

**Marine computer monoblock**  
**MVPC-xx04, MVPC-xx05, MVPC-xx06, MVPC-xx07**  
**Operating Manual**



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## **INTRODUCTION**

This operating manual (hereinafter referred to as the OM) covers structure, construction, specifications of Marine computer monoblock type MVPC-xx04, MVPC-xx05, MVPC-xx06, MVPC-xx07 (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.

### **Terms and abbreviations:**

CL – check list;

OM – operating manual;

TS – technical service;

TS-1 – semi-annual technical service;

TS-2 – annual technical service.



## 1 DESCRIPTION AND OPERATION OF THE PRODUCT

### 1.1 DESCRIPTION

The Product is designed to be applied as a control computer, component of shipborne automation, navigation and surveillance devices, etc., and to indicate textual, graphic and other data types.

### 1.2 TECHNICAL SPECIFICATIONS

#### 1.2.1 The Product ensures:

- control, conversion (transformation), reception and transmission of data by the connected input/output interfaces according to the connected ports;
- automated data processing in accordance with the installed software;
- displaying computing processes in accordance with the installed software;
- backlight dimming from the front panel;
- operation with the mains 50 Hz to 60 Hz, rated voltage 110, 220 V AC or 12, 24 V DC.

The Product can be optionally applied as a data input device using capacitive touch panel.

1.2.2 Main parameters and technical specifications of the Product are represented in tables 1–6.

Table 1 – Technical specifications of the MVPC-xx04

Parameter			MVPC-1204	MVPC-1504	MVPC-1704	MVPC-1904	MVPC-2104
			Value				
Screen diagonal *			12.1"	15"	17"	19"	21.3"
Screen format			4:3		5:4		4:3
Screen resolution			1024x768		1280x1024		1600x1200
Viewable area, mm			245x184	304x228	337x270	376x301	432x324
Viewing angle	vertical	standard brightness	80°/80°	70°/80°	80°/80°	89°/89°	89°/89°
		high brightness	80°/80°	70°/80°	70°/70°	89°/89°	89°/89°
	horizontal	standard brightness	80°/80°	80°/80°	85°/85°	89°/89°	89°/89°
		high brightness	80°/80°	80°/80°	80°/80°	89°/89°	89°/89°
Contrast ratio		standard brightness	700:1	800:1	1000:1	1000:1	1800:1
		high brightness	800:1	800:1	700:1	1000:1	1800:1
Brightness, cd/m² ***		standard	500	450	350	300	1000:1
		high	1000	1600	800	700	1000:1
Screen surface			anti-glare glass; anti-glare touch screen				
Supply voltage **			220 VAC, 110 VAC, 24 VDC, 12 VDC				
Protection degree			IP22; IP56 - front side, IP22 - other surfaces				
Type of connectors (one of available options)			standard; protected				
Operating temperature, °C			–15 to +55				
Temperature limit, °C			–60 to +70				
Dynamics			no		yes		
* The monoblocks may be delivered with non-standard diagonals.							
** One of available options.							
*** Brightness may differ depending on a particular order.							

Table 2 – Technical specifications of the MVPC-xx05

Parameter			MVPC-1005	MVPC-2105	MVPC-2305	MVPC-2405	MVPC-2705	MVPC-3205	MVPC-4205	MVPC-4605
			Value							
Screen diagonal *			10.1"	21.5"	23"	24.1"	27"	31.5"	42"	46"
Screen format			16:10	16:9		16:10	16:9			
Screen resolution			1280x800	1920x1080		1920x1200	1920x1080			
Viewable area, mm			217x136	476x268	509x286	518x324	597x336	698x392	930x523	1018x572
Viewing angle	vertical	standard brightness	85°/85°	89°/89°						
		high brightness								
	horizontal	standard brightness	85°/85°	89°/89°						
		high brightness								
Contrast ratio		standard brightness	1300:1	5000:1	1000:1	1000:1	1000:1	3000:1	4000:1	4000:1
		high brightness	1300:1	3000:1	1000:1	1000:1	1000:1	4000:1	4000:1	4000:1
Brightness, cd/m² ***		standard	360	300	300	300	300	500	500	700
		high	360	700	300	1200	1000	1000	700	1500
Screen surface			touch screen	anti-glare glass; anti-glare touch screen						
Supply voltage **			220 VAC, 110 VAC, 24 VDC, 12 VDC					220 VAC, 110 VAC, 24 VDC		
Protection degree			IP22; IP56 - front side, IP22 - other surfaces							
Type of connectors (one of available options)			standard; protected							
Operating temperature, °C			-15 to +55							
Temperature limit, °C			-60 to +70							
Dynamics			no	yes						

\* The monoblocks may be delivered with non-standard diagonals.

\*\* One of available options.

\*\*\* Brightness may differ depending on a particular order.

Table 3 – Technical specifications of the MVPC-xx06

Parameter			MVPC-1206	MVPC-1506	MVPC-1706	MVPC-1906	MVPC-2106
			Value				
Screen diagonal *			12.1"	15"	17"	19"	21.3"
Screen format			4:3		5:4		4:3
Screen resolution			1024x768		1280x1024		1600x1200
Viewable area, mm			246x184	304x228	337x270	376x301	432x324
Viewing angle	vertical	standard brightness	80°/80°	70°/80°	80°/80°	89°/89°	89°/89°
		high brightness	80°/80°	70°/80°	70°/70°	89°/89°	89°/89°
	horizontal	standard brightness	80°/80°	80°/80°	85°/85°	89°/89°	89°/89°
		high brightness	80°/80°	80°/80°	80°/80°	89°/89°	89°/89°
Contrast ratio		standard brightness	700:1	800:1	1000:1	1000:1	1800:1
		high brightness	800:1	800:1	700:1	1000:1	1800:1
Brightness, cd/m² ***		standard	500	450	350	300	1000
		high	1000	1600	800	700	1000
Screen surface			anti-glare glass; anti-glare touch screen				
Supply voltage **			220 VAC, 110 VAC, 24 VDC, 12 VDC				
Protection degree			IP22; IP56 - front side, IP22 - other surfaces				
Type of connectors (one out of available options)			standard; protected				
Operating temperature, °C			-15 to +55				
Temperature limit, °C			-60 to +70				
Dynamics			no		yes		

\* The monoblocks may be delivered with non-standard diagonals.

