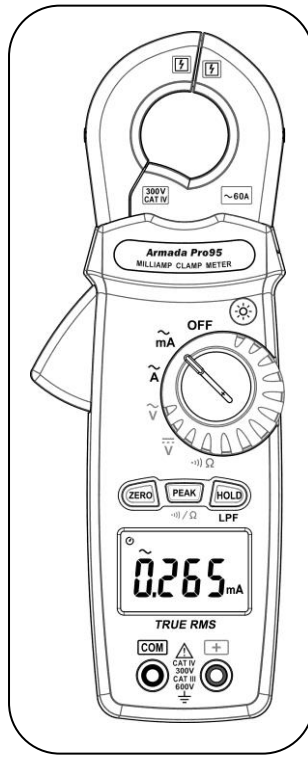
Model: Pro95

TRUE RMS
MILLIAMP CLAMP
METER



Instruction Manual

CE

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1. ⚠ SAFETY INFORMATION

- Do not operate the tester if there is any sign of damage to the tester or the test leads.
- Check the main function dial and make sure it is in the correct position before each measurement.
- Do not perform resistance and continuity tests on a live power system.
- Do not apply voltage between the test terminals and test terminal to ground that exceed the maximum limits stated in this manual.
- Keep your fingers behind the protection ring on the test probes when using the test leads.
- Change the battery when the [+] symbol appears to avoid incorrect data.

Environmental Conditions

Operation Temperature: 0°C to 40°C(32°F to 104°F); < 80 % RH
Storage Temperature: -10°C to 60°C(14°F to 140°F); < 80 % RH

Explanation Symbols

⚠ Attention refer to operation Instructions.

Dangerous voltage may be present at terminals.

This instrument has double insulation.

Approvals: CE **EN61010 600V CAT III**

N2068

2. GENERAL SPECIFICATION

Digital Display:
4 digital liquid crystal(LCD), maximum reading 6000.

Polarity:
When a negative signal is applied, the "▬" signal appears.

Low Battery Indication:
When the battery voltage is below that required for proper operation then the [+] symbol will appear on the LCD display.

Sample Rate:
2 times/sec for digital data.

Power Source:
1.5V size AAA battery X 2
Typical battery Life: (without buzzer, backlight)
40 hours at ACmA and ACA and ACV function;
60 hours at DCV and Ohm function. (alkaline battery)

Auto Power Off:
If there is no key or dial operation for 30 minutes, the meter will power itself off to save battery life. This function can be disabled by pressing and holding the " **HOLD** " button and powering on the unit.

Over Load:
When the applied signal is larger than the maximum for the range in use the display will show OL.

Maximum jaw opening:
∅ 23 mm

Dimensions:
206 x 76 x 33.5 mm

Weight:
262g (with battery)

Accessories:
Carrying case, Batteries, Test Lead & Instruction Manual.

3. ELECTRICAL SPECIFICATION

The accuracy specification is defined as ± (percent of reading + digit) At 23±5°C, ≦80 %RH.

3-1 ACmA (True RMS)

Range	Resolution	Accuracy	
		50~60Hz	50~500Hz
6.000mA	0.001mA	1.0% + 8dgts	2.0% + 8dgts
60.00mA	0.01mA	1.0% + 5dgts	2.0% + 5dgts
600.0mA	0.1mA		

Zero correction: Fractions smaller than approximately 0.006 mA are calibrated to zero.

Low Pass Filter

Range	Resolution	Accuracy
6.000mA	0.001mA	2.0% + 8dgts
60.00mA	0.01mA	2.0% + 5dgts
600.0mA	0.1mA	

3-2 ACA (True RMS)

Range	Resolution	Accuracy	
		50~60Hz	50~500Hz
6.000A	0.001A	1.0% + 5dgts	2.0% + 5dgts
60.00A	0.01A		

Low Pass Filter

Range	Resolution	Accuracy
6.000A	0.001A	2.0% + 5dgts
60.00A	0.01A	

3-3 ACV (True RMS)

Range	Resolution	Accuracy
		50~500Hz
60.00V	0.01V	1.0% ± 3dgts
600.0V	0.1V	

Input impedance: 2MΩ

3-4 DCV

Range	Resolution	Accuracy
60.00V	0.01V	1.0% + 2dgts
600.0V	0.1V	

Input impedance: 2MΩ

3-5 Continuity ·))

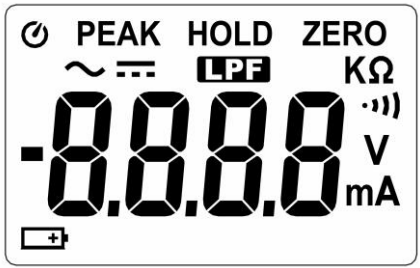
Range	Buzzer Function
·))	Ohm < 45Ω

3-6 Resistance (Ω)

Range	Resolution	Accuracy
600.0Ω	0.1Ω	1.0% + 2dgts
6.000KΩ	0.001KΩ	
60.00KΩ	0.01KΩ	
600.0KΩ	0.1KΩ	

