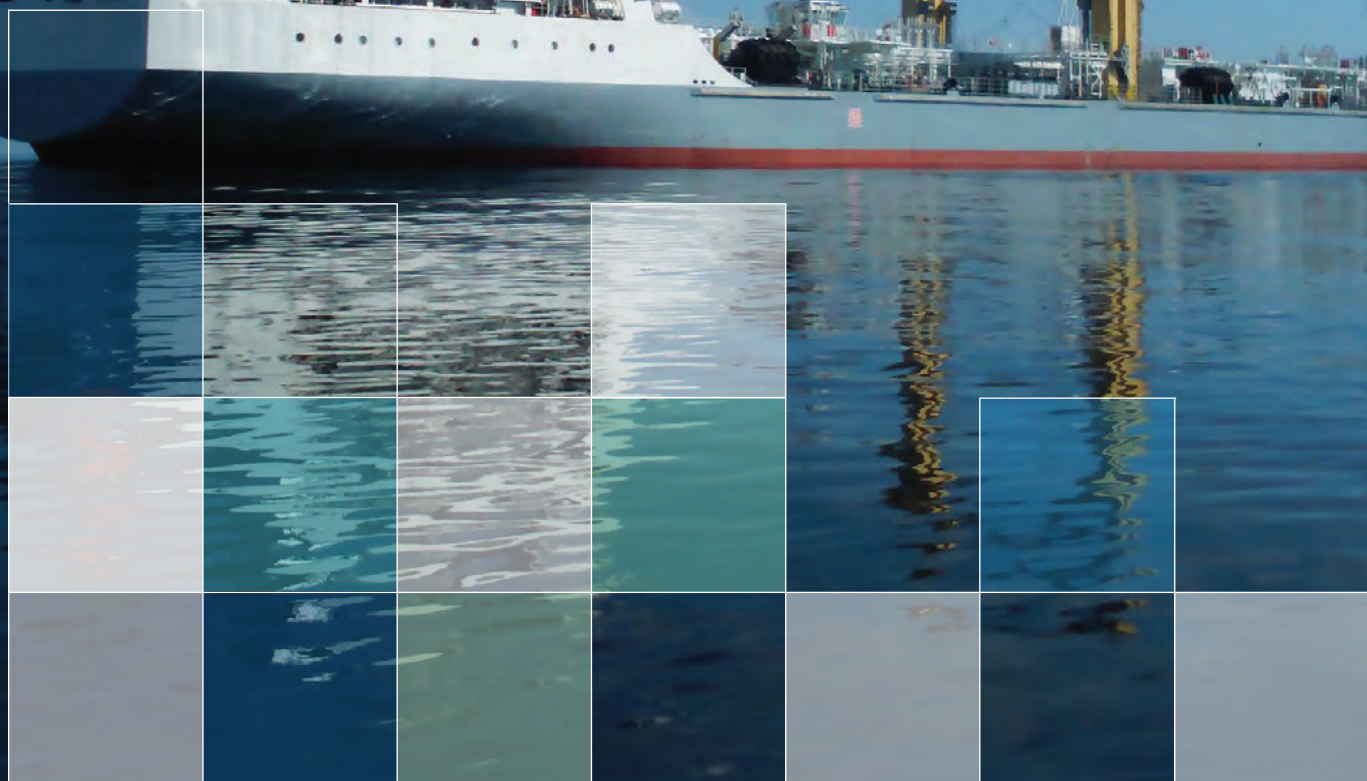


Marine 2020 Electronics



unicont.com



NPK «Morsvyazavtomatica» group of companies is driven by a team of competent professionals united with the challenging ambition to develop a high-quality production of shipborne and industrial equipment. Implementing the most audacious ideas, using first class scientific and technological approaches and the latest technologies available, enables NPK to offer state-of-the-art systems and products.

NPK obtained following certificates:



- Own high-quality scientific, engineering and manufacturing units.
- Our customers are civil industrial companies.
- We focus on innovative and high-tech production.
- Over 600 skilled professionals in our team.
- 24.000 m² of office and manufacturing facilities.
- 40+ state of the art CNC machines are in operation.
- Registered Trademarks: **Unicont, Unimach, NPK MSA.**

Company's philosophy

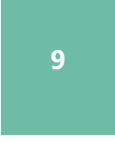
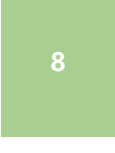
NPK's strategy is a comprehensive approach towards the customer needs. Research, design, production, equipment integration into existing operating systems, installation, operator training, warranty and post-warranty service are in our focus. We in NPK have implemented cost-effective and time efficient manufacturing cycles.

Our key-principles are **Safety** at sea, **Reliability** and **High quality**.

Data conversion and distribution units	1
Communication and interface converters	2
Power supply units	3
Video and audio interfaces	4
Alarm units and systems	5
Lighting, indication and power regulation units	6
Computers, displays and panel PCs	7
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NMEA 0183 Amplifier-distributor

MDU-102

The MDU-102 is designed for the multiplication of NMEA 0183 signals, version 1-3 (IEC 61162-1, 61162-2) or other serial data transmissions via RS-232 and RS-422/485 interfaces from one or two sources. The unit provides a checksum test for data received on the first channel.

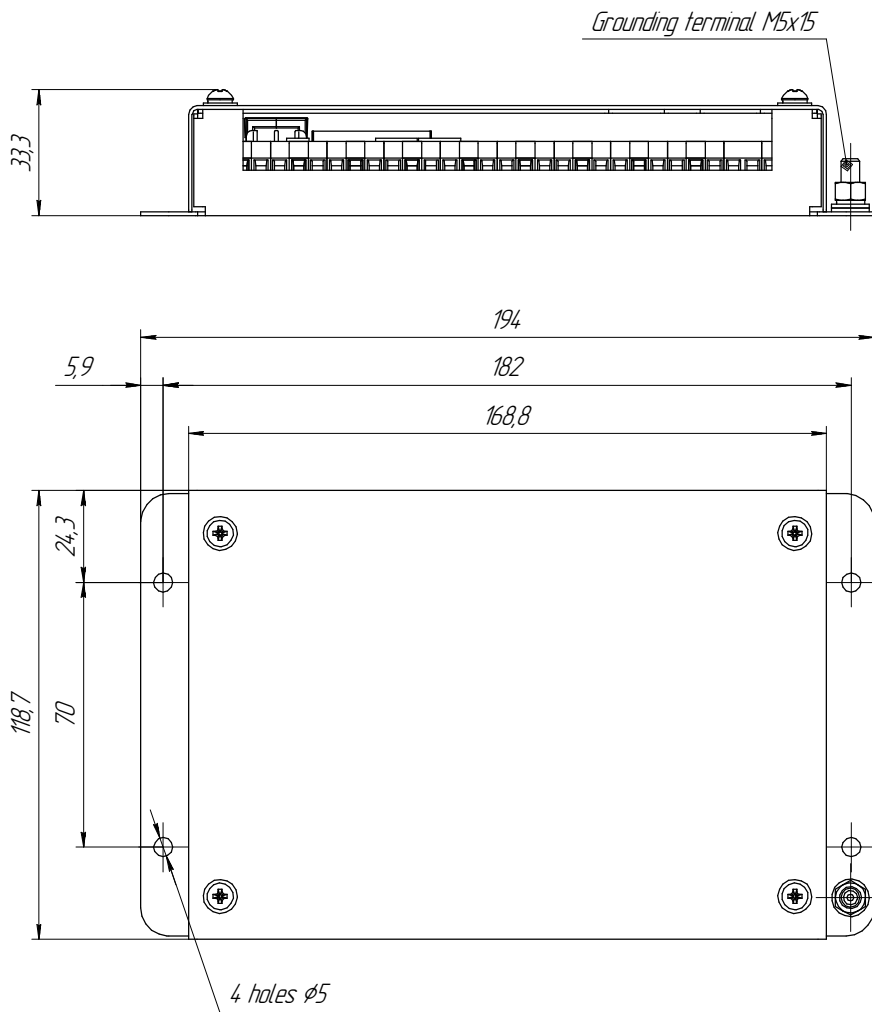
TECHNICAL CHARACTERISTICS

General characteristics	
IP rating	IP 22
Storage temperature	-60...+70°C
Operating temperature	-15...+55°C
Weight	0.5 kg

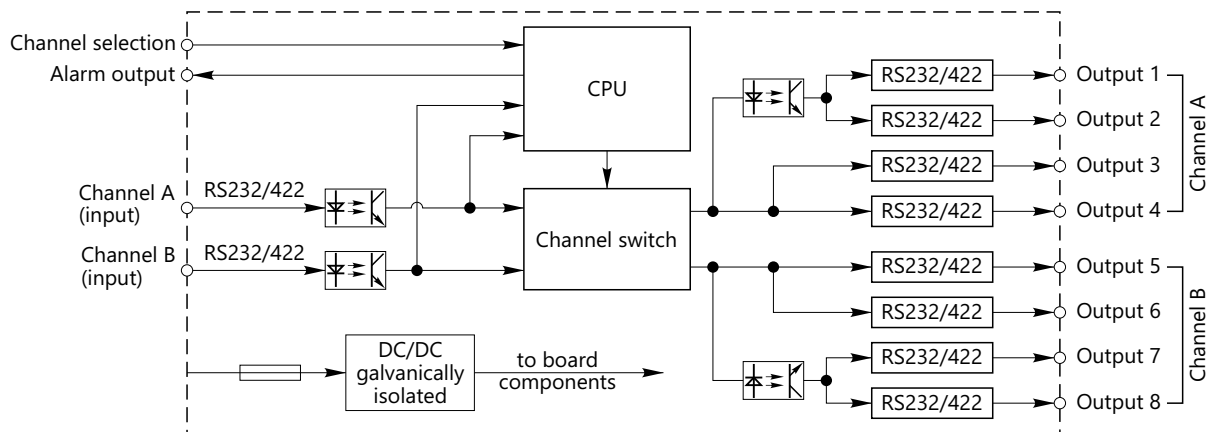
Electrical characteristics	
Power supply voltage	10...36 VDC
Power consumption	max 3 W
Galvanic isolation from power mains	+
Reverse polarity protection	+
Overvoltage protection	+

Characteristics of inputs	
Number of input ports	2 (CH1, CH2)
Supported interfaces	RS-232, RS-422/485
Maximum receive rate	1200-115200 bit/s
Optoisolation of inputs	+

Characteristics of outputs	
Number of output ports	8 (2x4)
Number of output groups	2 (A and B)
Galvanic isolation	4 x – non-isolated 4 x – optoisolated
Supported interfaces	RS-232, RS-422/485
Maximum baud rate	1200-115200 bit/s



MDU-102 dimensional drawing



MDU-102 functional diagram



NMEA 0183 Amplifier-distributor

ADU-202

The ADU-202 is designed for the amplification and multiplication of NMEA 0183 signals, version 1 and 2, or other serial data transmissions via RS-232 and RS-422/485 interfaces. An integrated summarizer combines the input NMEA 0183 sentences and transmits the results to one or two output groups, depending on the jumpers' position on the printed circuit board.

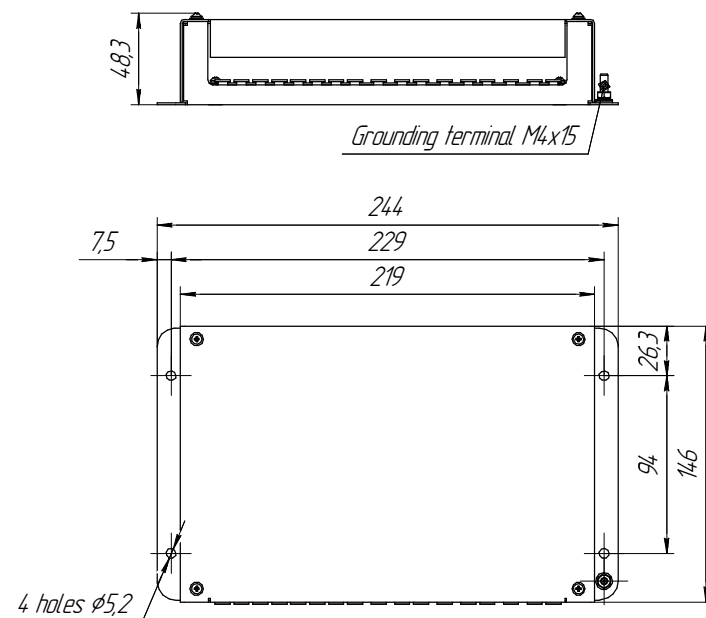
TECHNICAL CHARACTERISTICS

General characteristics	
IP rating	IP 22
Storage temperature	-60...+70°C
Operating temperature	-15...+55°C
Weight	1.2 kg

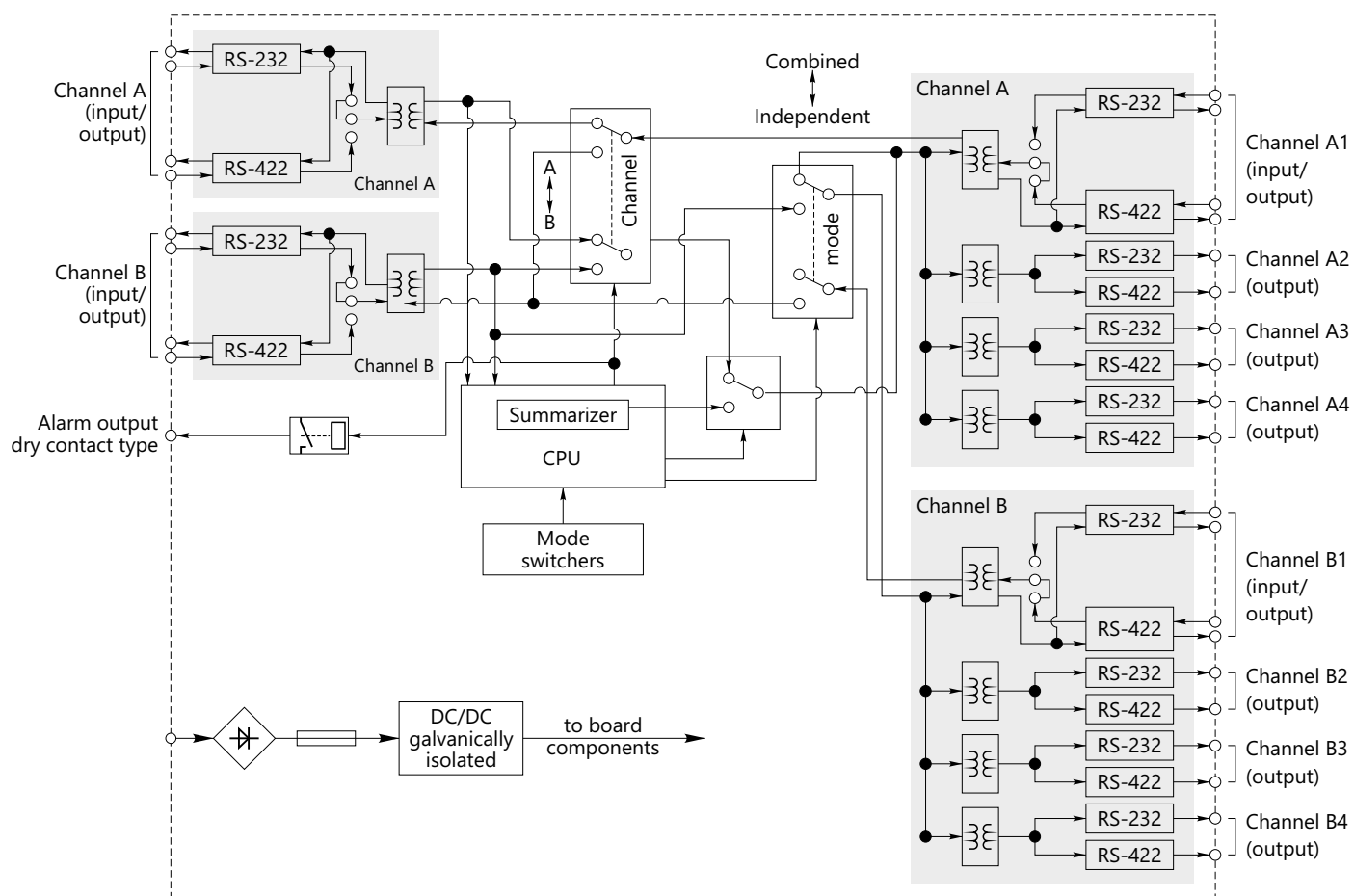
Electrical characteristics	
Power supply voltage	19...36 VDC
Power consumption	max 5 W
Galvanic isolation from power mains	+
Reverse polarity protection	+
Overvoltage protection	+

Characteristics of inputs	
Number of input ports	2 (A, B)
Supported interfaces	2 (RS-232, RS-422/RS-485)
Max receive rate	230 400 bit/s
Optoisolation of input ports	+

Characteristics of outputs	
Number of output groups	2 (A, B)
Number of output ports per each group	4
Number of interfaces per each output port	2 (RS-232, RS-422/RS-485)
Isolation of output ports	+
Total number of output ports	16
Maximum baud rate	230400 bit/s



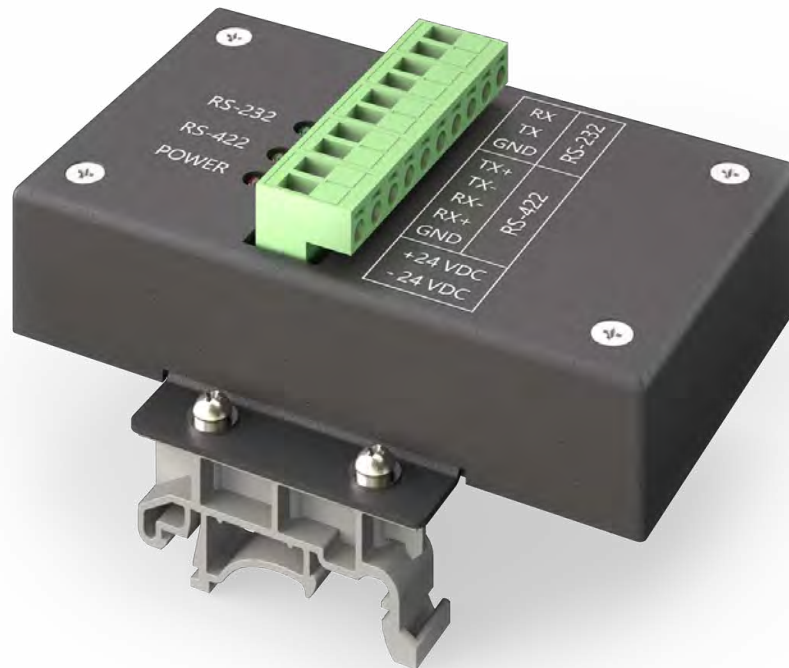
ADU-202 dimensional drawing



ADU-202 functional diagram

Bidirectional RS-232/422 converter

RS-104



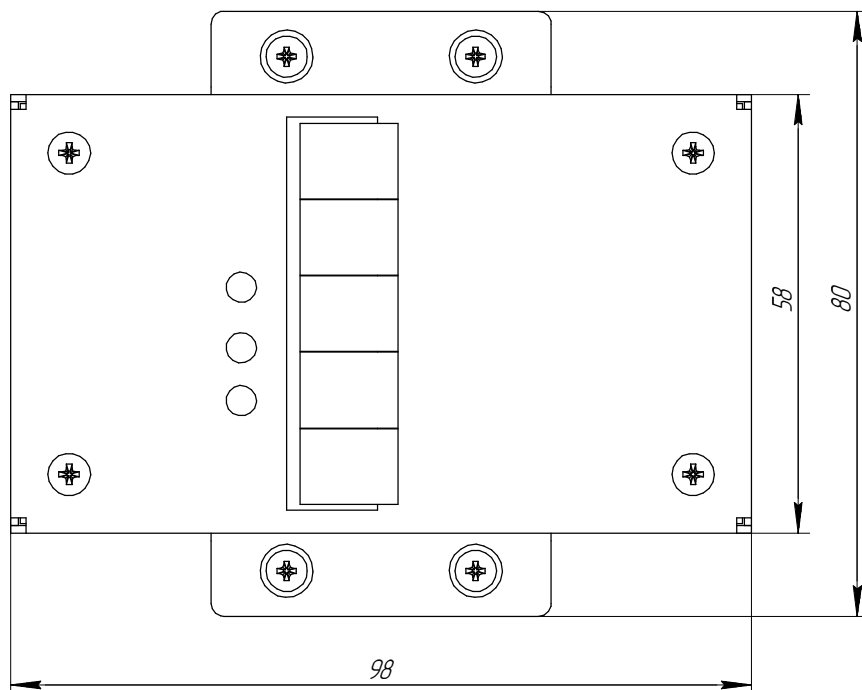
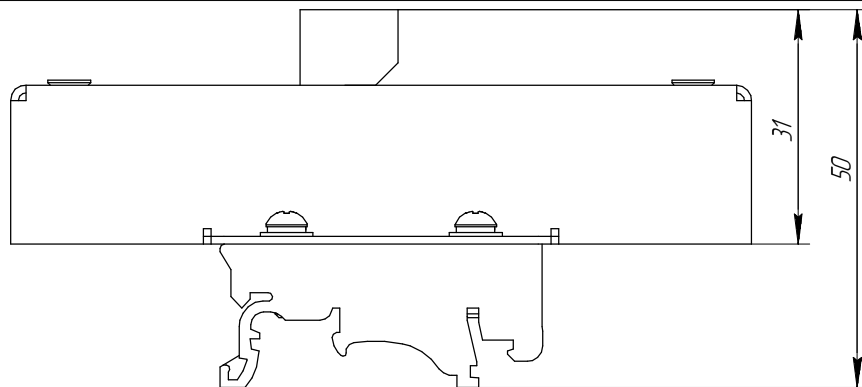
The RS-104 Interface converter is designed for the signal conversion between two standards: RS-232 and RS-422. It is the solution to combine equipment operating with RS-232 or RS-422 signals on river- and sea-going vessels.

TECHNICAL CHARACTERISTICS

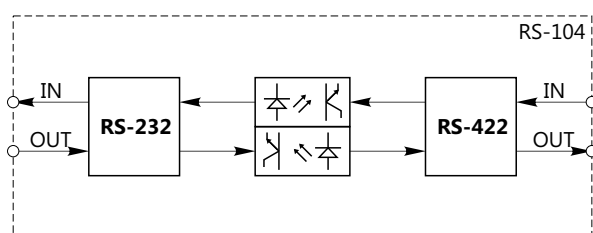
General characteristics	
Storage temperature	-60...+70°C
Operating temperature	-15...+55°C
Weight	0.2 kg
Electrical characteristics	
Power supply voltage	8...40 VDC
Power consumption	3 W

Delivered with DIN-rail mount.

Characteristics of inputs	
Number of input ports	2
Supported interfaces	RS-232 and RS-422
Receive rate	4800-115200 bit/s
Optoisolation of inputs/utputs	+
Characteristics of outputs	
Number of output ports	2
Supported interfaces	RS-232 and RS-422
Maximum baud rate	4800-115200 bit/s



RS-104 dimensional drawing



RS-104 functional diagram



NMEA data combiner

NC-117

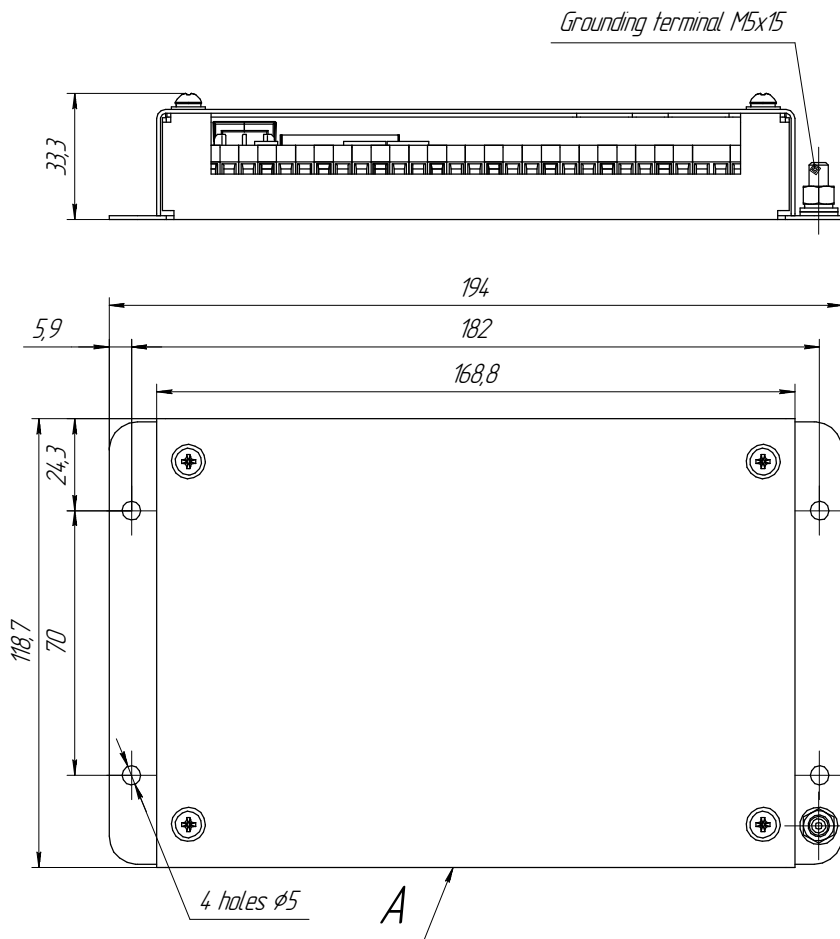
The NC-117 receives NMEA 0183 messages via eight RS-232/422 inputs and 1 USB port. It combines the received messages according to the customer settings and repeats them via four RS-232/422 outputs and 1 USB port.

The unit will combine sentences of standards starting with \$ or ! or # and ending with <CR> and <LF> («carriage return» (CR) and “line feed” (LF) symbols).

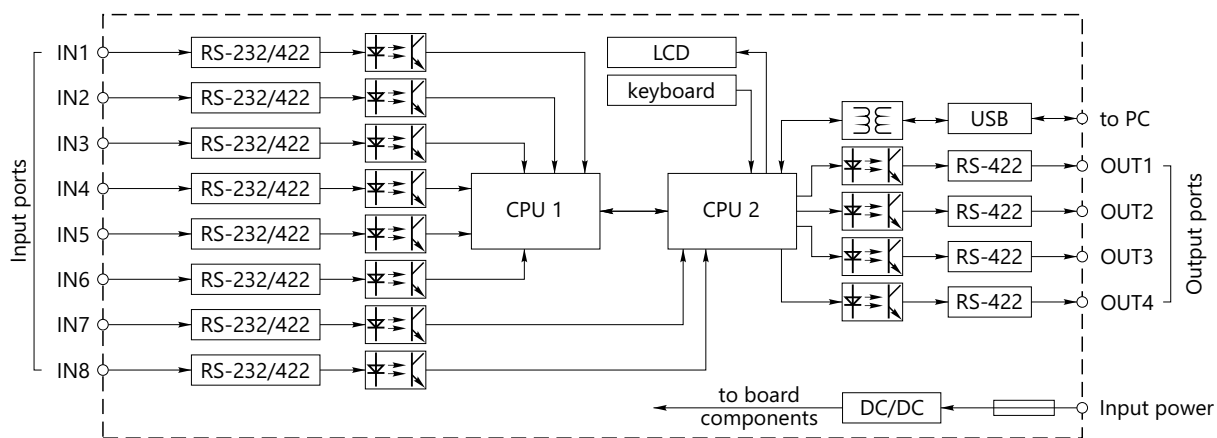
TECHNICAL CHARACTERISTICS

General characteristics	
IP rating	IP 22
Storage temperature	-60...+70°C
Operating temperature	-15...+55°C
Weight	0.7 kg
Electrical characteristics	
Power supply voltage	9...36 VDC
Power consumption	max 7 W
Galvanic isolation from power mains	+
Reverse polarity protection	+
Overvoltage protection	+

Characteristics of inputs/outputs	
Number of input ports	8xRS-232, RS-422/485+USB
Number of output ports	4xRS-232, RS-422/485+USB
Receive/baud rate	2400-115200 bit/s
Signal format	NMEA 0183 versions 1-3 (IEC 61162-1, 61162-2) or other serial data transmissions
Optoisolation of input ports	+
Optoisolation of output ports	+
Data combining	Configured for each port



NC-117 dimensional drawing



NC-117 functional diagram



Data combiner NC-217



The NC-217 receives NMEA 0183 messages via four RS-232/422 inputs, combines them according to the customer settings and repeats them via twelve RS-232/422 outputs. Two additional bidirectional service ports and 1 USB are provided.

TECHNICAL CHARACTERISTICS

General characteristics	
IP rating	IP 22
Storage temperature	-60...+70°C
Operating temperature	-15...+55°C
Weight	3.3 kg

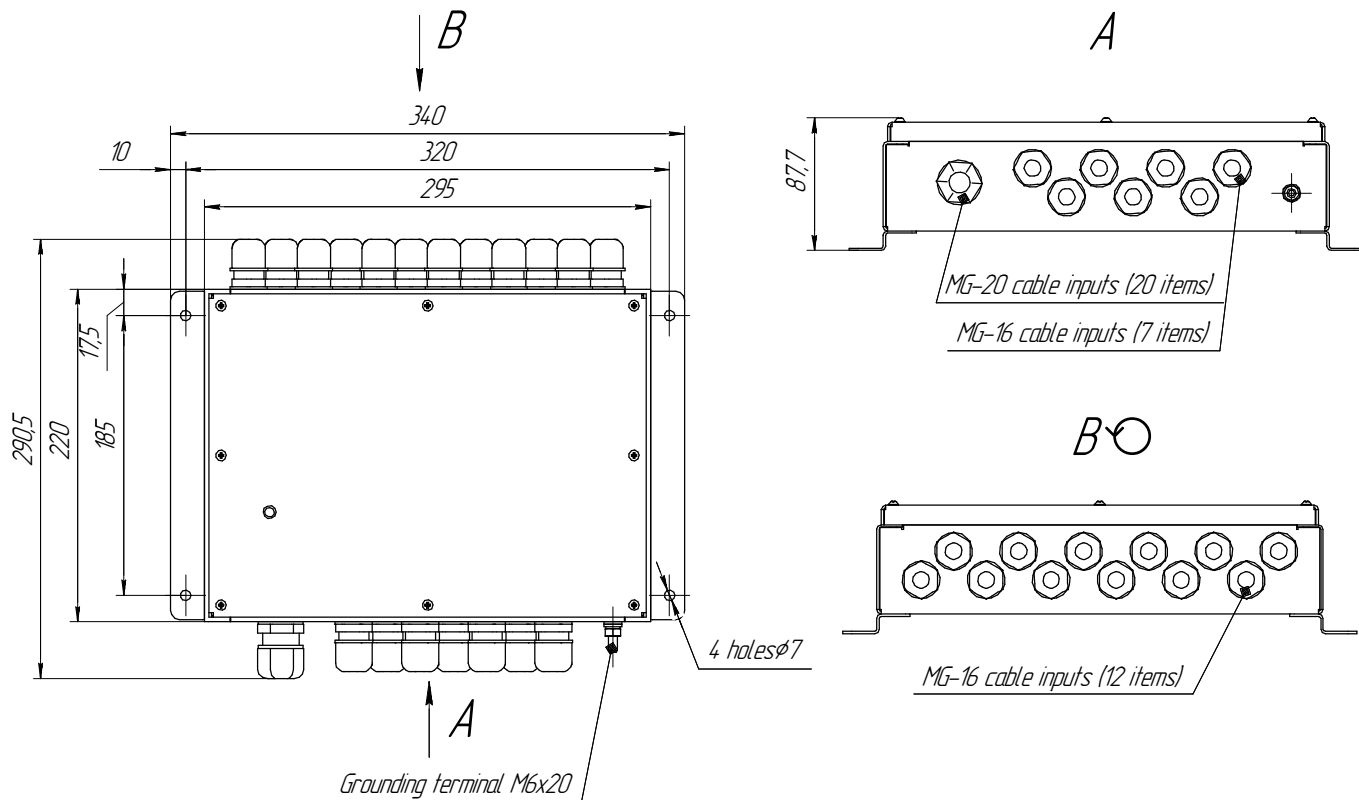
Electrical characteristics	
Power supply voltage	9...36 VDC
Power consumption	max 20 W
Galvanic isolation from power mains	+
Reverse polarity protection	+
Overvoltage protection	+

General characteristics of ports	
Data receive formats	NMEA0183, vers. 2, 3 (checksum test)
Selection of NMEA message	Configured for each port

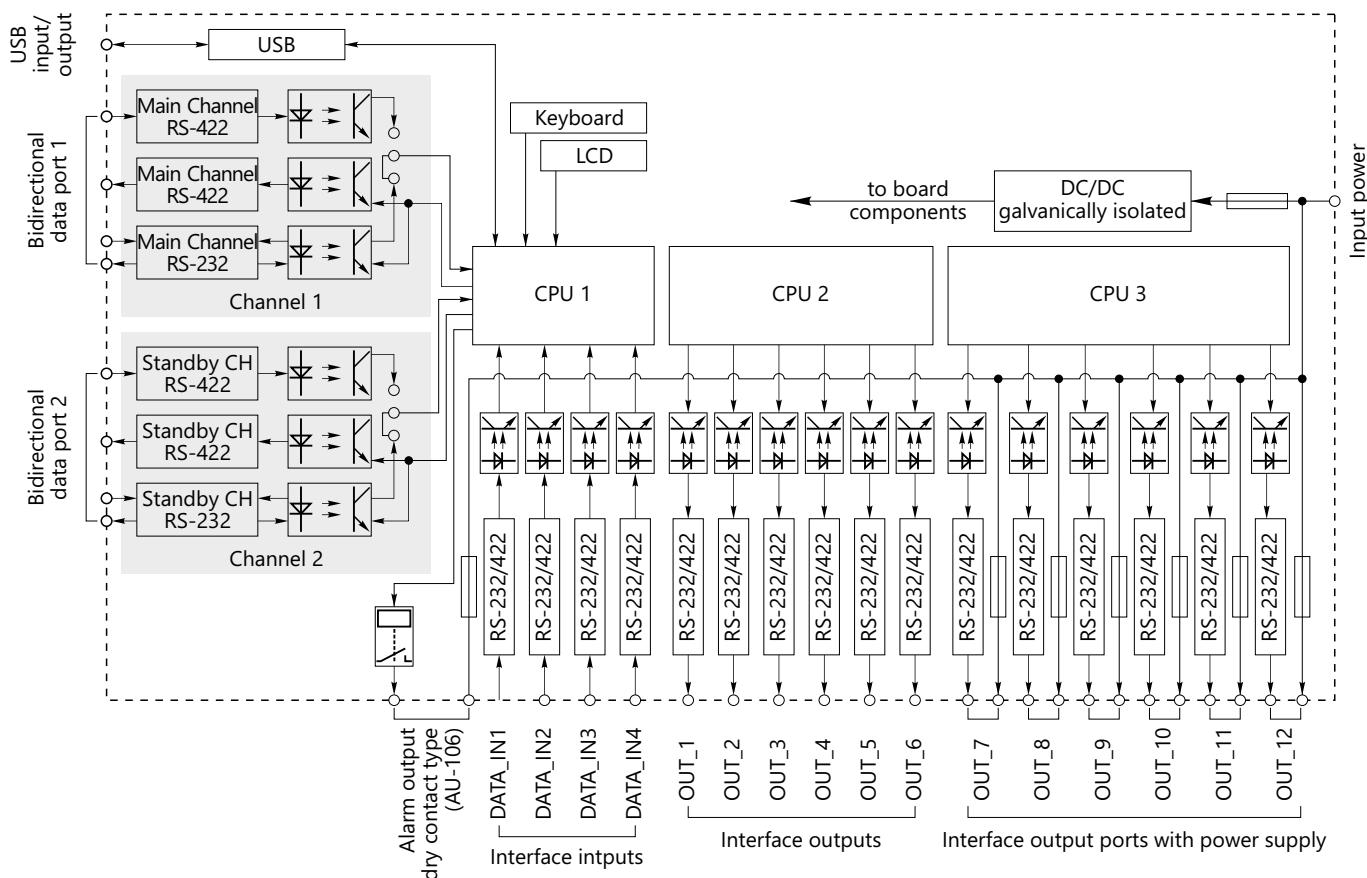
Characteristics of inputs	
Receive rate	4800 - 115200 bit/s
Number of input ports	4
Supported interfaces	RS-232/422
Data reception formats	NMEA0183, ver. 2, 3 (checksum test CRC)
Optoisolation of inputs	+

Characteristics of outputs	
Maximum baud rate	4800 - 115200 bit/s
Number of output ports	12
Supported interfaces	6 x RS-232/422, 6 x RS-232/422 with terminals for load supply
Galvanic isolation	+

Characteristics of service ports	
Number of ports	3
Supported interfaces	2 x RS-232/422, 1 x USB



NC-217 dimensional drawing



NC-217 functional diagram



Multipurpose data converter

DFR-118

The DFR-118 data converter processes received NMEA data and repeats them to units connected to the converter output port. Depending on the software used, the unit is capable to filter and change baud and frequency rate of the data stream, adjust letter and digit of the NMEA sentences and add a checksum.

