

# **CLOSED JOINT STOCK COMPANY**

## **"Ikar" Science and research center**

**The plant has picked up prestigious awards at international exhibitions:**



Gold medal,  
*Geneva, Switzerland, 2004*

Silver medal,  
*Brussels, Belgium, 2003*

Bronze medal,  
*Geneva, Switzerland, 1994*

# **IZUMRUD-SI**

**PASSPORT  
AND  
OPERATION MANUAL**

**Izhevsk**

**Attention! Carefully read the present passport prior to starting up the device.**

## **1. Purpose**

"Izumrud-SI" device (mod. 01m-50), hereinafter referred to as the device, is designed for production of activated drinking water of the highest quality (SanPiN (Sanitary Regulations and Norms) 2.1.4.1116-02) with predetermined mineral composition and antioxidant properties \*.

The device provides:

- ✓ correction of ion composition of mineral elements in water ( $\text{Ca}^{2+}$ ,  $\text{Mg}^{2+}$ ,  $\text{K}^+$ ,  $\Gamma \dots$ );
- ✓ water contains antioxidant properties;
- ✓ **elevated** disinfection of water;
- ✓ automatic control of all main components of operation.

**Reverse osmosis system with storage tank shall be definitely used** in "Izumrud-SI" device (mod. 01m-50) for preliminary treatment of water. By means of this device all drawbacks typical for such systems are eliminated (patents RU 2299859, 0074909, 0023302, 00145022, <http://ikar.udm.ru/sb/sb43-1.htm>, <http://ikar.udm.ru/sb/sb44-1.htm>).

It is proved that water after treatment by reverse osmosis system becomes:

- ✓ distilled (demineralised) and actually non-potable;
- ✓ de-ionized (oxidated) as its oxidation-reduction potential (ORP) measured relative to silver-chloride electrode is positive +200...+400 mV.

Usage of new unique activation technologies based on patented devices and methods allowed for creation of brand new generation device for preparation of drinking water of the highest quality (DWHQ) with resonance microcluster structures. Currently the device has no analogs in the world.

The device is equipped with integrated controller, display, automatic dosing mineralizer and three flow-type sensors with two-level indicating system - monitoring operation of osmosis (treatment), activation (water ionization), mineralization (optimizing mineral composition).

The closest analog of drinking water obtained by means of "Izumrud-SI" device (mod.01m-50) is beverage "Your Health" (<http://gepatitunet.ru>, <http://ionvoda.ru>, ~400 rub/l) and beverage obtained by means of microhydrin (~100 rub/l).

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\* activated water solutions with antioxidant properties - liquids transferred into unbalanced thermodynamic state with ORP revised into negative values (liquids with vortexes - localized resonance microcluster structures - [http://ikar.udm.ru/c\\_n\\_aw.htm](http://ikar.udm.ru/c_n_aw.htm)).

## 2. Operation conditions

### 2.1. Standard requirements

- Relative humidity of ambient air up to 80% (at 25 °C).
- Ambient temperature +5...+40 °C.
- The device shall be mounted inside living area.

### 2.2. Source water requirements

- Source water temperature +7...+32 °C.
- Max. mineralization of water flowing through reactor not more 35 mg/l.
- Water flow through reactor within the range of 6...23 l/h.
- Sensor activation water flow at least 15 l/h.
- Sensor deactivation water flow 3 l/h max.
- Maximum pressure 5 atmospheres.

## 3. Technical characteristics

Maximum capacity, l/day	50
Mineralizer volume, l	0.6
Changing of ORP ( $\Delta$ ORP), mV*	-250...-600
AC voltage, V	100...240
Power supply frequency, Hz	47...63
Maximum power consumption, Wt	25
Nett weight (water), kg	3
Overall dimensions, mm	300×350×90

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\* see measurement of unbalanced water solutions ORP ("Torments of choice of instrument for water ORP measurement..." – <http://ikar.udm.ru/faq.htm>, <http://ikar.udm.ru/dsi-2.htm>).

