

**EKF****EXPERT**






TECHNICAL AND OPERATION MANUAL

DIGITAL CLAMP METER M266C EKF EXPERT

SAFETY INFORMATION

Digital clamp meter M266C series EKF Expert complies with the requirements of GOST 12.2.091-2012 (IEC 61010-1:2001) regarding safety of devices and GOST R 51522.2.1-2011 (IEC 61326-2-1:2005), GOST R 51522.2.2-2011 (IEC 61326-2-2:2005) regarding electromagnetic compatibility. To ensure safe operation 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 device if it has a damaged housing. Pay particular attention to the connection sockets.
- Use original probes from this model of device. Do not use defective probes. Check the insulation of the probes on the regular basis. When measuring, keep your fingers behind the barrier edge of the probes.
- Do not operate the device when the back cover is 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 measured circuit.
- If the order of the measured value is not known beforehand, set the range switch to the maximum value.
- Before changing the position of the range switch, 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.
- Do not put more than one conductor in the clamp meter.
- Replace the battery as soon as the symbol «**BAT**» appears.
- Always be careful at work when voltage is over 60V DC or 30V 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 using the device immediately. The device 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 clamp meter M266C series EKF Expert is a quality measuring instrument with a wide range of functions for everyday use:

- DC voltage measurement DCV ()
- AC voltage measurement ACV ()
- AC current measurement (no break in circuit) ACA ()
- electrical resistance measurement ()
- temperature measurement (°C / °F)
- circuit continuity checking / audible checking ()
- data hold (hold)

To hold the measurement result, press the button and the current values will be hold on the display. Press the button again to reset the recorded value.

- insulation resistance test (if an additional 500V insulation meter is connected) .

2 ELEMENTS OF FRONT PANEL

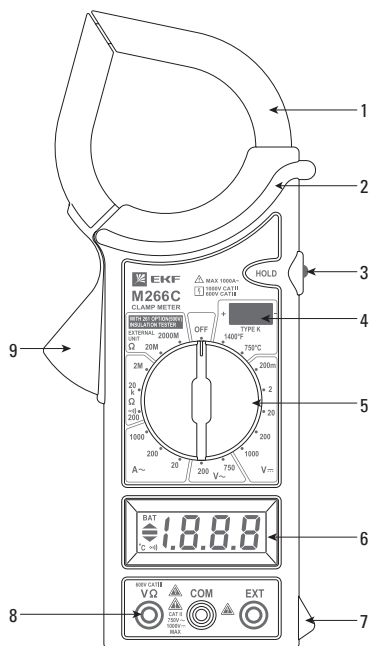


Fig. 1 - Front panel elements

1. Transformer clamp meter for non-contact measurement of alternating current that flows through a conductor;
 2. Finger safety barrier;
 3. Button «**HOLD**»;
 4. Socket for connection of thermocouple, type "K";
 5. Rotary switch to select the function and measuring range and to activate/deactivate («**OFF**») the device;

6. LCD display 3 1/2 digits;
 7. Strap fixation;
 8. Sockets:
 «**VΩ**» - to connect the probe of positive polarity (red probe);
 «**COM**» - to connect the probe of negative polarity (black probe);
 «**EXT**» - to connect 500V insulation meter;

9. Key to open the clamp meter.

3 TECHNICAL DATA

Table 2

Parameter	Value
Maximum display value	1999 with automatic polarity detection
Measurement method	Double-integrated ADC
Measuring rate	2 measurements per second
Overload indicator	"1" on LCD display
Battery discharge indicator	symbol on LCD display BAT
Polarity indicator	symbol " - " for negative polarity
Safety category	600V CATIII / 1000V CATII
Housing insulation	double, class II
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
Dimensions, mm	96x235x46
Weight, g	330 (with battery)
Service life, years	10

DC VOLTAGE

Table 3

Range	Resolution	Accuracy
200 mV	0,1 mV	$\pm 0,5\% \pm 1D$
2 V	0,001 V	$\pm 0,5\% \pm 3D$
20 V	0,01 V	
200 V	0,1 V	
1000 V	1 V	$\pm 0,8\% \pm 3D$

*D - least significant digit value
Input resistance: $\geq 9 M\Omega$
Overload protection: 250 V AC root-mean-square value for range 200 mV and 1000V DC or 750 V AC for other ranges.

AC VOLTAGE

Table 4

Range	Resolution	Accuracy
200 V	0,1 V	$\pm 1,0\% \pm 5D$
750 V	1 V	$\pm 1,2\% \pm 5D$

Input resistance: $\geq 9 M\Omega$
Overload protection: 1000 V DC or 750 V AC for all ranges
Frequency range:
50 Hz - 400 Hz $\leq 600 V$;
50 Hz - 200 Hz 750 V.

