

TECHNICAL DATA

# Fluke 170 Series True-rms Digital Multimeters



**Fluke 170 Series DMMs are the industry-standard troubleshooting tools for electrical and electronic systems**

Fluke 170 Series digital multimeters are the preferred solutions for professional technicians around the world. They include the features you need to troubleshoot and repair electrical and electronic systems, combined with Fluke's unparalleled reputation for ruggedness, reliability and accuracy.

All 170 Series DMMs are true-rms responding. In today's electrical environment full of harmonics and variable speed drives, these DMMs will provide accurate ac voltage and current readings on complex, non-sinusoidal signals.

Fluke pioneered the analog bar graph in DMMs and it remains the industry standard today. For signals that change over time, the bar graph can be easier to understand than changing numbers.

Fluke 170 Series DMMs all carry a limited lifetime warranty. When your job depends on your tools, make sure a Fluke 170 Series DMM is on your toolbelt.

**EXCEPTIONAL EASE-OF-USE, RUGGEDNESS AND RELIABILITY**

The Fluke 175, 177 and 179 are the perfect choice for everyday use when your job depends on your meter

**INCREASED ACCURACY WITH TRUE-RMS MEASUREMENTS**

Get accurate voltage and current readings when measuring complex ac signals

**EASY UNDERSTANDING OF CHANGING SIGNALS**

An analog bar graph makes it easy to see trends in fluctuating signals

**TEMPERATURE MEASUREMENTS AT YOUR FINGERTIPS (179 ONLY)**

Built-in thermometer conveniently allows you to take temperature readings without having to carry a separate instrument





| General specifications                |                                                            |
|---------------------------------------|------------------------------------------------------------|
| Environmental specifications          |                                                            |
| Operating temperature                 | -10 °C to +50 °C                                           |
| Storage temperature                   | -30 °C to +60 °C                                           |
| Humidity (without condensation)       | 0 % – 90 % (0 °C – 35 °C)<br>0 % – 70 % (35 °C – 50 °C)    |
| Safety specifications                 |                                                            |
| Overvoltage category                  | EN 61010-1 to 1000 V CAT III<br>EN 61010-1 to 600 V CAT IV |
| Agency approvals                      | CSA, CE                                                    |
| Mechanical and general specifications |                                                            |
| Size                                  | 43 x 90 x 185 mm                                           |
| Weight                                | 420 g                                                      |
| Warranty                              | Limited lifetime                                           |
| Battery life                          | Alkaline ~200 hours typical, without backlight             |

## Specifications

Accuracy is specified for 1 year after calibration, at operating temperatures of 18 °C to 28 °C, with relative humidity at 0 % to 90 %. Accuracy specifications take the form of:  $\pm$  ( [ % of Reading ] + [ Counts ] )

