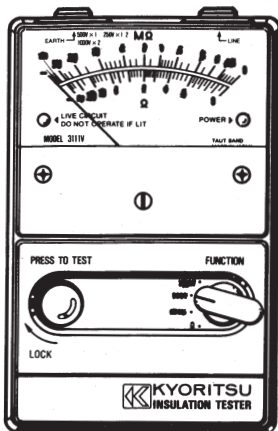


INSTRUCTION MANUAL



**BATTERY OPERATED
INSULATION RESISTANCE TESTER**

MODEL 311V



**KYORITSU ELECTRICAL
INSTRUMENTS WORKS, LTD.**

TABLE OF CONTENTS

1. Features	1
2. Specifications	2
3. Instrument Layout	3
4. How to Make Measurements.....	4
4-1. Preparation for Measurements	4
4-2. Insulation Resistance Measurements... ..	6
4-3. Resistance Measurements.....	7
5. Battery & Fuse Replacement.....	8
6. How to Use the Carrying Case	8

SAFETY WARNING

THIS INSTRUMENT MUST BE USED BY A COMPETENT, TRAINED PERSON AND OPERATED IN STRICT ACCORDANCE WITH THE INSTRUCTIONS.

KYORITSU ELECTRICAL INSTRUMENTS WORKS WILL NOT ACCEPT LIABILITY FOR ANY DAMAGE OR INJURY CAUSED BY MISUSE OR NON-COMPLIANCE WITH THE INSTRUCTIONS OR SAFETY PROCEDURES.

IT IS ESSENTIAL TO READ AND UNDERSTAND THE SAFETY RULES CONTAINED IN THE INSTRUCTIONS. THEY MUST BE OBSERVED WHEN USING THE INSTRUMENT.

1. Features

- High power insulation tester that permits accurate measurements.
- Expanded megohm scale for easier reading.
- Performs four functions — 250V/100M Ω , 500V/200M Ω and 1,000V/400M Ω insulation resistance testers plus a continuity tester (2 Ω mid-scale) for MODEL 3111V.
- Provided with a pilot lamp that warns live circuit on every range.
- Press to test button with lock down feature.
- Releasing the press to test button will automatically discharge the capacitance of the circuit under test.
- Internal circuitry is fuse protected.
- Compact, lightweight and portable.

2. Specifications

MODEL 3111V			
Test Voltage	DC 1000V	DC 500V	DC 250V
Measuring Ranges	0~400MΩ	0~200MΩ	0~100MΩ
Mid-Scale Value	4MΩ	2MΩ	1MΩ
Output Voltage on Open Circuit	DC 1000V±10%	DC 500V±10%	DC 250V±10%
Output Voltage in Neighbourhood of Mid-Scale	DC 1000V±10% at 2MΩ	DC 500V±10% at 1MΩ	DC 250V±10% at 0.5MΩ
Output Short Circuit Current	2mA approx.		
Accuracy	±5% of indicated value at 0.2~40MΩ	±5% of indicated value at 0.1~20MΩ	±5% of indicated value at 0.05~10MΩ
	±0.7% of scale length at ranges other than above ranges		
Measuring Range	0~50Ω		
Mid-Scale Value	2Ω		
Output Voltage on Open Circuit	0.6V approx.		
Output Short Circuit Current	300mA approx.		
Accuracy	±3% of scale length		
Dimensions	143 (L) x93 (W) x63 (D) mm		
Weight	500g approx.		
Batteries	8pcs. 1.5V SUM-3 Battery or Equivalent		
Accessories	Test Leads/Carrying Case/Fuse 1A 250V (Fast Acting Type. 275mΩ±15mΩ Internal Resistance)		

3. Instrument Layout

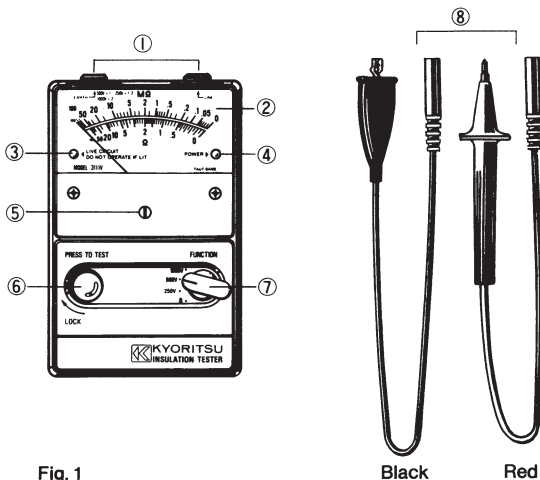


Fig. 1

- ① Terminals
- ② Scale Plate
- ③ Live Circuit Warning Lamp
- ④ Power Indication Lamp
- ⑤ Zero Adjust Screw
- ⑥ Press to Test Button with Lock Down Feature
- ⑦ Range Switch Knob
- ⑧ Test Leads

