2010

Low Noise 7½-Digit Autoranging Multimeter

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.

- **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

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

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

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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KEITHLEY

A GREATER MEASURE OF CONFIDENCE

DMM optimized for resistance measurement applications

DIGITAL MULTIMETERS & SYSTEMS

2010

Low Noise 7½-Digit Autoranging Multimeter

DC VOLTAGE

Range	Resolution	Accuracy 23°C ± 5°C ±(ppm of rdg. + ppm of range) 90 Day	1 Year	Input Resistance
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) 90 Day	1 Year	Test Current
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) 90 Day	1 Year	Burden Voltage
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) 90 Day	1 Year	Test Current
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) 90 Day	1 Year	Test Current
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
DCV (all ranges), DCI (all ranges), and Ohms (<10M range)	7½	4 (3)	5
	6½	30 (27)	1
	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)
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 ACI (all ranges)	6½	0.5 (0.4)	SLOW	3 Hz–300 kHz
	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]
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

1. For temperatures <–100°C, add ±0.1°C and >900°C add ±0.3°C.
2. Specifications apply to channels 2–6. Add 0.06°C/channel from channel 6.
3. 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 × 10⁷V·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 × 8⅜ in × 14⅝ in).

Bench Configuration (with handle and feet): 104mm high × 238mm wide × 370mm deep (4⅛ in × 9⅜ in × 14⅝ in).

SHIPPING WEIGHT: 5kg (11 lbs).

Precision, multi-purpose solutions for evolving test needs

Series 2000 High Performance Digital Multimeters

KEITHLEY

A GREATER MEASURE OF CONFIDENCE

- A complete set of measurement tools in one compact enclosure
- Superior measurement integrity
- Easy to find a cost-effective solution for a specific application
- Easy migration from model to model as applications evolve
- Exceptional long-term reliability

Meet our high performance family

Each Series 2000 Digital Multimeter offers a unique combination of measurement capabilities that make them ideal for high speed production testing. Their half-rack design fits easily into just about any test rack or benchtop. With maximum resolutions from 6½ to 8½ digits and a variety of built-in capabilities, there's sure to be a Series 2000 DMM that matches your application.

Go to work with the right tools

Series 2000 multimeters are essentials for anyone's basic electrical toolbox because they combine all the measurement capabilities needed for electronic device and sub-system measurements, operational circuit measurements, and electronic product development and validation for bench and in ATE applications.

Be confident of your measurement integrity

All Series 2000 DMMs are based on the same high speed, low noise 28-bit A/D converter technology for superior measurement precision, sensitivity, and traceability. The Models 2001 and 2002 incorporate five distinct processors for tighter A/D control, higher accuracy, more precise triggering, higher throughput, and support for a variety of advanced capabilities.

Get high value plus high performance

A wide range of price and performance options are available, so it's easy to find a cost-effective match for your application. Whether you need the speed and economy of the basic Model 2000, the ultra-high precision of the Model 2002, or something in between, there's a Series 2000 DMM that's right for the job. All Series 2000 models are capable of reading rates of up to 2000 readings/sec (at 4½ digits).

Migrate your applications easily from instrument to instrument

The common SCPI programming and software architecture simplifies migrating applications to more capable instruments as new test needs arise or when substituting a Keithley DMM for a meter from another manufacturer.

Handle tomorrow's test challenges with today's test solution

Series 2000 DMMs have earned a reputation for exceptional long-term performance and reliability. Each one is backed with a standard three-year warranty. Built-in measurement, signal conditioning, switching, and data communications functions give you the flexibility to repurpose your instrument readily as your test needs change over time.

