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Comfort and economy
in your home

You bought an electric water heating boiler TM TENKO (then the product)



WARNING! Read these "operating instructions" carefully before installing and operating the product (then the instruction) as proper installation, adjustment and maintenance of the device will ensure its long-term and safe operation.

Due to the ongoing work to improve the product, the design can be made changes that are not reflected in these instructions, without reducing the consumer properties of the product.

1. PURPOSE OF THE PRODUCT

1.1 The product is intended for heat supply in rooms with forced circulation of the heat carrier in the closed system of heating and automatic maintenance of a temperature mode. The product can be used autonomously or together with devices running on other fuels (gas, wood, coal).

1.2 During operation, it is necessary to regularly monitor the operation of this product.

1.3 The product is not intended for indoor use: humid, explosive, with an aggressive environment. The premises must have the following climatic parameters: temperature from 5 to 40 C, relative humidity not more than 80% at 25 C, atmospheric pressure from 84 to 107 kPa.

2. CHARACTERISTICS

Characteristics of electric boilers TM Tenko series KEM, KE, SKE, SPKE

	KEM (Mini)	KE(Econom)	KE(Econom) 18-30 kW	SKE (Standart)	SPKE (Standart plus)
Mains supply voltage, U	230	230/400	230/400	230/400	230/400
Rated power consumption, kW	3; 4,5	3;4,5;6;7,5;9; 10,5;12;15	18;21;24;30	3;4,5;6;7,5;9; 10,5;12;15	3;4,5;6;7,5;9; 10,5;12;15;18; 21;24;30;36
Current frequency, Hz	50				
Class of protection against electric shock	II				
The degree of protection provided by the shell	IP 20				
Overall dimensions (height * width * length), mm	490*165*106	629*193*112	640*262*186	640*262*186	680*383*240
Net weight, not more, kg	5	9	20	18	40
Gross weight, not more, kg	6	11	23	21	45
Connecting pipes, inch	3/4	3/4	1	3/4	3/4
Heater type.	Tubular electric heater				
Number of heating elements, pcs	3	3	6	3	3 or 6 depending on power
Heating circuit adjustment, °C	0-90				
Maximum pressure in the heating system, bar	3				
Work in an open heating system	yes	yes	yes	no	no

Tables 1

Characteristics of electric boilers TM Tenko series DKEM, DKE, SDKE, SDKE+

	DKEM (Mini Digital)	DKE (Digital)	SDKE (Standart Digital)	SDKE+ (Standart Digital Plus)
Mains supply voltage, U	230	230/400	230/400	230/400
Rated power consumption, kW	3;4,5	3;4,5;6;7,5; 9;10,5;12;15	3;4,5;6;7,5; 9;10,5;12;15	3;4,5;6;7,5; 9;10,5;12;15; 18;21;24;30;36
Current frequency, Hz	50			
Class of protection against electric shock	II			
The degree of protection provided by the shell	IP 20			
Overall dimensions (height * width * length), mm	490*165*106	629*193*112	640*262*186	680*383*240
Net weight, not more, kg	5	9	18	40
Gross weight, not more, kg	6	11	21	45
Connecting pipes, inch	3/4	3/4	3/4	3/4
Heater type.	Tubular electric heater			
Number of heating elements, pcs	3	6	3	3 or 6 depending on power
Heating circuit adjustment, °C	0-80	20-75	0-80	0-80
Indoor air regulation, °C	no	1-40	10-40	10-40
Maximum pressure in the heating system, bar		3		
Work in an open heating system	yes	yes	no	no

Tables 2

Characteristics of electric boilers TM Tenko series PKE and PPKE

	PKE (Premium)	PPKE(Premium plus)
Mains supply voltage, U	230/400	230/400
Rated power consumption, kW	3;4,5;6;7,5;9;10,5;12;15	3;4,5;6;7,5;9;10,5;12;15;18;21;24;30;36
Current frequency, Hz	50	
Class of protection against electric shock	II	
The degree of protection provided by the shell	IP20	
Overall dimensions (height*width*length), mm	650*260*190	672*383*235
Net weight, not more, kg	17	40
Gross weight, not more, kg	20	43
Connecting pipes, inch	3/4	3/4
Heater type.	Tubular electric heater	
Number of heating elements, pcs	3	3 or 6 depending on power
Heating circuit adjustment, °C	10-75	10-75
Indoor air regulation, °C	17-40	17-40
Maximum pressure in the heating system, bar	3	
Work in an open heating system	no	no

