



Fluke 170 Series True-rms Digital Multimeter Extended Specifications

Model Differences

(all other specifications are the same for each model)

| Feature | Model | | |
|---------------------------|-------|-------|-------|
| | 175 | 177 | 179 |
| Backlight | | • | • |
| Temperature Measurement | | | • |
| Basic dc voltage accuracy | 0.15% | 0.09% | 0.09% |


Nominal Specifications

| Function | Absolute Range or Description | |
|---------------------------|---|-------------------|
| AC Voltage, True-rms | 0.1 mV to 1000V (1 kHz) | |
| DC Voltage | 0.1 mV to 1000V | |
| Continuity | Beeper guaranteed on < 25 Ω, guaranteed off > 250 Ω; detects opens or shorts of 250 μs or longer. | |
| Resistance | 0.1Ω to 50.00 MΩ | |
| Diode Test | 2.400V | |
| Capacitance | 1 nF to 9999 uF | |
| AC Current, True-rms | 0.01 mA to 10.00A (20.00 A over-range for 30 seconds) | |
| DC Current | 0.01 mA to 10.00A (20.00 A over-range for 30 seconds) | |
| Frequency | 2 Hz to 50 kHz | |
| Temperature (179 Only) | -40 °C to +400 °C; -40 °F to +752 °F | |
| Basic dc voltage accuracy | 0.15% (175) | 0.09% (177 & 179) |
| Basic ac voltage accuracy | 1.0% | |

Features

| Feature | Description |
|--------------------------------|--|
| Digital Display | 6000 counts, updates 4 x second |
| Analog Bargraph Display | 33 segments, updates 40 x second |
| Backlight (177 & 179 only) | Automatically turns off after 2 minutes to save battery life The timeout feature can be disabled with a power-up option |
| HOLD & Auto HOLD | HOLD: freezes the display at the push of a button Auto HOLD: Display holds present reading until it detects new stable input, then the meter beeps and displays new reading |
| MIN MAX AVG | Minimum, maximum, and average reading memory |
| Manual or auto ranging | In auto range, the meter selects the range with the best resolution for the present measurement value |
| Fast continuity/open detection | The beeper sounds with a stretched pulse for opens or shorts as brief as 250 μs |
| Test lead alert | The message "LEAd" appears briefly on the display when the rotary switch is moved to or from any A (Amps) position |
| Power-up options | (1) Turn on all LCD segments, (2) Disable beeper, (3) Disable sleep mode, (4) Enable smoothing, (5) Disable backlight timeout (Models 177 & 179 only) |
| Closed-case calibration | No internal adjustments needed |
| Probe holders | The instrument comes with built-in probe holders for probe storage and for convenience when making measurements |
| Battery access door | Battery replacement without voiding calibration |
| High-impact overmold case | Integrated overmolded protection provides superior impact protection for your meter |

General Specifications

| | |
|--|--|
| Accuracy is specified for 1 year after calibration, at operating temperatures of 18 °C to 28 °C, with relative humidity of 0 % to 75 %. Accuracy specifications take the form of: $\pm ([\% \text{ of Reading }] + [\text{ Counts }])$ | |
| Maximum voltage between any terminal and earth ground | 1000V DC or AC RMS |
| Surge Protection | 8 kV peak per IEC 61010 |
| Fuse for mA inputs | 440 mA, 1000 V FAST Fuse |
| Fuse for A input | 11A, 1000V FAST Fuse |
| Display | Digital: 6,000 counts, updates 4/sec Bar Graph: 33 segments, updates 40/sec Frequency: 9,999 counts Capacitance: 9,999 counts |
| Altitude | Operating: 2000 m; Storage: 12000 m |
| Temperature | Operating: -10 °C to +50 °C Storage: -30 °C to +60 °C |
| Temperature coefficient | 0.1 X (specified accuracy / °C) (< 18 °C or > 28 °C) |
| Electromagnetic Compatibility (EN 61326-1:1997) | In an RF field of 3 V/M, accuracy = specified accuracy except in temperature: specified accuracy ± 5 °C, ± 9 °F |
| Relative Humidity | 0 % to 90 % @ 0 °C to 35 °C; 0 % to 70 % @ 36 °C to 50 °C |
| Relative Humidity in 50 MΩ Range | 0 % to 80 % @ 0°C to 35°C; 0 % to 70 % @ 36 °C to 50 °C |
| Battery Life | Alkaline: ~200 hrs typical |
| Size, with Holster (H x W x L) | 4.3 cm x 9 cm x 18.5 cm |
| Weight | 420g |
| Safety Compliances | ANSI/ISA S82.02.01, CSA C22.2-1010.1, IEC 61010 to 1000 V Overvoltage Category III, 600 V Overvoltage Category IV |
| Certifications | CSA, TÜV (EN61010), Australian  (N10140) |

