


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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TL75 -1 Hard Point TM Test Lead Set



Overview

Models and Accessories

Knowledge and Information

- One pair (red, black) of comfort grip probes
- 48 inches (1.22 meter) PVC insulated test leads with right-angle shrouded banana plugs
- Recommended for general purpose measurements
- CAT II 1000 V, 10 A rating EN/IEC 61010-031:2002 +A1:2008
- One year warranty

TL220 -1 SureGrip™ Industrial Test Lead Set



Overview

Models and Accessories

Knowledge and Information

Handy all-in-one kit that includes :

- AC220 SureGrip™ Alligator Clip Set
- TP238 SureGrip™ Insulated Test Probe Set
- TL222 SureGrip™ Silicone Test Lead Set (right to right)
- One year warranty



TL223 -1 SureGrip™ Electrical Test Lead Set



Overview

Models and Accessories

Knowledge and Information

Handy all-in-one kit that includes :

- AC220 SureGrip™ Alligator Clip Set
- TP238 SureGrip™ Insulated Test Probe Set
- TL224 SureGrip™ Silicone Test Lead Set (straight to right)
- One year warranty



TLK-225 -1, SureGrip™ Master Accessory Set



Overview

Models and Accessories

Knowledge and Information

Kit includes all the SureGrip™ leads and probes in a handy 6-Pocket roll-up pouch:

- AC220 SureGrip™ Alligator Clip Set
- AC280 SureGrip™ Hook Clip Set
- AC283 SureGrip™ Pincer Clip Set
- AC285 SureGrip™ Large Jaw Alligator Clip Set
- TP238 SureGrip™ Insulated Test Probe Set
- TL224 SureGrip™ Silicone Test Lead Set

T5-KIT-1, T5 Tester Accessory Starter Kit



Overview

Models and Accessories

Knowledge and Information

Special value starter kit for the electrical professional who already owns a Fluke T5 Electrical Tester or is thinking of buying one. Includes insulated test probes, alligator clips for hands free connections and a soft carry case to protect your tester when not in use and store your accessories.

Included with kit:

- TP238 SureGrip™ Insulated Test Probe Set
- AC285 SureGrip Large jaw alligator clips
- C33, soft carrying case

TL80A -1, Test Lead Set, Basic Electronic



Overview

Models and Accessories

Knowledge and Information

- Economical accessories for making measurements in low energy, electronic applications
- One pair (red, black) each 1 meter long WearGuard™ test lead set, TL71-1. Exposes contrasting color when leads are damaged and need replacing.
- Compatible with all instruments that accept standard 4 mm, shrouded banana connectors
- EN/IEC 61 01 0-031:2002 +A1:2008
- Includes: Alligator Clips, 5 A max Insulated Extended probe tips, 3A max
- C75 soft carrying case
- One year warranty

TLK282 -1, Deluxe Automotive Test Lead Kit



Overview

Models and Accessories

Knowledge and Information

Everything you can find in the TLK281 Automotive Test Lead Kit, plus a few extras. Use the back probe pins to slide into weather pack connectors on fuel injectors, TPS and MAP sensors. A hook probe with plunger actuation allows quick connection to pins or exposed conductors.

- Tested to 60 V DC

Kit contains:

- TP81 Insulation Piercing Clip Set
- TP40 Automotive Back Probe Pins (five)
- TL224 Suregrip™ Silicone Test Lead Set
- TP238 SureGrip™ Insulated Test Probe Set
- AC220 Suregrip™ Alligator Clip Set
- AC285 Suregrip™ Large Jaw Alligator Clip Set
- AC280 Suregrip™ Hook Clip Set
- Soft Case, 6-Pocket roll-up pouch

VPS40-III Voltage Probe, 10:1, with safety-designed shrouded 4mm testpin

Overview

Models and Accessories

Knowledge and Information

Voltage Probe, 10:1, with safety-designed shrouded 4mm testpin, for use with 120 Series ScopeMeter®. Hook clip and ground lead included. The shrouded 4mm banana testpin makes this probe also compatible with standard safety-designed alligator clips (like e.g. the AC285).

Set contains 600 V CAT III / 1000 V CAT II rated items:

- 10:1 Voltage Probe, 1 Black
- Hook Clip, 1 Red (HC120-III)
- Ground Lead with Mini Alligator, 1 Black

Specification:

- Attenuation 10x
- Bandwidth DC to 40 MHz (-3 dB)
- Max Input Voltage 600 V CAT III / 1000 V CAT II as per IEC61010-031:2008
- V*Hz product: 500*10⁶ V*Hz
- Max Floating Voltage: See Instrument Manual
- Input Resistance / Capacitance, 5 MΩ // 15.5 pF
- Compensation Fixed for ScopeMeter 120 Series (14 pF)
- Probe Tip: safety-shrouded 4 mm banana pin with test tip (see photo)
- Instrument Connector 4 mm shielded banana plu
- Cable Length 1.2 m
- Safety IEC / EN 61010-031:2008; UL61010 B-2-031; CSA C22.2 No. 1010.2.031
- Working Voltage 600 V CAT III / 1000 V CAT II
- Pollution Degree 2
- Protection Class II (double insulation)

