

**KEITHLEY**



## **Integra Series Model 2750 Multimeter/Switch System**

Next generation measurement, switching and control solutions for ATE and data acquisition systems





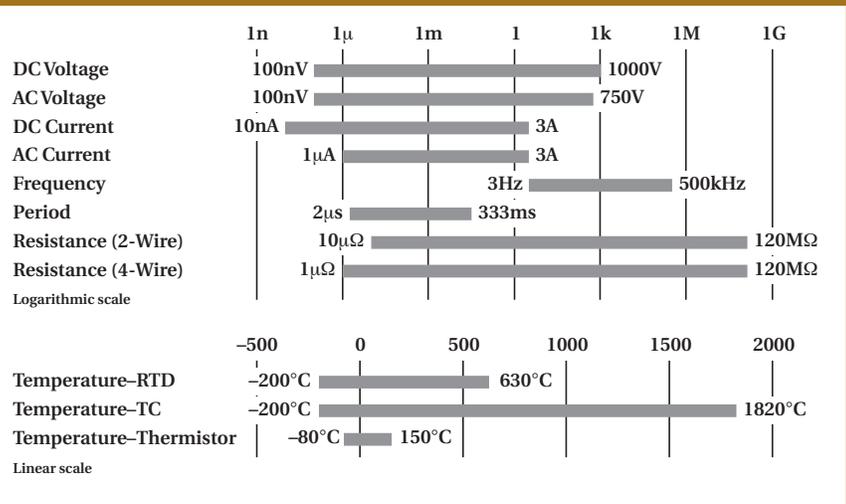
# High channel-count measurement and control solutions



HIGH-CHANNEL-COUNT TEST SOLUTIONS

The Model 2750's high throughput, wide measurement ranges, and modular architecture make it an ideal platform for applications like production testing of electronic components, subassemblies and systems, accelerated stress testing (including burn-in testing), process monitoring and control, and precision low-ohms measurements.

## MEASUREMENT RANGES





# for flexible, high-speed testing

The Model 2750 Multimeter/Switch System is an affordable alternative to traditional high-channel-count test solutions like rack-and-stack systems, dataloggers/recorders, VXI/PXI systems, and plug-in card-based data acquisition equipment. Like our popular Model 2700 Multimeter/Data Acquisition System, it builds upon the powerful Integra Series platform. The Model 2750 brings together high-speed measurement, switching, and control capabilities for optimizing test processes for a fraction of the cost of alternative solutions.

## Modular platform handles today's and tomorrow's applications

The system's flexible, five-slot mainframe combines a 6½-digit, 14-function DMM with support for up to 200 channels of two-pole switching and multi-channel analog/digital I/O control. This tight integration simplifies system design while it minimizes rack space requirements. It also allows the Model 2750 to scan and measure more than 200 channels per second, ensuring shorter test times and greater productivity than competitive approaches. Currently, the Model 2750 supports nine optional plug-in switch/control modules and additional modules are already in development. Up to five modules can be mixed or matched to provide the combination of switching and control capabilities today's ATE and data acquisition systems demand. For the flexibility needed for tomorrow's applications, the Model 2750's on-board flash memory can be reprogrammed to support new Keithley modules as they are introduced.

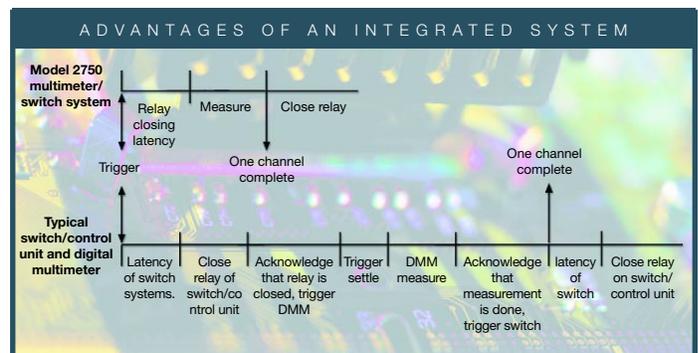
## Multi-channel low ohms measurements you can trust

Expanded resistance measurement ranges allow the Model 2750 to address applications that normally require costly and complex micro-ohmmeters, such as precision milli- or micro-ohm measurements of connectors, harnesses, squibs, sensors, semiconductors, and other low-ohms devices. Production-floor features such as open test lead indication and an offset

compensation mode help eliminate troublesome "false failures" than can result from problems with test stand wiring, connections, relays, or cabling. The built-in 20mV clamp helps protect sensitive DUTs from damage and prevents self-heating errors during testing. The Model 2750 can also handle series lead resistances of up to 80% of range and still meet specification—this important capability helps ensure measurement integrity in large, multipoint test system applications.

