

AC/DC FORK CURRENT TESTER

KEW FORK KEW 2300R



KYORITSU ELECTRICAL INSTRUMENTS WORKS, LTD.

1. Safety Warnings

This instrument has been designed and tested according to IEC Publication 61010: Safety Requirements for Electronic Measuring Apparatus...

WARNING

- Read through and understand instructions contained in this manual before starting to use the instrument.
Save and keep the manual handy to enable quick reference whenever necessary.
The instrument is to be used only in its intended applications.
Understand and follow all the safety instructions contained in the manual.

The symbol Δ indicated on the instrument means that the user must refer to related parts in the manual for safe operation of the instrument. Be sure to carefully read the instructions following each Δ symbol in this manual.

- DANGER is reserved for conditions and actions that are likely to cause serious or fatal injury.
WARNING is reserved for conditions and actions that can cause serious or fatal injury.
CAUTION is reserved for conditions and actions that can cause minor injury or instrument damage.

Following symbols are used on the instrument and in the instruction manual. Attention should be paid to each symbol to ensure your safety.

- Refer to the instructions in the manual. This symbol is marked where the user must refer to the instruction manual so as not to cause personal injury or instrument damage.
Indicates an instrument with double or reinforced insulation.
Indicates that this instrument can clamp on bare conductors when measuring a voltage corresponding to the applicable Measurement category, which is marked next to this symbol.
Indicates AC (Alternating Current).
Indicates DC (Direct Current).
Indicates AC and DC.
This instrument satisfies the marking requirement defined in the WEEE Directive (2002/96/EC). This symbol indicates separate collection for electrical and electronic equipment.

DANGER

- Never make measurement on the circuit above AC/DC300V.
Do not attempt to make measurement in the presence of flammable gases.
Never attempt to use the instrument if its surface or your hand is wet.
Do not exceed the maximum allowable input of any measurement range.
Do not open the battery cover and the instrument case when making measurement.
Never try to make measurement if any abnormal conditions, such as broken Transformer jaws or case is noted.
The instrument is to be used only in its intended applications or conditions.
Functions equipped with the instrument doesn't work, and instrument damage or serious personal injury may be caused.
Keep your fingers and hands behind the Barrier during measurement.

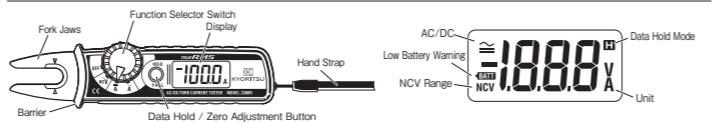
WARNING

- Never attempt to make any measurement, if the instrument has any structural abnormality noted, such as cracked case or exposed metal parts.
Do not install substitute parts or make any modification to the instrument.
Do not try to replace the batteries if the surface of the instrument is wet.
Always switch off the instrument before opening the battery compartment cover for battery replacement.

CAUTION

- Always make sure to check the function selector switch is set to the appropriate range before starting measurement.
Do not expose the instrument to the direct sun, high temperature and humidity or dewfall.
Be sure to set the function selector switch to the "OFF" position after use.
Use a cloth dipped in water or neutral detergent for cleaning the instrument.
Do not use abrasives or solvents

4. INSTRUMENT LAYOUT



Barrier: It is a part providing protection against electrical shock and ensuring the minimum required air and creepage distances.

5. Preparation

- Check battery voltage
Set the Function selector switch to the position other than OFF position.
Battery Voltage is enough if indications are displayed clearly and "BATT" mark is not displayed on the LCD.
If "BATT" mark is indicated or no indication on the LCD, replace batteries with new one according to battery replacement procedures shown in clause 8 in this document.

CAUTION

- Indications may not be displayed on the LCD despite the function selector switch is at the position other than OFF position.
This is because power-off function operated automatically and the instrument turned off.
Power off function can be released by turning the function selector switch to OFF, and then set it to the range on which you would like to make a measurement.
If LCD still blank, batteries are completely exhausted. Please replace batteries.

