2001
2002

7½-Digit High Performance Multimeter
8½-Digit High Performance Multimeter

- **True 7½- (Model 2001) or 8½-digit (Model 2002) resolution**
- **Exceptional measurement integrity with high speed**
- **Broad range of built-in measurement functions**
- **Built-in 10 channel scanner option**
- **IEEE-488.2 and SCPI compatible**
- **Model 2002 has HP 3458A emulation mode**

DMM users whose applications demand exceptional resolution, accuracy, and sensitivity combined with high throughput now have two attractive alternatives to high priced, high-end DMMs. Keithley's 7½-digit Model 2001 and 8½-digit Model 2002 High Performance Digital Multimeters not only deliver performance specifications usually associated only with instruments that cost thousands more, but they also offer a broad range of functions not typically available from DMMs.

True 7½- (or 8½-) Digit Resolution

While other DMMs may claim 7½- or 8½-digit resolution, those instruments must average multiple readings to extend their resolution. The resolution specifications of the 2001 and 2002 are based on a 28-bit A/D converter that provides the resolution needed to discern smaller changes. This higher resolution also provides greater dynamic range, making it possible to measure from 1μV to 20V on a single range, thus avoiding range-shift errors and delays.

High Throughput, High Accuracy DCV and Resistance Measurements

In applications where high throughput is critical, both the Model 2001 and 2002 provide more than 2000 readings per second at 4½-digit resolution. At 7½ digits, the Model 2002 maintains full rated accuracy at reading rates up to 44/second on DCV and ohms.

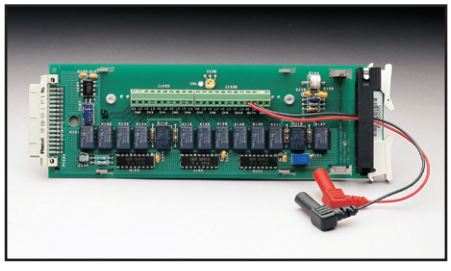
The Model 2002 uses a unique single-phase method for 4-wire ohms measurements. This makes it twice as fast for a given power line cycle rate. This also eliminates errors due to changing lead resistances that can result from fast test handlers. A built-in "open-lead" detection circuit also eliminates many production test problems.

High Accuracy ACV Measurements

A patented circuit design makes the 2001 and 2002's AC measurements several times more accurate than competitive DMMs, thus maintaining very good accuracy (better than 0.1%) down to 1Hz. The wide bandwidth of these DMMs allows for accurate measurements of high frequency AC signals without the need for a special AC meter. Both the 2001 and 2002 feature TRMS AC, Average AC, Peak AC, AC+DC, and Crest Factor measurement capability for a wide variety of applications.

Built-In Scanner (Multiplexer) Options

With the addition of a plug-in scanner card, it becomes a complete scan and measure system for applications involving up to ten measurement points. The additional resolution and measurement ranges provided by the 2002 make it an excellent choice for production test, design verification, and metrology applications where high accuracy is critical.



ACCESSORIES AVAILABLE

TEST LEADS AND PROBES	
5805	Kelvin Probes, 0.9m (3 ft)
8606	High Performance Modular Probe Kit
CABLES/ADAPTERS	
7007-1	Shielded GPIB Cable, 1m (3.3 ft)
7007-2	Shielded GPIB Cable, 2m (6.6 ft)
7009-5	RS-232 Cable
RACK MOUNT KITS	
4288-1	Single Fixed Rack Mount Kit
4288-4	Side by Side Rack Mount Kit
GPIB INTERFACES	
KPCI-488LP	IEEE-488 Interface/Controller for the PCI Bus
KPXI-488	IEEE-488 Interface Board for the PXI Bus
KUSB-488A	IEEE-488 USB-to-GPIB Interface Adapter

1.888.KEITHLEY (U.S. only)
www.keithley.com

KEITHLEY

2001
2002

7½-Digit High Performance Multimeter
8½-Digit High Performance Multimeter

Ordering Information

2001 High Performance 7½-Digit DMM with 8K Memory

2002 High Performance 8½-Digit DMM with 8K Memory

2000-SCAN
10-Channel Scanner Card

2001-SCAN
10-Channel Scanner Card with two high-speed channels

2001-TCSCAN
9-Channel Thermocouple Scanner Card

2001/MEM1
High Performance 7½-Digit DMM with 32K Memory

2001/MEM2
High Performance 7½-Digit DMM with 128K Memory

2002/MEM1
High Performance 8½-Digit DMM with 32K Memory

2002/MEM2
High Performance 8½-Digit DMM with 128K Memory

Accessories Supplied

Model 8605 High Performance Modular Test Leads, user's manual, option slot cover, and full calibration data.

GENERAL

POWER
- **Voltage:** 90–134V and 180–264V, universal self-selecting.
- **Frequency:** 50Hz, 60Hz, or 400Hz self-identifying.
- **Consumption:** <55 VA.

ENVIRONMENT
- **Operating Temperature:** 0° to 50°C.
- **Storage Temperature:** –40° to +70°C.
- **Humidity:** 80% R.H., 0° to 35°C.
- **Altitude:** 4,500m (15,000 ft) operating; 12,000m (40,000 ft.) non-operating.

PHYSICAL
- **Case Dimensions:** 90mm high × 214mm wide × 369mm deep (3½ in × 8½ in × 14½ in).
- **Unit Weight:** 4.2kg (9.2 lbs).

