SAFETY RULES

- This meter is designed and tested in accordance with IEC publication 1010, pollution degree II and installation category (overvoltage category) III 600V.
- This meter has been tested according to the following EC Directives:
- This meter is designed to be indoor use at temperature 41°F to 104°F (5°C to 40°C) and altitude up to 2,000m.
- To ensure that the meter is used safely, follow all safety and operating instructions in this operation manual. If the meter is not used as described in this operation manual, the safety features of the meter might be impaired.
- Do not use the meter if the meter or test leads look damaged, or if you suspect that the meter is not operating properly.
- When using the probes, keep your fingers behind the finger guards on the probes.
- Disconnect the live test lead before disconnecting the common test lead.
- Make sure power is off before cutting, unsoldering, or breaking the circuit. Small amount of current can be dangerous.
- Do not apply more than 600Vdc or 600Vac rms between a terminal and earth ground.
- To avoid electrical shock, use CAUTION when working above 60Vdc or 25Vac rms. Such voltages pose a shock hazard.
- Never make measurements with the battery cover or bottom case off.
- To avoid electrical shock or damage to the meter, do not exceed the input limits.

INTERNATION SYMBOLS

- Important information
- Diode
- Continuity
- Ground
- Double insulation

FEATURES

- One rotary switch operation.
- Auto polarity with engineering units annunciator
- Dual polarity A-D converter.
- Auto voltage ranges selection: DCV: 1V~600V, ACV: 1V~600V
- Auto amperage ranges selection: DCA: 40mA~10A, ACA: 40mA~10A
- Auto resistance ranges selection: 0.1Ω - 40MΩ
- Diode & continuity test

3.1 General Specifications

- Display: 3 3/4 digit LCD, 3999 counts with decimal point and engineering units annunciator display
- Polarity: Automatic, (-) negative polarity indication.
- Zero adjustment: Automatic.
- Measuring Method: Dual slope integration A to D converter system.
- Over range indication: Only the "OL" is displayed.
- Power: Two, standard 1.5 volt (AAA) battery, UM4 or equivalent.
- Dimension: (70 x 144 x 40) (D) mm
- Weight: Approx. 280gm. (including batteries and packaging)

3.2 Electrical Specifications

<table>
<thead>
<tr>
<th>DC Voltage</th>
<th>Range</th>
<th>Resolution</th>
<th>Accuracy</th>
<th>Input Impedance</th>
<th>Overload Protection</th>
</tr>
</thead>
<tbody>
<tr>
<td>4V</td>
<td>1mV</td>
<td>±(0.8%+1)</td>
<td>10Ω</td>
<td>600V DC/AC rms</td>
<td></td>
</tr>
<tr>
<td>40V</td>
<td>10mA</td>
<td>±(1.2%+3)</td>
<td>40-400</td>
<td>Overload Protection</td>
<td></td>
</tr>
<tr>
<td>600V</td>
<td>1V</td>
<td>±(1.5%+5)</td>
<td>40-100</td>
<td>600V rms</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>AC Voltage</th>
<th>Range</th>
<th>Resolution</th>
<th>Accuracy</th>
<th>Frequency (Hz)</th>
<th>Overload Protection</th>
</tr>
</thead>
<tbody>
<tr>
<td>4V</td>
<td>1mV</td>
<td>±(1.2%+3)</td>
<td>40-400</td>
<td>Overload Protection</td>
<td></td>
</tr>
<tr>
<td>40V</td>
<td>10mA</td>
<td>±(1.5%+5)</td>
<td>40-100</td>
<td>600V rms</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DC Current</th>
<th>Range</th>
<th>Resolution</th>
<th>Accuracy</th>
<th>Input resistor</th>
<th>Overload Protection</th>
</tr>
</thead>
<tbody>
<tr>
<td>10A</td>
<td>10mA</td>
<td>±(1.8%+5)</td>
<td>60A/600V</td>
<td>Overload Protection</td>
<td></td>
</tr>
<tr>
<td>10A</td>
<td>10mA</td>
<td>±(3.0%+5)</td>
<td>0.01Ω</td>
<td>60A/600V fuse</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Resistance</th>
<th>Range</th>
<th>Resolution</th>
<th>Accuracy</th>
<th>Measurement Voltage/Current</th>
<th>Response time: 5 sec. max. on 40MΩ range</th>
</tr>
</thead>
<tbody>
<tr>
<td>40kΩ</td>
<td>100kΩ</td>
<td>±(1.0%+2)</td>
<td>0.01Ω</td>
<td>0.2mA or less</td>
<td>3 sec. on all other range</td>
</tr>
<tr>
<td>4kΩ</td>
<td>1Ω</td>
<td>±(1.0%+2)</td>
<td>0.7V(TYP)</td>
<td>0.7mA or less</td>
<td>Temperature range for 40MΩ from 18°C to 30°C</td>
</tr>
<tr>
<td>40kΩ</td>
<td>10Ω</td>
<td>±(0.7%+2)</td>
<td>0.47V(TYP)</td>
<td>0.7mA or less</td>
<td></td>
</tr>
<tr>
<td>40kΩ</td>
<td>100Ω</td>
<td>±(5.0%+2)</td>
<td>0.7mA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>40MΩ</td>
<td>10kΩ</td>
<td>±(5.0%+2)</td>
<td>0.7mA</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Diode Test</th>
<th>Range</th>
<th>Resolution</th>
<th>Open short or Normal Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>0~3.999V</td>
<td>1mV</td>
<td>Buzzer sound generation resistance 50Ω</td>
<td></td>
</tr>
</tbody>
</table>

