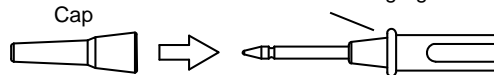
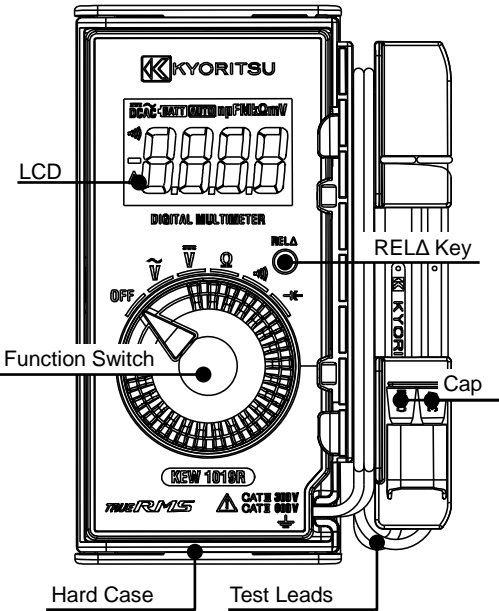


INSTRUCTION MANUAL

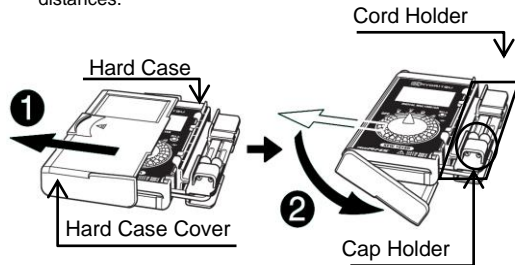
CARD TYPE AUTO RANGE DIGITAL MULTIMETER

KEW1019R



Protective fingerguard:

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





- Features
- True-RMS type
 - Practical design Hard case




1. Safety Warnings

This instrument has been designed, manufactured and tested according to IEC 61010: Safety requirements for Electronic Measuring apparatus, and delivered in the best condition after passing quality control tests. This instruction manual contains warnings and safety rules which have to be observed by the user to ensure safe operation of the instrument and to maintain it in safe condition. Therefore, read through these operating instructions before using the instrument.



WARNING

- Read through and understand the instructions contained in this manual before using the instrument.
 - Keep the manual at hand 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.
- Failure to follow the instructions may cause injury, instrument damage and/or damage to equipment under test. Kyoritsu is by no means liable for any damage resulting from the instrument in contradiction to this cautionary note.


The symbol  indicated on the instrument means that the user must refer to the related parts in the manual for safe operation of the instrument. It is essential to read the instructions wherever the symbol  appears in the 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 injury or instrument damage.

- Symbols listed below are used on this instrument.

-  User must refer to the manual.
-  Instrument with double or reinforced insulation.

 AC  DC  Ground (Earth)

 This instrument complies to WEEE Directive (2002/96/EC). Please contact your local distributor at disposal.

Measurement Category

O Circuits which are not directly connected to the mains power supply.

CAT II Primary 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).

This instrument is basically designed for CAT II 600V, but the cap for CAT III 300V is supplied with.

DANGER

- Never make measurements under the circumstances exceeding the designed measurement category and the rated voltage of the instrument.
- Do not attempt to make measurement in the presence of flammable gasses. Otherwise, the use of the instrument may cause sparking, which can lead to an explosion.
- Never attempt to use the instrument if its surface or your hand is wet.
- Do not exceed the maximum allowable input of any measuring range.
- Never open the case during a measurement.
- To avoid electrical shock by touching the equipment under test or its surroundings, be sure to wear insulated protective gear.
- Protective figerguard on the test leads provide protection to keep your fingers and hands from touching an object under test. Keep your fingers and hands behind the protective figerguard during measurement.

WARNING

- Never attempt to make measurement if any abnormal conditions, such as broken case and exposed metal parts are found on the instrument or test leads.
- Verify proper operation on a known source before use or take action as a result of the indication of the instrument.
- Firmly attach the caps to the test leads when performing measurements in CAT III test environments.
- Do not try to replace the battery if the surface of the instrument is wet.
- Do not rotate the function switch if the instrument and the equipment under test are connected.
- Do not install substitute parts or make any modification to the instrument. For repair or re-calibration, return the instrument to your local KYORITSU distributor.
- Ensure that the test lead is disconnected from the object under test, and that the instrument is powered off when opening the battery compartment cover for battery replacement.
- Stop using the test lead if the outer jacket is damaged and the inner metal or color jacket is exposed.

CAUTION

- Use of this instrument is limited to domestic, commercial and light industry applications. Strong electromagnetic interference or strong magnetic fields, generated by large currents, may cause malfunction of the instrument.
- Set the function switch to an appropriate position before starting measurement.
- This instrument isn't dust & water proofed. Keep away from dust and water.
- Do not pull or twist the test leads to prevent the risk of damage.
- Power off the instrument after use. Remove the battery if the instrument is to be stored and will not be in use for a long period.
- Do not expose the instrument to direct sunlight, high temperature and humidity or dewfall.
- Use a cloth dipped in water or neutral detergent for cleaning the instrument. Do not use abrasives or solvents.

