

Manual Supplement

Manual Title: 114,115, 116, and 117 Calibration
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This supplement contains information necessary to ensure the accuracy of the above manual.

Change #1

On page 10, delete step 30.

Change #2, 543, 572

On page 4, replace **Table 2** with the following:

Table 2. Accuracy Specifications

Function	Range	Resolution	Accuracy ± ([% of Reading] + [Counts])		Model
DC millivolts	600.0 mV	0.1 mV	0.5 % + 2		114, 115, 117
DC Volts	6.000 V	0.001 V	0.5 % + 2		114, 115, 117
	60.00 V	0.01 V			
	600.0 V	0.1 V			
			DC, 45 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, 117
			45 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, 117
AC Volts ⁽¹⁾ True-rms	6.000 V	0.001 V	1.0 % + 3		114, 115, 117
	60.00 V	0.01 V			
	600.0 V	0.1 V			
Continuity	600 Ω	1 Ω	Beeper on < 20 Ω, off > 250 Ω; detects opens or shorts of 500 μs or longer.		114, 115, 117
Ohms	600.0 Ω	0.1 Ω	0.9 % + 2		114, 115, 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, 117
Capacitance	1000 nF	1 nF	1.9 % + 2		115, 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 - 1000 μF: 1.9 % + 2 > 1000 μF: 5 % + 20		
Lo-Z Capacitance (Power-up option)	1 nF to 500 μF		10 % + 2 typical		115, 117
AC Amps True-rms ⁽¹⁾ (45 Hz to 500 Hz)	6.000 A	0.001 A	1.5 % + 3		115, 117
	10.00 A ⁽³⁾	0.01 A			
DC Amps	6.000 A	0.001 A	1.0 % + 3		115, 117
	10.00 A ⁽³⁾	0.01 A			

Hz (V or A input) ^[2]	99.99 Hz 999.9 Hz 9.999 kHz 50.00 kHz 99.99 kHz	0.01 Hz 0.1 Hz 0.001 kHz 0.01 kHz 0.01 kHz	0.1 % + 2	115, 117
Notes:				
[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 99.99 kHz. Minimum input required above 50.00 kHz typically is > 1.1 vac sine. Minimum input typical and not specified. AC Amps Hz is dc-coupled and specified from 45 Hz to 5 kHz.				
[3] Δ >10 A accuracy is unspecified. Duty cycle: >10 A to 20 A, 30 seconds on, 10 minutes off.				

Change #3

On page 2, under **Safety Information**:

Change: Do not use the Meter around explosive gas or vapor.

To: Do not use the Product around explosive gas, vapor, or in damp or wet environments

Change #4, 63151, 63405, 543, 238

On page 3, replace Table 1 with:

Table 1. Electrical Symbols

Symbol	Description	Symbol	Description
	AC (Alternating Current)		Fuse
	DC (Direct Current)		Double Insulated
	WARNING - RISK OF DANGER. Consult user documentation.		WARNING. RISK OF DANGER
	Battery (Low battery when shown on the display.)		Earth ground
	This product complies with the WEEE Directive marking requirements. The affixed label indicates that you must not discard this electrical/electronic product in domestic household waste. Product Category: With reference to the equipment types in the WEEE Directive Annex I, this product is classed as category 9 "Monitoring and Control Instrumentation" product. Do not dispose of this product as unsorted municipal waste.		
	Conforms to relevant South Korean EMC Standards		
CAT II	Measurement Category II is applicable to test and measuring circuits connected directly to utilization points (socket outlets and similar points) of the low-voltage MAINS installation.		
CAT III	Measurement Category III is applicable to test and measuring circuits connected to the distribution part of the building's low-voltage MAINS installation.		
CAT IV	Measurement Category IV is applicable to test and measuring circuits connected at the source of the building's low-voltage MAINS installation.		
	Certified by CSA Group to North American safety standards.		
	Certified by TÜV SÜD Product Service.		
	Consult user documentation.		

On page 3, under **General Specifications**, delete **Surge Protection, Safety Compliance, and Certifications** and add:

Safety IEC 61010-1: Pollution Degree 2
IEC 61010-2-033: Measurement CAT III, CAT IV 600 V

Electromagnetic Compatibility (EMC)

International..... IEC 61326-1: Portable Electromagnetic Environment

CISPR 11: Group 1, Class A

Group 1: Equipment has intentionally generated and/or uses conductively-coupled radio frequency energy that is necessary for the internal function of the equipment itself.

Class A: Equipment is suitable for use in all establishments other than domestic and those directly connected to a low-voltage power supply network that supplies buildings used for domestic purposes. There may be potential difficulties in ensuring electromagnetic compatibility in other environments due to conducted and radiated disturbances.

