

## DETAILED SPECIFICATIONS

# Fluke 114, 115, 116 and 117 Digital Multimeters

Accuracy is specified for 1 year after calibration, at operating temperatures of 18 °C to 28 °C, with relative humidity of 0 % to 90 %.

General specifications	
Maximum voltage (between any terminal and earth ground)	600 V rms
Safety	IEC 61010-1, Pollution Degree 2 IEC 61010-2-033 CAT III 600 V, 10 A EMC IEC 61326-1: Portable
Fuse for A input (115, 117 only)	11 A, 1000 V, IR 17 kA (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 (IEC 6LR61)
Battery life	400 hours typical, without backlight
Certifications	CE, CSA, RCM
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	0.001 V	0.5 % + 2		114, 115, 116, 117
	60.00 V	0.01 V			
	600.0 V	0.1 V			
Auto-V LoZ <sup>1</sup> true-rms (114, 116, 117 only)	600.0 V	0.1 V	<b>DC, 45 Hz to 500 Hz</b>	<b>500 Hz to 1 kHz</b>	114, 116, 117
			2.0 % + 3	4.0 % + 3	
AC millivolts <sup>1</sup> true-rms	600.0 V	0.1 V	<b>45 Hz to 500 Hz</b>	<b>500 Hz to 1 kHz</b>	114, 115, 116, 117
			1.0 % + 3	2.0 % + 3	
AC volts <sup>1</sup> 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 (115, 116 only)	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	0.1 Ω	0.9 % + 2		114, 115, 116, 117
	6.000 kΩ	0.001 kΩ	0.9 % + 1		
	60.00 kΩ	0.01 kΩ	0.9 % + 1		
	600.0 kΩ	0.1 kΩ	0.9 % + 1		
	6.000 MΩ	0.001 MΩ	0.9 % + 1		
	40.00 MΩ	0.01 MΩ	5.0 % + 2		
Diode test	2.000 V	0.001 V	0.9 % + 2		115, 116, 117
Capacitance (115, 116, 117 only)	1000 nF	1 nF	1.9 % + 2		115, 116, 117
	10.00 μF	0.01 μF	1.9 % + 2		
	100.0 μF	0.1 μF	1.9 % + 2		
	9999 μF	1 μF	100 μF to 1000 μF: 1.9 % + 2		
	-	-	> 1000 μF: 5 % + 20		

<sup>1</sup> 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.

<b>Accuracy specifications (all models)</b>				
<b>Function</b>	<b>Range</b>	<b>Resolution</b>	<b>Accuracy ± ([% of Reading]+ [Counts])</b>	<b>Model</b>
LoZ capacitance (power-up option) (114, 116, 117 only)	1 nF to 500 µF		10 % + 2 typical	115, 116, 117
Temperature - K-Type thermocouple (116 only)	-40 °C to 400 °C -40 °F to 752 °F	0.1 °C 0.2 °F	1 % + 10 <sup>2</sup> 1 % + 18 <sup>2</sup>	116
AC amps true-rms <sup>1</sup> (45 Hz to 500 Hz) (115, 117 only)	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 <sup>1</sup> (45 Hz to 1 kHz) (116 only)	600.0 µA	0.1 µA	1.5 % + 3 (2.5 % + 3 > 500 Hz)	116
DC amps (115, 117 only)	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 (116 only)	600.0 µA	0.1 µA	1.0 % + 2	116
Hz (V or A input) <sup>2</sup> (Hz A 115, 117 only)	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) <sup>3</sup> (115, 116, 117 only)	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.

<b>Frequency counter sensitivity (models 115, 116, 117)</b>					
<b>Input range</b>		<b>Typical sensitivity (rms sine wave)</b>			
		<b>5 Hz to 45 Hz</b>	<b>45 Hz to 5 kHz</b>	<b>5 kHz to 10 kHz</b>	<b>10 kHz to 50 kHz</b>
Volts AC	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	2 V	2 V to 3 V	3 V to 4 V	4 V to 10 V
	600 V	20 V	20 V to 30 V	30 V to 40 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

<b>Input characteristics (all models)</b>				
<b>Function</b>	<b>Input impedance (nominal)</b>	<b>Common mode rejection ratio (1 kΩ unbalanced)</b>		<b>Normal mode rejection</b>
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 (114, 116, 117 only)	~3 kΩ < 500 pF	> 60 dB at dc, 50 or 60 Hz		
	<b>Open circuit test voltage</b>	<b>Full scale voltage</b>		<b>Short circuit current</b>
Ohms	< 2.7 V dc	<b>To 6.0 MΩ</b>	<b>40 MΩ</b>	< 350 µA
		< 0.7 V dc	< 0.9 V dc	
Diode test (115, 117 only)	< 2.7 V dc	2.000 V dc		< 1.2 mA

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08/2020 2793260b-en

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