EDWARDS
United Technologies

Compact Voice Alarm System

EST VES

EN

Service Manual

EN 54-16: 2008
EN 54-4: 1997 + A1: 2002 + A2: 2006

CE

rev. 1.2019

Table of Contents

IMPORTANT INFORMATION

Introduction

This is the installation and operation manual for the EST VES Compact Voice Alarm System. Read these instructions and all related documentation entirely before installing or operating this product.

Limitation of liability

To the maximum extent permitted by applicable law, in no event will UTCFS be liable for any lost profits or business opportunities, loss of use, business interruption, loss of data, or any other indirect, special, incidental, or consequential damages under any theory of liability, whether based in contract, tort, negligence, product liability, or otherwise. Because some jurisdictions do not allow the exclusion or limitation of liability for consequential or incidental damages the preceding limitation may not apply to you. In any event the total liability of UTCFS shall not exceed the purchase price of the product. The foregoing limitation will apply to the maximum extent permitted by applicable law, regardless of whether UTCFS has been advised of the possibility of such damages and regardless of whether any remedy fails of its essential purpose.

Installation in accordance with this manual, applicable codes, and the instructions of the authority having jurisdiction is mandatory.

While every precaution has been taken during the preparation of this manual to ensure the accuracy of its contents, UTCFS assumes no responsibility for errors or omissions.

Product warnings and disclaimers

THESE PRODUCTS ARE INTENDED FOR SALE TO AND INSTALLATION BY QUALIFIED PROFESSIONALS. UTC FIRE & SECURITY CANNOT PROVIDE ANY ASSURANCE THAT ANY PERSON OR ENTITY BUYING ITS PRODUCTS, INCLUDING ANY “AUTHORIZED DEALER” OR “AUTHORIZED RESELLER”, IS PROPERLY TRAINED OR EXPERIENCED TO CORRECTLY INSTALL FIRE AND SECURITY RELATED PRODUCTS.

For more information on warranty disclaimers and product safety information, please check:
https://firesecurityproducts.com/policy/product-warning/ or scan the QR code:

NOTE!
The manufacturer reserves a right to modify parameters and methods of operation without further notice. By virtue of regular modifications and improvements, certain functions specified in this manual may differ insignificantly.

In order to avoid difficulties in operating the Voice Alarm System, it is advisable to get familiar with the manual before the first use.

VAS central unit is equipped with a set of automatic functions responsible for testing the system performance. The central unit uses FAILURE LED to signal irregularities. In such case, it is necessary to react immediately and, if necessary, consult a person in charge of VAS performance.

Exposing devices to extreme temperature, direct sunlight, moisture or dust may result in a fire or electric shock.

- ⚠ **Do not connect the device to the source of power before all installation works have been completed.**
- ⚠ **Read this manual.**
- ⚠ **Keep this manual.**
- ⚠ **Pay special attention to warnings.**
- ⚠ **Follow all provisions of this manual.**
- ⚠ **Avoid contact with water. Do not let the device come in contact with water or other liquids.**
- ⚠ **Use devices with utmost care.**
- ⚠ **Use soft materials to clean devices. Never use solvents, such as petrol or diluent.**
- ⚠ **Do not cover vent openings in device casing. Install the device in accordance with the manufacturer's instructions.**
- ⚠ **Do not install the device close to sources of heat.**
- ⚠ **Protect the feeder cable against stepping, pressure, bending or crushing, particularly close to plugs, sockets and the area on the device casing which is connected to the wire. A damaged Power Cord poses fire or electric shock hazards. Never touch electric plugs with wet palms.**
- ⚠ **Avoid mechanical shocks. Strong impact and shocks may damage the equipment.**
- ⚠ **Be careful while grabbing wires. To connect and disconnect all wires, grab a plug, not a wire.**
- ⚠ **Always switch off power before disconnecting other devices. To avoid device and accessories damage, switch off the power supply by using the master switch of the device before connecting or disconnecting wires. While connecting wires, pay special attention to their polarization. A change of poles may damage them.**
- ⚠ **Use accessories and additional parts specified by the manufacturer only.**
- ⚠ **Do not leave any redundant items in the device.**
- ⚠ **Do not try to repair or modify the device on your own. The device is not equipped with elements intended to be serviced by the user. As for maintenance, contact the authorized service provider.**
- ⚠ **The warranty becomes invalid if you open or manipulate internal subassemblies on your own.**
- ⚠ **Service works are required if any type of system damage occurs.**
- ⚠ **The workers operating in the area where the system was installed should complete a suitable training with regard to system operation. One person must be responsible for maintaining proper performance and system maintenance.**
- ⚠ **Following the regulations, the system must be maintained on a yearly basis, while the manufacturer advises to maintain the system twice a year.**

Declaration of Performance

No EstVes 20180313

1.	Product	**Emergency Sound System**
2.	Type of construction product	**EST VES** **<u>Components:</u>** **EST-VES-2001 / EST-VES-2001-L / EST-VES-2001-N / EST-VES-2001-LN / EST-VES-4001 / EST-VES-4001-L / EST-VES-4001-N / EST-VES-4001-LN / EST-VES-4002 / EST-VES-4002-L / EST-VES-4002-N / EST-VES-4002-LN / DFMS BOX / DFMS BOX-L / EST-xNET_MINI-1Gb/WAN/RS / EST-xNET_MINI-1Gb/WAN / EST-xCtrLine-2 / EST-xCtrLine-4 / SF-MM31002D-GP / SF-CP100C-GP / SFP-1GBT-06 / SF-MM31/55WD055D-GP / SF-MM31/55WD055-GP / SF-MMS31/55WD055D-GP / SF-MMS31/55WD055-GP / SF-SM31/55WD020D-GP / SF-SM31/55WD020-GP / SF-SMS31/55WD020D-GP / SF-SMS31/55WD020-GP / EST-DFMS / EST-EKB-20M / GUI EST-xLCD / EST-REG1 / ST-POE8P-A / ST-POE4P-A / ST-POE16P-AF / ST-POE1R-P / ST-I2POESFP / ST-I4POESFP / Netgear FS116P / FS116Pv2 / FS108P**
3.	Type, batch or serial number or any other element allowing identification of the construction product	**See CE mark label and marking on boards**
4.	Declared intended use of product	**Fire Safety**
5.	Manufacturer	**UTC Fire and Security B.V** **Kelvinstraat 7, Weert NL-6003 DH The Netherlands**
6.	System of AVCP	**1**
7.	Notified body	**CNBOP-PIB 1438-CPR-XXXX**

Example of VASCU EST VES rating plate

EST VES 2001L

Certificate of constancy of performance EN 54-4, EN 54-16	**1438-CPR-XXXX**
Declaration of Performance	**EST20180314**
Declared intended use of product	**fire safety**
Comply with	**EN 54-4 / EN 54-16**
Ingress Protection Rating	**30**

CE
18

Manufacturer: **UTC Fire & Security B.V.**
Kelvinstraat 7, Weert NL-6003 DH, The Netherlands

SN

Impact on the environment

This product was marked in accordance with WEEE Directive (2002/96/EC) and further amendments on waste electrical and electronic equipment. Assuring a proper scrapping, you contribute to reduction of risk of negative impact on the environment and people's health, which would occur in the case of improper equipment disposal. The symbol located on the product or attached documents means that our product has not been classified as domestic waste. The equipment must be transported to a suitable waste treatment plant in order to recycle it. To see more details about recycling our product, contact a local authority representative, waste treatment service provider or the store where our product was sold. Pursuant to the act of 29 July 2005 on waste electronic and electrical equipment, it is forbidden to dispose of the waste electronics along with other (municipal) waste because such actions entail criminal penalties. Packaging elements were made of cardboard and polyethylene foam. For this reason, they may be subject to recycling. In so doing, redundant packaging must be sorted out in accordance with their intended use and delivered to the local waste collector.

In the interest of protecting human's health and environment, we assure that our products, subject to RoHS 2011/65/EU directive provisions on the use of hazardous substances in electric and electronic equipment, have been designed and manufactured in accordance with requirements of this directive.

1. UTC Fire & Security presentation

UTC Fire & Security B.V. is a leading innovator, manufacturer and supplier of fire and gas safety worldwide.

Owned by United Technologies Corporation (UTC), we employ almost 500 people handling the complete value chain, from idea, development and manufacturing to the marketing, sales and servicing of our products.

Our products ensure safety in applications on land, sea and in the petrochemical, oil and gas sectors, and include:

- **Fire detection systems**
- **Integrated fire and gas detection systems**
- **Voice alarm systems**
- **Emergency light systems**
- **Presentation systems**
- **Integrated safety and emergency management systems**
- **Video solutions**
- **Fire suppression systems**

We are an international company with offices worldwide.

For more information on solutions and products, please refer to our official website **www.firesecurityproducts.com**

Manufacturer
UTC CCS Manufacturing Polska Sp. z o.o.
Ul. Kolejowa 24. 39-100 Ropczyce, Poland

Authorized EU manufacturing representative:
UTC Fire & Security B.V. Kelvinstraat 7, NL-6003 DH, Weert, The Netherlands

2. EST VES Compact Voice Alarm System presentation

EST VES Compact Voice Alarm System is the latest product promoted by UTC Fire & Security B.V., the company specializing in production of reliable and certified voice alarm systems. EST VES is a Public Address & Voice Evacuation system based on optical fiber digital transmission of voice, alarm and commercial messages.

EST VES central unit has been designed in accordance with the European EN 54-16 norm.

In accordance with the internal regulations of CEN/CENELEC, the organizations for standardization of the following countries are obligated to introduce this European standard:
Austria, Belgium, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Island, Ireland, Italy, Lithuania, Latvia, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Spain, Slovakia, Slovenia, Sweden, Switzerland and Great Britain.

EST VES system includes the following: control devices, fireman microphone panels and zone microphones. All components are certified (officially approved). The system rests on a modern platform which allows a digital scalable communication between all elements of the system, as well as between other integrated safety systems.

EST VES system has been developed with various applications in mind – it is perfect for both decentralized and centralized systems.

The system architecture is based on optical connection between control unit devices and other system elements. It allows creation of highly large facilities, such as airport terminals, oil fields and refineries, shopping centers or office complexes.

At the same time, along with the customized construction of control unit and network types, we are able to create compact systems for single small and middle-sized facilities, as well as larger groups connected by a digital network.

The following components account for integrated concept of EST VES system VAS central unit:

- EST-VES-2001 unit
- EST-VES-2001-N unit
- EST-VES-2001-L unit
- EST-VES-2001-LN unit
- EST-VES-4001 unit
- EST-VES-4001-N unit
- EST-VES-4001-L unit
- EST-VES-4001-LN unit
- EST-VES-4002 unit
- EST-VES-4002-N unit
- EST-VES-4002-L unit
- EST-VES-4002-LN unit
- DFMS BOX unit

4 loudspeaker line control card EST-xCtrLine-4
2 loudspeaker line control card EST-xCtrLine-2
EST-DFMS fireman microphone
EST-DMS zone microphone
EST-DMS-LCD zone microphone with display
EST-EKB-20M microphone keyboard extension

Optional features in accordance with EN 54-16 standard:

Sound signaling	×
Delayed voice alarm introduction	✓
Gradual evacuation	✓
Manual voice alarm muting	✓
Manual voice alarm cancelling	✓
Fire alarm device outputs	×
Voice alarm output	✓
Signaling damage related to transmission track to FACIE	✓
Signaling damage related to voice alarm zones	✓
Lock status	✓
Manual control of voice alarm	✓
Digital interface between VASCU and external control devices	×
Emergency microphones	✓
Back-up power amplifier	✓

3. Symbols used in the document

Warning!
This symbol means a potentially hazardous situation posing a death or disability hazards

Attention!
This symbol means potentially hazardous situation posing medium or minor injuries and/or material loss hazards.

Warning!
This symbol means that using the above-mentioned products increases the risk of visual impairment.

4. Warranty conditions

Warranty conditions are part of General Terms & Conditions of Delivery available at www.firesecurityproducts.com

5. Requirements

Unused devices must be stored in the original packaging, in enclosed rooms with the ambient temperature ranging from -20°C to 70°C and relative humidity – from 5% to 95% (without condensation).

Once the device has been moved from cold to warm environment, there is a risk of water condensation, which has a negative impact on device performance. In such case, it is necessary to leave the device to let it adapt to a new surrounding for about an hour before the operation.

During the transport, the devices should be packed in a way assuring reduced risk of mechanical damage and impact of weather conditions.

⚠ **EST VES should only be transported vertically, as indicated on the carton of the device;**

⚠ **EST VES should be transported only on a transport pallet (wooden or plastic) up to 3 stacking units. Additional load stabilization methods such as plastic stretch wrap, shrink wrap, plastic or stretch tape is required for additional securement.**

5.1 Unpacking

Please read this service manual to get familiar with relevant details concerning installation, operation, nature and product functions. If it is necessary to return the product to the service point, wrap the device into the original packaging (or identical to the origintal one).

5.2 Installation requirements

The alarm central unit room, in which VASCU is located, must satisfy the following conditions:

- Fire protection device operation room (FPDOR) should be located on the floor of the structure, close to entrance/exit designed and marked as the entrance for rescue teams.
- The room must be located and marked in a way that allows rescuers to notice it at the entrance. It is advisable to make sure FPDOR access doors are not located farther than 10m from rescue team exit.
- The width of passage leading to the room should be at least 1,5 m.
- The room should be properly marked.
- If FPDOR is located at a distance greater than 10 m from the rescue team exit, additional signs must be used in order to point location and direction to FPDOR.
- The Fire Safety Instructions in graphics and site evacuation procedures should include signs and location of FPDOR.
- Install the Manual Call Point in FPDOR or in its immediate vicinity. FPDOR should be monitored by automatic sensors being part of fire alarm system on the site.
- Access to FPDOR should be given solely to authorized persons and rescue team. It is acceptable to lock the door as long as one key is located in a suitably marked box with breakable glass attached to the wall in immediate vicinity to room doors.
- FPDOR should be a closed room whose walls and ceilings have REI 60 fire resistance rating. The door of FPDOR should have EI30 fire resistance rating.
- The control desk with a fireman microphone should be connected to VASCU via wires assuring circuit continuity in case of fire.
- Natural and artificial lighting should be provided. Lighting intensity in the room must be min. 500 lx.
- The room must be equipped with emergency lighting of an average lighting intensity – min. 10 lx.
- Weather conditions must satisfy the following requirements: temperature from 0°C to +40°C, relative humidity from 25% to 80%, air pressure from 860 hPa to 1060 hPa.
- A suitable amount of space around front VASCU board must be provided in order to allow required manipulations.
- The height of control and indication devices assembly should allow their suitable operation.
- Background noisevalues in the room, in which the console with the fireman microphone is located, should not exceed 40 dB.
- A table with dimensions big enough to unfold site and system documentations must be located in the room.

5.3 Environmental conditions

Do not place the product in the environment which may affect its performance or shorten its life. Environments which have a negative influence frequently have high temperatures, are dusty, humid and have high level of vibrations. The equipment must be placed in cold and dry area far away from direct sunlight and inflammable and explosive materials.

EST VES system is designed to either be mounted in a 19" RACK cabinet or to be mounted on a wall as a standalone device. Even without the additional casing it is rated at IP30 and thus compliant with the EN 54-16 norm.

6. Device description

This section provides an insight into EST VES system components:

- **Control units**
- **Extension cards**
- **Microphones and microphone extensions**

6.1 Internal devices

6.1.1 Control units

A control unit is the main element of the system which receives audio signal and sends it to the entire system. This device manages all other elements. This component allows flexible configuration of audio signal tracks from any source of signal to any output. Global audio track switch is possible on the basis of the programmable logic system and Ethernet 1G (UDP/IP,TCP/IP) network.

EST VES system offers thirteen various control units:

- **EST-VES-2001 unit**
  to be used as a secondary unit or for smaller site applications. Unit equipped with a sigle xCtrLine-4 card and a basic xNET_mini card
- **EST-VES-2001-N unit**
  similar to the 2001 unit, additionaly equipped with the xNET_mini-1GB/WAN/RS card with extended networking capabilities
- **EST-VES-2001-L unit**
  primary system unit, equipped with an LCD screen
- **EST-VES-2001-LN unit**
  similar to the 2001-L unit with the addition of the xNET_mini-1GB/WAN/RS card with extended networking capabilities
- **EST-VES-4001 unit**
  to be used as a secondary unit or for smaller site applications. Equipped with two xCtrLine-4 cards and a basic xNET_mini card
- **EST-VES-4001-N unit**
  similar to the 4001 unit, additionaly equipped with the xNET_mini-1GB/WAN/RS card with extended networking capabilities
- **EST-VES-4001-L unit**
  primary system unit, equipped with an LCD screen and two xCtrLine-4 cards
- **EST-VES-4001-LN unit**
  similar to the 4001-L unit with the addition of the xNET_mini-1GB/WAN/RS card with extended networking capabilities
- **EST-VES-4002 unit**
  to be used as a secondary unit or for smaller site applications. Equipped with four xCtrLine-2 cards and a basic xNET_mini card
- **EST-VES-4002-N unit**
  similar to the 4002 unit, additionaly equipped with the xNET_mini-1GB/WAN/RS card with extended networking capabilities
- **EST-VES-4002-L unit**
  primary system unit, equipped with an LCD screen and four xCtrLine-2 cards
- **EST-VES-4002-LN unit**
  similar to the 4002-L unit with the addition of the xNET_mini-1GB/WAN/RS card with extended networking capabilities
- **DFMS Box unit**
  unit containing the DFMS fireman's microphone as a standalone solution

System elements operate with the following resolution: 48KHz/32 bits/2 channels. The communication between devices at large distances is carried out in 1000BASE-X technology (optical fiber), a thanks to 2 ports with SFP modules, connection redundancy occurs. In the case of connecting devices located in one RACK-type cabinet, it is advisable to use ports with RJ45 connectors. Available ports:

- 1000BASE-TX / RJ45 – CAT5E cables – 2 ports available on the rear device panel/communication card,
- 100BASE-TX / RJ45 – CAT5 cables – 1 port available on the rear panel responsible for connecting WAN external network, and PC with installed configuration software.

To create optical fiber connections, SFP modules are used. It creates a possibility of choosing optical fiber system elements independently and lower costs if the system does not use optical fiber connections.

Components of EST VES control unit:

- 1x main backplane
- 2x amplifier module
- 1x processor card with LAN/WAN 100 Mb/s connection
- 1x communication card (option)
- optional GUI module
- depending on version: 1x CtrLine-4, 2x CtrLine-4, 4x CtrLine-2
- 1x Charger module

Components of DFMS Box unit:

- 1x main backplane
- 1x xNET_mini-1GB/WAN/RS with 2 logical inputs and 2 logical outputs
- 1x Charger module

6.1.1.1 EST VES series 2001, 4001 and 4002 units

EST VES series 2001,4001 and 4002 units were designed to perform minor VAS system or serve as an extension unit in complex systems. In case of lack of connection with a superior unit, thanks to local configuration, it is able to carry out a fire scenario. The device attached to the main system communication “ring” can receive alarm signals and digital signals and send them to other system devices.

