VINGTOR STENTOFON
by ZENITEL GROUP


# Technical Manual
# Command Talk-Back System

## CTB & CTB-100

## Contents

# 1 Introduction

## 1.1 Document Scope

This manual supplies an engineer with the information required to install and commission a CTB system, and the end-user with all necessary instructions for operating the CTB system. The manual can be used as a general guideline for designing and planning the system.

The following central and control units are available for the CTB system:

| Item No. | Item Name | Product Description |
|---|---|---|
| 3005020008 | CU-10 | Central Unit for CTB-10, 24V DC, 3A standard |
| 3005020010 | CU-20 | Central Unit for CTB-10 & CTB-20, 24V DC, 4A standard |
| 3005020009 | CU-100 | Central Unit for CTB-10, 24V DC, 3A , 100V output with alarm mute |
| 3005020011 | CU-200 | Central Unit for CTB-10 & CTB-20, 24V DC, 4A, 100V output with alarm mute |
| 3005020001 | CTB-10 | Control Unit, 10 lines, panel mounted |
| 3005020003 | CTB-20 | Control Unit, 20 lines, panel mounted |
| 3005020002 | CTB-10 W/V01 | Waterproof Control Unit, 10 lines, wall mounted |
| 3005020005 | CTB-20 W/V01 | Waterproof Control Unit, 20 lines, wall mounted |

## 1.2 Publication Log

| Rev. | Date | Author | Description | Comments |
|---|---|---|---|---|
| 1.0 | 7.1.2019 | HKL | Replacement for A100K10865 CTB and A100K10864 CTB-100 | Published |


*For further information, datasheets, technical drawings, certificates, etc. visit www.zenitel.com*

## 1.3 Rules & Regulation

The CTB and CTB-100 system and its components is tested according to the following regulations:

- IEC 60533: Second edition, 1999; *"Electrical and electronic installation in ships – Electromagnetic compatibility".*
- IEC 60945: Fourth edition, 2002; *"Maritime navigation and radio communication equipment and systems - General requirements - Methods of testing and required test results".*
- IACS E10: Corr. 1 July 2003; *"Unified environmental test specification – Testing procedure for electric control and monitoring , safety and protection, on board computer based systems and peripherals, loading instruments, internal communication and other electrical equipment as considered appropriate".*
- Complies with DNV ship requirements – "*Main Class Cargo Ship Vessels for two way voice communication*".
- Complies with DNV ship requirements – *"C500 Nautical safety for two way voice communication, as a Talk Back System"*
- Compass safety distance:
  - Central units must be mounted with a distance of minimum 90 cm
  - Operation Panels must be mounted with a distance of minimum 160 cm

# 2 System Overview

## 2.1 General

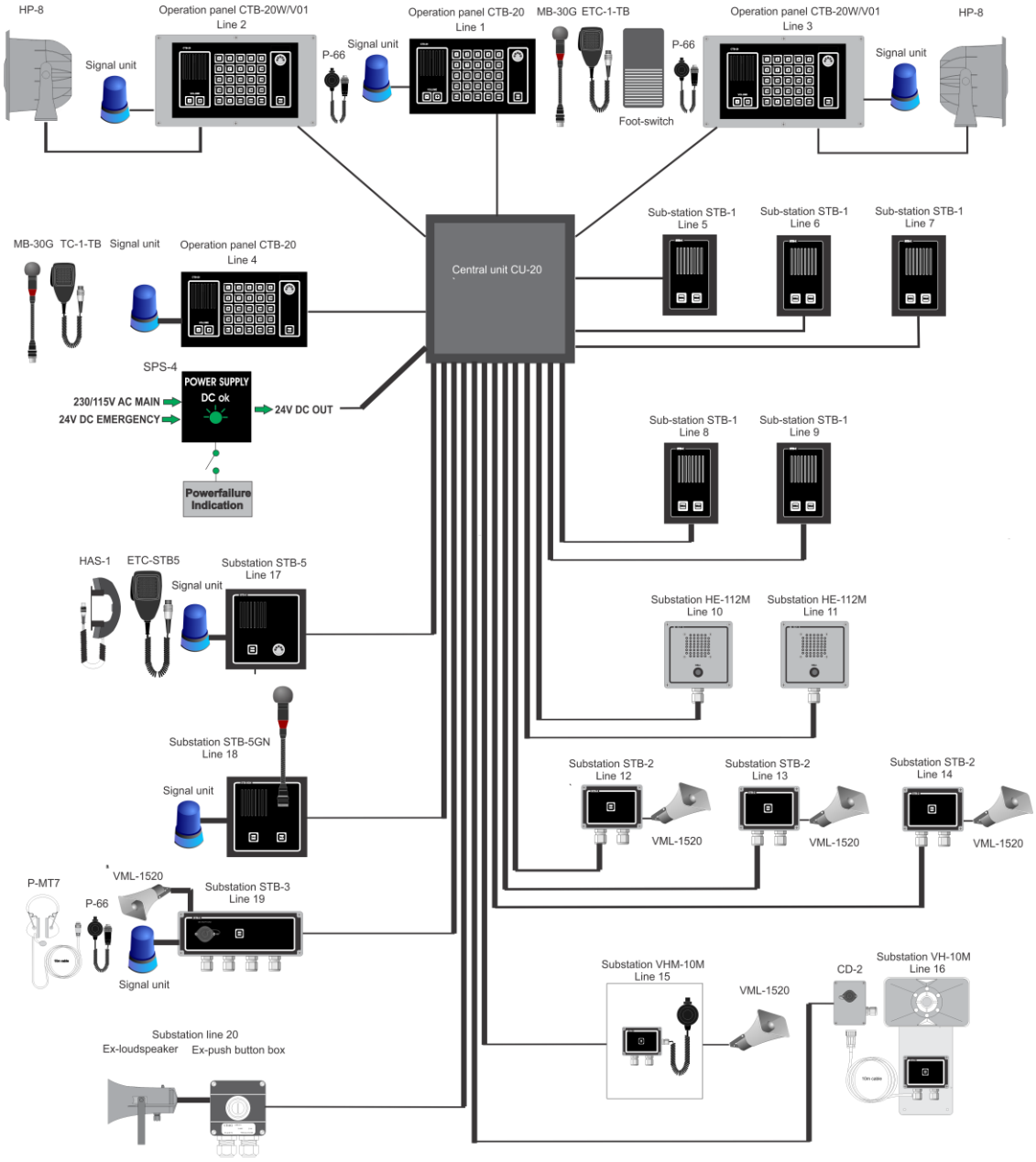
There are two types of Command Talk-Back system:

- CTB is a Command Talk-Back system with 10 or 20 lines.
- CTB-100 is a Command Talk-Back & Public Address system with 10 or 20 lines

The CTB system consists of central units CU-10 and CU-20, while the CTB-100 system consists of central units CU-100 and CU-200.

Both systems have up to 4 operation panels for use on bridge console, bridge wings, engine control room, etc. and a comprehensive range of substations and field equipment for use indoors, outdoors and noisy areas. The system includes many features, and can operate together with a PA system to increase functionality and areas of operation.

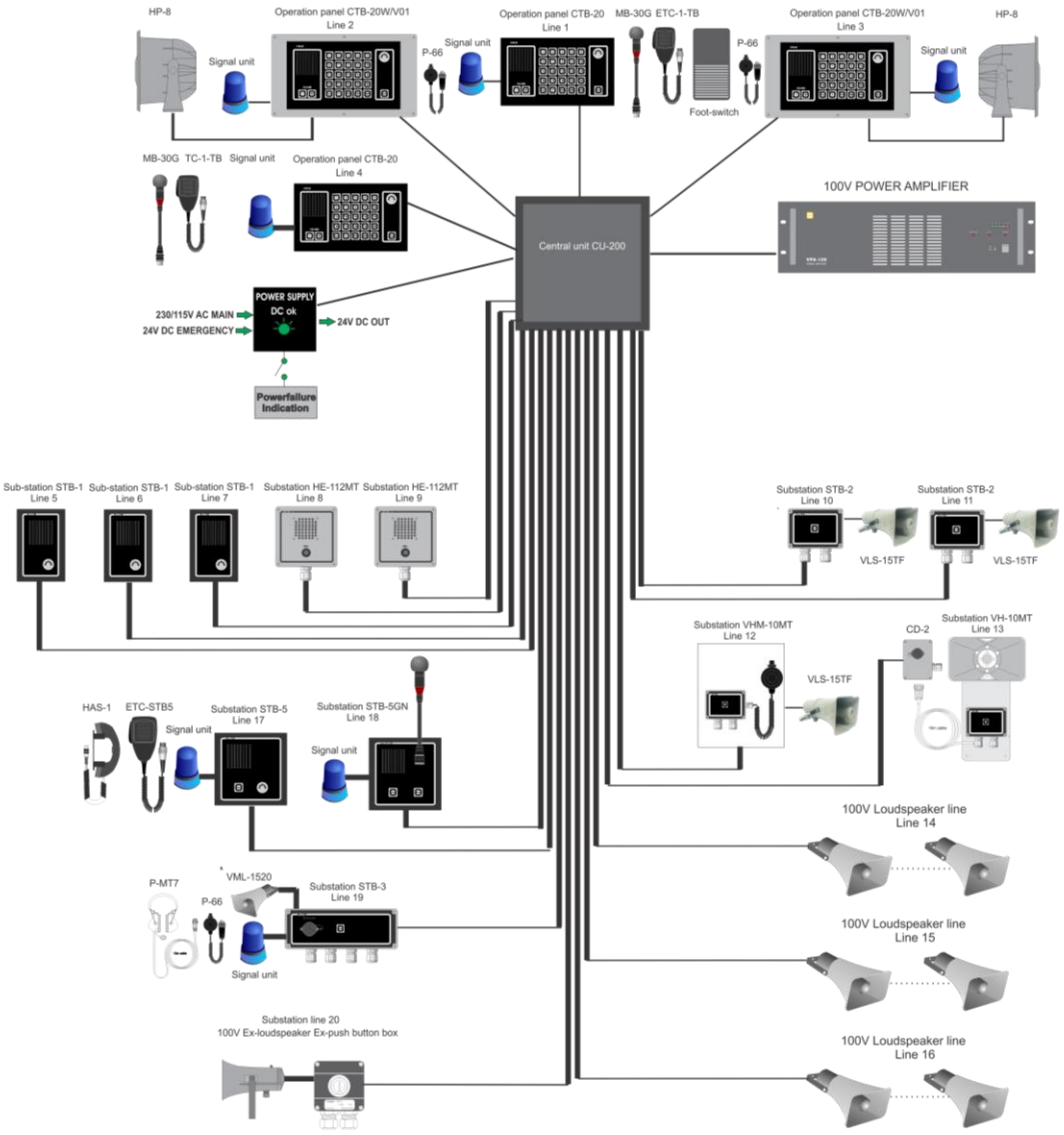
## 2.2 CTB System Configuration




### 2.2.1 Features

* 10 or 20 line selection
* 4 Operation Panels
* Gooseneck or handheld microphone
* Parallel Communication
* All call / Group Call facility
* Access to external PA system
* AUX / Alarm input
* Hands free operation
* Dimmable panel background light
* Step volume control
* Output for extra signal device for all substation lines
* Output for external loudspeaker
* Input for external microphone
* Power 22 - 32 V DC

## 2.3 CTB-100 System Configuration




### 2.3.1 Features

* 10 or 20 line selection
* 4 Operation Panels
* Gooseneck or handheld microphone
* Parallel Communication
* All call / Group Call facility
* Public address operation with 100V line power amplifier
* AUX / Alarm input
* Hands free operation
* Dimmable panel background light
* Step volume control
* Output for extra signal device for all substation lines
* Output for external loudspeaker
* Input for external microphone
* Power 22 - 32 V DC

## 2.4 System Components

Central Units, Microphones & Amplifiers

| Item number | Search name | Item Name |
|---|---|---|
| 3005020008 | CU-10 | Central unit for CTB-10, 24V DC, 3A standard |
| 3005020010 | CU-20 | Central unit for CTB-10 & CTB-20, 24V DC, 4A standard |
| 3005020009 | CU-100 | Central unit for CTB-10, 24V DC, 3A , 100V output w/alarm mute |
| 3005020011 | CU-200 | Central unit for CTB-10 & CTB-20, 24V DC, 4A, 100V output, w/alarm mute |
| 3005020001 | CTB-10 | Control unit, 10 lines panel mounted |
| 3005020003 | CTB-20 | Control unit, 20 lines panel mounted |
| 3005020002 | CTB-10 W/V01 | Waterproof control unit, 10 lines, wall mounting |
| 3005020005 | CTB-20 W/V01 | Waterproof control unit, 20 lines, wall mounting |
| 3006100065 | HP-8 | Loudspeaker 8W 8 ohm IP67, for CTB-10W / CTB-20W |
| 3005020033 | MB-30G | Gooseneck Microphone with plug |
| 3005020029 | ETC-1-TB | Handheld microphone with curled cord and plug |
| 3005020028 | ETC-1CH | Chassis Contact 5pin Din For ETC-1-TB W/1m Cable |
| 3005020039 | P-66 | Hand microphone WP W/PTT 3m Cord W/4 Pin Plug IP-47 |
| 3005020040 | P-66/10 | Hand microphone WP W/PTT 10m Cord W/4 Pin Plug IP-47 |
| **For CTB-100 only** | | |
| 3005010235 | VPA-120 | 120W Power amplifier, 3HU 24VDC and 110/230VAC |
| 3005010237 | VPA-240 | 240W Power amplifier, 3HU 24VDC and 110/230VAC |
| 3005010237 | VPA-400 | 400W Power amplifier, 3HU 24VDC and 110/230VAC |
| 3006206019 | RS-3C | Cabinet 3HU for above power amplifiers |

Substations & Complementary Equipment

| Item number | Search name | Item Name |
|---|---|---|
| 3005020057 | STB-1 | Substation, IP44, indoor, wall mounted with Call and Talk button |
| 3005020010 | STB-2 | Central unit for CTB-10 & CTB-20, 24V DC, 4A standard |
| 3005020059 | STB-3 | Combined Call/Plug Box, IP66, watertight, socket for mic & P-MT7 headset, relay unit for loudspeaker, extra signal device |
| 3005020050 | P-MT7 | Headset w/ boom microphone, 10m cable and plug for STB-3 |
| 3006100088 | VML-1520 | Horn loudspeaker 15W 20 ohm IP67 |
| 3005020060 | STB-5 | Flush mounted substation, IP44, relay for microphone or handset |
| 3005020061 | STB-5GN | Flush mounted substation, IP44, relay & gooseneck microphone |
| 3005020032 | HAS-1 | Handset for STB-5 |

| | | |
|---|---|---|
| 3005020030 | ETC-STB5 | Handheld microphone with curled cord and plug for STB-5 |
| 3006206030 | VH-10M\| | Portable deck loudspeaker with call box & 10m cable & plug |
| 1020600989 | CD-2 | Plug Box for VH-10M and VH-10M-T |
| 3006206034 | VHM-10 | Deck unit with hand microphone mounted in cabinet |
| 3006206006 | HE-112M | Outdoor loudspeaker with call button, watertight, IP66 |
| 3006206015 | NEBB-42EX | Call Box, EX-approved, IP67 |
| **For CTB-100 only** | | |
| 3006206032 | VH-10M-T | Portable deck loudspeaker with call box & 10m cable & plug,100V |
| 3006206035 | VHM-10-T | Deck unit, with hand microphone mounted in cabinet, 100V |
| 3006206007 | HE-112M-T | Outdoor loudspeaker, 100V with call button, watertight, IP66 |
| 2131000206 | VLS-15TF | Horn Loudspeaker 15W 100V with Fuse |

## Bridge Wing Substations & Microphones

| Item number | Search name | Item Name |
|---|---|---|
| 3005020062 | STB-6 | Flush mounted substation, IP44, for handheld mic ETC-1-TB |
| 3005020063 | STB-6GN | Flush mounted substation, IP44, with gooseneck microphone |
| 3005020053 | SB-4 | Plug box for mic, headset, loudspeaker, wall mounted, watertight |
| 3005020039 | P-66 | Handheld microphone with curled cord and plug, watertight |
| 3005020040 | P-66/10 | Handheld microphone with 10m cable and plug, watertight |

## Additional Equipment

| Item number | Search name | Item Name |
|---|---|---|
| 3005020065 | WBOKS | Wall mounted backbox for ETB-5/ETB-10/ETB-100 |
| 3005010206 | STBOKS5 | Wall mounted backbox for STB-5/STB-5GN |
| 3005020064 | STBOKS | Wall mounted backbox for STB-6/STB-6GN |
| 3005020055 | SPS-4 | Power supply 115/230V AC 24V DC w/ automatic switchover relay |
| 3006102023 | BLK5-24 | Flash beacon 24V AC/DC 5 Joule, IP65 |
| 3006102038 | EHS-24 | Rotary light 24V DC, IP54 |
| 3006102002 | A-100 | Electronic alarm horn 24V DC, IP55, 100dB |
| 300620602 | U2410 | Foot switch for hands free operation. |

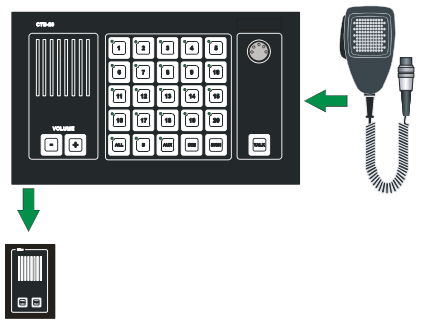
# 3 System Functions

The CTB system consist of 1 central unit (CU-10, CU-100 or CU-20, CU-200), 1 to 4 operation panels and 1 to 20 substations. On systems with more than 1 operation panel, each panel takes one substation line.

The system has one speech channel and usage from one operation panel will be indicated in other operation panels. The operation panels follow a priority hierarchy of 1 to 4, meaning that operation panels with higher priority can override operation panels with lower priority.

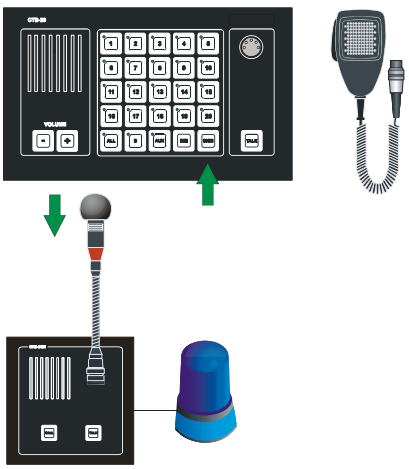
Operation Panels CTB-10 & CTB-10W V01 has 10 lines while CTB-20 & CTB-20W V01 has 20 lines. CTB-20 is used in the following examples.

## 3.1 Line Selection / Single Call



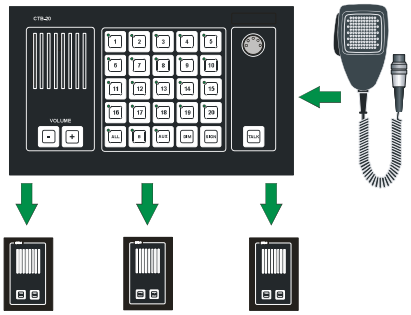
1 - 10 (20) substations or other operation panels can be selected from any operation panel by pressing the respective line button. Indicated by steady green light in the LED.

## 3.2 Signal & Extra Signal Device for Substations



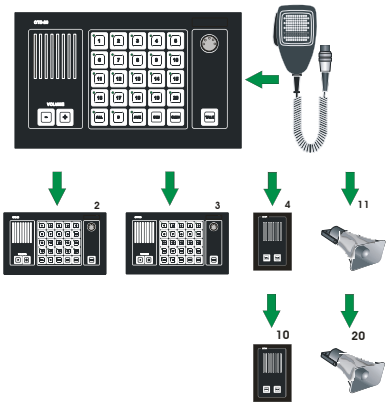
A call signal can be sent to a selected station. The function will also activate a 24VDC max 50mA signal to a substation with a relay or directly connected external signal device.

## 3.3 Group Call



Group of substations or other operation panels can be selected by pressing the respective number of line buttons. Indicated by a steady green LED.

## 3.4 All Call

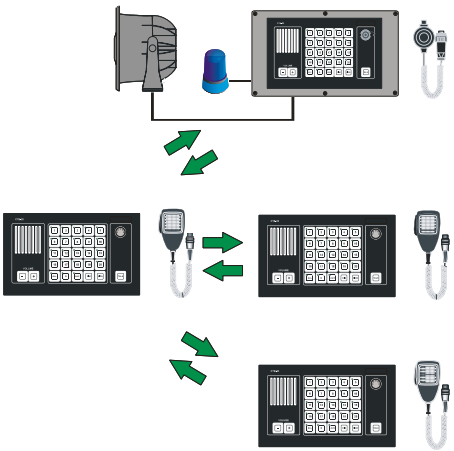



All Call message can be distributed from any operation panel to all substations and other operation panels.

All Call message will also activate external Public Address System if connection is set up.

Indicated by steady green LED in the **ALL** push button.

## 3.5 Calls from and between Operation Panels



Up to 4 operation panels can be connected.
Calls can be made from any operation panel to substations.
Calls can be made from any operation panel to another by pressing the respective line button.
In this stage, the called operation panel acts as a substation.
The system has one speech channel. Operation from one operation panel will be indicated in other operation panels.

**Priority:**

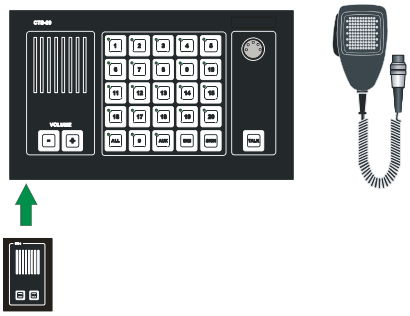
The operation panels follow a priority hierarchy of 1 to 4, meaning that operation panels with higher priority can override operation panels with lower priority.

Operation Panel 1 has highest priority.
It is a standard setting. The priority can be changed with DIP switches in the central unit.

**Panel Types:**

CTB-10 Operation Panel 10 line selection, indoor use.
CTB-10W/V01 Operation Panel 10 line selection, WP.
CTB-20 Operation Panel 20 line selection, indoor use.
CTB-20W/V01 Operation Panel 20 line selection, WP.

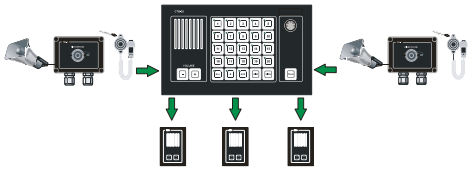
## 3.6 Call from Substations



Calls from a substation can be received in operation panels that are set to receive calls.

Calls will be indicated by a flashing green LED in the respective line.

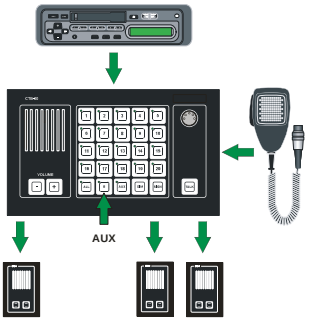
## 3.7 Parallel Communication



This functions with operation from parallel microphone/ loudspeaker located on bridge wings, or other locations where parallel microphone/loudspeaker is required.

*Note: Line selection has to be set up from the operation panel.*

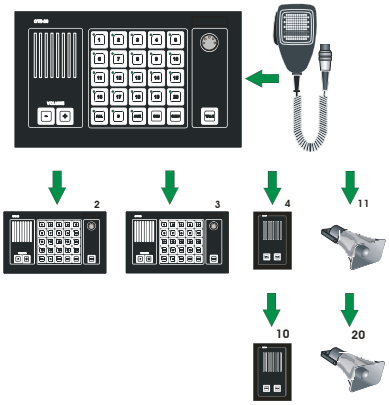
## 3.8 AUX Function




External entertainment, message or alarm can be distributed through the CTB system by using the push button **AUX** together with the line selection switches.
0dB signal from the external system connected to the CTB system will be addressed to selected substations.

The **TALK** button on operation panels or PTT button on handheld microphones will override the **AUX** button to give an All Call message. External system can be: VHF radio system or entertainment system.

## 3.9 Audio from External System




Alarm (or any audio) from the external system can be distributed through the CTB system.
A potential-free contact and 0dB signal from the external system activate the CTB and the message will be addressed to all substations and operation panels.

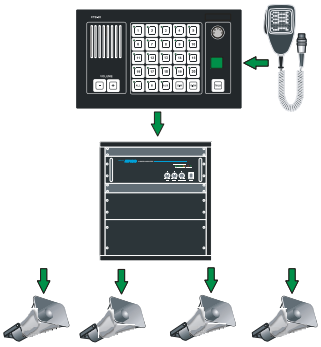
The talk button on the operation panel or PTT button on handheld microphone will override the external audio. Normal talk-back functions cannot be used in this mode.

External system can be:

- Alarm system
- External Public Address system

*Note: Only the operator of the external system can switch off the external audio.*

## 3.10 Public Address Operation of External System



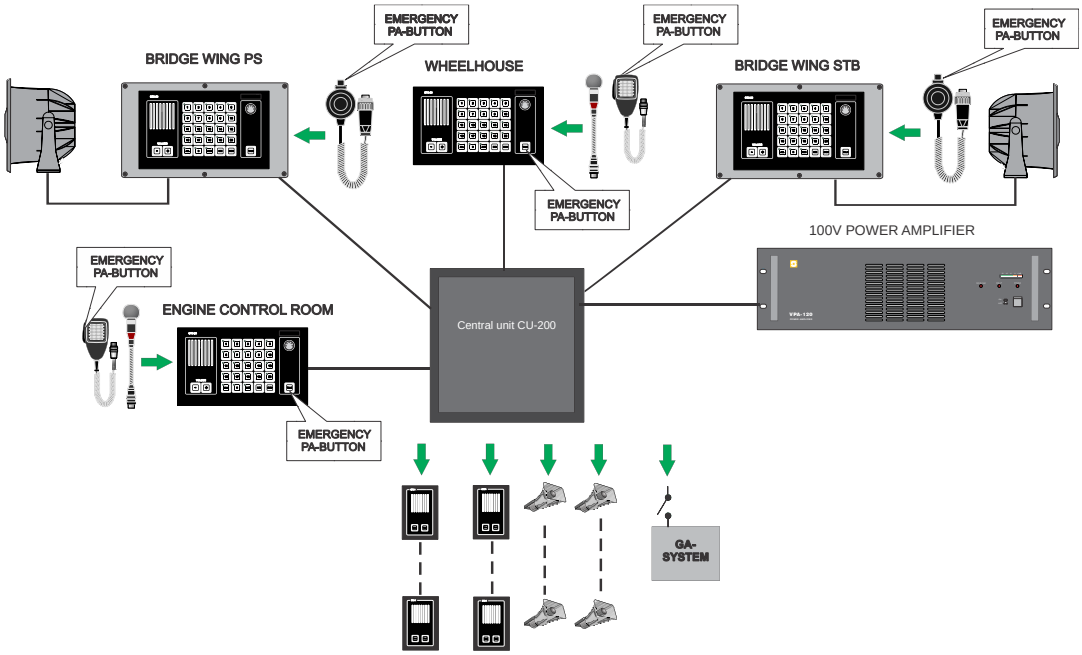
The final four line buttons on the operation panel can be set to access an external Public Address system with up to 4 zones.

CTB-10 & CTB-10W/V01: Push buttons marked 7, 8, 9, 10

CTB-20 & CTB-20W/V01: Push buttons marked 17, 18, 19, 20

*Note: Other operation panels with higher priority can override the PA message.*

## 3.11 Emergency Public Address Operation



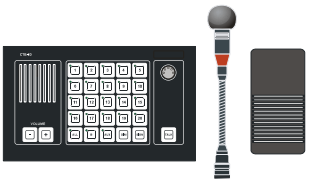

In order to comply with PA requirements, two PA call stations are required: The CTB-100 system is designed for use with up to four operation panels that can be used as Emergency Call stations. In addition one or more All Call stations (Ex. Lifeboat stations) can be used as Emergency Call stations.
Functions:

- Muting of the External Alarm System (General/Fire Alarm)
- Operation Panel with 1st priority, normally bridge, can override other operation panels.

Types of Operation Panels / Emergency Call stations:

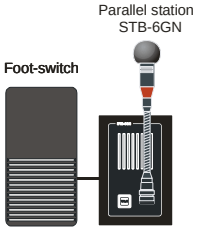
- CTB-10 Operation Panel 10 line selection, indoor use. Hand or gooseneck microphone.
- CTB-10W/V01 Operation Panel 10 line selection, WP. Hand microphone only.
- CTB-20 Operation Panel 20 line selection, indoor use. Hand or gooseneck microphone.
- CTB-20W/V01 Operation Panel 20 line selection, WP. Hand microphone only.

## 3.12 Handsfree Operation



Handsfree operation of operation panel or parallel station.

**Option 1**
Operation Panel with gooseneck microphone MB-30G and footswitch U2410.




**Option 2**
Parallel station type STB-6GN with gooseneck microphone and footswitch U2410.

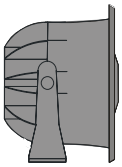
## 3.13 Privacy Function - Substation STB-1


Substation STB-1 is designed for indoor use, e.g. cabins, mess room etc., and prepared with privacy function.
It means listening is not possible in the central unit from STB-1.
After a call is set up from the central unit, the operator of STB-1 has to use the TALK button to communicate with the central unit.
(STB-1 can also be set to normal talk-back function.)

