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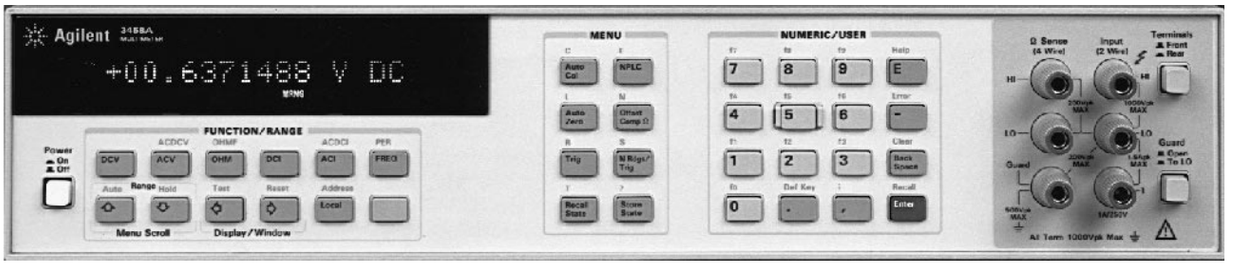
Find the *Keysight / Agilent 3458A* at our website: ***Click HERE***

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Digital Multimeters

8½ Digit Multimeter

3458A



3458A

3458A Multimeter

GPIB

The Agilent 3458A multimeter shatters long-standing performance barriers of speed and accuracy on the production test floor, in research and development, and in the calibration lab. The 3458A is the fastest, most flexible, and most accurate multimeter offered by Agilent Technologies. In your system or on the bench, the 3458A saves you time and money with unprecedented test-system throughput and accuracy, seven-function measurement flexibility, and low cost of ownership.

Select a rate of 100,000 reading per second for maximal test through-put. Or achieve highest levels of precision with up to 8½ digits of measurement resolution and 0.1 part per million transfer accuracy. Add to this the 3458A's simplicity of operation, and you have the ideal multimeter for your most demanding applications.

High-Test System Throughput

Faster Testing
- Up to 100,000 readings/s
- Internal test setups > 340/s
- Programmable integration times from 500 ns to 1 s

Greater Test Yield
- More accuracy for tighter test margins
- Up to 8½ digits resolution

Longer Uptime
- Two-source (10 V, 10 kΩ) calibration, including ac
- Self-adjusting, self-verifying auto-calibration for all functions and ranges, including ac

High-Resolution Digitizing

Greater Waveform Resolution and Accuracy
- 16 to 24-bits resolution
- 100,000 to 0.2 sample/s
- 12 MHz bandwidth
- Timing resolution to 10 ns
- Less than 100 ps time jitter
- Over 75,000 reading internal memory

Calibration Lab Precision

Superb Transfer Measurements
- 8½ digits resolution
- 0.1 ppm dc volts linearity
- 0.1 ppm dc volts transfer capability
- 0.01 ppm rms internal noise

Extraordinary Accuracy
- 0.6 ppm for 24 hours in dc volts
- 2.2 ppm for 24 hours in Ω
- 100 ppm mid-band ac volts
- 8 ppm (4 ppm optional) per year voltage reference stability

3458A Multimeter Performance Features

DC Volts
- 5 ranges: 0.1 V to 1000 V
- 8½ to 4½ digits resolution
- Up to 100,000 readings/s (4½ digits)
- Maximum sensitivity: 10 nV
- 0.6 ppm 24-hour accuracy
- 8 ppm (4 ppm optional)/year voltage reference stability

Resistance
- 9 ranges: 10 Ω to 1 GΩ
- 2-wire and 4-wire Ω with offset compensation
- Up to 50,000 readings/second (5½ digits)
- Maximum sensitivity: 10 µΩ
- 2.2 ppm 24-hour accuracy

AC Volts
- 6 ranges: 10 mV to 1000 V
- 1 Hz to 10 MHz bandwidth
- Up to 50 readings/s with all readings to specified accuracy
- Choice of sampling or analog true rms techniques
- 100 ppm best accuracy

DC Current
- 8 ranges: 100 nA to 1 A
- Up to 1,350 readings/s (5½ digits)
- Maximum sensitivity: 1 pA
- 14 ppm 24-hour accuracy

AC Current
- 5 ranges: 100 µA to 1 A
- 10 Hz to 100 kHz bandwidth
- Up to 50 readings/second
- 500 ppm 24-hour accuracy

Frequency and Period
- Voltage or current ranges
- Frequency: 1 Hz to 10 MHz
- Period: 100 ns to 1 second
- 0.01% accuracy
- AC or dc coupled

Throughput

Maximum Reading Rates
- 100,000 readings/s at 4½ digits (16 bits)
- 50,000 readings/s at 5½ digits
- 6,000 readings/s at 6½ digits
- 60 readings/s at 7½ digits
- 6 readings/s at 8½ digits

Measurement System Speed
- 100,000 readings/s over GPIB or with internal memory
- 110 autoranges/s
- 340 function or range changes/s
- Postprocessed math from internal memory

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Abbreviated Technical Specifications

DC Voltage

Range	Full scale	Maximum resolution	1-Year* accuracy	Transfer accuracy 10 min., tref ±0.5° C	Input impedance
			ppm of reading + ppm of range		
100 mV	120.00000	10 nV	9(5) + 3	0.5 + 0.5	>10 GΩ
1 V	1.20000000	10 nV	8(4) + 0.3	0.3 + 0.1	>10 GΩ
10 V	12.0000000	100 nV	8(4) + 0.05	0.05 + 0.05	>10 GΩ
100 V	120.000000	1 µV	10(6) + 0.3	0.5 + 0.1	10 MΩ ±1%
1000 V	1050.00000	10 µV	10(6) + 0.1	1.5 + 0.05	10 MΩ ±1%

One-year specifications for NPLC 100 within 24 hours and ±1° C of last ACAL, Tcal ±5° C, MATH NULL, fixed range. Add 2 ppm of reading additional error for Agilent factory traceability of 10 V dc to US NIST. Traceability error is the absolute error relative to National Standards associated with the source of last external calibration. Transfer specifications for NPLC 100, following 4-hour warm-up. Full scale to 10% of full scale. Measurements on the 1000 V range are within 5% of the initial measurement value and following measurement settling. Tref is the starting ambient temperature. Measurements are made on a fixed range using accepted metrology practices. *High stability (Option 002) ppm of reading in parentheses.