\*\* One of available options.

\*\*\* Brightness may differ depending on a particular order.

**Table 4 – Technical specifications of the MVPC-xx07**

Parameter			MVPC-1007	MVPC-2107	MVPC-2307	MVPC-2407	MVPC-2707	MVPC-3207	MVPC-4207	MVPC-4607
			Value							
Screen diagonal *			10.1"	21.5"	23"	24.1"	27"	31.5"	42"	46"
Screen format			16:10	16:9		16:10	16:9			
Screen resolution			1280x800	1920x1080		1920x1200	1920x1080			
Viewable area, mm			217x136	476x268	509x286	518x324	597x336	698x392	930x523	1018x572
Viewing angle	vertical	standard brightness	85°/85°	89°/89°						
		high brightness								
	horizontal	standard brightness	85°/85°	89°/89°						
		high brightness								
Contrast ratio	standard brightness		1300:1	5000:1	1000:1	1000:1	1000:1	3000:1	4000:1	4000:1
	high brightness		1300:1	3000:1	1000:1	1000:1	1000:1	4000:1	4000:1	4000:1
Brightness, cd/m² ***	standard		360	300	300	300	300	500	500	700
	high		360	700	300	1200	1000	1000	700	1500
Screen surface			touch screen	anti-glare glass; anti-glare touch screen						
Supply voltage **			220 VAC, 110 VAC, 24 VDC, 12 VDC					220 VAC, 110 VAC, 24 VDC		
Protection degree			IP22; IP56 - front side, IP22 - other surfaces							
Type of connectors (one out of available options)			standard; protected							
Operating temperature, °C			-15 to +55							
Temperature limit, °C			-60 to +70							
Dynamics			no	yes						
* The monoblocks may be delivered with non-standard diagonals.										
** One of available options.										
*** Brightness may differ depending on a particular order.										

**Table 5 – Technical specifications of products with screen diagonal 10"–17"**

Parameter	MVPC-1005, MVPC-1204, MVPC-1007, MVPC-1206	MVPC-1504, MVPC-1704, MVPC-1506, MVPC-1706
	Value	
CPU	Intel Celeron N3350, 2 cores 1.1 GHz	
RAM	DDR3L, 8 GB	
Type and capacity of HDD	SSD, 120 GB to 1 TB	
Supported interfaces	Ethernet 10/100/1000 Base-T - 1 pc. (2 pcs. at option) USB 3.0 - 2 pcs. on the rear panel USB 2.0 - 1 pc. on the front panel** COM (RS-232/422) - 2 pcs. Audio (output, microphone) - 1 pc. HDMI - 1 pc.	Ethernet 10/100/1000 Base-T - 1 pc. (2 pcs. at option) USB 3.0 - 2 pcs. on the rear panel USB 2.0 - 1 pc. on the front panel* COM (RS-232/422) - 4 pcs. Audio (output, microphone) - 1 pc. HDMI - 1 pc.
* Number and type of interfaces may differ from the ones specified.		
** Only for MVPC-xx04, MVPC-xx05.		

Table 6 – Technical specifications of products with screen diagonal 19"–46"

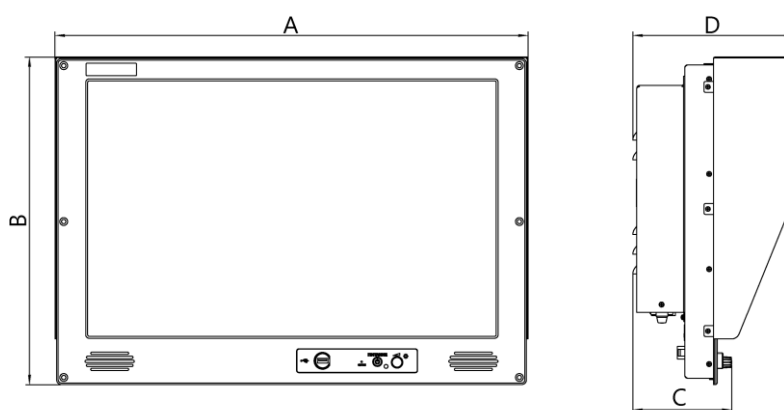
Parameter	MVPC-1904, MVPC-2104, MVPC-2105, MVPC-2305, MVPC-2405, MVPC-2705, MVPC-3205, MVPC-4205, MVPC-4605, MVPC-1906, MVPC-2106, MVPC-2107, MVPC-2307, MVPC-2407, MVPC-2707, MVPC-3207, MVPC-4207, MVPC-4607
	Value
CPU	Intel Core i7- 9700, 8 cores 3 GHz Intel Core i5-8500, 6 cores 3 GHz Intel Core i3-9100, 4 cores 3.6 GHz
RAM	DDR4 SO-DIMM, 8 to 32 GB
Type and capacity of HDD	SSD, 120 GB to 4 TB
Supported interfaces	USB 3.0 - 2 pcs. on the rear panel USB 2.0 - 2 pcs. on the rear panel USB 2.0 - 1 pc. * on the front panel Ethernet 10/100/1000 Base-T - 2 pcs. Audio input, audio output, microphone - 1 pc. HDMI - 1 pc. (VGA - 1 pc. at option) COM (RS-232/422/485) - 4 pcs. ** DisplayPort - 1 pc. Mini DisplayPort - 1 pc. SATA - 1 pc.
* Only for MVPC-xx04, MVPC-xx05, ** 4 pcs. for MVPC-xx06, MVPC-xx07 type.	

