



COMPETITION

BEDIENUNGSANLEITUNG - NOTICE D'UTILISATION - OPERATING INSTRUCTIONS



512.5065

-  Digital Multimeter
-  Multimètre numérique
-  Digital multimeter
-  Multimetro digital
-  Multimetro digitale
-  Digitalt multimeter
-  Multimetr cyfrowy
-  Digitale multimeter
-  Цифровой мультиметр
-  ملتي ميتر رقمي

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Introduction

Dear customer!

We are very pleased that you decided to purchase this product from KS Tools. Thank you for your confidence in us. You can find all the information you need in these operating instructions. Please read the instructions completely with care and observe the advice given. The operating instruction is part of the item and should be kept intact.

If you have any uncertainties or further questions, please contact:

customerservice@competitiontools.com

1. Safety information

This multimeter has been designed according to IEC -61010 concerning electronic measuring instruments with an overvoltage category (CAT III) and pollution 2.

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

2. Safety symbols



Important safety information, refer to the operating manual.



Dangerous voltage may be present.



Earth ground.



Double insulation (Protection class II).



200mA / 250V

Fuse must be replaced with rating specified in the manual.



3. Maintenance

- Before opening the case, always disconnect test leads from all energized circuits.
- For continue protection against fire; replace fuse only with the specified voltage and current ratings: F 200mA/250V
- Never use the meter unless the back cover is in place and fastened completely.
- Do not use abrasives or solvents on the meter. To clean it using a damp cloth and mild detergent only.

4. During use

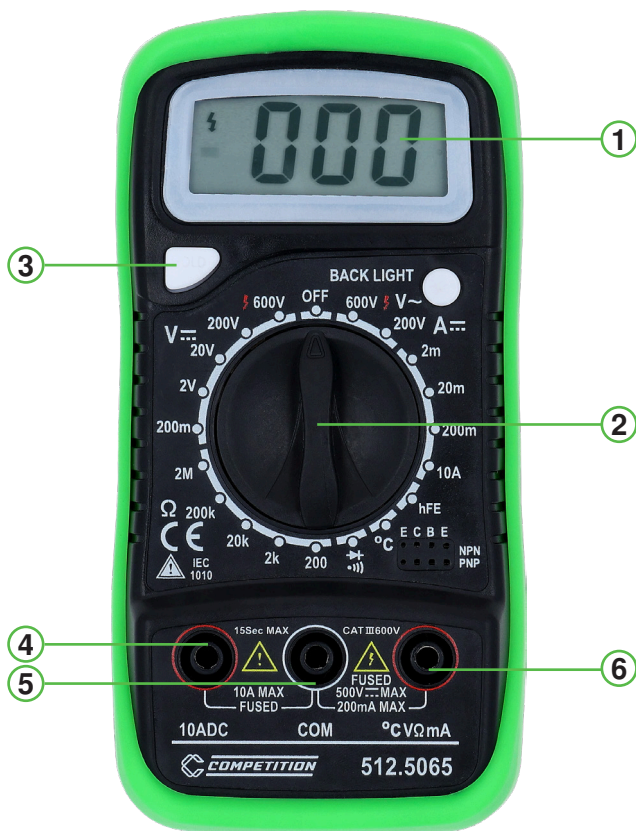
- Never exceed the protection limit values indicated in specifications for each range of measurement.
- When the meter is linked to measurement circuit, do not touch unused terminals.
- Never use the meter to measure voltages that might exceed 600V above earth ground in category III installations.
- When the value scale to be measured is unknown beforehand, set the range selector at the highest position.
- Before rotating the range selector to change functions, disconnect test leads from the circuit under test.
- When carrying out measurements on TV or switching power circuits always remember that there may be high amplitude voltages pulses at test points, which can damage the meter.
- Always is careful when working with voltages above 60V dc or 30V ac rms. Keep fingers behind the probe barriers while measuring.
- Never perform resistance measurements on live circuits.