The Control Unit’s main functions are:

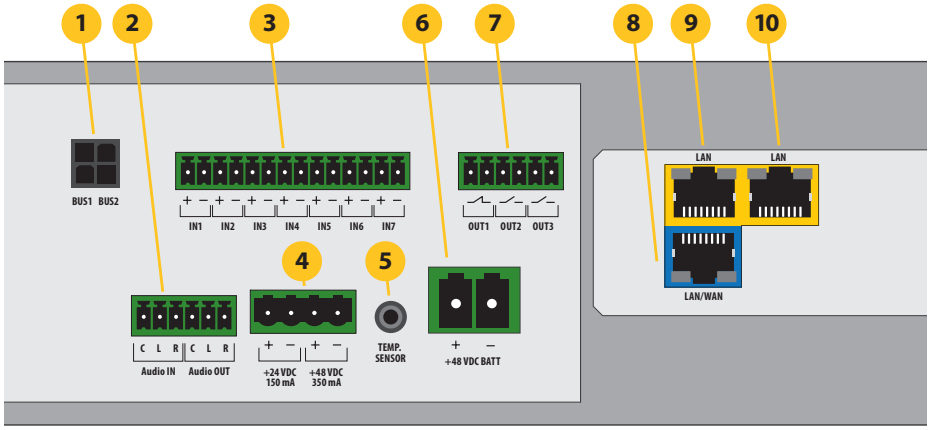
- Dividing audio signals into particular zones and overseeing proper operation of particular zones.
- Controling loudspeaker lines.
- Detecting and signalling damage.
- Activating internal back-up amplifier module.

Each unit is equipped with a built in communication card which provides one audio input and one audio output intended to connect amplifier inputs. Its diagram has been presented below.

Every central unit except the DFMS-BOX can work independently.

Line control card configuration:

- » **2001:** 1x xCtrLine-4
- » **4001:** 2x xCtrLine-4
- » **4002:** 4x xCtrLine-2

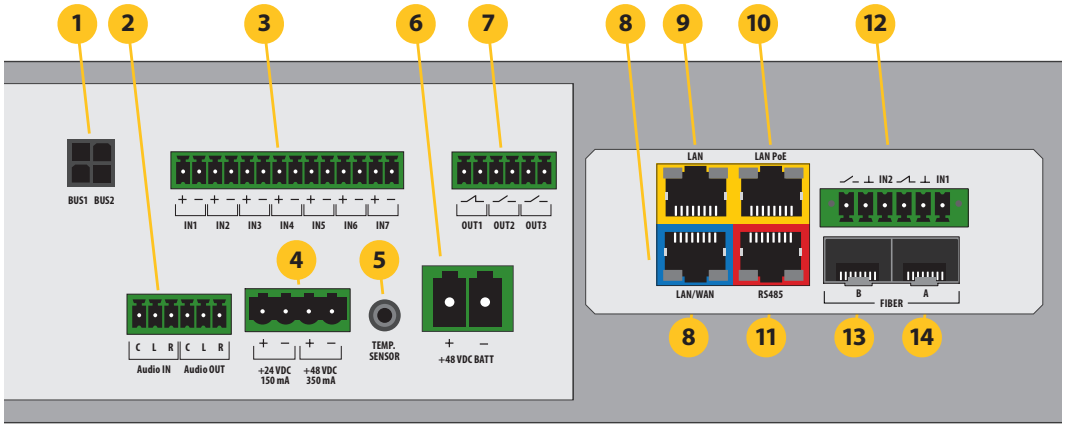


Drawing 1. Diagram of the connector panel for EST VES series 2001, 4001 and 4002 units

1. **Local audio bus outputs for 4 line control card operation**
2. **Audio input and output**
3. **Logic inputs**
4. **Auxillary power outputs**
5. **Battery temperature sensor input jack**
6. **Main Battery connector**
7. **Logic outputs**
8. **10/100 Mbps Lan/Wan port (PC connection)**
9. **10/100/1000 Mbps Lan port**
10. **10/100/1000 Mbps Lan port**

6.1.1.2 *EST VES series 2001-N, 4001-N, 4002-N*

Units similar to the 2001, 4001, 4002 series with the exception of the extended xNET_mini-1GB/WAN/RS network interface. This provides more connectivity and slots for two optional SFP modules.



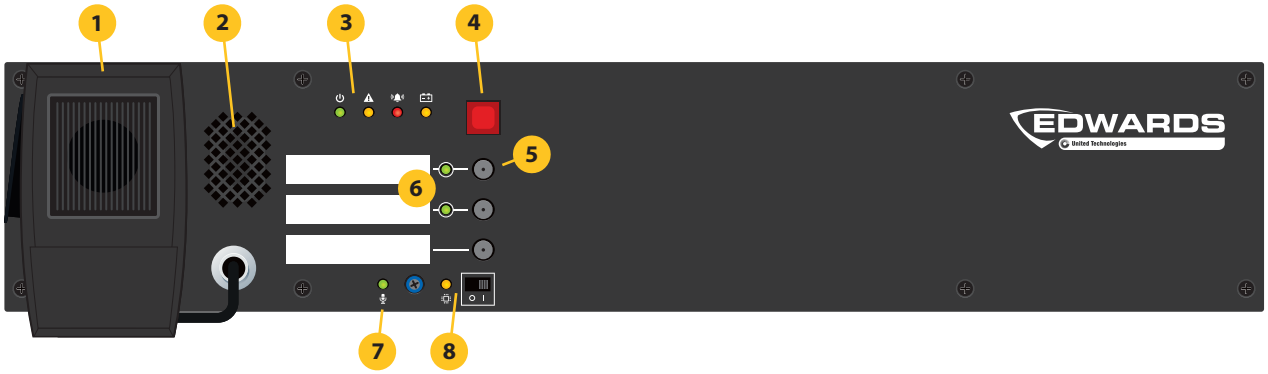
Drawing 2. Diagram of the connector panel for EST VES series 2001-N, 4001-N and 4002-N units

1. **Local audio bus outputs for 4 line control card operation**
2. **Audio input and output**
3. **Logic inputs**
4. **Auxillary power outputs**
5. **Battery temperature sensor input jack**
6. **Main Battery connector**
7. **Logic outputs**
8. **10/100 Mbps Lan/Wan port (PC connection)**
9. **10/100/1000 Mbps Lan port**
10. **10/100/1000 Mbps Lan port**
11. **RS485 Port**
12. **Additional Logic I/O ports**
13. **SFP module slot B**
14. **SFP module slot A**

Table 1. EST VES series 2001, 4001, 4002 and series 2001-N, 4001-N, 4002-N technical data

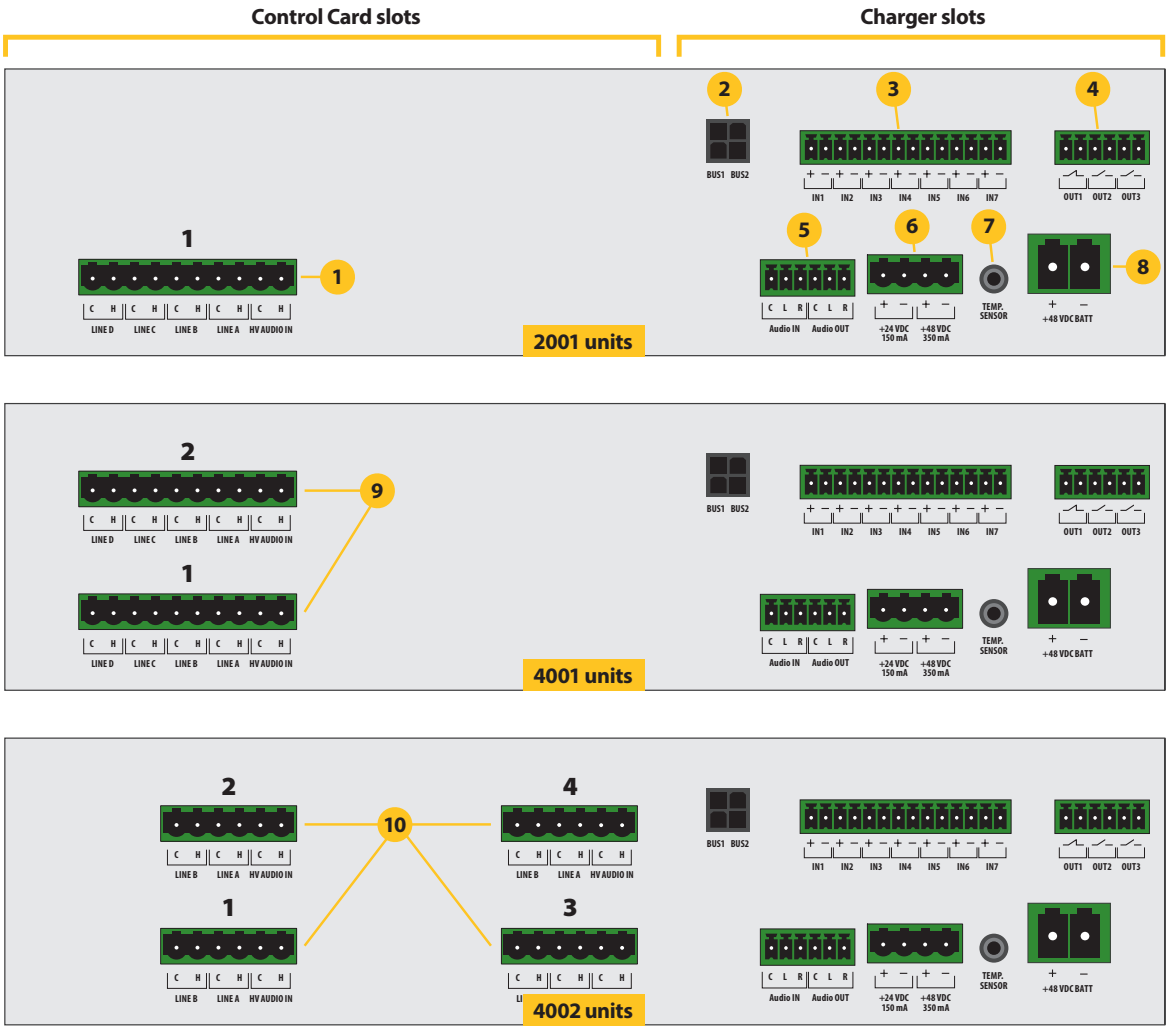
Model	EST VES 2001, 4001 and 4002	EST VES 2001-N, 4001-N, 4002-N
Power supply	230 V AC, IEC C14 3pin terminal	
Power consumption	Up to 600 W (depending on configuration)	
Number of control slots	4	
Message storage	SD HC cards with capacities up to 32 GB supported The included 512 MB SLC SDHC card provides more than 20 min of message time	
LCD display	None	
DSP	Implemented 3 band parametric EQ	
Number of audio inputs	1	
Connector type	3 pin phoenix connector	
Frequency response	40 Hz… 20 kHz (@1 dB) / 400 Hz… 8 kHz (@0,1 dB)	
Input impedance	≥ 10 kΩ	
Maximum input voltage	≥ 3 Vrms	
Number of outputs	1	
Type of outputs	Balanced	
Connector type	3 pin phoenix connector	
Frequency response	40 Hz… 20 kHz (@1dB) / 400 Hz… 8 kHz (@0,1dB)	
Harmonic distortion (THD+IMD)	≤ 0,05%	
Headroom	10 dB	
SNR	≥ 90 dB	
Channel separation	≥ 80 dB	
Output impedance	600 Ω	
Nominal output level	1 Vrms	
Data communication	Standard communication: › 1000BASE-TX/RJ45 CAT5E cables – 2 ports available on the connector panel › 100BASE-TX/RJ45 CAT5 cables – 1 port available on the connector panel, for connections with an external network	Communication over large distances: › 1000BASE X optical fiber › 2 ports providing a redundant connection Standard communication: › 1000BASE-TX/RJ45 CAT5E cables – 2 ports available on the connector panel › 100BASE-TX/RJ45 CAT5 cables – 1 port available on the connector panel, for connections with an external network

Fiber module connector type / fiber type	SFP modules / SC/LC connector Multimode or single mode E30 or E90, OM or OM2
Communication with PC	PC software: RJ45, twisted pair connection TIA/EIA568-B via Ethernet protocol
Operating temperature	0°C / +60°C
Operating humidity	15% to 80% (non-condensing)
Storage temperature	-20°C / +70°C
Storage Humidity	15% to 80% (non-condensing)
Case material and finish	Steel with powdercoat finish
Dimensions	439 (W) × 531 (H) × 355 (D) mm
Mount options	4 x 12 mm wall mount holes in the back of the case
Weight	24 kg
Accessories	Battery cable, AC power connector, Handheld Microphone



Drawing 3. Front panel of EST VES 2001, 4001, 4002 and 2001-N, 4001-N, 4002-N series

1. **Handheld fireman's microphone**
2. **Built in speaker**
3. **Indicators**
   a. power supply indicator (green LED)
   b. Failure indicator (yellow LED)
   c. Emergency indicator (red LED)
   d. Battery power indicator (yellow LED)
4. **Emergency button**
5. **Configurable function buttons**
6. **Function button activation LEDs**
7. **Handheld microphone LED**
8. **CPU off section**
   a. CPU off function LED (yellow)
   b. CPU off function switch



Drawing 4. Line control card arrangement for EST VES systems

1. **EST-xCtrLine-4 control card**
2. **Local audio bus outputs for 4 line control card operation**
3. **Logic inputs connector**
4. **Logic outputs connector**
5. **Audio I/O connector**
6. **Auxillary power outputs**
7. **Temperature sensor input jack**
8. **Main battery connector**
9. **Two EST-xCtrLine-4 control cards**
10. **Four EST-xCtrLine-2 control cards**

Built in amplifier module options:

1. 200X series units use two 160W amplifier modules and a single switchable transformer. This enables one of the amplifiers to work as the main unit while the second one provides redundancy
2. 400X series units use two 320W amplifier modules with two transformers. This enables both of the amplifiers to work either simultaneously with the total output limited to 320W or with one used as main and the other one as backup.

6.1.1.3 *EST VES series 2001-L, 4001-L and 4002-L units*

EST VES series 2001-L, 4001-L and 4002-L units were designed to perform minor VAS system or serve as an extension unit in complex systems. In case of lack of connection with a superior unit, thanks to local configuration, it is able to carry out a fire scenario. The device attached to the main system communication "ring" can receive alarm signals and digital signals and send them to other system devices.

In comparison to previously presented 2001,4001, 4002 and 2001-N, 4001-N, 4002-N series units these devices are equipped with a 4.5" touch screen LCD display which allows direct access to management and entire system monitoring functions.

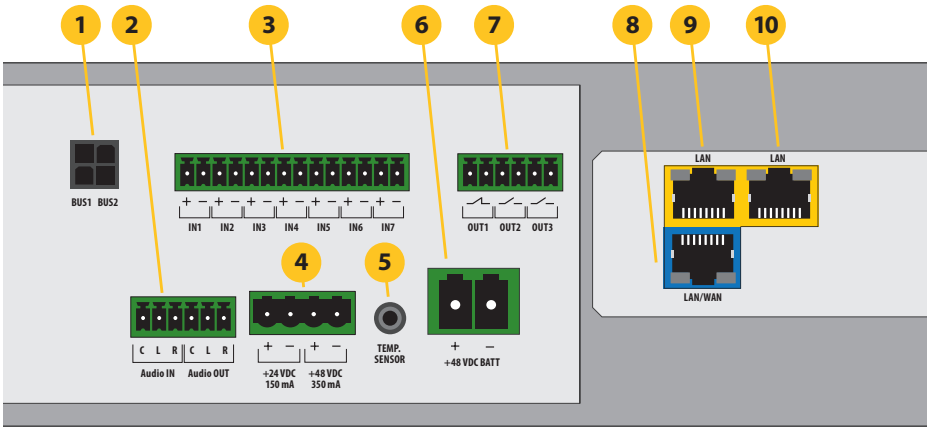
The Control Unit's main functions are:

- Dividing audio signals into particular zones and overseeing proper operation of particular zones.
- Controling loudspeaker lines.
- Detecting and signalling damage.
- Activating internal back-up amplifier module.
- Each unit is equipped with a built in communication card which provides one audio input and one audio output intended to connect amplifier inputs. Its diagram has been presented below.

Every central unit except the DFMS-BOX can work independently.

Line control card configuration:

- **2001-L:** 1x xCtrLine-4
- **4001-L:** 2x xCtrLine-4
- **4002-L:** 4x xCtrLine-2

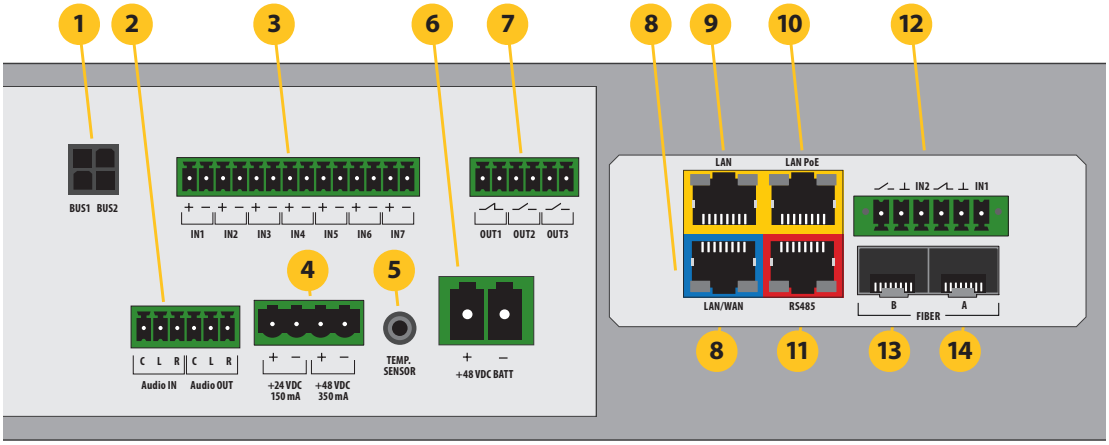


Drawing 5. Diagram of the connector panel for EST VES series 2001-L, 4001-L and 4002-L units

1. **Local audio bus outputs for 4 line control card operation**
2. **Audio input and output**
3. **Logic inputs**
4. **Auxillary power outputs**
5. **Battery temperature sensor input jack**
6. **Main Battery connector**
7. **Logic outputs**
8. **10/100 Mbps Lan/Wan port (PC connection)**
9. **10/100/1000 Mbps Lan port**
10. **10/100/1000 Mbps Lan port**

6.1.1.4 EST VES series 2001-LN, 4001-LN, 4002-LN

Units similar to the 2001-L, 4001-L, 4002-L series with the exception of the extended xNET_mini-1GB/WAN/RS network interface. This provides more connectivity and slots for two optional SFP modules.



