SAFETY INFORMATION

This meter has been designed according to IEC-1010 concerning electronic measuring instruments with an overvoltage category (CAT Ⅲ 600V) and pollution degree 2.

Follow all safety and operating instructions to ensure the meter is used safely and kept in good condition.

Full compliance with safety standards can be guaranteed only with test leads supplied. If necessary, they must be replaced with the type specified in the manual.

DURING USE

- Never exceed the protection limit indicated in the specifications for each range of measurement.
- When the meter is linked to the circuit under measurement, be careful not to touch unused terminals.
- Never use the meter to measure voltages that might exceed 600V above earth ground in category installations.
- Always be careful when working with voltages above 60V DC or 30V AC rms. Keep fingers behind the probe barriers while measuring.
- Before attempting to insert transistors for testing, always be sure that test leads have been disconnected from any measurement circuits.
- Components should not be connected to the hFE socket when making voltage measurements with test leads.
- Do not perform resistance measurements on live circuits.

SAFETY SYMBOLS

⚠ Improtant safety information, refer to the instruction manual.

ϟ Dangerous voltage may be present.

⏚ Earth ground.

⧈ Indicates compliance with requirements for double insulation.

⚠ Fuse must be replaced with ratings specified in the manual.

MAINTENANCE

- Before opening case, always disconnect test leads from all energized circuits.
- For continuous protection against fire, replace fuse only with ratings: F 250mA/250V (Fast Blown)
- Never use the meter unless the back cover is in place and fastened completely.
- Periodically wipe the case with a damp cloth and mild detergent. Do not use abrasives or solvents.

GENERAL DESCREPTION

This instrument is one of a series of pocket-sized 3 1/2 digits multimeters, for measuring DC and AC Voltage, DC Current, Resistance and Testing Diode. Some models also provide transistor test function, signal output or performing continuity test. Overload protection and low battery indication are provided. The table in page 9 shows functions of the series multimeters.

FRONT PANEL DESCRIPTION

1. FUNCTION AND RANGE SWITCH

This switch is used to select the functions and desired ranges as well as to turn ON/OFF the meter.

To extend the life of the battery, the switch should be set to the "OFF" position when the meter is not in use.

2. DISPLAY

3 1/2 digits, LCD(12mm)

3. "COM" JACK

Pulg in connector for the black (negative) test lead.

4. "VΩmA" JACK

Plug in connector for the red (positive) test lead for all voltage, resistance and curret (up to 200mA) measurements.

5. "10A" JACK

Plug in connector for the red (Positive) test lead for current (between 200mA and 10A) measurement.

6. There is a selector switch for "electric torch light" and "back light" on the left. (only for DT830BL)

SPECIFICATION

Accuracies are guranteed for 1 year, 23℃ ± 5℃, less than 75%RH.

1. DC VOLTAGE

RANGE	RESOLUTION	ACCURACY
200mV	100μV	±0.5% ± 2D
2000mV	1mV	
20V	10mV	
200V	100mV	
1000V	1V	±0.8% ± 2D

Input impedance:1MΩ
Max. input voltage:1000V DC or 750VAC rms
(200mV 500V DC or 350VAC rms).

2. DC CURRENT

RANGE	RESOLUTION	ACCURACY
200μA	100nA	±1.0% ± 2D
2000μA	1μA	
20mA	10μA	
200mA	100μA	±1.2% ± 2D
10A	10mA	±2.0% ± 2D

Overload protection: F 250mA/250V Fused (Range10A unfused).

3. AC VOLTAGE

RANGE	RESOLUTION	ACCURACY
200V	100mV	±1.2% ± 10D
750V	1V	

Frequency response:45-400Hz
Max.input voltage: 750V AC rms
Display: sine wave rms. average response

4. RESISTANCE

RANGE	RESOLUTION	ACCURACY
200Ω	0.1Ω	±1.0% ± 2D
2000Ω	1Ω	±0.8% ± 2D
20kΩ	10Ω	
200kΩ	100Ω	
2000kΩ	1kΩ	±1.0% ± 2D

Max. open circuit voltage:2.8V

5. TEMPERATURE

RANGE	RESOLUTION	ACCURACY
0℃ ~ +1000℃	1℃	±3℃ ± 2D < 150℃
		±3% > 150℃

6. hFE

Vce about 3V, Ib about 10uA, hFE displayed about 1-1000

7. DIODE AND BUZZER

Diode: Testing Voltage 2.8V, current 1mA. The approximate forward voltage of the diode under test will be displayed on the LCD.
Buzzer: The buzzer will sound when the resistance is less than 50Ω.

8. SIGNAL OUTPUT

Signal output: 50Hz square wave
Level output: 3Vp-p

9. BATTERY TEST

Range	Description	Test Condition
1.5V	The working voltage of the battery will be displayed on the LCD, so that the quality of the battery can be judged.	The working current is about 20mA.
9V		The working current is about 5mA.

