

# **COMPUTER SYSTEM UNIT OF TYPES MPC-127, MPC-19-4**

Operating Manual



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## **INTRODUCTION**

This operating manual (hereinafter referred to as the OM) covers structure, construction, specifications of Computer system unit of types MPC-127, MPC-19-4 (hereinafter referred to as the Product), its components and instructions required for the Product's correct and safe operation (intended use, technical service, current repair), as well as disposal information for its components.

Only those who have read operational documentation shall be permitted to operate with the Product.

Only those who have had general education in the area of electronic devices and read operational documentation shall be permitted to provide the Product's service.

# 1 DESCRIPTION AND OPERATION OF THE DEVICE

## 1.1 DESCRIPTION

The Product is designed to be applied as a control computer, component of shipborne automation, navigation and surveillance devices, etc.

## 1.2 TECHNICAL SPECIFICATIONS

1.2.1 Main parameters and technical specifications of the Product are represented in Table 1.

Table 1 – Technical specifications of the Product

Parameter	MPC-127	MPC-19-4
	Значение	
CPU	Intel Core i3, Intel Core i5, Intel Core i7, Intel Pentium	
Graphics, MB	included, 1024, 2048, 4096, 8192	
RAM, GB	4, 8, 16, 32	
Type and capacity of HDD, GB <sup>1)</sup>	480, 960, 2 ТБ, 4 ТБ	
Software <sup>2)</sup>	Windows 7x86, Windows 7x64, Windows 10x64 Astra Linux Special Edition	
Supported interfaces, pcs.	1 x Audio input, audio output, microphone 8 x USB 2.0, 2 x USB 3.0 1 x VGA, 1 x DVI 1 x Ethernet 10/100/1000 Base-T 1 x COM (RS-232) 2 x PS/2 (keyboard and manipulator)	
Supply voltage	220 VAC, 110 VAC, 24 VDC, 12 VDC	
Max. Power consumption, W <sup>3)</sup>	550	
Protection degree	IP22	
Operating temperature, °C	-60 ... +70	
Temperature limit, °C	-15 ... +55	
Монтаж	desk top	19" rack
Type of connectors	standard	
<sup>1)</sup> Specify HDD type at order (HDD or SSD). <sup>2)</sup> Another OS may be installed on request. <sup>3)</sup> Standard power characteristics.		

### 1.2.2 The Product ensures:

- data processing, reception and transmission with connected devices via interfaces; installed software control;
- display of computing processes on the screen according to the installed software;
- automatic configuration control and software load under Basic Input and Output System (BIOS) when the Product is switched on and setup initially;
- continuous operation mode;
- performing autonomous operations in all operating conditions including emergency ones.

1.2.3 Products' overall dimensions depending on the diagonal are represented in Figures 1 и 2.

Note – Overall dimensions in Figures 1 and 2 are informative and may differ from particular Product design depending on the order. Inquire the manufacturer for overall dimensions of particular Product design

