JT2007
Pen Type Multimeter
Operating Manual

Overview

This Operating Manual covers information on safety and cautions. Please read the relevant information carefully and observe all the Warnings and Notes strictly.

⚠ **Warning:**
To avoid electric shock or personal injury, read the “Safety Information” and “Rules for Safe Operation” carefully before using the Meter.

The Model JT2007 Pen Type (hereafter referred as “the Meter”) are 3,000 counts. The Meter uses a large scale of integrated circuits with professional multimeter IC as its core, and has a full range overload protection.
The Meter measures or tests the following:

- AC/DC voltage
- EF Function
- Resistance
- Diode
- Continuity
- Capacitance

Unpacking Inspection

Open the package case and take out the Meter. Check the following items carefully to check if there is any missing or damaged part:

Item	Description	Qty
1	English Operating Manual	1 piece
1	Test Lead	1 pair

In the event that there is any missing or damage, please contact your dealer immediately.

Safety Information

This Meter complies with standards EN61010: in pollution degree 2, overvoltage category (CATIII 300V) and double insulation. CATIII: Distribution level, fixed installation, with smaller transient over voltages than CAT IV. Use the Meter only as specified in this operating manual. Otherwise, the protection provided by the Meter may be impaired.
In this manual, a Warning indicates conditions and actions that pose hazards to the user, or may damage the Meter or the equipment under test.
A Note indicates the information to which the user should pay attention on.

Rules For Safe Operation

⚠ **Warning:**
To avoid possible electric shock or personal injury, and to avoid possible damage to the Meter or to the equipment under test, adhere to the following rules:

- Before using the Meter, inspect the case. Do not use the Meter if it is damaged or the case (or part of the case) is removed. Look for cracks or missing plastic. Pay attention to the insulation around the connectors.
- Inspect the test leads for damaged insulation or exposed metal parts. Check the test leads for continuity. Replace the damaged test leads with identical model number or electrical specifications before using the Meter.
- When using the test leads, keep your fingers behind the finger guards.
- Do not apply more than the rated voltage, as marked on the Meter, between the terminals or between any terminal and grounding.
- When the Meter is working at an effective voltage over 60V DC or 30V AC, special care should be taken because there is a danger of electric shock.
- Use the proper function and range for your measurements.
- Disconnect the circuit power and discharge all high voltage capacitors before testing current, resistance, diodes or continuity.
- Replace the battery as soon as the battery indicator appears. With a low battery, the Meter might take false readings that can lead to an electric shock and personal injury.
- When servicing the Meter, use only the same model or identical electrical specifications replacement parts.
- The internal circuit of the Meter shall not be altered at will, in order to avoid damage of the Meter and any accident.
- Soft cloth and mild detergent should be used to clean the surface of the Meter when servicing. No abrasives and solvents should be used to prevent the surface of the Meter from corrosion, damage and accident.
- Do not use or store the Meter in an a humid, hot, explosive, inflammable place or with a strong magnetic field. The performance of the Meter may be deteriorated after being dampened.

International Electrical Symbols

	Deficiency of Built-In Battery
	Grounding
~	AC (Alternative Current)
⎓	DC (Direct Current)
	Double Insulated
	Continuity Test
≂	AC or DC
	Diode
CE	Conforms to Standards of European Union
⚠	Warning. Refer to the Operating Manual

The Meter Structure (see figure 1)

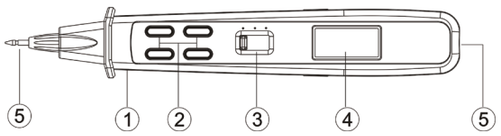

Figure 1

1. Front Housing
2. Functional buttons
3. Switch
4. LCD Display
5. Input Terminals

Display Symbols (see figure 2)

