# Shipborne systems

## 2019

MSA
Engineering
the future

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 m$^2$ 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**.

# Content

# Multipurpose integrated workstation
## YKRM–1



## Description

The YKRM–1 is a state-of-the-art workstation with a wide range of functionalities.

## Features and advantages

The convenient and ergonomic combination of the controls and data display elements enables the ship's master to monitor all necessary information.

Electronic mapping systems are easily operated by Multitouch control. Two standard industrial keyboards with trackballs are used additionally providing a comfortable working environment for different user groups.

LED and display brightness dimming provides stress-free operations at any lighting conditions during day and night.

The YKRM-1 is equipped with 3 drawers for paper maps, books, manuals and navigational instruments within reach. The workstation is available in two versions: "standing" or "sitting".
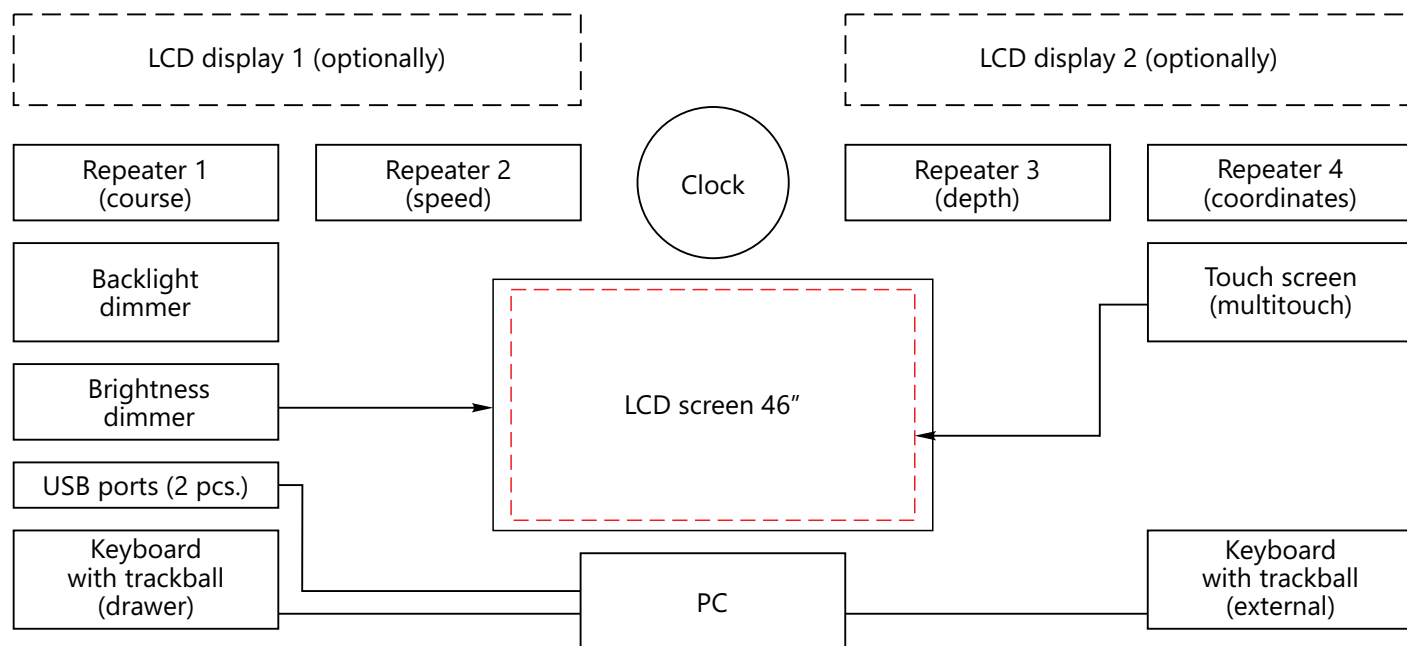
LCD's, indicators and special controls can be added optionally to customize the unit to your specific requirements.

## Possible applications

- Chart table
- VTMS operator station, port operator station
- Dispatching station
- Emergency assessment station, management and forecasting
- Captain's station
- Training station
- Control station, e.g. for unmanned aircraft, vessels

# Multipurpose integrated workstation
## YKRM–1

| LCD display 1 (optionally) | | Clock | LCD display 2 (optionally) | |
|---|---|---|---|---|
| Repeater 1 (course) | Repeater 2 (speed) | | Repeater 3 (depth) | Repeater 4 (coordinates) |
| Backlight dimmer | | LCD screen 46" | | Touch screen (multitouch) |
| Brightness dimmer | | | | |
| USB ports (2 pcs.) | | | | |
| Keyboard with trackball (drawer) | | PC | | Keyboard with trackball (external) |

## Specifications

- CPU: Intel Core i7-7700T Kaby Lake (2900MHz, LGA1151, L3 8192Kb)
- RAM: DDR4 16 GB
- SSD: SSD 250 GB
- Graphics card: GeForce GTX 970
- Power supply voltage: 220V (90...264V), 50/60Hz
- Operating temperature: -15...+55°C
- Power consumption: 500W
- Interfaces:
    - 4 x RS-422;
    - 1 x RS-232;
    - 6 x USB (including two ports on the front panel);
    - 1 x LAN (1000 Mb/s);
    - 1 x DVI;
    - 1 x HDMI.

*Specifications can be changed on request.

# Digital talk-back public address system
# ICB-131



Approved by Russian Maritime
and River Register of Shipping

## Description

- Talk-back public address communication for any navigational area.
- The system includes units for humid and/or noisy areas, e.g. open decks.
- ISDN communication.

## Features and advantages

- Several central units can be combined into a single system and operate together.
- Main stations with priorities.
- Individual or group selective calling.
- Interfacing with external systems (command public address system, VDR, PBX, general alarm system, entertainment sources).
- Direct-pair communication without connection to the central unit.
- A user can call at any station using dialing units.

## Main stations

- The stations can also be used as substations.
- Left and right wing stations allow a ship's master to keep communication on at a distance from the main control panel, e.g. while docking.
- System status indications.

## The system

- All stations can be easily connected to the central unit.
- High jamming resistance, reliability and perfect communication quality.
- Up to 700 m of communication lines.
- The system can be installed using current cable passages.

## Structural diagram of the system



RB-139G-(24/220)

24 V / 220 V

Portable user substation S4P

A socket CB-1

Unit alarms

S1-3/5

S-1B

S-1

S2-3/5

S-2

User devices for open decks

BO-2

S-3

S-4

BO-3

The central unit CU-0131

SW-1

Wing substation

BO-1

ST-2

Ethernet

Signal amplifier TPA-15

Main station SP-18/36(W)

to VDR

To analogue PBX

To analogue command public address system

To digital command public address system

To IP PBX
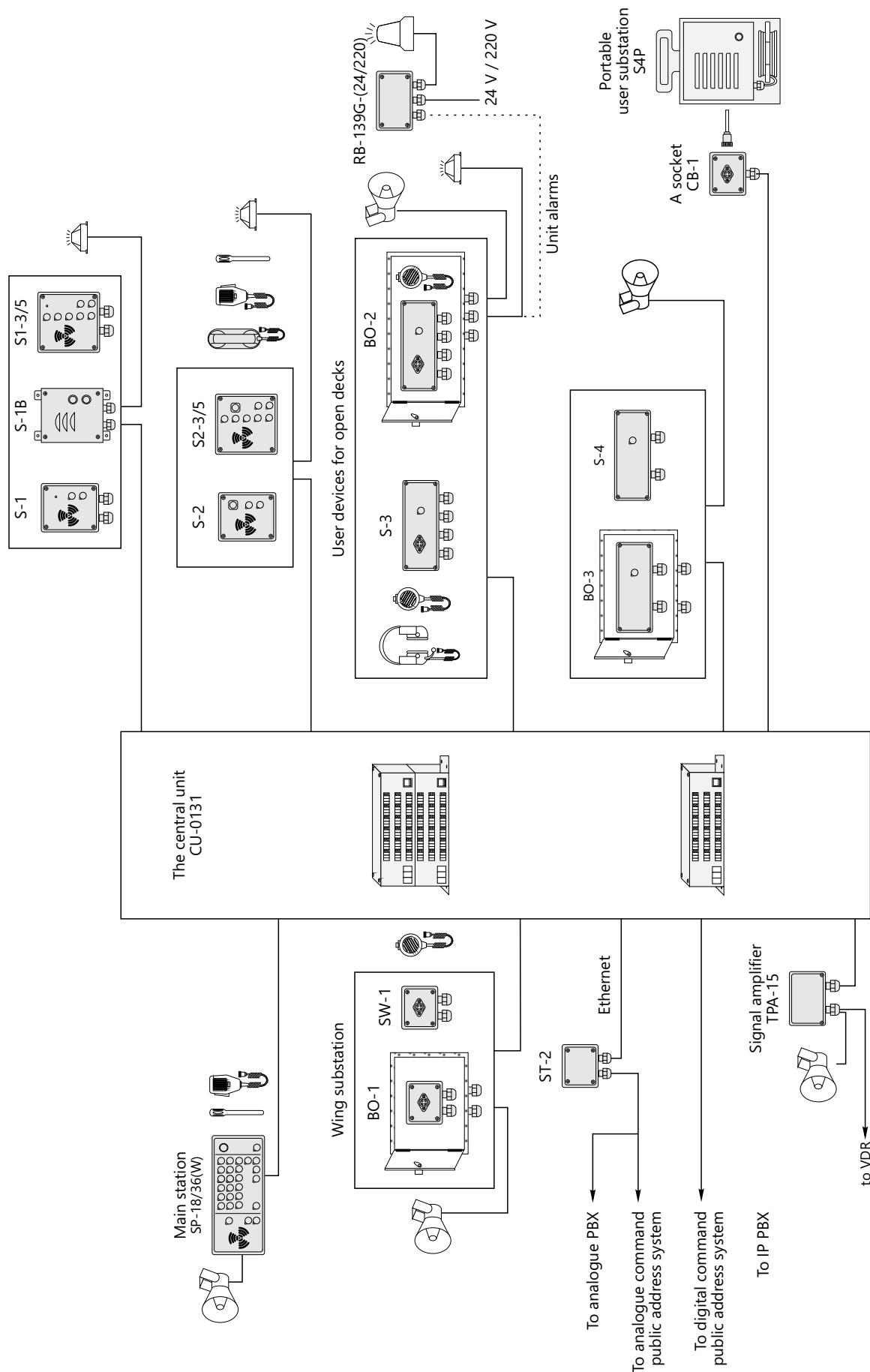
## Technical specifications of ICB-131 system

| | The central unit | Substations | |
|---|---|---|---|
| Communication link | Digital two-wire, ISDN | | |
| Communication type | Duplex, half-duplex | | |
| Sampling rate of audio signal | 8 kHz | | |
| Capacity of audio signal | 16 bit | | |
| Number of subscriber lines | Up to 36 | | |
| Bandwidth | 100 – 8000 Hz | | |
| Ethernet expanding option | + | | |
| Interfacing with the external systems (optionally) | General alarm system<br>Command public address system<br>PBX<br>Voyage data recorder (VDR)<br>Entertainment source | | |
| Power supply voltage | 18.5-36.0 V DC | | |
| Power consumption | Defined by total consumed power of all the units included in the delivery set.<br>For more information about power – see Operating Manual. | | |
| The central unit protection | Galvanic isolation from power mains<br>Reverse polarity protection<br>Short circuit/overload protection | | |
| | **The central unit** | **Substations** | |
| IP rating | IP22 | IP22, IP44 | IP56 |
| Operating temperature | -15°...+55 °C | -15°C...+ 55° | -40°...+55 °C |
| Storage temperature | -60°C...+ 70°C | | |

## Networking types

- Direct-pair communication.
- Communication between single or several stations and a group of users.
- Combined (two or more systems can operate together as a single system).
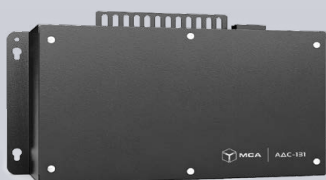
## Central unit



### Central unit
### CU-0131.6, CU-0131.12, CU-0131.18, CU-0131.24, CU-0131.30, CU-0131.36

Provides talk-back communication and switching among the connected units and interfaces with external systems (e.g. command public address system, VDRs, PBXs, general alarm system, entertainment sources).

*Technical characteristics:*
*Power supply voltage: 18-36 V DC*
*Power consumption:*
- *CU-0131. 6 – 5 W;*
- *CU-0131. 12 – 10 W;*
- *CU-0131. 18 – 15 W;*
- *CU-0131. 24 – 20 W;*
- *CU-0131. 30 – 25 W;*
- *CU-0131. 36 – 30 W.*

*Digital (ISDN) units can be connected.*
*Weight: 21.69 kg*
*IP rating: IP22*
*Operating temperature: -15...+55°C*

*Mounting type*
*Wall-mounted*

## Main stations

### SP-18 main station

Is used for calls and communication with other system users.

- Up to 18 users.
- Wing microphone stations and an external loudspeaker can be connected.
- Sound and LED call signal.
- Backlight of the controls.
- Built-in loudspeaker.

*Technical characteristics:*
*Power supply: from ISDN line*
*Max power consumption: 10W*
*Number of lines: 6/12/18*
*IP rating: IP44*
*Operating temperature: -15...+55°C*

*Mounting type and weight:*
*SP-18-B (bracket-mounted) - 1.8 kg;*
*SP-18-W (wall-mounted) - 1.5 kg;*
*SP-18-C (console-mounted) - 0.7 kg.*

*Accessories:*
*Microphones M-1 and M-2*
*Wing substation SW-1*

### SP-18W main station (waterproof)

Is used for calls and communication with other system users.

- Up to 18 subscribers.
- Wing stations and an external loudspeaker can be connected.
- Sound signal and LED call signal.
- Buttons backlight.
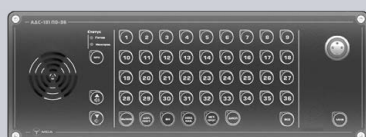- Built-in loudspeaker.

*Technical characteristics:*
*Power supply: from ISDN line*
*Max power consumption: 10 W*
*Number of lines: 6/12/18*
*Weight: 2.92 kg*
*IP rating: IP56*
*Operating temperature: -40...+55°C*

*Mounting type*
*Wall-mounted*

*Accessories:*
*Microphones M-3 and M-3-10*
*A cover for waterproof port*
*Wing substation SW-1*
*Headsets HS-4, HS-4M*

### SP-36 main station

Is used for calls and communication with other system users.

- Up to 36 users.
- Wing stations and an external loudspeaker can be connected.
- Sound and LED call signal.
- Buttons backlight.
- Built-in loudspeaker and call-button.

*Technical characteristics:*
*Power supply: from ISDN line*
*Max power consumption: 18 W*
*Number of lines: 24/30/36*
*IP rating: IP44*
*Operating temperature: -15...+55 °C*

*Mounting type and weight:*
*SP-36-B (bracket-mounted) – 2.37 kg;*
*SP-36-W (wall-mounted) – 2.2 kg;*
*SP-36-C (console-mounted) – 0.76 kg.*

*Accessories:*
*Microphones M-1 and M-2*
*Wing substation SW-1*

### SP-36W main station (waterproof)

Is used for calls and communication with other system users.

- Up to 36 users.
- Wing stations and an external loudspeaker can be connected.
- Sound and LED call signal.
- Buttons backlight.
- Built-in loudspeaker and call-button.
- Waterproof.

*Technical characteristics:*
*Power supply: from ISDN line*
*Max power consumption: 18 W*
*Number of lines: 24/30/36*
*Weight: 3 kg*
*IP rating: IP56*
*Operating temperature: -40°...+55 °C*

*Mounting type:*
*Wall-mounted*

*Accessories:*
*Microphones M-3 and M-3-10*
*Wing substation SW-1*

## The user substations

### S-1 user substation

Used for calls and communication with other system users.

• Built-in loudspeaker and microphone.
• Backlight of the control buttons.
• Dry contact type output to connect external signaling units.

*Technical characteristics:*
*Power supply: from ISDN line*
*Power consumption: 4 W*
*IP rating: IP44*
*Operating temperature: -15...+55 °C*

*Mounting type and weight:*
*S-1-W (wall-mounted) - 1.0 kg;*
*S-1-C (console-mounted) - 0.4 kg.*

*Accessories:*
*Relay unit RB-139-24/220*

### S-2 user substation

Used for calls and communication with other system users (recommended to use in the central control room).

• Built-in loudspeaker.
• Backlight of the control buttons.
• One connector for the external microphones M-1, M-2.
• Dry contact type output to connect external signaling units and user substation S-1-3, S-2-3, S-1W, S-3.

*Technical characteristics:*
*Power supply: from ISDN line*
*Power consumption: 4 W*
*IP rating: IP44*
*Operating temperature: -15...+55°C*

*Mounting type and weight:*
*S-2-W (wall-mounted) - 1.1 kg;*
*S-2-C (console-mounted) - 0.5 kg.*

*Accessories:*
*Microphones M-1 and M-2*
*Relay unit RB-139-24/220*

### S1-3 / S1-5 user substation

Used for calls and communication with other system users.

• Built-in loudspeaker and microphone.
• Buttons to select users (3/5).
• Backlight of the control buttons.
• Dry contact type output.

*Technical characteristics:*
*Power supply: from ISDN line*
*Power consumption: 6 W*
*Number of buttons to select users: 3 / 5*
*IP rating: IP44*
*Operating temperature: -15...+55 °C*

*Mounting type and weight:*
*S1-3-W / S1-5-W (wall-mounted) - 1.7 kg;*
*S1-3-C / S1-5-C (console-mounted) - 0.9 kg.*

*Accessories:*
*Relay unit RB-139-24/220*

### S2-3 / S2-5 user substations

Used for calls and communication with other system users.

• Built-in loudspeaker
• Buttons to select users (3/5)
• Backlight of the control buttons
• Port for external microphones
• Dry contact type output
• Microphone ON button, CALL button

*Technical characteristics:*
*Power supply: from ISDN line*
*Power consumption: 6 W*
*Number of buttons to select users: 3 / 5*
*IP rating: IP44*
*Operating temperature: -15...+55°C*

*Mounting type and weight:*
*S2-3-W / S2-5-W (wall-mounted) - 1.7kg;*
*S2-3-C / S2-5-C (console-mounted) - 0.9kg.*

*Accessories:*
*Microphones M-1 and M-2*
*Relay unit RB-139-24/220*

# Digital talk-back public address system
## ICB-131

### S-1W user substation

Used for calls and communication with other system users; waterproof.

• Built-in loudspeaker and microphone
• Microphone ON button and CALL button
• Dry contact type output

***Technical characteristics:***
*Power supply: from ISDN line*
*Max power consumption: 4 W*
*Weight: 1.9 kg*
*IP rating: IP56*
*Operating temperature: -40...+55°C*

***Mounting type:***
*Wall-mounted*

***Accessories:***
*Relay unit RB-139-24/220*

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### S-3 user substation

Used for calls and communication with other system users; recommended for noisy and humid environments.

• Connection of headset/external microphone, signaling units and loudspeaker
• Call button
• Dry contact type output

***Technical characteristics:***
*Power supply: from ISDN line*
*Power consumption: 5W (w/o loudspeaker and signaling units)*
*Max power of connected loudspeaker: 15 W*
*Weight: 0.7 kg*
*IP rating: IP56*
*Operating temperature: -40...+55°C*

***Mounting type:***
*Wall (cabinets BO-2, BO-1H, BTS2-BO are recommended in case of mounting on the deck)*

***Accessories:***
*Microphones M-3 and M-3-10*
*Headsets HS-4, HS-4M*
*Loudspeakers 15 W, 30 W (max)*

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### S-4 user substation

Provides communication (half-duplex mode) using an external loudspeaker; recommended for noisy and humid areas or on open decks.

• Call and MIC (microphone) buttons

***Technical characteristics:***
*Power supply: from ISDN line*
*Power consumption: 4 W (w/o loudspeaker)*
*Max power of the connected loudspeaker:*
*- 10 W*
*Communication channel: digital*
*Weight: 0.6 kg*
*IP rating: IP56*
*Operating temperature: -40...+55°C*

***Mounting type:***
*Wall-mounted*

***Accessories:***
*Loudspeakers 15 W, 30 W (max)*

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### S-4P portable user substation

Provides communication with other system users (half-duplex mode) using a built-in loudspeaker; for on deck applications.

• Call button
• Standard cable 10 m
• Wall mounting is available
• Portable (connected to socket CB-1)

***Technical characteristics:***
*Power supply: from ISDN line*
*Max power consumption: 15 W*
*Cable length: 10 m*
*Weight: 1.6 kg*
*IP rating: IP56*
*Operating temperature: -40...+55°C*

***Mounting type:***
*Portable (can be hinged on the wall mounts)*

***Accessories:***
*PB-HS socket to connect portable substations*

### S-WP user substation

Provides portable communication with other system users; for open deck applications.

• *Loudspeaker can be connected.*
• *Waterproof connector for microphone M-3, M-3-10.*
• *Used with SP-18, SP-36.*

*Technical characteristics:*
*Max power consumption: 0,5 W*
*Weight: 1.2 kg*
*IP rating: 56*
*Operating temperature: -40...+55 °C*

*Mounting type:*
*Wall mounting (recommended for installation in BO-1 cabinet if mounted on deck)*

*Accessories:*
*Loudspeaker*
*Microphone M-3, M-3-10*

## Peripheral units

### ST-2 signal converter

The unit interfaces the system with the external PBX.

• *Ports to connect analogue and digital PBXs*
• *Priority caller settings (PBX represents the caller)*
• *Displays the line state of health*

*Technical characteristics:*
*Power supply voltage: 18-36V DC*
*Power consumption: 25 W*
*Signal conversion (depending on the settings):*
*-   Ethernet into FXO (and vice versa)*
*-   ISDN into FXO (and vice versa)*
*Weight: 1.5 kg*
*IP rating: IP22*
*Operating temperature: -15...+55°C*

*Mounting type:*
*Wall-mounted*

### KP-124PW junction box

The multipurpose junction box splits input lines into several outputs.

• *Waterproof*

*Technical characteristics:*
*Casing: plastic*
*Number of outputs (output terminals): 7*
*Circuits coupled to a terminal: 5*
*Total passing current: 20A (max 5A per terminal)*
*Weight: 0.8 kg*
*IP rating: IP56*
*Operating temperature: -40...+55°C*

*Mounting type:*
*Wall-mounted*

### KP-124PW-4 junction box

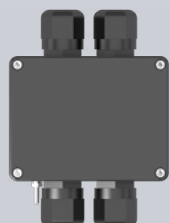Splits cable conductors among shipborne electronics (e.g., navigation systems, ship automatic systems, electrics, etc.).

*Technical characteristics:*
*Casing: plastic*
*Number of outputs (output terminals): 3*
*Circuits coupled to a terminal: 5*
*Total passing current:*
*-   20A (max 15A for channel)*
*Weight: 0.6 kg*
*IP rating: IP56*
*Operating temperature: -40...+55°C*

*Mounting type:*
*Wall-mounted*

### RB-139-24 (220) relay unit

Controls light and sound alarm, provides switching of external power supply to the connected units.

- Can be used together with substations S1(W), S2, S3, S1-3(5), S2-3(5).
- Light and sound alarm units (220V or 24V) can be connected.

*Technical characteristics:*
*Casing: plastic*
*Switching voltage:*
- *220V, 50-60 Hz - RB-139-220*
- *24V DC - RB-139-24*
*Switching current: max 10A*
*Number of outputs terminals: 2*
*Control signal: dry contact*
*Weight: 1.5 kg*
*IP rating: IP56*
*Operating temperature: -40...+55°C*

*Mounting type*
*Wall-mounted*

### T-140B-U1/ U2/ U3 matching transformer

Converts audio signal of definite amplitude within a wide bandwidth.

- Loudspeakers are connected to zones, voltage 100/48/24/12 V
- Galvanic isolated (2kV) windings

*Technical characteristics:*
*Operating bandwidth: 50 – 15 000Hz*
*Input voltage: 12/24/48V*
*Output voltage: 100V*
*Max power: 60 W*
*Weight: 5 kg*
*IP rating: IP56*
*Operating temperature: -40...+55°C*

*Mounting type:*
*Wall-mounted*

### TPA-15 power amplifier

Amplifies analogue line (0 dB) & digital line ISDN audio signal (max 15 W) received from external microphones.

- Powered from external power circuit or ISDN line (loudspeaker system).
- The unit can operate from external microphones connected to waterproof port (front panel), digital user lines, four-wire transmission lines.
- Power LED.
- Audio signal can be transmitted to sound recorders: i.e. tape recorders, PCs, VDRs.

*Technical characteristics:*
*Power supply:*
- *from ISDN line or external circuit (18–50 V DC)*
*Operating bandwidth: 50 – 10 000 Hz*
*Output load: min 4 Ohm*
*Output operating voltage: 100 V*
*Output amplifier power: max 15 W*
*Weight: 1.8 kg*
*IP rating: IP56*
*Operating temperature: -40...+55°C*

*Mounting type:*
*Wall-mounted*

### BO-1/ BO-2 metal cabinet

The waterproof metal cabinet is designed to house devices and peripheral equipment; for installation on open decks.

- The door is equipped with a manual lock and can be fixed in open position.

*Technical characteristics:*
*Material: steel (painted)*
*Door opening angle: 105°C*
*Weight:*
- *7.2 kg - BO-1;*
- *9.9 kg - BO-2.*
*IP rating: IP56*
*Operating temperature: -40...+55°C*

*Mounting type*
*Wall mounting*

# Command public address system
# TPA-1007





Approved by Russian Maritime and
River Register of Shipping

Command public address system TPA-1007 ensures command and entertainment broadcasting, alarm signaling and talk-back public address communication.
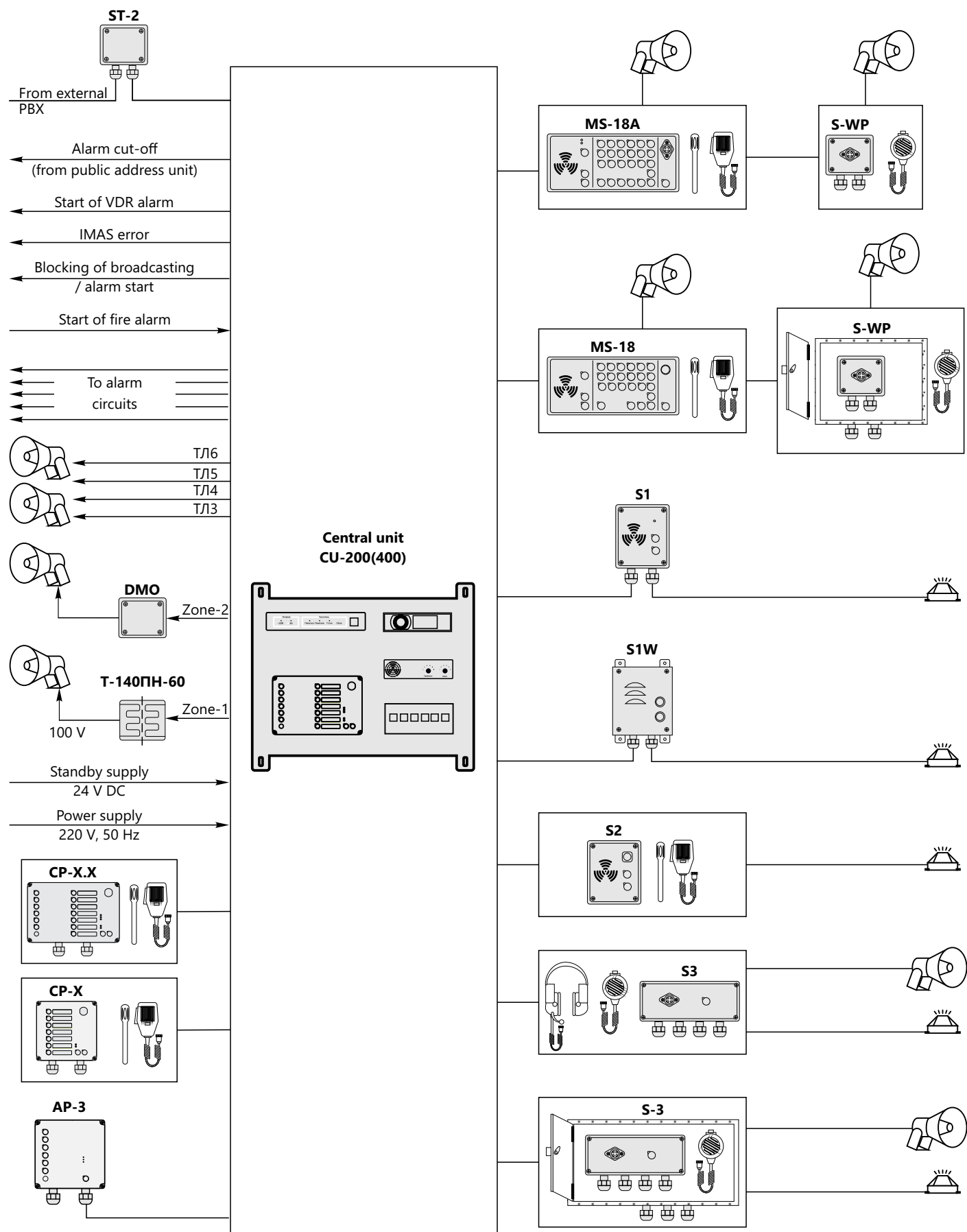
## Features and advantages

- Installation on sea and river-going vessels of any navigational area
- Digital communication with high-noise immunity
- Wide-range communication (up to 700 m)
- 6 independent zones
- Built-in power amplifier 200 W or 400 W, transmission zone voltage 100 W
- Built-in sound alarm generator
- Optional pre-monitoring of zones
- Ready for instant operation
- Interfacing with external ship systems (Automatic Telephone System (ATS), Voyage Data Recorder (VDR), Integrated Marine Automation Systems (IMAS))
- The System can be installed using existing cabling (in case of ship amendment)
- External radiobroadcast units and audio recorders can be connected

## Technical specifications of TPA-1007 system

| Operating characteristics: | |
|---|---|
| Built-in power amplifier | 200/400 (200x2) W |
| Output voltage | 100 W |
| Number of user lines per Central Unit | Up to 24 |
| Number of zones per Central Unit | Up to 6 |
| Number of alarm panels per Central Unit | Up to 4 |
| Number of Central Units within the System | Unlimited |

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# Command public address system
# TPA-1007

ST-2

From external PBX

Alarm cut-off
(from public address unit)

Start of VDR alarm

IMAS error

Blocking of broadcasting
/ alarm start

Start of fire alarm

To alarm
circuits

ТЛ6
ТЛ5
ТЛ4
ТЛ3

DMO
Zone-2

Т-140ПН-60
Zone-1
100 V

Standby supply
24 V DC

Power supply
220 V, 50 Hz

CP-X.X

CP-X

AP-3

Central unit
CU-200(400)

MS-18A

S-WP

MS-18

S-WP

S1

S1W

S2

S3

S-3

System diagram labels:

- Start of VDR alarm
- IMAS error
- Blocking of broadcasting / alarm start
- Start of fire alarm
- To alarm circuits
- To telephone lines
- Audio signal from external entertainment source
- Power supply 24 V DC
- Central unit CU-10
- S1
- S1W
- S2
- S2
- S3
- S3

## Central Units

### Central Unit CU-10

Ensures public address communication for 6 zones, command broadcasting for 3 zones (max. power 25 W each), supplies 8 alarm signals.

- Built-in speaker and microphone.
- A connector for external microphone.
- Line input to connect entertainment source.
- Terminal block to connect signaling units.

*Technical characteristics:*
*Power supply voltage: 24 V DC*
*Power consumption: 30 W (not including connected equipment)*
*Zone voltage: 30 V*
*Weight: 4.1 kg*
*IP rating: IP22*
*Operating temperature: -15...+55 °C*
*Mounting type:*
*Wall-mounting*
*Console-mounting*
*Bracket-mounting*

# Command public address system
## TPA-1007

## Central Units

### Central Unit CU-200, CU-400

Provides power supply to the connected units and ensures reception and transmission of signals received from user substations, control consoles, microphone and alarm panels. Amplifies and transmits signals to transmission zones.

*Technical characteristics:*
*Power supply voltage (main):*
*- 100 or 220 V, 50/60 Hz*
*Power supply voltage (standby):*
*- 24V DC*
*Amplifier power: 200/400 (2x200) W*
*Max weight:*
*- 31.8 kg for CU-200;*
*- 35.6 kg for CU-400.*
*IP rating: IP22*
*Operating temperature: -15°...+55 °C*
***Mounting type:***
*Wall-mounting*

## Microphone panels

### Microphone panel
### CP-1/CP-3/CP-6

Transmits voice messages to selected zones.