Detailed Specifications

| Function | Range ¹ | Resolution | Accuracy ± ([% of Reading] + [Counts]) | | |
|--|---|--|--|--------------------------------|--------------------------------|
| | | | Model 175 | Model 177 | Model 179 |
| AC Volts ² | 600.0 mV | 0.1 mV | 1.0 % + 3 (45 Hz to 500 Hz) | 1.0 % + 3 (45 Hz to 500 Hz) | 1.0 % + 3 (45 Hz to 500 Hz) |
| | 6.000V 60.00V 600.0V 1000V | 0.001V 0.01V 0.1V 1V | 2.0 % + 3 (500 Hz to 1 kHz) | 2.0 % + 3 (500 Hz to 1 kHz) | 2.0 % + 3 (500 Hz to 1 kHz) |
| DC mV | 600.0 mV | 0.1 mV | 0.15 % + 2 | 0.09 % + 2 | 0.09 % + 2 |
| DC Volts | 6.000V 60.00V 600.0V | 0.001V 0.01V 0.01V | 0.15 % + 2 | 0.09 % + 2 | 0.09 % + 2 |
| | 1000V | 1V | 0.15 % + 2 | 0.1 % + 2 | 0.1 % + 2 |
| Continuity | 600Ω | 1Ω | Meter beeps at < 25 Ω, beeper turns off at > 250 Ω; detects opens or shorts of 250 ms or longer. | | |
| Ohms | 600.0Ω | 0.1Ω | 0.9 % + 2 | 0.9 % + 2 | 0.9 % + 2 |
| | 6.000 kΩ | 0.001 kΩ | 0.9 % + 1 | 0.9 % + 1 | 0.9 % + 1 |
| | 60.00 kΩ | 0.01 kΩ | 0.9 % + 1 | 0.9 % + 1 | 0.9 % + 1 |
| | 600.0 kΩ | 0.1 kΩ | 0.9 % + 1 | 0.9 % + 1 | 0.9 % + 1 |
| | 6.000 MΩ | 0.001 MΩ | 0.9 % + 1 | 0.9 % + 1 | 0.9 % + 1 |
| | 50.00 MΩ | 0.01 MΩ | 1.5 % + 3 | 1.5 % + 3 | 1.5 % + 3 |
| Diode test | 2.400V | 0.001V | 1 % + 2 | | |
| Capacitance | 1000 nF | 1 nF | 1.2 % + 2 | 1.2 % + 2 | 1.2 % + 2 |
| | 10.00 μF | 0.01 μF | 1.2 % + 2 | 1.2 % + 2 | 1.2 % + 2 |
| | 100.0 μF | 0.1 μF | 1.2 % + 2 | 1.2 % + 2 | 1.2 % + 2 |
| | 9999 μF ³ | 1 μF | 10 % typical | 10 % typical | 10 % typical |
| AC Amps (True-rms) (45 Hz to 1 kHz) | 60.00 mA 400.0 mA (600 mA for 18 hrs) 6.000A 10.00A (20A for 30s) | 0.01 mA 0.1 mA 0.001A 0.01A | 1.5 % + 3 | 1.5 % + 3 | 1.5 % + 3 |
| | DC Amps | 60.00 mA 400.0 mA (600 mA for 18 hrs) 6.000A 10.00A (20A for 30s) | 0.01 mA 0.1 mA 0.001A 0.01A | 1.0 % + 3 | 1.0 % + 3 |
| Hz (AC- or DC- coupled, V or A ^{4,5} input) | 99.99 Hz 999.9 Hz 9.999 kHz 99.99 kHz | 0.01 Hz 0.1 Hz 0.001 kHz 0.01 kHz | 0.1 % + 1 | 0.1 % + 1 | 0.1 % + 1 |
| Temperature | -40 °C to +400 °C -40 °F to +752 °F | 0.1 °C 0.1 °F | NA | NA | 1 % + 1.0 °C 1 % + 1.8 °F |
| MIN MAX AVG | For DC functions, accuracy is the specified of the measurement function ± 12 counts for changes longer than 275 ms in duration. For AC functions, accuracy is the specified of the measurement function ± 40 counts for changes longer than 1.2 s in duration. | | | | |

1. All AC voltage and AC current ranges are specified from 5 % of range to 100 % of range.
 2. Crest factor of ≤ 3 at full scale up to 500 V, decreasing linearly to crest factor ≤ 1.5 at 1000 V.
 3. In the 9999 μF range for measurements to 1000 μF, the measurement accuracy is 1.2 % for all models.
 4. In mA and A ranges, frequency measurement is specified to 30 kHz.
 5. Frequency < 10 kHz are not specified in 600 mV AC, 60 mA AC, and 6 A AC ranges.

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| Function | Overload Protection ¹ | Input Impedance (Nominal) | Common Mode Rejection Ratio (1 kΩ Unbalanced) | | Normal Mode Rejection |
|------------|----------------------------------|---------------------------|---|------------|--------------------------|
| Volts AC | 1000 V RMS or DC | > 10 MΩ < 100 pF | > 60 dB @ DC, 50 or 60 Hz | | |
| Volts DC | 1000 V RMS or DC | > 10 MΩ < 100 pF | > 120 dB @ DC, 50 or 60 Hz | | > 60 dB @ 50 Hz or 60 Hz |
| | | Open Circuit Test Voltage | Full Scale Voltage To: 6.0 MΩ 50 MΩ | | Short Circuit Current |
| Ohms | 1000V RMS or DC | < 1.5 V DC | < 600 mV DC | < 1.5 V DC | < 500 μA |
| Diode test | 1000V RMS or DC | 2.4 to 3.0 V DC | 2.4 V DC | | < 1.2 mA typical |

1. 10⁷ V-Hz maximum.

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