Limited Liability Company
«NPK MORSVYAZAVTOMATICA»

PUBLIC ADDRESS SYSTEM/ COMMAND TALK-BACK SYSTEM TPA-1007 BASED ON CU-200, CU-400

Operating manual

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TERMS AND ABBREVIATIONS

ABANDON	*Abandon ship* alarm
CL	Check list
CNF	Conference
CP	Microphone panel
CU	Central unit
Ethernet	Family of computer networking technologies
GENERAL ALARM	General alarm
IMAS	Integrated Marine Automation Systems
ISDN	Integrated Services Digital Network
LFGS	Large fine porous granulated silica gel
LIST	General list (all) communication mode
LS	Loudspeaker
MANUAL	Manual alarm
PAC	Public address communication
S	Talk-back stations
SC	System component
SPTA	Spare parts, tools and accessories
UU	User unit
VDR	Video data recorder
Z	Zone (broadcasting)
TS	Technical service
TS-1	Semi-annual technical service
TS-2	Annual technical service

INTRODUCTION

This operating manual (hereinafter referred to as OM) describes composition, structure and specifications of Public address system/Command talk-back system TPA-1007 (hereinafter – the System), and the SC. This OM contains instructions required for safe and correct System operation (intended use, technical service, current repair), and disposal information.

Only those who have read and understood this document and those who have had a special training shall be permitted to operate and service the System according to the applicable regulations.

1 DESCRIPTION AND OPERATION OF THE SYSTEM

1.1 DESCRIPTION

The System equipment ensures voice communication transmission, emergency announcement, command and talk-back public address communication on sea- and river-going vessels.

The System consists of different user and peripheral devices for operation in diverse environment, including areas with increased level of noise, humidity and dust.

1.2 TECHNICAL SPECIFICATIONS

Main parameters and technical specifications are shown in Table 1.

Table 1 – Main technical specifications of the System

Parameter		Value	
Number of PA lines (zones), pcs.		6	
Output power of power amplifier, W	CU-200	200	
	CU-400	400 or 2x200	
Zone voltage, V		100 (70 and 30 – optional)	
Bandwidth of power amplifier, Hz		50…20000	
Number of ports to connect control panels, pcs.	To connect microphone panels and PA units	6, 12, 18 or 24 (digital)	
	To connect alarm panels (if alarm generator is applied)	2	
Number of ports to connect general alarm signaling units, pcs.		5 to connect alarm circuits (if alarm generator is applied)	
Line audio input parameters		0.7 V; 600 Ohm	
Overall dimensions, weight		for more information on dimensions and weight, see Technical description.	
Electrical specifications			
Input voltage	main	220 (180…264) V AC, 50 (60) Hz	
	standby	24 (18…36) V DC	
Power consumption		defined by total power consumed by SC included in the scope of delivery. For more information on power, see Technical description	
Operation limitations			
IP rating		IP22; IP44	IP56
Operating temperature, °C		–15 ... +55	–40 ... +55

1.3 DESCRIPTION AND OPERATION OF THE SYSTEM

1.3.1 Description

The System includes one central unit CU-200 or CU-400 and the following units:

– PA units: microphone panels (CP) and loudspeakers (LS);

– general alarm units: alarm panels (AP) and signaling units;

– talk-back PA units: user substations (S) and combined microphone panels (MS).

CP, MS and S units are connected to CU via two-wire digital communication line. AP is connected to CU via analog line.

Example of the System structure based on CU-200, CU-400 is shown in Figure 1.

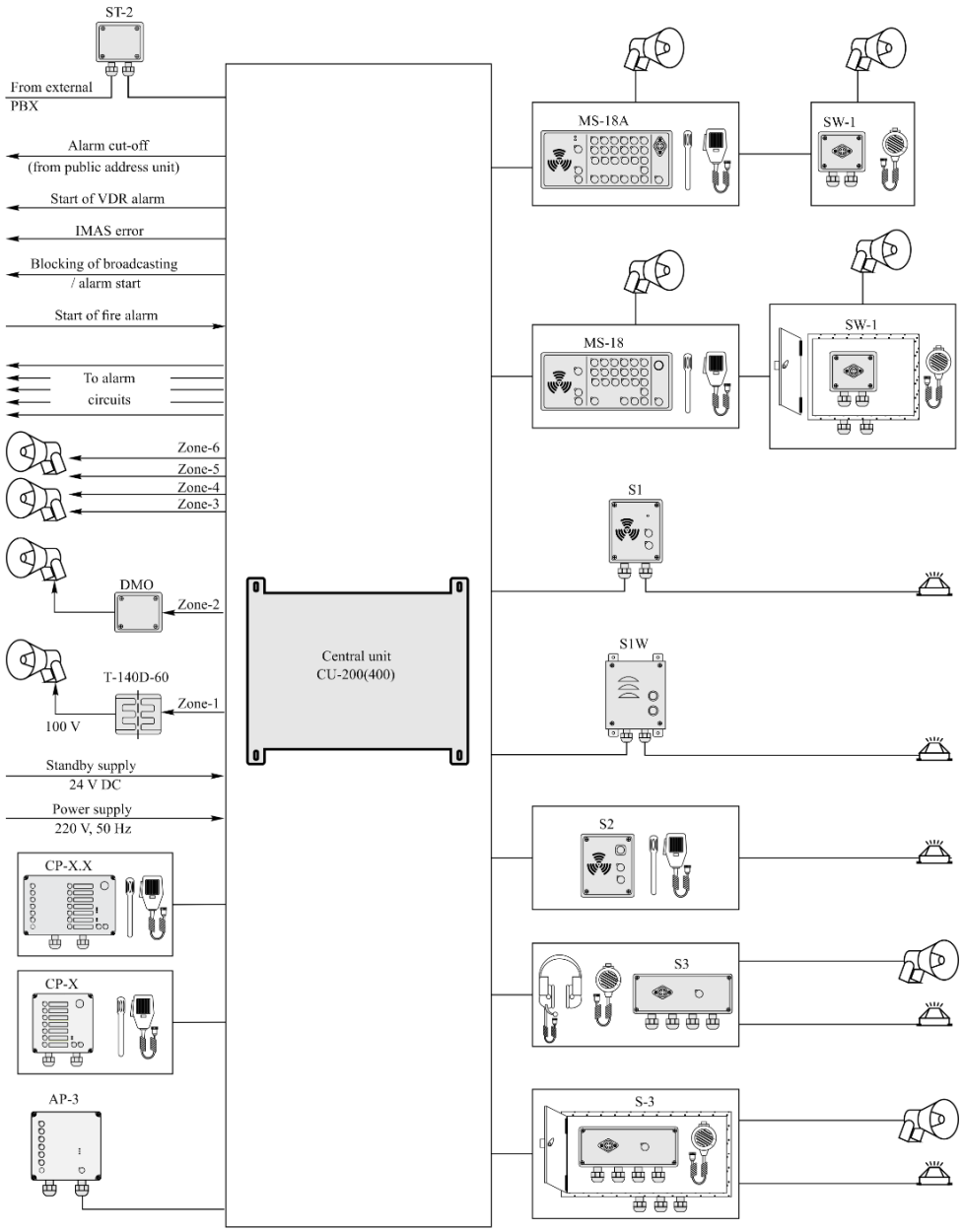


Figure 1 – the System's structural diagram

1.3.2 Functions of the System

1.3.2.1 Functions of the System:

1) zones may be controlled from local or remote microphone panel not depending on controls position of other CPs;

2) transmits voice communication and entertainment broadcasting to zones;

3) supplies block signal to the external systems and interrupts current alarm signaling with voice communication transmission;

4) audio quality control on every line;

5) CPs transmit voice communication to the pre-defined or all zones simultaneously;

6) light indication of microphone connected to zone.

1.3.2.2 The System functions (if alarm generator is applied):

1) sends general alarm signals (and other types of alarm) to signaling units;

2) sends alarm signal (audio 0 dB and discrete signal) to PA zones;

3) makes up to five independent control circuits of signaling units (different types of alarm);

4) noise pressure of sound and sound/light signaling units (within from 30 to 105 dB) may be adjusted; tone of signal may be selected;

5) receives and transmits fire alarm signals (0 dB);

6) sends «alarm activation» signal to VDR;

7) interrupts alarm signaling with voice announcements to zones;

8) sends error signal to IMAS.

1.3.2.3 If a record player (entertainment source) is included in the scope of delivery, the System ensures:

1) broadcasting from external source of entrainment programs to the selected communication devices and zones;

2) voice communication and alarm signals interrupt broadcasting of entertainment programs;

3) voice commands or alarm signaling switch off volume controls of LS;

4) zone for entertainment broadcasting may be selected (if CU includes a record player (entertainment source).

1.3.2.4 The System may operate with the following external systems:

1) external general alarm system;

2) external unit of talk-back PA system;

3) external digital and analog ATX using ST-2;

4) external unit to play entertainment programs.

1.3.2.5 The System provides the following services, see 2 if PA units are applied.

Table 2 – Communication services

Service	Description
LIST General list (all)	in this mode UU transmits voice communication to all UUs and zones connected to the System
Selective list	in this mode UU transmits voice communication to the pre-defined UUs and zones
Roll conference call	in this mode two or more UUs from the pre-defined list exchange voice communication
Selective CNF	in this mode two or more UUs exchange communication; another UU may be optionally connected
Command public address	in this mode UU transmits voice communication to one or several zones
Pair communication	in this mode two UUs exchange voice communication
ATX mode	in this mode UUs operate in analog telephone or digital line mode

1.3.2.6 MS in PA mode generally ensures:

1) call to other system users;

2) call pick up;

3) duplex and half-duplex communication;

4) connection of external communication device;

6) connection of wing stations;

7) connection of signaling units and LS.

1.3.2.7 General application of talk-back stations ensures:

1) call to other system users;

2) headset connection;

3) microphone panels connection;

4) connection of external call signaling units.

1.3.3 Priorities

1.3.3.1 General description

The System ensures functioning of shipborne communication and alarm subsystems (as well as connected external systems) regarding pre-defined priorities, see Table 3.

Table 3 – The System priorities

Name of priority service	Description
Priority-1	LIST General list (all)
Priority-2	talk-back and CNF communication
Priority-3	command public address
Priority-4	external ATX (if applied)
Priority-5	general alarm (and other alarm types)
Priority-6	radio and entertainment broadcasting
Note – Priority-1 has the highest priority in the System; Priority-6 – the lowest.	

CPs have the highest priority. Emergency voice communication is transmitted to all zones. Other signals including alarm signals are temporarily switched off.

1.3.3.2 Priorities of talk-back PA units

Along with communication mode priorities, the System allows for setting priorities among talk-back PA system units, CPs, combined CPs within from «0» to «255», where «0» – no priority, «1» – the lowest priority, «255» – the highest one.

Firstly, the System compares priorities of initiator and user. If they match, the System compares UUs priorities:

– if initiator's priority is lower, busy signal will be supplied;

– if initiator has the same priority, auto redial will be set;

– if initiator's priority is higher, user will be cut off the current communication and connected to initiator.

Note – priorities are set using PC with special software, see Settings instruction.

1.3.3.3 Microphone panels priorities

CPs may be prioritized by the System in a similar way with the units included in talk-back public address system. Priorities are valid, if several CPs are included in the System.

Each CP may be assigned with a priority within «0» .. «255», where «0» – no priority, «1» – the lowest priority, «255» – the highest one.

CP with higher priority interrupts communication of CP with lower priority.

The same priority may be assigned to several (all) CPs.

If several CPs have the same priorities within the System, only the first assigned CP will control transmission unit; other CPs (with the same priority) will receive busy signal while attempting to connect. Consequently, only the first assigned CP will be able to ensure transmission to zones (if CP microphones will be connected to zones).

Attention!

According to the requirements of Register, control of transmission unit shall be carried out from any CP not depending on controls position of other CPs (to achieve this, all CPs within the System shall have the same priority number).

Priority number is assigned using PC and special software according to the Settings instruction.

1.3.4 Alarm and warnings

1.3.4.1 General description

The functions are available only if CU includes alarm generator.

The System may retransmit alarm signals received from external general alarm system.

Voice communication will interrupt alarm signaling.

CU receives alarm signals from external general alarm system, and the System retransmits them to zones loudspeakers. The external general alarm system initiates corresponding alarm audio signal (0 dB) and discrete signals (dry contact).

Figure A.2 describes connection diagram of CU and external general alarm system.

Alarm generator produces alarm signaling. Types of alarm signals are set by the Manufacturer and may be changed on customer request.

Rules of Register and other normative documents (according to Ship Damage Control Manual of Russia, LSA Code) allow for changing only output signal frequency of conventional alarm signals (w/o changing sound sequence of signal).

Alarm generator includes control circuits of signaling units, service input and output signaling (discrete) circuits, AP connection ports, input and output ports to transmit and receive alarm audio signals.

1.3.4.2 Types of alarm

Alarm generator initiates the following types of alarm:

1) general alarm (GENERAL);

2) alarm «Abandon ship» (ABANDON);

3) manual alarm (MANUAL);

4) other alarms (e.g., MOB).

Other types of alarm may be added to the abovementioned on customer request (according to the ship's muster list).

Alarm generator operates according to the following regulatory documents:

1) Ship Damage Control Manual of Russia (4.2.2) – for inland navigation vessels;

2) Regulations on Equipment on Seagoing Ships, 6.22.1.4 part II (LSC Code (7.2.1.1) resolution MSC.48(66), SOLAS-74 (III / 6.4)) – for vessels engaged on international voyages.

ATTENTION!

If you a System order includes alarm generator, please specify requirements to signals

To select alarms and learn more about settings procedure of alarm generator (incl. fire alarms), see the Settings instruction.

Abovementioned alarms are initiated by the corresponding buttons of alarm panels (AP-3, AP-6), combined microphone panels (CP-3.3, CP-6.3, CP-6.6), combined control panels (MS-K18A).

1.3.4.3 Alarm priorities

Alarm priorities from the highest to the lowest: General alarm (*GENERAL ALARM*); Abandon ship (*ABANDON*); and manual alarm (*MANUAL*).

Alarm with a higher priority will interrupt alarm with a lower one.

1.3.4.4 Emergency announcement (EMERGENCY)

Combined panels (CP-3.3, CP-6.3, CP-6.6) may initiate emergency voice communication along with the signaling units; the voice communication will interrupt alarm signaling.

1.3.4.5 Options to initiate alarms from external systems:

1) alarm from CP, AP or MS.

Initiate alarms from control panels using corresponding buttons; to learn more about the order of alarms see 3.3.7;

2) alarm from fire alarm signal.

Alarm generator actuates fire alarms automatically having received a signal from the fire alarm system; alarm operates according to the preset algorithm;

3) external general alarm system.

This type is available only if external general alarm is connected to the System.

Once the signal is received from the external general alarm system, alarm is initiated (see 3.3.7) to zones automatically (Figure 1 describes connection diagram); zones loudspeakers send signals in compliance with external general alarm system.

Note – voice communication will automatically interrupt transmission of loudspeakers to zones (for example, transmission from CPs, see 1.3.3.3).

1.4 SYSTEM COMPONENTS

Table 4 describes the SC that might be included in a scope of delivery. For more information on specifications and types of SC, see Technical description.

Table 4 – The System components

Name/Code	Description
Central units	
Central unit CU-200	main System unit establishes a communication channel, transmit commands to zones and initiates alarm signaling
Central unit CU-400	
Combined main substations	
Combined main substation MS-18	to ensure talk-back public address communication, transmit voice communication and alarm signals to zones and alarm circuits (depending on the panel type)
Combined main substation MS-36	
Combined main substation MS-18A	
Combined main substation MS-36A	
Talk-back stations	
Talk-back station S1	to ensure talk-back public address communication with one or several pre-defined users
Talk-back station S1W	
Talk-back station S2	
Talk-back station S3	
Talk-back station S4	
Talk-back station S4P	
Talk-back station S1-3	
Talk-back station S1-5	
Talk-back station S2-3	
Talk-back station S2-5	
Bridge wing substation SW-1	
Microphone panels	
Microphone panel CP-6	to transmit voice communication to zones
Microphone panel CP-3	
Microphone panel CP-6W	
Microphone panel CP-3W	
Microphone panel CPW2-6	
Microphone panel CPW2-3	
Microphone panel CP2-6	
Microphone panel CP2-3	
Microphone panel CP-6-19	
Microphone panel CP-3-19	
Microphone panel CP2-6-19	
Microphone panel CP2-3-19	
Combined microphone panel CP-6.6	to transmit voice communication and alarm signals to zones and alarm circuits
Combined microphone panel CP-6.3	
Combined microphone panel CP-3.3	

Name/Code	Description
Combined microphone panel CP-6.6W	
Combined microphone panel CP-6.3W	
Combined microphone panel CP-3.3W	
Combined microphone panel CP2-6.6	
Combined microphone panel CP2-6.3	
Combined microphone panel CP2-3.3	
Combined microphone panel CP2-6.6W	
Combined microphone panel CP2-6.3W	
Combined microphone panel CP2-3.3W	
Alarm panels	
Alarm panel AP-6	to transmit voice communication and alarm signals to zones and alarm circuits
Alarm panel AP-3	
Alarm panel APW-6	
Alarm panel APW-3	
Alarm panel AP2-6	
Alarm panel AP2-3	
Alarm panel APW2-6	
Alarm panel APW2-3	
Alarm panel AP-6-19	
Alarm panel AP-3-19	
Alarm panel AP2-6-19	
Alarm panel AP2-3-19	
Power amplifiers	
Amplifier TPA-15	to amplify sound signals received from microphone, ISDN line or line sound signal
Amplifier TPA-200	
Amplifier TPA-400	
Amplifier TPA-200S	
Commutation, coupling, distribution, switching units	
Switch SW-16-WM	to combine connected devices in one network using Ethernet
POE injector POE-INJ	to extend range of PoE line by 100 m
Line switch KP-124-DMO	to connect LS to four-wire zone
Entertainment remote control EC-6	to control entertainment broadcasting for six zones
Entertainment remote control EC-6M	
Junction box KP-124PW	to split input circuits to several outputs
Junction box KP-124PW-2	
Junction box KP-124PW-3	
Junction box KP-124PW-4	
Junction box KP-124-30	
Junction box KP-124-40	
Junction box KP-124-100	
Junction box KP-124V	
Junction box KP-124VF	
Matching transformer T-140-D60	to convert amplitudes of sound signal in wide bandwidth
Matching transformer T-140-D120	
Cord CE	to extend standard cable of external communication devices
Relay unit RB-139G-24	to switch external power to connected external alarm units
Relay unit RB-139G-220	

Name/Code	Description
Foot-switch FB1	to switch on microphone
Antenna ANT	to receive and convert radio signals, omnidirectional
Volume control DMO	to control volume of connected LS, one-channel, volume control override function
Volume control DM	to control volume of connected LS, two-channel, volume control override function
Volume control DMP	to control volume of connected LS, volume control override function
Selector / Volume control SDP	to control volume together with program selector (6 positions), one-channel
Selector SELP	program selector (6 positions)
Socket CBP1	to connect portable substations to user line, waterproof
Socket HS-CB	to connect external communication devices to PA units, waterproof
Socket SM-1	to connect remote (portable) microphones to substations
Socket SM-2	
Socket SM-3	
External communication devices	
Handset B-HS1	to conduct talk-back communication
Handset B-HS3	
Handset B-HS4	
Microphone M1	to connect to CP and MS
Microphone M2	
Microphone M3	
Headset HS-4	to ensure talk-back communication in noisy areas
Headset HS-6	
Intercom helmet TH-4M	intercom helmet with a microphone, 3 m cable and manual switch
Intercom helmet TH-4L	intercom helmet with a throat microphone, 3 m cable and manual switch
Loudspeakers	
Loudspeaker LS-1	to ensure broadcasting, different acoustic signaling, and voice communication in public address systems
Loudspeaker LS-2	
Loudspeaker LS-3	
Loudspeaker LS-5	
Loudspeaker LS-6	
Loudspeaker LS-7	
Loudspeaker LS-8	
Loudspeaker LS-9	
Loudspeaker LS-10	
Loudspeaker LS-12	
Loudspeaker LS-13	
Loudspeaker SDL	
Loudspeaker DSP (Ex)	
Loudspeaker GVR-Exd-10-Prometey	
Loudspeaker GVR-Exd-20-Prometey	
Loudspeaker GVR-Exd-30-Prometey	
Loudspeaker LF-1	

Name/Code	Description
Signaling units	
Rotating lamp RL-24	to ensure light alarm signaling on open deck and in noisy areas
Rotating lamp RL-220	
Flashing lamp FL-24	
Rotating flashing lamp RFL-24	
Rotating flashing lamp RFL-220	
Light signaling unit L-24	
Light signaling unit L-220	
Sound signaling unit A-24	to ensure sound alarm signaling on open deck and in noisy areas
Sound signaling unit A-220	
Sound signaling unit A2-24	
Sound signaling unit A2-220	
Howler HW1-24	
Howler HW1-220	
Buzzer-howler BH1-24	
Buzzer-howler BH1-220	
Sound and light signaling unit AL-24	to ensure sound and light alarm signaling on open deck and in noisy areas
Sound and light signaling unit AL-220	
Light signaling unit PGS-VSPYSHKA-24	to ensure light alarm signaling in explosion hazard areas
Light signaling unit PGS-VSPYSHKA-220	
Sound signaling unit BExS110E24DC	to ensure sound alarm signaling in explosion hazard areas
Sound signaling unit BExS110E230AC	
Light signaling unit ORBITA MK S	to ensure light alarm signaling (ORBITA MK S), sound alarm (ORBITA MK Z) and sound light alarm (ORBITA MK SZ) in explosion hazard areas
Sound signaling unit ORBITA MK Z	
Sound and light signaling unit ORBITA MK SZ	
Wall-mounted metal enclosures	
Wall-mounted metal enclosure BO-1H	to protect devices installed on open deck against low temperature
Wall-mounted metal enclosure BO	to house devices in dry spaces and on open deck
Wall-mounted metal enclosure BLTS2-BO	

1.5 MEASUREMENT TOOLS, INSTRUMENTS AND APPLIANCES

Control operation of the SC by their controls and LED indicator lights.