## 4. Scope

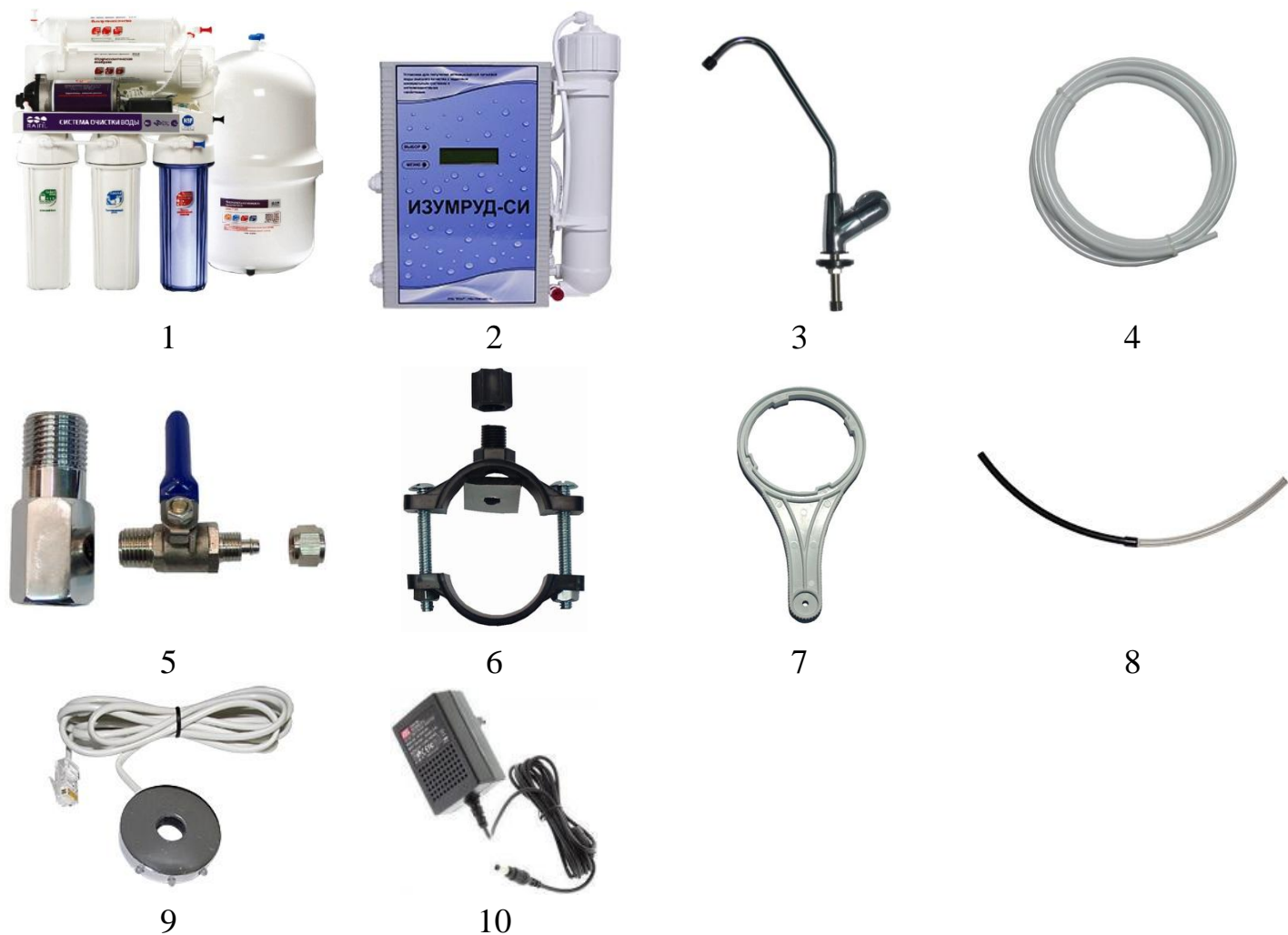


Fig.1 Scope of the device.

- |                                       |             |
|---------------------------------------|-------------|
| 1. Activation and mineralization unit | - 1 pc.     |
| 2. Indicating unit                    | - 1 pc.     |
| 3. Power adapter                      | - 1 pc.     |
| 4. Mineralizer water draining hose    | - 1 pc.     |
| 5. Plastic connecting tube            | - 4 meters. |
| 6. Mineral supplement *               | - 1 set.    |
| 7. Passport                           | - 1 pc.     |

\* set of completed (dissolved) mineral supplement "Severyanka+" is already primed into mineralizer and in case of supply in winter period mineral supplement (concentrated) is delivered in separate reservoir therefore it is necessary to perform works specified in it.10.1 prior to commencement of works.

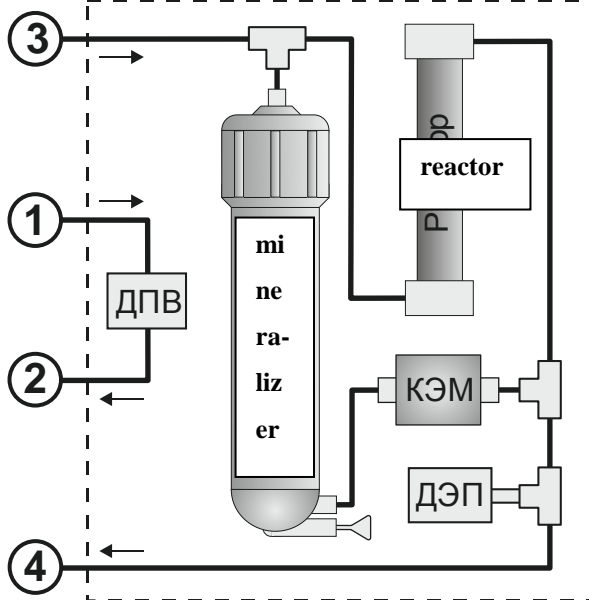


Fig.2a. "Izumrud-SI" flow diagram (mod.01m-50)

ДЭП - conductivity sensor,  
 ДПВ - water passage sensor,  
 КЭМ - measuring valve

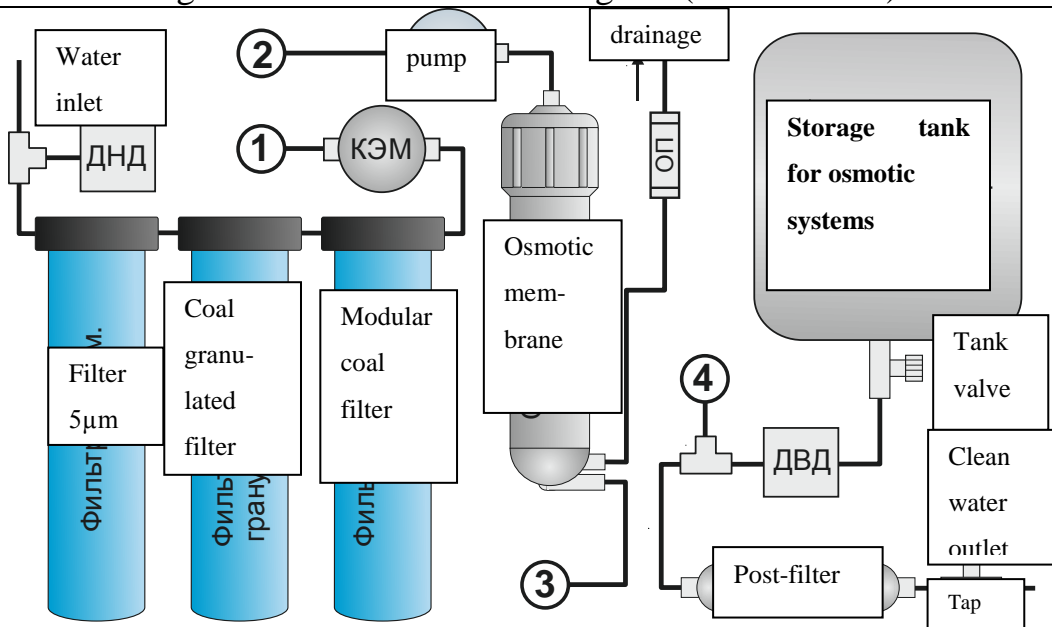


Fig.2b. Open osmosis connection flow diagram

ДВД – high pressure transmitter  
 ДНД – low pressure transmitter  
 ОП – flow limiter,  
 КЭМ - inlet valve

