KKmoon KKM828

KKmoon KKM828 2-in-1 Digital Multimeter with Oscilloscope User Manual

Model: KKM828

1. Introduction

The KKmoon KKM828 is a versatile 2-in-1 device combining the functionalities of a digital multimeter and an oscilloscope. Designed for efficiency and accuracy, it features a 2.4-inch color display, a 1MHz bandwidth for AC voltage, and a 2.5Msps real-time sampling rate. This manual provides essential information for safe and effective operation of your KKM828 device.

2. Safety Information

Please read and understand all safety instructions before using the device. Failure to follow these instructions may result in electric shock, fire, or damage to the device or other equipment.

- Always ensure the device is in good working condition and free from damage before use.
- Do not apply voltage or current that exceeds the maximum limits specified in the technical specifications.
- Use caution when working with voltages above 24V, as they pose a shock hazard. The device will emit an audible warning if the input voltage exceeds 24V.
- Ensure the correct function and range are selected before making measurements.
- Replace batteries promptly when the low battery indicator appears to ensure accurate readings.
- The device is equipped with double fuses (500mA/250V and 10A/250V) for protection. Do not bypass or use incorrect fuse types.
- Do not operate the device in wet environments or explosive atmospheres.
- Refer to the "Maintenance" section for proper cleaning and storage procedures.

3. Product Overview

The KKmoon KKM828 integrates a digital multimeter and an oscilloscope into a compact, handheld unit. Key components and features are detailed below.

3.1 Key Features

- **2-in-1 Functionality:** Combines a digital multimeter and an oscilloscope.
- **Display:** 2.4-inch 320x240 LCM color screen for clear readings and waveform display.

- **Oscilloscope Performance:** 1MHz ACV bandwidth, 2.5Msps real-time sampling rate.
- **Multimeter Functions:** Measures AC/DC voltage, AC/DC current, resistance, capacitance, frequency, duty cycle, diode, and continuity.
- **Data Storage:** Stores up to 100 sets of data and 10 waveforms.
- **User Interface:** Silicone buttons and a pressure-sensitive dial for precise function selection.
- **Ergonomics:** Integrated back bracket for a 60° viewing angle.
- **Safety:** Double fuse protection (500mA/250V, 10A/250V) and input voltage warning.

3.2 Device Components

Refer to the image below for an overview of the device's main components.

Figure 1: KKM828 Product Details. This image highlights the device's HD color screen (01), the function dial for accurate gear changes (02), and the back bracket (03) for easy viewing.

1. **HD Screen:** 2.4-inch color screen for clear display of measurements and waveforms.
2. **Function Dial:** Rotary switch for selecting measurement functions (voltage, current, resistance, etc.) and

oscilloscope mode.

3. **Buttons (F1-F4, R, S):** Used for navigating menus, selecting ranges, holding data, and other specific functions.
4. **Input Jacks:** Terminals for connecting test leads for various measurements (e.g., VΩHz, mA, 10A, COM).
5. **Back Bracket:** Foldable stand for propping up the device at a 60° angle for convenient viewing.

4. Setup

4.1 Battery Installation

The KKM828 requires three AA batteries for operation. Ensure the device is powered off before installing or replacing batteries.

1. Locate the battery compartment cover on the back of the device.
2. Open the battery compartment cover by sliding or unscrewing it (if applicable).
3. Insert three AA batteries, observing the correct polarity (+ and -) as indicated inside the compartment.
4. Close the battery compartment cover securely.

4.2 Powering On/Off

To power on the device, rotate the function dial from the "OFF" position to any desired measurement function. To power off, rotate the dial back to the "OFF" position.

5. Operating Instructions

5.1 Multimeter Functions

The KKM828 offers a comprehensive range of multimeter measurement capabilities. Always connect test leads correctly to the appropriate input jacks (e.g., COM, VΩHz, mA, 10A) for the selected function.

- **AC/DC Voltage Measurement:** Rotate the dial to the 'V~' or 'V=' position. Connect test leads in parallel with the circuit.
- **AC/DC Current Measurement:** Rotate the dial to the 'mA~', 'mA=', '10A~', or '10A=' position. Connect test leads in series with the circuit.
- **Resistance Measurement:** Rotate the dial to the 'Ω' position. Ensure the circuit is de-energized before measuring resistance.
- **Capacitance Measurement:** Rotate the dial to the 'mF' position. Discharge capacitors before measurement.
- **Frequency and Duty Cycle Measurement:** Rotate the dial to the 'Hz%' position.
- **Diode Test:** Rotate the dial to the 'Diode' position. Connect leads across the diode to check forward voltage drop.
- **Continuity Test:** Rotate the dial to the 'Continuity' position. The device will beep if resistance is below approximately 50Ω.