## Benefits of an integrated design

The Model 2750 offers a variety of advantages over existing solutions for ATE and data acquisition applications. For example, its flexible modular architecture and integrated measurement, switching, and control capabilities save rack space by reducing the number of separate instruments needed. This design also simplifies expanding the system as the number of channels grows or re-purposing it as new test requirements evolve. Its integrated signal conditioning, scaling, stimulus, filtering and I/O capabilities eliminate the need for external circuitry when designing and building data acquisition systems. This architecture also makes it unnecessary to open the computer to install plug-in boards. The Model 2750 offers accuracy and repeatability superior to plug-in data acquisition boards and VXI/PXI systems, while providing faster test times than typical DMM/switch systems. This makes it possible to combine higher test yields with higher test throughput.



# The Model 2750 provides wide measurement ranges



FAMILIAR DMM-LIKE FRONT PANEL

Initialize the system with one of three fully programmable set-up conditions.

Built-in independently programmable alarm limits per channel.

Front panel input jacks simplify manual probing, troubleshooting, and calibration.

Use  $mX+b$  or  $1/x\%$  scaling to convert sensor/transducer outputs directly into engineering units.

View slot capacity and channel closure status from front panel.

Open lead detection protects against false readings due to lead disconnections.

Open or close single or multiple channels from the front panel.

Manually step through channels or scan automatically. Each channel independently configurable.

Non-volatile memory allows time-stamped storage of 110K readings. Has built-in real-time clock.

Familiar DMM-like front panel scheme makes it easier to use on bench or rack. Select or change functions with the push of a button.

$1\Omega$  range with  $1\mu\Omega$  resolution.

Voltage clamp ohms (dry circuit) clamps open circuit voltage to 20mV.

# and a modular architecture



Built-in digital I/O lines provide for control, external triggering, and HI/LO alarm/limit outputs.

Trigger Link enables tightly synchronized triggering with other instruments in large ATE systems.

A variety of measurement and control modules make it simple to mix, match, and change input signals or control lines whenever needed. Install up to five modules at once to create a system of up to 200 channels.

Built-in noise rejection circuitry ensures stable, predictable measurements.



IDC connectors on selected modules are compatible with standard ribbon cable.

GPIB and RS-232 interfaces are standard.

Rugged D-sub bulkhead connectors on selected modules.

Built-in relay cycle counters on each module for ease of maintenance.

S I M P L E T O M I X , M A T C H , A N D C H A N G E

For detailed technical specifications on the Model 2750 Multimeter/Switch System, request a copy of the Model 2750 Technical Specification Booklet, or visit our website: [www.keithley.com](http://www.keithley.com)

# Our Growing Family of Switch/Control Modules

The Model 2750 supports nine different plug-in switch/control modules, including those originally developed for the Model 2700 two-slot system. Any combination of five modules can be installed at any time to match the test requirements. At power-up, the mainframe automatically detects which modules are installed, minimizing set-up time. To allow for timely preventive maintenance for modules and enhance system up-time, the Model 2750 mainframe automatically logs the number of relay closures on a memory chip built into each module.

## Model 7700 20-Channel Differential Multiplexer w/Automatic CJC

- 20 channels of general-purpose measurements, plus two current measurement channels.
- 300V/1A capacity for voltage channels, 3A capacity for current channels.
- Cold Junction Compensation sensors support temperature measurements with thermocouples, RTDs, and thermistors.

## Model 7701 Low Voltage 32-Channel Differential Multiplexer

- Configurable as 32 2-pole channels, 16 4-pole channels, or as dual 1 × 16 independent multiplexers.
- 150V/1A capacity.
- D-sub/IDC ribbon cable connectors are standard.

## Model 7702 40-Channel Differential Multiplexer

- 40 channels of general-purpose measurements, plus two channels of current input.
- 300V/1A capacity for voltage channels, 3A capacity for current channels.
- Oversize screw terminal blocks for easy wiring.

## Model 7703 32-Channel High-Speed Differential Multiplexer

- Configurable as 32 2-pole channels, 16 4-pole channels, or as dual 1 × 16 independent multiplexers.
- Reed relay design with <1ms relay actuation time allows fast scanning.
- D-sub connectors for secure, reliable hookup.

## Model 7705 40-Channel Control Module

- 40 independent control channels.
- Ideal for controlling power to the DUT, switching loads, controlling light indicators and relays, etc.
- 300V/2A capacity.