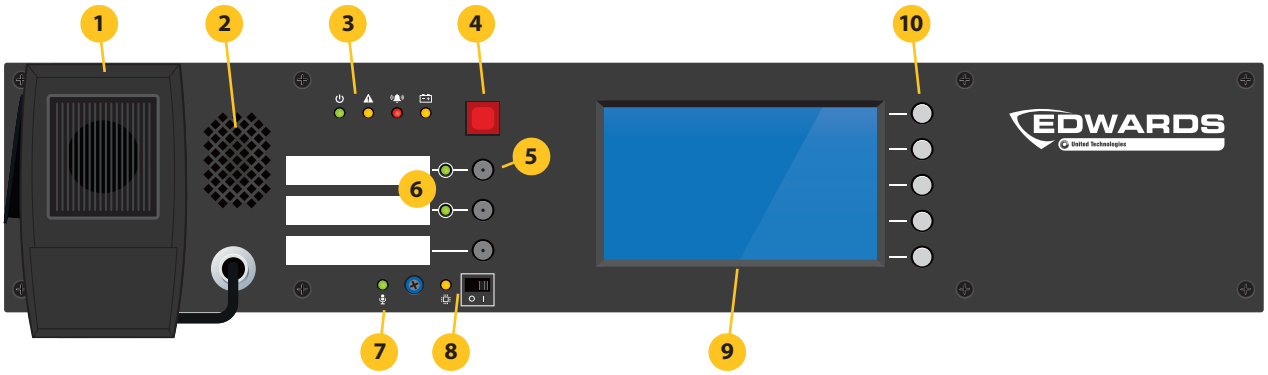
Drawing 6. Diagram of the connector panel for EST VES series 2001-LN, 4001-LN and 4002-LN units

1. **Local audio bus outputs for 4 line control card operation**
2. **Audio input and output**
3. **Logic inputs**
4. **Auxillary power outputs**
5. **Battery temperature sensor input jack**
6. **Main Battery connector**
7. **Logic outputs**
8. **10/100 Mbps Lan/Wan port (PC connection)**
9. **10/100/1000 Mbps Lan port**
10. **10/100/1000 Mbps Lan port**
11. **RS485 Port**
12. **Additional Logic I/O ports**
13. **SFP module slot B**
14. **SFP module slot A**

Table 2. EST VES series 2001-L, 4001-L, 4002-L and series 2001-LN, 4001-LN, 4002-LN technical data

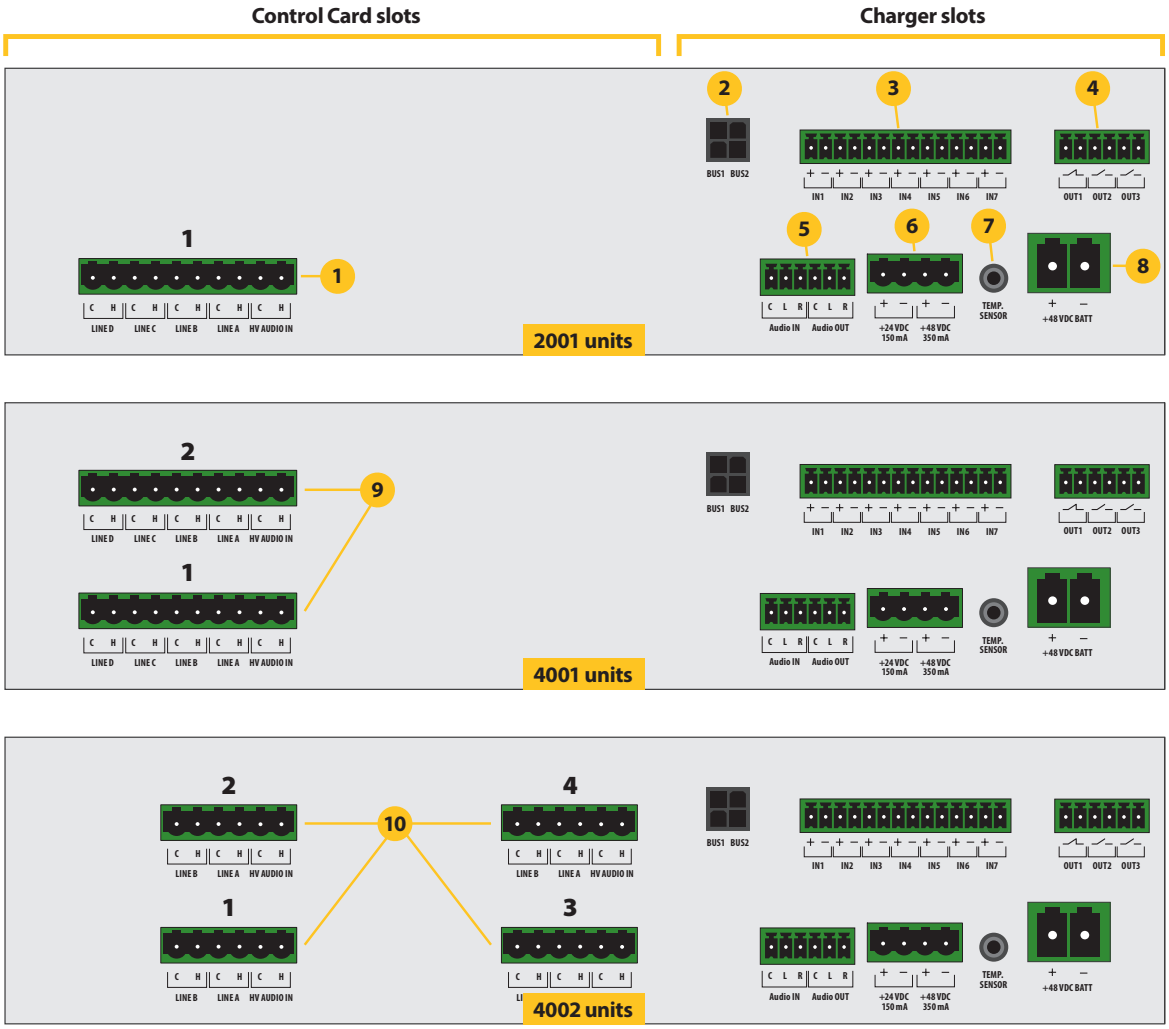
Model	EST VES 2001-L, 4001-L, 4002-L	EST VES 2001-LN, 4001-LN, 4002-LN
Power supply	230 V AC, IEC C14 3pin terminal	
Power consumption	Up to 600 W (depending on configuration)	
Number of control slots	4	
Message storage	SD HC cards with capacities up to 32 GB supported The included 512 MB SLC SDHC card provides more than 20 min of message time	
LCD display	4,5" LCD touch screen	
DSP	Implemented 3 band parametric EQ	
Number of audio inputs	1	
Type of audio inputs	Differential	
Connector type	3 pin phoenix connector	
Frequency response	40 Hz… 20 kHz (@1 dB) / 400 Hz… 8 kHz (@0,1 dB)	
Input impedance	≥ 10 kΩ	
Maximum input voltage	≥ 3 Vrms	
Number of outputs	1	
Type of outputs	Balanced	
Connector type	3 pin phoenix connector	
Frequency response	40 Hz… 20 kHz (@1dB) / 400 Hz… 8 kHz (@0,1dB)	
Harmonic distortion (THD+IMD)	≤ 0,05%	
Headroom	10 dB	
SNR	≥ 90 dB	
Channel separation	≥ 80 dB	
Output impedance	600 Ω	
Nominal output level	1 Vrms	
Data communication	Standard communication: › 1000BASE-TX/RJ45 CAT5E cables – 2 ports available on the connector panel › 100BASE-TX/RJ45 CAT5 cables – 1 port available on the connector panel, for connections with an external network	Communication over large distances: › 1000BASE X optical fiber › 2 ports providing a redundant connection Standard communication: › 1000BASE-TX/RJ45 CAT5E cables – 2 ports available on the connector panel › 100BASE-TX/RJ45 CAT5 cables – 1 port available on the connector panel, for connections with an external network
Fiber module connector type / fiber type		SFP modules / SC/LC connector Multimode or single mode E30 or E90, OM or OM2
Communication with PC	PC software: RJ45, twisted pair connection TIA/EIA568-B via Ethernet protocol	

Operating temperature	0°C / +60°C
Operating humidity	15% to 80% (non-condensing)
Storage temperature	-20°C / +70°C
Storage humidity	15% to 80% (non-condensing)
Case material and finish	Steel with powdercoat finish
Dimensions	439 (W) X 531 (H) × 355 (D) mm
Mount options	4 x 10 mm wall mount holes in the back of the case
Weight	24 kg
Accessories	Battery cable, AC power connector, Handheld Microphone



Drawing 7. Front panel of EST VES 2001-L, 4001-L, 4002-L and 2001-LN, 4001-LN, 4002-LN series

1. **Handheld fireman's microphone**
2. **Built in speaker**
3. **Indicators**
   a. Power supply indicator (green LED)
   b. Failure indicator (yellow LED)
   c. Emergency indicator (red LED)
   d. Battery power indicator (yellow LED)
4. **Emergency button**
5. **Configurable function buttons**
6. **Function button activation LEDs**
7. **Handheld microphone LED**
8. **CPU off section**
   a. CPU off function LED (yellow)
   b. CPU off function switch
9. **Display – shows control unit's menu**
10. **Functional keys, support auxillary functions when navigating the menu**
    a. HOME – press to return to the fers menu
    b. ENTER – press to enter value / select control unit in menu
    c. Up arrow – press to navigate in the control unit menu
    d. Down arrow – press to navigate in the control unit menu
    e. Back – press to return to previous item in the control unit menu



Drawing 8. Line control card arrangement for EST VES systems

1. **EST-xCtrLine-4 control card**
2. **Local audio bus outputs for 4 line control card operation**
3. **Logic inputs connector**
4. **Logic outputs connector**
5. **Audio I/O connector**
6. **Auxillary power outputs**
7. **Temperature sensor input jack**
8. **Main battery connector**
9. **Two EST-xCtrLine-4 control cards**
10. **Four EST-xCtrLine-2 control cards**

6.1.1.5 DFMS Box

This unit is a fusion of the Fireman microphone and EST VES Chassis. It features the same functionality as the fireman microphone with the addition of emergency battery power. In comparison to the previosly presented EST VES units the DFMS Box lacks amplifier modules and line control cards.

6.1.2 Extension cards

Every individual element of the system has a set of functions related to sending audio signal, system operation (operation or event reporting), as well as auto-diagnostics.

6.1.2.1 EST-xNET_mini-1Gb/WAN/RS communication card

EST-xNET_mini-1Gb/WAN/RS is a communication card consisting of two independent 1 Gbit network switches. The network switch no.1 is intended solely to transmit data related to basic EST VES system functions, that is performing tasks of alarm voice system and AVB support. The network switch no. 2 is intended for remote connections. The card supports TCP/UDP/PTP/DHCP protocols and assures audio data exchange in CPU-OFF mode via an innovative UTC protocol. Additionally, this card is equipped with RS485 port which implements and integrates EST VES with any system, e.g. SAP. Another advantage is support of PoE technology to power, e.g. fireman microphone.

Drawing 9. EST-xNET_mini-1Gb/WAN/RS communication card

Unlike the EST ENT VES system in the EST VES devices the communication card also doubles as the main CPU card. It is responsible for reproducing audio messages from the SD card and sharing them locally or globally while also performing system and control functions.

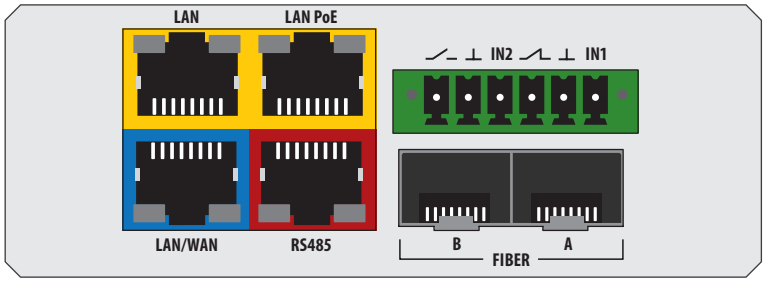
The card is capable of reproducing 8 messages at a time and supports SD cards up to 32 GB for individual messages, as well as event or defect logs or system update files.

The communication card:

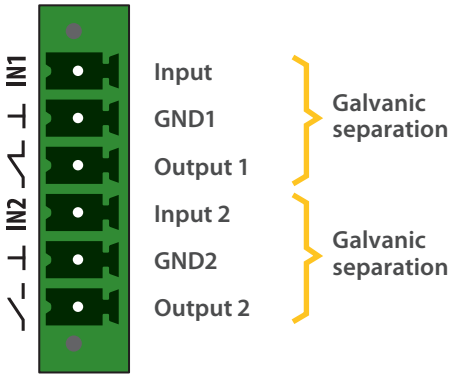
- has two switches (2 LAN 10/100/1000 ports), system (for VAS communication) and for remote connections (disconnected during fire-fighting) (1 LAN/WAN 10/100 port – configurable working mode),
- is equipped with VAS switch with AVB support,
- allows 1Gb/s transmission speed and has optical-fiber interface (2 connectors for SFP modules),
- supports TCP/UDP/PTP/DHCP protocols,
- assigns IP addresses dynamically,
- thanks to replaceable libraries, RS485 port (ModBus) allows implementation of other protocols,
- has PoE feature,
- can support two logic inputs or two relay outputs (every channels is configured on a case-by-case basis, and by default, both are set as logic inputs) relay outputs NC/NO,
- in CPU-OFF mode. It transmits audio data via independent protocol,
- in the future it will allow using network infrastructure for other Audio-Video purposes.

To connect communication cards and fireman microphone via an optical cable, it is required to use highly-reliable low power consumption SFP 1,25 Gbps optical modules.

SFP modules operate with single or multiple-mode optical fibers sending information with up to 1,25 Gbps. They transmit data through optical fiber pairs (duplex). Both SC and LC connectors can be used, the unit also supports digital optical monitoring (DOM).



Drawing 10. EST-xNET_mini-1Gb/WAN/RS communication card



Drawing 11. Diagram of logical inputs/outputs of communication card

Table 3. Technical parameters of EST-xNET_mini-1Gb/WAN/RS communication card

Model	EST-xNET_mini-1Gb/WAN/RS
Source of power	Control Unit main backplane
Power consumption	48 V about 100 mA; Input / output / PoE extension – max. consumption 360 mA, Typical consumption depends on devices connected to the card via RJ45 connector (PoE) max. 15 W
Optical module – type of connector	SFP low power consumption modules, SC/LC connector, Multi-mode or single-mode optical fiber, E 30 or E 90, OM1, OM2, OM3
Number of logical inputs / outputs	2 independent channels; galvanically separated 1x NO, 1x NC output
Source of parametric input signal	Passive, standard resistors: 4 kΩ ↔10 kΩ, detection thresholds 0/1/short-circuit/open-circuit set in configuration application
Type of logic input / output seats	Screw terminals PHOENIX 6 pin-type, 3,5 mm
PoE output voltage, load capacity	48 V, 0,3 A of load capacity
Number of RS485 connectors	1 in RJ45
Max. length of RS485 cable	1200 m (according to specifications and characteristics RS485)
Working temperature	0°C to +60°C
Ambient humidity during operation	from 15% to 80% (without condensation)
Storage temperature	-20°C to +70°C
Ambient humidity during storage	from 15% to 80% (without condensation)
Dimensions	70 x 160 x 30 (mm)

6.1.2.2 EST-xNET_mini-1Gb communication card

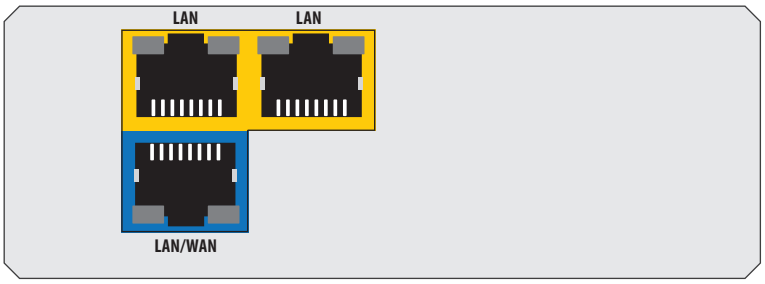
The EST-xNET_mini-1Gb is a downsized version of the previous EST-xNET_mini-1Gb/WAN/RS communication card. As it's predecessor it consists of two independent 1 Gbit network switches.
The network switch no.1 is intended solely to transmit data related to basic EST VES system functions, that is performing tasks of alarm voice system and AVB support.
The network switch no. 2 is intended for remote connections. The card supports TCP/UDP/PTP/DHCP protocols and assures audio data exchange in CPU-OFF mode via an innovative UTC protocol. This card is not equipped with an RS485port but supports PoE technology on one of the RJ45 ports to power e.g. fireman microphone.

Unlike the EST ENT VES system in the EST VES devices the communication card also doubles as the main CPU card. It is responsible for reproducing audio messages from the SD card and sharing them locally or globally while also performing system and control functions.

The card is capable of reproducing 8 messages at a time and supports SD cards up to 32 GB for individual messages, as well as event or defect logs or system update files.

The communication card:

- » has two switches (2 LAN 10/100/1000 ports), system (for VAS communication) and for remote connections (disconnected during fire-fighting) (1 LAN/WAN 10/100 port – configurable working mode),
- » is equipped with VAS switch with AVB support,
- » supports TCP/UDP/PTP/DHCP protocols,
- » assigns IP addresses dynamically,
- » has PoE active supply feature,
- » in CPU-OFF mode. It transmits audio data via independent protocol,
- » in the future it will allow using network infrastructure for other Audio-Video purposes.



Drawing 12. EST-xNET_mini-1Gb communication card

Table 4. Technical parameters of EST-xNET_mini-1Gb communication card

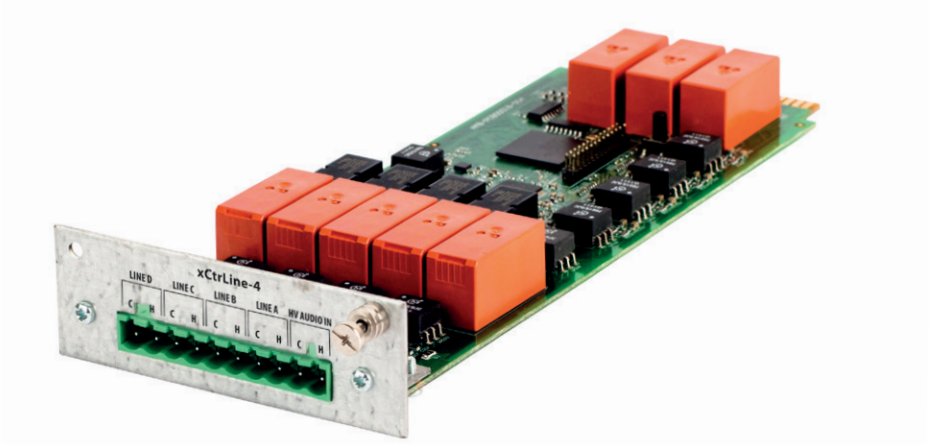
Model	EST-xNET_mini-1Gb
Source of power	Control Unit main backplane
Power consumption	48 V about 100 mA; Input / output / PoE extension – max. consumption 360 mA, Typical consumption depends on devices connected to the card via RJ45 connector (PoE) max. 15 W
Optical module – type of connector	none
Number of logical inputs / outputs	none
Source of parametric input signal	Does not apply
Type of logic input / output seats	Does not apply
PoE output voltage, load capacity	48 V, 0,3 A of load capacity
Number of RS485 connectors	none
Max. length of RS485 cable	Does not apply
Working temperature	0°C to +60°C
Ambient humidity during operation	from 15% to 80% (without condensation)
Storage temperature	-20°C to +70°C
Ambient humidity during storage	from 15% to 80% (without condensation)
Dimensions	70 x 160 x 30 (mm)

6.1.2.3 EST-xCtrLine-4 – Control card of 4 loudspeaker lines

EST-xCtrLine-4 card provides 4 independent outputs of loudspeaker lines (A,B,C,D).

The card relays 100 V signal to loudspeaker lines from individual HV audio input placed on the card's front panel or the internal 100 V bus available for all control cards.

The card allows switching between main and back-up amplifier modules.