Figure 2: Multimeter Measurement Examples. This image illustrates the display during Frequency, Duty Cycle, Diode Test, and Continuity measurements, demonstrating the device's various multimeter functions.

5.2 Oscilloscope Functions

The KKM828 features a convenient one-button oscilloscope for waveform analysis.

1. Rotate the function dial to the 'Graphical' (oscilloscope) mode.
2. Connect the test leads to the circuit where you wish to observe the waveform.
3. The device will automatically display the waveform. Use the secondary display at the bottom to view parameters such as Peak-to-Peak voltage (VP-P), average value, RMS value, frequency, time base, and amplitude.
4. Measurement modes include 'Normal' and 'Automatic'. The device can quickly and accurately measure and display waveforms.

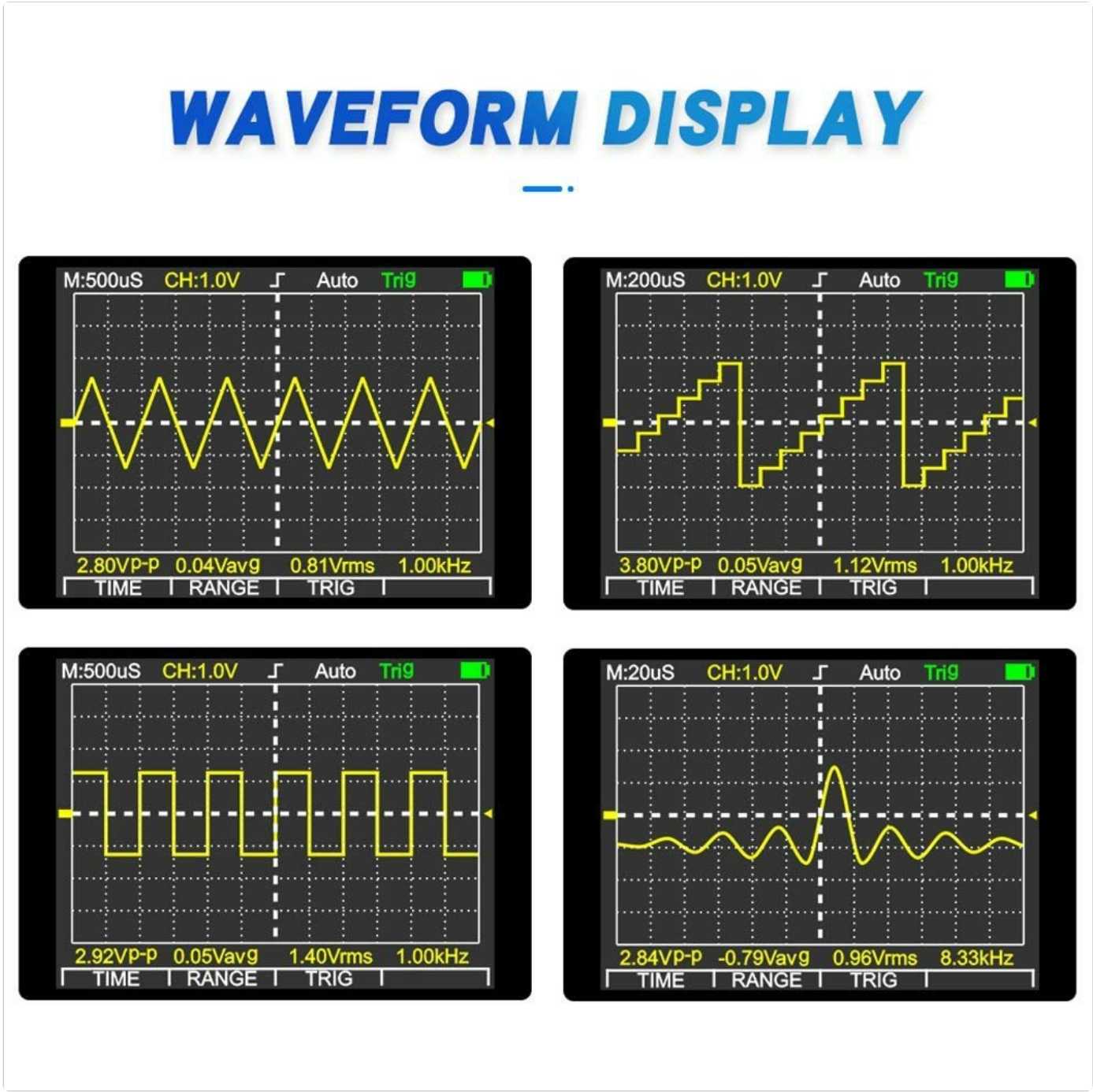

Figure 3: Oscilloscope Waveform Display. This image shows examples of different electrical waveforms (sine, square, pulse, complex) as displayed on the KKM828's oscilloscope screen, along with key measurement parameters.