## 3.14 Monitor Speaker

The monitor speaker is located in front of the operation panels CTB-10 & CTB-20. Panels CTB-10W/V01 & CTB-20W/V01 are used with external loudspeakers only.
This is used for the distribution of audio messages or alarm signals.

## 3.15 Monitor Loudspeaker



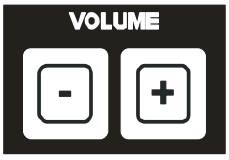
This is used as an external loudspeaker for improved and higher sound levels. It is connected in parallel with the monitor speaker in CTB-10 and CTB-20 and located near the operation panel.

*Note: CTB-10W/V01 & CTB-20W/V01 operation panels are only equipped with external loudspeakers.*

## 3.16 Dimmer of Call Light

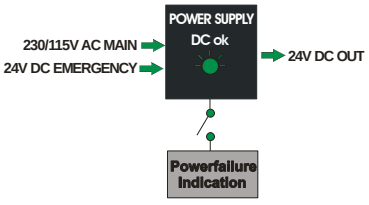

The intensity of the push button light can be adjusted by pressing the **DIM** button.
Switch between the two steps max. and 1/3. The default is set to max. The dimmer can be set to on/off by a DIP switch.

## 3.17 Volume Adjustment




By pressing the + or - buttons repeatedly, you can increase or decrease the volume in the central unit
This will also affect the volume for an external speaker connected to the panel.

## 3.18 Power Supply SPS-4 (Option)




The power supply SPS-4 is designed with power failure contact and automatic switch over relay.
This means that it will automatically switch over to 24V DC emergency power supply when the mains supply or power module fails.

# 4 Installation & Configuration Procedures

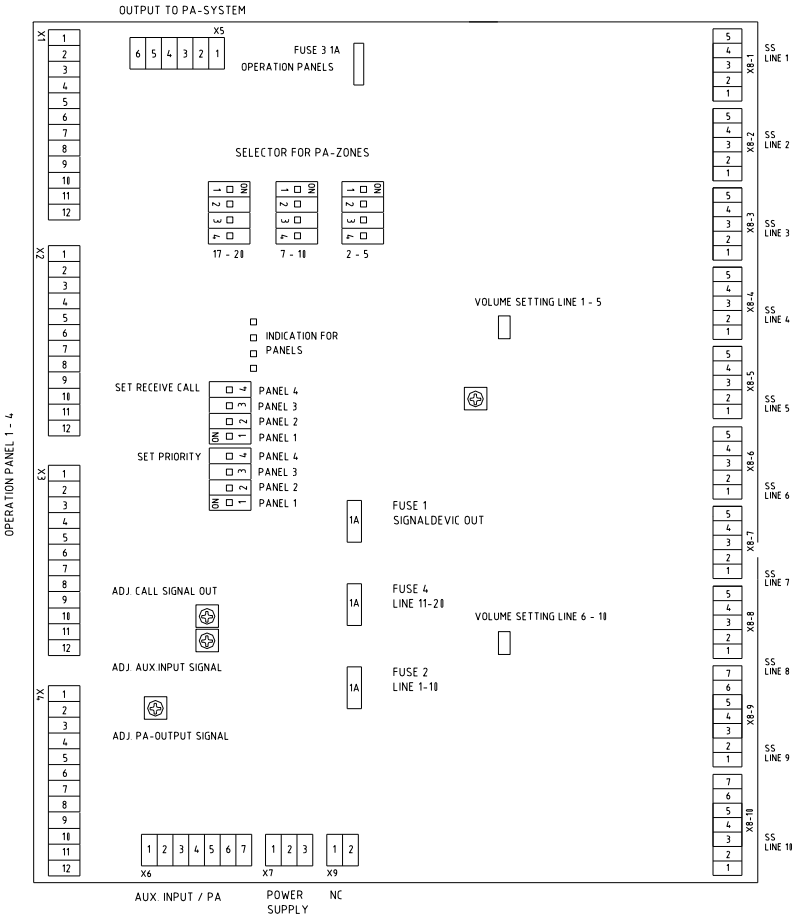
## 4.1 General

For proper installation and operation of the CTB system, we recommend reading this section thoroughly together with installation drawings in section 7.1.
***Caution: Make sure that all mounting and cabling are correct before switching on the system!***

## 4.2 Mounting & Terminal Configuration

### 4.2.1 Central Unit CU-10

The CU-10 unit should be bulkhead mounted in a normal and ventilated indoor environment with a temperature of max. $55^0$ C. **Minimum compass safe distance: 90 cm**
The CU-10 unit is equipped with pluggable screw terminals for cables max. $2.5mm^2$
*Note: Make sure that there is sufficient space for cables and maintenance.*

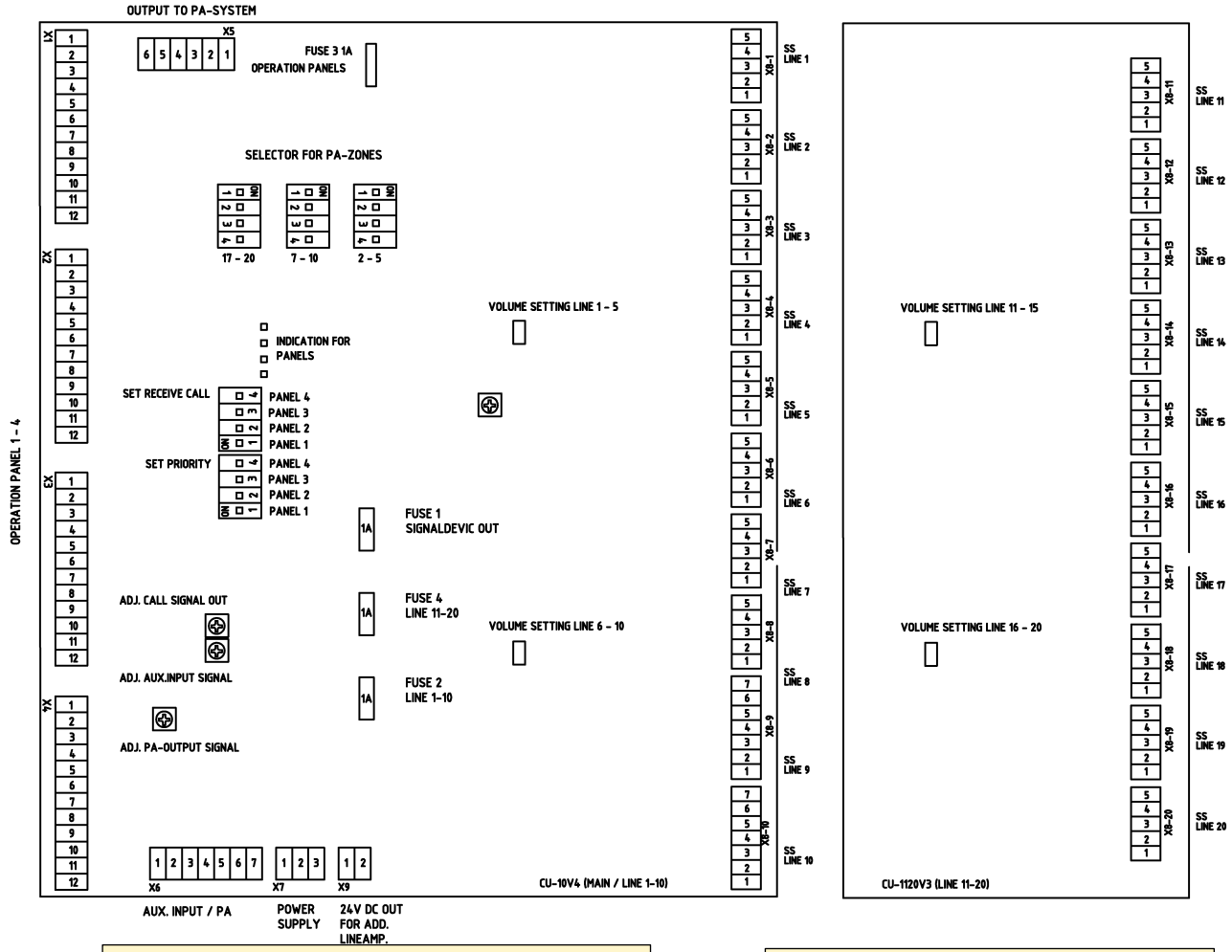



**Main board CU-10**
Terminal block X1-X4 Connection of operation panels.
Terminal block X5 Output to the PA-system.
Terminal block X6 AUX and PA input.
Terminal block X7 Power supply.

Terminal block X8 1-10 for substations 1-10
Terminal no.1 – 2-substation line.
Terminal no.3 – 4-24V DC to extra signal device.
Terminal no.5 is ground point for each substation screen.

### 4.2.2 Central Unit CU-20

The CU-20 unit should be bulkhead mounted in a normal and ventilated indoor environment with a temperature of max. $55^0$ C. **Minimum compass safe distance: 90 cm**
The CU-20 unit is equipped with pluggable screw terminals for cables max. $2.5mm^2$
*Note: Make sure that there is sufficient space for cables and maintenance.*



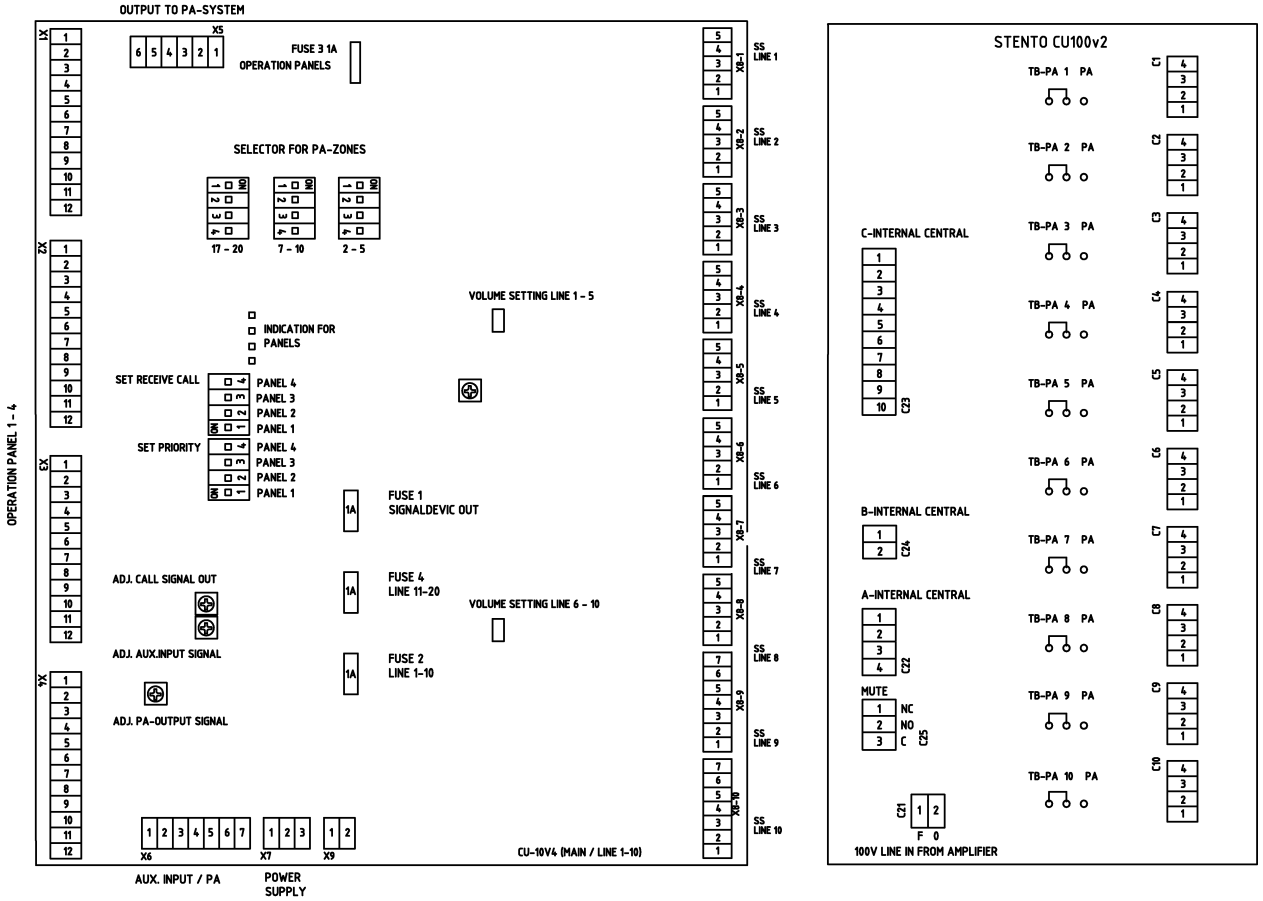

**Main board CU-20**
Terminal block X1-X4 Connection of operation panels.
Terminal block X5 Output to the PA-system.
Terminal block X6 AUX and PA input.
Terminal block X7 Power supply.

Terminal block X8 1-10 for substations 1-10
Terminal no.1 – 2-substation line.
Terminal no.3 – 4-24V DC to extra signal device.
Terminal no.5 is ground point for each substation screen.

**Add board CU-20 line 11-20**
Terminal block X8 11-20 for substations 11-20
Terminal no.1 – 2-substation line.
Terminal no.3 – 4-24V DC to extra signal device.
Terminal no.5 is ground point for each substation screen

### 4.2.3 Central Unit CU-100

The CU-100 unit should be bulkhead mounted in a normal and ventilated indoor environment with a temperature of max. $55^0$ C. **Minimum compass safe distance: 90 cm**
The CU-20 unit is equipped with pluggable screw terminals for cables max. $2.5mm^2$
*Note: Make sure that there is sufficient space for cables and maintenance.*

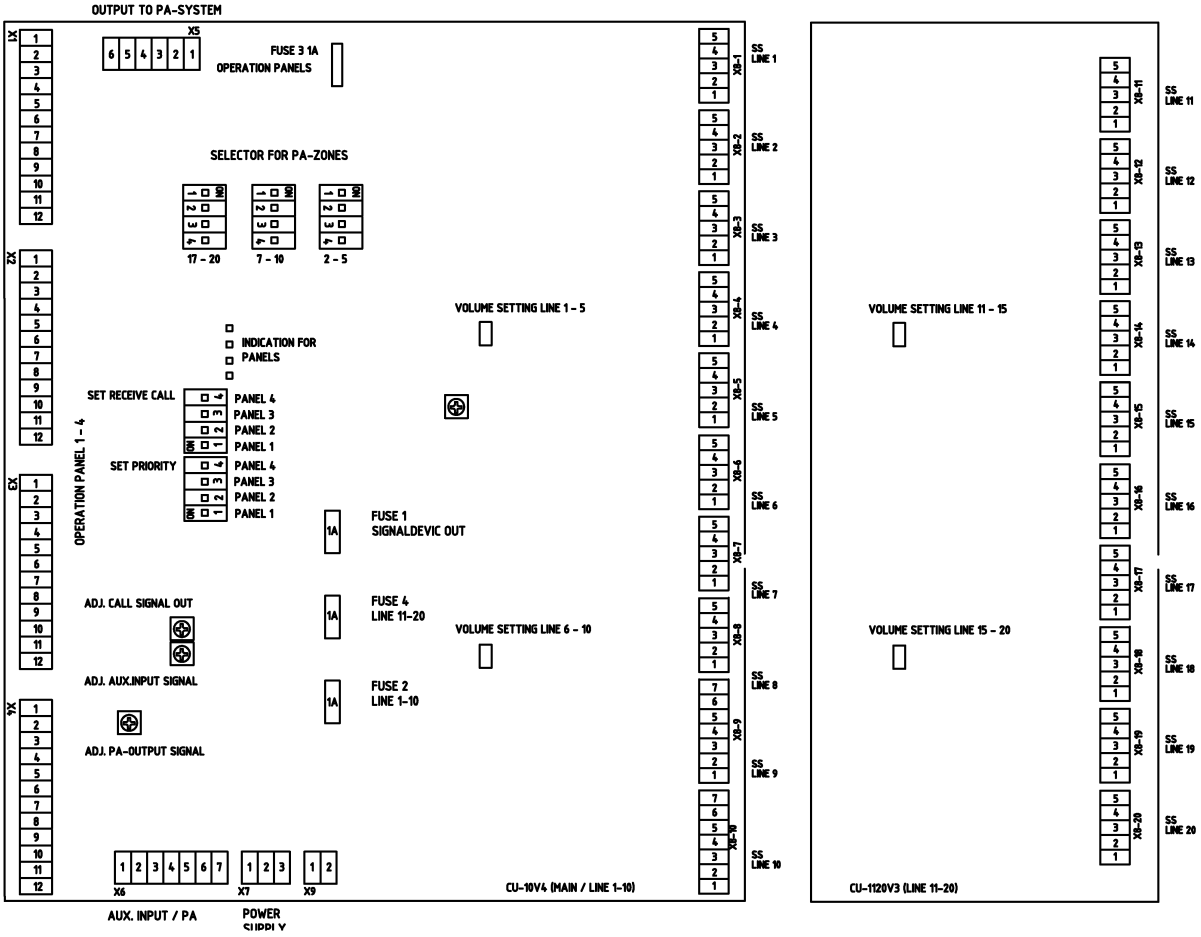



**Main board CU-100**
Terminal block X1-X4 Connection of operation panels.
Terminal block X5 Output to the PA-system.
Terminal block X6 AUX and PA input.
Terminal block X7 Power supply.
Terminal no.3 – 4 24V DC to extra signal device.
Terminal no.5 is ground point for each substation screen.
Terminal block X8 1-10 for substations 1-10
Terminal no.1 – 2 substation line.
Terminal no.3 – 4 24V DC to extra signal device.
Terminal no.5 is ground point for each substation screen.

**100V board CU-100 line 1-10**
Terminal block C1-C10 for Connection Substations.
Terminal no.1 – 2-substation line low impedance
Terminal no.3 – 4-substation line 100V
Terminal block C25
Mute for external alarm system

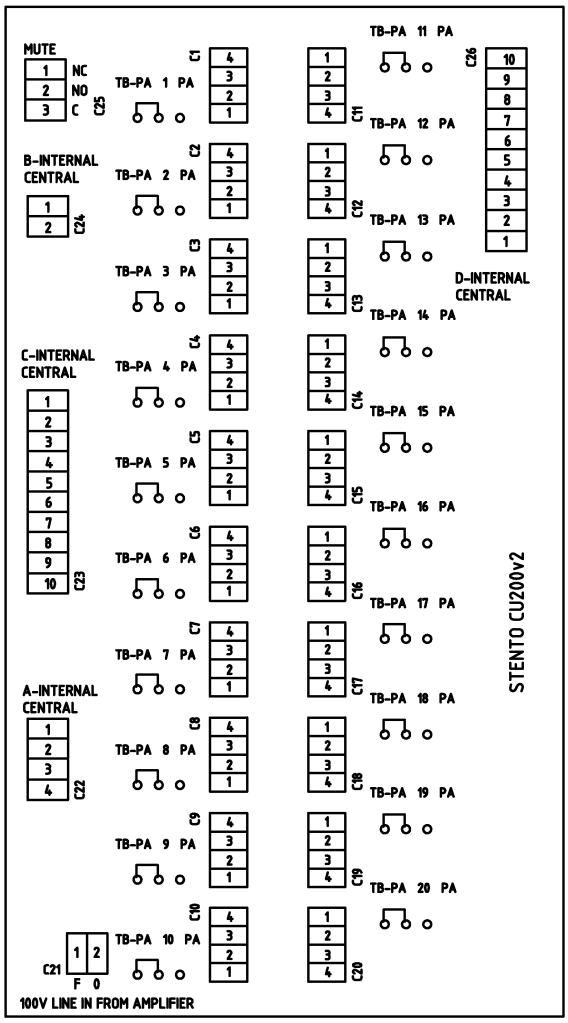
### 4.2.4 Central Unit CU-200

The CU-200 should be bulkhead mounted in a normal and ventilated indoor environment with a temperature of max. 55$^0$ C. **Minimum compass safe distance: 90 cm**
The CU-200 unit is equipped with pluggable screw terminals for cables max. 2.5mm$^2$
*Note: Make sure that there is sufficient space for cables and maintenance.*




**Main board CU-200**
Terminal block X1-X4 Connection of operation panels.
Terminal block X5 Output to the PA-system.
Terminal block X6 AUX and PA input.
Terminal block X7 Power supply.
Terminal no.3 – 4 24V DC to extra signal device.
Terminal no.5 is ground point for each substation screen.
Terminal block X8 1-10 for substations 1-10
Terminal no.1 – 2 substation line.
Terminal no.3 – 4 24V DC to extra signal device.
Terminal no.5 is ground point for each substation screen.

**Add board CU-200 line 11-20**
Terminal block X8 11-20 for substations 11-20
Terminal no.1 – 2-substation line.
Terminal no.3 – 4-24V DC to extra signal device.
Terminal no.5 is ground point for each substation screen



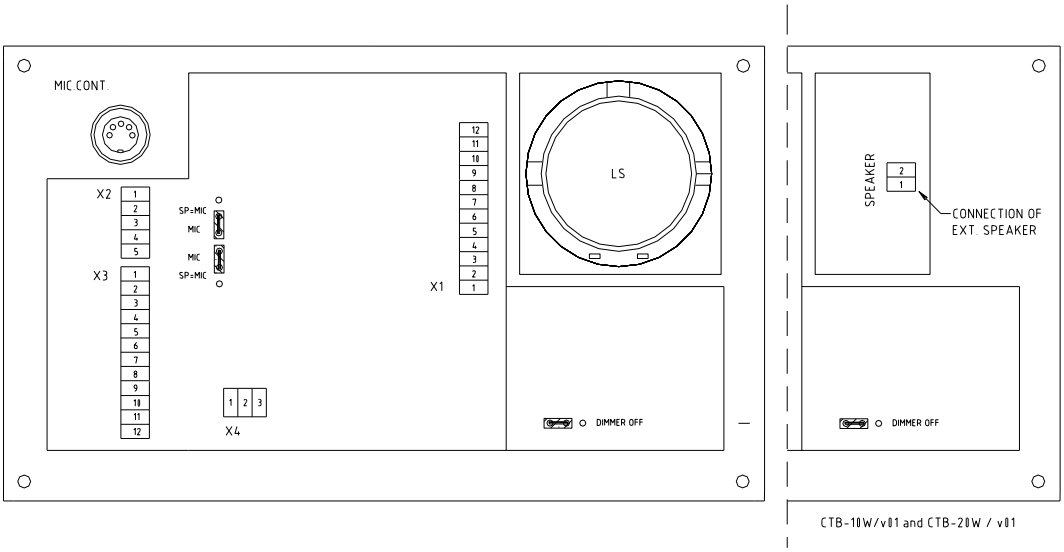

**100V board CU-200 line 1-20**
Terminal block C1-C20 for Connection Substations.
Terminal no.1 – 2-substation line low impedance
Terminal no.3 – 4-substation line 100V
Terminal block C25
Mute for external alarm system

Other terminal blocks for internal use

### 4.2.5 Operation Panel CTB-10 & CTB-10

The operation panels can be flush or bulkhead mounted in a normal and ventilated indoor environment with a temperature of 0 - 55$^0$ C. **Minimum compass safe distance: 160 cm**
*Note: Make sure that there is sufficient space for cables and maintenance.*

It is equipped with 2x cable gland PG-16 and pluggable screw terminals for cables max. 2.5 mm$^2$.




**Terminal block X1**: For connection to the central unit.
**Terminal block X2**: Not in use
**Terminal block X3**: For connection to external loudspeaker, microphone, parallel microphone and footswitch
**Terminal block X4**: Potential-free contact for extra signal unit.
**Terminal block SPEAKER 1-2**: for external loudspeaker HP-8 (CTB-10W / V01, CTB-20W / V01)

### 4.2.6 Operation Panel CTB-10W/V01 & CTB-20W/V01

These weatherproof operation panels are for bulkhead mounting only. They include external loudspeakers HP-8.
They are equipped with 2x cable gland PG-16 and pluggable screw terminals for cables max. 2.5mm$^2$.
**Minimum compass safe distance: 160 cm**
*Note: Make sure that there is sufficient space for cables and maintenance.*

### 4.2.7 Identification Sign Plate CTB Panels

A sign plate with directory/substation number for all substations has to be placed close to the CTB panels.

### 4.2.8 Substations and Other Equipment

Ref. datasheets for dimension, cut out and mounting.
*Note: Make sure that there is sufficient space for cables and maintenance.*

### 4.2.9 Identification Sign Plate Substation

A sign plate with each substation number has to be placed on or close to each substation.

## 4.3 Cable Requirements

All signal cables have to be approved ship cable of type twisted-pair with outer braided copper shield.
*See cable connection drawings in section 7 for further details.*
The shields must be interconnected in junction boxes and grounded in the central unit only.
Terminal block X8 1-20 terminal no.5 is ground point for each substation screen
Terminal block X1,2,3,4 / no.11 is ground point for each operation panel.
Power cable has to be approved ship cable min. 3 x 1.5 $mm^2$
***Note: The central unit has to be connected to the vessels central ground.***
***Proper grounding is essential for reliable operation.***

## 4.4 Power Supply Requirements

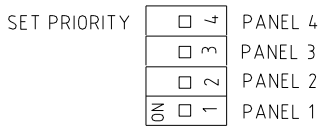
24VDC -10% + 33% (21.6 – 32VDC) Current consumption max. 4A
System power supply should be wired and fused independently from other systems.

- 24V DC from the ship's 24V DC system.
- 24V DC from power supply SPS-4 230V AC / 24V DC with automatic switch to 24V DC emergency power supply.

## 4.5 Priority Setting

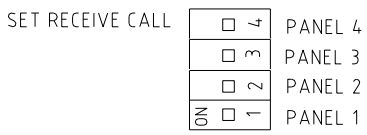
Refer to section 7.2 Connection / Block / Single Line Diagrams.

### 4.5.1 Set Priority in CU-10/CU-20/CU-100/CU-200



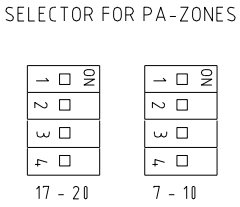

Priority is set by 4 DIP switches, corresponding to each operation panel 1 to 4.
If all 4 DIP switches are set to off, the priority follows a hierarchy 1 to 4 giving panel 1 the highest priority.
This is standard factory setting.
Whatever DIP switch is set to ON, it will have the highest priority, followed by the hierarchy as explained above.
Example: If DIP switch 4 is set to ON, priority will be 4-1-2-3.
If both DIP switches 1 and 4 are set to ON, priority will be 1-4-2-3.

### 4.5.2 Set Receive Call from Substation




Receive Call from substation is set by 4 DIP switches, corresponding to each operation panel 1 to 4.
The DIP switch set to ON permits the panel to receive a call from substations.
DIP switch 1 set to ON for panel 1 is standard factory setting.
Example: If both DIP switches 1 and 4 are set to ON, both panels 1 and 4 will receive a call.

### 4.5.3 Set Public Address Zones SPA




Four line push buttons on the operation panel can be set to access up to 4 Public Address zones.

PA is set by 4 DIP switches corresponding to each push button:

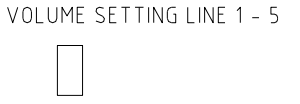
- DIP switches marked 7-10 for line 7 – 10 (CTB-10 & CTB-10W/V01)
- DIP switches marked 17-20 for line 17 – 20 (CTB-20 & CTB-20W/V01)
- Standard factory setting is OFF.

## 4.6 Volume & Signal Adjustment

*Refer to section 7.2 Connection / Block / Single Line Diagram*

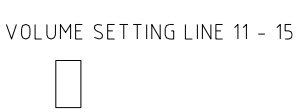
### 4.6.1 Substations

System volume for substations can be adjusted by separate trim potentiometer for each group of 5 lines.
Master volume line: “1-5” “6-10” “11-15” “16-20”
Volume is factory adjusted and does not normally require any adjustment.
If the installation on some locations requires another sound pressure level, this can be changed to satisfactory audibility and volume.




Volume adjustment for substation line 1 – 5
Trim potentiometer located on mainboard


Volume adjustment for substation line 6 – 10
Trim potentiometer located on mainboard




Volume adjustment for substation line 11 – 15
Trim potentiometer located on additional board CU-20 / CU-200


Volume adjustment for substation line 16 – 20
Trim potentiometer located on additional board CU-20 / CU-200

### 4.6.2 Auxiliary & Public Address


Input signal for auxiliary can be adjusted by separate trim potentiometer marked “ADJ AUX INPUT SIGNAL”. Required signal: 0dB (0.775V).


Signal for Public Address can be adjusted by separate trim potentiometer marked “ADJ PA-OUTPUT SIGNAL”.
Signal is factory set to 0dB (0,775V) and does not normally require any adjustment.

### 4.6.3 Call Signal

Signal is factory adjusted and does not normally require any adjustment.

Level of Call signal out on all lines can be adjusted by trim potentiometer marked “ADJ CALL SIGNAL OUT”.

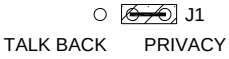

## 4.7 Default Settings

*Refer to section 7.2 Connection / Block / Single Line Diagram*

### 4.7.1 Dimmer On/Off in Operation Panel

Dimmer can be set to on/off by DIP switch marked “DIMMER OFF”.


### 4.7.2 Substation STB-1

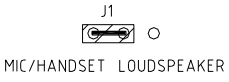



Default setting is PRIVACY function. Move the jumper J1 to TALK BACK for normal talk-back function.