• *Two designs for 3 or 6 zones.*
• *Operates with M-1, M-2 microphones (see Microphones)*

*Technical characteristics:*
*Power consumption:*
*- 4.6 W – for CP-3;*
*- 5 W – for CP-6.*
*IP rating: IP44*
*Weight: 1.7 kg*
*Operating temperature: -15°...+55 °C*
***Mounting type:***
*Wall-mounted*
*Console-mounted*

### Microphone panel (waterproof)
### CP-3W/CP-6W

Transmits voice messages to selected zones.

• *Two designs for 3 or 6 zones.*
• *Operates with microphones M-3 and M-3-10 (see Microphones)*

*Technical characteristics:*
*Power consumption::*
*- 4.6 W for CP-3W;*
*- 5 W for CP-6W.*
*IP rating: IP56*
*Weight: 1.6 kg*
*Operating temperature: -40...+55 °C*
***Mounting type:***
*Wall-mounting*

### Microphone panel
### CP-3.3/CP-6.3/CP-6.6 (combined)

Transmits voice messages and supplies alarm signals to the selected zones.

• *3 designs with different number of zones and alarm signals.*
• *Operates with microphones M-1 and M-2 (see Microphones)*

*Power consumption:*
*- 6 W for CP-3.3;*
*- 6 W for CP-6.3;*
*- 8 W for CP-6.6.*
*Weight: 2.6 kg*
*IP rating: IP44*
*Operating temperature: -15°...+55 °C*
***Mounting type:***
*Wall-mounting*
*Console-mounting*
*Bracket-mounting*

### Combined microphone panel
### CP-3.3W/CP-6.3W/CP-6.6W (waterproof)

Transmits voice messages and supplies alarm signals to the selected zones.

• *3 designs with different number of zones and alarm signals.*
• *Operates with microphones M-3-W and M-3-10-W (see Microphones).*

*Technical characteristics:*
*Power consumption:*
*- 6 W for CP-3.3W;*
*- 6 W for CP-6.3W;*
*- 8 W for CP-6.6W.*
*Max weight: 2.4 kg*
*IP rating: IP56*
*Operating temperature: -40...+55 °C*
***Mounting type:***
*Wall-mounting*

# Command public address system
## TPA-1007

## Alarm panels

### Alarm panel AP-3/AP-6

Supplies alarm signals to zones. Two panel designs with 3 or 6 alarm signals.

*Technical characteristics:*
*Power consumption:*
*- 3 W – for AP-3;*
*- 5 W – for AP-6*
*Weight: 1.7 kg*
*IP rating: IP44*
*Operating temperature: -15...+55 °C*
***Mounting type:***
*Wall-mounting*
*Console-mounting*
*Bracket-mounting*

### Alarm panel AP-3W/AP-6W (waterproof)

Supplies alarm signals to zones.

Two panel designs with 3 or 6 alarm signals.

*Technical characteristics:*
*Power consumption:*
*- 3 W for AP-3W;*
*- 5 W for AP-6W.*
*Weight:*
*- 1.8 kg for AP-3W;*
*- 2.1 kg for AP-6W.*
*IP rating: IP56*
*Operating temperature: -40...+55 °C*
***Mounting type***
*Wall-mounting*

## Control panels

### Combined control panel MS-18

Ensures voice messages transmission and talk-back public address communication by built-in loudspeaker and connected microphone (M-1 and M-2, see Microphones).

Provides a call for up to 12 users and up to 6 zones. Talk-back public address communication and voice message transmission.

*Technical characteristics:*
*Power consumption: 10 W*
*Weight: 1.8 kg*
*IP rating: IP44*
*Operating temperature: -15...+55 °C*
***Mounting type:***
*Bracket-mounting*
*Wall-mounting*
*Console-mounting*

### Combined control panel MS-18A

Supplies alarm signals to zones, ensures voice messages transmission and talk-back public address communication by built-in loudspeaker and a connected microphone (M-1 and M-2, see Microphones).

Provides a call for up to 12 users, up to 6 zones and up to 3 alarm types.

*Technical characteristics:*
*Power consumption: 12 W*
*Weight: 2.8 kg*
*IP rating: IP44*
*Operating temperature: -15°...+55 °C*
***Mounting type:***
*Bracket-mounting*
*Wall-mounting*
*Console-mounting*

## User substations

The system is compatible with user substations of the ICB-131 System (see user substations in Command talk-back system ICB-131 (UNITALK).

# Command public address/General alarm system
# TPA-1907

Public address system / General alarm system TPA-1907 is designed to provide command broadcasting, talk-back public address communication and alarm announcement on sea- and river-going vessels for all navigational areas.

Approved by Russian Maritime and River Register of Shipping
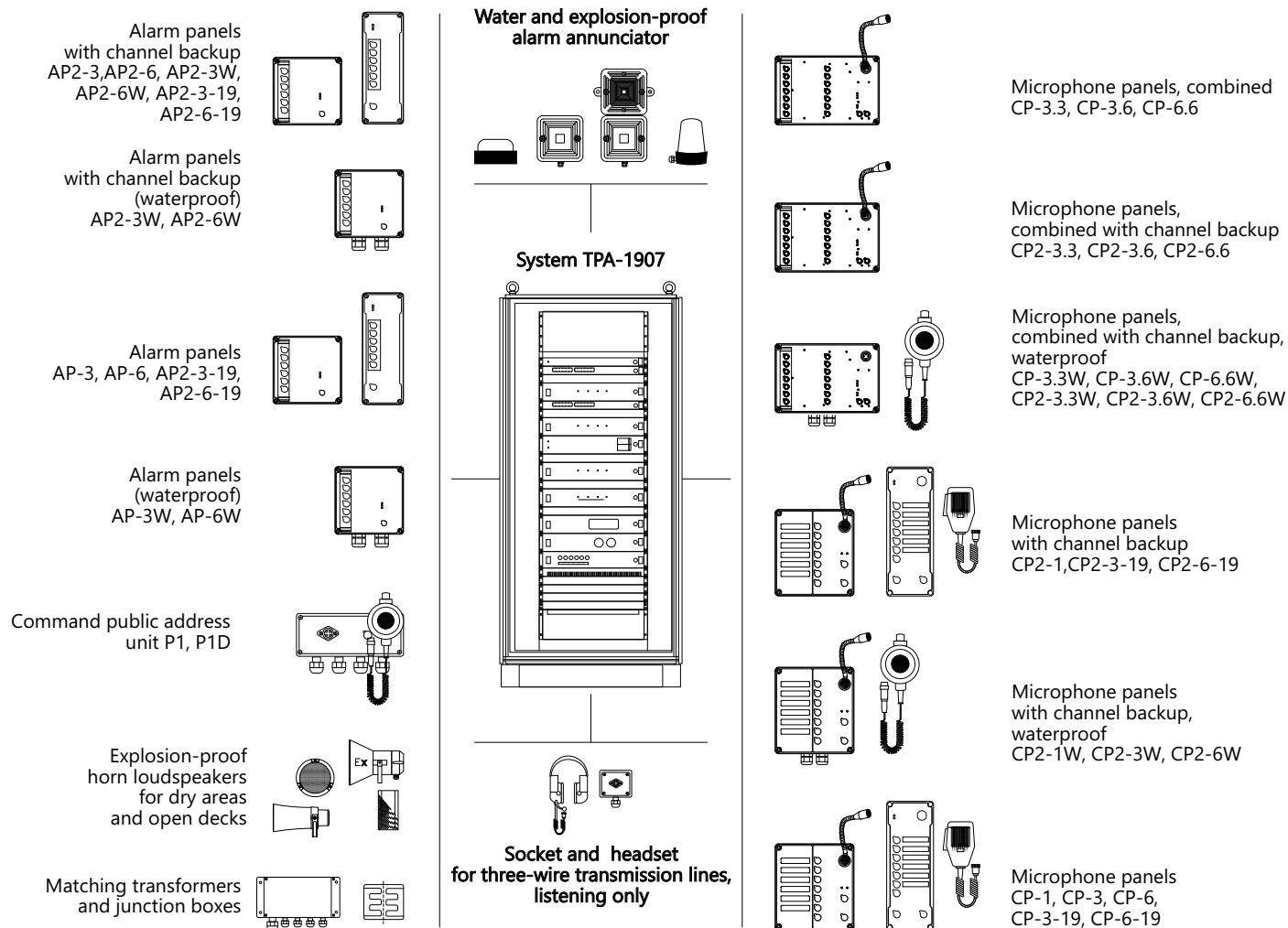
## Features and Advantages

- Installation on sea- and river-going vessel for all navigational areas
- Digital communication with high-noise immunity
- Wide-range communication (up to 700 m)
- 6 independent zones
- Built-in power amplifier 200 or 400W, zone voltage 100V
- Built-in sound alarm generator
- Prior quality control of transmitted messages
- Ready for operation immediately
- Interfacing with external ship systems (i.e. Automatic Telephone System (ATS), Voyage Data Recorder (VDR), Integrated Marine Automation Systems (IMAS))
- The System can be installed using existing cabling (in case of ship amendment)
- External radio broadcast units and audio recorders can be connected

## Technical specifications of TPA-1907 system

| | |
|---|---|
| Output voltage of power amplifier | 200 W<br>400 (200x2) W |
| Transmission zones voltage | 100 V |
| Number of user lines per Central Unit | up to 6 |
| Number of zones | up to 4 |
| Number of connected alarm panels | up to 12 |
| Number of amplifiers within the System | 64 |
| Number of Central Units within the System | 16 |

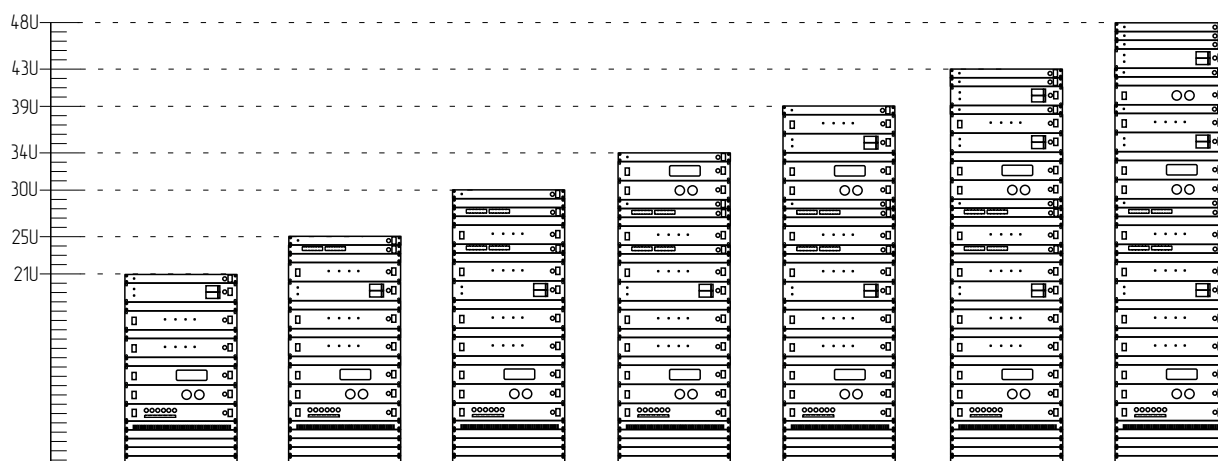# Command public address/General alarm system
## TPA-1907

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## Structural diagram of the system

Alarm panels
with channel backup
AP2-3,AP2-6, AP2-3W,
AP2-6W, AP2-3-19,
AP2-6-19

Alarm panels
with channel backup
(waterproof)
AP2-3W, AP2-6W

Alarm panels
AP-3, AP-6, AP2-3-19,
AP2-6-19

Alarm panels
(waterproof)
AP-3W, AP-6W

Command public address
unit P1, P1D

Explosion-proof
horn loudspeakers
for dry areas
and open decks

Matching transformers
and junction boxes

Water and explosion-proof
alarm annunciator

System TPA-1907

Socket and headset
for three-wire transmission lines,
listening only

Microphone panels, combined
CP-3.3, CP-3.6, CP-6.6

Microphone panels,
combined with channel backup
CP2-3.3, CP2-3.6, CP2-6.6

Microphone panels,
combined with channel backup,
waterproof
CP-3.3W, CP-3.6W, CP-6.6W,
CP2-3.3W, CP2-3.6W, CP2-6.6W

Microphone panels
with channel backup
CP2-1,CP2-3-19, CP2-6-19

Microphone panels
with channel backup,
waterproof
CP2-1W, CP2-3W, CP2-6W

Microphone panels
CP-1, CP-3, CP-6,
CP-3-19, CP-6-19

---

## Mounting rack

### Mounting rack 19IR

| Technical characteristics | |
|---|---|
| Material | steel (painted, galvanized) |
| Optional number of units | 21U / 25U / 30U / 34U /39U / 43U / 48U |
| IP rating | IP22 |
| Built-in ventilation system | 100 W |

## Central Units

### Central Unit 19-CU-6 / 19-CU-12

Provides power supply to the connected units (up to 6/12); ensures reception and switching of signals, received from user substations, control consoles, microphone and alarm panels. Amplifies and transmits signals to zones.



**Technical characteristics:**
Power supply voltage: 48 or 24 VDC
Power consumption: 130 W
Weight: 6 kg
Operating temperature: -15...+55 °C
IP rating: IP20

**Mounting type:**
Rack-mounted 19"

---

### Central unit ITS-CUICB

Provides power supply to connected units (up to 12); ensures reception and switching of signals, received from user substations and control consoles.



**Technical characteristics:**
Power supply voltage: 48 or 24 VDC
Power consumption: 15 W
Weight: 7.2 kg
Operational temperature: −15°...+55°C
IP rating: IP20

**Mounting type:**
19" rack-mounting

---

### Network switch SW–16/ SW–24

Ensures changeover of several central units.



**Technical characteristics:**
Power supply voltage: 48 or 24 VDC
Power consumption: 20 W
Weight: 3.6 kg
Operational temperature: −15°...+55°C
IP rating: IP20

**Mounting type:**
19" rack-mounting

---

### Alarm generator 19–AG

Generates and supplies alarm signals to zones; operates in line with the combined microphone and alarm panels.
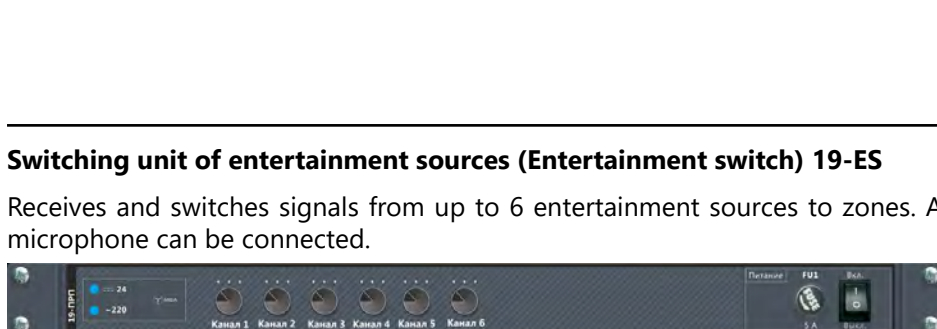


**Technical characteristics:**
Power supply voltage: 220 VAC 50–60 Hz and 24 VDC
Power consumption: 10W
Weight: 4.3 kg
Operating temperature: −15...+55°C
IP rating: IP 20

**Mounting type:**
19" rack-mounting

---

### Zone switching unit 19–SW–4–6

Provides the reception and zone switching of ITS-CUICB signals (see Central Units). Up to 6 zones can be managed.

**Technical characteristics:**
Power supply voltage: 48 or 24 VDC
Power consumption: 30 W
Weight: 6.5 kg
Operational temperature: −15...+55°C
IP rating: IP20

**Mounting type:**
Rack-mounted 19"

---

### Switching unit of entertainment sources (Entertainment switch) 19-ES

Receives and switches signals from up to 6 entertainment sources to zones. A microphone can be connected.



**Technical characteristics:**
Power supply voltage: 48 or 24 VDC
Power consumption: 30 W
Weight: 6.5 kg
Operational temperature: −15...+55°C
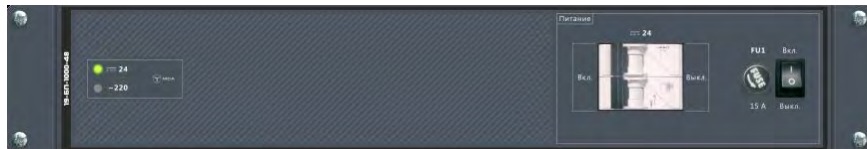IP rating: IP20

**Mounting type:**
19" rack-mounting

## Power supply unit 19-PS-1000 / 19-PS-500-24(48)

Converts input voltage of 220V 50–60Hz (main) and 24VDC (standby) into 24 or 48 VDC. Automatic transfer to standby power in case of a power supply failure.
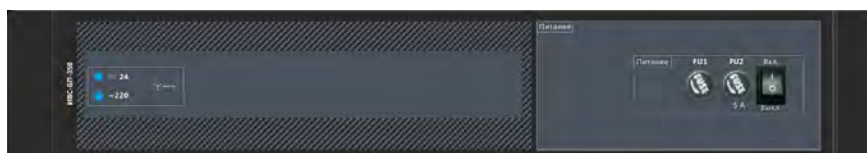
*Technical characteristics:*
*Power supply voltage:*
*- 220 VAC 50/60 Hz (main) and 24V DC (standby)*
*Output voltage: 24 or 48 VDC*
*Output power:*
*– 400 W – 19-PS-500;*
*– 800 W – 19-PS-1000*
*Power consumption: 1130/560W*
*Weight: 8.5 kg*
*Operational temperature: –15...+55°C*
*IP rating: IP20*

*Mounting type:*
*19" rack-mounting*

## Uninterruptible power supply unit ITS-PS–350

Converts input voltage of 220V 50/60Hz (main) into 24 VDC. Automatic transfer to the built-in storage battery in case of power supply failure.

*Technical characteristics:*
*Input power supply: 220VAC 50/60Hz, 24VDC*
*Output voltage: 24VDC*
*Power consumption: 350W*
*Storage battery operation time: up to 60 min (under 10 A load)*
*Weight: 8.5 kg*
*Operational temperature: –15°...+55°C*
*IP rating: IP20*

*Mounting type:*
*19" rack-mounting*

## Automatic power switch ITS-APS–120

Provides automatic mains/standby switch in case of voltage failure. 6 outputs to connect load. Ensures input voltage switching (220VAC 50/60Hz or 24VDC).

*Technical characteristics:*
*Max switching current:*
*- Model A: under 220V – 10A;*
*- Model B: under 24V – 60A.*
*Weight: 5.2 kg*
*Operational temperature: –15...+55°C*
*IP rating: IP20*

*Mounting type:*
*19" rack-mounting*

## Standby power supply unit ITS–CH–105

Charges external storage battery (24VDC, capacity 200 Ah) and supplies rack devices from the chargeable battery.

*Technical characteristics:*
*Power supply voltage: 110-220 VAC, 50-60 Hz*
*Weight: 8.5 kg*
*Operational temperature: –15...+55°C*
*IP rating: IP20*

*Mounting type:*
*19" rack-mounting*

## Audio control unit 19–PKV

Audio quality control of messages transmitted by zones.

*Technical characteristics:*
*Power consumption: 5 W*
*Weight: 1.9 kg*
*Operational temperature: –15°...+55°C*
*IP rating: IP20*

*Mounting type:*
*19" rack-mounting*

# Command public address/General alarm system
## TPA-1907

### Entertainment source 19-ES

Transmits entertainment programs from USB, radio (AM/FM), CD/DVD to transmission zones.

*Technical characteristics:*
*Power supply voltage: 24 or 48VDC*
*Power consumption: 25W*
*Weight: 4.8 kg*
*Operating temperature: -15...+55 °C*
*IP rating: IP20*

*Mounting type:*
*19" rack-mounting*

### Broadcasting control unit 19-CP-6

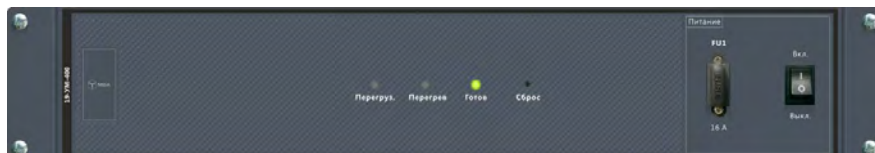Transmits voice messages to max 6 selected zones.

*Technical characteristics:*
*Power consumption: 5W*
*Weight: max 1.2 kg*
*Operating temperature: -15°...+55 °C*
*IP rating: IP20*

*Mounting type:*
*19" rack-mounting*

### Power amplifier 19-TPA-200/19-TPA-400

Amplifies input signals from Central units and media broadcasting sources. Simultaneous operation by two independent sources. Max. output power is 200 or 400 (2x200) W, 100 V.

*Technical characteristics*
*Power supply voltage: 24 or 48 VDC*
*Weight: 19.5 kg*
*Operating temperature: -15...+55 °C*
*IP rating: IP20*

*Mounting type:*
*19" rack-mounting*

### Zones operation check units 19-KTL-6/OKTL-1

Provides automatic operation control of up to 6 zones (rupture, overvoltage, short-circuit) using the control signals returned toresponse terminal. 19" rack or wall mounting available.
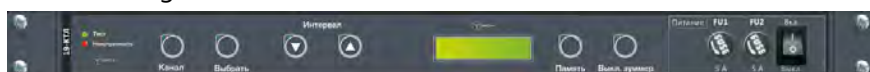
*Technical characteristics*
*Power supply voltage:*
*- 220 VAC 50–60 Hz or 24/48 VDC*
*Power consumption: 30 W*
*Weight: 6.5/0.5 kg*
*IP rating: IP20/ IP56*
*Operational temperature:*
*   15...+55°C / –40...+55 °C*

*Mounting type:*
*19" rack-mounting*
*Wall-mounted*

## Microphone panels

### Microphone panel
### CP-3-19/ CP-6-19/ CP2-3-19/ CP2-6-19

Transmits voice messages to selected zones. Depending on the model, it can be connected to either one or two independent system racks. Number of zones are 3 or 6. Operates with M-1, M-2 microphones (see Microphones)

*Technical characteristics:*
*Max. power consumption: 8 W*
*Weight: 0.7 kg*
*Operational temperature: −15°...+55°C*
*IP rating: IP44*

*Mounting type:*
*Console-mounted*

### Microphone panel
### CP-3/ CP-6/ CP2-3/ CP2-6

Transmits voice messages to selected zones. Depending on the model, it can be connected to either one or two independent system racks. Number of zones to select are 3 or 6. Operates with M-1, M-2 microphones (see Microphones).

*Technical characteristics:*
*Max. power consumption: 8 W*
*Weight: 1.7 kg*
*Operational temperature: −15°...+55°C*
*IP rating: IP44*

*Mounting type:*
*Wall-mounted*
*Console-mounted*
*Bracket-mounted*

### Microphone panels (waterproof)
### CP-3W/ CP-6W/ CP2-3W/ CP2-6W

Transmits voice messages to selected zones. Depending on the model, it can be connected to either one or two independent system racks. Number of zones to select: 3 or 6. Operates with M-3-W and M-3-10-W microphones (see Microphones).

*Technical characteristics*
*Max. power consumption: 8 W*
*Weight: 1.8 kg*
*Operational temperature: −40...+55°C*
*IP rating: IP56*

*Mounting type:*
*Wall-mounted*

# Command public address/General alarm system
## TPA-1907

## Combined microphone panels

### Combined microphone panel
### CP-3.3/ CP-6.3/ CP-6.6/ CP2-3.3/ CP2-6.3/ CP2-6.6

Transmits voice messages and supplies alarm signals to the transmission zones.

Depending on the model, it can be connected to either one or two independent system racks. The first digit in product name specifies the number of zones, the second one – the number of alarm signals.

Operates with M-1, M-2 microphones (see Microphones).

*Technical characteristics*
*Power consumption: 9 W*
*Weight: 2.3 kg*
*Operational temperature: −15°…+55°C*
*IP rating: IP 44*

*Mounting type:*
*Wall-mounted*
*Console-mounted*
*Bracket-mounted*

### Combined microphone panel (waterproof)
### CP-3.3W/ CP-6.3W/ CP-6.6W/ CP2-3.3W/ CP2-6.3W/ CP2-6.6W

Transmits voice messages and supplies alarm signals to transmission zones.

Depending on the model, it can be connected to either one or two independent system racks. The first digit in product name specifies the number of zones, the second one – the number of alarm signals.

Operates with M-3-W and M-3-10-W microphones (see Microphones).

*Technical characteristics*
*Power consumption: 9W*
*Weight: 2.5 kg*
*Operational temperature: −40…+55°C*
*IP rating: IP56*

*Mounting type:*
*Wall-mounted*

## Alarm panels

### Alarm panel AP-3/ AP-6/ AP2-3/ AP2-6

Supplies either 3 or 6 alarm signals to zones. Depending on the model, it can be connected to either one or two independent system racks.

*Technical characteristics:*
*Power consumption: up to 7 W*
*Weight: 1.7 kg*
*Operational temperature: −15°…+55°C*
*IP rating: IP 44*

*Mounting type:*
*Wall-mounted*
*Console-mounted*
*Bracket-mounted*

### Alarm panel (waterproof)
### AP-3W/ AP-6W/ AP2-3W/ AP2-6W

Supplies alarm signals to zones. Depending on the model, it can be connected to either one or two independent system racks. Up to 3 or 6 alarms can be supplied.

*Technical characteristics:*
*Power consumption: 7 W*
*Weight: 2.2 kg*
*Operational temperature: –40...+55°C*
*IP rating: IP56*

*Mounting type:*
*Wall-mounted*
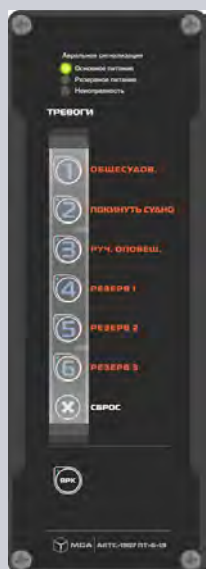
### Alarm panel
### AP-3-19/AP-6-19/ AP2-3-19/AP2-6-19

Supplies alarm signals to zones. Depending on the model, it can be connected to either one or two independent system racks. Up to 3 or 6 alarms can be supplied.

*Technical characteristics:*
*Power supply: from a subscriber line*
*Power consumption: 7W*
*Weight: 0.6 kg*
*Operational temperature: –15...+55°C*
*IP rating: IP 44*

*Mounting type:*
*Console-mounted*

## User substation

The System is compatible with the user substations of the ICB-131 System (see User substations in catalogue Command talk-back system ICB-131).

# Digital integrated intercommunication system
## ITS-1010

**a) public address communication in the following modes:**
- pair communication mode allowing additional users to be quickly connected to a conference call;
- selective or pre-defined conference call;
- broadcast communication (commands are transmitted to all substations and all zones);
- emergency call.

**b) automatic telephone communication in the following modes:**
- pair communication (forwarding call, forwarding call if the line is busy, return call, number repetition, abbreviated dialing, etc.) and priority caller;
- selective or pre-defined conference call.

**c) radio telephone communication (RTC) with following capabilities:**
- providing an extension (via base unit) to internal telephone sets (including other RTC devices);
- intercommunication within one base unit (the line is not busy).

**d) automatic telephone line with coastal stations;**

**e) video communication (using telephone sets of PT-VC type and digital PoE lines);**

**f) announcement can be provided from user substations and PBX sets (requires external public address unit – at option);**

**g) communication between users of loudspeaker system and PBX;**

**h) incoming call is indicated by external light and sound units;**

**i) automatic recording of voice messages;**

**j) administration, settings and diagnostics of the system are made by a PC.**

# Digital integrated intercommunication system
## ITS-1010

## Features and advantages

- Digital high quality communication with jamming resistance
- 500 m distance
- Any obsolete systems can be replaced using existing cabling
- Interface with public address system, coastal stations, satellite telecommunication
- The substations are ready for operation within 10 sec, the PBX – within 2 minutes
- The system has provision of peripherals operating in humid and noisy areas

## Technical specifications of ITS-1010 system

| | | | |
|---|---|---|---|
| Number of subscribers | Loudspeaker system – max 54 subscribers (can be expanded optionally)<br>PBX network – max 1,000 subscribers (can be expanded optionally)<br>DECT network (the controller BSS-16) – max 128 subscribers (can be expanded optionally) | | |
| Communication lines | Loudspeaker system units – digital, ISDN (two-wire)<br>PBX units:<br>   two-wire line (analogue telephones)<br>   eight-wire Ethernet digital sets with PoE support | | |
| Communication mode with the system units | Loudspeaker system units – duplex or half-duplex<br>PBX units – duplex | | |
| Power supply voltage | main power: 220V, 50/60 Hz (180-264 V) or 24V (18-36V DC)<br>standby power: 24V (18-36V DC) or 220 V, 50/60Hz (180-264 V) | | |
| Power consumption | Defined by total power of units, included in the scope of delivery | | |
| Galvanic isolation from power mains | + | | |
| | **Rack** | **Substations** | |
| IP rating | IP22 | IP22, IP44 | IP56 |
| Operating temperature | -15...+55 °C | -15...+55 °C | -40...+55 °C |
| Storage temperature | -60...+70 °C | | |

The system is certified by Russian Maritime Register of Shipping and Russian River Register.

## Structural diagram of the system

**User substations**
S1, S2, S1-3, S1-5,
S2-3, S2-5

*ISDN lines*

**Combined user substations**
SP-18, SP-36, PT-CMIP,
PHS-1, PHS-3, S-W

*ISDN lines*

**Combined user substations
(waterproof)**
SP-18W, SP-36W, PHS-3

*ISDN lines*

**Portable
user substations**

*ISDN lines*

**User substations**
S1W, S3, S4, S4P, SW-1

*ISDN lines*

Power supply 220VAC/24VDC

Standby supply 220VAC/24VDC

СИСТЕМА ЦИСВС-1010

**VoIP subscribers
(with local power)**

*Ethernet VoIP*

**VoIP subscribers**
PT-2IP, PT-2IPW, PT-VC, PT-3CIP,
AT-3CIPW,  Auteldac 5 VoIP

*(VoIP) lines of PoE type Cat 5e*

**Subscribers of analogue telephones**
PT-1A, PT-2A, PT-3A, ST-3A

*ТфОП 2x0,5(з)*

**Subscribers of analogue telephones
(waterproof)**
PT-2AW, PT-CMA, PT-ADCW

*ТфОП 2x0,5(з)*

**Subscribers of analogue telephones
(explosion-proof)**
KNEx1 (Ex), Koontech, ExResisesTel (Ex)

*ТфОП 2x0,5(з)*

**Subscribers DECT network**
S-DRTU, S-ARTU

*DECT network*

*Coastal communication lines 2x0,5(з)*

Subscribers of external telephones

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# Digital integrated intercommunication system
## ITS-1010

## Mounting rack

### Mounting rack 19IR

| Technical characteristics | |
|---|---|
| Material | steel (painted, galvanized) |
| Optional number of units | 21U / 25U / 30U / 34U /39U / 43U / 48U |
| IP rating | IP22 |
| Built-in ventilation system | 100 W |
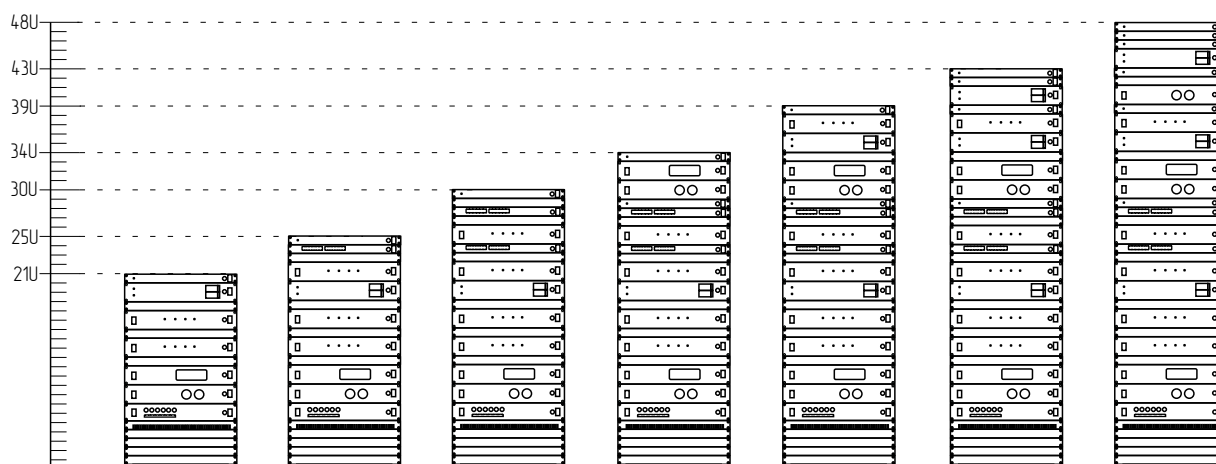


## The central units

### ITS-CUICB

The ITS-CUICB converts voice communication from substations and ensures digital talk-back communication among 12 users.