STANDARDS
- **EMI/RFI:** Conforms to VDE 0871B (per Vfg 1046/1984), IEC 801-2, FCC part 15 Class B, CISPR-22 (EN55022).
- **Safety:** Conforms to IEC348, CAN/CSC22.2 No. 231, MIL-T-28800E1.

2001 Condensed Specifications

DC VOLTS

Range	Reso-lution	Input Resistance	Accuracy ±(ppm of reading + ppm of range) 90 Days
200 mV	10 nV	>10 GΩ	25 + 6
2 V	100 nV	>10 GΩ	18 + 2
20 V	1 μV	>10 GΩ	18 + 4
200 V	10 μV	10 MΩ ±1%	27 + 3
1000 V	100 μV	10 MΩ ±1%	31 + 6

RESISTANCE

Range	Reso-lution	Current Source	Accuracy ±(ppm of reading + ppm of range) 90 Days
20 Ω	1 μΩ	9.2 mA	52 + 7
200 Ω	10 μΩ	0.98 mA	36 + 7
2 kΩ	100 μΩ	0.98 mA	33 + 4
20 kΩ	1 mΩ	89 μA	32 + 4
200 kΩ	10 mΩ	7 μA	72 + 4.5
2 MΩ	100 mΩ	770 nA	110 + 4.5
20 MΩ	1 Ω	70 nA	560 + 4.5
200 MΩ	10 Ω	4.4 nA	10000 + 100
1 GΩ	100 Ω	4.4 nA	20000 + 100

DC AMPS

Range	Reso-lution	Maximum Burden Voltage	Accuracy ±(ppm of reading + ppm of range) 90 Days
200 μA	10 pA	0.25 V	300 + 25
2 mA	100 pA	0.31 V	300 + 20
20 mA	1 nA	0.4 V	300 + 20
200 mA	10 nA	0.5 V	300 + 20
2 A	100 nA	1.5 V	600 + 20

2002 Condensed Specifications

DC VOLTS

Range	Reso-lution	Input Resistance	Accuracy ±(ppm of reading + ppm of range) 90 Days
200 mV	1 nV	>100 GΩ	15 + 8
2 V	10 nV	>100 GΩ	6 + 0.8
20 V	100 nV	>100 GΩ	6 + 0.15
200 V	1 μV	10 MΩ ±1%	14 + 2
1000 V	10 μV	10 MΩ ±1%	14 + 0.4

RESISTANCE

Range	Reso-lution	Current Source	Accuracy ±(ppm of reading + ppm of range) 90 Days
20 Ω	100 nΩ	7.2 mA	15 + 6
200 Ω	1 μΩ	960 μA	15 + 4
2 kΩ	10 μΩ	960 μA	7 + 0.4
20 kΩ	100 μΩ	96 μA	7 + 0.4
200 kΩ	1 mΩ	9.6 μA	29 + 0.8
2 MΩ	10 mΩ	1.9 μA	53 + 0.5
20 MΩ	100 mΩ	1.4 μA	175 + 0.6
200 MΩ	1 Ω	1.4 μA	500 + 3
1 GΩ	10 Ω	1.4 μA	2000 + 15

DC AMPS

Range	Reso-lution	Maximum Burden Voltage	Accuracy ±(ppm of reading + ppm of range) 90 Days
200 μA	10 pA	0.25 V	275 + 25
2 mA	100 pA	0.3 V	275 + 20
20 mA	1 nA	0.35 V	275 + 20
200 mA	10 nA	0.35 V	300 + 20
2 A	100 nA	1.1 V	600 + 20

FREQUENCY COUNTER

RANGE: 1Hz–15MHz.

ACCURACY: ±(0.03% of reading).

DC IN-CIRCUIT CURRENT

RANGE: 100μA to 12A.

ACCURACY: ±(5% + 2 counts) over 2 years.

TRACE RESISTANCE: 1mΩ to 10Ω typical.

TEMPERATURE

Built-in linearization for J, K, N, T, E, R, S, B thermocouple types to ITS-90 and 100Ω platinum RTDs.

For complete specifications, refer to the 2001 or 2002 Technical Data Book.

For more information, request the Model 2001 and 2002 Technical Specifications books.

SERVICES AVAILABLE

2000-SCAN-3Y-EW	1-year factory warranty extended to 3 years from date of shipment
2001/MEM1-3Y-EW	1-year factory warranty extended to 3 years from date of shipment
2001/MEM2-3Y-EW	1-year factory warranty extended to 3 years from date of shipment
2001-SCAN-3Y-EW	1-year factory warranty extended to 3 years from date of shipment
2001-TCSCAN-3Y-EW	1-year factory warranty extended to 3 years from date of shipment
2001-3Y-EW	1-year factory warranty extended to 3 years from date of shipment
2002/MEM1-3Y-EW	1-year factory warranty extended to 3 years from date of shipment
2002/MEM2-3Y-EW	1-year factory warranty extended to 3 years from date of shipment
2002-3Y-EW	1-year factory warranty extended to 3 years from date of shipment
C/2000-3Y-ISO	3 (ISO-17025 accredited) calibrations within 3 years of purchase for Model 2000-SCAN*
C/2001-3Y-ISO	3 (ISO-17025 accredited) calibrations within 3 years of purchase for Models 2001, 2001/MEM1, 2001/MEM2, 2001-SCAN, 2001-TCSCAN*
C/2002-3Y-ISO	3 (ISO-17025 accredited) calibrations within 3 years of purchase for Models 2002, 2002/MEM1, 2002/MEM2*

*Not available in all countries

1.888.KEITHLEY (U.S. only)

www.keithley.com

KEITHLEY