2. Specification

Temperature: 23 ± 5°C, Humidity: 45 - 75%

ACV		(Auto Range)
Range	Display Range	Accuracy (sine wave)
6V	0.000, 0.006-6.299V	±1.3 %rdg±5dgt (50/60Hz) ±1.7 %rdg±5dgt (45-500Hz)
60V	5.70-62.99V	±1.6 %rdg±5dgt (50/60Hz)
600V	57.0-629.9V	±2.0 %rdg±5dgt (45-500Hz)

Guaranteed accuracy : 0.010V-600.0V
CF ≤ 3 (50/60Hz), less than 900V peak
For non-sinusoidal waveforms, add ±0.5 %rdg±5dgt

DCV		(Auto Range)
Range	Display Range	Accuracy
600mV	0.0-±629.9mV	±0.8%rdg±5dgt
6V	±0.570-±6.299V	
60V	±5.70-±62.99V	
600V	±57.0-±629.9V	±1.0%rdg±5dgt

Guaranteed accuracy : 0.0mV-±600.0V
ACV/DCV input impedance : approx. 10MΩ

Resistance / Continuity		(Auto Range)
Range	Display Range	Accuracy
600Ω	0.0-629.9Ω	±1.0%rdg±5dgt
6kΩ	0.570-6.299 kΩ	
60kΩ	5.70-62.99 kΩ	
600kΩ	57.0-629.9 kΩ	
6MΩ	0.570-6.299 MΩ	±2.5%rdg±5dgt
40MΩ	5.70-41.99 MΩ	
Continuity	0.0-629.9Ω	Buzzer threshold value 60Ω or less.

Guaranteed accuracy : 0.0 Ω-40.00M Ω
Open-loop voltage : less than 3V
Input protective voltage : AC/DC600V 10 sec

Capacitance		(Auto Range)
Range	Display Range	Accuracy
6nF	0.000-6.299nF	±3.5%rdg±50dgt
60nF	5.70-62.99nF	±3.5%rdg±10dgt
600nF	57.0-629.9nF	±3.5%rdg±5dgt
6μF	0.570-6.299μF	
60μF	5.70-62.99μF	
600μF	57.0-629.9μF	±4.5%rdg±5dgt

Guaranteed accuracy : 0.000nF-600.0μF
Input protective voltage : AC/DC600V 10 sec

- Measuring method : $\Delta \Sigma$ method
- Over-range indication : OL
- Measurement cycle : 2.5 times per second (600μF range of Capacitance function 0.2 times per second)

- Applicable standards :
IEC 61010-1/ 61010-031/ 61010-2-033
CAT III 300V / CAT II 600V
- Pollution degree 2, Indoor use, Altitude up to 2000m
IEC 61326 (EMC)
In the radio-frequency electromagnetic field of 3V/m, accuracy is within five times the rated accuracy.
- EN 50581 (RoHS)

- Withstand voltage :
AC3470Vrms 5sec between circuit and enclosure
- Insulation resistance :
100MΩ or more /1000V between enclosure and electrical circuit

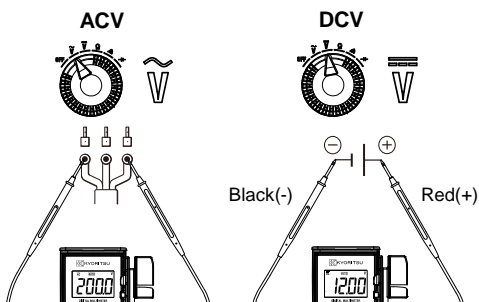
- Operating temperature and humidity range :
0 to 40°C, 80%RH or less (no condensation)
- Storage Temperature and humidity range :
-20 to 60°C, 80%RH or less (no condensation)

- Power source : DC3V CR2032x1
- Current consumption : 2mA or less
- Battery life (ACV, continuous, no load, with CR2032) : Approx. 120 hours
- Dimension, Weight : 126(L)x85(W)x18(D)mm, approx. 135g (including battery and hard case)
- Accessories :
 - Battery CR2032 1pce
 - Instruction manual 1pce
 - Hard case (M-9188) 1pce

3. ACV/DCV Measurement

⚠ DANGER

- Never make measurement on a circuit in which voltage over 600V exists.
- Keep your fingers and hands behind the protective figerguard during measurement.



NOTE

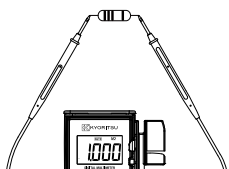
- Beep sounds when the instrument switches the ranges from 60V to 600V.
- If the connection is reversed, the “ - ” mark will be displayed on the LCD. (DCV measurement).
- The LCD shows some digits at the ACV or the DCV range even while the test leads are open. And, it may show some digits instead of 0 even if the test leads are shorted. However, these phenomena don't affect measurement results.