### 4.7.3 Substation STB-3


Default setting is HEAD for headset. Move DIP switch to MICROPHONE for microphone.

### 4.7.4 Substation STB-5




Default setting is MIC/HANDSET for microphone or handset. It can be set to both loudspeaker and microphone (re-entrant speaker). Move the jumper J1 to LOUDSPEAKER for re-entrant speaker.


Default setting is PRIVACY function. Move the jumper J2 to TALK BACK for normal talk-back function.

# 5 Operating Instructions

## 5.1 Using the Operation Panel

Up to 4 operation panels can be connected. Calls can be made from any operation panel to substations. And calls can be made from any operation panel to another by pressing the respective line button.
In this stage, the called operation panel acts as a substation. Calls from one operation panel will be indicated in other operation panels. One operation panel is always determined as a master station with the highest priority and can override operation panels with lower priority.

Figure 1 Operation Panel CTB-10

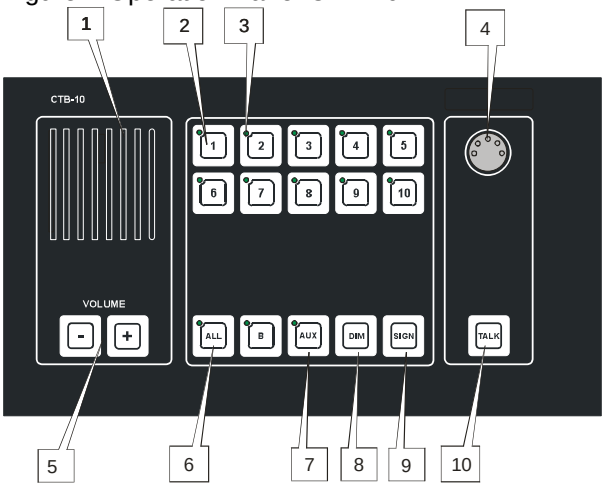



Figure 2 Operation Panel CTB-20

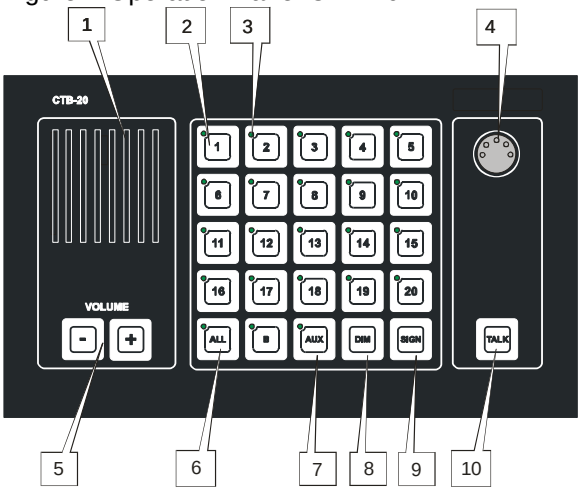



Figure 3 Operation Panel CTB-10W/V01

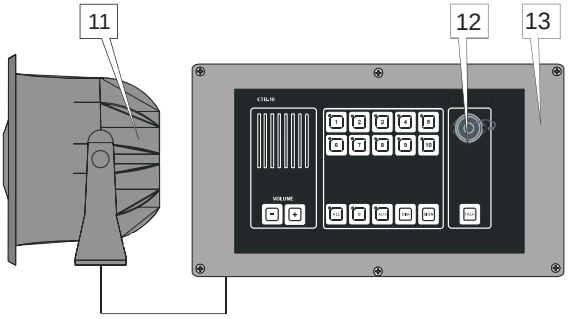



Figure 4 Operation Panel CTB-20W/V01

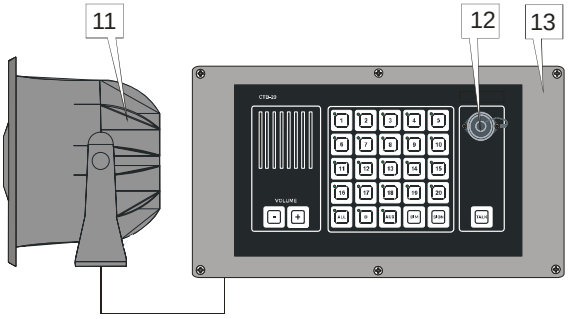



Figure 5
Gooseneck Microphone MB-30G

Figure 6
Handheld Microphone with PTT switch ETC-1-TB


Figure 7
Handheld Microphone WP with PTT switch P-66

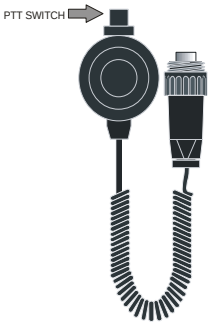



Figure 8
Footswitch U2410

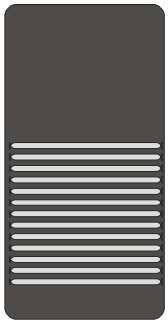


Figure 1 & 2 CTB-10 & CTB-20

1. .....**Monitor loudspeaker** ..For communication and alarm signals.
2. .....**Line Push Buttons** .....Line selection switch with indication light, 1 -10 for CTB-10
..... .....1 – 20 for CTB-20
3. .....**Green Indication light** (LED) for each line push button.
4. .....**Microphone contact** ... For Gooseneck or hand microphone.
5. .....**VOLUME - +**: .....Increase or decrease of volume in monitor speaker)
6. .....**ALL** .....Push button switch with indication light (LED)
**7. .....AUX.....**Push button switch for activating external signal to selected stations.
8. .....**DIM** .....Push button switch for adjust intensity of call light in indication light (LED)
9. .....**SIGN** .....Push button switch for signal and activating of extra signal device substations.
10. ...**TALK** .....PTT switch for gooseneck microphone MB-30G

Figure 3 & 4 CTB-10W/V01 & CTB-20W/V01

2-10..**Functions**.....Same as for CTB-10 & CTB-20
11. ....**External loudspeaker** .For communication and alarm signals. Flush or wall mounting.
..... .....Monitor speaker not installed.
12. ....**Microphone contact** ...For handheld microphone P-66
13. ....**Cabinet** .....WP cabinet, wall mounting only.

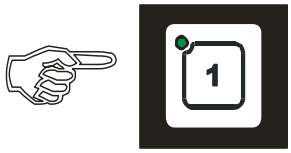
Figure 5.....Gooseneck microphone MB-30G for CTB-10 & CTB-20.
Figure 6.....Handheld microphones ETC-1-TB for CTB-10 & CTB-20.
Figure 7.....Handheld microphones P-66 for CTB-10W/V01 & CTB-20W/V01
Figure 8.....Footswitch U2410 for handsfree operation of microphone MB-30G

PTT switch = Push-To-Talk switch LED = Light Emitting Diode

### 5.1.1 Make a Call to Substation

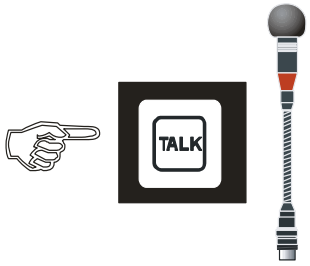
You can select the substation by pressing the desired line button.
A steady green LED light will indicate the activated selection.
If desired, the signal button **SIGN** may be pressed to give a tone signal to the selected station. Talk from the operation panel is performed every time the **TALK** button is pressed. The operation panel unit will be in listening mode as soon as a station is selected. When communication is finished, press the selected station button again to switch off. The LED light will be unlit to indicate that the selected line is turned off.

**Operation Panel: CTB-10, CTB-20, CTB-10W/V01 or CTB-20W/V01**



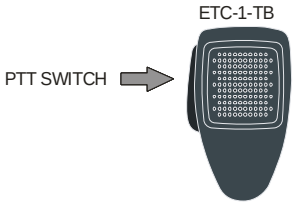

- Press the **LINE** button to set up the call
  Indicated by steady green LED


- Press the **SIGN** button
  A tone signal will be given to the selected station as long as the **SIGN** button is kept pressed.
  This will also activate extra signal devices if connected.



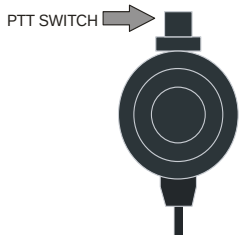

<u>Operation Panel with gooseneck microphone MB-30G</u>

- Press the **TALK** button
  Speak clearly into the microphone. When the **TALK** button is released, the operation panel will be in listening mode, and you will hear the communication from the selected station.



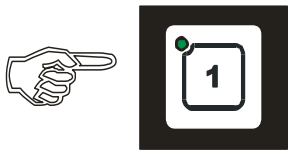

<u>Operation Panel with hand microphone ETC-1-TB</u>

- Press the **PTT SWITCH**
  Speak clearly into the microphone. When the **PTT SWITCH** is released, the operation panel will be in listening mode, and you will hear the communication from the selected station.




<u>Operation Panel with hand microphone P-66</u>

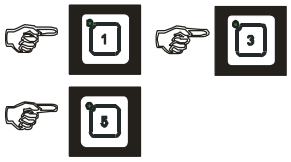
- Press the **PTT SWITCH**
  Speak clearly into the microphone. When the **PTT SWITCH** is released, the operation panel will be in listening mode, and you will hear the communication from the selected station.




- Press the **LINE** button once again to end the call
  The LED light will be turned off.

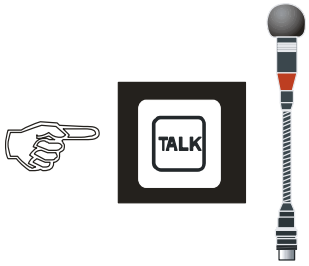
### 5.1.2 Make a Call to a Group of Substations

You can select a group of substations by pressing the respective line buttons from one of the four Operation Panels. Only the operation panels can switch off and terminate the call.



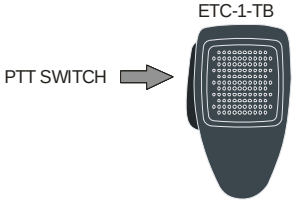

- Press the required **LINE** buttons to set up the call
  Indicated by steady green LED in selected buttons.


- Press the **SIGN** button
  A tone signal will be given to the selected station as long as the **SIGN** button is kept pressed.
  This will also activate extra signal devices if connected. (See section 5.1.5)



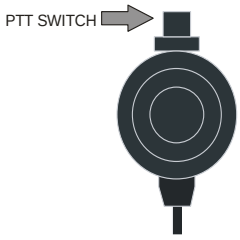

<u>Operation Panel with gooseneck microphone MB-30G</u>

- Press the **TALK** button
  Speak clearly into the microphone. When the **TALK** button is released, the operation panel will be in listening mode, and you will hear the communication from the selected station.



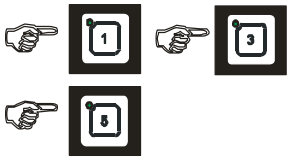

<u>Operation Panel with hand microphone ETC-1-TB</u>

- Press the **PTT SWITCH**
  Speak clearly into the microphone. When the **PTT SWITCH** is released, the operation panel will be in listening mode, and you will hear the communication from the selected station.




<u>Operation Panel with hand microphone P-66</u>

- Press the **PTT SWITCH**
  Speak clearly into the microphone. When the **PTT SWITCH** is released, the operation panel will be in listening mode, and you will hear the communication from the selected stations.



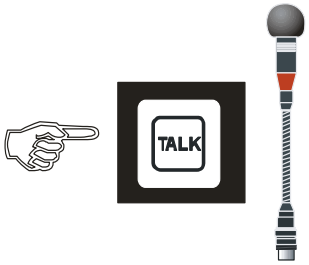

- Press all the **LINE** buttons once again to terminate the call.
  The LED will be turned off.

### 5.1.3 All Call

The All Call message from the operation panel will be broadcast to all substations as a one-way message. It will be indicated by a steady green **LED** in the **ALL** button only. Talk-back from the substations is closed in this mode.

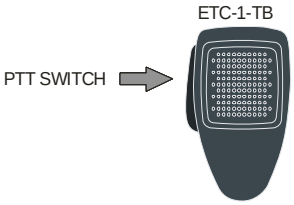

- Press the **ALL** button to set up the call.
  Indicated by a steady green LED in the **ALL** button.


- Press the **SIGN** button
  A tone signal will be given to the selected station as long as the **SIGN** button is kept pressed.
  This will also activate extra signal devices if connected. (See section 5.1.5)



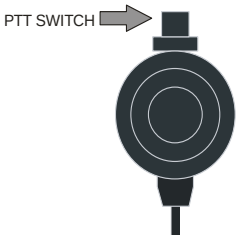

<u>Operation Panel with gooseneck microphone MB-30G</u>

- Press the **TALK** button
  Speak clearly into the microphone.



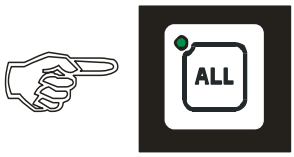

<u>Operation Panel with hand microphone ETC-1-TB</u>

- Press the **PTT SWITCH**
  Speak clearly into the microphone.




<u>Operation Panel with hand microphone P-66</u>

- Press the **PTT SWITCH**
  Speak clearly into the microphone.




- Press the **ALL** button once again to end the call.
  The LED will be turned off.

### 5.1.4 Handsfree Operation

<u>Operation Panel with gooseneck microphone MB-30G and footswitch</u>

- Press the **FOOTSWITCH**
  Speak clearly into the microphone. When the **FOOTSWITCH** is released, the operation panel will be in listening mode, and you will hear the communication from the selected station.

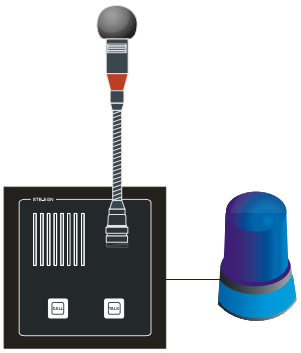
### 5.1.5 Activate Signal on Substations with Extra Signal Device

Substations STB-3, STB-5, and STB-5GN are equipped with a relay for activating extra signal devices. Extra signal devices may be flashing beacons, rotary lights, alarm horns and bells.

Operation Panel


- Press the **SIGN** button
  A tone signal will be given to the selected station as long as the **SIGN** button is kept pressed:
  ***Indication 1:***
  ***A tone signal in the substation's monitor speaker for STB-5 and STB-5GN or in horn loudspeaker for STB-3.***
  This will also activate extra signals for substations equipped with these devices.
  ***Indication 2:***
  ***Signal in flashing beacon, rotary light, alarm horn or bell.***

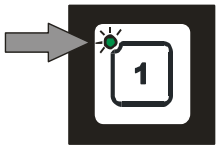
Substation



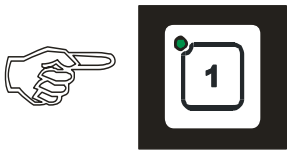
STB-5GN with rotary light

### 5.1.6 Receive a Call from Substation

A call is indicated by a flashing green **LED** in the push button and a beep tone in the monitor speaker or external loudspeaker. It will also activate an extra signal unit if installed. Only the operation panel can switch off and terminate the call.



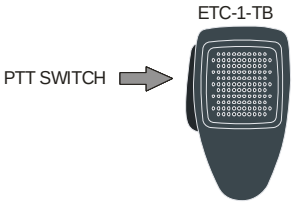

- A call is indicated with a flashing green **LED** for the respective line button, and a signal in the monitor speaker.
  (and in extra signal unit if installed.)




- Press the **LINE** button to set up the call.
  Indicated by a steady green LED.

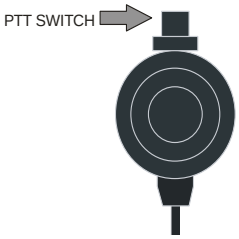

<u>Operation Panel with gooseneck microphone MB-30G</u>

- Press the **TALK** button
  Speak clearly into the microphone. When the **TALK** button is released, the operation panel will be in listening mode, and you will hear the communication from the selected station.



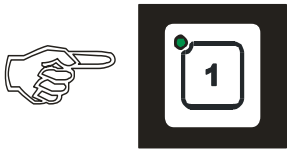

<u>Operation Panel with hand microphone ETC-1-TB</u>

- Press the **PTT SWITCH**
  Speak clearly into the microphone. When the **PTT SWITCH** is released, the operation panel will be in listening mode, and you will hear the communication from the selected station.




<u>Operation Panel with hand microphone P-66</u>

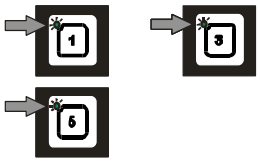
- Press the **PTT SWITCH**
  Speak clearly into the microphone. When the **PTT SWITCH** is released, the operation panel will be in listening mode, and you will hear the communication from the selected station.



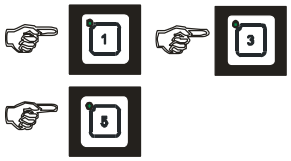

- Press the **LINE** button once again to terminate the call.
  The LED will be turned off.

### 5.1.7 Receive a Call from Two or More Substations

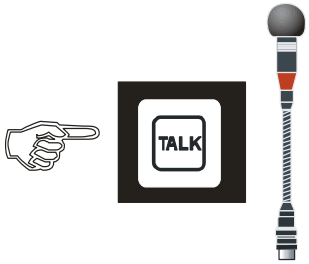
Calls can be received from two or more substations at the same time. The operation panel that is set to receive calls can select between calls from the substations.
A call is indicated by a flashing green **LED** in the push buttons and a beep tone in the monitor speaker. It will also activate an extra signal unit if installed. (Only for the first incoming call.)




- Calls are indicated by a flashing green **LED** for the respective line button, and a signal in the monitor speaker.
  (Calls will also be in the extra signal unit if installed, albeit only for the first call.)

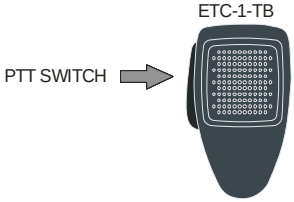



- Press the **LINE** button to set up the call.
  Indicated by a steady green LED.
  The operation panel user can select between substation lines and cancel calls by pressing the respective LINE button once again.



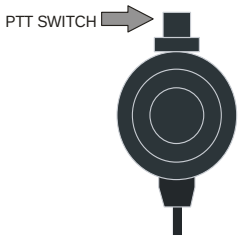

<u>Operation Panel with gooseneck microphone MB-30G</u>

- Press the **TALK** button
  Speak clearly into the microphone. When the **TALK** button is released, the operation panel will be in listening mode, and you will hear the communication from the selected station.



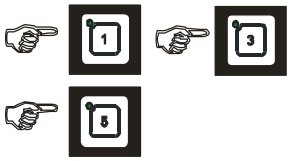

<u>Operation Panel with hand microphone ETC-1-TB</u>

- Press the **PTT SWITCH**
  Speak clearly into the microphone. When the **PTT SWITCH** is released, the operation panel will be in listening mode, and you will hear the communication from the selected station.




<u>Operation Panel with hand microphone P-66</u>

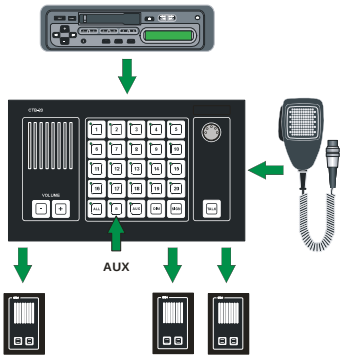
- Press the **PTT SWITCH**
  Speak clearly into the microphone. When the **PTT SWITCH** is released, the operation panel will be in listening mode, and you will hear the communication from the selected station.



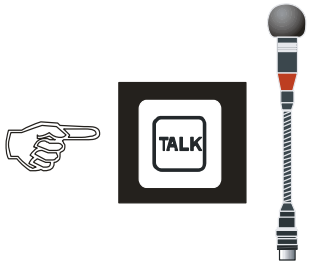

- Press the selected **LINE** buttons once again to terminate the call.
  The LEDs will be turned off.

### 5.1.8 AUX Function

An external signal connected to the **AUX** input of the system will be transferred to any selected station or group of stations if the **AUX** button is selected. (Example: Entertainment and VHF signal.)
The TALK button in any operation panel will override this function.

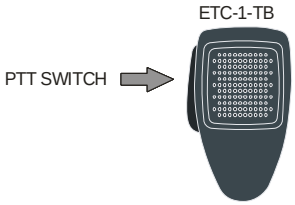



- Press the desired line buttons
- Press the **AUX** button
  The **AUX** signal transference is set up and indicated by a steady green LED.



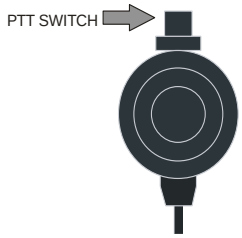

<u>To override this function with gooseneck microphone:</u>

- Press the **TALK** button on the operation panel.
  Speak clearly into the microphone. When the **TALK** button is released, the system will be in AUX mode again.



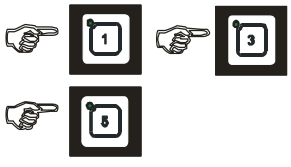

<u>To override this function with hand microphone ETC-1-TB:</u>

- Press the **PTT SWITCH**
  Speak clearly into the microphone. When the **PTT SWITCH** is released, the system will be in AUX mode again.




<u>To override this function with hand microphone P-66:</u>

- Press the **PTT SWITCH**
  Speak clearly into the microphone. When the **PTT SWITCH** is released, the system will be in AUX mode again.

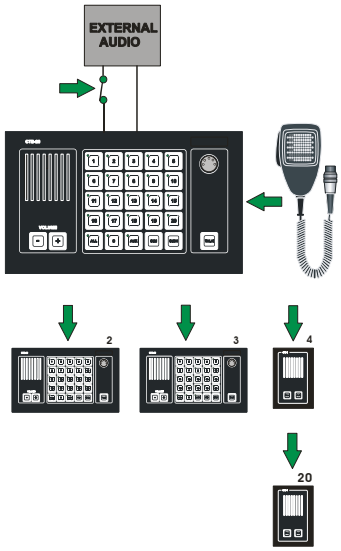



<u>To terminate the function:</u>

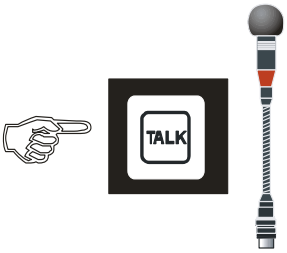
- Press the line buttons and **AUX** button once again to terminate the signal transference.

### 5.1.9 Audio from External Audio to All

Alarm (or any audio) from an external system can be distributed through the CTB system.
A potential-free contact and 0dB signal from the external system activate the CTB and the message will be addressed to all substations and operation panels.
The TALK button on the operation panel or PTT button on the hand microphone will override the external audio. Normal talk-back functions cannot be used in this mode.

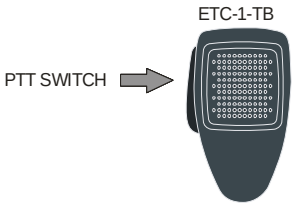



- Switch on the external audio.
  The audio transference is set up and indicated by a steady green LED in all the line buttons.




<u>To override this function with gooseneck microphone:</u>

- Press the **TALK** button on the operation panel.
  Speak clearly into the microphone. When the **TALK** button is released, the system will be in “audio to all” mode again.




<u>Operation Panel with hand microphone ETC-1-TB:</u>
Press the **PTT SWITCH**
Speak clearly into the microphone. When the **PTT SWITCH** is released, the system will be in “audio to all” mode again.


<u>Operation Panel with hand microphone P-66:</u>

- Press the **PTT SWITCH**
  Speak clearly into the microphone. When the **PTT SWITCH** is released, the system will be in “audio to all” mode again.

<u>To terminate the function:</u>

- Switch off the external audio.

### 5.1.10 Public Address Operation of External System

The final four line buttons on the operation panel can be set to access 1 to 4 public address zones on an external Public Address System.
CTB-10 & CTB-10W/V01: Line buttons marked 7-8-9-10
CTB-20 & CTB-20W/V01: Line buttons marked 17-18-19-20
The ALL button will access all substations and the external Public Address system.

CTB-10 & CTB-10W/V01

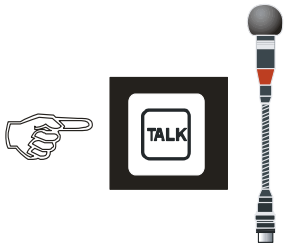

CTB-20 & CTB-20W/V01


PA to a single zone or group of zones:

- Press the desired **LINE** button.
  The Public Address broadcast will be set up, indicated by a steady green LED.

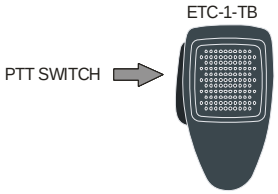

PA to all zones:

- Press the **ALL** button, the call
  The Public Address broadcast will be set up, indicated by a steady green LED in the **ALL** button.



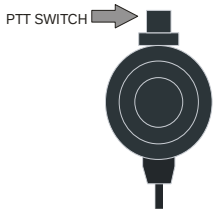

Operation Panel with gooseneck microphone MB-30G:

- Press the **TALK** button
  Speak clearly into the microphone to broadcast the message.




Operation Panel with hand microphone ETC-1-TB:

- Press the **PTT SWITCH**
  Speak clearly into the microphone to broadcast the message.




Operation Panel with hand microphone P-66:

- Press the **PTT SWITCH**
  Speak clearly into the microphone to broadcast the message.

CTB-10 & CTB-10W/V01


CTB-20 & CTB-20W/V01



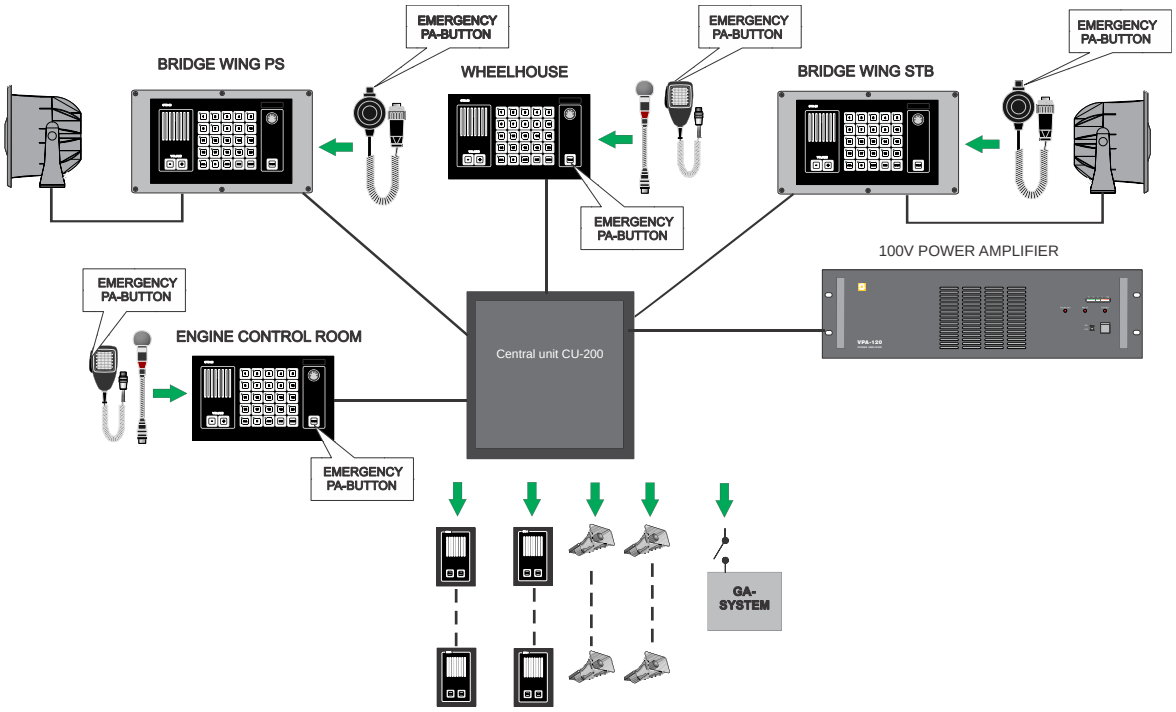
To terminate the function:

- Press the **line** button(s) or **ALL** once again to terminate the Public Address broadcast.

### 5.1.11 Emergency Public Address Operation

In order to comply with PA requirements, two PA call stations are required. The CTB-100V system is designed for up to four operation panels that can be used as Emergency call stations. In addition, one or more All Call stations (e.g. Lifeboat stations) can be used as Emergency call stations.
Functions:
• Muting of the External Alarm System (General/Fire Alarm)
• Operation Panel with 1st priority, e.g. the bridge can override other operation panels.

Types of Operation Panels / Emergency Call Stations:
• CTB-10 Operation Panel 10 line selection, indoor use. Hand or gooseneck microphone.
• CTB-10W/V01 Operation Panel 10 line selection, WP. Hand microphone only.
• CTB-20 Operation Panel 20 line selection, indoor use. Hand or gooseneck microphone.
• CTB-20W/V01 Operation Panel 20 line selection, WP. Hand microphone only.




## Operation from 1 of 4 Operation Panels:

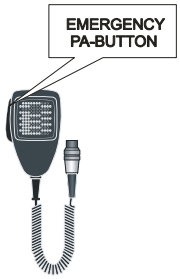

- Press the **ALL** button to set up the call.
  Indicated by steady green LED in the **ALL** button.


