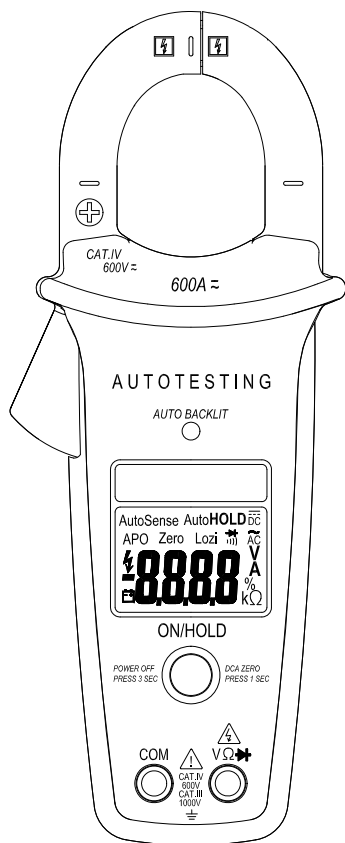




**PRO-91**  
**Clamp Multimeter**

*Instruction*  
*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 4K $\Omega$ )
- 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
	Do not discard this product or throw away
	Application around and removal from hazardous live conductors is permitted

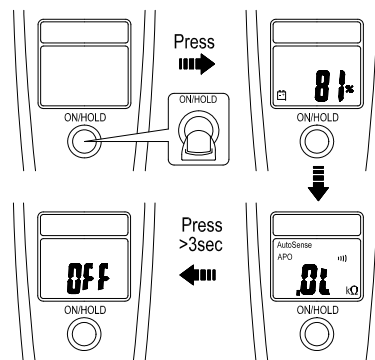
**Maintenance**

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.

**Power On / Off**

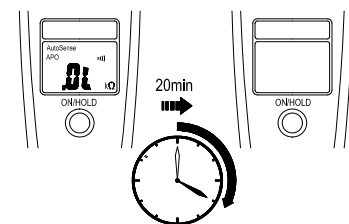


- The Meter displays Battery Capacity when powering up. Please replace the battery when 0% is shown.

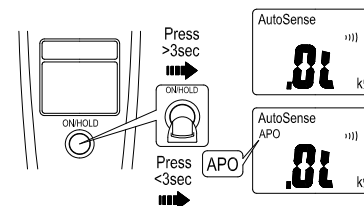
**Caution**

The Tester powers up in  $\Omega$  / continuity mode.

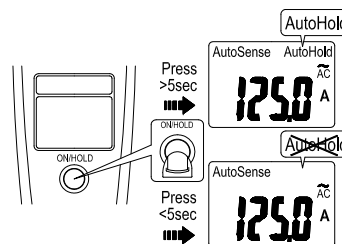
**Auto Power Off**



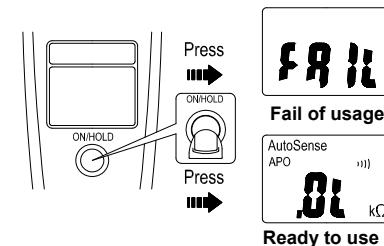
**Auto Power Off Enable / Disable**



**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 "FAIL" is not shown.

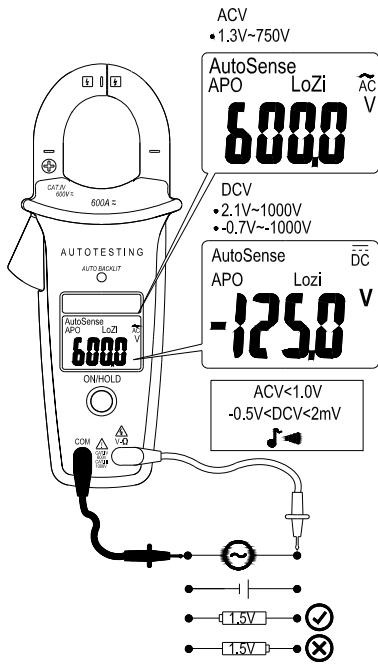
**Caution**

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.

## 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.



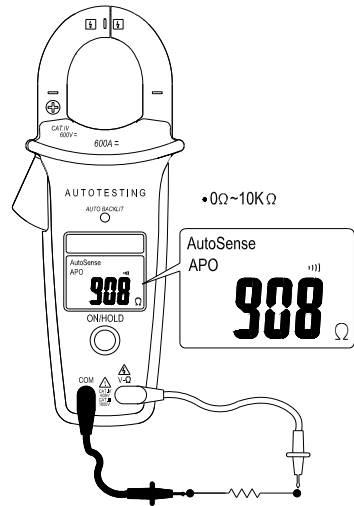
### • Input Impedance

$\geq 4K$  for input voltage up to 30V.  
Impedance increase with input voltage to approximate 375K $\Omega$  at 750V.

