Thsinde 18Z-III

Thsinde 18Z-III Auto-Range Digital Multimeter User Manual

Model: 18Z-III

1. Introduction

The Thsinde 18Z-III is a 20000-count, 4 1/2 digit automatic digital multimeter designed for high precision, stable performance, and reliability. This battery-driven instrument features a 21mm high LCD display for clear readings and includes a peak value retention function. It is capable of measuring DC/AC voltage, DC/AC current, resistance, capacitance, diode, temperature, continuity, electric field induction (NCV), and frequency. Utilizing a double integral A/D conversion core, the 18Z-III is an ideal tool for laboratories, factories, and electronics enthusiasts.

2. Safety Information

To ensure safe operation and avoid damage to the meter, please observe the following safety precautions:

- Always use the correct function and range for measurements.
- Do not exceed the maximum input values specified for each range.
- Inspect test leads for damage before each use. Do not use if insulation is compromised.
- Ensure the meter is switched off before connecting or disconnecting test leads to a circuit.
- Exercise extreme caution when working with live circuits. Avoid contact with bare wires or terminals.
- Do not operate the meter if it appears damaged or if the battery cover is not properly closed.
- Replace the battery promptly when the low battery indicator appears to ensure accurate readings.
- Adhere to local and national safety codes.

3. Package Contents

Verify that all items are present in the package:

- Thsinde 18Z-III Digital Multimeter
- 9V Battery (pre-installed or included separately)

- Test Leads (1 pair)
- Alligator Clips (2 pieces)
- English User's Manual (this document)

4. Product Features

- **Display:** 20000 Counts, 4 1/2 digit LCD with LED backlight.
- **Measurement Functions:** DC/AC Voltage, DC/AC Current, Resistance, Capacitance, Diode, Temperature, Continuity, NCV (Non-Contact Voltage), Frequency, Duty Cycle.
- **True RMS Measurement:** Provides accurate readings for non-sinusoidal waveforms.
- **Auto-Ranging:** Automatically selects the appropriate measurement range.
- **Data Hold:** Freezes the displayed reading.
- **Peak Hold:** Captures and displays the maximum peak value.
- **Low Battery Indication:** Alerts when battery replacement is needed.
- **Auto Power Off:** Conserves battery life by automatically shutting down after a period of inactivity.
- **Overload Protection:** Protects the meter from damage due to excessive input.
- **High Pressure Alarm:** Provides an alert under certain high voltage conditions.

