

**BEDIENUNGSANLEITUNG - OPERATING INSTRUCTIONS - NOTICE D'UTILISATION**



**BT122910**

 **Digital-Multimeter**  
 **Digital multimeter**

DE/KRE/TJU/05-09-2022



## Introduction

Dear customer!

Thank you for buying one of our products. 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. The manufacturer is not liable for personal injuries and material damages which result from improper use.

## 1. Provisions for use

The manufacturer shall not be held liable for personal and/or material damage which can be traced back to unintended use of the tool.



**Pay heed to the vehicle manufacturer's specifications!**

## 2. Technical data

### FRONT PANEL DESCRIPTION

#### 1. FUNCTION AND RANGE SWITCH

This switch is used to select the function and desired range as well as to turn on the instrument. To extend the life of this battery, the switch should be in the "OFF" position when the instrument is not in use.

#### 2. DISPLAY

3 ½ digit, 7 segment, 0.5" high LCD.

#### 3. "Common" JACK Plug

in connector for black (negative) test lead.

#### 4. "VΩmA" JACK

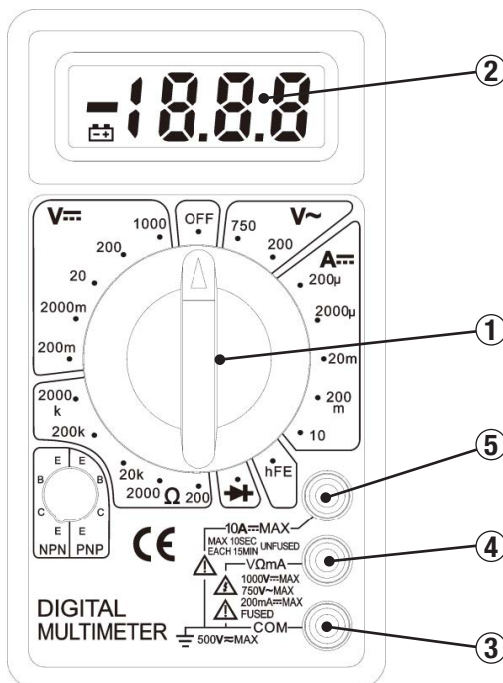
Plug in connector for red (Positive) test lead for all voltage and resistance and current (except 10A) measurements.

#### 5. "10A" JACK

Plug in connector to red (positive) test lead for 10A measurement.

## SPECIFICATIONS

Accuracies are guaranteed for 1 year,  
23°C±5°C, less than 80%RH





## DC VOLTAGE

| RANGE  | RESOLUTION | ACCURACY                         |
|--------|------------|----------------------------------|
| 200mV  | 100uV      | $\pm(0.5\% \text{ of rdg} + 3D)$ |
| 2000mV | 1mV        | $\pm(1.0\% \text{ of rdg} + 5D)$ |
| 20V    | 10mV       |                                  |
| 200V   | 100mV      |                                  |
| 1000V  | 1V         | $\pm(1.2\% \text{ of rdg} + 5D)$ |

**OVERLOAD PROTECTION:** 220V rms AC for 200mV range and 1000V DC or 750V rms for all ranges.

## AC VOLTAGE

| RANGE | RESOLUTION | ACCURACY                          |
|-------|------------|-----------------------------------|
| 200V  | 100mV      | $\pm(1.2\% \text{ of rdg} + 10D)$ |
| 750V  | 1V         |                                   |

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

**FREQUENCY RANGE:** 45Hz ~ 450Hz

**OVERLOAD PROTECTION:** 1000V DC or 750V rms for all ranges.

## AUDIBLE CONTINUITY

| RANGE                                                                               | DESCRIPTION                                                         |
|-------------------------------------------------------------------------------------|---------------------------------------------------------------------|
|  | Built-in buzzer sounds if resistance is less than $30 \pm 20\Omega$ |

**OVERLOAD PROTECTION:** 15 second maximum 220 V rms.

## DC CURRENT

| RANGE  | RESOLUTION | ACCURACY                          |
|--------|------------|-----------------------------------|
| 200uA  | 100nA      | $\pm(1.8\% \text{ of rdg} + 2D)$  |
| 2000uA | 1uA        |                                   |
| 20mA   | 10uA       |                                   |
| 200mA  | 100uA      | $\pm(2.0\% \text{ of rdg} + 2D)$  |
| 10A    | 10mA       | $\pm(2.0\% \text{ of rdg} + 10D)$ |