OPERATION WARNING

1) When measuring voltage ensure that the instrument is not connected or switched to a current or resistance or temperature or to the diode check/continuity range. Always ensure that the correct terminals are used for the type of measurement to be made.
2) Use extreme care when measuring voltage above 50V, especially from sources where high energy exists.
3) Avoid making connections to "live" circuits whenever possible.
4) When making current measurements ensure that the circuit is not "live" before opening it in order to connect the test leads.
5) Before making resistance measurements or continuity / diode test, ensure that the circuit under test is de-energised.
6) Always ensure that the correct function and range is selected. If in doubt about the correct range, start with the highest and work downwards.
7) Extreme care should be taken when using the instrument to conjunction with a current transformer connected to the terminals. High voltage may be produced at the terminals if an open circuit occurs.
8) Ensure that the test leads and prods are in good condition with no damage to the insulation.
9) Take care not to exceed the over-load limits as given in the specifications.
10) Fuse for replacement must be of the correct type and rating.

5.1 DC and AC Voltage measurement

1) Set the selector switch to the "COM" socket and red test lead to the "V" socket.
2) Set the selector switch to the DC current or AC current position.
3) Connect the prods in series with the current to be measured.

5.2 DC and AC Current measurement

1) Connect the black test lead to the "COM" socket and red test lead to the "V" or "Ω" socket.
2) Set the selector switch to the "Ω" position.
3) Connect the black and red test prods to the cathode (-) and anode (+) ends of the diode to be tested respectively.
4) Read the forward voltage drop (junction) value from the display. If reverse connected the prods to diode, display shows over-load.

5.3 Continuity test

1) Connect the black test lead to the "COM" socket and red test lead to the "V" or "Ω" socket.
2) Set the selector switch to the "Ω" position.
3) Connect the prods across the circuit to be tested, if the resistance less than approx. 50Ω, buzzer will be activated.

5.4 Diode test

1) Connect the black test lead to the "COM" socket and red test lead to the "V" or "Ω" socket.
2) Set the selector switch to the "Ω" position.
3) Connect the black and red test prods to the cathode (-) and anode (+) ends of the diode to be tested respectively.
4) Read the forward voltage drop (junction) value from the display. If reverse connected the prods to diode, display shows over-load.

5.5 Continuity test

1) Connect the black test lead to the "COM" socket and red test lead to the "V" or "Ω" socket.
2) Set the selector switch to the "Ω" position.
3) Connect the prods across the circuit to be tested, if the resistance less than approx. 50Ω, buzzer will be activated.

6. MAINTENANCE

- BEFORE ATTEMPTING BATTERY AND FUSE REMOVAL OR REPLACEMENT, DISCONNECT TEST LEADS FROM ANY ENERGISED CIRCUITS TO AVOID SHOCK HAZARD.

6.1 Fitting and replacing the battery and fuse

1) Ensure that the instrument is not connected to any external circuit, set the selector switch to OFF position and remove the test leads from the terminals.
2) Remove the screw of the back case.
3) Replace the spent battery or fuse with the same type and rating.
4) Reinstall the back case, tighten and securing screw.
5) Resume operation by pressing switch gently once.

6.2 Cleaning

Periodically wipe the case with a soft damp cloth and mild household cleanser. Do not use abrasives or solvents. Ensure that no water gets inside the equipment to prevent possible shorts and damage.

FOR TECHNICAL ASSISTANCE, PLEASE CONTACT:

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