1.2.3 Products' overall dimensions depending on the diagonal are represented in figures 1 and 2.

#### Notes

1 Figures 1 and 2 show overall dimensions of the Products' casings not including a set of mounting brackets.

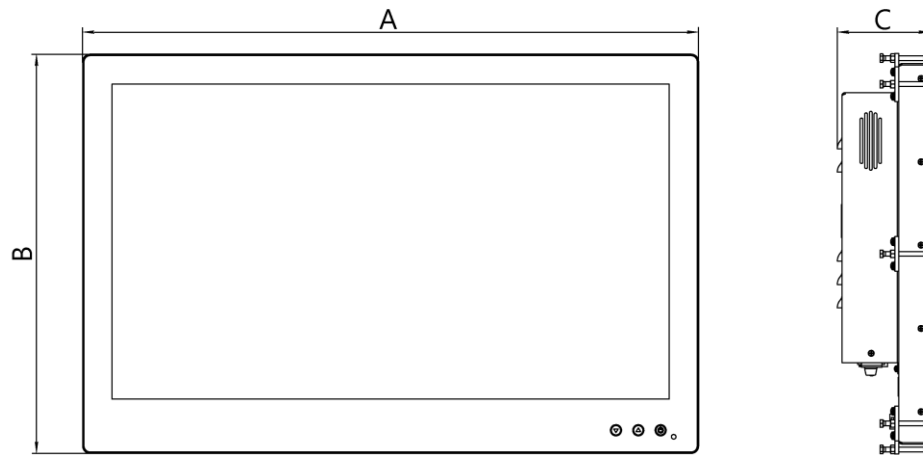
2 Overall dimensions in figures 1 and 2 are informative and may differ from particular Product design depending on the order. Contact the Manufacturer to receive overall dimensions for a particular Product type.



Type	A, mm	B, mm	C, mm	D, mm
MVPC-1005	266.5	230	121.5	177
MVPC-1204	325	263	118	177
MVPC-1504	384.5	314	121.5	201
MVPC-1704	417.5	360	123.5	203
MVPC-1904	415,3	388	121	200.5
MVPC-2104	514.5	413	127	206.5

Type	A, mm	B, mm	C, mm	D, mm
MVPC-2105	552	360	125.5	205
MVPC-2305	590	377	120	198.5
MVPC-2405	602	417	125.5	205
MVPC-2705	674	424	118	207.5
MVPC-3205	811	542	128.5	218
MVPC-4205	1051	675	130	269.5
MVPC-4605	1144.5	727.5	129	268.5

Figure 1 – Overall dimensions of the Products MVPC-xx04, MVPC-XX05 type



Type	A, mm	B, mm	C, mm
MVPC-1007	260	198	102.5
MVPC-1206	302.5	251	100
MVPC-1506	362	302	103
MVPC-1706	395	348	105.5
MVPC-1906	430.5	375.5	103
MVPC-2106	492	401	109

Type	A, mm	B, mm	C, mm
MVPC-2107	529.5	347.5	93.5
MVPC-2307	567.5	364.5	102
MVPC-2407	590	419.5	108.5
MVPC-2707	662	426.5	100
MVPC-3207	759	478	102
MVPC-4207	1000	611	112
MVPC-4607	1092.5	663.5	112

Figure 2 – Overall dimensions of the Products MVPC-xx06, MVPC-xx07 type



### 1.3 STRUCTURE AND OPERATION

#### 1.3.1 Installation

The Product may have various types of mounting depending on a particular order. For all types of mounting a sunshield is mounted using screws delivered in the mounting kit. For desk-top or wall mounting of the Products with the diagonal more than 21" vibration isolators are provided. Types of mounting are shown in figures 3 – 7.

**Caution!** While mounting, provide 160 mm free space from the detachable connection to connect the Product.

1) Panel mounting with outside fasteners (see figure 3) ensures fastening from the front panel using mounting kit of metal ware.

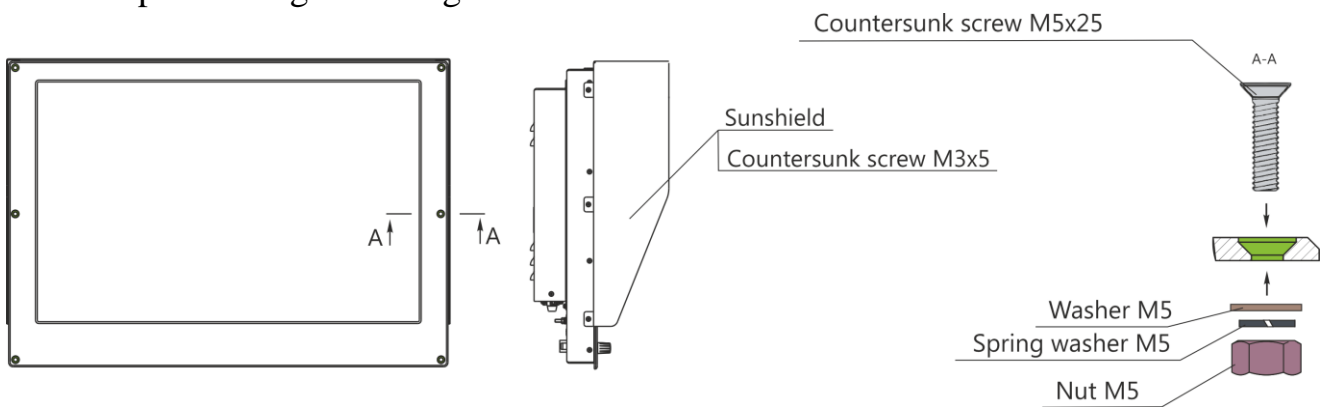


Figure 3 – Panel mounting with outside fasteners

2) Panel mounting with inside fasteners (see figure 4) ensures fastening from the inner panel of console using plates and a mounting kit of metal ware.