- Display: —— 3 1/2 digits LCD with a max. reading of 1999
- Polarity: —— Auto polarity indication.
- Overrange indication: —— Only figure "1" on the display.
- Operating environment: — temp. 0 ~ 40℃ ; relative humidity<75%.
- Storage: —— -15℃ ~ 50℃, relative humidity<90%.
- Battery: —— 9V 6F22/1.5V×2 A-A(for DT830BL only)
- Low battery indication: — appears on the display.
- Size: —— 126mm×70mm×27mm
- Weight: —— 137g
- Pressure-resistance: —— 3.7KV(AC rms) per min. for testing terminal and cover.
  Max. allowable input 1000V DC or 750VAC rms (200mV 500V DC or 350VAC rms).
- Power consumption: —— 20mW

OPERATING INSTRUCTION

1. DC CURRENT MEASUREMENT

A. Connect the red test lead to "**VΩmA**", and the black one to "**COM**";
B. Set the range switch to the desired DCA position;
C. Open the circuit to be measured, and connect test leads in series with the circuit in which current is to be measured.

2. DC VOLTAGE MEASUREMENT

A. Connect the red test lead to "**VΩmA**", and the black one to "**COM**".
B. Set the range switch to desired DCV position. If the Voltage to be measured is not known beforehand, set the range switch to the highest range and reduce it until sanisfactory reading is obtained.
C. Connect the test leads to device or circuit to be measured.

3. AC VOLTAGE MEASURE

A. Connect the red test lead to "**VΩmA**", and the black one to "**COM**".
B. Set the range switch to the desired ACV position.
C. Connect the test leads to device or circuit to be tested.

4. RESISTANCE MEASUREMENT

A. Connect the red test lead to "**VΩmA**", and the black one to "**COM**".
B. Set the range switch to the desired "Ω" position.
C. If the resistance being measured is connected to a circuit, turn off power and discharge all capacitors before making measurement.
D. Connect the test leads to the circuit to be measured.

5. TEMPERATURE MEASUREMENT

A. Set the range switch to TEMP posittion and the current room temperature appears on the display with the character ℃.
B. Connect the K type thermocouple to "**VΩmA**" and "**COM**" jacks. Contact the object under measurement with the thermocouple carefully. Read the temperature displayed on the LCD.

6. hFE MEASUREMENT

A. Set the range switch to the hFE range.

B.Determine whether the transistor is NPN or PNP type and locate the Emitter, Base and Collector leads. Insert the leads into the proper holes of the hFE socket on the front panel. The approximate hFE value will be displayed on the LCD.

7. DIODE & CONTINUITY TEST

A. Connect the red test lead to "**VΩmA**", and the black one to "**COM**".
B. Set the range switch to ⊣◀ range.
C. The forward voltage drop in mV will be displayed. If the diode is reversed, figue "1" will be shown.
D. Connect the test leads to the two terminal of circuit to be tested. If the resistance is lower than about 50Ω , the built-in buzzer wil sound.

8. SIGHAL OUTPUT

A. Connect the red test lead to "**VΩmA**", and the black one to "**COM**".
B. Set the range switch to "⎍" or "∿" range, and the red and black test leads are output terminals.
Cautions: (1) This is output signal. Be sure not to measure Voltage.
(2) There is no short circuit protection.
(3) The voltage of the reversed signal of the output terminal should not exceed 40Vp-p.

9. BATTERY MEASUREMENT

A. Set the range switch to the desired "BATT" range (1.5V or 9V).
B. Connect the red test lead to "**VΩmA**", and the black one to "**COM**", connect the test leads to the terminals of the battery under measurement and read the value displayed on the LCD.

10. Make use of light switch when the tested point or value displayed is unclear.

A. Turn the switch up, the electric torch light and back light will flash at the same time
B. Turn the switch down,the "back light" will falsh.
C. Set the switch at middle position and neither of the lights will flash.

BATTERY AND FUSE REPLACEMENT

- If 🪫 appears on the LCD, it indicates that the battery voltage is low and the battery should be replaced.
- When reading error is too much, it indicates that the battery should be replaced.
- If the input signal has no response when testing mA current, it indicates that the fuse needs be replaced.
- To replace battery & fuse, remove the 2 screws in the bottom of the case, simply remove the old one, and replace it with a new one. Be careful to observe the polarity.

⚠ WARNING

Before attempting to open the case, always be sure that the test leads have been disconnected from measurement circuits. Close case and tighten screws completely before using the meter to avoid electrical shock.

DT830 SERIES MULTIMETER FUNCTIONS

MODEL	DCV	ACV	DCA	Ω	hFE	⊣◀	•))	TEMP	⎍▲	LIGHT	BAT
830	*	*	*	*		*	*				*
830A	*	*	*	*		*			50Hz		*
830B	*	*	*	*	*	*					
830D	*	*	*	*		*	*				
830E	*	*	*	*			*				*
832	*	*	*	*	*	*	*		50Hz		
832H	*	*	*	*	*	*	*		1000Hz		
837	*	*	*	*		*	*	*			
838	*	*	*	*	*	*	*	*			
830BL										*	

▲ This function allows the meter to output a signal as a signal generator.

DT830 Series 3 1/2 Digital Multimeter

Operation Manual