Customizable software can be developed to meet all customer needs.

TECHNICAL CHARACTERISTICS

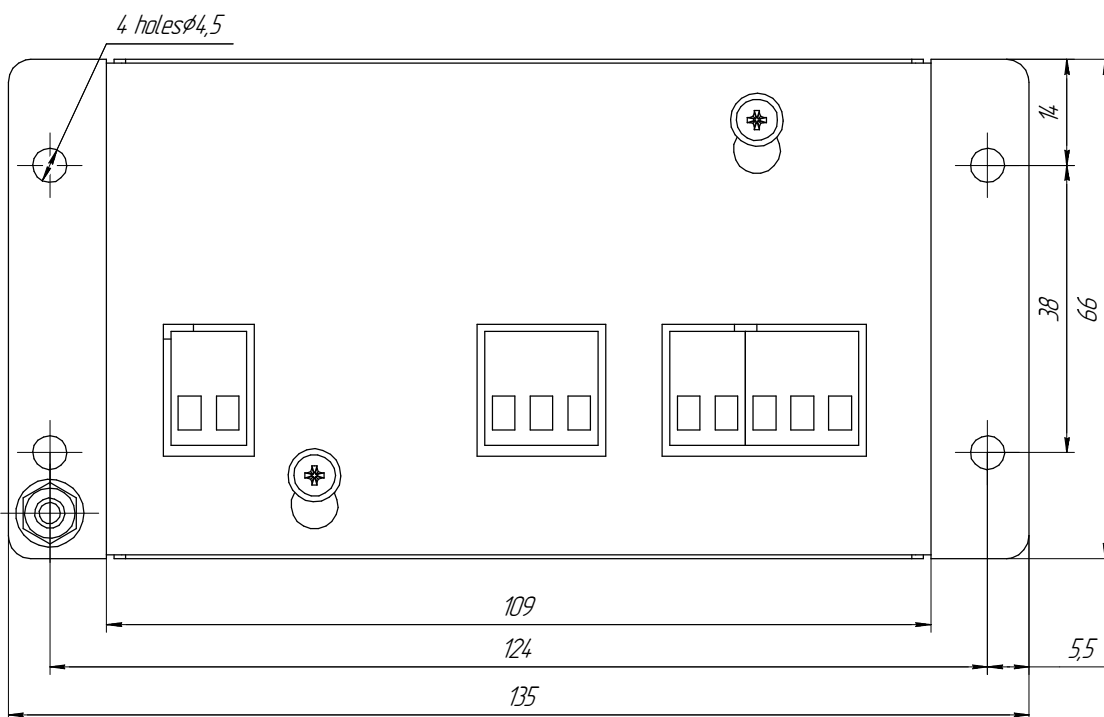
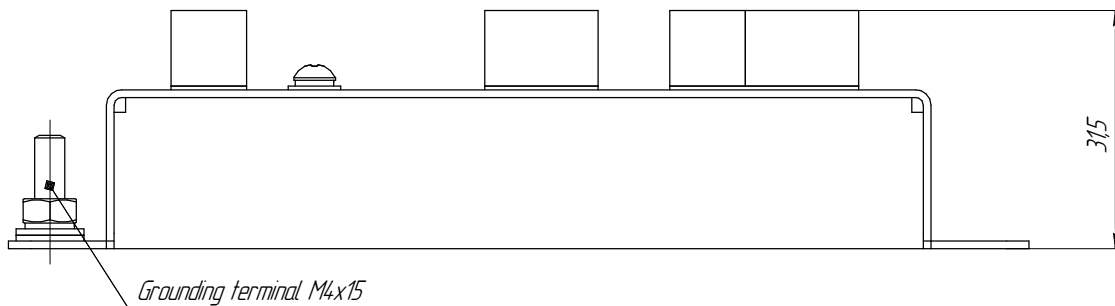
General characteristics	
IP rating	IP 22
Storage temperature	-55...+75°C
Operating temperature	-25...+55°C
Weight	0.265 kg

Electrical characteristics	
Power supply voltage	10...36 VDC
Power consumption	1 W
Reverse polarity protection	+
Overvoltage protection	+

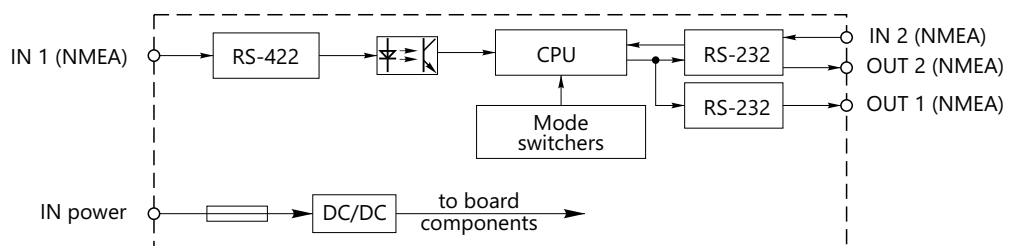
Characteristics of inputs	
Number of input ports	1
Supported interfaces	RS-232, RS-422
Receive rate	4800-115200 bit/s

Characteristics of outputs	
Number of output ports	1
Supported interfaces	RS-232, RS-422
Maximum baud rate	4800 - 115200 bit/s

Customizable software can be provided according to the customer requirements.



DFR-118 dimensional drawing



DFR-118 functional diagram



Analog-to-digital converter (gyrocompass and log signals)

ADPC-101

The ADPC-101 is designed to digitize obsolete analog signals from gyrocompasses and logs into NMEA 0183 format and to transmit the converted data to the relevant navigational equipment.

TECHNICAL CHARACTERISTICS

General characteristics	
IP rating	IP 22
Storage temperature	-60...+70°C
Operating temperature	-15...+55°C
Weight	1.4 kg

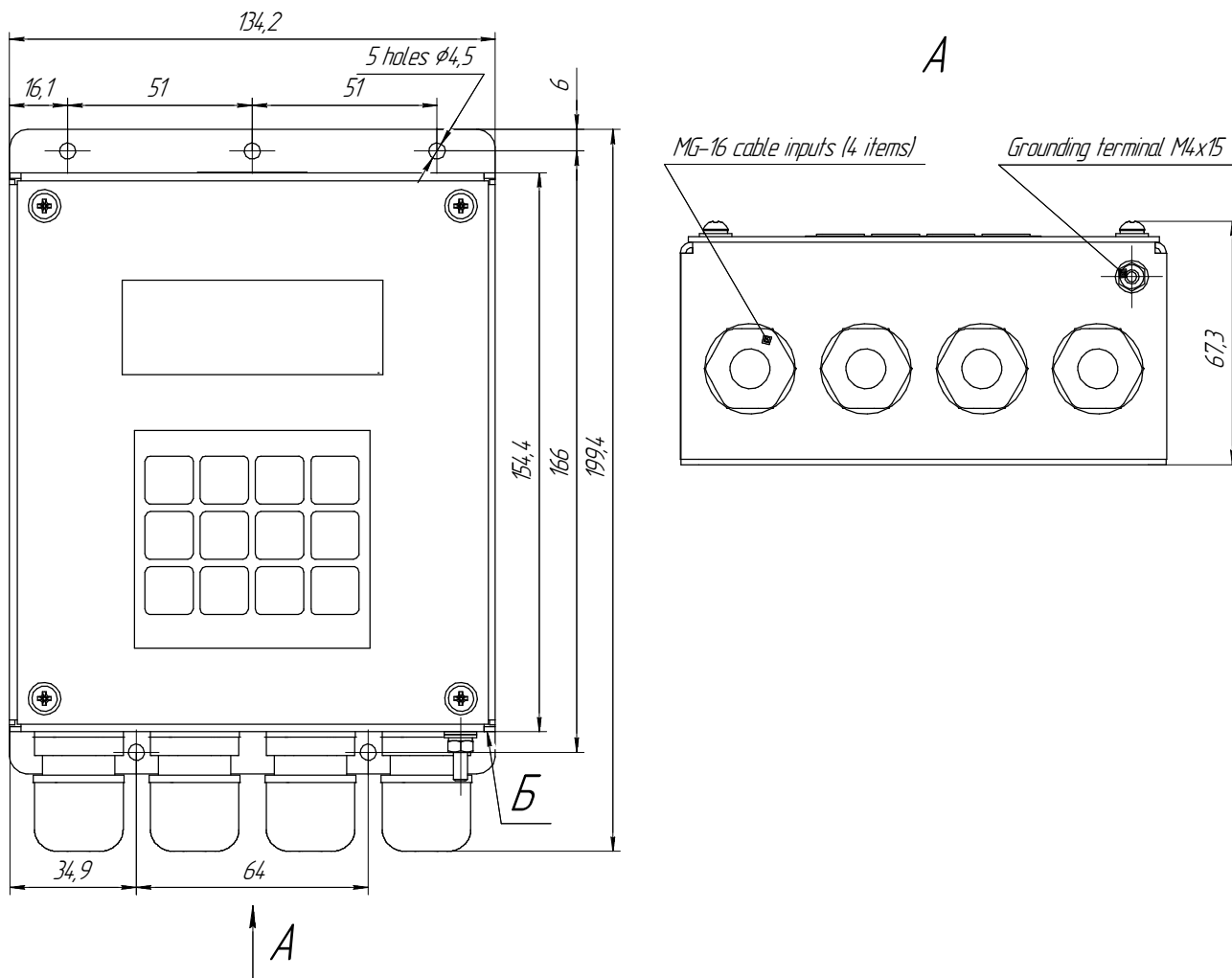
Electrical characteristics	
Power supply voltage	10...36 VDC
Power consumption	2 W

Types of equipment connected	
Gyrocompasses	selsyn (synchro) type stepper type
Logs	stepper log type (pulse) log with closing contact interface

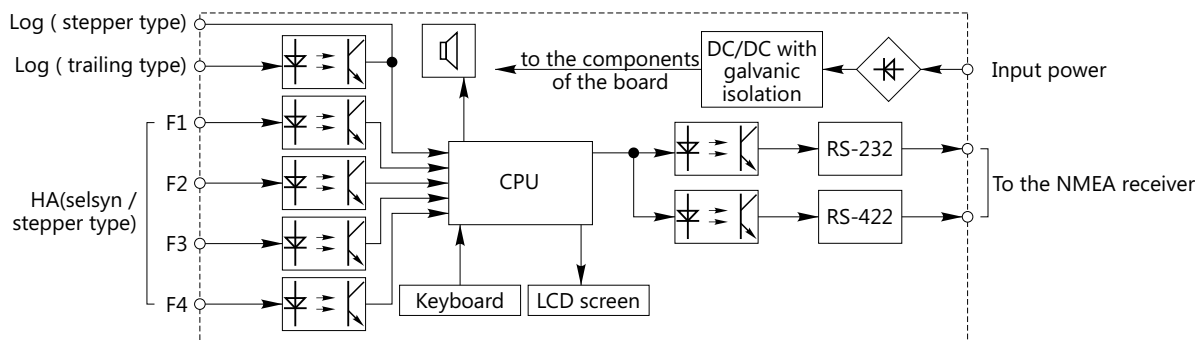
Output signal	
Output signal format by ports RS-232 and RS-422/485	NMEA-0183 1-3 (IEC-61162) with line checksum
Line options NMEA-0183	63 (configured)

	Range of measured values	Data accuracy
Speed	0...99.9 knots	0.1 knots
Course	0...359.9 degrees	0.1 degrees

Input signals	
Gyrocompass:	
Sine voltage of synchro windings	+
Voltage pulses	+ (stepper type)
Voltage	up to 350 V
Gyro ratio	360x, 240x, 180, 90x, 60x, 36x
Frequency	up to 500 Hz
Rate of course change (rate of turn)	up to 80 degrees/s
Log:	
Voltage pulses	+ (stepper type)
Closing contact	+
Voltage	up to 350 V
Pulses per mile	100/ 200/ 300/ 400/ 500/ 600



ADPC-101 dimensional drawing



ADPC-101 functional diagram



NMEA 0183 to AD-10S converter

NTA-115



The NTA-115 converts ship course data received in NMEA 0183 sentences into AD-10S format. The unit connects devices not equipped with AD-10S-output to various Furuno equipment.

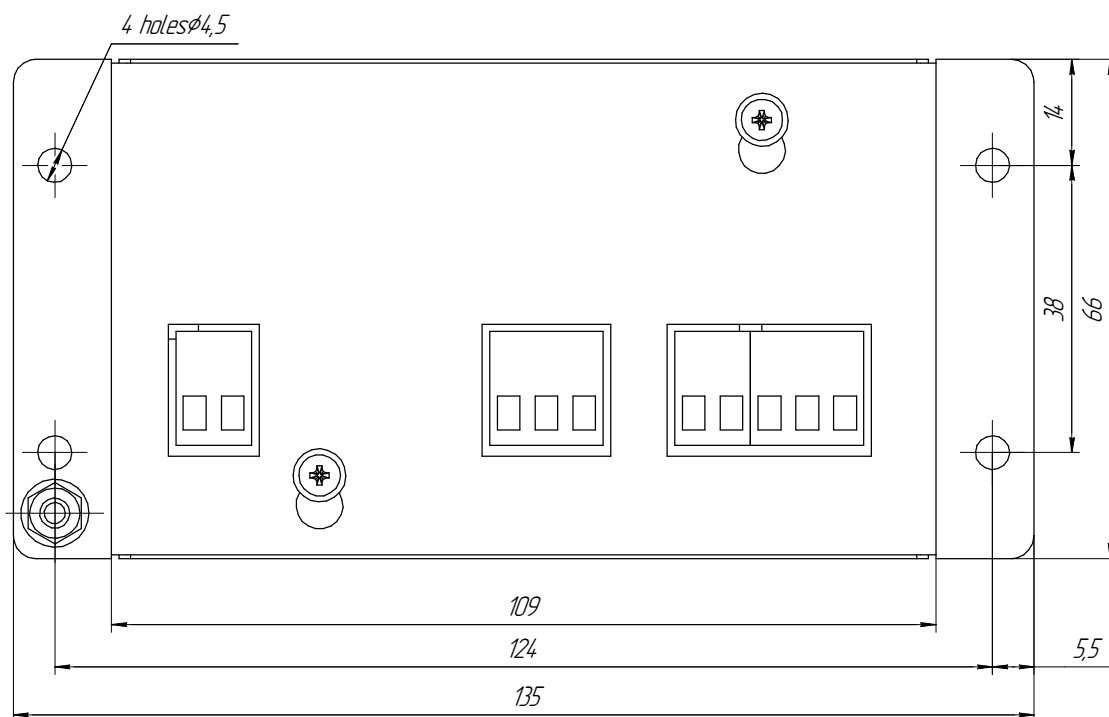
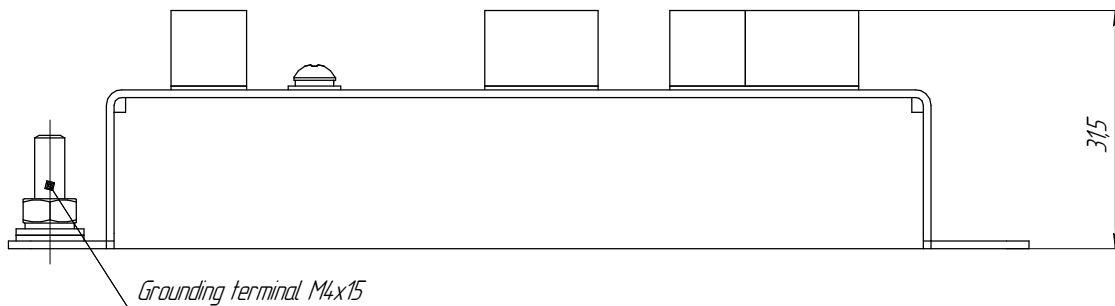
TECHNICAL CHARACTERISTICS

General characteristics	
Storage temperature	-55...+75°C
Operating temperature	-15...+55°C
Weight	0.29 kg

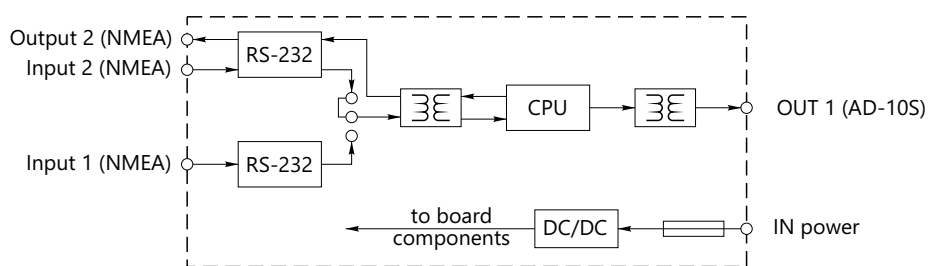
Electrical characteristics	
Power supply voltage	9...40 VDC
Power consumption	2 W
Reverse polarity protection	+
Overvoltage protection	+

Characteristics of inputs	
Supported interfaces	RS-232, RS-422
Received NMEA sentences	xxHDT, xxOSD, xxVHW
Input data type	course value

Characteristics of outputs	
Output data type	AD-10S



NTA-115 dimensional drawing



NTA-115 functional diagram



Digital-to-analog converter / Heading converter

DAC-109

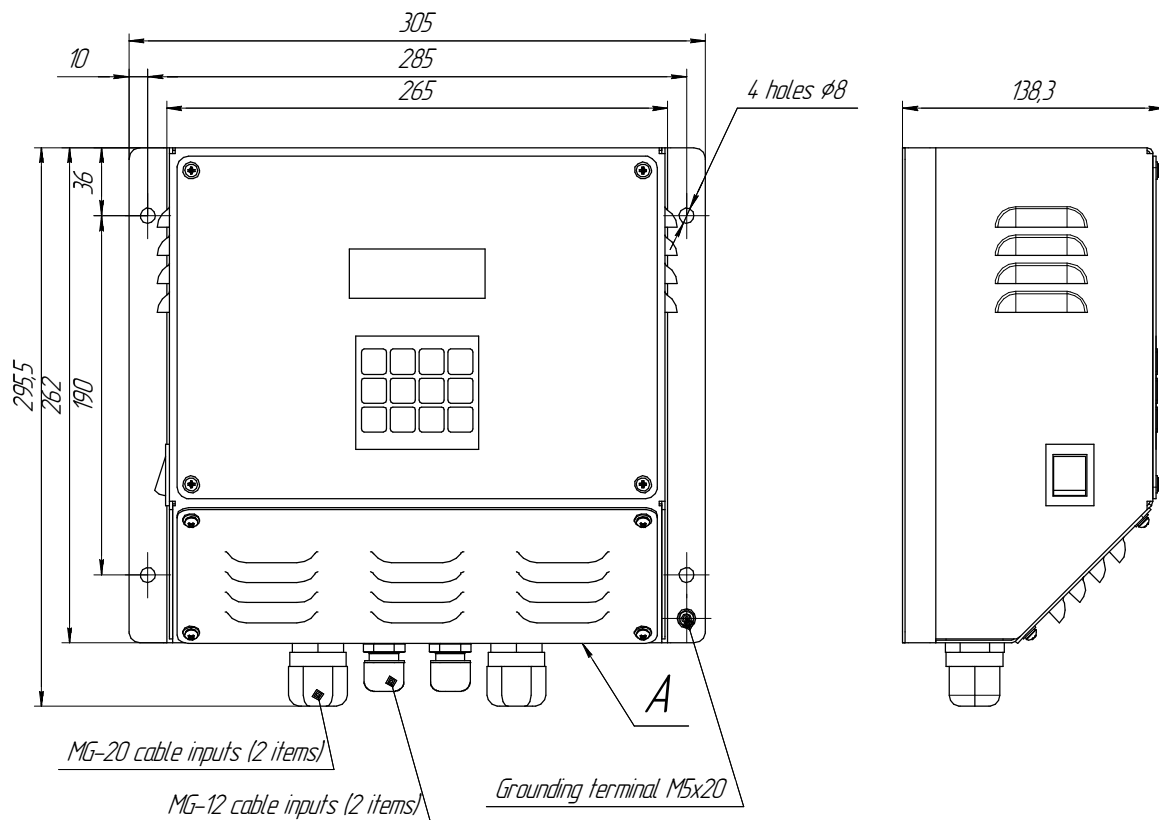
The DAC-109 converts digital course data received in NMEA format into synchrosignals required to control analog repeaters and other selsyn-based equipment.

The unit may be used as a digital repeater to display the current course data.

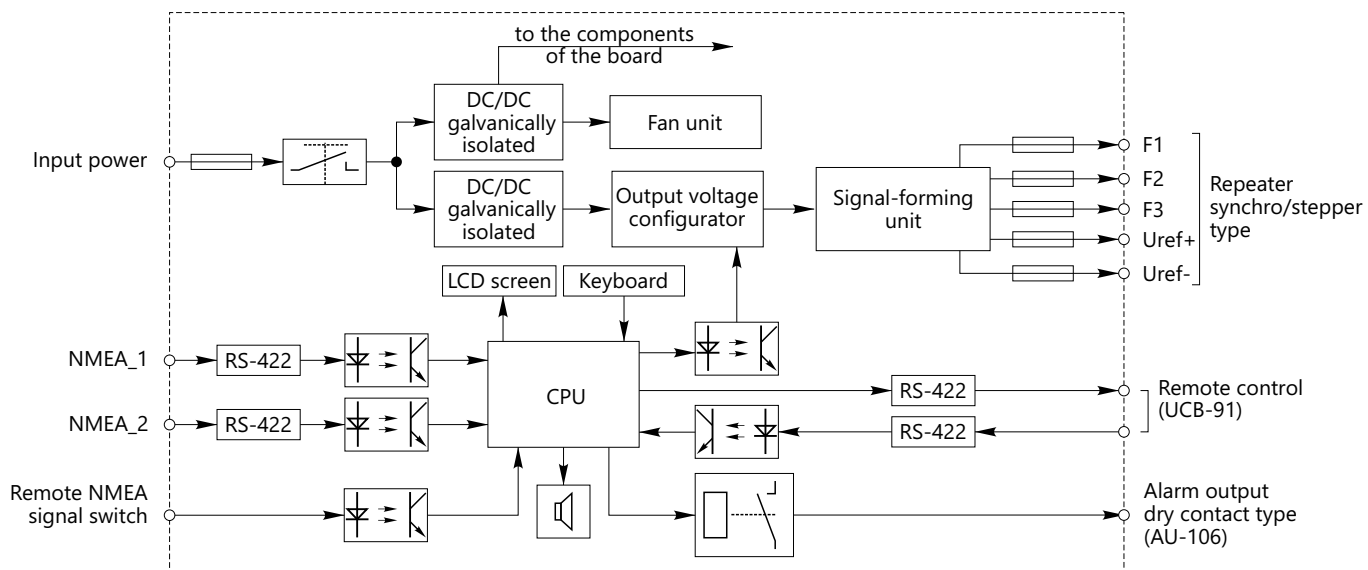
TECHNICAL CHARACTERISTICS

General characteristics	
IP rating	IP 22
Storage temperature	-55...+70 °C
Operating temperature	-15...+55 °C
Weight	6 kg
Electrical characteristics	
Power supply voltage	9...36 VDC
Max total power consumed by connected selsyns	250 W
Frequency of output alternating voltage	50 Hz / 500 Hz
Galvanic isolation from power mains	+
Reverse polarity protection	+
Overvoltage protection	+

Characteristics of digital inputs	
Number of input ports	1+1 (main, standby)
Supported interfaces	RS-232/422/485
Receive rate	up to 115 200 bit/s
Optoisolation of inputs	+
Supported protocols	NMEA 0183 ver. 1 -3
Supported NMEA sentences	xxHDG, xxHDT, xxHDM
Characteristics of outputs	
Maximum number of connected synchro-receivers	8
Types of connected analog repeaters	Synchro/Step

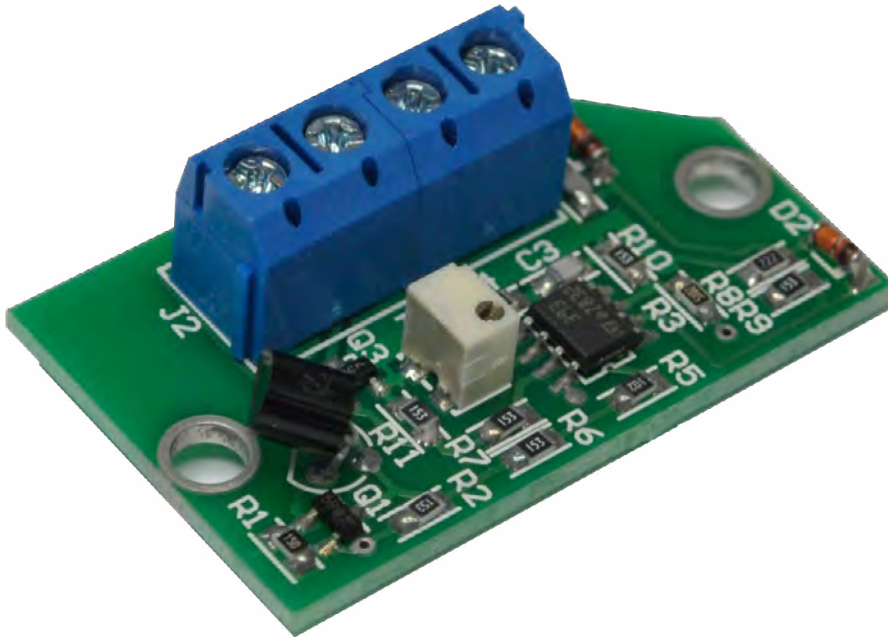


DAC-109 dimensional drawings



DAC-109 functional diagram

Pulse width controller

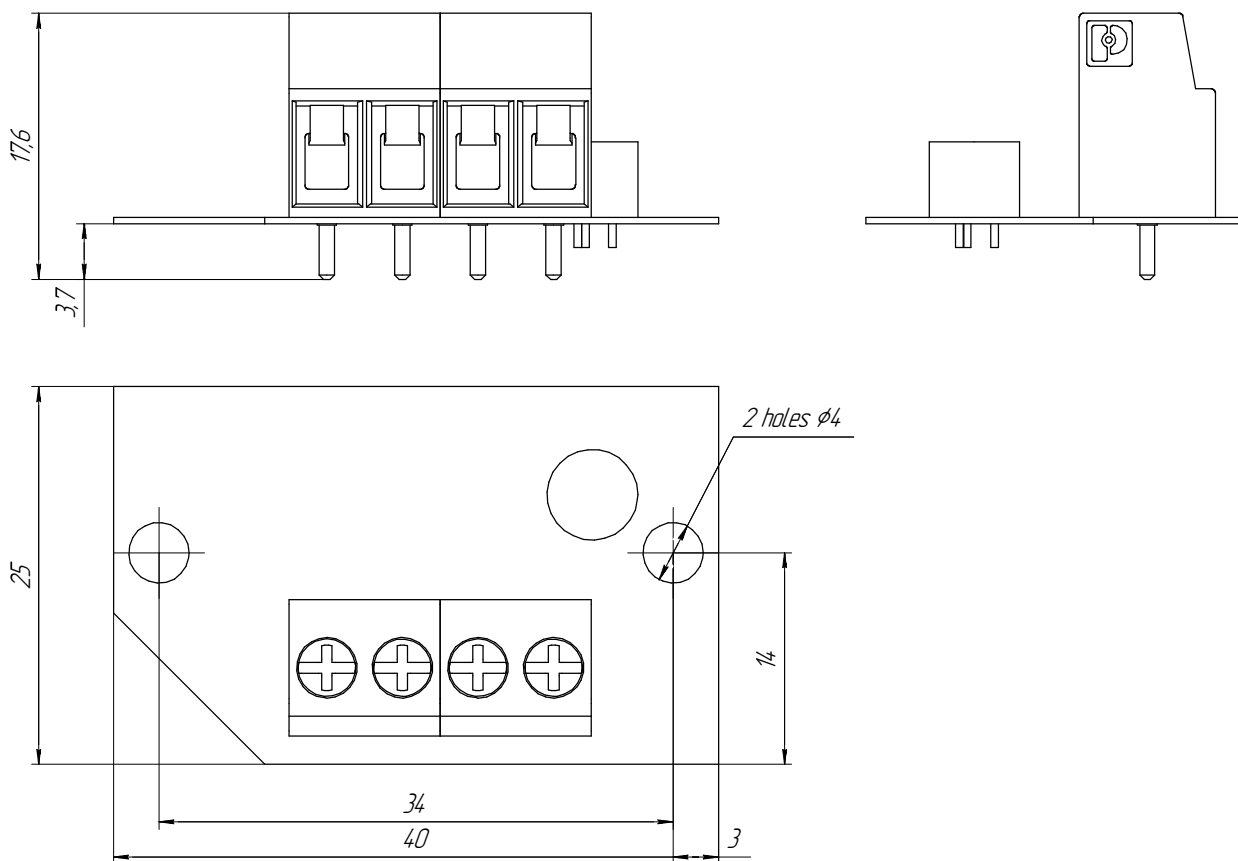
IWR-123


The IWR pulse width controller harmonizes the pulse time of different radio navigational equipment. Regardless of the output pulse time, the IWR-123 regulates the output signal within 10-300 microseconds.

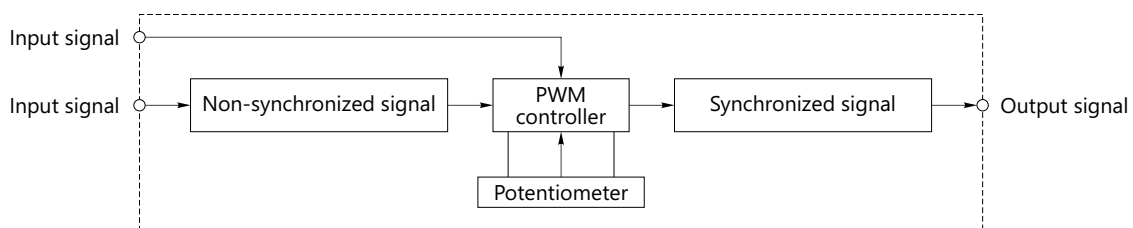
TECHNICAL CHARACTERISTICS

General characteristics	
Storage temperature	-60...+70 °C
Operating temperature	-15...+55 °C
Weight	0.1 kg
Electrical characteristics	
Power supply voltage	8...20 VDC
Current consumption	max 100 mA

Characteristics of inputs	
Number of input ports	1
Input signal amplitude	(0.6...1)·Vcc
Input signal time	5...300 μs
Input resistance	2.2 kOhm
Characteristics of outputs	
Number of output ports	1
Adjustment range of output signal	10...300 μs
Output signal amplitude	(Vcc-2) V
Max load current	30 mA



IWR-123 dimensional drawing



IWR-123 functional diagram

Power supply unit
PS-103



The PS-103 power supply unit with a rated power of 192 W operates with 110 (optionally) / 220 VAC and provides unregulated power of 24V for various shipboard and industrial equipment. The PS-103 has an input for a standby storage battery (24 VDC) with automatic switching in the event of a main power supply failure. A power loss actuates the closing of built-in dry relay contacts.

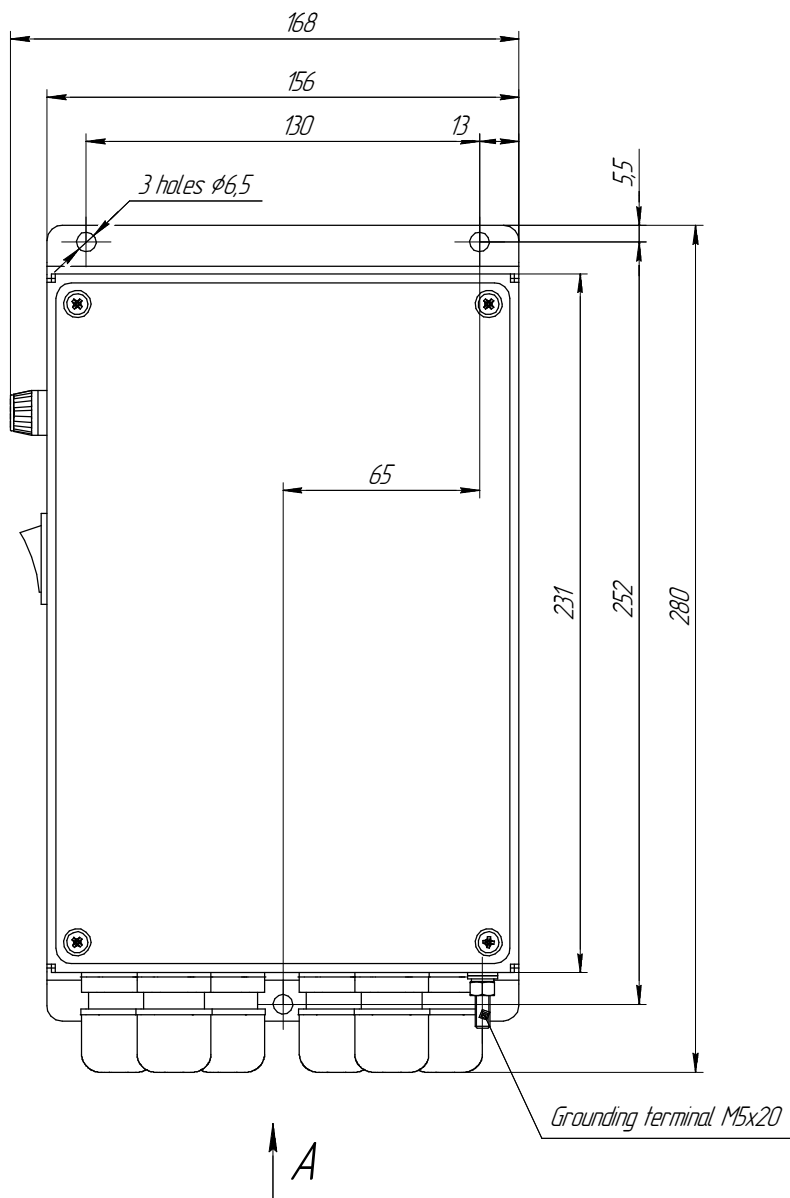
The unit is designed for installation in a dry environment (IP22). Galvanic isolation of power circuit, load, and current overload protection are provided.

TECHNICAL CHARACTERISTICS

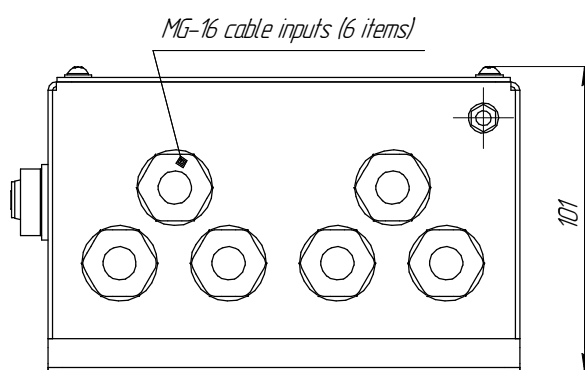
General characteristics	
IP rating	IP 22
Storage temperature	-60...+70 °C
Operating temperature	-15...+55 °C
Weight	4.6 kg
Current overload protection	+

Electrical characteristics	
Power supply voltage	110 V (optionally)/ 220 V, 50-60 Hz
Output voltage	18...31 V DC
Rated power	190 W
Rated load current	10 A
Terminals for connected loads	3
Galvanic isolation from power mains (for main power)	+

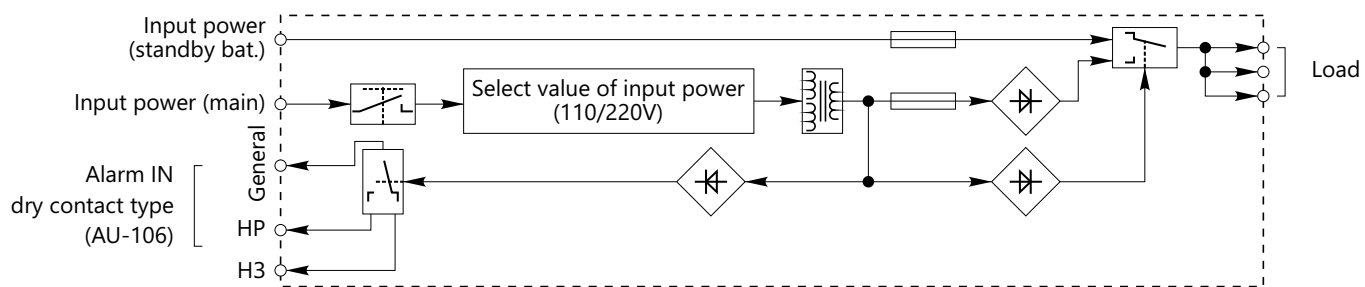
The AU-106 may be used as an Alarm unit (see p. 60).