"EMERGENCY PA-BUTTON"

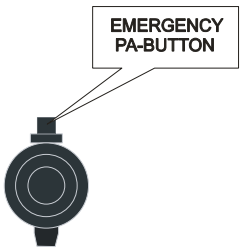
<u>With gooseneck microphone MB-30G CTB-10 & CTB-20:</u>

- Press the **TALK** button marked "EMERGENCY PA –BUTTON."
- Speak clearly into the microphone to broadcast the message.

<u>With hand microphone ETC-1-TB (CTB-10 & CTB-20):</u>




- Press the **PTT SWITCH** marked “EMERGENCY PA-BUTTON”
- Speak clearly into the microphone to broadcast the message.



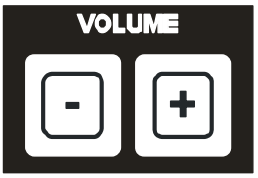

<u>With hand microphone P-66 (CTB-10W/V01 & CTB-20W/V01):</u>

- Press the **PTT SWITCH** marked “EMERGENCY PA-BUTTON”
- Speak clearly into the microphone to broadcast the message.


- Press the **ALL** button once again to terminate the PA call. The LED will be turned off.

### 5.1.12 Volume

By pressing the **+** or **-** buttons repeatedly, you can increase or decrease the listening volume in the CTB station. This will also affect the volume for a parallel speaker connected to the CTB station.




- Press the + button repeatedly to increase the volume
- Press the - button repeatedly to decrease the volume

### 5.1.13 Dimming of Call Light

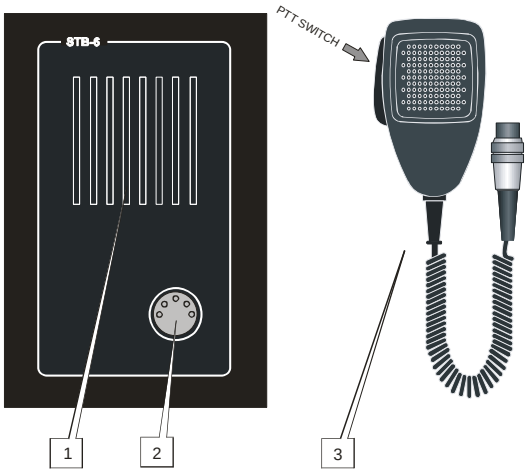
The light intensity in the line buttons can be adjusted by pressing the **DIM** button.
The light intensity toggles between two levels: maximum and 1/3. Default is set to maximum intensity.
The dimmer can be set to on/off by the DIP switch marked “dimmer off”.


- Press the **DIM** button once for 1/3 intensity.
- Press the **DIM** button once again to toggle back to maximum intensity.

## 5.2 Parallel Communication

Parallel Communication is, typically, the operation of parallel microphones/loudspeakers located on bridge wings or other locations near the operation panel where parallel microphones/loudspeakers are needed. Two parallel stations can be connected. Communication is set up by the operation panel.
The bridge wing unit will be in operation mode as soon as a station is selected on the operation panel.

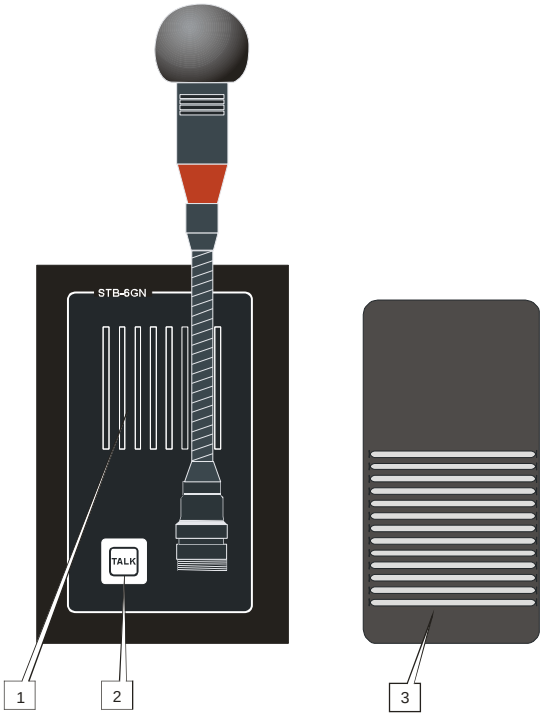
*Figure 9 Parallel station STB-6*




1. **Loudspeaker** (Parallel to the central unit)
2. **Contact** For microphone
3. **Microphone** ETC-1-TB with PTT switch

PTT switch = Push to talk button switch

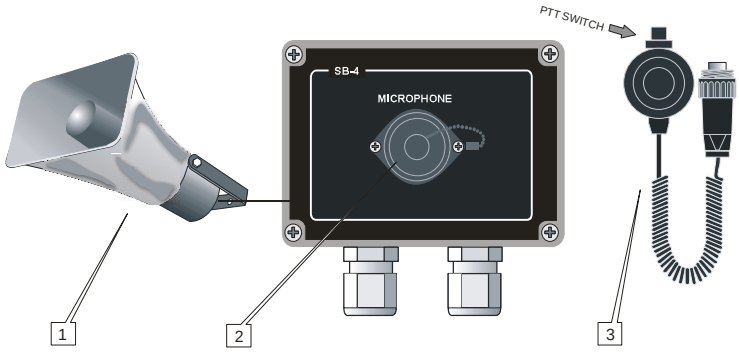
*Figure 10 Parallel station STB-6GN*




1. **Loudspeaker** (Parallel to the central unit)
2. **TALK** PTT switch for microphone (Parallel to the central unit)
3. **Footswitch** (Parallel to PTT switch )

PTT switch = Push to talk button switch

*Figure 10 Parallel station SB-4*



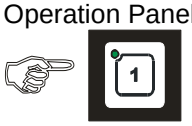

1. **Loudspeaker** (Parallel to the central unit)
2. **Contact** For microphone
3. **Microphone** Microphone P-66 with push to talk switch (parallel to microphone on the central unit

PTT switch = Push to talk button switch

### 5.2.1 Operation

***Note: Line selection and signal have to be set up from the central unit***

Operation Panel




- Press the desired **LINE** button to set up the call. Indicated by steady green LED.

Operation Panel


- Press the **SIGN** button.
  A tone signal will be given to the selected station as long as the **SIGN** button is kept pressed.
  This will also activate extra signals to substations equipped with these devices.

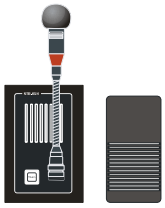
Parallel Station STB-6

- Press the **PTT SWITCH** on the hand microphone. Speak clearly into the microphone. When the **PTT SWITCH** is released, the parallel equipment will be in listening mode, and you will hear the communication from the selected station in the monitor speaker.

Parallel Station STB-6GN

- Press **TALK** on the STB-6GN
  Speak clearly into the microphone. When the **TALK** button is released, the parallel equipment will be in listening mode, and you will hear the communication from the selected station in the monitor speaker.

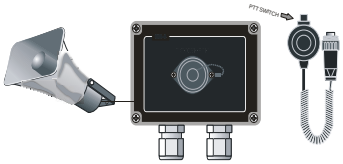
STB-6GN Handsfree Operation



- Press the **FOOTSWITCH**
  Speak clearly into the microphone. When the **FOOTSWITCH** is released, the parallel equipment will be in listening mode, and you will hear the communication from the selected station

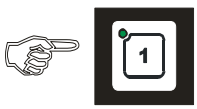
Parallel Station SB-4

SB-4 Plugbox / P-66 Mic / VML-1520 Loudspeaker



- Press the **PTT SWITCH** on hand microphone P-66
  Speak clearly into the microphone. When the **PTT SWITCH** is released, the parallel equipment will be in listening mode, and you will hear the communication from the selected station.

Operation Panel

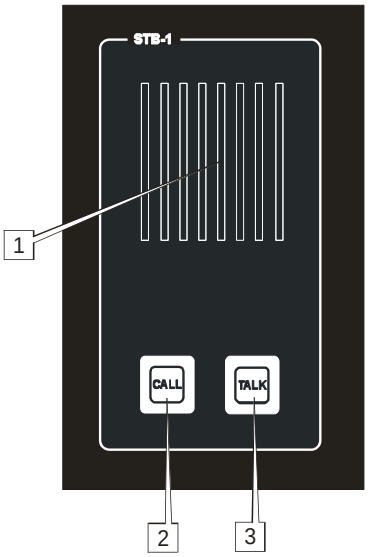



- Press the desired **LINE** button on the operation panel once more to end the call.
  The LED will be switch off.

## 5.3 Operation from Substations

Calls can be made from substations to the operation panels by pressing the CALL button. A call is indicated by a flashing green LED and a tone in the operation panel. The operation panel user can confirm the call by pressing the respective line button, after which the communication is set up. Only the operation panel user can switch off and terminate the call.

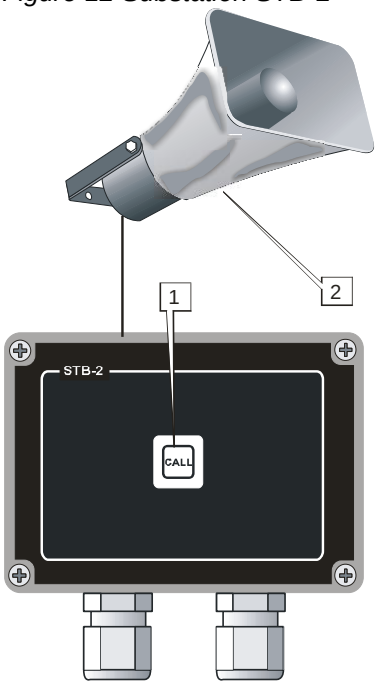
*Figure 11 Substation STB-1*




1. Re-entrant **Loudspeaker**
   For communication from the central unit.
   Microphone for communication to the central unit.
2. **CALL**
   Push button switch for call to central unit.
3. **TALK**
   PTT switch for talk to the central unit

PTT switch = Push to talk button switch

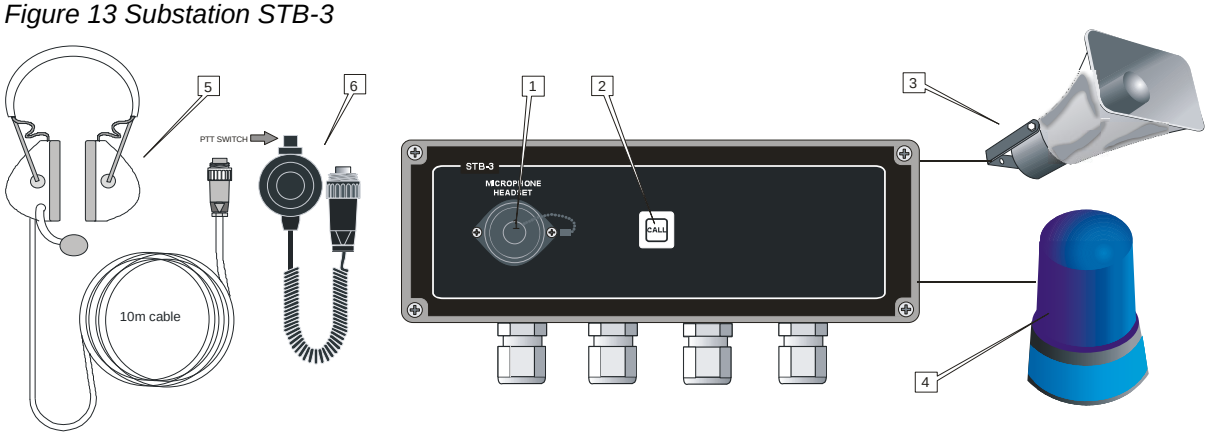
*Figure 12 Substation STB-2*




1. **CALL**
   Push button switch for call to central unit.

2. **Re-entrant Loudspeaker**
   For communication from the central unit.
   Microphone for communication to the central unit.

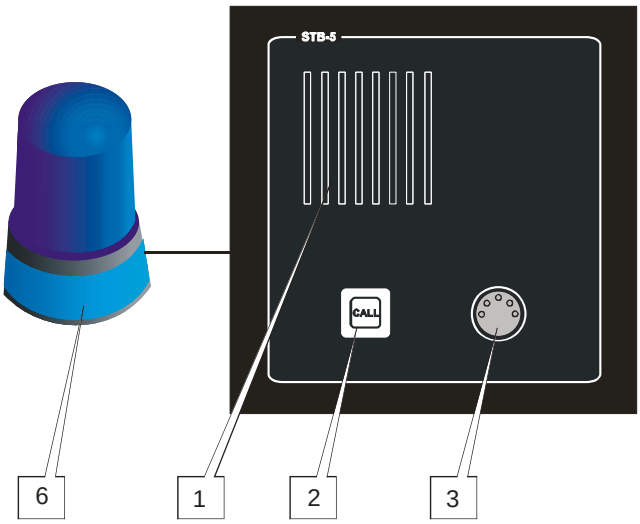
*Figure 13 Substation STB-3*

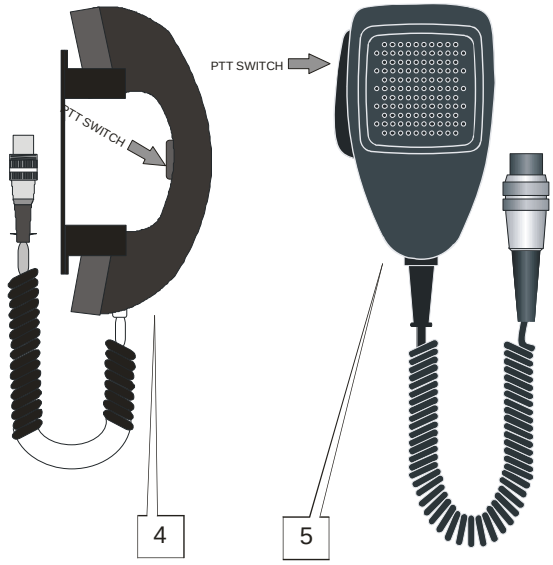



1. **Contact** For headset or Microphone.
2. **Call** Push button switch for call to central unit.
3. **Loudspeaker** For communication from the central unit.
4. **Signal device** Activated from the central unit.
5. **Headset** P-MT7 with boom microphone
6. **Microphone** P-66 with PTT switch

PTT switch = Push to talk button

*Figure 14 Substation STB-5*



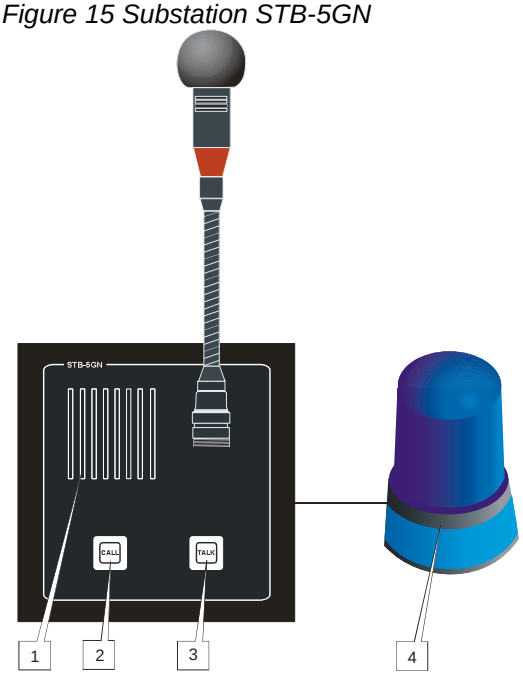




1. **Loudspeaker** For communication from the central unit.
2. **Call** Push button switch for call to central unit.
3. C**ontact** For handset HAS-1 or handheld microphone ETC-STB5
4. **Handset** HAS-1 with push to talk switch (PTT)
5. **Microphone** ETC-STB5 with push to talk switch (PTT)
6. **Signal device** Activated from the central unit.

PTT switch = Push to talk button switch

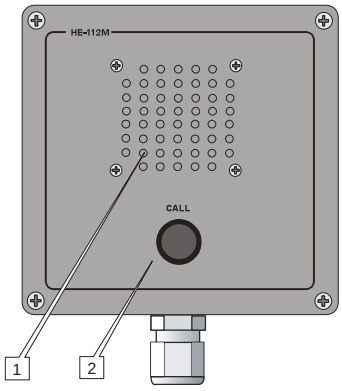
*Figure 15 Substation STB-5GN*

*Figure 16 Substation HE-112M and HE-112MT*




1. **Loudspeaker** For communication from the central unit.
2. **CALL** Push button switch for call to central unit.
3. **TALK** PTT switchfor talk to the central unit.
4. **Signal device** Activated from the central unit.

PTT switch = Push to talk button switch

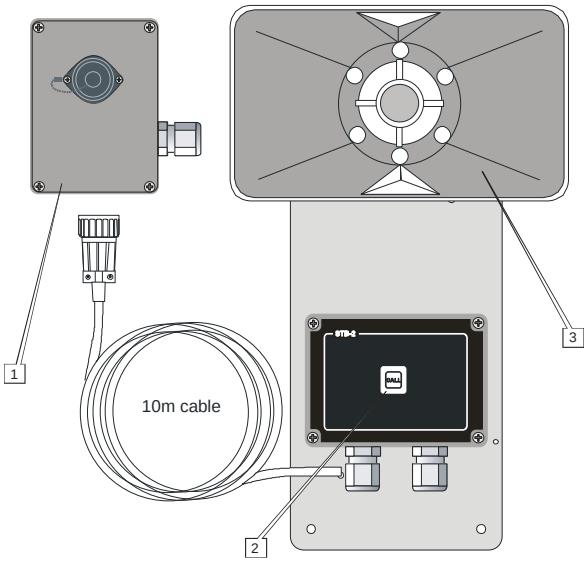



1. **Re-entrant Loudspeaker**
   For communication from the central unit.
   Microphone for communication to the central unit.

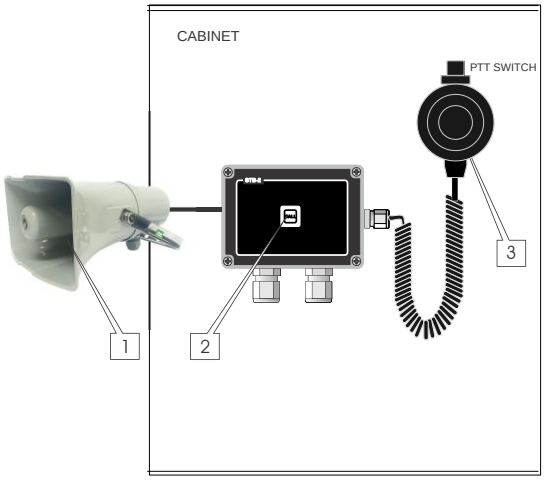
2. **CALL**
   Push button switch for call to central unit.

*Figure 17 Substation VH-10M and VH-10MT*

*Figure 18 Substation VHM-10 and VHM-10T*



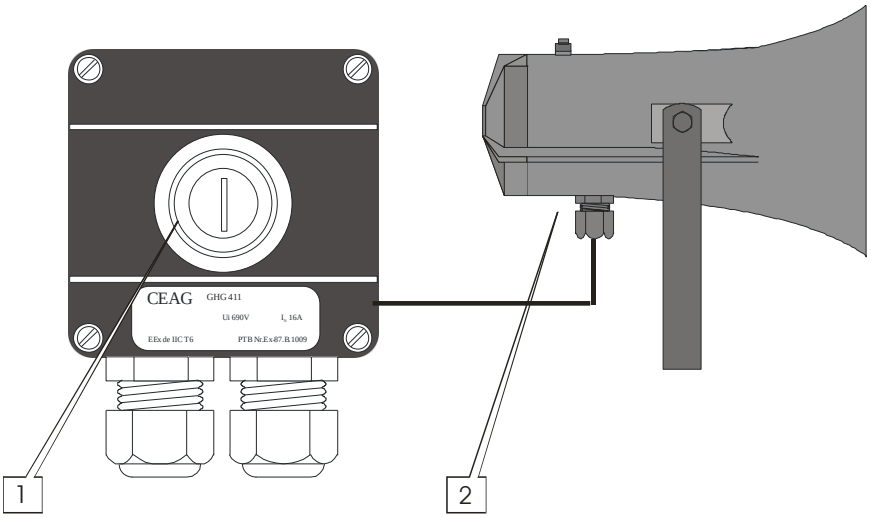

1. **Plugbox**
   CD-2 for VH-10M
2. **CALL**
   Push button switch for call to the central unit
3. **Re-entrant Loudspeaker**
   For communication from the central unit
   Microphone for communication to the central unit.




1. **Loudspeaker** For communication from the central unit
2. **CALL** Push button switch for call to the central unit
3. **Microphone** P-66 fixed connected with PTT switch

PTT switch = Push to talk button switch

*Figure 19 Substation NEBB-42EX / Ex Loudspeaker*



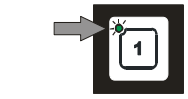

1. Push to call switch
2. Re-entrant Loudspeaker EX.

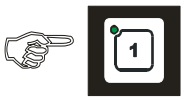
### 5.3.1 Operation from STB-1

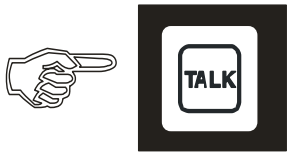
Substation


- Press the **CALL** button
- *Indicated by a flashing green LED on the selected line button and a tone from the operation panel's speaker.*
- *When the operator of the operation panel presses the respective LINE button, the call is set up and indicated by a steady green LED.*

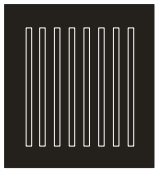
Operation Panel



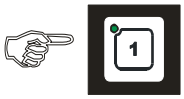




- Press the **TALK** button



Speaker

- Speak clearly into the re-entrant loudspeaker. When the **TALK** button is released, the STB-1 will be in listening mode, and you will hear the communication from the operation panel.
- *Operator of the operation panel terminates the call by pressing the LINE button once again.*

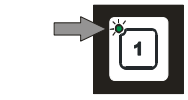


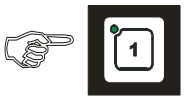

### 5.3.2 Operation from STB-2

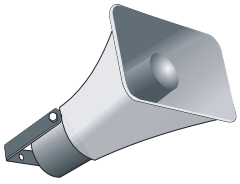
Substation


- Press the **CALL** button
- *Indicated by a flashing green LED on the selected line button and a tone from the operation panel's speaker.*
- *When the operator of the operation panel presses the respective LINE button, the call is set up and indicated by a steady green LED.*

Operation Panel



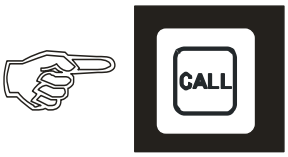



- Speak clearly into the re-entrant loudspeaker for communication to the operation panel, and receive communication in the same loudspeaker.
- *Operator of the operation panel terminates the call by pressing the LINE button once again.*

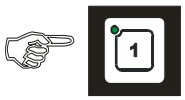
### 5.3.3 Operation from STB-3

Substation



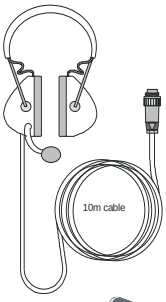

Operation Panel


- Press the **CALL** button.
- *Indicated by a flashing green LED on the selected line button and a tone from the operation panel's speaker.*

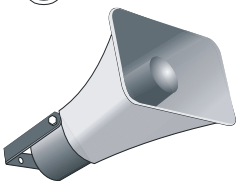


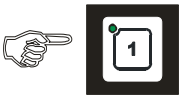

- *When the operator of the operation panel presses the respective LINE button, the call is set up and indicated by a steady green LED.*

With Headset P-MT7




- Speak clearly into the boom microphone on the headset
- Receive communication from the operation panel in the headphone, and in the loudspeaker if installed.

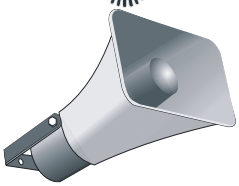


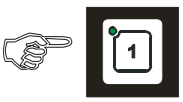



- *Operator of the operation panel terminates the call by pressing the LINE button once again.*

With Microphone P-66


- Press the **PTT SWITCH** on the microphone.
  Speak clearly into the microphone.
  When the **PTT SWITCH** is released, the microphone will be in listening mode, and you will hear the communication from the operation panel in the loudspeaker



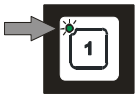



- *Operator of the operation panel terminates the call by pressing the LINE button once again.*

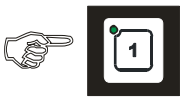
### 5.3.4 Operation from STB-5

Substation


Operation Panel

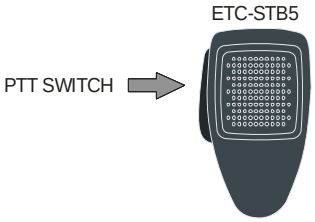



- Press the **CALL** button.
- *Indicated by a flashing green LED on the selected line button and a tone from the operation panel's speaker.*

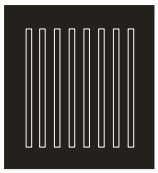



- *When the operator of the operation panel presses the respective LINE button, the call is set up and indicated by a steady green LED.*

With Mic ETC-STB5

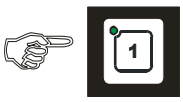



- Press the **PTT SWITCH** on the microphone and speak clearly into the microphone.



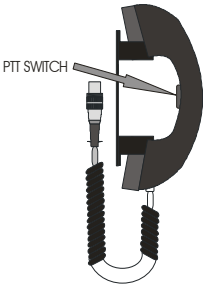
Speaker

- When the **PTT SWITCH** is released, the STB-5 will be in listening mode, and you will hear the communication from the operation panel in the monitor speaker.




- *Operator of the operation panel terminates the call by pressing the LINE button once again.*

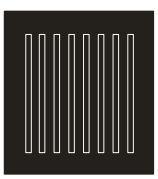
With Handset HAS-1




- Press the **PTT SWITCH** on the handset and speak clearly into the microphone on the handset.
- When the **PTT SWITCH** is released, the STB-5 will be in listening mode, and you will hear the communication from the operation panel in the handset's speaker


- *Operator of the operation panel terminates the call by pressing the LINE button once again.*

With Monitor Speaker

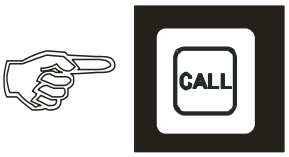


- Speak clearly into the monitor speaker for communication to the operation panel, and receive communication from the operation panel in the same speaker.

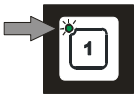

- *Operator of the operation panel terminates the call by pressing the LINE button once again.*

### 5.3.5 Operation from STB-5GN

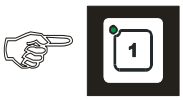
Substation



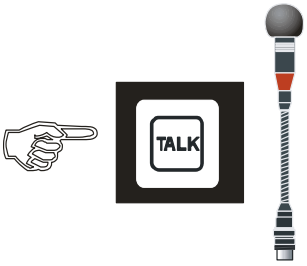

Operation Panel



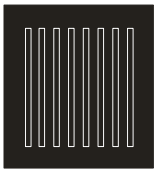

- Press the **CALL** button.
- *Indicated by a flashing green LED on the selected line button and a tone from the operation panel's speaker.*




- *When the operator of the operation panel presses the respective LINE button, the call is set up and indicated by a steady green LED.*

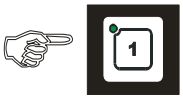



- Press the **TALK** button on the STB-5GN.
  Speak clearly into the microphone. When the **TALK** button is released, the STB-5GN will be in listening mode, and you will hear the communication from the selected station in the monitor speaker.



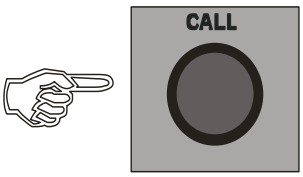
Speaker

- *Operator of the operation panel terminates the call by pressing the LINE button once again.*



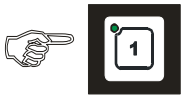

### 5.3.6 Operation from HE-112M / HE-112MT

Substation

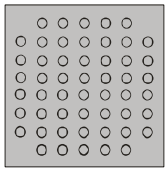



Operation Panel


- Press the **CALL** button.
- *Indicated by a flashing green LED on the selected line button and a tone from the operation panel's speaker.*

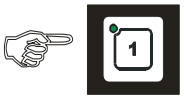



- *When the operator of the operation panel presses the respective LINE button, the call is set up and indicated by a steady green LED.*



Speaker

- Speak clearly into the re-entrant speaker for communication to the operation panel, and receive communication in the same speaker.



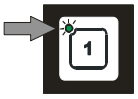

- *Operator of the operation panel terminates the call by pressing the LINE button once again.*

### 5.3.7 Operation from VH-10M / VH-10M-T

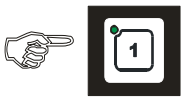
Substation

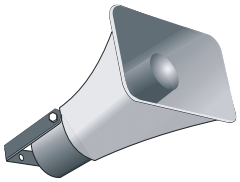

Operation Panel

- Press the **CALL** button.
- *Indicated by a flashing green LED on the selected line button and a tone from the operation panel's speaker.*




- *When the operator of the operation panel presses the respective LINE button, the call is set up and indicated by a steady green LED.*



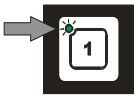
- Speak clearly into the re-entrant speaker for communication to the operation panel, and receive communication in the same speaker.
- *Operator of the operation panel terminates the call by pressing the LINE button once again.*


### 5.3.8 Operation from VHM-10 / VHM-10-T

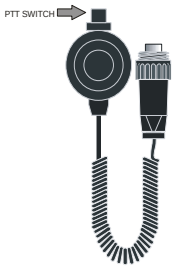
Substation


Operation Panel

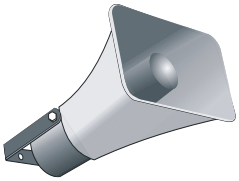
- Press the **CALL** button.
- *Indicated by a flashing green LED on the selected line button and a tone from the operation panel's speaker.*




- *When the operator of the operation panel presses the respective LINE button, the call is set up and indicated by a steady green LED.*

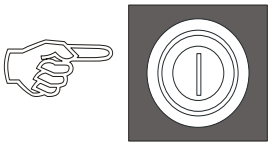

- Press the **PTT SWITCH** on the microphone.
  Speak clearly into the microphone.
  When the **PTT SWITCH** is released, the **VHM-10** will be in listening mode, and you will hear the communication from the operation panel in the loudspeaker.

