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197A 5½-Digit Multimeter Specifications

DC VOLTS

RANGE	RESOLUTION	INPUT RESISTANCE	ACCURACY** ±(%rdg + counts) 24 Hr.,* 22°–24°C	1 Year, 18°–28°C
200 mV	1 µV	>1 GΩ	0.007 + 2	0.016 + 3
2 V	10 µV	>1 GΩ	0.005 + 2	0.011 + 2
20 V	100 µV	11 MΩ	0.006 + 2	0.015 + 3
200 V	1 mV	10 MΩ	0.006 + 2	0.015 + 2
1000 V	10 mV	10 MΩ	0.007 + 2	0.015 + 2

*Relative to calibration accuracy. **When properly zeroed.

NMRR: >60dB at 50Hz, 60Hz ±0.1%.

MAXIMUM ALLOWABLE INPUT: 1000V DC or peak AC (<10 seconds per minute on 200mV and 2V ranges; 300V rms continuous).

SETTLING TIME: 1 second to within 3 counts of final reading on range.

dB MODE (ref: 600Ω): Accuracy: ±(0.02dB+1 count) above –78dBm.

RESOLUTION: 0.01dB above 0.7% of range.

dB REFERENCE IMPEDANCE: 50, 75, 93, 135, 300, or 600 ohms (default), front panel selectable.

DC AMPS

RANGE	RESOLUTION	MAXIMUM VOLTAGE BURDEN	ACCURACY (1 Year) 18°–28°C ±(%rdg + counts)
200 µA	1 nA	0.3 V	0.1 + 15
2 mA	10 nA	0.3 V	0.1 + 15
20 mA	100 nA	0.3 V	0.1 + 15
200 mA	1 µA	0.3 V	0.2 + 15
2000 mA	10 µA	0.8 V	0.2 + 15
10 A	100 µA	0.3 V	0.5 + 15*

*Above 5A derate 0.15% rdg per amp for self–heating.

OVERLOAD PROTECTION: mA Input: 2A fuse (250V), externally accessible. **10A Input:** 20A for 15s, unfused.

SETTLING TIME: 1 second to within 3 counts of final reading.

ANALOG/IEEE OUTPUT (Model 1972A Option)

ANALOG OUTPUT:

Accuracy: ±(0.25% of displayed reading + 2mV).

Response Time: Follows display conversion rate.

Level: 1V=100,000 counts on ×1 gain. 1V=100 counts on ×1000 gain. Maximum output voltage = 4V.

Output Resistance: 1000Ω.

Isolation: 500V peak, Input LO to Output LO.
30V peak, Output LO to earth ground.

IEEE OUTPUT: See IEEE BUS IMPLEMENTATION.

IEEE BUS IMPLEMENTATION
(1972A ANALOG/IEEE & 1973A IEEE OPTIONS)

MULTILINE COMMANDS: DCL, SDC, GET, GTL, UNT, UNL, SPE, SPD.

UNILINE COMMANDS: IFC, REN, EOI, SRQ, ATN.

INTERFACE FUNCTIONS: SH1, AH1, T5, TE0, L4, LE0, SR1, RL0, PP0, DC1, DT1, C0, E1.

PROGRAMMABLE PARAMETERS: Range, REL, dB, EOI, Trigger, Calibration, SRQ, Status, Output Format, Terminator, Data Logger Retrieval.

TRMS AC VOLTS

RANGE	ACCURACY (1 Year)* 18°–28°C ±(%rdg + counts) 20Hz–50Hz	50Hz–10kHz	10kHz–20kHz	20kHz–50kHz	50kHz–100kHz
200 mV	1.00 + 100	0.35 + 100	0.6 + 200	1.5 + 250	5 + 400
2V–200V	1.00 + 100	0.35 + 100	0.6 + 200	1.5 + 250	3 + 400
750 V	1.25 + 100	0.5 + 100	1.0 + 200	1.8 + 250	3 + 400

*Above 1800 counts. **Above 18000 counts.

MAXIMUM ALLOWABLE INPUT: 750V rms, 1000V peak (<10 seconds per minute on 200mV and 2V ranges; 300V rms continuous). 10^7V·Hz maximum.

3dB BANDWIDTH: 300kHz typical.

INPUT IMPEDANCE: 1MΩ paralleled by <75pF on 200V and 750V ranges; 1.1MΩ on 200mV, 2V, and 20V ranges. Capacitively coupled.