Caution: This equipment is not intended for use in residential environments and may not provide adequate protection to radio reception in such environments.

Emissions that exceed the levels required by CISPR 11 can occur when the equipment is connected to a test object.

Korea (KCC)..... Class A Equipment (Industrial Broadcasting & Communication Equipment)

Class A: Equipment meets requirements for industrial electromagnetic wave equipment and the seller or user should take notice of it. This equipment is intended for use in business environments and not to be used in homes.

USA (FCC)..... 47 CFR 15 subpart B. This product is considered an exempt device per clause 15.103.

Change #5, 593

On pages 11-12, in the **Testing the VoltAlert Function (117 only)** section, replace the procedure and add Figure 1:

For Fluke 117 with S/N 38920290 through 42913406, use the alternate calibration procedure described below to verify that VoltAlert functions properly.

Note

- *Ensure the instrument is REMOVED from the holster prior to performing the test.*
- *Keep the meter away from electrical noise sources during the tests for, example, florescent lights, dimmable lights, motors. These sources can trigger VoltAlert and invalidate the test.*
- *It may be necessary in steps 4 and 8 below to slightly adjust the Meter's position for maximum signal strength, in order to get the Meter's beeper to sound continuously.*

Refer to Figure 1 while performing the following steps.

1. Select the VoltAlert function, and verify that "Hi" is on the display. Verify that the beeper is silent and the red LED is off.
2. Connect wire (Pomona 4911A-12-2 or equivalent) to the High output voltage terminals of the calibrator (Fluke 5500A or equivalent).
3. Set the calibrator output to 10 V at 60 Hz.
4. Hold the Meter so that the wire contacts and runs across the top center of the unit. The wire should run perpendicular to the face of the unit (front to back of Meter, not side to side). Verify that the Meter's beeper is on continuously, and the red LED, at the top of the display, lights up.
5. Place the calibrator in standby mode and verify that the beeper is now silent and the red LED is off.
6. Press the RANGE (display should indicate 'Lo' range).
7. Set the calibrator's output to 30 V at 60 Hz.
8. Hold the Meter so that the wire contacts and runs across the top center of the unit. The wire should run perpendicular to the face of the unit (front to back of Meter, not side to side). Verify that the Meter's beeper is on continuously, and the red LED, at the top of the display, lights up.
9. Return the calibrator to standby mode and verify the Meter's beeper is silent and the red LED is off.

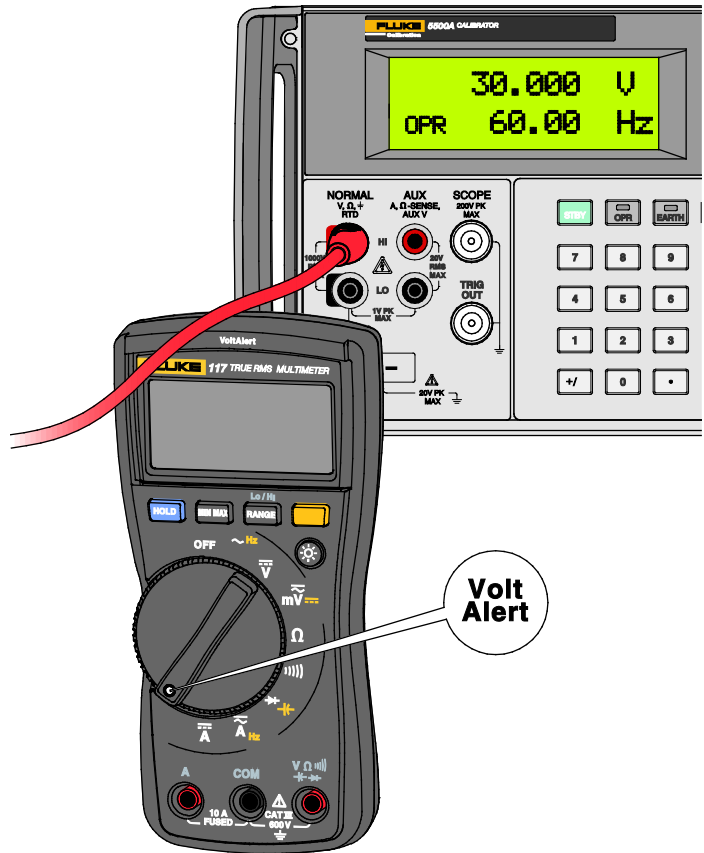


Figure 1. VoltAlert Alternate Calibration Procedure