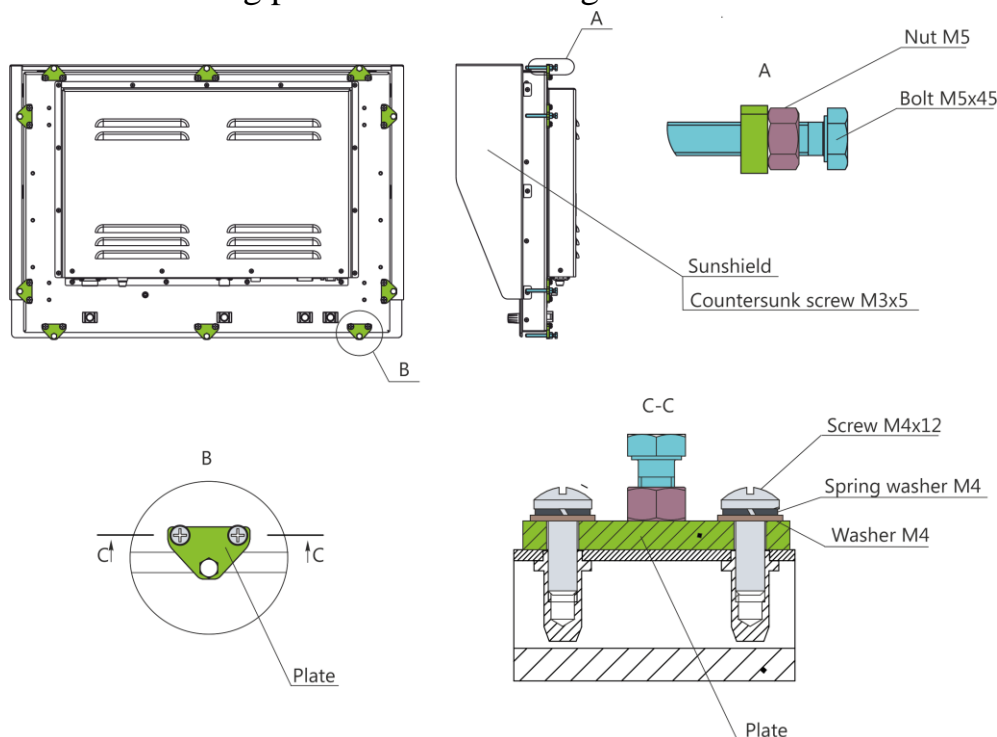


Figure 4 – Panel mounting with inside fasteners



3) Desk-top mounting with an adjustable bracket (see figure 5) ensures mounting on a surface using adjustable brackets, nut handles and a mounting kit of metal ware.

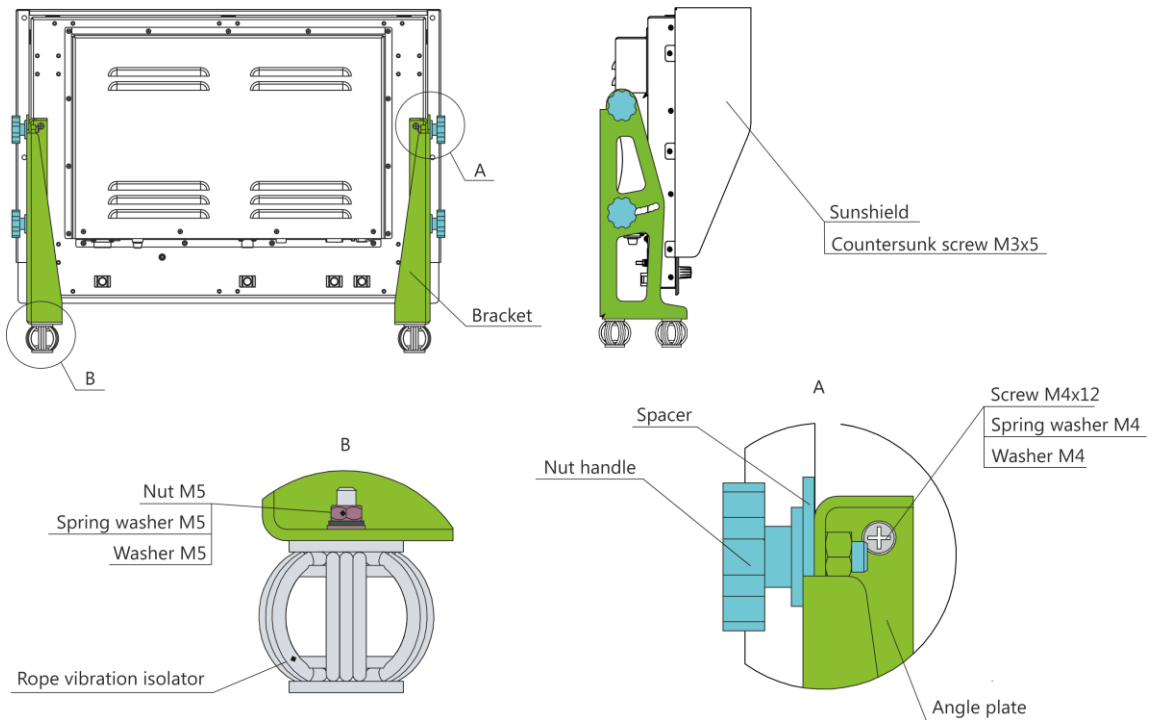


Figure 5 – Desk-top mounting with an adjustable bracket

4) Wall mounting with an adjustable bracket (see figure 6) ensures mounting on a surface using adjustable brackets, nut handles and a mounting kit of metal ware.