5. General description

The meter is a handheld digital multimeter with 3 1/2 digits for measuring DC and AC voltage, DC current, Resistance, Diode and Continuity Test with battery operated. The Back light of display is optional.



6. Front panel



6.1 Front panel description

1: Display

3 1/2 digit, 7 segment, 15mm high LCD.

2: Rotary switch

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

3: Hold button

When this button is pushed, the display will keep the last reading and “**H**” symbol will appear on the LCD until pushing it again.



4: “10A” jack

Plug in connector for red test lead for 10A measurement.

5: “COM” jack

Plug in connector for black (negative) test lead.

6: “VΩmA” jack

Plug in connector for red (positive) test lead for voltage, resistance and current (except 10A) measurements.

7. Specifications

Accuracy is specified for a period of one year after calibration and at 18 to 28°C (64°F to 82°F) with relative humidity to 80%.

8. General

Maximum voltage between terminals and earth ground:

Fuse protection:

Power:

Display:

Measuring method:

Overrange Indication:

Polarity indication:

Operating Environment:

Storage temperature:

Low battery indication:

Size:

Weight:

CAT III 600V

F 200mA/250V

9V battery, NEDA 1604 or 6F22

LCD, 1999 counts, updates 2-3/ sec.

Dual-slope integration A/D converter

Only figure “1” on the display

“-” displayed for negative polarity

0 to 40 °C

-10 °C to 50 °C

“ ” appears on the display

135 mm × 67 mm × 33 mm

approx. 145g

8.1 DC Voltage

Range	Resolution	Accuracy
200mV	100μV	±0.5% of rdg ± 2 digits
2V	1mV	±0.5% of rdg ± 2 digits
20V	10mV	±0.5% of rdg ± 2 digits
200V	100mV	±0.5% of rdg ± 2 digits
600V	1V	±0.8% of rdg ± 2 digits

Overload Protection: 220V rms. For 200mV range and 600V dc or rms. ac for other ranges.



8.2 DC Current

Range	Resolution	Accuracy
200μA	0,1μA	±1% of rdg ± 2 digits
2mA	1μA	±1% of rdg ± 2 digits
20mA	10μA	±1% of rdg ± 2 digits
200mA	100μA	±1.5% of rdg ± 2 digits
10A	10mA	±3% of rdg ± 2 digits

Overload Protection: F 200mA/250V

8.3 AC Voltage

Range	Resolution	Accuracy
200V	100mV	±1.2% of rdg ± 10 digits
600V	1V	±1.2% of rdg ± 10 digits

Overload Protection: 600V dc or rms. ac for all ranges.

Frequency range: 40Hz to 400Hz.

Response: Average responding, calibrated in rms. of a sine wave.

8.4 Diode & Continuity

Bereich	Description
	If continuity exists (about less than 1.5kΩ), built-in buzzer will sound.
	Show the approx. forward voltage drop of the diode.

Overload Protection: 220V dc or rms. ac.

8.5 Resistance

Range	Resolution	Accuracy
200Ω	0,1Ω	±0.8% of rdg ± 3 digits
2kΩ	1Ω	±0.8% of rdg ± 2 digits
20kΩ	10Ω	±0.8% of rdg ± 2 digits
200kΩ	100Ω	±0.8% of rdg ± 2 digits
2MΩ	1kΩ	±1.0% of rdg ± 2 digits

Maximum Open Circuit Voltage: 3.0V

Overload Protection: 220V dc or rms. AC for all ranges.



9. Operating Instructions

9.1 DC Voltage measurement

1. Connect the red test lead to the "V.Ω.mA" jack and the black lead to the "COM" jack.
2. Set rotary switch at desired DCV position. If the voltage to be measured is not known beforehand, set range switch at the highest range position and then reduce it until satisfactory resolution is obtained.
3. Connect test leads across the source being measured.
4. Read voltage value on the LCD display along with the polarity of the red lead connection.

