

KEITHLEY

2700

The Keithley Model 2700 (Integra Series) is a high-performance, 6.5-digit (22-bit) digital multimeter, data acquisition, and logging system. It features two expansion slots to accommodate up to 80 differential measurement channels, making it a highly versatile and cost-effective solution for multi-channel test applications.

SPECIFICATIONS

General

Interfaces	GPIB (IEEE-488.2), RS-232
Display	12-character alphanumeric VFD with 7-character secondary display

Physical

Power Supply	100 V / 120 V / 220 V / 240 V $\pm 10\%$, 45 Hz to 66 Hz and 360 Hz to 440 Hz, <28 VA
Operating Temperature	0 °C to 50 °C °C
Dimensions (W×H×D)	213 mm × 89 mm × 370 mm mm
Weight	3.7 kg

DC Voltage

DC Voltage Ranges	100 mV, 1 V, 10 V, 100 V, 1000 V
DC Voltage Resolution	100 nV (on 100 mV range)
DC Voltage Input Impedance	>10 G Ω on 100 mV, 1 V, 10 V ranges; 10 M Ω $\pm 1\%$ on 100 V, 1000 V ranges
DC Voltage Best 1-Year Accuracy	$\pm(0.003\%$ of reading + 0.0005% of range)
DC Voltage Normal Mode Rejection Ratio (NMRR)	>60 dB at 50 Hz or 60 Hz
DC Voltage Common Mode Rejection Ratio (CMRR)	>140 dB at DC, 50 Hz or 60 Hz (with 1 k Ω unbalance)
Maximum DC Input Voltage	1000 V peak
DC Voltage Input Bias Current	<75 pA at 23 °C

AC Voltage

AC Voltage Ranges	100 mV, 1 V, 10 V, 100 V, 750 V
AC Voltage Resolution	100 nV (on 100 mV range)
AC Voltage Frequency Range	3 Hz to 300 kHz
AC Voltage Input Impedance	1 M Ω $\pm$ 2% in parallel with <100 pF
AC Voltage Best 1-Year Accuracy	$\pm$ (0.06% of reading + 0.03% of range) at 10 Hz - 20 kHz
Maximum AC Input Voltage	750 V RMS, 1000 V peak
AC Voltage Crest Factor	5:1 at full scale
AC Voltage Bandwidth Filters	3 Hz - 300 kHz, 30 Hz - 300 kHz, 300 Hz - 300 kHz

DC Current

DC Current Ranges	20 mA, 100 mA, 1 A, 3 A
DC Current Best Resolution	10 nA (on 20 mA range)
DC Current Best 1-Year Accuracy	$\pm$ (0.05% of reading + 0.005% of range)
DC Current Shunt Resistance	0.1 Ω for 1 A and 3 A ranges, 5.1 Ω for 20 mA and 100 mA ranges
DC Current Burden Voltage	<0.3 V on 20 mA and 1 A ranges, <1.0 V on 100 mA and 3 A ranges
DC Current Overload Protection	3 A, 250 V fuse

AC Current

AC Current Ranges	1 A, 3 A
AC Current Best Resolution	1 μ A (on 1 A range)
AC Current Frequency Range	3 Hz to 5 kHz
AC Current Shunt Resistance	0.1 Ω
AC Current Burden Voltage	<0.3 V on 1 A range, <1.0 V on 3 A range
AC Current Best 1-Year Accuracy	$\pm$ (0.1% of reading + 0.04% of range) at 45 Hz - 2 kHz
AC Current Overload Protection	3 A, 250 V fuse

Resistance

Resistance Ranges	100 Ω , 1 k Ω , 10 k Ω , 100 k Ω , 1 M Ω , 10 M Ω , 100 M Ω (2-wire and 4-wire)
Resistance Best Resolution	100 μ Ω (on 100 Ω range)
Resistance Best 1-Year Accuracy	$\pm$ (0.01% of reading + 0.001% of range)
Resistance Source Current	1 mA (on 100 Ω and 1 k Ω ranges)
Resistance Open Circuit Voltage	<6.9 V
Offset Compensation	Selectable on 100 Ω , 1 k Ω , and 10 k Ω ranges
Maximum 4-Wire Lead Resistance	10% of range per lead (for 100 Ω and 1 k Ω), 1 k Ω per lead (for other ranges)

