

2000

# 6½-Digit DMM



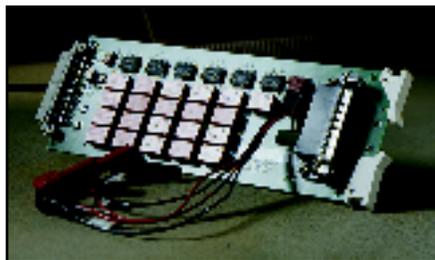
- 13 built-in measurement functions
- 2000 readings/second at 4½ digits
- Optional scanner cards for multipoint measurements
- IEEE-488 and RS-232 interfaces
- Fluke 8840/42 command set

## Ordering Information

- 2000 6½-Digit DMM
- 2000/2000-SCAN 6½-Digit DMM/Scanner Combination
- 2000-20 6½-Digit Multimeter with factory-installed 20-channel scanner card

This product is available with an Extended Warranty.

Accessories Supplied  
Instruction Manual and Model 1751 Safety Test Leads



## Optional Multiplexer Cards

Creating a self-contained multipoint measurement solution is as simple as plugging a scanner card into the option slot on the 2000's back panel. This approach eliminates the complexities of triggering, timing, and processing issues and helps reduce test time significantly. For applications involving more than 20 measurement points, the 2000 is compatible with Keithley's 7000 Series switch matrices and cards.

### Model 2000-SCAN Scanner Card

- Ten analog input channels (2-pole)
- Configurable as 4-pole, 5-channel

### Model 2001-SCAN Scanner Card

- Ten analog input channels
- Two channels of 2-pole high-speed solid-state switching

### Model 2001-TCSCAN Thermocouple Scanner Card

- Nine analog input channels
- Built-in temperature reference for thermocouple cold-junction compensation

The Model 2000 6½-digit Multimeter is part of Keithley's family of high performance DMMs. Based on the same high speed, low noise A/D converter technology as the Model 2001 and 2002, the 2000 is a fast, accurate, and highly stable instrument that's as easy to operate as it is to afford. It combines broad measurement ranges with superior accuracy specifications — DC voltage from 100nV to 1kV (with 0.002% 90-day basic accuracy) and DC resistance from 100μΩ to 100MΩ (with 0.008% 90-day basic accuracy). Optional switch cards enable multiplexing up to 20 different input signals for multipoint measurement applications.

## High Throughput

The 2000 offers exceptional measurement speed at any resolution. At 6½ digits, it delivers 50 triggered rdgs/s over the IEEE-488 bus. At 4½ digits, it can read up to 2000 rdgs/s into its internal 1024 reading buffer, making it an excellent choice for applications where throughput is critical.

For benchtop or stand-alone applications, the 2000 has a front panel design that's simple to understand and easy to use. The 2000 has 13 built-in measurement functions, including DCV, ACV, DCI, ACI, 2WΩ, 4WΩ, temperature, frequency, period, dB, dBm, continuity measurement, and diode testing. A built-in RS-232 interface connects to a notebook or full-sized PC's serial port to take, store, process, and display measurements automatically.

TestPoint Instrument Driver Libraries and run-time programs are included with the 2000 to simplify IEEE-488.2 and RS-232 program generation. A variety of ready-to-run applications programs are also included. A LabVIEW and LabWindows/CVI library for the 2000 is available.

## ACCESSORIES AVAILABLE

2000-SCAN	10-Channel, General-Purpose Scanner Card
2001-TCSCAN	9-Channel, Thermocouple Scanner Card with built-in cold junction

### CABLES/ADAPTERS

7007-1	Shielded IEEE-488 Cable, 1m (3.3 ft)
7007-2	Shielded IEEE-488 Cable, 2m (6.6 ft)
7009-5	RS-232 Cable

### RACK MOUNT KITS

4288-1	Single Fixed Rack Mount Kit
4288-2	Dual Fixed Rack Mount Kit

### OTHER

KPCI-488	IEEE-488 Interface/Controller for the PCI Bus
KPC-488.2AT	IEEE-488 Interface Card for the ISA Bus

General-purpose instrument that's as easy to operate as it is to afford

DIGITAL MULTIMETERS

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2000

# 6½-Digit Multimeter

Model 2000 Specifications

DIGITAL MULTIMETERS

## DC VOLTAGE

RANGE	RESOLUTION	ACCURACY 23°C ± 5°C ±(ppm of rdg. + ppm of range)		INPUT RESISTANCE
		90 DAY	1 YEAR	
100.0000 mV	0.1 μV	40 + 35	50 + 35	> 10 GΩ
1.000000 V	1.0 μV	25 + 7	30 + 7	> 10 GΩ
10.00000 V	10 μV	20 + 5	30 + 5	> 10 GΩ
100.0000 V	100 μV	30 + 6	45 + 6	10 MΩ ±1%
1000.000 V	1 mV	35 + 6	45 + 6	10 MΩ ±1%

## RESISTANCE

RANGE	RESOLUTION	ACCURACY 23°C ± 5°C ±(ppm of rdg. + ppm of range)		TEST CURRENT
		90 DAY	1 YEAR	
100.0000 Ω	100 μΩ	80 + 40	100 + 40	1 mA
1.000000 kΩ	1 mΩ	80 + 10	100 + 10	1 mA
10.00000 kΩ	10 mΩ	80 + 10	100 + 10	100 μA
100.0000 kΩ	100 mΩ	80 + 10	100 + 10	10 μA
1.000000 MΩ	1 Ω	80 + 10	100 + 10	10 μA
10.00000 MΩ	10 Ω	200 + 10	400 + 10	700 nA
100.0000 MΩ	100 Ω	1500 + 30	1500 + 30	700 nA

