

**EKF****EXPERT**






TECHNICAL AND OPERATION MANUAL

DIGITAL MULTIMETERS MY61, MY64 EKF EXPERT

SAFETY INFORMATION


Digital multimeters MY61, MY64 EKF series Expert comply with the requirements of GOST 12.2.091-2012 (IEC 61010-1:2001) in terms of device safety and GOST R 51522.2.1- 2011 (IEC 61326-2-1:2005), GOST R 51522.2.2-2011 (IEC 61326-2-2:2005) in terms of electrical compatibility. To ensure safe use of the device, follow the recommendations in the operation manual. The safety symbols are shown in Table 1.


Table 1

	Important safety information
	High voltage may be present
	Grounding
	Double insulation
	The fuse can be replaced with a similar one with the parameters given in the operation manual

SAFE OPERATION RULES:

- Use the sockets, functions and measuring ranges as described in the operation manual.
- Do not use the multimeter if it has a damaged housing. Pay particular attention to the connection sockets.
- Use the original probes from this model of multimeter. Do not use defective probes. Check the insulation of the probes at regular intervals. When measuring, keep your fingers behind the barrier edge of the probes.
- Do not use the multimeter if the back cover open or the housing is not fully closed.
- Never exceed the overload capacity value specified for each measuring range.
- Do not touch any unused sockets when the device is connected to the circuit to be measured.
- If the order of the measured value is not known beforehand, set the range switch to the maximum value.
- Before changing the range switch position, disconnect the probe from the circuit to be measured.
- When measuring in TV sets and static power supply unit, always remember that high voltage impulses may be present at the measured points, which can damage the device.










- Disconnect power and discharge high voltage capacitors when measuring electrical resistance, checking circuit continuity, diodes.
- Never measure resistances in the closed circuit.
- Do not use the product in an explosive atmosphere or in the rooms with high humidity.
- Replace the battery as soon as the symbol appears .
- Always be careful at work when voltage is over 60 V DC or 30 V AC.

 If the producer's operating rules are not followed, the protection applied to the device may be degraded.

If a fault or malfunction occurs, it is necessary to stop operating the multimeter immediately. The multimeter shall be only diagnosed and repaired in an authorized workshop. When maintaining the product, use a soft cloth for cleaning, do not use abrasives or solvents.

1 FUNCTION

Digital multimeters MY61, MY64 EKF series Expert are quality measuring devices with a wide range of functions for everyday use (table 2 has functions for each model):

- DC voltage measurement DCV ()
- AC voltage measurement ACV ()
- direct current measurement DCA ()
- alternating current measurement ACA ()
- electrical resistance measurement ()
- capacitance measurement ()
- frequency measurement ()
- temperature measurement °C (**Temp**)
- diode checking ()
- transistor testing (**hFE**)
- circuit continuity checking / audible checking ()
- data hold (**HOLD**)
- automatic power off Apo










 The multimeter goes into «sleep mode» and turns off the display if no action has been performed for more than 20 minutes. To deactivate this function, press and hold the button **«HOLD»**.

Table 2

Model						Hz	Temp				hFE	HOLD
MY61	+	+	+	+	+			+	+	+	+	+
MY64	+	+	+	+	+	+	+	+	+	+	+	+

2 FRONT PANEL ELEMENTS

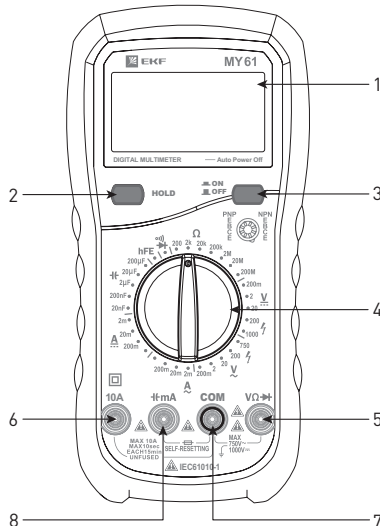


Fig. 1 - Front panel elements


1. 3 1/2 digit LCD display
2. Button «**HOLD**»
3. Button «**ON/OFF**»
4. Rotary switch
5. Connection «**VΩmA**» (MY61) / «**VΩHz**» (MY64) to connect the probe of the positive polarity probe (red probe)
6. Socket «**10A**» to connect the probe of positive polarity (red probe)
7. Socket «**COM**» to connect the probe of negative polarity (black probe)
8. Slot «**mA**» (MY61) / «**Temp**» (MY64) to connect the probe of positive polarity (red probe)