| Function                                              | Range $\pm$ ([ % of reading ] + [ counts ])1                                                                                                                                                                                                                                                | Resolution       | Accuracy                                                                                                              |                                |                                                |
|-------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-----------------------------------------------------------------------------------------------------------------------|--------------------------------|------------------------------------------------|
|                                                       |                                                                                                                                                                                                                                                                                             |                  | Model 175                                                                                                             | Model 177                      | Model 179                                      |
| AC volts 2,3                                          | 600.0 mV                                                                                                                                                                                                                                                                                    | 0.1 mV           | 1.0 % + 3<br>(45 Hz to 500 Hz)                                                                                        | 1.0 % + 3<br>(45 Hz to 500 Hz) | 1.0 % + 3<br>(45 Hz to 500 Hz)                 |
|                                                       | 6.000 V                                                                                                                                                                                                                                                                                     | 0.001 V          |                                                                                                                       |                                |                                                |
|                                                       | 60.00 V                                                                                                                                                                                                                                                                                     | 0.01 V           |                                                                                                                       |                                |                                                |
|                                                       | 600.0 V                                                                                                                                                                                                                                                                                     | 0.1 V            |                                                                                                                       |                                |                                                |
|                                                       | 1000 V                                                                                                                                                                                                                                                                                      | 1 V              | 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                                              | 6.000 V                                                                                                                                                                                                                                                                                     | 0.001 V          | 0.15 % + 2                                                                                                            | 0.09 % + 2                     | 0.09 % + 2                                     |
|                                                       | 60.00 V                                                                                                                                                                                                                                                                                     | 0.01 V           |                                                                                                                       |                                |                                                |
|                                                       | 600.0 V                                                                                                                                                                                                                                                                                     | 0.1 V            |                                                                                                                       |                                |                                                |
|                                                       | 1000 V                                                                                                                                                                                                                                                                                      | 1 V              | 0.15 % + 2                                                                                                            | 0.15 % + 2                     | 0.15 % + 2                                     |
| Continuity                                            | 600 $\Omega$                                                                                                                                                                                                                                                                                | 1 $\Omega$       | Meter beeps at < 25 $\Omega$ , beeper turns off at > 250 $\Omega$ ; detects opens or shorts of 250 $\mu$ s or longer. |                                |                                                |
| Ohms                                                  | 600.0 $\Omega$                                                                                                                                                                                                                                                                              | 0.1 $\Omega$     | 0.9 % + 2                                                                                                             | 0.9 % + 2                      | 0.9 % + 2                                      |
|                                                       | 6.000 k $\Omega$                                                                                                                                                                                                                                                                            | 0.001 k $\Omega$ | 0.9 % + 1                                                                                                             | 0.9 % + 1                      | 0.9 % + 1                                      |
|                                                       | 60.00 k $\Omega$                                                                                                                                                                                                                                                                            | 0.01 k $\Omega$  | 0.9 % + 1                                                                                                             | 0.9 % + 1                      | 0.9 % + 1                                      |
|                                                       | 600.0 k $\Omega$                                                                                                                                                                                                                                                                            | 0.1 k $\Omega$   | 0.9 % + 1                                                                                                             | 0.9 % + 1                      | 0.9 % + 1                                      |
|                                                       | 6.000 M $\Omega$                                                                                                                                                                                                                                                                            | 0.001 M $\Omega$ | 0.9 % + 1                                                                                                             | 0.9 % + 1                      | 0.9 % + 1                                      |
|                                                       | 50.00 M $\Omega$                                                                                                                                                                                                                                                                            | 0.01 M $\Omega$  | 1.5 % + 3                                                                                                             | 1.5 % + 3                      | 1.5 % + 3                                      |
| Diode test                                            | 2.400 V                                                                                                                                                                                                                                                                                     | 0.001 V          | 1 % + 2                                                                                                               |                                |                                                |
| Capacitance                                           | 1000 nF                                                                                                                                                                                                                                                                                     | 1 nF             | 1.2 % + 2                                                                                                             | 1.2 % + 2                      | 1.2 % + 2                                      |
|                                                       | 10.00 $\mu$ F                                                                                                                                                                                                                                                                               | 0.01 $\mu$ F     | 1.2 % + 2                                                                                                             | 1.2 % + 2                      | 1.2 % + 2                                      |
|                                                       | 100.0 $\mu$ F                                                                                                                                                                                                                                                                               | 0.1 $\mu$ F      | 1.2 % + 2                                                                                                             | 1.2 % + 2                      | 1.2 % + 2                                      |
|                                                       | 9999 $\mu$ F <sup>4</sup>                                                                                                                                                                                                                                                                   | 1 $\mu$ F        | 10 % typical                                                                                                          | 10 % typical                   | 10 % typical                                   |
| AC amps <sup>5</sup><br>(True-rms)<br>(45 Hz to 1kHz) | 60.00 mA                                                                                                                                                                                                                                                                                    | 0.01 mA          | 1.5 % + 3                                                                                                             | 1.5 % + 3                      | 1.5 % + 3                                      |
|                                                       | 400.0 mA <sup>6</sup>                                                                                                                                                                                                                                                                       | 0.1 mA           |                                                                                                                       |                                |                                                |
|                                                       | 6.000 A                                                                                                                                                                                                                                                                                     | 0.001 A          |                                                                                                                       |                                |                                                |
|                                                       | 10.00 A <sup>7</sup>                                                                                                                                                                                                                                                                        | 0.01 A           |                                                                                                                       |                                |                                                |
| DC amps <sup>4</sup>                                  | 60.00 mA                                                                                                                                                                                                                                                                                    | 0.01 mA          | 1.0 % + 3                                                                                                             | 1.0 % + 3                      | 1.0 % + 3                                      |
|                                                       | 400.0 mA <sup>6</sup>                                                                                                                                                                                                                                                                       | 0.1 mA           |                                                                                                                       |                                |                                                |
|                                                       | 6.000 A                                                                                                                                                                                                                                                                                     | 0.001 A          |                                                                                                                       |                                |                                                |
|                                                       | 10.00 A <sup>7</sup>                                                                                                                                                                                                                                                                        | 0.01 A           |                                                                                                                       |                                |                                                |
| Hz                                                    | 99.99 Hz                                                                                                                                                                                                                                                                                    | 0.01 Hz          | 0.1 % + 1                                                                                                             | 0.1 % + 1                      | 0.1 % + 1                                      |
| (AC- or DC-coupled,<br>V or A <sup>2,3</sup> input )  | 999.9 Hz                                                                                                                                                                                                                                                                                    | 0.1 Hz           |                                                                                                                       |                                |                                                |
|                                                       | 9.999 kHz                                                                                                                                                                                                                                                                                   | 0.001 kHz        |                                                                                                                       |                                |                                                |
|                                                       | 99.99 kHz                                                                                                                                                                                                                                                                                   | 0.01 kHz         |                                                                                                                       |                                |                                                |
| Temperature                                           | -40 °C to +400 °C<br>-40 °F to +752 °F                                                                                                                                                                                                                                                      | 0.1 °C<br>0.1 °F | NA                                                                                                                    | NA                             | 1 % + 10 <sup>5</sup><br>1 % + 18 <sup>5</sup> |
| Min-max avg                                           | For DC functions, accuracy is the specified accuracy of the measurement function $\pm$ 12 counts for changes longer than 350 ms in duration.<br>For AC functions, accuracy is the specified accuracy of the measurement function $\pm$ 40 counts for changes longer than 900 ms in duration |                  |                                                                                                                       |                                |                                                |

<sup>1</sup> All AC voltage and AC current ranges are specified from 5 % of range to 100 % of range.

