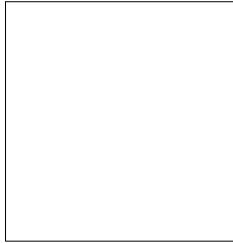


ACA/DCA *with TEMP.*
CLAMP METER

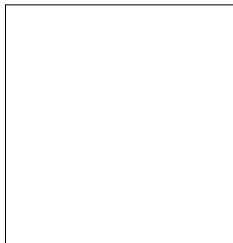


Caution Symbol



Caution :

- * Risk of electric shock !



Caution :

- * Do not apply the overload voltage, current to the input terminal !
- * Remove test leads before open the battery cover !
- * 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

- * Design meet IEC 1010 safety requirement.
- * Compact & heavy duty ABS housing plastic case.
- * Measure DCA & ACA on the inductive conductor.
- * Wide ranges (1000 A, 200 A) for ACA/DCA measurement.
- * LSI circuit provides high reliability and durability.
- * Multi-functions for ACA, ACV, DCV, OHMS, Diode, Continuity beeper measurement.
- * LCD display allows clear readout even at high ambient light level.
- * Built-in the temp. measurement function.
- * Overload protection circuit is provided for all range.

2. SPECIFICATIONS

2-1 General Specifications

Display	13 mm (0.5") LCD, 3 1/2 digits. Max. indication 1999.
Measurement Range &	ACA, DCA, ACV, DCV, Resistance, Diode, Continuous, TEMP.
Polarity	Automatic Switching, "-" indicates negative polarity.
Current Sensor	Hall effect sensor.
Zero adjustment	DCA : <i>Manual adjustment.</i> Other ranges except the DCA range : <i>Automatic adjustment.</i>
Over-input	Indication of "1" or "-1".
Sampling Time	Approx. 0.4 second.
Battery	006P DC 9V battery (heavy duty type).
Power Consumption	Approx. DC 11 mA.

Operating Temp. & Humidity	0 蚓 to 50 蚓(32 蚌 to 122 蚌). Less than 80% RH.
Weight	380 g/0.85 LB (including battery).
Dimension	HWD : 230 x 70 x 36 mm. (9.1 x 2.8 x 1.4 inch)
Max. Conductor Size	32 mm (1.3 inch) Dia.
Accessories	Operation manual..... 1 PC Test lead (red & black)..... 1 Set Carrying case 1 PC TP-01 Thermocouple Probe with plug..... 1 Set

2-2 Electrical Specifications

Function	Range	Reso- tion	Accuracy	Overload Protection
DC voltage	200 V	0.1 V	0.8 % + 1d)	AC/DC 600 V.
	600 V	1 V		
AC voltage	200 V	0.1 V	1% + 2d)	AC/DC 600 V.
	600 V	1 V		
OHMS	2 k ohm	1 ohm	1 % + 1 d)	AC/DC 400 V
AC & DC current	200 A	0.1 A	1.5% + 10d)	AC/DC 1000 A
	1000 A	1 A	2% + 2d)	
<i>Remark</i>	* <i>Input impedance for ACV & DCV range is 10 Meg ohm.</i> * <i>ACA, ACV frequency response is from 40 to 400 Hz.</i> * <i>ACA, ACV specification be tested on sine wave 50/60 Hz.</i>			

Function	Range	Resolution	Accuracy
TEMP. mV Model only	-40mV to 750mV	1mV	0 to 750mV : 1% + 2mV) 750 to 900mV: typ. 2% + 1mV) 900 to 1000mV: typ. 3% + 1mV) 0 to -20mV: typ. 2mV -20 to -40mV: typ. 3mV
TEMP. μV Model only	-40μV to 1400μV	1μV	32 to 1400μV : 1.2% + 2μV) 1400 to 1800μV: typ. 2% + 2μV) 1800 to 2000μV: typ. 4% + 4μV) 32 to -4μV typ. 4μV -4 to -40μV typ. 6μV

Diode	Short/non conductance, good/defect test
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PEAK HOLD	Acquisition Time: Approx. 150 ms. Display Decay Rate: < 2 digits/sec. Application: Use for measuring transient signal for current.
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DATA HOLD	Available for all functions to keep the data hold on the display
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3. FRONT PANEL DESCRIPTION