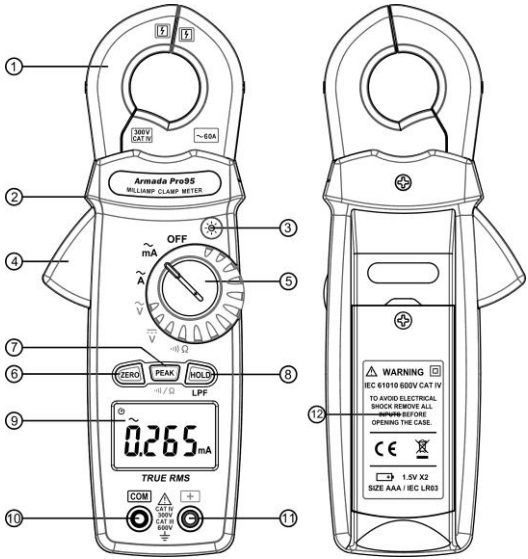
4.DESCRIPTION OF THE INSTRUMENT

4-1 Description of the display



	Auto power off indication
	Polarity indication
	Low battery indication
	AC measurement indication
	DC measurement indication
A	Current measurement indication
V	Voltage measurement indication
ZERO	ZERO indication
HOLD	Data hold indication
PEAK	PEAK hold indication
LPF	Low pass filter indication
	Continuity test indication
K	Measurement unit
Ω	Resistance measurement indication
m	Measurement unit

4-2 Description of front and back



① Current Sensing Clamp
② Safety protection ring
③ Backlight button
④ Clamp opening handle
⑤ Function select dial
⑥ ZERO button
⑦ PEAK or ·ıı)) / Ω button
⑧ Data HOLD or LPF button
⑨ LCD display
⑩ COM (Common) input terminal
⑪ Positive input terminal
⑫ Battery hatch

5. BUTTON OPERATION

5-1 HOLD or LPF Function

It is possible to freeze the value displayed by pressing on the "**HOLD**" button. Press the "**HOLD**" button again to exit the Hold mode.

To activate the 60 Hz Low Pass Filter (LPF) feature, press and hold the "**LPF**" button until the symbol displays. To deactivate the LPF feature, press and hold the "LPF" button for 2 seconds. The meter will return to normal mode of operation.

The Cut-Off frequency of the low pass filter is about 160Hz.

Note: The LPF function operates on the AC A and AC mA ranges.

5-2 PEAK Hold or ·)) / Ω Function

Press "**PEAK**" button to enter the PEAK mode, the meter records the peak/maximum value. Press the "**PEAK**" button again, to exit the peak mode.

When you turn the rotary switch to the Ohms/Continuity Test position, press the "**PEAK**" button to select Resistance measurement, press the "PEAK" button again to select continuity test with beeper. The display symbols ·)) or Ω show the mode.

5-3 ZERO Function

Press "**ZERO**" button to enter the Zero mode, ZERO will appear and set a new base value for the display. The reading is stored as reference value for new measurements.

Press the "**ZERO**" button again, to exit the zero mode.

5-4 BACKLIGHT Function

When the "☼" button is pressed, the backlight will be turned on.

Press the button again to turn the backlight off. If the button is not pressed again then the backlight will be automatically turned off in about 30 seconds after it is turned on.

6. MEASURING INSTRUCTION

6-1 **ACA、ACmA Measurement:**

(1) Set the selector switch to the approximate range (A or mA). The current to be measured should be within the selected measuring range.

(2) Normal measurement (see Fig.1):

Press the jaw trigger to open the clampmeter jaws and close them over one conductor only. The measured current value is shown on the display. Earth leakage current or any small AC current that flows through a ground wire can also be measured by this method.

(3) Measuring out of balance leakage current (see Fig.2):

Clamp around both conductors except the ground wire. The measured imbalance current value is shown on the display.

Before this measurement, disconnect any test leads from the meter for safety.

In some cases wherein reading the display is difficult, press the HOLD button and read the result after the clamp is removed from the conductors.

Fig.1 Normal measurement:

INCORRECT **CORRECT**

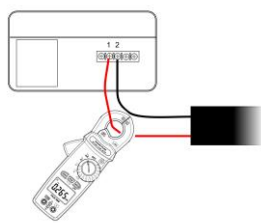
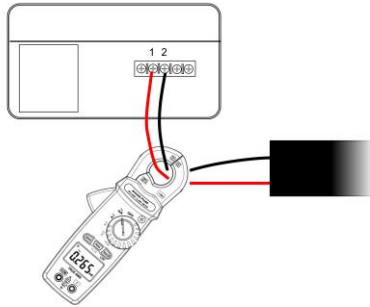


Fig.2 Measuring out of balance leakage current:



6-2 ACV Measurement：

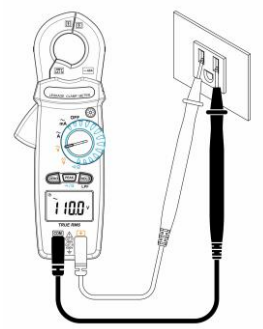
> **⚠ WARNING!**
>
> Maximum Input Voltage is 600V AC/DC. Do not attempt to Take any voltage measurement that may exceed this maximum to avoid Electrical shock hazard and/or damage to this instrument.