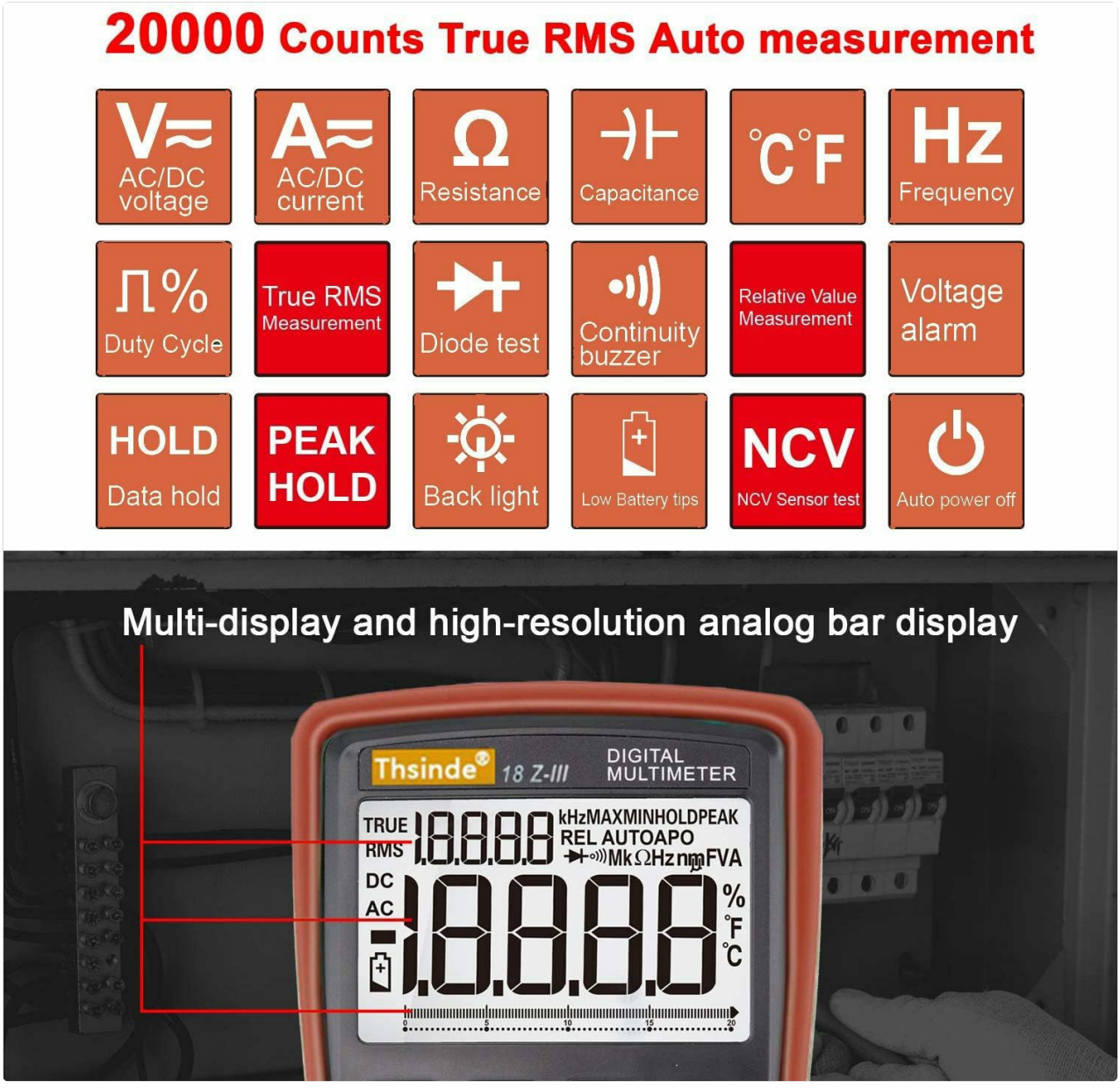

Figure 1: Overview of Thsinde 18Z-III Multimeter's capabilities and display features.

5. Product Overview

Familiarize yourself with the components and controls of your Thsinde 18Z-III Digital Multimeter.

Figure 2: Front panel layout and controls of the Thsinde 18Z-III Digital Multimeter.

1. **LCD Display:** Shows measurement readings, units, and function indicators.
2. **Bar Graph Display:** Provides an analog representation of the measured value.
3. **RANGE Button:** Manually selects measurement range (disables auto-ranging).
4. **HOLD / Backlight Button:** Short press to activate Data Hold; long press to toggle backlight.
5. **SELECT Button:** Toggles between different measurement modes within a single rotary switch position (e.g., AC/DC, Diode/Continuity).
6. **REL A Button:** Activates relative measurement mode.
7. **Hz % Button:** Toggles between frequency and duty cycle measurement.
8. **PEAK Button:** Activates peak hold function.

9. **Rotary Function Switch:** Selects the primary measurement function (OFF, V, mV, A, mA, uA, Ohm, Capacitance, Diode/Continuity, NCV, Temperature, Frequency).
10. **Input Jacks:**
    - **10A Input:** For measuring currents up to 10A.
    - **mA uA Input:** For measuring milliampere and microampere currents.
    - **COM Input:** Common (negative) terminal for all measurements.
    - **VΩHz Input:** Positive terminal for Voltage, Resistance, Capacitance, Frequency, Diode, and Temperature measurements.

6. Setup

6.1 Battery Installation

The Thsinde 18Z-III Multimeter operates on a single 9V battery, which is included. The battery compartment is located on the back of the unit.

1. Ensure the multimeter is turned **OFF**.
2. Locate the screw on the battery compartment cover on the back of the meter.
3. Use a screwdriver to loosen the screw and remove the battery cover.
4. Connect the 9V battery to the battery clips, observing correct polarity (+ and -).
5. Place the battery into the compartment and replace the cover, securing it with the screw.

6.2 Connecting Test Leads

Always connect the black test lead to the **COM** jack. Connect the red test lead to the appropriate input jack based on the measurement type:

- For Voltage, Resistance, Capacitance, Frequency, Diode, and Temperature measurements: Connect the red test lead to the **VΩHz** jack.
- For mA/uA Current measurements: Connect the red test lead to the **mA uA** jack.
- For 10A Current measurements: Connect the red test lead to the **10A** jack.

Ensure test leads are fully inserted into the jacks.

7. Operating Instructions

Turn the rotary function switch to the desired measurement function. The meter will automatically select the appropriate range unless the **RANGE** button is pressed.

7.1 DC/AC Voltage Measurement (V, mV)

1. Connect the black test lead to **COM** and the red test lead to **VΩHz**.
2. Turn the rotary switch to **V** (for volts) or **mV** (for millivolts).
3. Press **SELECT** to toggle between DC and AC voltage if necessary.
4. Connect the test probes across the circuit or component to be measured.

7.2 DC/AC Current Measurement (A, mA, uA)

CAUTION: Never connect the meter in parallel with a voltage source when measuring current. This can blow the fuse or damage the meter.

1. Connect the black test lead to **COM**.
2. For currents up to 200mA, connect the red test lead to **mA uA**. For currents up to 10A, connect the red

test lead to **10A**.

3. Turn the rotary switch to the appropriate current range (**A**, **mA**, or **uA**).
4. Press **SELECT** to toggle between DC and AC current if necessary.
5. Open the circuit and connect the test probes in series with the circuit to be measured.

7.3 Resistance Measurement (Ω)

CAUTION: Ensure the circuit is de-energized and all capacitors are discharged before measuring resistance.

1. Connect the black test lead to **COM** and the red test lead to **VΩHz**.
2. Turn the rotary switch to **Ω**.
3. Connect the test probes across the component to be measured.

