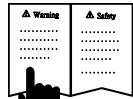
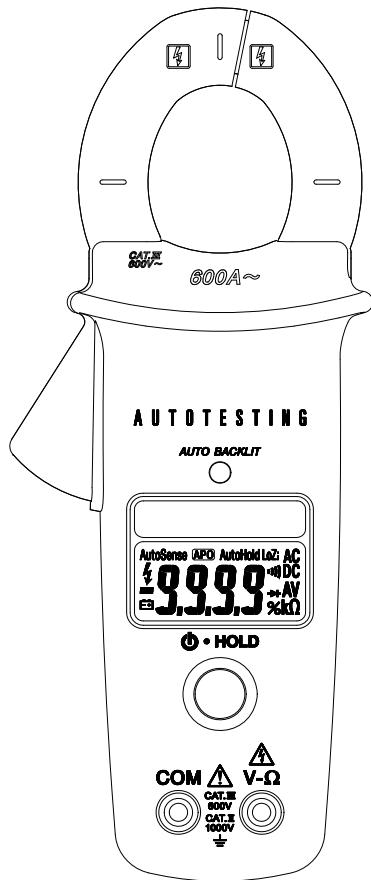




PRO-90 *Instruction*
Clamp Multimeter *Card*



Read First

Safety Information

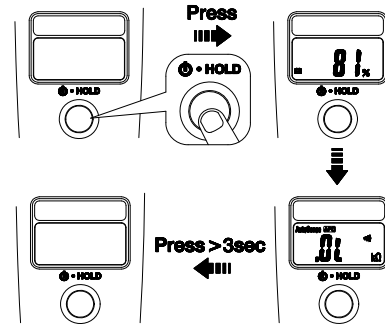
To ensure safe operation and service of the Tester, follow these instructions. Failure to observe warnings can result in severe **injury** or **death**.

- Avoid working alone so assistance can be rendered.
- Do not use test leads or the Tester if they look damaged.
- Do not use the Tester if the Tester is not operating properly or if it is wet.
- Use the Tester only as specified in the Instruction card or the protection by the Tester might be impaired.
- Use extreme caution when working around bare conductors or bus bar. Contact with the conductor could result in electric shock.
- Do not use the Tester to measure voltages in circuits that could be damaged by the Tester's low input impedance (approximate 4KΩ)
- Use caution with voltages above 30 V ac rms, or 60 V dc. These voltages pose a shock hazard.

Symbols as marked on the Tester and Instruction card

	Risk of electric shock
	See instruction card
	DC measurement
	Equipment protected by double or reinforced insulation
	Battery
	Earth
	AC measurement
	Conforms to EU directives
	Application around and removal from hazardous live conductors is permitted
	Do not discard this product or throw away

Power On / Off

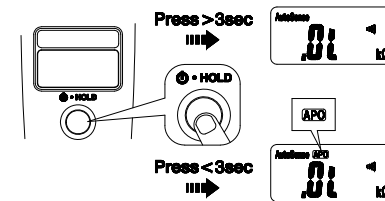


- The Meter displays Battery Capacity when powering up. Please replace the battery when 0% is shown.

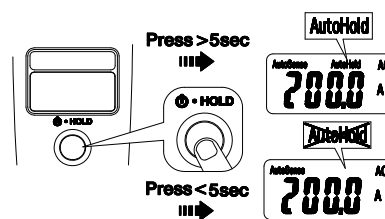
Caution

The Tester powers up in Ω / continuity mode.

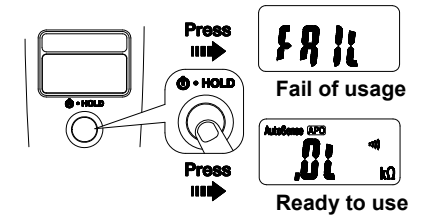
Auto Power Off Enable / Disable



Auto Hold Enable / Disable



Self-Testing Aid

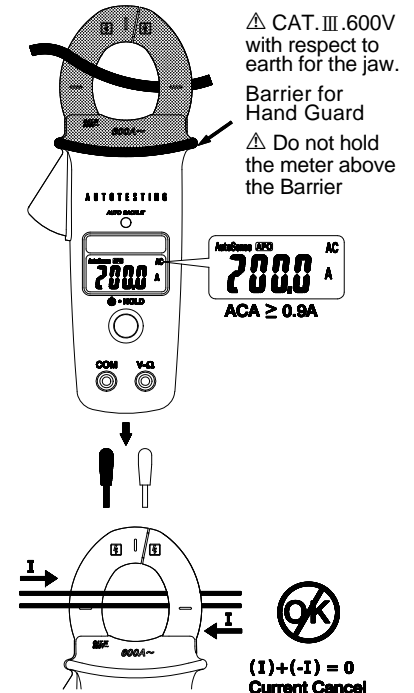


- Do not measure while powering up, it will cause Self-Testing failure.

Caution

Do not use the Meter when "FAIL" is shown. Undiscovered failure could exist even No "FAIL" is shown.

