

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 HP-IB or with internal memory
- 110 autoranges/s
- 340 function or range changes/s
- Postprocessed math from internal memory

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	1.2000000	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 HP 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 ECRM	DC ECRM
NPLC < 1	0	90	140
NPLC ≥ 1	60	150	140
NPLC ≥ 10	60	150	140
NPLC ≥ 100	70	160	140
NPLC = 1000	80	170	140

¹Applies for 1 kΩ unbalance in the LO lead and ± 0.1% of the line frequency currently set for LFREQ.

²For line frequency ± 1%, ACNMR is 40 dB for NPLC ≥ 1, or 80 dB for NPLC ≥ 100. For line frequency ± 5%, ACNMR is 65 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

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	1MΩ ± 15% with < 140 pf
100 mV	120.00000	10 nV	0.007 + 0.002	1MΩ ± 15% with < 140 pf
1 V	1.2000000	100 nV	0.007 + 0.002	1MΩ ± 15% with < 140 pf
10 V	12.0000000	1 μV	0.007 + 0.002	1MΩ ± 2% with < 140 pf
100 V	120.000000	10 μV	0.02 + 0.002	1MΩ ± 2% with < 140 pf
1000 V	700.00000	100 μV	0.04 + 0.002	1MΩ ± 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 × full scale for all ranges. Add 2 ppm of reading additional error for HP 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
Volt-Hz product	1 × 10 ⁹	

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	12.0000000	1 mΩ	100 μA	10 + 0.5
100 kΩ	120.000000	10 mΩ	50 μA	10 + 0.5
1 MΩ	1.20000000	100 mΩ	5 μA	15 + 2
10 MΩ	12.00000000	1 Ω	500 nA	50 + 10
100 MΩ	120.0000000	10 Ω	500 nA	500 + 10
1 GΩ	1.200000000	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 HP factory traceability of 10 kΩ to US NIST.

Memory

	Standard		Option 001	
	Readings	Bytes	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 HP 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° to 55° C

Warmup Time: Four hours to all specifications except where noted

Humidity Range: 95% RH, 0° to 40° C

Storage Temperature: -40° 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: 425.5 mm W × 88.9 mm H × 502.9 mm D (16.75 in × 3.5 in × 19.8 in)

Weight: Net, 12 kg (26.5 lb); shipping, 14.8 kg (32.5 lb)

Ordering Information

HP 3458A Multimeter (with HP-IB, 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 005 Waveform Analysis Library for HP Series 300 computers with BASIC 4.0 or greater and

HP Vectra with Measurement Coprocessor

Opt 1BN MIL-STD-45662A Certificate of Calibration

Opt 1BP MIL-STD-45662A Certificate of Calibration with data

Opt W30 Two additional years return-to-HP hardware support (see page 663)

Opt W32 Three-year customer return calibration coverage

Opt 700 CIIL Language

Opt 907 Front Handle Kit

Opt 908 Rack Flange Kit

Opt 909 Rack Flange Kit (with handles)