A(1:2,5)



PS-103 dimensional drawing



PS-103 functional diagram

Power supply unit
PS-103-20



The PS-103-20 with a rated power of 192 W is designed to operate with 110 (optionally) / 220 VAC and provides unregulated power of 24V for various shipboard and industrial equipment. The PSU has an input for a standby storage battery (24 VDC) with an automatic switchover in the event of a main power supply failure. A power loss actuates the closing of built-in dry relay contacts.

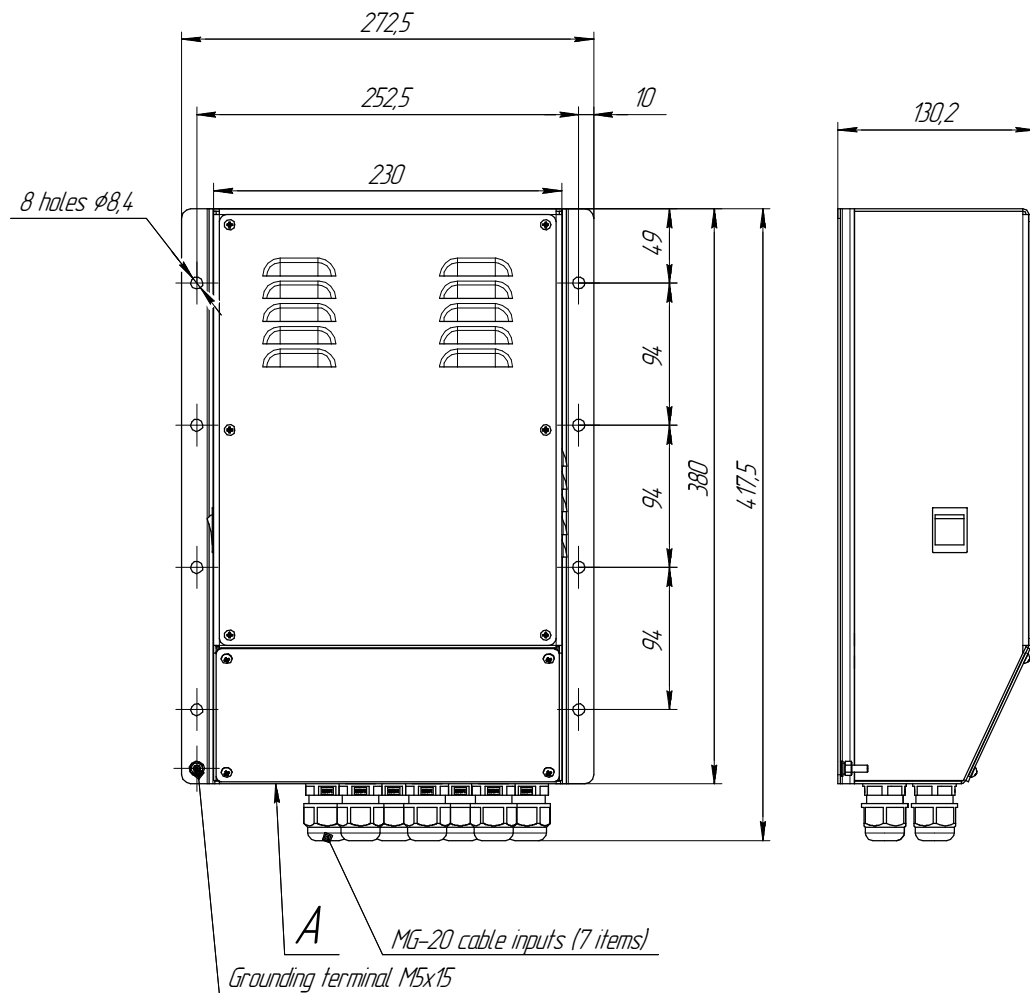
Install in a dry environment (IP22). Galvanic isolation of the power circuit, load, and current overload protection are provided.

TECHNICAL CHARACTERISTICS

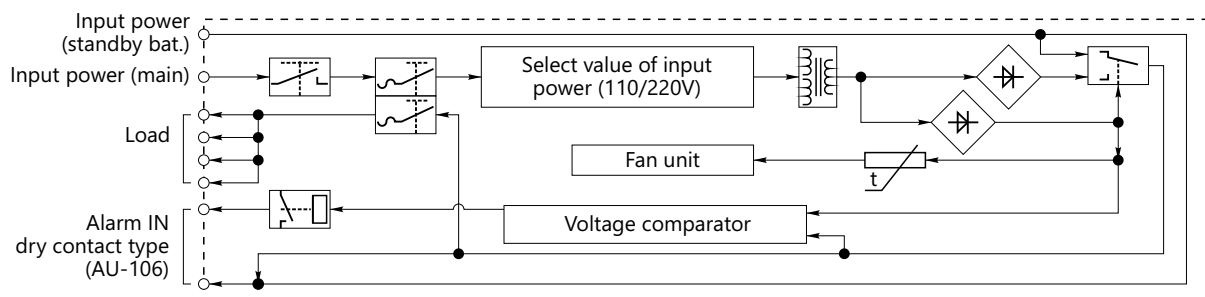
General characteristics	
IP rating	IP 22
Storage temperature	-60...+70°C
Operating temperature	-15...+55°C
Weight	9.385 kg
Degree of efficiency	up to 93%
Current overload protection	+

Electrical characteristics	
Power supply voltage	110 V (optionally)/ 220 V, 50-60 Hz
Output voltage	18...31 VDC
Rated power	450 W
Pulsation	1 V
Rated load current	20 A
Terminals for connected loads	4
Galvanic isolation from power mains (for main power)	+

The AU-106 may be used as an Alarm unit (see p. 60).



PS-103-20 dimensional drawing



PS-103-20 functional diagram

Power supply unit
PS-203



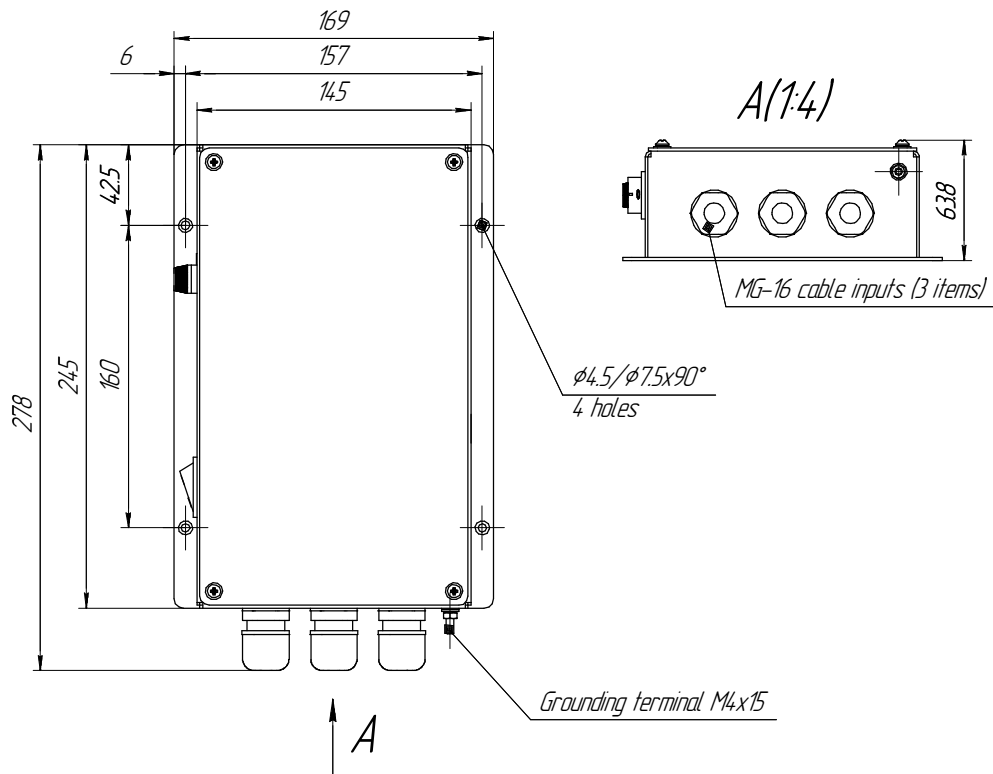
The PS-203 power supply unit operates with single-phase AC mains 50-60 Hz and converts the input voltage of 110/220VAC into 12/24/48VDC. The PS-203 supplies shipboard equipment which is sensitive to input voltage surges and peaks.

Install in a dry environment (IP22). The unit has a galvanic isolation of the input/output feed circuit and overvoltage protection.

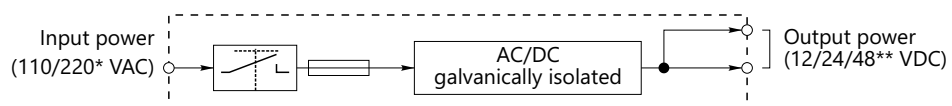
TECHNICAL CHARACTERISTICS

General characteristics	
IP rating	IP 22
Storage temperature	-60...+70°C
Operating temperature	-15...+55°C
Weight	5 kg
Overvoltage protection	+
Current overload protection	+

Electrical characteristics			
Design	PS-203-A1 (12.5 A)	PS-203-A2 (6.5 A)	PS-203-A3 (3.2 A)
Power supply voltage	90...132 / 180...264 V, 50/60 Hz (selected by a switch)		
Output voltage	12 VDC	24 VDC	48 VDC
Rated power	150 W	156 W	158 W
Rated load current	12.5 A	6.5 A	3.3 A
Coefficient of efficiency	up to 87%	up to 89%	up to 90%
Galvanic isolation from power mains	+		
Terminals for connected loads	2		



PS-203 dimensional drawing



* Selected by switch on power unit

** Depending on design

PS-203 functional diagram

Power supply units
PS-203-40A(60A)



The PS-203-40A and PS-203-60A power supply units with a rated power of 1000 and 1512 W are designed to operate with 110/220VAC and convert the input voltage into a regulated 24VDC. Both power supply units have an input for a standby storage battery (24 VDC), which switches over automatically in the event of a power supply failure. A power failure actuates the closing of the built-in dry relay contacts. The units are suitable to supply shipboard equipment, which is sensitive to input voltage surges and peaks.

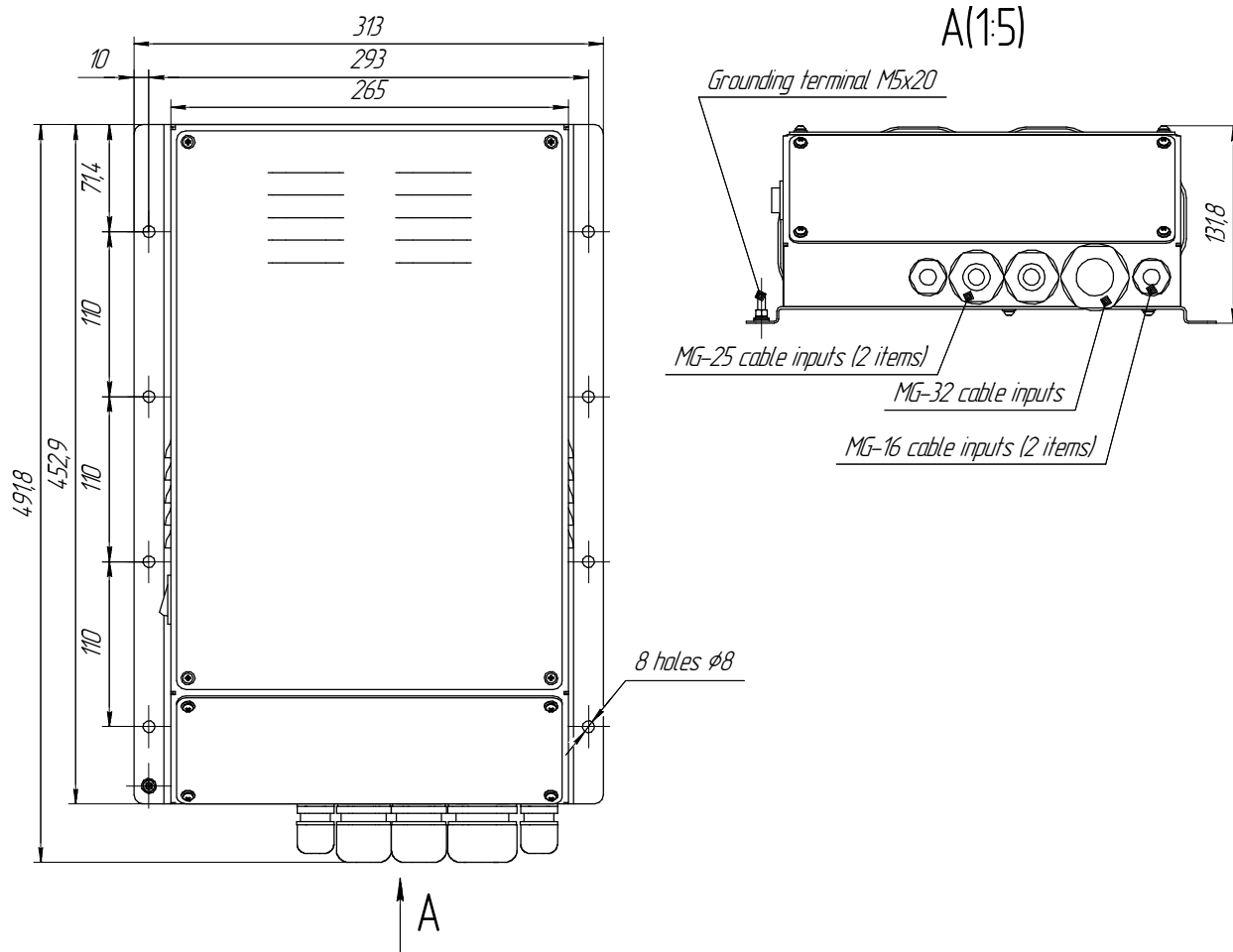
The PS-203-40A (60A) can be used in a dry environment (IP22). The units have galvanic isolation of input/output feed circuit, overvoltage and current overload protection.

TECHNICAL CHARACTERISTICS

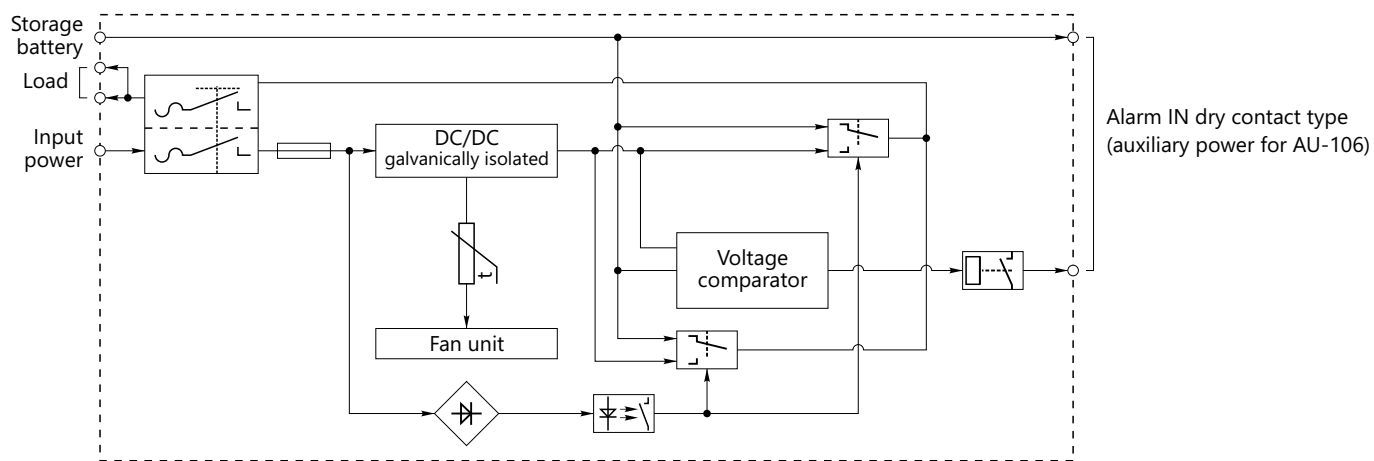
General characteristics	
IP rating	IP 22
Storage temperature	-60...+70°C
Operating temperature	-15...+55°C
Weight	15 kg
Degree of efficiency	up to 90%
Overvoltage protection	+
Current overload protection	+

Electrical characteristics		
Name	PS-203-40A	PS-203-60A
Power supply voltage (main)	~110/220 V, 50/60 Hz	
Output voltage	24 VDC	
Rated power	1000 W	1500 W
Pulsation (main power)	150 mV	
Rated load current	41.7 A	63 A
Terminals for connected loads	2	
Galvanic isolation from power mains (main power)	+	

The AU-106 may be used as an Alarm unit (see p. 60).



PS-203-40A (60A) dimensional drawing



PS-203-40A (60A) functional diagram

Power supply unit
PS-303



The PS-303 power supply unit operates with 220VAC or 24/12 VDC and converts the input voltage into a regulated voltage of 12/24 VDC. The unit has an input for a standby power source of 12/24 VDC, which switches over automatically in the event of a power supply failure.

The PS-303 has a galvanic isolation of input and output feed circuit, overvoltage, current overload and reverse polarity protection. For dry environment installation (IP22).

TECHNICAL CHARACTERISTICS

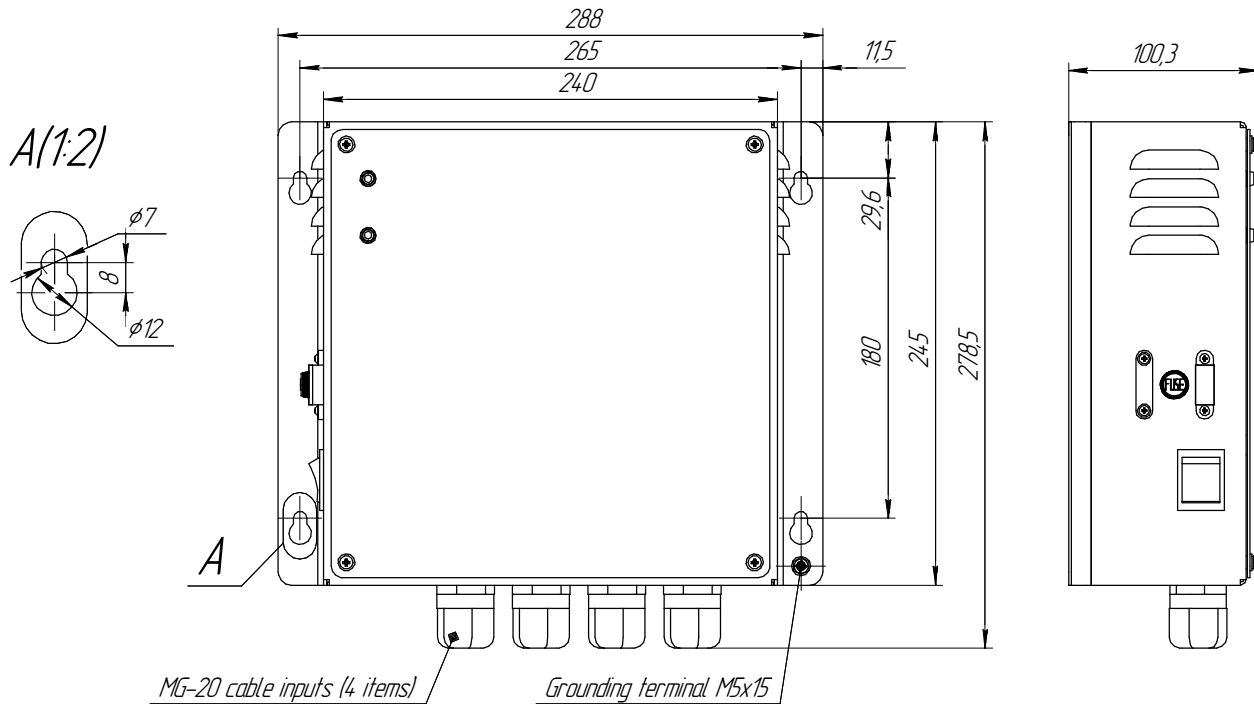
Electrical characteristics												
Subdesign	A	B	C	A	B	B	C	C	D	D	D	D
Design	A2-2 (4.2A)	A2-2 (6.5A)	A2-2 (12.5A)	A2-1 (8.5A)	A1-1 (12.5A)	A1-1 (18.5A)	22-1 (8.5A)	22-2 (4.2A)	22-2 (14.6A)	21-1 (18A)	21-1 (12.5A)	11-1 (8.5A)
Power supply voltage (main)	220 V, 50/60 Hz						24 VDC					12 VDC
Power supply voltage (standby)	24 VDC (19...36 V)				12 VDC (9...18 V)		24 VDC (19...36 V)				12 VDC (9...18 V)	
Output voltage (DC)	24 V	24 V	24 V	12 V	12 V	12 V	12 V	24 V	24 V	12 V	12 V	12 V
Output current	4.2 A	6.5 A	12.5 A	8.5 A	12.5 A	18.5 A	8.5 A	4.2 A	14.6 A	18 A	12.5 A	8.5 A
Pulsation	150 mV	240 mV	150 mV	120 mV	180 mV	150 mV	120 mV	150 mV	150 mV	120 mV	120 mV	120 mV
Output power	100 W	156 W	300 W	100 W	150 W	222 W	100 W	100 W	350 W	216 W	150 W	100 W
Degree of efficiency	78%	85%	86%	75%	82%	82%	75%	78%	80%	80%	75%	72%
Galvanic isolation (standby power)	+	+	+	+	+	+	+	+	+	+	+	+
Galvanic isolation (main power)	+	-	-	+	-	-	+	+	-	-	-	-

General characteristics	
IP rating	IP 22
Storage temperature	-60...+70 °C
Operating temperature	-15...+55 °C
Weight	4 kg

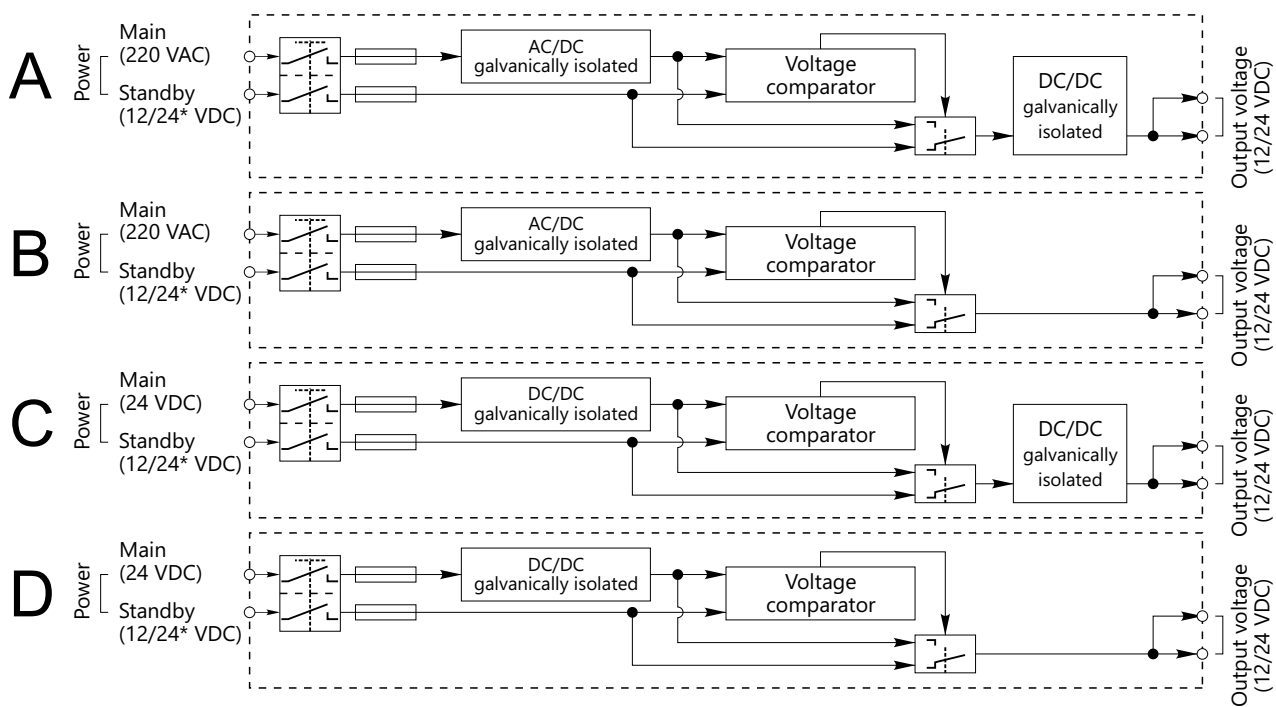
- Terminals for connected loads: 2
- Load switch to standby power: automatic (automatic recovery after power supply)

Built-in protection:

- Short circuit in load circuit
- Current overload (fuse)
- Power reverse polarity.



PS-303 dimensional drawing



*Depending on the design

PS-303 functional diagram

Automatic battery charger **CH-105**



The CH-105 automatic battery charger operates with single-phase mains of 50-60 Hz 110/220 VAC or 24 VDC, depending on the design. It is used to charge different storage batteries automatically, providing a max output power of 600 W and an output to connect load.

The unit is equipped with a built-in control and indication panel to set the charging modes and display the storage battery status. The CH-105 can be optionally equipped with the external control panel BCP-136.

Install in a dry environment (IP22). The device has a reverse polarity protection of the main power and storage battery, and a current overload protection. Deep discharge and overheat protection are optional (provided that the thermal sensor DTS-135 is used).

TECHNICAL CHARACTERISTICS

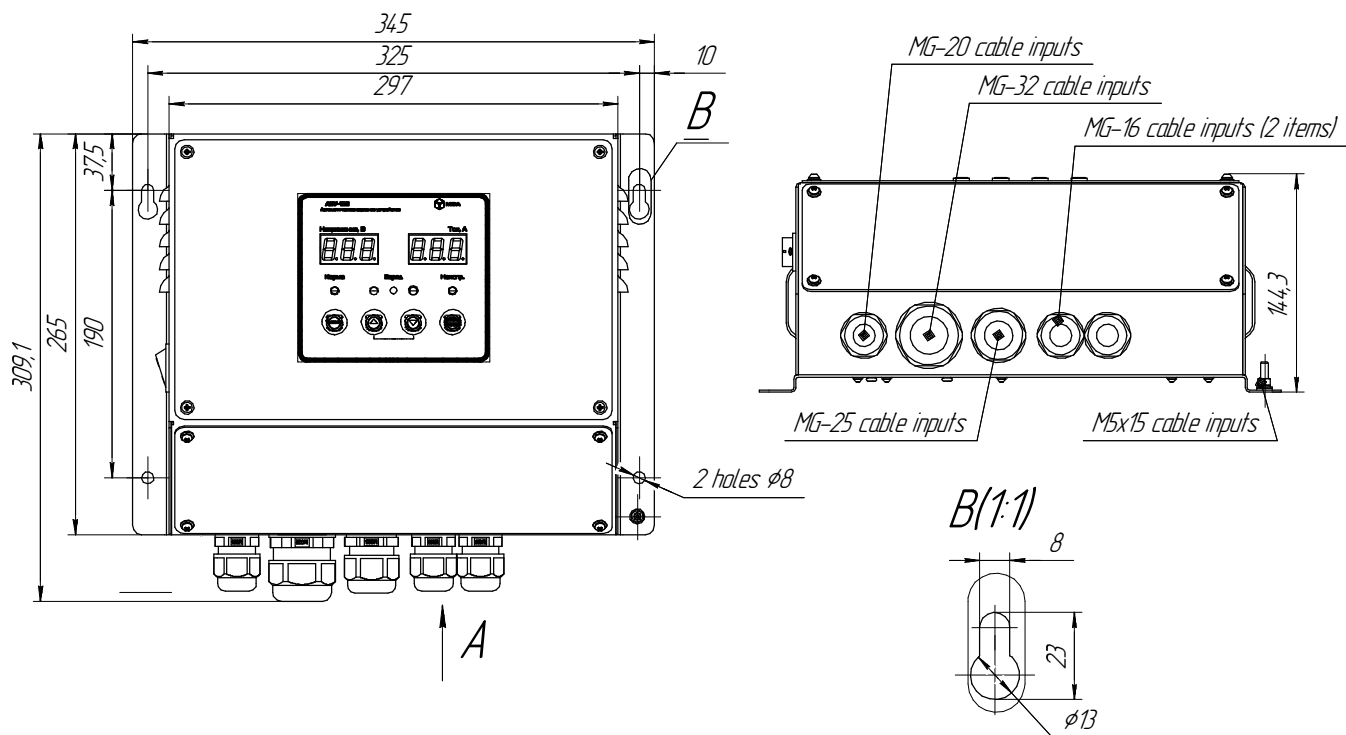
Electrical characteristics					
Design	CH-105	CH-105-24	CH-105-2412A	CH-105-110 VDC	CH-105-220 VDC
Power supply voltage	~110/220 V, 50/60 Hz	24 VDC (19...72 V)		110 VDC	220 VDC
Maximum output power	600 W	500 W	350 W	500 W	420 W
Charge current	1...20 A	1...16 A	1...12 A	1...16 A	1...14 A
Charge voltage	9...30 VDC (to charge 12/24 V battery)				
Standard capacity of charged batteries	40-200 A·h	40-160 A·h	40-120 A·h	40-160 A·h	40...140 A·h

General characteristics	
IP rating	IP 22
Storage temperature	-60...+70°C
Operating temperature	-15...+55°C
Weight	7 kg

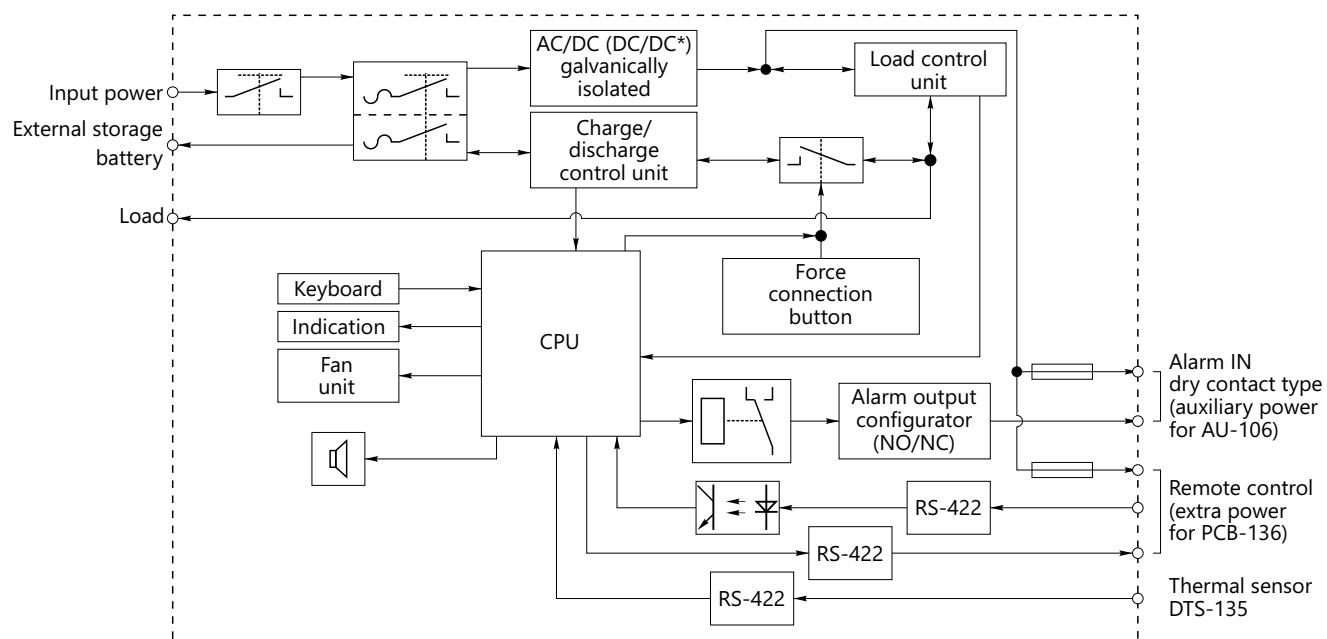
Built-in protection:

- reverse polarity;
- power loss;
- excessive current in battery circuit (overload / short-circuit);
- reverse polarity battery connection;
- deep discharge (optional);
- overheating (combined with the thermal sensor DTS-135).

A



CH-105 dimensional drawing



*Design with DC input is optional

CH-105 functional diagram

Power supply / Automatic battery charger
PCH-205



The PCH-205 power supply / automatic battery charger is designed to operate with single-phase mains 50-60 Hz 110/220VAC and provide 24VDC to shipborne systems and other industrial equipment with a total capacity of up to 1000 W. Combined with power supply, the PCH-205 charges connected storage batteries automatically. In case of a main power failure the unit switches the load to the storage battery automatically.

Two options are available for the PCH-205:

Option 1: a built-in control and indication panel, providing charge mode settings and battery status display (see Functional diagram).

Option 2: basic design w/o a built-in control (see Dimensional drawing). The device can be optionally equipped with the external battery control panel BCP-136.

The PCH-205 shall be installed in a dry environment (IP22). It has a power supply and SB mains reverse polarity protection, current overload protection in the battery and load circuit. Deep discharge protection. The thermal sensor DTS-135 allows for controlling the battery temperature on the PCH-205 screen (see Functional diagram).

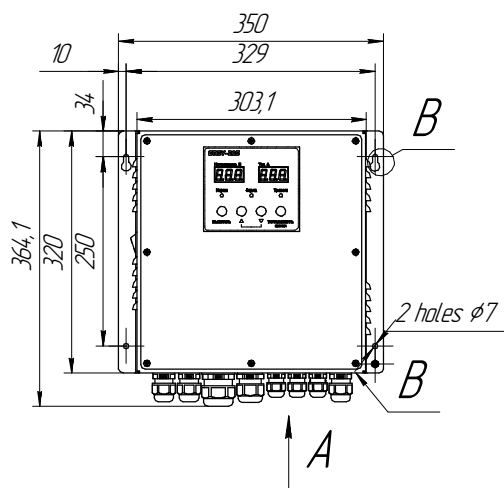
TECHNICAL CHARACTERISTICS

General characteristics	
IP rating	IP 22
Storage temperature	-60...+70°C
Operating temperature	-15...+55°C
Weight	7 kg

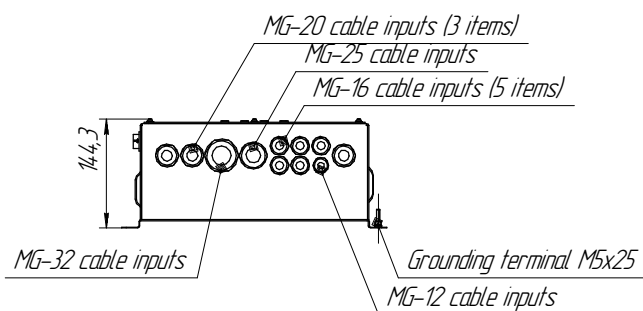
Electrical characteristics		
Parameter	Built-in power supply unit	Built-in charge unit
Power supply voltage	110/220 V, 50-60 Hz	
Output voltage	24 VDC regulated	28.4 VDC (basic design)*
Output current	40 A	20 A (basic design)*
Rated power	1000 W	600 W
Connected storage batteries	-	24 V, up to 200 A·h
Battery charge time	-	10 hours up to 80% capacity
Number of terminals to connect loads	7 pcs.	1 pc. (to connect the battery)

*In Functional diagram, with the BCP-136 the charging voltage can be set within 9-30 V, charging current within 0.2-20 A.