Tables 3

Characteristics of electric boilers TM Tenko series Smart

Mains supply voltage, U	230	400	230	400	400	400	400	400	400	400	400
Rated power consumption, kW	6000	6000	9000	9000	12000	15000	18000	21000	24000	30000	36000
Rated current consumption of one phase, A	27	9	40	14	18	22	26	31	35	33	52
Current frequency, Hz	50										
Class of protection against electric shock	II										
The degree of protection provided by the shell	IP 20										
Overall dimensions (height * width * length), mm	740x410x256,5										
Net weight, not more, kg	32		32		32	32	34	34	34	34	34
Gross weight, not more, kg	33		33		33	33	35	35	35	35	35
Connecting pipes, inch	3/4"										
Heater type.	Tubular electric heater										
Number of heating elements, pcs	6										
Heating circuit adjustment, °C	10-75 (delta 1-9 step 0.1)										
Indoor air regulation, °C	7-40 (delta 0,1-1 step 0.1)										
Maximum pressure in the heating system, bar	3										
Work in an open heating system	no										

Tables 4

3. APPEARANCE AND DEVICE OF PRODUCTION

3.1 You can see the appearance of the device on our official website tenko.ua. During production, some elements may be changed to similar ones, which will not affect the operation of the product.

4. SAFETY REQUIREMENTS

- 4.1 Install and connect the product to the mains according to the technical conditions issued by the owner of the power grid. In the technical conditions, instructions for safety measures must be provided, given in this section.
- 4.2 Installation, connection to the power supply network, and maintenance must be performed by specialist which has not less than III qualification group of the admission on electrical safety for electric installations with voltage up to 1000 V.
- 4.3 Responsibility for the safe operation of the product and its maintenance is in good condition Consumer.
- 4.4 The device must be connected to the mains via an automatic safety switch and residual current device - out device (if not provided by your device), only the wires of the appropriate cross section, as shown in Table 5 in paragraph 7.5.
- 4.5 The housing of the device must be grounded by a special (separate) PE conductor, cross-section not less than power wires.
- 4.6 The grounding condition is subject to mandatory periodic monitoring at least once every 6 months.
- 4.7 The work must be performed by persons familiar with this instruction and equipment, Rules of safe operation of electrical installations of consumers and Rules of technical operation of electrical installations of consumers.
- 4.8 All inspection, maintenance, and repair work should only be carried out after disconnection of power supply circuits.
- 4.9 After connecting the device to the heating system and the mains must be carried out adjusting and launching works by an organization certified for such works, which provide for:
- check the correct connection of the device to the heating system;
 - check the correct connection of the device to the power supply;
 - start the device and adjust its operation;
 - instructing the Consumer on safety rules and device settings;
 - mandatory entry in the passport on the device for commissioning, confirmed by the seal of the organization.

5. FORBIDDEN

- 5.1 It is forbidden to switch on the device with a faulty grounded and removed housing cover.
- 5.2 It is forbidden to connect the device to the mains independently, without a representative authorized repair and installation service and if the coupon is not issued in the appropriate manner about carrying out commissioning works.
- 5.3 It is forbidden to switch on the appliance when the heating system is not filled or if it is not completely filled.
- 5.4 It is forbidden to close the taps that stop the circulation of the coolant through the heat exchanger of the device.
- 5.5 It is forbidden to allow persons unfamiliar with the manual to work with the device exploitation, minors, as well as persons with mental disabilities.
- 5.6 It is forbidden to switch on the appliance when the coolant freezes in the heating system.
- 5.7 It is forbidden to leave the device unattended during its operation.
- 5.8 It is forbidden to install and operate the device in rooms with aggressive environment (explosive premises, with a lot of dust, steam, with high humidity, at facilities where construction or repair work is carried out).
- 5.9 It is forbidden to operate the device with defective elements of hydraulic group or control systems.



ATTENTION: It is strictly forbidden to use for grounding of the electric boiler of metal structures of water, heating and gas networks!



ATTENTION: In case of violation of these rules of operation of the device warranty obligations are terminated.

6. STRUCTURE AND PRINCIPLE OF WORK

6.1 The device is a steel tank with nozzles for supply and discharge of coolant (further the heat exchanger). Blocks of tubular electric heater are screwed in the heat exchanger on a carving. The heat exchanger is placed in a metal housing, which also has a built-in control system.

6.2 The principle of operation of the product is to heat with a heating element, which is located in heat exchanger, coolant. The coolant is heated and exits the heat exchanger into the system heating circulating in a closed system, passing each time through a heat exchanger with a unit tubular electric heater.

6.3 Using the control panel located on the front panel of the boiler, set the required Consumer parameters (indoor air temperature, coolant temperature, operating mode, daily and weekly timer), as well as information on the technical condition of the boiler.

6.4 The appliance is equipped with a temperature limiter which switches off the heating in the event of an emergency, if the temperature of the heat carrier will reach 85 C or 95 C depending on a series and a complete set.