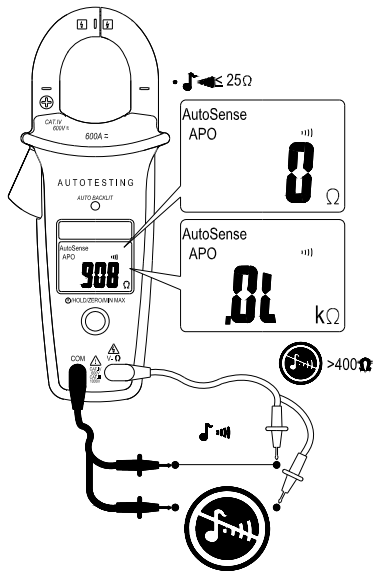
### ⚠ Warning

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

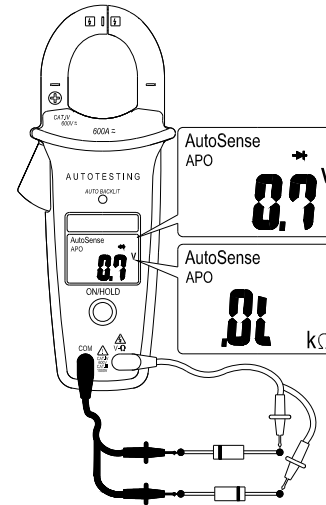
## Resistance



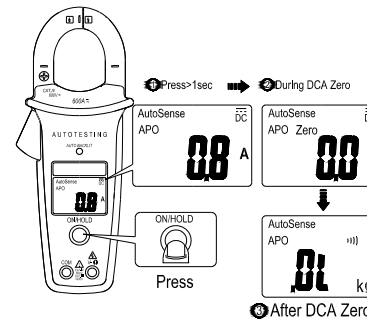
## Continuity



## Diode



## DCA Zero

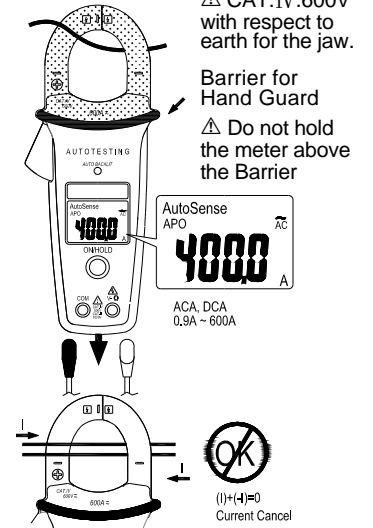


Remove the Jaw out of the conductor. Press KEY > 1sec to compensate the residual magnetism.

### ⚠ Caution

Remove Jaw out of the conductor before Powering up. The Meter will execute DCA Zero during powering up.

## ACA / DCA



## Priority of function

1st:

ACV,DCV  
Whichever is greater

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

2nd:

$\Omega$

The LCD display shows  $\Omega$  mode when the input terminal is satisfied by the following conditions:  
 $0 \sim \infty \Omega$   
ACV 0 ~ 0.9V  
DCV -0.4 ~ -0.2V  
DCV 1.0 ~ 2.0V

3rd:

Diode

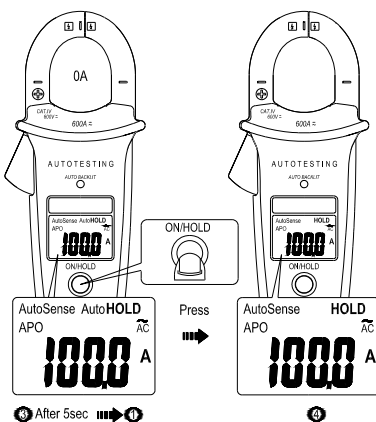
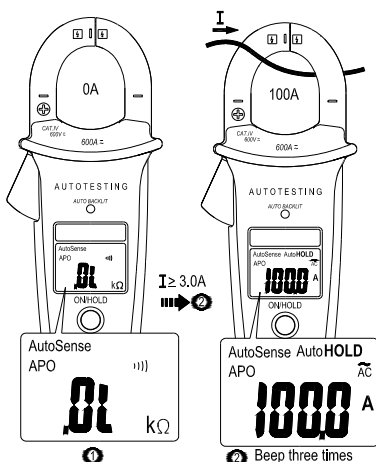
The LCD display shows diode mode when the Input Terminal is satisfied by the following conditions:  
DCV 0.4 ~ 0.8V

