

MULTI-FUNCTIONAL TESTER

Multi-functional measurement device



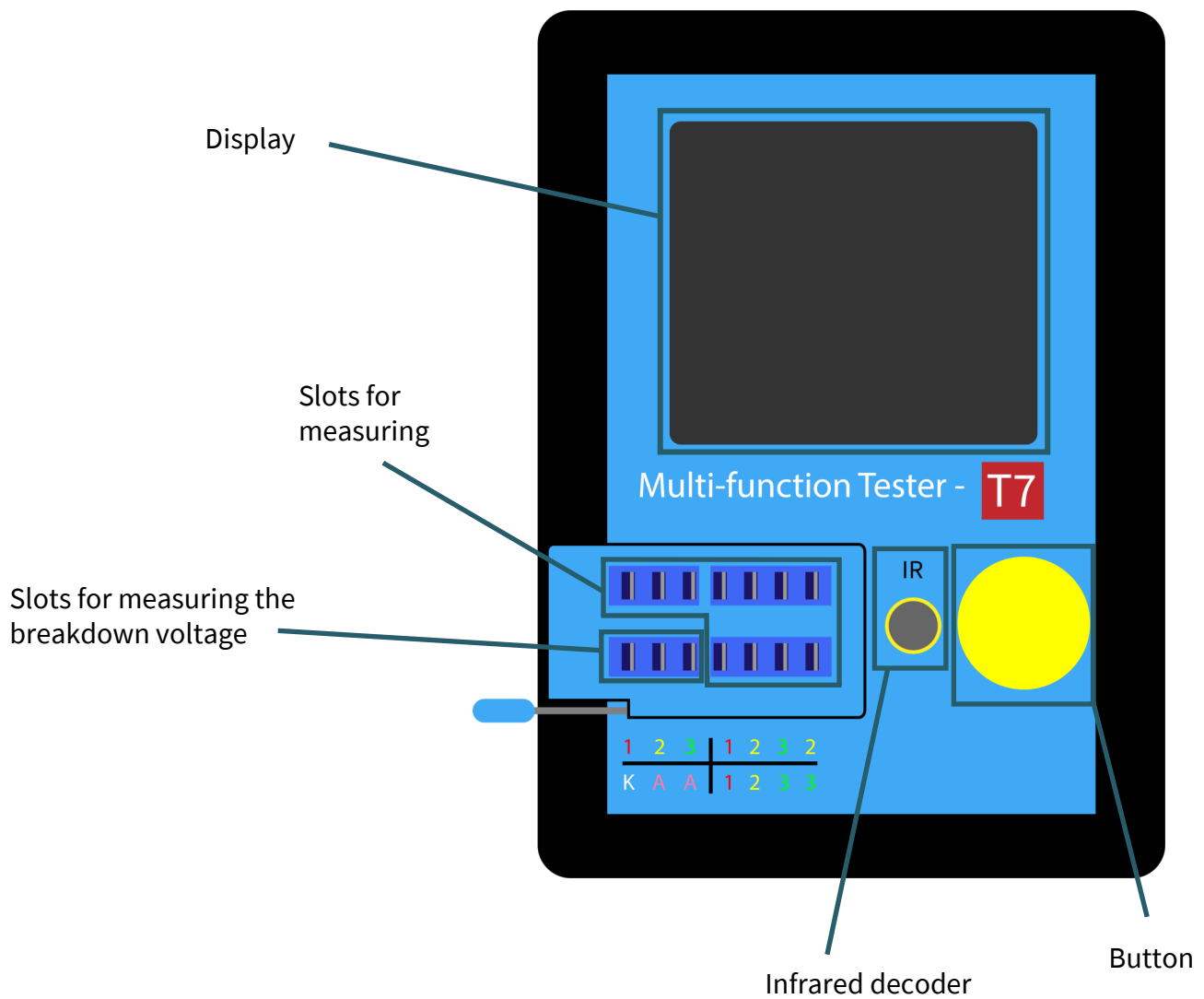
1. GENERAL INFORMATION

Dear customer,

thank you for choosing our product. In the following, we will show you how to use this device.