Table 3

Button	Function
ON/OFF	Power On/Off
HOLD	Current value hold (indicator « HOLD » appears) If you press the button again, the function of value hold is deactivated and the device returns to normal measurement mode

3 TECHNICAL DATA

Table 4

Parameter	Value
Maximum display value	1999
Measurement method	Double-integrated ADC
Measuring rate	3 measurements per second
Overload indicator	"1" on LCD display
Battery discharge indicator	symbol on LCD display 
Polarity indicator	symbol "-" - " for negative polarity
Safety category	600V CATIII
Housing insulation	double, class II
Fuses	250 mA/250 V
Protection class according to GOST 14254	IP20
Operating temperature	0 to 40 °C, at relative humidity of no more than 80%
Altitude above sea level, m	up to 2000
Supply voltage	9 V Battery type 6F22, 1604 , 006P
Dimensions, mm	93x188x50
Weight, g	380 (with battery)
Service life, years	10

DC VOLTAGE

Table 5

Range	Resolution	Accuracy
200 mV	0,1 mV	± 0,5% ± 2D
2 V	0,001 V	
20 V	0,01 V	
200 V	0,1 V	
1000 V	1 V	± 0,8% ± 2D

*D - least significant digit value Input resistance: 10 MΩms.

Maximum allowable input voltage: 1000 V DC or 750 V AC RMS (RMS),
250 V DC or AC (RMS) for 200 mV measuring range.

AC VOLTAGE

Table 6

Range	Resolution	Accuracy	Model
200 mV	0,1 mV	$\pm 1,2\% \pm 3D$	MY61
2 V	0,001 V	$\pm 0,8\% \pm 3D$	MY61/MY64
20 V	0,01 V		
200 V	0,1 V		
750 V	1 V	$\pm 1,2\% \pm 3D$	

Input resistance: 10 Mohms

Maximum allowable input voltage: 1000 V DC or 750 V AC (RMS), 250 V DC or AC (RMS) for 200 mV measuring range. Frequency: 40 Hz to 400 Hz (200 Hz for 750 V).

DIRECT CURRENT

Table 7

Range	Resolution	Accuracy
2 mA	0,001 mA	$\pm 0,8\% \pm 1D$
20 mA	0,01 mA	
200 mA	0,1 mA	$\pm 1,5\% \pm 1D$
10 A	0,01 A	$\pm 2,0\% \pm 5D$

10A range is not protected against overload.



WARNING! When the measured current is more than 5A, the continuous measurement time should not exceed 10 seconds. The interval between current measurements should be at least 15 minutes

RESISTANCE

Table 9

Range	Resolution	Accuracy
200 0M	0,1 0M	$\pm 0,8\% \pm 3D$
2 k0M	0,001 k0M	$\pm 0,8\% \pm 3D$
20 k0M	0,01 k0M	
200 k0M	0,1 k0M	
2 M0M	0,001 M0M	$\pm 1,0\% \pm 2D$
20 M0M	0,01 M0M	
200 M0M	0,1 M0M	

ALTERNATING CURRENT

Table 8

Range	Resolution	Accuracy
2 mA	0,001 mA	$\pm 1,0\% \pm 5D$
20 mA	0,01 mA	
200 mA	0,1 mA	$\pm 1,8\% \pm 5D$
10 A	0,01 A	$\pm 3,0\% \pm 7D$

* 2 mA range only for MY61. Overload protection: 250 mA/250 V fuse. 10A range is not protected against overload.



WARNING! When the measured current is more than 5A, the continuous measurement time should not exceed 10 seconds. The interval between current measurements should be at least 15 minutes.
Frequency: 40 Hz - 400 Hz.

FREQUENCY

Table 10

Range	Resolution	Accuracy
20 kHz	10 Hz	$\pm 2,0\% \pm 5D$

Overload protection: 250 mA/250 V fuse.

TEMPERATURE

Table 11

Range	Resolution	Accuracy
from -20 °C to 0 °C	1 °C	±5,0% ± 4D
from 1 °C to 400 °C		±2,0% ± 3D
from 401 °C to 1000 °C		±2,0% ± 5D

Overload protection: 250 mA/250 V fuse.