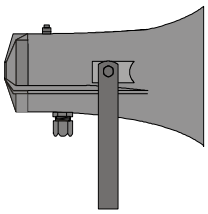


- *Operator of the operation panel terminates the call by pressing the LINE button once again.*

### 5.3.9 Operation from NEBB-42EX / Ex Loudspeaker

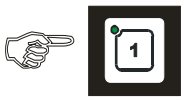
Substation

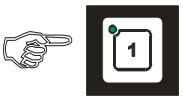




- Press the **CALL** button.
- *Indicated by a flashing green LED on the selected line button and a tone from the operation panel's speaker.*
- *When the operator of the operation panel presses the respective LINE button, the call is set up and indicated by a steady green LED.*
- Speak clearly into the re-entrant Ex speaker for communication to the operation panel, and receive communication from it in the same speaker.
- *Operator of the operation panel terminates the call by pressing the LINE button once again.*

Operation Panel

# 6 Commissioning

The CTB and CU units and all secondary equipment are fully tested before delivery. To ensure that everything is correct after installation and configuration of the system, carry out the following procedure before putting the system to use.
*Refer to section 4. Installation and Configuration Procedures.*

## 6.1 Mechanical Inspection

- All equipment is well fastened into the console or wall.
- All cables and cable glands are well tightened and fastened.

## 6.2 Cable Inspection

All cables are connected according to the Installation and Configuration procedures.

- Signal cables 0.75mm$^2$ approved ship-cable of type twisted-pair with outer braided copper shield are used. The shields are interconnected in junction boxes and grounded in the central unit only.
- Common ground points:
  Terminal block X8-1-20 / no. 5 is ground point for each substation.
  Terminal block X1,2,3,4 / no.11 is ground point for each operation panel.
- Power cable is 1.5mm$^2$ and connected to terminal block X7: + to terminal 1 and - to terminal 2. The shield is grounded on terminal 3.
- Cable 1.5mm$^2$ for power to signal units is used.
- Polarity for extra signal device is connected according to dwg.CTB_cc3 and dwg.CTB_cc4 in sections 7.2.11 and 7.2.12

## 6.3 Check Configuration

- Use power supply according to section 4.4
- Priority is set according to section 4.5
- Volume and signal adjustment are set according to section.4.6
- Dimmer and substations are set according to section 4.7

## 6.4 Starting up the System

The system has no On/Off switch for main power. Power switching is done from external equipment.
The system is always powered and ready for use and it is only indicated when the system is in use.
The following procedure has to be completed before putting the system to use. Do the test procedure for all equipment in the installation. Test the functions according to section 5 Operation Instructions.

**Basic Functions CTB, Test Operation from all CTB Operation Panels**

| Pos. | Operation Requirement | Tested, OK |
|---|---|---|
| 1 | Commissioning according to section 6.1 to 6.3. | ☐ |
| 2 | Turn power on. 24VDC measured on terminal X7 no.1-2 in central unit. | ☐ |
| 3 | Make a call to each substation. Ref. 5.1.1 | ☐ |
| 4 | Make a call to group of substations. Ref. 5.1.2 | ☐ |
| 5 | All Call. Ref. 5.1.3 | ☐ |
| 6 | Give signal to substations with extra signal device. Ref. 5.1.5 | ☐ |
| 7 | Receive a Call from a substation Ref. 5.1.6 | ☐ |
| 8 | Receive a Call from two or more substations. Ref. 5.1.7 | ☐ |
| 9 | Volume control of internal loudspeaker. Ref. 5.1.12 | ☐ |
| 10 | Dimmer for light in Line button. Ref. 5.1.13 | ☐ |

**Additional Functions**

| Pos. | Operation Requirement | Tested, OK |
|---|---|---|
| 11 | Make a call with footswitch, handsfree. Ref. 5.1.4 | ☐ |
| 12 | AUX function. Ref. 5.1.8 | ☐ |
| 13 | Audio from external system. Ref. 5.1.9 | ☐ |
| 14 | Public Address operation of external system. Ref. 5.1.10 | ☐ |
| 15 | Emergency Public Address operation. Ref. 5.1.11 | ☐ |

**Parallel Communication / Bridge Wing - Ref. 5.2.1**

| Pos. | Operation Requirement | Tested, OK |
|---|---|---|
| 16 | Operation with STB-6 | ☐ |
| 17 | Operation with STB-6GN | ☐ |
| 18 | Operation with STB-6GN handsfree | ☐ |
| 19 | Operation with SB-4 | ☐ |
| 20 | Call to two or more substations from parallel station | ☐ |

**Power Supply SPS-4 if installed**

| Pos. | Operation Requirement | Tested, OK |
|---|---|---|
| 21 | Operating with 230V AC or 115V AC mains power supply.<br>24V DC on terminal 3-4. Green light marked “DC OK”. | ☐ |
| 22 | Operating with 24V DC emergency power supply.<br>1. Disconnect 230V AC or 115V AC mains power supply and check that the auto switch relay switches to emergency 24V DC. 24V DC on terminal 3-4.<br>Check that power failure contact marked NC 6-7 is activated.<br>2. Disconnect cables to + and – on the power supply module, and check that the auto switch relay switches to emergency 24V DC on terminal 3-4.<br>Check that power failure contact marked NC 6-7 is activated. | ☐<br>☐ |

**Substations**

| Pos. | Operation Requirement | Tested, OK |
|---|---|---|
| 23 | Operation from STB-1. Ref. 5.3.1 | ☐ |
| 24 | Operation from STB-2. Ref. 5.3.2 | ☐ |
| 25 | Operation from STB-3. Ref. 5.3.3 | ☐ |
| 26 | Operation from STB-5. Ref. 5.3.4 | ☐ |
| 27 | Operation from STB-5GN. Ref. 5.3.5 | ☐ |
| 28 | Operation from HE-112M. Ref. 5.3.6 | ☐ |
| 29 | Operation from VH-10M. Ref. 5.3.7 | ☐ |

| | | |
|---|---|---|
| 30 | Operation from VHM-10. Ref. 5.3.8 | ☐ |
| 31 | Operation from NEBB-42EX / Ex Loudspeaker. Ref. 5.3.9 | ☐ |

**Volume Control**

| Pos. | Operation Requirement | Tested, OK |
|---|---|---|
| 32 | Adjust sound pressure level to convenient level if necessary.<br>Master volume line 1-5, 6-10, 11-15, 16-20.<br>Ref. 4.6 | ☐ |

## 6.5 Troubleshooting

Most faults can be related to the following issues.
***Note: Use this troubleshooting guide together with section 4 Installation and Configuration Procedures.***

**Problems when operating from Operation Panels**

| Pos. | Faults or Failures | Description / Indication | Recommended Action |
|---|---|---|---|
| 1 | The whole system is shut down.<br>No light indication in CTB panels. | No voltage measured on terminal block X7 no.1-2 in the CU unit. | 1. Check 24V DC mains power supply or power supply SPS-4. |
| | | Correct voltage 24 – 32VDC measured on terminal block X7 no.1-2 in the CU unit. | 2. Check fuse marked F3 1AT. |
| 2 | SPS-4 power supply failure | Indication from failure contact X2 No. 5-6 (NO) or X2 No. 6-7 (NC).<br>No light in “DC OK”.<br>Two possibilities:<br>1. 230V AC or 115V AC failed and switched to 24V DC Emergency.<br>2. The power supply module has failed. | 1. Check main power supply.<br>2. Check fuse 5.0AT, terminal marked 3.<br><br>3. If the problem is not solved, the power module has to be repaired or replaced. |
| 3 | Operation from CTB panels failed **1** | No audio message received in any substation no. 1-10 or 11-20. | Check fuse marked “fuse 2” 1.0AT for line 1-10 and “fuse 4” 1.0AT for line 11-20. |
| 3.1 | Operation from CTB panels failed **2** | One or more operation panels failed.<br>One or more indication lights are active for each operation panel marked “indication for panels” on central unit.<br>(Ref. section 4.2.1 and 4.2.2) | Check all connections for actual panel(s). The panel should operate correctly when light is turned off.<br>If panels work correctly, the fault must be in the central unit. The main board has to be replaced or repaired. |
| 4 | Priority does not fulfil requirement for actual operation panel | | Check that DIP switches in the central unit marked “set priority” is set according to section 3.5. |
| 5 | Received call from substation does not fulfil requirement for actual station. | | Check that DIP switches in the central unit marked “set receive call” is set according to section 3.6. |
| 6 | Public Address operation does not fulfil the requirement for operation of SPA Public Address system. | | Check that DIP switches in the central unit marked “selector for PA zones” are set according to section 3.7. |

| | | | |
|---|---|---|---|
| 7 | Level for signal from auxiliary does not fulfil the requirement. | | Adjust trim potentiometer in the central unit marked “adj. aux. input signal” to satisfactory level. Ref section 4.6.2 |
| 7.1 | Level for output PA signal does not fulfil the requirement. | | Adjust trim potentiometer in the central unit marked “adj. PA-output signal” to satisfactory level. Ref. section 4.6.2 |
| 7.2 | Level for call signal out to all lines does not fulfil the requirement. | | Adjust trim potentiometer in the central unit marked “adj. call signal out” to satisfactory level. Ref. section 4.6.3 |
| 8 | General operating problems occurred when operating several stations. | Instability. | Check cable and termination blocks in the CU unit for respective stations. Also cable and termination blocks in junction boxes if used. |
| 9 | One substation cannot be operated | No contact between CTB panel and substation. | Check cable and terminal block in the CU unit for current extension. Check cable and terminal block in the substation or plugbox. Move this terminal block to another extension number. If operation is OK, the current substation has to be repaired. |
| 10 | Operation problem from a substation. | Continuous beeping tone in the CTB units. | Change polarity in substation terminals no. 1-2. |
| 11 | No signal in substation when using the SIGN button on the CTB unit. | No audio 1Khz tone in the substation. | Disconnect the substation.<br>1. If 7V AC is measured on terminal X8 1-2 in the CU unit, this unit is OK.<br>2. If no voltage is measured, the CU unit has to be repaired<br>3. Connect the substation.<br>If no voltage is measured on terminal X8 1-2 in the substation, the fault must be in the cable or the substation has to be repaired. |
| 12 | No signal in additional signal device when using the SIGN button. | Signal in substation, but no signal in the additional signal device. | Disconnect the substation.<br>1. If no voltage is measured on terminal X8 3-4 in the CU unit, check fuse F3 1A.<br>2. If fuse F3 is OK, check automatic fuse by waiting 2-3 seconds. If 24V DC is measured, the load is too high - max. 50mA. |
| 13 | Feedback problems | Feedback in one CTB unit. | Move substation or parallel equipment to another position. |
| 14 | Problems with system generated noise **1** | Occurring both in central unit and substations they use the ship’s own 24V DC power. | Disconnect ship’s 24V DC and connect a separate power supply (SPS-4) or a DC 24V / 24V DC converter. |
| 14.1 | Problems with system generated noise **2** | Occurring both in CTB units and substations. | 1. Check all cable connections, especially the shields. Check |

| | | | |
|---|---|---|---|
| | | | that connections are done according to section 4.3.<br>2. Check with a capacitor 1uF between terminasl no. 1-2 block X8-10 (20).<br>If not solved, it will require service from Zenitel. |

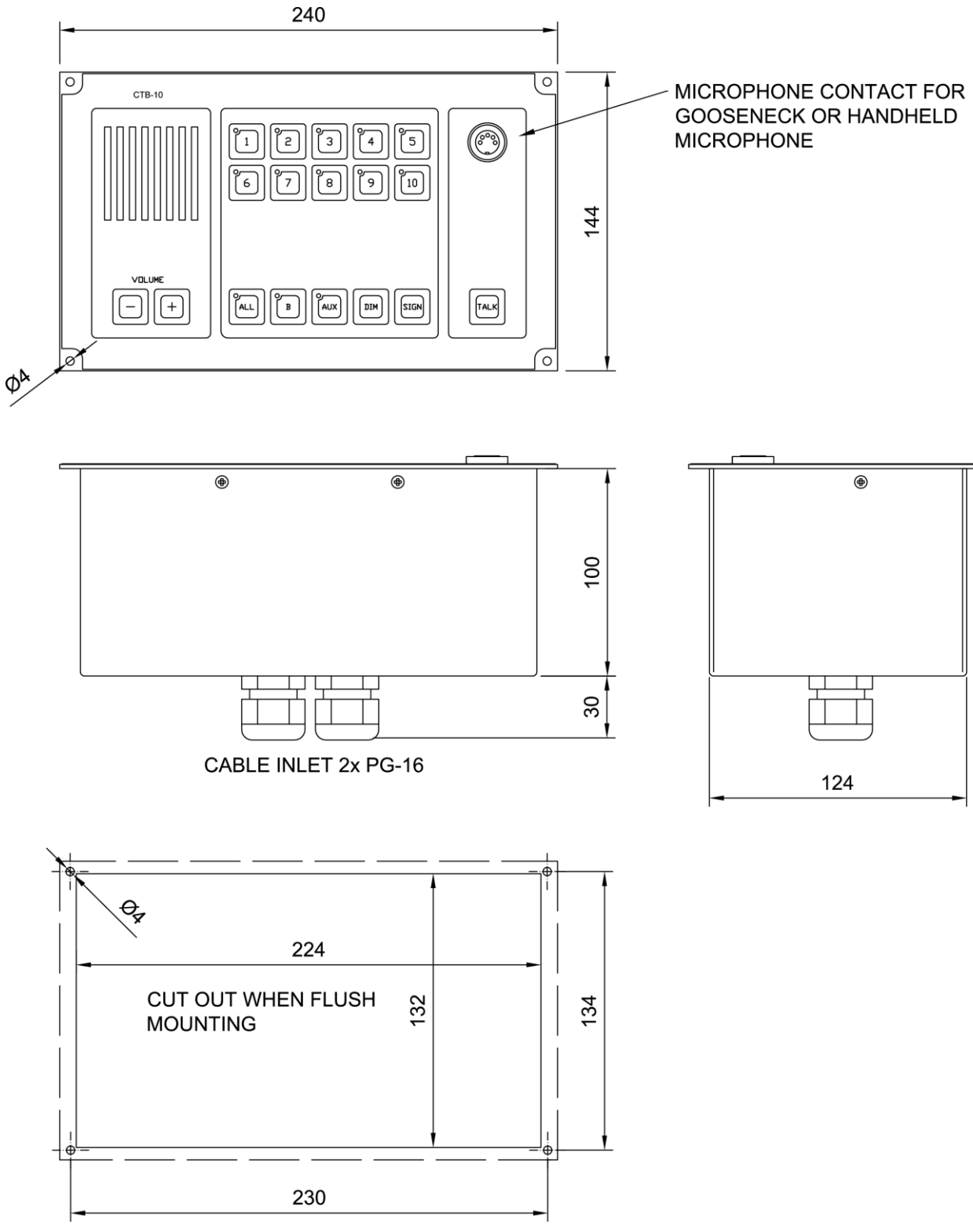
**Problems when operating from substation or parallel station connected to an operation panel**

| Pos. | Faults or Failures | Description / Indication | Recommended Action |
|---|---|---|---|
| 15 | Operation from a substation cannot be done. | No flashing green LED and tone in the CTB monitor speaker for the selected line. | 1. Check cable and terminal block in the substation or plug box.<br>2. Move this terminal block to another extension number.<br>If problem not solved, the substation has to be repaired.<br>If substation is operating OK, the CU unit has to be repaired |
| 16 | Problems with high background sound. | Sound near the substation. | Replace current substation with one with headset or with external loudspeaker STB-2, or adjust master volume line 1-5, 6-10, 11-15 or 16-20. (Ref. section 4.2.1 and 4.2.2) |
| 17 | Operation from a parallel station cannot be done. | Normal operation from the CTB unit can be done. | 1. Check cable and connections between the parallel station and the central unit.<br>2. Check the microphones.<br>If problem not solved, the parallel station has to be repaired. |

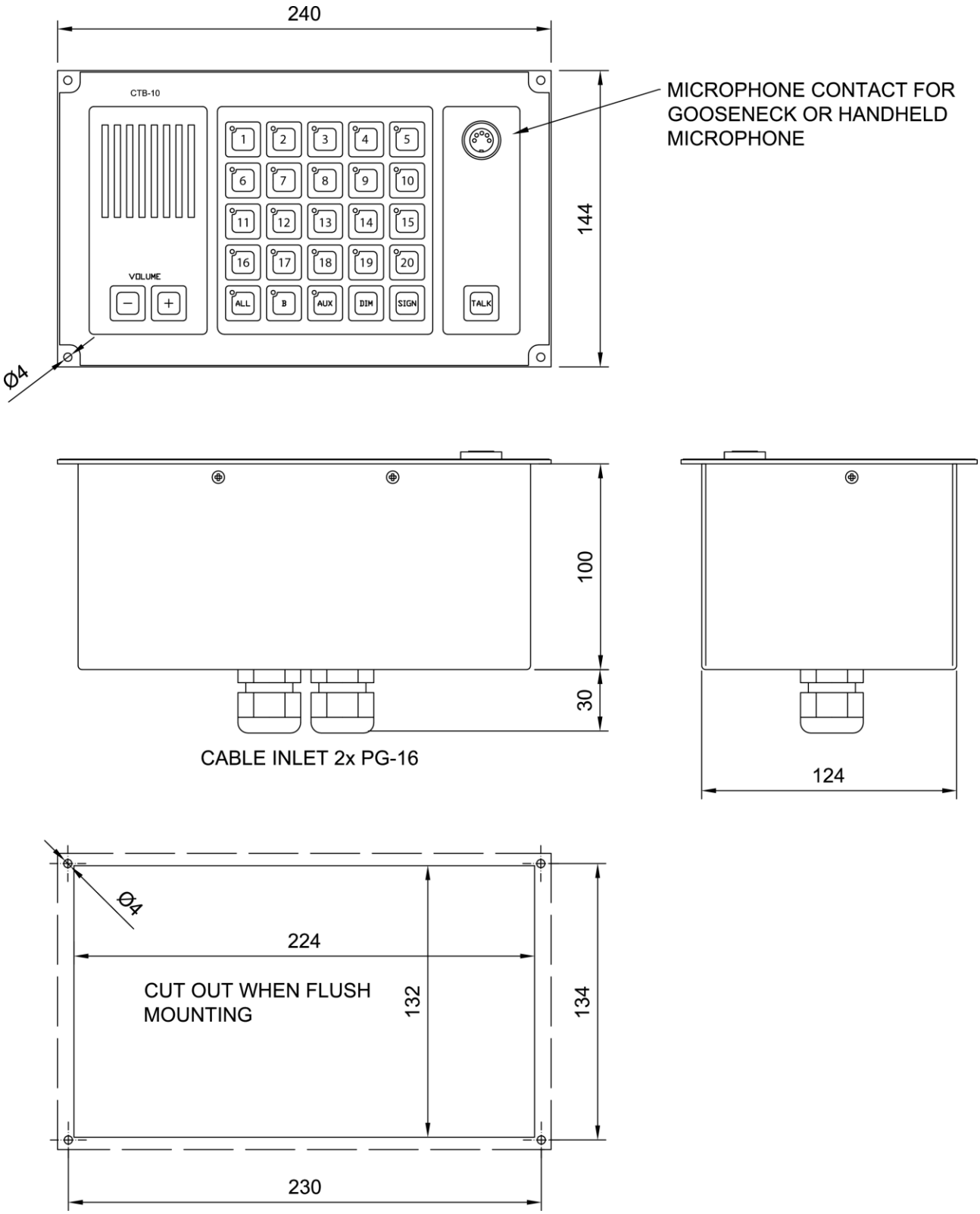
# 7 Appendix

## 7.1 Dimension & Mounting Drawings

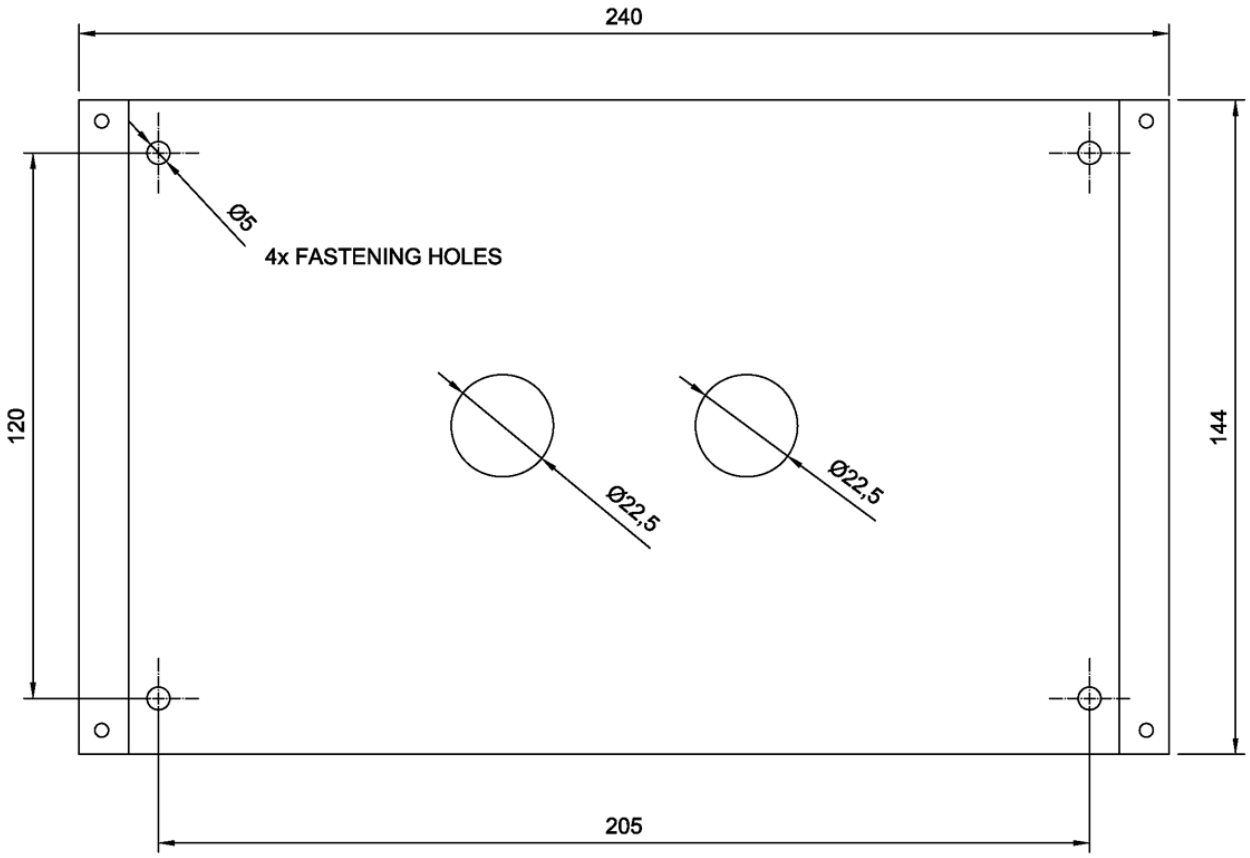
### 7.1.1 CTB-10



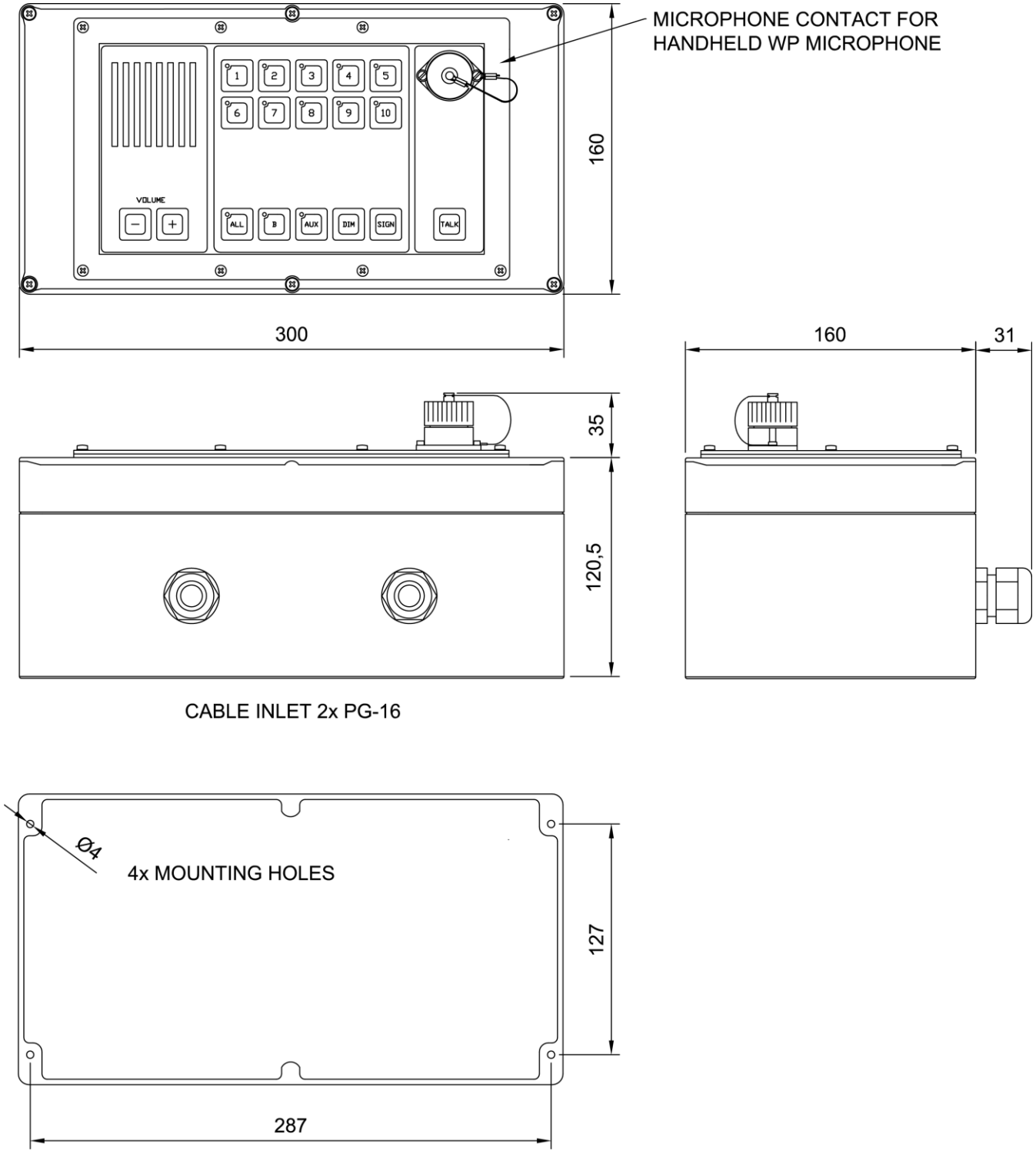
### 7.1.2 CTB-20


240
CTB-10
VOLUME
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
ALL
B
AUX
DIM
SIGN
TALK
144
MICROPHONE CONTACT FOR GOOSENECK OR HANDHELD MICROPHONE
Ø4
100
30
CABLE INLET 2x PG-16
124
Ø4
224
CUT OUT WHEN FLUSH MOUNTING
132
134
230