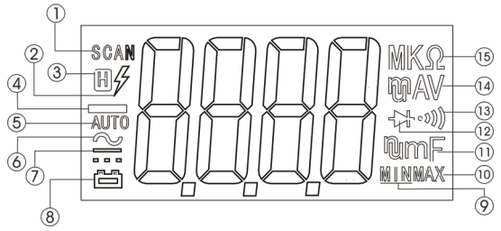

Figure 2

1. Indicates auto scan mode.
2. High voltage indicator.
3 Data hold is activated.
4. Indicates negative reading.
5. The meter is in the autorange mode.
6. Indicator for AC voltage.
7. Indicator for DC voltage.
8. The battery is low.
⚠ **Warning:** To avoid false readings, which could lead to possible electric shock or personal injury, replace the battery as soon as the battery indicator appears.
9. Minimum reading.
10. Maximum reading.
11. The unit of Capacitance.
12. Test of diode.
13. The continuity buzzer is on.
14. V : Volts. The unit of voltage.
mV : Millivolt. 1x10 or 0.001 volts.
15. Ω: Ohm. The unit of resistance.
kΩ : kilohm. 1x10 or 1000 ohms.
MΩ: Megaohm. 1x10 or 1,000,000 ohms.

Functional buttons and auto power off

1. SELECT

Press **SELECT** to switch between resistance, AC/DC voltage, continuity buzzer and diode measurement modes. Press and hold the button for more than 2 seconds to enter in or exit “sleep” mode.

2. HOLD

Press **HOLD** to enter or exit hold mode (except in the auto scan mode). Press and hold the **HOLD** button for more than 2 seconds, the meter will automatically holds the value which is obtained 6 seconds later. At this time, **H** is displayed and starts flashing.
If it enters in the “sleep” mode while it is in the hold mode, the meter will still be in the hold mode when it is turned on.

3. MAX/MIN

The MAX/MIN mode stores the minimum (MIN) and maximum (MAX) input values (except in the auto scan mode). Manual ranging occurs when you select this function.
Press **MAX/MIN** button MAX → MIN → MAX/MIN and vice versa.
In the hold mode and max/min mode, you should exit the hold mode first, then press and hold MAX/MIN for more than 1 second to exit the max/min mode.

4. ☼

Display Backlight and test lead light button. Press the button once to turn the display backlight and the test lead light on and press again to turn the display backlight and test lead light off. It will be automatically turned off after approx. 1 minute.

5. AUTO POWER OFF

To preserve battery life, the Meter automatically enters the “sleep” mode if you do not press any button for around 10 minutes. The Meter can be activated by pressing any button, then it returns to the display of the function selected previously.

6. BUZZER

The buzzer sounds every time the button is effectively pressed. When the meter will auto power off in 20 seconds, the buzzer beeps three times. Before powering off, there will be a long time buzzer beeps.

Measurement Operation

Before measurement, turn anticlockwise the blue cover and rock the input terminal.
When all the measurement has been completed, turn clockwise the blue cover and then hide the input terminal (see figure 3).

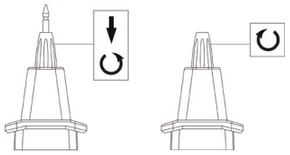

Figure 3

1. AC / DC Voltage auto Measurement.

⚠ Warning
To avoid harm to the Meter, never input higher than 300V voltage, although it is possible to measure higher voltage.
To measure Voltage, connect the Meter as follows:

- Set the switch to **V** ≂
- Auto measurement mode is default. In this mode, you can measure AC voltage and DC voltage.
- Connect the test leads to the object being measured. The measured value is shown on the display.
- When voltage measurement has been completed, disconnect the testing leads from the circuit under test, and remove the testing leads from the input terminal of the meter.

Note:
The threshold voltage of AC voltage is around 400mV.

2. DC Voltage Measurement

⚠ Warning
To avoid harm to the Meter, never input higher than 300V voltage, although it is possible to measure higher voltage.

- Set the switch to **V** ≂
- Press SELECT to select DC voltage measurement mode.
- Connect the test leads to the object being measured. The measured value is shown on the display.
- When voltage measurement has been completed, disconnect the testing leads from the circuit under test, and remove the testing leads from the input terminal of the meter.