Temperature Measurement

Supported Thermocouples	J, K, T, E, R, S, B, N
Thermocouple Resolution	0.001 °C
Supported RTDs	PT100, D100, F100, User-defined (2-wire, 3-wire, or 4-wire)
Supported Thermistors	2.2 kΩ, 5 kΩ, 10 kΩ
Cold Junction Compensation Accuracy	±1.0 °C (using internal sensor on 7700 card)

Frequency and Period

Frequency Range	3 Hz to 500 kHz
Period Range	2 μs to 333 ms
Input Signal Amplitude Range	100 mV RMS to 750 V RMS
Frequency Gate Times	10 ms, 100 ms, 1 s
Frequency Best 1-Year Accuracy	±0.01% of reading

Data Acquisition and Scanning

Max Scanning Speed	Up to 180 channels/s (for DCV)
Memory Buffer Capacity	55,000 readings
Triggering Sources	Manual, External Trigger, GPIB, RS-232, Trigger Link, Immediate
Trigger Delay Range	0 to 99 hours (1 ms resolution)
Channel-to-Channel Crosstalk	<-40 dB at 10 MHz (module dependent)
Max Voltage Between Channels	300 V DC or RMS (module dependent)

Expansion Slots and Modules

Number of Expansion Slots	2 slots (rear panel)
Compatible Modules	7700, 7701, 7702, 7703, 7705, 7706, 7707, 7708, 7709, 7710, 7711, 7712
Max System Channels	80 differential channels (with two 40-channel multiplexer cards)

Connectivity and Interfaces

Digital I/O Lines	4 outputs (limit/alarm, TTL compatible), 1 input (trigger)
Trigger Link Connection	8-pin micro-DIN
Command Languages	SCPI (Standard Commands for Programmable Instruments)

Environmental and Compliance

Storage Temperature Range	-40 °C to 70 °C
Operating Humidity Range	Up to 80% RH at 35 °C (non-condensing)
Warm-up Time	2 hours to rated accuracy
Safety Compliance	Conforms to European Union Low Voltage Directive (EN61010-1)
EMC Compliance	Conforms to European Union EMC Directive (EN61326-1)

Power

Power Consumption	28 VA
Power Line Frequency	45 Hz to 66 Hz and 360 Hz to 440 Hz (automatically sensed)

System & Memory

User Setup Storage	5 setups (1 factory default, 4 user-defined) in non-volatile memory
Real-Time Clock	Lithium battery-backed, 10-year typical life

Measurement & Math

Math Functions	mX+b, Percent (%), Reciprocal (1/X), dB, dBm, Limit Testing
dBm Reference Resistance	1 Ω to 9999 Ω

Diode Test

Diode Test Current	1 mA
Diode Test Voltage Range	3 V

Continuity Test

Continuity Threshold Range	1 Ω to 1000 Ω
Continuity Test Current	1 mA

Measurement Rates

Max Reading Rate to Internal Memory	2000 rdgs/s
Max Reading Rate to GPIB	375 rdgs/s

Inputs & Outputs

Maximum Common Mode Voltage	500 V peak
Digital Output Sink Current	100 mA (max. per output)
Digital Input Type	TTL compatible
Input Connection Locations	Front and rear selectable

Environmental

Maximum Operating Altitude	2000 m
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Frequency Measurement

Frequency Input Impedance	1 M Ω $\pm$ 2% in parallel with <150 pF
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TECHNOLOGY

Digital Multimeter and Data Acquisition

APPLICATIONS

Multi-channel temperature profiling, precision data logging, manufacturing test, and automated device characterization

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