FIND IT FAST

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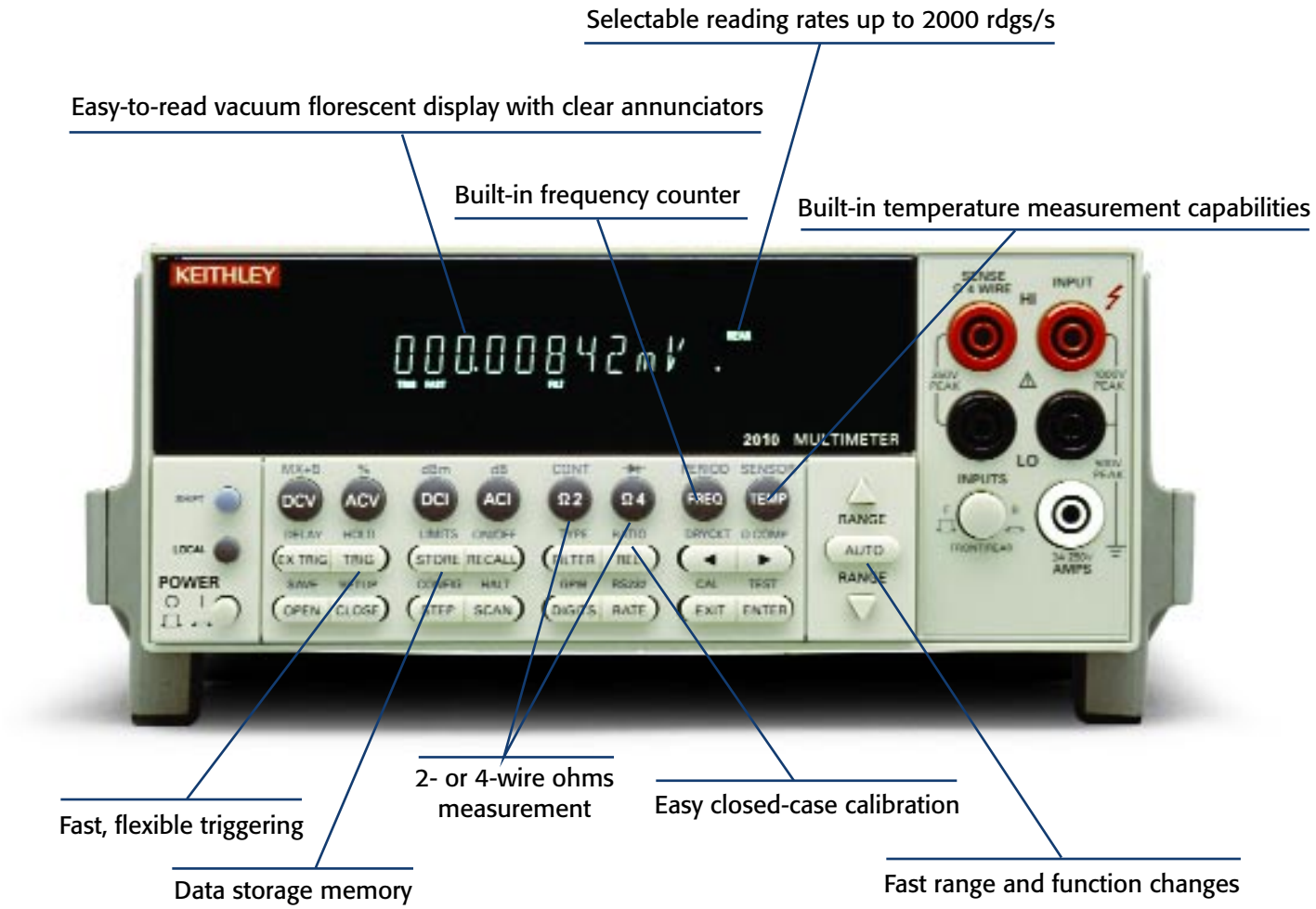
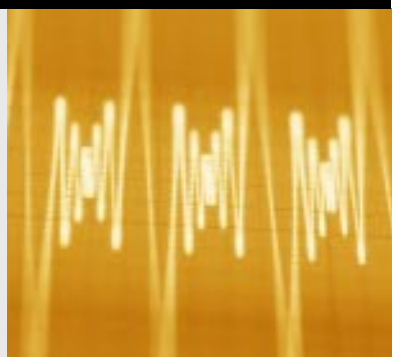
A broad range of built-in functions



Application: Low level resistance testing

The Model 2010 is made for low resistance applications like testing the reliability of electrical connectors. With a measurement range of 1$\mu\Omega$ to 120MΩ, it ensures more precise low level readings. Device self-heating is minimized when testing low ohms components, because resistance measurements can be made with source current as low as 100μA. The Model 2010's dry circuit test mode clamps the open circuit voltage at 20mV to prevent punctures in any oxides or films that may have formed on contacts and connectors, so the measurement derived reflects the "in use" resistance. An offset compensated ohms function eliminates error-causing thermal effects from cabling and connections.