ALTERNATING CURRENT

Table 5

Range	Resolution	Accuracy
20 A	0,01 A	$\pm 4,0\% \pm 5D$
200 A	0,1 A	$\pm 2,5\% \pm 5D$
1000 A	1 A	$\pm 3,0\% \pm 10D$

Overload protection: 1200 A within 60 sec
Frequency range: 50 - 60 Hz
Width of digital clamp meter opening: 5 sm

RESISTANCE

Table 6

Range	Resolution	Accuracy
200 Ohm	0,1 Ohm	$\pm 0,8\% \pm 3D$
2 kOhm	0,001 kOhm	$\pm 1,0\% \pm 8D$
20 kOhm	0,01 kOhm	
200 kOhm	0,1 kOhm	
2 MOhm	0,001 MOhm	

Overload protection: 250 V DC or 250 V AC (RMS) for all ranges
Maximum voltage of open circuit: 750 mV

TEMPERATURE

Table 7

Range	Resolution	Accuracy	
		from 0 to 400°C (from 32 to 752°F)	from 401 to 750°C (from 754 to 1382°F)
from 0 to 750°C	1°C	$\pm 1,0\% \pm 3D$	$\pm 2,0\% \pm 3D$
from 32 to 1382°F	1°F		

Insulation resistance (when connecting a 500 volt insulation meter)

Table 8

Range	Resolution	Accuracy
20 MOhm	0,01 MOhm	$\pm 2,0\% \pm 2D$
2000 MOhm	1 MOhm	$\pm 4,0\% \pm 2D$ up to 500 MOhm
		$\pm 5,0\% \pm 2D$ more than 500 MOhm

4 MEASUREMENT PERFORMANCE



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

DC VOLTAGE AND AC VOLTAGE MEASUREMENT (V_{DC} and V_{AC})

1. Connect the red probe to the "**V Ω** " 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 DC Voltage (V_{DC}) or AC Voltage (V_{AC}) measurement range.

If the voltage is not known beforehand, set the range switch to maximum voltage, 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 tested 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, disconnect the measuring probes from the tested circuits and put the rotary switch to the "**OFF**" position.

ALTERNATING CURRENT MEASUREMENT (I_{AC})

1. Make sure that the "**HOLD**" button is not pressed.

2. Use the rotary switch to select the desired alternating current measurement range (I_{AC}).

3. Open the clamp meter and put the wire into the clamp meter.

4. Read the current value 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, put the rotary switch to the "**OFF**" position.

RESISTANCE MEASUREMENT (R)

Connect the red probe to the "**V Ω** " socket and the black probe to the "**COM**" socket. The polarity of the red probe is considered positive.

1. Use the rotary switch to select the desired resistance measurement range (R).

2. Connect the probes to the tested resistance and read the values on the display.

3. 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.

4. When the work is completed, disconnect the probes from the tested circuits and put the rotary switch to the "**OFF**" position.



If the resistance to be measured is set in the circuit, switch off the power supply and discharge all capacitances in the circuit before carrying out the measurements.

TEMPERATURE MEASUREMENT ($^{\circ}C$ / $^{\circ}F$)

1. Put the rotary switch to the position ($^{\circ}C$ / $^{\circ}F$), the display will show the current ambient temperature.

2. Put the thermocouple of «K» type into the temperature socket on the front side of the clamp meter and touch the working end of the thermocouple to the surface of the object to be tested.

3. Read the measured temperature value on the display.

4. When the work is completed, remove the thermocouple of «K» type from its

sockets and put the rotary switch to the position «**OFF**».



To avoid electric shock, make sure that the thermocouple is disconnected from the device before switching to another measuring function.

CIRCUIT CONTINUITY CHECKING / AUDIO CHECKING (•|||)

Connect the red probe to the socket «**VΩ**» and the black probe to the socket «**COM**».

1. Put the rotary switch to position (•|||)
2. Connect the probes to two points of the circuit to be tested. If there is an electrical contact between the points (resistance less than 100 ohms), an audio signal will issue.
3. When the work is completed, disconnect the measuring probes from the tested circuits and put the rotary switch to the position «**OFF**».

INSULATION RESISTANCE MEASUREMENT

If an additional insulation meter 500 V is connected (NOT included in the scope of delivery),

1. Connect the insulation tester through tee fork, «**VΩ**», «**COM**», «**EXT**» on the meter to the sockets «**VΩ**», «**COM**», «**EXT**» on the clamp meter.
 2. Set the range switch on the device to the position 2000 MΩ.
 3. Set the range switch on the insulation tester to the position 2000 MΩ.
 4. Connect the probes of the device to the sockets "L" and "E" of the insulation tester and connect them to the tested insulation. (The insulation tester should be disconnected from power supply).
 5. Apply the power to the insulation tester.
 6. Press the button «**PUSH 500V**», and the red LED 500V will flash up. The value of measured insulation resistance will appear on the display.
- If this value is less than 19 MΩ, change the range switch on the device and the insulation tester to 20 MΩ, this will increase the accuracy of the reading.
7. When the insulation tester is not in operation, put its power switch to the «**OFF**» position and remove the probes from the "L" and "E" sockets. This will extend the life of the batteries and prevent electrical shock.

REPLACEMENT OF BATTERY

If the symbol «**BAT**» is displayed, it indicates that the battery needs to be replaced. To replace the battery, unscrew the screws on the rear cover of the device. Remove the old battery and replace with a new one. Observe the polarity of the battery. Close the housing and tighten the screws.



Before replacing the battery, ensure that the probes and attachment are switched off and the rotary switch is in the «**OFF**» position.

5. SCOPE OF DELIVERY

1. Clamp meter – 1 pc;
2. Set of measuring probes (red/black) – 1 pc.;
3. Thermocouple of "K" type – 1 pc;
4. Battery 9V – 1pc;
5. Transportation bag – 1pc;
6. 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:
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