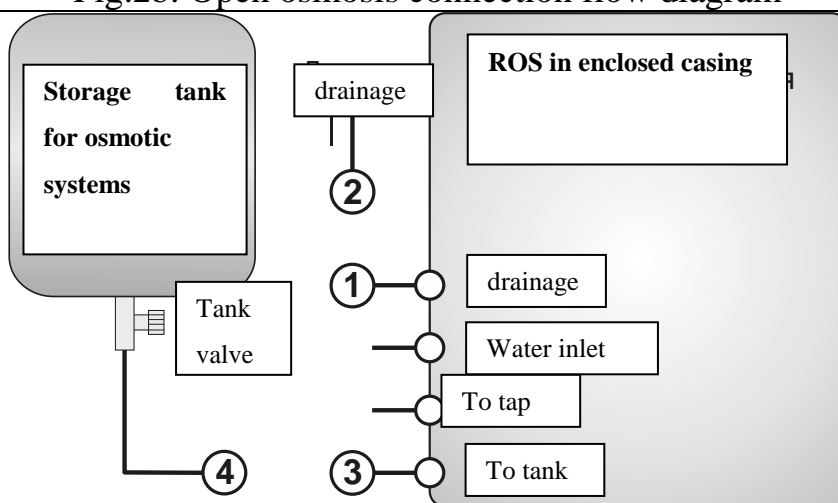


Fig.2c. Closed osmosis connection flow diagram

– Sensor input  
 – Sensor output  
 – Reactor input  
 – Reactor output

## 5. Design and operation principle

### 5.1. Description

Reverse osmosis system unit represents 5 staged filtration system which principle of operation is based on reverse osmosis technology. Source main water first passes through 3 primary filters (fig.3). At first stage primary filter (1) filters mechanical impurities. Second stage filter (2) with activated carbon removes odor and residual chlorine from water. Third stage filter with carbon cartridge (3) removes organo-chloride substances, bad tastes and odors. After passing through three stages filtered water comes into fourth stage - reverse osmosis filter (4). Diameter of filter membrane does not exceed 0.0001 microns and it infiltrates only water molecules and dissolved oxygen.

Further water treatment in device is performed in activation and mineralization unit. "Faraday cell" resonance activator of special design made of modern materials allows for activation of very fresh water, effective disinfection, improving cluster structures and shifting of ORP to negative values. As a result water obtains antioxidant properties.

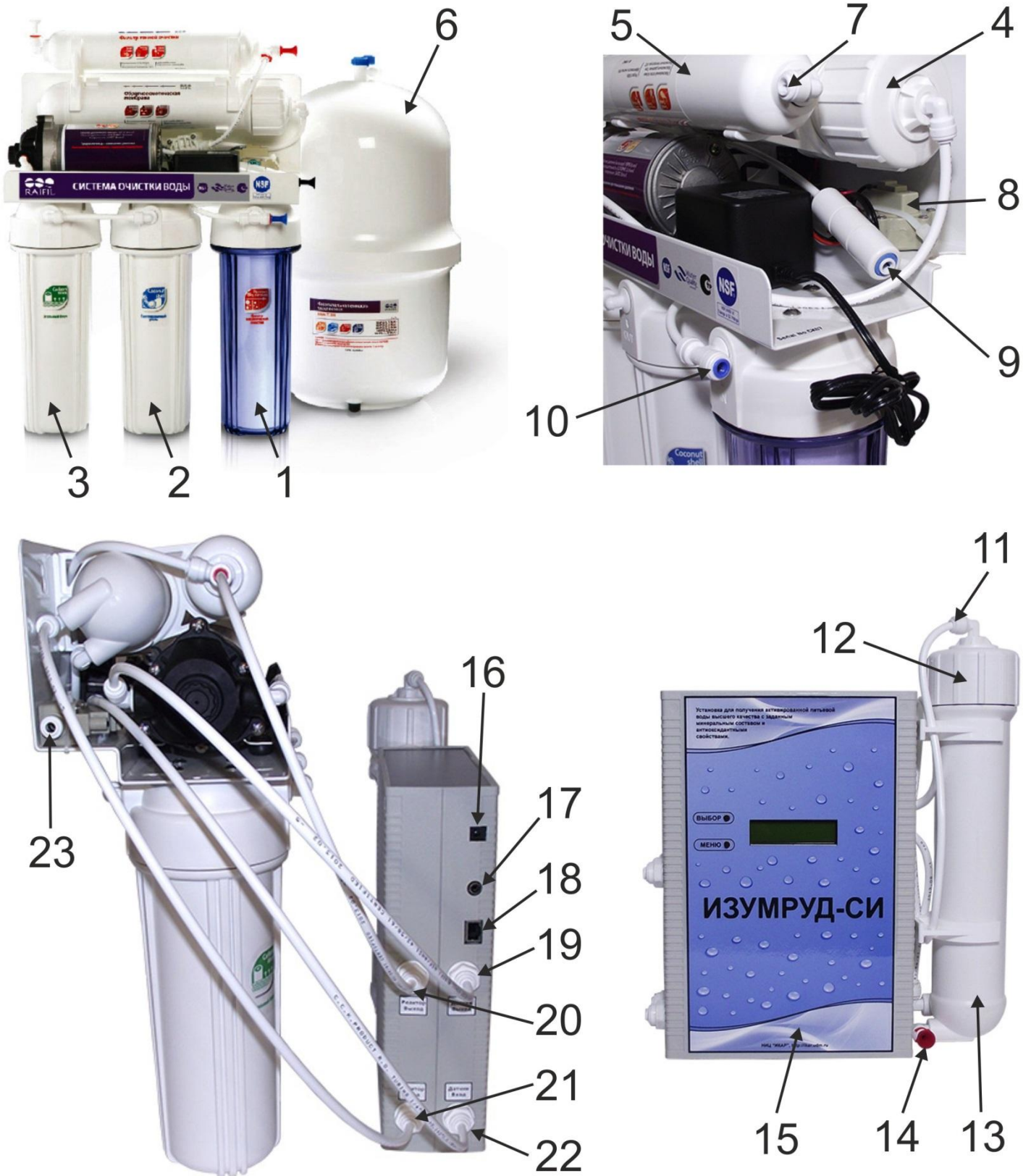
When water passes through device mineralizer microelements ( $\text{Ca}^{2+}$ ,  $\text{Mg}^{2+}$ ,  $\text{K}^+$ ,  $\text{I}^-$ ) useful for human organism are added thereto and further water comes into storage tank wherefrom it is supplied to clean water tap through pos-filter (5).

