



DIGITAL MULTIMETER

>>> 81780

PROPERTIES OF THE DEVICE

The all-purpose meter is a digital measurement device designed to measure various electrical quantities. The meter has been designed for amateur, non-professional purposes and must not be used for paid jobs or craft.

Before using the meter, read the whole manual and keep it.

The meter has a plastic housing, a liquid crystal display and a measurement range selector. The housing is equipped with three measurement sockets and a transistor test socket.

The meter is equipped with measurement cables with plugs.

The meter is sold without a battery.

ATTENTION! The meter is not a measurement device as it is construed within the „Measurement Law“

MEASUREMENT RANGES

ATTENTION! It is prohibited to measure electrical quantities exceeding the maximum measurement range of the meter.

Direct voltage			Direct current			Resistance		
Range	Grain	Precision	Range	Grain	Precision	Range	Grain	Precision
200 mV	0,1 mV	±0,5%	200 µA	0,1 µA	±1%	200 Ω	0,1 Ω	±1%
2000 mV	1 mV	±0,5%	2000 µA	1 µA	±1%	2000 Ω	1 Ω	
20 V	10 mV	±0,5%	20 mA	10 µA	±1%	20 k Ω	10 Ω	
200 V	100 mV	±0,5%	200 mA	100 µA	±1,5%	200 k Ω	100 Ω	
1000 V	1 V	±0,8%	10 A	10 mA	±2%	2000 k Ω	1 k Ω	
Alternating voltage			Transistor test		Diode test			
Range	Grain	Precision	I _B	U _{CE}		Resolution		
200 V	100 mV	±1,2%	10 µA	2,8 V		1mV		
750 V	1 V	±1,2%						

OPERATION OF THE MULTIMETER

ATTENTION! In order to protect from electric shock before the housing of the device is opened, disconnect the measurement cables and turn the meter off.

Replacement of the battery

The multimeter is powered with a **9V 6F22 battery**. It is recommended to use alkaline batteries.

In order to install a battery, open the housing of the device removing the two screws at the bottom of the meter. Connect the battery in accordance with the marking of the terminals, close the housing and replace the screws.

Replacement of the fuse

The device is equipped with a 0,2A/250V quick-break equipment fuse. If the fuse is damaged, it must be replaced with a new one of the same electrical parameters.

To do so, open the housing of the meter and proceed as in the case of replacement of the battery, observing the safety principles, to replace the fuse.

MEASUREMENTS

Depending on the actual position of the range switch in the display three significant digits will be displayed and a HV symbol in case of measurements in the highest ranges of the direct and alternating voltage. If it is necessary to replace the battery the multimeter indicates this displaying the battery symbol. If before the measured value the "-" symbol is displayed then the measured value has an opposite polarization in relation to the connection of the meter.

ATTENTION! The measurement range of the meter must not be lower than the measured value. It might damage the meter and cause an electric shock.

The correct connection of the leads:

The red lead must be connected to the socket marked as „VΩmA" or „10ADC"

The black lead must be connected to the socket marked as „COM"

Measurements of voltage

Connect the measurement cables. Switch the range selector to the position of the measurement of the direct voltage (V-) or alternating voltage (V~). Select the maximum measurement range, connect the measurement cables in parallel to the electric circuit and read the result of the measurements of the voltage. In order to ensure more precise results of the measurement you may change the measurement range.

Measurement of intensity of the current

Depending on the expected value of the measured intensity of the current connect the measurement cables to the socket marked as „10ADC" and „COM" or „VΩmA" and „COM".

Maximum intensity of the current measured through the „10ADC" socket may amount to 10A and it is not protected with any fuse. The maximum power-carrying capacity of the „VΩmA" socket is 200mA. **The maximum current and voltage values of the sockets must not be exceeded.**

Connect the measurement cables in series to the tested electric circuit, select the range and kind of the current and read the result of the measurement. The first stage of the measurements is to select the maximum measurement

range. In order to ensure more precise results of the measurement you may change the measurement range.

Measurements of resistance

Connect the measurement cables to the „VΩmA” and „COM” sockets; switch the range selector in the position of the measurement of resistance.

Place the measurements leads at the terminals of the measured element and read the result. In order to ensure more precise results of the measurement the measurement range may be changed if required.

It is strictly prohibited to measure the resistance of live elements.

Diode test

Switch the range selector to the diode symbol.

The test leads are connected to the meter as in the case of resistance measurements. Place the measurement leads to the diode terminals in the conduction direction and the reverse direction.

If the diode is functioning correctly, then at the diode connected in the forward direction we will read the voltage drop for this diode expressed in mV. In case the diode is connected in the reverse direction the display will read „1”.

If the diode terminal is damaged the display will read „0” independently of the direction in which the diode is connected. Correctly functioning diodes show a low resistance in the forward direction and a high resistance in the reverse direction.

It is strictly prohibited to test live diodes.

Transistor test

Switch the measurement range selector to the position marked with the h_{FE} symbol (measurement of the gain coefficient of the transistor).

Depending on the type of transistor it must be connected to the socket of the base marked as PNP or NPN, making sure the terminals of the transistor are placed in accordance with the letter indications: E - emitter, B - base, C - collector.

If the transistor is functioning properly and the connection is correct, the result of the measurement of the gain coefficient is read in the display.

It is strictly prohibited to test live transistors.



ENVIRONMENTAL PROTECTION

Correct disposal of this product: This marking shown on the product and its literature indicates this kind of product mustn't be disposed with household wastes at the end of its working life in order to prevent possible harm to the environment or human health. Therefore the customers is invited to supply to the correct disposal, differentiating this product from other types of refusals and recycle it in responsible way, in order to re - use this components. The customer therefore is invited to contact the local supplier office for the relative information to the differentiated collection and the recycling of this type of product.

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DECLARATION OF CONFORMITY

0112/81780/EC/2012

We declare and guarantee with full responsibility that the following products:

Digital universal multimeter; item no. 81780

meet requirements of the following European Standards / Technical Specifications:

EN 61010-1:2001
EN 61010-031:2002
EN 61326-1:2006
EN 61326-2-2:2006

and fulfill requirements of the following European Directives:

2006/95/EC Low voltage equipment
2004/108/EC Electromagnetic compatibility (EMC) Directive

The last two digits of the year in which the CE marking was affixed: 06
Year of production: 2012

Wrocław, 2012.01.02
(Place and date of issue)


TOYA SPÓŁKA AKCYJNA
VICE PREZES Zarządu
DARIUSZ HAJEK
(Name and signature of authorized person)