2001
2002

7½-Digit High Performance Multimeter
8½-Digit High Performance Multimeter

2001 Condensed Specifications

DC VOLTS

DCV INPUT CHARACTERISTICS AND ACCURACY

Range	Full Scale	Resolution	Default Resolution	Input Resistance	Accuracy ±(ppm of reading + ppm of range) 5 Minutes[4]	24 Hours[1]	90 Days[2]	1 Year[2]	2 Years[2]
200 mV[3]	±210.00000 mV	10 nV	100 nV	>10 GΩ	3 + 3	10 + 6	25 + 6	37 + 6	50 + 6
2 V	±2.1000000 V	100 nV	1 μV	>10 GΩ	2 + 1.5	7 + 2	18 + 2	25 + 2	32 + 2
20 V	±21.000000 V	1 μV	10 μV	>10 GΩ	2 + 1.5	7 + 4	18 + 4	24 + 4	32 + 4
200 V	±210.00000 V	10 μV	100 μV	10 MΩ ±1%	2 + 1.5	13 + 3	27 + 3	38 + 3	52 + 3
1000 V	±1100.0000 V	100 μV	1 mV	10 MΩ ±1%	10 + 1.5	17 + 6	31 + 6	41 + 6	55 + 6

DC VOLTS NOTES

1. For T_{CAL} ±1°C, following 55-minute warm-up. T_{CAL} is ambient temperature at calibration, which is 23°C from factory.
2. For T_{CAL} ±5°C, following 55-minute warm-up. Specifications include factory traceability to US NIST.
3. When properly zeroed using REL function.
4. DCV Transfer Stability typical applications are standard cell comparisons and relative accuracy measurements. Specs apply for 10 power line cycles, 20-reading digital filter, autozero on with type synchronous, fixed range following 2-hour warm-up at full scale to 10% of full scale, at T_{REF} ±1°C (T_{REF} is the initial ambient temperature). Specifications on the 1000V range are for measurements within 5% of the initial measurement value and following measurement settling.

AC VOLTS

Range	Normal Mode RMS[1] 90 Days, ±2°C from last AC self-cal for 1% to 100% of range[2] ±(% of reading + % of range) 20–50Hz	50–100Hz	0.1–2kHz	2–10kHz	10–30kHz	30–50kHz	50–100kHz	100–200kHz	0.2–1MHz	1–2MHz
200 mV	0.25 + 0.015	0.07 + 0.015	0.03 + 0.015	0.03 + 0.015	0.035 + 0.015	0.05 + 0.015	0.3 + 0.015	0.75 + 0.025	2 + 0.1	5 + 0.2
2 V	0.25 + 0.015	0.07 + 0.015	0.03 + 0.015	0.03 + 0.015	0.035 + 0.015	0.05 + 0.015	0.3 + 0.015	0.75 + 0.025	2 + 0.1	5 + 0.2
20 V	0.25 + 0.015	0.07 + 0.015	0.04 + 0.015	0.06 + 0.015	0.08 + 0.015	0.1 + 0.015	0.3 + 0.015	0.75 + 0.025	4 + 0.2	7 + 0.2[4]
200 V[3]	0.25 + 0.015	0.07 + 0.015	0.04 + 0.015	0.06 + 0.015	0.08 + 0.015	0.1 + 0.015	0.3 + 0.015	0.75 + 0.025[4]	4 + 0.2[4]	
750 V[3]	0.25 + 0.015	0.1 + 0.015	0.08 + 0.015	0.09 + 0.015	0.12 + 0.015	0.15 + 0.015[4]	0.5 + 0.015[4]			

AC VOLTS NOTES

1. Specifications apply for sinewave input, AC + DC coupling, 1 power line cycle, digital filter off, following 55 minute warm-up.
2. For 1% to 5% of range below 750V range, and for 1% to 7% of 750V range, add 0.01% to range uncertainty. For inputs from 200kHz to 2MHz, specifications apply above 10% of range.
3. Add 0.001% of reading × $(V_{IN}/100V)^2$ additional uncertainty above 100V rms.
4. Typical values.