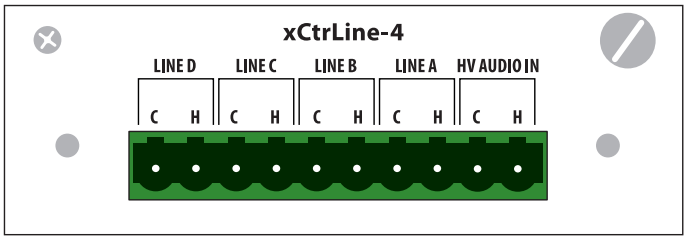
Drawing 13. EST-xCtrLine-4 loudspeaker lines control card

Line measurements can be performed by means of two various methods:

- » impedance,
- » loop.

The card detects short-circuit, open-circuit and absence of elements.

⚠ **Maximum power which EST-xCtrLine-4 can handle is 800 W for 100 V line. Each output on the card can handle up to 300 W (100 V Line), in the parallel connection of the A-B, C-D maximum load is 450 W.**



Drawing 14. EST-xCtrLine-4 loudspeaker lines control card

Table 5. Technical data of EST-xCtrLine-4

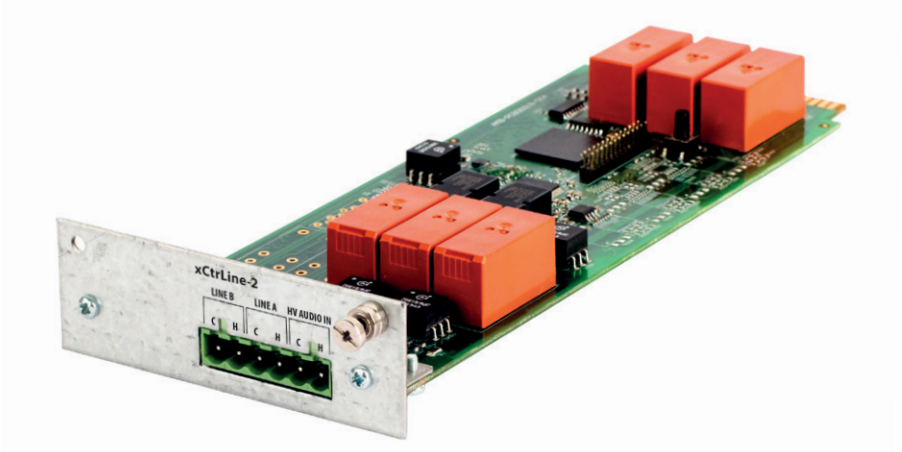
Model	EST-xCtrLine-4
Power supply	Internal form the Control Unit backplane
Maximum current consumption	152 mA for 48 V
Type of connector	10 pin screw terminal type PHOENIX, 5.08 mm
Impedance measurement frequency	1 kHz to 48 kHz
Frequency of the signal for EOL modules	18 kHz to 24 kHz
Maximum measured current	20 A
Maximum measured voltage	200 V
Accuracy of measurement	Up to 5%
Operating temperature	0°C to 60°C
Operating Humidity	15% to 80%
Storage Temperature	-20°C to 70°C (non-condensing)
Storage Humidity	5% to 95% (non-condensing)
Dimensions	70 x 215 x 30 (mm)
Accessories	Screw terminals 10 pins, the distance between the partitions 5.08 mm

6.1.2.4 EST-xCtrLine-2 – 2 loudspeaker lines control card

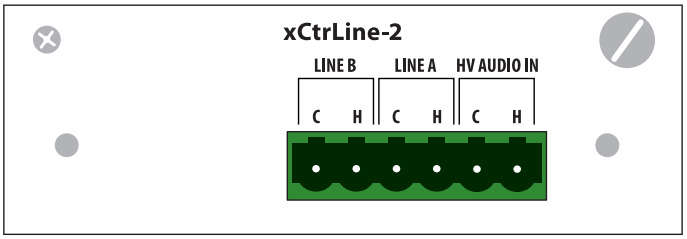
EST-xCtrLine-2 card provides 2 independent loudspeaker line outputs (A,B).lcd

The card relays of 100 V signal to loudspeaker lines from individual HV audio input located on the card's front panel or from the internal 100 V bus available to all control cards.

The card allows switching between main and back-up amplifier modules.



Drawing 15. EST-xCtrLine-2 card model



Drawing 16. EST-xCtrLine-2 card model

Line measurements can be performed by means of two various methods:

- » impedance,
- » loop.

The card detects short-circuit, open-circuit and absence of elements.

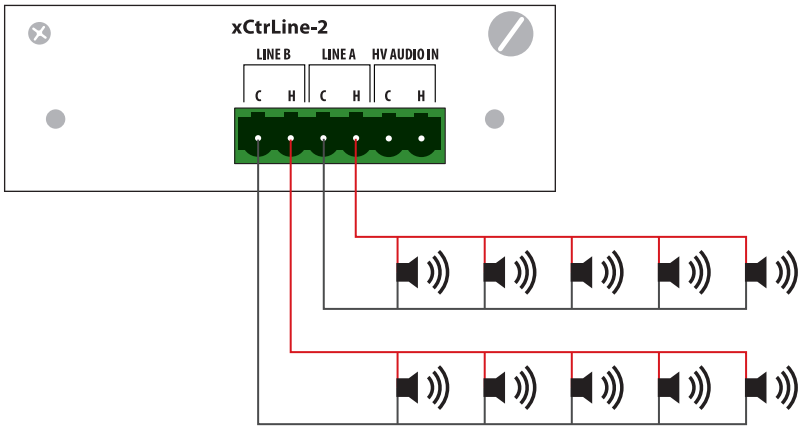
⚠ **Maximum power which EST-xCtrLine-2 can handle is 600 W for 100 V line. Each output on the card can handle up to 300 W (100 V Line), in the parallel connection of the A-B, C-D maximum load is 450 W.**

Table 6. Technical data of EST-xCtrLine-2

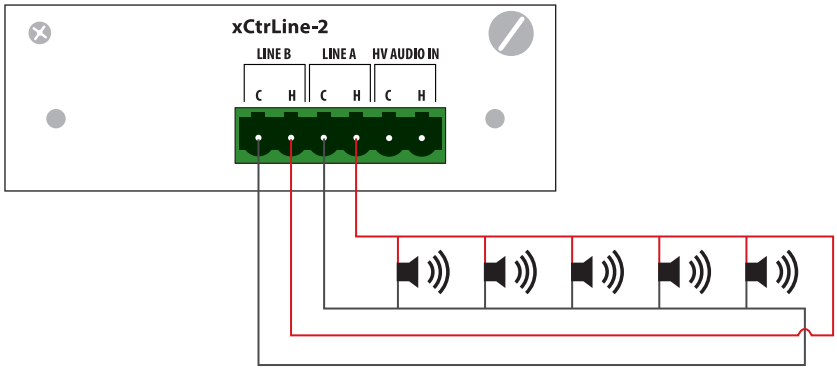
Model	EST-xCtrLine-2
Power supply	Internal form the Control Unit backplane
Maximum current consumption	121 mA for 48 V
Type of connector	6 pin screw terminal type PHOENIX, 5.08 mm
Impedance measurement frequency	1 kHz to 48 kHz
Frequency of the signal for EOL modules	18 kHz to 24 kHz
Maximum measured current	20 A
Maximum measured voltage	200 V
Accuracy of measurement	Up to 5%
Operating temperature	0°C to 60°C
Operating Humidity	15% to 80%
Storage Temperature	-20°C to 70°C (non-condensing)
Storage Humidity	5% to 95% (non-condensing)
Dimensions	70 x 215 x 30 (mm)
Accessories	Screw terminals 6 pins, the distance between the partitions 5.08 mm

Connecting loudspeaker lines illustrated with an example of xCtrLine-2 card

You can connect loudspeaker lines by means of 3 methods: impedance, loop and EST-EOL end-of-line module.



Drawing 17. Impedance connection



Drawing 18. Loop connection

6.1.3 Built in amplifier modules

EST VES systems are equipped with built in amplifier modules. This enables standalone operation as a complete VAS system.

Built in amplifier module options:

1. **2001 series** units use two 160 W amplifier modules and a single switchable transformer. This enables one of the amplifiers to work as the main unit while the second one provides redundancy
2. **4001 series** units use two 320 W amplifier modules with two transformers. This enables one of the amplifiers to work as the main unit while the second one provides redundancy
3. **4002 series** units use two 320 W amplifier modules with two transformers. This enables both of the amplifiers to work either simultaneously with the total output limited to 320 W or with one used as main and the other one as backup.

Ensure that the volume level of audio sources is set to minimum and the loudspeakers and all equipment are connected properly before turning the amplifier on.

CAUTION: The system is activated about 3 seconds after turning the device on. This is the regular operation of the amplifier that results from work of embedded automatic protection of circuits, loudspeakers and other connected components.

6.1.3.1 Technical details

Table 7. Technical specifications of amplifier modules

Model	160 W	320 W
Specifications		
Type	Class D	Class D
Audio channels	1	1
Output voltage	50 V, 100 V	50 V, 100 V
Power supply	DC	DC
Power supply voltage	48 V (42-57 VDC)	48 V (42-57 VDC)
Rated load	62,5 Ω + 200 nF	31,25 Ω + 200 nF
Pass band (-3 dB)	75 Hz – 20 kHz	75 Hz – 20 kHz
Channel separation	>70 dB	>70 dB
Signal to noise ratio SNR	>80 dB (curve A)	>80 dB (curve A)
Total harmonic distortion THD (rated load / 1 kHz)	0,01%	0,01%

6.1.4 EST VES Charger

The Charger module is responsible for distribution of uniterrupted power supply for all internal units and auxiliary outputs. It supplies the devices with guaranteed 42…57,6 VDC and 24 VDC.

As a main source of power it uses a switching power supply Unit; as a source of back-up power supply, it uses the VRLA battery bankconsisting of four 12 V batteries with the capacity of up to 60 Ah.

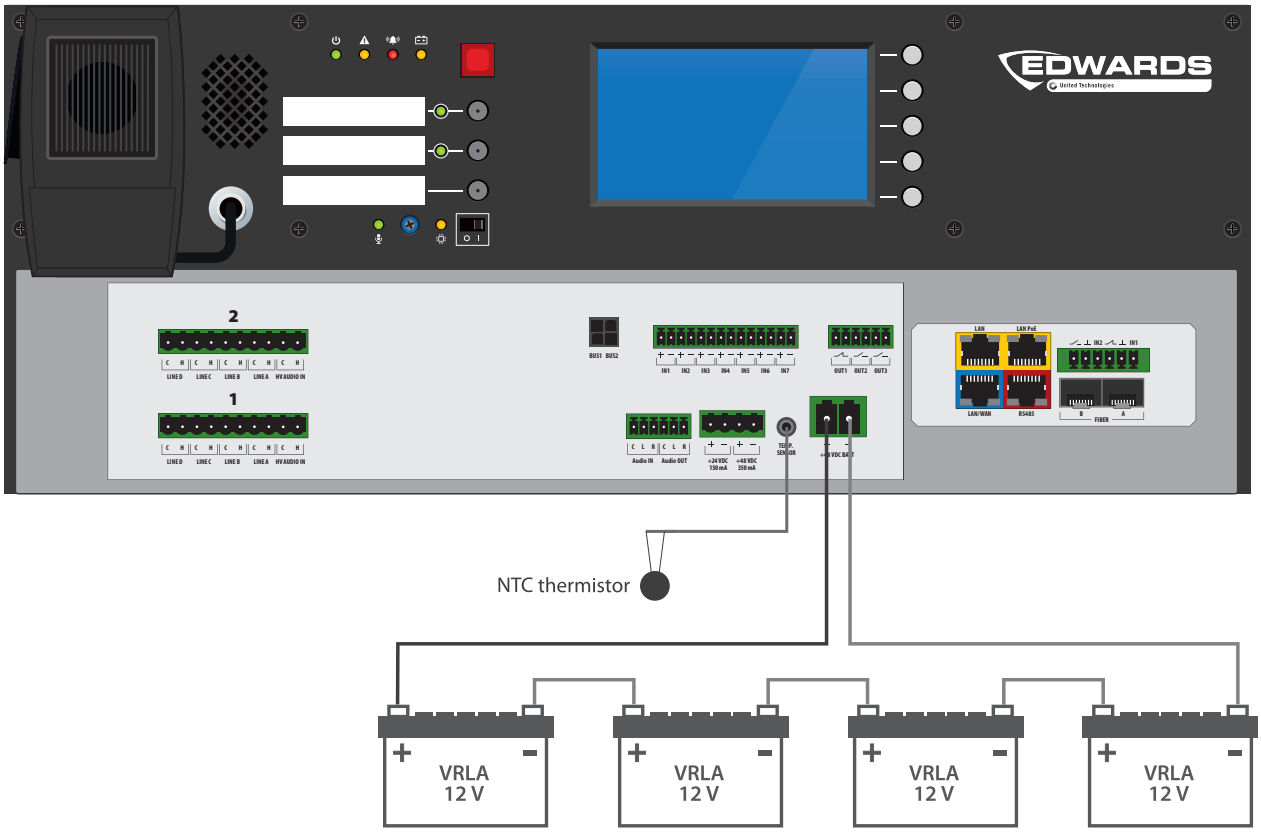
Charger module monitors fuses and output parameters of each circuit, it maintains the battery in charged condition, ensures temperature compensation of charging parameters and monitors series resistance of the battery and its wiring in compliance with Exhibit No. A2 of the EN 54-4 Standard.

Charger module ensures uninterruptible switching to back-up battery power in case of main power decay or failure of the Power Supply Unit.

Additionaly Charger module supports:

- 7 logic inputs and 3 relay outputs,
- auxiliary "BUS CTRL" port for connecting the wiring loom for two line control cards (only in the EST VES 4002x series devices)
- replaceable battery for the internal system clock
- audio line in, unbalanced, with stereo to mono conversion (1 ch)
- audio line out, unbalanced (1ch for L+R out)

In order to connect the batteries to the charger use the battery cable supplied with the device. Be sure of proper connection (polarity) between batteries and terminals. Lastly connect the thermistor temperature sensor to the "TEMP SENSOR" jack and place it near installed batteries. Only unused and type compliant batteries (same manufacturer, equivalent capacity and voltage, same manufacturing date) may be connected.



Drawing 20. Connection between VRLA batteries, temp. sensor and EST VES Charger module

Table 8. Technical specification of the EST VES Charger card

Model	EST VES Charger
Electrical	
DC main power supply	54 VDC from Power Supply Unit
DC input	Edge connector to backplane
DC input protection	15 A 63 VDC SMD slow-blow fuse (non replaceable)
DC outputs	Internal (edge connector): › 2x 48 V for power amplifiers, each output max. 10 A 42…57 VDC › 48 V for PoE, max. 1 A › 5 V max. 3 A › 12 V max 1,7 A › -12 V max 0,3 A Ext (Phoenix-type connector, 3.5 mm raster): › 1x 24 V max. 0,15 A › 1x 48 V max. 0,35 A
DC output protection	Int: › Amplifiers supply: replaceable fuses 58 VDC Low Profile Mini 891 series blade fuse › 5 A for 2xxx series, 10 A for 4xxx series Ext: › 48 V output: 0,5 A non replaceable PTC fuse › 24 V output: 0,2 A non replaceable PTC fuse
Summary maximum all DC output loads	Total output DC load shouldn't exceed 500 W
Backup Power Supply	
Battery (type)	4 pcs., VRLA 12 V 15-200 Ah
Charging method	constant voltage or multi-stage
Charging current	2,3 A max.
Charging voltage	54,6 V ± 0,6 V (at 25°C)
Temperature correction coefficient	-80 mV/ °C
Battery connection	Dedicated wiring Phoenix Contact 1720466 with AWG8 connection cord 4x 12 V
Battery circuit protection	Fuses 58 VDC Low Profile Mini 891 series blade fuse Positive cord: 7,5 A for 2xxx series, 15 A for 4xxx series Negative cord: 20 A
Maximum total serial resistance of wiring, fuses and batteries	60 - 160 mΩ (adjustable in configuration SW)
Temperature	
Temperature sensor	Dedicated temperature sensor
Operating temperature	-5°C to +40°C

6.2 External devices

6.2.1 EST-DFMS fireman microphone

The fireman microphone is intended to do the following:

- » transmit voice messages or system warning and evacuation messages to selected zones during fire-fighting,
- » activate emergency messages,
- » call general-purpose messages,
- » select particular zones,
- » send voice messages "live".

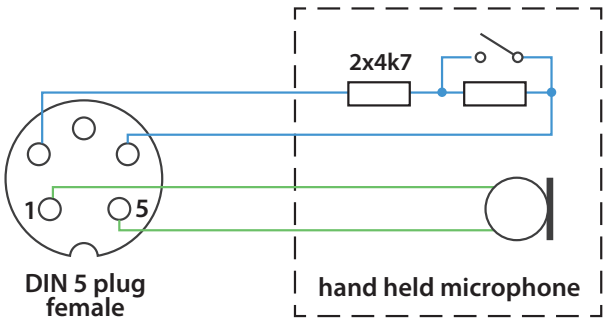
The microphone power is supplied locally by a certified fire cord (48 V) or remotely by PoE.

The device has programmable function buttons which can be assigned given functions. It is also possible to connect up to 5 EST-EKB-20M extensions with an additional 20 function buttons each. Up to 253 fireman microphones can operate in a single system. The microphone communicates with control units either through an ethernet network or via an optical fiber connection (1000BASE-X).

Another system function is the “CPU OFF” function. The entire system enters a state allowing transmission of voice messages from the unit on which this function is activated to all alarm zones without the use of the control unit. This enables the system to transmit to all zones even during central processor failure.

The microphone automatically detects and indicates failures such as function button damage and audio signal track damage.

It is possible to connect keyboard extension by a dedicated 10 pin female connector on the right side wall. The microphone is equipped with 2 slots for SFP modules, 2 LAN 10/100/1000 ports, 1 LAN 10/100 port, 1 RS485 port.



Drawing 21. Microphone pins diagram

Main features:

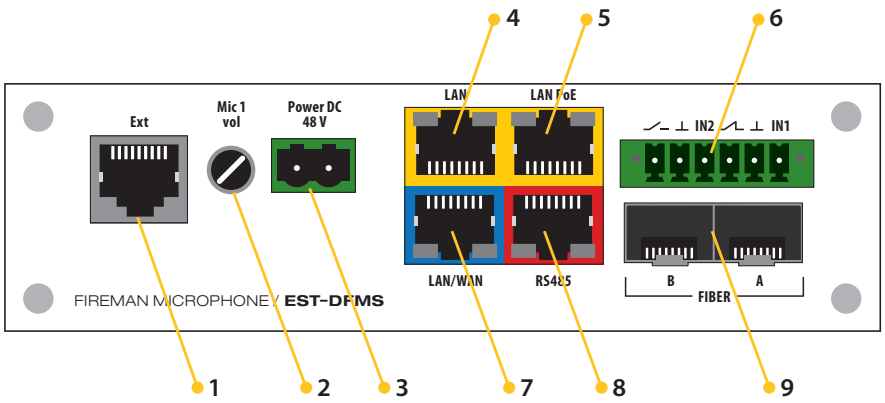
- Built-in 2 contact inputs and 2 relay outputs
- Powered using PoE or external PSU
- Black-box function – recording all announcements played back during an alarm
- Built-in SFP modules and CAT5e for flexibility in topology choice (either loop or star)
- RS 485 for communication with external systems
- Intercom function between all fireman and zone microphones

Main system functions:

- Reporting equipment errors detected on cards
- Reporting incorrect input voltage level (short-circuit/open-circuit)
- Defining short-circuit/open-circuit/high/low level statuses for every output
- Controlling any logic output via any system module which supports scripts
- Using values/status of any output via any system module which supports scripts
- Calling scenarios, actions by any input status
- Assigning any output to any system event
- Defining NC/NO inputs

Drawing 22. EST-DFMS fireman microphone

1. **Built-in loudspeaker**
2. **Microphone with "Push to talk" button**
3. **LED indicators** for: Power [green], Failure [yellow], Evacuation [red] (EVAC)
4. **"Activate Evacuation" button**
5. **Functional button** – can be programmed in any way, most frequently as "Evacuation"
6. **Functional button** – can be programmed in any way, most frequently as "Warning"
7. **Functional button** – can be programmed in any way, most frequently as "Cancel alarm"
8. **LED indicators for functional buttons**
9. **CPU OFF switch –** green LED indicates the CPU-OFF active mode
10. **Broadcasting readiness indicator** – flashing green LED after pressing the PTT signals readiness to broadcast a message.
11. Button description card slot



Drawing 23. Upper panel of fireman microphone

1. **RJ45 socket** to connect microphone extension EST-EKB-20M
2. **Microphone gain level adjustment** from -6 dB to +6 dB
3. **2-pin socket to connect power supply** in accordance with EN54-4
4. **RJ45 socket to support LAN connections**
5. **RJ45 socket to support LAN with PoE connections** – it is possible to power the microphone directly from the Control Unit via one CAT5 cable (data + voltage)
6. **Phoenix-type connector, two logic inputs or two relay outputs** (every channel is configured on a case-by-case basis, and by default, both are set as parametric inputs)
7. **RJ45 socket to support LAN/WAN connections**
8. **RJ45 socket** in accordance with RS485 transmission standard
9. **Two SFC module slots**

EST-DFMS fireman microphone consists of the EST-xNET-1Gb/WAN/RS communication card coupled with the fireman microphone keyboard module, extension support module and power supply module.