Antioxidant water filled into storage tank maintains its negative ORP for daily water intake.

Special sensors, located in the device give information about functioning of device by means of indication: green light - normal condition; red light - deviation from normal condition (pos.11, 12, 13 fig.5A). By means of keyboard and display it is possible to monitor and control device operation modes.

Device is running in automatic mode 24 hours a day. For this purpose water supply tap and tank valve shall be open and device power supply cables shall be connected to network. When device is running normally all indicators under the tap shall be of green light. Short time red light is acceptable when it is related to transient processes in device operation. All errors are displayed in menu "Condition" (see it. 5.2.).





**Fig.3.** Appearance of the device and reversed osmosis system (mod. 01os-50):

- |   |   |
|---|---|
| 1 – primary filter <b>No.1</b> (polypropylene),         | 14 - mineralizer casing blind,                        |
| 2 - filter <b>No.2</b> (granular coal),                 | 15 - activation and mineralization unit,              |
| 3 - filter <b>No.3</b> (briquette coal),                | 16 - power adapter connection,                        |
| 4 – filter <b>No.4</b> (reverse osmosis mem-<br>brane), | 17 - pH reactor connection (purchased<br>separately), |
| 5 – filter <b>No.5</b> (coal post-filter),              | 18 - indicating unit connection (multifunc-           |

- 6 - storage tank,
- 7 - clean water tap outlet,
- 8 - low pressure relay,
- 9 - outlet to drainage,
- 10 – main water inlet,
- 11 - inlet mineralizer fitting,
- 12 - mineralizer casing cover,
- 13 - mineralizer casing,

- tional connector),
- 19 - passage sensor output (②),
- 20 - ORP reactor output (④),
- 21 - ORP reactor input (③),
- 22 - passage sensor input (①),
- 23 - high pressure relay and outlet in storage tank.

## 5.2. Installation menu

### "Main" menu

```

-- Information -
- Full tank
```

is basic menu.  
Displays device operation process.

Table No.1

<b>Full tank</b>	- storage tank is full, the device switched to standby mode.
<b>Tank is being primed</b>	- water withdrawn from storage tank, the device is switched to water priming mode.
<b>Start xxxx</b>	- transition from standby mode to operation mode, where <b>xxxx</b> - value for diagnostics.
<b>Replace supplement</b>	- mineralization of prepared water lower than selected limit.
<b>Replace filter</b>	- reverse osmosis membrane is contaminated.
<b>Replace ORP reactor</b>	- activation of prepared water lower than selected limit.
<b>Short-circuit failure in reactor</b>	- short circuit in reactor or strong mineralization.
<b>Circuit termination in reactor</b>	- no contact in reactor or no water.

When the user uses any other menu item and does not use any key for more than 3 minutes in "**Full tank**" mode the device will automatically transit to "**-- Information --**" menu and turn off LED and display backlighting (if "**Energy saving**" is "**On**").



Condition  
OK

Shows device stored errors condition. If there are no errors "**OK**" is indicated, otherwise - last stored errors (see table No.1). Using "**Selection**" key you can scroll all errors (around a circle). Errors are automatically reset when the device is started.

Parameters  
Water

Enables enter into "**Water**" menu in order to control device parameters in "DWHQ" mode.

Language  
Russian

Enables changing output language.

Accessories  
None

Enables changing the type of used accessory (connected to connector fig.3. pos.18).

Indicators sound  
On

Switching on and off audio signal informing about messages (critical).

Energy saving  
On

Switching on and off energy saving function (extension of LED and display backlight service life).

Displ. contrast  
-|||||||-----+

Display contrast adjustment.

Service mode

Service menu enter  
(only for maintenance department personnel).

## "Water" menu

Running hours  
0

Contains information about quantity of **minutes** of device operation in DWHQ preparation mode from the beginning of operation.

Mineral. ( $\mu\text{S}$ )  
100

You can choose the level of mineralization of prepared water ( $\sim$  water electrical conductivity). The device allows for water preparation with customized mineralization level. (**attention** – *preparation of water with customized mineralization level is performed only when the device is filling the tank and when mineral supplement is available in mineralizer reservoir*). When mineralization level of water sent to the tank is reduced lower than selected limit (decreasing of solution concentration in mineralizer) the device will beep and change the color of mineralization indicator from green to red.

Using "**Selection**" key you can choose required mineralization value ( $\sim \mu\text{S}$ ): **50...500**;

"**Off**" - 5...40  $\mu\text{S}$  (this mode can be used when you don't want to use mineral supplements or you want to prepare osmotic ionized water), in this case "**Mineralization**" indicator goes out and sensor readings is ignored.

Filter control  
40

Control of reverse osmosis system membrane contamination is set.

When increasing membrane contamination above selected level the device will beep and change the colour of "**Osmosis**" indicator from green to red.

Using "**Selection**" key you can choose membrane contamination level ( $\sim \mu\text{S}$ ): **30...70**;

"**Off**" - ignoring of membrane contamination level, "**Osmosis**" indicator goes out.