OHMS

TWO-WIRE AND FOUR-WIRE OHMS (2W and 4W Ohms Functions)[6]

Range	Full Scale	Resolution	Default Resolution	Current Source[1]	Resistance Accuracy[3] ±(ppm of reading + ppm of range) 24 Hours[4]	90 Days[5]	1 Year[5]	2 Years[5]
20 Ω	21.000000 Ω	1 μΩ	10 μΩ	9.2 mA	29 + 7	52 + 7	72 + 7	110 + 7
200 Ω	210.00000 Ω	10 μΩ	100 μΩ	0.98 mA	24 + 7	36 + 7	56 + 7	90 + 7
2 kΩ	2100.0000 kΩ	100 μΩ	1 mΩ	0.98 mA	22 + 4	33 + 4	50 + 4	80 + 4.5
20 kΩ	21.000000 kΩ	1 mΩ	10 mΩ	89 μA	19 + 4	32 + 4	50 + 4	80 + 4.5
200 kΩ	210.00000 kΩ	10 mΩ	100 mΩ	7 μA	20 + 4.5	72 + 4.5	90 + 4.5	130 + 5
2 MΩ[2]	2.1000000 MΩ	100 mΩ	1 Ω	770 nA	50 + 4.5	110 + 4.5	160 + 4.5	230 + 5
20 MΩ[2]	21.000000 MΩ	1 Ω	10 Ω	70 nA	160 + 4.5	560 + 4.5	900 + 4.5	1100 + 5
200 MΩ[2]	210.00000 MΩ	10 Ω	100 Ω	4.4 nA	3000 + 100	10000 +100	20000 + 100	30000 + 100
1 GΩ[2]	1.0500000 GΩ	100 Ω	1 kΩ	4.4 nA	9000 + 100	20000 +100	40000 + 100	60000 + 100

OHMS NOTES

1. Current source is typically ±9% absolute accuracy.
2. For 2-wire mode.
3. Specifications are for 1 power line cycle, 10 reading digital filter, Auto Zero on, 4-wire mode, offset compensation on (for 20Ω to 20kΩ ranges).
4. For T_{CAL} ±1°C, following 55 minute warm-up. T_{CAL} is ambient temperature at calibration (23°C at the factory).
5. For T_{CAL} ±5°C, following 55-minute warm-up. Specifications include traceability to US NIST.
6. When measuring resistance of inductive loads, the inductance of that load must be 10mH or less.

DC AMPS

DCI INPUT CHARACTERISTICS AND ACCURACY[4]

Range	Full Scale	Resolution	Default Resolution	Maximum Burden Voltage[6]	Accuracy[1] ±(ppm of reading + ppm of range) 24 Hours[2]	90 Days[3]	1 Year[3]	2 Years[3]
200 μA	210.00000 μA	10 pA	100 pA	0.25 V	63 + 25	300 + 25	500 + 25	1350 + 25
2 mA	2.1000000 mA	100 pA	1 nA	0.31 V	64 + 20	300 + 20	400 + 20	750 + 20
20 mA	21.000000 mA	1 nA	10 nA	0.4 V	65 + 20	300 + 20	400 + 20	750 + 20
200 mA	210.00000 mA	10 nA	100 nA	0.5 V	96 + 20	300 + 20	500 + 20	750 + 20
2 A	2.1000000 A	100 nA	1 μA	1.5 V	500 + 20	600 + 20	900 + 20	1350 + 20

DC AMPS NOTES

1. Specifications are for 1 power line cycle, Auto Zero on, 10 reading digital filter.
2. For T_{CAL} ±1°C, following 55 minute warm-up.
3. For T_{CAL} ±5°C, following 55 minute warm-up. Specifications include traceability to US NIST.
4. Add 50 ppm of range for current above 0.5A for self heating.
6. Actual maximum voltage burden = (maximum voltage burden) × $(I_{MEASURED}/I_{FULL\ SCALE})$.