IEEE-488 bus simplifies controlling a wide range of GPIB instruments

Trigger Link for fast, precise, repeatable triggering of multiple instruments

Built-in scanner mainframe accepts optional switching cards for multi-point testing

*Visit **www.keithley.com** to download a wide range of application notes, articles, data sheets, and specifications on Series 2000 DMMs.*

Application: Power supply monitoring

The Model 2001's multiple display capability makes it easy to gather several pieces of information simultaneously from different aspects of a single signal. One of these displays is ideal for power supply monitoring because it shows the DC voltage of the supply's output, the AC noise level, and the frequency of that noise all at once, which simplifies tracking down the source of the noise and correcting it.

Individualized solutions for specific application needs

Model 2000: Get high accuracy without a high price tag

The 6½-digit Model 2000 has unique capabilities that simplify building and upgrading automated production test systems. For example, the built-in limit testing function can be used to sort or grade components or assemblies. It also offers a full resolution reading rate (50 rdg/s) that's nearly ten times faster than any other meter in its class and a maximum speed of 2000 rdgs/s. Built-in math functions let you make a variety of calculations on the acquired data without a computer controller.

Model 2010: Resolve low level signals quickly and accurately

With a noise floor of just 100nV RMS, the 7½-digit Model 2010 is designed for high accuracy millivolt- and microvolt-level measurements. It also wraps up all the functions needed for characterizing the resistance, linearity, or isolation of contacts, connectors, switches, or relays in a single instrument. With built-in capabilities like a low power ohms mode, dry circuit testing, offset-compensated ohms, and a 10Ω range, the Model 2010 DMM is ideal for developing, validating, or production testing sensors, transducers, A/D and D/A converters, regulators, references, connectors, switches and relays. It's equally appropriate for end-of-life contact testing per ASTM B539-90.

Model 2001: Advanced features you never thought a DMM could offer

The Model 2001 couples exceptional accuracy (0.0018% basic), resolution, and sensitivity with measurement and mathematical capabilities rarely found in DMMs. Its internal peak detector can catch 1μs spikes, such as power supply spikes and transients, AC line power surges, and short-duration dropouts on components, as well as up to 1MHz for repetitive signals. With the Model 2001, it's easy to measure AC peak value, average, and true rms directly to characterize the signal thoroughly.

Application: Precision resistor testing

The Model 2002's unique one-phase four-wire ohms measurement capability makes it a good solution for high speed production testing of precision resistors. Two high and two low limits can be tied to the status of any of four protected digital outputs, so the Model 2002 can sort or grade the resistors automatically after testing. For QA tests on small samples, the front panel bar graph display makes it easy to determine the tolerances of individual resistors.

Model 2002: Truly usable 8½-digit resolution

The Model 2002 offers the same advanced features and functions as the Model 2001, then adds an extra decade of resolution and broader DC voltage, temperature, and resistance ranges. The Model 2002's performance is specified for a ±5°C environment, not a ±1°C environment, and no daily re-calibration is required to stay in spec, so it's ideal for high accuracy production test applications. An "open lead" detection function helps identify problems that could lead the system to pass components that should have failed a test. Built-in digital I/O capabilities and a pass/fail testing function simplify connecting it to a variety of handlers for fast, efficient device binning and sorting.

Models 2015 and 2016: Audio analysis plus full-featured DMMs

Each of these specialized instruments combines audio band quality measurements and analysis with a full-function 6½-digit DMM for production testing of audio devices and sub-systems. The Models 2016 and 2016-P provide twice the sine wave generator output of the Models 2015 and 2015-P for applications that require test signals greater than 8Vrms. The Models 2015-P and 2016-P offer additional processing capacity for frequency spectrum analysis. All four models can measure Total Harmonic Distortion (THD) over the complete 20Hz to 20kHz audio band, as well as compute THD+Noise and Signal-to-Noise plus Distortion (SINAD). These capabilities are critical for applications such as assessing non-linear distortion in components, devices, and systems. Five industry-standard bandpass filters are provided for shaping the input signal for audio and telecommunication applications. Refer to the Selector Guide on pages 10-11 for specification information.

Refer to the Selector Guide on pages 10-11 to compare the capabilities of different models.

Application: THD analysis and frequency response

The Model 2015, 2016-P, 2016, and 2016-P can provide both time domain and frequency domain measurements in a single test protocol. Keithley can help you configure a system for testing telecommunication devices, such as mobile phones. These instruments can perform a frequency domain analysis of the Total Harmonic Distortion (THD) and the first three harmonics as a function of frequency, as well as a time domain analysis of microphone circuit output voltage as a function of frequency.

