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]) 0.5 % + 2 0.5 % + 2		Model 114, 115, 117
DC millivolts	600.0 mV	0.1 mV			
DC Volts	6.000 V 60.00 V 600.0 V	0.001 V 0.01 V 0.1 V			114, 115, 117
			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] Truerms	600.0 mV	0.1 mV	1.0 % + 3	2.0 % + 3	114, 115, 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, 117
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 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 5.0 % + 2		114, 115, 117
Diode test	2.000 V	0.001 V	0.9 % + 2		115, 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 1.9 % + 2 100 µF - 1000 µF: 1.9 % + 2 > 1000 µF: 5 % + 20		115, 117
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 10.00 A ^[3]	0.001 A 0.01 A	1.5 % + 3		115, 117
DC Amps	6.000 A 10.00 A ^[3]	0.001 A 0.01 A	1.0 % + 3		115, 117
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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
	99.99 kHz	0.01 kHz		

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] Λ >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			
A	WARNING - RISK OF DANGER. Consult user documentation.	\triangle	WARNING. RISK OF DANGER			
Û	Battery (Low battery when shown on the display.)	Ť	Earth ground			
X	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.					
C	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.					
©® us	Certified by CSA Group to North American safety standards.					
TIV SUO	Certified by TÜV SÜD Product Service.					
[]i	Consult user documentation.					

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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 600 V

Electromagnetic Compatibility (EMC)

InternationalIEC 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.

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.

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