 8,790.30	Photocurrent Measurement Module, 2 Channels