HT14D POCKET DIGITAL MULTIMETER

User manual

1. SAFETY PRECAUTIONS AND PROCEDURES

- Avoid doing that in humid or wet places
- Avoid doing that in rooms where explosive gas, combustible gas, steam or excessive dust is present
- Keep you insulated from the object under test
- Do not touch exposed metal parts such as test lead ends, sockets, fixing objects, circuits etc
- Avoid doing that if you notice anomalous conditions such as breakages, deformations, fractures, leakages of battery liquid, blind display etc
- Be particularly careful when measuring voltages exceeding 20V to avoid risks of electrical shocks

The following symbols are used:

CAUTION - refer to the instruction manual - an improper use may damage the instrument or its components

Double insulated meter

AC Voltage

DC Voltage or Current

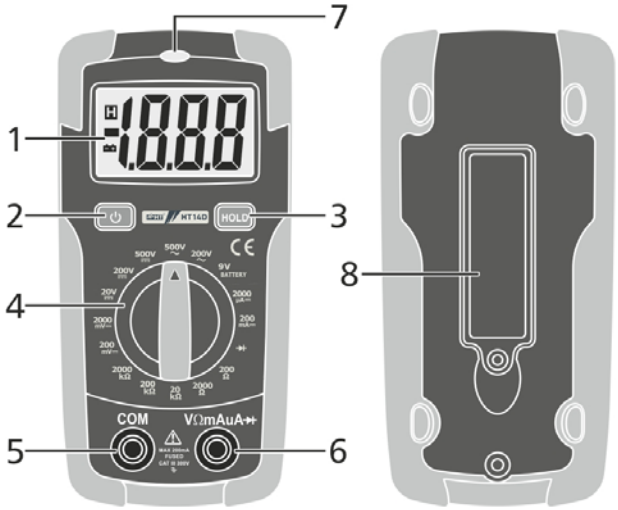
CAUTION: this symbol indicates that equipment, the battery and its accessories shall be subject to a separate collection and correct disposal

2. GENERAL DESCRIPTION

The HT14D instrument performs the herewith measurements:

- DC Voltage
- DC Current
- AC sine voltage
- Resistance
- Detection of AC voltage without contact
- Diode test
- 9V battery test

3. INSTRUMENT DESCRIPTION



CAPTION:

1. LCD display
2. **ON/OFF** key
3. **HOLD** key
4. Functions selector
5. **COM** input jack
6. **VΩmAμA** input jack
7. Red LED for AC voltage detection
8. Battery cover

Fig. 1: Instrument description

4. OPERATING INSTRUCTIONS

4.1. DC VOLTAGE MEASUREMENT

1. Switch on the desired measurement range among the options: **200mV⎓, 2000mV⎓, 20V⎓, 200V⎓, 500V⎓**
2. Insert the test leads into the jacks, the red plug into **VΩmAμA** jack and black plug into **COM** jack and connect the red and black test leads to the positive and negative poles of the circuit under test respectively. The voltage value is displayed. Press the **HOLD** key to fix the result at display. The symbol "**-**" on the instrument display indicates that voltage has opposite direction with regard to the connection performed
3. If the message "**OL**" is displayed the higher range is reached

4.2. AC VOLTAGE MEASUREMENT

1. Turn on the instrument in any position of the rotary switch, approach it closest to AC source and note the turn on of red LED which is placed to the top (see Fig.1 – part 7) which detect the AC voltage
2. Switch on the desired measurement range between the options: **200V~, 500V~**
3. Insert the test leads into the jacks, the red plug into **VΩmAμA** jack and black plug into **COM** jack and connect the red and black test leads to the circuit under test. The voltage value is displayed. Press the **HOLD** key to fix the result at display
4. If the message "**OL**" is displayed the higher range is reached

4.3. DC CURRENT MEASUREMENT

1. Power off the circuit under test
2. Switch on the desired measurement range between the options: **2000µA⎓, 200mA⎓**
3. Insert the test leads into the jacks, the red plug into **VΩmAµA⏭** jack and black plug into **COM** jack. Connect the red and the black plugs in series with the circuit whose current is to be measured respecting the polarities. Energize the circuit under test. The current value will be displayed. Press the **HOLD** key to fix the result at display. The symbol "**-**" on the instrument display indicates that current has opposite direction with regard to the connection performed
4. If the message "**OL**" is displayed the higher range is reached

