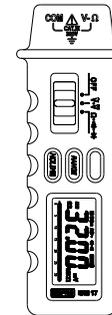




INSTRUCTION MANUAL
IDM17 PEN-TYPE MULTIMETER

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IDM 17
PEN-TYPE MULTIMETER
INSTRUCTION MANUAL



INTRODUCTION

1-1 Unpacking and Inspection

Upon removing your new Digital Multimeter from its packing, you should have the following items:

1. Digital Multimeter.
2. Test lead (one black).
3. Test probe (Red).
4. Operations manual.
5. Carrying case.

1-2 Meter Safety

Terms marked on Equipment

-  **ATTENTION** - Refer to Manual.
-  **DOUBLE INSULATION** - Protection Class II.
-  **DANGER** - Risk of electric shock

Symbols in this Manual

 This symbol indicates where cautionary or other information is found in the manual.

 Battery

1-3 Front Panel

Refer to Figure 1 and to the following numbered steps to familiarise yourself with the meter's front panel controls and connectors.

1. **Digital Display** — The digital display has a 3200 counts LCD readout with 65 segments analog bar graph, auto polarity, decimal point, " " AC, DC, RANGE,  ,  ,  , M Ω or K Ω or Ω and Unit annunciators.
2. **Function Switch** — Select the Function and Range desired.
3. **COM Input Terminal** — Ground input connector.
4. **V- Ω Input Terminal** — Positive input connector for Volts, Ohms and Diode.
5. **Range Switch (Manual Range)** — "RANGE" switch is pressed to select manual ranging and to change ranges. When "RANGE" switch is pressed once, "RANGE" annunciator on the LCD is displayed. Press "RANGE" switch to select appropriate range to be used. Press "RANGE" switch and hold for 2 seconds to return to Autoranging.

6. **V_~ , V_— , Ω ,  Selection Switch** — Press the blue switch alternately to measure AC Voltage or DC Voltage in the voltage mode or to measure resistor or continuity or diode in   mode.
7. **Hold  Switch** — This switch is used to hold measured value for all functions. Press the Hold switch until the "" annunciator is displayed. Conversions are made but the display is not updated.

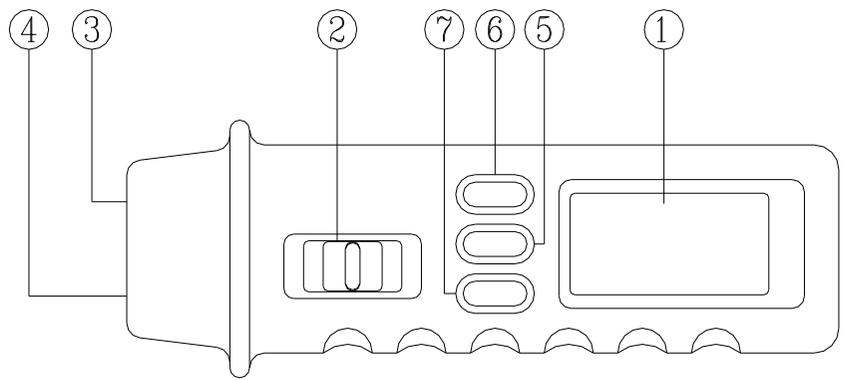


Figure 1

SPECIFICATIONS

2-1 General Specifications

This instrument has been designed in accordance with UL 3111-1 and IEC publication 1010 Pt 1, Class II, Safety Requirements for Electrical Equipment for measurement, control and laboratory use. This level of safety can only be guaranteed while the limits of 2.2 are observed.

Display : The Liquid Crystal Display (LCD) has a maximum reading of 3200, and 65 segments bar graph.

Polarity Indication : Automatic, positive implied, negative indicated.

Overrange Indication : "OL" or "-OL".

Low Battery Indication : "⚡" is displayed when the battery voltage drops below operating voltage.

Sampling : 2 times / sec for digit. 12 times / sec for analog bar graph.

Auto Power Off : Approx. 10 minutes.

2-2 Environmental Conditions

Maximum Altitude : 2000m

Installation Category : IEC 1010 600V CAT II 300V CAT III

Pollution Degree : 2

Operating Temperature : 0°C to 50°C, 0 to 80% R.H.

Storage Temperature : -20°C to 60°C, 0 to 80% R.H with battery removed from the meter.

Temperature Coefficient : 0.15 x (Specified accuracy) / °C, < 18°C or > 28°C.

Power Requirements : IEC LR03, AM4 or AAA size 1.5V x 2.

Battery Life : Alkaline 800 hours.

Dimensions (W x H x D) : 42mm x 145mm x 24mm.

Weight (including batteries) : 4 ounces (112 grams).

Supplied Accessories : Battery (installed) and operators' manual.

