

企业简介

COMPANY INTRODUCTION

公司简介



深圳市世家仪器有限公司是中国知名的仪器仪表产品代理商、系统集成商和综合服务商之一。公司在华北、东北和华东地区建立了广泛的销售和服务网络。

作为行业领先者，世家仪器代理销售众多知名品牌，包括 KEYSIGHT 安捷伦、TEKTRONIX 泰克、FLUKE 福禄克、HIOKI 吉时利等。专注于高频仪器仪表，如信号发生器、LCR 测试仪、示波器、电源、频率计、功率计、音频分析仪等。

我们的客户遍布高等院校、科研院所、电子制造业等各个行业。根据客户的需求，提供行业应用的完整测试解决方案，并为国内客户提供国际通行的高端电子测试仪器租赁解决方案。同时作为综合服务商，世家仪器集销售、维修和租赁于一体。我们秉承“诚信第一，用户至上”的原则，致力于以科技铸就品牌、以品质开拓市场。竭诚为海内外客户提供卓越的服务。我们承诺为客户提供更经济丰富的产品选择和更有效全面的专业服务。无论您的需求是什么，世家仪器将成为您可信赖的合作伙伴，为您提供优质的仪器仪表产品和解决方案。

企业文化

价值观

用户第一 / 品质保障
诚信正直 / 乐观坚韧

愿景

我们追求卓越的品质和完美的客户体验，不断推动行业发展，为客户的成功和成长提供支持。通过持续的合作和协作，与客户共同发展，成为用户信赖的长期伙伴。

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2010

Low Noise 7½-Digit Autoranging Multimeter



- 7½-digit resolution
- 100nV rms noise floor
- 7ppm DCV repeatability
- Built-in 10-channel scanner mainframe
- Dry circuit and low power measurement mode
- 15 measurement functions including support for RTD and thermocouple temperature measurements
- Built-in ratio measurement function
- GPIB and RS-232 interfaces

Ordering Information

2010 Autoranging DMM

Accessories Supplied

Model 1751 Safety Test Leads, User Manual, Service Manual

SERVICES AVAILABLE

2000-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
2010-3Y-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 Model 2001-TCSCAN*
C/2010-3Y-ISO	3 (ISO-17025 accredited) calibrations within 3 years of purchase for Model 2010*

*Not available in all countries

The 7½-digit Model 2010 Low Noise Multimeter combines high resolution with the high speed and accuracy needed for production applications such as testing precision sensors, transducers, A/D and D/A converters, regulators, references, connectors, switches, and relays. It is based on the same high speed, low noise A/D converter technology as the Models 2000, 2001, and 2002.

High Measurement Flexibility

The 2010 has 15 built-in measurement functions, including DCV, ACV, DCI, ACI, 2WΩ, 4WΩ, dry circuit resistance, temperature (with either thermocouples or RTDs), frequency, period, ratio, continuity measurement, and diode testing. This multi-functional design minimizes added equipment costs.

Creating a self-contained multipoint measurement solution is as simple as plugging a 2000-SCAN or 2001-TCSCAN scanner card into the option slot in the 2010's back panel. This "plug-in" approach eliminates the need for a separate scanner and significantly reduces programming and setup time in applications involving a limited number of test points. For larger applications, the 2010 is compatible with Keithley's Series 7000 switch matrices and cards.

Unique Resistance Measurement Functions

Characterizing the resistance, linearity, or isolation of contacts, connectors, switches, or relays completely and efficiently demands an uncommon combination of ohms measurement capabilities. The 2010 offers:

- **Low-power ohms measurement mode.** Low-level resistance measurements can be made with source current as low as 100μA, an order of magnitude lower than is possible with other DMMs, so device self-heating is minimized. Among other benefits, this low-power measurement capability makes the 2010 suitable for end-of-life contact testing per ASTM B539-90.
- **Dry circuit test function.** When measuring contact and connector resistances, it is important to control the test voltage carefully in order to avoid puncturing any oxides or films that may have formed. A built-in clamp limits the open circuit test voltage to 20mV to ensure dry circuit conditions.
- **Offset compensated ohms function.** This function eliminates thermal effects that can create errors in low-level resistance measurements in system environments.
- **Extended ohms measurement capability.** The 2010 provides a 10Ω range for more precise measurements of low resistances.

Optional Multiplexer Cards

Creating a self-contained multipoint measurement solution is as simple as plugging a scanner card into the option slot on the 2010'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 10 measurement points, the 2010 is compatible with Keithley's Series 7000 switch matrices and cards.

Model 2000-SCAN Scanner Card

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

ACCESSORIES AVAILABLE

TEST LEADS

5804/5 4-Wire/Kelvin Test Lead Sets

SWITCH/SCANNER CARDS

2000-SCAN 10-channel Scanner

2001-TCSCAN 9-channel Thermocouple Scanner

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

GPIB INTERFACES

KPCI-488LPA IEEE-488 Interface/Controller for the PCI Bus

KUSB-488B IEEE-488 USB-to-GPIB Interface Adapter

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DMM optimized for resistance measurement applications

DIGITAL MULTIMETERS & SYSTEMS

2010

Low Noise 7½-Digit Autoranging Multimeter

Model 2010 specifications

DIGITAL MULTIMETERS & SYSTEMS

DC VOLTAGE

Range	Resolution	Accuracy 23°C ± 5°C ±(ppm of rdg. + ppm of range)		Input Resistance
		90 Day	1 Year	
100.00000 mV	10 nV	25 + 9	37 + 9	> 10 GΩ
1.0000000 V	100 nV	18 + 2	25 + 2	> 10 GΩ
10.000000 V	1 μV	18 + 4	24 + 4	> 10 GΩ
100.00000 V	10 μV	25 + 5	35 + 5	10 MΩ ±1%
1000.0000 V	100 μV	31 + 6	41 + 6	10 MΩ ±1%