The Model 2015, 2015-P, 2016,

Building blocks for a comprehensive system solution

Plug-in scanner cards

To create test and measurement systems with up to ten measurement points quickly and economically, choose from three plug-in scanner cards designed specifically for several Series 2000 DMMs. Just slide one of these cards into the option slot on the meter's back panel and you'll combine scanning and measurement capabilities in a single instrument.

The Model 2000-SCAN 10-Channel Scanner Card is designed for use with Model 2000, 2010, 2001, and 2002 DMMs. It supports multiplexing one of ten two-pole or one of five four-pole signals into the DMM and/or any combination of two- or four-pole signals.

The Model 2001-SCAN Scanner Card is a high speed multiplexing scanner card developed for the Model 2000, 2010, 2001, and 2002 DMMs. This card transforms your meter into a high accuracy, high speed ten-channel datalogger for a variety of mixed-signal applications. Two high speed solid-state channels on the card allow calculating ratio and delta when it's installed in the Model 2001, 2002, or 2010.

When used with a Model 2000, 2001, 2002, or 2010 DMM, the **Model 2001-TCSCAN Thermocouple Scanner Card** provides up to nine channels of cold-junction compensated temperature measurements and/or voltage, resistance, and frequency measurements. When the card is installed in the Model 2001 or 2002, the DMM will linearize type J, K, E, R, S, B, and T thermocouples automatically. When used with the Model 2001, 2002, or 2010, it allows measuring temperature directly using two- or four-wire RTDs.

Extended range and sensitivity

The Model 1801 Nanovolt Pre-Amp extends the range and sensitivity of Model 2001 and 2002 DMMs by amplifying extremely low-level signals. It combines a variety of measurement functions, including DCV, ACV rms, four-wire ohms, frequency, and temperature. A nine-foot cable links the pre-amp unit to a power supply card, which installs in the DMM's back panel option slot. This remote architecture isolates the Model 1801's sensitive "chopper-type" amplification circuitry, so the unit can be located close to the test setup to keep test leads short, reducing interference.

Need greater switching capacity?

Choosing the right switching solution is often crucial to ensuring high measurement integrity and productivity in production testing. Keithley's Applications Engineers can help you determine the most appropriate configuration for your application.

If your application requires more than ten channels of switching capacity, consider Keithley's **Series 2700 Integra multimeter/data acquisition/switching systems**. The 80-channel Model 2700 and Model 2701 mainframes offer the industry's lowest per-channel installed cost in high performance data acquisition and control packages. A built-in Ethernet interface in the Model 2701 makes it the best choice for distributed applications. With five module slots, the Model 2750 simplifies configuring solutions for applications with hundreds of channels. A choice of 12 plug-in modules makes Integra systems almost infinitely adaptable.

Series 7000 switching solutions complement Series 2000 DMMs when building multi-point test systems. The 80-channel Model 7001 High Density Switch System will accept a wide variety of switching cards for signals up to 2GHz. Similarly, the Model 7002 Switch Mainframe will support up to 400 channels or crosspoints, with a unique interactive channel status display. Both mainframes are compatible with Keithley's line of more than 40 Series 7000 Switching Cards.

The two-slot **Model 7002-HD Switch Mainframe** combines the channel density of the Model 7002 with the half-rack footprint of the Model 7001. Two new high density switch cards mainframe let you create a system with up to 384 matrix crosspoints or 320 multiplexer channels.