2-3 Electrical Specifications

Accuracy is \pm (% reading + number of digits) at 23°C \pm 5°C, less than 75% R.H.

(1) DC Volts

| Range | Resolution | Accuracy | Over voltage protection |
|-------|-------------|--------------------------------|-------------------------|
| 300mV | 100 μ V | \pm (0.7% reading+ 2 digits) | 600V DC or 600Vrms |
| 3V | 1mV | | |
| 30V | 10mV | | |
| 300V | 100mV | | |
| 600V | 1V | | |

Input Impedance : 10M Ω .

(2) AC Volts

| Range | Resolution | Accuracy | Over voltage protection |
|--------------|-------------------|---|--------------------------------|
| 3V | 1mV | $\pm(1.7\% \text{ reading} + 5\text{digits})$ | 600V DC or 600Vrms |
| 30V | 10mV | $\pm(1.7\% \text{ reading} + 5\text{digits})$ 40Hz ~ 500Hz | |
| 300V | 100mV | | |
| 600V | 1V | | |

* **Frequency Response** : 40Hz 300Hz for 3V range.

Input Impedance: 10M Ω // less than 100pF.

The reading will fluctuate approximately 2 ~ 5 counts over 200V.

(3) Resistance

| Range | Resolution | Accuracy | Over load protection |
|-------|------------|--------------------------|----------------------|
| 300Ω | 0.1Ω | ±(1.2%reading + 4digits) | 600V DC or 600Vrms |
| 3KΩ | 1Ω | ±(1.0%reading + 2digits) | |
| 30KΩ | 10Ω | | |
| 300KΩ | 100Ω | | |
| 3MΩ | 1KΩ | ±(1.5%reading + 3digits) | |
| 30MΩ | 10KΩ | ±(3%reading + 5digits) | |

Open Circuit Voltage: 1.3V approx.

(4) Diode Check and Continuity

| Range | Resolution | Accuracy | Max. Test Current | Max. Open Circuit Voltage |
|-------|------------|---|-------------------|---------------------------|
| ▶ | 1mV | $\pm(1.5\% \text{reading} + 5 \text{digits})^*$ | 1.5mA | 3.3V |

*For 0.4V ~ 0.8V

Overload Protection: 600V DC/AC rms max.

Continuity: Internal sounder operates when resistance is less than approximately 20 Ω .

(5) Auto Power Off

The meter will automatically shut itself off approximately 10 minutes after power on. The meter can be turned back on by pressing the "RANGE" switch.

OPERATION

This instrument has been designed and tested in accordance with IEC Publication 1010, Safety Requirements for Electronic Measuring Apparatus, and has been supplied in a safe condition. This instruction manual contains some information and warnings which must be followed by the user to ensure safe operation and to retain the instrument in safe condition.

TEST EQUIPMENT RISK ASSESSMENT (UK RECOMMENDATION)

Users of this equipment and/or their employees are reminded that health and safety legislation require them to carry out valid risk assessments of all electrical work so as to identify potential sources of electrical danger and risk of electrical injury such as from inadvertent short circuits. Where the assessments show that the risk is significant then the use of fused test leads constructed in accordance with the HSE guidance note GS38 "Electrical Test Equipment for use by Electricians", should be used.

3-1 Preparation and Caution before Measurement

1. Allow at least 60 seconds after switching on before taking measurements.
2. When the function switch selector is changed during measurement, be sure to do so only after removing the test leads from the equipment.
3. If the equipment is used near noise generating equipment, be aware that the display may become unstable or indicate large errors.

3-2 Voltage Measurements

1. Connect the red test probe to the "V- Ω " input terminal and the black test lead to the "COM" terminal.
2. Set the function switch to " V \sim , V \equiv " position.
3. Press the blue key to the ACV or DCV function.
4. Connect the test probe and lead to the device to be measured.

⚠ WARNING

TO AVOID ELECTRICAL SHOCK, HAZARD OR DAMAGE TO THE METER, DO NOT ATTEMPT TO MEASURE VOLTAGE THAT MIGHT EXCEED 600V (INSTALLATION CATEGORY II) AND 300V (INSTALLATION CATEGORY III). DO NOT APPLY MORE THAN 600V D.C OR A.C. RMS BETWEEN THE COMMON INPUT TERMINAL AND EARTH GROUND.

NOTICE

UNSTABLE DISPLAY MAY OCCUR ESPECIALLY ON THE 300mV RANGE, EVEN IF THE TEST LEADS ARE NOT CONNECTED TO THE METER. IN THIS CASE IF AN ERRONEOUS READING IS SUSPECTED, SHORT THE "V-Ω" TERMINAL AND THE "COM" TERMINAL, AND MAKE SURE THE DISPLAY READS ZERO.