Technical service of the System is carried out using tools and consumables represented in Table 5.

Table 5 – Amount of consumables required for the TS

Name and identifier of consumables	Amount of consumables	Note
Cleaning cloth	0.10 kg	1) to clean surfaces and parts of the system – use clean cloth; 2) to clean severe contamination – use alcohol-soaked cloth
Rectified hydrolytic technical ethyl alcohol	0.01 l	to soak cloth while removing contamination
Varnish	0.005 kg	to cover surfaces of the unit in case of paint coating damage
Abrasive cloth	0.06 x 0.06 m	to polish surfaces of the unit in case of paint coating damage

1.6 MARKING AND SEALING

The System has a nameplate displaying information on the System's name, serial number, Manufacturer's details. The nameplate is located on the CU casing.

The SC also have nameplates displaying serial number, weight, IP rating, input voltage and power consumption. The nameplate is located on the SC casings.

If the SC casing has small dimensions, information may be reduced.

Sealing of SC is not provided.

1.7 PACKAGING

SC are delivered, transported and stored in corrugated board boxes.

Transport packaging is also used as a returnable packaging for transportation of the SC to the place of repair and back.

Packaging sealing is not provided.

2 DESCRIPTION AND OPERATION OF THE SC

2.1 CENTRAL UNIT CU-200, CU-400 TYPES

2.1.1 Description

CU establishes a communication channel, switches audio signals to zones, and functions as an alarm unit.

Types:

– CU-200 (amplifier power 200 W);

– CU-400 (amplifier power 400 W).

2.1.2 Controls and indication

Figure 2 shows controls and LEDs of CU. For the description of controls and LEDs, see Table 6.

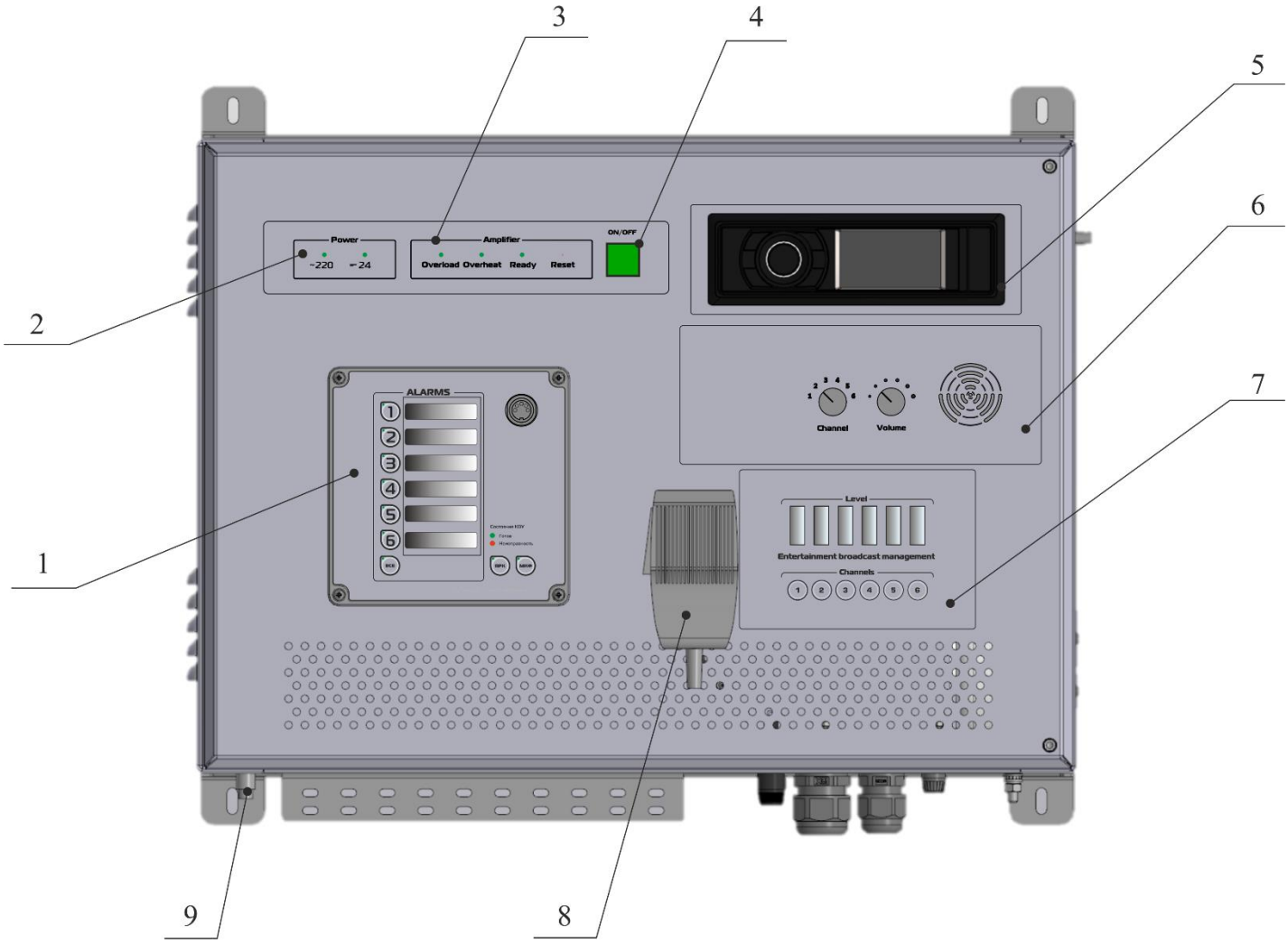


Figure 2 – Appearance of CU controls and LEDs

Table 6 – Description of CU controls and LEDs

№	Controls and LEDs	Description	Identifier
1	Microphone panel	—	one of CPs integrated in CU
2	Group of LEDs «Power»	«~220»	to indicate main power availability 220 V, 50 Hz
		«=24»	to indicate standby power availability 24 V
3	Group of LEDs «Amplifier»	«Overload»	to indicate amplifier overload
		«Overheat»	to indicate amplifier overheating
		«Ready»	to indicate non-faulty status of amplifier
	«Reset» button	«Reset»	to reset and reload amplifier (unlock)
4	Power button	«ON/OFF»	to switch the power on/off
5	Record player (entertainment source)	—	to play entertainment programs (radio, entertainment, etc.). A connector for antenna of record player is at the bottom of CU, see Figure 2
6	Audio quality control unit	—	to ensure quality control of transmission to zones; the unit includes: – a loudspeaker (connected to the selected zone); – *«Zone»* control (to select zones); – *«Volume»* control (to set volume level)
7	Entertainment remote control	—	to select zone for entertainment broadcasting
8	Built-in microphone	—	to transmit voice communication
9	Connector BNC-BJ	—	a connector for antenna
Notes 1 Points 1, 5, 7, 8 are at option. 2 Points 7 and 9 are delivered only together with position 5.			

2.2 AMPLIFIER TPA TYPE

2.2.1 Description

TPA amplify sound signals received from microphone, ISDN line or line sound signal.

Types:

– TPA-15 (power 15 W);

– TPA-200 (power 200 W);

– TPA-400 (power 400 W).

2.2.2 Controls and indication

Controls and LEDs of TPA are shown in Figures 3, 4. For the description of controls and LEDs, see Tables 7, 8.

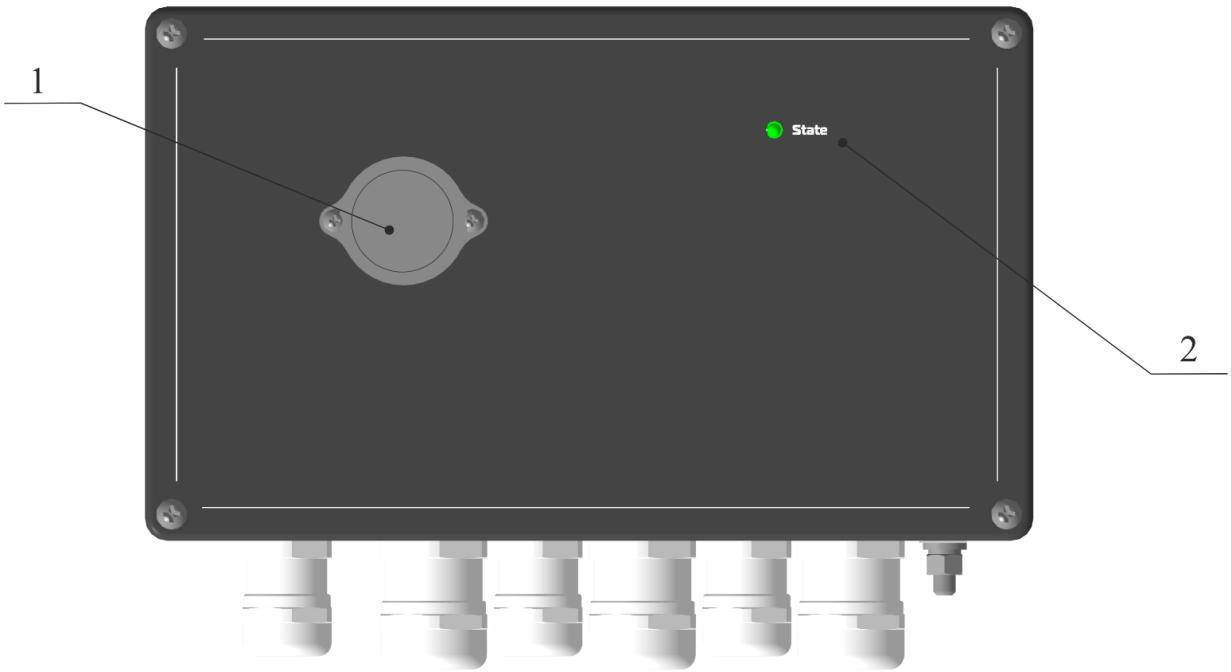


Figure 3 – Appearance of TPA-15 controls and LEDs

Table 7 – Controls and LEDs of TPA-15

№	Controls and LEDs	Description	Identifier
1	Waterproof connector Weipu WA22K4Z2	—	connector for external microphone
2	«State» LED	«State»	*no glowing* – device or user line error; *constant glowing* – correct functioning and ready for operation

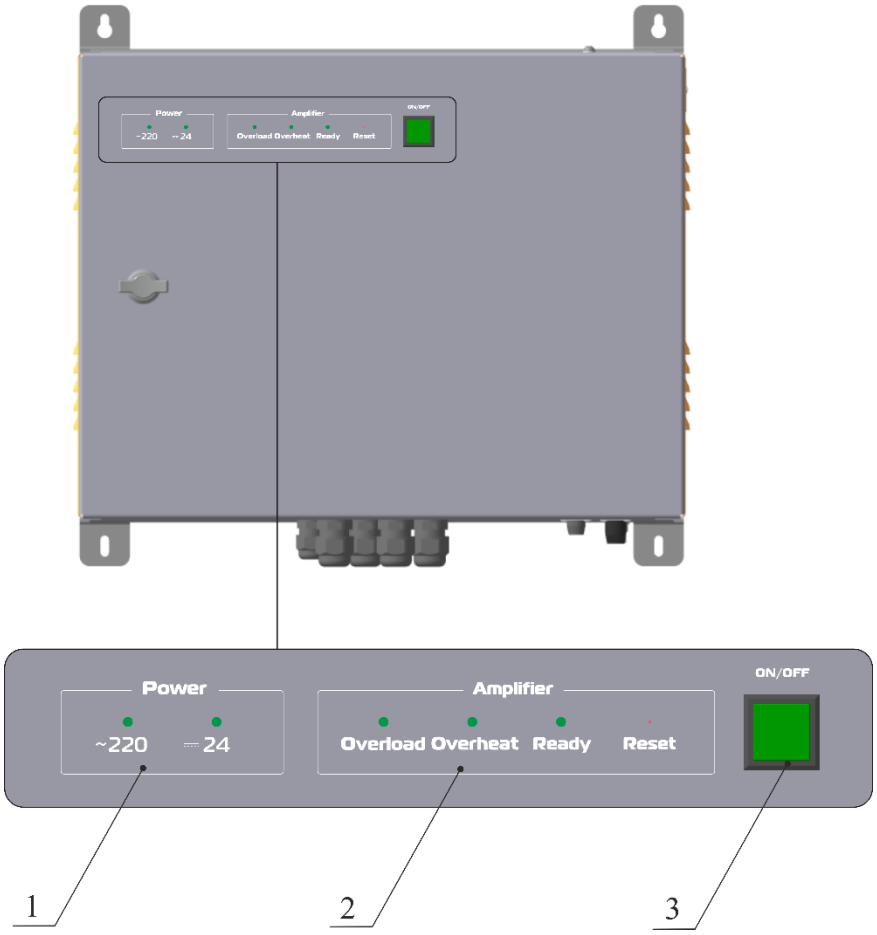


Figure 4 – Appearance of TPA-200, TPA-400 controls and LEDs

Table 8 – Controls and LEDs of TPA-200, TPA-400

№	Controls and LEDs	Description	Identifier
1	Group of LEDs «Power»	«~220»	to indicate main power availability 220 V, 50 Hz
		«=24»	to indicate standby power availability 24 V
2	Group of LEDs «Amplifier»	«Overload»	to indicate amplifier overload
		«Overheat»	to indicate amplifier overheating
		«Ready»	to indicate non-faulty status of amplifier
	«Reset» button	«Reset»	reset and reload of amplifier (unlock)
3	Power button	«ON/OFF»	to switch the power on/off

2.3 ALARM PANELS AP TYPE

2.3.1 Description

APs are designed to send alarm signals to zones.

Types:

1) single–channel, 3 alarms:

– AP-3-PM (panel mounting);
– AP-3-WM (wall mounting);
– AP-3-TM (bracket-mounted);
– APW-3 (wall mounting, waterproof);
– AP-3-19 (vertical, panel mounting);

2) two–channel, 3 alarms:

– AP2-3-PM (panel mounting);
– AP2-3-WM (wall mounting);
– AP2-3-TM (bracket-mounted);
– APW2-3 (wall mounting, waterproof);
– AP2-3-19 (vertical, panel mounting);

3) single–channel, 6 alarms:

– AP-6-PM (panel mounting);
– AP-6-WM (wall mounting);
– AP-6-TM (bracket-mounted);
– APW-6 (wall mounting, waterproof);
– AP-6-19 (vertical, panel mounting);

4) two–channel, 6 alarms:

– AP2-6-PM (panel mounting);
– AP2-6-WM (wall mounting);
– AP2-6-TM (bracket-mounted);
– APW2-6 (wall mounting, waterproof);
– AP2-6-19 (vertical, panel mounting).

2.3.2 Controls and indication

For the appearance of AP controls and LEDs, see Figure 5. For the description of APs controls and LCDs, see Table 9.

Note – Safety glass protects alarm buttons against key stroke.

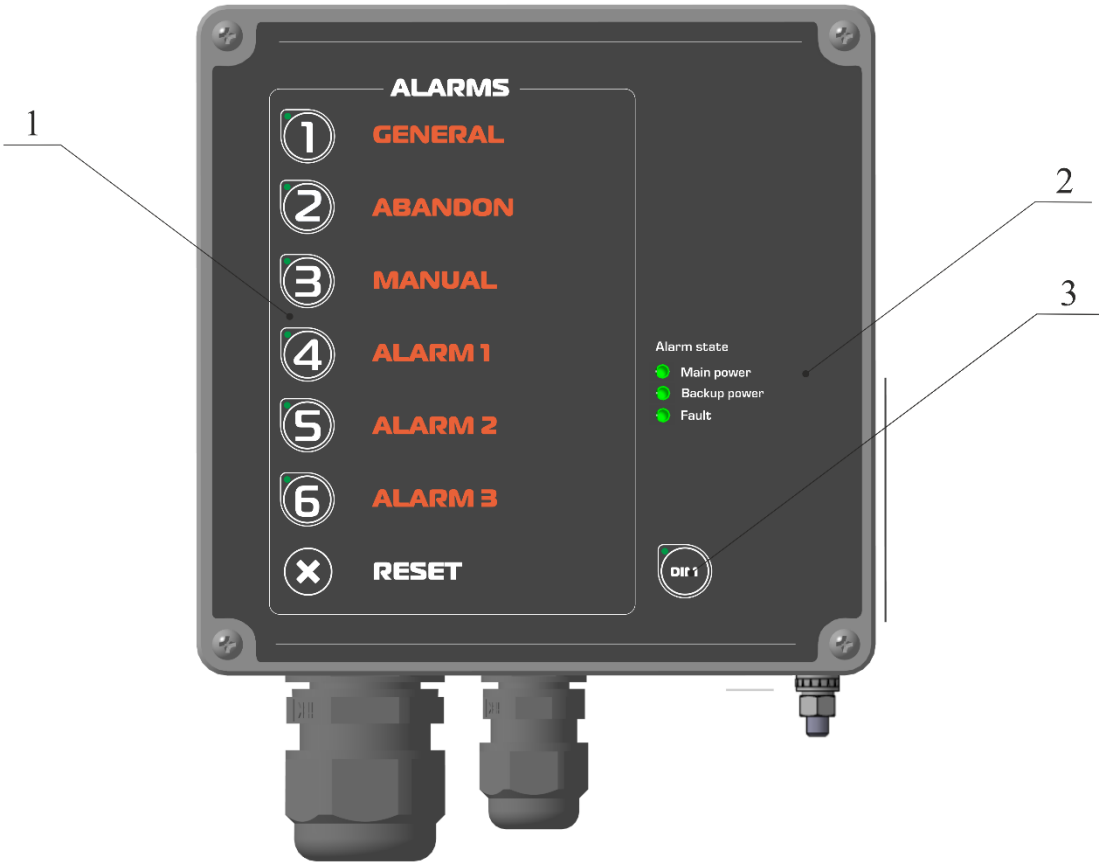


Figure 5 – Example of AP-6-WM controls and LEDs

Table 9 – Description of AP controls and LEDs

№	Controls and LEDs	Description	Identifier
1	Group of buttons «1»…«6» with LEDs ALARMS»	«1»…«6»	to initiate alarm; *constant glowing* – alarm is selected and initiated
	«RESET» button with LED	«RESET»	to reset actuated alarm
2	LED group «Alarm state»	«Main power»	main power supply
		«Backup power»	standby power supply
		«Fault»	no main or standby power supply
3	«DIM» button with LED	«DIM»	backlight brightness dimming

2.4 MICROPHONE PANELS CP TYPE

2.4.1 Description

CPs transmit voice communication to zones.

Types of microphone panels:

1) single–channel, 3 zones:

– CP-3-PM (panel mounting);
– CP-3-WM (wall mounting);
– CP-3-TM (bracket-mounted);
– CPW-3 (wall mounting, waterproof);
– CP-3-19 (vertical, panel mounting);

2) two–channel, 3 zones:

– CP2-3-PM (panel mounting);
– CP2-3-WM (wall mounting);
– CP2-3-TM (bracket-mounted);
– CPW2-3 (wall mounting, waterproof);
– CP2-3-19 (vertical, panel mounting);

3) single–channel, 6 zones:

– CP-6-PM (panel mounting);
– CP-6-WM (wall mounting);
– CP-6-TM (bracket-mounted);
– CPW-6 (wall mounting, waterproof);
– CP-6-19 (vertical, panel mounting);

4) two–channel, 6 zones:

– CP2-6-PM (panel mounting);
– CP2-6-WM (wall mounting);
– CP2-6-TM (bracket-mounted);
– CPW2-6 (wall mounting, waterproof);
– CP2-6-19 (vertical, panel mounting).

Types of combined microphone panels:

1) single–channel, 3 PA lines (zones), 3 alarms:

– CP-3.3-PM (panel mounting);
– CP-3.3-WM (wall mounting);
– CP-3.3-TM (bracket-mounted);
– CPW-3.3 (wall mounting, waterproof);

2) two–channel, 3 PA lines, 3 alarms:

– CP2-3.3-PM (panel mounting);
– CP2-3.3-WM (wall mounting);
– CP2-3.3-TM (bracket-mounted);
– CPW2-3.3 (wall mounting, waterproof);

3) single–channel, 6 PA lines, 6 alarms:

– CP-6.6-PM (panel mounting);
– CP-6.6-WM (wall mounting);
– CP-6.6-TM (bracket-mounted);
– CPW-6.6 (wall mounting, waterproof);

4) two–channel, 6 PA lines, 6 alarms:

– CP2-6.6-PM (panel mounting);
– CP2-6.6-WM (wall mounting);
– CP2-6.6-TM (bracket-mounted);
– CPW2-6.6 (wall mounting, waterproof);

5) single–channel, 6 PA lines, 3 alarms:

– CP-6.3-PM (panel mounting);
– CP-6.3-WM (wall mounting);
– CP-6.3-TM (bracket-mounted);
– CPW-6.3 (wall mounting, waterproof);

6) two–channel, 6 PA lines, 3 alarms:

– CP2-6.3-PM (panel mounting);
– CP2-6.3-WM (wall mounting);
– CP2-6.3-TM (bracket-mounted);
– CPW2-6.3 (wall mounting, waterproof).

