Neoteck NTK028

Neoteck Multimeter NTK028 User Manual

4000 Counts Auto Manual Ranging Digital Multimeter

1. Introduction

This manual provides detailed instructions for the safe and effective operation of your Neoteck NTK028 Digital Multimeter. This device is a versatile tool designed for measuring AC/DC voltage, AC/DC current, resistance, capacitance, frequency, temperature, and performing continuity, diode, hFE, and logic tests. Please read this manual thoroughly before use and retain it for future reference.

2. Safety Information

To ensure safe operation, always adhere to the following safety precautions:

- Do not exceed the maximum input values specified for each measurement range.
- Ensure test leads are properly connected and in good condition before making any measurements.
- Avoid touching exposed wiring or circuit components while measuring.
- Always disconnect power to the circuit under test before measuring resistance, capacitance, or continuity.
- Use caution when working with voltages above 30V AC RMS, 42V peak, or 60V DC, as these pose a shock hazard.
- The multimeter is rated for CAT II 1000V and CAT III 600V. Ensure the measurement category matches your application.
- Replace batteries promptly when the low battery indicator appears to maintain measurement accuracy.

3. Product Overview

The Neoteck NTK028 Multimeter features a large backlit LCD display, a rotary switch for function selection, and multiple input jacks for various measurements.

This image displays the Neoteck DM4000 PRO Digital Multimeter, highlighting its various measurement capabilities including AC/DC Voltage, Current, Resistance, Capacitance, Frequency, Temperature, Continuity, Diode, hFE, and Logic Test. The large LCD screen and rotary switch are visible.

3.1 Key Components

- **LCD Display:** Shows measurement readings, units, and indicators. Features a backlight for low-light conditions.
- **Rotary Switch:** Used to select the desired measurement function (e.g., Voltage, Current, Resistance, Temperature).
- **Function Buttons:** Include AUTO/MANUAL ranging, REL (Relative Measurement), HOLD (Data Hold), and LIGHT/RANGE (Backlight/Range selection).
- **Input Jacks:**
  - **COM:** Common input for all measurements (black test lead).
  - **VΩHz:** Input for Voltage, Resistance, Frequency, Capacitance, Diode, Continuity, and Temperature (red test lead).
  - **uAmA:** Input for microampere and milliampere current measurements (red test lead).
  - **10A:** Input for 10 Ampere current measurements (red test lead).

4. Setup

4.1 Battery Installation

The multimeter requires two AAA batteries for operation. To install or replace batteries:

1. Ensure the multimeter is turned OFF.
2. Locate the battery compartment cover on the back of the unit.
3. Use a screwdriver to remove the screw securing the cover.
4. Carefully remove the cover and insert two AAA batteries, observing correct polarity (+/-).
5. Replace the cover and secure it with the screw.

4.2 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, Continuity, and Temperature: Connect the red lead to the **VΩHz** jack.
- For Current (uA/mA): Connect the red lead to the **uAmA** jack.
- For Current (10A): Connect the red lead to the **10A** jack.

5. Operating Instructions

Turn the rotary switch to the desired function. The multimeter supports both auto-ranging and manual ranging. Press the "Range" button to switch between modes.

5.1 Measuring AC/DC Voltage

1. Set the rotary switch to the **V~** (AC Voltage) or **V-** (DC Voltage) position.
2. Connect the black test lead to **COM** and the red test lead to **VΩHz**.
3. Connect the test probes in parallel to the circuit or component you wish to measure.
4. Read the voltage value on the LCD display.

5.2 Measuring AC/DC Current

1. Set the rotary switch to the **A~** (AC Current) or **A-** (DC Current) position, selecting the appropriate range (uA, mA, or 10A).
2. Connect the black test lead to **COM**. Connect the red test lead to **uAmA** for small currents or **10A** for larger currents.
3. Connect the test probes in series with the circuit.
4. Read the current value on the LCD display.

The image shows the Neoteck Multimeter in use, measuring voltage within an electrical control panel. The display shows 'AC 220.8'. The user is wearing gloves, and the multimeter is connected via 15A banana plug to alligator clip cables, providing hands-free measurement.

5.3 Measuring Resistance (Ω)

1. Set the rotary switch to the **Ω** position.
2. Connect the black test lead to **COM** and the red test lead to **VΩHz**.
3. Ensure the circuit is de-energized before measuring.
4. Connect the test probes across the component to measure its resistance.
5. Read the resistance value on the LCD display.

5.4 Measuring Capacitance (F)

1. Set the rotary switch to the **F** position.
2. Connect the black test lead to **COM** and the red test lead to **VΩHz**.
3. Ensure the capacitor is fully discharged before measurement to prevent damage to the meter.
4. Connect the test probes across the capacitor terminals.
5. Read the capacitance value on the LCD display.