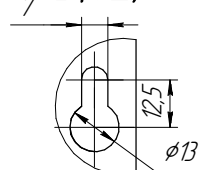
Drawing 1



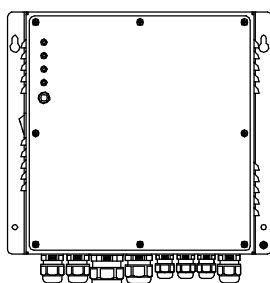
A(1:10)



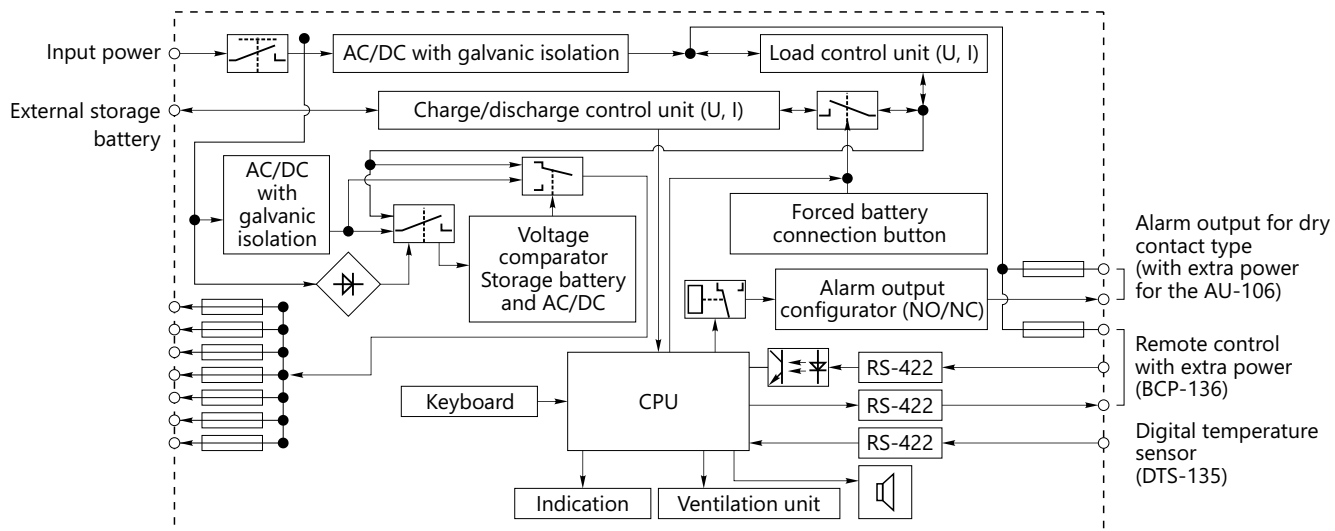
B(1:2)



Drawing 2



PCH-205 dimensional drawing



PCH-205 functional diagram

DC/DC converter
DC-108



The DC-108 operates with the mains of 12/24/110 VDC and converts the input voltage into a regulated 12/24 VDC, required to protect equipment, which is sensitive to input voltage surges and peaks.

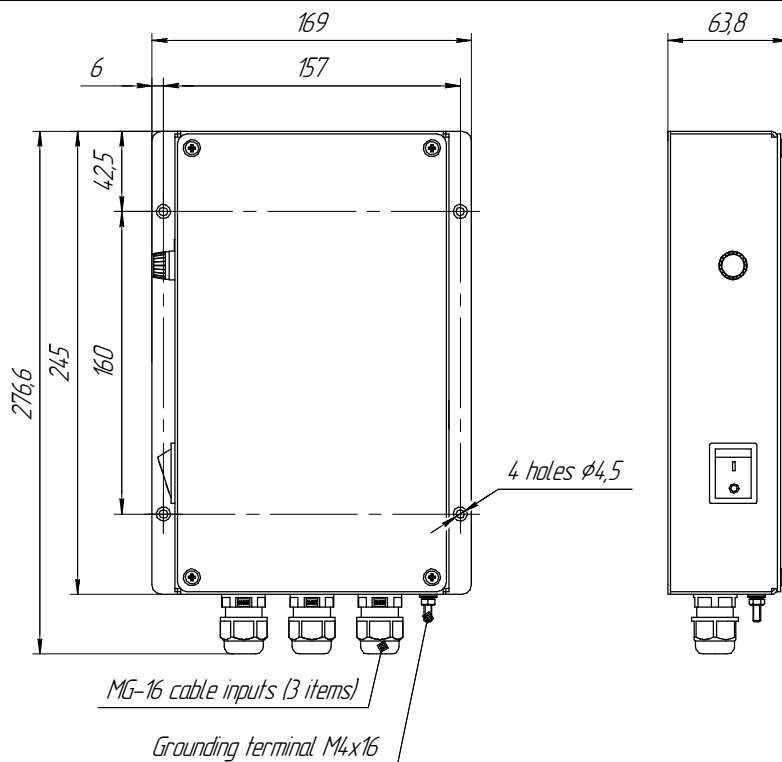
The unit has a galvanic isolation between the supply mains and the load, reverse polarity, overvoltage and over-load protection. Dry environment installation (IP22).

TECHNICAL CHARACTERISTICS

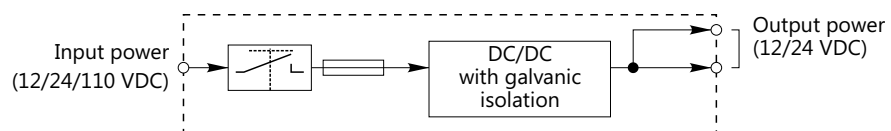
General characteristics	
IP rating	IP 22
Storage temperature	-60...+70°C
Operating temperature	-15...+55°C
Weight	1.9 kg

Name	Power supply voltage	Output voltage	Output power	Max output current	Power consumption (max)	Degree of efficiency
DC-108 (12/24-50)	12 (9.2...18) VDC	24 VDC	50 W	2.1 A	70 W	74%
DC-108 (24/24-50)				4.2 A		80%
DC-108 (24/12-50)	24 (19...36) VDC	12 VDC	150 W	12.5 A	200 W	75%
DC-108 (24/12-150)				6.3 A		77%
DC-108 (96/12-150)	110 (72...144) VDC ~110 V, 50/60 Hz	24 VDC	150 W	6.3 A	200 W	79%
DC-108 (24/24-150)	24 (19...36) VDC					82%
DC-108 (96/24-150)	110 (72...144) VDC ~110 V, 50/60 Hz	24 VDC	150 W	6.3 A	200 W	82%

The DC-108 can be optionally designed with various power and voltage.



DC-108 dimensional drawing



* depending on the version

DC-108 functional diagram

DC/DC converter
DC-108-1000



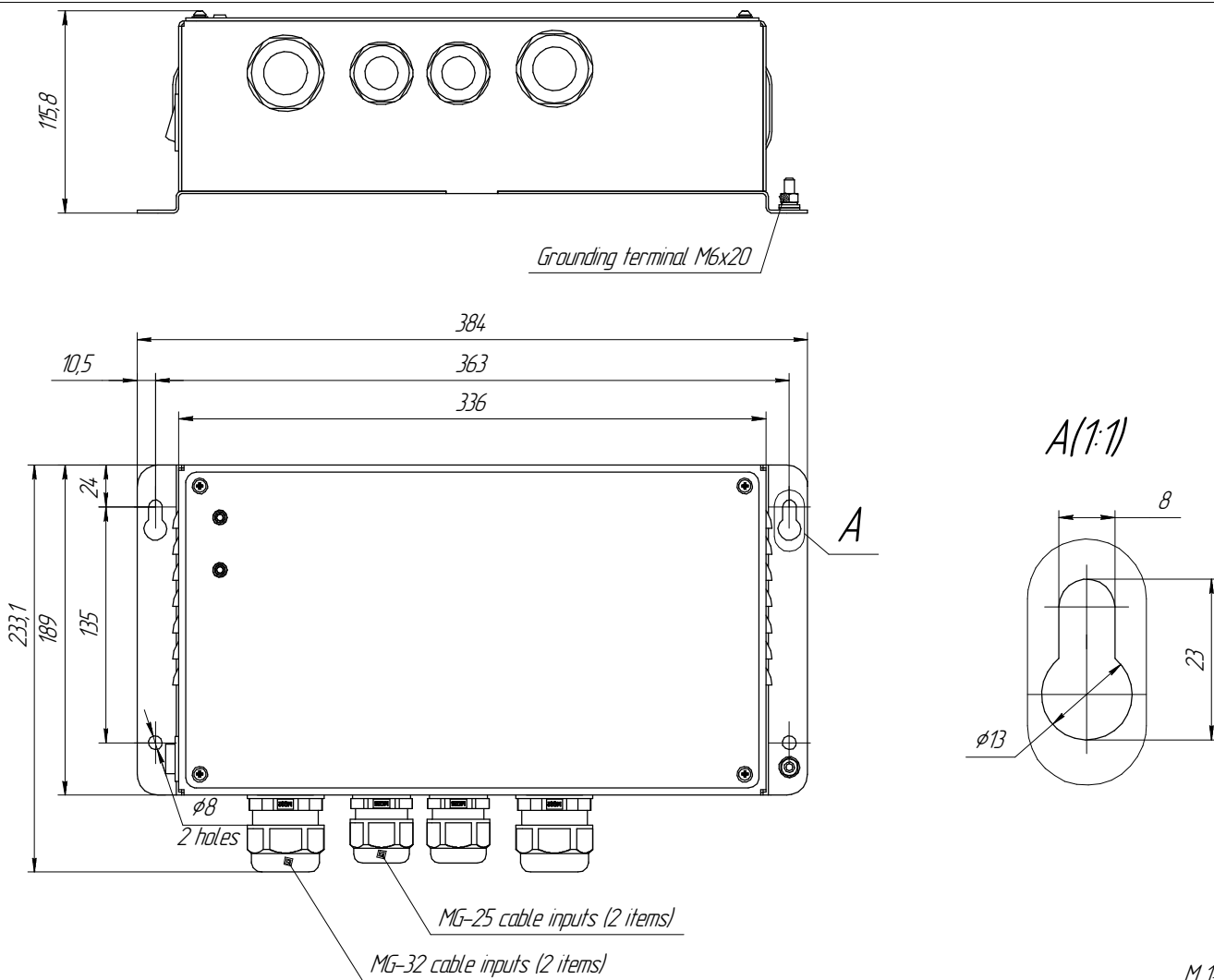
The DC-108-1000 operates with the mains of 24 VDC, converts the input voltage into a regulated VDC and protects electronic equipment against input voltage surges and peaks. The rated power is 960 W.

The unit has a galvanic isolation between the power mains and load, reverse polarity, overvoltage and overload protection by input circuit. Dry environment installation (IP22).

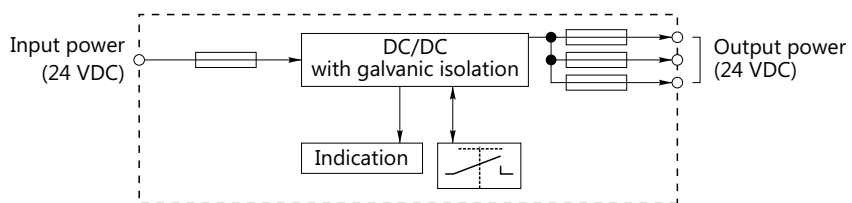
TECHNICAL CHARACTERISTICS

General characteristics	
IP rating	IP 22
Storage temperature	-60...+70°C
Operating temperature	-15...+60°C
Weight	6 kg
Efficiency	up to 88%

Electrical characteristics	
Power supply voltage	19 - 36 VDC
Output voltage	24 VDC
Rated power	960 W
Pulsation	150 mV
Rated load current	40 A
Terminals to connect loads	3
Galvanic isolation from power mains	+



DC-108 dimensional drawing



DC-108 functional diagram

Power supply unit (built-in storage battery)

BPS-114



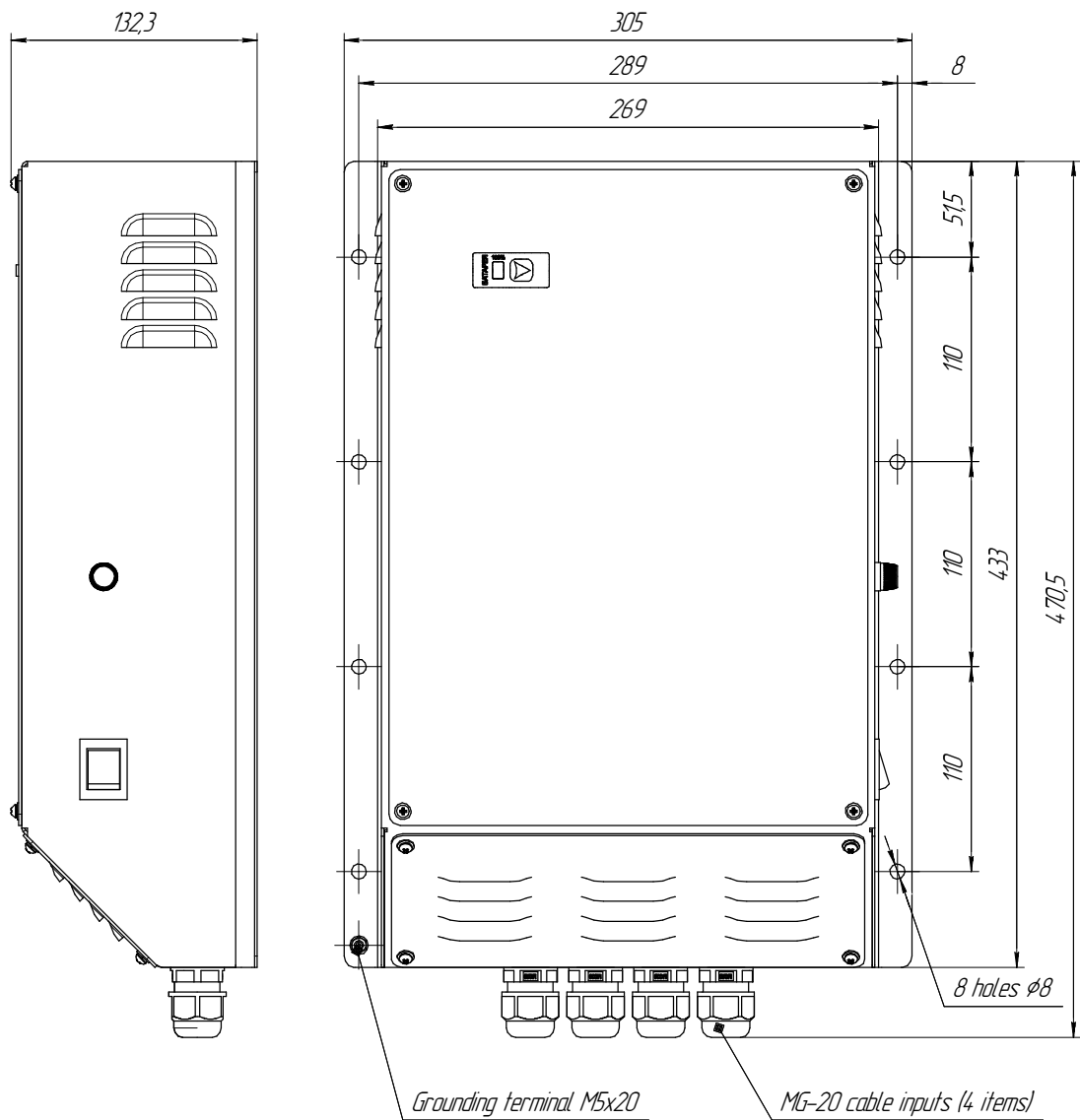
The BPS-114 uninterruptible power supply unit with a maximum rated power 200 W is designed to operate with single-phase mains of 50-60 Hz 110/220 VAC and to provide uninterruptible power to equipment with an input voltage of 12 VDC. The unit has a built-in storage battery with automatic switch over in case of a power supply failure. A power failure actuates the closing of built-in dry relay contacts and triggers a sound/light alarm. A current charge level and power level indicators are on the front panel.

The BPS-114 has a galvanic isolation between the power mains/load and current overload protection. Installation in a dry environment (IP22).

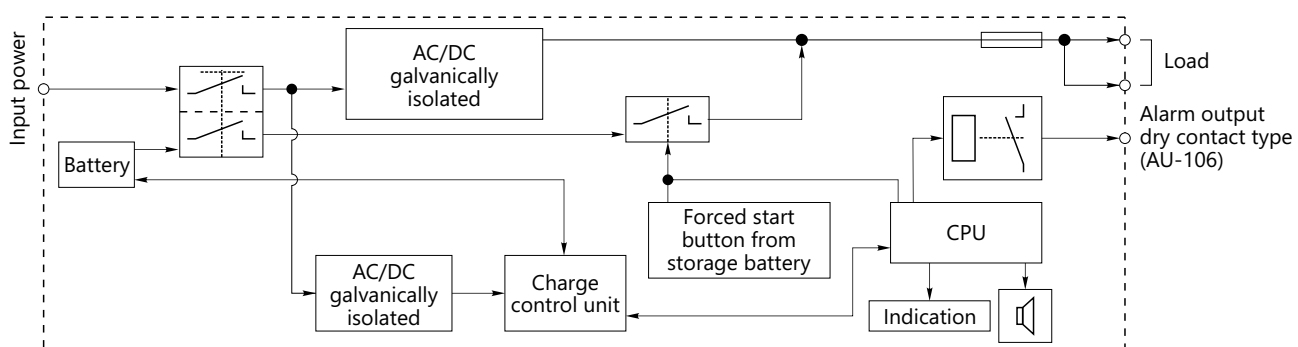
TECHNICAL CHARACTERISTICS

General characteristics	
IP rating	IP 22
Storage temperature	-60...+70°C
Operating temperature	-15...+55°C
Weight	10 kg

Electrical characteristics	
Power supply voltage	~110/220 V, 50/60 Hz
Output voltage (operation from the mains)	13.5 VDC
Output voltage (operation from the battery)	9.5...14 VDC
Output power	160 W
Max operation time from the battery under load 10 A	not less than 60 minutes
Tripping current	20 A
Efficiency	up to 84%
Terminals to connect loads	2
Battery	sealed lead acid battery, maintenance-free, 12V (20 A·h)



BPS-114 dimensional drawing



BPS-114 functional diagram

Power supply unit (built-in storage battery)

BPS-114-24



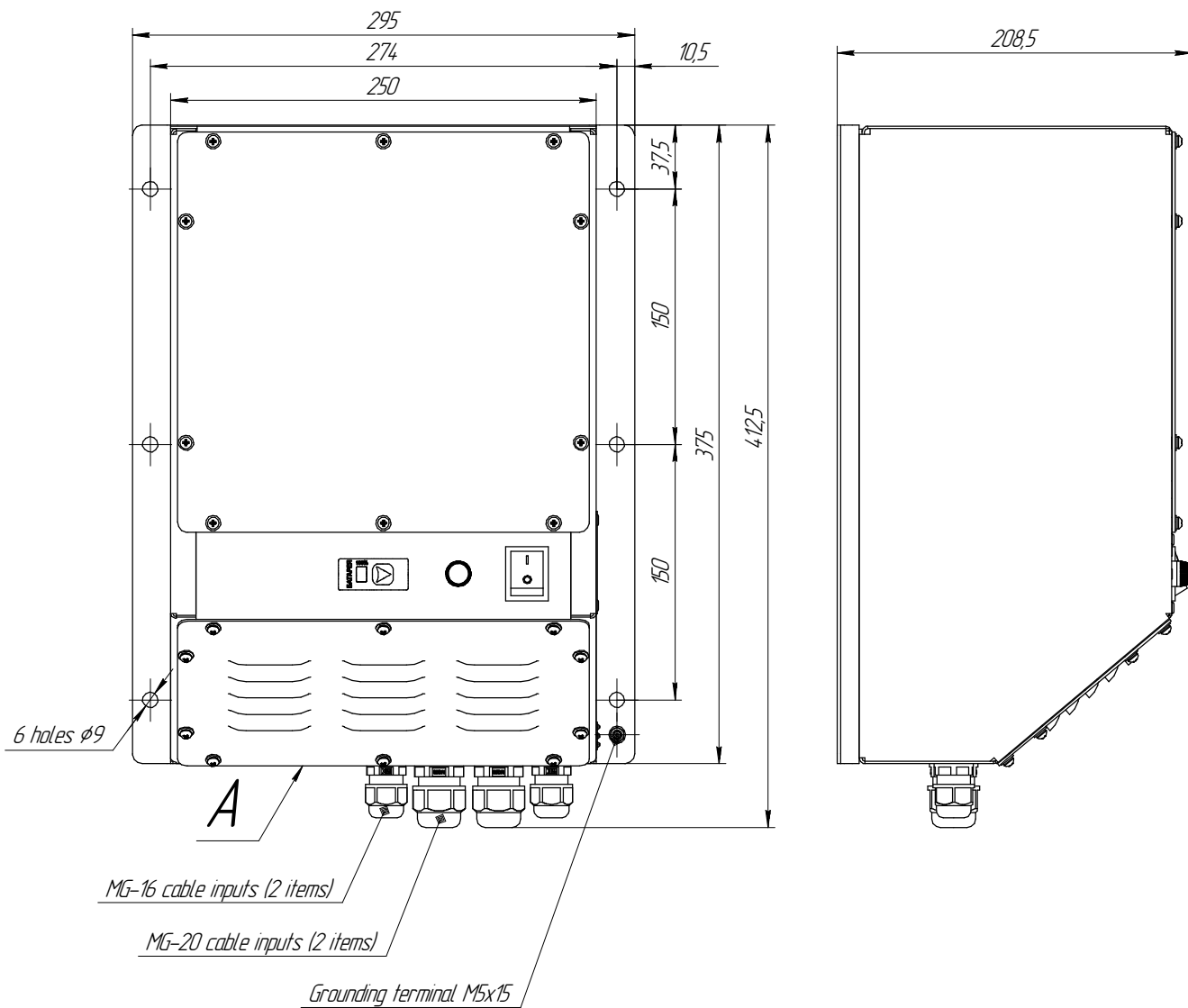
The BPS-114-24 uninterruptible power supply unit with maximum rated power 320 W is designed to operate with single-phase mains of 50-60 Hz 110/220 VAC and to provide uninterruptible power supply to equipment with an input voltage of 24 VDC. The unit has a built-in storage battery with automatic switch over in the event of a power supply failure. A power failure actuates the closing of built-in dry relay contacts, and a sound/light alarm is triggered. Current charge level and power load indicators are on the front panel.

The BPS-114-24 has a galvanic isolation between the power mains / load and current overload protection. Dry environment installation (IP22).

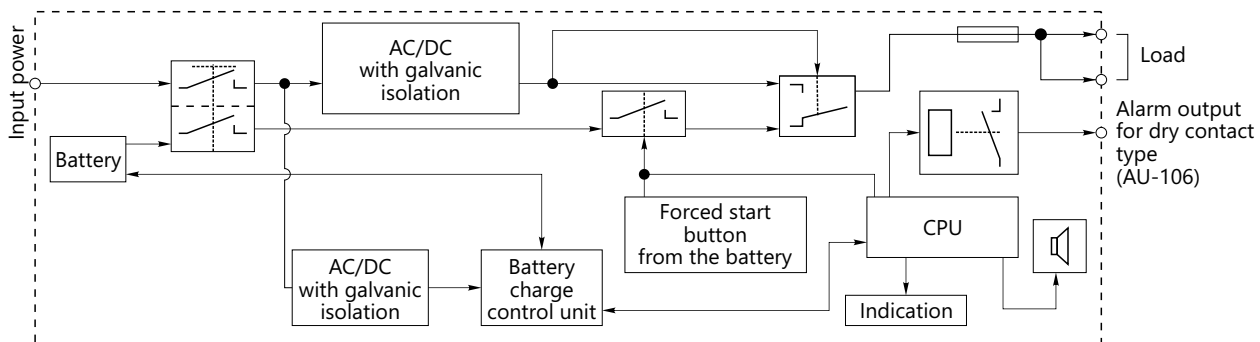
TECHNICAL CHARACTERISTICS

General characteristics	
IP rating	IP 22
Storage temperature	-60...+70°C
Operating temperature	-15...+55°C
Weight	21.7 kg

Electrical characteristics	
Power supply voltage	~110/220 V, 50/60 Hz
Output voltage (operation from the mains)	28.4 VDC
Output voltage (operation from the battery)	19.2...28 VDC
Output power	320 W
Max operation time from the battery under load 10 A	not less than 60 minutes
Efficiency	87%
Terminals to connect loads	2
Battery	sealed lead acid battery, maintenance-free, 2x12 V (20 A·h)



BPS-114 dimensional drawing



BPS-114 functional diagram

Battery control panel **BPC-136**



The BCP-136 allows remote setting of power supply units/battery chargers CH-105 and PCH-205. The device controls the status of connected storage batteries, indicating current charge/discharge and voltage data. In case of a power voltage failure and battery discharge the BCP-136 triggers sound and light alarm.

Install in a dry environment (IP22).

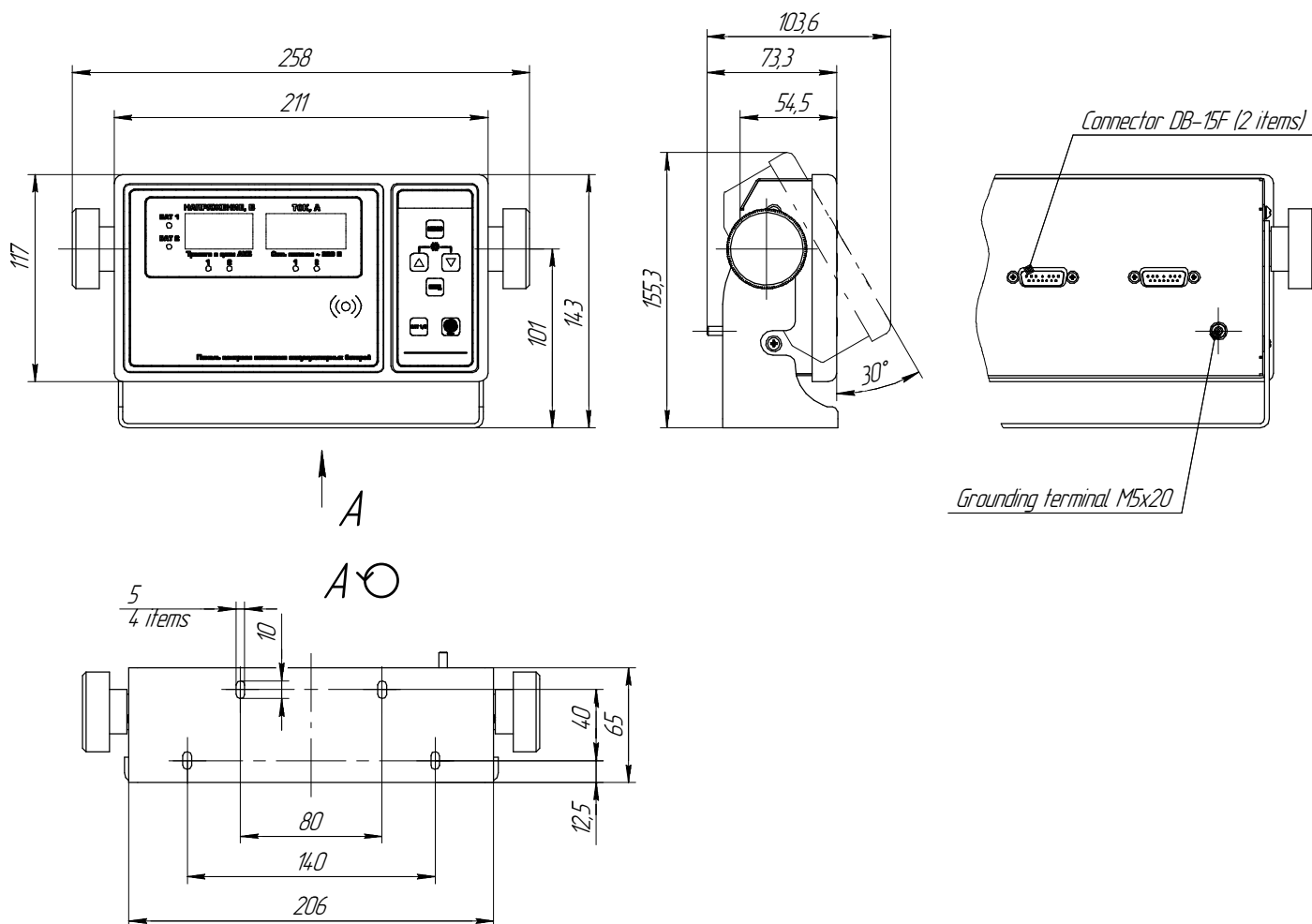
TECHNICAL CHARACTERISTICS

General characteristics	
IP rating	IP 22
Storage temperature	-60...+70°C
Operating temperature	-15...+55°C
Weight	2 kg

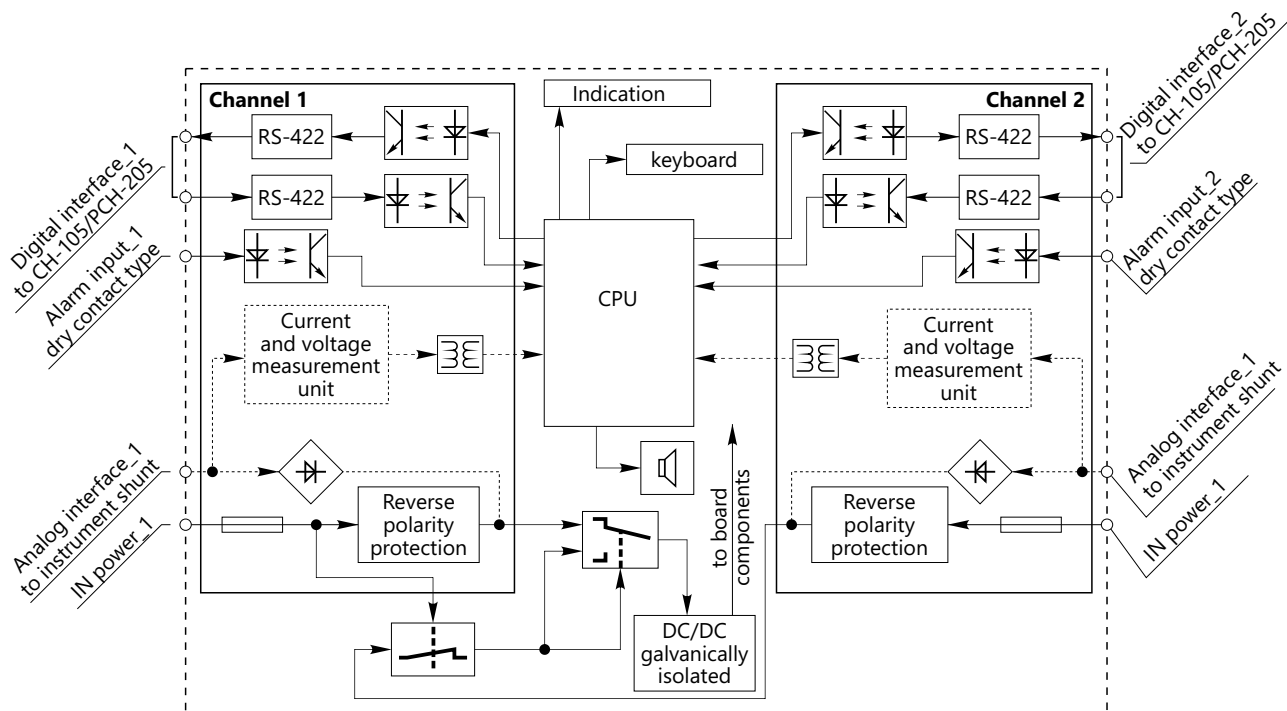
Electrical characteristics	
Power supply voltage	10...36 VDC
Power consumption	2.5 W
Galvanic isolation from supply mains	+
Reverse polarity protection	+
Overvoltage protection	+
Galvanic isolation	+

Characteristics of digital interface	
Number of input ports	2
Supported interfaces	RS-422
Max receive rate	115200 bit/s
Galvanic isolation	+

Characteristics of analog interface	
Number of input ports	2
Galvanic isolation of input ports	+
Measuring range Uresistor	80 mV
Measuring range Ubattery	0...36 V
Current measurement accuracy	0.1 A (format XX.X)
Voltage measurement accuracy	0.1 V (format XX.X)
Input resistance	0.8 MOhm



BPC-136 dimensional drawing



BPC-136 functional diagram

Battery power measurement unit
BMU-126



The BMU-126 reads the actual current and voltage data of a storage battery. Charge/discharge current and voltage may be controlled remotely using third-party devices. Readings are transmitted to the BCP-136 battery control panel via an RS-422 interface.