ORP power  
100 %

Using "**Selection**" key you can set the level of prepared water activation ( $\sim \Delta\text{ORP}$ ):

**25%, 50%, 100%** - activation level;

"**Off**" – ignoring of water activation sensor, "**Activation**" indicator goes out and ORP reactor is switched off.

pH Power  
off

Using "Selection" key you can increase pH level of prepared water ( $\sim \Delta\text{pH}$ ):

**10% ... 100%** - pH level;

"Off" - ignorance of water pH level sensor and pH reactor is switched off. (**pH reactor is purchased separately**)

Quit

Back to "Main" menu.

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All changes made are memorized automatically 10 seconds after last key pressed.

## **6. Safety precautions**

- 6.1.** Installation, usage and maintenance shall be performed in strict correspondence to the present instructions. Manufacturer is not responsible for events related to improper installation, usage or maintenance performed in conflict with instructions.
- 6.2.** If you are not acquainted with water supply equipment please consult with professional sanitary technician or make use of his services.
- 6.3.** Do not use the device to prepare drinking water from unknown sources without analyzing and consulting with specialists.
- 6.4.** Do not install the device at hot water supply line.
- 6.5.** Do not install the device in very humid (more than 80% at 25 °C) rooms in order to prevent corrosion of its metallic parts and electric contacts.
- 6.6.** It is prohibited to store and transport the device at temperature lower than 0 °C, without removing water previously.
- 6.7.** New membranes from manufacturer's packing shall be washed out prior to use according to article 9.
- 6.8.** Cartridge-filters and membrane shall be periodically replaced (see it.10 of the passport - guideline terms)
- 6.9.** Do not vent air from storage tank.
- 6.10.** If the device is not used for a long time (more than 7 days) or it is out of service it's required to disconnect power supply, stop water supply and drain water from the tank.

## **7. Unpacking**

- 7.1.** Unpacking of the device from transport package shall be started after keeping it at least for 4 hours at room temperature.
- 7.2.** Remove all parts of packing from the package and check scope of supply.
- 7.3.** Free hole in fitting (fig.3, pos.11) in the cover of mineralizer flask from process blind (as a plug) and then connect open end of tube to that fitting.

## 8. Installation

### Installation of indicating unit under clean water tap (in case of stainless steel wash-basin)

Mark and drill two holes, remove partition between them as shown in figure 4B. Grind edges and remove metallic chips. Install the tap according to fig.4A.

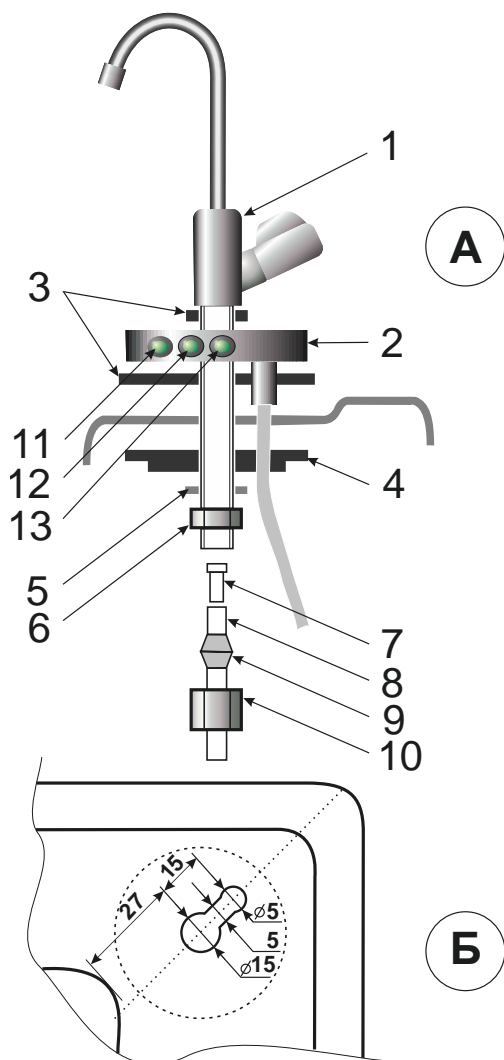


Fig.4. Tap installation.

- 1 – clean water tap,
- 2 – indicating unit,
- 3 – rubber gaskets,
- 4 – mounting disc,
- 5 – washer,
- 6 – nut,
- 7 – bushing,
- 8 – connecting tube,
- 9 – compression bushing,
- 10 – coupling nut,
- 11 – “osmosis” indicator,
- 12 – “activation” indicator,
- 13 – “mineralization” indicator.

### Assembly of device

- 8.1** Install activation and mineralization unit near to reverse osmosis system unit.
- 8.2** Use supplied plastic tube and cut the relevant sections of 4 tubes with a sharp knife (Fig.3, pos.19-22) and connect them.
- 8.3** Connect connector of indicating unit (Fig.1, pos. 2) to activation unit connector (Fig.3, pos.18).
- 8.4** Connect power adapter (Fig.1, pos. 10) to activation unit connector (Fig.3, pos. 16).

## 9. Preparation for work

- 9.1. Disconnect activation unit and reverse osmosis system (hereinafter ROS) from the electrical network.
- 9.2. Close ROS water tap, open clean water tap and close storage tank valve.
- 9.3. Disconnect tube from the fitting in mineralizer flask cover (Fig.3, pos.11) and direct it into small reservoir.
- 9.4. Connect ROS power cable to electrical network.
- 9.5. Open ROS water tap. After several minutes water will pour out of the tube.
- 9.6. Wait a few minutes and disconnect ROS power cable from electrical network.
- 9.7. Connect the tube (see item 9.3.) to mineralizer flask cover fitting.
- 9.8. Connect power supply unit of activation unit and ROS power cable to electrical network.
- 9.9. After 30 minutes (time to flush the system) open storage tank valve, close clean water tap. Before the first use of the system drain water from the tank by opening clean water tap (the first priming).
- 9.10. Check system tightness.

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### Notes:

1. When the device is in operation the light sound is possible (presence of air in the system).
2. While first priming or after a long interruption of work (several days), after water intake through the tap indicators may be red.
3. Connection and disconnection of ROS to electric network is performed only when it has power cable (electric pump is included into the scope).