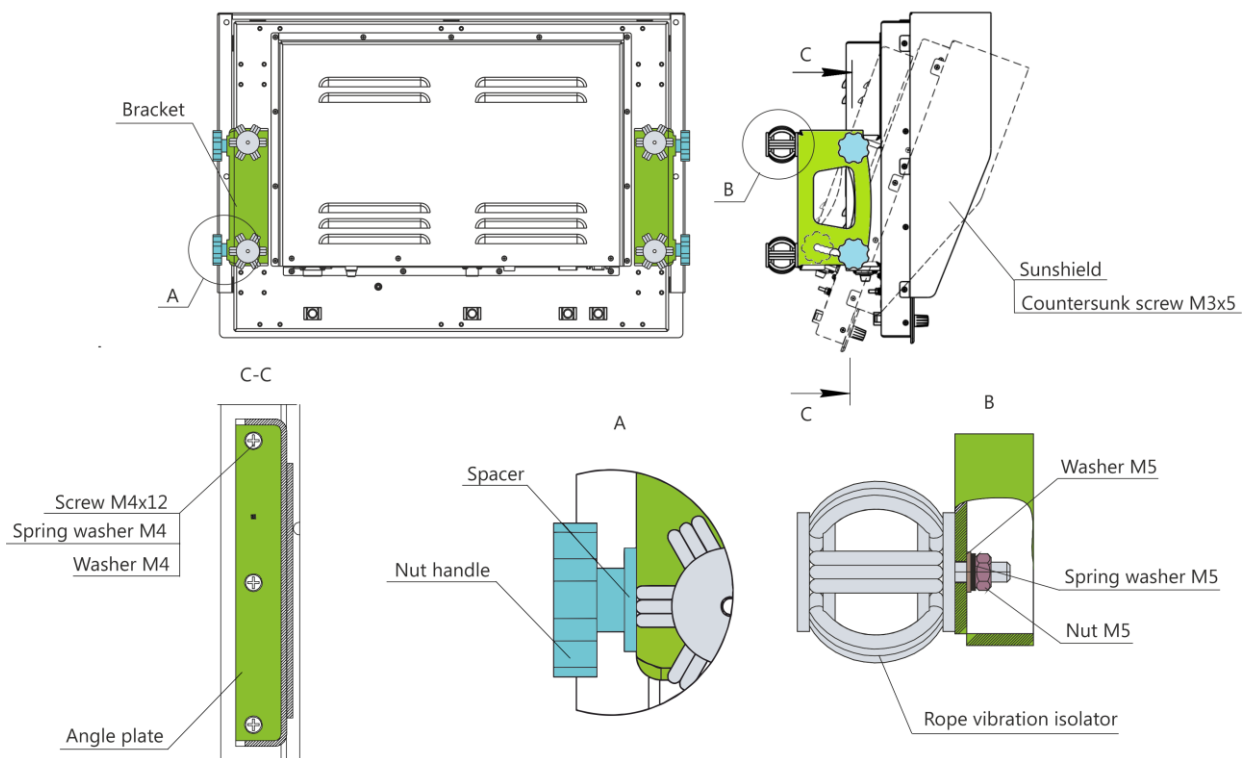


Figure 6 – Wall mounting with an adjustable bracket

5) Wall mounting with a non-adjustable bracket (see figure 7) ensures mounting on a surface using brackets and a mounting kit of metal ware.

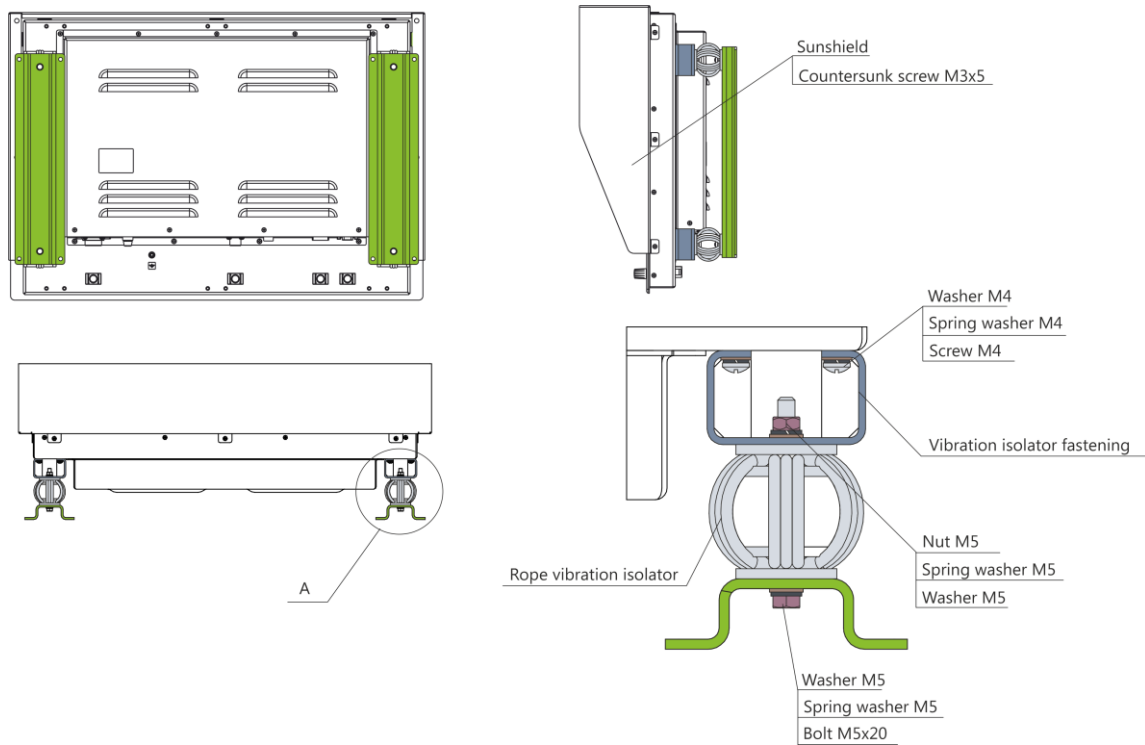
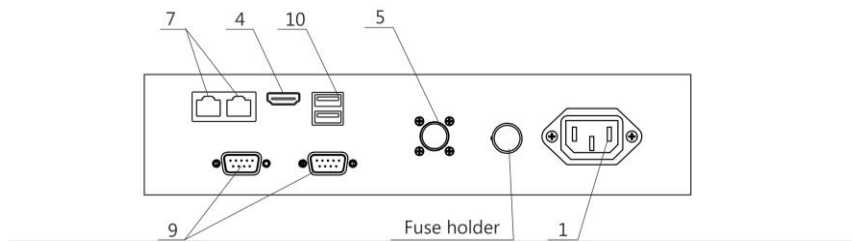
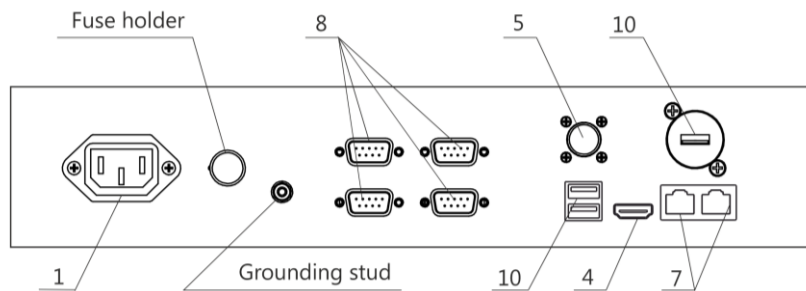
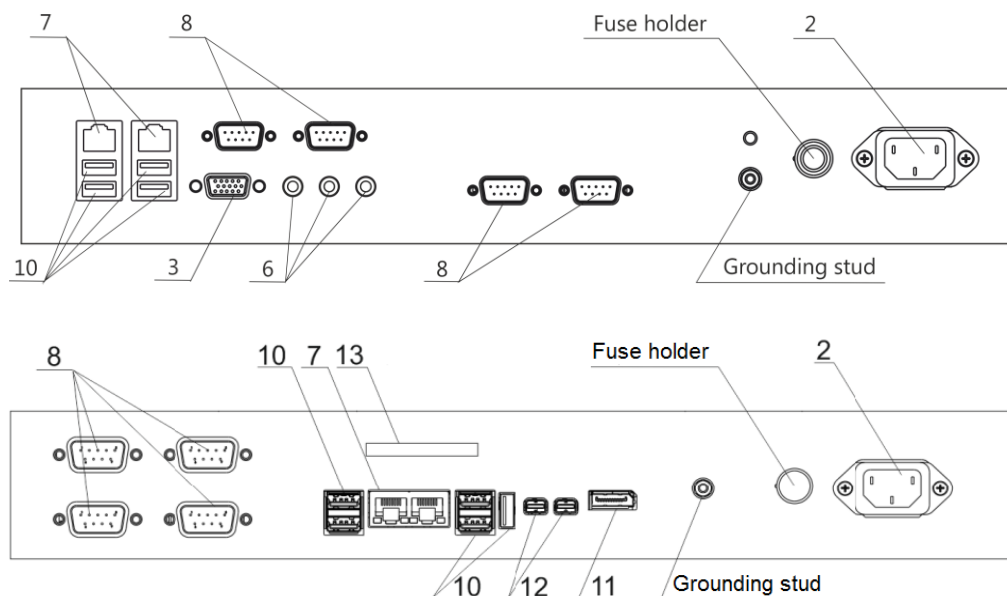


