

Twist Clamp Meter

TCM-45E

INSTRUCTION MANUAL

Thank you very much for selecting our digital AC/DC clamp-on Tester TCM-45E.

This model is complex instrument and employ a very reliable mechanical/electronic design.

Before you use your new instrument, read this Instruction Manual completely and familiarize yourself thoroughly with all functions.

Keep this manual carefully to take out whenever you need.

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1.FEATURES

1. The Twist Clamp Meter TCM-45E is an AC/DC clamp meter that has been developed to easily measure the current of cables that are difficult to measure when they are located deep inside.
2. The 0 adjustment of the DC current of this instrument can be performed by only pushing the 0 set switch once, and data could be hold even in a deep place where normally reading is impossible, then the measured value could be confirmed at hand.

2. SAFETY PRECAUTIONS

* In order to use this device safely, please read this "Safety Precautions" carefully and use it correctly.

* The precautions shown here are intended to prevent injury to the user or other people and damage to the device.

⚠ WARNING: This symbol indicates the contents "Possibilities of the death or the serious wound can be supposed" caused from mis-operations.

⚠ CAUTION: This symbol indicates the contents "Possibilities of the injury or only the material damage can be supposed" caused from mis-operations.

Usage and Storage Environment

⚠ CAUTION

*Do not use or store in direct sunlight, high temperature, high humidity, or condensation.

*Do not use or store in environments affected by acids, alkalis, organic solvents, corrosive gases, etc.

*Do not use or store in places where mechanical vibration is directly transmitted.

*Do not use or store near objects that generate strong magnetic fields or electrified objects.

*Do not use or store in dusty or wet environments.

Using Conditions

⚠WARNING

*This instrument is for low voltage. Do not use it in circuits with AC/DC 500V or higher. Before use, check the target circuit voltage.

*Only covered cables should be used. It should NEVER be used on bare cables.

*Do not expose to rain, moisture, water drips and never use with wet hands.

*Do not use if CT or CT case is damaged.

*Do not use the product with the battery cover removed.

*Applying an excessive current to a CT generates heat. Please use according to the rated value.

*Do not disassemble the instrument.

⚠ CAUTION

*Do not subject the device to a strong impact such as dropping it. If an impact is applied, it will make opening/closing and CT engagement deteriorate, which will affect the special characteristics badly.

*Do not apply force or shock to the drive shaft of the device. That will bend the drive shaft, making opening/closing and CT engagement deteriorate, which will affect the special characteristics badly.

3.SPECIFICATIONS

Safety standard : Meets the requirements for double insulation to IEC 1010-2-032, IEC 61010-1, IEC 61010-2-032 installation Category III 300V phase to earth.

Withstand Voltage: Between CT through-hole and grip: AC3700V, 1min

Measuring Method: CT clamp method


AC Detecting Method: RMS detection (analog calculation method)

A/D Conversion Method: Successive approximation method

Jaw opening capability : 45mmφ

Display Device (LCD): 4-digit LCD display with unit symbol

Over range Display: 「OL」 indication.

Battery Voltage Lowering Display: When the battery power goes below the operating voltage 「」 mark lights up

Sample Rate: 2 times/sec

Operating Circuit Voltage: Below AC/DC 500V (insulated cable)

Data Hold: 「DH」 lights up and the displayed value is hold

0 Adjustment: 「ZERO ADJ」 lights up for about 1 second and the display value is set to 「0」 . ※Valid only for DC

A 「=」 range

Auto Power Off: Automatically turns off the power in about 10 minutes after the last operation

Operating Temperature and Humidity Range: 0°C to 40°C, 80% RH or less (no condensation)

Storage Temperature and Humidity Range: -10°C to 50°C, 80% RH or less (no condensation)

Power Supply: AAA alkaline battery (LR03 x 3)

Current Consumption: Around 13mA

Switching Method: Tact switch

Dimensions: 75 (W) x 437 (H) x 34.6 (D) mm (excluding protuberance)

Weight: Approx. 385g (including batteries)

Accessories : Carrying case.....1

Instruction manual.....1

Batteries.....2

Measuring range (23°C±5°C, < 80% RH) :

	Range/Resolution		Measuring Range	Accuracy
DC A	10A	0.001A	±0.004~±9.999A	±1.5%rdg±5dgt
	100A	0.01A	±0.04~±99.99A	±2.0%rdg±5dgt
AC A	10A	0.001A	±0.000~±9.999A	±1.5%rdg±5dgt
	100A	0.01A	±0.01~±99.99A	±2%rdg±5dgt

*Above mentioned values are accurate if the conductor to be measured passes through the center of the CT and is placed at right angles to the CT.