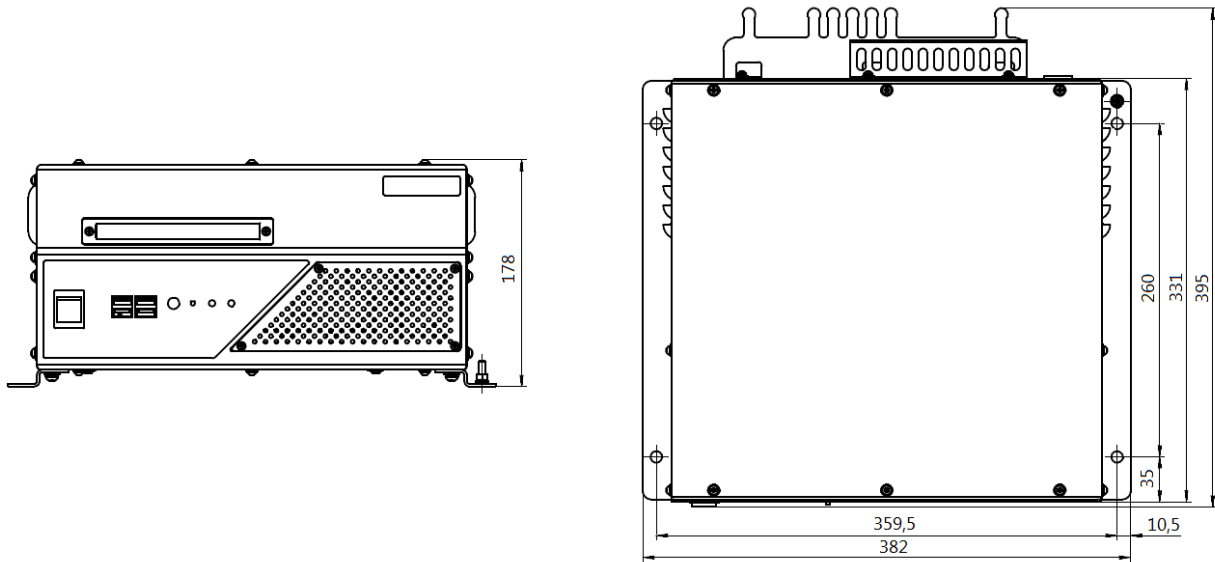


Figure 1 – Overall dimensions of the Product MPC-127

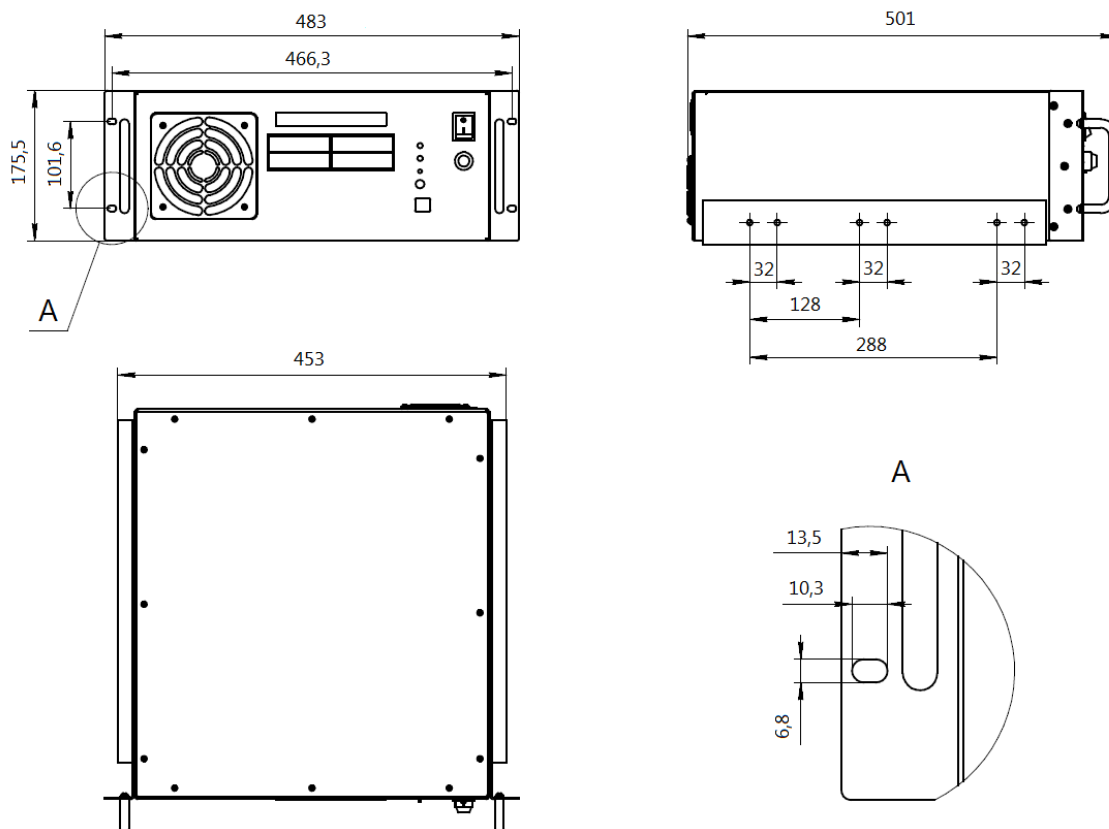


Figure 2 – Overall dimensions of the Product MPC-19-4

### 1.3 THE PRODUCT’S STRUCTURE AND OPERATION

#### 1.3.1 General description

The Product is manufactured in metal casing, where a power connector, audio ports, video ports, peripheral interfaces, local network ports are generally located. Connectors are standard, see Figure 2 (the Product’s connector layout may differ from the given ones). For the description of connectors, see Table 2. Electrical connector’s pinouts are represented in Tables 3 – 9.