4.4. RESISTANCE MEASUREMENT

1. Switch on the desired measurement range among the options: **2000kΩ**, **200kΩ**, **20kΩ, 2000Ω, 200Ω**
2. Insert the test leads into the jacks, the red plug into **VΩmAµA⏭** jack and black plug into **COM** jack and connect the red and black test leads to the circuit under test. The resistance value is displayed. Press the **HOLD** key to fix the result at display
3. If the message "**OL**" is displayed the higher range is reached

4.5. DIODE TEST

1. Switch on the position ⏭
1. Insert the test leads into the jacks, the red plug into **VΩmAµA⏭** jack and black plug into **COM** jack and connect the red test lead and the black test lead on the anode and cathode of the diode respectively. The threshold voltage value (mV) is displayed
2. If the message "**OL**" is displayed the diode terminals are reversed or the diode P-N junction is damaged

4.6. BATTERY TEST

1. Switch on the position **9V BATTERY**
2. Insert the test leads into the jacks, the red plug into **VΩmAµA⏭** jack and black plug into **COM** jack and connect the red test lead and the black test lead on positive and negative pole of a 9V (IEC 6F22) battery respectively. The voltage value is displayed

5. BATTERY REPLACEMENT

1. Turn off the instrument by means **ON/OFF** key
2. Disconnect the test leads from the input terminals
3. Remove the fixing screw from the battery cover and detach it
4. Replace the battery with a new one of the same type (12V MN21) observing the proper polarities
5. Replace the battery cover and screw
6. Use the appropriate battery disposal methods for your area

6. INTERNAL FUSE REPLACEMENT

1. Turn off the instrument by means **ON/OFF** key
2. Disconnect the test leads from the input terminals
3. Remove the fixing screws from the back case and detach it
4. Replace the fuse with a new one of the same type (200mA/600V, Fast)
5. Replace the back case and screws

7. TECHNICAL SPECIFICATIONS

The accuracy is indicated as [% rdg + (num. dgt* resolution)] at 18°C ÷ 28°C, <75%RH

Function	Range	Resolution	Accuracy	Overload protection
DC Voltage	200.0mV	0.1mV	±(0.5%rdg + 2 dgt)	200Vrms
	2000mV	1mV		500V DC/AC
	20.00V	0.01V		
	200.0V	0.1V		
	500V	1V	±(0.5%rdg + 4 dgt)	
AC Voltage (50/60Hz)	200.0V	0.1V	±(1.2%rdg + 10dgt)	500V AC
	500V	1V		
DC Current	2000µA	1µA	±(1.2%rdg + 2 dgt)	Fuse fast 200mA/600V
	200.0mA	0.1mA	±(1.5%rdg + 2 dgt)	
Resistance	200.0Ω	0.1Ω	±(0.8%rdg + 4 dgt)	250Vrms for 15s max
	2000Ω	1Ω		
	20.00kΩ	0.01kΩ		
	200.0kΩ	0.1kΩ		
	2000kΩ	1kΩ	±(1.5%rdg + 2 dgt)	
Battery test	9V	10mV	±(1.2%rdg + 2 dgt)	

8. GENERAL SPECIFICATIONS

Input impedance:	1MΩ
Diode test:	Max test current 1mA, open voltage 2.8V DC (typical)
Over range indication:	"**OL**" symbol at display
Display:	LCD, 3½ dgt, 2000 counts + symbol and decimal point
Sampling rate:	2 times/second
Low battery indication:	"**BAT**" symbol at display
Power supply:	1x12V battery type MS21 / MN21
Protection fuse:	Fast, 200mA/600V, 5x20mm ("mA" and "µA" inputs)
Safety:	IEC/EN61010-1
Insulation:	double insulation
Pollution degree:	2
Measurement category:	CAT III 300V, CAT II 600V
Max height of use:	2000m (7000ft)
Dimensions (L x W x H):	105 x 50 x 25mm (4 x 2 x 1in)
Weight (included battery):	100g (4 ounces)
Standard accessories:	couple of test leads, battery, user manual