SETTLING TIME: 1 second to within 0.1% of final reading on range.

dB MODE (ref.: 600Ω)

RANGE	INPUT	ACCURACY (±dBm) 20Hz–10kHz	10kHz–20kHz	20kHz–50kHz	50kHz100kHz
2V–750V	200 mV to 750 V (–12 to 59.8dBm)	0.18	0.18	0.28	0.50
200 mV	20 mV to 200 mV (–32 to –12dBm)	0.18	0.18	0.28	0.65
	2 mV to 20 mV (–52 to –32dBm)	0.85	1.10	2.00	—
	1 mV to 2 mV (–58 to –52dBm)	2.00	3.00	—	—

RESOLUTION: 0.01dBm above 0.5% of range.

dB REFERENCE IMPEDANCE: 50, 75, 93, 135, 300, or 600 ohms (default), front panel selectable.

TRMS AC AMPS

RANGE	MAX VOLTAGE BURDEN	ACCURACY (1 Year)* 18°–28°C ±(%rdg+counts) 20Hz–50Hz	50Hz–10kHz	10kHz–30kHz
200µA–20mA	0.3 V	1.0 + 100	0.8 + 100	2 + 250
200 mA	0.3 V	1.0 + 100	0.8 + 100	–
2000 mA	0.8 V	1.0 + 100	0.8 + 100	–
10 A	0.3 V	1.5 + 100	1.0 + 100**	–

*Above 1800 counts.

**1kHz max. Above 5A derate 0.15% rdg/amp for self–heating.

SETTLING TIME: 1 second to within 0.1% of final reading.

OHMS

RANGE	RESOLUTION	OUTPUT NOMINAL I–SHORT	MAX. V ACROSS UNKNOWN	ACCURACY ±(%rdg+counts) 24 Hr., 22°–24°C	1 Year, 18°–28°C
200 Ω	1 mΩ	2mA	0.5 V	0.01 + 2*	0.018 + 3*
2 kΩ ⊣▶⊢	10 mΩ	2mA	4.0 V	0.01 + 2	0.018 + 2
20 kΩ	100 mΩ	400µA	4.0 V	0.014 + 2	0.026 + 2
200 kΩ ⊣▶⊢	1 Ω	40µA	4.0 V	0.014 + 2	0.026 + 2
2 MΩ**	10 Ω	4µA	4.0 V	0.02 + 2	0.035 + 2
20 MΩ**	100 Ω	400nA	4.0 V	0.10 + 2	0.12 + 2
200 MΩ**	10 kΩ	400nA	5.0 V	2.00 + 1	2.00 + 1

*When properly zeroed. **Appropriate range selected automatically in MΩ.

CONFIGURATION: Automatic 2- or 4-terminal.

MAXIMUM ALLOWABLE INPUT: 450V DC or peak AC 10 seconds per minute. 350V rms continuous.

OPEN CIRCUIT VOLTAGE: +5V.

DIODE TEST: Display reads junction voltage up to 2.2V. Test Current: 1.6mA nominal.

SETTLING TIME: 2 seconds to within 3 counts of final reading on range.

GENERAL

DISPLAY: Backlit ±220,000-count LCD, 0.45 in height; polarity, function, range, and status indication.

RANGING: Auto or manual on DC volts, AC volts, and ohms; manual on AC amps and DC amps.

AUTORANGING TIME: 300ms per range average.

RELATIVE: Pushbutton allows zeroing of on range readings. Allows readings to be made with respect to baseline value. Front panel annunciator indicates REL mode.

DATA LOGGER and MIN/MAX: 100 reading storage capacity; records data at one of six selectable rates from 3 readings/second to 1 reading/hour or by manual triggering. Also detects and stores maximum and minimum readings continuously while in data logger mode.

CONVERSION RATE: 3 readings/second.

OVERRANGE INDICATION: "OL" displayed.

CREST FACTOR (ratio of peak value to rms value), AC FUNCTIONS: 3.

MAXIMUM COMMON MODE VOLTAGE: 500V peak.

COMMON MODE REJECTION RATIO (1kΩ unbalance): >120dB at DC, 50Hz, 60Hz ±0.1%. >60dB in AC volts.

TEMPERATURE COEFFICIENT (0°–18°C & 28°–50°C): ±(0.1 × applicable one year accuracy specification)/ °C.

ENVIRONMENT: Operating: 0°–50°C; <80% relative humidity up to 35°C; linearly derate 3% RH/°C, 35°–50°C. **Storage:** –40° to +70°C.

WARM–UP: 1 hour to rated accuracy.

POWER: 105–125V or 210–250V (external switch selected), 90–110V available; 50–60Hz, 12VA. Removable power cord. Optional 5 hour battery pack, Model 1978.

DIMENSIONS, WEIGHT: 89mm high × 235mm wide × 275mm deep (3½ in × 9¼ in × 10¾ in). Net weight 1.8kg (3 lb, 14 oz).

ACCESSORIES SUPPLIED: Model 1751 Safety Test Leads, instruction manual.

Specifications are subject to change without notice.

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