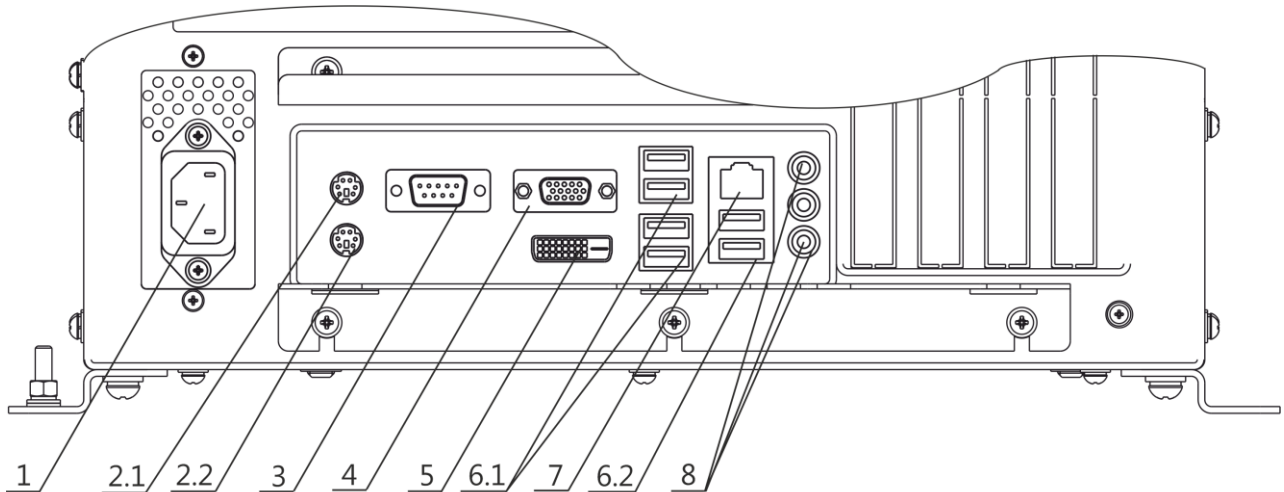


Figure 3 – Connectors layout

**Caution!** Provide 160 mm free space from the detachable connection to connect the Product at mounting

Table 2 – Description of the Product’s connectors

N.	Name	Description	Type
1	XPn.8	To connect AC voltage 220 V, 50 Hz	C13
	XPn.9	To connect AC voltage 110 V, 50 Hz	C13
	XSn.10	To connect DC voltage 24 V	C14
	XSn.11	To connect DC voltage 12 V	C14
2.1	XSn.27	To connect manipulator	mini DIN-6
2.2	XSn.27	To connect keyboard	mini DIN-6
3	XSn.20	To connect universal serial interface COM (RS-232)	DB-9M
4	XSn.1	To connect VGA	DB-15F
5	XSn.2	To connect DVI	DVI-D
6.1	XSn.25	To connect USB 2.0 devices	USB type A
6.2	XSn.25	To connect USB 3.0 devices	USB type A
7	XSn.17	To connect Ethernet 10/100/1000 Base-T	RJ-45
8	XSn.12	To connect audio input	3,5 jack
	XSn.13	To connect audio output (speaker)	3,5 jack
	XSn.14	To connect microphone	3,5 jack

Note – «n» – ordinal number of same-type connectors. For example, if the device has 2 USB interfaces, they are marked as: XS1.25, XS2.25.

Table 3 – Description of XPn.8, XPn.9 connector pins

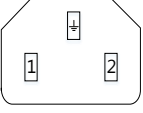
Type	Pin №	Description
 (view from soldering side)	1	L
	$\frac{\perp}{\equiv}$	E (PE)
	2	N

Table 4 – Description of XSn.10, XSn.11 connector pins

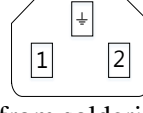
Type	Pin №	Description
 (view from soldering side)	$\frac{\perp}{\equiv}$	E (PE)
	1	+ 24 V
	2	0 V

Table 5 – Description of XSn.27 connector pins

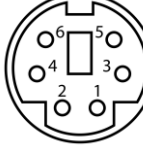
Type	Pin №	Description
	1	Data key / Data mouse
	2	–
	3	Gnd
	4	Vcc
	5	Clock key / Clock mouse
	6	–