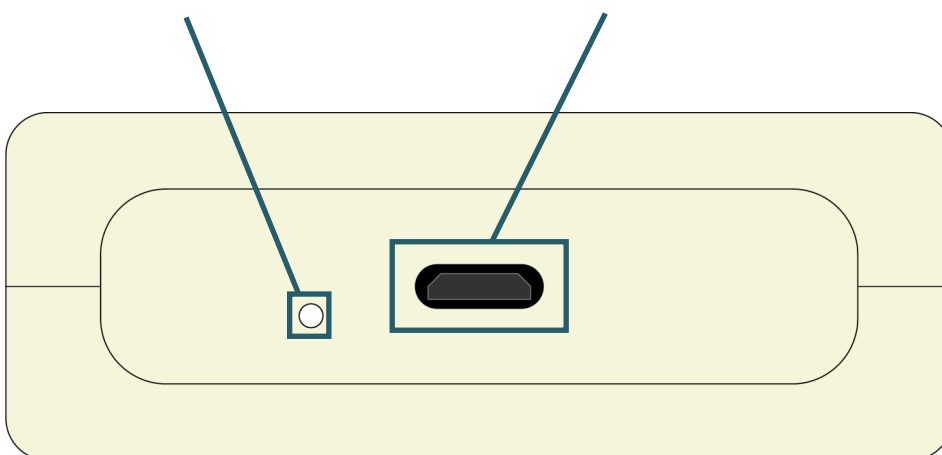
Should you encounter any unexpected problems during use, please do not hesitate to contact us.

2. STRUCTURE



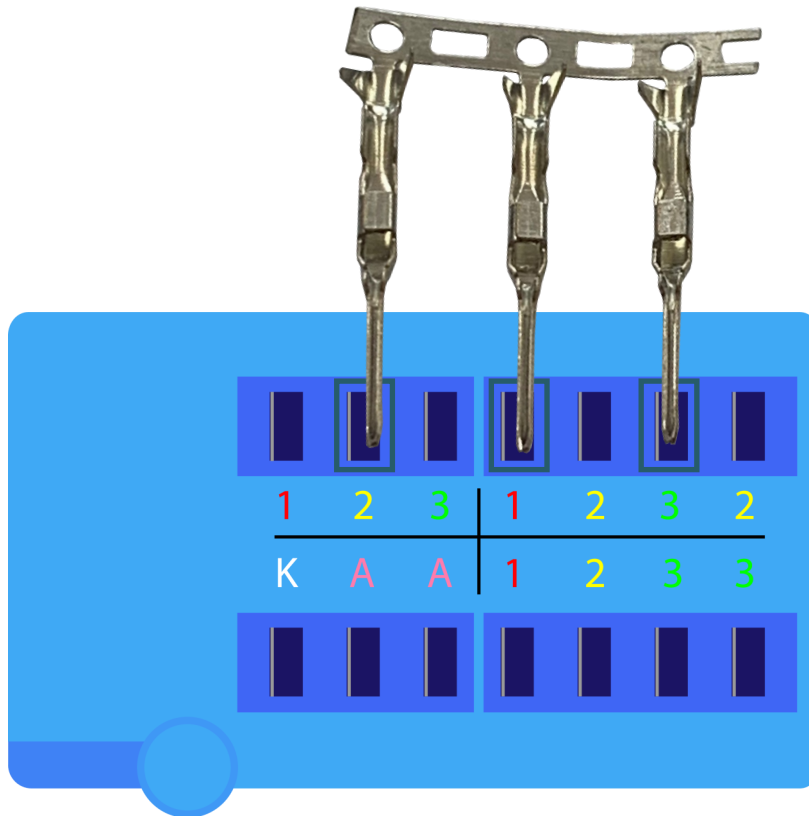
Charging status LED

microUSB port



3. INITIAL OPERATION

When you start the measuring device for the first time, you should first perform a self-test of the device. For this purpose, you must short-circuit the slots 1, 2 and 3. You do this as follows:



Now press **Start** to perform the self-test. You will be asked by the device at approx. 22% to remove the component to close the course so that the self-test can be completed successfully. Now you can start measuring your components. You start the measuring process with the Start button.

A 3.7 V battery with 350 mAh is built into the multifunction tester. You can charge it with microUSB and a 5 V power supply. The LED shows the status of the battery. That means it shines red when the battery is charging and green when the battery is fully charged.

The battery of this measuring device is also measured during each component measurement. Therefore, the residual voltage of the battery is also displayed during each measurement. This residual voltage is displayed with $V_{bat} = \dots V$.

The device will also tell you when the battery needs to be charged again.

This device switches off automatically after 20 seconds of inactivity. You can also turn it off manually by pressing and holding the Start button.

4. MEASURING COMPONENTS

This measuring instrument can detect and measure diodes, Z-diodes, double diodes, resistors, capacitors, inductors, thyristors, triacs, field effect transistors, bipolar transistors, and batteries. In the following, you will find information on how to measure a component and which values can be measured for the specific components.