Fig. 1

- 3-1 Current Sense Jaws
- 3-2 Trigger
- 3-3 Power OFF/ON/PEAK HOLD Switch
- 3-4 DCA Zero Adj. Knob
- 3-5 Display
- 3-6 Input Terminal
- 3-7 Temp. Measuring Socket (Type K Sensor Socket)
- 3-8 Function Switch
- 3-9 AC/DC, OHM, Temp., Diode Switch
- 3-10 Data Hold Switch
- 3-11 Battery Cover/ Compartment
- 3-12 Drop Proof Wrist Strap

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) Place the RED & BLACK Test Lead into the proper input terminal before making measurements.
- 3) Remove either of the test leads from the circuit when changing the measurement range.
- 4) Except operate the " PEAK HOLD " function, otherwise should select the " POWER OFF/ON/PEAK HOLD SWITCH " to the " ON " position.
- 5) Except operate the " DATA HOLD " function, otherwise should release the " DATA HOLD " switch to its " OFF " position.
- 6) Do not exceed the maximum rated voltage to the input terminal.
- 7) Always slide the " Power Switch " to the " Off " position when the instrument does not use.
- 8) Remove the battery if the instrument is not to be used for a long period of time.
- 9) Though the " Ohm " range build the overload circuit protection circuit, however it should be necessary to prevent any voltage input when make the resistance measurement.

5. MEASURING PROCEDURE

5-1 DCV, ACV Measurement

- 1) Connect BLACK test lead to " COM " terminal.
- 2) Connect RED test lead into " V/OHM " terminal.
- 3) If measure " DCV ", engage " AC/DC , OHM, Temp. switch " (3-9, Fig. 1) to the " DC " position.
If measure " ACV ", engage " AC/DC , OHM, Temp. switch " (3-9, Fig. 1) to the " AC " position.
- 4) Determine the highest anticipated voltage (200V, 600V) on the " FUNCTION SWITCH " (3-8, Fig. 1).
- 5) Slide power switch to "ON" position.

5-2 Resistance Measurement

- 1) Connect BLACK test lead to " COM " terminal.
- 2) Connect RED test lead into " V/OHM" terminal.
- 3) Engage " AC/DC , OHM, Temp. switch " (3-9, Fig. 1) to the " OHM " position.
- 4) Selecting the " FUNCTION SWITCH " (3-8, Fig. 1) to the " 2000 OHM " position.
- 5) Connect test lead into circuit under test or across unknown resistor.
- 6) Slide power switch to "ON" position.

5-3 Temperature Measurement

- 1) Engage " AC/DC , OHM, Temp. switch " (3-9, Fig. 1) to the " TEMP. " position.
- 2) Selecting the " FUNCTION SWITCH " (3-8, Fig. 1) to the " TEMP. " position.

3) Insert the plug of the Thermocouple Probe into the " Temp. Measuring Socket " (3-7, Fig 1 take care to observe the correct polarity). The sensor supplied with the instrument is an ultra fast response naked bead thermocouple TP-01 suitable for many applications but with a maximum operating temperature of 250 °C/480 °F (300 °C/570 °F short-term). For measurement of high temperature, surfaces, semi-solids, liquids etc., a range of hand-held probes is available (such as TP-02A, TP-03...) or, if required, any suitable probe of the K type (NiCr-NiAl) can be used.

Consideration :

- * *Use only type K Compatible plugs, sockets and extension or compensating cable to increase the lead length between the sensor and instrument. The recommended maximum lead resistance of 1k OHM causes an error of <0.2 °C (0.4 °F) in the reading. The extension length achievable within this resistance limit will vary with wire gauge and type form.*
- * *When the sensor is first plugged into the thermometer, or if the sensor is changed, the plug must be allowed to stabilize at the same temperature of the socket, which is in thermal contact with the cold junction compensation device, if greatest accuracy is to be achieved. This will only take a couple of minutes and only applies if the sensor plug has previously been exposed to an ambient temperature different to that of the meter.*

5-4 AC Current Measurement

- 1) Slide the " Power Switch " (3-3 Fig. 1) to the ON position.
- 2) Engage " AC/DC , OHM, Temp. switch " (3-9, Fig. 1) to the " AC " position.

- 3) Determine the highest anticipated current (200A, 1000A) on the Function Switch (3-8, Fig. 1).

Consideration :

If the max. current value is difficult to make the adjugement, then start with the highest range and keep decreasing until a suitable reading is obtained.

- 4) Press the " Trigger " (3-2, Fig. 1) to open the " Current Sense Jaws " (3-1, Fig. 1) & clamp on the measured conductor only.