Table 9. Technical data of EST-DFMS fireman microphone

Model	EST-DFMS
Power source	via LAN PoE or local power supply compliant with EN 54-4
Input voltage	48 V connector 2 pin screw 5.08 mm
Power consumption	max 266 mA for 48 V DC / 5 keyboard extensions
Protection rating	31
Transmission medium	fiber, UTP Cat. 5e
Number of logic inputs	2
Number of relay outputs	2
Connector type for logic input/output	screw 3.5mm, 6 pin
Type of fiber optic	modules type SFP / connector SC / LC / multimode or single-mode / E 30 or E 90, OM lub OM2,

Listening speaker	
Output	0,5 W
SPL	78 dBA (@1m, 1W)
Frequency response (3dB)	450 Hz … 8 kHz
Audio input	
Frequency response	400 Hz – 6 kHz (@3dB)
Impedance	500 Ω
Signal	-40 to 30 dBu
Sensitivity	-66 dB
Cable type, length	spiral - 1,5 m
Microphone connector	5 pin DIN
Keyboard and controls	
Number of buttons	3
Number of control panel buttons	2 LED / button
Dimensions of the buttons description	15x25 mm
Three normative LED controls	color LEDs: power – green / failure – yellow / alarm – red
Logic Input / Output	
Number of I / O logic	2 independent channels; galvanically isolated; each channel has 1 fully programmable input and output (NO / NC)
Parametric input source for monitor mode	passive; standard resistors 10 k || 10 kΩ or 4,7 kΩ - - 4,7 kΩ detection thresholds 0/1 / open / set in the application configuration
Type of socket I / O logic	6-pin screw terminal type PHOENIX, 3.5 mm
CPU-OFF switch	slide switch, two position, signaling LED color: yellow
Other parameters	
Operating temperature	0°C to 60°C
Operating humidity	15% to 80%
Storage temperature	-20°C to 70°C
Storage humidity	5% to 95%
Dimensions	150 (W) x 55 (H) x 210 (D) mm
Accessories	connector with screw terminals 6 pins, the distance between the partitions 5.08 mm

6.2.2 EST-DMS zone microphone

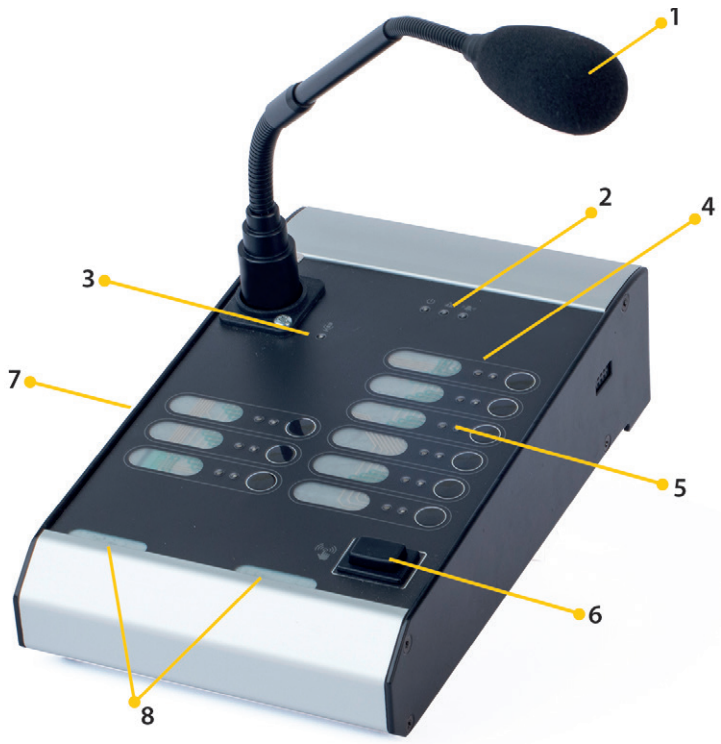
Zone microphone is used to:

- » call general-purpose messages,
- » select particular zones,
- » send voice messages "live".

This zone microphone is used to activate general public announcements, to choose individual zones and to broadcast live voice messages. It can be connected directly to a selected Control Unit or via an additional Ethernet switch. A zone microphone can be powered locally (48 V) or from a Control Unit via POE.
It is equipped with programmable function keys which can be used to assign functions as required. All operational parameters can be programmed e.g. assignment of zones to various keys, naming of zones and zone groups, determining priorities, setting up access rights to announcements, volume controls, 'push to talk' key, music on/off and music routing. Furthermore, LEDs on the EST-DMS provide information about existing fault on the system, any faults in a specific speaker zone, evacuation mode on and type of announcement in the zone (BGM, PA, EVAC, Warning, fireman microphone).
Up to 5 EST-EKB-20M keyboard extensions with additional function keys can be attached to a zone microphone.
Similarly to a fireman microphone, it is also equipped with an intercom function and is able to communicate with other microphones in the system.

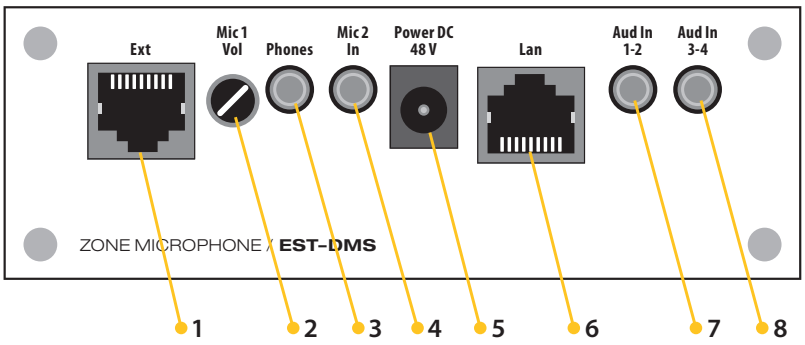
Main features:

- » Monitored connection of the unit to the system
- » 9 fully-programmable keys with a possibility of connecting up to five 20-key extensions
- » 4 non-symmetrical audio inputs, (1/8") stereo jack connector
- » Built-in speaker
- » Stereo jack sockets for a headset use
- » Implemented intercom function
- » Power supply via POE



Drawing 24. EST-DMS zone microphone

1. **Microphone**
2. **LED indicators** for: Power [green] (Power), Failure [yellow] (Fault), Evacuation [red] (EVAC)
3. **Active microphone LED** – the LED signals that the device is ready to transmit a voice message, if a gong is programmed, the microphone activates shortly after the sound is emitted
4. **Functional buttons** – freely programmable
5. **LED indicators for functional buttons**
6. **"Push to talk" button** – the button is programmed in order to activate microphone
7. **Built-in loudspeaker**
8. Buton description card slot



Drawing 25. EST-DMS zone microphone connectors diagram

1. **RJ45 socket to connect microphone extension EST-EKB-20M**
2. **Digital potentiometer**
3. **Headset 1/8" jack socket**
4. **Headset mic 1/8" jack socket**
5. **Power point 48 V**
6. **Communication port** providing connection with the control unit with the possibility to recieve PoE when connected to the EST-xNET_mini series cards
7. **2 Audio inputs**
8. **2 Audio inputs**

Table 10. Technical data of EST-DMS zone microphone

Model	EST-DMS
Power supply	via PoE (RJ45) or by additional 48 V power supply / 15 W DC connector 5,5 / 2,1 mm
Protection rating	IP 31
LCD	N/A
Number of outputs	2 channel audio (monitor speaker, headset)
Number of inputs	4 channels (single-ended input bgm)
Listening speaker	
Output	0,5 W
SPL	78 dBA (@1m, 1 W)
Frequency response (3dB)	450 Hz … 8 kHz
Output for headphones (headset)	mini-jack 3,5 mm
Audio Inputs	
Input type	single-ended, 4x bgm
Frequency response	50 Hz … 18 kHz (@3dB)
ADC resolution	32 bit
Sampling frequency	48 kHz
Connector	2x mini-jack 3,5 mm
Microphone input	
Input, connector type	balanced inputs, XLR
Condenser microphone, gooseneck	
Frequency response	100 Hz … 10 kHz
Sensitivity	-45dB
Keyboard and controls	
Number of keys	9 + PTT
Additional three normative controls	power – green / failure – yellow / activity – green
LED colors	RGB (red, green, yellow, blue)
Other parameters	
Operating temperature	-8°C to 60°C
Operating humidity	15% to 80%
Storage temperature	-20°C to 70°C
Storage humidity	5% to 95%
Dimensions	120 (W) x 55 (H) x 210 (D) mm
Weight	1,4 kg

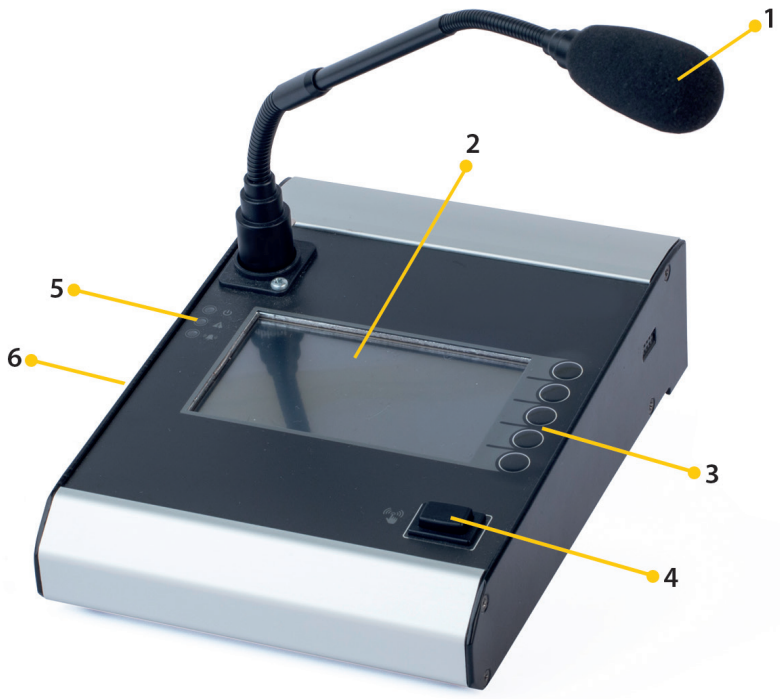
6.2.3 EST-DMS-LCD – zone microphone with LCD

For intuitive and easier operation, EST-DMS-LCD has been equipped with a touch-screen display. Navigation in the menu and change of settings is possible by means of both control buttons located next to LCD display, and touch-screen display. EST-DMS-LCD can only be used for purposes not related to evacuation/ alarm.

Zone microphone is equipped with intercom function which provides two-way communication between the zone microphones. EST-DMS-LCD has 4 local audio inputs on board and 1 audio output which allows for further system extension. Communication with control units takes place via Ethernet 10/100BASE -TX, 1 LAN port.

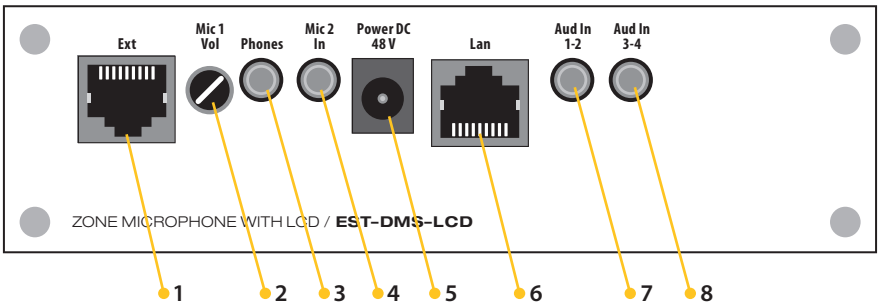
Main features:

- 4,5" LCD touch screen for fast and clear matricing and system management
- Four non-symmetrical audio inputs, (1/8") stereo jack connector
- Built-in speaker
- Stereo jack sockets for Headset / Audio out
- Implemented intercom function
- Extension up to five 20-button modules
- Power supply via POE or locally 48 VDC



Drawing 26. Zone microphone with EST-DMS-LCD display

1. **Microphone**
2. **Display**
3. **Functional buttons** – by default they support auxiliary functions when navigating in the menu:
   a. HOME – press to return to first menu page
   b. ENTER – ENTRANCE button– press to select in the microphone menu
   c. ↑ – up-arrow button – press to navigate in the microphone menu
   d. ↓ – down-arrow button – press to navigate in the microphone menu
   e. BACK – BACK button – press to return to previous microphone menu item
4. **"Push to Talk" button** – program this button to activate microphone
5. **LED indicators** for power [green], failure [yellow], evacuation [red] (EVAC)
6. **Built-in speaker**



Drawing 27. EST-DMS-LCD zone microphone connectors diagram

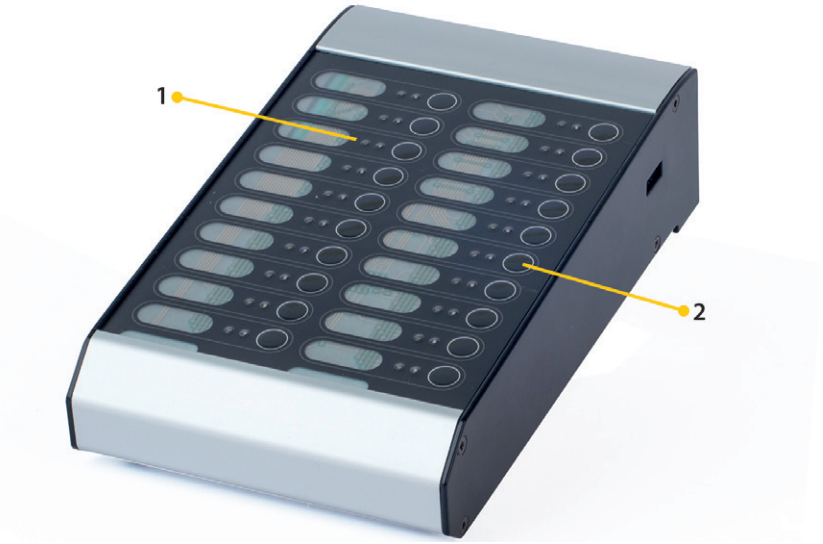
1. **RJ45 socket to connect microphone extension EST-EKB-20M**
2. **Digital potentiometer**
3. **Headset 1/8" jack socket**
4. **Headset mic 1/8" jack socket**
5. **Power point 48 V**
6. **Communication port** with control unit and possibility of supplying microphone via LAN PoE port (works only when EST-xNET-1Gb/WAN/RS communication card has been supplied with PoE support)
7. **2 Audio inputs**
8. **2 Audio IN inputs**

Table 11. Technical data of EST-DMS-LCD zone microphone

Model	EST-DMS-LCD
Power supply	via PoE (RJ45) or by additional 48 V power supply / 15 W DC connector 5,5 / 2,1 mm
Protection rating	IP 31
LCD	LCD, 272x480 resolution, 4.5 "resistive touchscreen
Number of outputs	2 channel audio (monitor speaker, headset)
Number of inputs	4 channels (single-ended input bgm)
Listening speaker	
Output	0,5 W
SPL	78 dBA (@1m, 1 W)
Frequency response (3dB)	450 Hz … 8 kHz
Diameter	50 mm
Output for headphones	mini-jack 3,5 mm
Audio Inputs	
Input type	single-ended, 4x bgm
Frequency response	50 Hz … 18 kHz (@3dB)
ADC resolution	32 bit
Sampling frequency	48 kHz
Connector	2x mini-jack 3,5 mm
Microphone input	
Input, connector type	balanced inputs, XLR
Condenser microphone, gooseneck	
Frequency response	100 Hz … 10 kHz
Sensitivity	-45 dB
Keyboard and controls	
Number of keys	5 + PushToTalk
Additional three normative controls	power – green / failure – yellow / activity – green
Other parameters	
Operating temperature	-8°C to 60°C
Operating humidity	15% to 80%
Storage temperature	-20°C to 70°C
Storage humidity	5% to 95%
Dimensions	150 (W) x 55 (H) x 210 (D) mm
Weight	1,4 kg

6.2.4 EST-EKB-20M – microphone keyboard extension

Every extension added to fireman microphone or zone microphone provides additional 20 functional buttons. The extension has two I2S interfaces to connect another extension. In accordance with EN54-16, one of the buttons should be assigned to a visual and sound signal test of the microphone unit.



Drawing 28. EST-EKB-20M microphone extension

1. **LED indicators** – freely programmable; RGB left LED, green right LED
2. **Functional buttons** – freely programmable

Table 12. Technical data of EST-EKB-20M microphone extension

Model	EST-EKB-20M
Power supply	RJ45 from DFMS or DMS
Protection rating	IP 31
Keyboard and controls	
Number of keys	20
Number of LED	20x RGB + 20x green
LED color	RGB (red, green, blue) + separate LED green
Other parameters	
Operating temperature	0°C to 60°C
Storage temperature	-20°C to 70°C
Operating humidity	15% to 80%
Storage humidity	5% to 95%
Weight	1,4 kg
Dimensions of the space for the description of the buttons	15 x 25 mm
Dimensions	120 (W) x 55 (H) x 210 (D) mm

6.2.4.1 *Functional buttons performance*

Every functional button can be associated with any VAS function possible to perform by a button push. The button function is set by program, during VAS system configuration. Depending on the function assigned to the functional button, the meaning of visual indicator signaling changes.

Detailed description of the functions that can be assigned to buttons is given in section 12.10.1 - Functions.

Functions related to alarming and sending messages via microphone:

- Alarm mode
- Failure Accept
- Failure Delete

6.2.4.2 *Functional buttons signaling*

Function button LED signalning is dependent on the function which is presently assigned to the button.