## 10. Maintenance

The production of drinking water of the highest quality requires regular replacement of filter cartridges and mineral supplement. Indicating unit (see Fig.5A) indicates the necessity of such replacement, when the relevant indicator changes its light from green to steady red:

- position 11 - replacement of reverse osmosis membrane;
- position 12 - regeneration or replacement of reactor;
- position 13 - priming of new mineral supplement;

Frequency of replacement of "Severyanka +" mineral supplement of composition No. 4:

- when the level of mineralization is of 100 ~ 2000 liters

(Service life of mineralizer depends on the type of used mineral supplement, selected level of mineralization and water temperature.)

### 10.1. Replacement of mineral supplement

Perform activities specified in it.9.1 and 9.2. Then close clean water tap (Fig.4, pos.7). Then remove retaining ring and take out the blind (Fig.3, pos.14). Attach a hose instead of it (Fig.1, pos.8) to drain water from mineralizer and direct it into reservoir with 1 liter volume. Perform activities specified in it. 9.3. Holding mineralizer casing (Fig.3, pos.13) unscrew the cover (Fig.3, pos.12). Wait until all water (if any) will pour out of the casing. Then disconnect hose, insert blind and retaining ring.

Mineral supplement may be as follows:

- a) Supplied in a bottle with a volume of 0.33 liters in device set (in winter).
- b) Acquired in separate package ("Severyanka+" composition No. 4).

Fill clean reservoir (not less than 1 liter) with mineral supplement in the amount of 300 ml and reverse osmosis (or distilled) water in the amount of 300 ml. Then mix the resulting solution in reservoir with a clean stick and pour it into mineralizer casing.

If necessary, add reverse osmosis (or distilled) water into mineralizer casing to the top (so that there is no air bubble). Close the cover tightly (Fig.3, pos.12). Perform works specified in article 9.

## 10.2. Entering diagnostic mode

Disconnect power adapter (fig.1, pos.3) from electric network, press and hold "Menu" button, connect power adapter to electric network. Release the button when logo disappears.

The following menu will appear: “**D1.0      F4.0**” where digits after **D** – type of device, and digits after **F** - firmware version. Further when device is running in tank priming mode four groups of digits will appear which shall be recorded (or photographed) with 5 seconds interval during several minutes. Then these data shall be transferred to customer service when any problems with device operation occur. Other parameters can be viewed by pressing the "**Select**" key (number of additional parameters group that is the digit followed by #symbol).

## 11. Troubleshooting

Trouble	Possible cause	Troubleshooting method	Remark
Milky water is coming out from clean water tap	Air in the system		Air in the system - normal case when starting up the system. In case of normal usage it will disappear during 1-2 weeks.
Water is not coming into storage tank or is coming slowly	Low pressure in supply main	Eliminate	Water supply rate into storage tank (after membrane) shall be at least 100 ml/min.
	Cartridges of 1, 2, 3 prefiltering stages are plugged	Clean or replace cartridges	Cartridges may be quickly contaminated due to volley of mud into water pipeline or very dirty inlet water.
	Osmotic membrane is plugged.	Replace	Membrane may be quickly contaminated if hard water is used.
Little water is coming from storage tank	Low gage pressure in storage tank	Increase pressure	Normal pressure in empty tank shall be 0.4-0.5 atm.
Leakages	Fittings are not tightened	Tighten connections	
Water tastes or smells unpleasantly	Coal post-filter service life expired	Replace	
	Preservative residuals in storage tank	Drain <u>all</u> water from tank and refill it	
	Minimum water intake specified in passport is not provided	Drain <u>all</u> water from tank, follow article 9 and refill it	Water may stagnate and obtain unpleasant taste and smell
Indicators are out	Indicator cable plug bad contact	Disconnect and reconnect indicator cable	
Pressure relay clicks constantly	Inlet filters service life is expired or insufficient pressure in water supply network	Replace inlet filters and check pressure in insufficient pressure water supply network	

## 12. Manufacturer warranty

- 12.1. Warranty period is 1 year from the date of device purchase.
- 12.2. The device is designed for residential use with a daily use of water not more than 50 liters. Otherwise service life of the replaceable cartridges and activation unit reactor will be reduced significantly.
- 12.3. Manufacturer guarantees device operation when consumer observes specified operating, safety and maintenance conditions.
- 12.4. Consumables: cartridge-filters, post-filter, reverse osmosis membrane and mineral supplement are not covered by warranty, changing of consumables during operation belongs to consumer responsibility.
- 12.5. In case of device failures during warranty period by manufacturer's fault, device should be returned to manufacturer for warranty repair with this passport.
- 12.6. If the device was damaged by consumer as a result of violations of operation rules repair is made at the expense of consumer.
- 12.7. If any problems occur during operation of the device, it is necessary to disconnect it from network, shut off water supply and contact your local dealer engaged in aftersales service or the manufacturer.
- 12.8. Consumer has the right to reject the device any time before it is handed over, and after handing over - within seven days.

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Notes: The manufacturer reserves the right to make modifications of the device which are not specified in this passport and do not affect the functionality of the device.

## 13. Acceptance certificate

"Izumrud-SI" device (mod. 01m-50) serial No. \_\_\_\_\_ corresponds to Spec. 3697-035-00206807-12 and is considered to be fit for service.

QCD representative \_\_\_\_\_

Stamp here

Date of sale \_\_\_\_\_



**CJSC S&RC "Ikar"**  
426075, Izhevsk, p/o box 1619  
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# **Annexes**

## **Antioxidant water solutions properties**

Medics consider oxidation-reduction potential (ORP) of solutions the most important indicator of their biological activity. Water and solutions based thereof obtained in devices "Izumarud-SI" with negative ORP are electron-donor relatively to mediums with positive ORP. Such water as electron-donor is an antioxidant which explains its biostimulating effect on body tissues. Water with parameters  $\Delta\text{ORP} \sim -(200...400)$  mV stimulates physiological regeneration processes, particularly DNA synthesis of dodecadactylon mucosa cells, has immunocorrective effect, enhances detoxifying function of liver, stabilizes permeability of cell membranes and normalizes their energy potential. Ordinary drinking water with ORP  $\sim (250...450)$  mV is electron-acceptive relatively to the cells and tissues of organism consisting of 80-90% of the water. As a result biological structures of organism undergo oxidative damage and aging.