5.3 Data Storage and Recall

The KKM828 can store up to 100 sets of measurement data and 10 waveforms for later review.

- Specific instructions for saving and recalling data are typically accessed via the function buttons (e.g., 'S' for Save, 'R' for Recall) in relevant measurement modes. Refer to the on-screen prompts for detailed operation.
- The device allows for simultaneous display of historical records and real-time data for easy comparison and analysis.

6. Maintenance

6.1 Cleaning

To clean the device, wipe the casing with a damp cloth and a mild detergent. Do not use abrasive cleaners or solvents. Ensure the device is powered off and disconnected from any circuits before cleaning. Do not allow moisture to enter the

device.

6.2 Battery Replacement

When the low battery indicator appears on the display, replace the three AA batteries as described in the "Battery Installation" section (4.1). Always use fresh batteries of the same type.

6.3 Storage

When not in use for extended periods, remove the batteries to prevent leakage. Store the device in a cool, dry place within the specified storage environment: -10°C to 60°C, with relative humidity less than 90% RH.

7. Troubleshooting

This section addresses common issues you might encounter with your KKM828 device.

Problem	Possible Cause	Solution
Device does not power on.	Dead or incorrectly installed batteries.	Check battery polarity and replace with fresh AA batteries.
No reading or "OL" (Overload) displayed.	Incorrect range selected, open circuit, or input exceeds maximum limit.	Select appropriate range, check test lead connections, ensure circuit is closed. Verify input does not exceed specifications.
Inaccurate measurements.	Low battery, incorrect connection, or environmental factors.	Replace batteries, re-check test lead connections, ensure operating environment is within specified range.
Oscilloscope waveform is unstable or absent.	Poor connection, signal too weak/strong, or incorrect mode.	Ensure secure test lead connection. Adjust amplitude or time base if available (though KKM828 is mostly auto-ranging). Verify signal source.
Device beeps continuously.	Input voltage exceeds 24V (safety warning).	Immediately disconnect the device from the circuit and verify the voltage level. Do not proceed if voltage is too high.

8. Specifications

The following table details the technical specifications of the KKmoon KKM828.

Parameter	Value
Model	KKM828
Display	2.4-inch 320 x 240 LCM Color Screen
Input Resistance	10 MΩ
Battery Type	3 x AA batteries (not included)
Power Consumption	Approx. 80 mA
Operating Time (low brightness)	Approx. 5 hours
Data Storage	100 data sets / 10 waveforms
Operating Environment	0 ~ 40 °C, <75% RH

Parameter	Value
Storage Environment	-10 ~ 60 °C, <90% RH
Bandwidth (ACV)	1 MHz
Bandwidth (ACA)	5 KHz
Max. Real-time Sampling Rate	2.5 Msps
Multimeter Range (DC Voltage)	400mV / 4V / 40V / 400V / 1000V (Accuracy: 0.75% rdg + 10dgt)
Multimeter Range (AC Voltage)	400mV / 4V / 40V / 400V / 750V (Accuracy: 1.0% rdg + 10dgt)
Multimeter Range (DC Current)	40mA / 400mA / 4A / 10A (Accuracy: 1.2% rdg + 10dgt)
Multimeter Range (AC Current)	40mA / 400mA / 4A / 10A (Accuracy: 1.5% rdg + 10dgt)
Multimeter Range (Resistance)	400.0 Ω ~ 40.00 MΩ (Accuracy: 1.0% rdg + 5dgt)
Multimeter Range (Capacitance)	0.1nF ~ 100, 10.00mF (Accuracy: 2.0% rdg + 10dgt)
Multimeter Range (Frequency)	5Hz ~ 10MHz (Accuracy: 1.0% rdg + 5dgt)
Multimeter Range (Duty Cycle)	0.1 % ~ 99.9 % (Accuracy: 1.0% rdg + 5dgt)
Diode Test	Voltage approx. 5V, Test current approx. 1.5mA
Continuity Test	Buzzer sounds if resistance < 50Ω
Fuse Specifications	500mA / 250V, 10A / 250V
Dimensions	160 x 83 x 32 mm
Weight	195 g