Figure 7 – Wall mounting

### 1.3.2 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 8 (Layout of the Product's connectors may vary from the specified ones).

For the description of connectors, see table 7. Electrical connectors pinouts are represented in tables 8–18.

**The Products with diagonals 10" - 12"****The Products with diagonals 15" - 17"****The Products with diagonals 19" - 46"****Figure 8 – Connectors layout depending on the diagonal****Table 7 – 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
2	XSn.10	To connect DC voltage 24 V	C14
	XSn.11	To connect DC voltage 12 V	C14
3	XSn.1	To connect VGA	DB-15F
4	XSn.4	To connect HDMI	HDMI
5	XPn.15	To connect common audio	PC10TB
6	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

N.	Name	Description	Type
7	XSn.17	To connect Ethernet 10/100/1000 Base-T	RJ-45
8	XPn.24	To connect universal serial interface COM (RS-232/422/485)	DB-9M
9	XPn.31	To connect universal serial interface COM (RS-232/422)	DB-9M
10	XSn.25	To connect USB devices	USB type A
11	XSn.5	To connect Display Port	Display Port
12	XSn.50	To connect Mini Display Port	Mini Display Port
13	XSn.47	External recycle bin connection for SSD	SATA

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 8 – Description of XSn.25 connector pins

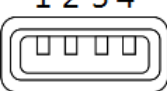
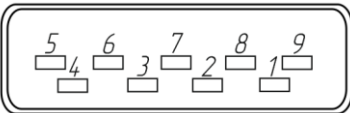
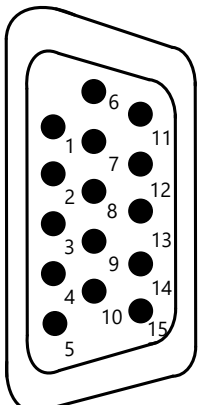
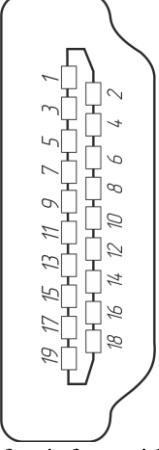
Type	Pin №	Description
 (view from connection side)	1	+ 5 V (VCC)
	2	data – (D –)
	3	data + (D +)
	4	GND
<b>USB 3.0</b>		
 (view from connection side)	1	VCC
	2	D–
	3	D+
	4	GND
	5	TX–
	6	TX+
	7	GND_DRAIN
	8	RX–
	9	RX+

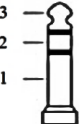
Table 9 – Description of XSn.1 connector pins

Type	Pin №	Description
 (pinout of unit from side of cable connection)	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	VSYN
	15	Data synch (SCL)

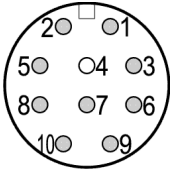
**Table 10 – Description of XSn.4 connector pins**

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

**Table 11 – 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 12 – Description of XPn.15 connector pins**

Type	Pin №	Description
 (view from soldering side)	1	Common (GND)
	2	Lin. right (Line_R)
	3	Lin.left (Line_L)
	4	common (GND)
	5	In. micr. (Mic_In)
	6	Micr.power (Mic_VCC)
	7	Common (GND)
	8	Aud.out.right (EAR_R)
	9	Aud.out.left (EAR_L)
	10	display

**Table 13 – Description of XPn.24, XPn.31 connectors pins**

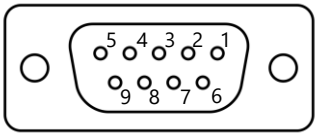
Type	Pin №	Description	Application		
			RS-232	RS-422	RS-485
 (view from soldering side)	1	Rx +	–	+	–
	2	RxD	+	–	–
	3	TxD	+	–	–
	4	Tx +	–	+	+
	5	GND	+	+	–
	6	Rx –	–	+	–
	7	RTS	+	–	–
	8	CTS	+	–	–
	9	Tx –	–	+	+
	10	Screen	+	+	+

Table 14 – Description of XPn.8, XPn.9 connector pins

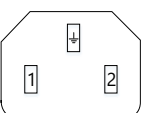
Type	Pin №	Description
 (view from soldering side)	1	L
	$\frac{\perp}{-}$	E (PE)
	2	N