2.4.2 Controls and indication

For the appearance of CPs controls and LEDs, see Figures 6, 7. For the description of CPs controls and LCDs, see Tables 10, 11.

Note – Safety glass protects group of buttons «ALARMS» against key stroke.

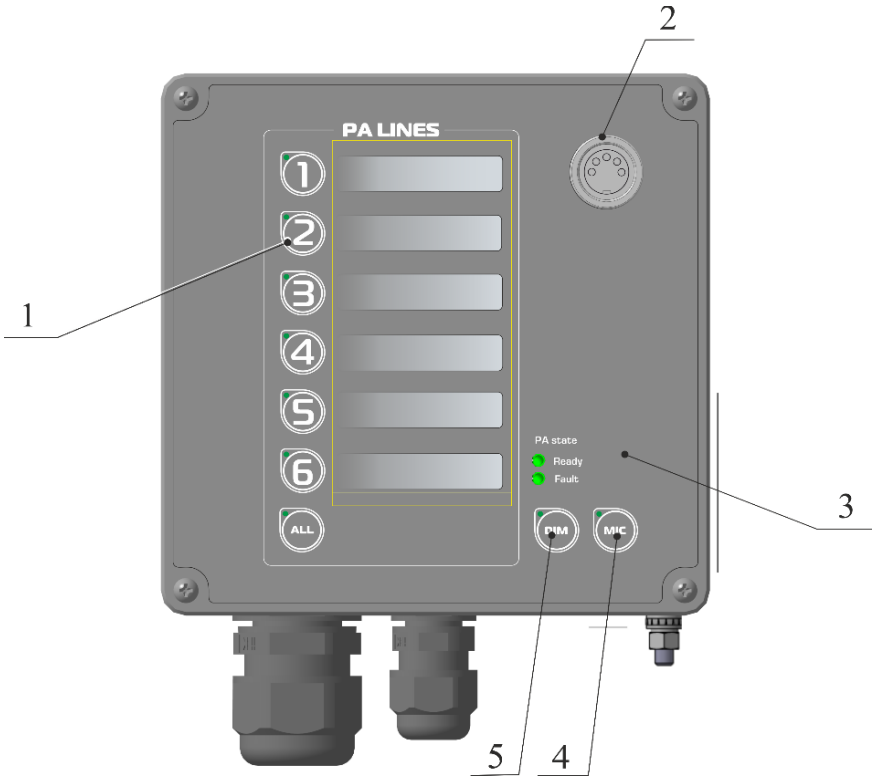


Figure 6 – Example of CP-6-WM controls and LEDs

Table 10 – Description of CP controls and LEDs

№	Controls and LEDs	Description	Identifier
1	Group of buttons «1»…«6» with LEDs «PA LINES»	«1»…«6»	to select zones; *constant glowing* – zone is selected.
	«ALL» button with LED	«ALL»	to select all zones
2	Connector	—	for external microphone
3	LED group «PA state»	«Ready»	CP is connected to CU and ready for operation
		«Fault»	CU signal is lost or CP error
4	«MIC» button with LED	«MIC»	to switch on (off) microphone; *constant glowing* – microphone is on
5	«DIM» button with LED	«DIM»	backlight brightness dimming

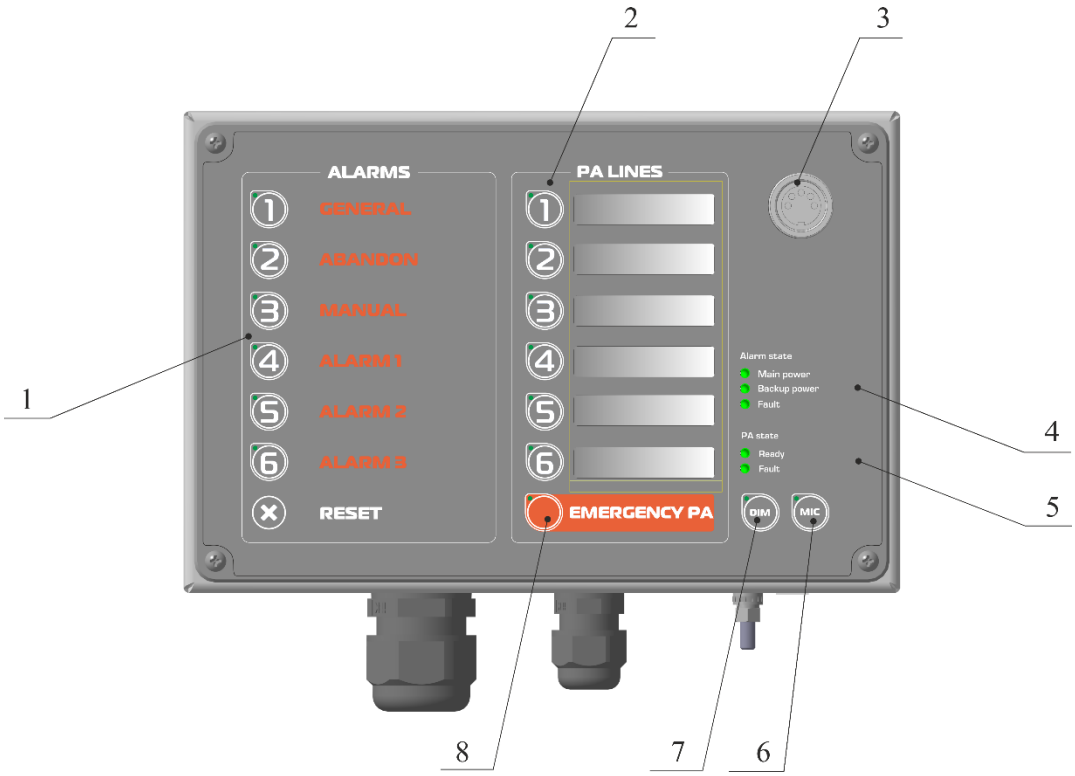


Figure 7 – Example of CP-6.6-WM controls and LEDs

Table 11 – Description of CP controls and LEDs

№	Controls and LEDs	Description	Identifier
1	Group of buttons «1»…«6» with LEDs ALARMS»	«1»…«6»	to initiate alarm; *constant glowing* – alarm is selected and initiated
		«RESET»	to reset active alarm
2	Group of buttons «1»…«6» with LEDs «PA LINES»	«1»…«6»	to select zones; *constant glowing* – zone is selected
3	Connector	—	for external microphone
4	LED group «Alarm state»	«Main power»	main power supply
		«Backup power»	standby power supply
		«Fault»	no main or standby power supply
5	LED group «PA state»	«Ready»	CP is connected to CU and ready for operation
		«Fault»	CU signal is lost, or CP error
6	«MIC» button with LED	«MIC»	to switch on (off) microphone; *constant glowing* – microphone is on
7	«DIM» button with LED	«DIM»	backlight brightness dimming
8	«EMERGENCY PA» button with LED	«EMERGENCY PA»	all zones emergency announcement; *constant glowing* – all zones are connected

2.5 COMBINED MAIN SUBSTATIONS MS TYPE

2.5.1 Description

MSs are designed to conduct talk-back public address communication, transmit voice communication and alarm signals to zones (depending on type).

Types:

1) 6 subscribers, 3 PA lines (zones):
– MS-18.6.3-PM (panel mounting);
– MS-18.6.3-WM (wall mounting);
– MS-18.6.3-TM (bracket-mounted);
2) 12 subscribers, 3 PA lines:
– MS-18.12.3-PM (panel mounting);
– MS-18.12.3-WM (wall mounting);
– MS-18.12.3-TM (bracket-mounted);
3) 12 subscribers, 6 PA lines:
– MS-18.12.6-PM (panel mounting);
– MS-18.12.6-WM (wall mounting);
– MS-18.12.6-TM (bracket-mounted);
4) 30 subscribers, 6 PA lines:
– MS-36.30.6-PM (panel mounting);
– MS-36.30.6-WM (wall mounting);
– MS-36.30.6-TM (bracket-mounted);
5) 6 subscribers, 3 PA lines 3 alarms:
– MS-18A.6.3.3-PM (panel mounting);
– MS-18A.6.3.3-WM (wall mounting);
– MS-18A.6.3.3-TM (bracket-mounted);
6) 12 subscribers, 3 PA lines, 3 alarms:
– MS-18A.12.3.3-PM (panel mounting);
– MS-18A.12.3.3-WM (wall mounting);
– MS-18A.12.3.3-TM (bracket-mounted);
7) 12 subscribers, 6 PA lines, 3 alarms:
– MS-18A.12.6.3-PM (panel mounting);
– MS-18A.12.6.3-WM (wall mounting);

– MS-18A.12.6.3-TM (bracket-mounted);

8) 30 subscribers, 6 PA lines, 3 alarms:

– MS-36A.30.6.3-PM (panel mounting);

– MS-36A.30.6.3-WM (wall mounting);

– MS-36A.30.6.3-TM (bracket-mounted).

2.5.2 Controls and indication

For the appearance of MSs controls and LEDs, see Figures 8, 9. For the description of MSs controls and LCDs, see Table 12.

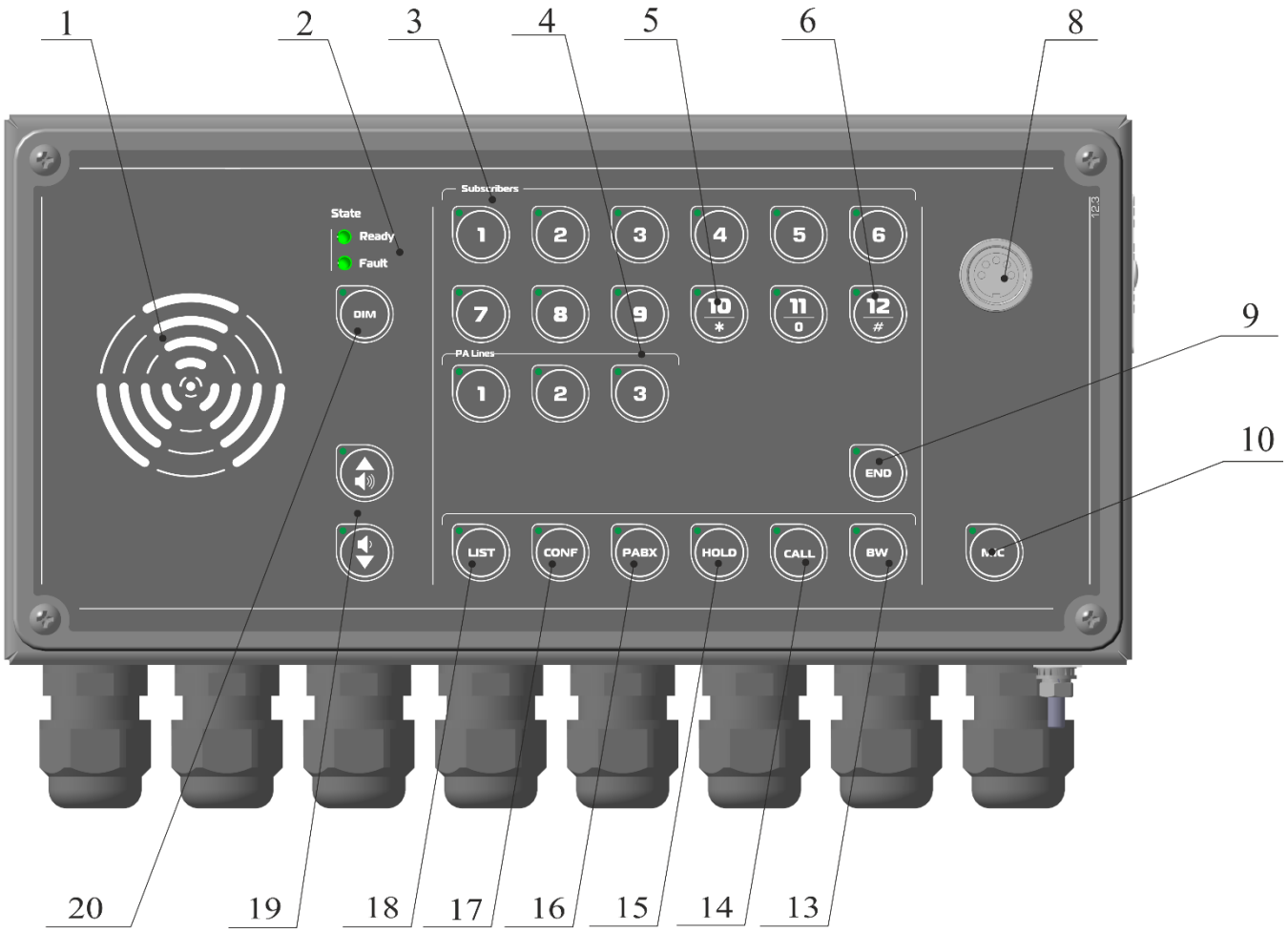


Figure 8 – Example of MS-18.12.3-WM controls and LEDs

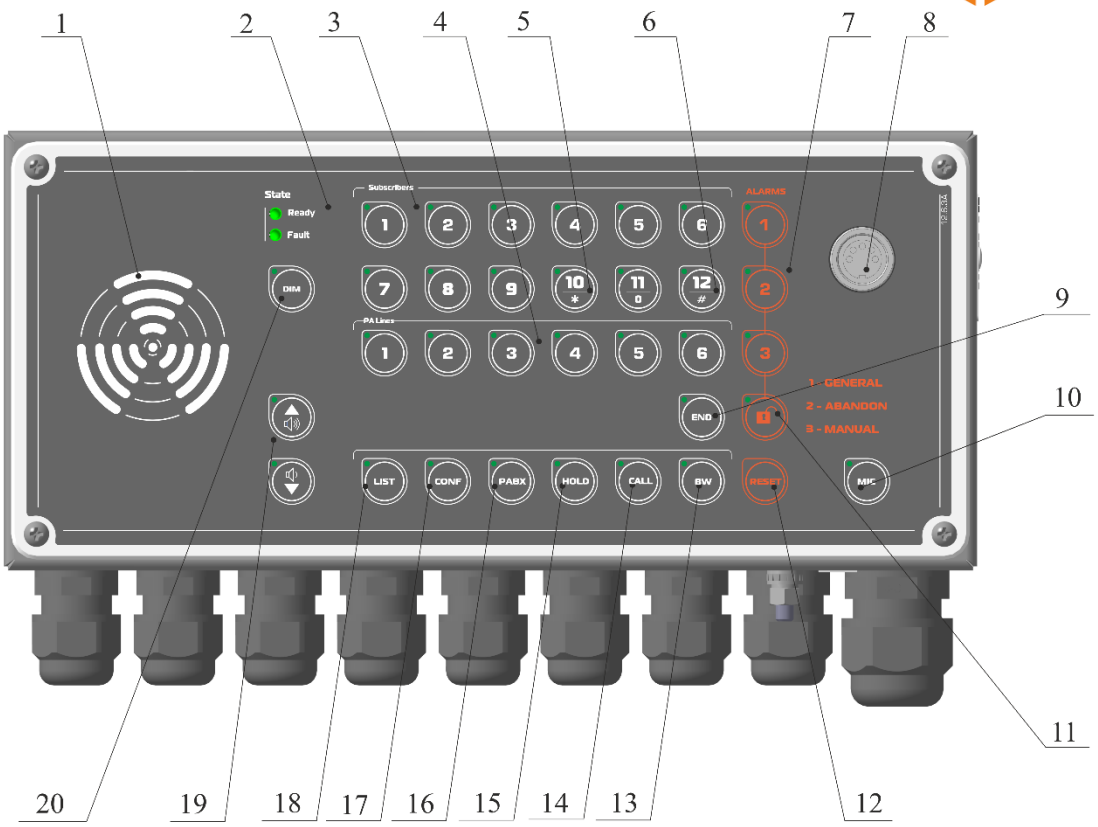


Figure 9 – Example of MS-18A.12.6.3-WM controls and LEDs appearance

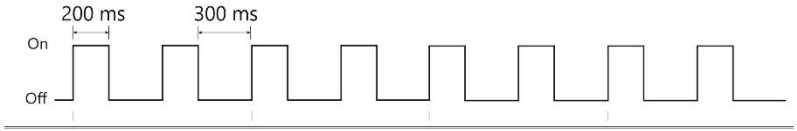
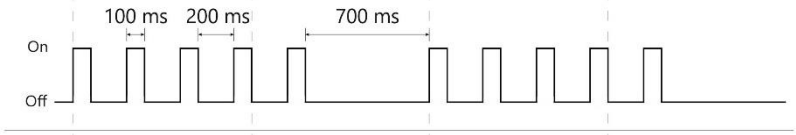
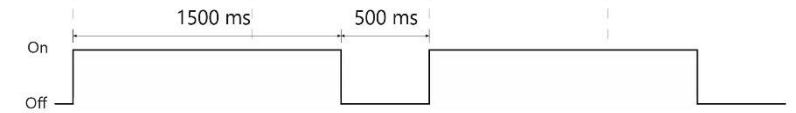
Table 12 – Description of MS controls and LEDs

№	Controls and LEDs	Description	Identifier
1	Speaker	–	to ensure sound signal of incoming and outgoing call, voice communication reproduction
2	Group of LEDs «State»	«Ready»	*constant glowing* – power supply voltage is available and station is ready for operation; *no glowing* – no power supply voltage
		«Fault»	*constant glowing* – no connection with CU; *flashing* in mode, see Table 13, position 1 – CU lost connection with one or several UUs; Flashing of one or several LEDs correspond to the stations that lost connection to CU

№	Controls and LEDs	Description	Identifier
3	Group of buttons «Subscribers» with LEDs	«1» … «XX»	to select a UU (in LS mode) or to dial a number «0» … «9» (in ATX mode); functions of buttons in LS mode: – press a button in operation mode – to call; – press the button second time during outgoing call – to stop outgoing call; – press the button in communication mode – terminate the connection; – press during incoming call – to accept a call. Description of button LEDs operation mode: *no glowing* – UU is not assigned to the corresponding user line, or no connection with UU; *constant glowing* – connection with UU assigned to the corresponding user line is established; *flashing* in mode, see Table 13, position 1 – no connection with UU assigned to the corresponding user line; *flashing* in mode, see Table 13, position 2 – incoming call from UU assigned to the corresponding user line; *flashing* in mode, see Table 13, position 3 – outgoing call to UU assigned to the corresponding user line
4	Group of buttons «PA lines» with LEDs	«1» … «6»	to select zone; *constant glowing* – zone is selected
5	Button «*» with LED		to switch substation panel from tone to pulse mode and vice versa (in ATX mode)
6	Button «#» with LED		to enter service commands (in ATX mode)
7	Group of buttons «ALARMS» with LEDs	«1» …«3»	to initiate alarm; *constant glowing* – alarm is selected and actuated
8	Connector	–	to connect external communication device
9	Button «END» with LED	«END»	press this button during connection with one or more UUs to stop communication with all active UUs
10	Button «MIC» with LED	«MIC»	to switch on a microphone; *constant glowing* – microphone is on; *no glowing* – microphone is off
11	Lock button with LED		to lock alarm buttons; *constant glowing* – no lock
12	Button «RESET»	«RESET»	to reset active alarm
13	Button «BW» with	«BW»	to activate wing substation;

№	Controls and LEDs	Description	Identifier
	LED		*constant glowing* – wing substation is active; *no glowing* – bridge wing substation is not active
14	Button «CALL» with LED	«CALL»	supplies warning signal in case of any established connections
15	Button «HOLD» with LED	«HOLD»	to hold on a user in PA mode (not used)
16	Button «PABX» with LED	«PABX»	to initiate mode that allows for calling to ATX users
17	Button «CONF» with LED	«CONF»	to initiate conference
18	Button «LIST» with LED	«LIST»	to initiate general list mode (in LS mode)
19	Buttons / with LEDs		to turn up / down volume of built-in speaker during communication
20	Button «DIM» with LED	«DIM»	to change (decrease) button and LEDs backlight brightness, stepwise with 20% step

Table 13 – Graphical representation of UUs indication

Pos.	Name of mode	Graphical representation of UUs indication
1	Loss of connection	
2	Incoming call from UU	
3	Outgoing call to UU	
Note – «Loss of connection» mode (position 1) is related to «Fault» LED of substation panels and switches on in case of connection loss between CU and one or several UUs; this mode is also related to LEDs of user select buttons, which switches on in case of connection loss with UU assigned to relevant user line.		

2.6 TALK-BACK STATIONS S TYPE

2.6.1 Description

Talk-back stations S ensure talk-back public address communication with one pre-defined user.

Types:

1) equipped with integrated microphone and loudspeaker:

– S1-WM (wall mounting);

– S1-PM (panel mounting);

– S1W (wall mounting, waterproof);

2) equipped with integrated microphone and loudspeaker, 5 buttons to select subscribers:

– S1-5-WM (wall mounting);

– S1-5-PM (panel mounting);

3) equipped with integrated microphone and loudspeaker, 3 buttons to select subscribers:

– S1-3-WM (wall mounting);

– S1-3-PM (panel mounting);

4) equipped with integrated loudspeaker and microphone connector:

– S2-WM (wall mounting);

– S2-PM (panel mounting);

5) equipped with integrated loudspeaker and microphone connector, 5 buttons to select subscribers:

– S2-5-WM (wall mounting);

– S2-5-PM (panel mounting);

6) equipped with integrated loudspeaker and microphone connector, 3 buttons to select subscribers:

– S2-3-WM (wall mounting);

– S2-3-PM (panel mounting);

7) equipped with an external alarm (incoming call) circuit connector and microphone connector, waterproof, wall mounting: S3;

8) equipped with terminals to connect external loudspeaker, waterproof, wall mounting: S4;

9) equipped with integrated loudspeaker, waterproof, portable: S4P;

10) bridge wing substation type SW-1, waterproof:

– SW-1-WM (wall mounting);

– SW-1-PM (wall mounting).