Table 6 – Description of XSn.20 connector pins

Тип разъема	№ контакта	Назначение
 (view from soldering side)	1	–
	2	RxD
	3	TxD
	4	–
	5	GND
	6	–
	7	RTS
	8	CTS
	9	–
	–	Screen

Table 7 – Description of XSn.25 connector pins


Тип	№ контакта	Назначение
 (view from connection side)	1	+ 5 V (VCC)
	2	data – (D –)
	3	data + (D +)
	4	GND

Table 8 – Description of XSn.12, XSn.13, XSn.14 connectors pins

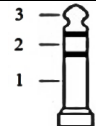
Type	Pin №	XSn.12, XSn.13	XSn.14
		Description	
	1	GND	GND
	2	LINE_R	MIC_VCC
	3	LINE_L	MIC_IN



Table 9 – Description of XSn.17 connector pins

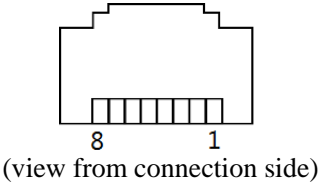
Type	Pin №	Description
 <p>(view from connection side)</p>	1	MDI 0 + (white orange)
	2	MDI 0 – (orange)
	3	MDI 1 + (white green)
	4	MDI 2 + (blue)
	5	MDI 2 – (white blue)
	6	MDI 1 – (green)
	7	MDI 3 + (white brown)
	8	MDI 3 – (brown)

Table 10 – Description of XSn.1 connector pins

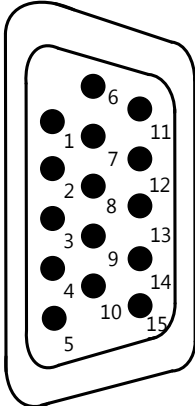

Type	Pin №	Description
 <p>(pinout of unit from side of cable connection)</p>	1	Red
	2	Green
	3	Blue
	4	Not used
	5	Common (GND)
	6	GND_Red
	7	GND_Green
	8	GND_Blue
	9	+ 5 B
	10	GND
	11	GND
	12	data (SDA)
	13	HSYNC
	14	VSYNC
	15	Data synch (SCL)

Table 11 – Description of XSn.4 connector pins

Type	Pin №	Description
 <p>(pinout of unit from side of cable connection)</p>	1	TMDS 2 -
	2	TMDS 2 +
	3	TMDS 2 Sh
	4	Not used
	5	Not used
	6	SCL
	7	SDA
	8	Not used
	9	TMDS 1 -
	10	TMDS 1 +
	11	TMDS 1 Sh
	12	Not used
	13	Not used
	14	+ 5 V
	15	GND
	16	HPD
	17	TMDS 0 -
	18	TMDS 0 +
	19	TMDS 0 Sh
	20	Not used
	21	Not used
	22	TMDS Cl Sh
	23	TMDS Cl +
	24	TMDS Cl -

### 1.3.2 Controls and indication

Controls, indication (LEDs) and speakers are also located on the front panel, see Figures 4 и 5. Description of the controls and indication (LEDs) are represented in Tables 12 и 13.