## DC CURRENT

RANGE	RESOLUTION	ACCURACY 23°C ± 5°C ±(ppm of rdg. + ppm of range)		BURDEN VOLTAGE
		90 DAY	1 YEAR	
10.00000 mA	10 nA	300 + 40	500 + 40	< 0.15 V
100.0000 mA	100 nA	300 + 400	500 + 400	< 0.03 V
1.000000 A	1 μA	500 + 40	800 + 40	< 0.3 V
3.00000 A	10 μA	1200 + 15	1200 + 15	< 1 V

## CONTINUITY 2W

RANGE	RESOLUTION	ACCURACY 23°C ± 5°C ±(ppm of rdg. + ppm of range)		TEST CURRENT
		90 DAY	1 YEAR	
1 kΩ	100 mΩ	100 + 100	120 + 100	1 mA

## DIODE TEST

RANGE	RESOLUTION	ACCURACY 23°C ± 5°C ±(ppm of rdg. + ppm of range)		TEST CURRENT
		90 DAY	1 YEAR	
3.00000 V	10 μV	30 + 7	40 + 7	1 mA
10.00000 V	10 μV	30 + 7	40 + 7	100 μA
10.00000 V	10 μV	30 + 7	40 + 7	10 μA

## DC OPERATING CHARACTERISTICS

DIGITS	READINGS/s	PLCs	RMS NOISE 10V RANGE	NMRR	CMRR
6½	5	10	< 1.5 μV	60 dB	140 dB
6½	50	1	< 4 μV	60 dB	140 dB
5½	500	0.1	< 22 μV	—	80 dB
4½	2000	0.01	< 150 μV	—	80 dB

## DC SYSTEM SPEEDS<sup>2, 6</sup>

RANGE CHANGE<sup>3</sup>: 50 / s.  
 FUNCTION CHANGE<sup>3</sup>: 45 / s.  
 AUTORANGE TIME<sup>3, 10</sup>: < 30 ms.  
 ASCII READINGS TO RS-232 (19.2K BAUD): 55 / s.  
 MAX. INTERNAL TRIGGER RATE: 2000 / s.  
 MAX. EXTERNAL TRIGGER RATE: 400 / s.

## TRUE RMS AC VOLTAGE AND CURRENT CHARACTERISTICS

RANGE	RESOLUTION	FREQUENCY RANGE	ACCURACY (1 Year), 23°C ± 5°C
			±(% of reading + % of range)
100 mV to 750 V	0.1 μV to 1 mV	3 Hz–10 Hz	0.35 + 0.03
		10 Hz–20 kHz	0.06 + 0.03
		20 kHz–50 kHz	0.12 + 0.05
		50 kHz–100 kHz	0.60 + 0.08
		100 kHz–300 kHz	4 + 0.5

## AC OPERATING CHARACTERISTICS

FUNCTION	DIGITS	READINGS/s	RATE	BANDWIDTH
ACV (all ranges), and	6½	2s/reading	SLOW	3 Hz–300 kHz
ACI (all ranges)	6½	1.4	MED	30 Hz–300 kHz
	6½	4.8	MED	30 Hz–300 kHz
	6½	2.2	FAST	300 Hz–300 kHz
	6½	35	FAST	300 Hz–300 kHz

## FREQUENCY AND PERIOD CHARACTERISTICS

ACV RANGE	FREQUENCY RANGE	PERIOD RANGE	GATE TIME	RESOLUTION ±(ppm of reading)	ACCURACY 90 DAY/1 YEAR ±(% of reading)
100 mV	3 Hz	333 ms	1 s (SLOW)	0.333	0.01
to 750 V	to 500 kHz	to 2 μs			

## TEMPERATURE CHARACTERISTICS

TYPE	RANGE	RESOLUTION	THERMOCOUPLE		
			90 DAY/1 YEAR (23°C ± 5°C)	ACCURACY Relative to Reference Junction	
			USING 2001-TCSCAN <sup>5</sup>		
J	–200 to +	760°C	0.001°C	±0.5°C	±0.65°C
K	–200 to +	1372°C	0.001°C	±0.5°C	±0.70°C
T	–200 to +	400°C	0.001°C	±0.5°C	±0.68°C

## GENERAL SPECIFICATIONS

**POWER SUPPLY:** 100V / 120V / 220V / 240V ±10%.  
**LINE FREQUENCY:** 45Hz to 66Hz, automatically sensed at power-up.  
**POWER CONSUMPTION:** 22VA.  
**OPERATING ENVIRONMENT:** Specified for 0°C to 50°C. Specified to 80% R.H. at 35°C.  
**STORAGE ENVIRONMENT:** –40°C to 70°C.  
**WARRANTY:** 3 years.  
**SAFETY:** Conforms with European Union Directive 73/23/EEC, EN 610110-1, UL 3111-1.  
**EMC:** Conforms with European Union Directive 89/336/EEC, EN 55011, EN 50082-1, EN 61000-3-2, EN 61000-3-3, FCC part 15 class B.  
**WARMUP:** 1 hour to rated accuracy.  
**DIMENSIONS: Rack Mounting:** 89mm high × 213mm wide × 370mm deep (3½ in × 8¾ in × 14⅞ in).  
**Bench Configuration (with handle and feet):** 104mm high × 238mm wide × 370mm deep (4⅞ in × 9⅝ in × 14⅞ in).  
**NET WEIGHT:** 2.9kg (6.3 lbs).  
**SHIPPING WEIGHT:** 5kg (11 lbs).  
**VOLT HERTZ PRODUCT:** ≤ 8 × 10<sup>7</sup> V·Hz.  
**ACCESSORIES SUPPLIED:** Model 1751 Safety Test Leads, User Manual.

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