Table 15 – Description of XSn.10, XSn.11 connector pins

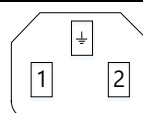
Type	Pin №	Description
 (view from soldering side)	$\frac{\perp}{-}$	E (PE)
	1	+ 24 V
	2	0 V

Table 16 – Description of XSn.17 connector pins

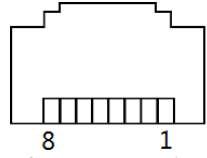
Type	Pin №	Description
 (view from connection side)	1	MDI 0 + (white orange)
	2	MDI 0 – (orange)
	3	MDI 1 + (white green)
	4	MDI 2 + (blue)
	5	MDI 2 – (white blue)
	6	MDI 1 – (green)
	7	MDI 3 + (white brown)
	8	MDI 3 – (brown)

Table 17 – Description of XSn.5, XSn.50 connector pins

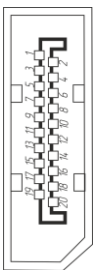

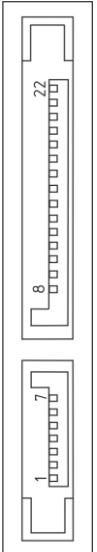
Type	Pin №		Description
	Display Port	mini Display Port	
 (pinout of unit from side of cable connection)  (pinout of unit from side of cable connection)	1	3	Main Link Lane 0+
	2	1	GND (Земля)
	3	5	Main Link Lane 0–
	4	9	Main Link Lane 1+
	5	7	GND (Земля)
	6	11	Main Link Lane 1–
	7	15	Main Link Lane 2+
	8	8	GND (Земля)
	9	17	Main Link Lane 2–
	10	10	Main Link Lane 3+
	11	13	GND (Земля)
	12	12	Main Link Lane 3–
	13	4	Configuration 1
	14	6	Configuration 2
	15	16	Auxiliary Channel+
	16	14	GND
	17	18	Auxiliary Channel–
	18	2	Hot Plug Detect
	19	19	Return
	20	20	DP_PWR

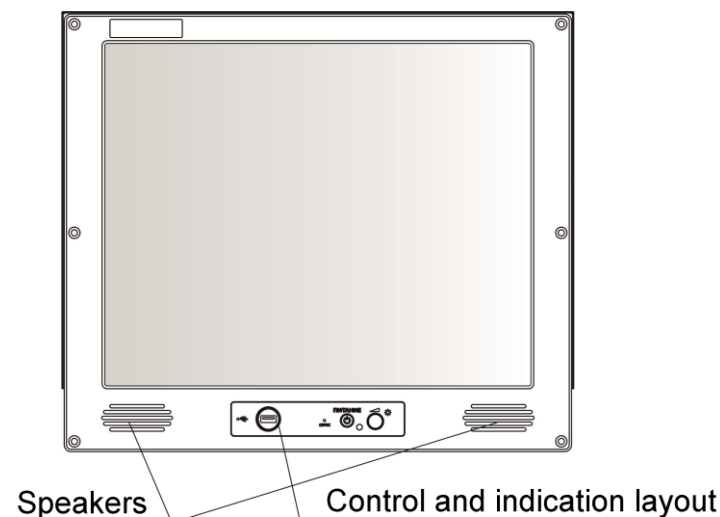
Table 18 – Description of XSn.47 connector pins

Type	Pin №	Description
 (pinout of unit from side of cable connection)	1	GND (Earth)
	2	A+ (Data transmission)
	3	A- (Data transmission)
	4	GND (Earth)
	5	B- (Data transmission)
	6	B+ (Data transmission)
	7	GND (Earth)
	8	+3,3 B (Power)
	9	+3,3 B (Power)
	10	+3,3 B (Power)
	11	GND (Earth)
	12	GND (Earth)
	13	GND (Earth)
	14	+5 B (Power)
	15	+5 B (Power)
	16	+5 B (Power)
	17	GND (Earth)
	18	GND (Earth)
	19	GND (Earth)
	20	+12 B (Power)
	21	+12 B (Power)
	22	+12 B (Power)

### 1.3.3 Controls and indication of MVPC-xx04, MVPC-xx05 type

Colour display with a diagonal in compliance with tables 1 and 2 is located on the front panel of the Products MVPC-xx04, MVPC-x05 type. The Product may be delivered in two types: anti-glare glass or touch capacitive panel.

Controls, indication (LEDs) and speakers are also located on the front panel, see figure 9 (the Product's appearance may be different and depends on order). Description of the controls and indication (LEDs) are represented in table 19.





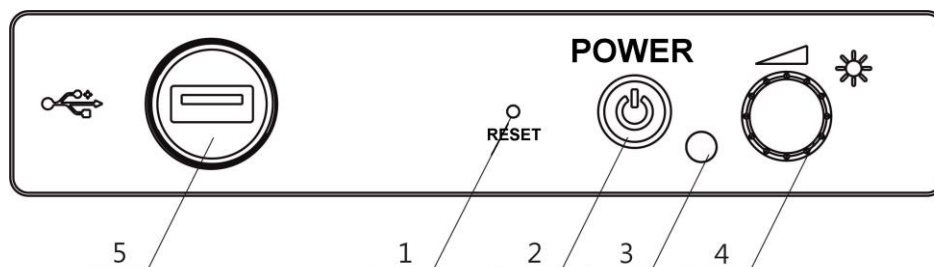


Figure 9 – Layout of controls, indication (LEDs) and speakers on the front panel of the Products MVPC-xx04, MVPC-xx05 type

Table 19 – Description of the controls and indication (LEDs)

N	Name	Description
1	Reset button	Button restarts the product.
2	Power button	Button switches on/off the product.
3	Display brightness LED	LED shows display brightness status.
4	Brightness adjustment knob (dimmer)	Knob ensures screen backlight adjustment.
5	USB	Provides connection of external USB devices
6	---	Speakers
7	---	Control and indication (LEDs) panel



### 1.3.4 Controls and indication (LEDs) of the Products MVPC-xx06, MVPC-xx07 type

Colour display with a diagonal in compliance with tables 3 and 4 is located on the front panel of the Products MVPC-xx06, MVPC-xx07 type. The Product may be delivered in two types: anti-glare glass or touch capacitive panel.