CAPACITY

Table 12

Range	Resolution	Accuracy
20 nF	0,01 nF	±4,0% ± 3D
200 nF	0,1 nF	
2 µF	0,001 µF	
20 µF	0,01 µF	
200 µF	0,1 µF	±6,0% ± 10D

Overload protection: 250 mA/250 V fuse.

4 MEASUREMENT PERFORMANCE



Never exceed the overload capacity value given for each measuring range.

PREPARATION FOR MEASUREMENT

Press the power button to turn on the device.

The device will turn off if the power button is pressed again after powering on.

DC/AC VOLTAGE MEASUREMENT (\overline{V} и \tilde{V})

1. Connect the red probe to the « $\overline{V\Omega}$ » (MY61) / « $\overline{V\Omega}$ » (MY64), and the black probe to the «**COM**» socket. The polarity of the red probe is considered positive.
2. Use the rotary switch to select the desired DCV or ACV voltage measurement range. If the voltage value is not known beforehand, set the range switch to the maximum voltage position and then switch to lower limits to achieve the required measurement accuracy.
3. Connect the probes to the circuit to be tested.
4. Read the value and polarity of the measured voltage on the display.
5. If the display shows only "1" in the left digit, it means that an overload has occurred and the range switch should be set to a higher value.
6. When the work is completed, set the rotary switch to the «**OFF**» position.




When the range switch is set to "1000 " or "750 V~", the display will show a «**HV**» sign to remind you of high voltage operation. Caution is required.

DIRECT AND ALTERNATING CURRENT MEASUREMENT **A** (and) **A**

1. If the current to be tested is less than 200 mA, connect the red probe to «**1 mA**» [MY61] / «**Temp 1 mA**» [MY64]. If the current to be tested is between 200 mA and 10 A, connect the red probe to '10 A'.
2. Use the rotary switch to select the desired DCA or ACA current measurement range.
- If the current value is not known beforehand, set the limit switch to "200 mA" and then set it to the lower limit to achieve the required accuracy.
3. Open the measured circuit and connect the probes of the device in series with the load where the current is measured.
4. Read the current value and polarity on the display.
5. If the display shows only "1" in the left digit, it means that an overload has occurred and the range switch should be set to a higher value.
6. When the work is completed, set the rotary switch to position «**OFF**».

RESISTANCE MEASUREMENT **Ω**

1. Connect the red probe to the «**VΩ**» [MY61] / «**VΩ**» [MY64] socket and the black probe to the «**COM**» socket. The polarity of the red probe is considered positive.
 2. Use the rotary switch to select the desired resistance measurement range **Ω**.
 3. Connect the probes to the resistance to be tested and read the values on the display.
 4. If the value of the measured resistance exceeds the maximum value of the selected measurement range, the display will show "1" in the left digit, this indicates that an overload has occurred and the range switch should be set to a higher value.
 5. When the work is completed, set the rotary switch to the «**OFF**» position.
-  If the resistance to be measured is set in the circuit, turn off the power and discharge all capacitances of the circuit before performing measurements.

CIRCUIT CONTINUITY CHECKING / AUDIO CONTINUITY CHECKING **••**

1. Connect the red probe to the «**VΩ**» [MY61] / «**VΩ**» [MY64] socket and the black probe to the «**COM**» socket.
2. Set the rotary switch to «**••**».
3. Connect the probes to the two points of the circuit to be tested. If there is an electrical contact between the points (resistance less than 50 ohms), an audio signal will issue.
4. When the work is completed, set the rotary switch to the «**OFF**» position.

DIODE CHECKING **▶**

1. Connect the red probe to the «**VΩ**» [MY61] / «**VΩ**» [MY64] socket and the black probe to the «**COM**» socket.
2. Set the rotary switch to the position «**▶**».
3. Connect the red probe to the anode and the black probe to the cathode of the tested diode. The display will show the approximate voltage drop in the diode when the direct current is flowing through it. When the probes are connected back to the diode, the display will show «1».
4. When the work is completed, press the button «**OFF**» to turn off the device.