When the button serves to select a zone, the signaling is as follows:

- **Message sending indicator:**
  - Green flashing – when verbal message is sent via fireman microphone "live" in the given zone.
  - Green constant light – when in the given zone the following is reproduced:
    - In normal mode – verbal message from zone microphone, music background or alarm canceling.
  - Red flashing – when in the given zone a warning message informing about danger is reproduced.
  - Red constant light – when in the given zone an automatic evacuation message forcing persons in this zone to leave the plant immediately is reproduced.
  - Yellow flashing – in case of system failure.
  - Yellow constant light – when failure was accepted or when one of the zones has been locked (optional function from EN 54-16 norm).
  - Blue flashing – when intercom communication is requested.
  - Blue constant light – when intercom communication is activated.
  - Red flashing – when microphone message is being recorded.
  - LED steady light – when recorded message is played out.
  - Cyan flashing – when audio monitoring from the given zone is active.
  - Magenta flashing – when voice alarm status is delayed (optional EN 54-16 norm, point 7.4).
- **Availability/zone selection indicator** – green LED lights once the button corresponding to a given zone has been pushed. This indicates that the zone is ready to receive either microphone input or a message saved in system memory.

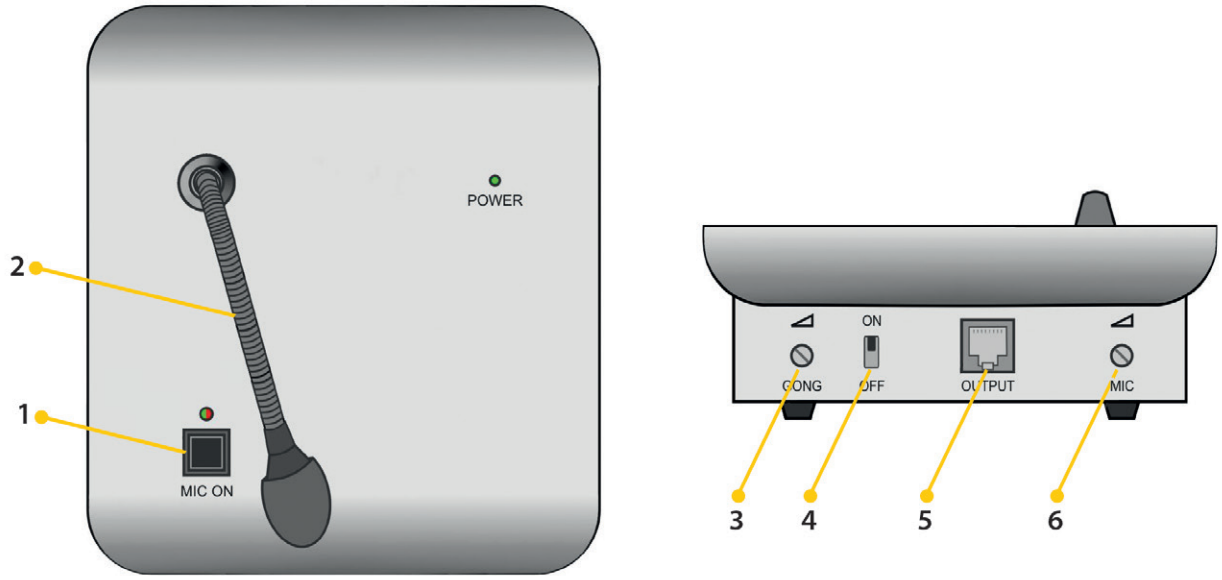
When the button is associated with failure signaling, the indication is as follows:

- **Failure indicators:**
  - Flashing of the microphone extension LED and steady yellow light of the collective failure LED – signals system failure.
  - Sound signal is generated at the same time (on microphones and Control units with LED displays.
  - Failure must be confirmed by pressing button next to flashing diode.
  - Once it has been pressed, the LED light is constant until the failure has been eliminated.

Detailed information can be found in section 8. Operation modes – LED colors.

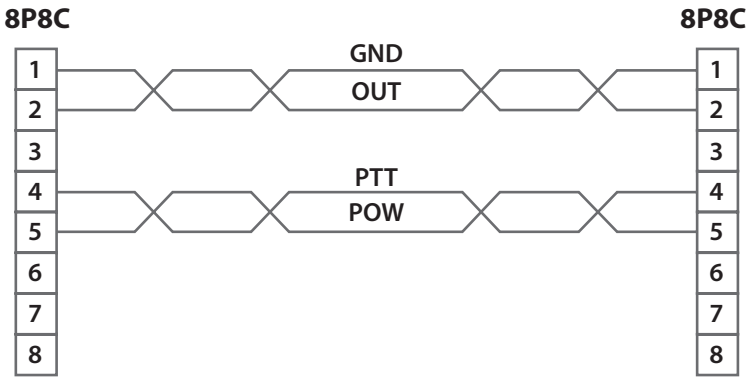
6.2.5 EST-M01 Microphone

The EST-M01 microphone is an affordable fully analog device. It is equipped with a built in gong generated onboard the device, accessible through the switch on the back panel. The gong as well as the microphone itself has an individual volume control knob also placed on the back panel of the device. To operate the device press the **MIC ON** button, the status LED will switch to steady green light. In the event of an active built in gong, the status LED will turn green once the gong has ended. When finished transmitting the message release the **MIC ON** button to deactivate the gooseneck mic.



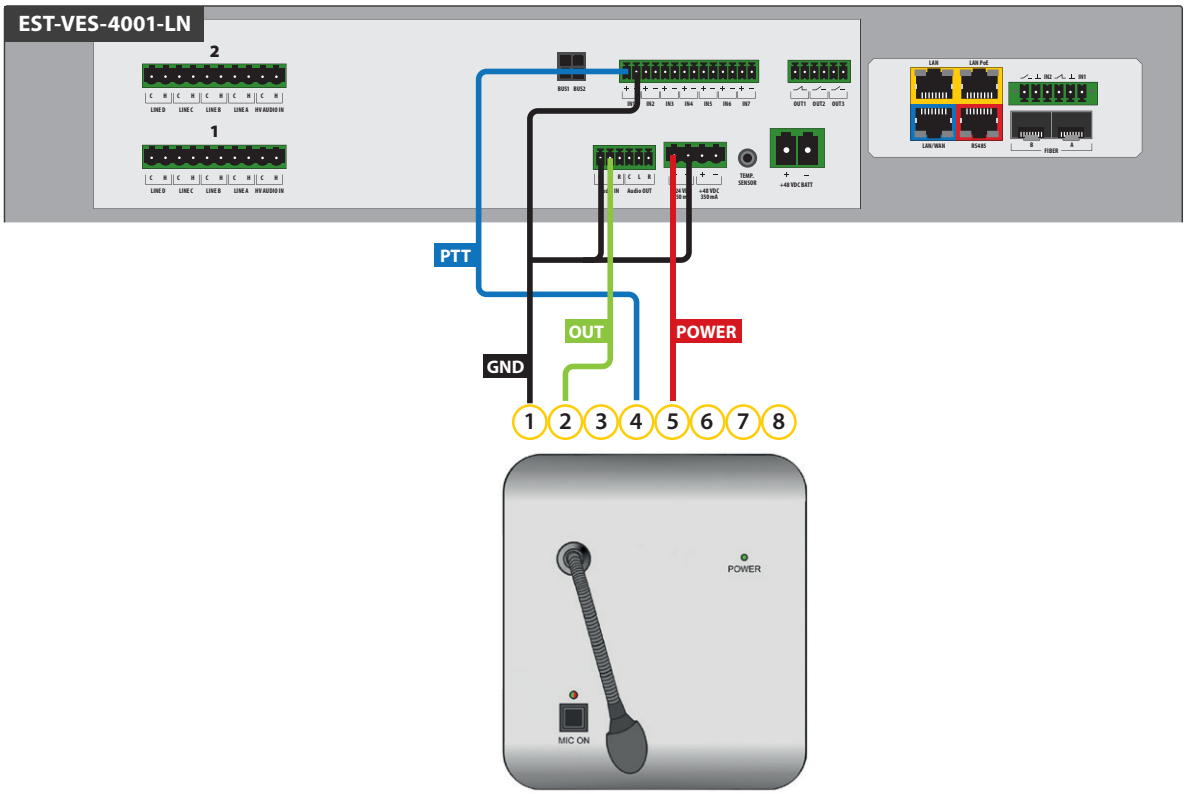
Drawing 29. EST-M01 main control placement

1. **MIC ON button**
2. **Dynamic goose neck microphone**
3. **Gong volume knob**
4. **Gong ON / OFF switch**
5. **RJ45 output connector**
6. **MIC volume (gain) knob**



Drawing 30. Microphone Connector pinout

Connection Diagram



Drawing 31. Connecting the EST-M01 microphone to EST VES

EST VES settings

- Change the generic name of the Audio input no.3 to Local Audio IN
- Create a Zone group – All Zones and add all of the available zones
- Create a new matrix and name it Microphone – add the Local Audio IN input from the available Audio inputs field and the All zones zone group
- In the Events Configuration tab assign the following events to Logical input INPUT1, contact mode:
  - Active – General – add the Microphone matrix (start)
  - Inactive – add the Microphone matrix (stop)

Table 13. Technical data of EST-M01 microphone

Model	EST-M01
Efficiency, mV / Pa	10
Output level, mV	775
Maximum distance from amplifier, m	250
Recommended cable type	UTP
Connector Type	8P8C (RJ45)
Dimensions without packaging (not more than), mm	150 x 60 x 165
Net weight (not more than), kg	1,2

7. System hardware installation

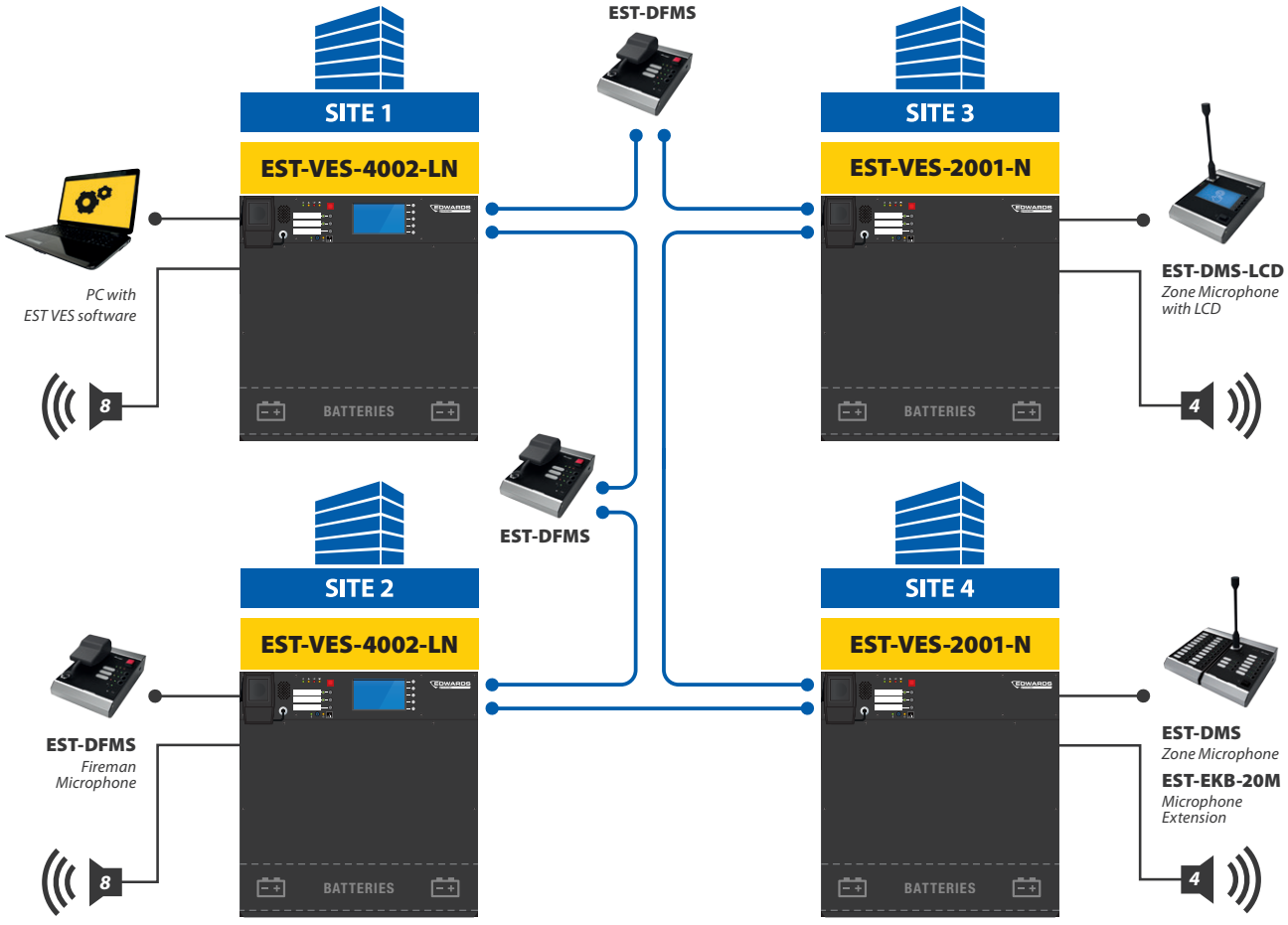
7.1 Information on limiting damage consequences

In order to avoid problems with Voice Alarm System Central Unit, it is advisable to get familiar with the contents of this manual before the first use of the central unit.

VASCU is equipped with a set of automatic functions which are responsible for testing system efficiency. FAILURE diode signals abnormalities. In such case, it is necessary to take prompt actions and, if necessary, consult a person in charge of VAS efficiency.

7.2 General connection diagram

Network connection of separated central units and fireman microphones by means of a fiber optic loop:



Drawing 32. General connection diagram

7.3 Connecting devices

EST VES central unit can be either placed in a RACK cabinet or used as a stand-alone wall mounted system. In the case of rack mount use, the cabinet schould be IP30 rated (according to EN54-2) and should be fitted with cooling fans.

In order to assure compliance of VAS central unit with norms, connections:

- with fire signaling central unit,
- sources of power,
- fireman microphones,
- network infrastructure,
- other VASCU elements,

must be carried out by suitably-trained and qualified personnel in accordance with relevant directives for electric devices.

⚠ **NOTE: It is crucial to connect the batteries to the system before startup.**

Once the power supply has been provided, connect loudspeaker lines, logic inputs and outputs, network devices.

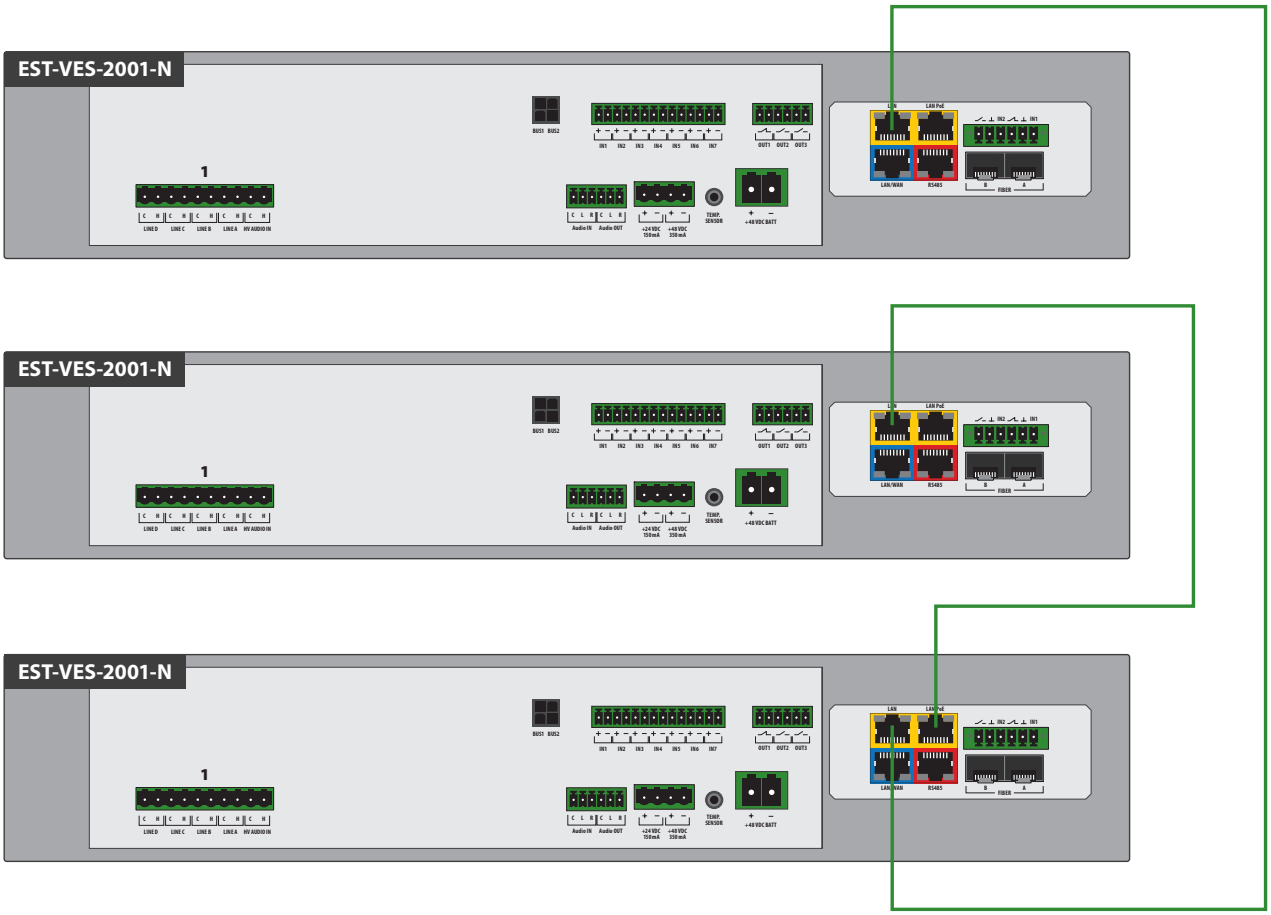
When you make sure all connections have been carried out properly, you can power up the system.

7.3.1 Control units

This section presents examples of control units connection diagrams.