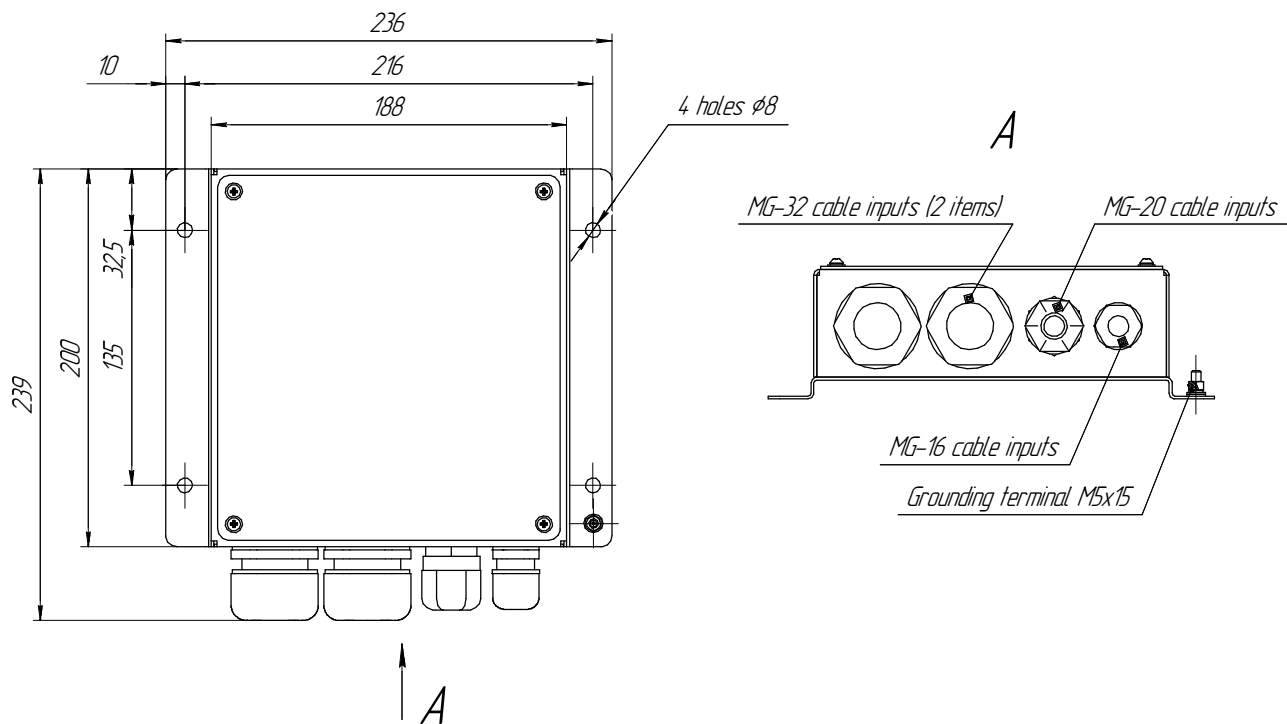
TECHNICAL CHARACTERISTICS

General characteristics	
IP rating	IP 22
Storage temperature	-60...+70°C
Operating temperature	-15...+55°C
Weight	1.5 kg

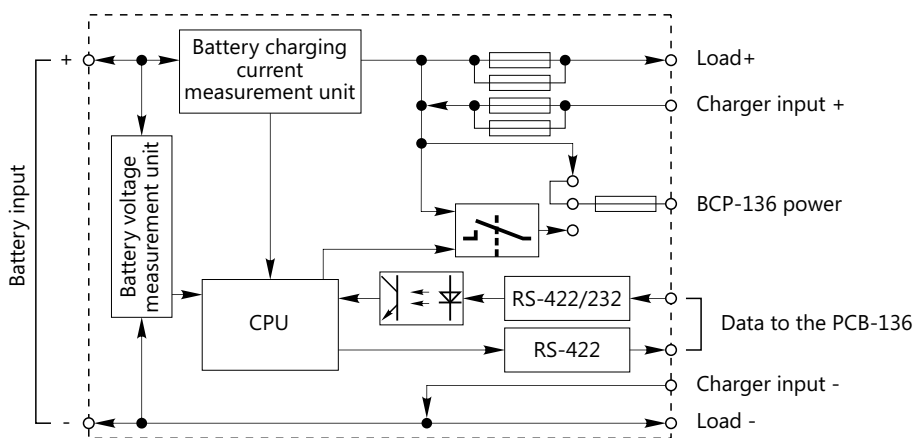
Electrical characteristics	
Power supply voltage	9.5...36 VDC
Power consumption	5 W
Reverse polarity protection	+
Overcurrent protection	+

Operating characteristics	
The accuracy of the measured values:	
current	0.2 A
voltage	0.1 V
Max value of measured current	50 A
Max value of measured voltage	36 V

Characteristics of outputs	
Number of output ports	1
Supported interfaces	RS-422
Max receive rate	9600 bit/s
Galvanic isolation from power mains	+ (if powered from external source)



BMU-126 dimensional drawing



BMU-126 functional diagram

Fuse box
FB-137



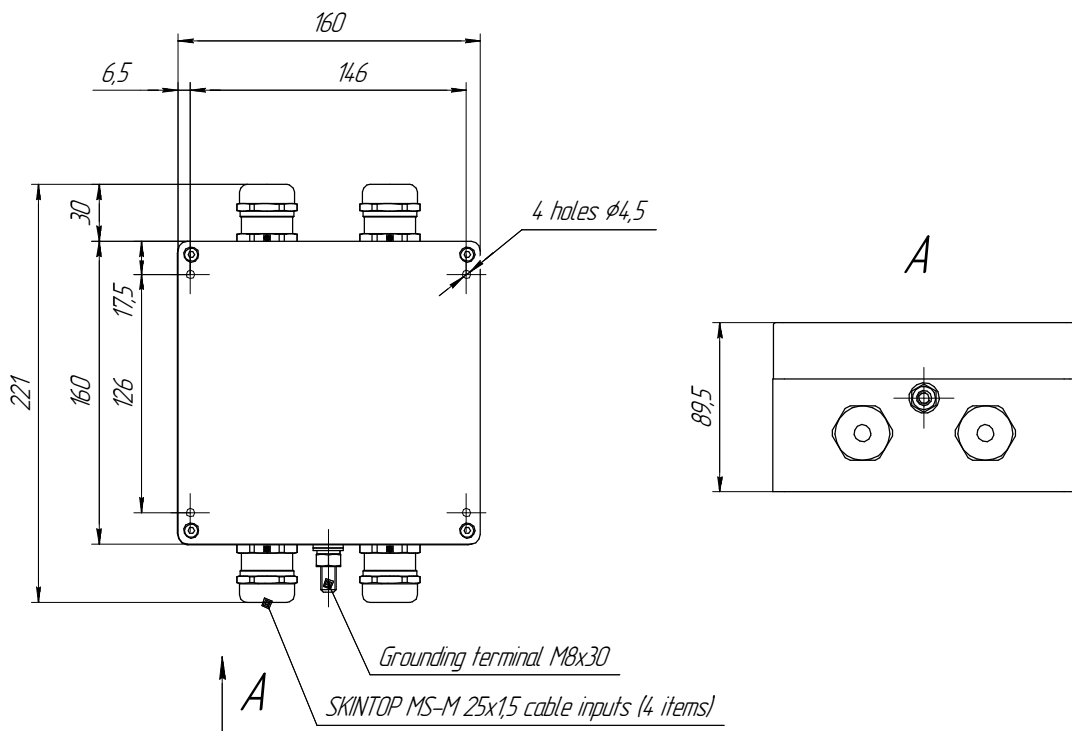
The FB-137 fuse box protects electric circuits and relevant elements from short circuit or overcurrent.

TECHNICAL CHARACTERISTICS

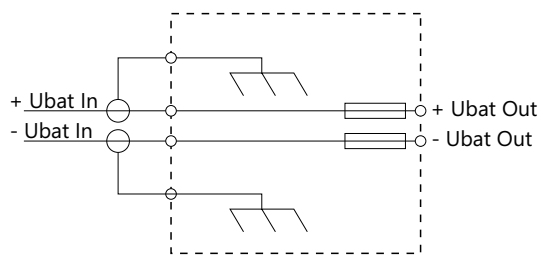
General characteristics	
IP rating	IP 65
Storage temperature	-60...+70 °C
Operating temperature	-40...+55 °C
Weight	1.5 kg

Electrical characteristics	
Max operating voltage	250 VDC or 400 VAC
Rated current	50 A*

* fuse rating may be changed on request.



FB-137 dimensional drawing



FB-137 functional diagram

Junction box
KP-124

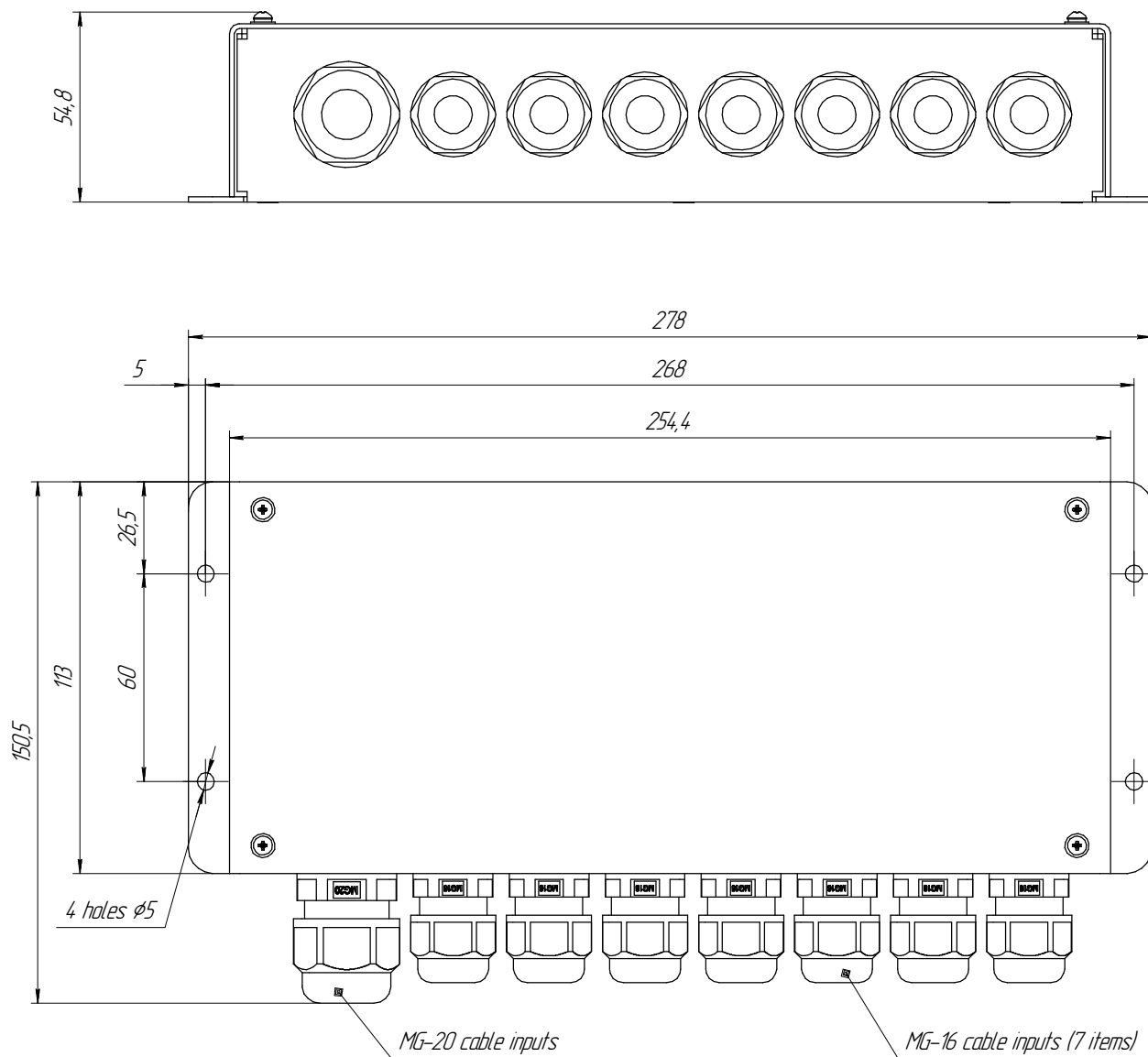


The KP-124 junction box connects several users to a single feed circuit; designed for installation in a dry environment (IP22).

TECHNICAL CHARACTERISTICS

General characteristics	
IP rating	IP 22
Storage temperature	-60...+70°C
Operating temperature	-20...+55°C
Weight	1.5 kg

Electrical characteristics			
Design	KP-124	KP-124P	KP-124S
Total number of terminals	8		
Terminals to connect users	7		
Contacts in terminal	6	3	3
Max permissible voltage	250 V		
Max permissible current	5 A	20 A	10 A



KP-124 dimensional drawing



VHF-interface (to connect VDR/SVDR)

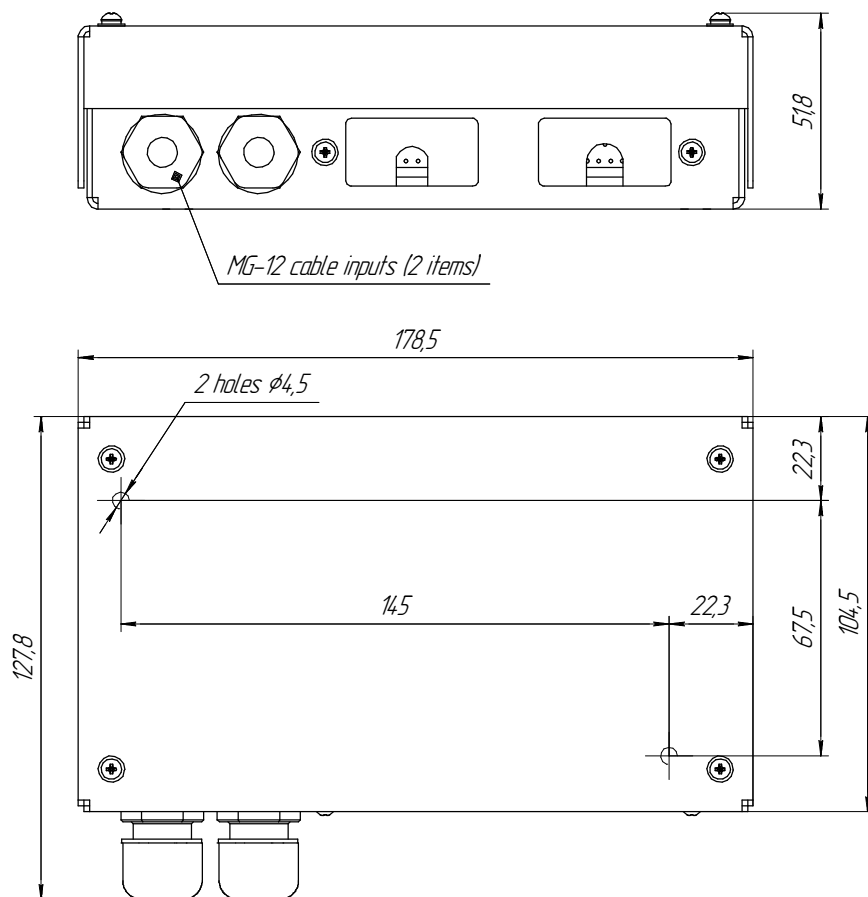
VI-116

The VI-116 is designed to interface voyage data recorders or simplified voyage data recorders with VHF-radio stations like Sailor RT-2048 (Debeg 6348, Husun 2048), Sailor RT-4822 (Debeg 6322, Husun 4822, Sperry 4822, Scanti VHF 1000 DSC) or Furuno FM-8500.

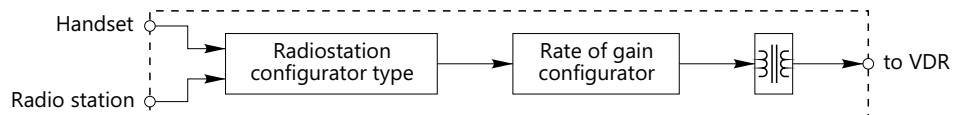
TECHNICAL CHARACTERISTICS

General characteristics	
IP rating	IP 22
Storage temperature	-60...+70 °C
Operating temperature	-15...+55 °C
Weight	1.1 kg

Electrical characteristics	
Power supply voltage	10...36 VDC
Power consumption	500 mW
Max power of analog output signal	100 mW
Max amplitude of analog output signal	10 V
Frequency bandwidth	100 Hz - 15 kHz



VI-116 dimensional drawing

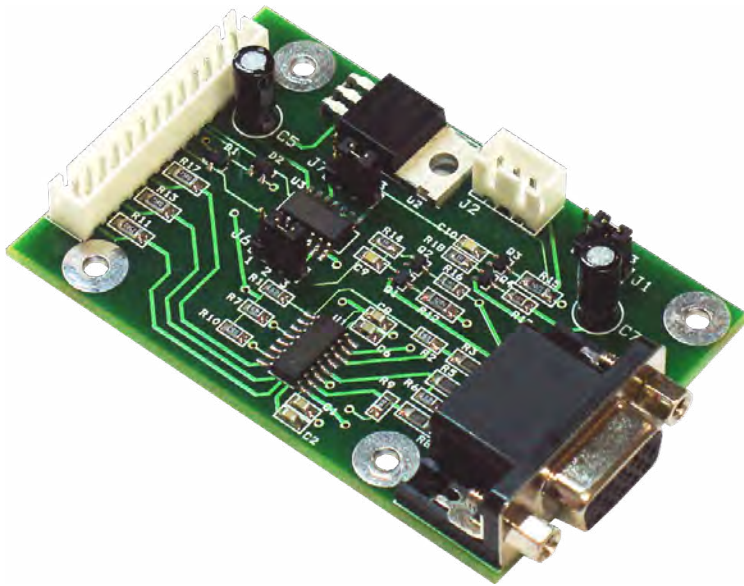


VI-116 functional diagram



VGA-interface (to connect radar to VDR/SVDR)

VGA-119

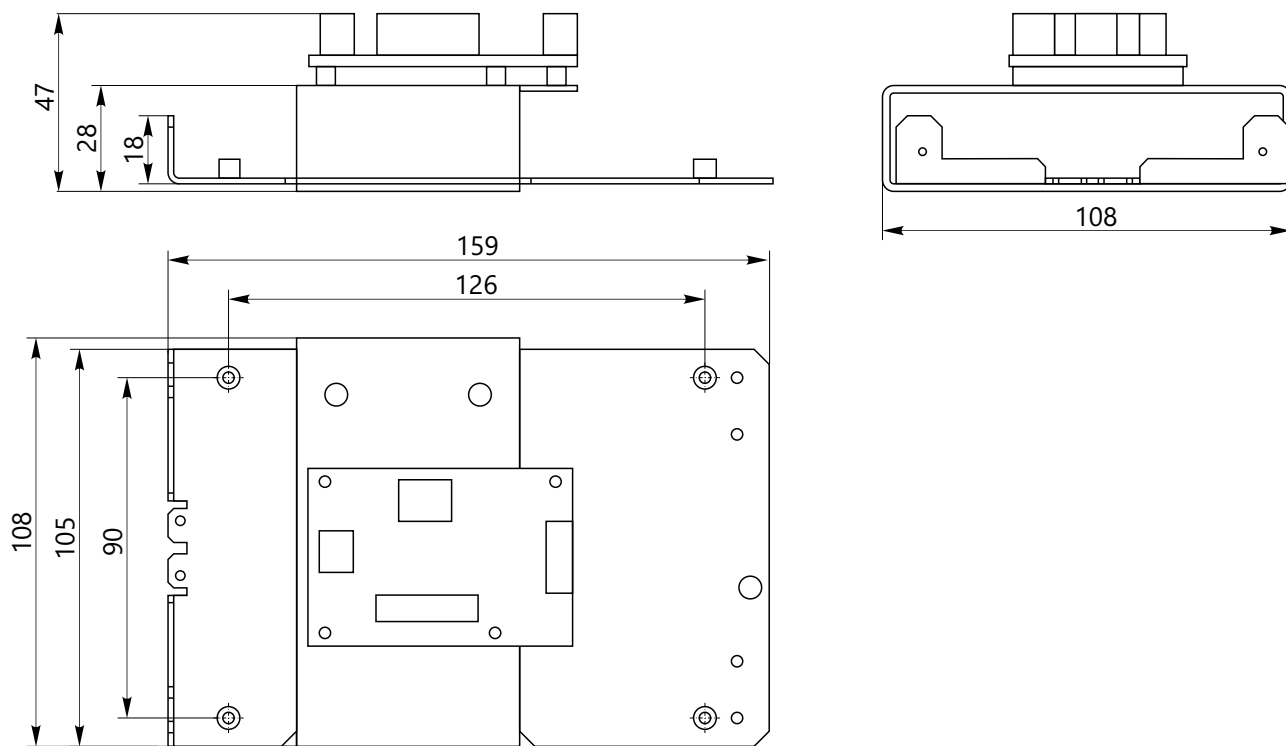


The VGA-119 connects VGA-radars and other devices to voyage data recorders or simplified voyage data recorders. The device provides amplification and jamming filtration of input VGA-signal, resolution up to 1600x1200. Install in a dry environment (IP22).

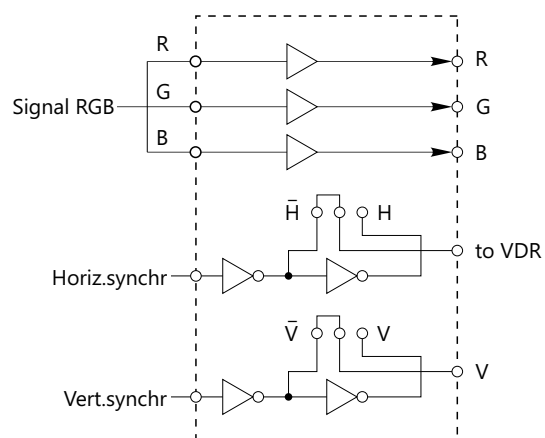
TECHNICAL CHARACTERISTICS

General characteristics	
Storage temperature	-60...+70°C
Operating temperature	-15...+55°C
Weight	0.4 kg

Electrical characteristics	
Power supply voltage	5 VDC
Max consumption current	300 mA
Max output load (per channel)	60 mA
Max vertical frequency	85 Hz
Max horizontal frequency	110 kHz
Max video resolution	1600 x 1200



VGA-119 dimensional drawing of bracket



VGA-119 functional diagram



Alarm unit
AU-106



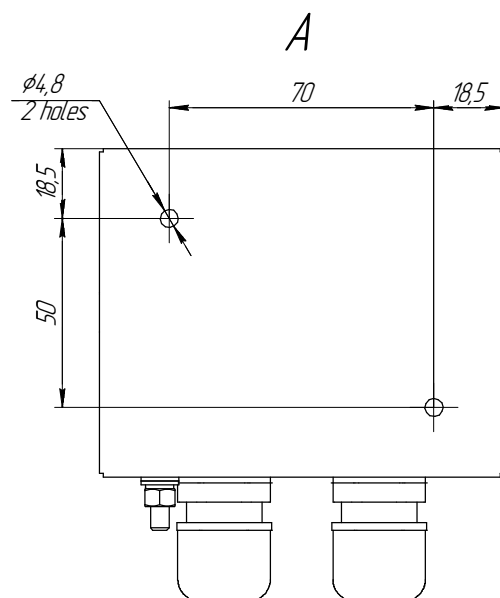
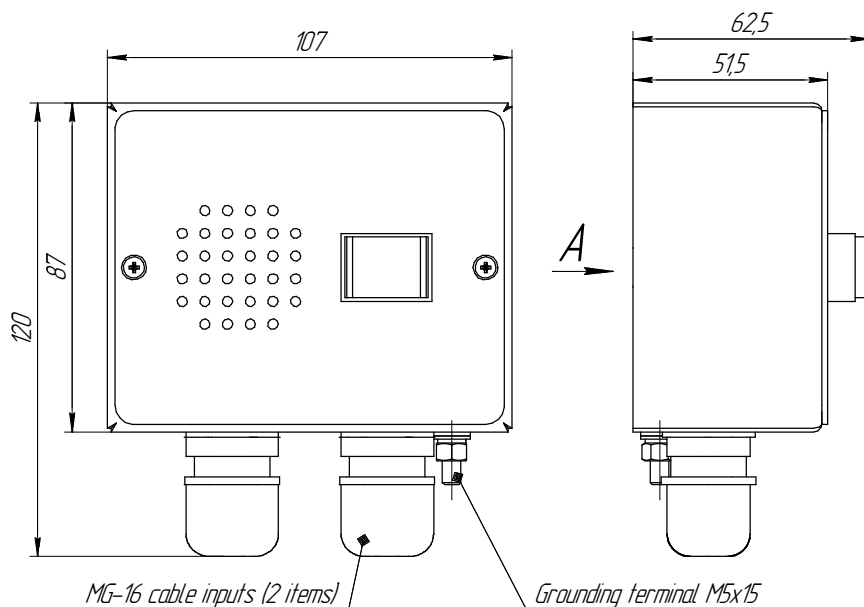
The AU-106 alarm unit provides a sound and visual signal, when triggered. The activation is ensured by closing (opening) dry contacts or voltage levels.

Install in a dry environment (IP22). The unit has a reverse polarity and overvoltage protection.

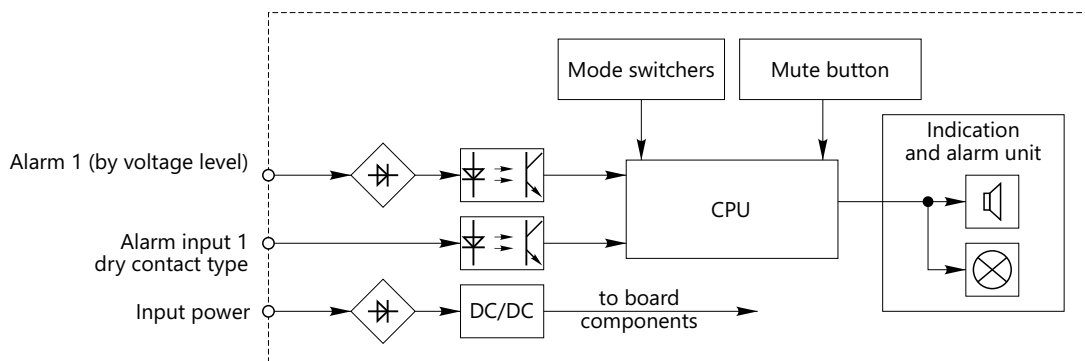
TECHNICAL CHARACTERISTICS

General characteristics	
IP rating	IP 22
Storage temperature	-60...+70°C
Operating temperature	-15...+55°C
Weight	0.435 kg

Electrical characteristics	
Power supply voltage	19...36 VDC
Consumption current	< 50 mA
Consumption current on the input «Relay»	< 2 mA
Voltage levels on the input «U»	5 / 12 / 24 / 110 / 220 V
Signaling units inputs	Dry relay contact Voltage level



AU-106 dimensional drawing



AU-106 functional diagram



Alarm unit AU-206



The AU-206 alarm unit controls the activation of external alarms on up to five simultaneously connected devices, having a dry contact type output. Triggered at least on a single output, an alarm causes sound/visual signal and closing of "power" output contacts, where external alarm devices may be connected (e.g. lamps, loudspeakers, etc.).

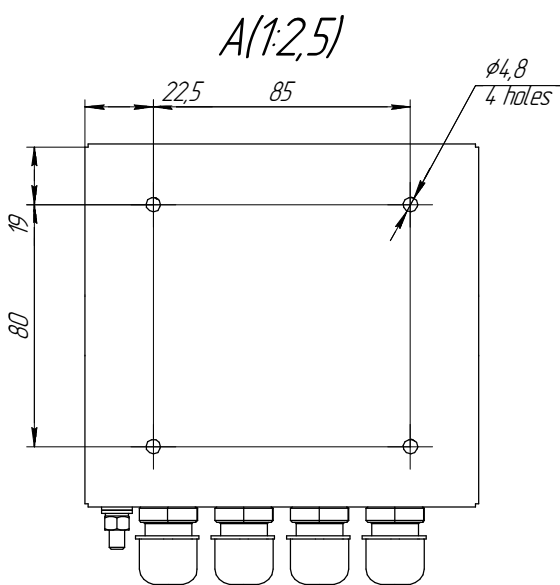
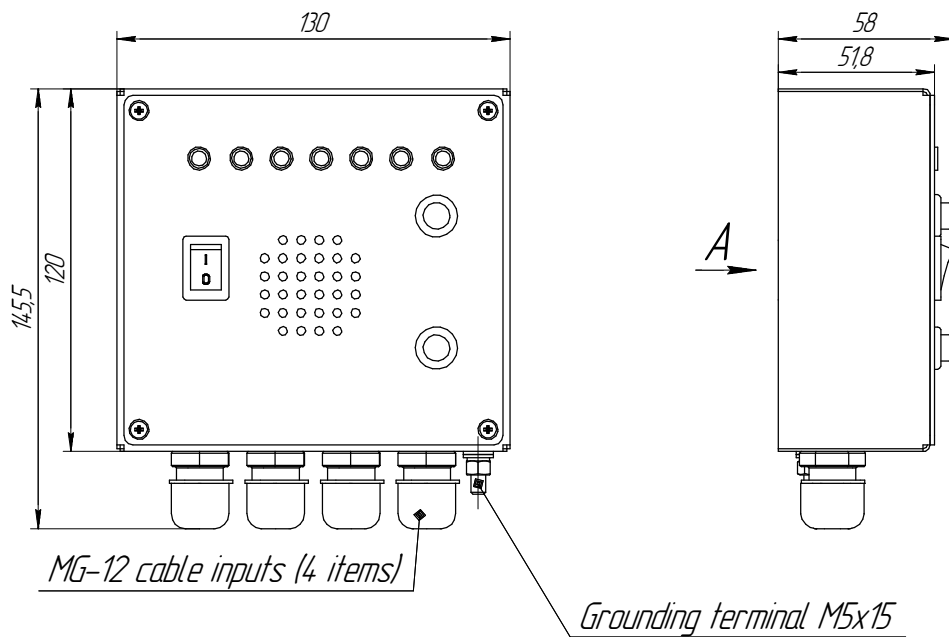
Install in a dry environment (IP22). The unit is provided with reverse polarity, current overload, overvoltage protection, and current overload protection on the "power" output.

TECHNICAL CHARACTERISTICS

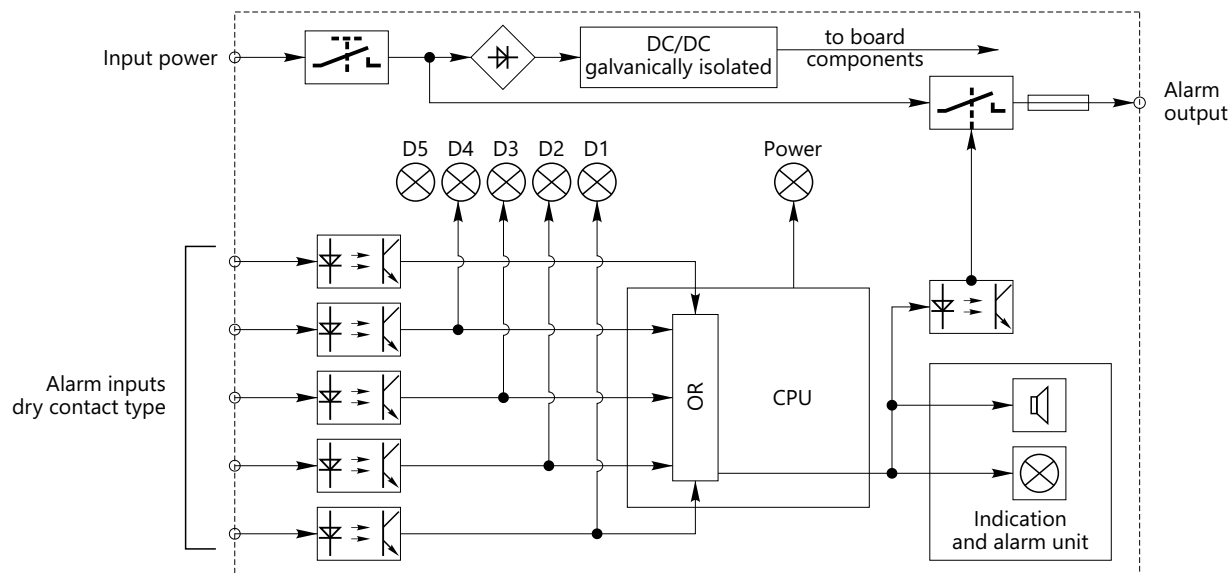
General characteristics	
IP rating	IP 22
Storage temperature	-60...+70°C
Operating temperature	-15...+55°C
Weight	0.8 kg

Electrical characteristics	
Power supply voltage	10...36 VDC
Maximum power consumption	3 W
Galvanic isolation from power mains	+
Reverse polarity protection	+
Overvoltage protection	+

Characteristics of inputs/outputs	
Numbers of inputs	5
Inputs type	Dry contacts opening sensor
Voltage on power output	Equal to power supply voltage



AU-206 dimensional drawing



AU-206 functional diagram

Dimmer
DM-107

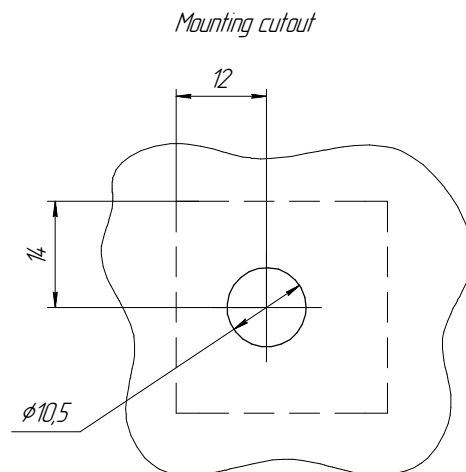
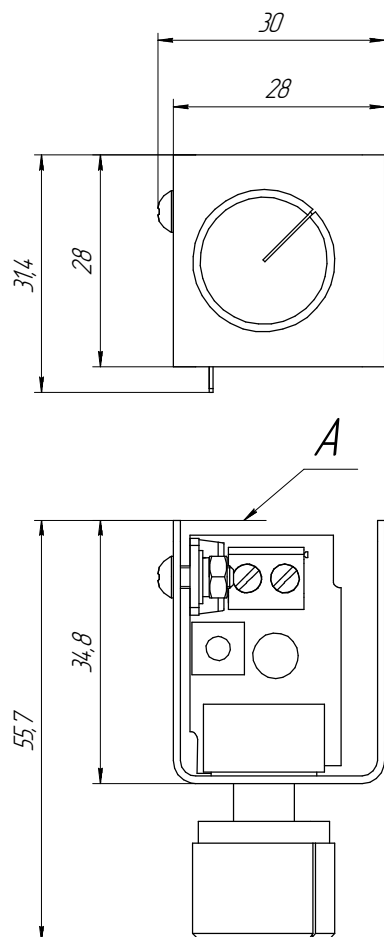


The DM-107 dimmer is a low-voltage power regulator for DC circuits, designed for a smooth adjustment of load power by potentiometer rotation. The load may be resistive (lighting lamps, resistors, etc.) and inductive (solenoids, valves, engines, etc.).

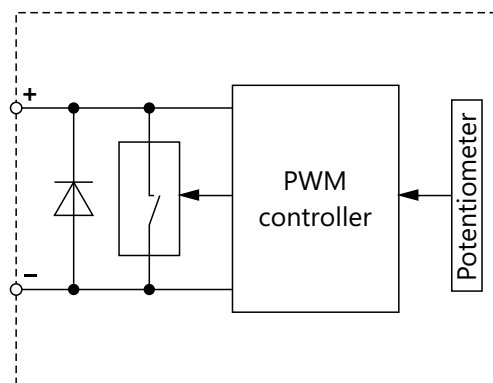
TECHNICAL CHARACTERISTICS

General characteristics	
Storage temperature	-60...+70 °C
Operating temperature	-15...+55 °C
Weight	0.12 kg

Electrical characteristics	
Operating voltage	18...36 VDC
Consumption current	1.1 mA
Connected load	resistive, inductive (except capacitive)
Max switching current	3.2 A
Regulated power	up to 100 W
Tuning range	0...90%
Limit of min power	0...50%
Operating frequency of PWM generator	200 ±20 Hz



DM-107 dimensional drawing



DM-107 functional diagram



Lamp L-112

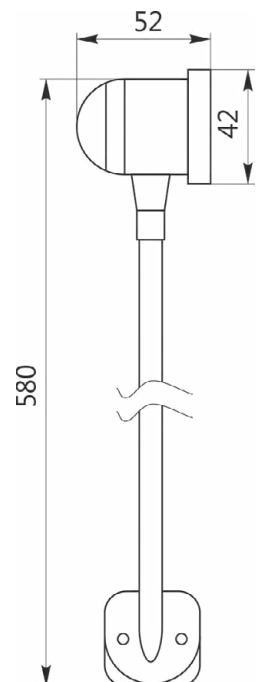


The L-112 lamp provides night lighting for workstations, console controls and other equipment. A gooseneck holder allows easy adjustment; the two-hole base is a perfect solution for a secure mounting on any surface.

TECHNICAL CHARACTERISTICS

General characteristics		
Model	L-112-24	L-112-12
IP rating	IP 22	
Weight	0.275 kg	
Storage temperature	-60...+70 °C	
Operating temperature	-15...+55 °C	

Electrical characteristics		
Power supply voltage	24 VDC	12 VDC
Power consumption	10 W	5 W
Bulb type	halogen	



L-112 dimensional drawing

Space-saving keyboard **UKT-801**



The UKT-801 is a space-saving keyboard designed to control computer devices with PS/2 or USB interfaces. The UKT-801 trackball allows the complete substitution of a mouse; made for a small-scale workspace.

TECHNICAL CHARACTERISTICS

General characteristics	
Dimensional drawing	292x160x26.3 mm
IP rating	IP 20
Weight	0.45 kg
Operating characteristics	
Interface	PS/2 (USB)
Number of keys	86
Pointing device	16 mm ball with two buttons
Keys	membrane, quiet tactile



Marine LCD display

MV-xx



The MV-xx04 type, marine display has a diagonal from 10" to 46" and various display resolutions & formats. It is designed to display textual, graphic and other data. It is used for electronic mapping, surveillance and automation systems, radars and workstations, etc. A potentiometer on the front panel is used to adjust the display backlight depending on the room lighting. The MV-xx can either operate with 110/220 VAC or 12/24 VDC (select at order). Various options can be deployed: touch screen, built-in speakers, high brightness matrix and optical bonding. IP rating of the front panel (IP56) can be changed on demand. The device has a galvanic isolation from power mains.

