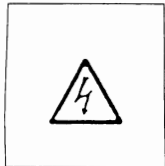




mini DCA/ACA
CLAMP METER

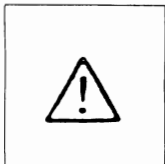
**OPERATION
MANUAL**

Caution Symbol



Caution :

- * Risk of electric shock !
- * Remove test leads before open the battery cover !



Caution :

- * Do not apply the overload voltage, current to the input terminal !
- * Cleaning – Only use the dry cloth to clean the plastic case !

Environment Conditions

- * Installation categories III .
- * Pollution Degree 2.
- * Altitude up to 2000 meters.
- * Indoor use.
- * Relative humidity 80% max.

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1. FEATURES

- * Miniature type, easy to carry out & operation.
- * Measure DCA or ACA on the inductive conductor.
- * High precision for low DCA & ACA current measurement.
- * Built-in DATA HOLD function.
- * Crystal time base, high quality.
- * LCD display allows clear readout even at high ambient light level.
- * LSI circuit provides high reliability and durability.
- * Overload protection circuit is provided for all range.
- * Design to meet IEC 1010 safety requirement.
- * Built-in one fuse on the input terminal for user safety consideration.
- * Compact, light weight and excellent operation.






2. SPECIFICATIONS

2-1 General Specifications

Display	13mm (0.5") LCD, 3 1/2 digits. Max. indication ± 1999 .
Measurement	ACA, DCA, ACV, DCV, ohms, DATA HOLD.
Polarity	Automatic Switching, "-" indicates negative polarity.
Current Sensor	Hall effect sensor.
Zero adjustment	DCA - External knob adjust. Other functions - Automatic zero adj.
Over-input	Display shows '1' or '-1'.
Sampling Time	Approx. 0.4 second.
Time base	Quartz crystal, 32768 Hz.
Battery	006P DC 9V battery (heavy duty type)
Power Consumption	Approx. DC 6 mA (voltage & ohm range). Approx. DC 12 mA (current range).
Operating Temp.	0 °C to 50 °C (32 °F to 122 °F).

Operating Humidity	Less than 80% RH.
Weight	225 g/0.5 LB (including battery).
Dimension	HWD 180 x 47 x 35 mm (7.1 x 1.9 x 1.4 inch).
Max. Conductor Size	19 mm dia.
Accessories Included	Operation manual.....1 PC. Test lead (red & black).....1 pair. Carrying case.....1 PC.

2-2 Electrical Specifications

Function	Range	Resolution	Accuracy	Overload Protection
DC voltage	200 V	0.1 V	$\pm (0.8 \% + 1 \text{ d})$	AC/DC 500V 
AC voltage	500 V	1 V	$\pm (1 \% + 2 \text{ d})$	AC/DC 500V 
Resistance	200 ohm	0.1 ohm	$\pm (1.2 \% + 1 \text{ d})$	AC/DC 400V 
AC current	20 A ($\geq 0.1 \text{ A}$) 200 A	0.01 A 0.1 A	$\pm (1.2 \% + 5 \text{ d})$	300 ACA (within 1 min.) 
DC current	200 A	0.1 A	$\pm (1.2 \% + 5 \text{ d})$	300 DCA (within 1 min.) 
DATA HOLD	Available for all functions to keep the data hold on the display.			
Remark	* Input impedance for ACV & DCV range is 10 Megohm. * ACA, ACV frequency response is from 40 to 400 Hz. * ACA, ACV specification be tested on sine wave 50/60 Hz.			

3. FRONT PANEL DESCRIPTION

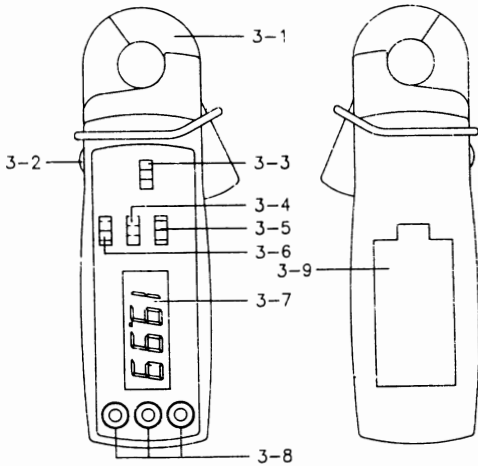


Fig. 1

3-1 Current Sense Jaw

3-2 DCA Zero Adj. Knob

3-3 20 A(AC)/200 A Switch

3-4 AC/DC Switch

AC = ~ DC = ≡

3-5 Off/On/Hold Switch

Off = 0 On = 1

3-6 V/A/ohm Switch

3-7 Display

3-8 Input Terminal

3-9 Battery Compartment

4. PRECAUTIONS & PREPARATIONS FOR MEASUREMENT

- 1) Ensure that the DC 9V battery is connected correctly to its snap terminal and placed in the battery compartment.
- 2) Except apply the " DATA HOLD " function, otherwise it is necessary to select the "Off/On/Hold" switch to "Power On" position.
- 3) Place the RED Test Lead into the proper input terminal before making measurements.
- 4) Remove either of the test leads from the circuit under test when changing the measurement range.
- 5) Do not exceed the maximum rated voltage to the input terminal.
- 6) Always select the " Power On/Off/Hold " switch to the "Off" position when the instrument does not use. Remove the battery if the instrument is not to be used for a long period of time.