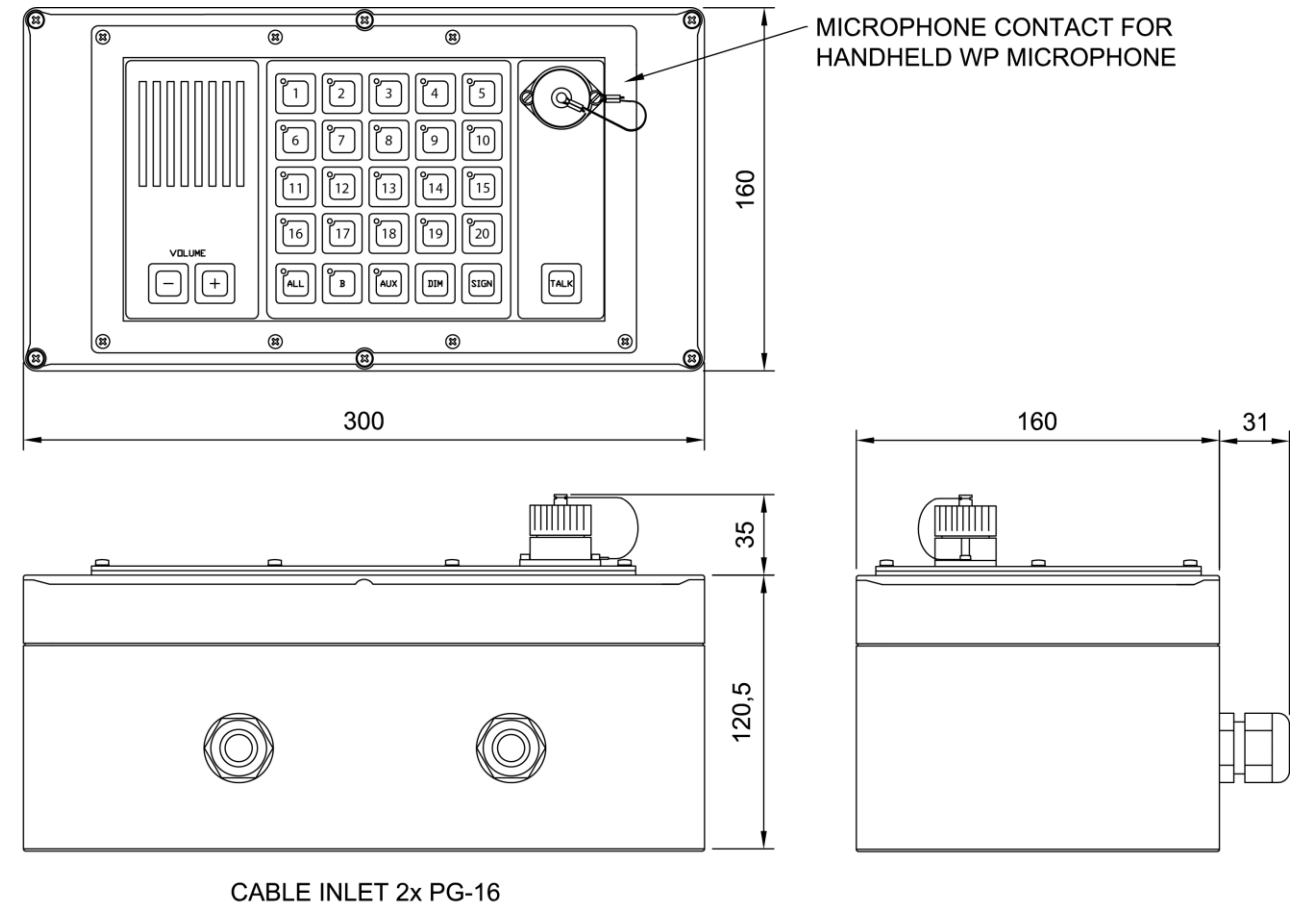
### 7.1.3 WBOKS Wall-Mount Box for CTB-10 & 20