6.5 Most series have a safety valve that will release excess pressure above 3 bar as well air vent, circulation pump, and expansion tank. In the series KEM, DKEM, KE, DKE hydraulic safety group and circulating pump are absent, but their presence in the heating system required

6.6 Description of the control system and adjustment methods can be found on the website tenko.ua in the section "TechSupport", or on our channel "Tenko" on YouTube



Electrical
circuits



Boiler
settings



Channel
TM Tenko

7. INSTALLATION AND PREPARATION FOR WORK



WARNING. Please read this section carefully. Avoid unqualified actions on your own - it's dangerous! Remember that without the commissioning mark at the same time "Management" of the installation organization you lose the right free warranty repair!

7.1 Unpack the product (in sub-zero temperatures outside, installation should be carried out not earlier than after 6 hours, after entering the room). Requirements for the premises in which the boiler is installed see in p.1.3.

7.2 Loosen the screws securing the boiler front cover and remove it. Attach the boiler to the wall anchors through special openings in the case (dimensions see in item 3.2), providing the necessary maintenance of the distance to the side walls (not less than 350 mm from the side of the boiler) and the distance to floors (not less than 950 mm from the bottom of the boiler). The boiler must be installed as follows so that it can be set up and serviced without additional devices (ladder, chair, etc.)

7.3 Connect the appliance to the heating system (installation on the inlet and outlet is permitted branch pipes of ball valves with a through section not less than 3/4 ")

7.4 Connect the device to the earth circuit.

7.5 Connect the boiler to the mains. It must be installed in front of the boiler circuit breaker and safety cut - out device (if the device does not equip). It is very important to follow the phasing according to the mains connection marking of power supply terminals. Check all wire clamps, be sure to have them if tightened.

Rated power, kW	Rated voltage, U	Calculated current of one phase, A	KEM, DKEM, KE, DKE, SKE, SDKE, PKE	SPKE, SDKE+, PPKE, SMART
			Cross section of copper wire, mm ²	
3	230	14	2*1,5	2*1,5
3	400	5	2*1	2*1
4.5	230	20	2*2,5	2*2,5
4.5	400	7	2*1,5	2*1,5
6	230	26	2*4	2*4
6	400	9	2*4	2*4
7.5	230	33	2*6	2*6
7.5	400	11	2*6	2*6
9	230	40	2*6	2*6
9	400	13	4*4	4*4
10.5	400	16	4*4	4*4
12	400	18	4*4	4*10
15	400	22	4*6	4*10
18	400	26	4*6	4*10
21	400	31	4*10	4*10
24	400	35	4*10	4*10
30	400	44	4*16	4*16
36	400	52	4*16	4*16

Table 5. Rated current and wire size

7.6 Fill the heating system with a pump or water supply pressure coolant. The pressure in the heating system must be not less than 0.8 bar and not more than 2.4 bar (recommended pressure in the heating system 1,2-i, 8 bar). We recommend as the heat carrier use distilled water. Water quality requirements see table 6.

The total stiffness is not more than mkg-eq/kg	20
Density at 20°C, g/cm ³	1,0-1,015
The content of mechanical impurities	unacceptable
The content of suspended particles	unacceptable
Corrosion effect on metals, g/m ² per day	not more than 0.1
Foaming, foam stability, sec.	not more than 3
Acidity index, pH	7.5-1 1.0
Alkalinity, cm ³	not less than 10

Table 6. Water quality requirements

7.7 When the system is full, it is important to ensure that the device is not working properly in air traffic jams. The control system will not be able to protect the device from failure during the passage of the air plug through the heat exchanger. We recommend additionally installing an automatic air vent at the top of the heating system, be sure to drain the air from the glass of the circulation pump.

7.8 Make sure that all connections of the device are tight. If there are leaks, be to sure remove them (by tightening the nuts). If it is impossible to eliminate the leak, contact the Service center of the company. It is forbidden to switch on and operate a boiler with leaks coolant.

7.9 Close the lid of the device turn on the boiler. Make the necessary system settings control, make sure that all components of the device work properly. Then the boiler works in automatic mode according to the parameters entered by the User.

8. MAINTENANCE

8.1 Monitoring and maintenance of the device are entrusted to the Consumer, who must keep it clean and in good condition, not to allow on the body of the device and units of automation of accumulation of dust and dirt.

8.2 Self-repair and replacement of device parts is not permitted performed by specialists of authorized Service Centers

8.3 Maintenance of the device is carried out only after switching off of power supply.

8.4 During operation of the device it is necessary to check reliability not less than once a season fastening of wires, tightness of hydraulic connections. If necessary it is necessary to tighten electrical connections. When detecting leaks during the operation of the device, it is the necessary to turn off the power, eliminate leaks by tightening the threaded connections or replacement of sealing gaskets.

8.5 All questions concerning maintenance, adjustment, or repair of the device you can solve in the company's main service center, or authorized service centers in your area.