**Technical characteristics:**
*Power supply voltage: 48 / 24V DC*
*Max power consumption: 15W*
*Weight: 7.2 kg*
*Operating temperature: -15...+55ºC*
*IP rating: IP20*

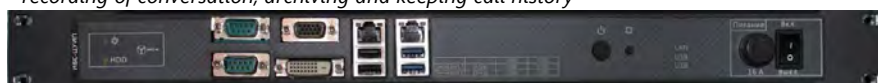**Mounting type:**
*19" rack mounting*

### ITS-CUIP

Allows for switching of calls and connections among subscriber lines.

• *recording of conversation, archiving and keeping call history*



**Technical characteristics:**
*Power supply voltage: 48 / 24V DC*
*Max power consumption: 350W*
*Weight: 4.2 kg*
*Operating temperature: -15...+55ºC*
*IP rating: IP20*

**Mounting type:**
*19" rack mounting*

## ITS-TBSW

The extension unit of the loudspeaker system increases the network capacity to 6/12 lines.

• Power, connection and data exchange LEDs
• Overload, short circuit and reverse polarity protection
• Ports to connect external systems (extension units of loudspeaker system and PBX)

*Technical characteristics:*
*Power supply voltage: 48 / 24V DC*
*Max power consumption: 10W*
*Weight: 5.25 kg*
*Operating temperature: -15...+55ºC*
*IP rating: IP20*

*Mounting type:*
*19" rack mounting*

## SW-16 / SW-24 network switch

combines digital data streams of the system units into a single network segment.

• 16 ports 10/100/1000 Base-T (SW-16)
• 24 ports 10/100/1000 Base-T (SW-24)
• Overload and reverse polarity protection (fuse on the input feed)

*Technical characteristics:*
*Power supply voltage: 48/24 V DC*
*Max power consumption: 20 W*
*Weight: 3.6 kg*
*Operating temperature: -15...+55ºC*
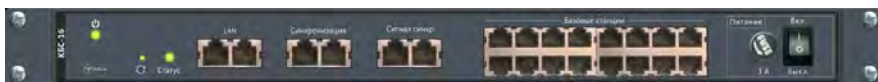*IP rating: IP20*

*Mounting type:*
*SW-16(24)-R - 19" rack mounting*
*SW-16(24)-W – wall mounting*

## BSS-16 base stations switch

Stations switching unit BSS-16 allows for DECT standard stand-alone radio telephone network deployment (using batteryless communication units S-DRTU).

• 16 ports to connect to base stations (stations are powered from communication lines)
• Home network service of 128 channels (radio telephone communication of DECT standard)
• Seamless roaming mode for home users (current connection is not interrupted while transferring between base stations)
• Several controllers BSS-16 can operate in single DECT network and roaming mode

*Technical characteristics:*
*Power supply voltage: 24V DC*
*Max power consumption:*
*- switching unit – 10 W*
*- supplying base stations – 250 W*
*Weight: 4.7 kg*
*Operating temperature: -15...+55ºC*
*IP rating: IP20*

*Mounting type:*
*19" rack mounting*

## FXS-8 / FXS-16 / FXS-24 / FXS-32 / FXS-48

The unit provides connection to coastal lines and PBX (FXO gateway).

• Indicates power, keeping alive line and network connection
• Settings are customized using an external PC via network or port RS-232
• Overload protection of feed circuit (fuse)

*Technical characteristics:*
*Power supply voltage: 48/24 V DC*
*Number of ports to connect subscriber lines:*
*- 8 – FXS-8;*
*- 16 – FXS-16;*
*- 24 – FXS-24;*
*- 48 – FXS-48.*
*Weight: 4.9 kg*
*Operating temperature: -15...+55ºC*
*IP rating: IP20*

*Mounting type:*
*19" rack mounting*

## FXO-4 / FXO-8

The unit provides connection to coastal lines and coastal PBX (FXO gateway).

• 4 or 8 lines extension to external coastal network
• Communication of all lines simultaneously (4 or 8)
• Indicates power, keeping alive line and network connection.
• Overload protection of feed circuit (fuse)

*Technical characteristics:*
Power supply voltage: 48/24 V DC
Number of ports to connect subscriber lines:
-  4 – FXO-4;
-  8 – FXO-8.
Weight: 9.2 kg
Operating temperature: -15...+55 ºC
IP rating: IP20
*Mounting type:*
19" rack mounting

## POE-SW-8 / POE-SW-16 / POE-SW-24 / POE-SW-48

The extension unit (digital type) increases the telephone network capacity to 8/16/24/48 lines of PoE or Ethernet standard (10/100/1000Base-T).

*Technical characteristics:*
Power supply voltage: 24 / 48V DC
Max power consumption:
-  extension unit – 11 W
-  if full capacity of PoE channels source – 400 W
Total feedthrough power (all PoE lines):
-  from PoE budget
Weight: 10.1 kg
Operating temperature: -15...+55 ºC
IP rating: IP20
*Mounting type:*
19" rack mounting

## Power supply unit ITS-PS-1500

Provides power to the rack units (220 V).

*Technical characteristics:*
Power supply voltage: 220 V (main) / 24 V DC (standby)
Output voltage: 24/48 V DC
Output power: 1500 W
Weight: 8.5 kg
Operating temperature: -15...+55 ºC
IP rating: IP20
*Mounting type:*
Rack-mounted 19"

## Power switching unit ITS-APS-120

Provides an automatic mains/standby switchover (220V, 50/60 Hz or 24V DC). 6 outputs to connect load.

• Power LED
• Overload protection of the input circuit; overload and short circuit protection of output circuit

*Technical characteristics:*
Switching voltage: 220 V, 50/60 Hz or 24 V DC
Number of output channels: 6
Max switching current:
-  220V – 10A;
-  24 V – 60A.
Max current per channel: 10A
Weight: 5.2 kg
Operating temperature: -15...+55 ºC
IP rating: IP20
*Mounting type:*
19" rack mounting

## Power supply units 19-PS-1000/19-PS-500

Provides power supply to the rack equipment from mains 220 V, 50-60 Hz and 24 V DC (automatic switchover).
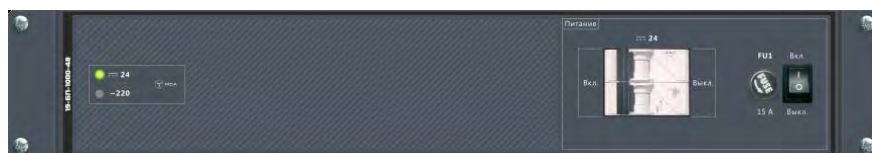
*Technical characteristics:*
Power supply voltage:
-  220V, 50-60Hz (main)
-  24V (standby)
Output voltage: 48V / 24V
Output power:
-  400 W - 19-PS-500;
-  800W - 19-PS-1000.
Power consumption: 1130W
Weight: 8.5 kg
Operating temperature: -15...+55 ºC
IP rating: IP20
*Mounting type:*
19" rack mounting

## User units

### User units PT-CMIP-xx

Talk-back communication in the loudspeaker network with optional telephone communication.

- *Built-in microphone and loudspeaker*
- *LCD (displays numbers of incoming/outgoing calls)*
- *Backlight buttons*
- *External communication (telephone receiver, headset, microphone) and signaling units for incoming calls can be connected*
- *Operates alternately in loudspeaker or PBX network*
- *Extension unit to 10/20/30/40/50 users can be connected*

*Technical characteristics:*
Casing: metal
Connection type: ISDN line
Additional number of call connections:
- 10, 20, 30, 40, 50
Max power consumption: 20W
IP rating: IP44
Operating temperature: -15...+55°C

*Mounting type and weight:*
- PT-CMIP-xxW (wall) - 3.7 kg;
- PT-CMIP-xxC (console) - 1.8 kg.
Accessories:
Microphone: M-1, M-2, M-3
Headsets:
- HS-4, HS-4M, HS-A, HS-6, HS-6M, HS-6A
Intercom helmet:
- IH-4L-x, IH-4L-x-P, IH-4M-x, IH-4M-x-P

### PHS-1, PHS-3

Talk-back communication in the loudspeaker network.

- *Built-in microphone and loudspeaker (only PHS-1)*
- *External talk-back device (telephone receiver, headset, and microphone), loudspeaker and signaling units for incoming calls can be connected*
- *Backlight buttons*
- *Can operate alternately in loudspeaker or PBX network.*

*Note: the substation PHS-3 requires an external source of sound transmission (telephone receiver, headset or loudspeaker).*

*Technical characteristics:*
Casing: painted metal
Connection type: ISDN line
Max number of pair communication lines in loudspeaker network: 10
Operating temperature: -40...+55 °C
Weight:
- 1.0 kg – PHS-3;
- 1.1 kg – PHS-1.
IP rating: IP56

*Mounting type:*
Wall

*Accessories:*
Telephone receivers: PH-1, PH-4
Microphone: M-3
Headsets: HS-4, HS-4M, HS-4A, HS-6, HS-6M, HS-6A
Intercom helmet: IH-4L-x, IH-4L-x-P, IH-4M-x, IH-4M-x-P

### User substation

Portable unit for communication with the system users. Can be used on open deck.

- *Portable*
- *Built-in loudspeaker and microphone*
- *Buttons to select users*
- *A connector for headset / to connect socket CP-1*

*Technical characteristics:*
Power supply: from user line
Max power consumption: 6 W
Cable length: 10 m
Weight: 0.8 kg
IP rating: IP 56
Operating temperature: -40...+55 °C

*Mounting type:*
Portable

*Accessories:*
Headsets HS-4, HS-4M

# Digital integrated intercommunication system
## ITS-1010

### Stationary telephone unit PT-1A

Provides telephone communication with value added services in the PBX network.

• Volume control of in-call signal
• Call on hold
• Last number redial

*Technical characteristics:*
*Casing: plastic*
*Power supply: from a telephone line*
*Connection to network: analogue line (E1)*
*Max power consumption: 4 W*
*Dialing mode: tone/pulse*
*Operating temperature: -15...+55 °C*
*IP rating: IP20*
*Weight: 0.5 kg*

*Mounting type:*
*Wall-mounting*
*Bracket-mounting*

### Stationary telephone unit PT-2A

Provides telephone communication with value added services in the PBX network.

• Equipped with LCD (date, time, dialed numbers, automatic number identification, integrated telephone book and call history).
• Buttons to switch microphone off and to control in-call signal volume.
• 10 function buttons.
• Loudspeaker mode.

*Technical characteristics:*
*Casing: plastic*
*Power supply: from a telephone line*
*Connection to network: analogue line (E1)*
*Max power consumption: 4W*
*Dialing mode: tone/pulse*
*Operating temperature: -15...+55 °C*
*IP rating: IP20*
*Weight: 1.1 kg*

*Mounting type:*
*Wall-mounted*
*Bracket-mounted*

### Stationary telephone unit PT-3A

Telephone communication with value added services in the PBX network.

• Compact design (receiver and dialer are integrated)
• Button to switch microphone off

*Technical characteristics:*
*Casing: plastic*
*Power supply: from a telephone line*
*Connection to network: analogue line (E1)*
*Max power consumption: 1W*
*Dialing mode: tone/pulse*
*Operating temperature: -15...+55 °C*
*Magnet mounting for the receiver*
*IP rating: IP20*
*Weight: 0.3 kg*

*Mounting type:*
*Wall mounting*

### The waterproof telephone unit PT-2AW

Telephone communication with value added services in the PBX network.

• Enclosed in a casing with door
• Analogue line operation
• Telephone book for 10 numbers
• External signaling unit SAAT-105 can be connected

*Technical characteristics:*
*Casing: metal (aluminum alloy)*
*Power supply: from a telephone line*
*Connection to network: analog line (E1)*
*Max power consumption: 2W*
*Operating temperature: -40...+55°C*
*IP rating: IP56*
*Weight: 5.2 kg*
*Standard cable 0.45 m*

*Mounting type:*
*Wall-mounting*

# Digital integrated intercommunication system
## ITS-1010

### Stationary telephone unit PT-CMA

Telephone communication by analogue line.

- Keypad backlight control (24V DC)
- Magnet mounting for the receiver
- Separate volume control of the microphone and speaker

**Technical characteristics:**
Power supply:
- Telephone: from a telephone line
- Backlight: 24V DC
Numbers in memory: 10
Speed dialing: +
Call repetition: +
Keypad backlight: +
Operating temperature: -15...+55 °C
Weight: 0.5 kg
IP rating: IP44

**Mounting type:**
Console
Wall-mounting

### Set of digital units S-DRTU

Ensures radio telephone communication (DECT standard) with value added services. DECT network deployment, telephone communication and roaming are optionally available.

- Colour display 128x160 pix
- Alarm button and drop sensor
- Automatic emergency call
- LED of operation mode
- Programmable charger (1- and 6 ports)
- Waiting/Talk mode: 120h/18h
- Multi type connector (Bluetooth, a headset)

**Technical characteristics:**
Power supply:
- Base station: 21...56V DC
- Receiver charger: 220V, 50Hz
Max power consumption:
- Base station: 10W
- Receiver charger: 143W
Operating bandwidth: 1880-1900MHz
Communication range:
- 20-30 m indoors
- 300 m outdoors
Explosion rating: DH-5ABBAAA
- 1Ex ib IIC T4 Gb X
- Ex ib IIIC T55°C Db
IP rating: IP65
Operating temperature:
  -10...+55°C - S-RDTU
  -10...+40°C - DH-5ABBAAA
Accessories:
Headset

### Set of RTC units PT-ADC

The set consists of a base station, charger and a portable receiver. Ensures radio telephone (wireless) communication with value added services.

- Communication by radio channel (DECT standard) between max. 4 telephones (within operation range of a base station) with optional telephone communication (subscriber line is free).
- Waterproof receiver is equipped with an LCD and 6 function buttons; loudspeaker mode and stray keystroke protection, telephone book for 120 numbers and keypad backlight.
- Base station can be installed on open decks.

**Technical characteristics:**
Receiver: plastic
Power supply:
- Base station
  Main: 220V 50/60 Hz or 24V
  Standby: 24V DC
- Receiver charger
  100-240V 50-60Hz through adapter
Max power consumption of base station:
- 4.2W
Telephone connection: analogue line (E1)
Radio channel:
- frequency: 1880-1900MHz
- standard: DECT/GAP
Communication range: 50 to 200m
Operation time:
- Talk mode: 14 h (single charge)
- Waiting mode: 300 h (single charge)
IP rating:
- IP56 – subscriber receiver PT-ADC and base station BS/CH-ARTU
- IP20 – individual charger HB-ARTU and power supply unit PS-ARTU

**Mounting type:**
Subscriber receiver PT-ADC
- portable
Individual charger HB-ARTU
- bracket-mounted
Units PS-ARTU, BS/CH-ARTU
- wall-mounted.

### Set of RTC units S-ARTU

Provides radio (wireless) communication with value added services.

- *Communication by radio channel (DECT standard) between max 6 receivers (within operation range of a base station) with optional telephone communication (subscriber line is available).*
- *A receiver is equipped with LCD 2.1", 2 function buttons; loudspeaker mode, stray keystroke protection, telephone book for 100 numbers, keypad backlight.*

*Technical characteristics:*
*Receiver: plastic*
*Power supply:*
*- Base station*
  *Main: 220V 50/60Hz or 24V*
  *Standby: 24V DC*
*- Receiver charger*
  *From mains 100-240V 50-60Hz through adapter*
*Max power consumption of base station: 5W*
*Telephone connection: digital line (PoE) via BS-ARTU*
*Radio channel: standard DECT*
*Communication range: 50 - 200 m*
*Number of receivers: up to 6 DECT*
*Operation time:*
*- waiting mode - 240 h*
*- talk mode - 120 h*
*Storage batteries: Ni-MH AAA*
*Operating temperature: -15...+55 °C*
*IP rating: IP20 (all units)*

*Mounting type:*
*Subscriber receiver S-ARTU*
*- portable*
*Individual charging device IC-ARTU*
*- bracket-mounted*
*Units PSU-ARTU, BS-ARTU*
*- wall-mounted*

*Accessories:*
*Headset*

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### Explosion-proof telephone unit KNEx1 (Ex), ExResistTel (Ex)

Ensures communication with value added services; for application in explosion-hazardous areas.

- *Volume control of incoming call and current communication*
- *BID LCD screen and 5 function buttons*
- *Telephone book for 50 numbers*
- *Built-in function of noise suppression*
- *A steel-reinforced handset cord*
- *Loudspeaker, call annunciators, microphone headset (only for ExResistTel set) can be connected*

*Technical characteristics:*
*Casing: plastic (polyester, reinforced)*
*Keypad: stainless steel*
*Power supply:*
*- Set – from a telephone line*
*- Backlight - 24V DC*
*Max power consumption: 4W*
*Signal of built-in loudspeaker:*
*- 70 dB*
*Explosion rating:*
*- set KNEx1:*
  *Ex e ib mb IIC T6 Gb*
  *Ex tb IIIC T80°C Db*
  *(protection «e», «m», «i», «t»)*
*- set ExResistTel:*
  *according to TP TC 012/2011:*
   *1Ex e mb [ib] IIC T6/T5 Gb,*
   *Ex tb [ib] IIIC T 80°C/100°C Db*
  *according to IECEx:*
   *Ex e mb [ib] IIC T6/T5 Gb,*
   *Ex tb [ib] IIIC T 80°C/100°C Db*
*IP rating: IP66*
*Operating temperature: -40...+55 °C*
*Weight: 5.8 kg*

*Mounting type:*
*Wall-mounted*
*Accessories:*
*Waterproof cabinet BO-2 (from ICB-131 set)*
*Heated cabinet BO-1H*
*Waterproof cabinet BTS2-BO (from BLTS-1006 set)*

# Digital integrated intercommunication system
## ITS-1010

### Digital stationary telephone unit PT-2IP

Ensures telephone communication with value added services in the PBX network (by digital line).

- LCD (132x48)
- Loudspeaker mode
- Conference call, up to 3 participants
- Direct IR call (without PBX network logon)
- Two network ports, up to 100 Mb
- 3 function buttons

*Technical characteristics*
*Casing: plastic*
*Power supply: from digital PoE line*
*Network interfaces:*
- *two ports (switchable) 10/ 100/ 1000 Mbps with built-in PoE support*
*Power consumption: 3.6 W*
*Connection to network:*
- *digital line (Ethernet, PoE), SIP protocol, junctor RJ45*
*Communication port capacity:*
- *max 100 Mbit/s*
*Network protocols support:*
- *SIP RFC3261, TCP/IP/UDP, RTP/RTCP, HTTP/HTTPS, ARP/RARP, ICMP, DNS (A record, SRV, NAPTR), DHCP, PPPoE, SSH, TFTP, NTP, STUN, SIMPLE, LLDP-MED, LDAP, TR-069, 802.1x, TLS, SRTP*
*IP rating: IP20*
*Operating temperature: -15...+55ºC*
*Weight: 0.73 kg*

*Mounting type:*
*Wall*
*Bracket*

### Stationary digital video telephone PT-VC

- Colour capacitive touch LCD 4.3" ensures video communication and displays operational data.
- Built-in 1 megapixel camera with CMOS array.
- Two gigabit network ports 1000 Mbps.
- Loudspeaker mode.

*Technical characteristics:*
*Casing: plastic*
*Power supply:*
- *from mains 100-240V 50-60Hz through adapter*
*Output voltage of adapter (set power supply): 12V*
- *from a digital telephone line (PoE)*
*Power consumption:*
- *18W, if supplied through adapter*
*Connection to network: digital line (Ethernet, PoE), SIP protocol, junctor RJ45*
*LCD resolution: 480 x 272*
*Communication port capacity:*
- *up to 100 Mbit/s*
*Memory card slot:*
- *SD, MMC/SDHC, USB (2.0)*
*Network protocols support:*
- *IP 2.0, UDP/IP, PPPoE, RTR/RTCP, SRTP by SDES, HTTP, ARP/RARP, ICMP, DNS, DHCP, NTR/SNTP, TFTR*
*Operating temperature: -15...+55°C*
*Weight: 0.67 kg*
*IP rating: IP20*

*Mounting type:*
*Bracket*
*Wall*

# **Periscope** ship weather station

The Periscope ship weather station is designed to measure, collect and display weather data.

## Features and advantages

- Touch screen 8" or 10.4", trackball/mouse.
- Data output in NMEA format.
- Data from the meteo-sensors are obtained in NMEA, ASCII formats.
- Built-in heating allows sensors to operate in cold environment.
- Received data are recorded in the ship's log and exported into XLS format.
- Data are presented in pictorial or graphical formats (figures or line graphs).
- Different measurement units at option.
- Water temperature sensor and 5 meteorological sensors are optionally available.
- Some sensors are equipped with built-in GPS-receivers (gyrocompass and log connection is not required to define ship speed and course and calculate true wind parameters).

# Periscope ship weather station

| Parameter | Value |
|---|---|
| Measurable atmospheric parameters* | air temperature;<br>water temperature;<br>atmospheric pressure;<br>wind direction and speed;<br>air humidity;<br>precipitation amount (rain, hail). |
| Additional data from external units | vessel course from gyrocompass or GPS-receiver<br>vessel speed from log or GPS-receiver (NMEA data according to standard IEC 61162-1, 2) |
| Displayed data | air temperature<br>water temperature<br>atmospheric pressure<br>wind direction and speed (true and relative wind gusts)<br>air humidity<br>precipitation amount (rain, hail)<br>Data are presented in pictorial or graphical formats (figures or line graphs).<br>Update interval: 30 to 60 sec |
| Recording of the meteorological data | into storage of system displays<br>record interval: 1 to 3,600 sec |
| Data output to the external systems/units | RS-422/RS-232<br>data baud rate 4800-115200 bit/s |
| Screen size | 8" (1024×768, 4 : 3) |
| System control devices | Trackball (mouse), touch screen |
| Power supply voltage | 9.5 – 36.0 V DC |
| Max power consumption (including heating) | 55 W |
| IP rating | For units installed inside: IP22<br>On-deck units: IP66. |
| Measurement units | Atmospheric pressure – hPa, Pa, mm Hg, bar, in.Hg.<br>Air temperature - °C, °F<br>Relative humidity - %<br>Wind speed – m/s, km/h, miles per hour (mph), knots<br>Wind direction – degrees<br>Precipitation amount (rain, hail) – mm/h, inches per hour |
| \* The accuracy and limits of measured atmospheric parameters differ and depend on the used weather sensors (see table below). | |

## Weather station configuration

| Data combiner | Display | Weather sensors/anemometer |
|---|---|---|

Log

Compass GPS

NC-117     DR-209M     MVPC-XX

24 V DC

NMEA connection
to the external users and ship
systems
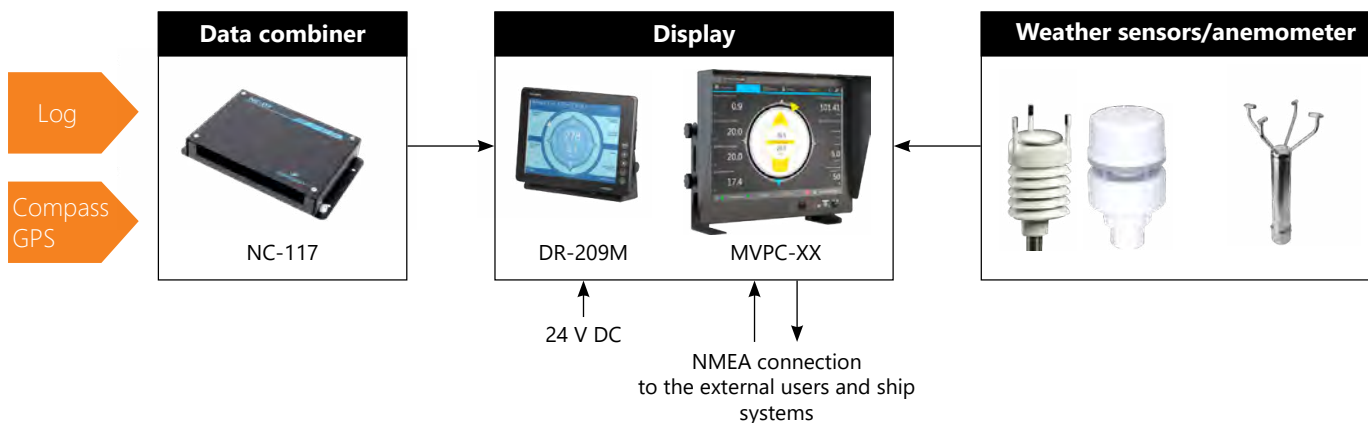
# Periscope ship weather station

## Measured atmospheric parameters and sensors

| Value/sensor | WXT520 (weather sensor) | WindObserver 65 (anemometer) | 100WX (weather sensor) | 150WX (weather sensor) | 300WX (weather sensor) |
|---|---|---|---|---|---|
| Sensor image | | | | | |
| Atmospheric pressure (hPa) | 600...1100 ± 0,5 | — | 800..1100 ±2 | | |
| Air temperature (°C) | −52...+60 ± 0,3 | −40...+70 | −25..+55 ± 1 (wind speed>2.2 m/s) | | |
| Relative humidity (%) | 0...90 ± 3<br>90...100 ± 5 | — | — | — | + |
| Wind speed (m/s) | 0...60 ± 0.3 or 2% | 0...65 ± 2% | 0 .. 5 (± 0.6 + 10%)<br>5 .. 40 (± 1.3 or 5%) | | |
| Wind direction, degrees (relative to mark) | 0...359 ± 2 | 0...359 ± 2 | 0 .. 359 ±2 RMS<br>(0..5.5) ) m/s ±5° RMS | | |
| True wind (relative to the North) | — /+ (*) | — /+ (*) | — /+ (*) | + | + |
| Amount of precipitation | Rain, hail | — | — | — | Rain, hail |
| Heating | + | + | | + | + |
| Size, mm | 115 × 115 × 238 | 213 × 213 × 381 | 72 × 72 × 130 | | |
| Weight | 0.8 | 1.4 | 0.3 | | |

* if course and speed data are received from a log or a gyrocompass (150WX and 300WX sensors are equipped with an integral GPS receiver) no external course and speed data are required.

## System units

| | | |
|---|---|---|
| System display | DR-209M | Multipurpose digital repeater |
| Weather sensors and anemometers | 100WX | Weather sensor (requires connection to gyrocompass and log, or GPS receiver to acquire vessel speed and course) |
| | 150WX | Weather sensor (equipped with an integrated GPS receiver) |
| | 300WX | Weather sensor (equipped with an integrated GPS receiver) |
| | WXT520 | Weather sensor (requires connection to gyrocompass and log, or GPS receiver to acquire vessel speed and course) |
| | WindObserver 65 | Anemometer (requires connection to gyrocompass and log, or GPS receiver to acquire vessel speed and course) |
| Extra equipment | NC-117 | Standard digital data combiner (NMEA sentences) |
| | MDU-102 | NMEA 1083 amplifier-distributor |
| System control devices | Trackball | TB-1-50 - trackball (with adjustable pressure) |
| | Keyboard | The UKT-801 (S1T) – the keyboard combined with a trackball |
| Power supply units | UPS-114 | 220V, 50/60Hz or 24V DC (built-in storage battery) |
| | PS-203 | 220V, 50/60Hz or 24V DC |
| | PS-103 | 220V, 50/60Hz or 24V DC |
| | PS-303 | 220V, 50/60Hz or 24V DC |

# External sound reception system
# NS-201

Approved by Russian Maritime and River Register of Shipping

The system receives external sound signals from all directions within bandwidth 70-820Hz, rebroadcasts the received signals to the appropriate location and equipment, indicating the sound signals source direction in relation to the vessel.

## Features and advantages

**The basic system includes a sound signal receiver (main unit) and microphone unit.**
- 3 compact omnidirectional microphones are combined in a compact unit.
- Signals are received within of 70-820 Hz ( (2100 Hz - at option), other signals are disregarded by the system.
- Built-in heating allows sensors to operate in cold environment.
- Additional repeater and loudspeaker can be connected.

**Controls**
- Trigger threshold (exceeding the noise level)
- Loudspeaker volume
- Backlight of the control buttons

## Technical specifications of the system

| Loudspeaker power (built-in/external) | 5W / 15W | |
|---|---|---|
| Number of microphones | 3 mics combined (omnidirectional) | |
| Pitch of bearing indicator | 15° | |
| | **NS-201CU / NS-201R** | **NS-201M** |
| Operating temperature | -15 °C .. + 55 °C | -40 °C .. + 55 °C |
| Storage temperature | -60 °C .. + 70 °C | -60 °C .. + 70 °C |

# External sound reception system
## NS-201

## Structural diagram of the system

CU-201
main unit

AU-201
additional unit

Typhoon horn

**Typhoon control unit**

*Signal of Typhoon activation*

Command public address unit

**Control system of command public address**

*Activation signal of command public address*

Microphone unit
MU-1

External loudspeaker
(8Ohm, 15W)

Power source
10-36V DC
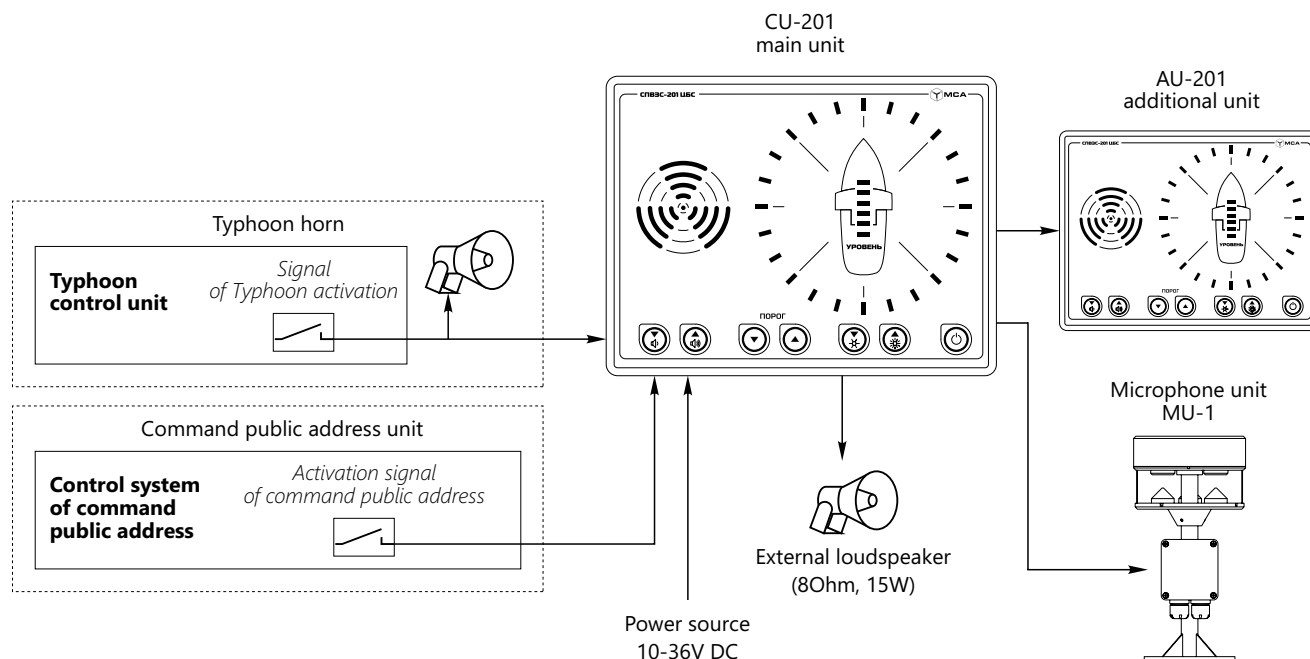
## The system units

### CU-201, AU-201
### Main and additional units

The NS-201 main unit is equipped with a microprocessor control, built-in speaker, LEDs (sound strength and bearing indicators) and buttons to provide control and settings.

***Technical characteristics:***
*Operating bandwidth: 70-820 Hz*
*Max power consumption: 12 W*
*Number of additional units: max 4*
*Sound pressure level: 86 dB*
*IP rating:*
*- IP44 (front panel);*
*- IP10 (back panel) - (w/o casing).*
*Weight: 1.1 kg*
*Operating temperature: -15 ... +55 °C*
***Mounting type:***
*Console*

### MU-1

The microphone unit is a set of combined moving coil microphones; waterproof; for installation on open deck.