Noise Rejection (dB)[1]

	AC NMR[2]	AC ECMR	DC ECMR
NPLC < 1	0	90	140
NPLC ≥ 1	60	150	140
NPLC ≥ 10	60	150	140
NPLC ≥ 100	60	160	140
NPLC = 1000	75	170	140

[1] Applies for 1 kΩ unbalance in the LO lead and ±0.1% of the line frequency currently set for LFREQ.
[2] For line frequency ±1%, ACNMR is 40 dB for NPLC ≥ 1, or 55 dB for NPLC ≥ 100. For line frequency ±5%, ACNMR is 30 dB for NPLC ≥ 100.

Maximum Input

	Rated input	Nondestructive
HI to LO	±1000 V pk	±1200 V pk
LO to guard	±200 V pk	±350 V pk
Guard to earth	±500 V pk	±1000 V pk
HI or LO to earth	±1000 V pk	±1200 V pk

True rms AC Voltage
(Synchronous Subsampled Mode)

Range	Full scale	Maximum resolution	Accuracy* 24 hour–2 year 40 Hz to 1 kHz % of reading + % of range	Input impedance
10 mV	12.00000	10 nV	0.02 + 0.011	1 MΩ ±15% with <140 pf
100 mV	120.00000	10 nV	0.007 + 0.002	1 MΩ ±15% with <140 pf
1 V	1.2000000	100 nV	0.007 + 0.002	1 MΩ ±15% with <140 pf
10 V	12.000000	1 µV	0.007 + 0.002	1 MΩ ±2% with <140 pf
100 V	120.00000	10 µV	0.02 + 0.002	1 MΩ ±2% with <140 pf
1000 V	700.0000	100 µV	0.04 + 0.002	1 MΩ ±2% with <140 pf

*Specifications apply for full scale to 10% of full scale, dc <10% of ac, sine-wave input, crest factor of 1.4. Within 24 hours and ± 1° C of last ACAL. Peak (ac+dc) input limited to 5 x full scale for all ranges. Add 2 ppm of reading additional error for Agilent factory traceability of 10 Vdc to US NIST.

Maximum Input

	Rated input	Nondestructive
HI to LO	±1000 V pk	±1200 V pk
LO to guard	±200 V pk	±350 V pk
Guard to earth	±500 V pk	±1000 V pk
HI or LO to earth	±1000 V pk	±1200 V pk
Volt-Hz product	1×10^8	—

Resistance

Range	Full scale	Maximum resolution	Current through unknown	1-Year Accuracy* (4-wire Ω) ppm of rdg+ppm of range
10 Ω	12.00000	10 µΩ	10 mA	15 + 5
100 Ω	120.00000	10 µΩ	1 mA	12 + 5
1 kΩ	1.2000000	100 µΩ	1 mA	10 + 0.5
10 kΩ	12.000000	1 mΩ	100 µA	10 + 0.5
100 kΩ	120.00000	10 mΩ	50 µA	10 + 0.5
1 MΩ	1.2000000	100 mΩ	5 µA	15 + 2
10 MΩ	12.000000	1 Ω	500 nA	50 + 10
100 MΩ	120.00000	10 Ω	500 nA	500 + 10
1 GΩ	1.2000000	100 Ω	500 nA	0.5% + 10

*Specifications for 100 NPLC, offset compensation on, within 24 hours and ± 1° C of last ACAL, Tcal ±5° C. Add 3 ppm of reading additional error for Agilent factory traceability of 10 kΩ to US NIST.

Memory

	Standard Readings	Bytes	Option 001 Readings	Bytes
Reading storage (16 bit)	10,240	20 k	+65,536	+128 k
Non-volatile, for subprograms and/or state storage	–	14 k	–	–

Math Functions
The 3458A performs the following math functions on measurements: NULL, SCALE, OFFSET, RMS FILTER, SINGLE POLE FILTER, THERMISTOR LINEARIZATION, DB, DBM, % ERROR, PASS/FAIL LIMIT TESTING, and STATISTICS. Two math functions may be used at one time.

General Specifications

Operating Temperature: 0° C to 55° C
Warmup Time: Four hours to all specifications except where noted
Humidity Range: 95% RH, 0° C to 40° C
Storage Temperature: –40° C to +75° C
Power: 100/120 V, 220/240 V ± 10%, 48 to 66 Hz, 360 to 420 Hz automatically sensed. Fused at 1.5 A @ 115 V or 0.5 A @ 230 V. <30 W, < 80 VA (peak).
Size: 88.9 mm H x 425.5 mm W x 502.9 mm D (3.5 in x 16.75 in x 19.8 in)
Weight: Net, 12 kg (26.5 lb); shipping, 14.8 kg (32.5 lb)

Ordering Information

3458A Multimeter (with GPIB, 20 KB reading memory, and 8 ppm stability)
Opt 001 Extended Reading Memory (expands total to 148 KB)
Opt 002 High-Stability (4 ppm/year) Reference

Opt 907 Front-handle Kit
Opt 908 Rack Flange Kit
Opt 909 Rack Flange Kit (with handles)

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