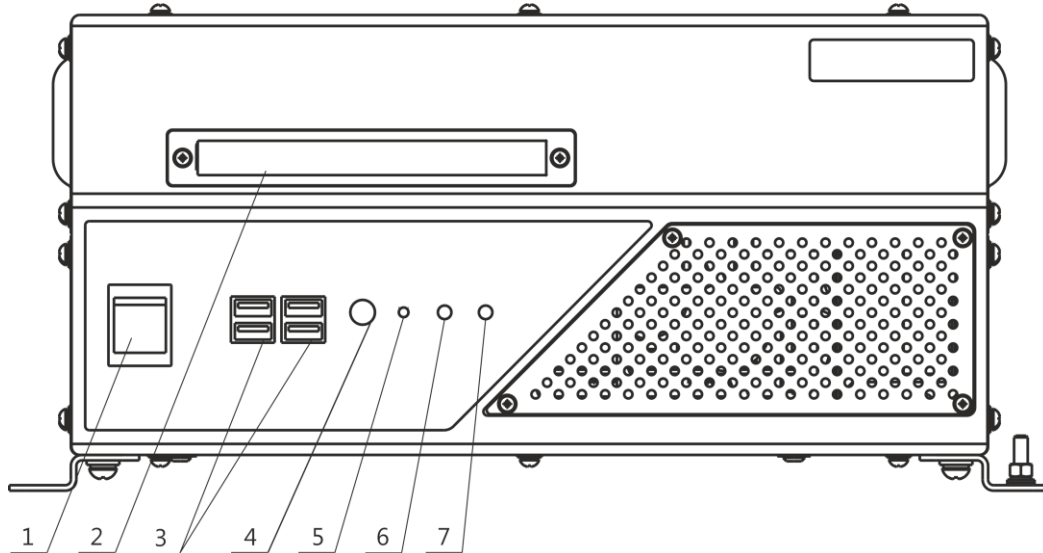







Рисунок 4 – Layout of controls, indication (LEDs) of the Products MPC-127 type

Table 12 – Control and indication description of the Products MPC-127 type

N	Name	Description
1	«O/I»	Switch to turn power on/off
2	DVD-RW	DVD-RW drive
3		Provides connection of external USB devices
4		Button switches on/off the product
5		Reset button
6		Power indicator
7		HDD activity indicator

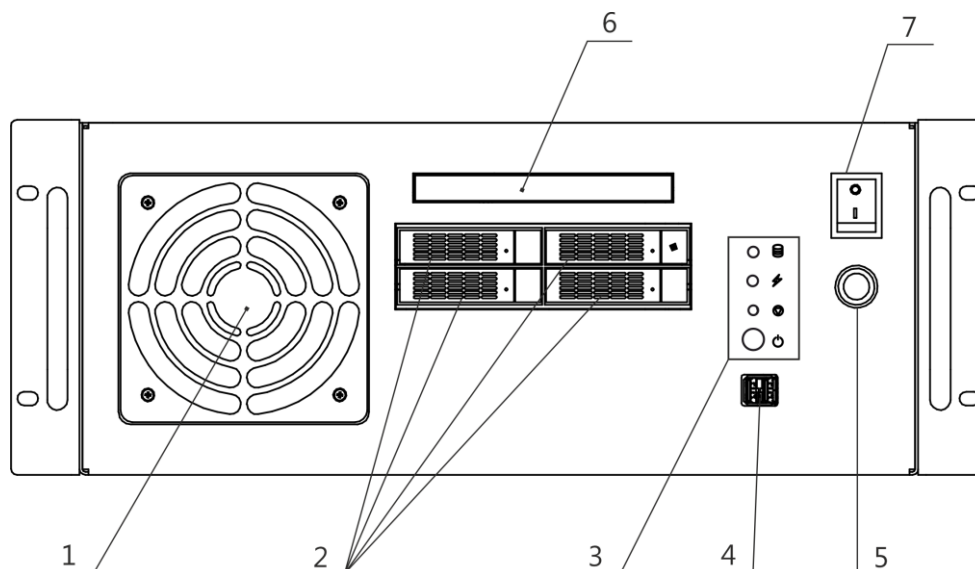







Рисунок 5 – Layout of controls, indication (LEDs) of the Products MPC-19-4 type

Table 13 – Control and indication description of the Products MPC-19-4 type

N	Name	Description
1	—	Fan
2	—	HDD trays
3		HDD activity indicator
		Power indicator
		Reset button
		Button switches on/off the device
4		Provides connection of external USB devices
5	—	Fuse holder
6	DVD-RW	DVD-RW drive
7	«O/ »	Switch to turn power on/off

### 1.4 MEASUREMENT TOOLS, INSTRUMENTS AND APPLIANCES

Technical service (hereinafter – the TS) of the Product is carried out using tools and consumables represented in Table 14.

Table 14 – Number of consumables required for the TS

Name and identifier of consumables	Weight of consumables	Note
Cleaning cloth	0.10 kg	1 To clean surfaces and parts of the device – use clean cloth 2 To clean severe contamination – use alcohol-soaked cloth
Rectified hydrolytic technical ethyl alcohol	0.01 l	To soak cloth while removing contamination
Varnish	0.05 kg	To cover surfaces of the device in case of paint coating damage
Abrasive cloth	0.06 x 0.06 m	To polish surfaces of the device in case of paint coating damage

### 1.5 MARKING AND SEALING

The Product has a marking plate of connectors and nameplate where a user can find a serial number, date of manufacturing, weight, protection degree, rated input voltage and power consumption.