3. AC Voltage Measurement

⚠ Warning
To avoid harm to the Meter, never input higher than 300V voltage, although it is possible to measure higher voltage.

- Set the switch to **V** ≂
- Press **SELECT** to select AC voltage measurement mode.
- Connect the lest leads to the object being measured. The measured value is shown on the display.
- When voltage measurement has been completed, disconnect the testing leads from the circuit under test, and remove the testing leads from the input terminal of the meter.

Note:
The threshold voltage of AC voltage is around 400mV.

4. EF Measurement

⚠ Warning
To avoid harm to the Meter, never input higher than 300V voltage, although it is possible to measure higher voltage.

- Set the switch to **V EF** and remove the test lead from the input terminal.
- Press **SELECT** to select EF measurement mode.
- Place the positive terminals towards the object being measured.

5. Ω •)) auto measurement

⚠ Warning
To avoid damages to the Meter or to the devices under lest, disconnect circuit power and discharge all the high-voltage capacitors before the measurement.

- Set the switch to Ω •))
- Auto measurement mode is default, in this mode, you can measure Resistance, Diode, Continuity and Capacitance automatically.
- For better accuracy, it is better to separate the object being measured from the circuit before the measurement.
- When voltage measurement has been completed, disconnect the testing leads from the circuit under lest.

Note:
In auto measurement mode, when input:
Resistance: <15Ω or >10MΩ
Capacitance: <400pF or >1mF
You will get an irresponsible value.

6. Resistance Measurement

⚠ Warning
To avoid damages lo the Meler or to the devices under lest, disconnect circuit power and discharge all the high-voltage capacitors before measuring the resistance.

- Set the switch to Ω •))
- Press **SELECT** to select Ω measurement mode.
- Connect the test leads to the object being measured.
- When resistance measurement has been completed, disconnect the testing leads from the circuit under test, and remove the testing leads from the input terminals of the Meter.

7. Continuity Test

⚠ Warning
To avoid damages to the Meter or to the devices under test, disconnect circuit power and discharge all the high-voltage capacitors before the continuity test.
To measure resistance, do the following:

- Set the rotary switch to Ω •))
- Press **SELECT** to select •)) measurement mode.
- Connect the test leads to the object being measured.
- The buzzer will sound continuously if the resistance of a circuit under test is ≤30Ω; it indicates the circuit has a good connection.

Note:
When continuity measurement has been completed, disconnect the testing leads from the circuit under test, and remove the testing leads from the input terminals of the Meler.

8. Diodes Test

⚠ Warning
To avoid damages to the Meter or to the devices under test, disconnect the circuit power and discharge all the high-voltage capacitors before measuring diodes.
To measure diode, do the following:

- Set the rotary switch to Ω •))
- Press **SELECT** to select measurement mode.
- For better accuracy, it is better to separate the object being measured from the circuit before the measurement.
- When diodes measurement has been completed, disconnect the testing leads from the circuit under test.

9. Capacitance Measurement

⚠ Warning
To avoid damage to the Meter or to the equipment under test, disconnect circuit power and discharge all high-voltage capacitors before measuring capacitance. Use the DC Voltage function to confirm that the capacitor is discharged.
To measure capacitance, connect the Meter as follows:

- Set the rotary switch to Ω •))
- Press **SELECT** to select measurement mode.
- For better accuracy, it is better to separate the object being measured from the circuit before the measurement.
- When diodes measurement has been completed, disconnect the testing leads from the circuit under test.

General Specifications

- Maximum voltage between red Terminals and Grounding: 300Vrms.
- Maximum Display: 3,000. Updates 4 times/second
- Temperature:
  Operating: 3°C~40°C (32°F~104°F);
  Storage: -10°C~50°C (14°F~122°F).
- Relative Humidity:≤75% @ 0°C~30°C;
  ≤50% @ 31°C~40°C.
- Altitude: Operating: 2,000m; Storage: 10,000m.
- Battery Type: 3V Li-MnO2 Button cell battery.
- Low Battery: Display "".
- Dimensions (HxWxL): 20.18x26.5x181.5mm.
- Weight: Approx. 90g (battery included).