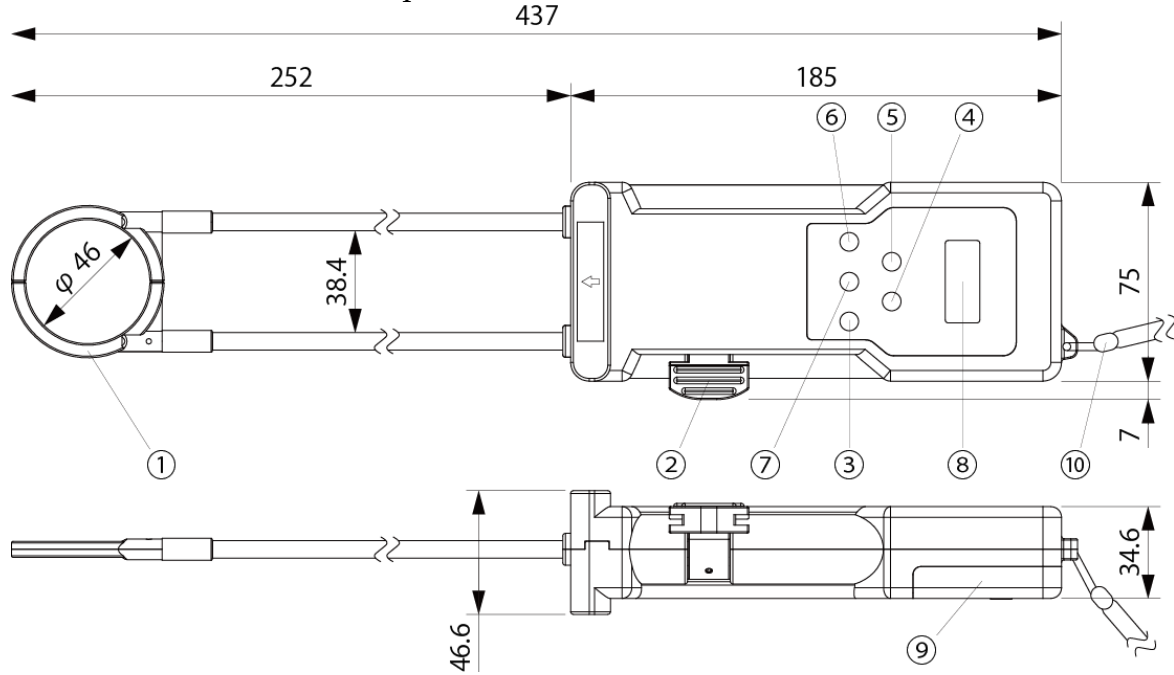
*DC A values are accurate when measured at input 0(zero) after setting the display value to 0 with the 0 set switch.

*When measuring DC A, less than 3 counts are displayed as 0.

*Accuracy of measurement error due to opening/closing ±0.5% rdg ±10 dgt for all ranges.

4.HANDLING METHOD

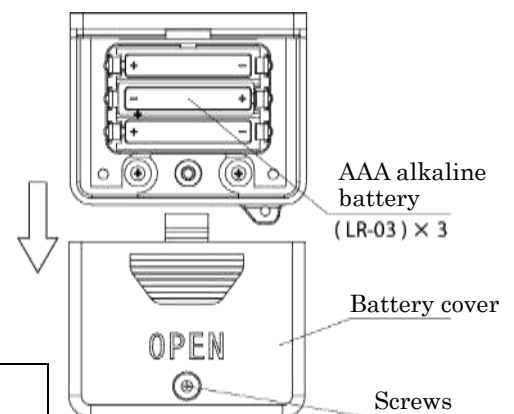
4-1 Dimensions and Description of Each Part



- ① Clamp Type CT: Current detection sensor for the main body.
- ② Open/Close Lever: When you push the lever down, CT clamp opens.
- ③ Power Switch: Switch to turn the power ON/OFF.
- ④ AC/DC Switch: Range selecting switch for AC and DC.
- ⑤ Range Switch: 10 A / 100 A current range selector switch.
- ⑥ 0 Set Switch: Switch for zero adjustment. When this switch is pressed, the 「ZERO ADJ」 mark lights up for 1 second and the display value becomes 0.
*This function is valid only in the DC range.
- ⑦ Data Hold Switch: When this switch is pressed, 「DH」 mark lights up on the display and the data at the time of pressing is hold.
- ⑧ Display Unit (LCD): Digital display of measured values, units, symbols and battery status.
- ⑨ Battery Cover: It is removed when changing batteries.
- ⑩ Hand Strap: A strap to prevent it from falling. It is used by passing it through the wrist at the time of measurement.

4-2 Battery Replacement

1. Make sure that the power is "OFF", then remove the screw which holds the battery cover on the back of the device with a [+] screwdriver, and slide the battery cover to remove it.
2. Remove all 3 spent batteries.
3. Check polarity and insert 3 new batteries.
4. Return the battery cover back to its place and fix it with the screws.
5. Press the power switch and confirm if the power is ON.




⚠WARNING

- *Please don't change the battery when a cable is clamped.
- *Don't use the device in a condition that battery cover is removed.

⚠CAUTION

- * If the polarity of the battery is incorrect, it may cause battery leakage or malfunction of the main body circuit.
- * Disassembling the battery or throwing it into fire is extremely dangerous.