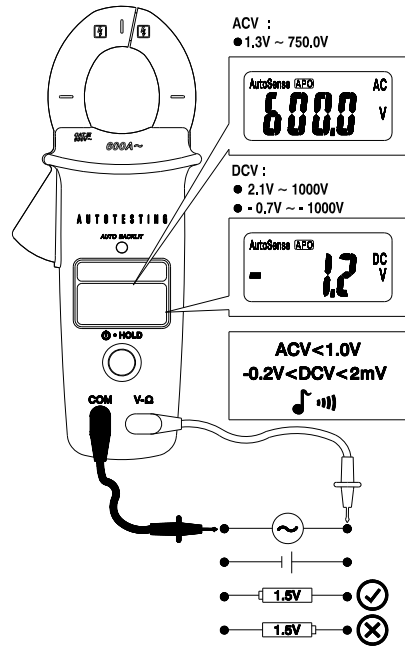
ACA



AC V / DC V

⚠ Caution

When connecting the test leads to the circuit or device, connect the black lead before the red lead; when removing the test leads, remove the red lead before the black lead.



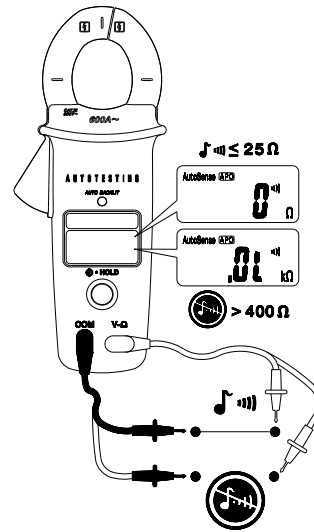
• Input Impedance

≥ 4K for input voltage up to 30V.
Impedance increases with input voltage to approximate 375KΩ at 750V.

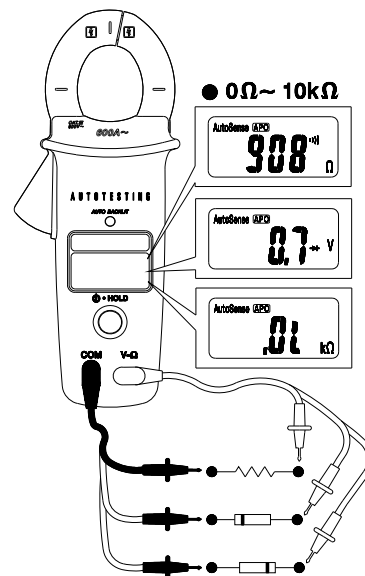
⚠ Warning

Do not apply more than 1000VDC / 750 VAC between Tester terminal and earth ground.

Continuity



Resistance / Diode



Priority of function

1st:

ACV, DCV
Whichever is greater

2nd:

Ω

3rd:

Diode

4th:

ACA

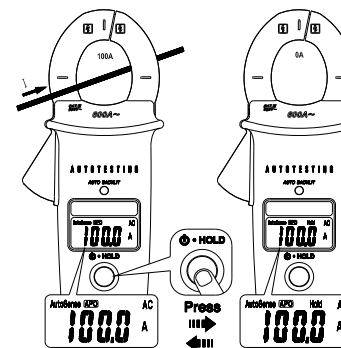
The LCD display shows voltage mode when the input Terminal is satisfied by the following conditions:
ACV 1.3V ~ 999.9V
DCV 2.1V ~ 999.9V
-0.7V ~ -999.9V

The LCD display shows Ω mode when the input terminal is satisfied by the following conditions:
0 ~ ∞ Ω
ACV 0 ~ 0.9V
DCV -0.4 ~ -2.0V
DCV 1.0 ~ 2.0V

The LCD display shows diode mode when the Input Terminal is satisfied by the following conditions:
DCV 0.4 ~ 0.8V

The LCD display shows AC mode when the Current Input Jaw is satisfied by the following conditions:
ACA 0.9A ~ 600.0A

Data Hold



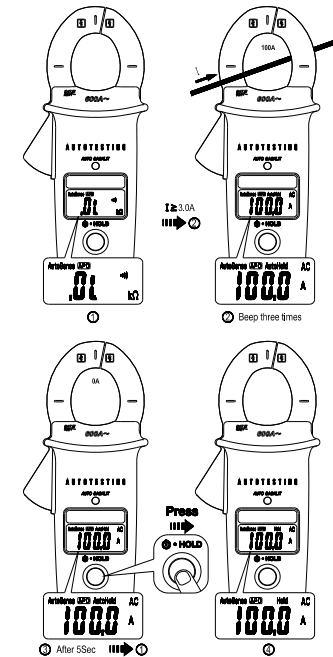
Data Hold is not available when "OL KΩ" is displayed with no input signals.

Data Hold Beep Guard

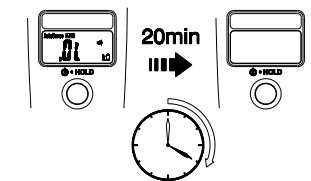
The internal sounder will beep continuously with LCD display flashing in two situations in the Data Hold mode:

1. The Meter measures a signal different from the LCD reading.
2. The measured signal is the same unit as the LCD reading and is larger 50 counts than the LCD reading.