9. STORAGE AND TRANSPORTATION RULES

9.1 The device must be stored in the factory packaging indoors. The temperature in the room should be from 5°C to 40°C and the relative humidity is not more than 80% at 25°C. The presence of acid and other vapors is allowed. Do not store the device indoors in an aggressive environment.

9.2 The device must be transported by closed vehicles in the factory packaging. It is forbidden to throw and tilt the device.

10. WARRANTY OBLIGATIONS

10.1 Warranty service of the device is carried out only if provided correctly a completed warranty card, with the specified date of sale, and a settlement document, which is provided by the legislation of Ukraine, with the specified trade organization, the name of the product, and the date of sale. The decision on a guarantee or paid form of execution repair work during the warranty period is accepted by the employee of the commissioner service only after diagnosing the device.

10.2 Warranty service is not provided in case of absence or incorrect completed warranty card (no model name, date of sale, trade stamp organization, the seller's signature), or the coupon has signs of dubious origin.

10.3 In case of loss by the Consumer of the guarantee coupon or the settlement document restoration is carried out in the order established by the legislation of Ukraine.

10.4 Warranty service is not performed if there is no mark of performance commissioning works: name of the organization, date of carrying out, address of installation of the device, seal of the commissioning organization, the signature of the contractor, and signature Device owner. It is recommended to perform commissioning work with the help of authorized service centers of the manufacturer.

10.5 Warranty service is not provided in case of the absence of original packaging on the device

10.6 Warranty service of the device is carried out in Service centers, the delivery device in the Service Centers will be carried out by the Owner of the device at his expense

10.7 Manufacturer's warranty on the device component.

10.7.1 The warranty period of operation of termo electric heater (heating element of the device) 12 months 3 days carrying out commissioning works but not more than 24 months from the date of release at the manufacturer's enterprise.

10.7.2 The warranty period of basic device automation (circulating pump, modular contactors, control, and switching boards, flow sensor, pressure switch, pressure transducer, automatic air vent, hydraulic connection, safety valve, expansion valve tank, emergency thermal switch, current and temperature sensors) 12 months commissioning works are not more than 24 months in 3 days of release at the enterprise-manufacturer.

10.7.3 The warranty period of other components of the device is 24 months 3 days of release on enterprises of the manufacturer.

10.7.4 The manufacturer undertakes free of charge during the warranty period to correct defects of the device if they arose not as a result of violation by the Consumer rules for using or storing the device. Warranty repairs are performed by enterprise-manufacturer or its representatives, information about which is in the appendix to this Instruction. In its absence, or inaccuracy of the information you can address to qualified staff of the manufacturer.

10.7.5 In the absence of the date of sale in the receipt of purchase, you lose the right to warranty repair.

10.7.6 The warranty period for components that were replaced during the warranty maintenance, may not exceed the terms specified in paragraphs 10.7.1, 10.7.2, 10.7.3.

10.8 Early termination of the warranty period.

10.8.1 The warranty period will be terminated until the expiration of the specified in paragraphs 10.7.1, 10.7.2, 10.7.3 period of time, under the following circumstances:

10.8.1.1 Violation by the Consumer of the rules of transportation, storage, installation, and operation device attack.

10.8.1.2 Operation with a faulty basic automation system or hydraulic group.

10.8.1.3 The device is operated in a room where construction or repair work is carried out (Deposition of dust and dirt on the components of the device may cause them to malfunction and lead to emergencies).

10.8.1.4 Independent repair, dismantling, replacement of components.

10.8.1.5 Applying mechanical damage to the device

10.8.1.6 Inconsistency of grid parameters or operating conditions.

10.8.1.7 Using the device for a purpose for which it is not intended.

10.8.1.8 Lack of serial number plate on the housing, or damage.

10.8.1.9 Non-compliance of the heating system or heat carrier with the requirements of this Instruction, operation in an open heating system.

10.8.1.10 Presence of traces of influence of moisture, hit in the middle of the device of foreign objects (including insects)

10.8.1.11 Deposits on the heating element or other deposits on the components of the boiler.

10.8.1.12 Faults caused by freezing, excess pressure in the system, operation with closed shut-off valves, etc.

10.8.1.13 Defects caused by incorrect connection to the heating system or the network connecting.

10.8.1.14 Damage caused by the actions of third parties.

10.8.1.15 Lightning strike, fire, flooding and other natural disasters.

10.9 We recommend that you use the services of our Main Service Center for carrying out annual preventive maintenance of devices with the subsequent extension of the warranty period. Through the network of our service centers, you can purchase components for the device, as well as obtain the necessary technical advice. You can find out the addresses and telephone numbers of the Service Centers in the Main Service Center.

Phone of the Main Service Center +38 (098) 227 51 19 or tenko.ua



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