**Three connector alternatives simplify connecting the switch/control modules to DUTs. Rugged D-sub connectors allow quick, secure connections and are especially convenient when performing routine maintenance or when the system is installed in a rack. IDC ribbon cable adapters are supplied with the Model 7701, 7707, and 7709 modules for fast, uncomplicated hookups in production test and process monitoring applications. Oversize screw-terminal connectors simplify setup in applications that require the greatest connection flexibility. Additional D-sub and IDC ribbon cable connector kits are sold separately.**

## Model 7706 All-in-One I/O Module

- 20 channels of analog input, 16 channels of digital output, 2 analog outputs.
- Automatic CJC supports thermocouple, RTD, and thermistor temperature measurements.
- Event counter/totalizer for monitoring and controlling systems components.

## Model 7707 Multiplexer-Digital I/O Module

- 32 digital I/O channels (4 banks of 8).
- 10 differential analog input channels for general-purpose measurements.
- D-sub connectors with IDC ribbon cable adapters.

## Model 7708 40-Channel Differential Multiplexer w/Automatic CJC

- Dual 1 × 20 configuration.
- Direct thermocouple inputs with 1°C accuracy and 5°C channel-to-channel variation.
- Designed especially for temperature datalogging and burn-in applications.

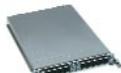
## Model 7709 6x8 Matrix Module

- 8 column × 6 row matrix can be daisy-chained to create larger matrices.
- Automatic 2- or 4-wire connection to the internal DMM.
- 300V/1A capacity.



# Module Selector Guide

This selector guide may prove helpful in identifying the best module for a specific application. Install up to five modules at a time in the Model 2750 mainframe.

Module	# Analog Inputs	Configuration	Differential*	4-pole	Type of Connector	Max. Voltage	Max. Switched Current	Current Measurement Channels	Digital I/O	Switch Speed	Other
<b>7700</b> 	20	Multiplexer w/CJC	1 x 20 or two 1 x 10	1 x 10	Screw terminals	300V	1A	2 channels @ 3A	N/A	3 ms	Maximum power = 125VA.
<b>7701</b> 	32	Multiplexer	1 x 32 or two 1 x 16	1 x 16	D-sub	150V	1A	N/A	N/A	3 ms	Maximum power = 125VA.
<b>7702</b> 	40	Multiplexer	1 x 40 or two 1 x 20	1 x 20	Screw terminals	300V	1A	2 channels @ 3A	N/A	3 ms	Maximum power = 125VA.
<b>7703</b> 	32	Multiplexer	1 x 32 or two 1 x 16	1 x 16	D-sub	300V	500mA	N/A	N/A	1 ms	Reed relays.
<b>7705</b> 	40	Independent SPST	N/A	N/A	D-sub	300V	2A	N/A	N/A	3 ms	Maximum power = 125VA.
<b>7706</b> 	20	Multiplexer w/CJC	1 x 20 or two 1 x 10	1 x 10	Screw terminals	300V	1A	N/A	16 Digital Out Only	3 ms	(2) ±12V analog output channels & 100kHz event counter/totalizer. Maximum power = 125VA.
<b>7707</b> 	10	Multiplexer/Digital I/O	1 x 10 or two 1 x 5	1 x 5	D-sub	300V	1A	N/A	32 Digital I/O	3 ms	Maximum power = 125VA. (4) eight-bit word I/O.
<b>7708</b> 	40	Multiplexer w/CJC	1 x 40 or two 1 x 20	1 x 20	Screw terminals	300V	1A	N/A	N/A	3 ms	Maximum power = 125VA.
<b>7709</b> 	48	6 x 8 Matrix	Yes	Yes	D-sub	300V	1A	N/A	N/A	3 ms	Connects to internal DMM. Daisy chain multiple cards for up to a 6 x 40 matrix. Maximum power = 125VA.

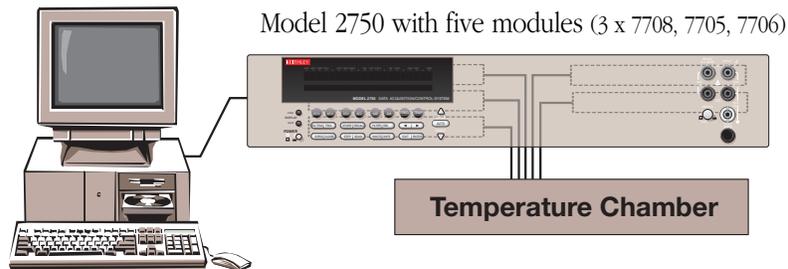
\* Can be disconnected from internal DMM for routing external signals  
Refer to the individual Switch/Control Module data sheets for additional information.

