INSTRUCTION MANUAL

CARD TYPE AUTO RANGE DIGITAL MULTIMETER

KEW1019R

Features:
- True-RMS type
- Practical design

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 manual at hand to enable quick reference wherever 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) (2002/96/EC). Please contact your local distributor at disposal.

Measurement Category

- Circuits which are not directly connected to the mains power supply.
- CAT II Electrical primary 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 loads.
- 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 fingerguard 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 fingerguard during measurement.

**WARNING**

- Never attempt to make measurements 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%

**DCV**

<table>
<thead>
<tr>
<th>Range</th>
<th>Display Range</th>
<th>Accuracy (sine wave)</th>
</tr>
</thead>
<tbody>
<tr>
<td>60mV, 6V</td>
<td>0.06-6.299mV</td>
<td>±0.8%rdg±5dgt</td>
</tr>
<tr>
<td>6kV, 60V</td>
<td>0.570-6.299kV</td>
<td>±1.7%rdg±5dgt</td>
</tr>
<tr>
<td>600V</td>
<td>57.0-6.299V</td>
<td>±2.0%rdg±5dgt</td>
</tr>
</tbody>
</table>

Guaranteed accuracy: 0.010V, 0.060V, 0.600V.

**ACV**

<table>
<thead>
<tr>
<th>Range</th>
<th>Display Range</th>
<th>Accuracy (sine wave)</th>
</tr>
</thead>
<tbody>
<tr>
<td>60mV</td>
<td>0.06-6.299mV</td>
<td>±0.3%rdg±5dgt</td>
</tr>
<tr>
<td>6V, 60V</td>
<td>0.570-6.299kV</td>
<td>±1.6%rdg±5dgt</td>
</tr>
<tr>
<td>600V</td>
<td>57.0-6.299V</td>
<td>±2.8%rdg±5dgt</td>
</tr>
</tbody>
</table>

Guaranteed accuracy: 0.010V, 0.060V, 0.600V.

**Resistance / Continuity**

<table>
<thead>
<tr>
<th>Range</th>
<th>Display Range</th>
<th>Accuracy (Auto Range)</th>
</tr>
</thead>
<tbody>
<tr>
<td>60Ω to 6MΩ</td>
<td>±1.0%rdg±5dgt</td>
<td></td>
</tr>
<tr>
<td>600Ω to 6GΩ</td>
<td>±1.0%rdg±5dgt</td>
<td></td>
</tr>
</tbody>
</table>

Guaranteed accuracy: 0.000Ω to 60.0Ω, 0.0001MΩ to 600MΩ.

**Over-range indication:** OL

**Measurement cycle:** 2.5 times per second (600µF range of Capacitance function 2.5 times per second)

**Applicable standards:**
- IEC 61010-1/61010-301/61010-2-033
- EN 61326 (EMC)

**Pollution degree 2, Indoor use, Altitude up to 2000m**

**Kyotoku:**

- CAT III 600V / CAT II 600V
- In the radio-frequency electromagnetic field of 3V/m, accuracy is within five times the rated accuracy.

**Storage Temperature and humidity range:**

- 0 to 40°C, 80%RH or less (no condensation)

- 20 to 60°C, 80%RH or less (no condensation)
3. ACV/DCV Measurement

**NOTE**
- Never make measurement on a circuit in which voltage over 600V exists.
- Keep your fingers and hands behind the protective finger guard during measurement.
- Never use the instrument on an energized circuit. Discharge the capacitor before measurement.
- 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

**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.

5. Capacitance Measurement

**WARNING**
- Never use the instrument on an energized circuit.
- Set the Function Switch to “OFF” position.
- Remove the Hard case.
- Slide and attach the Hard case cover.

**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 RELA 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. (all 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 RELA Key again to release the stored value.

- **Low battery indication**
  - “BAT” symbol appears when RELA Key is pressed.

- **Sleep Function**
  - Automatically powers save the instrument in about 15 min after the last switch operation.

- **Battery life**
  - Approx. (including battery and hard case)
  - ACV: 5h, DCV: 2h
  - Power source
    - Current consumption: 1mA or less
  - Voltage over 600V exists.

- **Battery**
  - CR2032

- **Battery replacement**
  - If the battery is completely exhausted, the LCD goes blank without showing the “BAT” 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.

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

7. Battery Replacement

**WARNING**
- Replace the battery when the “BAT” 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 “BAT” 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.

Kyoritsu reserves the rights to change specifications or designs described in this manual without notice and without obligations.