• *Heating unit*

***Technical characteristics:***
*Operating bandwidth: 50-8000 Hz*
*Power consumption: 22W (heating)*
*IP rating: IP 56*
*Weight: 1.7 kg*
*Operating temperature: -40...+55°C*
***Mounting type:***
*on horizontal surface*

### Loudspeaker LS-15

Multipurpose horn loudspeaker ensures broadcasting and transmits voice communication.

***Technical characteristics:***
*Operating voltage: 30V*
*Power: 15W*
*Sound pressure level: 108 dB*
*Weight: 1.4 kg*
*IP rating: IP56*
*Operating temperature: -40...+55 °C*

***Mounting type:***
*Bracket-mounting*

# Battery less telephone system
## BLTS-1006



Approved by Russian Maritime and
River Register of Shipping

## Description

The BLTS-1006 battery less telephone system ensures telephone communication both in routine operation and emergencies, when communication control or power systems fail.

## Features

- The system provides pair, broadcast, selective and conference communication among the stations (max 24).
- The system can be used as public address system.
- Communication and addressed calls are available from any system unit.
- Communication in harsh environments:
    - when applied respiratory protection (using portable communication devices with microphones);
    - in noisy areas, max 130 dB (using headset or intercom helmet).
- LEDs for power, call and inductor state of health.
- Light and sound signals for incoming calls.
- A headset and external in-call light signaling units can be connected.
- Automatic switchover to standby power in case of a power supply failure.
- Various configurations of telephone networks can be designed (subscribers are connected by dedicated or multiple channels).
- Depending on the modification, the units can be installed on open decks or inside, including noisy areas; hinge, desktop or console mounting.

# Battery less telephone system
## BLTS-1006

| | |
|---|---|
| Power supply voltage | batteryless (energy is supplied from generator rotation and accumulated energy); external, from the mains 24V (18...36V DC), loudspeaker mode |
| Number of users | 2-24 (expandable) |
| | Parallel connection devices:<br>    1-line- PH-1LA, PH-1L, PH-1LR, PH-1RW;<br>    12-line - PH-12L, PH-12LR, PH-12LWP, PH-12LWP;<br>    24-line - PH-24L, PH-24LR, PH-24RW, PH-24LWP.<br>Switching units (with isolated lines):<br>    6-channel - PH-6, PH-6A;<br>    12-channel - PH-12, PH-12A;<br>    20-channel - PH-20, PH-20A. |
| Operating mode | Battery less communication, loudspeaker (if external power supply is available) |
| Communication time (self-contained power supply) | For pair communication - min 10 min (after 1 rotation cycle of generator with the rate of rotation 3 rev/s within 3-5 s) |
| Communication line length | max 400 m |
| Functional capabilities | two types of in-calls signals;<br>caller number identification (for devices equipped with LCD);<br>call mode selection (with or without camp-on) |
| Operating temperature | -15...+55 °C – installation inside;<br>-40...+55 °C – installation on open decks. |

**Telephone sets**

| Number of lines | Name | Connection | | | IP rating | Notes |
|---|---|---|---|---|---|---|
| | | headset | extra in-call alarm | relay unit | | |
| 1 | PH-1LA (w/amplifier) | + | | + | IP44 | Relay unit can be connected |
| | PH-1L | + | | | IP44 | |
| | PH-1LR | + | + | + | IP44 | |
| | PH-1LW | + | + | + | IP56 | Waterproof |
| 12 | PH-12L | + | | | IP44 | |
| | PH-12LR | + | + | + | IP44 | |
| | PH-12LRW | + | + | + | IP56 | Waterproof |
| | PH-12LWP | + | | | IP56 | Portable, waterproof |
| 24 | PH-24L | + | | | IP44 | 1 |
| | PH-25LR | + | + | + | IP44 | |
| | PH-24LRW | + | + | + | IP56 | Waterproof |
| | PH-24LWP | + | | | IP56 | Portable, waterproof |
| Telephone / switching units | | | | | | |
| 6 | PH-6A (w/amplifier) | + | + | + | | |
| 12 | PH-12A (w/amplifier) | + | + | + | | |
| 20 | PH-20A (w/amplifier) | + | + | + | | |

**Note:**
Operating temperature depends on design:
-15...+55°C - IP44 telephones
- 40...+55°C - IP56 telephones

# Battery less telephone system
## BLTS-1006

## Switching units

**SB-12A** – Switching unit with a built-in PSU (18-36V/24V DC) and amplifier allows the connection of 12 telephone lines, IP22.
**SB-24A** – Switching unit with a built-in PSU (18-36V/24V DC) and amplifier allows the connection of 24 telephones lines, IP22.
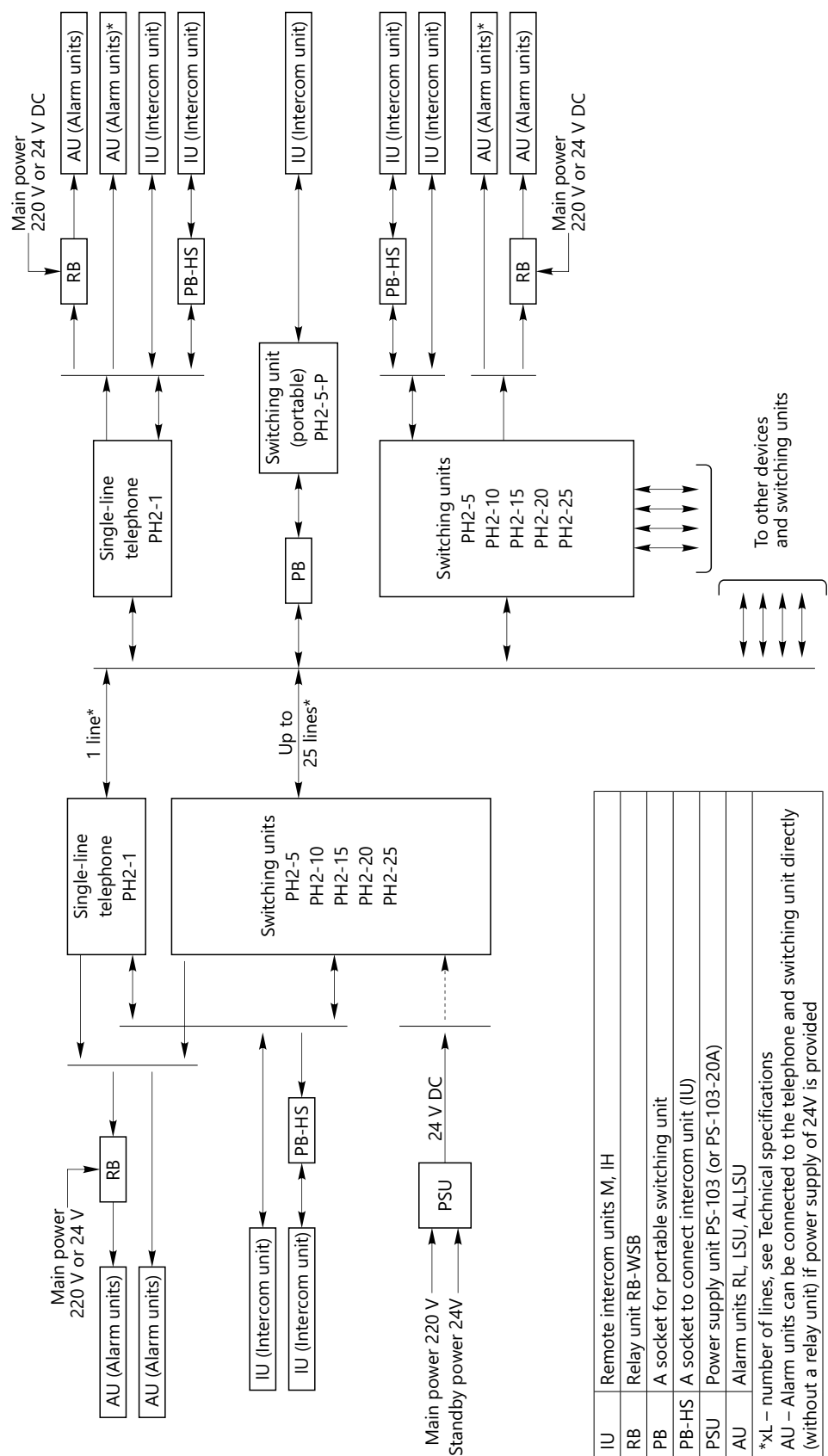
## Cabinets

**MBOX**– A metal cabinet for hinge mounting, for telephone units PH-xx, PH-xxLR, PH-6x. IP44.
**WBOX** – A wooden case/box for hinge mounting, for telephone units PH-xx, PH-xxLR, PH-6x. IP22.
**MBOX2**– A metal cabinet for hinge mounting, for telephone units PH-12x, PH-20x. IP44.
**WBOX2** – A wooden case/box for hinge mounting, for telephone units PH-12x, PH-20x. IP22.
**BTS2-BO** – A waterproof cabinet to house telephones (for PH-xx, PH-xxLR and switching units PH-6A, PH-12A, PH-20A), IP56.

## Peripheral equipment

**HS-2P** – Headset with 3m cable, manual switch and connector, IP56.
**HS-2**– Headset with 3m cable, manual switch, IP56.
**RB-WSB-220** – Relay unit, 220V, 50/60Hz to connect call annunciators, with a call button. IP56.
**RB-WSB-24** – Relay unit, 24V DC, to connect call annunciators, with a call termination button, IP56.
**PB-HS** – A socket to connect headset, IP56.
**S-PH-24WP** – A socket to connect portable telephone (12 and 24 lines), IP56.
**CG-xx** – Standard cord growth of external intercommunication devices, IP56.
**FL24** – A flashing impulse lamp (beacon), IP56.
**RL24** – A flashing lamp, rotating (24V DC), IP56.
**RL220** – A flashing lamp, rotating (220V, 50/60Hz), IP56.
**A-24** – Signaling unit (24V DC), waterproof, IP56.
**A-220** – Signaling unit (220V, 50/60Hz), waterproof, IP56.
**AL-24** – Sound and light signaling unit (24V DC), waterproof, IP56.
**AL-220** – Sound and light signaling unit (220V, 50/60Hz), waterproof, IP56.
**LSU-24** – Light signaling unit (24V DC, power consumption 7.5 W), IP56.
**LSU-220** – Light signaling unit (220V AC, 50/60 Hz, power consumption 8.5W), IP56.

## Structural diagram of the system

Main power 220 V or 24 V DC

AU (Alarm units)
AU (Alarm units)*
IU (Intercom unit)
IU (Intercom unit)

RB

PB-HS

Single-line telephone PH2-1

IU (Intercom unit)

Switching unit (portable) PH2-5-P

PB

PB-HS

IU (Intercom unit)
IU (Intercom unit)
AU (Alarm units)*
AU (Alarm units)

RB

Main power 220 V or 24 V DC

Switching units
PH2-5
PH2-10
PH2-15
PH2-20
PH2-25

To other devices and switching units

1 line*

Up to 25 lines*

Single-line telephone PH2-1

Switching units
PH2-5
PH2-10
PH2-15
PH2-20
PH2-25

RB

PB-HS

24 V DC

PSU

Main power 220 V or 24 V

AU (Alarm units)
AU (Alarm units)

IU (Intercom unit)
IU (Intercom unit)

Main power 220 V
Standby power 24V

| | |
|---|---|
| IU | Remote intercom units M, IH |
| RB | Relay unit RB-WSB |
| PB | A socket for portable switching unit |
| PB-HS | A socket to connect intercom unit (IU) |
| PSU | Power supply unit PS-103 (or PS-103-20A) |
| AU | Alarm units RL, LSU, AL,LSU |

*xL – number of lines, see Technical specifications
AU – Alarm units can be connected to the telephone and switching unit directly (without a relay unit) if power supply of 24V is provided

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## Network configuration of the BLTS-1006M system

### Sample of pair communication



PH-1LA

PH-1L, PH-1LR, PH-1LRW

24 V DC          24 V DC
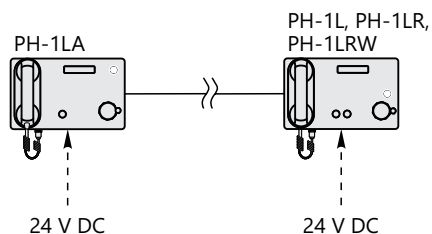
### Sample of communication with node paths (using switching unit and telephones)



HS

PH-6A

HS

PH-1LRW

Line 1

HS

External
power
24 V DC

PH-1LR

24 V DC

Line 2

HS

БТ-1

Line 3

24 V DC

24 V DC

Line 4-6

*To other telephones (4-6)*
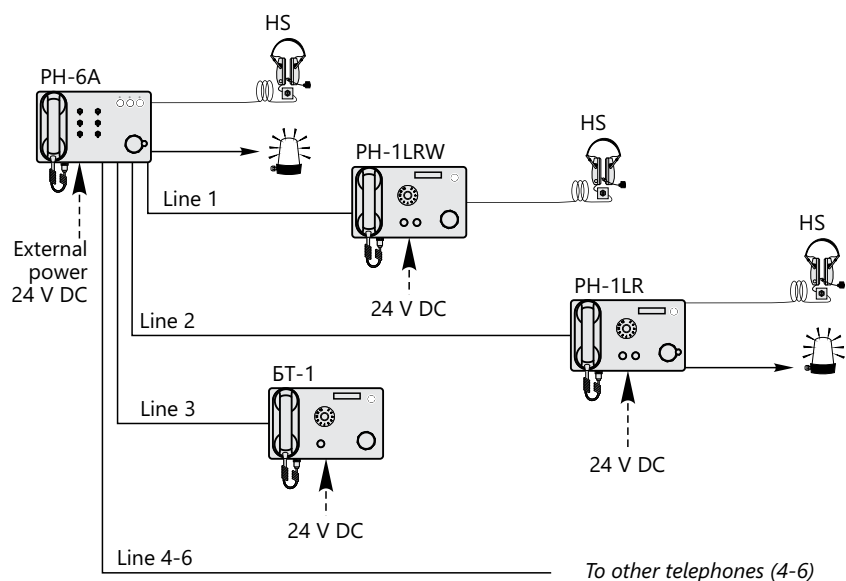
### Sample of combined communication



HS

PH-6S

Subscriber group 1

PH-24LRW        HS

HS

БТ-12Р
БТ-24Р

SB-12A
SB-24A

Line 1

Switching
unit

External power
24 V DC

*to other
telephone groups*

24 V DC

SB-12A
SB-24A

Line 2

Switching
unit

PH-12LWP
PH-24LWP        HS

External power
24 V DC

Р-БТ-24ВП

SB-12A
SB-24A

Line 3

Switching
unit

External power
24 V DC

Subscriber group 2

Line 4-6

*To other SB BLTS 4-6*

Subscriber group 3
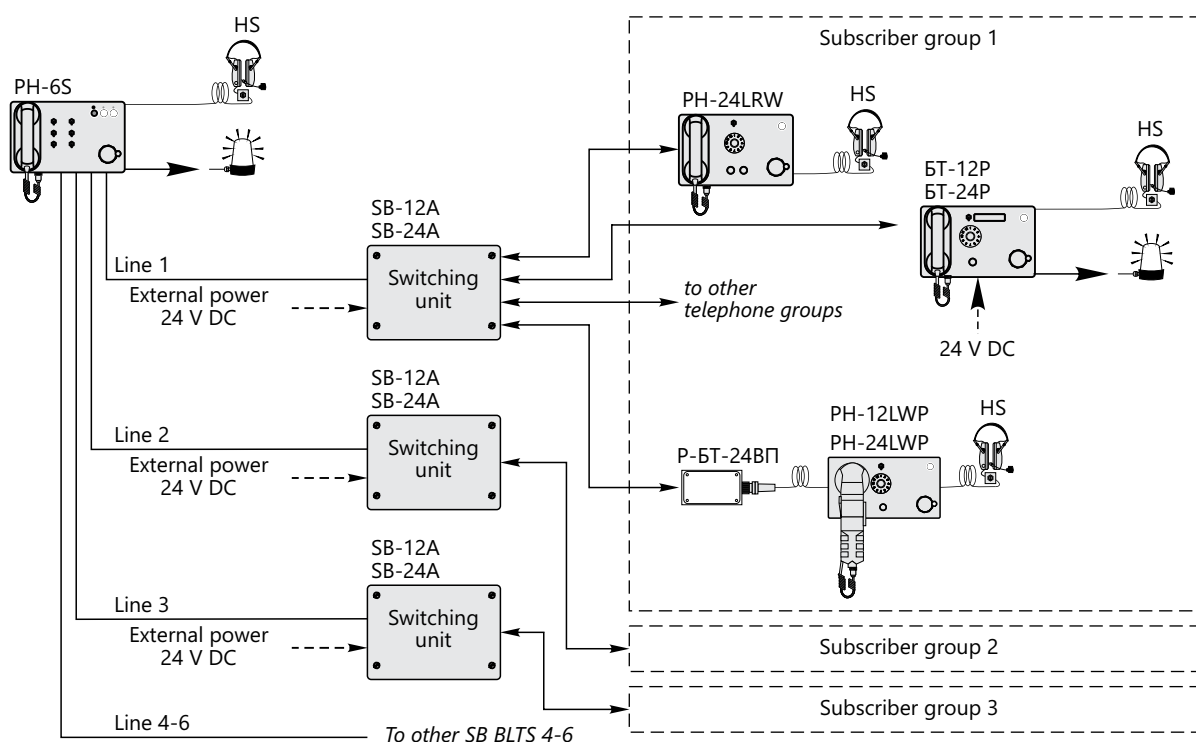
## Sample of switching communication



Inside areas

HS    PH-1L                    Line 1

HS    PH-12L, PH-24L           Line 2

SB-12A
SB-24A

Switching
unit

Inside areas
with increased
noise level

HS    PH-1LR                   Line 3

24 V DC

HS    PH-12L
      PH-24L               Line 4

24 V DC

24 V DC

Rooms and open areas (waterproof design is required)

HS    PH-24LRW               Line 5

24 V DC

Line 6    PH-12LRW
          PH-24LRW    HS

24 V DC    RBWSB    220 V AC

Portable telephone sets

PH-12LRW
PH-24LRW    HS

Line 7    PB-24

Line 8-12
Line 8-24    To other system telephones
             (BLTS 8-24)

# Battery less telephone system
## BLTS-1006

## System units

### PH-1LA telephone unit

One line telephone unit (including amplifier) ensures battery less direct (pair) communication.

- Built-in amplifier
- Backlight of LCD and control buttons
- Inductor and power LEDs
- Sound and light incoming call alert
- External signaling units and headset can be connected

**Technical characteristics:**
Max power consumption: 6 W
Number of users: 1
IP rating: IP44
Operating temperature: 15...+55 °C
Weight: 1.7 kg
**Mounting type:**
Console-mounted
Wall-mounted with MBOX, WBOX
**Accessories:**
Headsets: : HS-3, HS-3M, HS-5, HS-5M, HS-5A
Intercom helmets: IH-4M(S), IH-4M(S)-P
Relay unit RB-WSB

### PH-1L, PH-12L, PH-24L telephone units

Telephone units for 1/12/24 lines used for battery less communication.

- Backlight of LCD and control buttons
- Inductor and power LEDs
- Sound and light incoming call alert
- Headset can be connected

**Technical characteristics:**
Max power consumption: 3W
Number of users: 1 / 12 / 24
IP rating: IP44
Operating temperature: 15...+55 °C
Weight: 1.7 kg
**Mounting type:**
Console-mounted
Wall-mounted, applying MBOX, WBOX
Bracket-mounted, cabinet WBOX
**Accessories:**
Headsets: : HS-3, HS-3M, HS-5, HS-5M, HS-5A
Intercom helmets: IH-4M(S), IH-4M(S)-P

### PH-1LR, PH-12LR, PH-24LR telephone units

Telephone units for 1/12/24 lines used for battery less communication.

- Battery less telephone and loudspeaker modes
- Backlight of LCD and control buttons
- Inductor and power LEDs
- Sound and light incoming call alert
- External signaling units and headset can be connected

**Technical characteristics:**
Max power consumption: 3W
Number of users: 1 /12 / 24
IP rating: IP44
Operating temperature: -15...+55 °C
Weight: 1.7 kg
**Mounting type:**
Console-mounted
Wall-mounted, with MBOX, WBOX
Bracket-mounted, box/case WBOX
**Headsets:**
Headsets:
- HS-3, HS-3M, HS-5, HS-5M, HS-5A
Intercom helmets: IH-4M(S), IH-4M(S)-P
Relay unit RB-WSB
Signaling units RL24, A-24, LSU-24, AL-24

### PH-1LRW, PH-12LRW, PH-24LRW telephone units

Telephone units for 1/12/24 lines used for battery less communication.

- Backlight of control buttons
- Inductor and power LEDs
- Sound and light incoming call alert
- External signaling units and headset can be connected

**Technical characteristics:**
Max power consumption: 3W
Number of users: 1 / 12 / 24
IP rating: IP56
Operating temperature: -40...+55 °C
Weight: 2.5 kg
**Mounting type:**
Inside: wall-mounted, with MBOX, WBOX
Open decks: into a cabinet
**Accessories:**
Headsets:
- HS-3, HS-3M, HS-5, HS-5M, HS-5A
- Intercom helmets: IH-4M(S), IH-4M(S)-P
- Relay unit RB-WSB
- Metal cabinet BTS2-BO
- Signaling units RL24, A-24, LSU-24, AL-24

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### PH-1LWP, PH-12LWP, PH-24LWP portable telephone units

Portable telephones for 1/12/24 lines.

- Battery less telephone and loudspeaker modes
- Backlight of control buttons
- Inductor and power LEDs
- Sound and light incoming call alert
- Headset can be connected (into a connector on the casing side)

*Technical characteristics:*
*Max power consumption: 3W*
*Number of users: 1/12/24*
*Cable length: 10m*
*IP rating: IP56*
*Operating temperature: -40...+55 °C*
*Weight: 2.5 kg*
***Mounting type:***
*Portable*
***Accessories:***
*Headsets:*
*- HS-3, HS-3M, HS-5, HS-5M, HS-5A*
*Intercom helmets - IH-4M(S), IH-4L(S)-P*
*A socket PB-24*

### SU-6, SU-6A Telephone/switching unit

A telephone/switching unit for 6 lines battery less communication systems (separate connection of users).

- Backlight of control buttons
- Inductor and power LEDs
- Sound and light incoming call alert
- Headset can be connected

*Technical characteristics:*
*Number of users: 1 to 6*
*IP rating: IP44*
*Power consumption:*
*- talk mode: 15W*
*- waiting mode: 3W*
*Weight: 1.7 kg*
*Operating temperature: -15...+55 °C*
***Mounting type:***
*Console-mounted*
*Wall-mounted, MBOX, WBOX*
*Bracket-mounted, box/case WBOX*
***Accessories:***
*Headsets:*
*- HS-3, HS-3M, HS-5, HS-5M, HS-5A*
*Intercom helmets: IH-4M(S), IH-4M(S)-P*
*Relay unit RB-WSB*
*Signaling units RL24, A-24, LSU-24, AL-24*

### SU-12, SU-12A Telephone/switching unit

A telephone/switching unit for 12 lines (separate connection of users) used for battery less communication systems.

- Backlight of control buttons
- Inductor and power LEDs
- Sound and light incoming call alert
- Headset can be connected

*Technical characteristics:*
*Number of users: from 1 to 12*
*IP rating: IP44*
*Power consumption:*
*- talk mode: 15W*
*- waiting mode: 3W*
*Weight: 2.2 kg*
*Operating temperature: -15...+55 °C*
***Mounting type:***
*Console-mounted*
*Wall-mounted with MBOX2, WBOX2*
*Bracket-mounted with box/case WBOX2*
***Accessories:***
*Headsets: HS-3, HS-3M, HS-5, HS-5M, HS-5A*
*Intercom helmets: IH-4M(S), IH-4M(S)-P*
*Relay unit RB-WSB*
*Signaling units: RL24, A-24, LSU-24, AL-24*

### SU-20
### Telephone/switching unit

A telephone/switching unit for 20 lines used for battery less communication system (separate connection of users).

- Backlight of controls
- Sound and light incoming call alert
- Inductor and power LEDs
- Headset can be connected

*Technical characteristics:*
*Number of users: 1 to 20*
*IP rating: IP44*
*Power consumption:*
*- talk mode: 15W*
*- waiting mode: 3W*
*Weight: 2.2 kg*
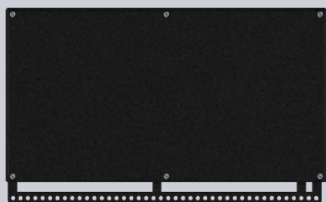*Operating temperature: -15...+55 °C*
***Mounting type:***
*Flush mounting*
*Hinge mounting, MBOX2, WBOX2*
*Accessories:*
*Headsets:*
*- HS-3, HS-3M, HS-5, HS-5M, HS-5A*
*Intercom helmets: IH-4M(S), IH-4M(S)-P*
*Relay unit RB-WSB*
*Signaling units: RL24, A-24, LSU-24, AL-24*

### SB-12A, SB-24A switching unit

ensures centralized power distribution to telephone units.

• Built-in amplifier
• The unit is used when two or more telephones are in operation

*Technical characteristics:*
*Power supply voltage:*
- *input 18-36V DC*
- *output 24V DC*
*Number of terminals to connect telephone units:*
- *SB-12A - 12*
- *SB-24A - 24*
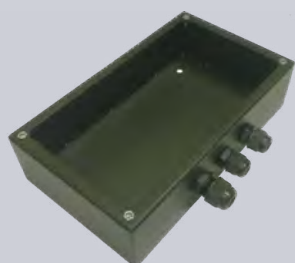*Galvanic isolation from power mains:*
- *1.5kV*
*Power consumption: 75W*
*IP rating: IP22*
*Weight: 1.4 kg*

*Mounting type:*
*Wall*

### Metal cabinets MBOX, MBOX2

To house telephone units on a vertical bulkhead.

• MBOX is used with telephones PH-1LA, PH-xx, PH-xxLR, PH-6x
• MBOX2 is used with telephones/switching units PH-12A, PH-12, PH-20A, PH-20

*Technical characteristics:*
*Material: steel*
*IP rating: IP44*
*Weight:*
- *1.4 kg (MBOX)*
- *1.6 kg (MBOX2)*

### Wooden case/box WBOX, WBOX2

To install telephones on a vertical bulkhead or horizontal surface (e.g. onto a desktop).

• WBOX is used with telephone units PH-1LA PH-xx, PH-xxLR, PH-6x
• WBOX2 is used with telephone units PH-12A, PH-12, PH-20A, PH-20

*Technical characteristics:*
*Material: wood (oak)*
*IP rating: IP22*
*Weight:*
- *WBOX - 0.8 kg*
- *WBOX2 - 1.0 kg*

### PB-HS socket

For remote connection of a headset to a telephone.

• Waterproof
• Waterproof port with a protective cover to connect substations

*Technical characteristics:*
*Weight: 0.8 kg*
*IP rating: IP56*
*Operating temperature: -40...+55 °C*

*Mounting type:*
*Wall*

### Socket (to connect portable PB-xx telephones) PB-24

To connect portable telephones PB-xx to telephone network or telephone/switching unit.

• Waterproof
• Waterproof port with protective cover

*Technical characteristics:*
*Casing: aluminum*
*Operating temperature: -40...+55 °C*
*IP rating: IP56*
*Weight: 0.8 kg*

*Mounting type:*
*Wall*

# Battery less telephone system
# BLTS-1006M

The BTS-1006M battery less telephone communication system ensures intercommunication in case of a power failure on board.

The system can operate in self-contained mode (requires no power connection) and in telephone mode (doesn't require a manual generator for its operation if external power is supplied).

Open architecture of the BLTS-1006M units creates an opportunity to arrange the systems providing different designs, options and user capacities.

The BLTS-1006M is designed for following networks:
- Single-path – to arrange direct-pair communication;
- Communication node path (using switching units and telephones) - to arrange communication (pair and broadcast) between the main station and a group of users;
- Multinode paths (using any combinations of switching units and telephones) – to arrange communication (pair and broadcast) of the main station within its group or other user groups.