TECHNICAL CHARACTERISTICS MV-xx04

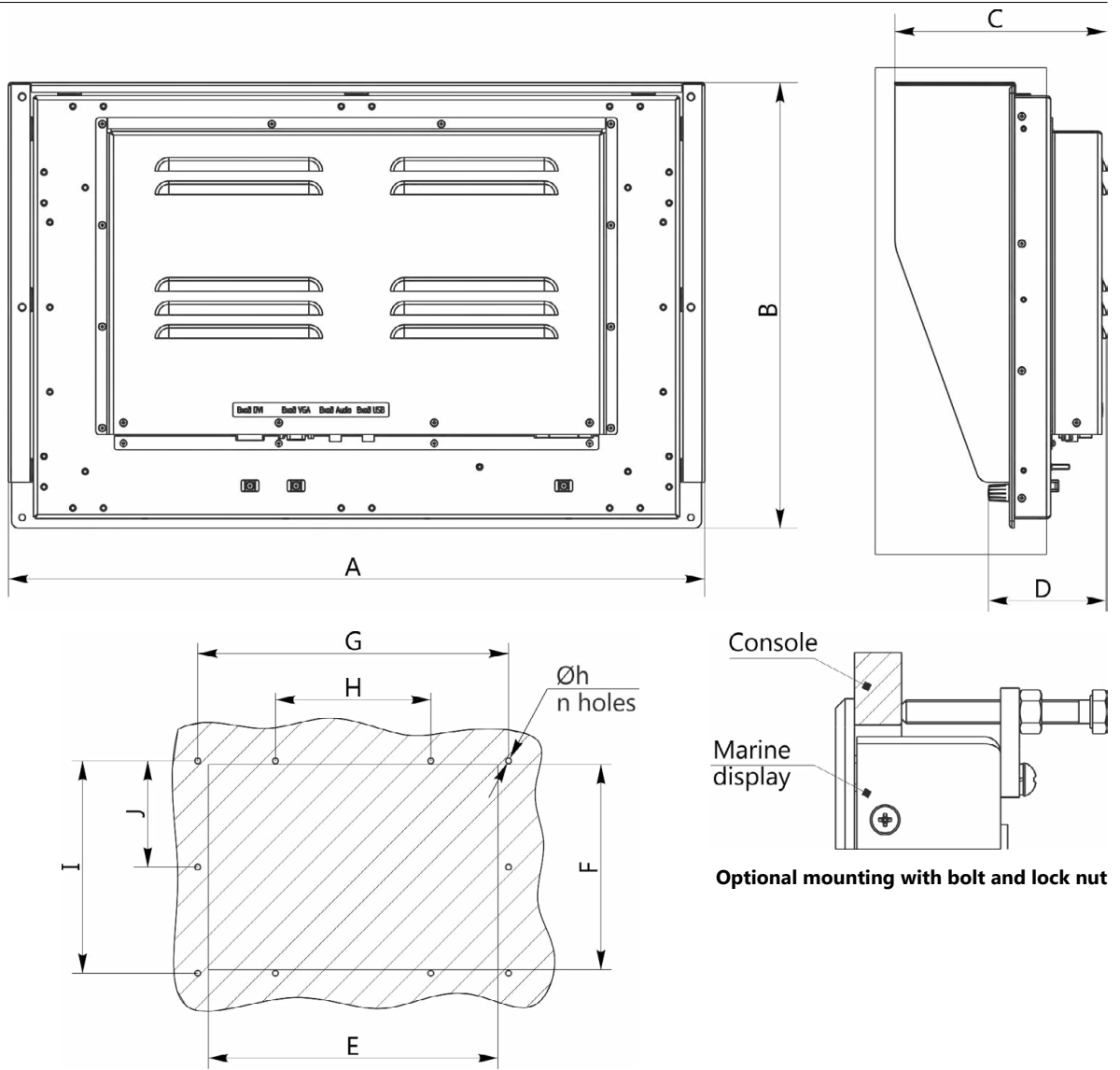
Design	MV-1004	MV-1204	MV-1504	MV-1704	MV-1904	MV-2104	
Display diagonal	10.4"	12.1"	15"	17"	19"	21.3"	
Format (aspect ratio)	4:3			5:4		4:3	
Resolution (pix.)	1024 x 768			1280 x 1024		1600 x 1200	
Viewable area, mm	215x157	246x184	304x228	337x270	376x301	432x324	
Weight, kg	4.6	5.5	7.8	9.8	10.3	13.5	
Angle of view (not less), dg	176	160	160	160	170	178	
Contrast ratio	1200:1	600:1	600:1	1000:1	700:1	1000:1	
Brightness, cd/m ²	500 (>500 option)	400 (>400 option)	400 (>400 option)	250 (>250 option)	300 (>300 option)	300 (>300 option)	
Screen surface	With non-reflective glass layer / w/o non-reflective glass layer (option) / touch screen (option)						
Sensor control signal	USB/RS-232						
Brightness remote control	no/ RS-232/422						
Built-in speakers	-			+*			
Optical bonding	Filling space between screen and glass (touch screen) with transparent glue – option						
Communication ports (interfaces)	VGA (RGB), DVI (DVI-D)/HDMI, CVBS ((option) resolution – max 720x576), S-Video ((option) resolution – max 720x576)						
Repetition frequency	Vertical, Hz	43...85	43...85	43...85	50...85	50...85	65...75
	Horizontal, kHz	36...68	36...68	36...68	53...91	53...91	81...93
Power consumption, W	51	55	55	75	75	75	
Power supply voltage	~110/220 V, 50-60 Hz / 19...36 VDC / 9.6...18 VDC						
IP rating	IP 22 / IP56 (option) – front panel, IP 22 – other surfaces						
Operating temperature	-15 °C .. +55 °C						
Storage temperature	-20 °C .. +70 °C						

*In case of a glass-frame mounting, speakers are not installed.

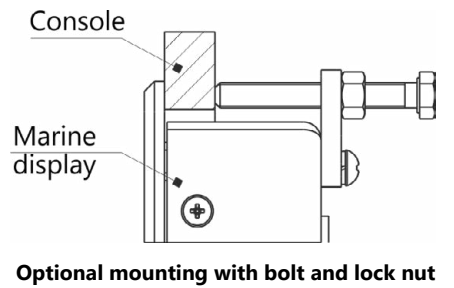
TECHNICAL CHARACTERISTICS MV-xx05

Design	MV-2105	MV-2305	MV-2405	MV-2705	MV-3205	MV-4205	MV-4605	
Display diagonal	21.5"	23"	24"	27"	31.5"	42"	46"	
Format (aspect ratio)	16:9		16:10	16:9				
Resolution (pix.)	1920x1080		1920x1200	1920x1080				
Weight, kg	12	12.3	14.8	16	24.8	42.6	48	
Viewable area, mm	476x268	509x286	518x324	597x336	698x392	930x523	1018x572	
Angle of view (not less), dg	178							
Contrast (ratio)	5000:1	1000:1			3000:1	4000:1		
Brightness, cd/m ²	300 (>300 option)				500 (>500 option)	500 (>500 option)	700 (>700 option)	
Screen surface	With non-reflective glass layer / w/o non-reflective glass layer (option) / touch screen (option)							
Sensor control signal	USB/RS-232							
Brightness remote control	no/ RS-232/422 (option)							
Built-in speakers	+							
Optical bonding	Filling space between screen and glass (touch screen) with transparent glue – option							
Communication ports (interfaces)	VGA (RGB), DVI (DVI-D)/HDMI, CVBS ((option) resolution – max 720x576), S-Video ((option) resolution – max 720x576)							
Repetition frequency	Vertical, Hz	50...75	55...76					
	Horizontal, kHz	64...83	31...80					
Power consumption, W	50				80	100		
Power supply voltage	~110/220 V, 50-60 Hz / 19...36 VDC / 9.6...18 VDC				~110/220 V, 50-60 Hz / 19...36 VDC			
IP rating	IP 22 / IP56 (option) – front panel, IP 22 – other surfaces							
Operating temperature	-15 °C .. +55 °C							
Storage temperature	-20 °C .. +70 °C							

*In case of a glass-frame mounting, speakers are not installed.



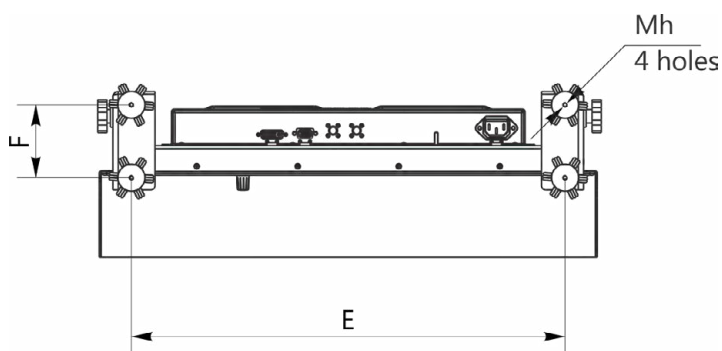
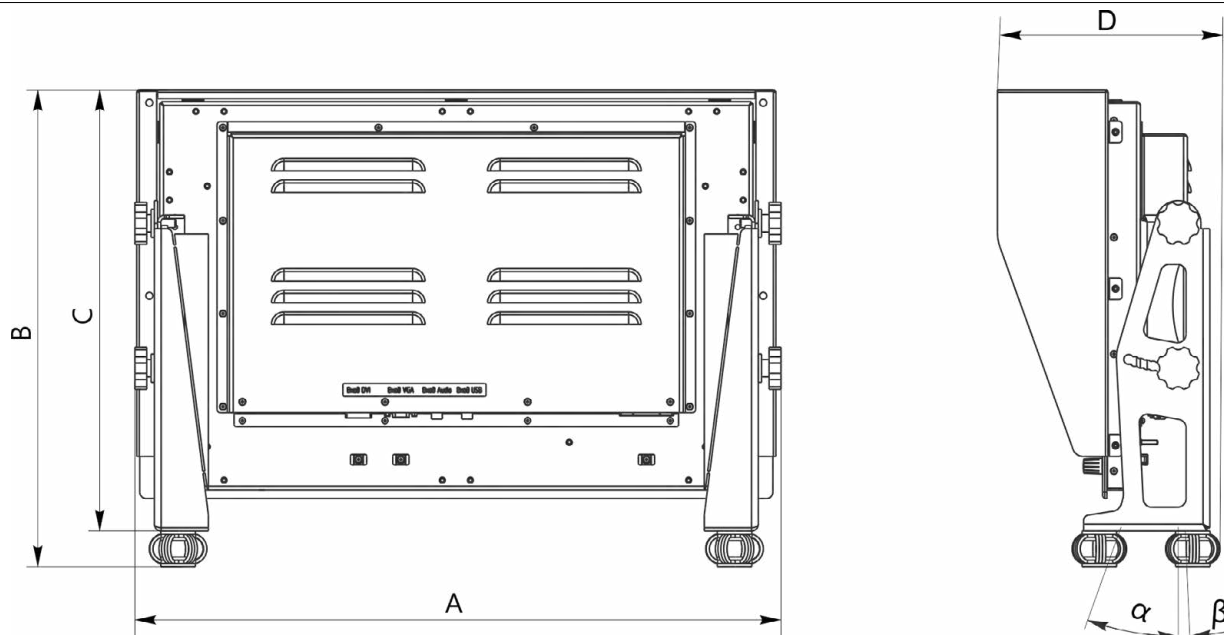
Optional console mounting through mounting holes



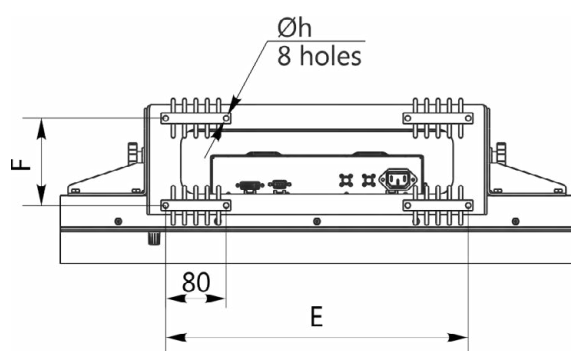
Optional mounting with bolt and lock nut

Design	Dimensions, mm											
	A	B	C	D	E	F	G	H	I	J	h	n
MV-1004	293	238	148.5	90	263	226	273	-	220	-	4.3	4
MV-1204	327	263	146.5	88	297	251	307	-	245	-	4.3	4
MV-1504	384.5	314	181	102.5	345.5	298	360.5	-	293	146.5	5.5	6
MV-1704	417.5	360	183	103.5	378.5	344	393.5	-	339	169.5	5.5	6
MV-1904	455	389	183	103.5	416	373	431	-	368	184	5.5	6
MV-2104	514.5	413	187.5	109	476	397	491	-	392	196	5.5	6
MV-2304	586.5	495.5	194.5	116	548	479.5	563	-	474.5	237.25	5.5	6
MV-2105	554	359	187.5	109	515.5	343	530	-	338	169	5.5	6
MV-2305	591.5	378	181	102.5	553	362	568	-	357	178.5	5.5	6
MV-2405	603.5	418	183.5	105	565	402	580	-	397	198.5	5.5	6
MV-2705	674	424	188.5	100	635	408	650	-	403	201.5	5.5	6
MV-3205	811	542	200.5	112	772	505	787	263	521	260.5	6.6	10
MV-4205	1051	675	262	123.5	1012	638	1027	343	654	327	6.6	10
MV-4605	1144.5	727.5	261	122.5	1105.5	691	1120.5	368.5	706.5	353.25	6.6	10

Dimensional drawing of MV-xx console mounting



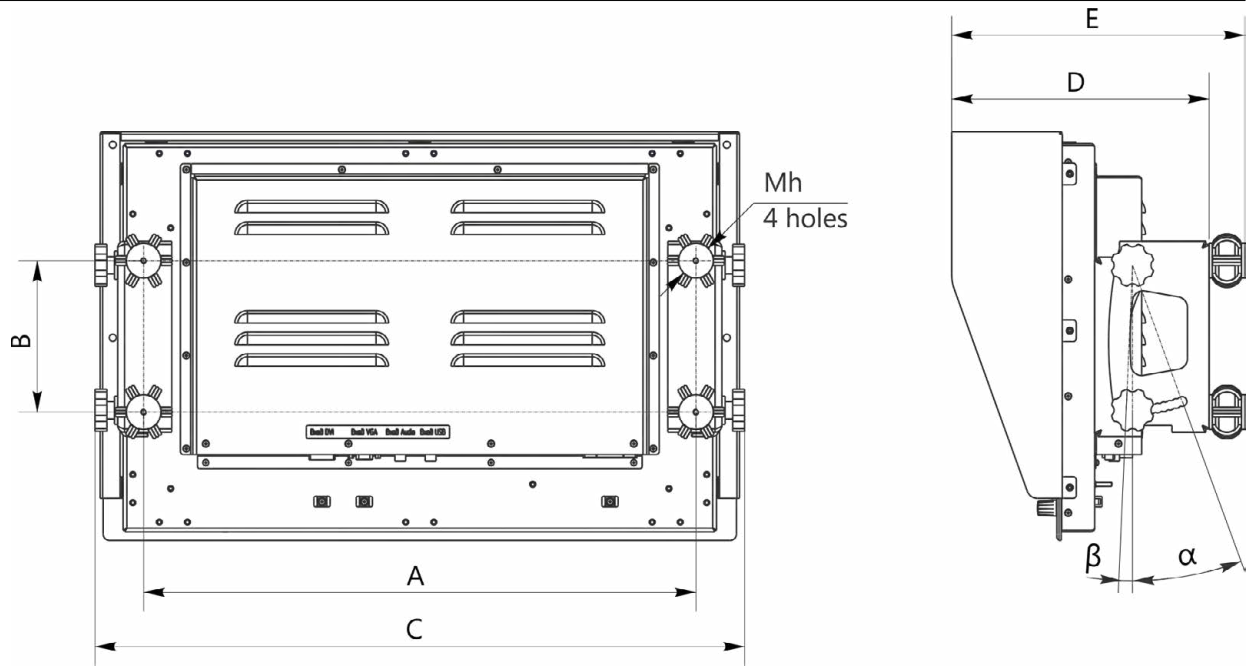
Mounting holes location if mounted on a bracket with vibration isolators (Type 1)



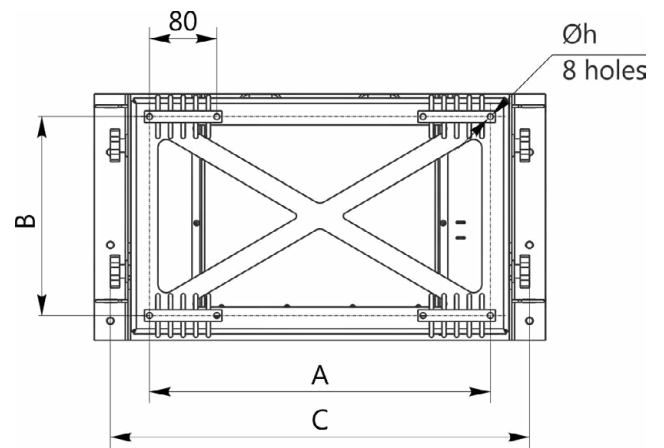
Mounting holes location if mounted on a bracket with vibration isolators (Type 2)

Design	Type	Dimensions, mm							Adjustment angles (°)		
		A	B	C	D	E	F	h	α	β	Pitch
MV-1004	1	287	301	268	167	234	64	4	20	2.5	2.5
MV-1204	1	323	326	293	165	270	64	4	20	2.5	2.5
MV-1504	1	361.5	377	344	238	280.5	100	5	20	2.5	2.5
MV-1704	1	396.5	423	390	240	310.5	100	5	20	2.5	2.5
MV-1904	1	410	444.5	411.5	240	324	100	5	20	2.5	2.5
MV-2104	1	470	468	435	246	384	100	5	20	2.5	2.5
MV-2304	1	596	568.5	525.5	226.5	510	86.5	6	20	2.5	2.5
MV-2105	1	564	420.5	387.5	214	490	86.5	5	20	2.5	2.5
MV-2305	1	598	441	408	207.5	515	86.5	5	20	2.5	2.5
MV-2405	1	615	476	443	209	529	86.5	5	20	2.5	2.5
MV-2705	1	406	497	454	236.5	314	82	6	20	5	2.5
MV-3205	2	403	610	568	270	320	95	7	20	5	2.5
MV-4205	2	498	767	725	331.5	400	115	7	20	5	2.5
MV-4605	2	418	819.5	777.5	352.5	320	115	7	25	5	2.5

Dimensional drawing of MV-xx with a desk-top bracket and vibration isolators



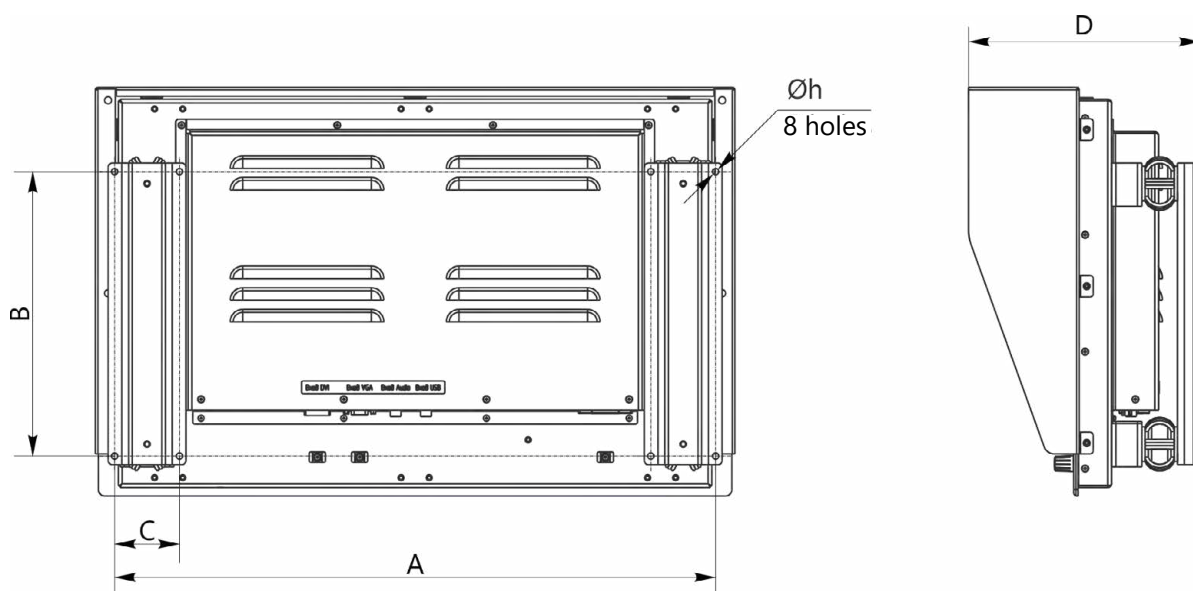
(Type 1)



(Type 2)

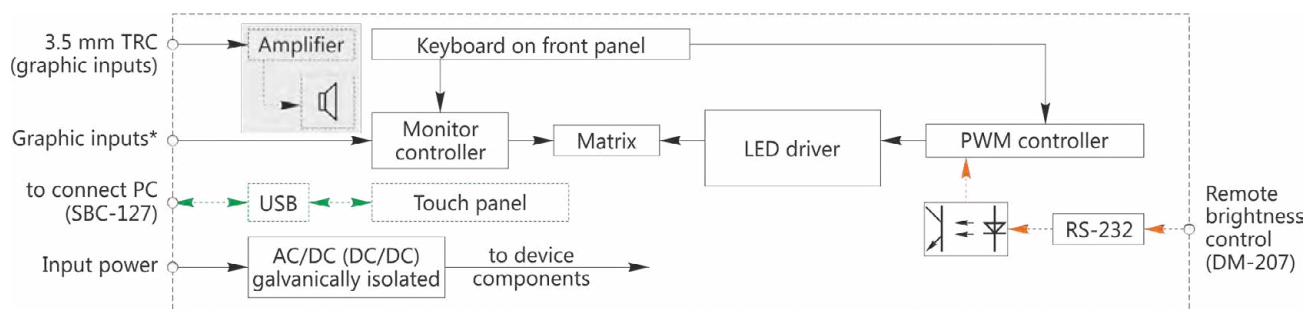
Design	Type	Dimensions, mm					Adjustment angles(°)			
		A	B	C	D	E	h	α	β	Pitch
MV-1004	1	234	90	287	211	244	4	20	2.5	2.5
MV-1204	1	270	90	323	209	242	4	20	2.5	2.5
MV-1504	1	280.5	114	361.5	269.5	302.5	5	20	2.5	2.5
MV-1704	1	306.5	140	396.5	271	304	5	20	2.5	2.5
MV-1904	1	320	140	410	271	304	5	20	2.5	2.5
MV-2104	1	380	140	470	277	310	5	20	2.5	2.5
MV-2304	1	506	140	596	262	305	6	20	2.5	2.5
MV-2105	1	474	140	564	244.5	277.5	5	20	2.5	2.5
MV-2305	1	511	140	598	238	271	5	20	2.5	2.5
MV-2405	1	525	140	615	239.5	272.5	5	20	2.5	2.5
MV-2705	1	305	120	406	280.5	323.5	6	20	5	2.5
MV-3205	2	310	132	403	300	342	7	15	10	2.5
MV-4205	2	405	236	498	346.5	388.5	7	15	10	2.5
MV-4605	2	325	256	418	385.5	427.5	7	20	10	2.5

Dimensional drawing MV-xx with a wall bracket and vibration isolators.



Design	Dimensions, mm				
	A	B	C	D	h
MV-1004	280	159	56	193.5	4.5
MV-1204	316	172	56	191.5	4.5
MV-1504	337.5	193	60	229	5.8
MV-1704	370.5	215	60	232	5.8
MV-1904	384	244	60	232	5.8
MV-2104	444	244	60	238	5.8
MV-2304	557	416.5	66	238	7
MV-2105	518.5	280	60	221	5.8
MV-2305	556	263	60	214.5	5.8
MV-2405	573	290	60	216	5.8
MV-2705	526	400	66	205.5	7
MV-3205	543	457	80	234	7
MV-4205	638	611	80	285.5	7
MV-4605	558	663.5	80	297	7

Dimensional drawing MV-xx with non-adjustable wall bracket



Optionally.

* Various options are available depending on design. See Table of Technical Characteristics.

Functional diagram MV-xx



Marine panel computers

MVPC-xx

The MVPC-xx04 and MVPC-xx05 marine panel computers have a display diagonal from 10" to 46" and formats 5:4, 4:3, 16:9, 16:10. They are used for electronic mapping, surveillance and automation systems, radars and workstations, etc. The MVPC-xx can either operate with 110/220 VAC or 12/24 VDC (please select at order). The units can optionally be deployed with built-in speakers, touch screen, high brightness matrix, optical bonding and variable IP rating of the front panel (IP56). The units are provided with galvanic isolation from power mains.

Marine panel computers MVPC-xx04 and MVPC-xx05 type shall be used in a dry environment (IP22).

Technical characteristics MVPC-XX05

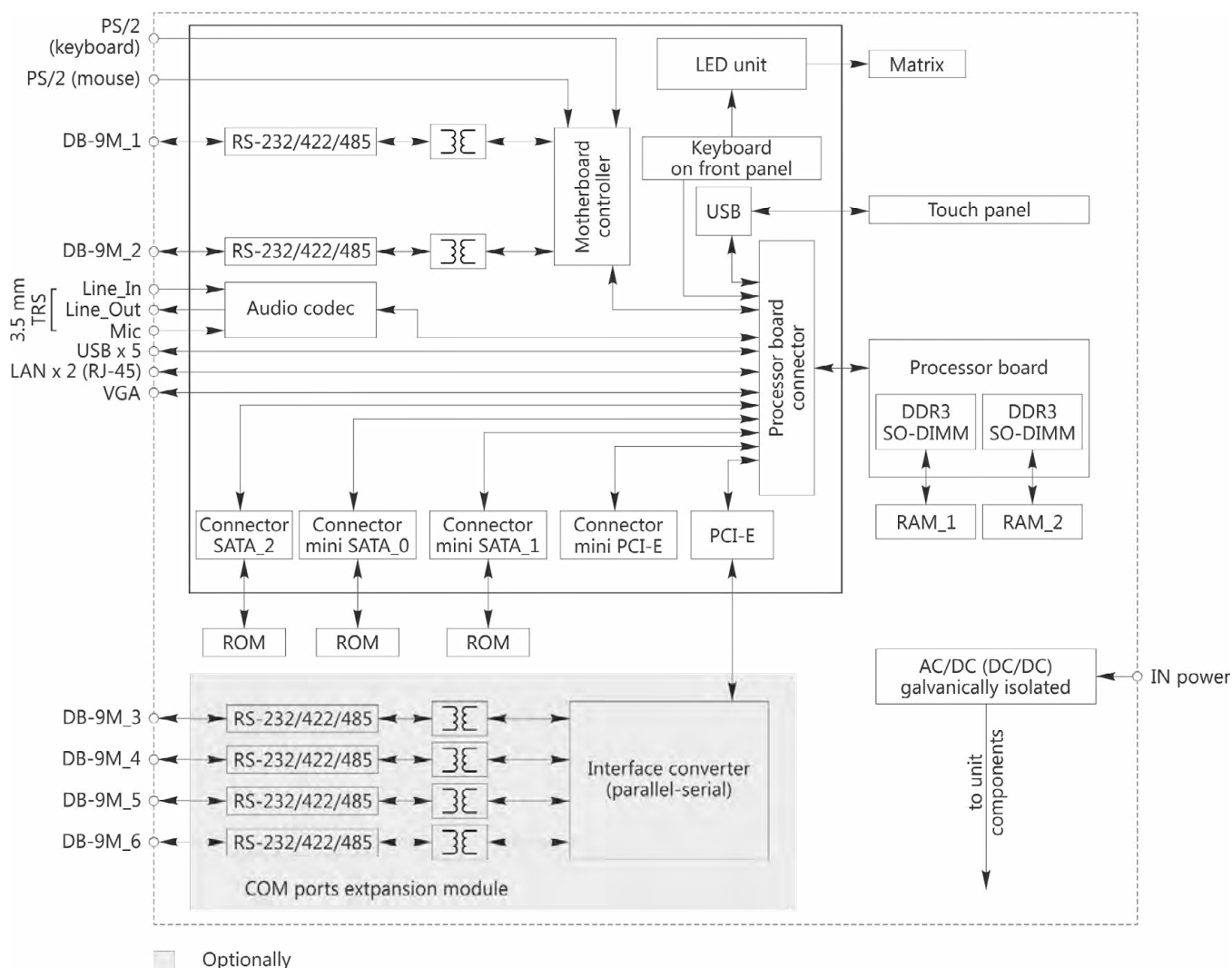
Model	MVPC-1005	MVPC-2105	MVPC-2305	MVPC-2405	MVPC-2705	MVPC-3205	MVPC-4205	MVPC-4605
Display diagonal	10.1"	21.5"	23"	24"	27"	31.5"	42"	46"
Format (aspect ratio)	(16:10)	(16:9)		(16:10)	(16:9)			
Resolution (pix.)	1280 x 800	1920x1080		1920x1200	1920x1080	1920x1080	1920x1080	1920x1080
Viewable area, mm	217x136	476x268	509x286	518x324	597x336	698x392	930x523	1018x572
Angle of view (not less), dg	170	178	178	178	178	178	178	178
Contrast ratio	1300:1	3000:1	1000:1	1000:1	1000:1	3000:1	4000:1	4000:1
Brightness, cd/m ²	360	300 (>300 option)	300	300 (>300 option)	300 (>300 option)	450 (>450 option)	500 (>500 option)	700 (>700 option)
Screen surface	Touch screen	Non-reflective glass layer / touch screen (option)						
Power consumption, W	60	160	170	180	180	190	200	200
Power supply voltage	(50...60) Hz, 220 VAC (180...264 VAC) / 110 VAC (90...132 VAC); 24 VDC (19...36 VDC) / 12 VDC (9.6...18 VDC)					(50...60) Hz, 220 VAC (180...264 VAC) / 110 VAC (90...132 VAC); 24 VDC (19...36 VDC)		
IP rating	IP22 / IP56 (option) - front panel, IP22 – other surfaces							
Operating temperature	- 15 °C ... +55 °C							
Storage temperature	- 20 °C ... +70 °C							

Technical characteristics MVPC-XX04

Model	MVPC-1004	MVPC-1204	MVPC-1504	MVPC-1704	MVPC-1904	MVPC-2104
Display diagonal	10.4"	12.1"	15"	17"	19"	21.3"
Format (aspect ratio)	(4:3)		(5:4)		(4:3)	
Resolution (pix.)	1024 x 768		1280 x 1024		1600 x 1200	
Viewable area, mm	210 x 157	246 x 184	304 x 228	337 x 270	376 x 301	432 x 324
Angle of view (not less), dg	178	160	160	160	178	178
Contrast ratio	3000:1	700:1	800:1	1000:1	1000:1	1400:1
Brightness, cd/m ²	470 (>470 option)	500 (>500 option)	450 (>450 option)	250 (>250 option)	300 (>300 option)	440 (>440 option)
Screen surface	Non-reflective glass layer / touch screen (option)					
Power consumption, W	60	60	75	75	150	150
Power supply voltage	(50...60) Hz, 220 VDC (180...264 V) / 110 V (90...132 V) 24 V DC (19...36 V DC) / 12 V DC (9.6...18 V DC)					
IP rating	IP22 or IP56 (option) – front panel, IP22 – other surfaces					
Operating temperature	- 15 °C ... +55 °C					
Storage temperature	- 20 °C ... +70 °C					

Computer characteristics

Model	MVPC-1005	MVPC-1004	MVPC-1204	MVPC-1504	MVPC-1704	MVPC-1904	MVPC-2104	MVPC-2105	MVPC-2305	MVPC-2405	MVPC-2705	MVPC-3205	MVPC-4205	MVPC-4605
Processor	Intel Atom E3845, 4 cores 1,91 GHz						Intel Core i7-6820EQ, 4 cores 2.8/3,5 GHz Intel Core i5-7442EQ, 4 cores 2.1/2,9 GHz Intel Core i3-7100E, 2 cores 2.9 GHz							
RAM	DDR3L, 8 GB						DDR4 SO-DIMM, from 8 to 16 GB							
HD	SSD 128 GB						SSD from 240 to 960 GB							
Supported interfaces	Ethernet 10/100/1000 Base-T – 2 pcs. USB 2.0 – 3 pcs.; COM – 2 pcs. Audio input, audio output, microphone – 1 pcs. HDMI – 1 pcs.						Ethernet 10/100/1000 Base-T – 2 pcs. Audio input, audio output, microphone – 3 pcs. HDMI – 2 pcs. COM (RS-232; RS-422; RS-485) – 4 pcs.							



Functional diagram MVPC-xx



Marine computer unit

MPC-127

The MPC-127 marine computer unit is intended for a wide range of applications: process control, electronic mapping, automation systems, etc. The MPC-127 can be equipped with discrete graphics, network adapter, trusted platform module or RAID-controller on request.

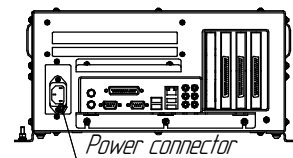
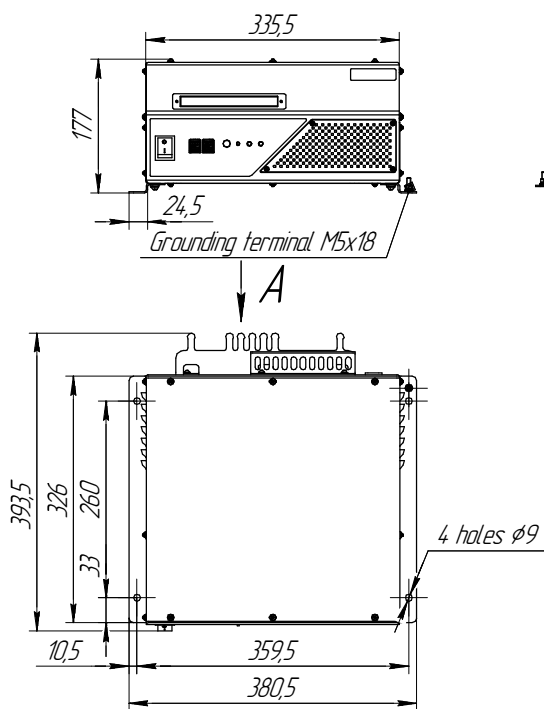
The unit can operate with 24 VDC and 110/220 VAC.