- Check the function selector switch is set to the appropriate range. And also check data hold function is not enabled. If inappropriate range is selected, desired measurement cannot be made.

6. Measurements

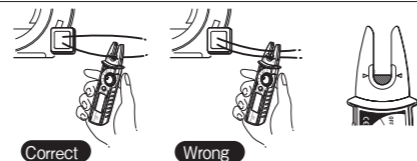
6-1 Current Measurement

DANGER

- To avoid getting an electrical shock, never make measurement on the circuit in which electrical potential over AC/DC300V exists.
Do not make measurement with battery cover removed.
Keep your fingers and hands behind the barrier during measurement.

CAUTION

- Max. diameter of measured object(conductor) is Φ10mm.

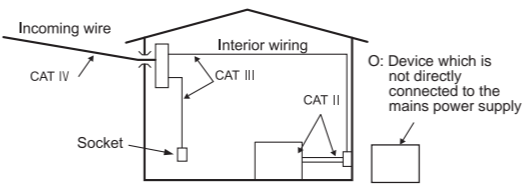


6-1-1 DC current measurement

- Set the function selector switch to "A" position.
Press HOLD(OADJ) button for 2sec or more to enable OADJ function and adjust the indication on the LCD to be 0.
Place one measured conductor lower than the triangle mark indicated on the fork shaped sensor and make a measurement.

Measurement Category

- To ensure safe operation of measuring instruments, IEC 61010 establishes safety standards for various electrical environments, categorized as O to CAT IV, and called measurement categories.
Higher-numbered categories correspond to electrical environments with greater momentary energy, so a measuring instrument designed for CAT III environments can endure greater momentary energy than one designed for CAT II.
CAT I : Circuits which are not directly connected to the mains power supply.
CAT II : Electrical circuits of equipment connected to an AC electrical outlet by a power cord.
CAT III : Primary electrical circuits of the equipment connected directly to the distribution panel, and feeders from the distribution panel to outlets.
CAT IV : The circuit from the service drop to the service entrance, and to the power meter and primary over-current protection device (distribution panel).



2. Features

- This instrument, Fork current tester, can measure AC/DC current up to 100A without opening and closing the Jaws.
True RMS reading for AC current
Fork shaped sensor for easy measurement at tight places and crowded cable areas.
NCV function (Non Contact Voltage) enables live wire check
Auto power off function
Data hold function
Pocket size handy tester, adopted over-molding for a better fit
Carrying case furnished as a standard accessory.
Designed to international safety standards.
IEC 61010-2-032 measurement CAT III 300V Pollution degree 2

3. Specification

Table with columns for AC current ~ A, DC current ~ A, and AC voltage ~ V. Rows include Range, Measuring range, Accuracy, and Action.

Note) NCV range is calibrated to detect the voltage, where non-grounded single wire, AC80V or more. However, detecting sensitivity may be affected by the absence of grounded or non-grounded metal tube or metal case.

- CF(Crest Factor) CF=2.5 or less
Standards IEC61010-1 Measurement CATIII 300V, pollution degree 2 IEC61010-2-032

Note) When current is flowing from the upside to the underside of the instrument, reading is positive(+), on the contrary, reading to be negative(-) when current is flowing from the underside to the upside of the instrument.

6-1-2 AC current measurement

- Set the function selector switch to "~A" position.
Place one measured conductor lower than the triangle mark indicated on the fork shaped sensor and make a measurement.
Then measured value is displayed on the LCD.
For the measurement of AC current, zero adjustment, which is required for the measurement of DC current, is not necessary. Current flowing direction has no relation to the indication polarity.

6-2 Non contact voltage detection(NCV)

- This function is to check the presence of voltage without touching wires or electrodes directly.
Also can check the presence of AC voltage in cable, outlet, fuse and circuit breaker.
While voltage is applied to a cable or outlet, the electric field depending on the voltage is generated. This instrument detects the generated electric field, and verifies the presence of AC voltage.