9.2 DC Current measurement

1. Connect the red test lead to the "V.Ω.mA" jack and the black test lead to "COM" jack. (For measurements between 200mA and 10A, remove red lead to "10A" jack.)
2. Set the rotary switch at desired DCA position.
3. Open the circuit in which the current is to be measured, and connect test leads in series with the circuit.
4. Read current value on LCD display.

9.3 AC Voltage measurement

1. Connect the red test lead to "V.Ω. mA" jack and the black test lead to the "COM" jack.
2. Set the rotary switch at desired ACV position.
3. Connect test leads across the source being measured.
4. Read voltage value on the LCD display.

9.4 Resistance measurement

1. Connect the red test lead to "V.Ω. mA" jack and black test lead to the "COM" jack. (The polarity of red lead is positive "+".)
2. Set the rotary switch at desired "Ω" range position.
3. Connect test leads across the resistor to be measured and read LCD display.
4. If the resistance being measured is connected to a circuit, turn off power and discharge all capacitors before applying test probes.

9.5 Diode test

1. Connect the red test lead to "V.Ω.mA" jack and the black test lead to the "COM" jack (The polarity of red lead is positive "+").
2. Set the rotary switch at "→|+" position.
3. Connect the red test lead to the anode of the diode to be tested and the black test lead to the cathode of the diode. The approx. forward voltage drop of the diode will be displayed. If the connection is reversed, only figure "1" will be shown.



9.6 Audible continuity test

1. Connect red test lead to “V.Ω.mA”, black test lead to “COM”.
2. Set range switch to “•|||)” position.
3. Connect test leads to two points of circuit to be tested. If continuity exists, built-in buzzer will sound.

9.7 Battery & Fuse replacement

If “ ” appears on display, it indicates that the battery should be replaced.

Fuse rarely need replacement and blow almost always as a result of operator's error.

To replace battery or fuse (250mA/600V; 10A/600V) remove the 2 screws in the bottom of the case. Simply remove the old battery, and replace with a new battery. Be careful to observe battery polarity.



WARNING

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

10. Accessories

- Operator's instruction manual
- Set of test leads
- 9 volt battery. NEDA 1604 6F22 006P type

11. Disposal

The disposal or recycling of the Digital Multimeter must be in accordance with the relevant legislation of the country of use!

12. Checks

All tools are to be checked for damage.



13. Guarantee

The KS Tools Werkzeuge und Maschinen GmbH guarantee applies for all tools that are used under normal usage conditions.

The following are excluded from the guarantee:

- **Consumables** e.g. any type of cutting tools, cutting inserts and disks, cutting and scraping tools, brooms, brushes, files, batteries, bits or bit sockets, rotor blades in pneumatic devices, isolators on heating coils, any type of fuses, carbon brushes, etc.
- **Faulty functioning** of parts that show usage-related or other natural wear and tear, as well as tool defects that can be traced back to usage-related or other natural wear and tear.
- **Defects** in the tool that can be traced back to a failure to observe the operating instructions, improper use, use under abnormal environmental conditions or unsuitable operating conditions, overloading or improper maintenance.
Also defects in tools caused by the use of accessory parts or other parts that are not KS Tools original parts.
- Tools which have been modified or equipped with additions.
- Minor deviations from the intended quality that are however insignificant for the value and suitability for use of the tool.

The guarantee period is 12 months in cases of industrial or equal use.

The guarantee period starts on the date of purchase by the commercial end customer. The date of the original purchase receipt is decisive. For technical products with limited guarantee types A, B and C, the user must principally submit the purchase receipt in addition to the serial number of the device, if present.

The guarantee applies under consideration of the guarantee type for the duration specified in the price list valid on the day the product was purchased.

If no guarantee claim exists for the product (expiration of the guarantee time, guarantee exclusion for the reasons listed in Sec. 2) but the repair is still possible, this will only be carried out following approval of the cost estimate by the user.



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