Choose the Series 2000 DMM that matches your application

Models		2000	2010
	Digits	**6½**	**7½**
	Expansion Channels	10	10
DC Volts	Sensitivity	100 nV	10 nV
	Maximum Reading	1000 V	1000 V
	Basic Accuracy	0.002%	0.0018%
	Ratio		•
	DC Peak Spikes		
AC Volts (TRMS)	Sensitivity	100 nV	100 nV
	Maximum Reading	750 V	750 V
	Basic Accuracy	0.05%	0.05%
	Bandwidth	3 Hz-300 kHz	3 Hz-300 kHz
	dB, dBm	•	•
	Frequency, Period	•	•
	Peak/Avg/RMS		
	AC, AC+DC		
	THD, Harmonics		
	4V Sine Source		
	9V Sine Source		
Ohms (2/4 Wire)	Sensitivity	100 µΩ	1 µΩ
	Maximum Reading	120 MΩ	120 MΩ
	Basic Accuracy	0.008	0.0032%
	Continuity Test	•	•
	Diode Test	•	•
	Offset Compensation		•
	Dry Circuit		•
	Constant Current	•	•
	Open Source Detection		
DC Amps	Sensitivity	10 nA	10 nA
	Range Span	10 mA- 3A	10 mA-3 A
	Basic Accuracy	0.03%%	0.03%
	In Circuit Current		
AC Amps (TRMS)	Sensitivity	1 µA	1 µA
	Range Span	1 A-3 A	1 A- 3A
	Basic Accuracy	0.1%	0.1%
	Bandwidth	3 Hz-5 kHz	3 Hz-5 kHz
General Features	Interface	GPIB, RS-232	GPIB, RS-232
	Reading Hold	•	•
	Digital I/O		
	Reading Memory	1024 rdgs	1024 rdgs
	Maximum Speed	2000 rdgs	2000 rdgs
	Temperature Meas.	T/C	TC, RTD
	Language Emulation	8840/42, 196/199	196, 199
	Memory Options	–	–
		2000-SCAN	2000-SCAN
	Compatible Scanner Cards	2001-SCAN	2001-TCSCAN
		2001-TCSCAN	

Visit **www.keithley.com** or call your local office for more information on our other switching solutions (p. 9).

2001	2002	2015, 2015-P	2016, 2016-P
7½	**8½**	**6½**	**6½**
10	10		
10 nV	10 nV	100 nV	100 nV
1100 V	1100 V	1000 V	1000 V
0.0018%	0.0006%	0.002%	0.002%
Option	Option		
100 nV	100 nV	100 nV	100 nV
775 V (1100 V pk)	775 V (1100 V pk)	750 V	750 V
0.03%	0.02%	0.05%	0.05%
1 Hz-2 MHz	1 Hz-2 MHz	3 Hz-300 kHz	3 Hz-300 kHz
•	•	•	•
•	•	•	•
•	•		
•	•		
		•	•
		• (2015-P)	• (2016-P)
		•	•
1 µΩ	100 nΩ	100 µΩ	100 µΩ
1 GΩ	1 GΩ	120MΩ	120MΩ
0.0032%	0.0007%	0.008%	0.008%
		•	•
•	•	•	•
•	•	•	•
	•		
10 pA	10 pA	10 nA	10 nA
200 µA-2 A	200 µA-2 A	10 mA-3 A	10 mA-3 A
0.03%	0.027%	0.03%	0.03%
•	•		
100 pA	100 pA	1 µA	1 µA
200 µA-2 A	200 µA-2 A	1 A-3 A	1 A-3 A
0.1%	0.1%	0.1%	0.1%
20 Hz-100 kHz	20 Hz-100 kHz	3 Hz-5 kHz	3 Hz-5 kHz
GPIB	GPIB	GPIB, RS-232	GPIB, RS-232
		•	•
•	•	2 in/5 out (TTL)	2 in/5 out (TTL)
Opt. to 30,000	Opt. to 30,000	1024 rdgs	1024 rdgs
2000 rdgs	2000 rdgs	2000 rdgs	2000 rdgs
T/C, RTD	T/C, RTD	T/C	T/C
	HP 3458		
MEM1: 32K	MEM1: 32K	–	–
MEM2:128K	MEM2: 128		
2000-SCAN	2000-SCAN	–	–
2001-SCAN	2001-SCAN		
2001-TCSCAN	2001-TCSCAN		

Free Keithley Handbooks

New edition of ***Low Level Measurements Handbook***

Want a fast refresher on test and measurement or data acquisition techniques? Just ask for a free copy of one of Keithley's popular handbooks on low level measurements, switching, and data acquisition and control. We've just published the 6th Edition of our industry-standard ***Low Level Measurements Handbook***, completely updated with the newest instrumentation and techniques. To request your copy of any of our handbooks, call your local sales engineer or visit our website at **www.keithley.com**.

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Need somebody to talk to?

There's a Keithley applications engineer ready with advice on configuring your test and measurement system. Call us toll free at 1-888-KEITHLEY (534-8453) (US only) or call your local Keithley sales office and ask to speak with one of our low level instrumentation specialists.

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