# Model 2750 Applications

A variety of switch/control plug-in modules make it easy to configure the Model 2750 for a broad range of test applications. The application areas highlighted here are only the beginning—

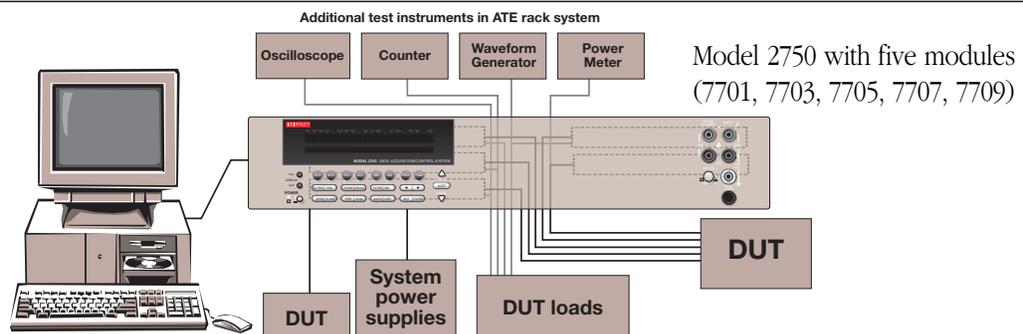
consult a Keithley representative or system integrator partner for assistance in determining the best combination of switch/control modules to solve your next test challenge.

## Accelerated Stress Test (AST) Checklist



- Directly measure up to 200 channels of voltage, temperature, current, and/or resistance without signal conditioning or external equipment.
- Relay cycle counting feature simplifies preventive maintenance.
- 110,000 point, non-volatile, dual-port memory buffer supports automatic data backup; resumes scanning automatically in case of a power failure.
- Alarm limits per channel and master alarm output.
- Analog and digital I/O for control.
- 300V isolation between channels and from any channel to ground.
- 0.002% basic 90 day DCV accuracy;  $\pm 1^\circ\text{C}$  thermocouple accuracy.
- Simple, secure cabling: D-sub, ribbon cable, or oversize screw terminal blocks.
- IEEE-488 and RS-232 communications bus.

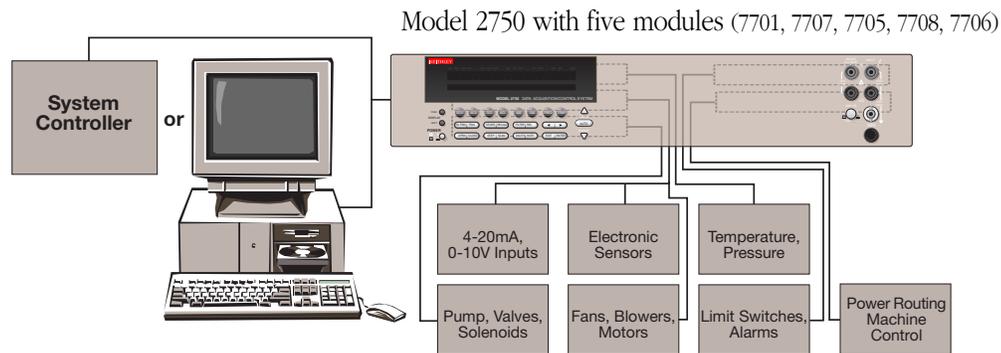
## Production Test Checklist



- 5-slot mainframe with internal  $6\frac{1}{2}$ -digit (22-bit) DMM.
- Scan rates (switch/measure) of up to 200 channels/sec.
- Relay cycle counting feature simplifies preventive maintenance.
- Up to 200 differential channels or 248 matrix crosspoints.
- Robust, industry-standard D-sub connectors. with solder cup or IDC ribbon cable wiring
- 0.002% basic 90 day DCV accuracy: 1000V/300V input protection.
- Rugged switch/control modules include matrix multiplex, independent switch, digital I/O, analog output, and counter/totalizer.
- IEEE-488 interface and LabVIEW/LabWINDOWS CVI drivers standard.
- Fully functional front panel with input jacks for troubleshooting: keypad and display for switch control and relay status.