2.6.2 Controls and indication

Controls and LEDs of S are shown in Figures 10–14. For the description of controls and LEDs, see Tables 14–16.

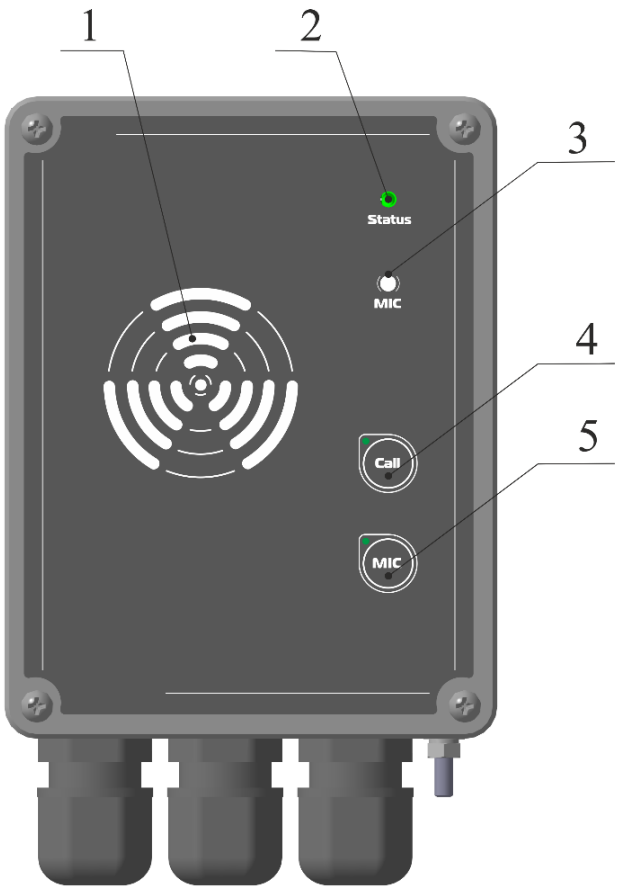


Figure 10 – Appearance of S1-WM controls and LEDs

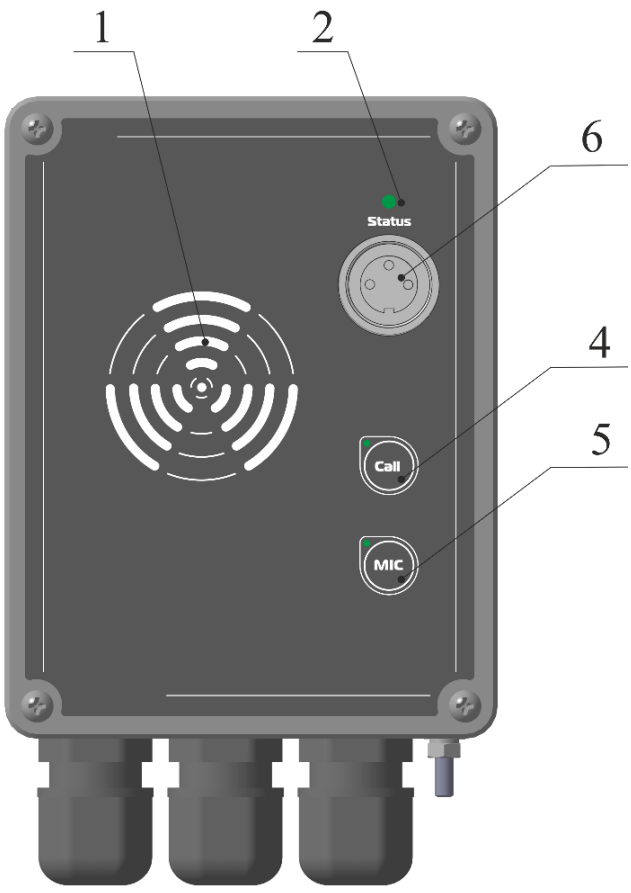


Figure 11 – Appearance of S2-WM controls and LEDs

Table 14 – Controls and LEDs of S1-WM and S2-WM

№	Controls and LEDs	Description	Identifier
1	Built-in speaker	—	to reproduce voice communication and call signal
2	«Status» LED	«Status	*constant green glowing* – correct functioning and ready for operation; *no glowing* – no power supply, user line error; *constant red glowing* – lost connection or error
3	Built-in microphone	—	to transmit voice communication.
4	«CALL» button with LED	«CALL»	ensures a call to assigned UU; functions of button in LS mode: – *press the button in standard operation mode* – to make a call; – *press the button second time during outgoing call* – to stop outgoing call; – *press the button in communication mode (during conversation)* – to stop communication; – *press the button during incoming call* – to accept incoming call Description of LEDs operation modes (located next to the button): – *constant glowing* – connection to assigned UU is established; – *flashing in mode see Table 13, position 3* – outgoing call to UU assigned to the button; – *flashing in mode see Table 13, position 2* – incoming call from UU assigned to the button
5	«MIC» button with LED	«MIC»	to switch on microphone; *constant glowing* – microphone is on; *no glowing* – microphone is off
6	Connector	—	to connect external communication device (microphone, headset)

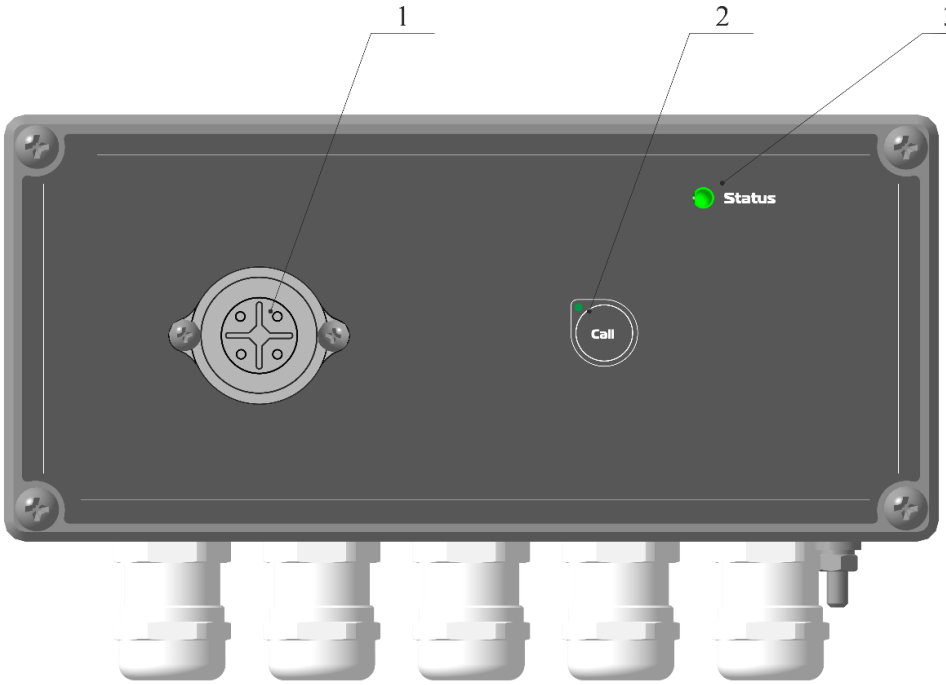


Figure 12 – Appearance of S3 controls and LEDs

Table 15 – Controls and LEDs of S3

№	Controls and LEDs	Description	Identifier
1	Connector	—	to connect external communication device (microphone, headset).
2	«CALL» button with LED	«CALL»	ensures a call to assigned UU; functions of button in LS mode: – *press the button in standard operation mode* – to make a call; – *press the button second time during outgoing call* – to stop outgoing call; – *press the button in communication mode (during conversation)* – to stop communication; – *press the button during incoming call* – to accept incoming call. Description of LEDs operation modes (next to button): – *constant glowing* – connection to assigned UU is established; – *flashing in mode see Table 13, position 3* – outgoing call to UU assigned to the button; – *flashing in mode see Table 13, position 2* – incoming call from UU assigned to the button
3	«Status» LED	«Status»	*constant green glowing* – correct functioning and ready for operation; *no glowing* – no power supply, user line error; *constant red glowing* – lost connection or error

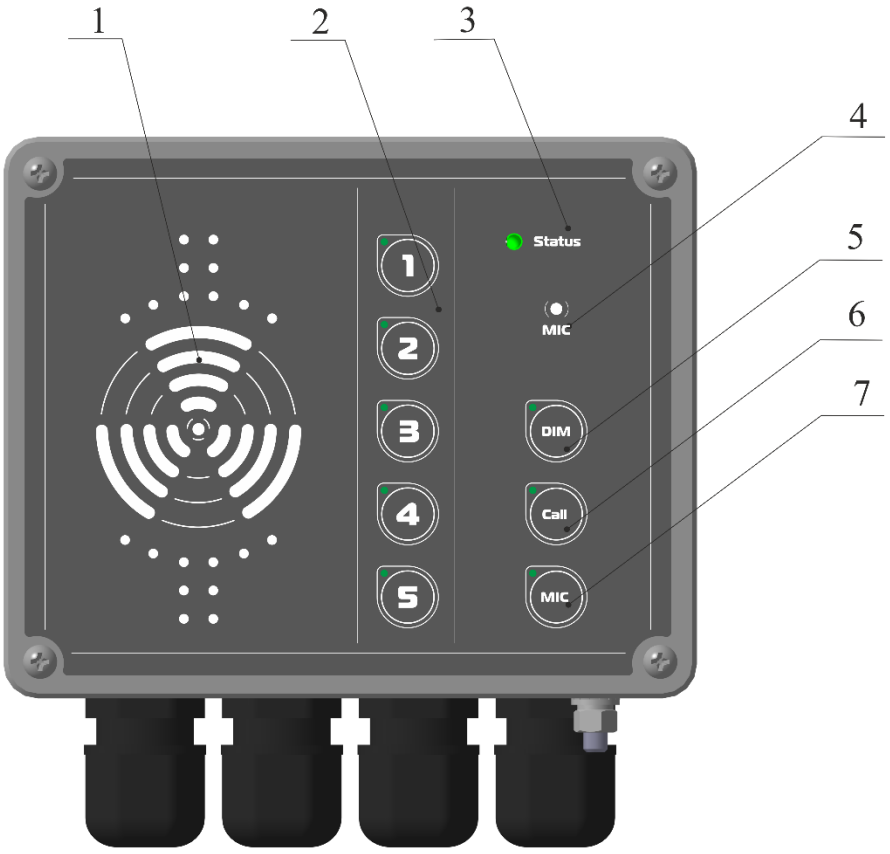


Figure 13 – Appearance of S1-5-WM controls and LEDs

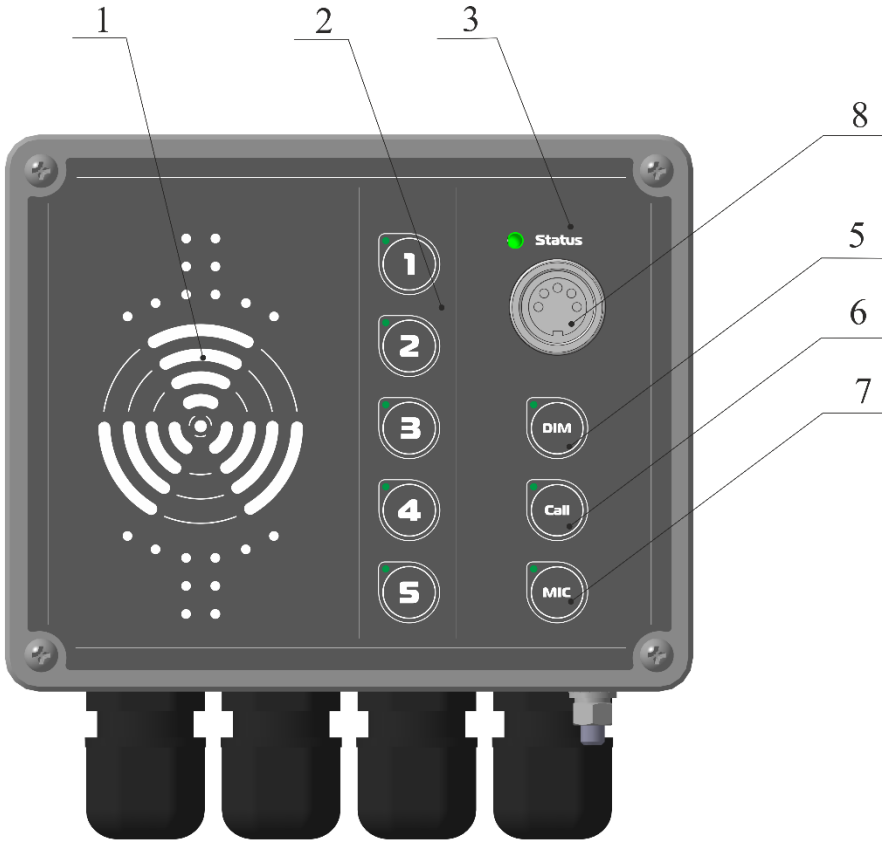


Figure 14 – Appearance of S2-5-WM controls and LEDs

Table 16 – Controls and LEDs of S1-5 and S2-5

№	Controls and LEDs	Description	Identifier
1	Built-in speaker	—	to reproduce voice communication and call signal
2	Group of buttons «1»…«5» with LEDs	«1»…«5»	select called UU in LS mode; functions of buttons «1» ... «5» in LS mode: – *press the button in standard operation mode* – to make a call; – *press the button second time during outgoing call* – to stop outgoing call; – *press the button in communication mode (during conversation)* – to disconnect; – *press the button during incoming call* – to accept incoming call. Description of LEDs operation modes (next to button): – *no glowing* – UU is not assigned to the corresponding user line, or connection with UU is absent; – *constant glowing* – connection to UU assigned to the corresponding user line is established; – *flashing in mode see Table 13, position 1* – loss of connection with UU assigned to the corresponding user line; – *flashing in mode see Table 13, position 2* – incoming call from UU assigned to corresponding user line; – *flashing in mode see Table 13, position 3* – outgoing call to UU assigned to the corresponding user line
3	«Status» LED	«Status	*constant green glowing* – correct functioning and ready for operation; *no glowing* – no power supply, user line error; *constant red glowing* – lost connection or error
4	Built-in microphone	—	to receive voice communication
5	«DIM» button with LED	«DIM»	to change (decrease) button and LEDs backlight brightness, stepwise with step 20%
6	«CALL» button with LED	«CALL»	ensures a call to assigned UU; functions of button in LS mode: – *press the button in standard operation mode* – to make a call; – *press the button second time during outgoing call* – to stop outgoing call; – *press the button in communication mode (during conversation)* – to stop communication; – *press the button during incoming call* – to accept incoming call

№	Controls and LEDs	Description	Identifier
			Description of LEDs operation modes (located next to the button): – *constant glowing* – connection to assigned UU is established; – *flashing in mode see Table 13, position 3* – outgoing call to UU assigned to the button; – *flashing in mode see Table 13, position 2* – incoming call from UU assigned to the button
7	«MIC» button with LED	«MIC»	to switch on microphone; *constant glowing* – microphone is on; *no glowing* – microphone is off
8	Connector	—	to connect external communication device (microphone, headset)
* Button «CALL» of talk-back stations S1-3, S1-5 and S2-3, S2-5 ensures only a warning signal supplied to user during current communication.			

2.7 COMMUTATION, COUPLING, DISTRIBUTION, SWITCHING UNITS

2.7.1 Switch SW-16-WM

2.7.1.1 Description

SW-16-WM is designed to combine connected network devices in one network using Ethernet.

2.7.1.2 Controls and indication

Controls and LEDs of SW-16-WM are shown in Figure 15. For the description of controls and LEDs, see Table 17.

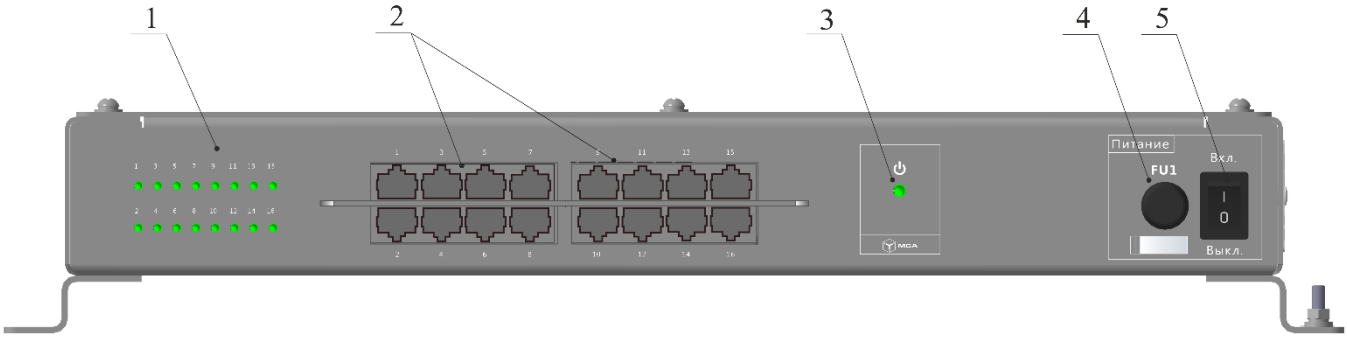


Figure 15 – Appearance of SW-16-WM controls and LEDs

Table 17 – Controls and LEDs of SW-16-WM

№	Controls and LEDs	Description	Identifier
1	Group of LEDs «1» … «16»	«1» … «16»	channel status LEDs
2	Group of ports «X1»… «X16»	«X1»… «X16»	ports RJ-45 with 10/100/1000Base-T support
3	LED	⏻	power LED
4	Power mains fuse	FU1	
5	Power button	«On / Off»	to switch the power on/off

2.7.2 POE injector POE-INJ type

2.7.2.1 Description

POE-INJ is designed to extend range of PoE line by 100 m. Wall mounting.

2.7.2.2 Controls and indication

Controls and LEDs of POE-INJ are shown in Figure 16. For the description of controls and LEDs, see Table 18.

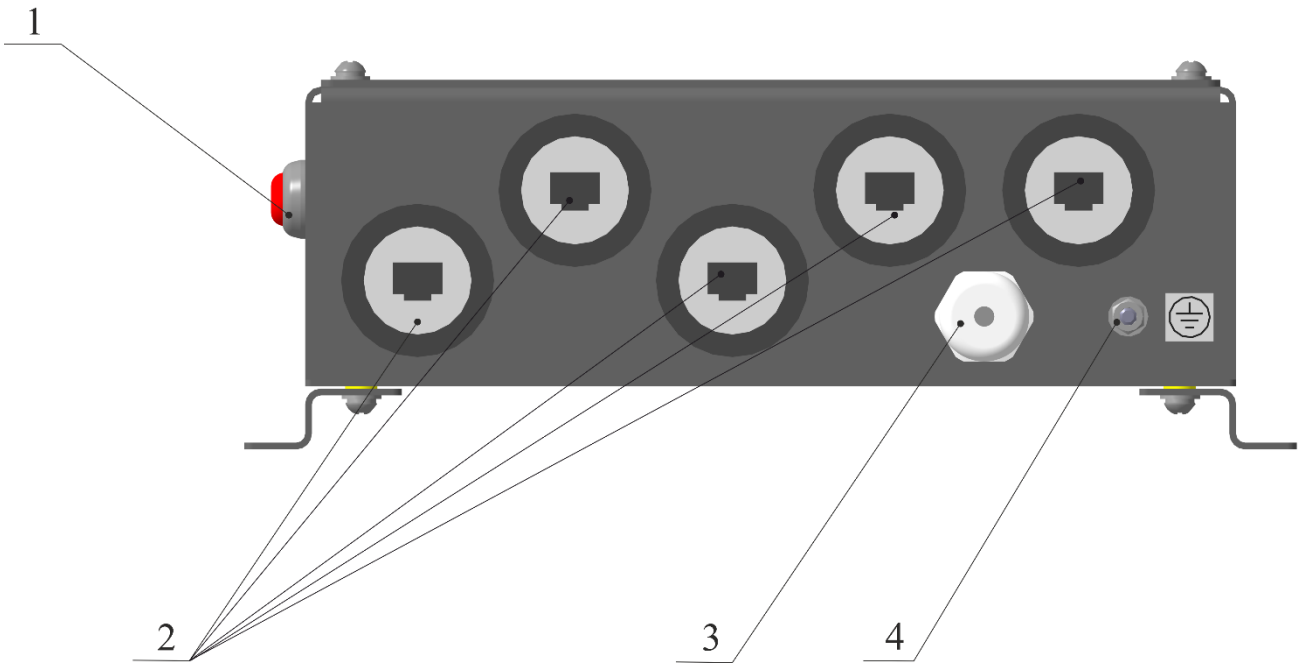


Figure 16 – Appearance of POE-INJ controls and LEDs

Table 18 – Controls and LEDs of POE-INJ

№	Controls and LEDs	Description	Identifier
1	Power button	«On / Off»	to switch the power on/off
2	Group of connectors	—	to connect Ethernet 10/100 Base-T; PoE power supply voltage
3	Cable gland SKINTOP MS-M 16x1.5	—	to connect input power supply
4	Grounding stud M5x16	—	main grounding element of POE injector

2.7.3 Entertainment remote control EC type

2.7.3.1 Description

The unit is designed to control entertainment broadcasting for six zones. Wall mounting.

EC-6M type is equipped with an integrated record player (entertainment source).