**Structural diagram of the system**



| IU | Remote intercom units M, IH |
|---|---|
| RB | Relay unit RB-WSB |
| PB | A socket for portable switching unit |
| PB-HS | A socket to connect intercom unit (IU) |
| PSU | Power supply unit PS-103 (or PS-103-20A) |
| AU | Alarm units RL, LSU, AL,LSU |

*xL – number of lines, see Technical specifications
AU – Alarm units can be connected to the telephone and switching unit directly
(without a relay unit) if power supply of 24V is provided
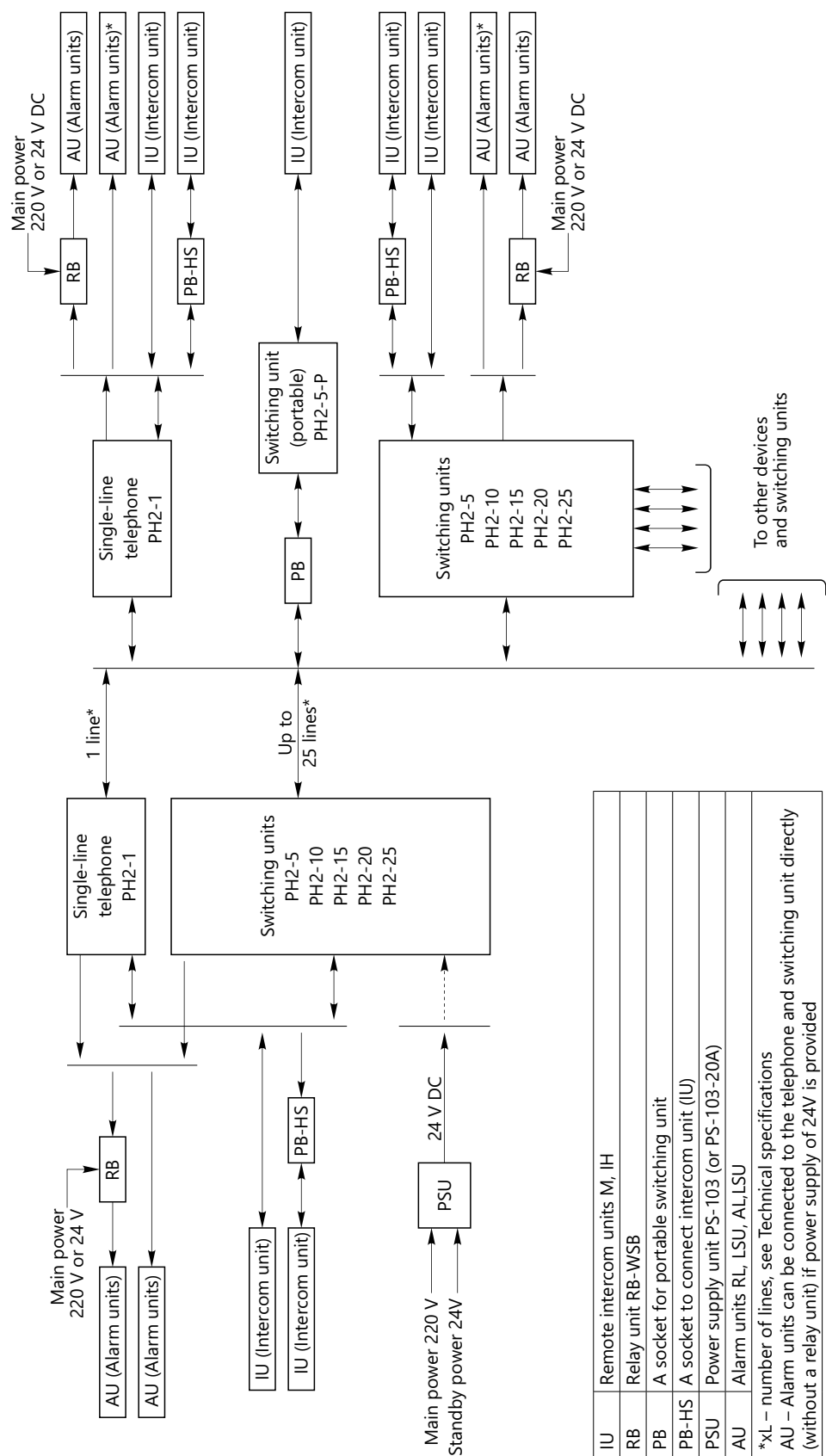
# Batteryless telephone system
## BLTS-1006M

**Single-path subscriber network (paired connection)**

PH2-1          PH2-1

24 V DC
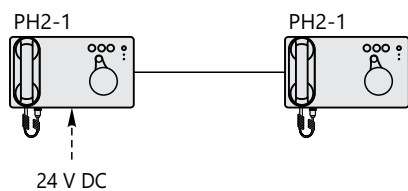
**Subscriber network with communication node path (based on switching unit)**

МГГ

PH-20

External
power
24 V DC

Line 1

HS

PH2-1

24 V DC

Line 2

HS

PH2-1

24 V DC

Line 3-20          *To other telephones (3-20)*
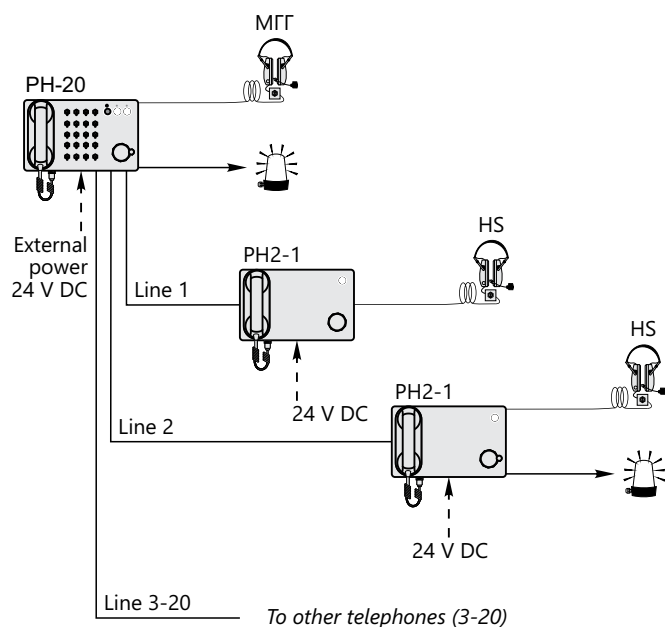
**Subscriber network with multi-node paths (connection between subscriber groups)**

Subscriber network of communication node 1

Subscriber network of communication node 2

PH2-1          PH-5          PH2-1

PH2-1

PH-10          PH-5          PH2-1

External power
24 V DC

PH2-1

Subscriber network of communication node 3
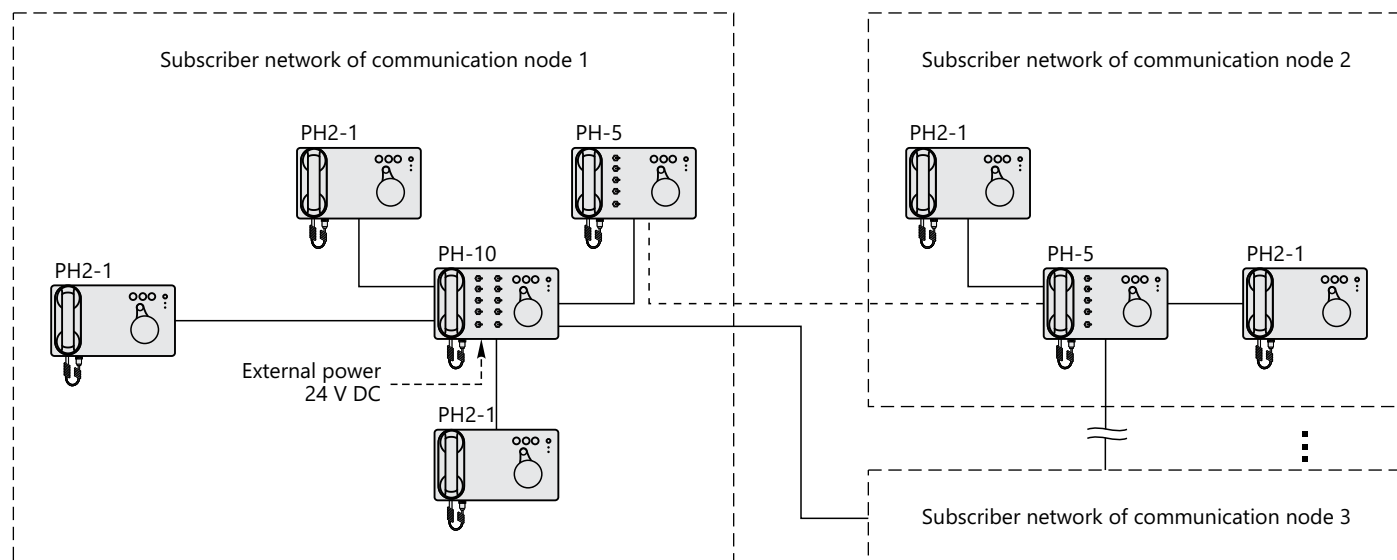
# Batteryless telephone system
## BLTS-1006M

## Description

A manually driven generator is required in case of external power failure. Transmission of voice communication is made by the PTT button on the receiver.

Rotate the generator handle before the call in order to charge the own capacitor or capacitor of the selected subscriber or group of subscribers.

All the telephone units are equipped with an integrated in-call light and sound module. External signaling units can be connected for operation in noisy areas (external power supply is required).

The switching units are equipped with toggles for selective calls.

## Main specifications

| Parameter | Value |
|---|---|
| Number of users | 2 to 25 (can be optionally expanded) |
| Number of lines | 1/5/10/15/20/25 |
| Operation mode | In case of a power failure, power can be gained by the manually driven generator (inductor) of any telephone or switching unit.<br>When power supply is available: from external source, 24V DC. |
| Communication time | Pair communication: min 10 min (after 1 rotation cycle with the speed 3 rot/sec during 3-5 sec) |
| Line length | up to 400 m |
| IP rating | IP56 |
| Operating temperature | -15...+55 °C – units installed inside<br>-40...+55 °C – units installed on open deck |

## System units



**System units**
**PH2-15-W, PH2-15-C, PH2-20-W, PH2-20-C, PH2-25-W, PH2-25-C**

Telephone units for 15/20/25 lines can be wall-mounted (W) or console-mounted (C).

• Battery less telephone and loudspeaker modes
• Backlight of control buttons
• Inductor and power LEDs
• Sound and light incoming call alert
• External signaling units, headset of HS-type, intercom helmet IH-4 can be connected

*Technical characteristics:*
*Power consumption:*
*- Waiting mode – 3W*
*- Talk mode – 15W*
*Number of lines: 15/20/25*
*IP rating: IP56*
*Operating temperature: -40...+55° C*
*Weight:*
*- PH2-xx-W: 4.6 kg;*
*- PH2-xx-C: 3.0 kg.*

*Mounting type:*
*Wall*
*Console*

*Accessories:*
*Headsets:*
*- HS-3, HS-3M, HS-5 HS-5M, HS-5A*
*Intercom helmets: IH-4M, IH-4L*
*Relay unit RB-WSB*
*Signaling units RL24, A-24, LSU-24, AL-24*

# Batteryless telephone system
## BLTS-1006M

### PH2-5-H, PH2-5-C, PH2-10-H, PH2-10-C

Telephone units for 5/10 lines can be hinged (H) or console-mounted (C).

- Battery less telephone and loudspeaker modes
- Backlight of controls
- Inductor and power LEDs
- Sound and light incoming call alert
- External signaling units, headset HS-type and intercom helmet IH-4 can be connected

*Technical characteristics:*
*Power consumption:*
- *waiting mode – 3W*
- *call mode – 15W*
*Number of lines: 5/10*
*IP rating: IP56*
*Operating temperature: -40...+55° C*
*Weight:*
- *PH2-xx-H: 3.6 kg;*
- *PH2-xx-C: 2.0 kg.*

*Mounting type:*
*Wall*
*Console*

*Accessories:*
*Headsets:*
- *HS-3, HS-3M, HS-5, HS-5M, HS-5A*
*Intercom helmets: IH-4M(S), IH-4M(S)-P*
*Relay unit RB-WSB*
*Signaling units RL24, A-24, LSU-24, AL-24*

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### PH2-5-P

Portable telephone for 5 lines.

- Battery less telephone and loudspeaker modes
- Backlight of controls
- Inductor and power LEDs
- Sound and light incoming call alert
- External signaling units, headset HS-type and intercom helmet IH-4 can be connected

*Technical characteristics:*
*Power consumption:*
- *Waiting mode – 3W*
- *Call mode – 15W*
*Number of lines: 5*
*IP rating: IP56*
*Operating temperature: -40...+55° C*
*Weight: 2.5 kg*

*Mounting type:*
*Portable*

*Accessories:*
*Headsets:*
- *HS-3, HS-3M, HS-5, HS-5M, HS-5A*
*Intercom helmets: IH-4M(S), IH-4M(S)-P*

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### PH2-1-W, PH2-1-C

One line telephone unit, wall (W) or console-mounted (C).

- Battery less telephone and loudspeaker modes
- Backlight of controls
- Inductor and power LEDs
- Sound and light incoming call alert
- External signaling units, headset HS-type and intercom helmet IH-4 can be connected

*Technical characteristics:*
*Power consumption:*
- *waiting mode – 3W*
- *talk mode – 15W*
*Number of lines: 1*
*IP rating: IP56*
*Operating temperature: -40...+55° C*
*Weight:*
- *PH2-x-W: 3.5 kg;*
- *PH2-x-C: 2.4 kg.*

*Mounting type:*
*Wall*
*Console*

*Accessories:*
*Headsets:*
- *HS-3, HS-3M, HS-5, HS-5M, HS-5A*
*Intercom helmets: IH-4M(S), IH-4M(S)-P*
*Relay unit RB-WSB*
*Signaling units:*
- *RL24, A-24, LSU-24, AL-24*

# Automatic marine telephone system
## ITS-1004



Approved by Russian Maritime and River Register of Shipping

The ITS-1004 automatic marine telephone system ensures telephone communication among rooms and stations of submarines, vessels of all classes, and with users of coastal telephone networks during anchorage. The system can be also used for industrial applications.

## System features

- Up to 64 analogue users, up to 12 external lines
- Wide range of internal and external line combinations
- Automatic switchover to standby power
- Integration with command public address and loudspeaker systems (ICB-131 and TPA-1007) produced by "NPK "MSA"
- The system is PC programmed
- Wired and radio communication
- Value added services

## Technical specifications of the system

| | |
|---|---|
| Ports | 64 internal and 12 external lines |
| | Audio input (AUX) |
| | An output for external public address system |
| | Relay ports |
| Main power | 220V 50/60Hz |
| Standby power | 24V DC (automatic switchover) |
| Max power consumption | 100W<br>ITS-CUA-0308, ITS-CUA-0316, ITS-CUA-0324<br>200W<br>ITS-CUA--0632, ITS-CUA-0640, ITS-CUA-0648, ITS-CUA-0656, ITS-CUA-0664 |

# ITS-CUA-0632

External lines          Internal lines

| Type of central unit | No. of external lines | No. of internal lines | Notes |
|---|---|---|---|
| ITS-CUA-0308 | 3 | 8 | 8h** |
| ITS-CUA-0316 | | 16 | 8h/8a** |
| ITS-CUA-0324 | 3(6)* | 24 | 8h/16a** |
| ITS-CUA-0632 | 6(9)* | 32 | 16h/16a** |
| ITS-CUA-0640 | | 40 | 16h/24a** |
| ITS-CUA-0648 | 6(12)* | 48 | 16h/32a** |
| ITS-CUA-0656 | | 56 | 22h/32a/2ip*** |
| ITS-CUA-0664 | | 64 | 30h/32a*** |

h (hybrid) – ports to connect digital and analogue telephones;
A (analogue) – ports to connect analogue telephones only;
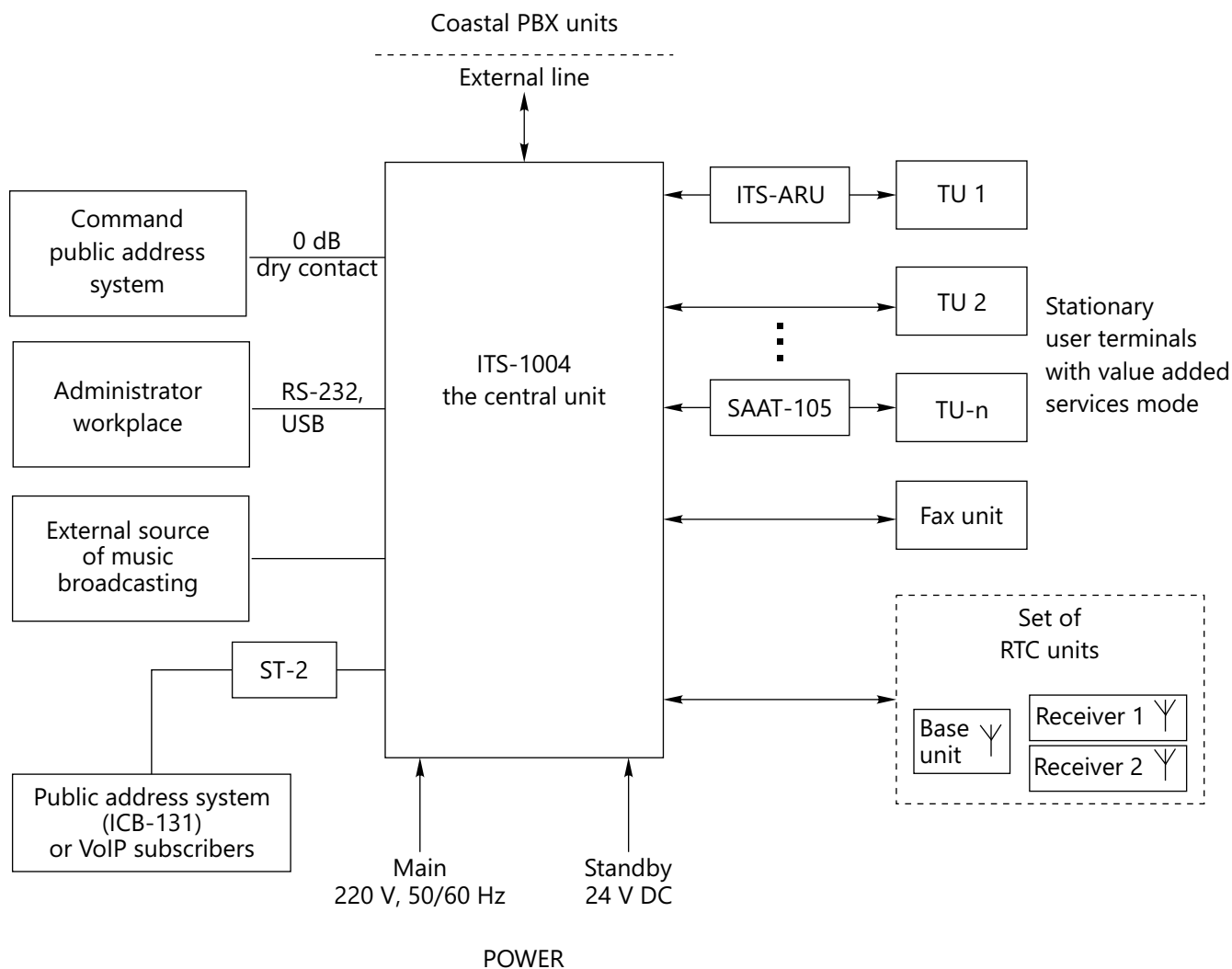ip (VoIP) – ports to connect VoIP telephones only.

Note:
* – number of external lines can be optionally expanded (6, 9 or 12);
** – analogue telephones can be connected to all hybrid ports except one, i.e. to 7 ports out of 8, 15 ports out of 16;
*** – two hybrid ports out of 32 are incapable to connect analogue telephone.

## Structural diagram of the system

Coastal PBX units

- - - - - - - - - - - - - - - - - - - - - - - - -

External line

| ITS-1004 the central unit | | ITS-ARU | → | TU 1 |

Command public address system

0 dB dry contact

Administrator workplace

RS-232, USB

ITS-1004 the central unit

TU 2

SAAT-105 → TU-n

Stationary user terminals with value added services mode

External source of music broadcasting

Fax unit

ST-2

Set of RTC units

Base unit

Receiver 1

Receiver 2

Public address system (ICB-131) or VoIP subscribers

Main 220 V, 50/60 Hz

Standby 24 V DC

POWER

## Peripheral units

| KP-RJ11 | A socket to connect to analogue user terminal |
|---|---|
| KP-1 | Junction box (to connect to coastal lines) |
| 5842/1 (Ex) | Light and sound unit, explosion-proof, for ExResistTel |
| 5842/2 (Ex) | Sound signaling unit, explosion-proof, for ExResistTel |
| 5802 (Ex) | Loudspeaker, explosion-proof, for ExResistTel |
| MT53H79E | A micro-telephone headset, explosion-proof, for ExResistTel set |

## System units

### CU ITS-1004 Central unit

The central unit of the analogue PBX provides basic and extra functions to the telephone communication service.

• PC based system administration
• Mechanical lock (key-lock) and door stop
• Digital and analogue (pushbutton and rotary dial) units with pulse or tone (frequency DTFM) dialing can be connected
• Telephone communication via radio channel (DECT station)
• Non-volatile memory
• Expandable and scalable architecture

*Technical characteristics:*
*Casing: metal (steel)*
*Power supply voltage:*
- *main: 220 V, (47-63Hz) and/or 24V DC*
- *standby: 24 V DC (automatic switchover)*
*Max power consumption:*
- *100 W (ITS-CUA-0308, ITS-CUA-0316, ITS-CUA-0324)*
- *200 W (ITS-CUA--0632, ITS-CUA-0640, ITS-CU-0648, ITS-CUA-0656, ITS-CUA-0664)*
*Main and standby power LEDs*
*Weight: 15 kg*
*Operating temperature: -15...+55°C*
*IP rating: IP22*
***Mounting type:***
*Wall*

### PT-SYSA
### Telephone unit (service)

Ensures digital telephone communication.

• BID LCD
• Function keys
• Headset can be connected
• Built-in loudspeaker allows for speakerphone mode
• Basic and expanded service options

*Technical characteristics:*
*Casing: plastic*
*Power supply: from a digital line*
*Max power consumption: 3W*
*Loudspeaker mode: +*
*Volume control of in-call, speaker and speakerphone: +*
*IP rating: IP20*
*Weight: 1.1 kg*
***Mounting type:***
*Bracket-mounted*

### PT-1A
### Stationary telephone unit

Ensures telephone communication with value added services in the PBX network.

• Volume control of in-call signal
• Call on hold
• Last number redial

*Technical characteristics:*
*Casing: plastic*
*Connection to network: analogue line (E1)*
*Power supply: from a telephone line*
*Max power consumption: 4 W*
*Dialing mode: tone/pulse*
*IP rating: IP20*
*Weight: 0.5 kg*
*Operating temperature: -15...+55 °C*
***Mounting type:***
*Wall-mounted*
*Bracket-mounted*

### PT-2A
### Stationary telephone unit

Ensures telephone communication with value added services in the PBX network.

• LCD (date, time, dialed number, automatic caller identification, integrated telephone book and call journal), microphone-off button, buttons to control in-call signal volume
• 10 programmable buttons
• Speakerphone mode

*Technical characteristics:*
*Casing: plastic*
*Power supply: from a telephone line*
*Connection to network: analogue line (E1)*
*Max power consumption: 4W*
*Dialing mode: tone/pulse*
*Operating temperature: -15...+55 °C*
*IP rating: IP20*
*Weight: 1.1 kg*
***Mounting type:***
*Wall-mounted*
*Bracket-mounted*

**Stationary telephone unit**

Ensures telephone communication with value added services in the PBX network.

• *Compact design (receiver and dialer are combined)*
• *Microphone-off button*

*Technical characteristics:*
*Casing: plastic*
*Power supply: from a telephone line*
*Connection to network: analogue line (E1)*
*Max power consumption: 1 W*
*Dialing mode: tone/pulse*
*Magnetic mounting for telephone receiver*
*Operating temperature: -15...+55 °C*
*IP rating: IP20*
*Weight: 0.3 kg*
**Mounting type:**
*Wall*

**PT-2AW**
**Waterproof telephone unit**

Ensures telephone communication with value added services in the PBX network.

• *Waterproof*
• *Protective shutter (case)*
• *Analogue line*
• *Telephone book for 10 users*
• *External in-call signaling unit SAAT-105 can be connected in line break.*

*Technical characteristics:*
*Casing: metal (aluminum alloy)*
*Power supply: from a telephone line*
*Connection to network: analogue line (E1)*
*Max power consumption: 2W*
*Operating temperature: -40...+55 °C*
*IP rating: IP56*
*Weight: 5.2 kg*
*Standard cable 0.45 m*
**Mounting type:**
*Wall*

**PT-CMA**
**Telephone unit**

Ensures telephone communication with value added services in the PBX network.

• *Microphone and speaker volume control can be provided independently*
• *Optional keyboard backlight (24V DC)*

*Technical characteristics:*
*Casing: aluminum*
*Power supply:*
- *from a telephone line (set);*
- *24V DC (backlight).*
*Backlight power supply: 18-36V DC*
*Connection to network: analogue line*
*Max power consumption: 1W*
*Colour: black*
*Operating temperature: -40...+55 °C*
*IP rating: IP56*
*Weight: 0.5 kg*
**Mounting type:**
*Console mounting (Flush) – PT-CMA-C*
*Wall – PT-CMA-W*

### PT-ADC
### Set of RTC units

The set includes one base station, one charger and one portable telephone receiver allowing for radio telephone communication with value added services (wireless).

- Communication is carried out by radio channel (DECT standard) between max 4 receivers of the base station provided the line is free (option of telephone communication).
- The receiver is waterproof, equipped with an LCD, loudspeaker mode, buttons lock from stray keystroke, telephone book for 120 numbers and buttons backlight.
- Base station can be installed on open deck.

**Technical characteristics:**
Receiver: plastic
Power supply:
- Base station
   main: 220V 50/60 Hz or 24V DC;
   standby: 24V DC
- Charger of receiver
   mains supply: 100-240V 50-60Hz through adapter
Max power consumption: 4.2W
Type of connection: analogue line (E1)
Radio channel:
- frequency: 1880-1900MHz
- standard: DECT/GAP
Range of communication: 50-200m
Operation time:
- waiting mode: 300 hours (w/o charging)
- talk mode: 14 hours (w/o charging)
IP rating:
- IP56 – user receiver PT-ADC and base unit BS/CH-ARTU
- IP20 – individual charger HB-ARTU and power supply unit PS-ARTU
**Mounting type:**
User receiver PT-ADC – portable
Individual charger HB-ARTU – desktop
Units PS-ARTU, BS/CH-ARTU – wall-mounted

### The explosion-proof subscriber terminal KNEx1 (Ex), ExResistTel (Ex)

Ensures telephone communication with value added services.

- For explosion-hazardous areas
- Volume control of incoming call and current conversation
- BID LCD and 5 function buttons
- Telephone book for 50 numbers
- Integrated function of noise suppression
- A steel-reinforced cord
- A loudspeaker, call signaling units, microphone headset can be connected (only ExResistTel)

**Accessories NEx1 (Ex), ExResistTel (Ex):**
Waterproof cabinet BO-2 (from ICB-131 set)
Heated cabinet BO-1H
Waterproof cabinet BTS2-BO (from BLTS-1006 set)

**Technical characteristics:**
Casing: plastic (polyester, reinforced)
Keypad: stainless steel
Power supply:
- the device – from a telephone line
- backlight – external 24V DC
Connection to network: analogue line (E1)
Max power consumption: 4W
Signal of built-in loudspeaker: 70 dB
Explosion proof rating:
- the device KNEx1:
   Ex e ib mb IIC T6 Gb
   Ex tb IIIC T80°C Db
   (protection rating «e», «m», «i», «t»)
- the device ExResistTel:
   According to TP TC 012/2011:
    1Ex e mb [ib] IIC T6/T5 Gb,
    Ex tb [ib] IIIC T 80°C/100°C Db
   according to IECEx:
    Ex e mb [ib] IIC T6/T5 Gb,
    Ex tb [ib] IIIC T 80°C/100°C Db
IP rating: IP66
Operating temperature: -40...+55 °C
Weight: 5.8 kg
**Mounting type:**
Wall

### PT-CMA The user terminal

Ensures telephone communication with value added services in the PBX network.

- Waterproof
- Compact design
- External headset can be connected
- Volume control of incoming call
- Control of backlight brightness
**Accessories:**
Headsets: HS-4, HS-4M, HS-5, HS-5M
Signaling units
Heated cabinet BO-1H
Waterproof cabinet BTS2-BO (from BLTS-1006 set)

**Technical characteristics:**
Casing: aluminum
Power supply: from a telephone line
Backlight power: 18-36V DC
Connection to network: analogue line
Max power consumption: 1W
Colour: black
Operating temperature: -40...+55 °C
IP rating: IP56
Weight: 0.5 kg
**Mounting type:**
Wall PT-CMA-W
Console PT-CMA-C

### PT-FAX fax unit

Ensures telephone and fax communication with value added services.

- *LCD (two-line, 16-symbol)*
- *Built-in calling number identification*
- *Loudspeaker mode*
- *Conversation loudness control*
- *Auto redial mode*
- *Automatic changeover: fax/telephone*
- *6 function buttons*
- *Telephone book for 100 numbers*

*Technical characteristics:*
*Casing: plastic*
*Power supply:*
- *220V 50-60Hz (or 24V from PS-ARTU)*
*Max power consumption: 110W*
*Received messages capacity (max):*
- *28 pages A4*
*Paper: thermal paper (roll)*
*Max size: 216 x 297 mm*
*Data baud rate: 9600 bit/s*
*Operating temperature: -15...+55 °C*
*IP rating: IP20*
*Weight: 2.7 kg*

*Mounting type:*
*Desktop*

### KP-16 junction box

Transfers trunk cables into single pair cables (max 16 users).

*Technical characteristics:*
*Total number of output terminals: 16*
*Max permissible current: 5 A*
*Cable cross section: up to 1.5 mm2*
*Operating temperature: -15...+55 °C*
*IP rating: IP22*
*Weight: 2 kg*

*Mounting type:*
*Wall*

### BPS-114-24 power supply unit

Ensures uninterruptable power supply of 10A and power supply voltage of 24V.
1 hour of autonomous power.

- *Sound, light and relay alarms*
- *Alarm of input power failure and critical charge level*
- *Double-colour four-segment LED, indicating residual charge of the storage battery*
- *Deep discharge protection*
- *Button of forced load connection to the storage battery (deep discharge protection mode is active)*

*Technical characteristics:*
*Casing: metal (steel)*
*Power: 110/220V, 50-60Hz*
*Output voltage:*
- *mains – 24V DC*
- *storage battery - 19.2...24.8V DC*
*Max load current: 12A*
*Max battery operation time under load 10 A:*
- *min 1 hour*
*Max power supply: 350W*
*Operating temperature: – 15...+55 °C*
*Weight: 16 kg*
*IP rating: IP22*

*Mounting type:*
*Wall*

### Audio recorder

The unit ensures recording of telephone conversations (by analogue line).

- *Displays incoming and outgoing numbers*
- *Records date, start time and length of conversation*
- *Records missed calls*
- *Event logging in case of operation failure*
- *Sound warning alarm: «recording on», «low battery», «memory full», «memory card failure»*
- *Installation in line break*
- *Recorded data can be listened on PC from the memory card*

*Technical characteristics:*
*Casing: metal (steel)*
*Power supply:*
- *telephone line (or AAA battery)*
*Format of recorded files: WAV*
*Memory card type: SDHC*
*Memory capacity: 4 Gb*
*Operating temperature: -15...+55 °C*
*IP rating: IP22*

*Mounting type:*
*Wall*

# Security CCTV system
## CCTV-2003/1



Approved by Russian Maritime and
River Register of Shipping

The security CCTV system provides remote surveillance solutions for any vessels.

## Features and advantages

- Active monitoring of the secured areas from a local control room.
- Audio and video data are recorded on the video server and remote client via Ethernet network.
- Data storage and playback.
- Motion detection.
- Light and sound alarms in case of equipment or power failure.
- Remote control of cameras, camera wipers and rotary devices via RS-485 and Ethernet.
- Data storage for 1 month.
- Records (log) keeping.
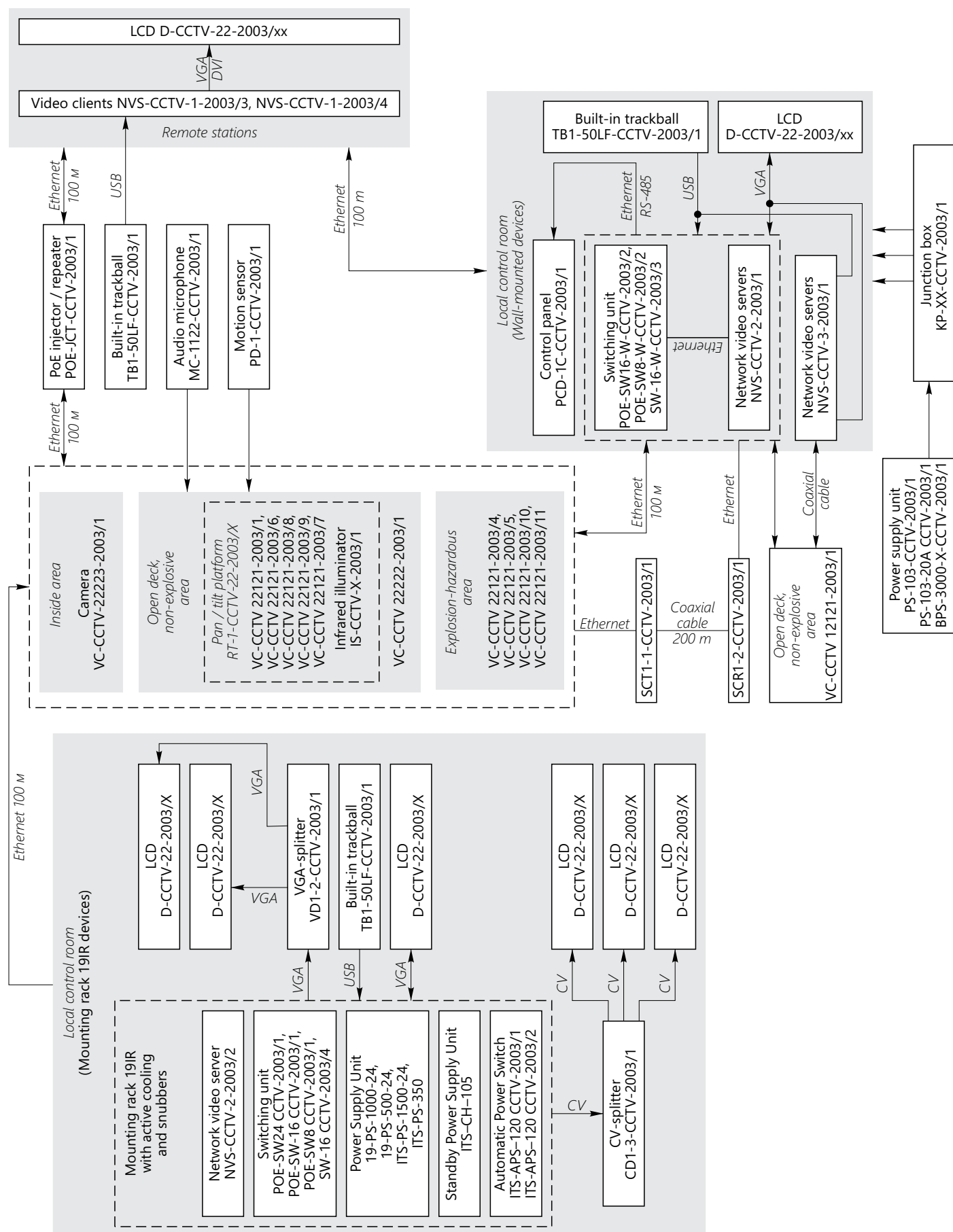- All settings are recovered from non-volatile memory in case of power loss.