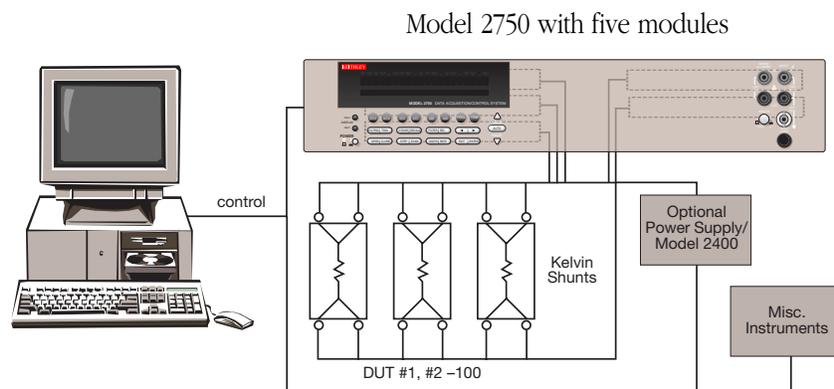


## Process Monitoring and Control Checklist



- Up to 200 channels of differential analog I/O.
- Up to 160 channels of digital I/O.
- 6½-digit (22-bit) resolution with 0.002% basic 90 day DCV accuracy.
- Built-in signal conditioning and 1000V/300V isolation.
- Flexible, modular configuration.
- Per-channel configurability, scaling, and alarm limits.
- Rugged packaging including industry-standard D-sub connectors and interface to PB-24SM board.
- Front panel input jacks simplify troubleshooting.
- Directly measure voltage, temperature, current, resistance, sensors, and transducers without signal conditioning.
- RS-232 and GPIB communications standard.

## Multi-channel Low Ohms Testing Checklist



- Low noise offset compensation.
- 10mA current minimizes relay non-linearities.
- 20mV dry circuit clamp.
- 100-channel Kelvin 4-wire switch capacity.
- Mixed signal capabilities
- Offset compensation/cancellation of thermoelectric EMFs.
- 1 $\mu\Omega$  sensitivity covers most low ohms applications.

# Model 2750 Specifications

## DC CHARACTERISTICS<sup>1</sup>

CONDITIONS: MED (1 PLC)<sup>2</sup> or 10 PLC or MED (1 PLC) with Digital Filter of 10

FUNCTION	RANGE	RESOLUTION	TEST CURRENT ±5% OR BURDEN VOLTAGE	INPUT RESISTANCE OR OPEN CKT. VOLTAGE <sup>3</sup>	ACCURACY: ±(ppm of reading + ppm of range) (ppm = parts per million) (e.g., 10ppm = 0.001%)			TEMPERATURE COEFFICIENT 0°–18°C & 28°–50°C
					24 Hour <sup>4</sup> 23°C±1°	90 Day 23°C±5°	1 Year 23°C±5°	
<b>Voltage</b> <sup>11</sup>	100.0000 mV	0.1 µV		>10 GΩ	15 + 30	25 + 35	30 + 35	(1 + 5)/°C
	1.000000 V	1.0 µV		>10 GΩ	15 + 6	25 + 7	30 + 7	(1 + 1)/°C
	10.00000 V	10 µV		>10 GΩ	10 + 4	20 + 5	30 + 5	(1 + 1)/°C
	100.0000 V	100 µV		10 MΩ ± 1%	15 + 6	35 + 9	45 + 9	(5 + 1)/°C
	1000.000 V <sup>5</sup>	1 mV		10 MΩ ± 1%	20 + 6	35 + 9	50 + 9	(5 + 1)/°C
<b>Resistance</b> <sup>6,8</sup>	1.000000 Ω	1 µΩ	10 mA	5.9 V	25 + 80	80 + 80	100 + 80	(8 + 1)/°C
	10.00000 Ω	10 µΩ	10 mA	5.9 V	20 + 20	80 + 20	100 + 20	(8 + 1)/°C
	100.0000 Ω	100 µΩ	1 mA	12.2 V	20 + 20	80 + 20	100 + 20	(8 + 1)/°C
	1.000000 kΩ	1 mΩ	1 mA	12.2 V	20 + 6	80 + 6	100 + 6	(8 + 1)/°C
	10.00000 kΩ	10 mΩ	100 µA	6.8 V	20 + 6	80 + 6	100 + 6	(8 + 1)/°C
	100.0000 kΩ	100 mΩ	10 µA	12.8 V	20 + 6	80 + 10	100 + 10	(8 + 1)/°C
	1.000000 MΩ <sup>23</sup>	1.0 Ω	10 µA	12.8 V	20 + 6	80 + 10	100 + 10	(8 + 1)/°C
	10.00000 MΩ <sup>7,23</sup>	10 Ω	0.7 µA // 10M Ω	7.0 V	150 + 6	200 + 10	400 + 10	(35 + 1)/°C
	100.0000 MΩ <sup>7,23</sup>	100 Ω	0.7 µA // 10M Ω	7.0 V	800 + 30	2000 + 30	2000 + 30	(200 + 1)/°C
<b>Dry Circuit Resistance</b> <sup>21</sup>	1.000000 Ω	1 µΩ	10 mA	20mV	30 + 40	80 + 40	100 + 40	(8 + 1)/°C
	10.00000 Ω	10 µΩ	1 mA	20mV	25 + 40	80 + 40	100 + 40	(8 + 1)/°C
	100.0000 Ω	100 µΩ	100 µA	20mV	25 + 40	90 + 40	140 + 40	(8 + 1)/°C
	1.000000 kΩ	1 mΩ	10 µA	20mV	25 + 90	180 + 90	400 + 90	(8 + 1)/°C
<b>Continuity (2W)</b>	1.000 kΩ	100 mΩ	1 mA	12.2 V	40 + 100	100 + 100	100 + 100	(8 + 1)/°C
<b>Current</b>	20.00000 mA	10 nA	< 0.2 V		60 + 15	300 + 40	500 + 40	(50 + 5)/°C
	100.0000 mA	100 nA	< 0.1 V		100 + 150	300 + 400	500 + 400	(50 + 50)/°C
	1.000000 A	1.0 µA	< 0.3 V <sup>9</sup>		200 + 15	500 + 40	800 + 40	(50 + 5)/°C
	3.000000 A	10 µA	< 1.0 V <sup>9</sup>		1000 + 15	1200 + 40	1200 + 40	(50 + 5)/°C
<b>Channel (Ratio)</b> <sup>10</sup>	Ratio Accuracy = Accuracy of selected Channel Range + Accuracy of Paired Channel Range							
<b>Channel (Average)</b> <sup>10</sup>	Average Accuracy = Accuracy of selected Channel Range + Accuracy of Paired Channel Range							

