

DMM Comparison Chart Benchtop DMMs		DC Voltage		AC Voltage			DC Current	
		Full Scale (V to V)	Accuracy (% + Counts) Resolution (µV)	Full Scale (V to V)	Accuracy (% + Counts) Resolution (µV)	Frequency Range (Hz)	Full Scale (mA to A)	Accuracy (% + Counts) Resolution (µA)
Company	Model (Counts)							
Agilent Technologies www.rsleads.com/302ee-190	33401A (1,200,000)	0.1 to 1,000	35 ppm reading + 5 ppm range (10) ^a	0.1 to 750	0.06% reading + 0.03% range (10) ^b	3 to 300k	10 to 3	0.1% reading + 0.01% range (1) ^c
	34420A (12,000,000)	0.001 to 100	30 ppm reading + 4 ppm range (1) ^a	N/A	N/A	N/A	N/A	N/A
	3458A (120,000,000)	0.1 to 1,000	8 ppm reading + 0.05 ppm range (0.1) ^a	0.01 to 1,000	0.06% reading + 0.01% range (10) ^b	10 to 2M	0.0001 to 1	0.011% reading + 0.1% range (1) ^c
B+K Precision www.rsleads.com/302ee-191	5491 (120,000)	0.12 to 1,000	0.02 + 5 (1) ^e	0.12 to 750	1.5 + 80 (1) ^e	40 to 30k	12 to 12	0.2 + 3 (0.1) ^e
Global Specialties www.rsleads.com/302ee-192	PRO-100 (4,000)	0.4 to 1,000	0.3	4 to 750	0.5	40 to 1k	4 to 10	0.4
Keithley Instruments www.rsleads.com/302ee-193	2701	0.1 to 1,000	30 ppm reading + 5 ppm range (10) ^a	0.1 to 750	0.06% reading + 0.03% range (10) ^b	3 to 300k	20 to 3	0.08% reading + 0.008% range (1) ^c
	2700/2750	0.1 to 1,000	30 ppm reading + 5 ppm range (10) ^a	0.1 to 750	0.06% reading + 0.03% range (10) ^b	3 to 300k	20 to 3	0.08% reading + 0.008% range (1) ^c
	2015/2016	0.1 to 1,000	30 ppm reading + 5 ppm range (10) ^a	0.1 to 750	0.06% reading + 0.03% range (10) ^b	3 to 300k	10 to 3	0.08% reading + 0.004% range (1) ^c
National Instruments www.rsleads.com/302ee-194	PXI-4070	0.1 to 300	25 ppm reading + 6 ppm range (10) ^a	0.05 to 300	0.05% reading + 0.02% range ^b (10 µV on 5-V range)	1 to 300k	20 to 1	0.05% reading + 0.002% range (1) ^c
Signametrics www.rsleads.com/302ee-195	SMX2044 (3,300,000)	0.33 to 330	25 ppm reading + 12 µV (0.1) ^e	0.33 to 330	0.055% reading + 1.1 mV (0.1) ^e	10 to 100k	3.3 to 2.5	0.055% reading + 0.4 µA (0.01) ^e
	SM2040 (3,300,000)	0.33 to 330	25 ppm reading + 12 µV (0.1) ^e	0.33 to 330	0.055% reading + 1.1 mV (0.1) ^e	10 to 100k	3.3 to 2.5	0.055% reading + 0.4 µA (0.01) ^e
VXI Technology www.rsleads.com/302ee-196	VM2710A	0.1 to 300	0.004% reading + 0.03% range (0.1) ^e	0.1 to 300	0.05% reading + 0.03% range (1) ^e	20 to 300k	10 to 1	0.015% reading + 0.04% range (0.01) ^e

Key: ^a = 10-V range, 1-year period, 23°C ±5°C; ^b = 10-V range, 10 Hz to 20 kHz, 1-year period, 23°C ±5°C; ^c = 1-A range, 1-year period, 23°C ±5°C; ^d = 1,000-Ω range, 1-year period, 23°C ±5°C; ^e = 90-day period, best resolution; ^f = 1-year period, best resolution

Chart 1.