**Video cameras provide:**
- Delivery of video and audio data via Ethernet network
- Automatic night surveillance mode
- External microphone can be connected
- External sensors (dry contact type) can be connected

## Structural diagram of the system

LCD D-CCTV-22-2003/xx

*VGA DVI*

Video clients NVS-CCTV-1-2003/3, NVS-CCTV-1-2003/4

*Remote stations*

*Ethernet 100 м*

*USB*

PoE injector / repeater POE-JCT-CCTV-2003/1

Built-in trackball TB1-50LF-CCTV-2003/1

Audio microphone MC-1122-CCTV-2003/1

Motion sensor PD-1-CCTV-2003/1

*Ethernet 100 м*

*Ethernet 100 m*

**Local control room (Wall-mounted devices)**

Built-in trackball TB1-50LF-CCTV-2003/1

LCD D-CCTV-22-2003/xx

*Ethernet* / *RS-485* / *USB* / *VGA*

Control panel PCD-1C-CCTV-2003/1

Switching unit POE-SW16-W-CCTV-2003/2, POE-SW8-W-CCTV-2003/2 SW-16-W-CCTV-2003/3

Network video servers NVS-CCTV-2-2003/1

Network video servers NVS-CCTV-3-2003/1

*Ethernet*

Junction box KP-XX-CCTV-2003/1

*Inside area*

Camera VC-CCTV-22223-2003/1

*Open deck, non-explosive area*

Pan / tilt platform RT-1-CCTV-22-2003/X

VC-CCTV 22121-2003/1, VC-CCTV 22121-2003/6, VC-CCTV 22121-2003/8, VC-CCTV 22121-2003/9, VC-CCTV 22121-2003/7

Infrared illuminator IS-CCTV-X-2003/1

VC-CCTV 22222-2003/1

*Explosion-hazardous area*

VC-CCTV 22121-2003/4, VC-CCTV 22121-2003/5, VC-CCTV 22121-2003/10, VC-CCTV 22121-2003/11

*Ethernet 100 М*

*Ethernet* / *Coaxial cable*

SCT1-1-CCTV-2003/1

*Ethernet* / *Coaxial cable 200 m*

SCR1-2-CCTV-2003/1

*Open deck, non-explosive area*

VC-CCTV 12121-2003/1

Power supply unit PS-103-CCTV-2003/1 PS-103-20A CCTV-2003/1 BPS-3000-X-CCTV-2003/1

*Ethernet 100 М*

**Local control room (Mounting rack 19IR devices)**

LCD D-CCTV-22-2003/X

LCD D-CCTV-22-2003/X

*VGA*

VGA-splitter VD1-2-CCTV-2003/1

*VGA*

Built-in trackball TB1-50LF-CCTV-2003/1

LCD D-CCTV-22-2003/X

LCD D-CCTV-22-2003/X

LCD D-CCTV-22-2003/X

LCD D-CCTV-22-2003/X

*VGA* / *USB* / *VGA* / *CV* / *CV* / *CV*

Mounting rack 19IR with active cooling and snubbers

Network video server NVS-CCTV-2-2003/2

Switching unit POE-SW24 CCTV-2003/1, POE-SW-16 CCTV-2003/1, POE-SW8 CCTV-2003/1, SW-16 CCTV-2003/4

Power Supply Unit 19-PS-1000-24, 19-PS-500-24, ITS-PS-1500-24, ITS-PS-350

Standby Power Supply Unit ITS-CH-105

Automatic Power Switch ITS-APS-120 CCTV-2003/1 ITS-APS-120 CCTV-2003/2

*CV*

CV-splitter CD1-3-CCTV-2003/1

## Network video servers and video clients

The video servers are designed to collect, process and store data from the video cameras (max 16 digital and analogue cameras).
AIO network video client provides displaying of 64 cameras, archive playback, records keeping, PTZ cameras control.
Max capacity of connected HD is 24 TB (uninterruptible recording from 16 cameras for 30 days).



**Technical specifications**

| Name | NVS-DVS-2-2003/1 | NVS-DVS-2-2003/2 | NVS-DVS-3-2003/1 | NVC-DVS-1-2003/3 | NVC-DVS-1-2003/4 |
|---|---|---|---|---|---|
| Type | Network video server | | | Network video client | |
| Power supply voltage | 19...36V DC | | | 90...264V, 50-60 Hz (optionally 19...36V DC) | |
| Number of analogue cameras | - | - | max 8 digital and/or analogue cameras | - | |
| Number of digital cameras | max 16 | max 16 | | max 64 | |
| Number and type of ports | 8 Ethernet 10/100Base-TX (with PoE support) 1 Ethernet 10/100/1000Base-T | 1 Ethernet 10/100/1000Base-T 16 (1Vp-p 75Ω), connector BNC | - | - | |
| PoE budget | 120 W | - | - | - | |
| Video recording | + (max resolution 1920 x 1080) | | | +* | |
| Video compression algorithm | H.264 | | | | |
| Audio recording | + | | | +* | |
| Audio compression algorithm | G.711 | | | | |
| Video outputs | VGA, HDMI, CVBS | | | VGA, HDMI, DVI-D | |
| HD capacity | max 2 x 12 TB | | max 2 x 6 TB | max 120 TB | |
| Operating temperature | −15...+55 ºC | | | | |
| IP rating | IP22 | IP20 | IP22 | IP22 | IP20 |
| Mounting type | Wall mounting | Rack mounting 19" | Wall mounting | Rack mounting 19" | Wall mounting |

* optionally

## Switching units

Ensure a switchover among connected video cameras, video servers, control consoles, etc. (max 16 units, depending on the modification). Power can be optionally supplied from PoE. Ethernet 10/100Base-TX and 10/100/1000Base-T/SFP standards are used for data transmission.


Network switch SW−16−W


Network switch POE−SW−16−W

**Technical specifications**

| Name | POE-SW8-DVS-2003/1 | POE-SW8-W-DVS-2003/2 | POE-SW16-DVS-2003/1 | POE-SW16-W-DVS-2003/2 | POE-SW24-DVS-2003/1 | SW16- DVS-2003/4 | SW16-W-DVS-2003/3 |
|---|---|---|---|---|---|---|---|
| Number of Ethernet ports (RJ-45) | 9 | | 16 | | 24 | 16 | |
| - incl. PoE | 8 | | 16 | | 24 | - | |
| Extra combined ports (RJ-45/SFP) | 0/1 | | 2/2 | | 0/4 | - | |
| PoE power (per channel) | 15.4W | | | | | - | |
| Total PoE budget | 125 W | | 246 W | | 193 W | - | |
| Power consumption | 134 W | | 302 W | | 239 W | 9,3 W | |
| Mounting type | Rack 19" | Wall | Rack 19" | Wall | Rack 19" | Rack 19" | Wall |
| Operating temperature | −15...+55 ºC | | | | | | |
| IP rating | IP20 | IP22 | IP20 | IP22 | IP20 | IP20 | IP22 |

## Video cameras

| Name | Parameters | | | | | | | | | | Focal length, mm | Angle of view (horizontal, dg) | IP rating | Operating temperature |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Zoom | PTZ | Ex | IR | T | SS | CW | LW | F | PoE | | | | |
| VC-CCTV-22121-2003/1 | | | | * | | * | | | * | * | 2.8/3.6/6/8/12 | 130/105/65/45/28 | IP66 | -60...+55 °C |
| VC-CCTV-22121-2003/4 | | | * | | | | | | * | | | | | -40...+55 °C |
| VC-CCTV-22121-2003/5 | | | * | * | | * | | | * | | | | | |
| VC-CCTV-22121-2003/6 | * | | | * | | * | | | | | 6-180 | 56 – 3 | | -60...+55 °C |
| VC-CCTV-22121-2003/7 | * | | | * | | * | | * | | | | | | -40...+55 °C |
| VC-CCTV-22121-2003/8 | | | | | * | | | | * | | 13/19/35/60/75 | 44/32/17/10/8.6 | | |
| VC-CCTV-22121-2003/9 | * | | | | * | * | | | * | | 6-180 | 56 – 3 | | |
| VC-CCTV-22121-2003/10 | * | | * | * | | | | | | | | | | |
| VC-CCTV-22121-2003/11 | * | | * | * | | * | | | | | | | | |
| VC-CCTV-22222-2003/1 | * | * | | * | | | * | | | | 4,7-94 | 61.4–2.9 | | |
| VC-CCTV-22223-2003/1 | | | | * | | | | | | * | 2.8...12 | 130...28 | IP44 | -15...+55 °C |
| VC-CCTV-12121-2003/1 | | | | * | | * | | | * | | 2.8/3.6/6/8/12 | 130/105/65/45/28 | IP66 | -60...+55 °C |
| VC-CCTV-12223-2003/1 | | | | * | | | | | | | 2.8...12 | 130...28 | IP44 | -15...+55 °C |

Notes:
Zoom – camera with adjustable zoom;
PTZ - Pan/Tilt/Zoom camera with remote control;
Ex – Explosion-proof camera;
IR– infrared camera;
T - thermal imaging camera;

SS - stainless steel casing;
CW – camera lens wipers (washer tank is not delivered);
LW – lens washer and wipers;
F - fixed angle of view, pre-defined at order (except varifocal);
PoE – power supply from network.

## Digital video cameras
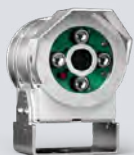
### VC-DVS-22121-2003/1

Fixed lens video camera is made of stainless steel. Depending on the modification, the camera can be equipped with a built-in microphone; for installation on open decks (IP66).

### VC-DVS-22223-2003/1

Dome varifocal lens video camera. Depending on the modification, the camera can be equipped with a built-in microphone; for installation in a dry environment (IP44).

### VC-DVS-22121-2003/4

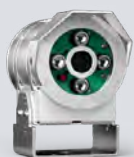Bullet colour fixed lens video camera is enclosed in aluminum explosion-proof casing; for installation on open deck (IP66).

### VC-DVS-22121-2003/5

Bullet colour fixed lens video camera is enclosed in steel explosion-proof casing; for installation on open deck (IP66).

### VC-DVS-22121-2003/6

Colour varifocal lens video camera is made of stainless steel; for installation on open decks (IP66).

### VC-DVS-22121-2003/7

Colour varifocal lens video camera is made of stainless steel and equipped with lens washer and wipers; for installation on open deck (IP66).

### VC-DVS-22222-2003/1

PTZ dome varifocal lens video camera is equipped with lens wipers. The camera can be controlled from the PCD-1C-CCTV-2003/1 remote control or video server via Ethernet network; for installation on open deck (IP66).

**Thermal imaging cameras**



### VC-DVS-22121-2003/8

The camera is used in low light conditions. Fixed focus is provided depending on the modification; for installation on open deck (IP66).

### VC-DVS-22121-2003/9

Bullet colour video camera. Combination of varifocal lens and thermal imaging is a perfect solution for low light conditions. The camera is made of stainless steel; for installation on open deck (IP66).



### VC-DVS-22121-2003/10

Bullet varifocal lens video camera is enclosed in aluminum explosion-proof casing; for installation on open decks (IP66).



### VC-DVS-22121-2003/11

Bullet varifocal lens video camera is enclosed in aluminum explosion-proof casing; for installation on open deck (IP66).

**Analogue video cameras**



### VC-DVS-12121-2003/1

Colour fixed lens video camera is made of stainless steel; for installation on open decks (IP66).



### VC-DVS-12223-2003/1

Dome colour varifocal lens video camera; for installation in a dry environment (IP44).

## Power supply units / chargers

Technical characteristics

| Name | ITS-PS-1500-24-DVS-2003/1 | ITS-PS-1000-24-DVS-2003/1 | ITS-PS-500-24 DVS-2003/1 | ITS-PS-350-DVS-2003/1 | BPS-114-24-DVS-2003/1 | BPS-3000-1-DVS-2003/1 | BPS-3000-2-DVS-2003/1 | BPS-3000-3-DVS-2003/1 | PS-103-DVS-2003/1 |
|---|---|---|---|---|---|---|---|---|---|
| Main power supply | 50Hz, 220V | | | | | | | | |
| Standby power supply | - | 24V DC | | Built-in storage battery | | 24V DC (external storage battery) | | | 24V DC |
| Automatic charge of external storage battery | - | | | | | + | | | - |
| Rated power, W | 1500 | 800 | 500 | 330 | | 1000 | 2000 | 3000 | 192 |
| Storage battery capacity | - | | | 18 Ah | | - | | | |
| Weight, kg | 8,5 | | | | 16 | 29 | | | 5 |
| Operating temperature | -15...+55 °C | | | | | | | | |
| IP rating | IP20 | | | | | IP22 | | | |
| Mounting type | Rack 19" | | | | | Wall | | | |

### Regulated power supply unit ITS-PS-1500-24-DVS-2003/1

The regulated PSU operates with single-phase mains of 50-60 Hz, 110/220V AC (rated power 1500W).

The unit provides regulated power 24V DC to 19" rack. It has galvanic isolation from power mains and load, and current overload protection.



### Uninterruptible power supply unit ITS-PS-350-CCTV-2003/1

The uninterruptible PSU operates with single-phase mains of 50-60Hz 110/220V AC. The unit is equipped with a built-in storage battery, where an automatic switchover occurs in case of main power failure.

The unit provides uninterruptible power (24V DC) to rack-integrated devices. Galvanic isolation from power mains and load, current overload protection.
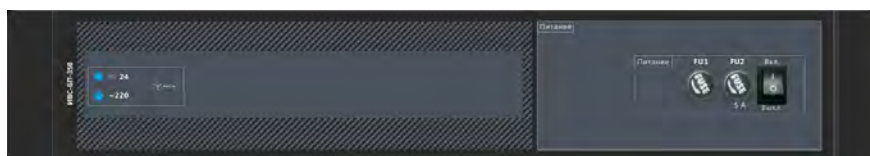


### Regulated power supply unit ITS-PS-1000-24-CCTV-2003/1, ITS-PS-500-24-CCTV-2003/1

Regulated PSUs operate with single-phase mains of 50-60 Hz 110/220V AC. The units are equipped with a standby power input (24V DC), where a switchover occurs automatically in case of the main power supply failure.

The units provide uninterruptible power supply to rack-integrated devices (regulated power 24V DC). Galvanic isolation from power mains and load, current overload protection.
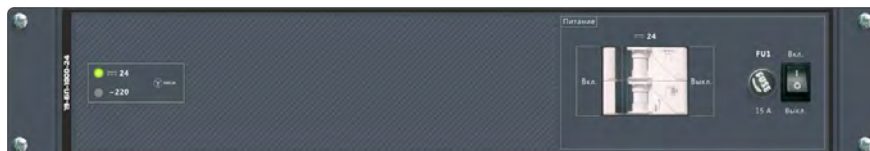
### Automatic power transfer switch
### ITS-APS-120-24-CCTV-2003/1, ITS-APS-120-220-CCTV-2003/2

Ensures an automatic main/standby switchover (220V 50/60Hz or 24V DC); splits input power to 6 outputs.

• *Indication of input/output power*
• *Overload protection of input mains; overload and short circuit protection of output mains*

*Technical characteristics:*
*Switching voltage: 220V, 50/60Hz or 24V DC*
*Number of outputs: 6*
*Max switching current:*
*– 220 V 15 A;*
*– 24 V 60 A*
*Max current per channel: 15 A*
*Weight: 5.2 kg*
*Operating temperature: -15...+55 °C.*
*IP rating: IP20*
***Mounting type:***
*Rack mounting 19″*

---

### Charging unit ITS-CH-105-CCTV-2003/1

The unit charges external storage battery (24V, 200 Ah) and supplies rack devices from the chargeable storage battery.

*Technical characteristics:*
*Power supply voltage:*
*- 110 V / 220 V, 50/60 Hz*
*Charging current and voltage:*
*- 1...20A, 9-30V*
*Parameters of charging storage battery 24V:*
*- 200Ah*
*Weight: 8.5 kg*
*Operating temperature: -15...+55°C*
*IP rating: IP20*
***Mounting type:***
*Rack mounting 19″*

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### Uninterruptible power supply unit BPS-114-24-CCTV-2003/1

The unit operates with single-phase mains of 50-60Hz 110/220V AC. The unit is equipped with a built-in storage battery, where a switchover occurs automatically in case of a main power supply failure.

BPS-114-24-CCTV-2003/1 provides uninterruptible power supply to the system units (24V DC). Galvanic isolation from power mains and load, current overload protection.

### Power supply / charger BPS-3000-X-CCTV-2003/1 type

The power supply unit / charger operates with single-phase mains 50-60Hz 110/220V AC and 24V DC. Depending on the modification, max rated power is 3000W. Combined with power supply, the unit charges connected storage batteries. In case of a main power failure the unit switches the load to the storage battery automatically. The BPS-3000-X-CCTV-2003/1 provides uninterruptible power supply to the system units (24V DC).

Galvanic isolation from power mains and load, current overload protection are provided.

### Power supply unit PS-103-CCTV-2003/1

The power supply unit operates with single-phase mains of 50-60Hz 110/220V AC, rated power 192W. The unit provides unregulated voltage of 24V DC to various system units.

The PS-103-CCTV-2003/1 is equipped with a standby power input (24V DC), where a switchover occurs automatically in case of a main power supply failure.

Galvanic isolation from power mains and load, current overload protection are provided.

## Displays

**Colour LCD D-CCTV-22-2003/X type**

The displays have various diagonals (10" - 46") and aspect ratios. A backlight dimmer is located on the front panel. Depending on the modification, the display can operate with 12 / 24V DC and 110/220V AC.

Options: built-in speakers, touch panels, different IP rating of the front panel (IP 56), optical bonding. Galvanic isolation from power mains.



| Technical characteristics | | | | | | |
|---|---|---|---|---|---|---|
| Display type | Diagonal | Viewable area, mm | Resolution | Weight, kg | Power consumption, W | IP rating |
| D-CCTV- 22-2003/10 | 10.4"(4:3) | 210 x 157 | 1024 x 768 | 8.5 | 16 | IP22 / IP56 (option) / IP00 (if delivered w/o glass/touch screen) – front panel, IP22 – other surfaces |
| D-CCTV-22-2003/12 | 12.1"(4:3) | 246 x 184 | 1024 x 768 | 9.5 | 20 | |
| D-CCTV-22-2003/15 | 15"(4:3) | 304 x 228 | 1024 x 768 | 10 | 20 | |
| D-CCTV-22-2003/17 | 17"(5:4) | 337 x 270 | 1280 x 1024 | 12.2 | 40 | |
| D-CCTV-22-2003/19 | 19"(5:4) | 376 x 301 | 1280 x 1024 | 13.1 | 40 | |
| D-CCTV-22-2003/21 | 21.3"(4:3) | 432 x 324 | 1600 x 1200 | 15 | 40 | |
| D-CCTV-22-2003/211 | 21.5"(16:9) | 476 x 268 | 1920 x 1080 | 15 | 50 | |
| D-CCTV-22-2003/231 | 23"(16:9) | 509 x 286 | 1920 x 1080 | 18 | 50 | |
| D-CCTV-22-2003/24 | 24"(16:10) | 518 x 324 | 1920 x 1080 | 18 | 50 | |
| D-CCTV-22-2003/27 | 27"(16:9) | 597 x 336 | 1920 x 1080 | 20 | 50 | |
| D-CCTV-22-2003/32 | 32"(16:9) | 698 x 392 | 1920 x 1080 | 25 | 80 | |
| D-CCTV-22-2003/42 | 42"(16:9) | 930 x 523 | 1920 x 1080 | 42 | 80 | |
| D-CCTV-22-2003/46 | 46"(16:9) | 1018 x 572 | 1920 x 1080 | 47.7 | 100 | |

## Peripheral units



### PTZ cameras control console
### PCD-1C-CCTV-2003/1

The unit ensures remote control of PT platforms and varifocal lens cameras via Ethernet or RS-485. Depending on the modification, the unit can be console or wall-mounted.

*Technical characteristics:*
*Power supply voltage: 19–36V DC*
*Power consumption: 6W*
*Interface: RS-485, Ethernet.*
*Operating temperature: − 15...+55°C*
*IP rating: IP22*
*Weight: 0.8 kg*
***Mounting type:***
*Console*
*Wall*

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### Pan / tilt platform RT-1-CCTV-22-2003/1

changes tilt angle of video camera in two planes, using the remote control PCD-1C-CCTV-2003/1 by RS-485 interface. For installation on open decks (IP66).

*Technical characteristics:*
*Power supply voltage: 19–36V DC*
*Number of scan planes: 2*
*Pan rotation angle: 0..355° (endless motion)*
*Tilt rotation angle: -10°...80°*
*Pan speed: 7.5 °/sec*
*Tilt speed: 6 °/sec*
*Power consumption: 60W*
*Operating temperature: −40...+55°C*
*IP rating: IP66*
*Weight: 4 kg*
*Load equivalent: 4 kg*
***Mounting type:***
*Wall*

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### RT-CCTV-22-2003/2

The pan and tilt platform changes tilt angle of video camera in two planes, using control console PCD-1C-CCTV-2003/1 by interface RS-485. Increased load equivalent; for installation on open decks (IP66).

*Technical characteristics:*
*Power supply voltage: 19–36V DC*
*Number of scan planes: 2*
*Pan rotation angle: 0..359°*
*Tilt angle: - 10°...80°*
*Pan speed: 7.5 °/sec*
*Tilt speed: 6 °/sec*
*Power consumption: 120W*
*Operating temperature: −40...+55°C*
*IP rating: IP66*
*Weight: 8,6 kg;*
*Load equivalent: 14 kg*
***Mounting type:***
*Wall*

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### The VGA-splitter VD1-2-CCTV-2003/1

amplifies and splits input VGA signal into two outputs.

*Technical characteristics:*
*Inputs: 1 x VGA*
*Outputs: 2 x VGA*
*Max resolution: 1600×1200*
*Power supply voltage: 19–36V DC*
*Power consumption: 1W*
*Operating temperature: − 15...+55°C*
*IP rating: IP22*
*Weight: 1 kg*
***Mounting type:***
*Wall*

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### The CV-splitter CD1-3-CCTV-2003/1

The unit amplifies and splits CV signal into three outputs.

*Technical characteristics:*
*Inputs: 1 x CV*
*Outputs: 3 x CV*
*Bandwidth: -3 dB 520MHz*
*Power supply voltage: 19–36 V DC*
*Operating temperature: − 15...+55°C*
*IP rating: IP22*
*Weight: 1 kg*
***Mounting type:***
*Wall*

### Infrared illuminator IS-CCTV-X-2003/1 type

Infrared band is invisible to human eye ensuring discreet surveillance. The IS-CCTV-X-2003/1 type is a perfect solution for illumination of the secured areas in night time. The IR searchlight switches on automatically depending on the lighting conditions. For installation on open decks (IP66).

*Technical characteristics:*
*Illumination range:*
*- 240m – IS-CCTV-3-2003/1;*
*- 100m – IS-CCTV-2-2003/1;*
*- 70m – IS-CCTV-1-2003/1.*
*Emission wave length: 850nm*
*Power supply voltage: 19–36V DC*
*Power consumption: 32W*
*Operating temperature: −40...+55°C*
*IP rating: IP66*
*Weight: 2.3 kg*
***Mounting type:***
*Wall*

### Motion sensor PD-1-CCTV-2003/1

The sensor detects motion within the secured areas. Combined type of detection (IR and microwave emission) reduces the number of false alarms.

*Technical characteristics:*
*Detection type: IR + microwave*
*Detection range: 15m*
*Power supply voltage: 10–36V DC*
*Power consumption: 1W*
*Operating temperature: −40...+55°C*
*IP rating: IP66*
*Weight: 0.5 kg*
***Mounting type:***
*Wall*

### Built-in trackball TB1-50LF-CCTV-2003/1

The trackball is a pointing device with laser sensor, connected to the video server by USB interface.

*Technical characteristics:*
*Power supply voltage:*
*- 5V DC (from USB port)*
*Power consumption: 1 W*
*Operating temperature: − 15...+55 °C*
*IP rating:*
*- IP66 (front panel);*
*- IP20 (back panel).*
*Weight: 0.15 kg*
***Mounting type:***
*Console*
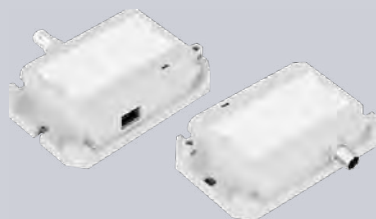
### The signal converters SC1-X-CCTV-2003/1 type

The signal converters transmit Ethernet signal by coaxial cable. The units can be used only in receiver-transmitter combination.

*Technical characteristics:*
*Power supply voltage: 48V POE*
*Transmitter: SCT1-1-CCTV-2003/1*
*Receiver: SCR1-2-CCTV-2003/1*
*Power consumption: 1W*
*Line length: 200m*
*Operating temperature: −40...+55 °C*
*IP rating: IP56*
*Weight: 0.6 kg*
***Mounting type:***
*Wall*

### Camera lens wiper CW1-1-CCTV-2003/1

cleans camera lens from dust and dirt; recommended for use with washer tank WT1-1-CCTV-2003/1.

*Technical characteristics:*
*Casing: polypropylene*
*Wiper: stainless steel*
*Power consumption: 7W*
*Operating temperature: −40...+55 °C*
*Weight: 0.7 kg*
*IP rating: IP66*

### Washer tank WT1-1-CCTV-2003/1

stores and sprays liquid to the camera lens; recommended for use with the wiper CW1-1-CCTV-2003/1 for the best results.

*Technical characteristics:*
*Power supply voltage: 19–36V DC*
*Power consumption: 30W*
*Max volume: 5 l*
*Hose length: 5m*
*Operating temperature: −40...+55 °C*
*Weight: 3.8 kg*
*IP rating: IP66*
*Casing: polypropylene*
*Mounting type:*
*Wall*

### Audio microphone MC-1122-CCTV-2003/1

converts sound waves into electrical signals. The unit is connected to the video camera. For installation on open decks (IP66).

*Technical characteristics:*
*Power supply voltage: 12V (from camera)*
*Power consumption: 0.5W*
*Acoustic coverage area: 7m*
*Operating temperature: −40...+55 °C*
*Weight: 0.5 kg*
*IP rating: IP66*
*Mounting type:*
*Wall*

### Junction box KP-124XX-CCTV-2003/1 type

distributes power to the system units. The power supply filters can be optionally provided. For installation on open decks (IP56).

*Technical characteristics:*
*Number of terminals: 10*
*Number of load terminals: 9*
*Modifications:*
*- KP-124WF-CCTV-2003/1 – with power filters;*
*- KP-124WF-CCTV-2003/1 – w/o filters:*
*Max voltage: 250 V*
*Max current: 20 A*
*Operating temperature: −40...+55 °C*
*Weight: 1.4 kg*
*IP rating: IP56*
*Mounting type:*
*Wall*

### Junction box KP-X-CCTV-2003/Y type

The junction box provides a connection of 2 to 6 units to the power bus RS-485, depending on the modification. For installation on open decks (IP56).

*Technical characteristics:*
*Number of outputs:*
*- 2 - KP-2-CCTV-2003/2;*
*- 6 - KP-6-CCTV-2003/3.*
*Switching current:*
*- 15 A – power mains;*
*- 2 A – signaling units circuit.*
*Operating temperature: −40...+55 °C*
*IP rating: IP56*
*Mounting type:*
*Wall*

### PoE injector / repeater POE-JCT-CCTV-2003/1

splits Ethernet line into 4 outputs and provides power supply from PoE network. The unit can be additionally used to expand range of Ethernet for 100 m; requires 24 V DC. For installation on open deck (IP56).

*Technical characteristics:*
*Power supply voltage: 24 V DC*
*Ports:*
*- 1 x input;*
*- 4 x outputs 10/100Base-TX.*
*Operating temperature: −40...+55 °C*
*Weight: 2.17 kg*
*IP rating: IP56*
*Mounting type:*
*Wall*

# Hospital and refrigerator alarm system
## SCS-1002



System SCS-1002 is designed for application on sea and river-going ships. It supplies in-call signals to watch officer station from button controllers, located in refrigerator machines rooms, ship's hospital and other areas where restricted mobility or life threat occur.

The System can be used for other purposes where remote alarm signals are required.

Approved by Russian Maritime Register of Shipping

## System features

- Signal from remote calling station is supplied immediately, displaying the name of station as well;
- call alarm is repeated on the duplicate device;
- reception and control device can display up to 32 remote stations at the same time;
- sound signal of alarm can be muted from control or duplicate devices;
- call alarm can be reset from the call site or reception and control device;
- connection with remote button controllers can be displayed on reception and control device and duplicate device;
- warning signal is supplied in case of signal circuit failure;
- alarm signal is duplicated by external light, sound and sound-light devices.

## Structural diagram of the system
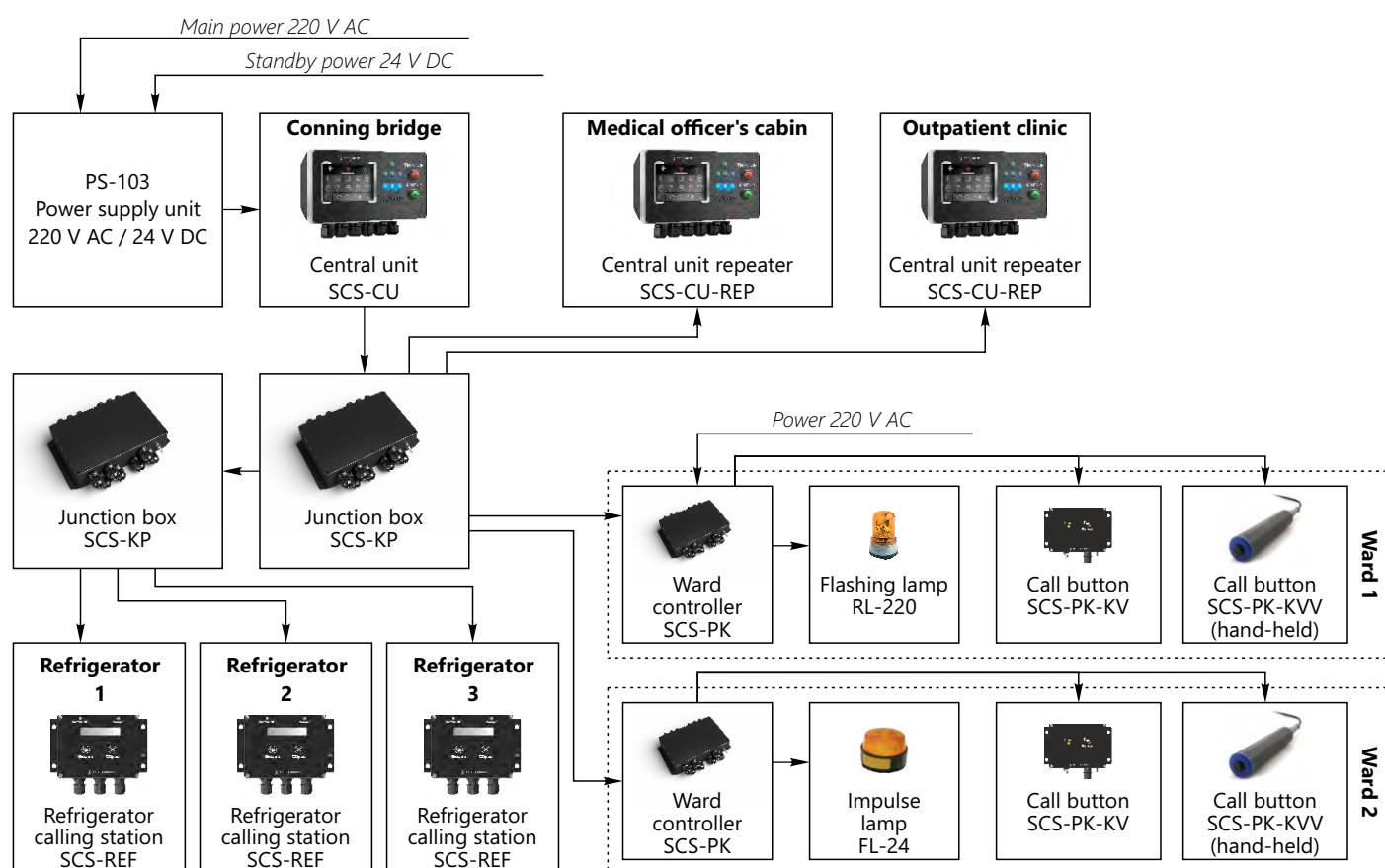
## Reception and control devices

### Central unit SCS-CU

Provides sound and light signaling to inform operator about alert buttons actuation and area, where signal is supplied from.

• Indication of peripheral devices status
• Sound alarm can be temporarily muted still providing light alarm
• External signaling devices can be connected
• Brightness control
• Remote stations power control

**Technical characteristics:**
Power supply voltage: 18...36 VDC
Max power consumption: 5 W
Operating temperature: -15...+55 °C
IP rating: IP22
Weight: 1.5 kg

**Mounting type:**
Wall
Console

---

### Central unit repeater SCS-CU-REP

Provides sound and light signaling to inform operator about alert buttons actuation and area, where signal is received from. If alarm signal wasn't responded by central unit operator, the repeater provides duplication with the delay (configured).

• Indication of connected calling stations
• Sound alarm can be temporarily muted still providing light alarm
• External signaling devices can be connected
• Brightness control

**Technical characteristics:**
Power supply voltage: 18..36 VDC
Max power consumption: 5 W
Operating temperature: -15...+55 °C
IP rating: IP22
Weight: 1.5 kg

**Mounting type:**
Wall
Console

---

### Reception and control device SCS-SPS-10 / SCS-SPS-5

Provides sound and light signaling to inform operator about alert buttons actuation and area, where signal is received from. The device can be applied as a remote station.