Accuracy Specifications

Accuracy: ±(a% reading+b digits) guaranteed for 1 year.
Operating temperature: 18°C~28°C.
Relative humidity: <75%.

A. AC Voltage

Range	Resolution	Accuracy	Overload Protection
3V	0.001V	± (1%+4)	300Vrms
30V	0.01V		
300V	0.1V		

Remark: Input Impedance: ≥10MΩ
Frequency Response: 40Hz~400hZ

B. DC Voltage

Range	Resolution	Accuracy	Overload Protection
3V	0.001V	± (1%+3)	300Vrms
30V	0.01V		
300V	0.1V		

Remark: Input Impedance: ≥10MΩ

C. EF Test

Range	Resolution
220V/50H	<10mm: buzzer beeps 10~50mm: may and may not beeps >50mm: buzzer not sound

D. Resistance

Range	Resolution	Accuracy	Overload Protection
300Ω	0.1Ω	± (1%+3)	300Vrms
3kΩ	1Ω		
30kΩ	10Ω		
300kΩ	100Ω		
3MΩ	1kΩ	± (1.5%+5)	
30MΩ	10kΩ		

Remark: In the auto scan mode, the max range is 3MΩ.

E. Continuity Measurement

Range	Resolution	Remark
•))	0.1Ω	Open Circuit Voltage around -1.2V; buzzer beeps at resislance, ≤10Ω; buzzer not sound when resistance is > 70Ω

F. Diodes Measurement

Range	Resolution	Overload Protection
	1mV	300 Vrms

Remark: Open Circuit Voltage around 3V, displays an approximate forward voltage drop.

G. Capacitance

Range	Resolution	Accuracy	Overload Protection
3nF	0.001nF	± (3%+5)	300Vrms
30nF	0.01nF		
300nF	0.1nF		
3μF	1nF		
30μF	10nF		
300μF	100nF	± (5%+5)	
3mF		Reference	

Remark:
1. In auto scan mode, the max. range is 300μF.
2. There is a residual reading when the circuit is open. To measure a small value of capacitance, subtract it to ensure accuracy.

Maintenance (see figure 4)

This section provides basic maintenance information and battery replacement instruction.

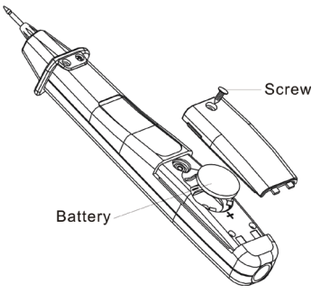

Figure 4

⚠ Warning
Do not attempt to repair or service your Meter unless you are qualified to do so and have the relevant calibration, performance test, and service information.
To avoid electrical shock or damage to the Meter, do not get water inside the case.

A. General Service

- Periodically wipe the case with a damp cloth and mild detergent. Do not use abrasives or solvents.
- Clean the terminals with a cotton bar with detergent, as dirt or moisture in the terminals can affect the readings.
- Turn the Meter off when it is not in use and take out the battery when do not use it for a long time.
- Do not store the Meter in a humid, hot, explosive, inflammable place or with a strong magnetic field.

B. Replacing the Battery

⚠ Warning
To avoid false readings, which could lead to possible electric shock or personal injury, replace the battery as soon as the battery indicator appears.
To replace the battery:

1. Turn the Meter off. Disconnect the testing leads from the circuit under test, and remove the testing leads from the input terminals of the Meter.
2. Remove the screw from the battery compartment and separate the battery compartment from the case bottom.
3. Remove the battery from the battery compartment.
4. Replace the battery with a new 3V battery.
5. Insert again the case bottom and the battery compartment, and tighten the screw.

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