DUAL-PORT MEMORY BUFFER

## DC MEASUREMENT SPEEDS<sup>15</sup>

Single Channel, 60Hz (50Hz) Operation

FUNCTION	DIGITS	READINGS/s	PLCs
<b>DCV, DCI, Ω (&lt;10M), Thermocouple, Thermistor</b>	6.5 <sup>12,16</sup>	5 (4)	10
	6.5 <sup>16</sup>	35 (28)	1
	6.5 <sup>12,16</sup>	45 (36)	1
	5.5 <sup>12,16</sup>	150 (120)	0.1
	5.5 <sup>16,17</sup>	300 (240)	0.1
	5.5 <sup>17</sup>	480 (400)	0.1
	4.5 <sup>17</sup>	2500 (2000)	0.01
<b>4WΩ (&lt;10M)</b>	6.5 <sup>16</sup>	1.4 (1.1)	10
	6.5 <sup>16</sup>	15 (12)	1
	5.5 <sup>17</sup>	33 (25)	0.1
<b>Channel (Ratio), Channel (AVG)</b>	6.5 <sup>16</sup>	2.5 (2)	10
	6.5 <sup>16</sup>	15 (12)	1
	5.5 <sup>17</sup>	25 (20)	0.1

## Multiple Channels, Into and Out of Memory to GPIB<sup>15,18</sup>

	Channels/s
7703 Scanning DCV	200/s
7703 Scanning DCV with Limits or Time Stamp On	180/s
7703 Scanning DCV alternating 2W	70/s
7702 Scanning DCV	65/s
7700, 7706, and 7708 Scanning Temperature (T/C)	50/s

## DC SYSTEM SPEEDS<sup>15,18</sup>

RANGE CHANGES<sup>16</sup>: 90/s (72/s).

FUNCTION CHANGES<sup>16</sup>: 90/s (72/s).

AUTORANGE TIME<sup>16</sup>: <60ms.

ASCII READINGS TO RS-232 (19.2k BAUD): 55/s.

MAX. INTERNAL TRIGGER RATE: 2000/s.

MAX. EXTERNAL TRIGGER RATE: 375/s.

## DC MEASUREMENT CHARACTERISTICS

### DC Volts

A-D LINEARITY: 2.0 ppm of reading + 1.0 ppm of range.

### INPUT IMPEDANCE:

**100mV–10V Ranges:** Selectable >10GΩ // with <400pF or 10MΩ ±1%.

**100V, 1000V Ranges:** 10MΩ ±1%.

**Dry Circuit:** 100kΩ ± 1% // <1µF

INPUT BIAS CURRENT: <75pA at 23°C.

COMMON MODE CURRENT: <500nApp at 50Hz or 60Hz.

AUTOZERO ERROR: Add ±(2ppm of range error + 5µV) for < 10 minutes and ±1°C.

INPUT PROTECTION: 1000V, all ranges. 300V with plug in modules.