• Sound alarm can be temporarily muted still providing light alarm
• Connection of external signaling devices
• Brightness control

**Technical characteristics:**
Power supply voltage: 18..36 VDC
Power consumption: 3 W
Number of controlled call stations: up to 10/5
Operating temperature: -15...+55 °C
IP rating: IP22
Weight: 1.6 kg

**Mounting type:**
Wall
Console

---

### Duty officer station SCS-PW

Provides sound and light signaling to inform operator about actuated call button.

• Alarm is supplied if connection with call button is failed
• Sound alarm can be temporarily muted still providing light alarm
• Connection of external signaling devices

**Technical characteristics:**
Power supply voltage: 18...36 VDC
Max power consumption: 1 W
Number of controlled call buttons: 1
IP rating: IP56
Operating temperature: -40...+55°C
Weight: 0.8 kg

**Mounting type:**
Wall

# Hospital and refrigerator alarm system
## SCS-1002

## Remote calling stations

### Ward controller SCS-PK

The device is designed to process and transmit signals received from call buttons to reception and control device.

• Indication of reception and control device connection
• Connection of up to 2 buttons, line operability control
• Connection of external signaling devices

*Technical characteristics:*
*Power supply voltage: 18..36 VDC*
*Power consumption: 2 W*
*Operating temperature: -15...+55 °C*
*IP rating: IP22*
*Weight: 0.7 kg*

*Mounting type:*
*Wall*
*Console*

### Refrigerator calling station SCS-REF

The device is designed to transmit call signals to reception and control device. For application in refrigerating machines rooms.

• Indication of reception and control device connection
• Equipped with a built-in call button
• External signaling devices can be connected

*Technical characteristics:*
*Power supply voltage: 18..36 VDC*
*Power consumption: 2 W*
*Operating temperature: -40...+55 °C*
*IP rating: IP56*
*Weight: 0.7 kg*

*Mounting type:*
*Wall*
*Console*

## Call buttons

### Call button SCS-PK-KV

Supplies a call to remote calling station.

• Applied in ship's hospital
• Equipped with a connector for external button

*Technical characteristics:*
*Max power consumption: 1 W*
*Operating temperature: -15...+55°C.*
*IP rating: IP22*
*Weight: 0.7 kg*

*Mounting type:*
*Wall*

### Call button SCS-PK-KVV (hand-held)

The button supplies a remote call; intended to be connected to SCS-PK-KV.

• Applied for bed patients care
• Equipped with a 3m cable with connector (quick disconnect type)

*Technical characteristics:*
*Power consumption: 1 W*
*Standard cable length: 3 m*
*Operating temperature: -15...+55 °C*
*IP rating: IP56*
*Weight: 0.4 kg*

*Mounting type:*
*Portable/hand-held (carried in hand)*

### Call button SCS-PK-KS

Duplicates a signal from a call button, until a call is reset by built-in button.

• Used only in combination with external call button
• External signaling devices can be connected

*Technical characteristics:*
*Power consumption: 1 W*
*Operating temperature: -15...+55°C.*
*IP rating: IP22*
*Weight: 0.7 kg*

*Mounting type:*
*Wall*

### Call button SCS-KVT

The button supplies a call to remote calling station; made of heatproof materials.

• *Can be applied under high ambient temperature and humidity*

*Technical characteristics:*
*Power consumption: 1 W*
*Operating temperature: -40...+125°C.*
*IP protection rating: IP56*
*Weight: 0.6 kg*

*Mounting type:*
*Wall*

### Call button SCS-PV-SB

The button supplies a call to remote calling station, until call is reset by built-in button.

• *External signaling devices can be connected*
• *Can be applied under high ambient temperature and humidity*

*Technical characteristics:*
*Power consumption: 1 W*
*Operating temperature: -40...+55°C.*
*IP protection rating: IP56*
*Weight: 0.6 kg*

*Mounting type:*
*Wall*

### Call button SCS-KVS

The button initiates remote external alarm annunciators; self-contained.

• *Equipped with an indicator of alarm actuation signal*

*Technical characteristics:*
*Max switching current: 10 A*
*Operating temperature: -40...+55°C.*
*IP protection rating: IP56*
*Weight: 0.8 kg*

*Mounting type:*
*Wall*

## Peripheral equipment
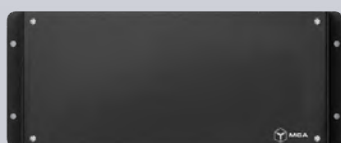
### Junction boxes
### SCS-KP-2 / SCS-KP-6

The devices provide switching of power supply and control signals between remote calling stations and reception and control devices.

*Technical characteristics:*
*Number of inputs: 1*
*Number of outputs: 2/6*
*Operating temperature:*
*-40...+55 °C/ -15...+55 °C*
*IP protection rating: IP56/ IP22*
*Weight: 1.4 kg/1.25 kg*

*Mounting type:*
*Wall*

### Relay units
### RB-139-24 / RB-139-220

Controls external light and sound alarm and provide switching of external power supply to connected devices.

*Technical characteristics:*
*Switching voltage:*
*- 220 V, 50-60 Hz for RB-139-220*
*- 24 VDC for RB-139-24*
*Switching current: max 10 A*
*Number of outputs terminals: 2*
*IP rating: IP56*
*Weight: 1.5 kg*
*Working temperature: -40°...+55 °C*

*Mounting type:*
*Wall*

# Antenna heating system
## AHS-1022



AHS-1022 is designed for low temperature protection and automatic heating of antennas exposed on open deck. Antenna heating unit (AHU) is an insulated radome with built-in (inside) heaters and temperature sensors.

Main / standby power switching is provided by control switchboard of antenna heating system (CSAHS) and additional junction boxes KP-124PW.

Temperature settings and control inside each radome are carried our by multipurpose digital repeater DR-209M with digital interface RS-422 (max. 3 units). DR-209M can be mounted directly into the control switchboard or have other locations (desk-top / flush mounting).

To connect more than 3 heating units to one repeater DR-209M, use multichannel transceiver MT-158 (ensures connection of max. 7 heating units). Therefore, totally 21 antennas can be heated by the System.

## Features and advantages

- Control, settings and status of each heating unit are displayed on DR-209M with touch screen.
- Two feeders 220 V ensure high reliability of the system power supply; excess power of two independent heaters provides for uninterruptible heating of each antenna. Two sensors allow for temperature monitoring inside the radome.
- Small size of units and open architecture allow for expanding the system at any stage of design.
- Testing of AHU operation can be provided manually and automatically (on schedule or during operation).
- The System allows for heating of 21 antennas.

| Main specifications | |
|---|---|
| Main / standby power supply | 220V±10%, 50/60Hz |
| Operating temperature for units mounted on open deck | -52...+55 °C |
| Protection degree for units mounted on open deck | IP56 |

## Structural diagram of the system

AHU(1) AHU(2) AHU(3) AHU(4) AHU(5) AHU(6) AHU(7)

AHU power (220 V)

RS-422

Data exchange with AHU by RS-422

AHU power (220 V)    AHU power (220 V)

RS-422

KP-124PW(1)    KP-124PW(2)    KP-124PW(3)

MT-158(1)    RS-422    DR-209M

RS-422

Max 7 AHU can be connected (RS-422)

MT-158(2)

Power output 220 V (1)    Power output 220 V (2)    Power output 220 V (3)

RS-422

Max 7 AHU can be connected (RS-422)

MT-158(3)

Output Power 24 V    Output Power 24 V

CSAHS

DR-209M

Power output 24 V

PS-103

1
2
2
3

KP-124PW

1  2

Power input 220V (main)    Power input 220 V (standby)

Input power 220 V

Location of DR-209M depends on order

Number of multichannel transceivers MT-158 depends on number of antennas (max. 7 heating units per multichannel transceiver, max. 21 heating units per 3 multichannel transceivers).

If more than 3 consumers are connected to PS-103, one output is connected to junction box KP-124PW.

## Microphones

### The M-1 microphone

Flexible gooseneck microphone for microphone panels and control consoles.

*Technical characteristics:*
*Type: electret*
*IP rating: IP22*
*Weight: 0.115 kg*
*Operating temperature: -15...+55°C*

### The M-2 microphone

A PTT microphone to provide inter-communication; operates with the microphone panels and control consoles.

*Technical characteristics:*
*Type: dynamic*
*Weight: 0.225 kg*
*Cable length: 1.5 m*
*IP rating: IP22*
*Operating temperature: -15...+55 °C*

*Mounting type:*
*Hinge (on a clip)*

### The M-3-W, M-3-10-W microphone

A PTT hand microphone, waterproof, to provide intercommunication. Operates with the waterproof microphone panels.

*Technical characteristics:*
*Type: dynamic*
*Weight: 0.3 kg*
*IP rating: IP56*
*Cable length: 3 /10 m*
*Operating temperature: -40...+55 °C*

*Mounting type:*
*Hinge (on a clip)*

## Telephone receivers

### The PH-1 – W/S telephone receiver

External intercom unit of public address system; stretched cord length – 3 m (with connectors: PB – splashproof and P – waterproof types) (IP56).

• *Connection to substations*
• *Applied with the following substations:*
  *S-2-WP, S2-x-WP (receiver holder K-TT1-WP is required);*
  *PHS-1, PHS-3 (receiver holder K-TT1-W is required).*

*Technical characteristics:*
*Operating bandwidth: 150-7000 Hz*
*Operating temperature: -40...+55 °C*
*Weight:*
*- 0.6 kg – PH-1-S*
*- 0.9 kg – PH-1-W*
*Cord length: 1.2 m*
*IP rating: IP56*

*Mounting type:*
*Console-mounted (a holder PH-1-S)*
*Wall-mounted (a holder PH-1-W)*

### Telephone receiver PH-4 – W/S

External communication unit for loudspeaker substations.

• *Used with substations PHS-1, PHS-3, PT-CMIP*

*Technical characteristics:*
*Operating bandwidth: 150...7000 Hz*
*Operating temperature: −40...+55 °C*
*Weight:*
*- 0.8 kg (PH-4-W), 1.6 kg (PH-4-S)*
*Cord length: 1.2 m*
*IP rating: IP56*
*Mounting type:*
*Console-mounted (a holder K-TT-4-S)*
*Wall-mounted (a holder K-TT-4-W)*

## Loudspeaker

### Loudspeakers LS-1, LS-1/100

Ceiling-mounted loudspeaker in plastic casing, waterproof, for broadcasting and voice messages transmission.

*Technical characteristics:*
*Operating voltage:*
- *LS-1 — 30 V;*
- *LS-1/100 — 100 V;*
*Operating bandwidth: 200–15000 Hz*
*Power:*
- *LS-1 — 6 W.*
- *LS-1/100 — 6 / 3 / 1.5 / 0.5 W*
*Sound pressure level: 90 dB*
*Casing: plastic*
*Weight: 0.73 kg*
*IP rating: IP22*
*Operating temperature: -15...+55 °C*

*Mounting type:*
*Wall-mounted*
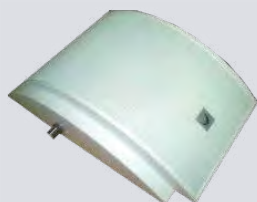
### LS-2, LS-2/100, SDL, SDL-4

Transmits service voice messages and entertainment broadcasting, power up to 6 W.

*Technical characteristics:*
*Operating voltage:*
- *LS-2 — 30 V;*
- *LS-2/100, SDL, SDL-4 — 100 V.*
*Operating bandwidth: 125–15000 Hz*
*Power:*
- *LS-2, SDL, SDL-4 – 6 W.*
- *LS-2/100 – 6; 3; 1,5 W.*
*Sound pressure level: 89 dB*
*Casing: plastic/steel*
*Weight: 1.25 kg*
*IP rating: IP22*
*Operating temperature: -15...+55°C*

*Mounting type:*
*Wall-mounted*

### Loudspeaker LS-3 (10, 15, 20, 30 W), LS-3/100 (10, 15, 20, 30 W)

Waterproof, general-purpose horn-type loudspeaker with various rated power. Supplies voice messages in transmission and public address systems.

*Technical characteristics:*
*Operating voltage:*
- *LS-3 (10 W) , LS-3 (15 W), LS-3 (20 W), LS-3 (30 W) — 30 V;*
- *LS-3/100 (10 W), LS-3/100 (15 W), LS-3/100 (20 W), LS-3/100 (30 W) — 100 V.*
*Operating bandwidth:*
- *LS-3 (10 W): 400-9000 Hz*
- *LS-3 (15W): 330-8000 Hz*
- *LS-3 (20 W), LS-3 (30 W): 310-8000 Hz*
- *LS-3/100 (10 W): 400-9000 Hz*
- *LS-3/100 (15W): 300-9000 Hz*
- *LS-3/100 (20 W): 310-8000 Hz*
- *LS-3/100 (30 W): 300-10000 Hz*
*Power:*
- *LS-3 (10 W):10 / 5 / 2.5 W*
- *LS-3 (20 W): 20W*
- *LS-3 (15W): 15 W*
- *LS-3 (30 W): 30 W*
- *LS-3/100 (10 W): 10 / 5 / 2,5 W*
- *LS-3/100 (15W): 15 / 7.5 / 3.7 W*
- *LS-3/100 (20 W): 20 / 15 / 7.5 / 3,5 / 2 W*
- *LS-3/100 (30 W): 30 / 15 / 7.5 W*

*Sound pressure level:*
- *LS-3 (10 W): 116 dB*
- *LS-3 (15W): 118 dB*
- *LS-3 (20 W): 110 dB*
- *LS-3 (30 W): 112 dB*
- *LS-3/100 (10 W): 116 dB*
- *LS-3/100 (15W): 120 dB*
- *LS-3/100 (20 W): 122 dB*
- *LS-3/100 (30 W): 125 dB*
*Weight:*
- *LS-3 (10 W): 1.1 kg*
- *LS-3 (15 W): 1.4 kg*
- *LS-3 (20 W): 1.8 kg*
- *LS-3 (30 W): 2.2 kg*
- *LS-3/100 (10 W): 1.7 kg*
- *LS-3/100 (15 W): 1.9 kg*
- *LS-3/100 (20 W): 2.1 kg*
- *LS-3/100 (30 W): 3.2 kg*
*IP rating: IP56*
*Operating temperature: –40...+55 °C*
*Cable length: 3 m*
*Casing: plastic*
*Accessories:*
*KP-124PW, KP-124PW-4*
*Mounting type:*
*Bracket-mounted*

### Loudspeaker LS-6/100

In metal case, anti-vandal, waterproof. Applied in tough environment, where extreme caution is required.

*Technical characteristics:*
*Operating voltage: 100 V*
*Operating bandwidth: 60 – 20000 Hz*
*Power: 6 / 3/ 1.5/ 0.5 W*
*Sound pressure level: 89 dB*
*Casing: aluminum*
*Weight: 1.35 kg*
*IP rating: IP56*
*Operating temperature: -40...+55 °C*

***Mounting type:***
*Wall-mounted*

### Loudspeaker LS-7, LS-7/100

Mini-loudspeaker ensures broadcasting and transmits voice messages on open decks.

*Technical characteristics:*
*Operating voltage:*
*- LS-7 — 30 V;*
*- LS-7/100 — 100 V;*
*Operating bandwidth: 300 20000 Hz*
*Power:*
*- LS-7: 8 W;*
*- LS-7/100: 8 / 4 / 2 / 1.5 / 0.7 / 0.4W*
*Sound pressure level: 101 dB*
*Casing: plastic*
*Weight: 0.66 kg*
*IP rating: IP56*
*Operating temperature: -40...+55 °C*

***Mounting type:***
*Bracket-mounted*

### Loudspeaker LS-8 (10, 25, 50 W), LS-8/100 (10, 25, 50, 100 W)

Horn-type metal loudspeaker with various rated power; provides broadcasting and transmits voice messages; installation on open decks.

*Technical characteristics:*
*Operating voltage:*
*- LS-8 —30 V;*
*- LS-8/100 — 100 V.*
*Operating bandwidth:*
*- LS-8 (10 W), LS-8/100 (10 W): 300–5000 Hz*
*- LS-8 (25 W), LS-8/100 (25W): 250-5000 Hz*
*- LS-8 (50 W), LS-8/100 (100/50 W): 200–5000 Hz*
*Power:*
*- LS-8 (10 W), LS-8/100 (10 W): 10 / 5 / 2.5 W*
*- LS-8 (25 W), LS-8/100 (25 W): 25 / 12.5 / 6 W*
*- LS-8 (50 W), LS-8/100 (50 W): 50 / 25 / 12.5 W*
*- LS-8/100 (100 W): 100 / 50 / 25 W*
*Sound pressure level:*
*- LS-8 (10 W), LS-8/100 (10 W): 104 dB*
*- LS-8 (25 W), LS-8/100 (25 W): 104 dB*

*- LS-8 (50 W), LS-8/100 (50 W): 107 dB*
*- LS-8/100 (100 W): 107 dB*
*Weight:*
*- LS-8 (10 W), LS-8/100 (10 W): 2.2 kg*
*- LS-8 (25 W), LS-8/100 (25 W): 2.7 kg*
*- LS-8 (50 W), LS-8/100 (50 W): 3.2 kg*
*- LS-8/100 (100 W): 4.5 kg*
*Casing: aluminum*
*IP rating: IP 56*
*Operating temperature: -40...+55 ºC*

***Mounting type:***
*Bracket-mounted*
***Accessories:***
*KP-124PW, KP-124PW-4*

### Loudspeaker LS-9/100

Loudspeaker for installation on open decks; ensures broadcasting and transmits voice messages.

• *Waterproof*

*Technical characteristics:*
*Operating voltage: 100 V*
*Operating bandwidth: 50 – 16000 Hz*
*Power: 50 / 25 / 12,5 / 9 / 4,5 / 3,5 W*
*Sound pressure level: 104 dB*
*Casing: plastic*
*Operating temperature: -40...+55 ºC*
*IP rating: IP 56*
*Weight: 3.9 kg*

*Mounting type:*
*Bracket-mounted*

### Loudspeaker DSP-15(Ex)/100

Horn-type plastic loudspeaker transmits voice messages and ensures broadcasting; for application in explosion-hazardous areas.

*Technical characteristics:*
*Operating voltage: 100V*
*Operating bandwidth: 380–7000 Hz*
*Power: 25 / 15 / 6.5 / 5 / 2.5 / 1.5 W*
*Sound pressure level: 109 dB*
*Casing: plastic*
*Operating temperature: -40...+55 °C*
*IP rating: IP56*
*Weight: 2.2 kg*
*Explosion proof rating:*
*- 2 ExdemIIBT5/H2;*
*- 2 ExdemIIBT4/H2;*
*- 2 ExdemIICT5/T4.*

*Mounting type:*
*Bracket-mounted*

### Signaling loudspeaker GSU-1

Horn-type signaling loudspeaker supplies continuous, intermittent and fluctuating signals.

• *Waterproof*

*Technical characteristics:*
*Operating voltage: 100V*
*Operating bandwidth: 200–16000 Hz*
*Power: 50 / 100 W*
*Sound pressure level*
*- 112 dB*
*Casing: metal*
*Operating temperature: -40...+55 ºC IP rating: IP 56*
*Weight: 6.2 kg*

*Mounting type:*
*Bracket*

## Signaling devices

### Signaling devices A-24/A-220

Supplies loud sound alarm in areas with increased level of noise.

*Technical characteristics:*
*Casing: impact resistant plastic*
*Power:*
*- 0.6 W – A-24*
*- 3.0 W – A-220*
*Power supply voltage:*
*- 24 VDC – A-24*
*- 220 V, 50/60 Hz – A-220*
*Max sound pressure level – 100 dB*
*Operating temperature: –40..+55 °C*
*IP rating: IP 56*
*Weight: 0.3 kg*

*Mounting type:*
*Wall-mounted*

### Signaling devices AL-24/AL-220

Supplies loud sound and bright light alarm signals in areas with increased level of noise.

*Technical characteristics:*
*Casing: impact resistant plastic*
*Power:*
- *8.0 W – AL-24,*
- *11.0 W – AL-220*
*Power supply voltage:*
- *24 VDC – AL-24,*
- *220 V, 50/60 Hz – AL-220*
*Operating temperature: -40 …+55 °C*
*IP rating: IP 56*
*Weight: 0.5 kg*
*Sound pressure level – max100 dB*
***Mounting type:***
*Wall*

### Flashing lamp, rotating RL-24/RL-220

Supplies bright light alarm on open decks and areas with increased level of noise.

*Technical characteristics:*
*Power supply voltage:*
- *24 VDC – RL-24*
- *220 V, 50/60 Hz – RL-220*
*Power: 45 W (RL-220), 65 W (RL-24)*
*Operating temperature: -40…+55 °C*
*IP rating: IP 56*
*Weight: 0.9 kg (RL-24), 1.1 kg (RL-220).*

***Mounting type:***
*Wall*
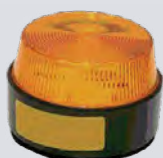
### Impulse lamp FL-24

Supplies bright light alarm on small-scale parts of open decks and in areas with increased level of noise.

*Technical characteristics:*
*Power supply voltage:: 10-100 V DC*
*Power: 3 W*
*Operating temperature: -40…+55 °C*
*IP rating: IP 56*
*Weight: 0.13 kg*

***Mounting type:***
*Wall*

### Flashing lamp, rotating RL-24/RL-220

Supplies bright light alarm on open decks and areas with increased level of noise.

*Technical characteristics:*
*Power supply voltage:*
- *24 VDC (RL-24)*
- *220 V, 50/60 Hz (RL-220)*
*Power:*
- *4 W (RL-24)*
- *10 W (RL-220)*
*Weight:*
- *0.28 kg (RL-24)*
- *0.39 kg (RL-220)*

***Mounting type:***
*Wall*
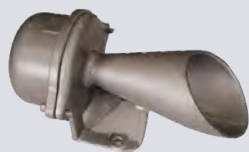
### The howler HW1-24/ HW1-220

Loud sound alarm on open decks and in areas with increased level of noise.

*Technical characteristics:*
*Power supply:*
*- 24 VDC (PC-24)*
*- 220 V, 50 Hz (PC-220)*
*Weight: 1.1 kg*
*Sound pressure level: 108 dB*
*Operating temperature: -40 ...+55°C*
*IP rating: IP56*
***Mounting type:***
*Wall*

### Buzzer-howler BH1-24 / BH1-220

Loud sound alarm in areas with increased level of noise and on open decks.

*Technical characteristics:*
*Power supply:*
*- 24 VDC – BH1-24*
*- 220 V, 50 Hz – BH1-220*
*Power consumption:*
*- 8 W – BH1-24*
*- 7.5 W – BH1-220*
*Sound pressure level: 92 dB*
*Weight: 3.6 kg*
*IP rating: IP 56*
***Mounting type:***
*Wall*

## Intercom helmets

### Intercom helmet
### IH-4M(S), IH-4M-3

External communication device.

- Ensures freedom to move and comfortable hands-free working environment.
- PTT switcher
- Summer and winter designs.
- Cable crimped ends or with a connector.
- The following devices can be connected:
  - from the set BLTS-1006(M) — PH-x, PH-xLR, PH-xLRW, PH-x, PH-x-C, PH2-x-H(P);
  - from the set ITS-1010 — PT-CMIP, PHS-1, PHS-3.

*Technical characteristics:*
*Bandwidth: 150...7000 Hz*
*Discrete word intelligibility in acoustic noise:*
*- up to 120 dB: min 92%*
*Operating temperature: -40...+ 55 °C*
*IP rating: IP56*
*Weight: 1.05 kg*
*Cable length: 3 m*
*Cable length from helmet to PTT: 0.8 m*

***Mounting type:***
*On a bracket (storage)*

### Headset HS-4, HS-4M, HS-4A, HS-2, HS-2P

Ensures talk-back communication in noisy areas up to 120 dB.

- Freedom to move and comfortable hands-free working environment
- Equipped with a quick connector
- PTT switcher
- Delivered with a mounting bracket
- Headset cable ends:
  - HS-2/HS-4 — crimped ends;
  - HS-2P/HS-4M — cable with a connector;
  - HS-4A — right-angle connector.
- The following devices can be connected:
  - HS-2/HS-2P: PH-x, PH-xLR, PH-xLRW, PH-x, PH-x-A, PH2-x-H(C);
  - HS-4/HS-4M/HS-4A: PT-CMIP, S-W, PHS-1, PHS-3, S-3

*Technical characteristics:*
*Headset type: passive, monophonic*
*Bandwidth: 200-400 Hz*
*Operating temperature: -40...+ 55 °C*
*IP rating: IP56*
*Weight:*
*- HS-2/HS-4: 0.64 kg*
*- HS-2P/HS-4M: 0.71 kg*
*- HS-4A: 0.73 kg*
*Cable length: 3 m*
*Cable length from helmet to PTT: 0.8 m*

***Mounting type:***
*Wall (storage)*

### Headset (micro-telephone)
### HS-5, HS-5M, HS-5A, HS-6, HS-6M, HS-6A

External communication device for loudspeaker substations, ensures talk-back communication under regular noise conditions.

• Mono headset
• Freedom to move and comfortable hands-free working environment
• PTT switcher
• Headset cable ends:
  - HS-5/HS-6 — crimped ends;
  - HS-5M/HS-6M — with a connector;
  - HS-5A/HS-6A — right-angle connector.
• Noise level limit 100 dB
• The following devices can be connected:
  - HS-6/HS-6M/HS-6A: PT-CMIP, S-W, PHS-1, PHS-3; S-3;
  - HS-5/HS-5M/HS-5A: PH-x, PH-xLR, PH-xLRW, PH-x, PH-xA, PH2-x-H(P).

**Technical characteristics:**
*Headset type: passive, monophonic*
*Bandwidth: 150-7000 Hz*
*Operating temperature: -40 ..+ 55 °C*
*IP rating: IP56*
*Weight:*
*- HS-5/HS-6 - 0.53 kg*
*- HS-5M/HS-6M - 0.54 kg*
*- HS-5A/HS-6A - 0.56 kg*
*Cable length: 3 m*
*Cable length from helmet to PTT: 0.8 m*

**Mounting type:**
*On a bracket (storage)*

### Intercom helmet IH-4L-S, IH-4L-W

• Ensures freedom to move and comfortable hands-free working environment.
• PTT switcher
• Summer (IH-4M-S) and winter (IH-4M-W) designs
• Cable crimped ends (IH-4M-S(W)-P) and with a connector (IH-4M-S(W)-P)
• The following devices can be connected:
- the system BLTS-1006(M) — PH-x, PH-xLR, PH-xLRW, PH-x, PH-xA, PH2-x-H(P);
- the system ITS-1010 — PT-CMIP, S-W, PHS-1, PHS-3.

**Technical characteristics:**
*Operating bandwidth: 150...7000 Hz*
*Discrete word intelligibility in acoustic noise up to 120 dB: min 92%*
*Operating temperature: -40...+ 55°C*
*IP rating: IP56*
*Weight: 1.05 kg*
*Cable length: 3 m*
*Cable length from helmet to PTT: 0.8 m*

**Mounting type:**
*On a bracket (for storage)*

### Power switching unit APS-120U

The unit switches input power supply (main/standby and standby/emergency) to load.

• Waterproof
• LEDs:
- three inputs (main, standby, emergency power);
- two outputs (main and standby).

**Technical characteristics:**
*Number of inputs:*
*- 1 main power*
*- 2 standby power (24V and 220V)*
*Number of outputs:*
*- 1 main / standby*
*- 1 emergency / standby*
*Max switching voltage: 300 V*
*Switching power: 1000 W*
*Max current: 40 A*
*Operating temperature: -40...+55 °C*
*IP rating: IP 56*
*Weight: 1.4 kg*

**Mounting type:**
*Wall*

### Relay units RB-WSB-24/RB-WSB-220

Ensure switching of external power supply to the connected units.

• *Applied with all telephones in range (except portable ones)*
• *Light and sound alarm units can be connected (220V and 24V)*
• *Reset button and incoming call LED*
• *Call is supplied by alarm units*

*Technical characteristics:*
*Casing: plastic*
*Switching voltage:*
- *220V, 50 Hz – RB-WSB-220;*
- *24V DC – RB-WSB-24.*
*Max switching current: 10 A*
*Number of connected loads (max): 3*
*Control signal: dry contact*
*Operating temperature: -40...+55 °C*
*IP rating: IP 56*
*Weight: 1.4 kg*
**Mounting type:**
*Wall*

### Power outlet CB-1

Connects portable substations S-W, S4P to the public address system (a quick connector).

• *Waterproof*
• *Waterproof port and a safety cover to connect substations*

*Technical characteristics:*
*Operating temperature: -40...+55 °C*
*IP rating: IP 56*
*Weight: 0.8 kg*
**Mounting type:**
*Wall*

### Power outlet PB-HS

Connects headsets and intercom helmets (a quick connector).

• *Waterproof*
• *Waterproof port and a safety cover to connect headsets and intercom helmets*

*Technical characteristics:*
*Operating temperature: -40...+55 °C*
*IP rating: IP 56*
*Weight: 0.8 kg*
**Mounting type:**
*Wall*

### Volume control
### DMO-10, DMO-25, DMO-50, DMO-25W

Provides single-channel volume control of the connected loudspeakers with max total power 10/25/50W. Volume control override.

Waterproof design – DMO-25W.

*Technical characteristics:*
*Max operating voltage: 150V*
*Power of the connected loudspeakers:*
- *10 W – DMO-10*
- *25 W – DMO-25 and DMO-25W*
- *50 W – DMO-50*
*Operating temperature:*
- *-15...+55ºC – DMO-10, DMO-25, DMO-50*
- *-40...+55ºC – DMO-25W*
*IP rating:*
- *IP 22 - DMO-10, DMO-25, DMO-50*
- *IP 56 - DMO-25W*
**Mounting type and weight:**
*DMO-xx – Console-mounted – 1.1 kg*
*DMO-xx – Wall-mounted – 2.1 kg*
*DMO-25W – Wall-mounted – 1.8 kg*

### Volume control dual-channel DM-10D/DM-25D/DM-50D/DM-25WD

Provides volume control of the loudspeakers connected via two isolated channels with max total power 10/25/50 W. Volume control override.

Waterproof design – DM-25WD.

*Technical characteristics:*
*Max operating voltage: 150V*
*Max power of the connected loudspeakers:*
- *10 W – DM-10D;*
- *25 W – DM-25D, DM-25WD;*
- *50 W - DM-50D.*
*Operating temperature:*
- *-15...+55ºC – DM-10D, DM-25D, DM-50D;*
- *-40...+55ºC - DM-25WD.*
*IP rating:*
- *IP 22 - DM-10D, DM-25D, DM-50D;*
- *IP 56 - DM-25WD.*
***Mounting type and weight:***
*DM-xxD – Console-mounted – 1.1 kg*
*DM-xxD – Wall-mounted – 2.1 kg*
*DM-25WD – Wall-mounted – 1.8 kg*

### Program switch PP-4

The unit switches entertainment programs and provides an automatic changeover to public address communication. Volume control override.

*Technical specifications:*
*Max switching voltage: 150V*
*Max switching power: 100W*
*Operating temperature: -15...+55 °C*
*IP rating: IP 22*
*Weight: 0.35 kg*
***Mounting type:***
*Console mounting*
*Wall*

### Metal cabinet BO-1H

The cabinet protects devices and peripheral equipment installed on open decks from low temperature and humidity. Automatic heating of the inside. A padlock can be installed on the lock handle.

*Technical characteristics:*
*Material: stainless steel (painted)*
*Operating voltage: 220V, 50/60 Hz*
*Heating power consumption: 300 W*
*Operating temperature: -40...+55 °C*
*IP rating: IP 56*
*Weight: 40 kg*
***Mounting type:***
*Wall*

### Metal cabinet BO-1, BO-2, BO-3, BO-4

The cabinet protects the equipment installed on open decks from humidity.

*Technical characteristics:*
*Material: stainless steel*
*Operating temperature: -40...+55 °C*
*IP rating: IP 56*
*Weight:*
- *BO-1 — 7.28 kg;*
- *BO-2 — 9.92 kg;*
- *BO-3 — 6.25 kg;*
- *BO-4 — 7.13 kg;*
***Mounting type:***
*Wall*

### BTS2-BO

The metal cabinet protects the equipment installed on open decks from humidity.

A padlock can be installed on the lock handle.

*Technical characteristics:*
*Operating temperature: -40...+55 °C*
*IP rating: IP 56*
*Weight: 13 kg*

*Mounting type:*
*Wall*

### Matching transformer T-140-D60/120

Converts sound signal voltage level upwards or downwards (depending on the design); operates within a wide bandwidth.