3-3 Resistance Measurement

1. Connect the red test probe to the "V-Ω" terminal and the black test lead to the "COM" terminal.
2. Set the function switch to "Ω → 🔑" position and press the blue key to select resistance function.
3. For correct reading, ensure that the device has no voltage present.

4. Connect the test leads across the resistor to be measured. To ensure the best accuracy in measurement of low resistance, short the test leads before measurement and note the test lead resistance. It is necessary to subtract the resistance of the test leads from the displayed reading.

3-4 Continuity Check by Sounder

1. Connect the red test probe to the "V- Ω " terminal and the black test lead to the "COM" terminal.
2. Set the function switch to " Ω \rightarrow \rightarrow " position, and press the blue key to select continuity function.
3. Connect the test probe and lead to the circuit to be measured. The sounder will operate if the resistance of the circuit measured is less than 20 Ω .

3-5 Diode Check

1. Set the function switch at " Ω \rightarrow \rightarrow " position, and press the blue key to select diode function.
2. Connect the black test lead to the "COM" terminal and the red probe to the "V- Ω " input terminal.
3. Connect test leads to the diode. Normally the forward voltage drop of good silicon diode is between .400V to .900V. If the diode under test is defective, "000" (short circuit) or "OL" (non-conductance) is displayed.
Reverse check of diode: If the diode under test is good "1" is displayed. If the diode under test is defective "000" or other values are displayed.

MAINTENANCE

To keep the instrument clean, wipe the case with a damp cloth and detergent. Do not use abrasives or solvents.

Any adjustment, maintenance and repair of opened instruments with voltage applied shall be avoided as far as possible and, if inevitable, shall be carried out by a skilled person who is aware of the hazard involved.

Whenever it is likely that the protection has been impaired, the instrument shall be made inoperative and be secured against any unintended operation.

The protection is likely to be impaired if, for example, the apparatus:

- shows visible damage,
- fails to perform the intended measurements,
- has been subjected to prolonged storage under unfavorable conditions,
- has been subjected to severe transport stresses.

⚠ CAUTION (refer to User Instructions).

◻ Double Square Symbol for Class II product.

BATTERY REPLACEMENT

The meter is powered by two 1.5V batteries. Refer to Figure 2 and use the following procedure to replace the batteries.

1. **Disconnect the test leads and turn the meter off.** Remove the test probe and lead from the input terminals.
2. Position the meter face down. Remove the screw from the case bottom.
3. Lift the end of the case bottom unit until it gently unsnaps from the case top at the end nearest the input terminal.
4. Lift the battery from the battery box.
5. Reinstall the new battery into the battery box.
6. Replace the case top and case bottom. Reinstall the screw.

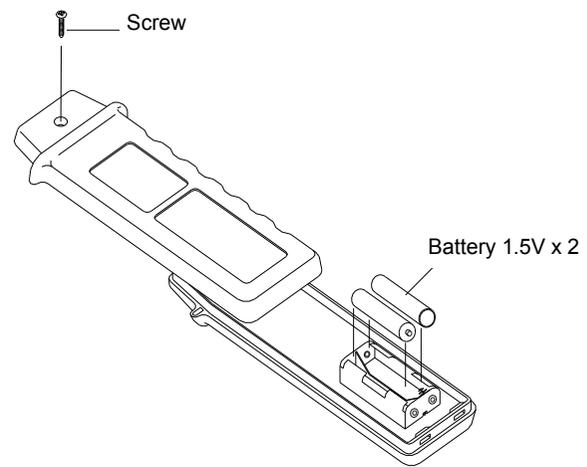


Figure 2

Africa
RS Components SA
P.O. Box 12182, Vorna Valley, 1686
20 Indianapolis Street, Kyalami Business Park,
Kyalami, Midrand
South Africa
www.rs-components.com

China
RS Components Ltd.
Suite 23 A-C , East Sea Business Centre
Phase 2 , No. 618 Yan'an Eastern Road
Shanghai, 200001
China
www.rs-components.com

Japan
RS Components Ltd.
West Tower (12th Floor),
Yokohama Business Park, 134 Godocho, Hodogaya,
Yokohama, Kanagawa 240-0005
Japan
www.rs-components.com

Asia
RS Components Pte Ltd.
31 Tech Park Crescent
Singapore 638040
www.rs-components.com

Europe
RS Components Ltd.
PO Box 99, Corby,
Northants. NN17 9RS
United Kingdom
www.rs-components.com

U.S.A
Allied Electronics
7151 Jack Newell Blvd. S.
Fort Worth, Texas 76118
U.S.A.
www.alliedelec.com

South America
RS Componentes Limitada
Av. Pdte. Eduardo Frei M. 6001-71
Centro Empresas El Cortijo
Conchalí, Santiago, Chile
www.rs-components.com