4. Resistance(Continuity)Measurement

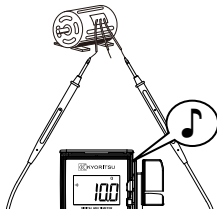
⚠ WARNING

Never use the instrument on an energized circuit.

Resistance



Continuity



“ ” appears on the LCD.
Beep 60Ω or less.

NOTE

- LCD shows “OL” when the test leads are open.
- Even if the test leads are shorted, the indicated values may not be “0”. But this is because of the resistance of test leads and not a failure. High resistance measurement and capacitive components may fluctuate readings.

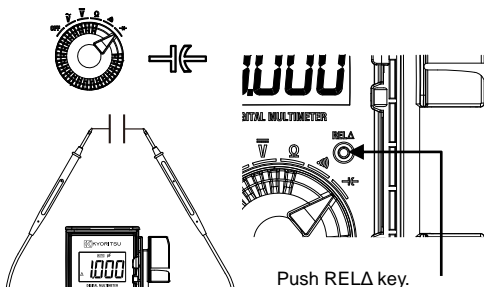
5. Capacitance Measurement

⚠ WARNING

Never use the instrument on an energized circuit.
Discharge the capacitor before measurement.

Press the REL key before starting a measurement and adjust the displayed value to “0.000nF”.

Capacitance



Push REL key.
“ Δ ” appears on the LCD.

NOTE

Measurement time at 600μF range is a bit long since the reading is updated once in approx 5 sec.

6. Other Functions

- REL Function
Press the REL key to enable this function and store the measured value to display the differences between the stored value and the values measured in further tests. (at any functions other than Continuity) The measurement range will be fixed when the REL function is enabled, and the measuring range will be between the initial value and the full scale value. (except for Capacitance)
Press the REL Key again to release the stored value.

“ Δ ” symbol appears when REL Key is pressed.



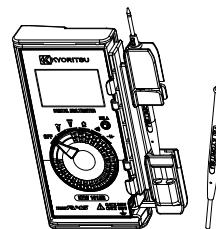
- Low battery indication

“ BATT ” symbol appears at 2.3±0.1V or less.



- Sleep Function
Automatically powers save the instrument in about 15 min after the last switch operation.
Buzzer beeps five times one minute before entering into the Sleep mode, and also one time just before entering into the mode.

- This instrument can make measurements while one test lead is left in place. So you can perform a test with checking the readings.



7. Battery Replacement

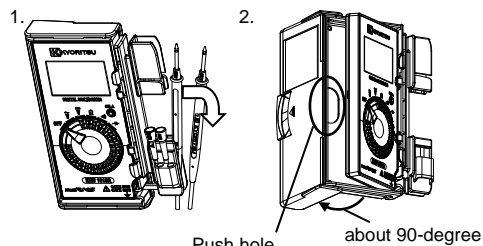
⚠ WARNING

- Replace the battery when the “ BATT ” mark- low battery voltage warning- appears on the LCD. Otherwise, precise measurement cannot be made. If the battery is completely exhausted, the LCD goes blank without showing the “ BATT ” mark.
- Do not try to replace the battery if the surface of the instrument is wet.
- Power off the instrument before opening the case for battery replacement.

⚠ CAUTION

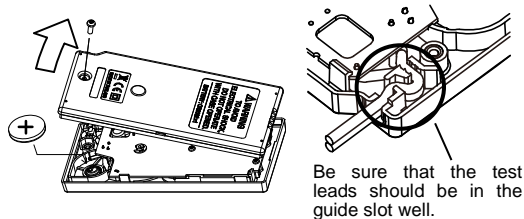
- Install a battery in correct polarity as indicated in the Battery Compartment.

- (1) Set the Function Switch to “OFF” position.
- (2) Remove the Hard case.
 1. Remove the test leads from the holder.
 2. Open and hold the Hard case cover about 90-degree, and then push the instrument through the hole on the back side of the Hard case.



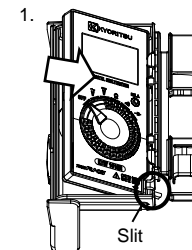
Push hole about 90-degree

- (3) Loosen the screw on the back side of the instrument and remove the case.
- (4) Replace the battery with a new one (CR2032) observing the correct polarity.

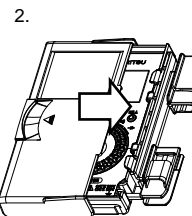


Be sure that the test leads should be in the guide slot well.

- (5) Be sure that the test leads should be in the guide slot well, then, install the case and tighten the screw.
- (6) Attach the Hard case.



Pass the test leads through the slit first, and put the main unit in the Hard case.



Slide and attach the Hard case cover.

DISTRIBUTOR

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