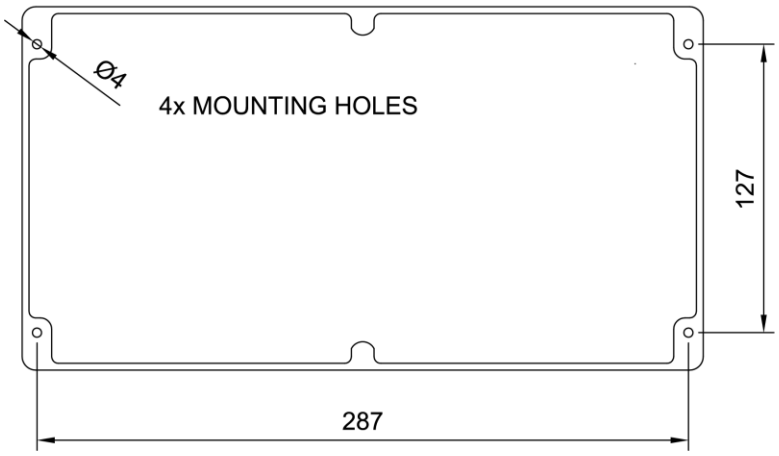

### 7.1.4 CTB-10W-V01



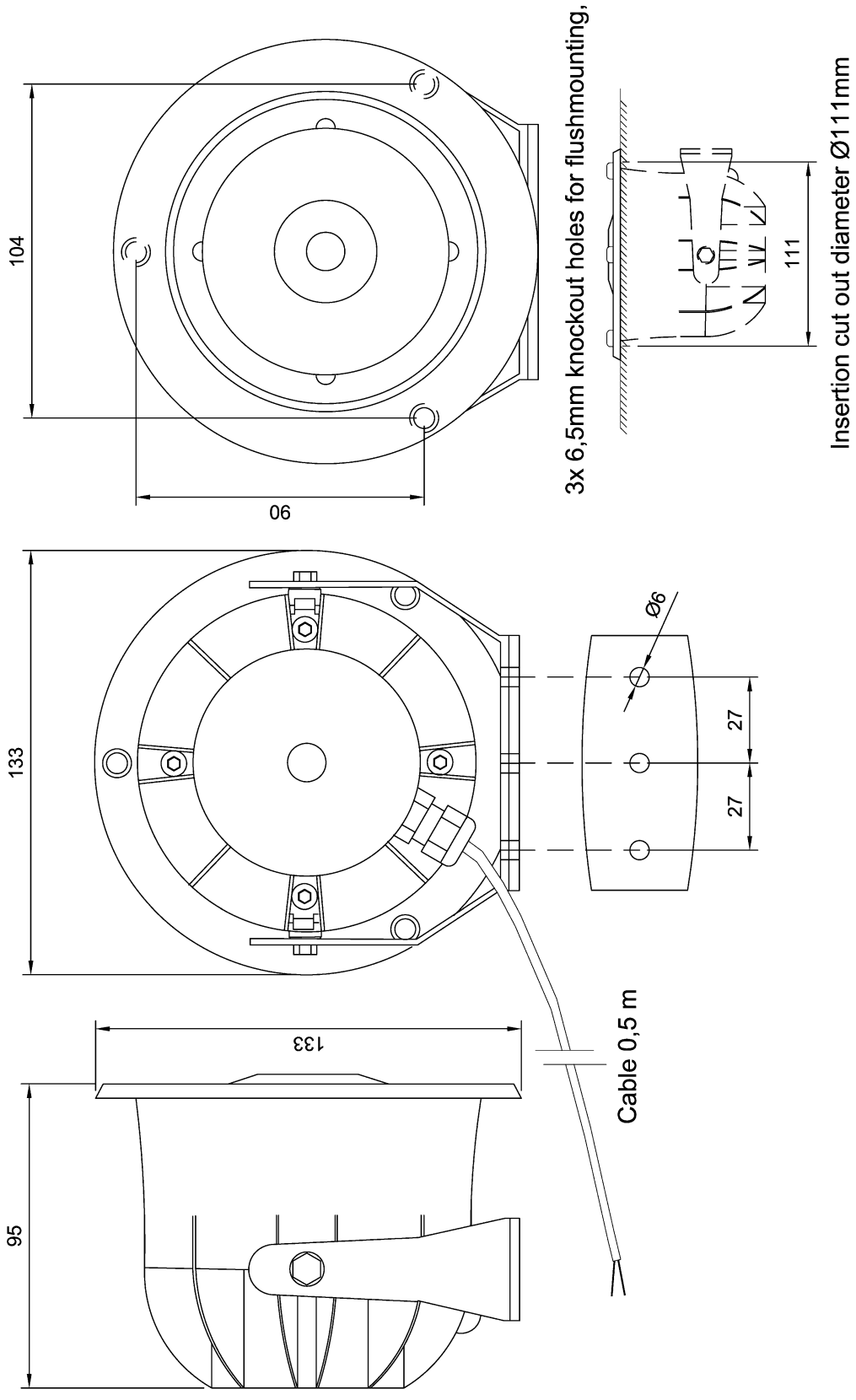
### 7.1.5 CTB-20W-V01



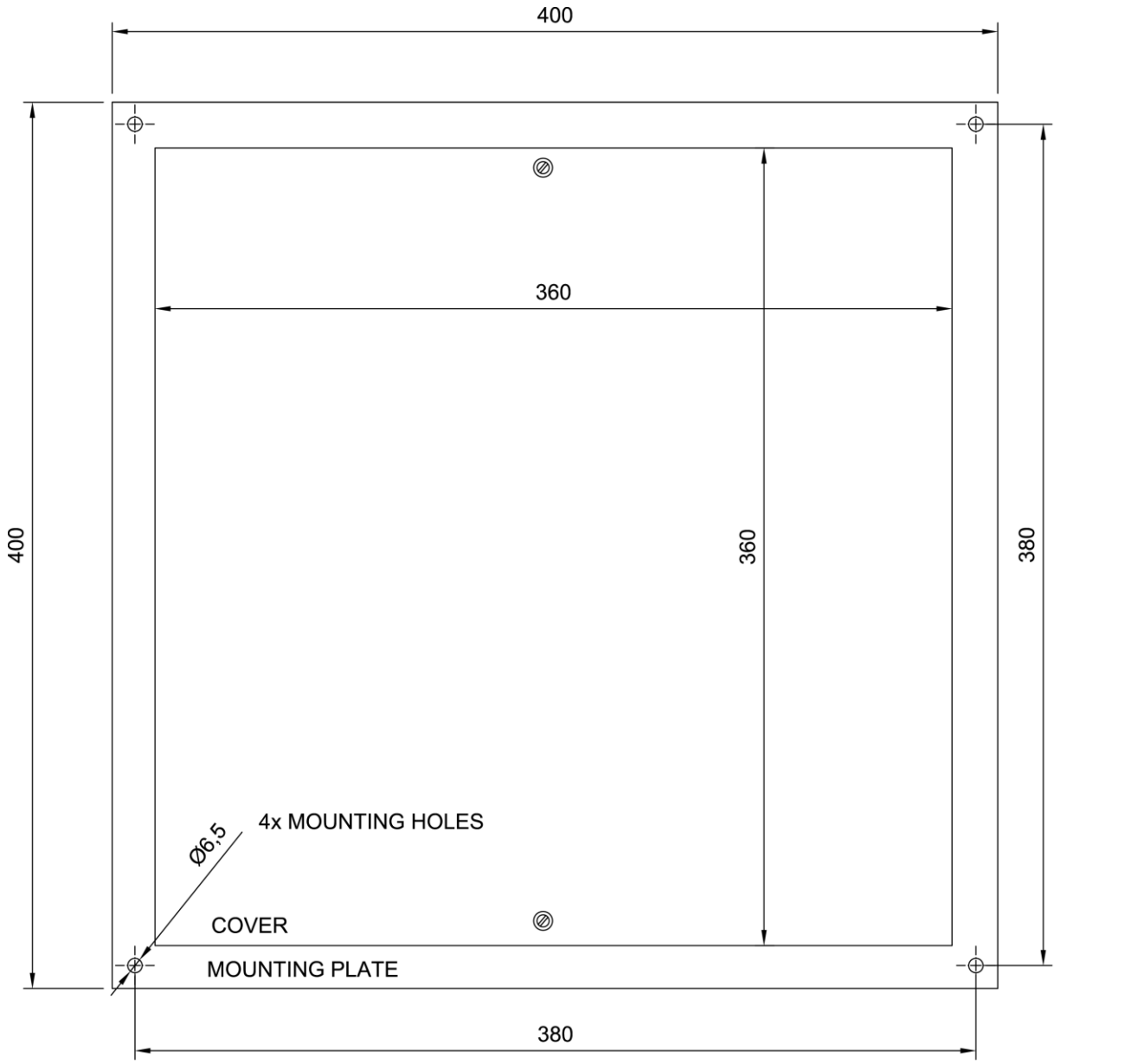

CABLE INLET 2x PG-16

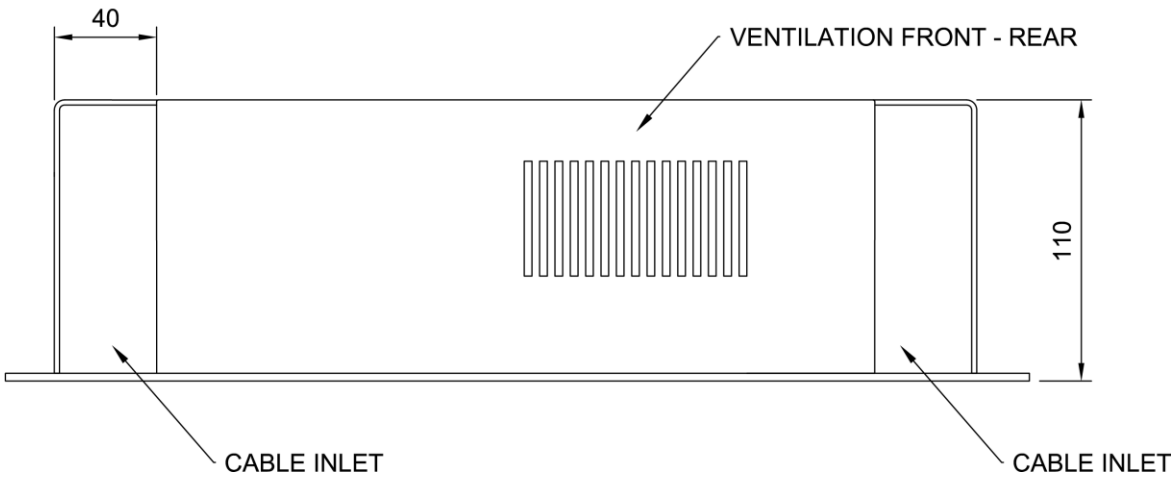


### 7.1.6 HP-8 Horn Loudspeaker for CTB-10W-V01/CTB-20W-V01



### 7.1.7 CU-10/CU-20/CU-100/CU-200

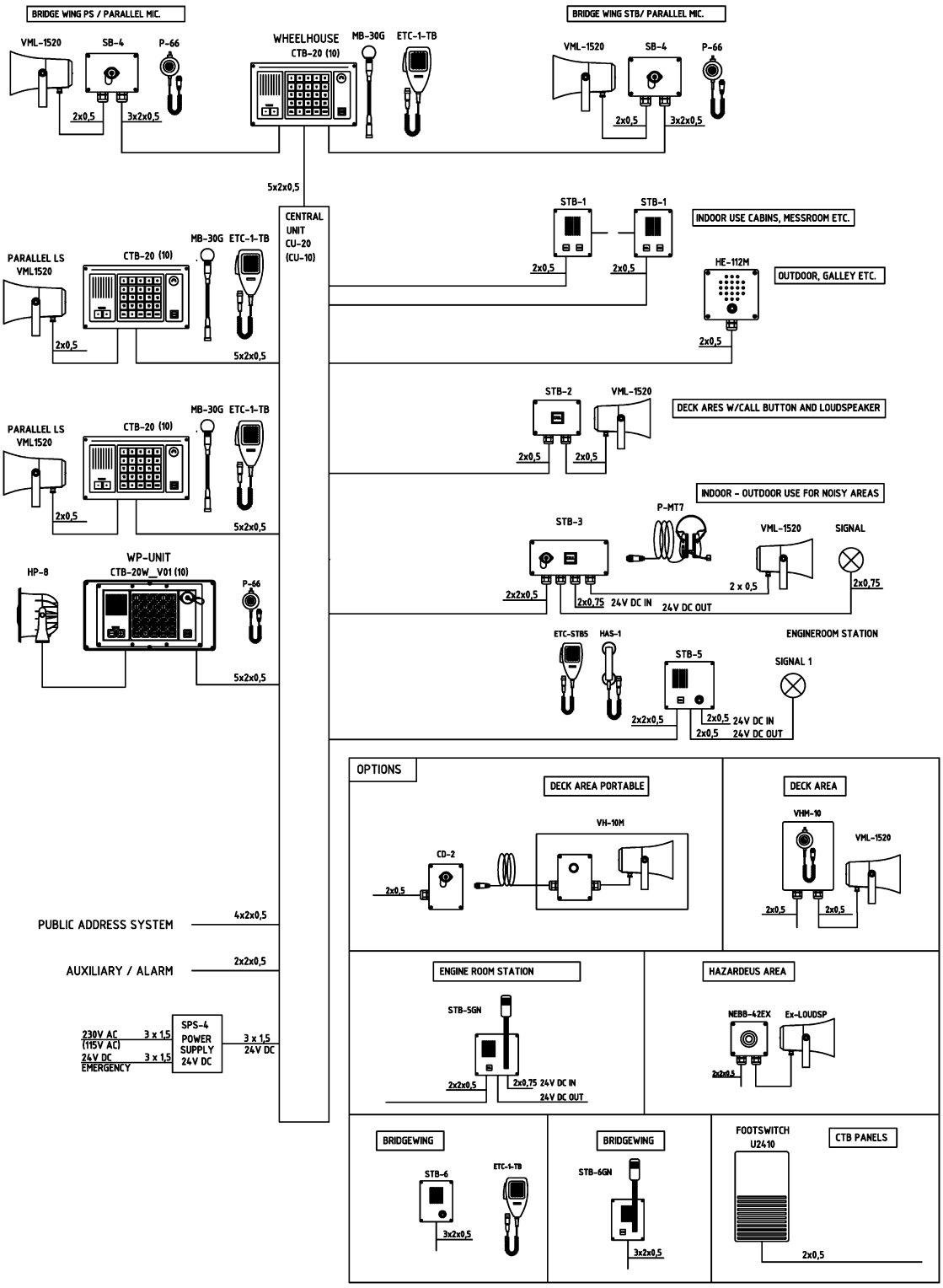


## 7.2 Connection / Block / Single Line Diagrams

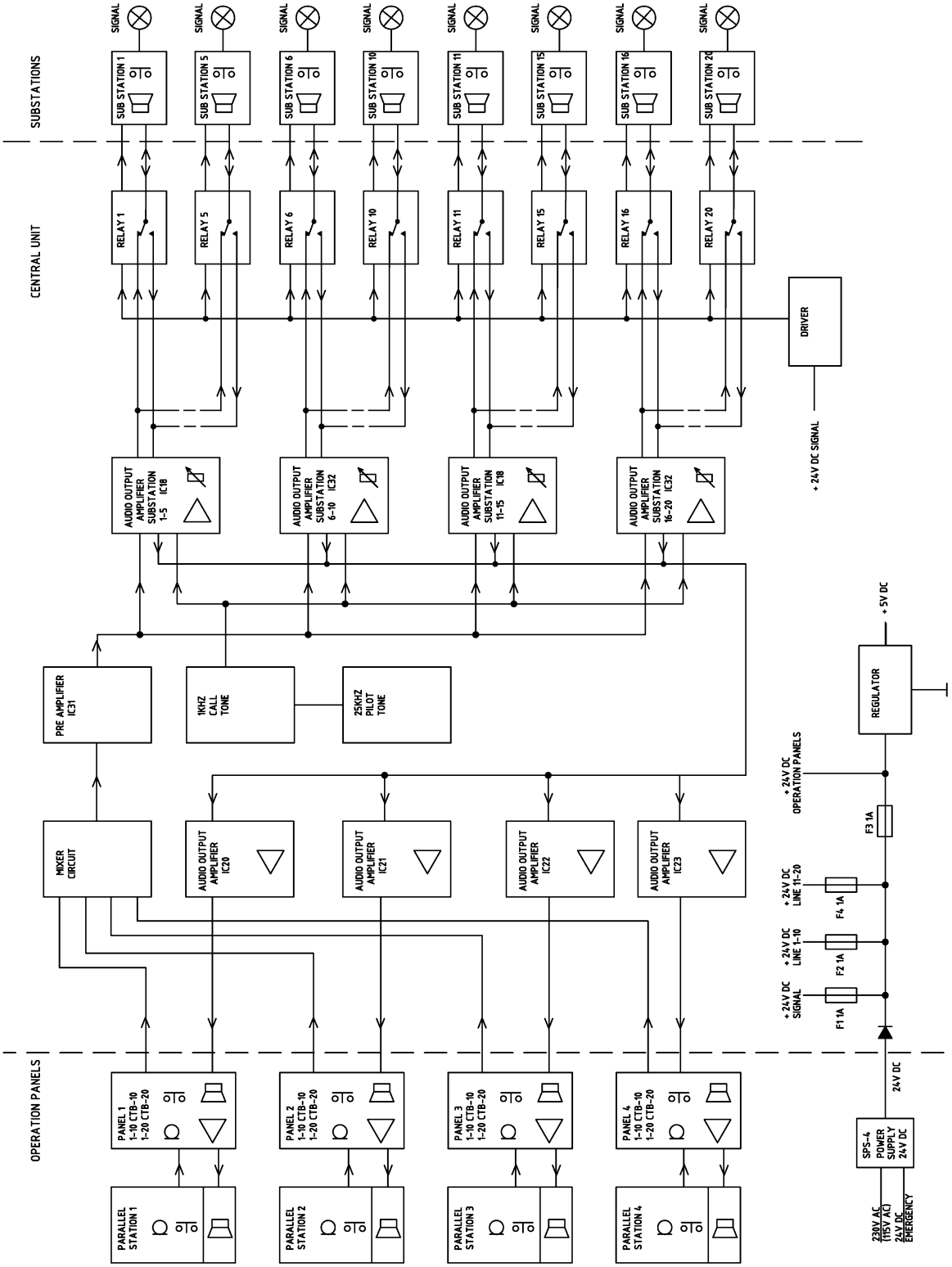
### 7.2.1 CTB Single Line Diagram

Ref. dwg.CTB_SL Rev.02



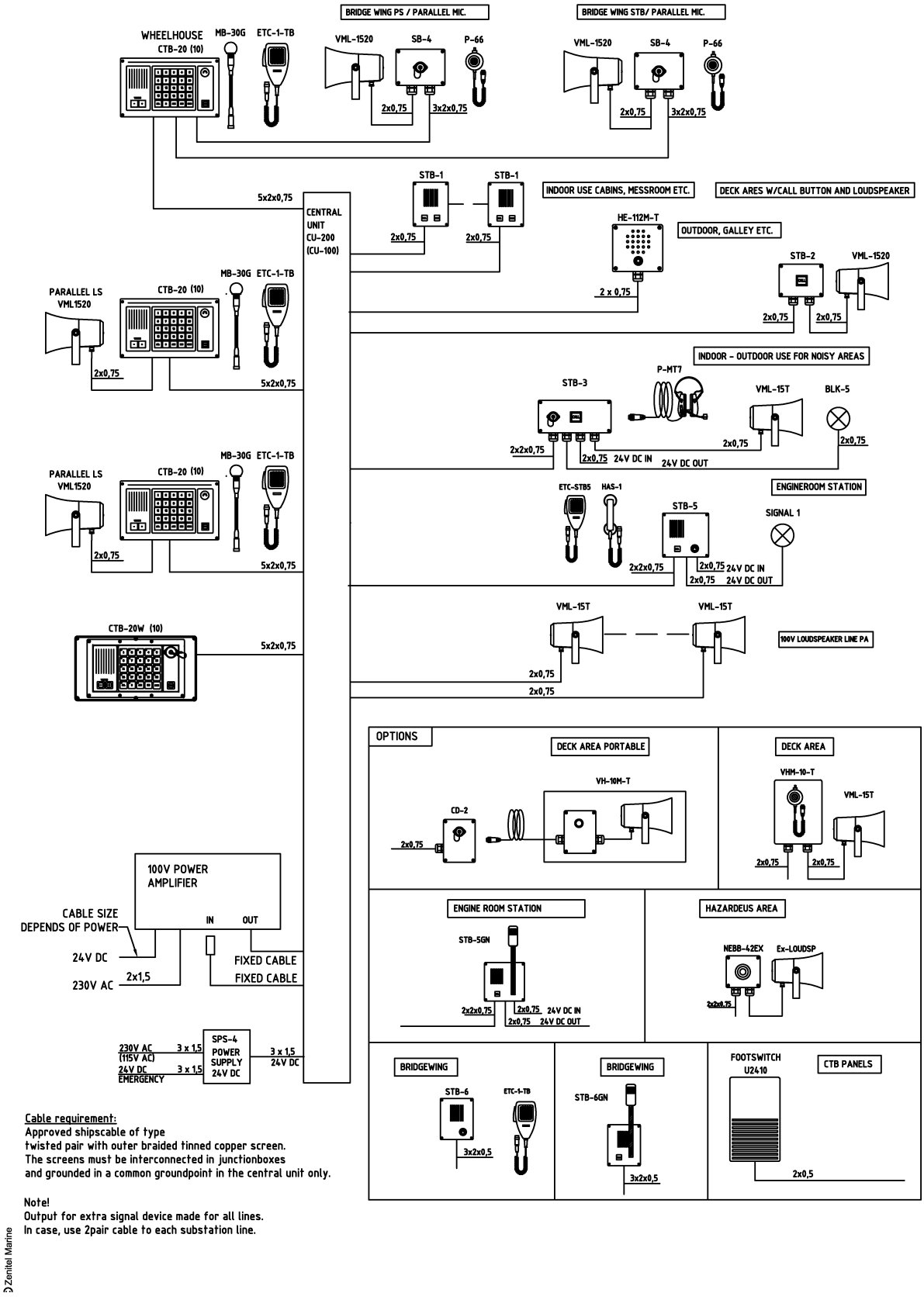
## 7.2.2 CTB Internal Block diagram

Ref dwg.CTB_bd Rev.00



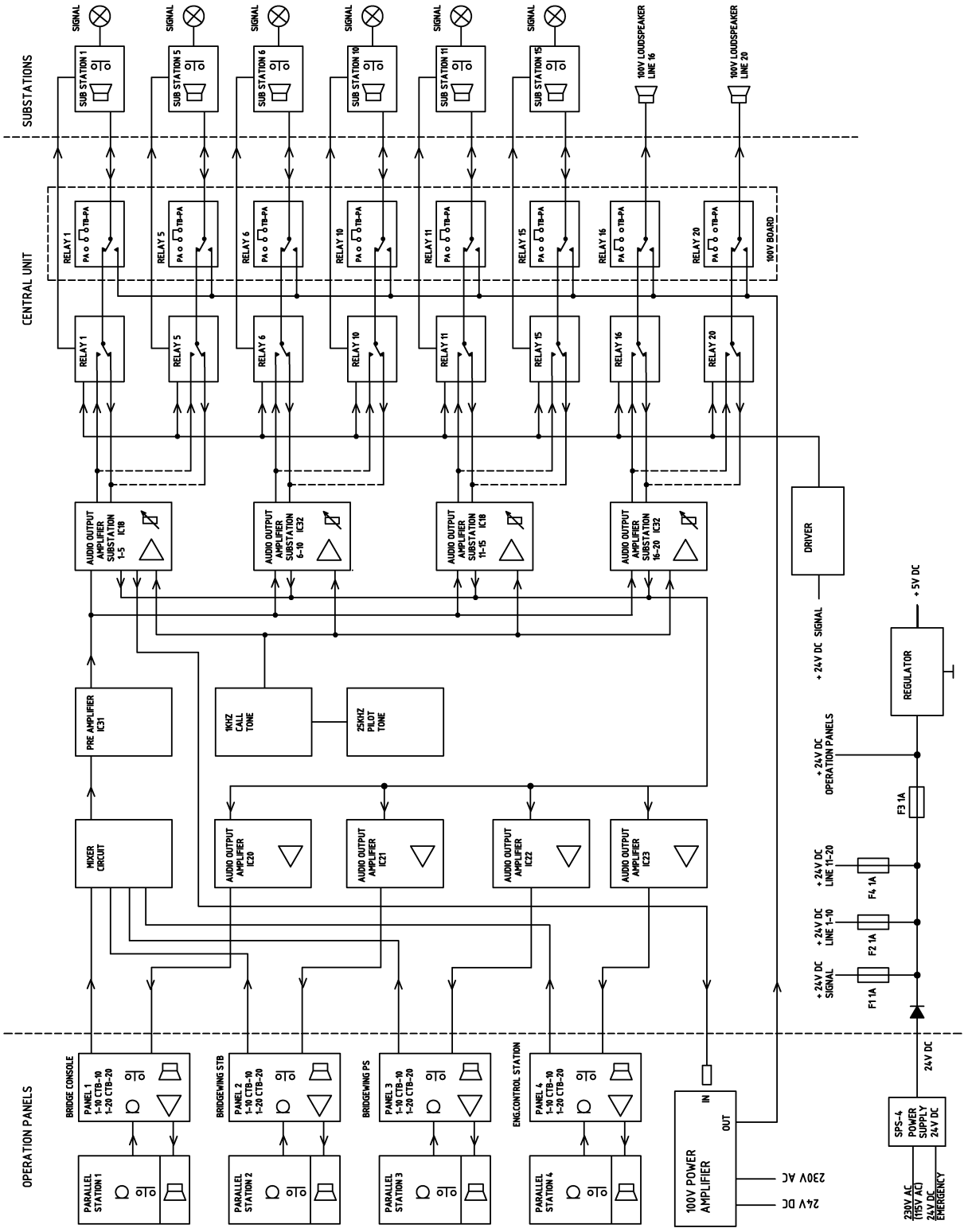
### 7.2.3 CTB-100 Single line diagram

Ref dwg.CTB-100_SL Rev.02



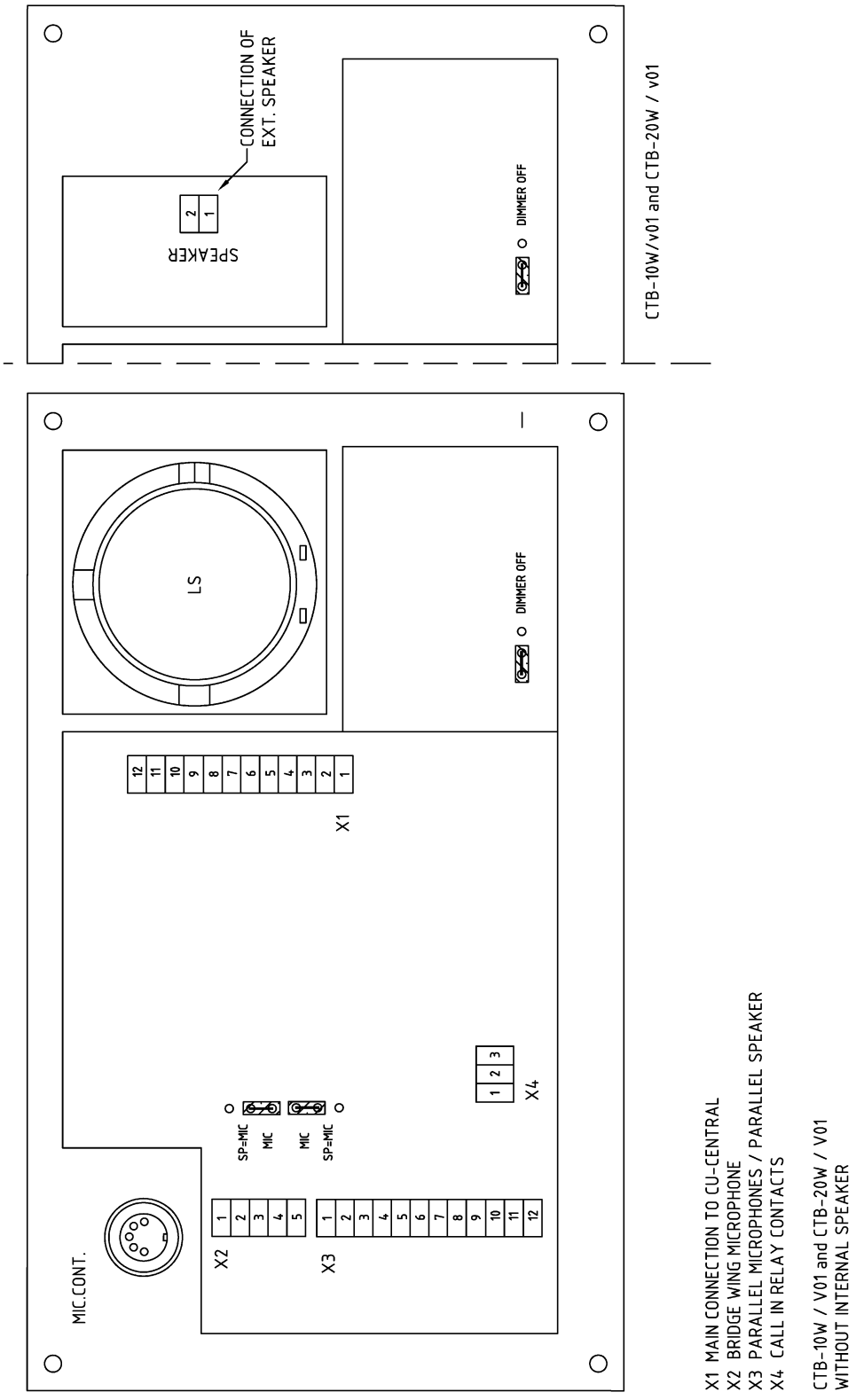
## 7.2.4 CTB-100 Internal Block diagram

Ref dwg.CTB-100_bd Rev.00



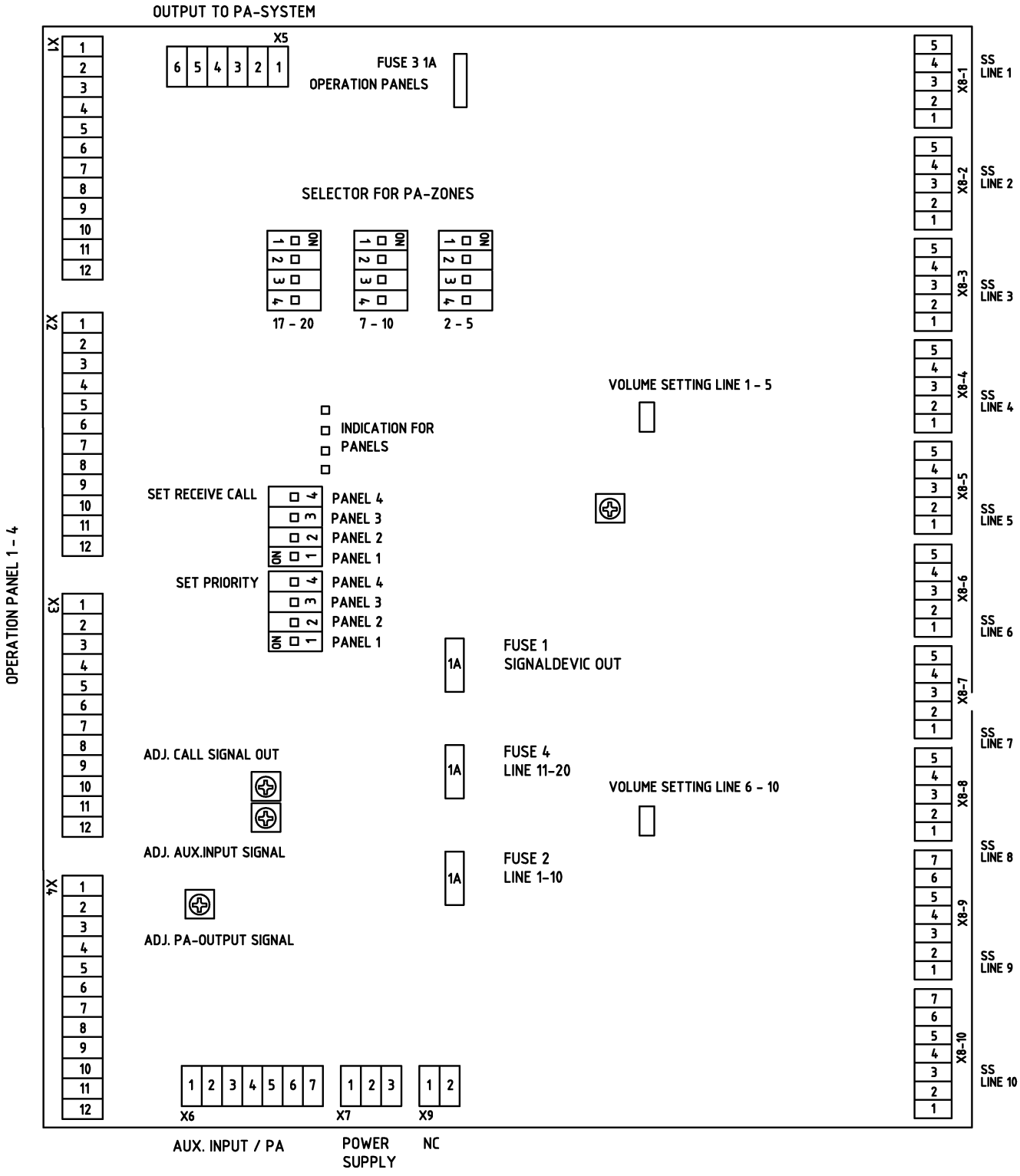
### 7.2.5 Lay out PCB CTB-10, CTB-20, CTB-10W/01, CTB-20W/01

Ref dwg.CTB-1020_lo Rev.01



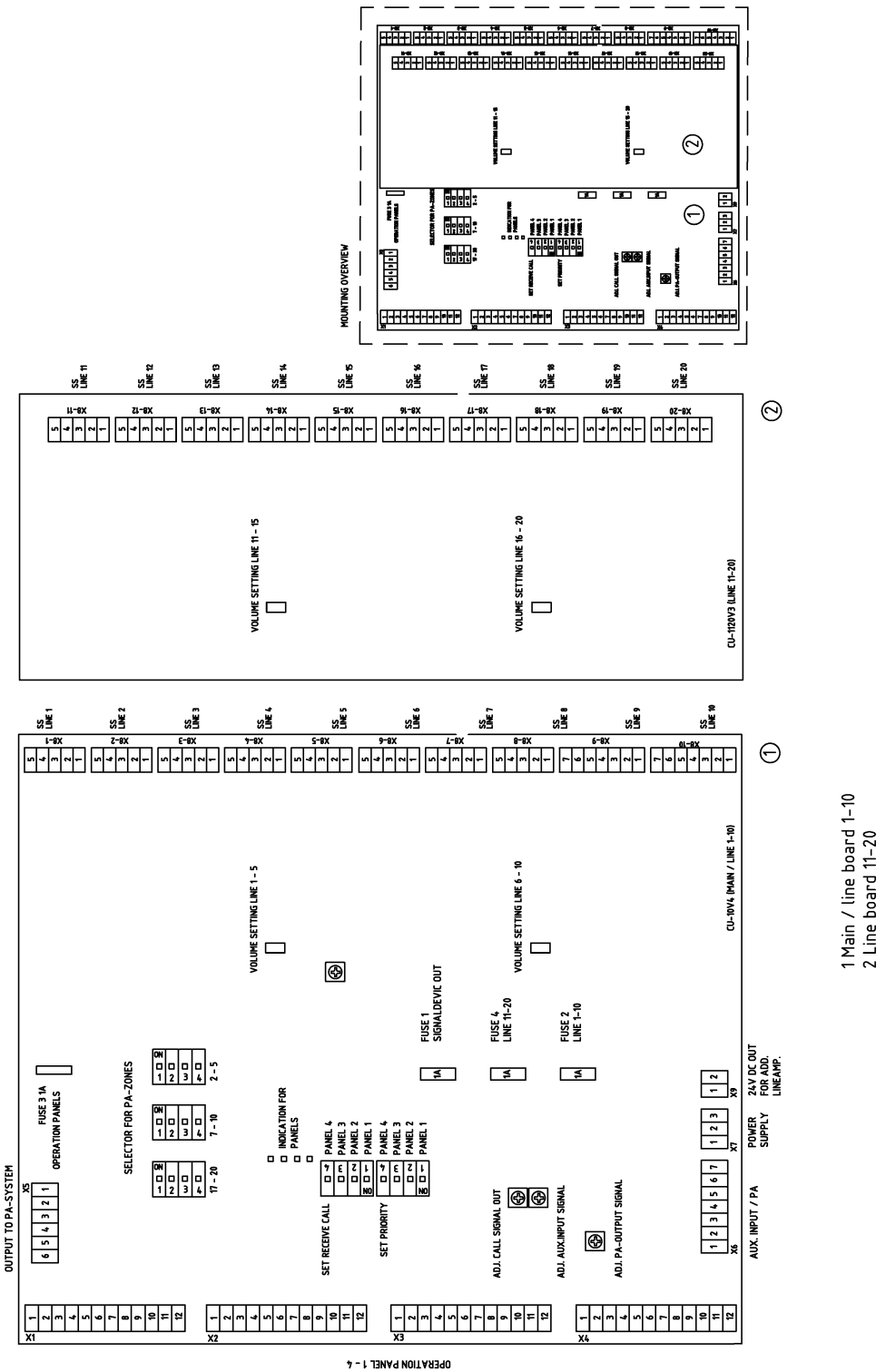
### 7.2.6 Lay out PCB CU-10

Ref dwg.CU-10_lo Rev.01



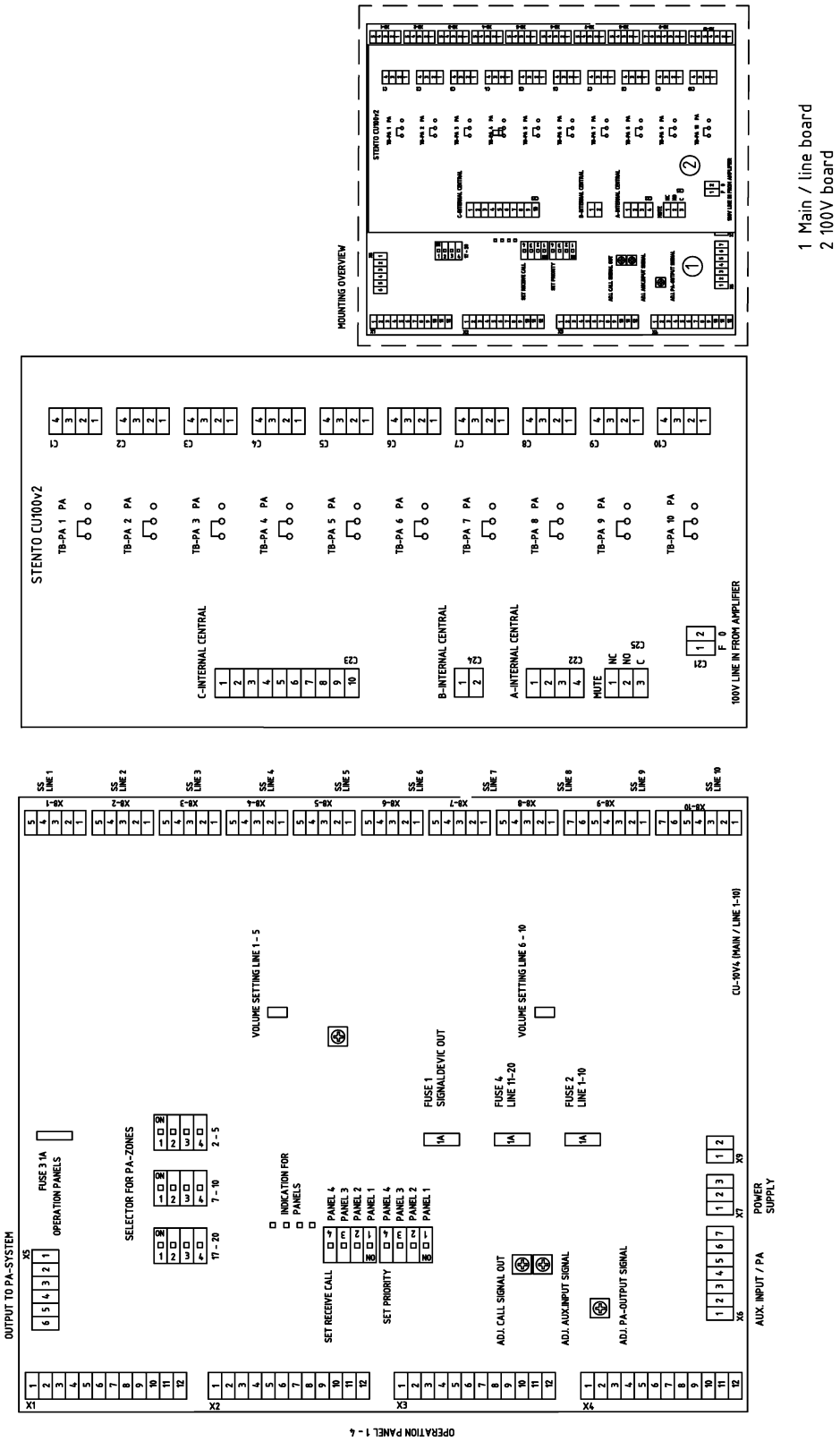
### 7.2.7 Lay out PCB CU-20

Ref dwg.CU-20_lo Rev.01



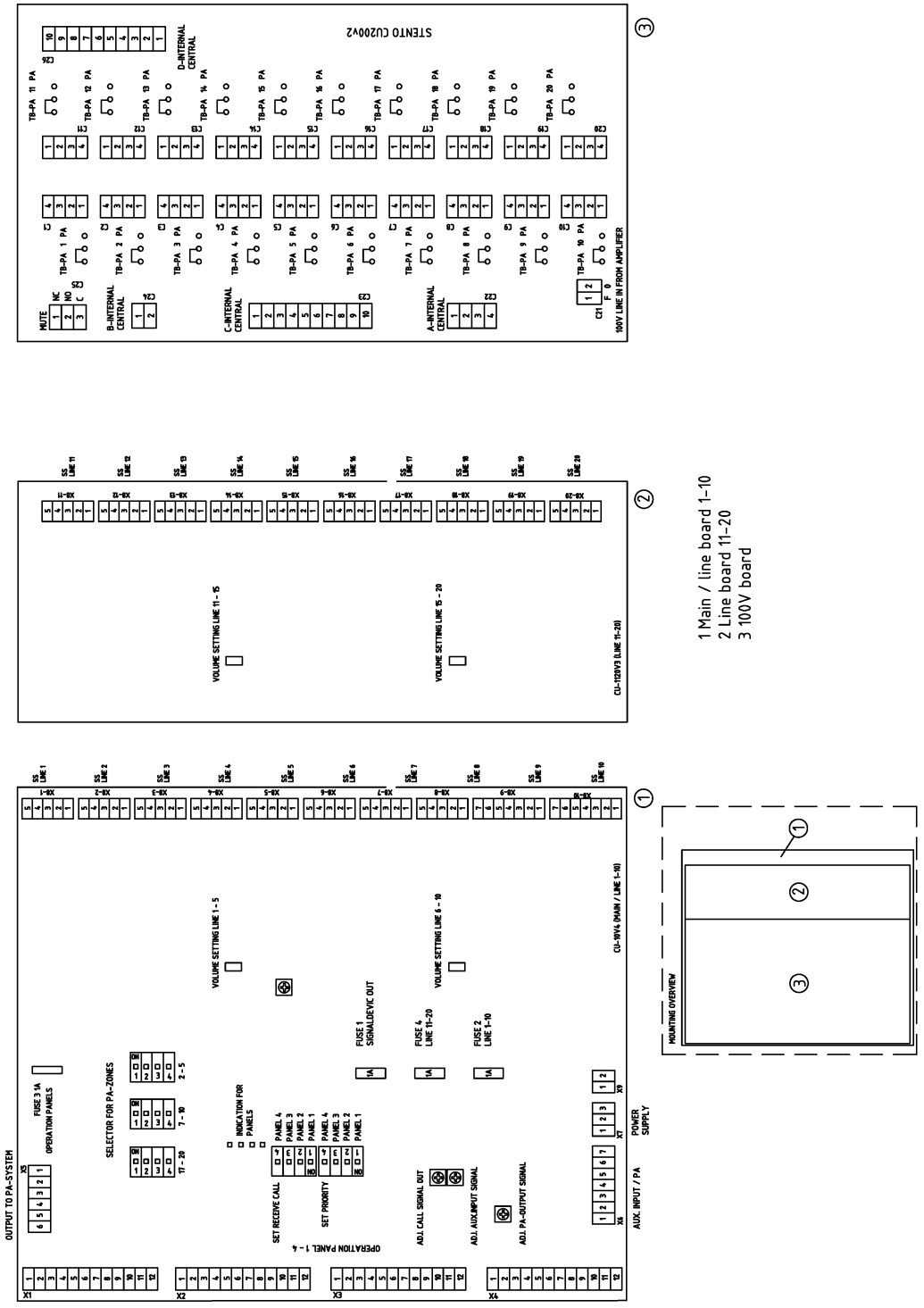
## 7.2.8 Lay out PCB CU-100

Ref dwg.CU-100_lo Rev.00



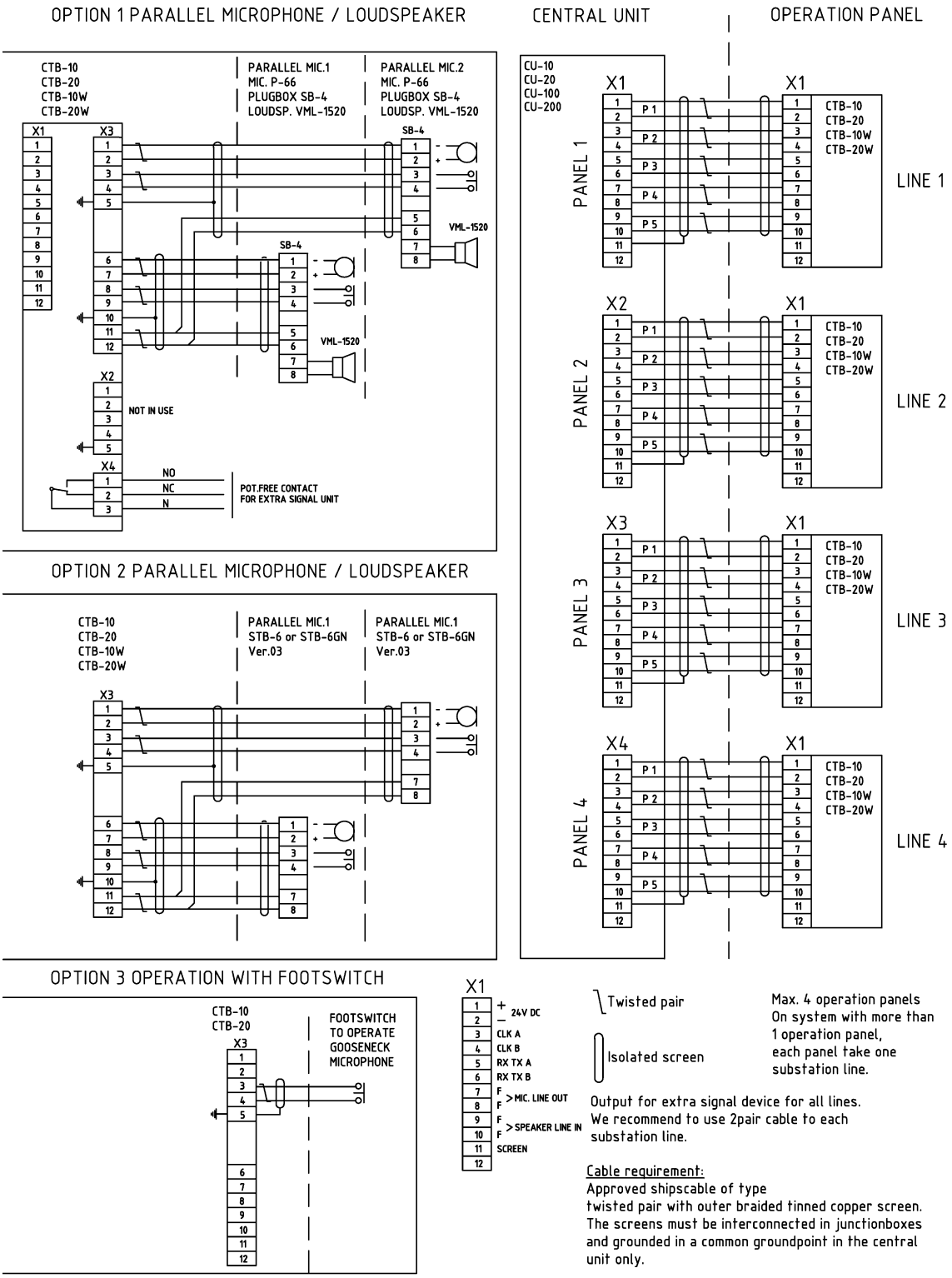
### 7.2.9 Lay out PCB CU-200

Ref dwg.CU-200_lo Rev.00



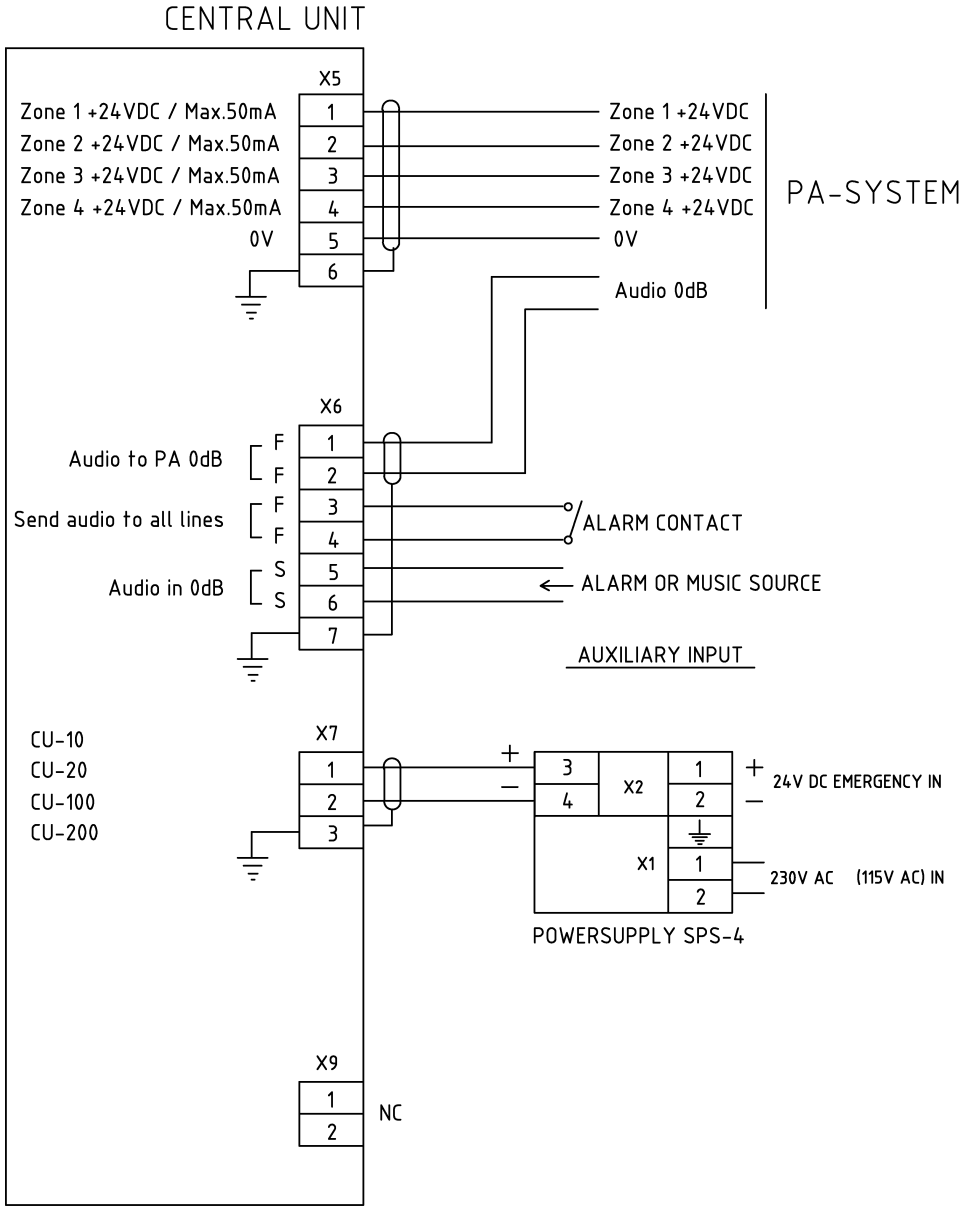
## 7.2.10 Connections for CTB operation panels

Ref dwg.CTB_cc2 Rev.04



### 7.2.11 Connections CU-10, CU-20, CU-100 & CU-200 for Power, PA, alarm & Auxiliary

Ref dwg.CTB_cc3 Rev.06

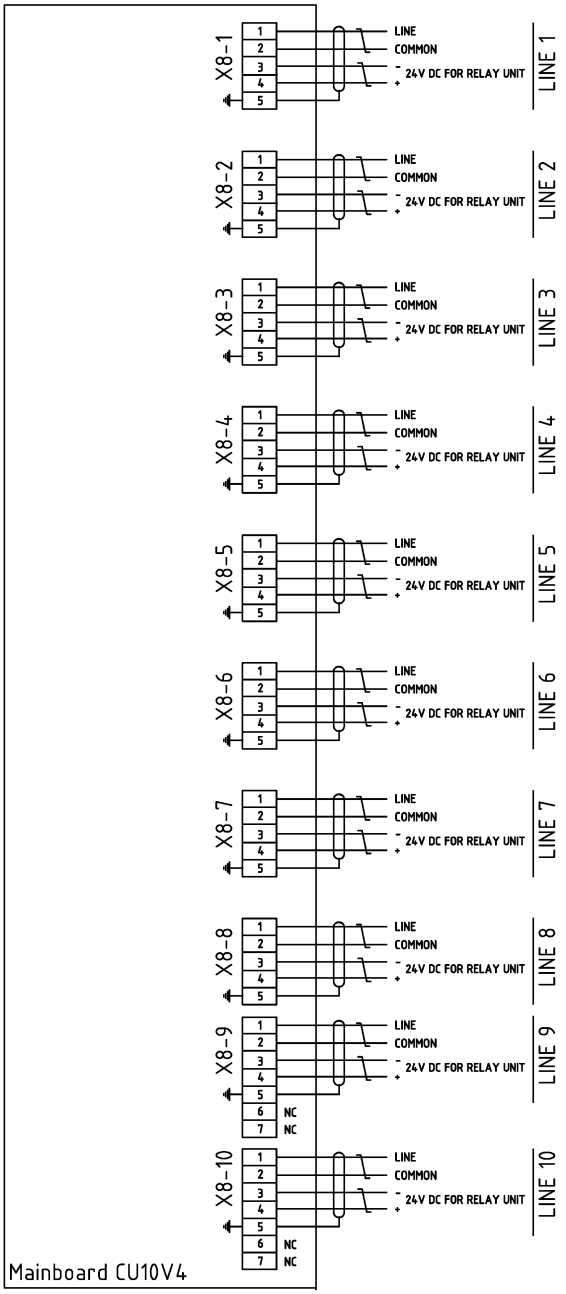



Cable requirement:
Approved shipscable of type
twisted pair with outer braided tinned copper screen.
The screens must be interconnected in junctionboxes
and grounded in a common groundpoint in the central unit only.

Powercable min 0,75mm

## 7.2.12 Connections CU-10 & CU-20 for substations line 1 - 10

Ref dwg.CTB_cc4 Rev.01




Cable requirement:
Approved shipscable of type
twisted pair with outer braided tinned copper screen.
The screens must be interconnected in junctionboxes
and grounded in a common groundpoint in the central unit only.