4th:

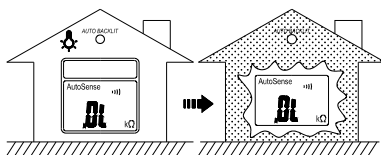
ACA,DCA  
Whichever is greater

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

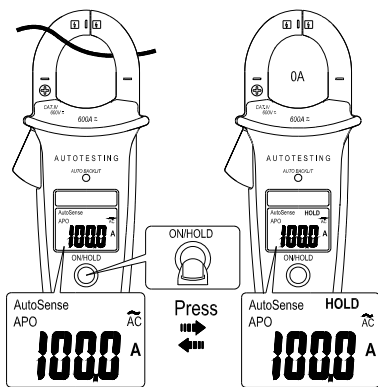
## Auto Hold (ACA and DCA only)



## Auto Backlight



## Data Hold



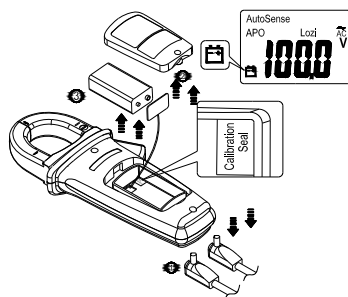
Data Hold is not available when “OL KΩ” displayed with no input signals.

### Data Hold Beep Guard

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

1. The Meter measure 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.

## 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” and “V” function, shows the real value for “A” 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 125 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).

**Temperature coefficient :**

0.2 x (Specified accuracy) / °C, < 18°C, > 28°C .

**Operating altitude :** 2000m (6562 ft)

**Overvoltage category :**

IEC 61010-1 1000V CAT. III,

600V CAT. IV.

**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 :** 35mm diameter.

**Pollution degree :** 2

**EMC :** EN 61326-1

**Shock vibration :** Sinusoidal vibration per MIL-T-28800E (5 ~ 55 Hz, 3g maximum).

### 1-3 Electrical Specifications

Accuracy is ±(% reading + number of digits) at 23°C ± 5°C < 80%RH.

(23°C ± 3°C < 80%RH for ACA & DCA)

### Voltage

Function	Range	Accuracy
V~	1.3V ~ 750.0V	±(0.9%+ 3 dgt) 50Hz ~ 60Hz
		±(1.5%+ 3 dgt) 61Hz ~ 500Hz
V=	2.1V ~ 1000V -0.7V ~ -1000V	±(0.3%+ 2 dgt)

**Overload protection :**

AC 750Vrms // DC1000V

**Max Operation time :**

DT=30s for ≥30V

**Input impedance :**

≥4K for input voltage up to 30V.

Impedance increases with input voltage to approximate 375KΩ at 750V.

**AC Conversion Type :**

AC Conversions are ac-coupled, true RMS responding, calibrated to the RMS value of a sine wave input. Accuracies are given for sine wave at full scale and non-sine wave below half scale. For non-sine wave add the following Crest Factor corrections :

For Crest Factor of 1.4 to 2.0, add 1.0% to accuracy.

For Crest Factor of 2.0 to 2.5, add 2.5% to accuracy.

For Crest Factor of 2.5 to 3.0, add 4.0% to accuracy.

CF 3 @ 400A, 400V  
2 @ 600A, 600V

### Resistance & Continuity & Diode

Function	Range	Accuracy
$\Omega$	0.0 $\Omega$ ~ 9999 $\Omega$	$\pm(0.9\% + 2 \text{ dgt})$
$\rightarrow$	0.4V ~ 0.8V	$\pm(0.9\% + 3 \text{ dgt})$

#### Overload protection :

AC 750Vrms // DC1000V

**Max. open circuit voltage** : 1.8V

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

#### Current

Function	Range	Accuracy
A $\sim$	0.9 ~600.0A	$\pm(1.5\% + 5 \text{ dgt})$ 50 ~60Hz
A $\equiv$		$\pm(1.5\% + 5 \text{ dgt})$

**Overload protection** : 600.0A  
AC Conversion Type and additional accuracy is same as AC Voltage.

**Position Error** :  $\pm 1\%$  of reading.

### 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 fuses, 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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