TECHNICAL CHARACTERISTICS

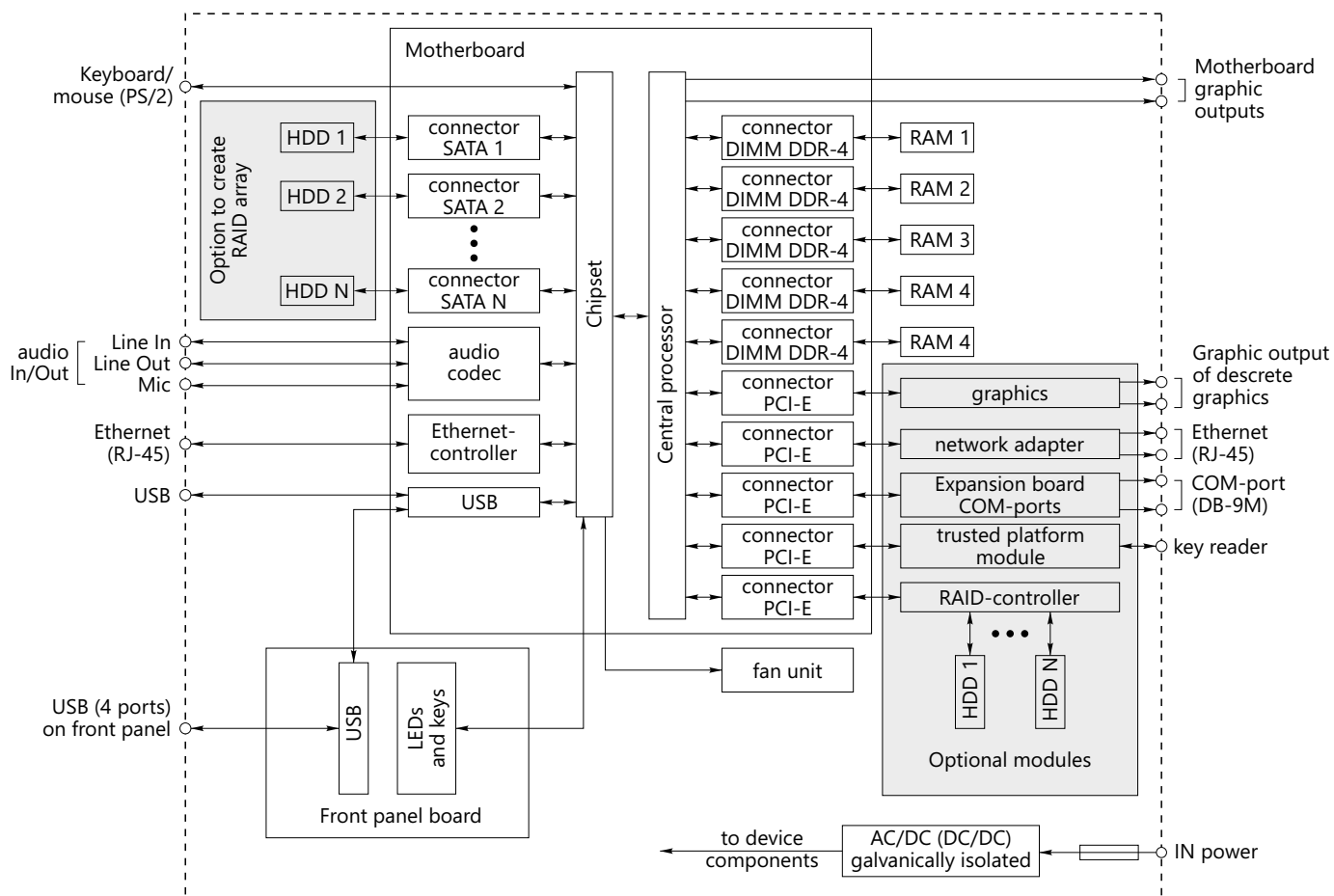
Processor	Cores	From 2 to 18
	Frequency	From 1300 to 4400 MHz
RAM		From 1 GB to 32 GB
HD		From 512 GB to 4 TB
Graphics card		External from 1 GB to 8 GB
Power supply voltage	220 V, 50-60 Hz	
	~110 V, 50-60 Hz /	
	19...36 VDC	
Power consumption		max 550 W
Supported interfaces		
DVD-RW		up to 1
Audio ports (input, output, microphone)		up to 3
USB ports		up to 8

Ports to connect monitor (VGA/DVI/HDMI/Display Port)	Up to 1 VGA, up to 2 DVI, up to 4 HDMI, up to 4 DP Total number up to 4
LAN (Ethernet 10/100/1000 Base-T)	Up to 4
COM F (RS232)/ COM (RS232/422/485)	Up to 6
PS/2 (Keyboard and manipulator)	Up to 2
LPT (printer)	Up to 3
Wi-Fi	Up to 1
CardReader	Up to 1
Remote wake on/reset	Up to 1
Operating characteristics	
IP rating	IP 22
Weight	15 kg
Storage temperature	-55...+70 °C
Operating temperature	-15...+55 °C
Mounting type	Wall

A(1:10)



MPC-127 dimensional drawing



Note: RAM and ROM capacity, optional modules are arranged while ordering.

MPC-127 functional diagram



Marine computer unit

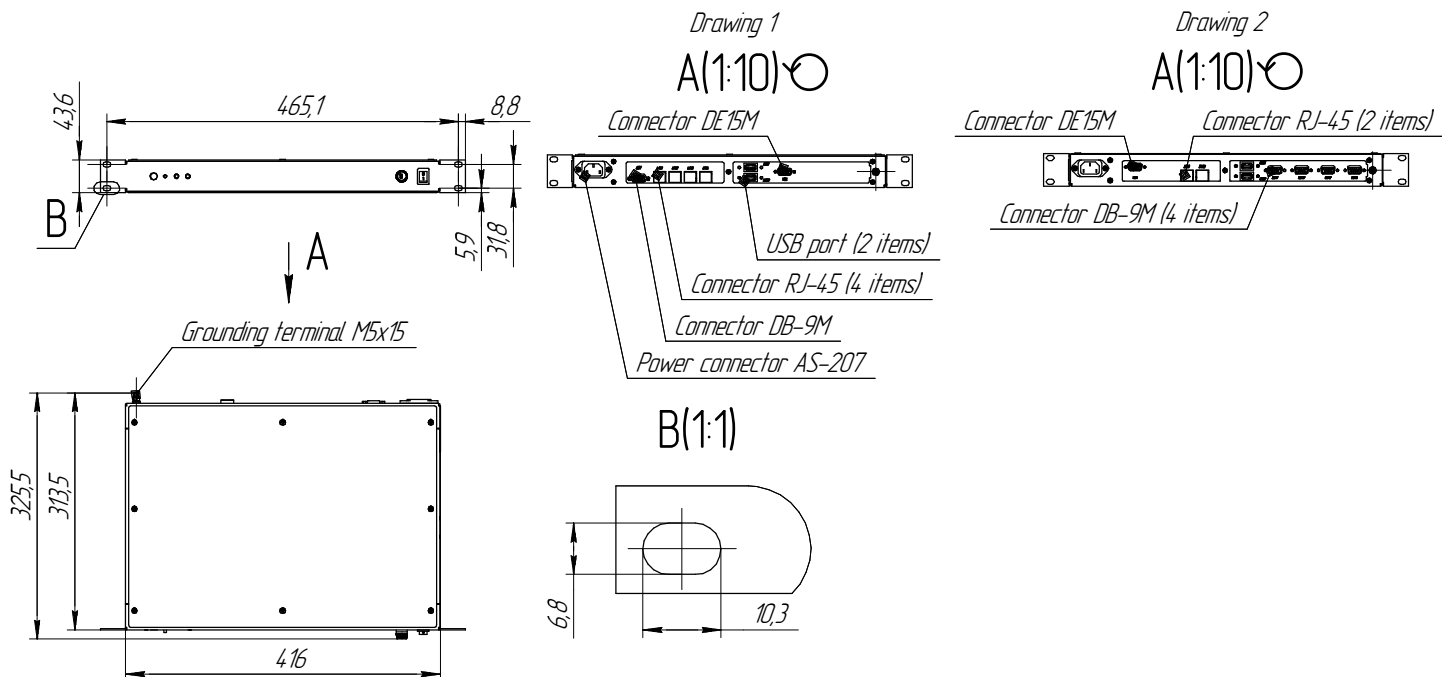
19-MPC-127 (1U)

The 19-MPC-127(1U) marine computer unit can be used for process control, electronic mapping, automation systems, etc. The unit is designed to fit into a 19" rack. The unit can operate both with 24 VDC or 110/220 VAC. The 19-MPC-127(1U) designs are offered with various numbers of network and COM-ports. The VGA interface is used to display graphic data. The device has a galvanic isolation from power mains.

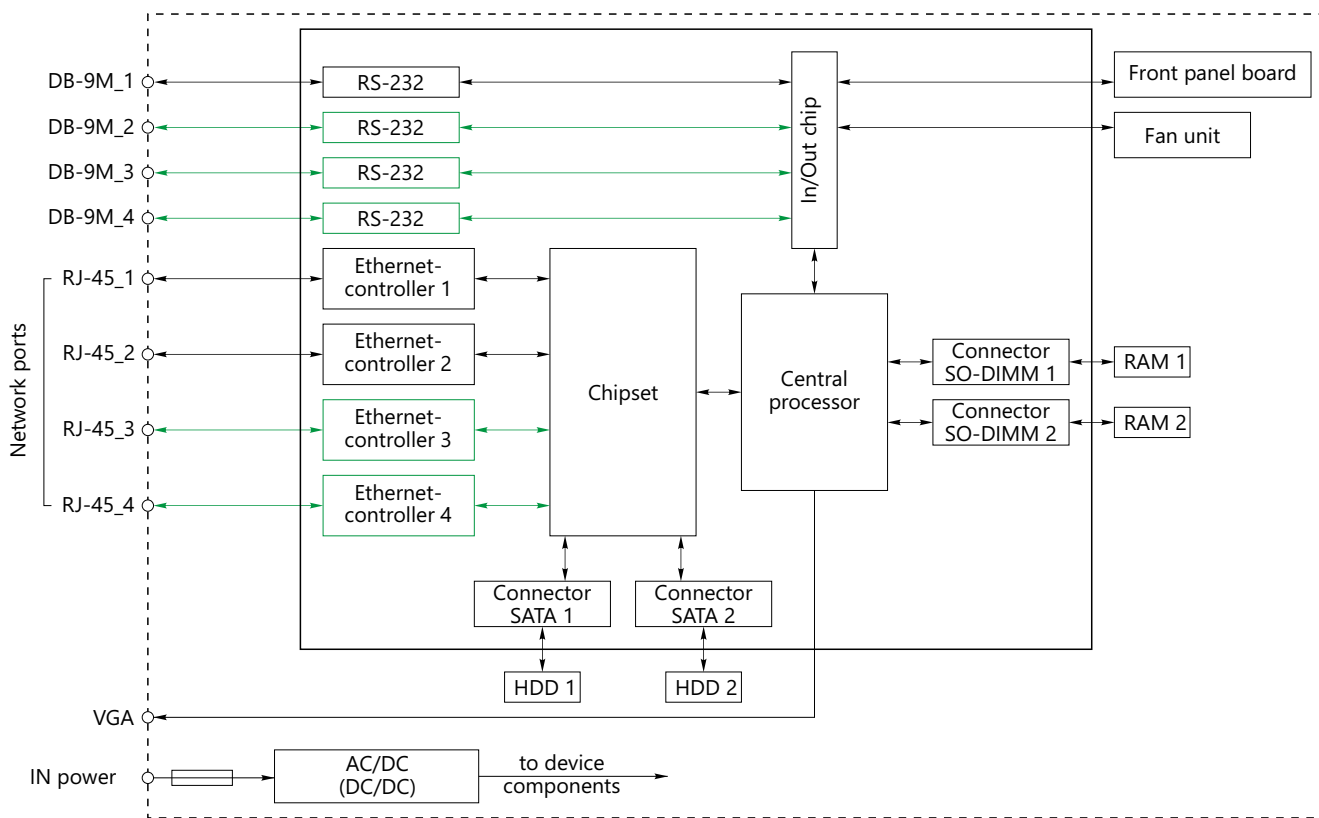
Peripheral devices can be connected via 2 USB-ports on the back panel of the 19-MPC-127(1U).

TECHNICAL CHARACTERISTICS

Design	1	2
Processor	Intel Atom Processor D525 2x1.8 GHz	
RAM	1...4 GB (DDR3)	
HD type and capacity	SSD 60 GB...4 TB (standard – 120 GB), HDD 120 GB...10 TB (option)	
Graphics card	Built-in Intel GMA 3150	
Ports	1xVGA 2xUSB 4xLAN (RJ-45) 1xRS-232(DB-9M)	1xVGA 2xUSB 2xLAN (RJ-45) 4xRS-232(DB-9M)
Operating characteristics		
Power supply voltage	90..264 V, 50/60 Hz 19...36 VDC (option)	
Power consumption	max 70 W	
IP rating	IP20	
Weight	max 5kg	
Storage temperature	-25..+70 °C	
Operating temperature	-15..+55 °C	
Mounting type	19" rack	



19-MPC-127 (1U) dimensional drawing



— depending on design is delivered in the following patterns:
 1 x RS-232 + 4 x LAN
 4 x RS-232 + 2 x LAN

19-MPC-127 (1U) functional diagram



Marine computer unit

19-MPC-127(4U)

The 19-MPC-127(4U) marine computer unit is an ATX motherboard-based computer, designed for installation into 19" rack. It is used for process control, electronic mapping, automation systems, etc.

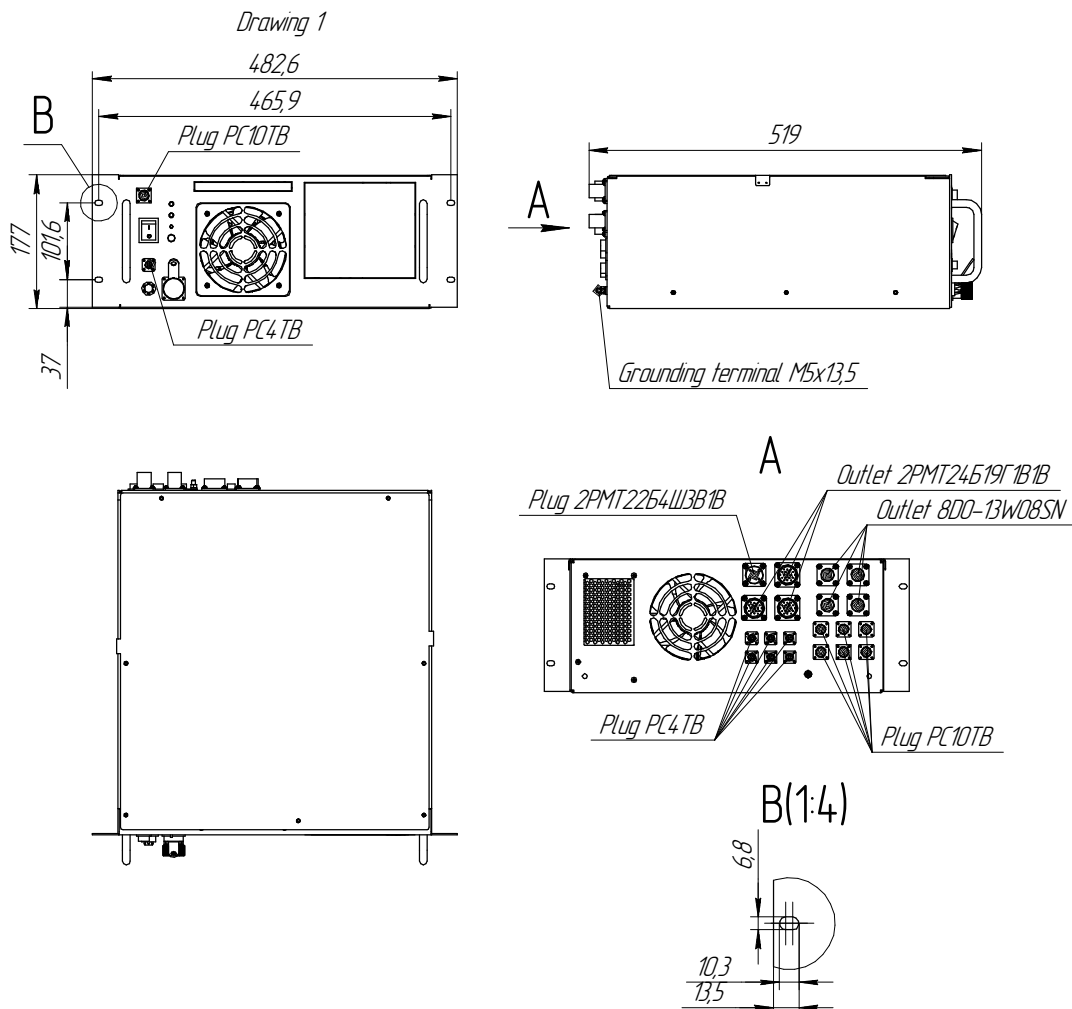
The device has a built-in RAID-controller, providing data back-up based on motherboard specifications. The 19-MPC-127(4U) can operate both with 24 VDC and 110/220 VAC. The device has a galvanic isolation from power mains and an input for a standby power source with an automatic switchover in case of a power supply failure.

The unit can be optionally equipped with discrete graphics, network adapter, COM-ports expander or trusted platform module.

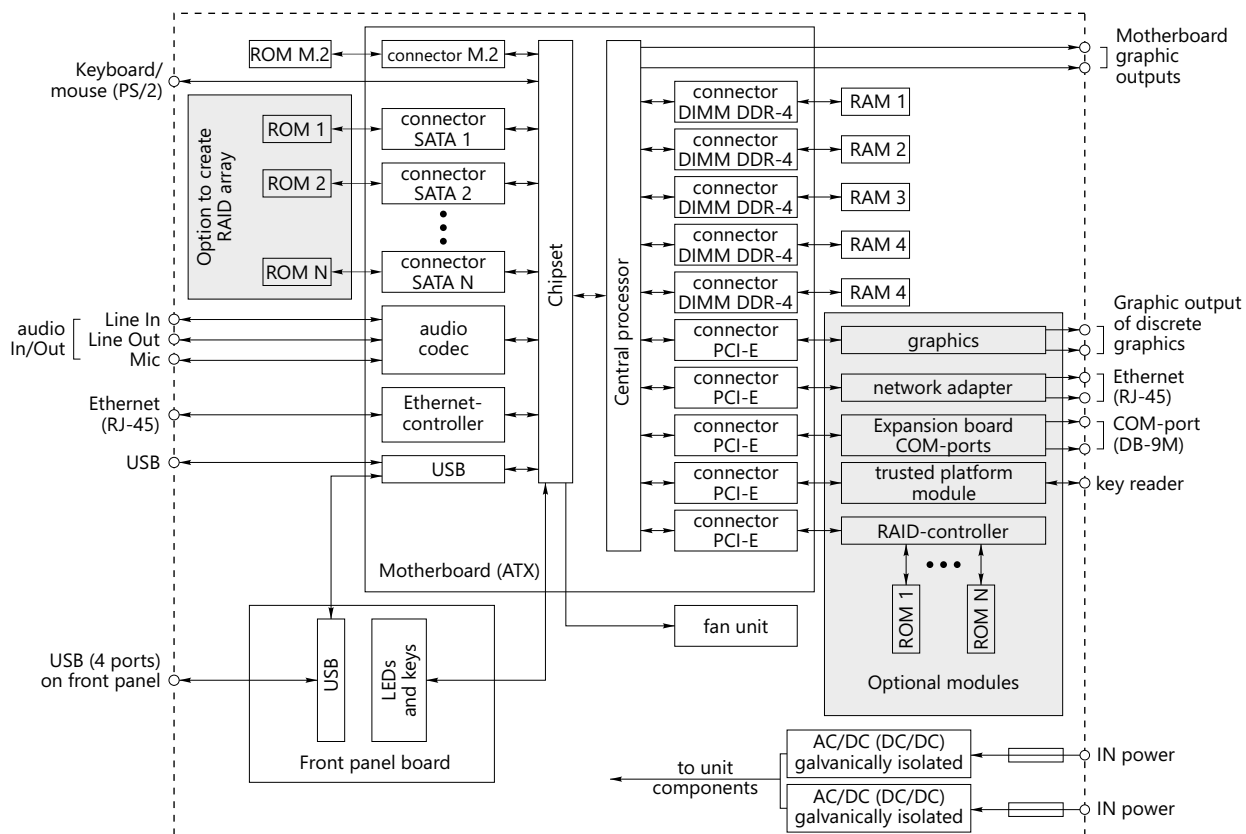
TECHNICAL CHARACTERISTICS

Processor	Cores	From 2 to 18
	Frequency	From 13 000 to 4400 Hz
RAM		From 1 to 32 GB
HD		From 512 GB to 4 TB
Graphics card		External, from 1 GB to 8 GB
Power supply voltage		~220 V, 50-60 Hz
		~110 V, 50-60 Hz
		19...36 VDC
Power consumption		max 550 W
Supported interfaces		
DVD-RW		Up to 1
Audio ports (input, output, microphone)		Up to 3
USB ports		Up to 8
Ports to connect monitor (VGA/ DVI/HDMI/Display Port)		Up to 1 VGA, up to 2 DVI, up to 4 HDMI, up to 4 DP total number up to 4

LAN (Ethernet 10/100/1000 Base-T)	Up to 4
COM F (RS232)/ COM (RS232/422/485)	Up to 6
PS/2 (Keyboard and manipulator)	Up to 2
LPT (printer)	Up to 3
Wi-Fi	Up to 1
CardReader (SD card)	Up to 1
Remote wake on/reset	Up to 1
Operating characteristics	
IP rating	IP 22
Weight	20 kg
Storage temperature	-55..+70 °C
Operating temperature	-15..+55 °C
Mounting	19" rack 4U



19-MPC-127 (4U) dimensional drawing

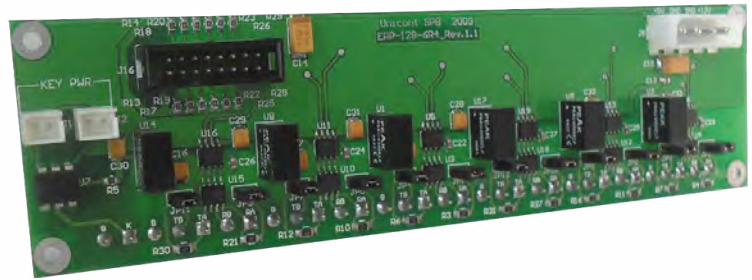


Note: RAM and ROM capacity, optional modules are arranged while ordering.

19-MPC-127 (4U) functional diagram

Expansion board

ERP-128/ERP-128-6R4

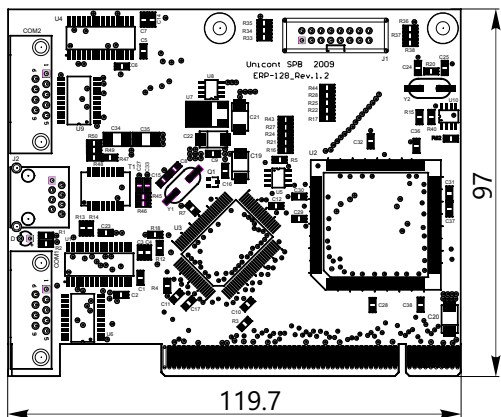


The ERP-128 expansion board allows the increase of COM and LAN ports through a PCI bus. The basic design includes 2 COM (RS-232) and 1 LAN ports. It can be optionally combined with the expansion board ERP-128-6R4, providing 6 ports RS-422 with screw terminals and a connector for an external PC power key. Both boards have COM-ports overvoltage protection. The expansion board has a galvanic isolation from the PCI bus and COM-ports.

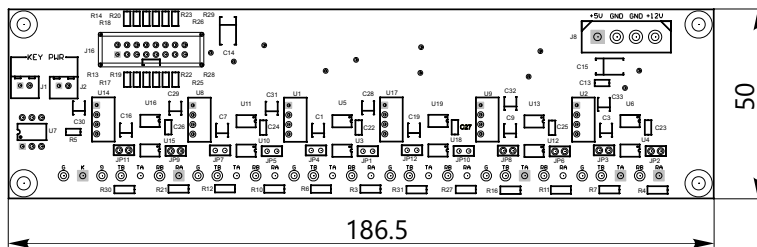
TECHNICAL CHARACTERISTICS

	ERP-128	ERP-128-6R4
General characteristics		
Storage temperature	-60...+70°C	-60...+70°C
Operating temperature	-20...+55°C	-20...+55°C
Weight	0.095 kg	0.11 kg
Operating characteristics		
Power supply voltage	5 V (PCI connector)	5 V
Number of output ports	2xRS-232 (DB-9F) 1xLAN (RJ-45)	6xRS-422 (screw terminals), 1 button to start PC
Ports protection	Short-circuit	Short-circuit, galvanic isolation

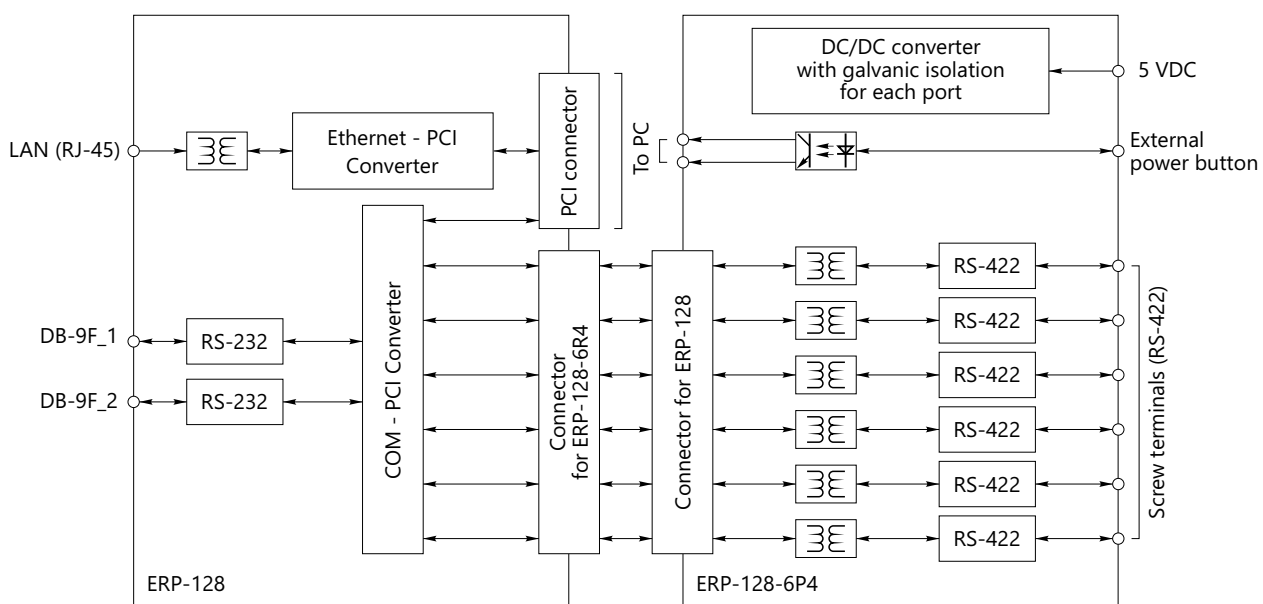
ERP-128



ERP-128-6P4



ERP-128/ERP-128-6R4 dimensional drawing



ERP-128 functional diagram



Digital repeater (LED)

DR-109

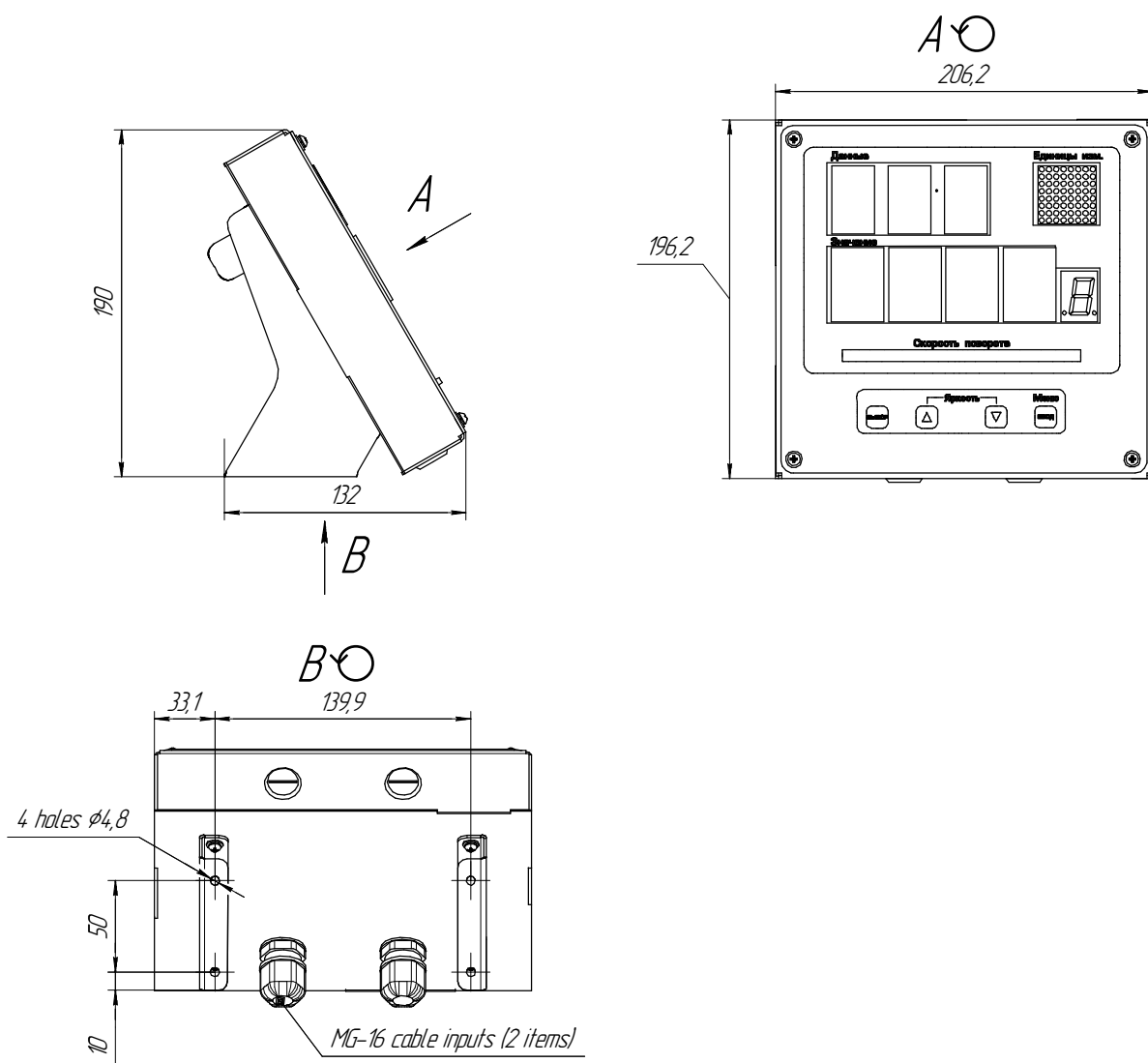
The DR-109 multipurpose digital repeater allows the visual indication of digital data received in NMEA 0183 sentences through RS-232 and RS-422/485 serial interfaces. The DR-109 provides sequential displaying of up to 3 data types on the built-in LED indicator (ship speed and heading, depth below keel, current time and weather conditions). The data of ship turn rate may be displayed regardless of main data on the built-in LED linear.

TECHNICAL CHARACTERISTICS

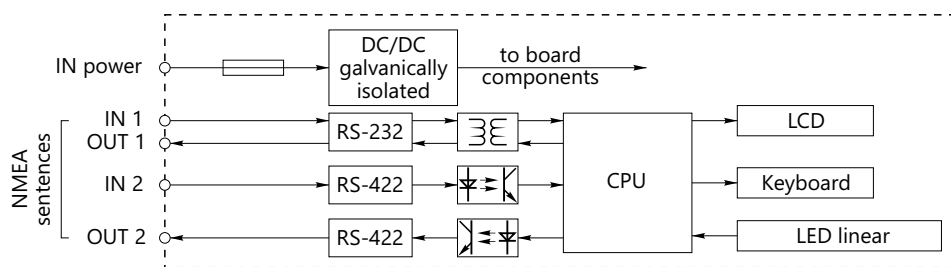
General characteristics	
IP rating	IP 22 (optionally IP 65)
Storage temperature	-60...+70°C
Operating temperature	-15...+55°C
Weight	2 kg

Characteristics of inputs	
Number of input ports	2
Supported interfaces	RS-232 and RS-422
Max receive rate	115200 bit/s

Electrical characteristics	
Power supply voltage	18...36 VDC
Max power consumption	10 W
Galvanic isolation from power mains	+
Reverse polarity protection	+



DR-109 dimensional drawing



DR-109 functional diagram



Multipurpose digital repeater (LCD)

DR-209



The DR-209 multipurpose digital repeater displays NMEA-sentences data from various ship equipment on a monochrome LCD monitor in user-friendly format and rebroadcasts the received data by communication channels.

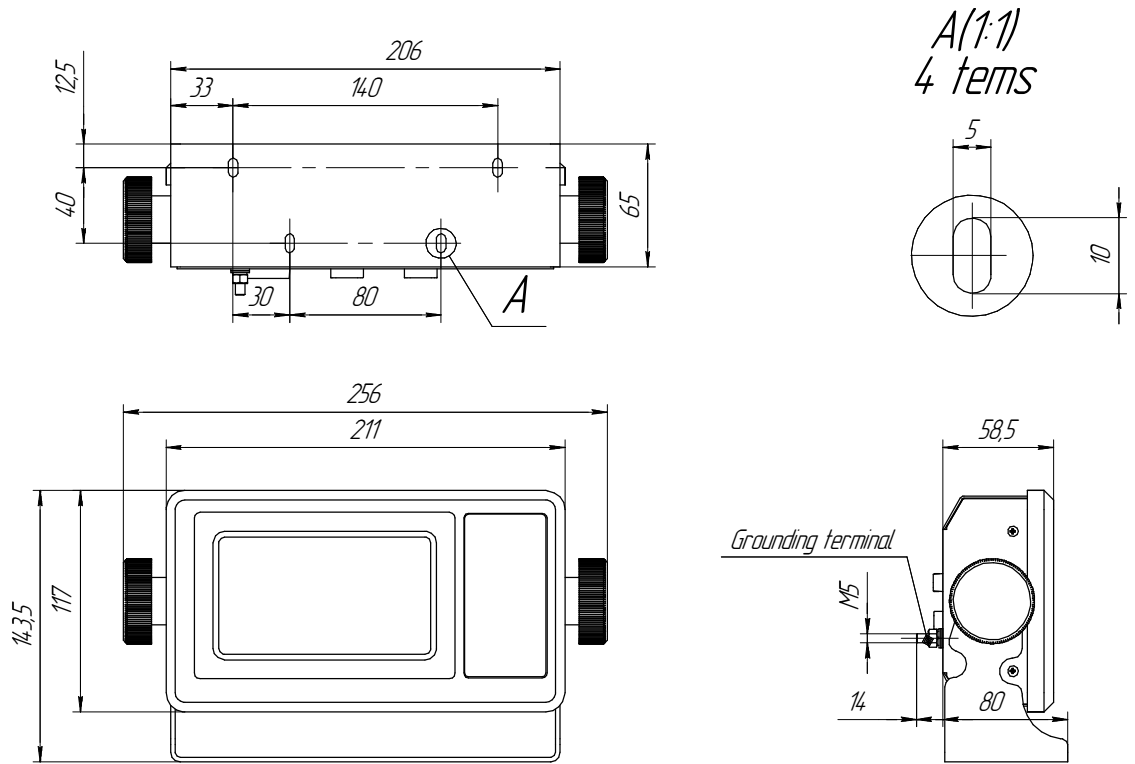
TECHNICAL CHARACTERISTICS

General characteristics	
IP rating	IP 22 (optionally IP 65)
Storage temperature	-60...+70°C
Operating temperature	-15...+55°C
Weight	2 kg

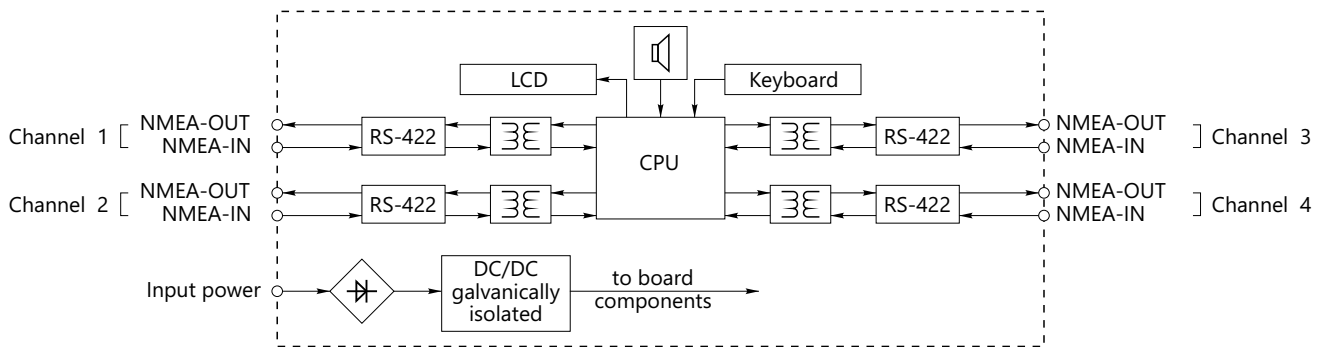
Electrical characteristics	
Power supply voltage	10...36 VDC
Power consumption	max 12 W
Galvanic isolation from power mains	+
Reverse polarity protection	+
Overvoltage protection	+

Characteristics of inputs	
Number of input ports	2
Supported interfaces	RS-422
Max receive rate	57600 bit/s
Galvanic isolation	+

Characteristics of outputs	
Number of output ports	4
Supported interfaces	RS-232, RS-422/485
Max baudrate	57600 bit/s
Galvanic isolation	+



DR-209 dimensional drawing



DR-209 functional diagram



Multipurpose digital repeater

DR-209M

The DR-209M multipurpose digital repeater displays NMEA-sentence data from various ship equipment on an 8 inch colour LCD monitor in user-friendly and convenient format. It rebroadcasts the obtained data by communication channels. The device is equipped with a touch screen and 12/24V output to supply connected equipment.