7.4 Capacitance Measurement (F)

CAUTION: Ensure capacitors are fully discharged before measurement to prevent damage to the meter.

1. Connect the black test lead to **COM** and the red test lead to **VΩHz**.
2. Turn the rotary switch to **Capacitance** symbol.
3. Connect the test probes across the capacitor.

7.5 Diode Test and Continuity

1. Connect the black test lead to **COM** and the red test lead to **VΩHz**.
2. Turn the rotary switch to the **Diode/Continuity** symbol.
3. Press **SELECT** to toggle between Diode Test and Continuity Test.
4. For Diode Test: Connect the red probe to the anode and the black probe to the cathode. The display shows the forward voltage drop. Reverse the probes; the display should show OL (Open Loop).
5. For Continuity Test: Connect the probes across the circuit. A continuous beep indicates continuity (low resistance).

7.6 Non-Contact Voltage (NCV) Detection

1. Turn the rotary switch to **NCV**.
2. Move the top front part of the meter close to the conductor being tested.
3. The meter will beep and the NCV indicator will light up if AC voltage is detected. The intensity of the beeping and light indicates the strength of the electric field.

7.7 Temperature Measurement

1. Connect the black test lead to **COM** and the red test lead to **VΩHz**.
2. Turn the rotary switch to **Temperature** symbol (usually °C/°F).
3. Insert the temperature probe (thermocouple, if included) into the **VΩHz** and **COM** jacks, observing polarity.
4. Place the tip of the temperature probe on or near the object whose temperature is to be measured.
5. Press **SELECT** to switch between Celsius (°C) and Fahrenheit (°F).

Figure 3: Thsinde 18Z-III Multimeter performing a temperature measurement.

7.8 Frequency and Duty Cycle Measurement (Hz, %)

1. Connect the black test lead to **COM** and the red test lead to **VΩHz**.
2. Turn the rotary switch to **Hz**.
3. Connect the test probes across the signal source.
4. Press **Hz %** to toggle between frequency (Hz) and duty cycle (%).

7.9 Data Hold (HOLD)

Press the **HOLD** button briefly to freeze the current reading on the display. Press it again to release the hold function.

7.10 Peak Hold (PEAK)

Press the **PEAK** button to capture and display the maximum peak value of a measurement. Press it again to exit peak hold mode.

7.11 Backlight

Press and hold the **HOLD** button for approximately 2 seconds to turn the LCD backlight on or off. The backlight will automatically turn off after about 15 seconds to conserve battery.

7.12 Auto Power Off

The meter will automatically power off after approximately 15 minutes of inactivity to save battery life. To disable this feature, hold down the **SELECT** button while turning the rotary switch from**OFF** to any function. To re-enable, simply power off and on normally.

8. Specifications

Parameter	Specification
Display	19999/20000 Counts, 4 1/2 Digit LCD
DC Voltage	200mV/2V/20V/200V/1000V
AC Voltage	200mV/2V/20V/200V/750V
DC Current	200uA/2000uA/20mA/200mA/10A
AC Current	200uA/2000uA/20mA/200mA/10A
Resistance	200Ω/2kΩ/20kΩ/200kΩ/2MΩ/20MΩ
Capacitance	20nF/200nF/2uF/20uF/200uF/2000uF
Temperature	-20°C to 1000°C / -4°F to 1832°F
Frequency	10Hz-20MHz
Duty Cycle	0.1%-99%
Power Source	9V Battery (included)
Working Environment	0°C to 40°C, relative humidity <75%
Item Weight	454 g
Dimensions	22.5 x 16.5 x 6 cm
Material	ABS

9. Maintenance

9.1 Battery Replacement

When the low battery indicator appears on the display, replace the 9V battery immediately to ensure accurate measurements. Follow the steps in Section 6.1 for battery installation.

9.2 Cleaning

Wipe the meter's casing with a damp cloth and a mild detergent. Do not use abrasives or solvents. Ensure the meter is completely dry before use.

9.3 Fuse Replacement

If the current measurement function fails, the fuse may need replacement. This meter uses HRC fuses. Refer to a qualified technician for fuse replacement to ensure proper type and rating are used.

10. Troubleshooting

Problem	Possible Cause	Solution
No display or dim display	Low battery; Meter off; Poor battery connection.	Replace battery; Turn rotary switch to a function; Check battery connection.
"OL" (Overload) displayed	Input value exceeds selected range; Open circuit (for resistance/continuity).	Switch to a higher range (if not auto-ranging); Check circuit connection.
Inaccurate readings	Low battery; Incorrect function/range selected; Damaged test leads.	Replace battery; Select correct function/range; Inspect and replace test leads if damaged.
Current measurement not working	Blown fuse; Incorrect input jack used.	Replace fuse (refer to 9.3); Ensure red lead is in 10A or mA uA jack.
No continuity beep	Open circuit; Meter not in continuity mode.	Check circuit for breaks; Press SELECT to ensure continuity mode is active.

11. Warranty and Support

For warranty information or technical support, please refer to the documentation provided at the time of purchase or contact Thsinde customer service directly. Keep your purchase receipt as proof of purchase.

For further assistance, you may visit the manufacturer's website or contact their support channels.