2.7.3.2 Controls and indication

Controls and LEDs of EC-6 and EC-6M are shown in Figures 17, 18. For the description of controls and LEDs, see Table 19.

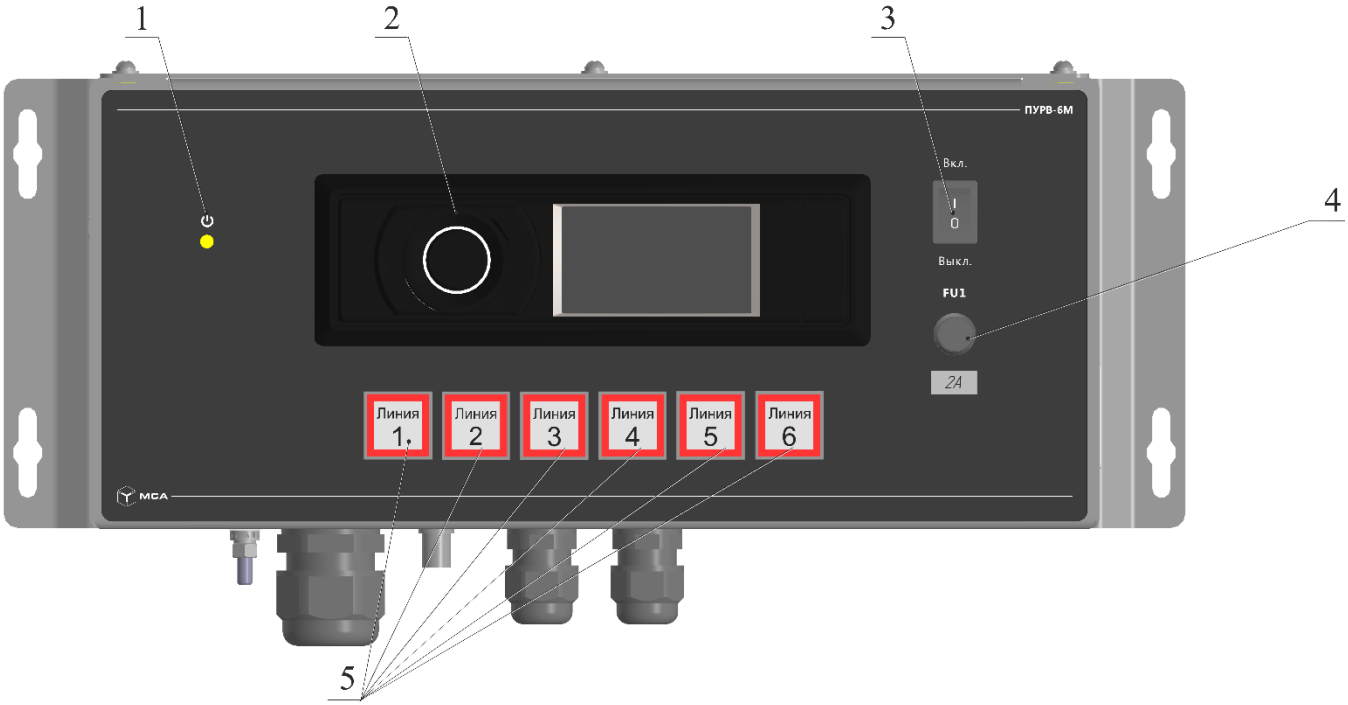


Figure 17 – Appearance of EC-6M controls and LEDs

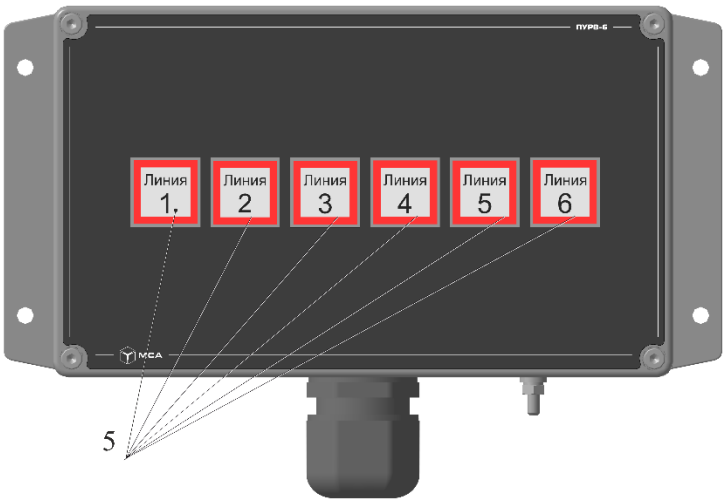


Figure 18 – Appearance of EC-6 controls and LEDs

Table 19 – Controls and LEDs of EC

№	Controls and LEDs	Description	Identifier
1	LED	⏻	power LED
2	Record player (entertainment source)	—	to play entertainment programs, radio and other broadcasting types
3	Power button	«On / Off»	to switch the power on/off
4	Fuse holder	«FU1»	—
5	Group of buttons «1»…«6» with LEDs	«1»… «6»	to select zone

2.7.4 Line switch KP-124-DMO

KP-124-DMO is designed to connect loudspeakers to four-wire line. Wall mounting.

2.7.5 Junction boxes KP-124PW, KP-124PW-2, KP-124PW-3, KP-124PW-4 types

KP-124PW, KP-124PW-2, KP-124PW-3, KP-124PW-4 are designed to split input circuits to several outputs. Additional alarm units may be connected to UUs. Waterproof. Wall mounting.

Types:

– KP-124PW (1 input, 7 outputs);

– KP-124PW-2 (1 input, 1 output);

– KP-124PW-3 (1 input, 2 outputs);

– KP-124PW-4 (1 input, 3 outputs).

2.7.6 Junction boxes KP-124-30, KP-124-40, KP-124-100 types

KP-124-30, KP-124-40, KP-124-100 are designed to split input circuits to several outputs. Wall mounting.

Types:

– KP-124-30 (1 input, 2 outputs, 10 terminals in circuit);

– KP-124-40 (1 input, 9 outputs, 4 terminals in circuit);

– KP-124-100 (1 input, 9 outputs, 10 terminals in circuit).

2.7.7 Junction boxes КР-124V, КР-124VF types

КР-124V, КР 124VF are designed to split input circuits to several outputs. Waterproof. Wall mounting.

КР 124VF is equipped with filter to suppress unwanted harmonic distortion.

Inputs – 1 pc.

Outputs – 9 pcs.

Number of terminals in circuit – 3 pcs.

2.7.8 Matching transformers T-140-D60, T-140-D120 types

T-140-D60, T-140-D120 are designed to convert signal amplitudes in wide bandwidth. Waterproof. Wall mounting.

Types:

– T-140-D60 (max. throughput power 60 W);

– T-140-D120 (max. throughput power 120 W).

2.7.9 Cord CE type

CE is designed to extend standard cable of external communication devices. The cords have the following lengths: 1.5; 3.0; 5.0; 7.0; 10.0 m.

Types:

– with two waterproof connectors (socket and straight plug) – type codes CE-1.5; CE-3; CE-5; CE-7; CE-10;

– with waterproof connector (socket and crimped ends) – type codes CE-1.5BE; CE-3BE; CE-5BE; CE-7BE; CE-10BE;

– with two waterproof connectors (socket and angle plug) – type codes CE-1.5AC; CE-3AC; CE-5AC; CE-7AC; CE-10AC.

2.7.10 Relay units RB-139G-24, RB-139G-220 types

RB-139G-24, RB-139G-220 are designed to switch external power supply to the connected external signaling units. Connected to SP and S. Waterproof. Wall mounting.

Types:

– RB-139G-24 (input voltage 24 V DC);

– RB-139G-220 (input voltage 220 V AC, 50 Hz).

2.7.11 Foot-switch FB1 type

FB1 is used to activate microphone. Compatible with all SPs. Floor mounting.

2.7.12 Antenna ANT

ANT is designed to receive and convert radio signals. Omnidirectional. Wall mounting or mounting on mast.

Types:

– ANT-1 (1.26 m);

– ANT-2 (2.68 m).

2.7.13 Volume control DMO type

DMO is designed to control volume of connected loudspeakers, one-channel, volume control override function. Panel mounting (PM) and wall mounting (WM). DMO-25W type is waterproof.

Types:

– DMO-10-PM DMO-10-WM (power of connected loudspeakers 10 W);

– DMO-25-PM, DMO-25-WM, DMO-25W (power of connected loudspeakers 25 W);

– DMO-50-PM, DMO-50-WM (power of connected loudspeakers 50 W).

2.7.14 Volume control DM type

DM is designed to control volume of connected loudspeakers, two-channel, volume control override function. Panel mounting (PM) and wall mounting (WM). DM-25WD type is waterproof.

Types:

– DM-10D-PM, DM-10D-WM (power of connected loudspeakers 10 W);

– DM-25D-PM, DM-25D-WM, DM-25WD (power of connected loudspeakers 25 W);

– DM-50D-PM, DM-50D-WM (power of connected loudspeakers 50 W).

2.7.15 Volume control DMP type

DMP is designed to control volume of connected loudspeakers, volume control override function. Panel mounting (PM) and wall mounting (WM).

Types:

– DMP-06-PM, DMP-06-WM (power of connected loudspeakers 6 W);

– DMP-12-PM, DMP-12-WM (power of connected loudspeakers 12 W);

– DMP-24-PM, DMP-24-WM (power of connected loudspeakers 24 W);

– DMP-36-PM, DMP-24-WM (power of connected loudspeakers 36 W);

– DMP-50-PM, DMP-24-WM (power of connected loudspeakers 50 W).

2.7.16 Selector / Volume control SDP type

SDPs function as volume controls and program selectors (6 positions), one-channel. Panel mounting (PM) and wall mounting (WM).

Types:

– SDP-06-PM, SDP-06-WM (power of connected loudspeakers 6 W);

– SDP-12-PM, SDP-12-WM (power of connected loudspeakers 12 W);

– SDP-24-PM, SDP-24-WM (power of connected loudspeakers 24 W);

– SDP-36-PM, SDP-36-WM (power of connected loudspeakers 36 W);

– SDP-50-PM, SDP-50-WM (power of connected loudspeakers 50 W).

2.7.17 Selector SELP type

SELPs function as program selectors (6 positions). Panel mounting (PM) and wall mounting (WM).

Types:

– SELP-06-PM (panel mounting);

– SELP-06-WM (wall mounting).

2.7.18 Socket CBP1 type

CBP1 is designed to connect portable substations to user line.

CBP1 is wall mounted. Waterproof. Equipped with protective cover (airtight protection of front side of connector against water).

2.7.19 Socket HS-CB type

HS-CB is designed to connect external communication devices to public address units.

HS-CB is wall mounted. Waterproof. Equipped with protective cover (airtight protection of front side of connector against water).

Types:

– HS-CB (w/o toggle switch);

– HS-CB-T (with toggle switch).

2.7.20 Socket SM-1 type

SM-1 is designed to connect M1, M2 external microphones to substations.

Types:

– SM-1;

– SM-1K (with microphone on/off button).

2.7.21 Socket SM-3 type

SM-3 is designed to connect microphones M3, headsets HS-4, HS-6 and intercom helmets TH-4M, TH-4L to UUs.

Types:

– SM-3;

– SM-3K (with microphone on/off button).

2.8 EXTERNAL COMMUNICATION DEVICES

2.8.1 Handset B-HS type

B-HS1, B-HS3, B-HS4 ensure talk-back communication. The units are equipped with a PTT switch (to connect telephone receiver to communication circuits). Panel mounting (PM) and wall mounting (WM).

Types:

– B-HS1-PM, B-HS1-WM;

– B-HS3-PM, B-HS3-WM;

– B-HS4-PM, B-HS4-WM.

2.8.2 Microphone M1 type

M1 has a gooseneck and quick connector. M1 is used with CP or S.

2.8.3 Microphone M2 type

M2 is connected to microphone panels.

M2, manual with PTT switch (splash proof); equipped with a quick connector with cord length 1.5 m (stretched).

2.8.4 Microphone M3-W type

M3-W, manual with PTT switch (waterproof); equipped with a quick connector. M3-W is used with CP or S.

Types:

– M3-W (cord length 3 m);

– M3-10W (cord length 10 m).

2.8.5 Headset HS-4 type

HS-4 ensures talk-back communication in noisy areas. The unit is connected only to S3. HS-4 has two headphones.

Types:

– HS-4 (crimped ends);

– HS-4C (straight plug connector);

– HS-4AC (angle plug connector).

2.8.6 Headset HS-6 type

HS-6 ensures talk-back communication in noisy areas. The unit is connected only to S3. HS-6 has one headphone.

Types:

– HS-6 (crimped ends);

– HS-6C (straight plug connector);

– HS-6AC (angle plug connector).

2.8.7 Intercom helmet TH-4M type

Intercom helmet with a microphone, 3 m cable and manual switch.

Summer type:

– TH-4M-S (crimped ends);

– TH-4M-S-C (straight plug connector);

– TH-4M-S-CA (angle plug connector).

Winter type:

– TH-4M-W (crimped ends);

– TH-4M-W-C (straight plug connector);

– TH-4M-W-CA (angle plug connector).

2.8.8 Intercom helmet TH-4L type

Intercom helmet with a throat microphone, 3 m cable and manual switch.

Summer type:

– TH-4L-S (crimped ends);

– TH-4L-S-C (straight plug connector);

– TH-4L-S-CA (angle plug connector).

Winter type:

– TH-4L-W (crimped ends);

– TH-4L-W-C (straight plug connector);

– TH-4L-W-CA (angle plug connector).

2.9 LOUDSPEAKERS LS TYPE

LS ensures broadcasting, different acoustic signaling, and voice communication in public address systems.

2.9.1 Loudspeakers LS-1 type

LS-1 has a metal casing, compact, built into ceiling/side ceiling, only for inside spaces.

Types:

– LS-1 (input voltage 30 V, power 6 W);

– LS-1/100 (input voltage 100 V, power 6.0, 3.0, 1.5, 0.5 W).

2.9.2 Loudspeakers LS-2 type

LS-2 has a metal casing, compact, wall-mounted, only for inside spaces, power 6.0; 3.0; 1.5 W.

Types:

– LS-2 (input voltage 30 V);

– LS-2/100 (input voltage 100 V).

2.9.3 Loudspeakers LS-3 type

LS-3 has a plastic casing, wall-mounted, for deck and inside spaces.

Types:

– LS-3/10 (input voltage 30 V, power 10 W);

– LS-3/15 (input voltage 30 V, power 15 W);

– LS-3/100/10 (input voltage 100 V, power 10 W);

– LS-3/100/15 (input voltage 100 V, power 15 W);

– LS-3/100/20 (input voltage 100 V, power 20 W);

– LS-3/100/30 (input voltage 100 V, power 30 W).

2.9.4 Loudspeakers LS-5 type

LS-5 has a wooden casing with brackets for wall mounting, only for inside spaces.

Types:

– LS-5 (input voltage 30 V, power 6 W);

– LS-5/100 (input voltage 100 V, power 6.0; 3.0; 1.5; 0.5 W).

2.9.5 Loudspeakers LS-6 type

LS-6 has an aluminum casing, waterproof, wall-mounted, for deck and inside spaces.

Types:

– LS-6 (input voltage 30 V, power 6 W);

– LS-6/100 (input voltage 100 V, power 6.0; 3.0; 1.5; 0.5 W).

2.9.6 Loudspeakers LS-7 type

LS-7 has a plastic casing, wall-mounted, compact, for deck and inside spaces.

Types:

– LS-7 (input voltage 30 V, power 8 W);

– LS-7/100 (input voltage 100 V, power 8.0; 4.0; 2.0; 1.5; 0.7; 0.4 W).

2.9.7 Loudspeakers LS-8 types

LS-8 has a metal casing, horn-type on a bracket, wall-mounted, for deck and inside spaces.

Types:

– LS-8/10 (input voltage 30 V, power 10.0; 5.0; 2.5 W);

– LS-8/25 (input voltage 30 V, power 25.0; 12.5; 6.0 W);

– LS-8/100/10 (input voltage 100 V, power 10.0; 5.0; 2.5 W);

– LS-8/100/25 (input voltage 100 V, power 25.0; 12.5; 6.0 W);

– LS-8/100/50 (input voltage 100 V, power 50.0; 25.0; 12.5 W).

2.9.8 Loudspeakers LS-9/100 type

LS-9 has a plastic casing with brackets for wall mounting, for deck and inside spaces.

Input voltage 100 V, power 50.0; 25.0; 12.5; 9.0; 4.5; 3.5 W.

2.9.9 Loudspeakers LS-10/100 type

LS-10/100 has a plastic casing with brackets for wall mounting, for deck and inside spaces.

Input voltage 100 V, power 50.0; 27.0; 18.0; 15.0; 7.5; 3.5 W.

2.9.10 Loudspeakers LS-12/100 type

LS-12/100 is manufactured in aluminium casing with brackets for wall mounting,

for deck and inside spaces.

Input voltage 100 V, power 6.0; 3.0; 1.5; 0.5 W.

2.9.11 Loudspeakers LS-13 type

LS-13 has a plastic all-weather casing in a shape of searchlight with a bracket, wall or ceiling mounting, for deck and inside spaces.

Types:

– LS-13/10 (input voltage 30 V, power 10.0; 5.0; 3.5; 2.5; 1.5; 0.8 W);

– LS-13/30 (input voltage 30 V, power 30.0; 15.0; 10.0; 7.5; 3.5; 2.0 W);

– LS-13/100/10 (input voltage 100 V, power 10.0; 5.0; 3.5; 2.5; 1.5; 0.8 W);

– LS-13/100/30 (input voltage 100 V, power 30.0; 15.0; 10.0; 7.5; 3.5; 2.0 W);

– LS-13/10D (input voltage 30 V, power 10.0; 5.0; 3.5; 2.5; 1.5; 0.8 W);

– LS-13/30D (input voltage 30 V, power 30.0; 15.0; 10.0; 7.5; 3.5; 2.0 W);

– LS-13/100/10D (input voltage 100 V, power 10.0; 5.0; 3.5; 2.5; 1.5; 0.8 W);

– LS-13/100/30D (input voltage 100 V, power 30.0; 15.0; 10.0; 7.5; 3.5; 2.0 W).

2.9.12 Loudspeaker SDL type

SDL has a plastic casing, wall-mounted, only for inside spaces.

Types:

– SDL (input voltage 100 V, power 6.0; 3.0; 1.5 W, volume control);

– SDL-4 (input voltage 100 V, power 6.0; 3.0; 1.5 W, program switch (selector) and volume control).

2.9.13 Loudspeaker DSP (Ex)

DSP (Ex) is manufactured in all-weather explosion-proof plastic casing and has a shape of megaphone with a bracket, for explosion hazard spaces.

Input voltage 100 V, power 25.0; 15.0; 6.5; 5.0; 2.5; 1.5 W.

2.9.14 Loudspeaker LF-1/100 type

LF-1/100 is manufactured in plastic casing and has a shape of megaphone with bracket, for deck and internal spaces.

Input voltage 100 V, power 100; 50 W.

2.9.15 Loudspeaker GVR-Prometey type

GVR-Prometey is manufactured in aluminum alloy casing and has a shape of megaphone with a bracket, for explosion hazard spaces.

Types:

– GVR-Exd-10-Prometey (input voltage 100 V, power 10 W);
– GVR-Exd-20-Prometey (input voltage 100 V, power 20 W);
– GVR-Exd-30-Prometey (input voltage 100 V, power 30 W).

2.10 SIGNALING UNITS

2.10.1 Rotating lamps RL-24, RL-220 types

RL-24, RL-220 ensure light alarm signaling on open deck and in noisy areas, wall mounting on a bracket, only on vertical plane, orange, blue, red and green globes.

Types:

– RL-24-O (input voltage 24 VDC, orange globe);
– RL-220-O (input voltage 220 VAC, orange globe);
– RL-24-B (input voltage 24 VDC, blue globe);
– RL-220-B (input voltage 220 VAC, blue globe);
– RL-24-R (input voltage 24 VDC, red globe);
– RL-220-R (input voltage 220 VAC, red globe);
– RL-24-G (input voltage 24 VDC, green globe);
– RL-220-G (input voltage 220 VAC, green globe).

2.10.2 Flashing lamp FL-24 type

FL-24, FL-220 ensure light alarm signaling on open deck and in noisy areas, beacon, wall mounting on a bracket, only on vertical plane with red, orange, white, blue and green globes.

Types:

– FL-24-O (orange globe);
– FL-24-B (blue globe);
– FL-24-R (red globe);
– FL-24-G (green globe);
– FL-24-W (white globe).

2.10.3 Rotating flashing lamp RFL-24, RFL-220 types

RFL-24, RFL-220 ensure light alarm signaling on open deck and in noisy areas, wall mounting with red, orange, blue and green globes.

Types:

– RFL-24-O (input voltage 24 V DC, orange globe);
– RFL-220-O (input voltage 220 V AC, orange globe);
– RFL-24-B (input voltage 24 V DC, blue globe);

– RFL-220-B (input voltage 220 V AC, blue globe);
– RFL-24-R (input voltage 24 V DC, red globe);
– RFL-220-R (input voltage 220 V AC, red globe);
– RFL-24-G (input voltage 24 V DC, green globe);
– RFL-220-G (input voltage 220 V AC, green globe).

2.10.4 Light signaling unit L-24, L-220 types

L-24, L-220 ensure light alarm signaling on open deck and in noisy areas, beacons, wall mounting, with red, orange, white, green and blue globes.