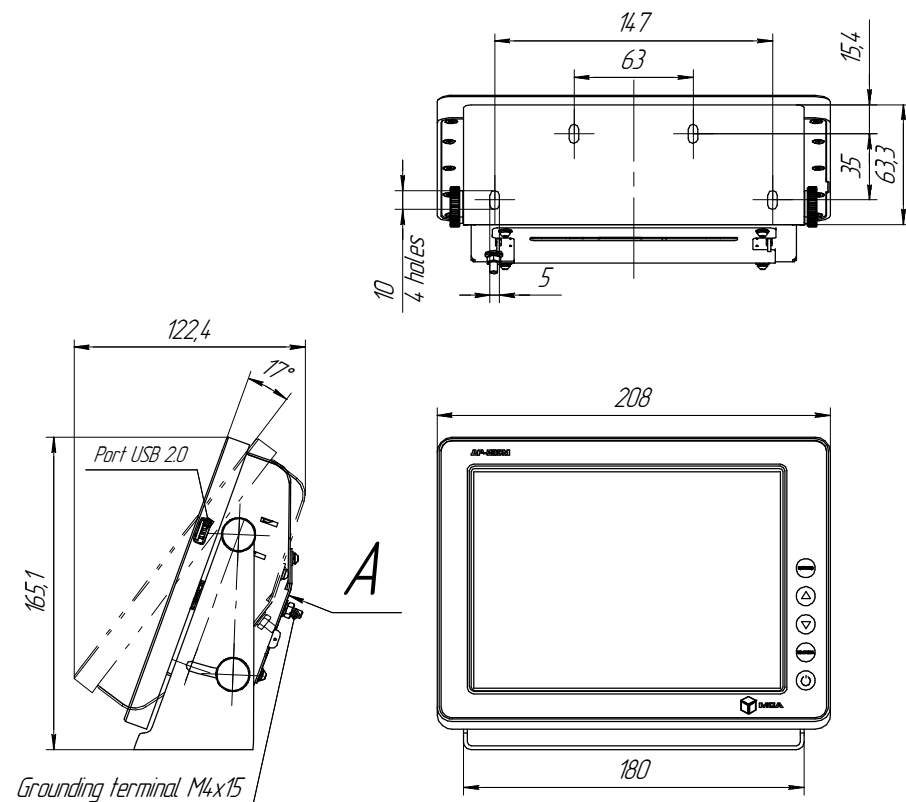
TECHNICAL CHARACTERISTICS

General characteristics	
IP rating	IP 22
Storage temperature	-60...+70°C
Operating temperature	-15...+55°C
Weight	1.76 kg

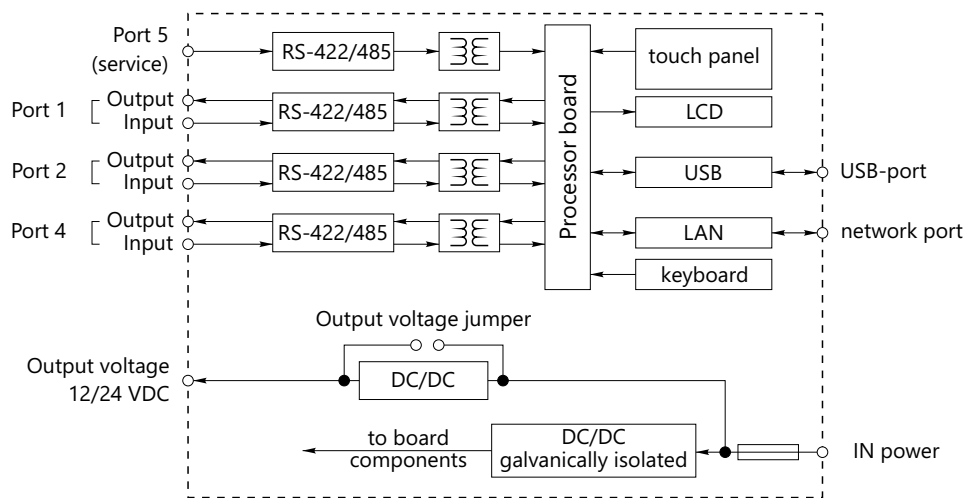
Electrical characteristics	
Power supply voltage	10...36 VDC
Power consumption	max 20 W
Galvanic isolation from power mains	+
Reverse polarity protection	+
Overvoltage protection	+

Characteristics of inputs	
Number of input ports	3
Supported interfaces	RS-422
Max receive rate	115200 bit/s
Galvanic isolation	+

Characteristics of outputs	
Number of output ports	3
Supported interfaces	RS-422
Maximum baud rate	115200 bit/s
Galvanic isolation	+



DR-209M dimensional drawing



DR-209M functional diagram



Steering repeater DR-309



The DR-309 steering repeater displays the vessel's course data received in NMEA-sentences from various digital sources using a card and LED indicator. The device rebroadcasts the received NMEA data through an RS-422 (or CAN optionally) interface.

TECHNICAL CHARACTERISTICS

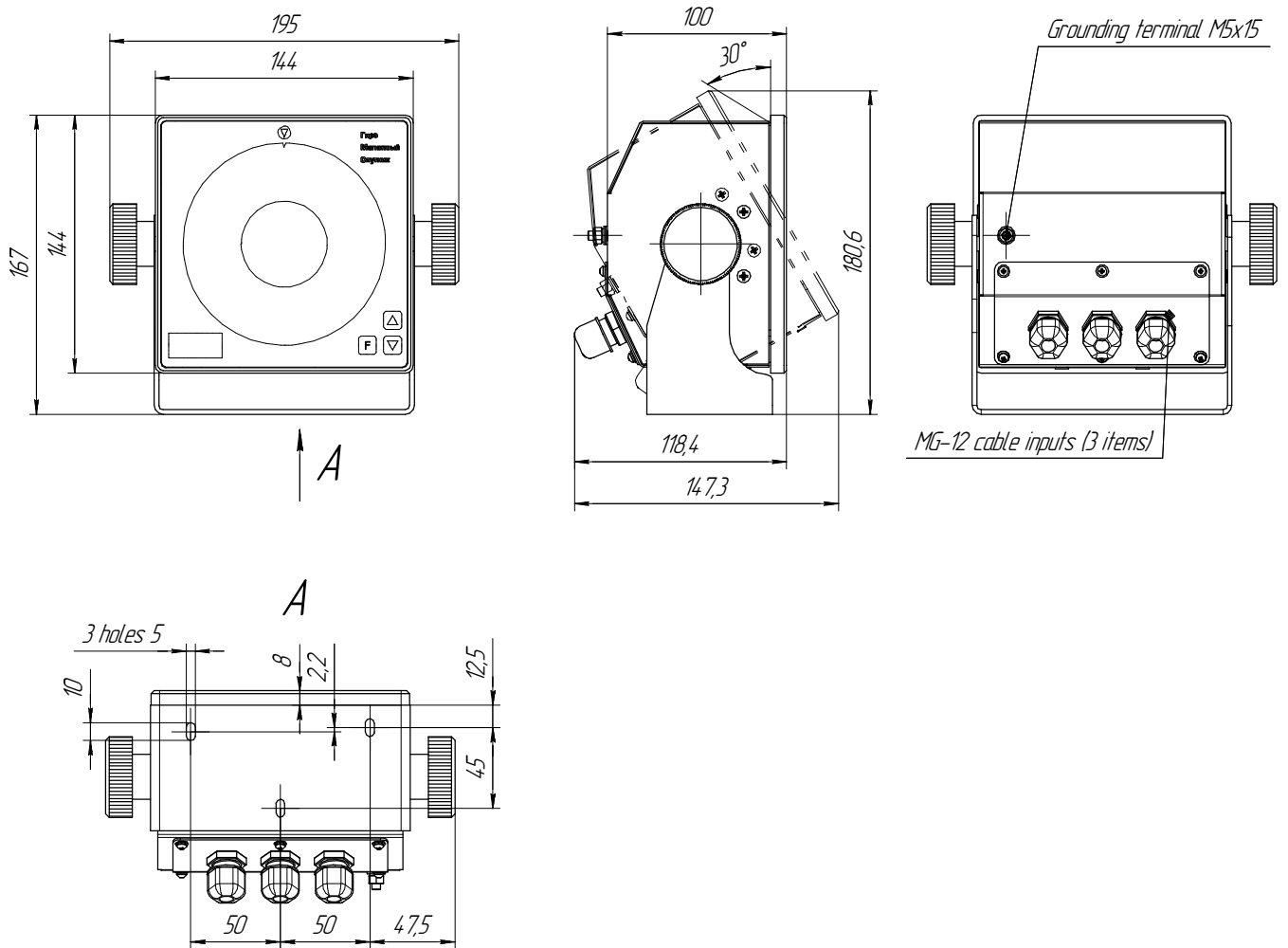
General characteristics	
IP rating	IP 22
Storage temperature	-60...+70°C
Operating temperature	-15...+55°C
Weight	2 kg

Electrical characteristics	
Power supply voltage	10...36 VDC
Power consumption	max 12.5 W
Galvanic isolation from power mains	+
Reverse polarity protection	+
Overvoltage protection	+

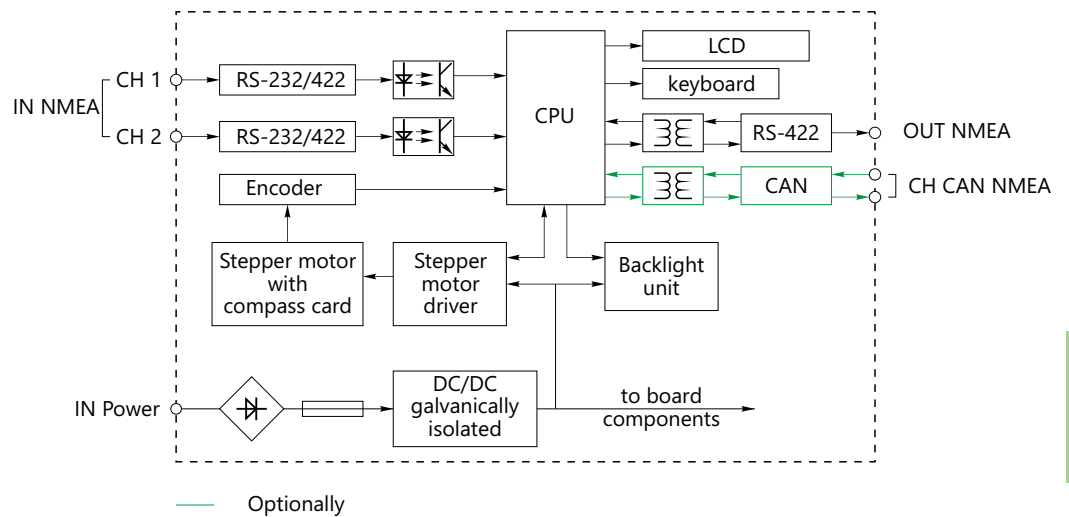
Characteristics of inputs	
Number of input ports	2
Supported interfaces	RS-232/RS-422
Max receive rate	115200 bit/s
Optoisolation	+
Supported sentences	\$xxHDT, \$xxHDG, \$xxHDM

Characteristics of outputs	
Number of output ports	1
Supported interfaces	RS-232/RS-422 (CAN optionally)
Max baud rate	115200 bit/s
Galvanic isolation	+

Operating characteristics	
Follow up speed	>12 °/s
<i>Resolution capacity:</i>	
Character display	0.1°
Compass card indicator	0.5°



DR-309 dimensional drawing



DR-309 functional diagram



Bearing repeater DR-309.2B



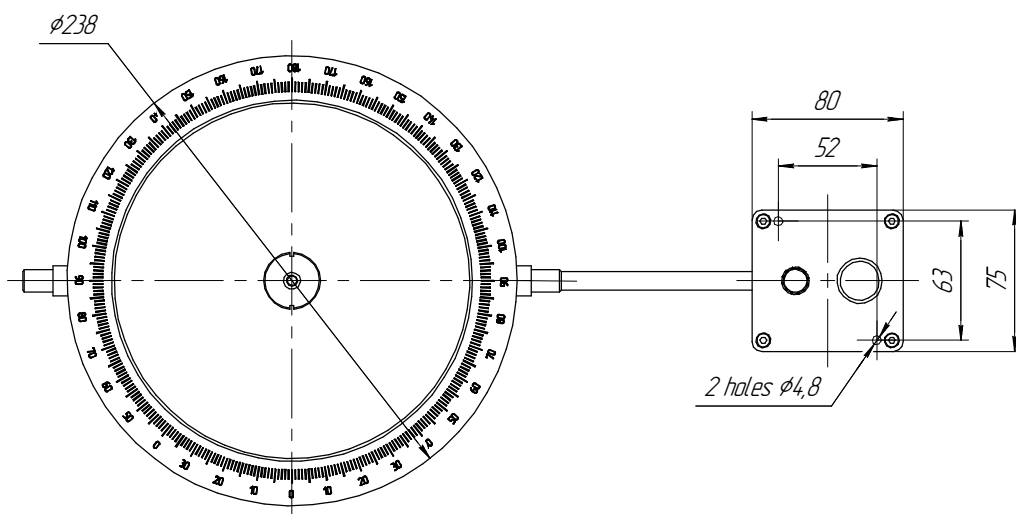
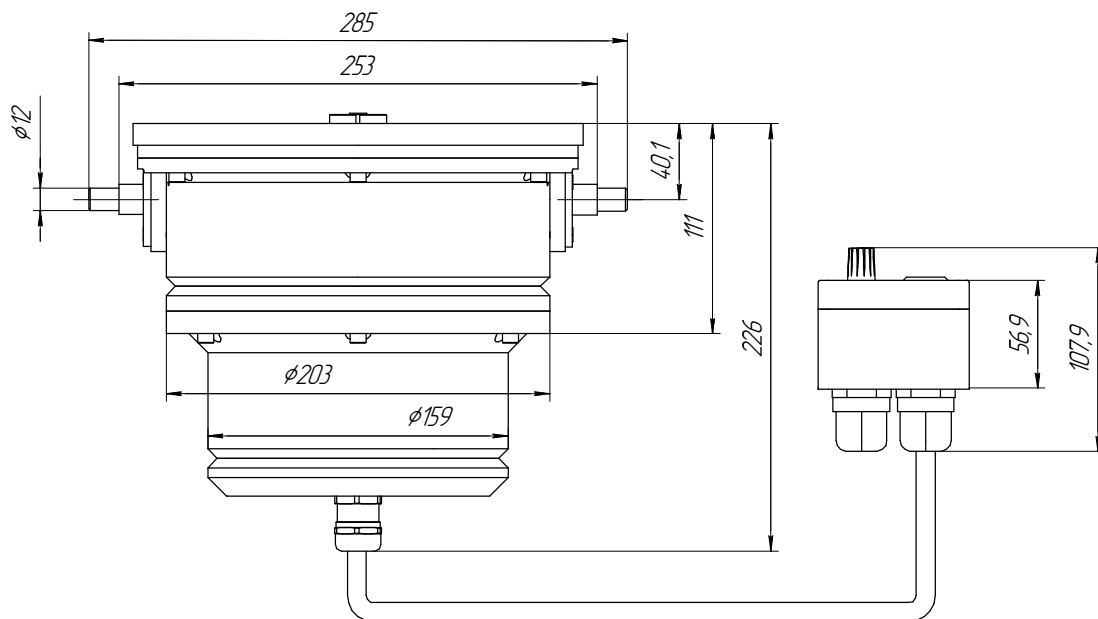
The DR-309.2B bearing repeater represents the vessel's course data received from the gyro compasses, gyro indicators or other navigation systems via an RS-232/422 digital interface (or CAN – optionally) in NMEA standard.

The repeater combined with an optical range finder allows complex bearings of land objects or celestial bodies being visible from the ship.

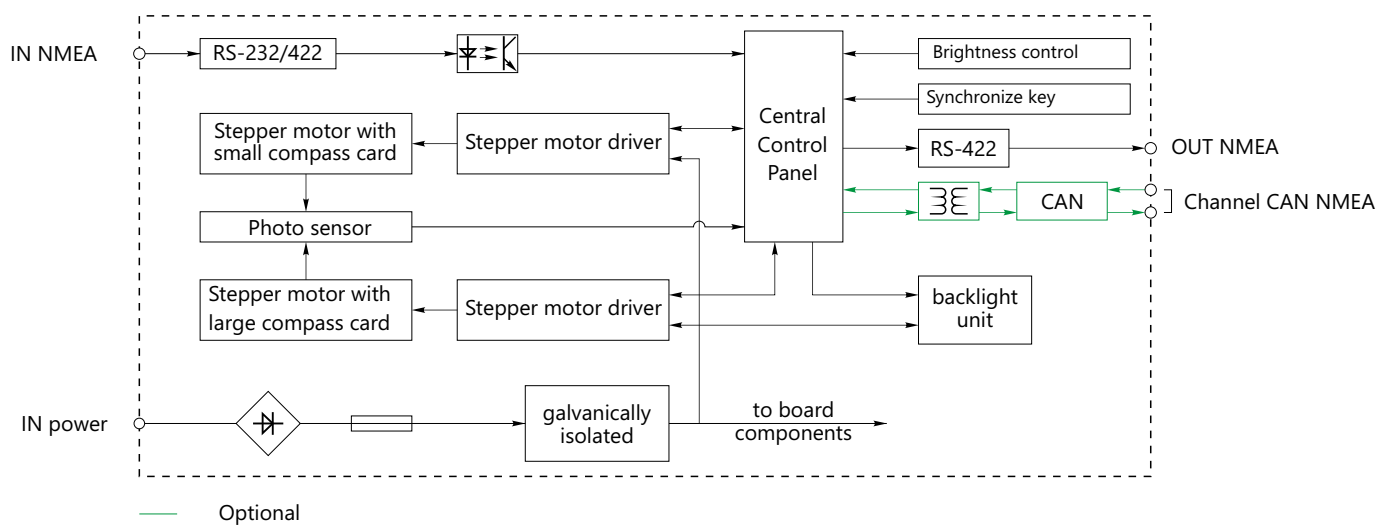
TECHNICAL CHARACTERISTICS

General characteristics	
IP rating	IP 56
Storage temperature	-55...+70°C
Operating temperature	-20...+55°C
Weight	~ 17 kg
Electrical characteristics	
Power supply voltage	10...36 VDC
Power consumption	max 20 W
Galvanic isolation from supply mains	+
Characteristics of inputs	
Number of input ports	1
Supported interfaces	RS-232/RS-422
Max receive rate	115200 bit/s
Optoisolation	+
Supported sentences	\$xxHDT

Operating characteristics	
Follow up speed	> 20 °/s
<i>Resolution capacity:</i>	
Value of coarse scale division	1°
Value of fine scale division	0.05°
<i>Errors:</i>	
Course reception error	± 0.05°
Statistical error	± 0.05°
Dynamic error	± 0.1°
Rate of turn error	± 0.05°



DR-309.2B dimensional drawing



DR-309.2B functional diagram

Keyboard-relay unit
KRB-130



The KRB-130 keyboard-relay unit is used for the remote control of various devices connected to the relay unit by opening/closing relay contacts and for backlight adjustment of external devices.

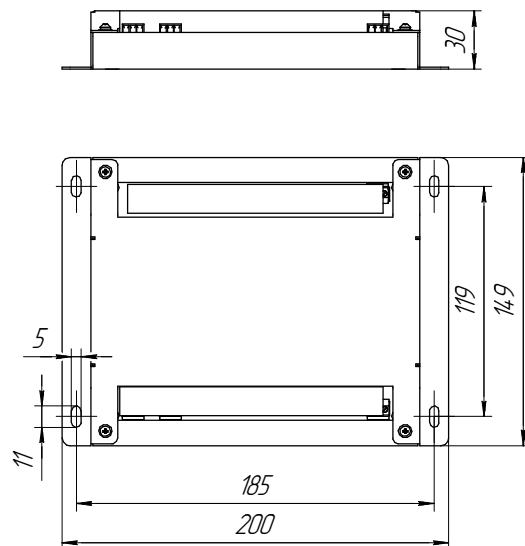
TECHNICAL CHARACTERISTICS

General characteristics of relay unit	
IP rating	IP 22
Storage temperature	-35...+70°C
Operating temperature	-15...+45°C
Weight	1.1 kg

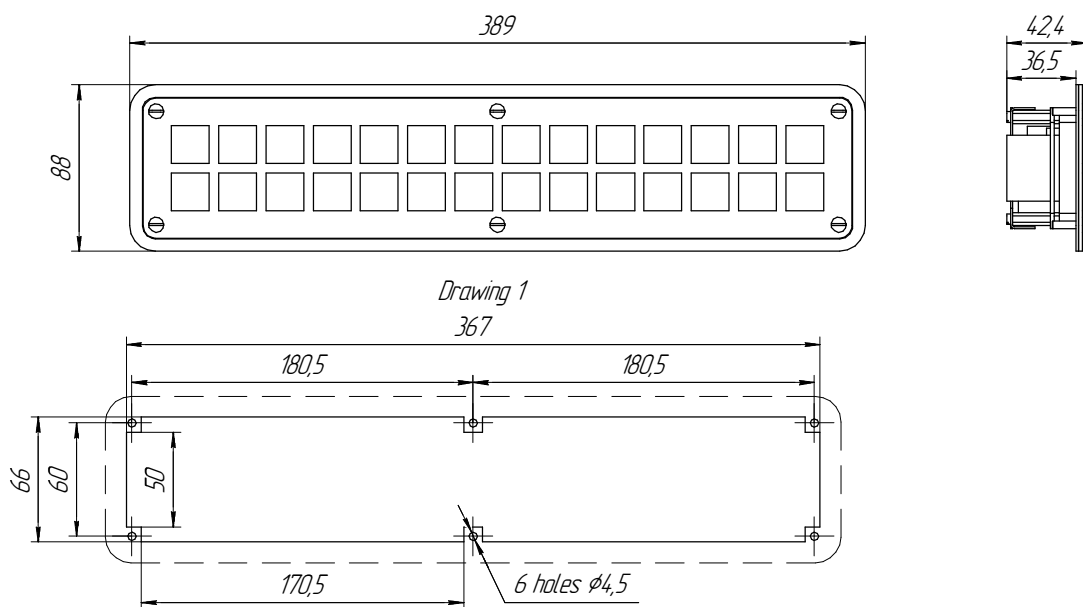
Electrical characteristics of relay unit	
Power supply voltage	19...36 VDC
Power consumption	max 17.5 W
Galvanic isolation from power mains	+
Reverse polarity protection	+
Overvoltage protection	+

General characteristics of keyboard	
IP rating	IP 22
Storage temperature	-25...+55°C
Operating temperature	-10...+45°C
Weight	1.3 kg

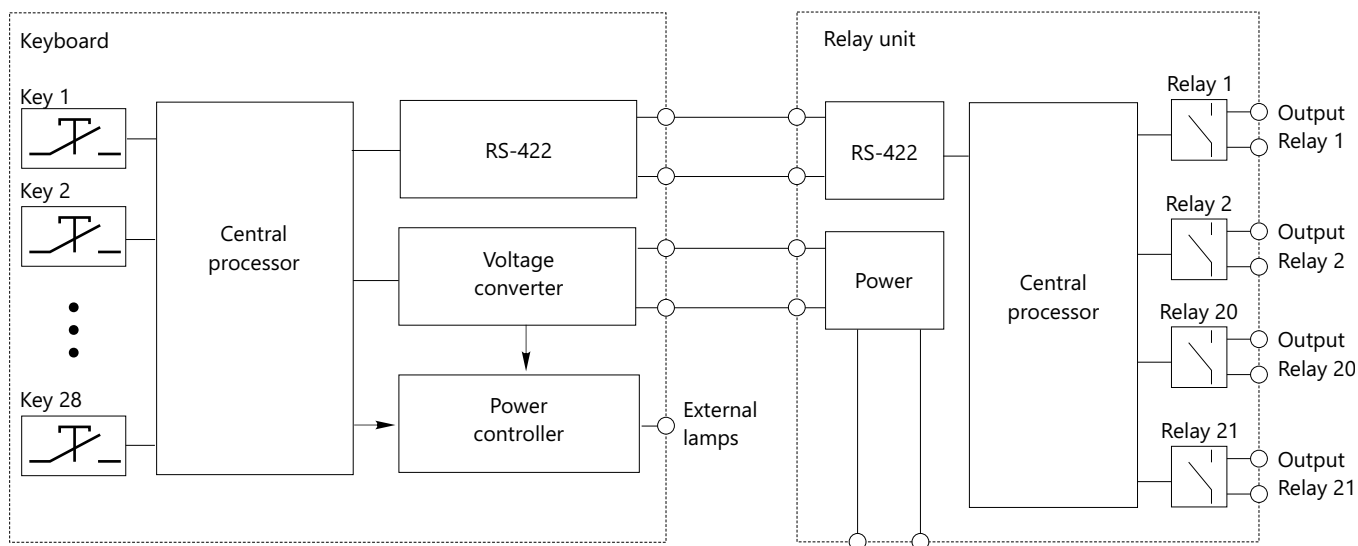
Electrical characteristics of keyboard	
Power supply voltage	19...36 VDC
Power consumption	max 10 W
Galvanic isolation from power mains	+
Reverse polarity protection	+
Overvoltage protection	+



Dimensional drawing of KRB-130 keyboard-relay unit



Dimensional drawing of KRB-130 control panel



KRB-130 functional diagram

Marine convection heater
UT type S



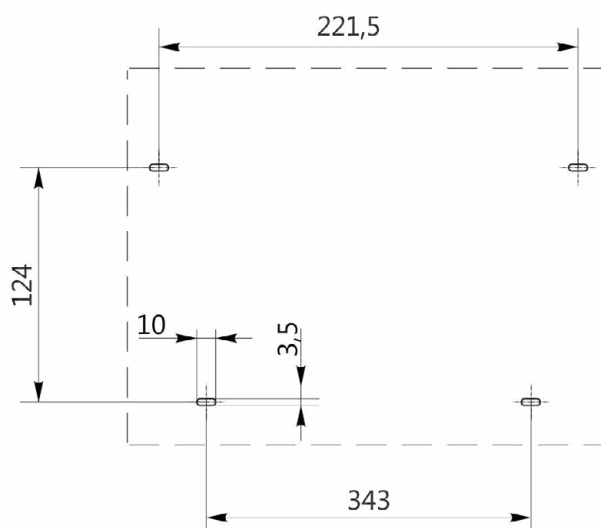
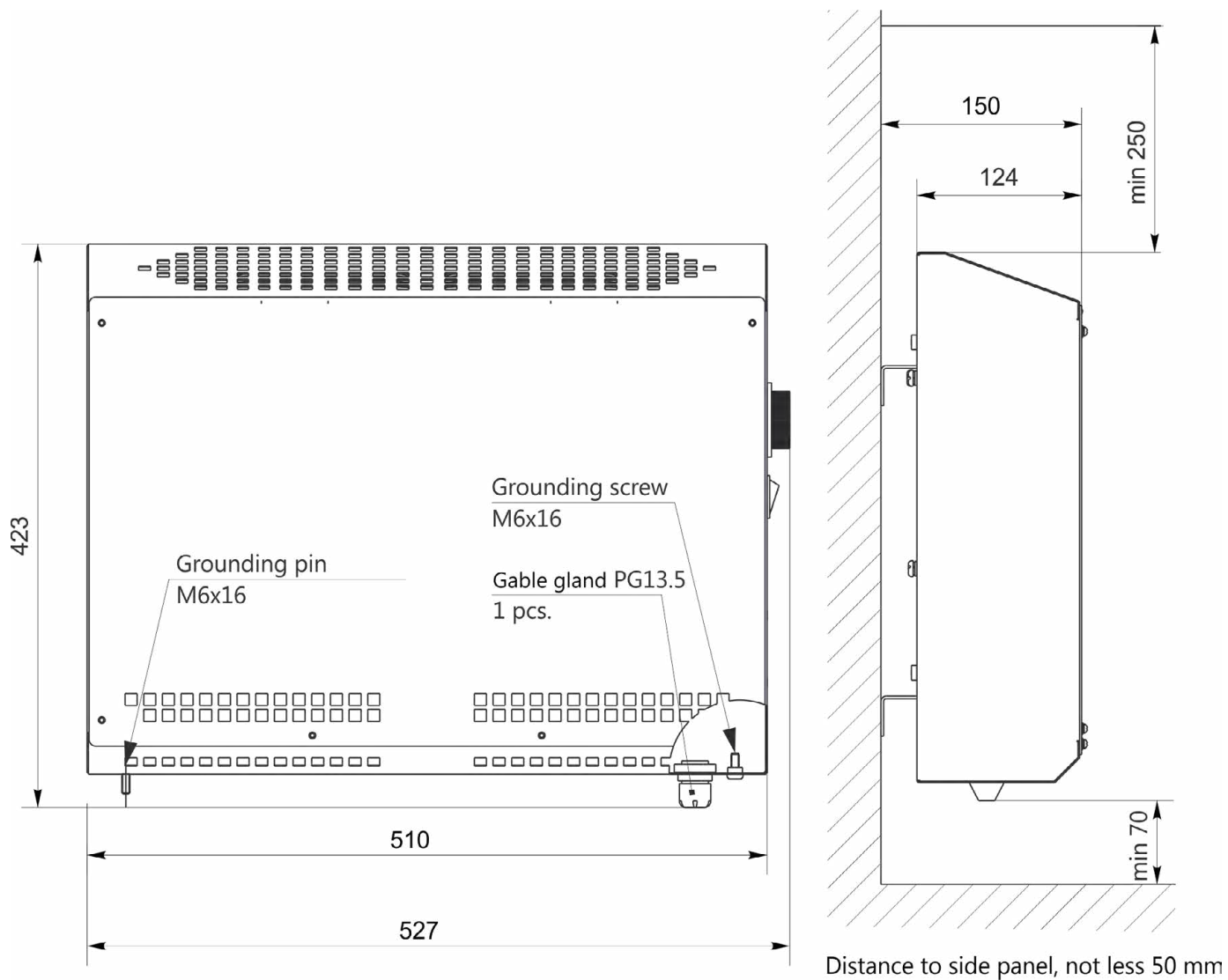
Unicont’s marine convection heaters (UT) are stationary units with tubular heating elements, which are optimal for room heating in any navigational area (not containing any explosive mixtures in the air). The heaters can also be deployed in industrial environments.

Dry environment installation (IP 22).

TECHNICAL CHARACTERISTICS

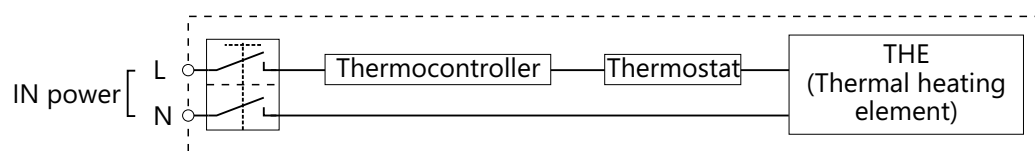
Characteristics	UT-300S	UT-600S	UT-800S	UT-1200S	UT-1800S
Power supply voltage	127 V, 50 Hz; 220 V, 50 Hz; 380 V (2 phases), 50 Hz				
Power consumption	300 W	600 W	800 W	1200 W	1800 W
Heated volume*	7 m ³	14 m ³	19 m ³	27 m ³	32 m ³
Weight	7.8 kg	7.8 kg	8.9 kg	8.9 kg	10 kg
IP rating	IP22				
Operating temperature	-15°...+55 °C				
Storage temperature	-60°...+70 °C				

* Given volume is approximate.



Sc 1:5

Dimensional drawing UT-xx



Functional diagram UT-xx

Marine convection heater
UT type C



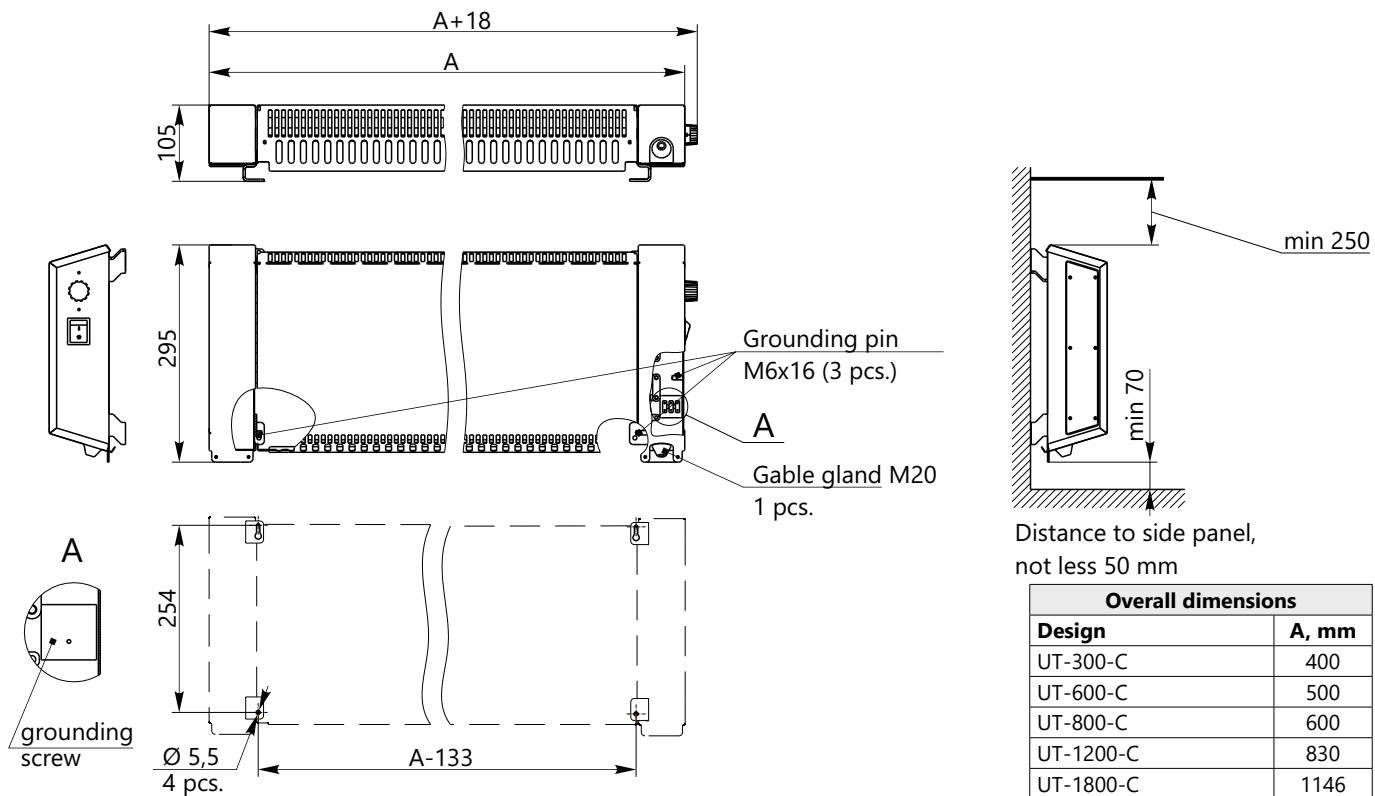
The marine convection heaters (UT) are stationary units with tubular heating elements, which are ideal for room heating in any navigational area (not containing any explosive mixtures in the air). The heaters can also be used in an industrial environment.

Designed for installation in a very humid environment (IP 44).

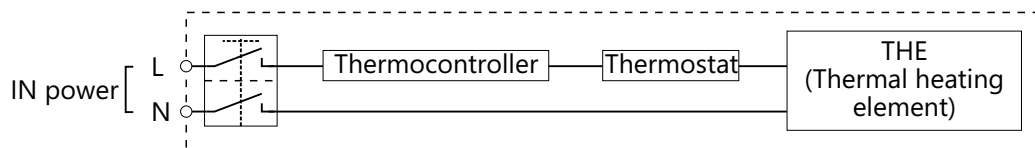
TECHNICAL CHARACTERISTICS

Characteristics	UT-C Design				
	UT-300C	UT-600C	UT-800C	UT-1200C	UT-1800C
Power supply voltage	127 V 50 Hz; 220 V 50 Hz; 380 V (2 phases), 50 Hz				
Power consumption	300 W	600 W	800 W	1200 W	1800 W
Heated volume*	7 m ³	14 m ³	19 m ³	27 m ³	42 m ³
Weight	6.3 kg	8.8 kg	9.4 kg	12.8 kg	17.8 kg
IP rating	IP44				
Operating temperature	-15°C...+55°C				
Storage temperature	-60°C...+70°C				

*Given volume is approximate.



UT type C dimensional drawing



UT type C functional diagram



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