Auto Hold (ACA only)



Auto Power Off



⚠ Caution

If the meter is used in the vicinity of equipment which generates electromagnetic interference, the display may become unstable or the measurements shown may be subject to large errors.

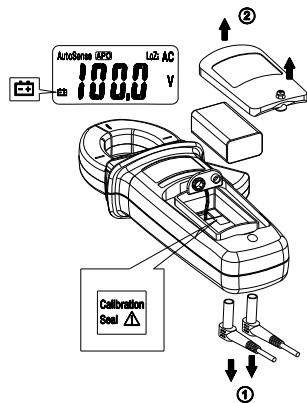
Maintenance

Do not attempt to repair this Tester. It contains no user-serviceable parts. Repair or serving should only be performed by qualified personnel.

Cleaning

Periodically wipe the case with a dry cloth and detergent do not use abrasives or solvents.

Battery Replacement



⚠ Caution

The calibration seal can only be punctured by certified distributor for annual calibration otherwise the meter's performance can not be warranted.

Specifications

1-1 General Specifications

LCD display digits :
9999 digit large scale LCD readout.
Measuring rate : 5 times / sec.
Overrange display : "OL" is displayed for "Ω" function, shows the real value for "A" and "V" function.
Automatic power off time :
Approximately 20 minutes after power on without operations.
Low battery indicator :
+ is displayed. Replace the battery when the indicator + appears in the display.
Power requirement : 9V battery.
Battery type and life :
ALKALINE PP3, 9V 250 hours.

1-2 Environmental Conditions

Indoor Use.
Calibration : One year calibration cycle.
Operating temperature :
0°C ~ 30°C (≤80% RH)
30°C ~ 40°C (≤75% RH)
40°C ~ 50°C (≤45%RH)
Storage temperature : -20 to +60°C,
0 to 80% RH (batteries not fitted).
Operating altitude : 2000m (6562 ft)
Overvoltage category :
IEC 61010-1 1000V CAT. II ,
600V CAT. III
CAT Application field

I	The circuits not connected to mains.
II	The circuits directly connected to Low-voltage installation.
III	The building installation.
IV	The source of the Low-voltage installation.

Conductor Size : 27mm diameter.
Pollution degree : 2
EMC : EN 61326-1
Shock vibration :
Sinusoidal vibration per MIL-T-28800E
(5 ~ 55 Hz, 3g maximum).
Drop Protection : 4 feet drop to
hardwood on concrete floor.

1-3 Electrical Specifications

Accuracy is $\pm(\% \text{ reading} + \text{number of digits})$ at 23°C \pm 5°C < 80%RH.
Temperature coefficient :
0.2 x (Specified accuracy) / °C, < 18°C, > 28°C.

Voltage

Function	Range	Accuracy
V~	1.3V ~ 750.0V	$\pm(1.5\% + 3 \text{ dgt})$ 50Hz ~ 500Hz
V=	2.1V ~ 1000V	$\pm(1\% + 2 \text{ dgt})$
	-0.7V ~ 1000V	$\pm(1\% + 4 \text{ dgt})$

Overload protection :

1000 VDC / 750 VAC

Max Operation time :

DT=30s for $\geq 30V$
Input impedance : $\geq 4K$ for input voltage up to 30V. Impedance increases with input voltage to approximate 375KΩ at 750V.

Resistance & Continuity & Diode

Function	Range	Accuracy
Ω	0.0Ω ~ 9999Ω	$\pm(2\% + 2 \text{ dgt})$
→	0.4V ~ 0.8V	$\pm(1\% + 3 \text{ dgt})$

Overload protection :

1000 VDC / 750 VAC

Max. open circuit voltage :

2.0V
Continuity check : Internal sound activates if the resistance of the circuit under test is less than 25Ω. It will then turn off if the resistance is increased beyond 400Ω. Specified from 0°C ~ 40°C.

AC Current

Function	Range	Accuracy
A~	0.9A ~ 600.0A	$\pm(1.9\% + 5 \text{ dgt})^*$ 50Hz ~ 60Hz

Overload protection : 600.0A
0 ~ 500A : Continuous Operation.
* 501A ~ 600A : 10 minutes maximum
Followed by 10 minutes cooling period.

Limited Warranty

This Meter is warranted to the original purchaser against defects in material and workmanship for 1 year from the date of purchase. During this warranty period, manufacturer will, at its option, replace or repair the defective unit, subject to verification of the defect or malfunction. This warranty does not cover disposable batteries, or damage from abuse, neglect, accident, unauthorized repair, alteration, contamination, or abnormal conditions of operation or handling.

Any implied warranties arising out of the sale of this product, including but not limited to implied warranties of merchantability and fitness for a particular purpose, are limited to the above. The manufacturer shall not be liable for loss of use of the instrument or other incidental or consequential damages, expenses, or economic loss, or for any claim or claims for such damage, expense or economic loss. Some states or countries laws vary, so the above limitations or exclusions may not apply to you.

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