During activation water, while maintaining complete biocompatibility (without any chemical additives) turns into effective antioxidant. It is reminder that vitamins E, C, PP, K and series of other vital substances being a part of food stuff are the most important antioxidants.

Oxidation-reduction reactions play a crucial role in exchange of substances and energy. In various diseases or harmful external effects on a living organism the imbalance of oxidation-reduction processes occurs.

Activation of oxidation processes in organisms tissues are traced in case of avitaminosis, harmful action of exogenous chemical agents (alcohol, nicotine poisoning, etc.) and physical factors (cold, fever, radiation injury, etc.), chronic emotional stress, cardiovascular diseases and other pathological processes and aging.

Numerous experiments on animals in laboratories, on farms, drinking of antioxidant water by volunteers showed that the activation of protective forces of an organism, decreasing of susceptibility to cold-related and infectious diseases occurs.

Note that attempts to obtain biologically active water simply by addition of chemical substances do not lead to similar results.

Numerous studies have shown the absence of toxicity and mutagenicity in antioxidant water.

Activation allows not only to disinfect source water, but also to obtain water with bactericidal and biostimulating properties.

Antioxidant water is a powerful stimulant of biological processes, obtain high extracting and dissolving properties. For example, propolis is dissolved in activated water heated to 40-50 °C during 4 hours, while under normal conditions it is dissolved only by alcohol during 24 hours.

Activated water is an immune stimulator and stimulates processes of physiological and reparative regeneration of tissues, normalizes metabolism, improve circulatory processes in tissues, stimulates tissue respiration, improves reliability of antioxidant protection of liver and myocardium, enhances detoxifying function of liver.

This water is easily absorbed by organism, in case of regular use human needs less food and as a result, gets rid of excess weight.

Use of this water improves metabolism, excretion of toxins and chemicals not absorbed by organism and leads to activation of all human organism systems, primarily activation of immune system work.

It is effective for the prevention of geriatric diseases, hypertension, atherosclerosis, diabetes and others.



It is effective in cosmetics, prevents the appearance of wrinkles by softening the skin and give it healthy appearance, when rinsing hair makes it shining and reduce hair loss.

The effectiveness of phytopreparations is significantly rising when using this water.

Activated water has a strong extracting properties reaching maximum at 70°C, therefore herbal extracts infused with such water contain much more useful and necessary for treatment substances.

As a result the efficiency of their use is much higher.

The effectiveness of therapeutic baths and aromatherapy with the use of activated water increases.

Physiological sufficiency of drinking water is characterized first by ORP and its mineral composition, which must meet biological needs of human organism. In international and national documents of major industrialized countries minimum rates are established only for hardness of water. This parameter is expressed either directly by the value of total hardness, or in form of minimum concentrations of divalent calcium and magnesium. WHO guideline includes instruction on minimum level of total mineralization of drinking water - 100 mg/l, and optimum level of mineralization is 200...500 mg/l.

"Severyanka" composition (<http://www.severyanka.spb.ru> ) was designed and certified in Saint-Petersburg specifically for soft water in this region which can be used to normalize water for drinking and cooking by ions of calcium and magnesium. The composition is used by adding it to drinking water in accordance with instruction.

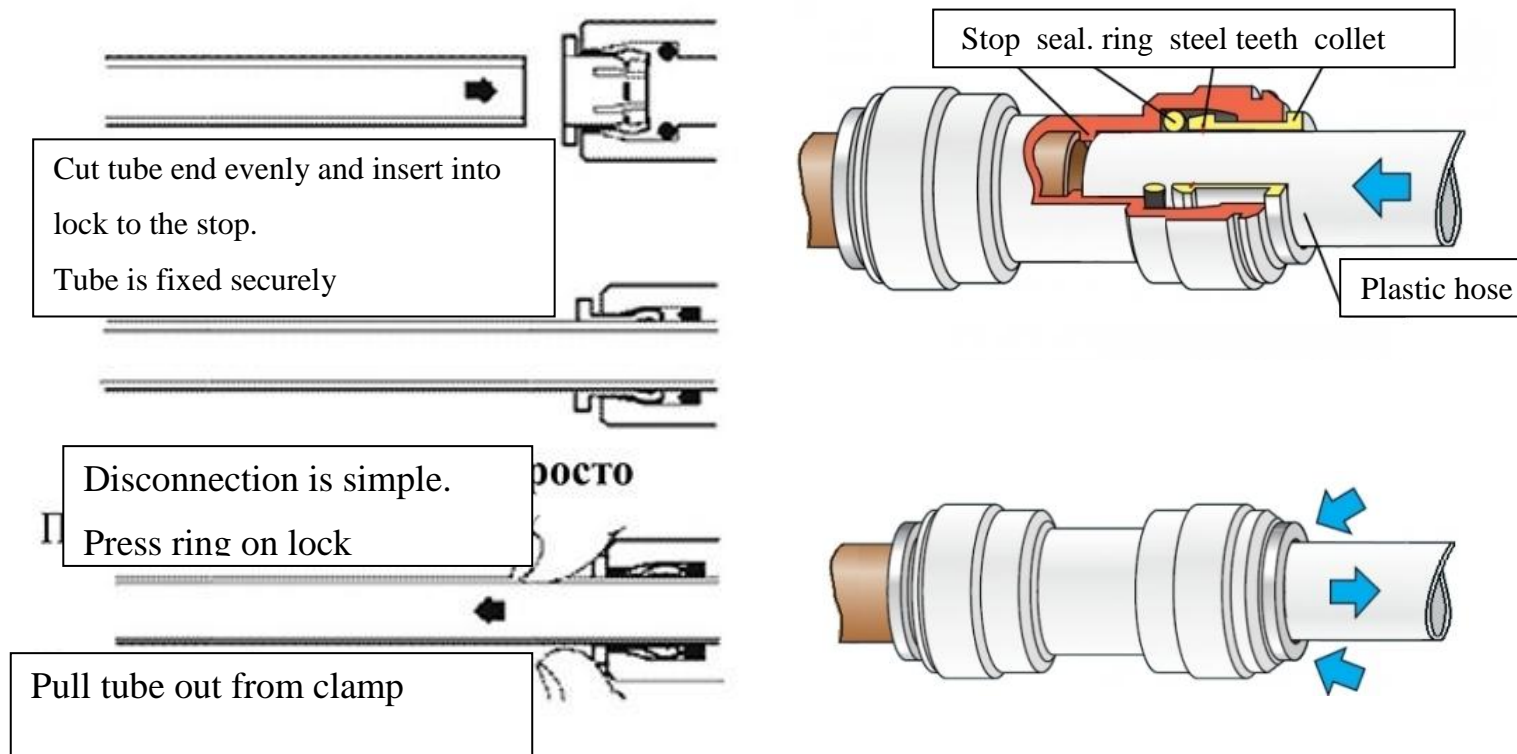
"Izumrud-SI" devices provide you with decontaminated, disinfected, activated drinking water. Using dispenser integrated into the devices, you can add thereto any mineral supplements (based on experts recommendations) which are missing in your region, facilitating thereby their absorption by your organism.