Touch buttons with blue backlight are also located on the front panel, see figure 10 (the Product's appearance may be different and depends on order). Speakers, if any available, are located on the back panel of the Product. Description of the controls and indication (LEDs) see in table 18.

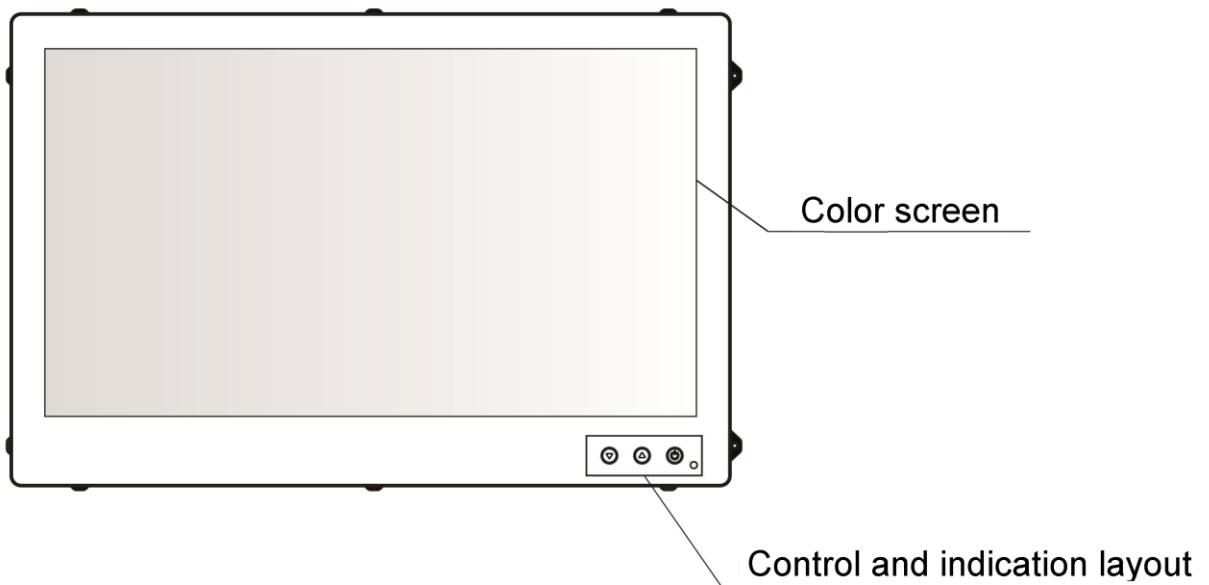

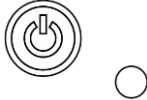


Figure 10 – Controls and indication (LEDs) layout on the front panel of MVPC-xx06, MVPC-xx07

Table 20 – Description of controls and indication (LEDs)

Name	Description
	Brightness adjustment buttons
	Product on/off button with screen brightness indicator

## 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 21.

Table 21 – 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 product – use clean cloth 2 To clean severe contamination – use alcohol-soaked cloth
Rectified hydrolytic technical ethyl alcohol	0.05 l	To soak cloth while removing contamination
Varnish	0.05 kg	To cover surfaces of the product in case of paint coating damage
Abrasive cloth	0.06 x 0.06 m	To polish surfaces of the product in case of paint coating damage

## 1.5 MARKING AND SEALING

The Product has a marking tag for 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 LIMITATIONS**

The Product's installation place 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 for operation, check it visually after unpacking; mechanical damage shall be 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 products and proper grounding.

#### **2.2.3 Switching 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” button on the front panel;

– adjust display brightness using brightness controls on the front panel of the Product.

Switching the Product off is carried out in the following order: switch off power supply using software tools, transfer circuit breakers of main power switchboard to “OFF” position, disconnect power cable from the Product.

### **2.3 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.

After switching the Product on, make sure that power supply indication is functioning, and graphic data to be displayed on the screen are correct and accomplish proper quality.

Check touch screen operation, estimate response time (sensitivity of cursor) and motion within active area of LCD.

Control the Product by means of pre-configured software.



### 3 TECHNICAL SERVICE OF THE PRODUCT

#### 3.1 GENERAL INSTRUCTIONS

Technical service of the Product (hereinafter – TS) must be provided by staff, familiarized 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 22. Maintenance routine procedure is given in the checklists (CL), represented in tables 23, 24.

Table 22 – The list of the TS works

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

Table 23 – CL № 1. Visual check

To be done	Routine	Man-hours per 1 Product
Visually examine the Product	1 Check completeness and appearance of the Product; mechanical damage, paint defects must be absent; leg-ends 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.	1 person 5 mins

To be done	Routine	Man-hours per 1 Product
	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	
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 24 – CL №2. The Product's operation test

To be done	Routine	Man-hours per 1 Product
Check indication and picture on the computer screen	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 operation of any device connected to the Product; 2 Check operation of each port of the Product	1 person 15 mins

### 3.4 PRESERVATION

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

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

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

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



## **4 CURRENT REPAIR OF THE PRODUCT**

### **4.1 GENERAL INSTRUCTIONS**

Control the Product's operation by brightness LED located on the front panel, and presence of image on the screen.

To provide diagnostics of the problems, see table 25.

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

### **4.2 SAFETY FEATURES**

Any repair works must be carried out by personnel examined and received proper qualifications in the area of the occupational safety.

The Product must be grounded before repair works.

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

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 25.

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

Table 25 – Potential problems/defects and troubleshooting

<b>Problem/defect</b>	<b>Potential reasons</b>	<b>To do</b>
No picture, brightness LED is not lighting up.	No voltage supplied from the power source	Check power cable connection to the Product
		Check the fuse
		Provide the power supply
No picture, brightness indicator screen illuminated	Port is faulty. Data source defect	Check cable connection to the Product port
		Check operability of the connected data source



## **5 STORAGE**

The Product must be stored in packaging inside areas complying with the required storage conditions (+ 5 to + 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 Product 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 product 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 products**



**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 violation of operation conditions 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

Tel.: + 7 (812) 602-02-64, 8-800-100-67-19

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

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