### 1.6 PACKAGING

The Products are packed in a corrugated board box and inner packaging ensuring its transportation and storage at the warehouse.

Transport packaging is also used as a returnable packaging for transportation of the Product to the repair location and back. Packaging sealing is not provided.

## **2 INTENDED USE**

### **2.1 OPERATIONAL CONSTRAINTS**

The Product's installation site must be selected according to the operational constraints (operating temperature and protection degree).

**Caution!** Installation site of the Product must not be less than 1 m from a magnetic compass!

### **2.2 PREPARATION FOR THE PRODUCT OPERATION**

#### **2.2.1 Safety features**

While preparing the Product to operation provide the visual check and make sure the mechanical damage is absent.

Connection of the Product to the power mains must be provided only considering input power requirements.

The Products must be switched off and grounded before connection.

The staff shall follow «The technical rules for operation of electric installation» and «Safety rules for operation of electric installation» while testing electrical circuits and insulation resistance.

#### **2.2.2 Method of the visual check**

Before switching the Product on, the staff shall:

- observe visually the cable integrity and initial position of the controls on the front panel;
- clean front panels from dust and dirt by clean soft cloth, if necessary;
- check reliable cable connections to the devices and proper grounding.

#### **2.2.3 Switching the Product on instructions**

While connecting the Product and preparing it for operation follow the steps below:

- make sure that power mains voltage conforms with input voltage requirements;
- transfer circuit breakers of main power switchboard to «OFF position»;
- connect power cable and interface cables to the Product;
- transfer circuit breakers of main power switchboard to «ON» position;

– press «Power» switch on the front panel.

Switching the Product off is carried out in the following order: switch off the power supply using software, transfer a piano type switch «On/Off» to «Off» position, transfer a circuit breaker of main power switchboard to «Off» position, and disconnect power cable from the Product.

## **2.1 USAGE OF THE PRODUCT**

The Product is delivered with pre-configured software (in accordance with the order) from the manufacturing plant and it is ready to be used.

The Product may be used to the full extent only after connection of input device, display and OS installation.

### 3 TECHNICAL SERVICE OF THE PRODUCT

#### 3.1 GENERAL INSTRUCTIONS

Technical service of the Product (hereinafter – TS) must be provided by staff, acquainted with structure, composition and operational features of the Product.

To ensure reliable operation of the Product service personnel shall carry out all types of service:

- Technical service № 1 (TS-1) – semi-annual TS;
- Technical service № 2 (TS-2) – annual TS;

TS-1, TS-2 shall be provided by staff on the equipment in operation/running.

#### 3.2 SAFETY FEATURES

While providing TS the staff shall follow instructions, see 4.2.

#### 3.3 MAINTENANCE ROUTINE

The list of works for all types of the Technical service is given in Table 15. Maintenance routine procedure is given in the checklists (CL), represented in Tables 20 and 17.

Table 15 – The list of the TS works

CL №	Name of work	TS type	
		TS-1	TS-2
1	Visual check of the Product	+	+
2	Product operability test	–	+
Notes «+» – work is obligatory; «-» – work is not required.			

Table 16 – Check list № 1. Visual check

To be done	Routine	Man-hours per 1 Device
Visually examine the Product	1 Check completeness and appearance of the Product; mechanical damage, paint defects must be absent; legends are to be read easily; 2 Clean all surfaces by clean cloth; 3 Remove severe contamination, parts of corrosion, oil spots: – from metal surfaces: by suds, avoiding its penetration inside the device; all surfaces clean dry by clean cloth and dry up; – from LED: by alcohol soaked cloth. Do not use hard cloth, paper, glass cleaning liquids or chemicals; Do not press hard on the surface while cleaning; Do not spray liquid directly to the surface of the Product; 4 In case of varnish damage clean it with abrasive cloth, then alcohol soaked cloth, cover with varnish and let dry	1 person 5 mins
Check reliability of cable connections and grounding buses	1 Make sure that connectors and attaching screws are fastened tight, provide further fastening if needed; 2 Check integrity (no mechanical damage) of leading cables which are visible	1 person 5 mins

Table 17 – Checklist №2. The Product’s operability check

Что делать	Как делать	Трудозатраты на 1 изделие
Check LEDs and display on the screen of connected monitor	1 Switch the Product on; picture shall be in accordance with the pre-configured software; 2 The Product’s indication shall be in order and work	1 person 5 mins
Check ports	1 Check operability of any device connected to the Product; 2 Check operability of each port of the Product	1 person 5 mins

### **3.4 PRESERVATION**

The Product and set of operational documents are stored in preserved condition in Manufacturer's packaging boxes.