5. MEASURING PROCEDURE



Caution :

*** Do not apply the overload voltage, current to the input terminal !**

5-1 Voltage Measurement

- 1) Select the " Power On/Off/Hold switch " (3-5, Fig.1) to the " On " position.
- 2) Select the " V/A/ohm Switch " (3-6, Fig.1) to the " V " position.
- 3) Connect red test lead to " V " input terminal and black test lead to " COM " input terminal.

- 4) a. If voltage to be measured is AC, select " AC/DC Switch " (3-4, Fig.1) to the " AC " position.
- b. If voltage to be measured is DC, select " AC/DC Switch " to the " DC " position.
- 5) Connect test lead probes into circuit under test.
- 6) Read voltage values on the digital display.

5-2 Resistance Measurement

- 1) Select the " Power On/Off/Hold switch " (3-5, Fig.1) to the " On " position.
- 2) Select the " V/A/ohm Switch " (3-6, Fig.1) to the " ohm " position.
- 3) Connect red test lead to " ohm " input terminal and black test lead to " COM " input terminal.
- 4) If the resistance being measured is connected to a circuit turn off power to circuit being tested and discharge all capacitors.
- 5) Connect test lead probes into circuit (resistance) under test.
- 6) Read resistance values on the digital display.

Consideration :

- a. Due to there exist small stray resistance values for PCB & input circuit. So if intend to make precision measurement, short the test lead at first, then record the display values.
- b. After making measurement, then deduct above stray resistance values from the display reading, it will get the true measurement resistance values.

5-3 AC Current Measurement

- 1) Select the " Power On/Off/Hold switch " (3-5, Fig.1) to the " On " position.
- 2) Select the " V/A/ohm " (3-6, Fig.1) to the " A " position.

- 3) Select the " AC/DC Switch " (3-4, Fig.1) to the " AC " position.
- 4) Determine the highest anticipated current (200 A, 20 A) on the " 20 A/200 A Switch " (3-3, Fig. 1) and select to the corresponding position.

Consideration :

" 20 A " range only available for measured current ≥ 0.1 A.

- 5) Press the trigger to open the " Current Sense Jaw " (3-1, Fig. 1) & clamp on the measured conductor only.
- 6) Read ACA values on the digital display.

5-4 DC Current Measurement

- 1) Select the " Power On/Off/Hold switch " (3-5, Fig.1) to the " On " position.
- 2) Select the " V/A/ohm Switch " (3-6, Fig.1) to the " A " position.
- 3) Select the " AC/DC Switch " (3-4, Fig.1) to the " DC " position.
- 4) Select the " 20 A/200 A Switch " (3-3, Fig.1) to the " 200A " position.
- 5) Adjust the " DCA Zero Adj. Knob " (3-2, Fig.1) until the display show "0 ".

Consideration :

As the core of the "Current Sense Jaw" may remain some magnetic force after using for a while. Under such situation, then the display may can not reach " 0 " when adjusting " DC Zero Knob ". If happen this problem, please take the following procedures to correct :

- a. To change the direction of the measured DC current, then work again.
- or b. Open the JAW several times.

5-5 Data Hold

When make any measurement, if select the " On/Off/Hold Switch " (3-5, Fig.1) to the " Hold " position will keep the data on the display. It will release the data hold function if select the " On/Off/Hold Switch " to the " On " position again.

6. MAINTENANCE

6-1 Replacement of Battery



Caution : Remove test leads before open the battery cover !

- 1) When the left corner of LCD display show " LOBAT ", it indicate a normal battery output of less than 6.5 V – 7.5 V. It is necessary to replace the battery, However in-spec. measurement may still be made for several hours after LOW BATTERY INDICATOR appears before the instrument become inaccurate.
- 2) Open the " Battery Cover " (3-9. Fig 1), use the " - " type screwdriver or small coin to open the battery cover away from the instrument and remove the battery.
- 3) Replace with 9V battery (heavy duty type) and reinstate the cover.

6-2 Cleaning



Caution : Cleaning – Only use the dry cloth to clean the plastic case !

7. THE ADDRESS OF AFTER SERVICE CENTER :