### Resistance

**MAX 4WΩ LEAD RESISTANCE:** 80% of range per lead (Dry Ckt mode). 5Ω per lead for 1Ω range; 10% of range per lead for 10Ω, 100Ω, and 1kΩ ranges; 1kΩ per lead for all other ranges.

**OFFSET COMPENSATION:** Selectable on 4WΩ, 1Ω, 10Ω, 100Ω, 1kΩ, and 10kΩ ranges.

**CONTINUITY THRESHOLD:** Adjustable 1 to 1000 Ω

**INPUT PROTECTION:** 1000V, all Source Inputs, 350V Sense Inputs. 300V with plug-in modules.

### DC Current

**SHUNT RESISTORS:** 100mA–3A, 0.1Ω, 20mA, 5Ω.

**INPUT PROTECTION:** 3A, 250V fuse.



## AC SPECIFICATIONS<sup>1</sup>

Accuracy: ±(% of reading + % of range), 23°C ± 5°C

Function	Range	Resolution	Calibration Cycle	3 Hz–10 Hz	10 Hz–20 kHz	20 kHz–50 kHz	50 kHz–100 kHz	100 kHz–300 kHz
Voltage <sup>2</sup>	100.0000 mV	0.1 µV	90 Days	0.35 + 0.03	0.05 + 0.03	0.11 + 0.05	0.6 + 0.08	4.0 + 0.5
	1.000000 V	1.0 µV						
	10.00000 V	10 µV	1 Year	0.35 + 0.03	0.06 + 0.03	0.12 + 0.05	0.6 + 0.08	4.0 + 0.5
	100.0000 V	100 µV						
	750.000 V	1.0 µV						
			(Temp. Coeff.)/°C <sup>3</sup>	0.035 + .003	0.005 + .003	0.006 + .005	0.01 + .006	0.03 + .01
Current <sup>2</sup>	1.000000 A	1.0 µA	90 Day/1 Yr.	0.30 + 0.04	0.10 + 0.04			
	3.00000 A <sup>14</sup>	10 µA		0.35 + 0.06	0.15 + 0.06			
			(Temp. Coeff.)/°C <sup>3</sup>	0.035 + 0.006	0.015 + 0.006			
Frequency <sup>4</sup> and Period	100 mV	0.333ppm	90 Day/ 1 Yr.	(3 Hz–500 kHz) (333 ms–2 µs)				
	to	3.33ppm		100 ppm + 0.333 ppm (SLOW, 1s gate)				
	750 V	33.3 ppm		100 ppm + 3.33 ppm (MED, 100ms gate)				
				100 ppm + 33.3 ppm (FAST, 10ms gate)				

## AC MEASUREMENT SPEEDS<sup>7</sup>

Single Channel, 60Hz (50Hz) Operation

Function	Digits	Readings/s	Rate	Bandwidth
ACV, ACI	6.5 <sup>8</sup>	2s/Reading	SLOW	3 Hz–300 kHz
	6.5 <sup>9</sup>	1.4 (1.1)	MED	30 Hz–300 kHz
	6.5 <sup>9</sup>	4.8 (4)	MED	30 Hz–300 kHz
	6.5 <sup>9</sup>	35 (28)	FAST	300 Hz–300 kHz
Frequency, Period	6.5	1 (1)	SLOW	3 Hz–300 kHz
	5.5	9 (9)	MED	30 Hz–300 kHz
	4.5	35 (35)	FAST	300 Hz–300 kHz
	4.5 <sup>10</sup>	65 (65)	FAST	300 Hz–300 kHz

### Multiple Channel

7703 SCANNING ACV<sup>10,13</sup>: 180/s.

## AC SYSTEM SPEEDS<sup>7,11</sup>

RANGE CHANGES<sup>12</sup>: 4/s (3/s).

FUNCTION CHANGES<sup>12</sup>: 4/s (3/s).

AUTORANGE TIME: < 3s.

ASCII READINGS TO RS-232 (19.2k baud): 50/s.

MAX. INTERNAL TRIGGER RATE: 300/s.

MAX. EXTERNAL TRIGGER RATE: 250/s.

## TEMPERATURE<sup>1</sup>

(Displayed in °C, °F, or K. Exclusive of probe errors.)

Thermocouples (Accuracy based on ITS-90.)