- * If the battery is left with the wrong polarity, the battery will heat up and become defective. That battery can not be used again even if it is reinserted correctly.
- * Please dispose the used batteries following the rules of the designated place.
- * When the「」mark lights up on the display, replace batteries with the new ones as soon as possible.
- * Do not mix new batteries with the used ones or different type of batteries.

4-3 Method of Measurement

4-3-1 Measurement of DC current (DC A=)

- (1) Press the power switch to turn the power ON. (After the power is "ON", it switches to DC 10A range automatically)
- (2) Press the range switch and set the suitable range. (10A/100A).
- (3) Bring the device close to the cable to be measured with CT section closed. Press the [0 set switch] to set the display to 0. If the display doesn't become 0 after pressing [0 set switch] once, press the switch 2-3 times.

*If the measuring environment is affected by noise, earth magnetism etc., 0 point may become unstable, but this is not a malfunction.

- (4) Push down the opening/closing lever, open the CT section, and clamp the cable to be measured (1 cable) then read the displayed value.

* Adjust the position so that the cable to be measured is in the center of the CT.

* If you measure with 10A range and happened to measure overrange current, therefore 「OL」 mark is displayed; remove the clamp and press the range switch.

Set to 100A range and perform the operation again from above 3.

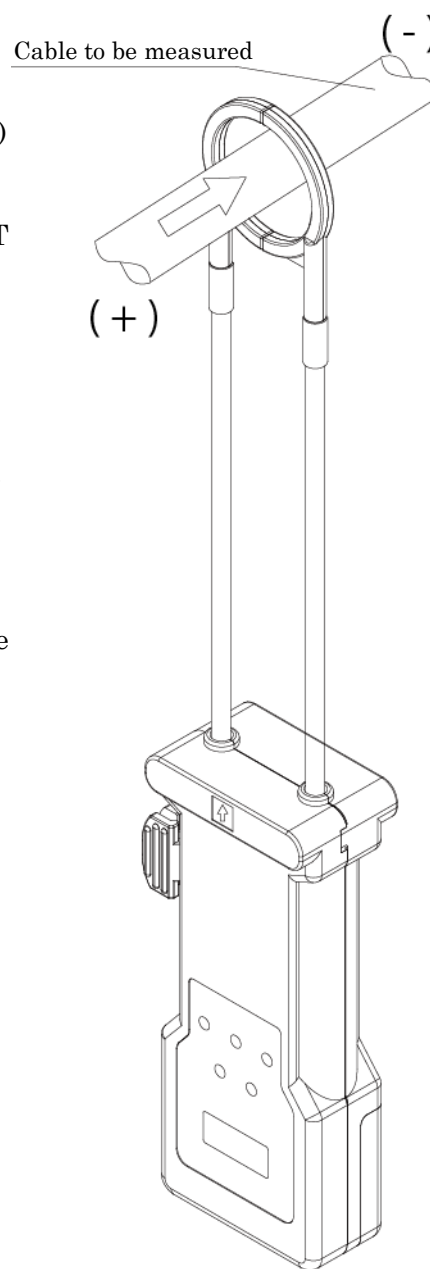
- (5) Press the power switch to turn off the power after the measurement is finished. (Auto power off function automatically turns the power off 10 minutes after the operation)

4-3-2 Measurement of AC current (AC A~)

- (1) Press the power switch to turn the power ON. (After the power is "ON", it switches to DC 10A range automatically)
- (2) Press the AC/DC switch once to change to AC range. (Press again to return to DC range)
- (3) Press the range switch and set the suitable range. (10A/100A)
- (4) Push down the opening/closing lever, open the CT section, and clamp the cable to be measured (1 cable) then read the displayed value.

*Adjust the position so that the cable to be measured is in the center of the CT.

- (5) Press the power switch to turn off the power after the measurement is finished. (Auto power off function automatically turns the power off 10 minutes after the operation)



⚠CAUTION

- *Do not apply any force other than opening and closing to the CT section.
- *Do not apply current over 120A to the CT.
- *Hall element is being used for the sensor of this device. Since it is easily affected by terrestrial magnetism, press the 0 set switch and adjust to 0 before use.
- *When the CT section is open, do not press the 0 set switch.

5.REPAIR SERVICE

When making requests for repair service, please bring the instrument directly to the dealer. If this is impossible, however, send the instrument directly to our sales office. When mailing this instrument, always pack it in its original or equivalent packing material and pack together with name, address, telephone number and the warranty documentation.

- To ensure speedy and reliable repair, always include information as the type of failure and cause.
- If required, always return accessories with the instrument.
- When contacting us, provide the model number and serial number of your instrument.

6.WARRANTY

- 1.This instrument is warranted for the operation under normal use for 15 months from the date of purchase.
- 2.This warranty does not cover the following defects:
 - a. Defect caused from the improper use and operation.
 - b. Defect caused from the use, operation and storage beyond the original specifications, designs and conditions.
 - c. Defect caused from the renovations or repairs done by someone else than us or our representatives.
 - d. Defect not caused from our responsibilities.