7.3.1.1 Daisy Chain Topology

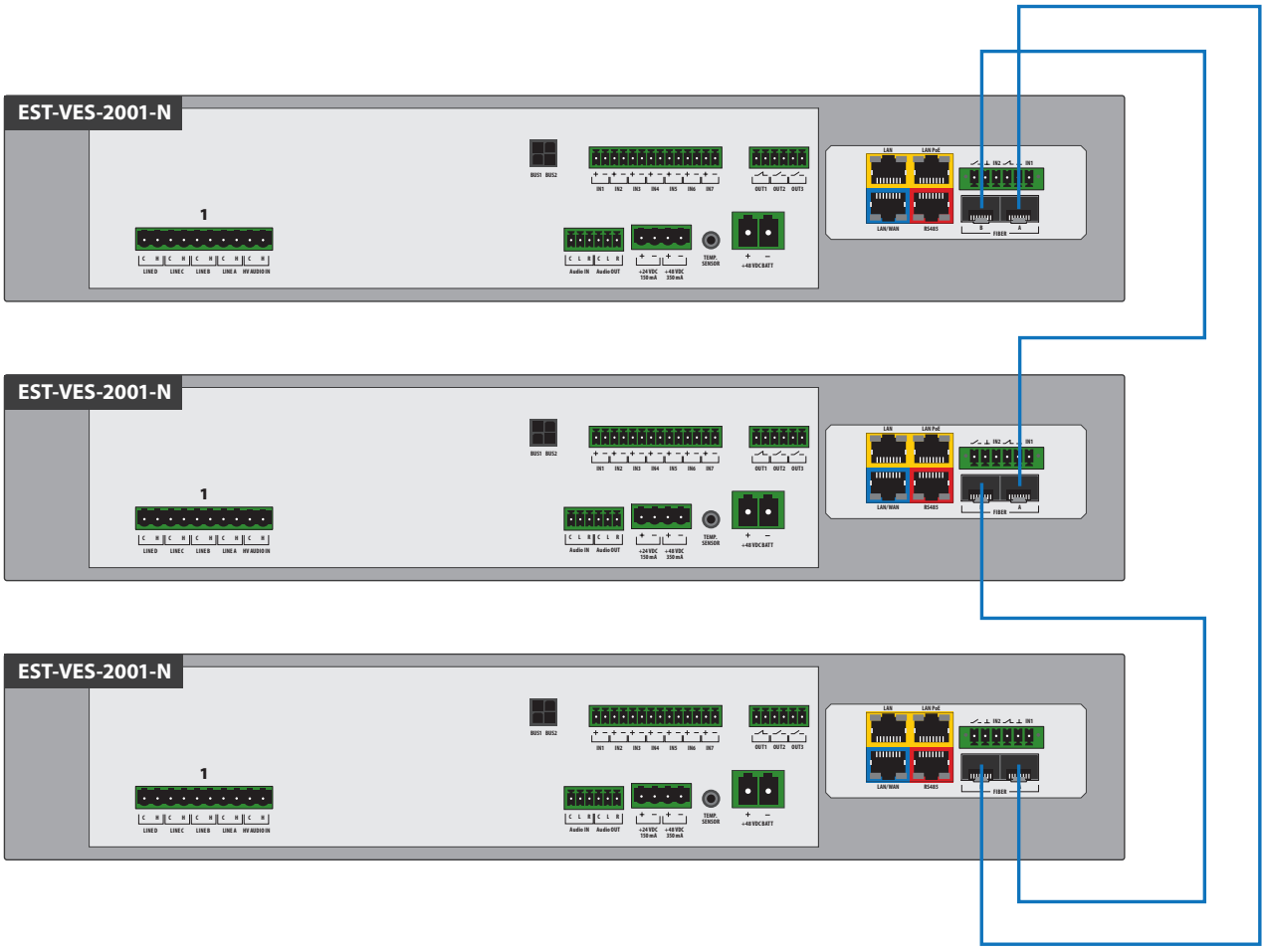
In CHAIN topology, the connection is not redundant. Connecting units in this system does not guarantee operation of the system in the event of communication cable damage. According to EN 54-16 norm, connections between VAS control units in a large scale system must be redundant. Connections in CHAIN Topology are applied locally, and in the systems not responsible for sending evacuation messages.



Drawing 33. Example of CHAIN topology control units connection

7.3.1.2 *Ring Topology*

In RING topology, the connection between system elements is redundant. The cables form a single continuous pathway for signals through each node – a ring. In the event of cable/communication optic fiber damage, the system still functions by using the remaining part of the ring.



Drawing 34. RING topology control units connection (fiber connection)

Note: this connection type applies only to xxxxN and xxxxLN series units. These devices are equipped with the xNET_mini 1Gb/WAN/RS network card providing slots for two SFP modules.

7.3.2 Batteries

It is necessary to protect batteries from short-circuit while connecting battery leads. Short-circuit may lead to system failure. Follow this manual to assure safety while connecting.

Make sure the system power has been switched off before battery is connected.

Once the batteries have been connected, make sure all terminals of all batteries have been protected against short-circuit.

Connecting batteries

» Wait over 10 seconds after the power cord was unplugged from AC socket located on the EST VES main unit.

» Never connect negative cable in the first place as in the case of short-circuit between battery positive wire and a device frame or rack cabinet element, a device damage may occur.

» Connect battery negative cable to negative terminal.

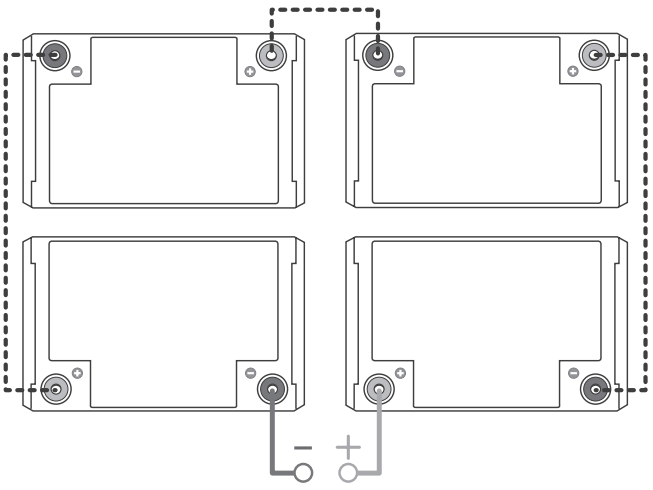
Disconnecting batteries

» Make sure battery supply is not used. To do so, check LED on the EST VES front panel which signals such state of affairs.

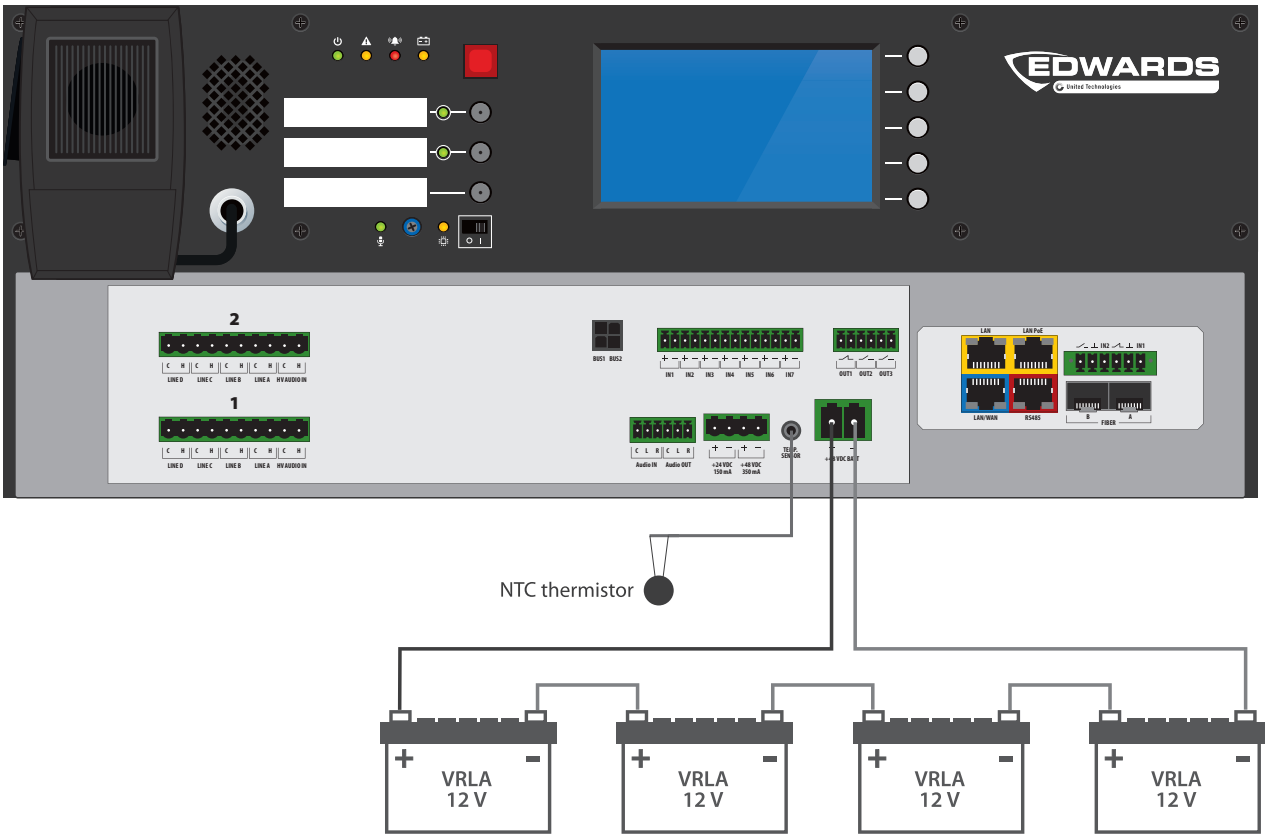
» Take out battery negative lead from terminals. Never disconnect positive wire in the first place as it may cause short-circuit if you touch device frame or rack cabinet elements. Isolate disconnected cable tip with a suitable insulator, e.g. insulating tape, to protect against short-circuit.

» Disconnect last battery lead. Isolate disconnected wire tip with a suitable insulator, e.g. insulating tape, to protect against short-circuit.

⚠ A total voltage of batteries connected to the device, loading and monitoring, according to EN 54-4 should reach 48 V DC (40-56 V DC). In the last stage of system comissioning, it is necessary to connect four VRLA 12 V batteries to the battery port located on the main connector panel of the EST VES unit via the provided cable with special regard to wire polarity. Additionally, it is necessary to connect a thermistor temperature sensor by connecting its wire to Temp Sensor connector and placing the sensor in the place where the batteries were installed.



Drawing 35. 4x12 V DC VRLA storage batteries connecting diagram



Drawing 36. Battery connection diagram

Thermistor installation:

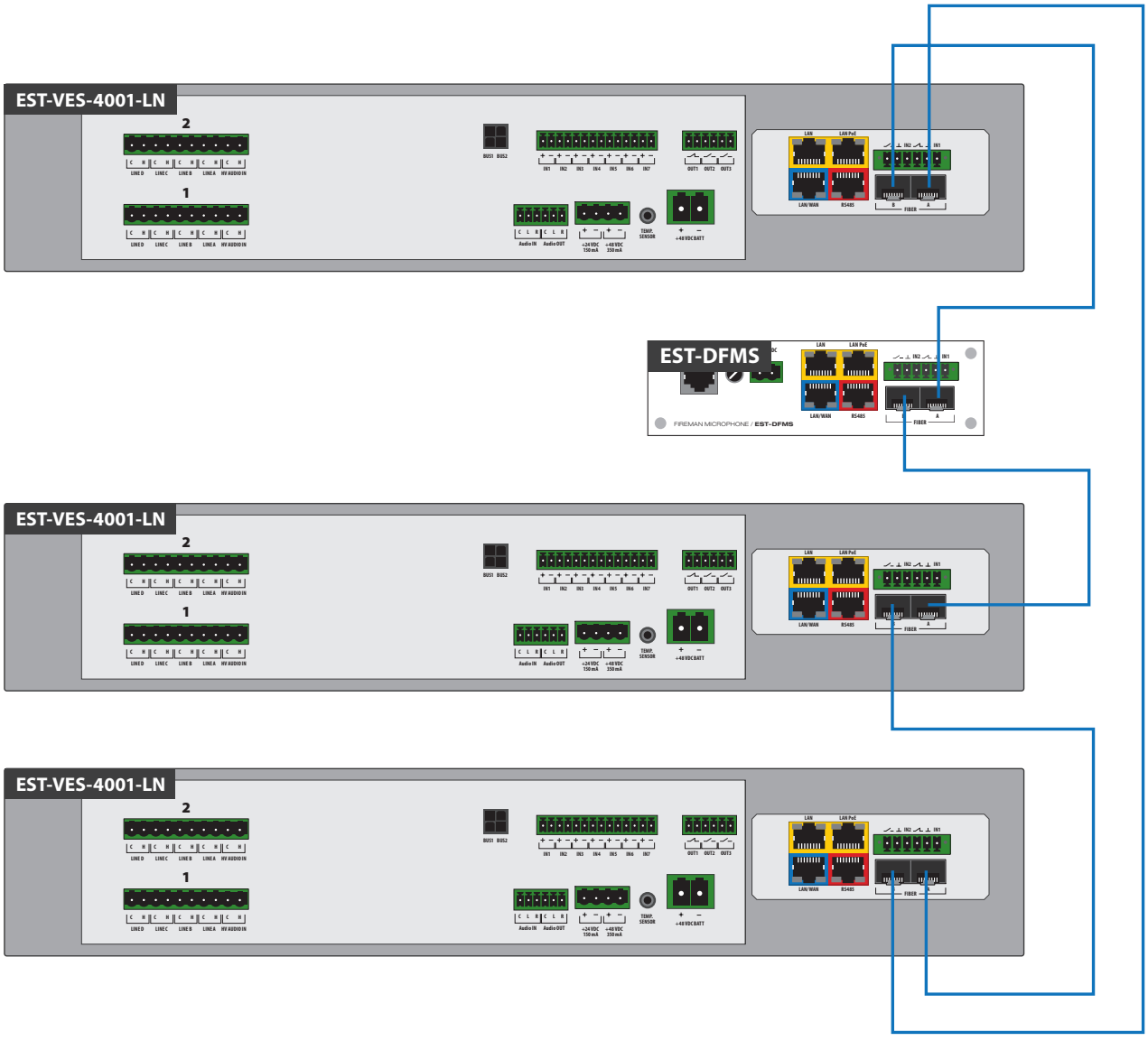
A thermistor, attached to a 3.5 mm jack on the connector panel of the EST VES unit is intended to compensate temperature changes when charging batteries. Place the thermistor between two batteries.

NOTE: the thermistor cable can be extended by several meters without any risk of communication loss

Before powering up the EST VES unit for the first time, it is necessary to perform standard inspections specified in the chapter – *Maintenance and service* – page 77.

7.3.3 Microphones

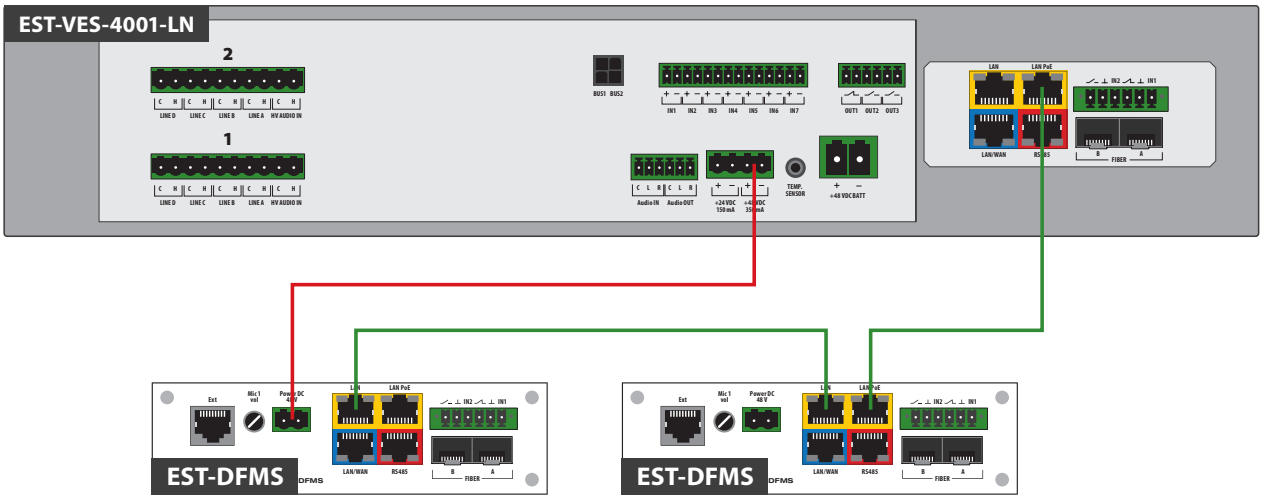
7.3.3.1 Fireman microphone RING-type optic fiber connection



Drawing 37. Fireman microphone optic fiber connection – RING topology

7.3.3.2 *Fireman microphone CHAIN-type cable connection*

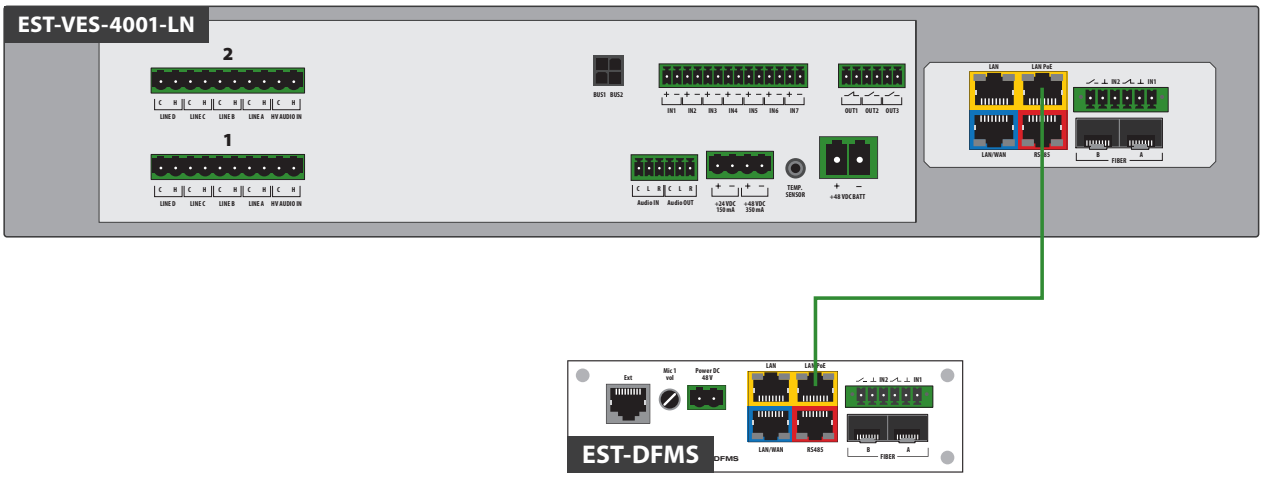
In the CHAIN-type cable connection, the first fireman microphone can be connected to the control unit via LAN PoE, whereas further microphones require external power supply. This does not apply to a system in which there are PoE switches between microphones (Switches must be supplied with fire power supply units).