4. How to Make Measurements

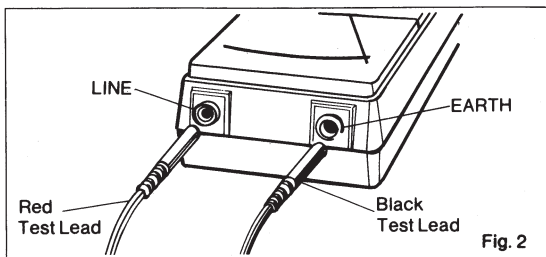
4-1. Preparation for Measurements

1. Mechanical Zero Adjustment

Make sure that the meter pointer is correctly set to ∞ mark of the ohm scale. When the pointer is off this position correct it by turning the zero adjust screw.

2. How to Connect Test Leads

As shown in Fig.2, insert the red and black test leads into the respective terminals.



3. Fuse & Test Leads Check

Set the range switch to Ω range. With the tip and alligator clip of the test leads connected press the test button. The meter pointer should read zero. When it reads infinity the test leads may be open circuit or the fuse blown. First, replace the fuse as outlined in section 5 for battery and fuse replacement. If the fuse has not blown, then check the test leads.

4. Disconnection & Check of Power Source of Circuit under Test

Turn off the power source of the circuit under test and connect the test leads to it. Make certain that the live circuit warning lamp is not on. If the lamp lights up, recheck the power source for improper disconnection.

Note: Be careful not to press the test button when the live circuit warning lamp is lit.

4-2. Insulation Resistance Measurements

1. Set the range switch to a desired position.
2. With the test leads connected to the circuit being tested press the test button and read resistance in megohms on the megohm scale. The power indication lamp should light up. Read the indication directly from the megohm scale on the 500V range (Model 3111V). Multiply the reading by 0.5 for 250V (Model 3111V), and by 2 for 1,000V (Model 3111V).
3. Lock Down Feature
For hands free operation a lock down feature is incorporated on the press to test button. Pressing and turning clockwise locks the button in the operating position. The button is released by turning it anti-clockwise.

Note: Be careful not to turn the range switch, while pressing the test button. It will damage the instrument.

4-3. Resistance Measurements

1. Set the range switch to Ω position.
2. Connect the tips of the test leads to both ends of the circuit under test. Press the test button and read resistance in ohms on the ohm scale. The power indication lamp should light up.
3. Check and adjust the zero position on the ohm scale as follows: Short the tips of the test leads and press the test button.

When the meter pointer does not read zero on the ohm scale open the battery compartment cover and turn the variable resistor located under the ohm zero adjust aperture to make the zero adjustment by using a screw-driver as shown in Fig. 3.

Note: The unit operates on the constant voltage circuit principle which does not

require the zero adjustment. However, the zero position could shift after a long period of use or after making fuse replacement.

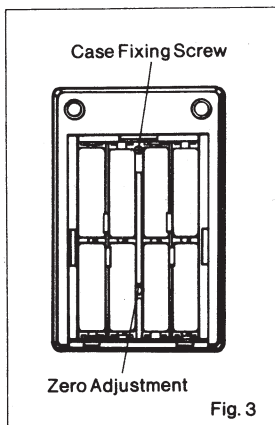


Fig. 3

5. Fuse & Battery Replacement

The power indication lamp flashes at longer intervals as the batteries become exhausted and finally stops flashing at approximately 8.5V. For battery replacement open the battery compartment cover and insert 8 new batteries, while observing correct polarity. For fuse replacement open the battery compartment cover and remove the batteries, first. Then, remove the screw (see Fig. 3) and open the case. Make sure to use the 1A/250V fuse (Fast Acting Type, $275\text{m}\Omega \pm 15\text{m}\Omega$ internal resistance). The use of any other fuse may damage the instrument. The zero position on the ohm scale may shift after the fuse replacement. In such a case make the ohm zero adjustment in accordance with the instructions given in section 4-3.3 (this does not apply to the megohm range.)

6. How to Use Carrying Case

Unhook the cover of the carrying case and put it underneath the bottom of the carrying case as shown in Fig. 4.

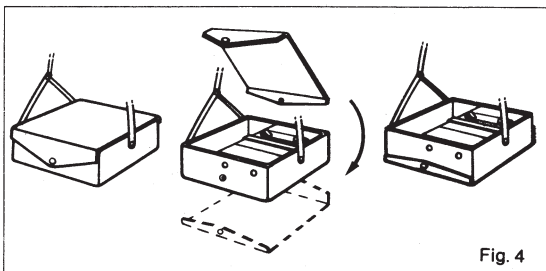


Fig. 4

This will permit the use of the instrument without removing the carrying case.

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