5.5 Measuring Frequency (Hz)

1. Set the rotary switch to the **Hz** position.
2. Connect the black test lead to **COM** and the red test lead to **VΩHz**.
3. Connect the test probes to the signal source.
4. Read the frequency value on the LCD display.

5.6 Measuring Temperature (°C/°F)

1. Set the rotary switch to the **°C** position.
2. Connect the K-Type thermocouple to the **VΩHz** (positive) and **COM** (negative) jacks.
3. Place the thermocouple probe in contact with the object or environment whose temperature you wish to measure.
4. Read the temperature value on the LCD display. Press the "Select" button to switch between Celsius and Fahrenheit.

This image illustrates the Neoteck Multimeter performing a temperature measurement using the included K-Type thermocouple. The display shows '0087 °C', indicating a temperature reading in Celsius. The thermocouple probe is submerged in a glass of water.

5.7 Continuity Test

1. Set the rotary switch to the continuity symbol (speaker icon).
2. Connect the black test lead to **COM** and the red test lead to **VΩHz**.

3. Ensure the circuit is de-energized.
4. Touch the test probes to the two points of the circuit you want to check for continuity.
5. If continuity exists (resistance below approximately 50Ω), the buzzer will sound.

5.8 Diode Test

1. Set the rotary switch to the diode symbol.
2. Connect the black test lead to **COM** and the red test lead to **VΩHz**.
3. Ensure the diode is disconnected from the circuit.
4. Connect the red probe to the anode and the black probe to the cathode. The display will show the forward voltage drop.
5. Reverse the probes. An open circuit (OL) reading indicates a good diode.

5.9 hFE Test (Transistor Test)

1. Set the rotary switch to the **hFE** position.
2. Insert the transistor's emitter, base, and collector leads into the corresponding hFE test sockets (E, B, C) on the multimeter.
3. The display will show the hFE value (DC current gain) of the transistor.

5.10 Logic Test (CMOS/TTL)

1. Set the rotary switch to the **CMOS** or **TTL** position.
2. Connect the black test lead to **COM** and the red test lead to **VΩHz**.
3. Connect the red probe to the logic circuit point to be tested.
4. The display will indicate the logic state (HIGH, LOW, or PULSE).

6. Maintenance

6.1 Cleaning

Wipe the meter with a damp cloth and mild detergent. Do not use abrasives or solvents.