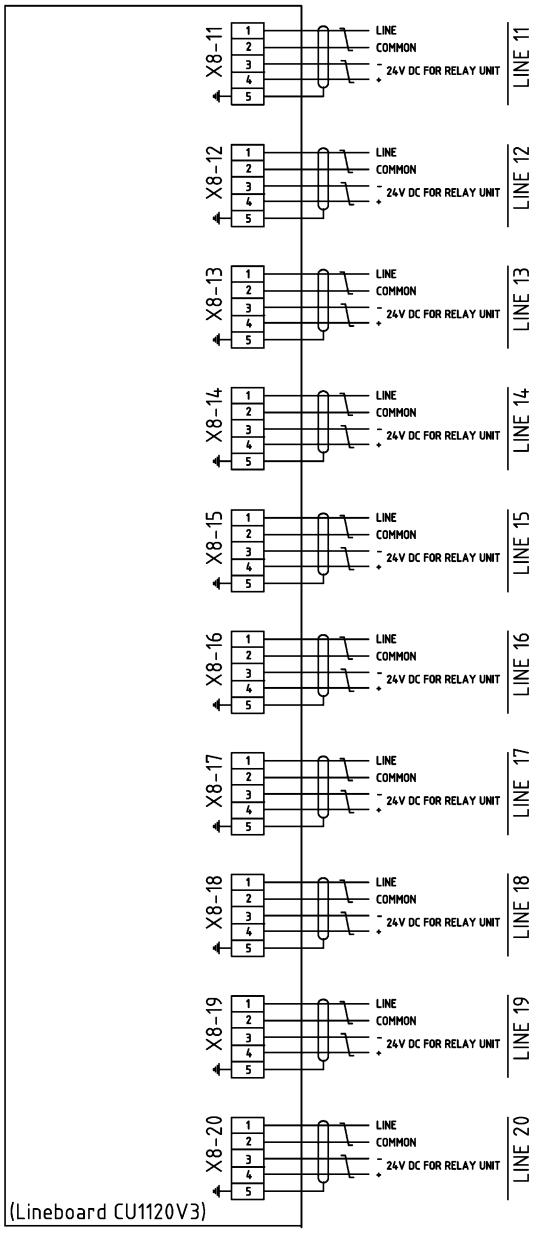
Power cable 1,5mm
JB is yard supply

24V DC out for substation w/ relay unit
or other relay units (max 50mA)
We recommend to use 2pair cable to each
substation line.

Twisted pair

### 7.2.13 Connections CU-20 for substations line 11- 20

Ref dwg.CTB_cc5 Rev.01




Cable requirement:
Approved shipscable of type
twisted pair with outer braided tinned copper screen.
The screens must be interconnected in junctionboxes
and grounded in a common groundpoint in the central unit only.

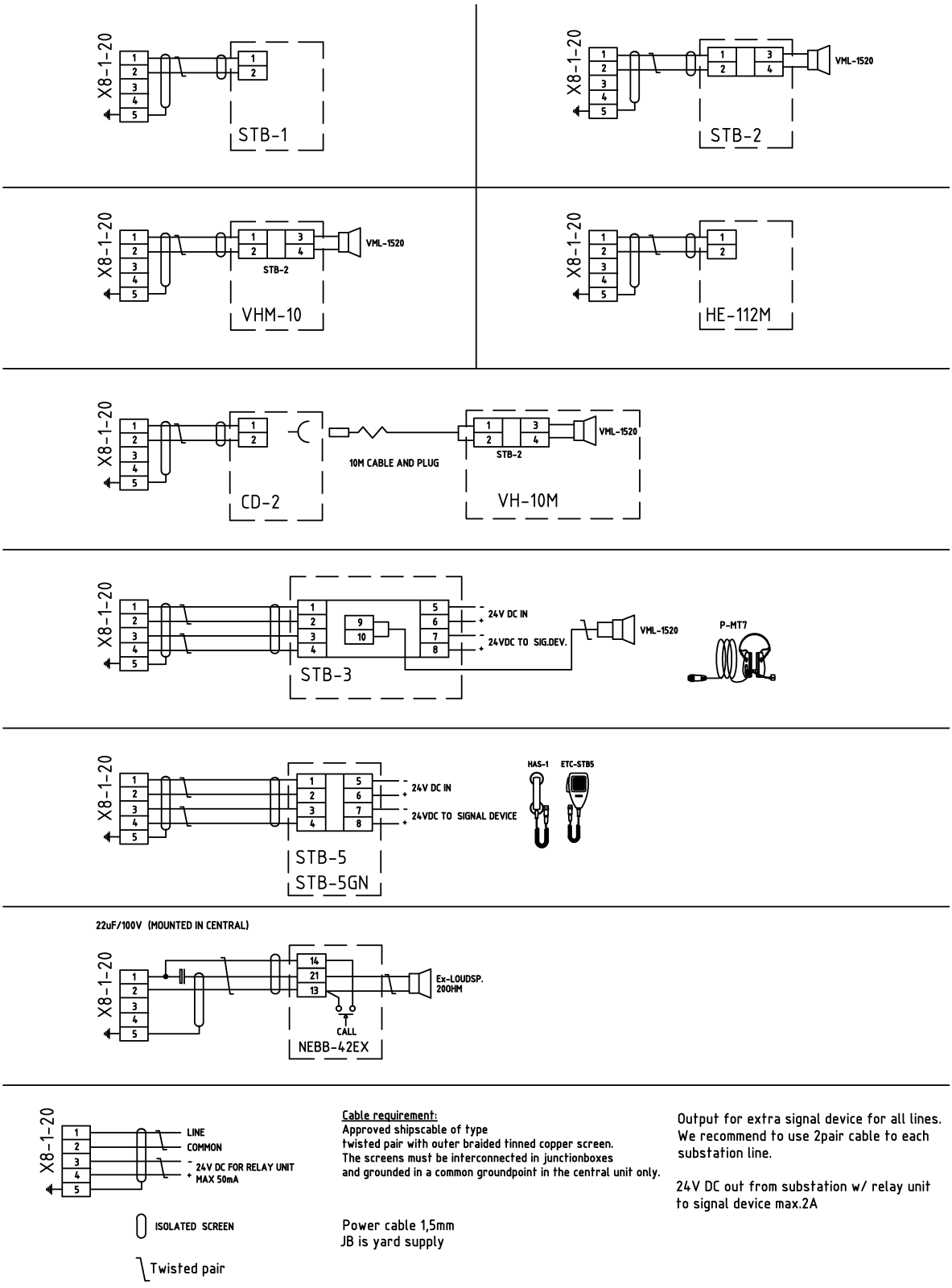
Power cable 1,5mm
JB is yard supply

24V DC out for substation w/ relay unit
or other relay units (max 50mA)
We recommend to use 2pair cable to each
substation line.

Twisted pair

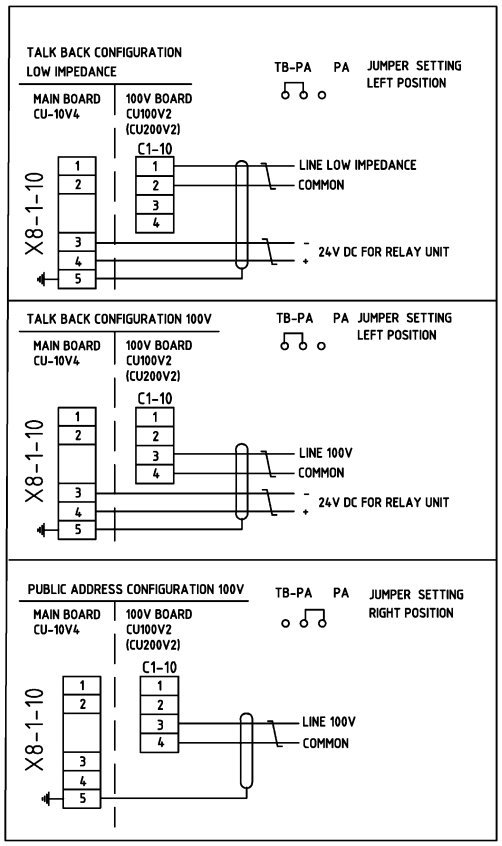
## 7.2.14 Connection substations CU-10 & CU-20

Ref dwg.CTB-cc1 Rev.03



## 7.2.15 Connections Central unit CU-100 & CU-200 substation line 1 - 10

Ref dwg.CTB-100_cc3 Rev.02



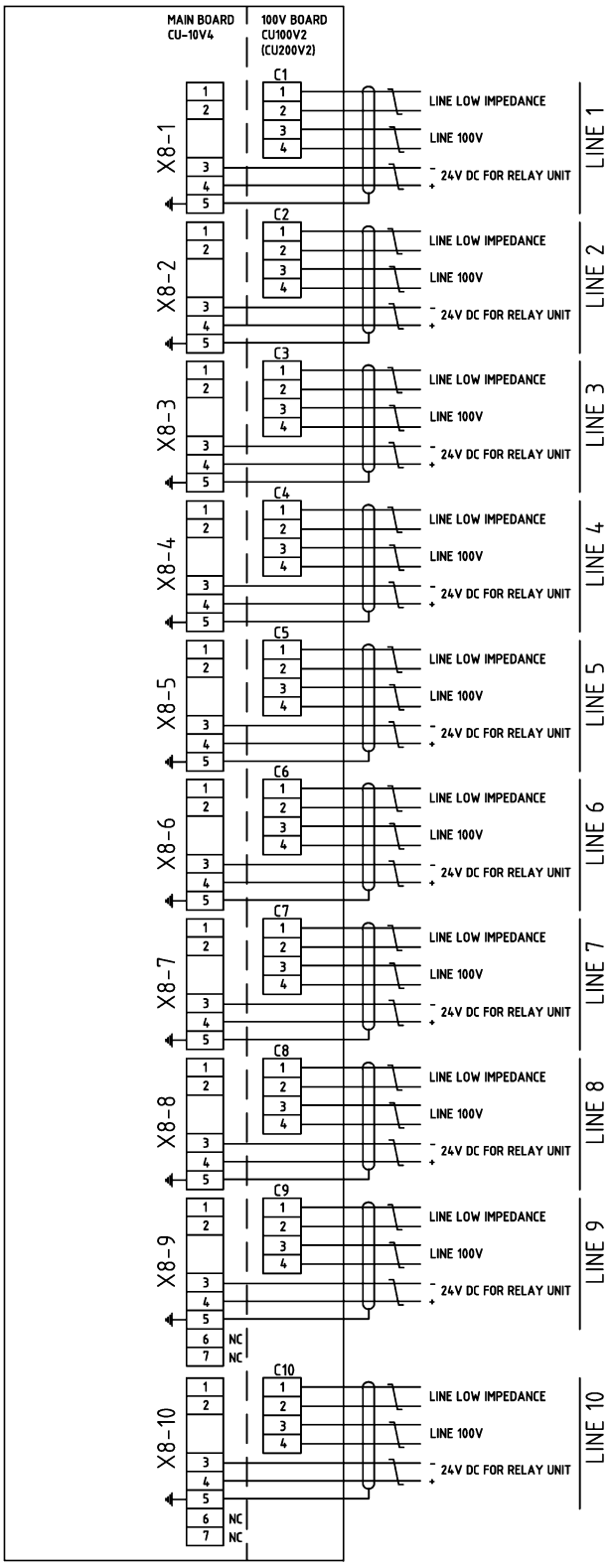

Note!

Cable requirement:
Approved shipscable of type
twisted pair with outer braided tinned copper screen.
The screens must be interconnected in junctionboxes
and grounded in a common groundpoint in the central unit only.

Power cable 1,5mm
JB is yard supply

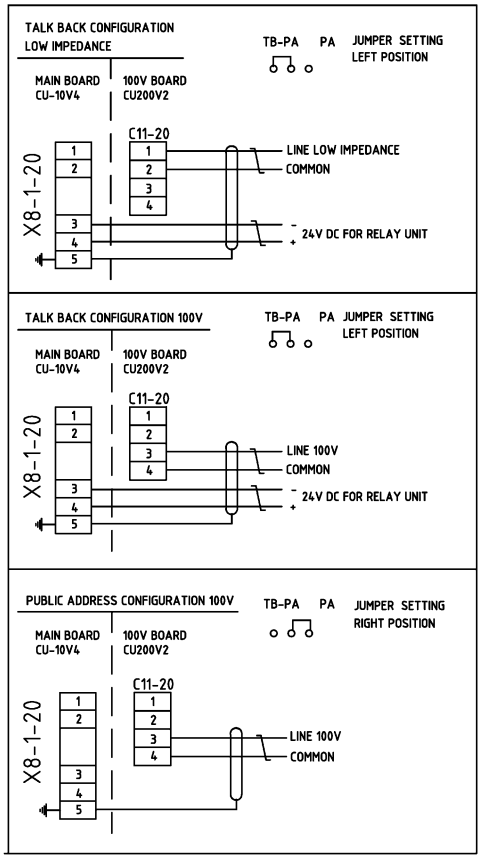
24V DC out for substation w/ relay unit
or other relay units (max 50mA)
We recommend to use 2pair cable to each
substation line.

Twisted pair



## 7.2.16 Connections Central unit CU-200 substation line 11 - 20

Ref dwg.CTB-100_cc4 Rev.02



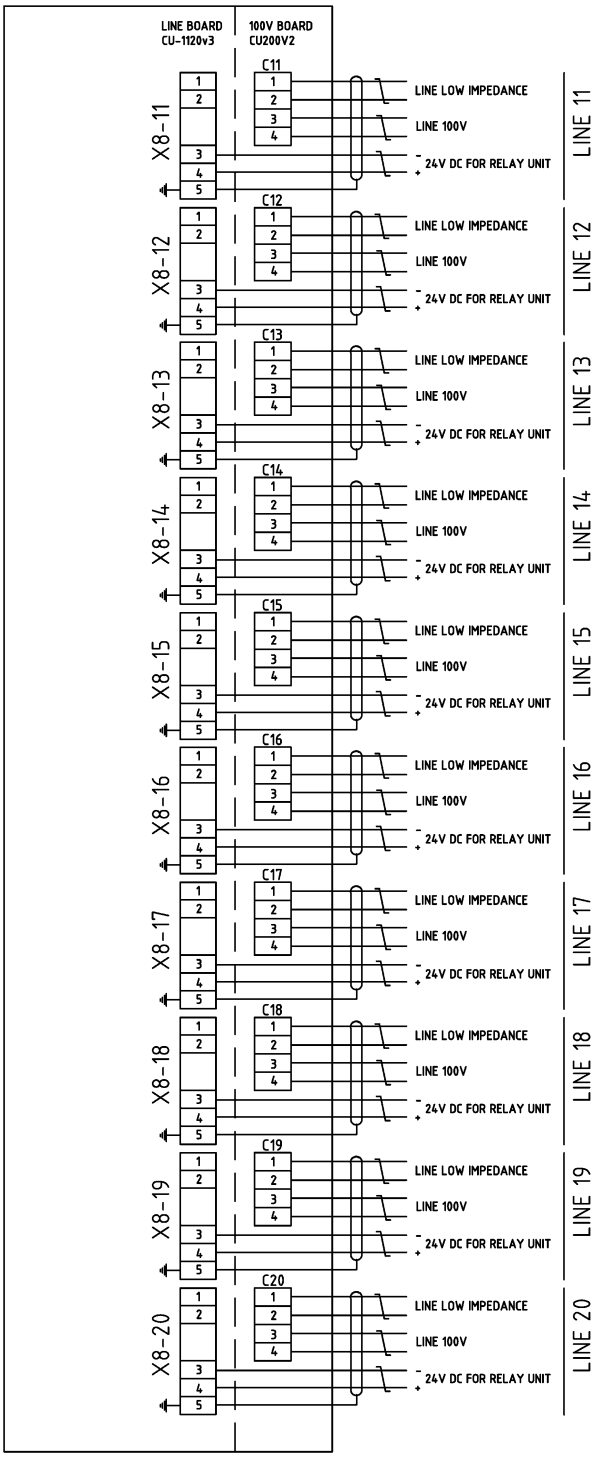

Note!

Cable requirement:
Approved shipscable of type
twisted pair with outer braided tinned copper screen.
The screens must be interconnected in junctionboxes
and grounded in a common groundpoint in the central unit only.

Power cable 1,5mm
JB is yard supply

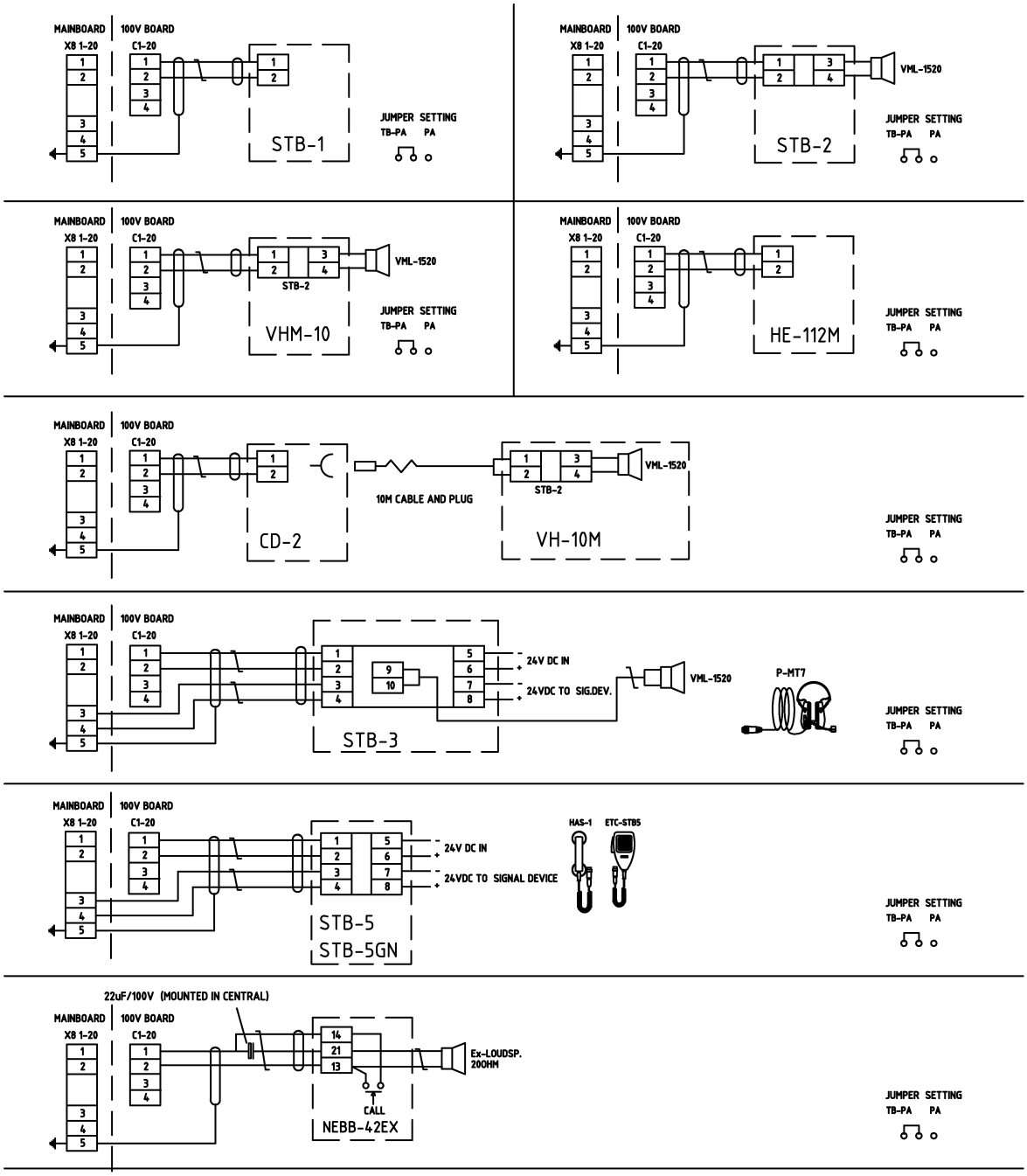
24V DC out for substation w/ relay unit
or other relay units (max 50mA)
We recommend to use 2pair cable to each
substation line.

Twisted pair



## 7.2.17 Connections substations 1 CU-100 & CU-200 Low Impedance

Ref dwg.CTB-100_cc1 Rev.05




Cable requirement:
Approved shipscable of type
twisted pair with outer braided tinned copper screen.
The screens must be interconnected in junctionboxes
and grounded in a common groundpoint in the central unit only.

Output for extra signal device for all lines.
We recommend to use 2pair cable to each substation line.

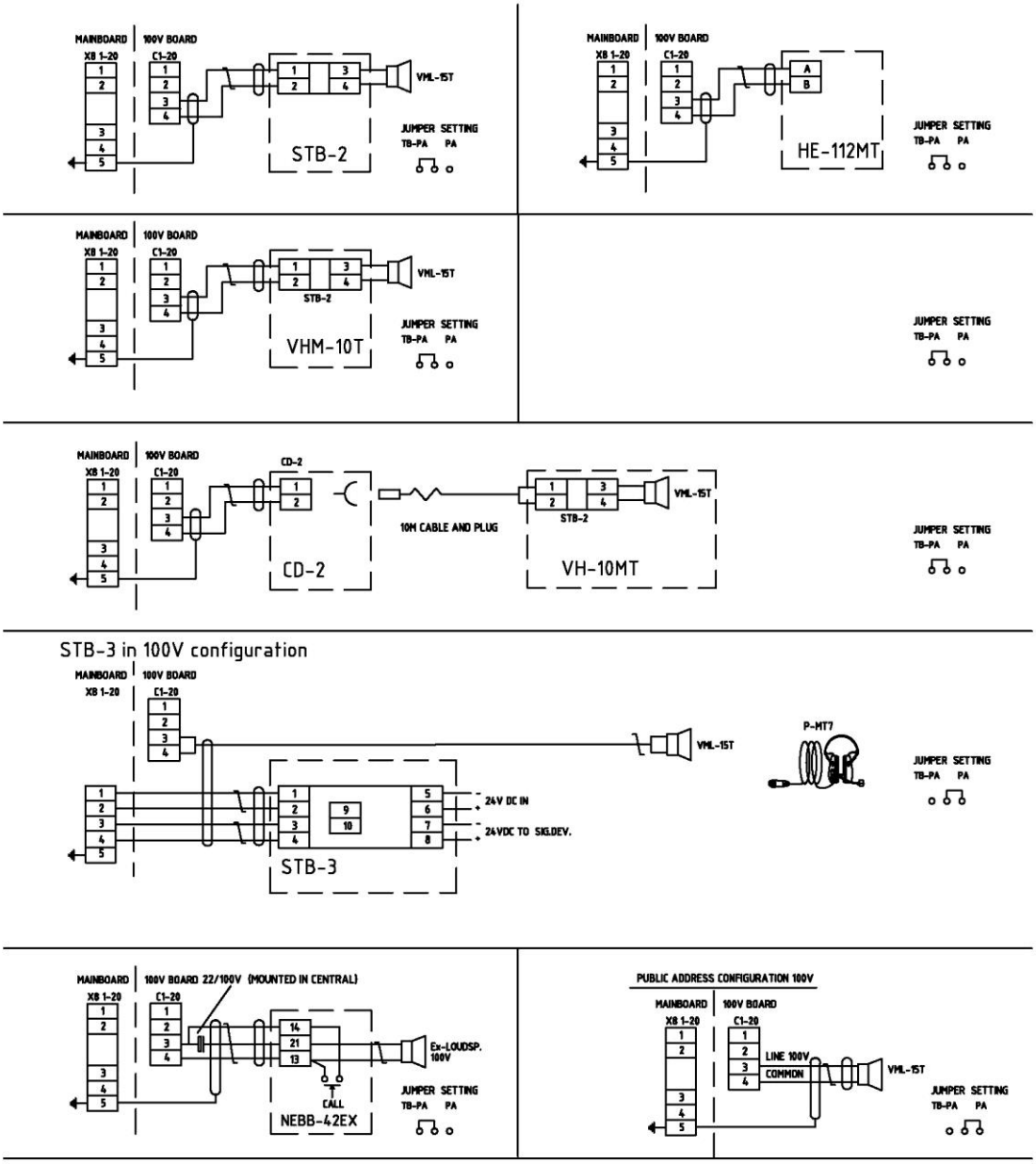
24V DC out from substation w/ relay unit to signal device max.2A

Isolated screen

Twisted pair

## 7.2.18 Connections substations 2 CU-100 & CU-200 100V configuration

Ref dwg.CTB-100_cc5 Rev.03




Cable requirement:
Approved shipscable of type
twisted pair with outer braided tinned copper screen.
The screens must be interconnected in junctionboxes
and grounded in a common groundpoint in the central unit only.

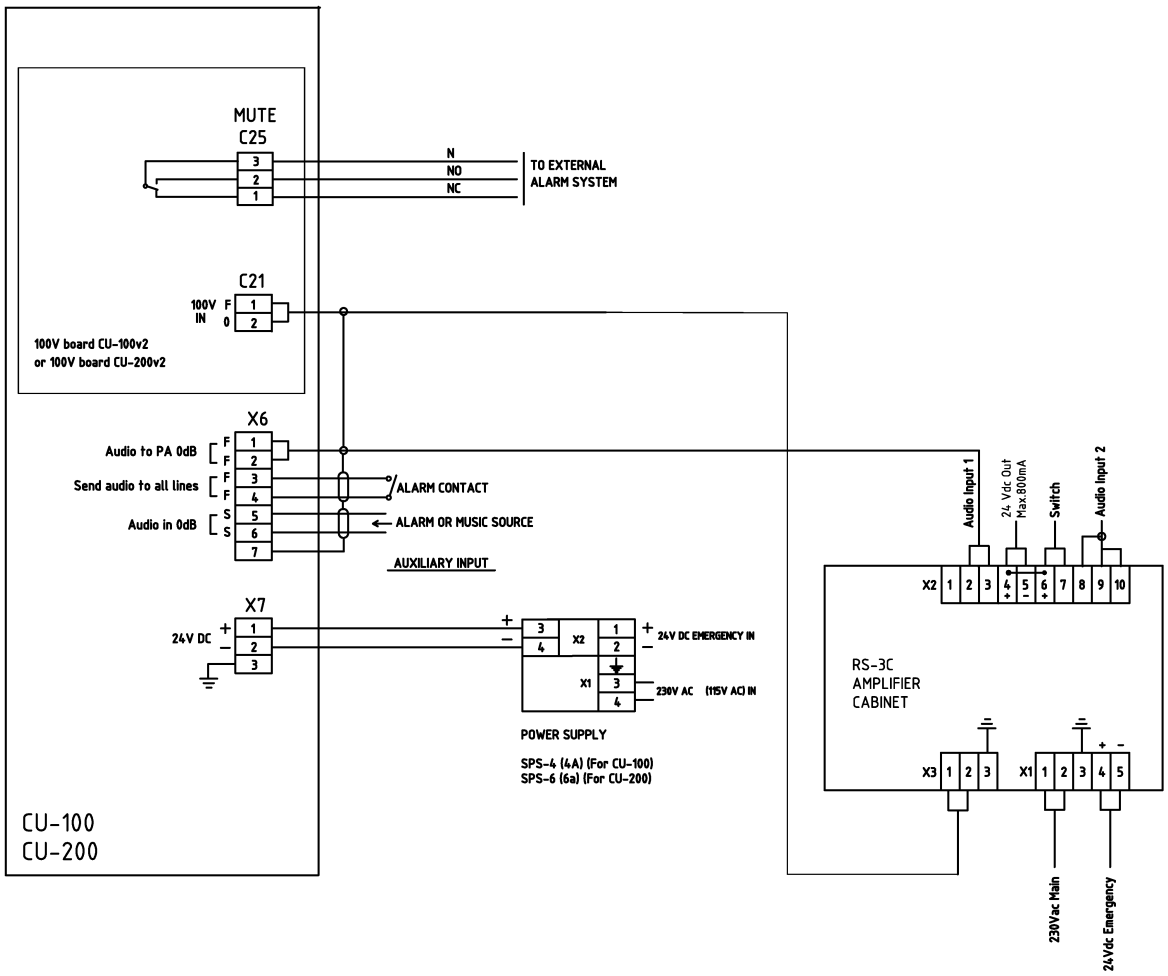
Output for extra signal device for all lines.
We recommend to use 2pair cable to each
substation line.

24V DC out from substation w/ relay unit
to signal device max.2A

Twisted pair

## 7.2.19 Connections CTB-100V Loud hailing PA / Power/Aux

Ref dwg.CTB-100_cc2 Rev.06




**Optional amplifiers:**
**AW8121 100W Slave Power Amplifier.**
**AW8241 240W Slave Power Amplifier.**
**P-8501 500W Slave Power Amplifier.**

Cable requirement:
Approved shipscable of type
twisted pair with outer braided tinned copper screen.
The screens must be interconnected in junctionboxes
and grounded in a common groundpoint in the central unit only.

⚠ The WEEE Directive does not legislate that Zenitel, as a ‘producer’, shall collect ‘end of life’ .

This ‘end of life’ WEEE should be recycled appropriately by the owner who should use proper treatment and recycling measures. It should not be disposed to landfill.

Many electrical items that we throw away can be repaired or recycled. Recycling items helps to save our natural finite resources and also reduces the environmental and health risks associated with sending electrical goods to landfill.

Under the WEEE Regulations, all new electrical goods should now be marked with the crossed-out wheeled bin symbol shown below:

Goods are marked with this symbol to show that they were produced after 13th August 2005, and should be disposed of separately from normal household waste so that they can be recycled.