


Fluke 114, 115, 116 and 117 Digital Multimeters Extended specifications

Technical Data

General specifications (all models)

| | |
|---|--|
| Accuracy is specified for 1 year after calibration, at operating temperatures of 18 °C to 28 °C, with relative humidity of 0 % to 90 %. | |
| Maximum voltage between any terminal and earth ground | 600 V |
| Surge protection | 6 kV peak per IEC 61010-1 600 V CAT III, Pollution Degree 2 |
| Ω Fuse for A input | 11 A, 1000 V FAST 17 kA Fuse (Fluke PN 803293) |
| Display | Digital: 6,000 counts, updates 4/sec; Bar Graph: 33 segments, updates 32/sec |
| Temperature | Operating: -10 °C to +50 °C; Storage: -40 °C to +60 °C |
| Humidity | 0 % to 90 % to 35 °C; 75 % to 40 °C; 45 % to 50 °C |
| Temperature coefficient | 0.1 x (specified accuracy/°C) (< 18 °C or > 28 °C) |
| Operating altitude | 2,000 meters |
| Battery | 9 Volt Alkaline, NEDA 1604A/IEC 6LR61 |
| Battery life | Alkaline: 400 hours typical, without backlight |
| Safety compliances | ANSI/ISA 82.02.01 (61010-1) 2004, CAN/CSA C22.2 No 61010-1-04, UL 6101B (2003) and IEC/EN 61010-1 2 nd Edition for measurement Category III, 600 V, Pollution Degree 2, EMC EN61326-1 |
| Certifications | UL, CSA, TUV, N10140  , VDE |
| IP rating (dust and water protection) | IP42 |

Accuracy specifications (all models)

| Function | Range | Resolution | Accuracy ± ([% of Reading] + [Counts]) | | Model |
|-------------------------------------|---|---|--|------------------------|--------------------|
| DC millivolts | 600.0 mV | 0.1 mV | 0.5 % + 2 | | 114, 115, 116, 117 |
| DC volts | 6.000 V 60.00 V 600.0 V | 0.001 V 0.01 V 0.1 V | 0.5 % + 2 | | 114, 115, 116, 117 |
| | | | DC, 45 Hz to 500 Hz | 500 Hz to 1 kHz | |
| Auto-V LoZ ¹ true-rms | 600.0 V | 0.1 V | 2.0 % + 3 | 4.0 % + 3 | 114, 116, 117 |
| | | | 45 Hz to 500 Hz | 500 Hz to 1 kHz | |
| AC millivolts ¹ true-rms | 600.0 mV | 0.1 mV | 1.0 % + 3 | 2.0 % + 3 | 114, 115, 116, 117 |
| AC volts ¹ true-rms | 6.000 V 60.00 V 600.0 V | 0.001 V 0.01 V 0.1 V | 1.0 % + 3 | 2.0 % + 3 | 114, 115, 116, 117 |
| Continuity | 600 Ω | 1 Ω | Beeper on < 20 Ω, off > 250 Ω; detects opens or shorts of 500 μs or longer | | 114, 115, 116, 117 |
| Ohms | 600.0 Ω 6.000 kΩ 60.00 kΩ 600.0 kΩ 6.000 MΩ 40.00 MΩ | 0.1 Ω 0.001 kΩ 0.01 kΩ 0.1 kΩ 0.001 MΩ 0.01 MΩ | 0.9 % + 2 0.9 % + 1 0.9 % + 1 0.9 % + 1 0.9 % + 1 1.5 % + 2 | | 114, 115, 116, 117 |
| Diode test | 2.000 V | 0.001 V | 0.9 % + 2 | | 115, 116, 117 |
| Capacitance | 1000 nF 10.00 μF 100.0 μF 9999 μF | 1 nF 0.01 μF 0.1 μF 1 μF | 1.9 % + 2 1.9 % + 2 1.9 % + 2 100 μF to 1000 μF: 1.9 % + 2 > 1000 μF: 5 % + 20 | | 115, 116, 117 |
| LoZ capacitance (power-up option) | 1 nF to 500 μF | | 10 % + 2 typical | | 115, 116, 117 |

¹ All ac ranges except Auto-V LoZ are specified from 1 % to 100 % of range. Auto-V LoZ is specified from 0.0 V. Because inputs below 1 % of range are not specified, it is normal for this and other true-rms meters to display non-zero readings when the test leads are disconnected from a circuit or are shorted together. For volts, crest factor of ≤ 3 at 4000 counts, decreasing linearly to 1.5 at full scale. For amps, crest factor of ≤ 3. AC volts is ac-coupled. Auto-V LoZ, ac mV, and ac amps are dc-coupled.