**WISH YOU GOOD HEALTH!**

Your guidebook – "MIS-RT" magazine.

<http://www.ikar.udm.ru/mis-rt.htm>

## FLEXIBLE TUBES CONNECTION



**Note:** 2 types of fittings (quick-release plastic connections) may be used in the device:

- 1) **JACO-type**, coupling nut connection. Prior to connecting the special bushing is inserted into the tube. When nut is tightened it presses the tube fixing and sealing connection.
- 2) **JG-type**, connection without nut. Tube is fixed in fitting with mechanical clamp and rubber ring inside fitting seals connection.

Connecting tube to fitting. Insert tube in fitting to the stop. Tube is fixed with mechanical clamp. Apply additional force for sealing of connection. In this case tube will move approximately for 5-6 mm more and will be tightly pressed by fitting rubber ring. Slightly pull the tube out from fitting for checking connection.

Disconnecting tube from fitting. Ensure tube is depressurized. Press (symmetrically) mechanical clamp ring to fitting base. It will release the tube. Pull the tube out holding and symmetrically pressing the ring.

**Attention! Tube end connected to fitting shall not be scratched or dented.**

## "Severyanka+" mineral supplement composition No.4

Currently "Severyanka+" is the best balanced mineral supplement. If you did not manage to find it in markets of your city you can order it directly by LLC "Eco-project" ([www.severyanka.spb.ru](http://www.severyanka.spb.ru)).

### "Severyanka+" mineral supplement

By physicochemical parameters composition No.4 shall meet standards specified in table No.1.

Table No.1

Ion concentration in water.			
Ca <sup>2+</sup>	Mg <sup>2+</sup>	K <sup>+</sup>	I <sup>-</sup>
75-85 g/dm <sup>3</sup>	17-22 g/dm <sup>3</sup>	4-6 g/dm <sup>3</sup>	80-120 mg/dm <sup>3</sup>

Supplement is used as follows:

- at home; in preschool institutions and schools
- in the process of water treatment at industrial production of drinking water, beverages and food.

Transportation and storage rules:

- Transportation of supplement is performed in transport package by any transportation mode in accordance with shipping rules applicable for definite mode of transport.
- Transportation and storage of supplement is performed at temperature from -30 to 30 °C, no light admission.
- Guaranteed storage life of supplement - 18 months.





**(mod. 01)**



**(mod. 02)**

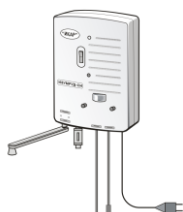


**(mod. 03)**

**Air ionizer "ЛЧ-1"** (compact household plasmatron– Chizhevskiy lamp) sanitary and hygienic apparatus for room air enrichment by light negative ions and compensation of air ionization deficiency at working places of personal computer users for aeroionotherapy and air ionizing in rooms and protection against "display illness".

**Apparatus modification:**

- mod. 01** – multipurpose portable,
- mod. 02** - ceiling and wall panels mounted,
- mod. 03** - mounted into 5" computer base unit compartment.



**(mod.01– 03)**



**(mod.01d)**

**"Izumrud-SI"** multipurpose plant for preparation of drinking water with predetermined mineral composition and antioxidant properties and for obtaining of the following solutions based thereon: detergent, disinfecting and sterilizing solutions.

**Apparatus modification:**

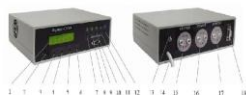
- mod. 01** – obtaining of drinking ionized water with negative oxidation-reduction potential (ORP) and predetermined mineral composition
- mod. 02** – function mod. 01 plus pH and ORP control
- mod. 03** – function mod. 02 plus obtaining of detergent, disinfecting and sterilizing solutions
- mod. 01d** – multiple access plant based on dispenser



**(mod.01os)**



**(mod.04c)**



**(mod.04uni)**

**mod. 01os** – in order to obtain activated water of the highest quality with predetermined mineral composition and antioxidant properties the plant is equipped with integrated controller and three flow-type sensors with two-level indicating system - monitoring of operation of osmosis system (purification). activation (ionization), mineralization (optimization of mineral composition)

**mod. 01 r/w** – independent option for railway and water passenger transport

**mod. 04c, mod. 04uni** – universal device for obtaining of activated liquids with negative ORP (drinking water, beverages, physical solutions, blood) based on noncontact and contact activation of liquids for household use and in different national economy branches (medicine, agriculture, industry, oil production); **"Vlada"** – chafing dish - activator for obtaining of activated water at home (contact and noncontact activation of water solutions).



**"Vlada"**



**(mod. 0-n-0)**



**mod. 0-n-0** – the plant for obtaining of detergent, disinfecting and sterilizing solutions, water disinfection in swimming pools.