**OVERLOAD PROTECTION:** 500mA 250V fuse (10A range unfused).

**MEASURING VOLTAGE DROP:** 200mV

## RESISTANCE

| RANGE  | RESOLUTION | ACCURACY             |
|--------|------------|----------------------|
| 200Ω   | 0,1Ω       | ± (1,0% of rdg +10D) |
| 2000Ω  | 1Ω         | ± (1,0% of rdg +4D)  |
| 20KΩ   | 10Ω        |                      |
| 200KΩ  | 100Ω       |                      |
| 2000KΩ | 1KΩ        |                      |

## MAXIMUM OPEN CIRCUIT VOLTAGE:

3.2V. OVERLOAD PROTECTION: 15 seconds maximum 220Vrms.

## TEMPERATURE (K TYPE PROBE)

| RANGE             | RESOLUTION | ACCURACY                    |
|-------------------|------------|-----------------------------|
| -20 °C to<br>1370 | 1 °C       | ± (1.0% + 4) (up to 150 °C) |
|                   |            | ± (1.5% + 15) (over 150 °C) |

## 3. OPERATING INSTRUCTIONS

### DC & AC VOLTAGE MEASUREMENT

1. Connect red test lead to "VΩmA" jack, Black lead to "COM" jack.
2. Set RANGE switch to desired VOLTAGE position, if the voltage to be measured is not known beforehand, set switch to the highest range and reduce it until satisfactory reading is obtained.
3. Connect test leads to device or circuit being measured.
4. Turn on power of the device or circuit being measured voltage value will appear on Digital Display along with the voltage polarity.

### DC CURRENT MEASUREMENT

1. Red lead to "VΩmA". Black lead to "COM" (for measurements between 200mA and 10A connect red lead to "10A" jack with fully depressed.)
2. RANGE switch to desired DCA position.
3. Open the circuit to be measured, and connect test leads IN SERIES with the load in with current is to measure.
4. Read current value on Digital Display.
5. Additionally, "10A" function is designed for intermittent use only. Maximum contact time of the test leads with the circuit is 15 seconds, with a minimum intermission time of seconds between tests.



## RESISTANCE MEASUREMENT

1. Red lead to "V $\Omega$ mA". Black lead to "COM".
2. RANGE switch to desired OHM position.
3. If the resistance being measured is connected to a circuit, turn off power and discharge all capacitors before measurement.
4. Connect test leads to circuit being measured.
5. Read resistance value on Digital Display

## DIODE MEASUREMENT

1. Red lead to "V $\Omega$ mA", Black lead to "COM".
2. RANGE switch to " position.
3. Connect the red test lead to the anode of the diode to be measured and black test lead to cathode.
4. The forward voltage drop in mV will be displayed. If

## TRANSISTOR hFE MEASUREMENT

1. RANGE switch to the hFE position.
2. Determine whether the transistor is PNP or NPN type and locate the Emitter, Base and Collector leads. Insert the leads into the proper holes of the hFE Socket on the front panel.
3. The meter will display the approximate hFE value at the

## TEMPERATURE MEASUREMENT

1. Connect the K type thermoelectric couple to GBI "V $\Omega$ mA" and "COM" jacks.
2. RANGE switch to TEMP position
3. The display shows the temperature value °C.

## AUDIBLE CONTINUITY TEST

1. Connect red test lead to "V $\Omega$ .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.

## TEST SIGNAL USE

1. Set the RANGE switch to „“.
2. A test signal (50 Hz) appears between the „V $\Omega$ mA“ and „COM“ sockets. The output voltage is approx. 5 V p-p with an impedance of 50 k $\Omega$ .



## 4. Safety and usage instructions

### 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.

Tools may in principle only be used for the purpose intended, under the conditions envisaged and within the limitations as to their use.

## 5. Maintenance

Incorrect or defective replacement parts can lead to damage.

## 6. Checks

All tools are to be checked for damage.

## 7. Disposal

The tool is to be disposed of or recycled in accordance with the legislation of the respective country.

## 8. Guarantee

The KS Tools Werkzeuge-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.

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.