Types:
– L-24-O (input voltage 24 V DC, orange globe);
– L-220-O (input voltage 220 V AC, orange globe);
– L-24-B (input voltage 24 V DC, blue globe);
– L-220-B (input voltage 220 V AC, blue globe);
– L-24-R (input voltage 24 V DC, red globe);
– L-220-R (input voltage 220 V AC, red globe);
– L-24-G (input voltage 24 V DC, green globe);
– L-220-G (input voltage 220 V AC, green globe);
– L-24-W (input voltage 24 V DC, white globe);
– L-220-W (input voltage 220 V AC, white globe).

2.10.5 Sound signaling unit A-24, A-220, A2-24, A2-220 type

A-24, A-220, A2-24, A2-220 ensure sound alarm signaling on open deck and in noisy areas, wall mounting.

Types:
– A-24 (input voltage 24 V DC);
– A-220 (input voltage 220 V AC);
– A2-24 (input voltage 24 V DC);
– A2-220 (input voltage 220 V AC).

2.10.6 Howler HW1-24, HW1-220 types

HW1-24, HW1-220 ensure sound alarm signaling on open deck and in noisy areas, wall mounting.

Types:
– HW1-24 (input voltage 24 V DC);
– HW1-220 (input voltage 220 V AC).

2.10.7 Buzzer-howler BH1-24, BH1-220 types

BH1-24, BH1-220 ensure sound alarm signaling on open deck and in noisy areas, wall mounting.

Types:

– BH1-24 (input voltage 24 V DC);

– BH1-220 (input voltage 220 V AC).

2.10.8 Sound and light signaling unit AL-24, AL-220 types

AL-24, AL-220 ensure sound and light alarm signaling on open deck and in noisy areas, wall mounting.

Types:

– AL-24-O (input voltage 24 V DC, orange globe);
– AL-220-O (input voltage 220 V AC, orange globe);
– AL-24-B (input voltage 24 V DC, blue globe);
– AL-220-B (input voltage 220 V AC, blue globe);
– AL-24-R (input voltage 24 V DC, red globe);
– AL-220-R (input voltage 220 V AC, red globe);
– AL-24-G (input voltage 24 V DC, green globe);
– AL-220-G (input voltage 220 V AC, green globe);
– AL-24-W (input voltage 24 V DC, white globe);
– AL-220-W (input voltage 220 V AC, white globe).

2.10.9 Light signaling unit PGS-VSPYSHKA-24, PGS-VSPYSHKA-220 types

PGS-VSPYSHKA-24, PGS-VSPYSHKA-220 ensure light alarm signaling in explosion hazard areas, wall mounting.

Types:

– PGS-VSPYSHKA-24 (input voltage 24 V DC);

– PGS-VSPYSHKA-220 (input voltage 220 V AC).

2.10.10 Sound signaling unit BExS110E24DC, BExS110E230AC types

BExS110E24DC, BExS110E230AC ensure sound alarm signaling in explosion hazard areas, wall mounting.

Types:

– BExS110E24DC (input voltage 24 V DC);

– BExS110E230AC (input voltage 220 V AC).

2.10.11 Light signaling unit ORBITA MK S, sound signaling unit ORBITA MK Z, sound and light signaling unit ORBITA MK SZ types

ORBITA MK S, ORBITA MK Z, ORBITA MK SZ ensure light alarm signaling, sound alarm and sound light alarm in explosion hazard areas, wall mounting.

Types:

– ORBITA MK S (light alarm);

– ORBITA MK SZ (sound / light alarm);

– ORBITA MK Z (sound alarm).

2.11 WALL MOUNTED METAL ENCLOSURES

2.11.1 Wall mounted metal enclosure BO-1H type

BO-1H is designed to protect devices against low temperature on open deck; wall mounting.

BO-1H provides hinges for wall mounting; the door has a lock and stopper to keep it open; a padlock may be put on the locked door; the inside of enclosure is heated automatically (preset unchangeable values of integrated thermal sensor). Cables are led into the cabinet through cable glands.

2.11.2 Wall mounted metal enclosure BO-1 type

BO is designed to house devices in dry spaces and on open deck; wall mounting.

BO-1, BO-2, BO-3 and BO-4 types have different volume, as well as hinges for wall mounting; they are equipped with a lock and stopper to keep the door open (opening angle – 105°). Cables are led into the cabinet through cable glands.

3 INTENDED USE

3.1 OPERATION LIMITATIONS

Connect the SC according to connection diagram and table of connections applied for this order. All SC shall have reliable grounding; all cables shall be isolated; make sure there are not any non-isolated cable ends.

Select a place for SC installation considering operation limitations (operating temperature, IP rating and explosion proof rating).

ATTENTION!

Install LS on minimum distance of 3 m from microphones of communication devices and CP in order to avoid self-excitation effect

3.2 USAGE PREPARATIONS

3.2.1 Safety features

Before using the System, provide the following steps:

– train the staff to operate the System, test and control the equipment, and familiarize with occupational safety rules required for the operation;

– familiarize the staff with all grounding points; check grounding;

– use fuses from SPTA kit;

– de-energize all devices before disconnecting cables, replacing fuses, units and modules;

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

3.2.2 Visual check procedure

Before switching the SC on, the installer shall:

– observe visually the cable integrity and initial position of the controls on the SC front panels;

– clean the SC from dust and dirt by clean soft cloth, if necessary;

– check fail-safe cable connections to the SC and their proper grounding.

3.3 USAGE OF THE SYSTEM

3.3.1 Connection

Connect transmission units and general alarm signaling units according to connection diagrams, see Figures A.1–A.7.

Connect CU to the external systems, specified in 1.3.2.4, according to the diagram, see Figure A.3 in Appendix A.

Figure 19 describes layout of CU boards for max. enhanced configuration. Table 20 describes CU boards. Figures 20–27 and Tables 21 – 28 describe layout of terminals for connection.

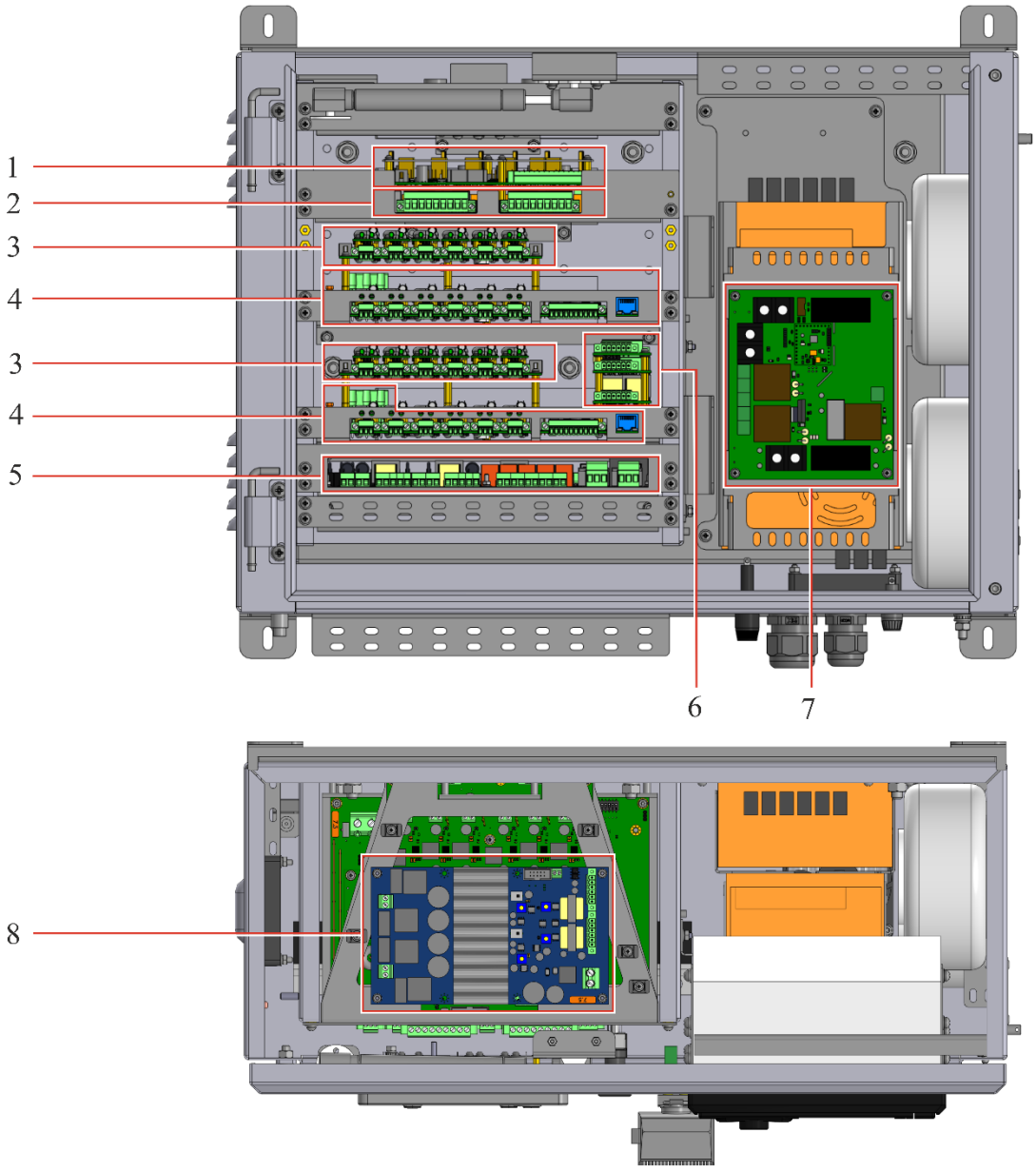


Figure 19 – Layout of CU boards

Note – Figure 19 shows CU without front and top panels.

Table 20 – Description of CU boards

№	Name	Description
1	OVR+PMRC	to connect control panels of entertainment broadcasting; 24 V DC supply to volume controls and program switches on the selected PA lines (zones).
2	PMUX	switching of amplified sound signal to the selected PA lines (zones); switching of connected amplifiers from voice amplification to music amplification and vice versa
3	CU-SLAVE	connection of additional six PA users
4	CU-MAIN	connection of six PA users; equipped with Ethernet port.
5	AG-1	to generate alarm signals; connection of alarm panels, general alarm units and external signaling units
6	PA_CTRL	control of PA lines and sound signal of general alarm
7	PWRBRD	connection of main and standby power to CU
8	PAMP	fmplifying line sound signal; select of amplified signal type: voice or musical
Notes 1 Number of boards CU-MAIN and CU-SLAVE is defined regarding PA system users. 2 Board PA_CTRL is always delivered together with board CU-MAIN. 3 Boards PMUX and OVR+PMRC are combined and, therefore, delivered together. 4 Board AG-1 is at option.		

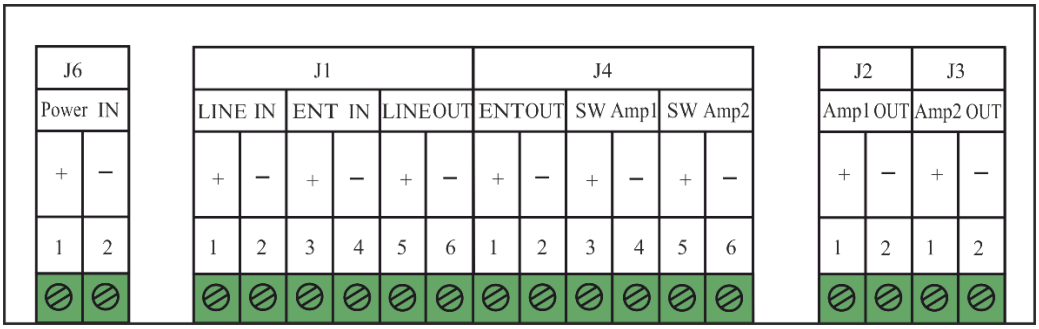


Figure 20 – Layout of terminals on board PAMP

Table 21 – Description of PAMP board terminals

Terminal name	Assignment
J6	input power supply
J1 (pins 1…2)	line audio signal input (voice) from CU
J1 (pins 3…4)	line audio signal input (music) from record player
J1 (pins 5…6)	line audio signal output (voice) to the next amplifier
J4 (pins 1…2)	line audio signal output (music) to the next amplifier
J4 pins 3…4)	dry contact input. When external system closes «+» and «–» the first board channel switches from music amplification to voice amplification
J4 (pins 5…6)	dry contact input. When external system closes «+» and «–» the second board channel switches from music amplification to voice amplification
J2, J3	amplified audio signal output to step-up transformer

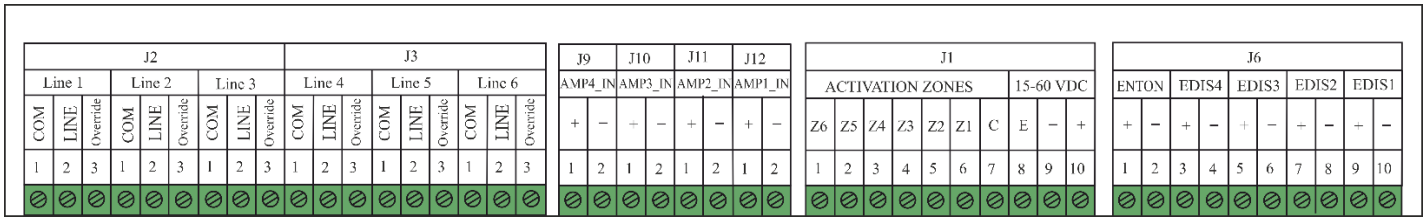


Figure 21 – Layout of terminals on board PMUX

Table 22 – Description of PMUX board terminals

Terminal	Assignment
J2, J3	output 100 V of amplified audio signal to PA lines (zones)
J9… J12	input 100 V of amplified signal from amplifiers
J1 (pins 1…7)	control signal input (dry contacts) from board PA_CTRL
J1 (pins 8...10)	for internal connections
J6 (pins 1…2)	power supply input 12 V from record player
J6 (pins 3…10)	dry contacts outputs to connected amplifiers. Switching voice and musical signals

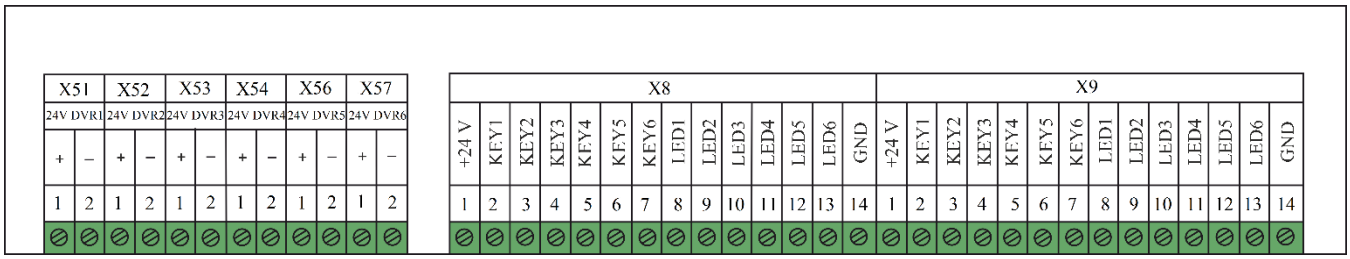


Figure 22 – Layout of terminals on board OVR+PMRC

Table 23 – Description of OVR+PMRC board terminals

Terminal	Assignment
X51…X56	24 V DC output to volume control coils of PA lines loudspeakers or program switches; voice transmission on the first PMUX channel activates OVR 1. Other channels work as well
X8	output to control panel of entertainment broadcasting №1
X9	output to control panel of entertainment broadcasting №2

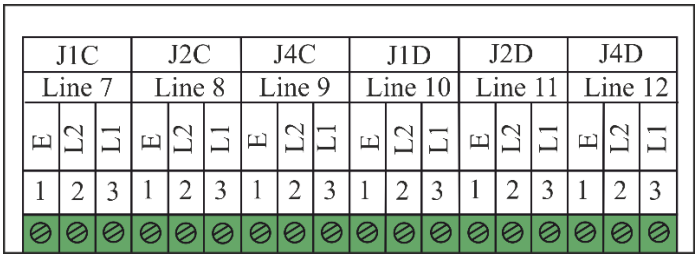


Figure 23 – Layout of terminals on board CU-SLAVE

Table 24 – Description of CU-SLAVE board terminals

Terminal	Assignment
J1C, J2C, J4C, J1D, J2D, J4D	connection of MPs and PA units

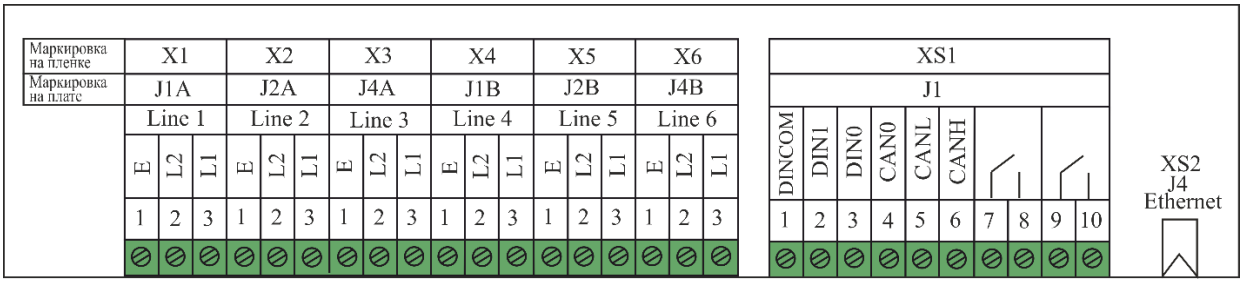


Figure 24 – Layout of terminals on board CU-MAIN

Table 25 – Description of CU-MAIN board terminals

Terminal	Assignment
J1A, 2A, J4A,J1B, J2B, J4B	connection of MPs and PA units
J1 (pins 1…6)	not used
J1 (pins 7…10)	dry contact outputs from CU-MAIN board. Contacts close when CU is switched on or transmission to zones is activated (depending on configuration)
J4	connector RJ-45 to connect board CU-MAIN to local Ethernet network

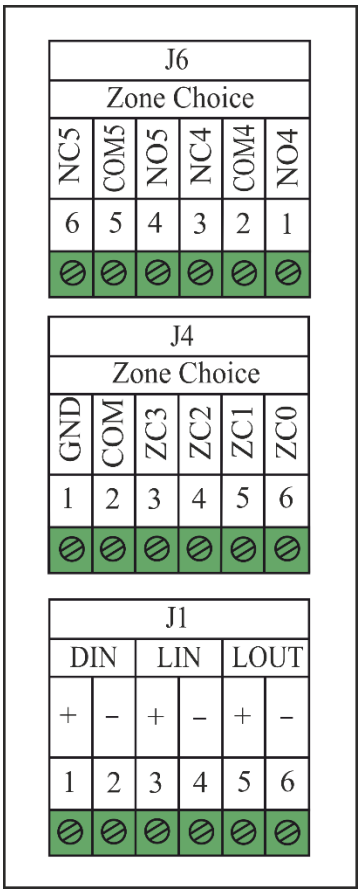


Figure 25 – Layout of terminals on board PA_CTRL

Table 26 – Description of PA_CTRL board terminals

Terminal	Assignment
J1 (pins 1…2)	dry contact input from general alarm
J1 (pins 3…4)	line audio signal input from general alarm
J1 (pins 5…6)	line audio signal output from PA_CTRL board to amplifier
J4, J6	dry contacts output to control activation of PMUX board outputs

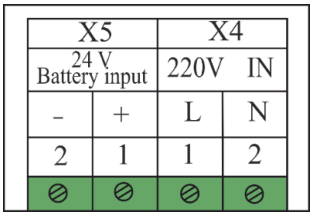


Figure 26 – Layout of terminals on board PWRBRD

Table 27 – Description of PWRBRD board terminals

Terminal	Assignment
X5	standby power input voltage 24 V DC
X4	main power input voltage 220 V AC, 50 (60) Hz

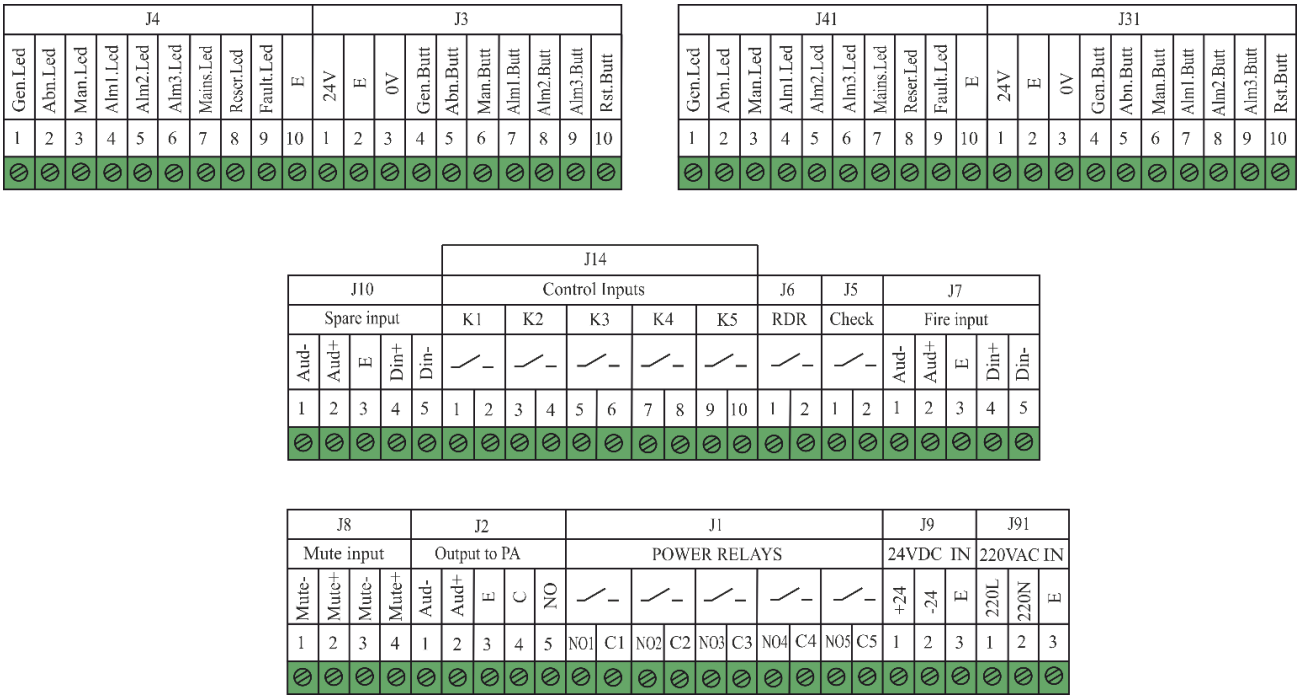


Figure 27 – Layout of terminals on board AG-1

Table 28 – Description of AG-1 board terminals

Terminal	Assignment
J4, J3	input №1 from alarm panel (alarms actuates once the button is pressed on the alarm panel)
J41, J31	input № 2 from alarm panel (alarms actuates once the button is pressed on the alarm panel)
J10	input №2 to connect to external alarm system
J14	not used
J6	dry contact output to VDR
J5	dry contact output that indicates normal/error in alarm generator operation
J7	input №1 to connect to fire alarm system
J8	input for external dry contact. To interrupt alarm signaling
J2	output of audio alarm signal and discrete alarm signal
J1	dry contacts current up to 10 A to connect external signaling units
J9	power supply input 24 V DC
J91	power supply input 220 V AC, 50 (60) Hz

The System loudspeakers may be connected to CU directly or by two-core cable.