TRANSISTOR TESTING **hFE**

1. Set the rotary switch to the position «**hFE**».
2. Determine the type of transistor NPN or PNP and identify the emitter, base, and collector contacts. Insert the transistor into the corresponding connector holes on the front panel: "E" - emitter, "B" - base, "C" - collector of the transistor.
3. Read the value **hFE** on the display at a base current of 10 μ A and a collector-emitter voltage V_{ce} of 2.8 V.
4. When the work is completed, press the button «**OFF**» to turn off the device.



Before testing the transistor, remove the probes from the sockets of the multimeter.

TEMPERATURE MEASUREMENT (**Temp**) FOR MODEL MY64

1. Set the range switch to the position «**Temp**». The display will show the ambient temperature.

2. Connect the thermocouple, type "K" to the corresponding sockets on the front panel and place the thermocouple against the object to be tested (red wire is connected to the socket «**COM**», black wire is connected to the socket «**COM**»).



3. Read the temperature on the display.



4. When the work is completed, press the button «**OFF**» to turn off the device.

To avoid electric shock, remove the thermocouple, type "K" from its sockets before carrying out other work.

Maximum operating temperature of the thermocouple, type "K" is 250 °C (300 °C for short-term operation).

FREQUENCY MEASUREMENT [**Hz**] for model MY64

1. Connect the red probe to the «**V Ω Hz**» socket and the black probe to the socket «**COM**».
2. Set the rotary switch to the position «**Hz**».
3. Connect the measuring probes to the measured circuit.
4. Read the frequency value on the display.

5. When the work is completed, press the button «**OFF**» to turn off the device.



To avoid electric shock or damage to the device, do not measure frequency signals with rms voltage more than 250 V.

CAPACITANCE MEASUREMENT **fC**


1. Connect the red probe to the «**fCmA**» [MY61] / «**Temp fCmA**» [MY64] socket and the black probe to the socket «**COM**».
2. Use the rotary switch to select the desired capacity measurement range «**fC**».
3. Measure the capacitance value of the tested circuit and read the measured value on the display.

4. When the work is completed, press the button «**OFF**» to turn off the device.



To avoid possible damage to the multimeter or the equipment under test, disconnect the current in the tested circuit and discharge all high voltage capacitors before capacitance measurement. To make sure that the capacitor is discharged, measure the capacitor voltage first.

REPLACEMENT OF BATTERY AND FUSE

If the symbol  is displayed, it indicates that the battery needs to be replaced. The fuse rarely needs to be replaced and almost always blows due to user's error. To

replace the battery and fuse (250 mA/250 V), unscrew the screws on the back cover of the device. Remove the old element and replace it with the new one. Observe the polarity of the battery. Close the housing, tighten the screws.



Before replacing the battery, make sure that the probes and thermocouple are disconnected from the devices under test and the device is turned off.

5 SCOPE OF DELIVERY

1. Multimeter – 1 pc.;
2. Set of measuring probes (red/black) – 1 pc.;
3. Battery 9 V – 1 pc.;
4. Thermocouple of type "K" – 1 pc (only for MY64 model);
5. Technical and operation manual – 1 pc.

6 TRANSPORTATION AND STORAGE

The device shall be transported in accordance with the transport regulations applicable to each mode of transport. During storage and transportation the device shall be protected from any mechanical damage. Conditions of transportation and storage of these products in terms of climatic factors of environment are according to group 1 of GOST 16962-71.

7 DISPOSAL



After the device has been decommissioned, it shall be packed for disposal in accordance with the procedures specified by the consumer, or in accordance with federal or regional law in Russia or the member states of the Customs Union.

8 PRODUCER'S WARRANTY

The producer guarantees that the product is in compliance with the requirements of the normative documentation, provided the user observes the conditions of use, transportation and storage.

Service life: 10 years.

Warranty period of storage starting from the production date: 10 years. Warranty period of operation, starting from the date of sale: 12 months.

9 CERTIFICATE OF ACCEPTANCE

The multimeter has been produced in accordance with current normative documentation and is recognized as suitable for use.

Stamp of technical supervision:

Production date _____

10 NOTE OF SALE

Date of sale _____

Seller's signature _____

Stamp of selling company:





EKF

EXPERT



Importer and EKF trademark service representative on the territory of the Russian Federation: OOO «Electroresheniya», Otradnaya st., 2b bld. 9, 5th floor, 127273, Moscow, Russia. Tel.: +7 (495) 788-88-15.

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