Switch the main function selector to $\tilde{V}$ range.

Connect the red test lead to the "+" terminal and the black lead to the "COM" terminal.

Measure the voltage by touching the test lead tips to the test circuit where the voltage measurement is required.

Read the result from the LCD display.



6-3 DCV Measurement：

Switch the main function selector to ⎓V range.

Connect the red test lead to the "+" terminal and black lead to the "COM" terminal.

Measure the voltage by touching the test lead tips to the test circuit where the value of voltage is needed.

Read the result from the LCD.

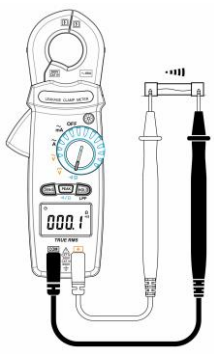
6-4 Continuity Test With Beeper：

Switch the main function to ·))Ω position.

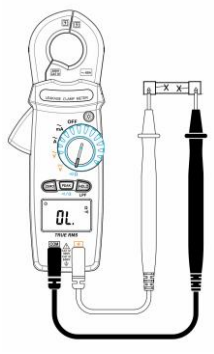
Connect the red test lead to the "+" terminal and the black lead to the "COM" terminal.

Connect tip of the test leads to the points between which continuity is to be measured.

If the resistance is under 45Ω, the beeper will sound continuously.



Short circuit



Open circuit

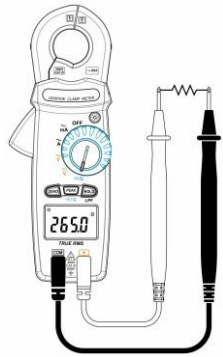
6-5 Resistance Measurement

Switch the main function to ·)) Ω position.

Connect the red test lead to the "+" terminal and the black lead to the "COM" terminal.

Connect tip of the test leads to the points where the value of the resistance is to be measured.

Read the result from the LCD.



Note :

When measuring resistance in a circuit, make sure any power on the circuit is turned off and any capacitors are discharged.

7. CHANGING THE BATTERY

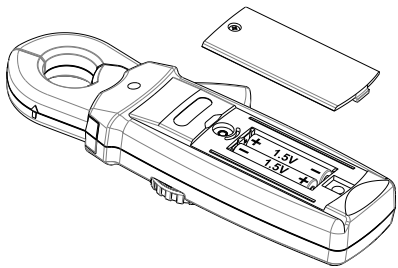
When the battery voltage drops below that required for proper operation of the instrument, the battery symbol will appear on the LCD display and the battery should be changed.

Before changing the battery, switch the main dial to "OFF "and disconnect test leads.

Open the back cover using a screwdriver.

Replace the old batteries with two new 1.5V (AAA Size) batteries.

Close the back cover and tighten the screw before using the meter.



8. MAINTENANCE

⚠ WARNING!

Before opening the meter, disconnect both test leads. Never use the meter unless the battery cover is in place and the screw is tightened.

CAUTION!

To avoid contamination or static damage, do not touch the circuit board without proper static protection.

8-1 NOTES:

- If the meter is not going to be used for a long time then please remove the battery and do not store the meter in a high temperature or high humidity environment.
- Keep the cable in the center of the clamp will return a more accurate test result when making current measurements.
- Repairs or servicing not covered in this manual should only be performed by qualified personnel.

8-2 CLEANING:

Periodically wipe the case with a dry cloth. Do not use abrasives or solvents on these instruments.

Pro93 and Pro95 TIPS :

The clamp is only good for reading current in **ACA** or **ACmA**. For everything else use the test leads that plug into the front of the Pro95.

Use **ACVolts** to check the output of irrigation controllers. If the value seems to jump around press the **PEAK** button to capture the voltage value. Conventional controllers will be around 24 Vac while 2-wire controllers may be up to 35 Vac.

When checking 2-wire decoder currents use the clamp set for **mA** and engage the **LPF** mode for consistency. Individual decoders can range from 0.5 mA to 5 mA each depending on the system manufacturer.

When measuring outdoor lighting power consumption use the clamp set for **A** (amps). Be sure to clamp around single conductors and not wire pairs. The voltage times the amp reading gives you the VA being used - important for transformer fusing.

When measuring resistance in ohms be sure to be in **Ω** Mode rather than continuity check **•))** mode. You can read up to 600 kohms that way which can allow you to check for ground vaults on cables among other things.

DCVolts is great for checking batteries. 'AA' and 'AAA' batteries will be around 1.6 Vdc when fresh – if they are below 1.5 Vdc they are suspect. Your vehicle battery should be around 13.8 Vdc when running and not below 12 Vdc when idle.

You won't need the **ZERO** function very often. Only when working near big magnetic sources like power transformers.