To measure a component you can use slots 1-3. Just make sure that you do not connect two cables to the same channel, i.e. the same digit. So you have to select any slot at 1, 2, and 3 for three connections.

To measure the breakdown voltage, use channels K and A. Connect the positive pin to K and the negative pin to A. You will find further information under Z-Diode.

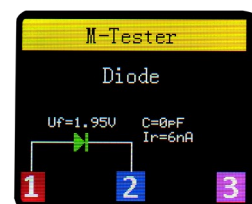
You can always start the measurement with the start button. If nothing, a defective part, or wrongly connected, this will be indicated on the screen.

Diode

U_f - forward voltage

C - capacity

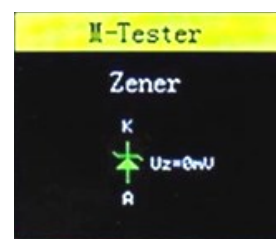
I_r - leakage current



Z-Diode

U_z - breakdown voltage / Z-voltage

Here the breakdown voltage of a component is measured, so here the positive line must be connected to K and the negative line to A. Up to 30 V can be measured in the reverse voltage.

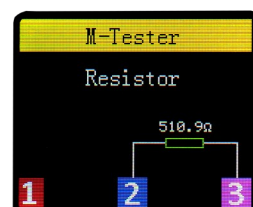


Double diode

U_f - forward voltage

Resistor

Here the resistance in Ω is displayed.



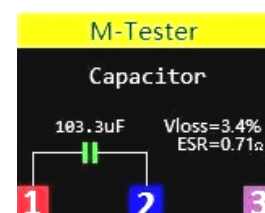
Capacitor

The capacity is displayed here.

V_{loss} - Loss factor

ESR - equivalent series resistance

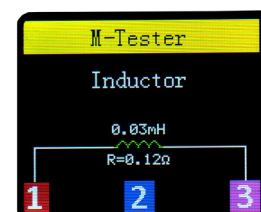
Attention! The capacitors must always be discharged before you can test them, otherwise the multifunction tester may be damaged!



Inductor

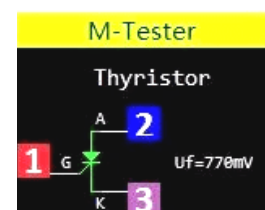
The inductance is displayed here.

R - resistance



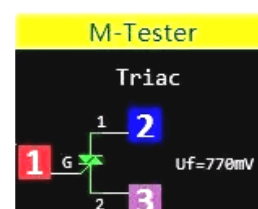
Thyristor

U_f - forward voltage



Triac

U_f - forward voltage



Field effect transistor

V_t - breakdown voltage

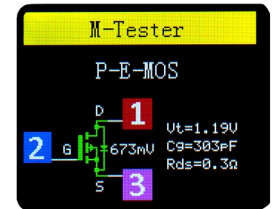
C_g - gate capacity

R_{ds} - drain source resistance

U_f - forward voltage

@V_g - gate voltage

Here the multifunction tester can distinguish between N-E-MOS, P-E-MOS, N-MOS, P-MOS, N-JFET, P-JFET, N-IGBT and P-IGBT.



Bipolar transistor

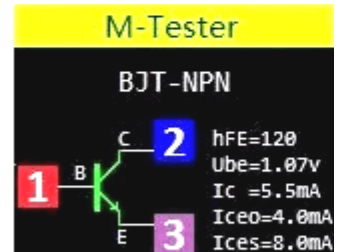
h_{FE} - current amplification factor

U_{be} - base voltage

I_c - collector current

U_f - forward voltage

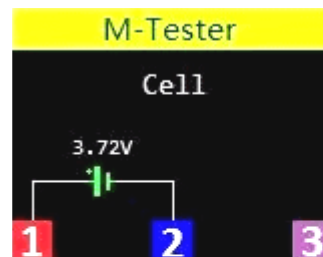
Here the multifunction tester can distinguish between BJT-NPN, BJT-NPN with diode, BJT-PNP and BJT-PNP with diode.



Batteries

The battery voltage is displayed here.

Attention! The battery must have less than 4.5 V, otherwise the multifunction tester may be damaged!



Infrared-Decoder

The infrared decoder is located next to the start button and does not need to be activated separately. You can simply e.g. activate your infrared remote control in front of the device, which decodes it immediately. You can then see the UserCode and the DataCode on the screen. The UserCode is the specific code of the remote control you are using and the DataCode is the code of the button you pressed.

IR