Type	Range	Resolution	90 Day/1 Year Relative to Simulated Reference Junction	23°C ± 5°C Using CJC from Plug-In Module	Temperature Coefficient 0°–18°C & 28°–50°C
J	–200 to +760 °C	0.001 °C	0.2°C	1.0°C	0.03°C/°C
K	–200 to +1372°C	0.001 °C	0.2°C	1.0°C	0.03°C/°C
N	–200 to +1300°C	0.001 °C	0.2°C	1.0°C	0.03°C/°C
T	–200 to +400°C	0.001 °C	0.2°C	1.0°C	0.03°C/°C
E	–200 to +1000°C	0.001 °C	0.2°C	1.0°C	0.03°C/°C
R	0 to +1768°C	0.1 °C	0.6°C	1.8°C	0.03°C/°C
S	0 to +1768°C	0.1 °C	0.6°C	1.8°C	0.03°C/°C
B	+350 to +1820°C	0.1 °C	0.6°C	1.8°C	0.03°C/°C

### 4-Wire RTD:

(100Ω platinum [PT100], D100, F100, PT385, PT3916, or user type. Offset compensation On)

–200° to	630°C	0.01 °C	0.06°C	0.003°C/°C
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### Thermistor: (2.2kΩ, 5kΩ, and 10kΩ)<sup>20</sup>

–80° to	150°C	0.01 °C	0.08°C	0.002°C/°C
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## AC MEASUREMENT CHARACTERISTICS

### AC Volts

MEASUREMENT METHOD: AC-coupled, True RMS.

INPUT IMPEDANCE: 1MΩ ±2% // by <100pF.

INPUT PROTECTION: 1000Vp or 400VDC. 300Vrms with plug in modules.

### AC Current

MEASUREMENT METHOD: AC-coupled, True RMS.

SHUNT RESISTANCE: 0.1Ω.

BURDEN VOLTAGE: 1A <0.3Vrms, 3A <1.5Vrms. Add 1Vrms when used with plug in modules.

INPUT PROTECTION: 3A, 250V fuse.

### Frequency and Period

MEASUREMENT METHOD: Reciprocal Counting technique.

GATE TIME: SLOW 1s, MED 100ms, and FAST 10ms.

## GENERAL SPECIFICATIONS

### MEMORY:

Memory Size: 110,000 readings.

EXPANSION SLOTS: 5.

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

LINE FREQUENCY: 45Hz to 66Hz and 360Hz to 440Hz, automatically sensed at power-up.

POWER CONSUMPTION: 28VA.

BATTERY: Lithium battery-backed memory, 3 years @ 23°C.

WARRANTY: 3 years.

EMC: Conforms to European Union Directive 89/336/EEC EN61326-1.

SAFETY: Conforms to European Union Directive 73/23/EEC EN61010-1, CAT I.

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

### DIMENSIONS:

Rack Mounting: 89mm high × 485mm wide × 370mm deep (3.5 in × 19 in × 14.563 in).

Bench Configuration (with handle and feet): 104mm high × 238mm wide × 370mm deep (4.125 in × 9.375 in × 14.563 in).

SHIPPING WEIGHT: 13kg (28 lbs.).

ACCESSORIES SUPPLIED: Model 1751 Safety Test Leads, User Manual, Service Manual.

# Keithley's two-slot solution for smaller applications

While the Model 2750 offers the capacity needed to handle high-channel-count testing, many applications require just 80 switching or control channels or less. For these cases, the two-slot Model 2700 Multimeter/Data Acquisition system is often the perfect size. Built on the same measurement platform, the Model 2700 and Model 2750 share many of the same capabilities and programming commands. All the switch/control modules work in both mainframes. This high compatibility also makes it easy to migrate applications from the Model 2700 to the Model 2750 as new test needs emerge or the number of test points grows.



## Matrix or Multiplexer

A matrix switch is the most versatile type of system switching—any input can be connected to output, singly or in combination. A multiplex switch connects one instrument to multiple devices under test or multiple instruments to one device under test. To find out more:

To request a **FREE** copy of Keithley's Switching Handbook, visit [www.keithley.com](http://www.keithley.com)



## A Greater Measure of Confidence

With more than a half-century of expertise in making demanding low-level measurements, Keithley offers its customers a greater measure of testing confidence on the production floor, in the QA lab, and in R&D. For more information on how Keithley test solutions can help you keep pace with changing technologies, call your local Keithley sales engineer or visit our website.

## All the Support You Need

For applications assistance, call us on our toll-free hotline **1-888-KEITHLEY** (534-8453) from 8:00 am to 5:00 pm ET (U.S. only). If you need assistance beyond those hours, send our Applications Engineering Department a facsimile (440-248-6168) or an e-mail message ([product\\_info@keithley.com](mailto:product_info@keithley.com)) and we'll respond as soon as possible. Applications assistance is also available via the web, with many reference materials available online, as well as convenient forms for contacting our Applications Engineers. Keithley maintains facilities and affiliates worldwide, which offer native language support services. Visit our web site for the latest listings. [www.keithley.com](http://www.keithley.com)

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