If you use volume control override function, use three- or four-wire PA line (zone).

General alarm units are connected to board of AG-1 alarm generator that is delivered optionally (see Figure 27).

Connect external source of entertainment broadcasting to AUX port of MB-1 entertainment source integrated in CU (delivered optionally).

If a customer orders entertainment source MB-1, CU will be equipped with BNC-BJ type connector to connect antenna.

Main/standby power switching system integrated in CU ensures ongoing System operation in case of main power failure.

Attention!

Make sure that power cables are de-energized while connection. Connect and ensure power supply after all SC connections.

3.3.2 System settings

To learn more information about System settings see Settings instructions.

Attention!

System and SC settings shall be carried out by engineers of «NPK MSA» or their authorized representatives in order to avoid faulty/incorrect operation.

3.3.3 Power consumption

SC power consumption is equal to total power consumed by SC used within the System. To calculate total power use data from Technical description.

Calculate quantity of loudspeakers for each zone and then calculate power for each PA line (zone).

Attention!

Total power of loudspeakers for particular zone shall not exceed total power of System amplifiers.

3.3.4 Power requirements

To power the System, use a separate power source (voltages are described in Table 1) capable to supply required power.

3.3.5 Cable requirements

To connect SC, apply flame-resistant cables according to part XI of the RMRS Rules, 16.5 and part VI of the RRR Rules, 12.1.1. For the instructions on cables, see Table 29.

Table 29 – Cable instructions

Cable		Cable cross-section
Power supply	220 V AC, 50 (60) Hz	2x2,5 (э) mm^2
	24 V DC	cross section is calculated depending on total power consumption (at least 2.5 mm^2, shielded)
User substations (ISDN line)		2x0.5 (э) mm^2
Loudspeakers		2x0.75 (э) mm^2
Signaling units (electric power supply)	2x0.75 (э) mm^2	2x0,75 (э) mm^2
	24 VDC	cross section is calculated depending on permissible supply voltage range of signaling unit, power of all signaling units and cable length (at least 0.75 mm^2, shielded)

3.3.6 Transmission of voice communication to zones

3.3.6.1 Control panels

MPs, SPs or APs may be used as System control panels. For the description of panel controls and LEDs see 2.3–0.

To transmit voice communication from the panel, act as follows:

1) select one or several zones by pressing the corresponding buttons «1» … «3» or «1» … «6» within the group «PA LINES» (or select all zones by «ALL» button, if available MP-X);

2) switch on the microphone by «MIC» button or PTT switch on the microphone;

3) clearly say the command into the microphone.

LEDs of the selected buttons will light up.

To stop transmission, act as follows:

1) switch off the microphone by « MIC » button or PTT switch on the microphone;

2) press illuminated buttons of the selected zones.

Note – All System MPs and SPs ensure public address transmission.

3.3.6.2 Telephone unit of external ATX

To transmit voice communication from telephone of external ATX, act as follows:

1) dial assigned telephone number (actuation of ATX external announcement ports);

2) wait for the connection;

3) clearly say the command;

4) hang up the receiver.

Note – enable voice communication transmission in ATX settings.

Attention!

Voice communication transmission will temporary switch off alarm signaling and (or) entertainment broadcasting, and then automatically resume it.

3.3.7 Alarm actuation from control panels

The function is available if alarm generator AG-1 is included in the CU scope of delivery. For the description of controls and LEDs of the control panel see 2.3.

Attention!

Control panels are equipped with a protective cover or special lock button to protect alarm buttons against key stroke. To access the alarm buttons, open the protective cover or unlock the alarm buttons.

To start required alarm, act as follows:

1) press required alarm button on the control panel;
2) LED of selected alarm will light up.

To stop alarm signaling, press the same alarm button again or «Reset» button (do not hold «unlock» button this time, it is not necessary).

All System APs may actuate alarms.

Notes

1 Voice communication will interrupt alarm signaling (for example, from MP) and resume afterwards.

2 Use reserve alarm button to actuate additional alarms (added on customer request); the alarms are actuated in the same way as the standard ones.

3.3.8 Entertainment broadcasting

To transmit entertainment programs from integrated entertainment source MB-1, act as follows:

1) turn on the entertainment source;
2) selected audio signal will start transmission to zone (select type of program, if necessary);
3) backlight of controls and LCD of the entertainment source switches on;
4) entertainment programs are transmitted from external entertainment source via AUX port of MB-1. MB-1 and AUX mode shall be switched on (to retransmit input audio signal).

To stop transmission, press power button for the second time.

Number of zones to broadcast musical programs may be limited (or increased) by corresponding settings of CU board, as well as buttons on the CU front panel, see Settings instructions.

Note – Any voice communication or alarm will interrupt entertainment broadcasting.

3.3.9 Audio quality control

The module integrated in CU ensures quality control of transmitted messages, see Figure 2. To control quality, act as follows:

1) select the required zone by selector switch;
2) rotating «Volume» handle (knob), set up volume of transmitted messages.

3.3.10 Volume controls

Volume controls are used together with loudspeaker (integrated in loudspeaker or external (connected)).

Rotating handle (knob) of volume control, set up required volume or switch the loudspeaker off, transferring it to OFF position.

Note – Voice communication transmitted to zones overrides volume controls. The commands are transmitted at maximum level of volume (not depending on volume control position).

3.3.11 Software

3.3.11.1 Connection with user. Communication mode – Pair / Selective CNF

Initiator's steps to follow:

1) by means of buttons «1» to «X» (where X – max. number of UUs, depending on the SP type) select one UU for pair communication or press UUs one by one to establish a conference call. Selected UU will receive call signal;
2) wait for the answer;

Note – If initiator's priority is higher than a called user's priority, connection will be established immediately.

3) to transmit voice communication, press and hold «MIC» button or PTT switch of external communication device, and clearly say a command to the microphone;
4) to disconnect, press UU button for the second time or press UU buttons one by one to disconnect them from the conference call;
5) To disconnect all UUs, press «END» button.

Note – To draw user's attention (if necessary) during current connection, press «CALL » to send the call for the second time. Release the button to stop the call.

User's steps to follow: press button of calling UU to answer the call.

Note – To establish CNF with all UUs or transmit announcements to all zones, press «ALL» button on the CU control panel.

3.3.11.2 Communication mode – General list (all)

Initiator's steps to follow:

1) press «CNF» button, then «1». All PA users will be automatically connected to conference call;

2) to transmit voice communication, press and hold «MIC» button or PTT switch of external communication device, and clearly say a command to the microphone;

3) to disconnect, press «CNF» button for the second time.

No actions are required from ***user*** – the mode switches on automatically.

Notes

1 «General list» mode may be activated only if initiator does not have any active connections.

2 All users of « General list » mode are not available for other calls. Calling UU will receive busy signal.

3 User may be disconnected from this mode only by initiator.

3.3.11.3 Switching to bridge wing substation SW-1

Once UU is connected, act as follows:

1) press «BW» button on SP and move to bridge wing;

2) use external communication device and loudspeaker connected to SW-1 to transmit or receive voice communication;

3) once communication is finished, return to SP and press «BW» button for the second time to disconnect SW-1.

3.3.11.4 Volume and brightness settings

Adjust volume of SP built-in speaker by pressing buttons «   ».

3.3.11.5 Backlight brightness dimming of buttons and LEDs

Adjust backlight brightness by «BRT» button from «backlight off» to «max. brightness level» with a step of 20%.

3.3.12 Talk-back stations S

3.3.12.1 S1, S1W, S2, S3, S4 and S4P operation in pair communication mode

Initiator's steps to follow:

1) to establish connection and supply sound signal, press «ВЫЗОВ/ЭКСТР» button;

2) wait for the answer. If substation priority is higher than the called user's priority, connection will be established immediately (after pressing «ВЫЗОВ/ЭКСТР»;

2) to talk, press «MIC» button (if available), or press and hold PTT switch of microphone or loudspeaker (for S4 and S4P), then clearly say a command into the microphone;

3) to disconnect, press «CALL» for the second time.

User's steps to follow:

1) to take the call, press « CALL»;

2) to disconnect, press « CALL» for the second time.

3.3.12.2 S1-3, S1-5 and S2-3, S2-5 operation in pair communication and conference modes

Initiator's steps to follow:

1) by pressing «1» to «5» buttons, select one UU for pair communication or press buttons of required UUs one by one to establish a conference call. Selected user (users) will receive a call;

2) wait for the answer;

Note – If Initiator's priority is higher than the called UU's priority, connection will be established immediately after pressing the button;

3) to transmit voice communication, press and hold «MIC» or PTT of external communication device, then clearly say a command into the microphone;

4) to disconnect UU in pair communication mode, press the corresponding UU button for the second time, or press buttons of the corresponding UUs to disconnect them from the conference call.

User's steps to follow: to take the incoming call, press button of calling UU.

Note – To draw user's attention (if necessary) during current connection, press «CALL» to send the call for the second time. Signal will be operating unless you release «CALL» button.

4 TECHNICAL SERVICE

4.1 General description

Before performing the TS the staff shall familiarize with the System composition, structure and operation features.

In order to provide safe and reliable operation of the System, the staff shall carry out TS-1 and TS-2.

TS-1 is carried out on equipment in operation. The TS № 1 results are registered in log of operation (duty log).

TS-2 is carried out on equipment in operation.

The TS № 2 results are registered in the System certificate.

4.2 Safety features

While maintaining TS, observe 5.2 of this OM.

4.3 Maintenance routine

The list of works for all types of TS is given in Table 30. Maintenance routine procedure is given in CL, represented in Tables 31–34. Amount of consumables required for TS is shown in Table 5.

Table 30 – List of works for the System SC

CL №	Work	Type of TS	
		TS-1	TS-1
1	Visual check of the SC	+	+
2	Operational test of the SC	–	+
3	Testing command public address, general alarm and entertainment broadcasting modes	–	+
4	Checking the scope of delivery, SPTA kit condition and operation documentation	–	+
Note: «+» – work is obligatory. «–» – work is not obligatory.			

Table 31 – CL № 1. Visual check of the SC

To be done	Routine	Man-hours per 1 SC
Visually examine the SC	1) check appearance of the SC; mechanical damage, paint defects must be absent; marking plates shall be present; legends are to be read easily; 2) clean up the SC surfaces with clean cloth; 3) remove severe contamination, parts of corrosion, oil spots: – from front surfaces – using soap foam preventing it against penetration inside the SC, then all surfaces clean dry by clean cloth and dry up; – from other surfaces – using alcohol soaked cloth; 4) if varnish paint coating is damaged, polish it with sand paper, then clean with alcohol-soaked cloth, cover with varnish AK-113 and dry up	1 person 5 minutes
Check cable and bus connection to the SC	check that connectors and attaching screws are fastened tight; provide further fastening if needed	1 person 5 minutes

Table 32 – CL № 2. Check of the SC operation

To be done	Routine	Man-hours per 1 SC
Check System operation	check the following: 1) indication of «~220», «=24» or «Ready» on CU, if CU includes MP; 2) intact user lines by LED pairs above the connectors «X1»… «X24» on CU; 3) indication of corresponding SC included in the scope of delivery	1 person 10 minutes per 1 SC

Table 33 – CL № 3. Check operation of command transmission, general alarm and entertainment broadcasting

To be done	Routine	Man-hours per 1 SC
Check operation of command transmission, general alarm and entertainment broadcasting	1) transmit commands to zones according to 3.3.6, control adherence to priorities; 2) activate alarm (see 3.3.7), control adherence to priorities; 3) initiate entertainment broadcasting, control adherence to priorities	2 persons 1 hour 2 persons 1 hour 2 persons 15 minutes

Table 34 – CL №4. Check of scope of delivery, SPTA kit condition and operational documentation

To be done	Routine	Man-hours per 1 SC
Check of scope of delivery, SPTA kit condition and operational documentation	1) compare SPTA kit items to those listed in operational documentation, see section 4 «The scope of delivery» of the System Certificate; 2) check storage time and quality of every item in case of SPTA kit use (and was completed again); 3) complete SPTA kit if necessary	1 person 1 hour

4.4 Instructions on SPTA kit

SPTA kit is delivered together with the System and used to support operating condition of the System by replacing faulty SC. SPTA kit composition shall comply with section 4 «The scope of delivery» of the System Certificate.

4.5 Preservation

The System, SPTA kit and set of operational documents are stored in preserved condition in Manufacturer’s packaging boxes.

The preservation is done in full terms, for 2 years, applying protection and packaging.

The preservation may be repeated; it is done in heated rooms in the same order as the first one. The System, SPTA kit and set of operational documents preserved for the second time are placed in package.

5 CURRENT REPAIR OF THE SYSTEM

5.1 GENERAL DESCRIPTION

Complete used up portable SPTA kit using basic SPTA kit.

5.2 SAFETY FEATURES

Any repair works must be provided by qualified personnel.

All SC shall be grounded!

Use rubber rug in front of power supply units.

Replacement of fuse links or defective parts, boards and modules when power is ON is STRICTLY PROHIBITED.

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

Installation and repair works are PROHIBITED in the room, where less than two (2) people are present.

5.3 CURRENT REPAIR OF THE SC

5.3.1 Current repair of CU

Control CU operation by LED indicator lights of the SC. The list of CU potential malfunctions and troubleshooting is represented in Table 35.

Replace failed SC from portable SPTA kit.

Table 35 – CU potential malfunctions

Malfunction	Potential reasons	To be done
No power indication	faulty power supply circuit	check the circuit for short circuit. If no short circuit found, replace the faulty fuse of corresponding power circuit.
Amplifier (included in CU scope) does not switch on; «Ready» LED is not glowing	faulty fuse of power circuit	replace the fuse from SPTA kit
	power supply unit of amplifier is out of order	contact the Manufacturer
Amplifier (included in CU scope) is constantly reloading; «Overload» LED is glowing	total power of load connected to the amplifier exceeds power of the amplifier	disconnect odd load
	short circuit of PA line (zone)	cut off power supply of CU. Check cables and loudspeakers connected to zones for short circuit.
Amplifier (included in CU scope) is operating, but «Overload» LED is glowing	disturbance of amplifier temperature conditions	switch off the amplifier to cool it down. If the malfunction repeats, one cooler may be malfunctioning. In this case contact the Manufacturer.

5.3.2 Current repair of microphone panels

Control operation of CPs by LED indicator lights located on the device casings.

The list of CP potential malfunctions and troubleshooting is represented in Table 36.

Table 36 – Potential problems of CP

Problem	Potential reasons	To be done
«*Fault*» LED is glowing	CU connection is lost	check condition of cable, reload the System

5.3.3 Current repair of combined microphone panels

Control operation of combined CPs by LED indicator lights located on the device casings.

The list of CP potential malfunctions and troubleshooting is represented in Table 37.

Table 37 – Potential problems of combined CPs

Problem	Potential reasons	To be done
«Fault» LED is glowing	no connection with CU	check condition of cable, reload the System
No glowing of «Main power» LED	no main power of AG-1 alarm generator	turn off the System, check condition of cable, cable connection, power supply voltage of alarm generator contacts
No glowing of «Standby power» LED	no standby power of AG-1 alarm generator	

5.3.4 AP current repair

Control operation of APs by LEDs on the front panels.

Table 38 describes potential malfunctions and troubleshooting.

Table 38 – Potential problems of AP

Problem	Potential reasons	To be done
«Fault» LED is glowing	no connection with CU	check condition of cable, reload the System
No glow of «Main power» LED	no main power	turn off the System, check condition of cable, cable connection, power supply voltage of alarm generator contacts
No glow of «Standby power» LED	no standby power	

5.3.5 Current repair of talk-back stations

Table 39 – Potential malfunctions of talk-back stations

Problem	Potential reasons	To be done
No connection with CU (READY LED is not glowing on the front panel).	cable break	check the cable for damage (break); replace cable or repair it; isolate the cable
	board malfunction	contact the Manufacturer
	CU port malfunction	connect device to non-faulty CU port

6 STORAGE

The System must be stored in packaging inside areas complying with the required storage conditions (+5°C…+40°C) without exceeding the concentration of dust, oil, moisture and aggressive impurities in the air for the working areas of production facilities.

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

7 TRANSPORTATION

The System must be transported in the Manufacturer's transportation package in enclosed means of transport.

Types of shipment:

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

– air transportation (in sealed and heated compartments);

– sea transportation (in dry working areas).

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

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

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

8 DISPOSAL

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

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

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

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

This unit must be disposed according to the rules applied to electronic devices

Any products marked with a crossed trash bin must be disposed separately from standard household wastes

9 WARRANTY

The Manufacturer is under warranty obligations in case of correct System exploitation according to the OM. The Manufacturer will not consider damage claims in case of case violation of operating conditions.

More information about warranty terms you can find on the official site of «NPK MSA», LLC, section Support.

Address and contacts of the Manufacturer's service centre:

«NPK MSA», LLC
26E, Kibalchicha str., 192174, St Petersburg, Russia
Tel.: + 7 (812) 602-02-64, 8-800-100-67-19
fax: +7 (812) 362-76-36
e-mail: service@unicont.com

ANNEX A
CONNECTION DIAGRAM OF SC AND CU

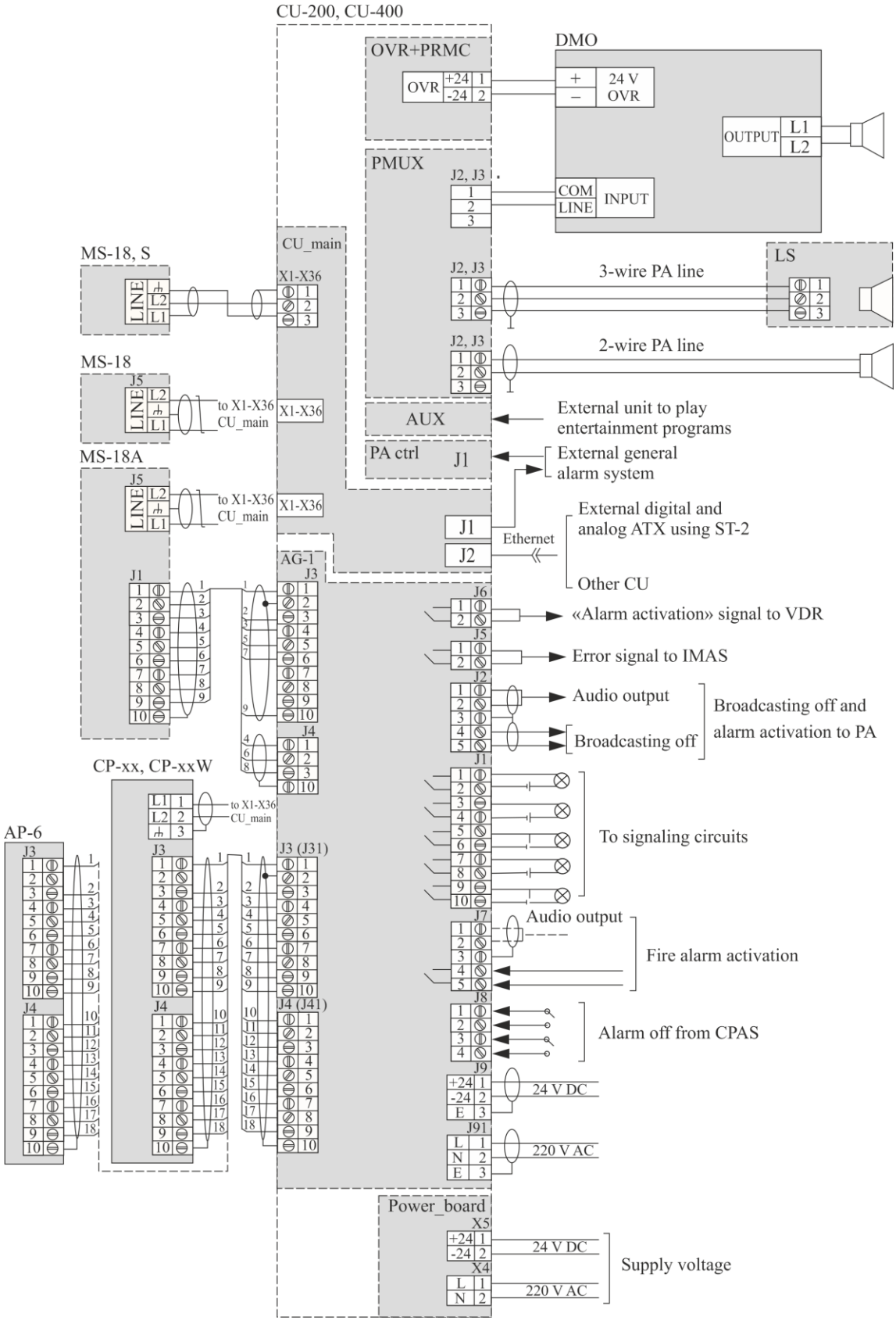


Figure A.1 – Example of PA units connection

Note – Connection of loudspeakers according to two- and three-wire scheme.