RESISTANCE

Range	Resolution	Accuracy 23°C ± 5°C ±(ppm of rdg. + ppm of range)		Test Current
		90 Day	1 Year	
10.000000 Ω	1 μΩ	40 + 9	60 + 9	10 mA
100.00000 Ω	10 μΩ	36 + 9	52 + 9	1 mA
1.0000000 kΩ	100 μΩ	33 + 2	50 + 2	1 mA
10.000000 kΩ	1 mΩ	32 + 2	50 + 2	100 μA
100.00000 kΩ	10 mΩ	40 + 4	70 + 4	10 μA
1.0000000 MΩ	100 mΩ	50 + 4	70 + 4	10 μA
10.000000 MΩ	1 Ω	200 + 4	400 + 4	640 nA/10 MΩ
100.00000 MΩ	10 Ω	1500 + 4	1500 + 4	640 nA/10 MΩ

DC CURRENT

Range	Resolution	Accuracy 23°C ± 5°C ±(ppm of rdg. + ppm of range)		Burden Voltage
		90 Day	1 Year	
10.000000 mA	1 nA	300 + 80	500 + 80	< 0.15 V
100.00000 mA	10 nA	300 + 800	500 + 800	< 0.18 V
1.0000000 A	100 nA	500 + 80	800 + 80	< 0.35 V
3.000000 A	1 μA	1200 + 40	1200 + 40	< 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	
10.000000 V	1 μV	30 + 7	40 + 7	1 mA
4.400000 V	1 μV	30 + 7	40 + 7	100 μA
10.000000 V	1 μV	30 + 7	40 + 7	10 μA

DC OPERATING CHARACTERISTICS

Function	Digits	Readings/s	PLCs
	7½	4 (3)	5
	6½	30 (27)	1
DCV (all ranges), DCI (all ranges), and Ohms (<10M range)	6½	50 (44)	1
	5½	260 (220)	0.1
	5½	490 (440)	0.1
	5½	1000 (1000)	0.04
	4½	2000 (1800)	0.01

DC NOISE PERFORMANCE

Rate	Digits	RMS Noise 100mV Range (2 min.)	RMS Noise 10V Range (2 min.)	NMRR	CMRR
5 PLC	7½	110 nV	1.2 μV	60 dB	140 dB
1 PLC	6½	125 nV	1.4 μV	60 dB	140 dB
0.1 PLC	5½	1.9 μV	11.5 μV	—	80 dB
0.01 PLC	4½	2.9 μV	139 μV	—	80 dB

TRUE RMS AC VOLTAGE AND CURRENT CHARACTERISTICS

Voltage Range	Resolution	Frequency Range	Accuracy (1 Year) 23°C ± 5°C ±(% of reading + % of range)	
			3 Hz–10 Hz	0.35 + 0.03
100 mV to 750 V	0.1 μV to 1 mV	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
	6½	0.5 (0.4)	SLOW	3 Hz–300 kHz
ACV (all ranges), and ACI (all ranges)	6½	1.4 (1.5)	MED	30 Hz–300 kHz
	6½	4.0 (4.3)	MED	30 Hz–300 kHz
	6½	2.2 (2.3)	FAST	300 Hz–300 kHz
	6½	35 (30)	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 to 750 V	3 Hz to 500 kHz	333 ms to 2 μs	1 s	0.3	0.01

TEMPERATURE CHARACTERISTICS

Thermocouple

Type	Range	Resolution	Accuracy ¹ 90 Day/1 Year (23°C ± 5°C) Relative to Reference Junction		USING 2001-TCSCAN ²
			Reference Junction	2001-TCSCAN ²	
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	
N	-200 to + 1300°C	0.001°C	±0.5°C	±0.70°C	
T	-200 to + 400°C	0.001°C	±0.5°C	±0.68°C	

4-WIRE RTD

Range	Resolution	Accuracy ³ 90 Day/1 Year (23°C ± 5°C)	Accuracy ³ 2 Years (23°C ± 5°C)
-100° to +100°C	0.001°C	±0.08°C	±0.12°C
-200° to +630°C	0.001°C	±0.14°C	±0.18°C

TEMPERATURE NOTES

- For temperatures <-100°C, add ±0.1°C and >900°C add ±0.3°C.
- Specifications apply to channels 2–6. Add 0.06°C/channel from channel 6.
- Excluding probe errors.

GENERAL

POWER SUPPLY: 100V / 120V / 220V / 240V.

LINE FREQUENCY: 50Hz to 60Hz and 440Hz, automatically sensed at power-up.

POWER CONSUMPTION: 22VA.

VOLT HERTZ PRODUCT: ≤8 × 10⁶ V·Hz.

OPERATING ENVIRONMENT: Specified for 0° to 50°C. Specified to 80% R.H. at 35°C.

STORAGE ENVIRONMENT: -40° to 70°C.

ALTITUDE: Up to 2000 meters.

SAFETY: Conforms to European Union Directive 73/23/EEC EN 61010-1, Cat II.

EMC: Complies with European Union Directive 89/336/EEC, EN 61326-1.

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

WARMUP: 2 hours to rated accuracy.

DIMENSIONS:

Rack Mounting: 89mm high × 213mm wide × 370mm deep (3½ in × 8½ in × 14½ in).

Bench Configuration (with handle and feet): 104mm high × 238mm wide × 370mm deep (4½ in × 9½ in × 14½ in).

SHIPPING WEIGHT: 5kg (11 lbs).

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