• *Waterproof*

*Technical characteristics:*
*Primary circuit voltage: 100 V*
*Output voltage: 120-70-50-30V*
*Operating bandwidth: 100-20000 Hz*
*Power consumption: 60 / 120 W*
*Operating temperature: -40...+55 °C*
*IP rating: IP 56*
*Weight: 5.8 / 8.3 kg*

*Mounting type:*
*Wall*
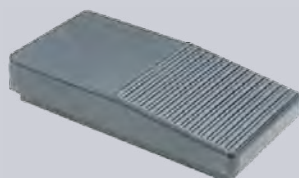
### Foot-switch FB-1

Switches a microphone on the MS-18, MS-36 control panels when manual control cannot be carried out.

*Technical characteristics:*
*Output signal type: dry contact (max 1 A)*
*Operating temperature: -15...+55°C*
*IP rating: IP 44*
*Weight: 0.4 kg*

### Junction box KP-124

Splits single-program telephone lines or controls of the alarm units. Volume control override.

| Technical characteristics | | | | | | |
|---|---|---|---|---|---|---|
| Name | Casing | Number of outputs (output terminals) | Circuits coupled to the terminal | Rated current | Weight, kg | Mounting type |
| KP-124PW | Aluminum | 7 | 3 | 20A (max 5A per terminal) | 1.1 | Wall |
| KP-124PW-3 | Polycarbonate | 2 | 5 | 20A (max 15A per channel) | 0.71 | |
| KP-124-30 | | 2 | 10 | 5A | 2.0 | |
| KP-124-40 | | 9 | 4 | 5A | 2.0 | |
| KP-124-100 | | 9 | 10 | 5A | 2.5 | |

Switching voltage: 250 V
Operating temperature: -40...+55°C
IP rating: IP 56

# Online system builder

[http://schemes.unicont.com](http://schemes.unicont.com) offers our customers a web-tool to compose system diagrams and get extra information about the following equipment:
- Systems of loudspeaker and public address communication;
- Video surveillance and batteryless communication;
- Peripheral units.

Up-to-date web design and user-friendly intuitive interface allow for easy work and saves time of our customers at order.

Advantages
- The constructed diagram will be tested to avoid errors;
- The constructed diagrams will be stored on our company server or on your PC and can be printed out.
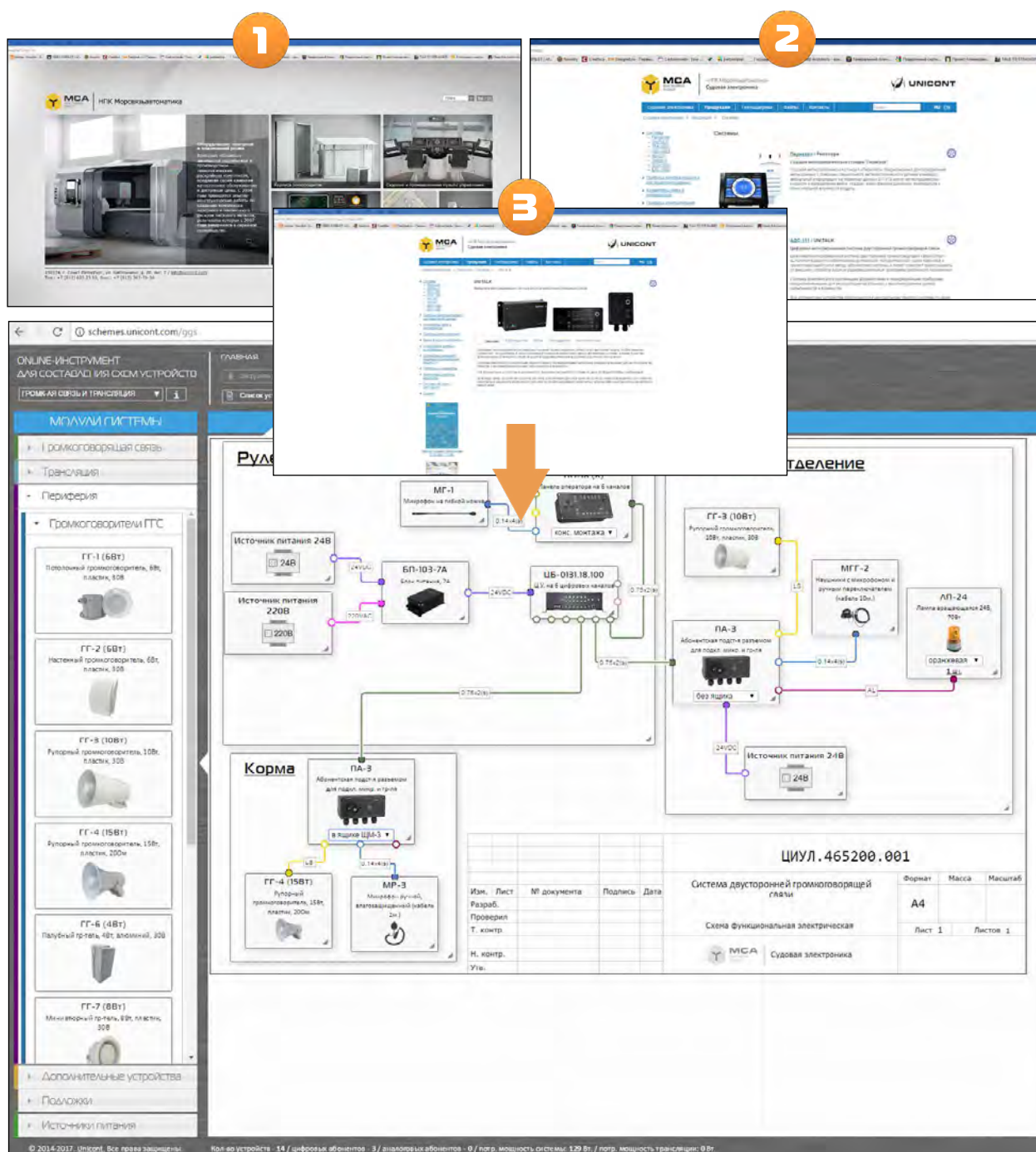
# Bidirectional converter up to 5 MW
## "PAPIR"

## Description

Bidirectional converter "PAPIR" is produced in the power range 1 - 5 MW and used to control vessel's propulsion systems: propulsion steering column and thruster. "PAPIR" ensures smooth start and stop of electric motor, controls its temperature, power and speed, and protects electric drive.

Voltage converter with pulse width modulation and active rectifier is based on high-power IGBT transistors. SEMIKRON power converter assemblies, which are highly resistant to harsh environmental conditions and temperature cycling, are used as transistors.

"PAPIR" Microcontrollers are based on up-to-date ARM STMicroelectronics processor with 180 mln flops performance. The converter system ensures high quality control, maintaining accuracy of output frequency at 0.1%. The converter supports vector (both with and w/o encoder) and scalar (w/o encoder) types of electric motor control.

Additional section of water recirculation system can be delivered on request.

## Brief specifications

| Rated output power, MW | 1.2 | 2.4 |
|---|---|---|
| Max power consumption (including overload), MW | 1.855 | 3.711 |
| Input power | 3x690V, 50Hz | |
| Output voltage, V | 0...690 | |
| Rated output current, A | 1005 | 2010 |
| Overload capacity, % | 120% - 60 sec., 150% - 3 sec. (in 10 mins) | |
| Output frequency, Hz | 0...60 | |
| Power factor cos φ (rated speed) | 0.95 | |
| Coefficient of efficiency, % | 97 | |
| Generated thermal power, kW | 42 | 78 |
| Nominal flow rate of cooling fluid, l/min | 40 | 72 |

Frequency converter allows for together operation with control systems of higher level via RS-422/485 interface. Additional devices – temperature sensors, encoders, tachometers, etc. - can be connected. The converter's software and non-volatile error and alarm history allow for conducting in-depth unit testing.

The converter's control panel has user-friendly interface and is equipped with 8'' touch screen produced by "NPK MSA", as well as duplicate control buttons, rpm and motor load pointer indicators, sound and light signalizators and emergency stop button.

# Bidirectional converter **"PAPIR"** up to 5 MW

## Interface screens

Basic data are displayed on the main screen of the control panel: power contactor status, cooling system status, rpm and motor load pointer indicators and warning / alarm notifications. Additional screens allows for carrying out in-depth testing of the electric drive.



## Design

Modular design allows for easier converter's transportation and installation on the vessel. The enclosure has a heightened rigidity and mechanical reliability. Simultaneous operation of two converters ensures maximum power of 5 mW.

Max converter's weight (power 2.4 mW) is 2800 kg, dimensions 2400x2000x800 (WxHxD). Meanwhile, the converter's power-to-weight ratio is more than 800 W / kg and 625 W / dm 3. IP rating – IP44.



1
Power input
and control section

2
Conversion section
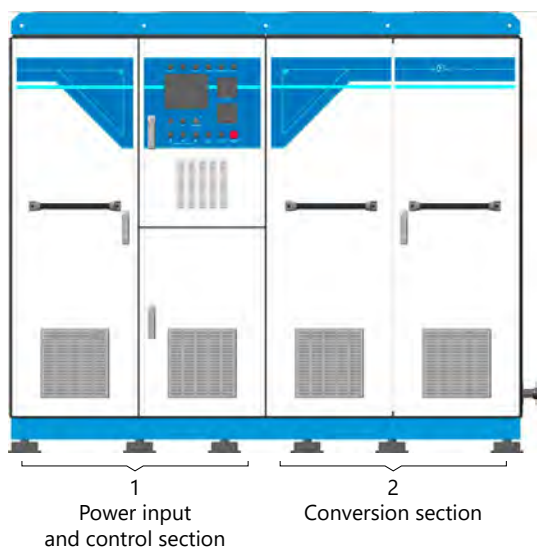
### The converter includes two sections:

- Power input and control section ensures power input, power splitting and distribution, control and protection of the internal devices, control from the local panel, interfacing with external ship systems and units. The section contains voltage control relay, automatic switch, input filters, voltage sensors, controllers and others.

- Conversion section ensures voltage level and frequency conversion, containing controlled rectifier, DC link with water-cooled brake resistor and voltage inverter.

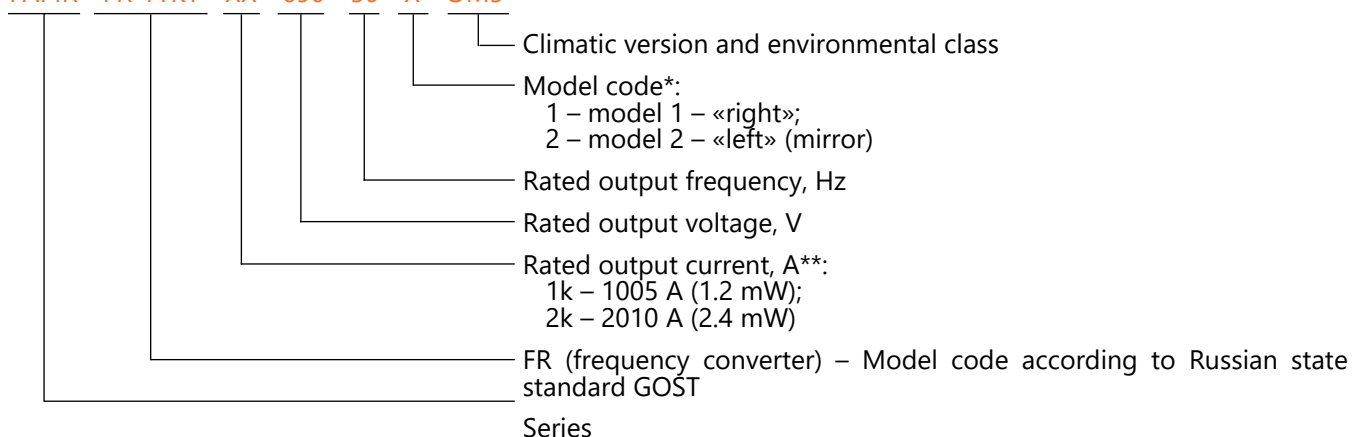# Bidirectional converter **"PAPIR"** up to 5 MW

Model 2 «Left»
2.4 mW (1.2 mW)

For easy and convenient installation onboard the converters are produced in two models with mirror arrangement of the sections. Model codes are arranged at order:

- Model 1 «Right». Power input is on the left side, output – on the right; sections are located left to right.

- Model 2 «Left». Power input is on the right side, output – on the left; mirror arrangement of sections.

## Model code (at order)

PAPIR - FR-TTKT - XX - 690 - 50 - X - OM5

Climatic version and environmental class

Model code*:
1 – model 1 – «right»;
2 – model 2 – «left» (mirror)

Rated output frequency, Hz

Rated output voltage, V

Rated output current, A**:
1k – 1005 A (1.2 mW);
2k – 2010 A (2.4 mW)

FR (frequency converter) – Model code according to Russian state standard GOST

Series

\* Model code defines position of the sections relative to each other.

\*\* To increase power up to 4.8 mW connect two converters (in parallel) with power 2.4 mW "left" or "right" models in any combinations.

Sample code for converter with output current 2010 A (power 2.4 mW), "right" model: the frequency converter PAPIR series PAPIR-FC-TTKT-2k-690-50-1-OM5.

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The frequency converter PAPIR series by Russian Electrotechnical LLC is produced in compliance with the Russian State Standard and approved by the RMRS certificate. Our skilled professional team and several most advanced parallel assembly lines enable us to provide the highest quality production in the shortest time.

Approved by Russian Maritime
Register of Shipping

# Propulsion-steering column control system
## SURK-1005

## Description

SURK-1005 is designed to control propulsion-steering columns (starboard and port) and display propulsion and steering data to the control consoles and external ship systems. SURK-1005 ensures full control over azimuthal drives of column rotation, hydraulic and electric types, lubrication system, interfacing with frequency converters and other propulsion units (electromagnetic brake, tachometer, etc.)

**Three types of control are implemented in SURK-1005:**

- Local – using control panel of the local switchboard 1005-LSU;
- Remote – using one of remote control stations RCS in the wheelhouse and / or other ship rooms;
- Automatic – by external ship systems: autopilot (underway), dynamic positioning system (D.P.) and/or Joystick System.

SURK-1005 is created according to modular design principle with dual redundancy based on state-of-the-art microcontrollers (performance 180 mln flops). The number of internal modules can be changed to increase input or output signals from sensors, propulsion units and external ship systems. The system's reconfiguration allows for solving a wide variety of tasks.

## Features

- Compliance with any external ship systems: electrical power system (EPS), integrated control system for technical facilities (ICS TF), alarm warning system (AWS), VDR, conning display, etc.
- Modular design principle with dual redundancy.
- Supported interfaces: RS-422/485 (Modbus, Profibus, NMEA), 4...20 mA, dry contact relays.
- High-performance state-of-the-art processors.
- Software testing of the System.
- Customizable displays and main screen controls.
- Non-volatile alarm and error history.
- Uninterruptible PSU provides autonomous power up to 30 minutes.
- Combined, separate and portable versions of remote control stations.
- Ergonomic lever to control speed and column rotation angle.
- Compliant with RMRS standards and approved by RMRS.
- IP rating – IP44.

## Interface

Local control panel of the local switchboard 1005-LSU is equipped with 8" resistive touch screen, produced by "NPK MSA", main propulsion motor rpm and load pointer indicators, and electronic indicator of propulsion column rotation angle.
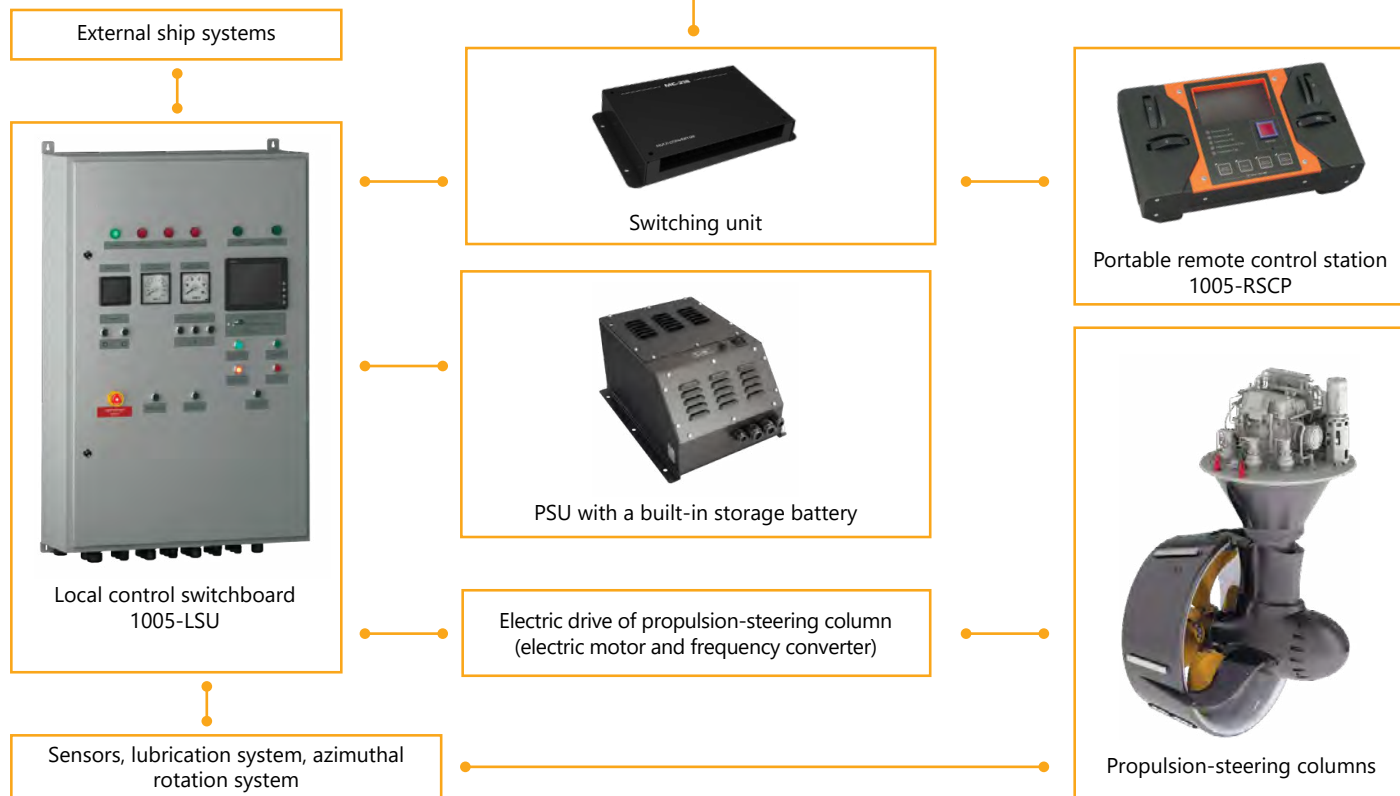
Remote control stations are equipped with touch screen as well. The main screen contains all necessary data to monitor steering column and main propulsion system status: operating parameters of the control system, electric system, main propulsion motor and azimuthal rotation system. Names of the menu items on the touch screen and their number are customized on request.

Additional screens allows for in depth testing of the steering column status and connected systems.
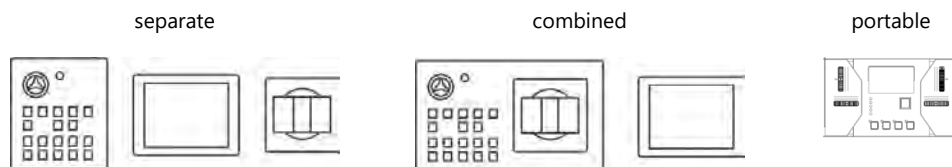
# Propulsion-steering column control system
## SURK-1005

## The system includes:

- Local control switchboard 1005-LSU
- Uninterruptible PSU UPS-214-24
- Switching unit
- Remote control station::
  - control panel;
  - display unit TSD;
  - rotation and speed control unit LAT-219
- Portable control station 1005-RSCP

Remote control station (max 16 stations)



Combined remote control station



Separate remote control station

External ship systems



Switching unit



Portable remote control station 1005-RSCP



Local control switchboard 1005-LSU



PSU with a built-in storage battery

Electric drive of propulsion-steering column (electric motor and frequency converter)



Propulsion-steering columns

Sensors, lubrication system, azimuthal rotation system

## Remote control stations versions

separate                    combined                    portable

# Thruster control system
**KRPU-1011**

## Description

Thruster control system KRPU-1011 controls the thruster, direction and speed of propeller rotation (by sending control signals to frequency converter), and all thruster units (frequency converter, electric motor, lubrication system, etc.).

KRPU-1011 has three types of control:
- Local – using control panel of the local switchboard 1005-LSU;
- Remote – using one of remote control stations RCS in the wheelhouse and / or other ship rooms
- Automatic – by dynamic positioning system and/or Joystick System.

Local control panel of switchboard LS is equipped with 8" resistive touch screen, produced by "NPK MSA", and duplicating pointer indicators and controls.

Microcontrollers of KRPU-1011 are based on state-of-the-art processor with performance 180 mln flops. The system is created according to modular design principle with modular dual redundancy. The number of internal modules can be changed to increase input or output signals from thruster sensors and external ship systems.

## Features

- Certificated by RMRS.
- Modular design principle with dual redundancy.
- Wide range of supported interfaces: RS-422/485 (Modbus, Profibus, NMEA), 4...20 mA, dry contact relays.
- Compliant with dynamic positioning system and other ship systems: VDR, electrical power system (EPS), integrated control system for technical facilities (ICS TF), alarm warning system (AWS), conning display, etc.
- Based on state-of-the-art high-performance processor.
- Uninterruptible PSU provides autonomous power up to 30 minutes.
- Software self-test of the System.
- Non-volatile error and alarm history.



Power supply unit
with a built-in storage battery

Remote control stations RCS (max 16)

Approved by Russian Maritime
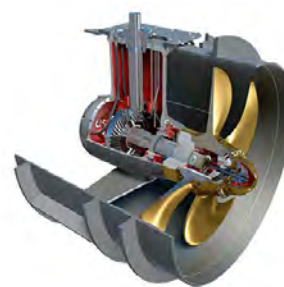Register of Shipping

Local switchboard LS

Switching unit

External ship systems

Thruster sensor and lubrication system

Thruster electric drive
(electric motor and frequency converter)

Tunnel thruster
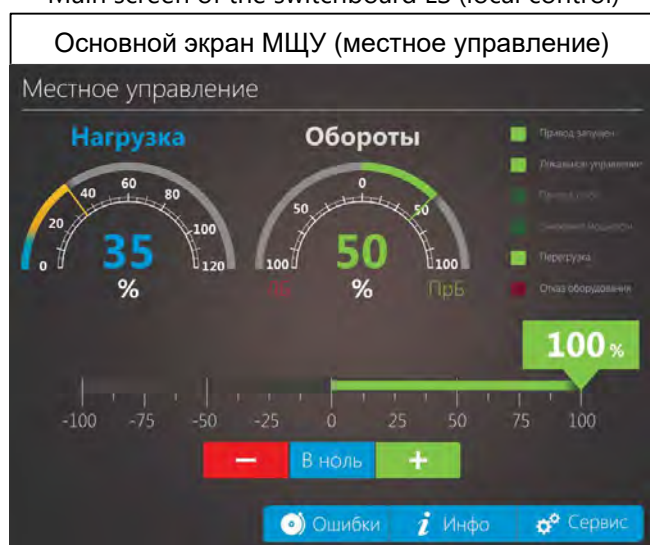
# Thruster control system
## KRPU-1011

## The System components:

- Local control switchboard LS, IP44;
- Uninterruptible power supply UPS-114, IP44;
- Switching unit SU, IP22;
- Remote control station RCS, IP22.

## Control panel of switchboard LS

The main screen contains all necessary information: thruster status, motor rpm and load, type of control, alarm and warning signals. Additional thruster controls appear on the screen in the local control mode. Additional menu sections allow for in depth testing of the thruster and connected systems status.
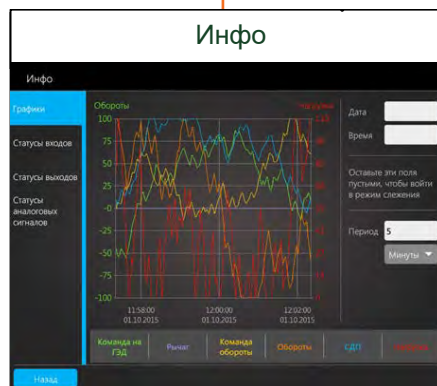
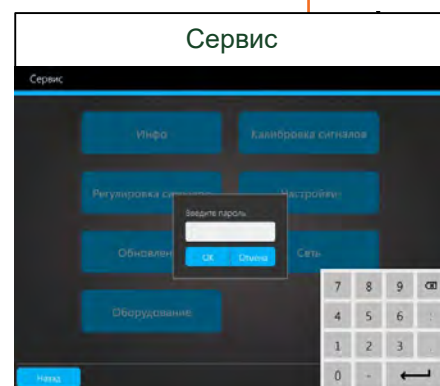Main screen of the switchboard LS (local control)



Main screen of the switchboard LS (remote control)
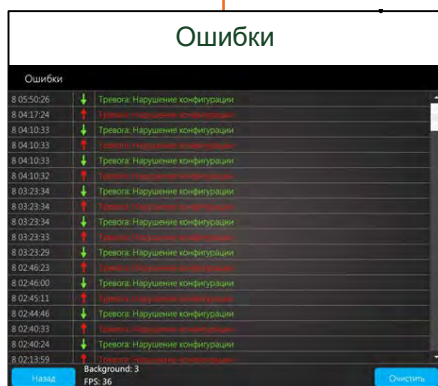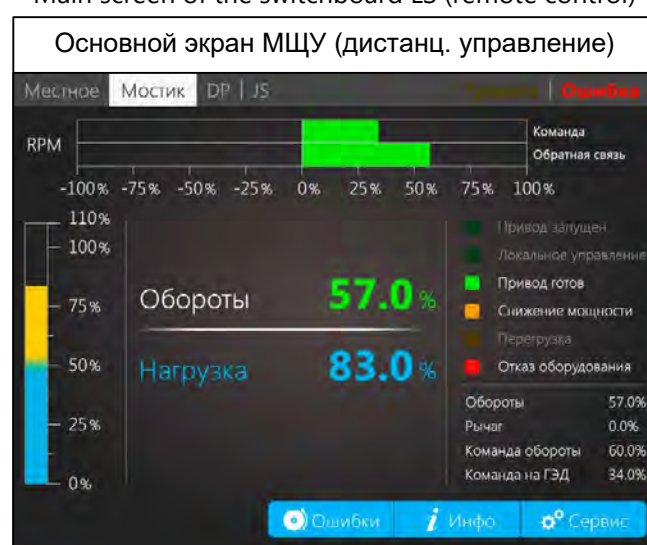




Errors section



Info section



Service section

# Steering gear control system
# KARM-1021

## Description

Steering gear control system KARM-1021 is designed to control operation of one or two hydraulic steering gears from the local or remote control panels. Each steering gear consists of two hydrostations. The System has two main types of hydrostation control: automatic (digital steering control system) and straight forward control.

Three types of control are implemented in KARM-1021:

- Local – using local control panel LCP
- Remote – using remote control station RCS
- Automatic – by autopilot system

## Features

- Compliance with any external ship system: autopilot, electrical power system (EPS), integrated control system for technical facilities (ICS TF), alarm warning system (AWS), VDR, conning display, etc.
- Modular design principle with dual redundancy.
- Wide range of supported interfaces: RS-422/485 (Modbus, Profibus, NMEA), 4...20 mA, dry contact relays.
- Based on state-of-the-art high-performance processor.
- Software testing of the System.
- Rotation angle is controlled from automatic steering wheel ASW
- Uninterruptible power supply unit, built in a switchboard PMA
- Approved by RMRS
- Protection degree – IP54

## Interface

Remote control stations are equipped with button console RCP (touch screen). RCP displays main steering gear data.

Local control panel LCP is equipped with 8'' resistive touch screen; it displays main steering gear information. Other menu sections allow for providing in depth testing of the steering gear and connected systems status.
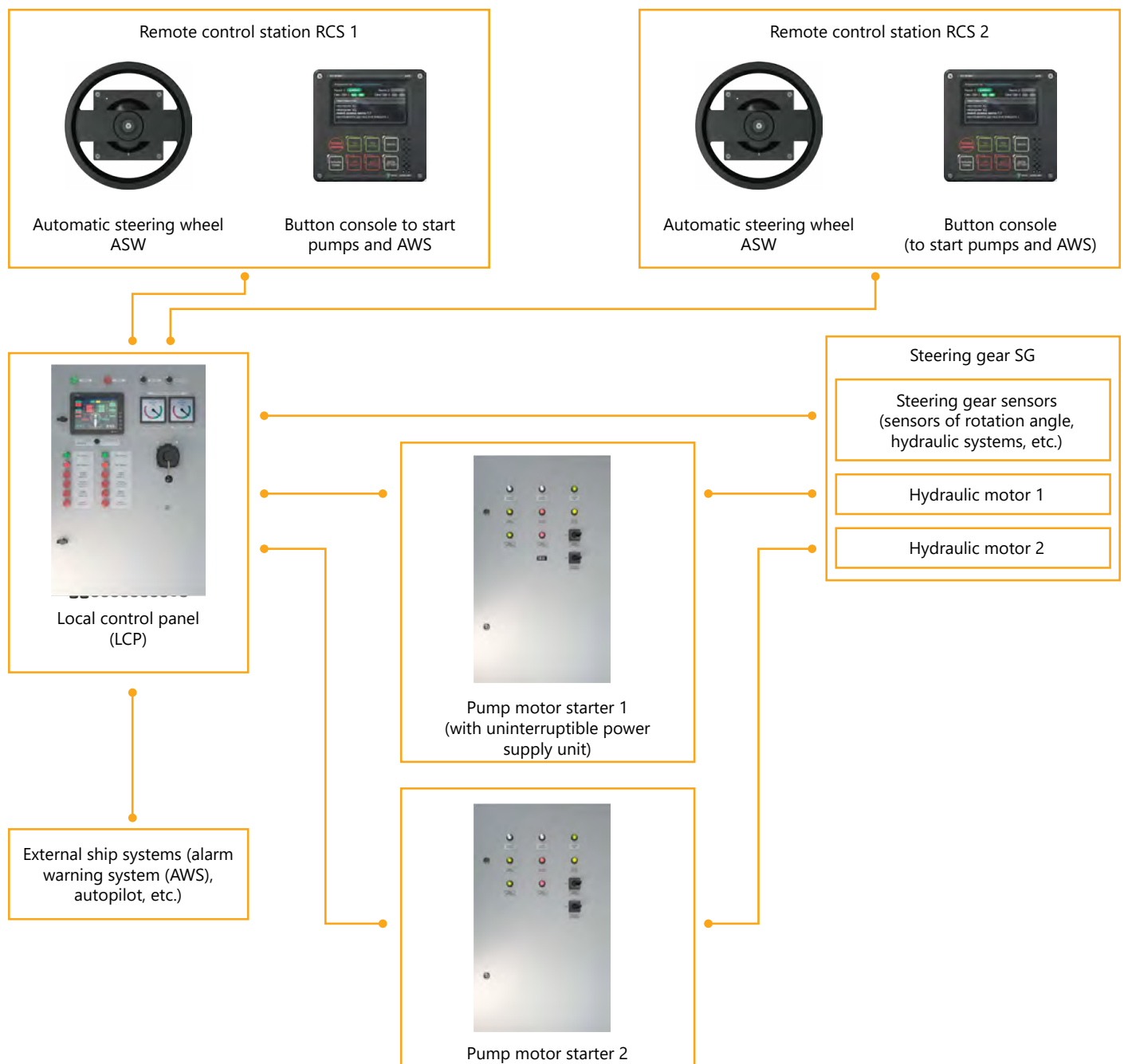
# Steering gear control system
## KARM-1021

### The System components:

- Local control panel LCP
- Pump motor actuators PMA
- Remote control station RCS:
    - Automatic steering wheel ASW
    - Straight forward control lever SCL
    - Button console to start pumps and AWS
- Sensor of column rotation angle SRA



Remote control station RCS 1

Automatic steering wheel ASW

Button console to start pumps and AWS

Remote control station RCS 2

Automatic steering wheel ASW

Button console (to start pumps and AWS)

Local control panel (LCP)

Steering gear SG

Steering gear sensors (sensors of rotation angle, hydraulic systems, etc.)

Hydraulic motor 1

Hydraulic motor 2

Pump motor starter 1 (with uninterruptible power supply unit)

External ship systems (alarm warning system (AWS), autopilot, etc.)

Pump motor starter 2