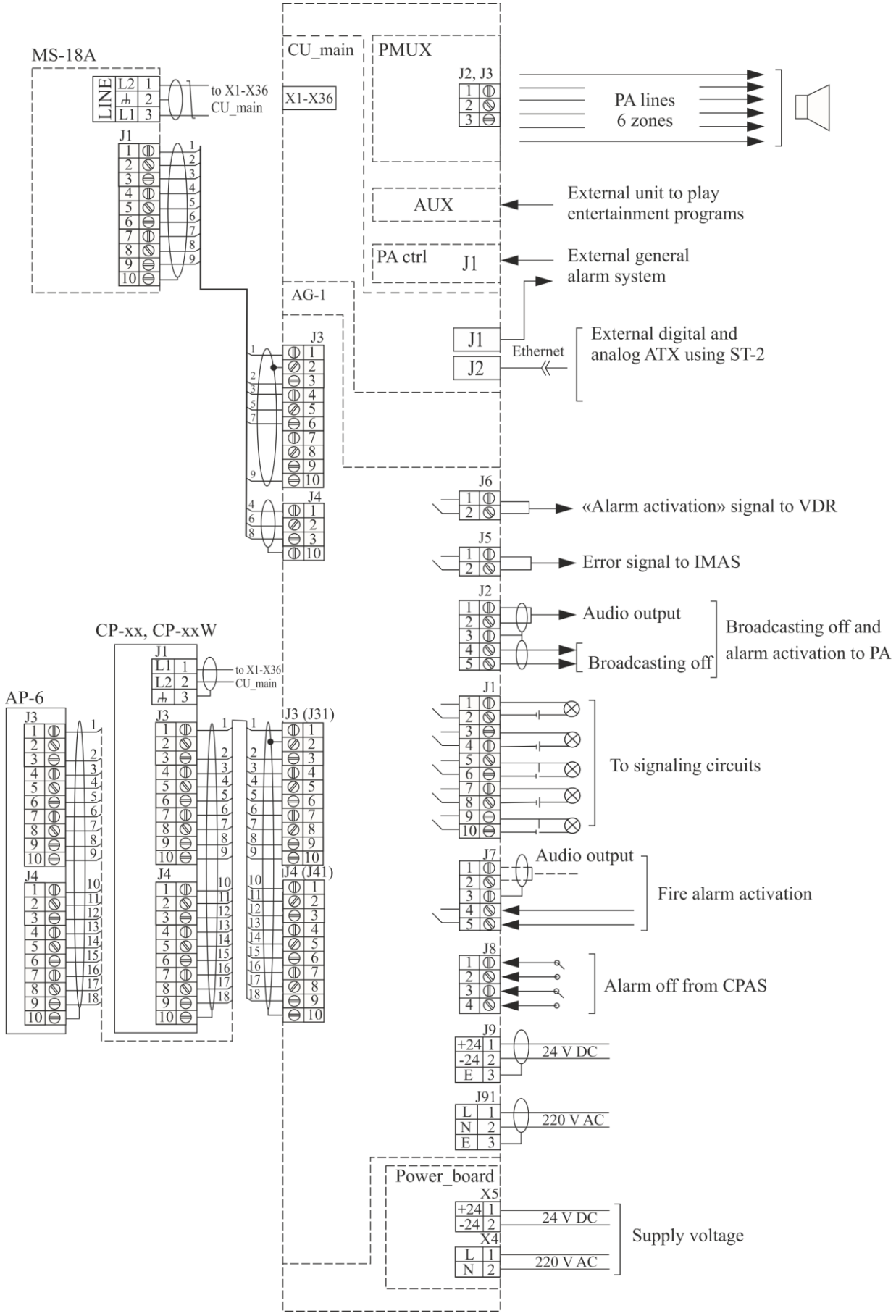


Figure A.2 – Example of general alarm units connection
(if CU is delivered together with alarm generator)

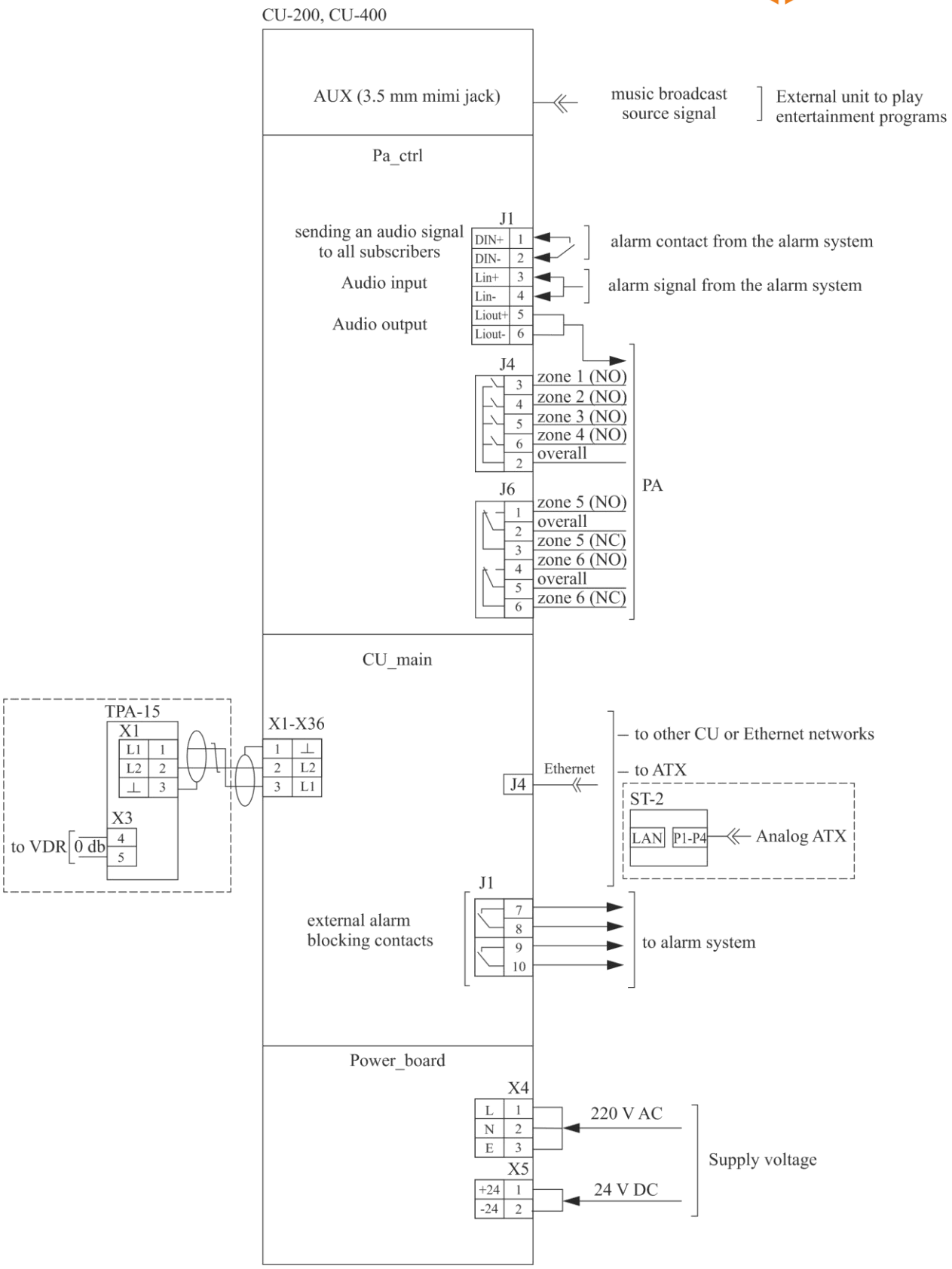


Figure A.3 – Example of CU connection to external systems

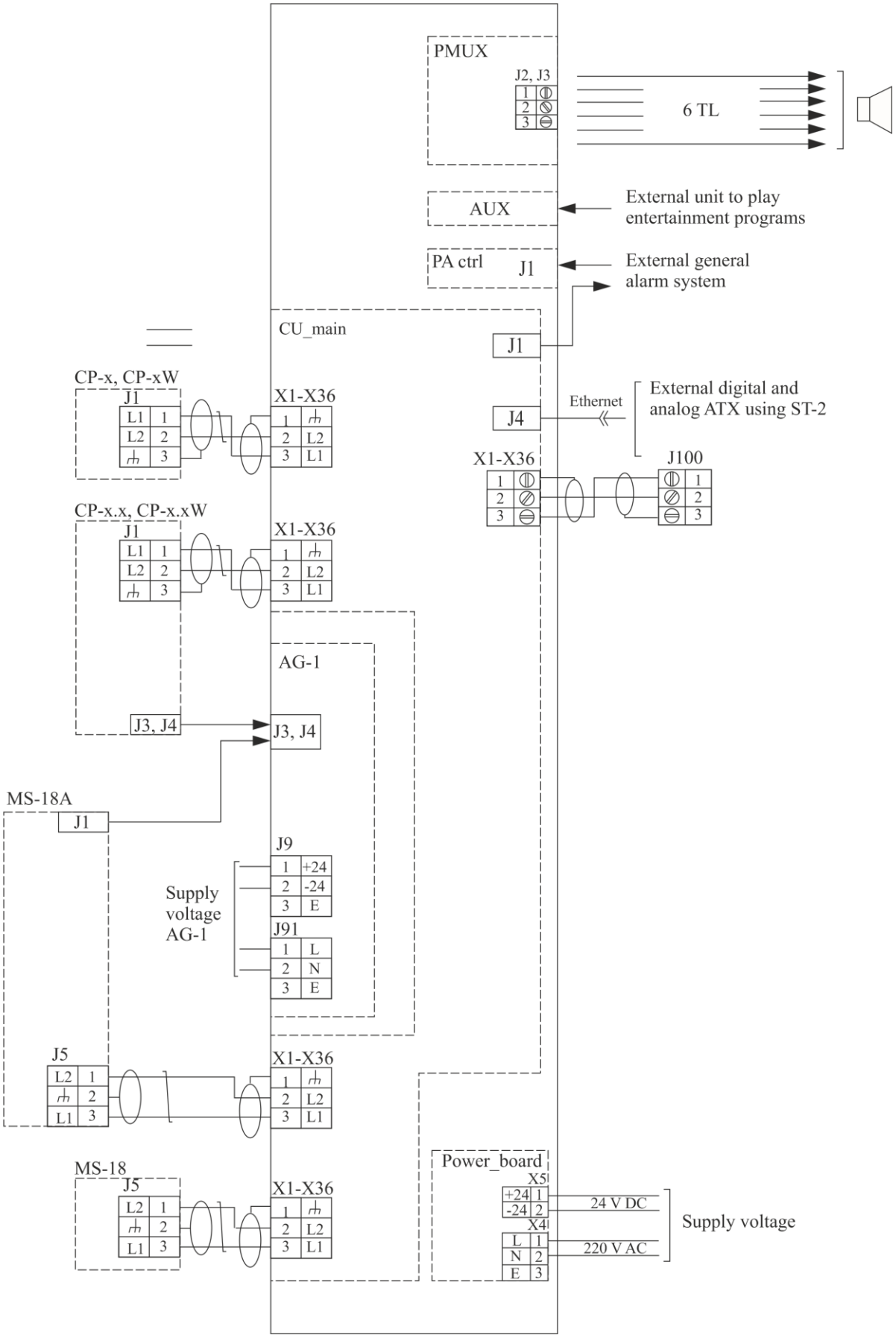


Figure A.4 – Example of talk-back units connection

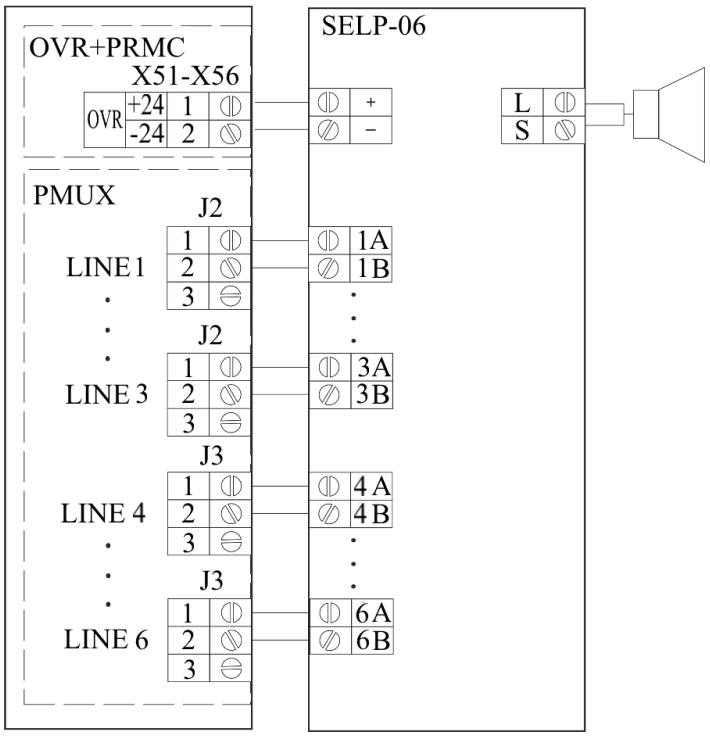
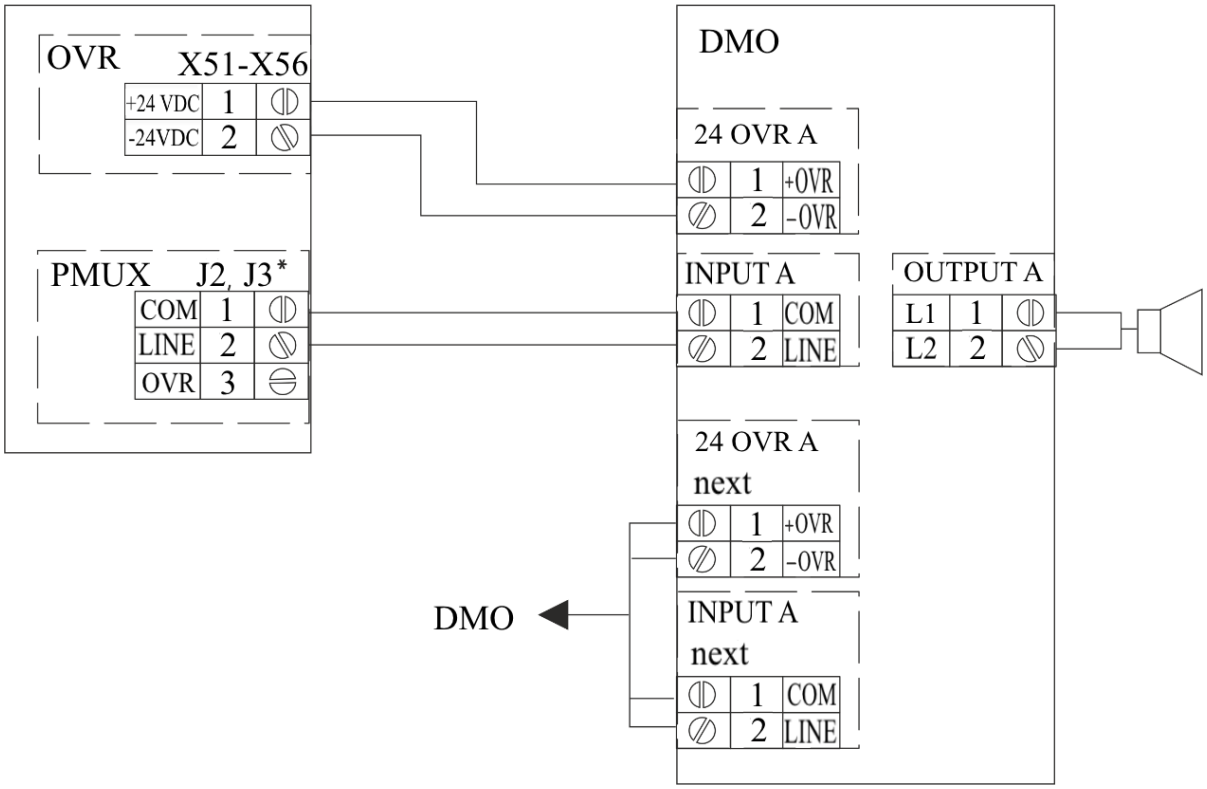
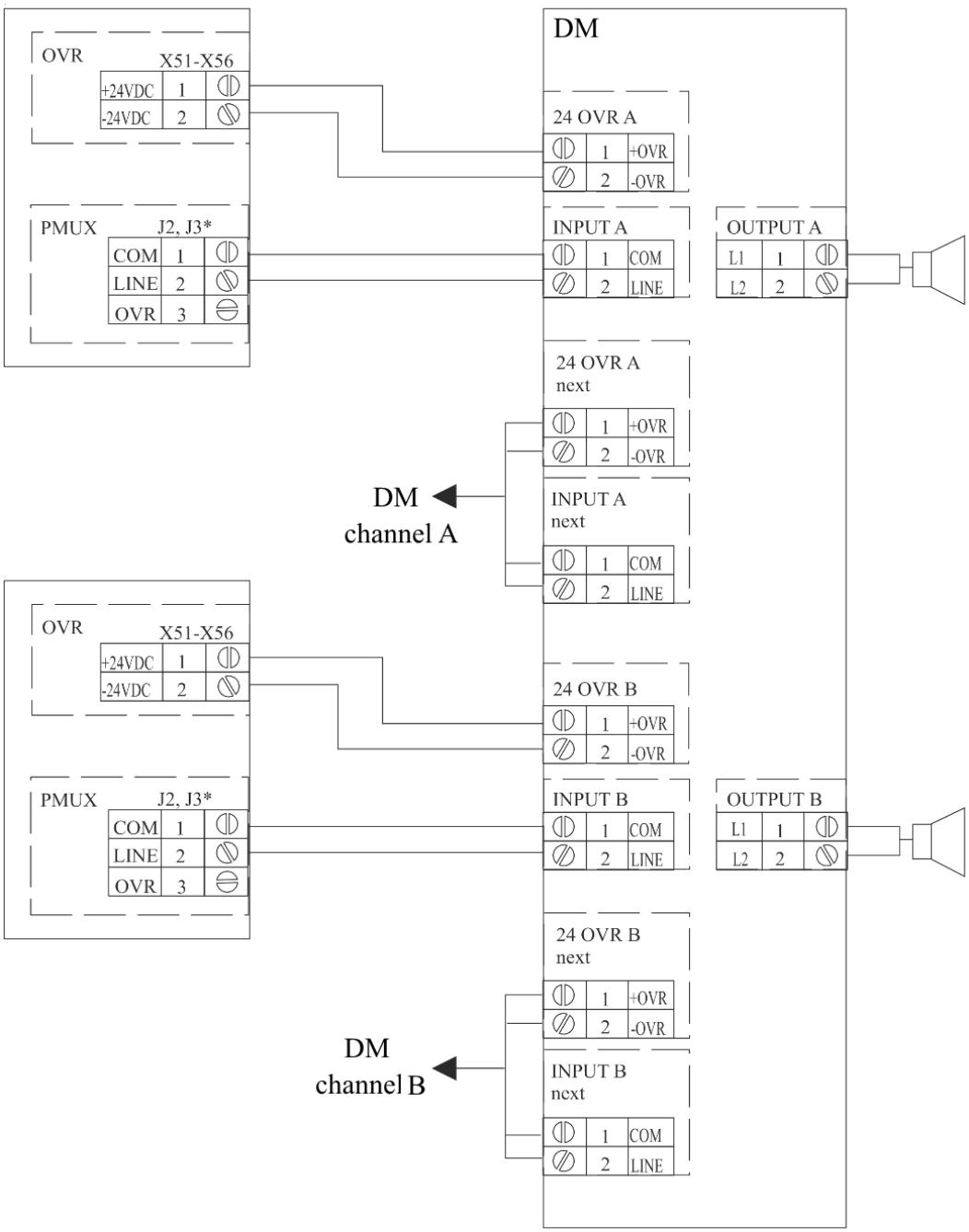


Figure A.5 – Program switch connection to CU



*For board version TPA-131-PMUX_Rev.1.2 terminal block numbering J2-J8 is used.

Figure A.6 – Connection of volume control DMO-xx for board version TPA-131-PMUX_Rev.1.4, included in CU scope of delivery



*For board version TPA-131-PMUX_Rev.1.2 terminal block numbering J2-J8 is used.

Figure A.7 – Connection of volume controls DM-xx for board version TPA-131-PMUX_Rev.1.4, included in CU scope of delivery