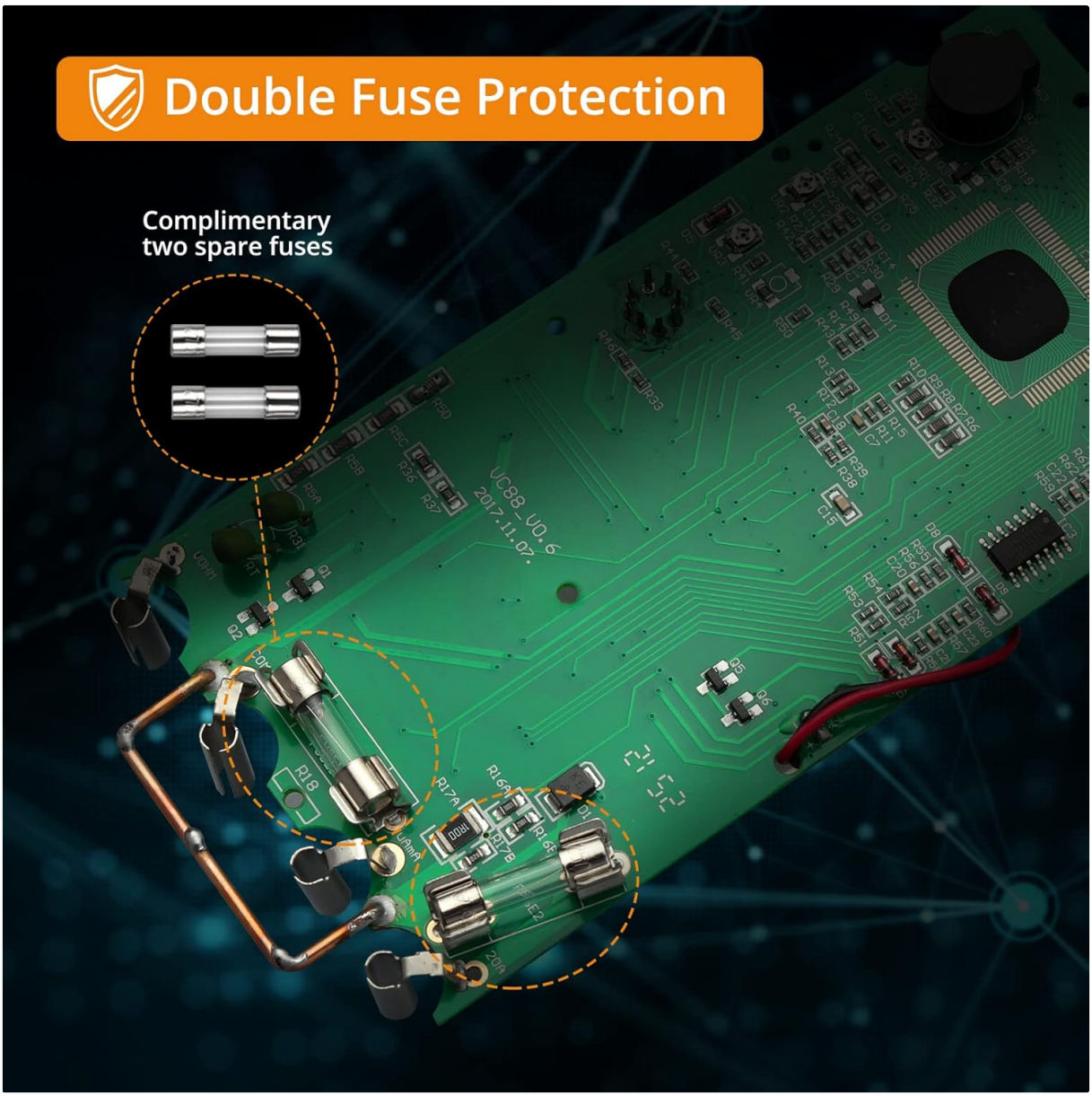
6.2 Battery Replacement

When the battery symbol appears on the LCD, replace the batteries as described in Section 4.1. Always use two new AAA batteries.

6.3 Fuse Replacement

If the current measurement function fails, the fuse may need replacement. The multimeter features double fuse protection. To replace a fuse:

1. Ensure the multimeter is turned OFF and all test leads are disconnected.
2. Remove the battery compartment cover and batteries.
3. Carefully open the meter casing (refer to the internal diagram if available).
4. Locate the blown fuse(s) and replace them with fuses of the same type and rating (e.g., F400mA/250V for mA range, F10A/250V for 10A range). Two spare fuses are included.
5. Reassemble the meter, ensuring all screws are tightened.



An internal view of the multimeter's circuit board, highlighting the double fuse protection. Two spare fuses are also shown, emphasizing the safety feature and ease of replacement.

The image displays the Neoteck Multimeter alongside its protective orange rubber shell. The shell is designed to be dustproof and waterproof, offering enhanced durability and drop protection for the device.

7. Troubleshooting

- **No display or dim display:** Check battery installation and charge. Replace batteries if necessary.
- **Incorrect readings:** Ensure correct function selection, proper test lead connection, and that the circuit is de-energized for resistance/capacitance measurements. Check for blown fuses if current measurement is inaccurate.
- **"OL" (Overload) displayed:** The measured value exceeds the selected range. Switch to a higher range or check for an open circuit.
- **No continuity beep:** Check if the circuit resistance is above 50Ω or if the function is correctly selected.

8. Specifications

Brand	Neoteck
Model Number	NTK028

Power Source	Battery Powered (2 AAA batteries)
Display	4000 Counts, Backlit LCD
Measurement Type	AC/DC Voltage, AC/DC Current, Resistance, Capacitance, Frequency, Temperature, Diode, Continuity, hFE, Logic Test
Temperature Range	Up to 1000 Degrees Celsius (with K-Type Thermocouple)
Safety Rating	CAT II 1000V, CAT III 600V
Dimensions (L x W x H)	6.46 x 2.76 x 1.57 inches
Item Weight	0.01 ounces (0.29 Grams)

This image provides a side view of the Neoteck Multimeter, showcasing its integrated one-piece foldable stand, which positions the device at a 45-degree angle for easy viewing. A convenient pen recess for test lead storage is also visible.

9. What's in the Box

The Neoteck Multimeter package includes the following items:

- 1 x Neoteck Digital Multimeter
- 1 x Carrying Bag
- 1 x K-Type Temperature Probe
- 1 x Standard Test Lead Set
- 1 x Test Lead Banana Plug to Alligator Clip Set
- 2 x AAA Batteries
- 2 x Spare Fuses
- 1 x Screwdriver

This image shows the complete contents of the Neoteck Multimeter package, including the multimeter unit, a carrying bag, a K-Type temperature probe, standard test leads, banana plug to alligator clip test leads, two AAA batteries, and two spare fuses. A screwdriver for battery compartment access is also included.

10. Warranty and Support

For any questions, technical support, or warranty inquiries regarding your Neoteck Multimeter, please contact Neoteck customer service. Refer to the product packaging or the official Neoteck website for contact information.