<sup>2</sup> Crest factor of  $\leq$  3 at full scale up to 500 V, decreasing linearly to crest factor  $\leq$  1.5 at 1000 V.




<sup>3</sup> For non-sinusoidal waveforms, add -(2 % reading + 2 % full scale) typical, for crest factors up to 3.

<sup>4</sup> In the 9999  $\mu$ F range for measurements to 1000  $\mu$ F, the measurement accuracy is 1.2 % + 2 for all models.

<sup>5</sup> Amps input burden voltage (typical): 400 mA input 2 mV/mA, 10 A input 37 mV/A.

<sup>6</sup> 400.0 mA accuracy specified up to 600 mA overload.

<sup>7</sup> > 10A unspecified.

| Models                                | 175                                                                               | 177                                                                                | 179                                                                                 |
|---------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                                       |  |  |  |
|                                       | General purpose                                                                   | Troubleshooting<br>Repair                                                          | Built-in thermometer<br>Troubleshooting<br>Repair                                   |
| <b>Basic features</b>                 |                                                                                   |                                                                                    |                                                                                     |
| Counts                                | 6000                                                                              | 6000                                                                               | 6000                                                                                |
| True-rms readings                     | Ac                                                                                | Ac                                                                                 | Ac                                                                                  |
| Basic dc accuracy                     | 0.09 %                                                                            | 0.09 %                                                                             | 0.09 %                                                                              |
| Auto/manual ranging                   | • / •                                                                             | • / •                                                                              | • / •                                                                               |
| Digits                                | 3-1/2                                                                             | 3-1/2                                                                              | 3-1/2                                                                               |
| <b>Measurements</b>                   |                                                                                   |                                                                                    |                                                                                     |
| Voltage ac/dc                         | 1000 V                                                                            | 1000 V                                                                             | 1000 V                                                                              |
| Current ac/dc                         | 10 A                                                                              | 10 A                                                                               | 10 A                                                                                |
| Resistance                            | 50 MΩ                                                                             | 50 MΩ                                                                              | 50 MΩ                                                                               |
| Frequency                             | 100 kHz                                                                           | 100 kHz                                                                            | 100 kHz                                                                             |
| Capacitance                           | 10,000 μF                                                                         | 10,000 μF                                                                          | 10,000 μF                                                                           |
| Temperature                           |                                                                                   |                                                                                    | (+) 400 °C                                                                          |
| Continuity/diode test                 | •                                                                                 | •                                                                                  | •                                                                                   |
| <b>Display</b>                        |                                                                                   |                                                                                    |                                                                                     |
| Analog bargraph                       | •                                                                                 | •                                                                                  | •                                                                                   |
| Backlight                             |                                                                                   | •                                                                                  | •                                                                                   |
| <b>Diagnostics and data</b>           |                                                                                   |                                                                                    |                                                                                     |
| Min-max recording                     | •                                                                                 | •                                                                                  | •                                                                                   |
| Display hold/Auto (touch) hold        | • / •                                                                             | • / •                                                                              | • / •                                                                               |
| <b>Other features</b>                 |                                                                                   |                                                                                    |                                                                                     |
| Overmolded case, integrated holster   | •                                                                                 | •                                                                                  | •                                                                                   |
| Operating temperature range           | -10 °C, +50 °C                                                                    | -10 °C, +50 °C                                                                     | -10 °C, +50 °C                                                                      |
| <b>Warranty and electrical safety</b> |                                                                                   |                                                                                    |                                                                                     |
| Warranty (years)                      | Limited lifetime                                                                  | Limited lifetime                                                                   | Limited lifetime                                                                    |
| Dangerous voltage indication          | •                                                                                 | •                                                                                  | •                                                                                   |
| EN61010-1 CAT III                     | 1000 V                                                                            | 1000 V                                                                             | 1000 V                                                                              |
| EN61010-1 CAT IV                      | 600 V                                                                             | 600 V                                                                              | 600 V                                                                               |
| Recommended accessory test leads      | TL75, TL175                                                                       | TL75, TL175                                                                        | TL75, TL175                                                                         |

Denotes features only available with this model

## Ordering information

Fluke 179 True-rms Digital Multimeter  
 Fluke 177 True-rms Digital Multimeter  
 Fluke 175 True-rms Digital Multimeter

## Included accessories

Installed 9V battery  
 TL75 test leads  
 User's manual  
 80BK-A Temperature Probe (Fluke 179 only)



**Fluke.** *Keeping your world up and running.®*

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