The time of representation – 2 years from the Manufacturer's commissioning.

The representation is done in heated rooms in the same order as the preservation.

The represented Product, SPTA kit and documents are placed in package. The time of storage - 2 years.



## 4 INSTALLATION AND DISASSEMBLY OF THE PRODUCT

### 4.1 GENERAL DESCRIPTION

The Product’s operability is controlled by the display brightness LED located on the front panel, and presence of image on the screen.

To provide diagnostics of the problems, see Table 18.

If trouble shooting cannot be provided, contact manufacturer’s service center.

### 4.2 SAFETY FEATURES

Repair works must be provided by personnel, examined in occupational safety and received qualification group not lower than 3.

The Product must be grounded before repair works.

Replacing defected parts, cards and modules when power of device under repair is ON is **STRICTLY PROHIBITED**.

It is **PROHIBITED** to put a poster “DO NOT switch on! Under Operation!”, when power supply switch is in OFF position.

Installation, commissioning and repair works are **PROHIBITED** in the room, where less than 2 people present.

### 4.3 CURRENT REPAIR

The service personnel can provide repair works as given in Table 18.

All other defects shall be carried out only by the Manufacturer’s specialists or the Manufacturer’s representatives.

Table 18 – Possible problems / defects and troubleshooting

<b>Problem / defect</b>	<b>Possible reasons</b>	<b>To do</b>
No data display, «Power» LED is not operating	No voltage supplied from the power source	Check power cable connection to the Product Provide the voltage
	Fuse malfunction	Check the fuse
No data reception on the port	Port is faulty	Check cable connection to the Product port
		Check operability of connected device

## **5 STORAGE**

The Product must be stored in packaging inside areas complying with the required storage conditions (+ 5...+ 40 °C) with the concentration of dust, oil, moisture and aggressive impurities in the air within the required limits for the working areas of production facilities.

After storage or transportation of the Device below + 10 °C, it must be unpacked only in heated premises and left in normal climate conditions for 12 hours beforehand.

## **6 TRANSPORTATION**

The Product must be transported in the Manufacturer's transportation package in closed means of transport.

Types of shipment:

- motor vehicle and railroad transportation in closed means of transport (covered cars, multipurpose containers);

- air transportation (in sealed and heated compartments);

- sea transportation (in dry service premises).

The Product must be transported in compliance with transportation rules applicable for each means of transport.

During loading / unloading operations and transportation, the requirements indicated on warning labels on the boxes/packaging must be observed, and no impacts are permitted since they can affect the safety and performance of the Product.

Inside the means of transport, the packed device must be firmly secured/fastened.

## 7 DISPOSAL

New equipment, the parts of the Product damaged during operation, and any overage equipment must not be disposed as standard household wastes, since they contain the materials suitable for re-use.

Decommissioned and non-used components of the Product must be delivered to a special waste disposal center licensed by local authorities. You can also send an overage equipment / unit to the manufacturer for its further disposal.

Proper disposal of Product components allows avoiding possible negative environmental and health impacts, and it also allows for proper restoration of components with substantial energy and resources saving.

**During operation and upon completion of its service life, the equipment is not hazardous for health and environment**

**This unit must be disposed according to the rules applied to electronic devices** (Federal Law dated 24.06.98 No. 89-FZ On Production and Consumption of Waste as amended of 30.12.2008 No.309-FZ)



**Any products marked with a crossed trash bin must be disposed separately from standard house-hold wastes**

## **8 WARRANTY**

The Manufacturer is under warranty obligations in case of correct System exploitation according to the OM. In case of incorrect operation or service damage claims are not considered by the Manufacturer.

More information about warranty terms you can find on the official site of “NPK Morsvyazavtomatica” LLC, section Support.

Address and contacts of the Manufacturer's service centre:

“NPK Morsvyazavtomatica” LLC

26E, Kibalchicha str., 192174, St Petersburg, Russia

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fax: +7 (812) 362-76-36

e-mail: [service@unicont.com](mailto:service@unicont.com)

**FOR NOTES**