Accuracy specifications (all models) cont.

| Function | Range | Resolution | Accuracy ± ([% of Reading] + [Counts]) | Model |
|---|---|--|--|----------|
| Temperature (K-Type thermocouple) | -40 °C to 400 °C -40 °F to 752 °F | 0.1 °C 0.2 °F | 1 % + 10 ² 1 % + 18 ² | 116 |
| AC amps true-rms ¹ (45 Hz to 500 Hz) | 6.000 A 10.00 A 20 A overload for 30 seconds maximum | 0.001 A 0.01 A | 1.5 % + 3 | 115, 117 |
| AC µAmps true-rms ¹ (45 Hz to 1 kHz) | 600.0 µA | 0.1 µA | 1.5 % + 3 (2.5 % + 3 > 500 Hz) | 116 |
| DC amps | 6.000 A 10.00 A 20 A overload for 30 seconds maximum | 0.001 A 0.01 A | 1.0 % + 3 | 115, 117 |
| DC µAmps true-rms | 600.0 µA | 0.1 µA | 1.0 % + 2 | 116 |
| Hz (V or A input) ² | 99.99 Hz 999.9 Hz 9.999 kHz 50.00 kHz | 0.01 Hz 0.1 Hz 0.001 kHz 0.01 kHz | 0.1 % + 2 | 115, 117 |
| Hz (V input) ³ | 99.99 Hz 999.9 Hz 9.999 kHz 50.00 kHz | 0.01 Hz 0.1 Hz 0.001 kHz 0.01 kHz | 0.1 % + 2 | 116 |

¹ All ac ranges except Auto-V LoZ are specified from 1 % to 100 % of range. Auto-V LoZ is specified from 0.0 V. Because inputs below 1 % of range are not specified, it is normal for this and other true-rms meters to display non-zero readings when the test leads are disconnected from a circuit or are shorted together. For volts, crest factor of ≤ 3 at 4000 counts, decreasing linearly to 1.5 at full scale. For amps, crest factor of ≤ 3. AC volts is ac-coupled. Auto-V LoZ, ac mV, and ac amps are dc-coupled.

² AC Volts Hz is ac-coupled and specified from 5 Hz to 50 kHz. AC Amps Hz is dc-coupled and specified from 45 Hz to 5 kHz. Amps input burden voltage (typical): 6 A input 2 mV/A, 10 A input 37 mV/A.

³ Frequency is ac-coupled, 45 Hz to 50 kHz.

Frequency counter sensitivity (models 115, 116, 117)

| Input range | | Typical sensitivity (rms sine wave) | | | |
|----------------------------|---------------|-------------------------------------|----------------------------|----------------------------|------------------------------|
| | | 5 Hz to 45 Hz | 45 Hz to 5 kHz | 5 kHz to 10 kHz | 10 kHz to 50 kHz |
| Volts AC | 6 V | 0.2 V | 0.2 V to 0.3 V | 0.3 V to 0.4 V | 0.4 V to 1.0 V |
| | 60 V 600 V | 2 V 20 V | 2 V to 3 V 20 V to 30 V | 3 V to 4 V 30 V to 40 V | 4 V to 10 V 40 V to 100 V |
| AC Amps (115, 117 only) | 6 A | N/A | 0.4 A | N/A | N/A |
| | 10 A | N/A | 0.5 A | N/A | N/A |

Input characteristics (all models)

| Function | Input impedance (nominal) | Common mode rejection ratio(1 kΩ unbalanced) | | Normal mode rejection |
|------------|---------------------------|--|------------|------------------------|
| Volts AC | > 5 MΩ < 100 pF | > 60 dB at dc, 50 or 60 Hz | | |
| Volts DC | > 10 MΩ < 100 pF | > 100 dB at dc, 50 or 60 Hz | | > 60 dB at 50 or 60 Hz |
| Auto-V LoZ | ~3 kΩ < 500 pF | > 60 dB at dc, 50 or 60 Hz | | |
| | Open circuit test voltage | Full scale voltage | | Short circuit current |
| Ohms | < 2.7 V dc | To 6.0 MΩ | 40 MΩ | < 350 µA |
| | | < 0.7 V dc | < 0.9 V dc | |
| Diode Test | < 2.7 V dc | 2.000 V dc | | < 1.2 mA |

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