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PURCHASED ITEM

2500 and 2502 Dual Photodiode Meters

The Models 2500 and 2502 Dual Photodiode Meters can measure and display either photodiode current or optical power for two photodiodes with appropriate user-supplied optical power gain/wavelength calibration factors.

The Model 2502 includes an analog output jack on the rear panel for each channel.

Measurement Specifications

RANGE	MAXIMUM RESOLUTION	ACCURACY[1,2] 23°C ±5°C ±(% rdg. + offset)	TEMPERATURE COEFFICIENT 0°–18°C & 28°–50°C ±(%rdg. + offset)/°C	DC INPUT IMPEDANCE[3] (Maximum)
2.000000 nA	1 fA	1.00% + 2 pA	0.01 + 200 fA	20 kΩ
20.00000 nA	10 fA	0.40% + 2 pA	0.01 + 200 fA	20 kΩ
200.0000 nA	100 fA	0.30% + 200 pA	0.02 + 20 pA	200 Ω
2.000000 µA	1 pA	0.20% + 200 pA	0.02 + 20 pA	200 Ω
20.00000 µA	10 pA	0.10% + 20 nA	0.01 + 2 nA	2.0 Ω
200.0000 µA	100 pA	0.10% + 20 nA	0.01 + 2 nA	2.0 Ω
2.000000 mA	1 nA	0.10% + 2 µA	0.02 + 200 nA	0.2 Ω
20.00000 mA	10 nA	0.10% + 2 µA	0.02 + 200 nA	0.2 Ω

MAXIMUM INPUT: ±20.0mA.

Typical Speed and Noise Rejection[4]

DIGITS	READINGS/s GPIB (SCPI)	READINGS/s GPIB (488.1)	NPLC	NMRR
4½	700	900	0.01	—
5½	460	475	0.1	—
6½	58	58	1	60 dB

Photodiode Voltage Bias Specifications[2]

RANGE	RESOLUTION	ACCURACY 23°C ±5°C	MAXIMUM CURRENT	LOAD REGULATION[5]	TEMPERATURE COEFFICIENT
0 to ±10 V	<400 µV	±(0.15% of setting + 5 mV)	20 mA	< 0.30%, 0 to 20 mA	150 ppm/°C
0 to ±100 V	<4 mV	±(0.3% of setting + 50 mV)	20 mA	< 0.30%, 0 to 20 mA	300 ppm/°C

NOTES:

1. Speed = Normal (1.0 NPLC), Filter On.
2. 1 year.
3. Measured as $\Delta V_{in}/\Delta I_{in}$ at full scale (and zero) input currents.
4. Dual channel, internal trigger, measure only, display off, Autorange off, Auto Zero off, source delay = 0, filters off, limits off, CALC5 and CALC6 off, 60Hz.
5. Measured as $\Delta V_{in}/\Delta I_{in}$ at full scale (20mA) and zero load currents.
6. Noise floor measured as rms (1 standard deviation), 100 samples, Filter off, open (capped) input.
7. Specification by design.
8. Measured (at input triax) as ΔV_{in} at full scale (20mA) vs. zero input currents.

Analog Output Specifications (2502 only)

OUTPUT VOLTAGE RANGE[1]: OUTPUT IS INVERTING: -10V out for positive full scale input
+10V out for negative full scale input

OUPUT IMPEDANCE: 1kΩ typical.

RANGE	ACCURACY 23°C ±5°C ±(%output + offset)	TEMPERATURE COEFFICIENT 0°C - 18°C & 28°C - 50°C ±(%output + offset)/°C	RISE TIME Typical (10% to 90%)
2.000000 nA	6.0% + 90mV	0.30% + 7mV	6.1 ms
20.00000 nA	3.0% + 9mV	0.11% + 700µV	6.1 ms
200.0000 nA	6.0% + 90mV	0.30% + 4mV	395 µs
2.000000 µA	3.0% + 9mV	0.11% + 400µV	395 µs
20.00000 µA	6.0% + 90mV	0.30% + 4mV	135 µs
200.0000 µA	2.5% + 9mV	0.11% + 400µV	135 µs
2.000000 mA	6.0% + 90mV	0.30% + 4mV	21 µs
20.00000 mA	2.5% + 9mV	0.11% + 400µV	21 µs

[1] The analog output voltage for each channel is referenced to that channel's floating ground.

GENERAL

Typical Noise Floor Measurement Specification[6]

RANGE	TYPICAL NOISE FLOOR RMS (1 STDEV), 100 SAMPLES 0.01 NPLC	0.1 NPLC	1.0 NPLC	10 NPLC
2.000000 nA	2 pA	1 pA	40 fA	15 fA
20.00000 nA	2 pA	1 pA	40 fA	15 fA
200.0000 nA	200 pA	100 pA	2 pA	500 fA
2.000000 µA	200 pA	100 pA	2 pA	500 fA
20.00000 µA	20 nA	10 nA	200 pA	50 pA
200.0000 µA	20 nA	10 nA	200 pA	50 pA
2.000000 mA	2 µA	1 µA	25 nA	5 nA
20.00000 mA	2 µA	1 µA	25 nA	5 nA

SOURCE CAPACITANCE: Stable to 10.0nF typical.

INPUT BIAS CURRENT[7]: 50fA max. @ 23°C.

INPUT VOLTAGE BURDEN[8]: 4.0mV max.

VOLTAGE SOURCE SLEW RATE: 3.0ms/V typical.

COMMON MODE VOLTAGE: 200VDC.

COMMON MODE ISOLATION: Typically $10^9\Omega$ in parallel with 150nF.

OVERRANGE: 105% of measurement range.

MEMORY BUFFER: 6000 readings (two 3000 point buffers). Includes selected measured value(s) and time stamp.

PROGRAMMABILITY: IEEE-488 (SCPI-1995.0), RS-232, five user-definable power-up states plus factory default and *RST.

DIGITAL INTERFACE:

Enable: Active low input.

Handler Interface: Start of test, end of test, 3 category bits. +5V @ 300mA supply.

Digital I/O: 1 trigger input, 4 TTL/Relay Drive outputs (33V @ 500mA, diode clamped).

POWER SUPPLY: 100V/120V/220V/240V ±10%

LINE FREQUENCY: 50, 60Hz.

POWER DISSIPATION: 60VA.

WARRANTY: 1 year.

EMC: Complies with European Union Directive 89/336/EEC.

VIBRATION: MIL-T-28800F Random Class 3.

SAFETY: Complies with European Directive 73/23/EEC.

WARM-UP: 1 hour to rated accuracy.

DIMENSIONS: 89mm high × 213mm wide × 370mm deep (3½ in × 8⅜ in × 14⁹⁄₁₆ in).

Bench configuration (with handle and feet): 104mm high × 238mm wide × 370mm deep (4⅛ in × 9⅜ in × 14⁹⁄₁₆ in).

WEIGHT: 23.1kg (10.5 lbs).

ENVIRONMENT:

Operating: 0°–50°C, 70% R.H. up to 35°C non-condensing. Derate 3% R.H./°C, 35°–50°C.

Storage: –25° to 65°C, non-condensing.

Specifications are subject to change without notice.

HW 4/22/02
Rev. A

LTR	REVISIONS	APP.	DATE
A	27166 Released	HW	4/24/02

DRN. HW DATE 4/24/02
CKD. DATE
APP. SK DATE 4/24/02

KEITHLEY Keithley Instruments, Inc.
Cleveland, Ohio 44139

PART NUMBER
SPECIFICATIONS
SPEC-250X

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