AC Current		Resistance		Frequency	Special Features	Price
Full Scale (mA to A)	Accuracy (% + Counts) Resolution (μ A)	Full Scale (Ω to M Ω)	Accuracy (% + Counts) Resolution (Ω)	Full Scale (Hz to MHz)		
1,000 to 3	0.1% reading + 0.04% range (1) ^c	100 to 100	100 ppm reading + 10 ppm range (0.001) ^d	3 to 0.3	6½ digits; 512-reading memory; IEEE 488 and RS-232 standard; min/max/avg, dB, dBm, limit test functions; 140-dB DC CMRR; continuity, diode test functions	\$995
N/A	N/A	1 to 1	60 ppm reading + 2 ppm range (0.0001) ^d	N/A	7½ digits; two channels; max/min/avg, peak-peak, standard deviation functions; thermocouple, thermistor, RTD temperature measurements; channel filters	\$3,260
0.1 to 1	0.08% reading + 0.02% range (1) ^c	10 to 1,000	10 ppm + 0.5 ppm range (0.0001) ^d	1 to 10	8½ digits; autoranging; 10,240 reading storage; functions: linearization, filtering, dB, dBm, statistics, and limit test	\$7,195
12 to 12	1.5 + 80 (0.1) ^e	120 to 300	0.12 + 5 (0.001) ^e	40 to 0.12	5½ digits; diode, continuity, dB, dBm measurements; RS-232 interface	\$595
4 to 10	1	400 to 40	0.4	100 to 1	Backlit display with bar graph; AC or battery operation; audible continuity and diode test; memory, relative mode, and sleep function; capacitance 4 nF to 40 μ F	\$199
1,000 to 3	0.1% reading + 0.041% range (1) ^c	100 to 100	100 ppm reading + 6 ppm range (0.001) ^d	3 to 0.5	6½-digit DMM and data acquisition system via two expansion slots; RS-232, Ethernet I/O; min/max/avg, standard deviation; limit test, linearization functions; trigger filtering, reading hold	\$1,895
1,000 to 3	0.1% reading + 0.041% range (1) ^c	1 to 100	100 ppm reading + 6 ppm range (0.001) ^d	3 to 0.5	6½-digit DMM and data acquisition system via five expansion slots; RS-232, GPIB; min/max/avg, standard deviation; limit test, linearization functions; trigger filtering, reading hold	From \$1,345
1,000 to 3	0.1% reading + 0.04% range (1) ^c	100 to 100	100 ppm reading + 10 ppm range (0.001) ^d	3 to 0.5	6½-digit analyzing DMM with integral 20 Hz to 20 kHz low-distortion source; THD and signal-to-noise-plus-distortion; CCITT and CCIR audio filters, harmonic measurement to 50 kHz; min/max/avg, standard deviation, dB, dBm, limits test, and linearization functions	From \$3,595
10 to 1	0.1% reading + 0.02% range (1) ^c	100 to 100	80 ppm reading + 3 ppm range (0.001) ^d	1 to 0.5	6½-digit PXI card; specifications for two-year period; self-cal with internal reference maintains accuracy specs over 0°C to 50°C; no high crest factor accuracy degradation	\$1,995
3.3 to 2.5	0.08% reading + 3 μ A (0.001) ^e	33 to 330	23 ppm reading + 0.0015 Ω (10 $\mu\Omega$) ^e	1 to 0.3	6½-digit PXI DMM; measures peak-to-peak, crest factor, and median; 2-, 4-, and 6-wire resistance; capacitance 10 nF to 10,000 μ F, inductance, leakage, diode V/I characterization; pulse width, duty cycle, frequency, period; sources AC/DC volts and DC current	\$1,995
3.3 to 2.5	0.08% reading + 3 μ A (0.001) ^e	330 to 33	46 ppm reading + 0.005 Ω (0.0001) ^e	N/A	6½-digit DMM PC card; dB, dBm, diode measurements; DLL, VB, LabVIEW, LabWindows, TestPoint, ATEasy software supported	\$995
10 to 1	0.15% reading + 0.05% range (0.1) ^e	20 to 20	50 ppm reading + 20 ppm range (0.0001) ^e	N/A	VXI DMM with two isolated differential inputs; VMIP form factor allows three instruments on a C-size card; 256,000 reading storage; max/min, limits functions	\$2,200