5-5 DC Current Measurement

- 1) Slide the " Power Switch " (3-3 Fig. 1) to the ON position.
- 2) Engage " AC/DC , OHM, Temp. switch " (3-9, Fig. 1) to the " DC " position.
- 3) Determine the highest anticipated current (200A, 1000A) on the Function Switch (3-8, Fig. 1).

Consideration :

If the max. current value is difficult to make the adjugement, then start with the highest range and keep decreasing until a suitable reading is obtained.

- 4) Adjust the " DCA ZERO KNOB " (3-4, Fig. 1) until the display show "0"

Consideration:

As the jaw core may remain some magnetic force after using for a while. If the display can not reach "0" when adjusting " DCA ZERO KNOB", please take following process to correct it:

A. To change the direction of the measured DC current.

or B. Open the JAWS several times.

- 5) Press the trigger to open the JAWS and clamp on conductor only.

5-6 Diode Test

- 1) Connect BLACK test lead to " COM " terminal.
- 2) Connect RED test lead into " V/OHM" terminal.
- 3) Engage " AC/DC , OHM, Temp. switch " (3-9, Fig. 1) to the " " position.
- 4) Selecting the " FUNCTION SWITCH " (3-8, Fig. 1) to the " " position.
- 3) a. When connected with polarity as shown in Fig. 2, a forward current flow is established and the approx. Diode Forward Voltage (VF) values in volt will display on the display reading. If the diode under test is defective, ".000" or near ".000" value (short circuit) or "1" (open circuit) will be displayed.

Fig. 2

- b. When connected as shown in Fig. 3, a reverse check on the diode is made. If the diode under test is good, "1" will be displayed. If the diode under test is defective, ".000" or other numbers will be displayed. Proper diode testing should include both steps a. and b. above.

Fig. 3

5-7 Peak Current Measurement

- 1) Power off the clamp meter.
Power off the tested installation.
- 2) Press the " Trigger " (3-2, Fig. 1) to open the JAWS & clamps on conductor only.
- 2) Engage " AC/DC , OHM, Temp. switch " (3-9, Fig. 1) to the " DC " or " AC " position according the type of measured current.
- 3) Determine the highest anticipated current (200A, 1000A) on the Function Switch (3-8, Fig. 1).
- 4) Set the powr switch of the clamp meter to "ON" position.
- 5) If measure the " DCA ", it is necessary to adjust the " DCA ZERO ADJ. KNOB " (3-4, Fig. 1) until the display show " 0 ".
- 6) Slide the " PEAK HOLD Switch " (3-3, Fig. 1) to the " PEAK HOLD " position.
- 7) Starting the tested installation's powr switch will get the peak value ot the starting current on the display.
- 8) Make sure that " PEAK HOLD Switch " is released after the current is measured.

5-8 Data Hold Operation

When make any function operation, engaging the " DATA HOLD switch " (3-10, Fig. 1) to the "ON" position will keep the data on the display.

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 screw of " Battery Cover " (3-11, Fig 1) by screwdriver, then move the battery.
- 3) Replace with 9V battery and reinstate the cover.

6-2 Cleaning

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

7. THERMOCOUPLE PROBE (TYPE K), TP-01, TP-02A, TP-03, TP-04

<p>Thermocouple Probe (Type K) TP-01</p> <p><i>* Standard Accessory</i></p>	<ul style="list-style-type: none"> * Measure Range: -40 𠄎 to 250 𠄎, -40 蚌 to 482 蚌. * Max. short-tern operating Temperature: 300 𠄎 (572 蚌). * It is an ultra fast response naked-bead thermocouple suitable for many general purpose application.
<p>Thermocouple Probe (Type K), TP-02A</p> <p><i>* Optional</i></p>	<ul style="list-style-type: none"> * Measure Range: -50 𠄎 to 900 𠄎, -50 蚌 to 1650 蚌. * Dimension: 10cm tube, 3.2 mm Dia.
<p>Thermocouple Probe (Type K), TP-03</p> <p><i>* Optional</i></p>	<ul style="list-style-type: none"> * Measure Range: -50 𠄎 to 1200 𠄎, -50 蚌 to 2200 蚌. * Dimension: 10cm tube, 8 mm Dia.
<p>Surface Probe (Type K), TP-04</p> <p><i>* Optional</i></p>	<ul style="list-style-type: none"> * Measure Range: -50 𠄎 to 400 𠄎, -50 蚌 to 752 蚌. * Size : Temp. sensing head - 15 mm Dia. Probe length - 120 mm.

8. THE ADDRESS OF AFTER SERVICE CENTER