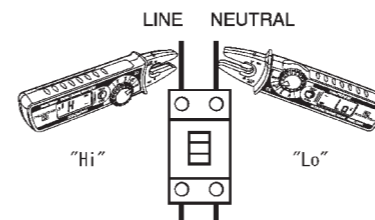
DANGER

- To avoid getting an electrical shock, never make measurement on the circuit in which electrical potential over AC/DC300V exists.
Before a measurement, be sure to check the instrument operation with well-known power supply.
Do not make measurement with battery cover removed.
Indication on NCV range is a reference value.
Indication of voltage may be affected by non-grounded metal tube or metal case, the place where affected by other voltages, handgrip or the measuring position of sensor.
Keep your fingers and hands behind the barrier during measurement.

6-2-1 Measurements

- Set the function selector switch to "NCV" position.
The sensing mode (100V or 200V) in effect is displayed on the LCD for 1min, and NCV measurement starts.

Note) When set the function selector switch to NCV range, self-check function operates and indicates "Err", if there is some fault or abnormal condition.



- Environmental standards EU RoHS directive compliant
Indication LCD Max. 1049 units, symbols
Over range display "OL" symbol is displayed on the LCD.
Response time Approx. 2sec.
Sampling rate Approx. twice per second
Location for use Indoor use, Altitude up to 2000m
Temperature & Humidity range (guaranteed accuracy) 23°C±5°C
Operating Temperature & Humidity range 0 ~ 40°C
Storage Temperature & Humidity range -20 ~ 60°C
Power source DC3V : R03(UM-4)x2pcs
Current consumption Approx. 12mA or less
Power off function Power off function operates automatically after a switch remains for 10min.
Overload Protection AC/DC current : AC/DC 120A/ 10sec.
Withstand Voltage AC voltage (NCV) : AC360V/ 10sec.
Insulation Resistance 10MΩ/1000V
Max. diameter of measured object Max. 10mm
Dimensions 161(L) x 40(W) x 30(D) mm
Weight 110g(including batteries)
Accessories Battery R03 2
Instruction manual 2
Carrying case M-9113 1

Reference

Table with columns for Waveform, Effective value Vrms, Average value Vavg, Conversion factor Vrms/Vavg, Reading error for average instruments, and Crest factor CF.

*Effective Value (RMS)
Most alternating currents and voltages are expressed in effective values, which are also referred to as RMS (Root-Mean-Square) values.

*CF (Crest Factor) is found by dividing the peak value by the effective value.
Examples: Sine wave: CF=1.414, Square wave with a 1: 4 duty ratio: CF=2

- 6-2-2 Sensing mode
There are two types of sensing mode: 100V mode and 200V mode.
Above two modes can be changed over by pressing the data hold button 2sec or more.
Factory setting : 200V mode
100V mode
Sensitivity on this mode is set sharp, therefore, the presence of AC voltage can be checked only by placing the instrument closer to the measured object, such as an outlet, a plug and parallel cords, as shown in figure.
200V mode
Sensitivity on this mode is set dull, so the earth side and non-earth side of 100V cable way can be verified.

7. Other functions

- 7-1 Auto power off function
This function causes the instrument to automatically enter the power-off mode about 10min after the last function selector switch operation.
7-2 Data hold function (Only on ACA/DCA range)
This is a function to hold the measured value on the LCD. "H" mark is shown on the LCD while the instrument is in the data hold mode.

Note) The measured value being held will be released when auto power-off function operates while data hold function is operating.

8. Battery replacement

WARNING

- To avoid getting electrical shock, be sure to set the function selector switch to "OFF" position before trying to replace the batteries.

CAUTION

- Do not mix new and old batteries.
Make sure to install battery in correct polarity as indicated inside the battery cover.

When "BATT" mark is shown on the upper left corner of the LCD, replace the batteries. Note that the battery is completely exhausted, the LCD blanks without "BATT" mark shown.