Drawing 38. Fireman microphone cable connection – CHAIN topology

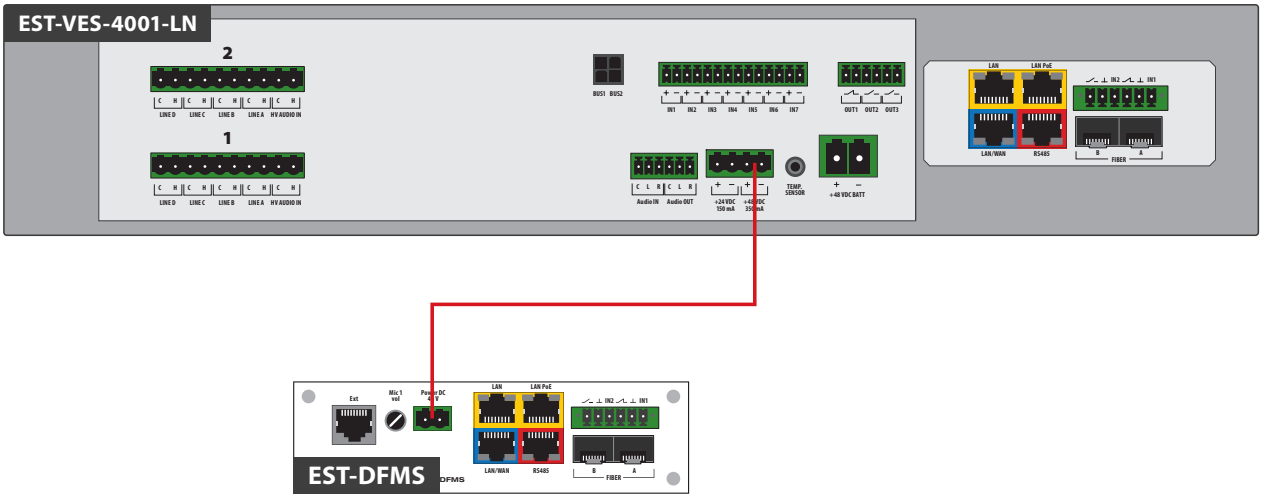
7.3.3.3 *Different ways to power the fireman microphone*

1. **Via LAN PoE in EST VES Control Units**



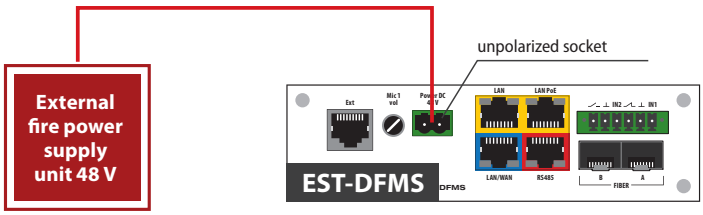
Drawing 39. Fireman microphone powered through LAN PoE

2. **Via auxillary power connector located on the main panel of the EST VES unit**



Drawing 40. Fireman microphone powered from 48 V auxillary power output

3. **Via external fire power supply unit 48 V**

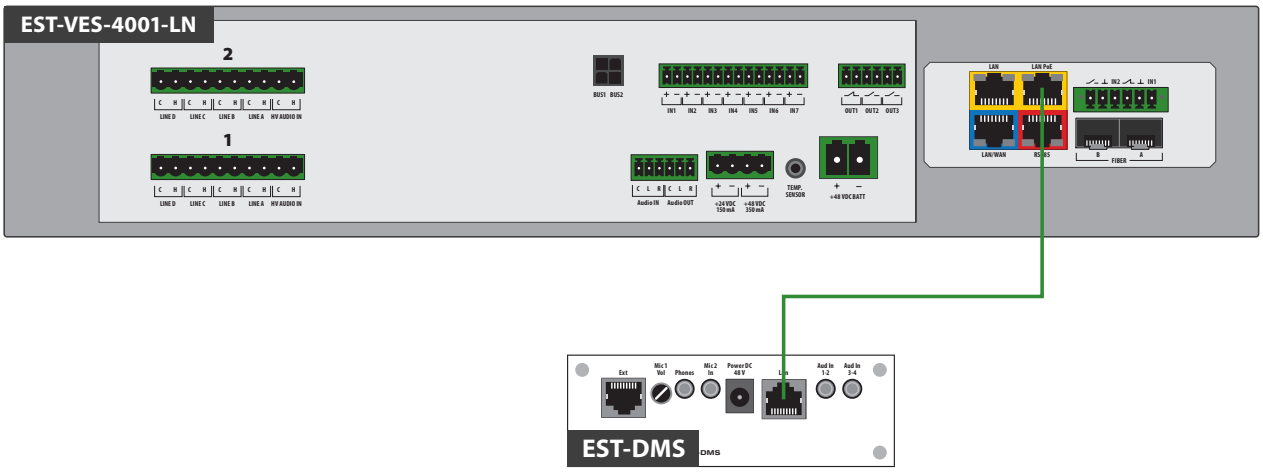


Drawing 41. Fireman microphone powered by the fire power supply unit

7.3.3.4 Zone microphones – types of connection

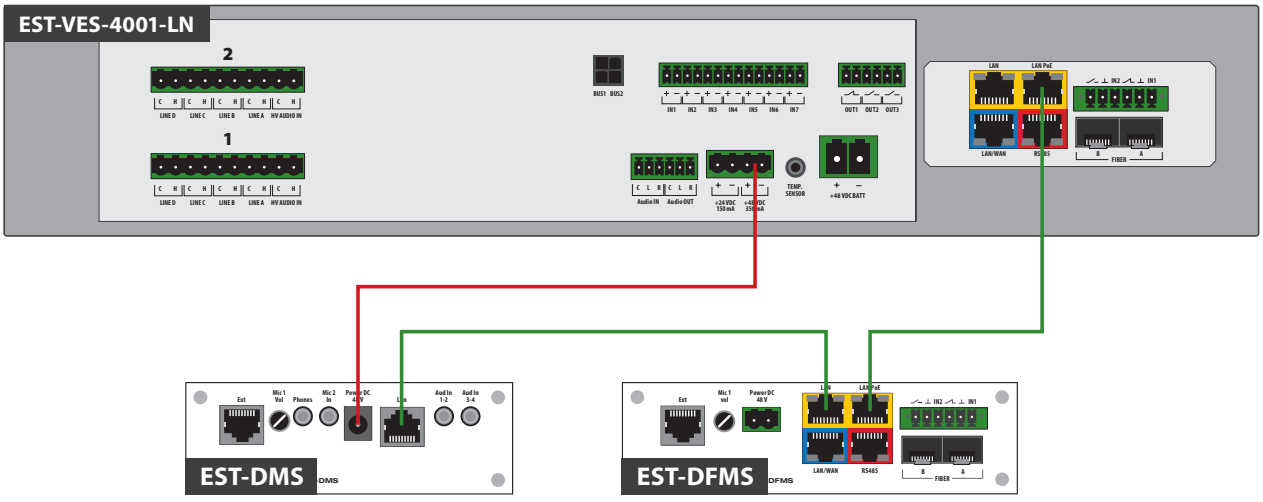
A zone microphone can be connected directly to VASCU via LAN or to the fireman microphone. Most zone microphones can be connected to VASCU via a certified switch. When the switch supports PoE function, only one wire (UTP/STP cat. 5e) is required to assure a proper microphone operation.

1. **LAN PoE connection.**
   For direct connection to VASCU, it is not required to provide additional power supply provided that the unit has LAN PoE port.



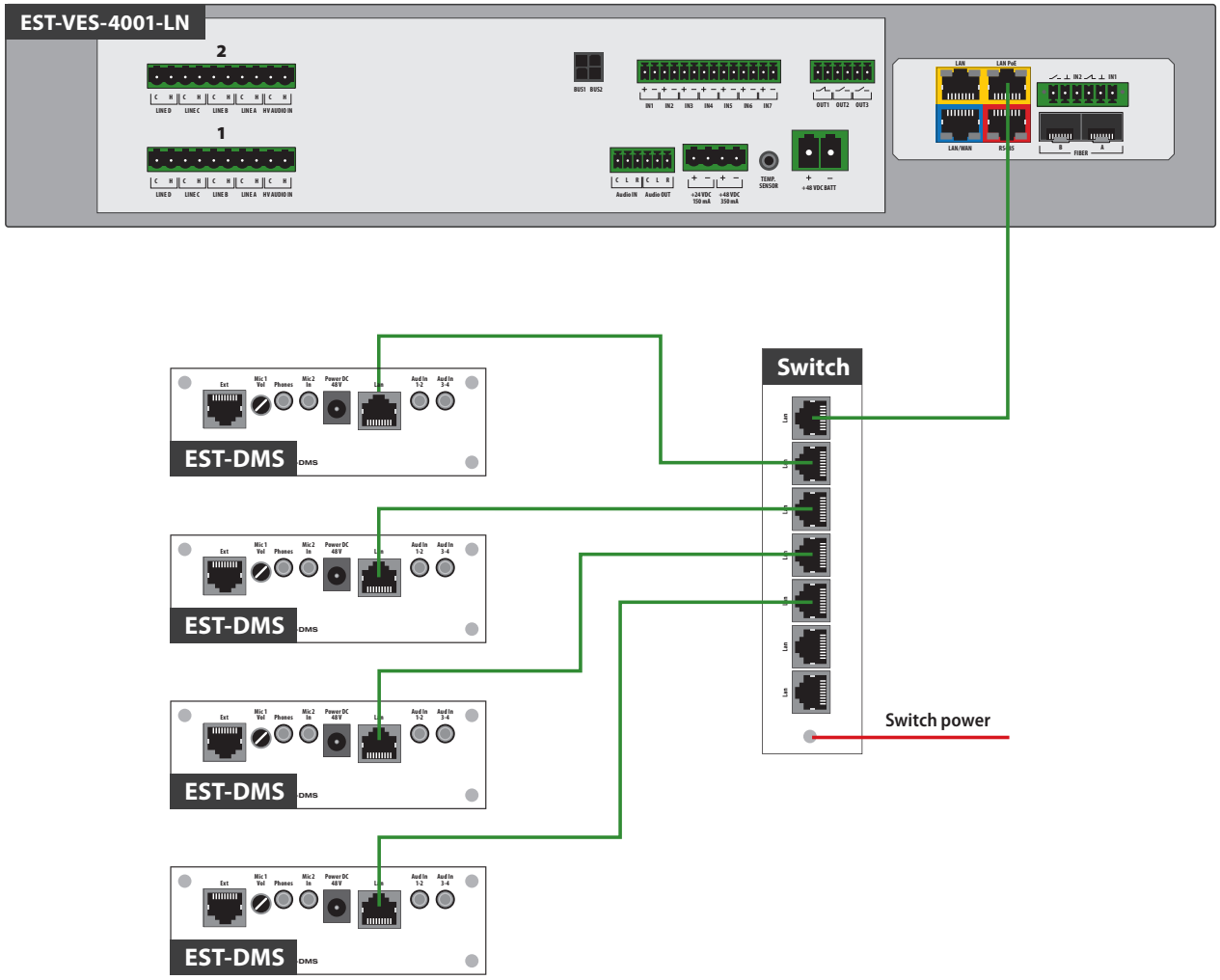
Drawing 42. Connecting zone microphone

2. **Connecting via EST-DFMS fireman microphone**. In this case it is required to provide additional power supply from the external power supply unit or the auxilliary 48 V power output on the EST VES unit.



Drawing 43. Connecting zone microphone, fireman microphone

3. **Connecting with a certified network switch**. The diagram below shows connection of 4 zone microphones via a switch with LAN PoE.



Drawing 44. Connecting zone microphone – switch

List of certified switches:

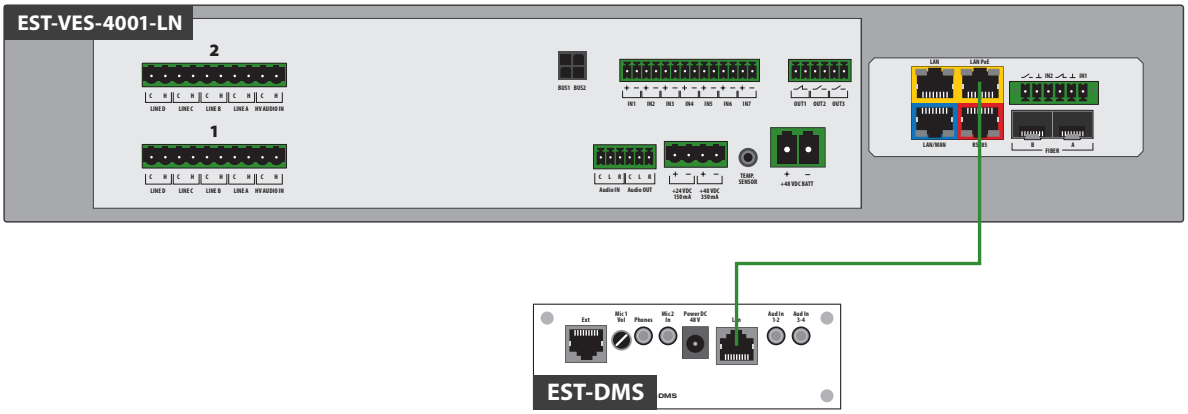
- NETGEAR – Prosafe Gigabit Plus series with PoE
- CTC Union Technologies – IGS Gigabit Ethernet Managed Switch series
- CTC Union Technologies – IFS Fast Ethernet Managed Switch

7.3.3.5 *Connecting power to zone microphones*

Zone microphones can be powered either locally (48 V) or from the EST VES central unit with PoE.

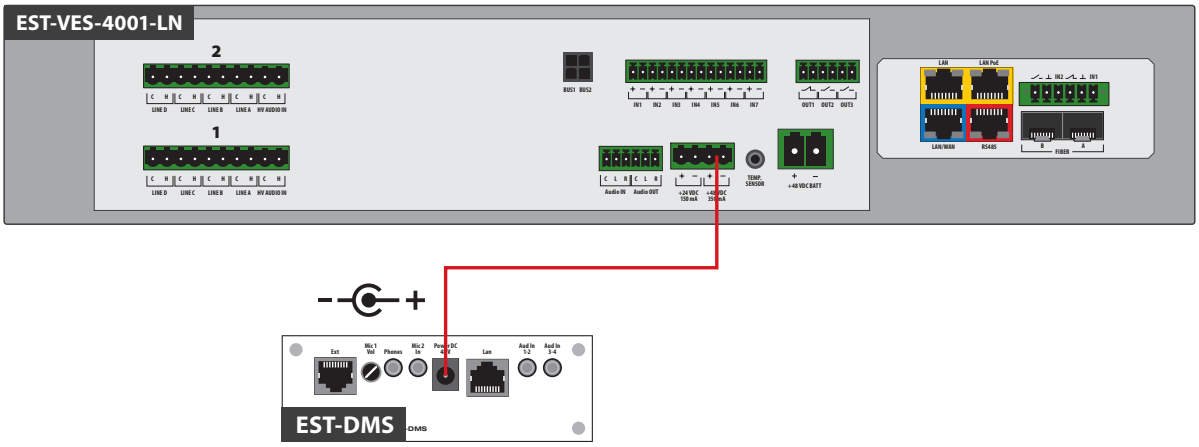
Ways to power a zone microphone:

1. **Via LAN PoE (from VASCU or certified switch)**



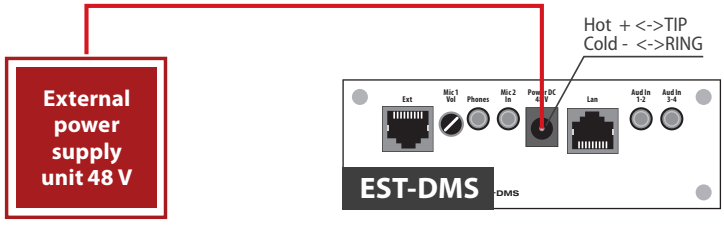
Drawing 45. Zone microphone powered by LAN PoE

2. **Via auxillary 48 V power output on the connector panel of the EST VES unit**



Drawing 46. Zone microphone powered by the auxillary 48 V power output on the connector panel of the EST VES unit

3. **Via external power supply unit 48 V**



Drawing 47. Zone microphone powered from an external source

7.4 Preparing sound system for VAS application

Cabinet assembly

Carefully mark loudspeaker line cables, control cables and power cables. Upon routing the cables provide at least 3 m of margin, measured from the floor. Anticipate empty service space behind the cabinet (at least 50 cm from the wall). Make sure there is a gap between the back of the cabinet and the wall.

Messages recorded on memory cards

Define content, language and type of recorded messages on memory cards. (Emergency messages should suit the building and be confirmed by the Fire Marshal). To record messages, please contact UTC employee who is responsible for VAS start-up.

Emergency messages:

- **EVACUATION** – potential life hazard requiring evacuation – the message instructs all inhabitants to leave the building immediately,
- **WARNING** – situation in which danger is imminent and requires warning during evacuation,
- **CANCELLATION** – information that the alarm has been cancelled and there is no danger on the site,
- **NO HAZARDS** – operational messages, e.g. system testing.

Fire scenario and control between FACIE and VAS

Please prepare a fire scenario which involves an algorithm of cooperation between SAP and VAS systems. (This algorithm should be accepted by the Fire Marshal). Make sure that a sufficient number of cable connections is made between the FACIE fire signalling central unit and the VAS cabinet to allow triggering of the evacuation message and reporting error state. When connecting the FACIE central unit to VAS, fire resistant cables with the rating of at least PH30 must be used. As for control algorithm, please consult UTC employee responsible for VAS start-up.

Loudspeaker lines

Please check if the loudspeaker lines have been routed in accordance with the blueprint the number of loudspeakers per single line, selection of the correct power on speaker transformers, proper line description compliant with the blueprint). Use the meter (e.g. ohmmeter or multimeter) to check for short-circuits between loudspeaker line and earthed elements. Next, check for short-circuits or open-circuits between loudspeaker line wires.

⚠ While assembling loudspeakers, the wires must be connected to the tap of the speaker transformer corresponding to the correct power as specified in the blueprint. Incorrect power setting can lead to amplifier overload. In the process of system startup, it causes unwanted time and resource loss.

Power supply

EST VES units accept Single-phase 230 V AC power. While connecting the power supply, make sure that each unit is provided with a separate circuit and choose proper means of protection.

The cable supplying the EST VES unit with current should bypass the site's main power switch. (Use at least 3x 1.5 fire resistant cable with PH90 rating). The power cord must be led to the target place where VAS cabinet is assembled. The cabinet power supply circuit must be protected with a residual current device.

System start-up by UTC Fire & Security employees

The sound system must be prepared according to the instructions above. Before the team responsible for VAS system start-up arrives, contact UTC with information that "system is completed and ready for start-up" along with start-up date. Make sure the technicians have access to the room intended for VAS cabinets, reduce the number of third parties at the time when the system is installed. It is strictly forbidden to perform any works in the VAS assembly room by personnel unauthorized to install VAS cabinet. Once the system has been started, conduct a training related to system operation for staff responsible for proper system use, and prepare relevant protocols.

Speech comprehensibility testing

Pursuant to provisions of EN 60849 norm, each Voice Alarm System (VAS) installation must be followed by speech comprehensibility tests. These tests aim to confirm that the installed sound devices are able to produce a suitable acoustic power which allows obtaining a required sound pressure level (SPL), as well as a high degree of RASTI speech comprehensibility – in accordance with assumptions in the specification. The tests must be performed on a system operating in alarm mode and without the use of dynamic range compressors.

The scheduled system test must be arranged with staff responsible for administration of the building and UTC employee. Make sure to provide access to rooms in which tests are supposed to be carried out (as a rule – all rooms in the building). Please notify personnel staying in the building (i.e. plant administrator) that tests will involve unpleasant and noisy signals emitted by loudspeakers.

8. Operation modes – LED colors

LED indicators located on microphones and control units can signal various statuses. The tables below present the indicators and their functions.

Table 14. Colors signaling on the system microphones depending on the function assigned

FUNCTION	LED 1		LED 2				
	GREEN		RGB			Blink	On
	Blink	On	R	G	B		
General	✓						
Stop Scenario	✓						
Skip Scenarios Delay	✓						
Audio Monitor	✓	✓					
Volume Change	✓						
Failure Accept	✓						
Failure Delete	✓						
Alarm Mode	✓	✓	●				
Display Text	✓						
Led Test							
Select Audio Source	✓	✓					
Mute Audio Source	✓	✓					
Select Zone	✓	✓					
Block Zone	✓	✓					
Zone(s) OFF	✓						
Group Zone	✓	✓					
Start/Stop Matricing	✓	✓					

Power Safe	✓	✓		●	●		
Scenario Delay	✓		●		●	✓	
Silence		✓	●				
Intercom					●	✓	
Record Message			●	●		✓	
Failure Delete	✓		●	●		✓	
Failure Accept	✓		●	●			
Standby	✓	✓		●	●	✓	

Table 15. LED colors of the button assigned to the function Select Zone

FUNCTION	R	G	B	Blink	On
Block Zone	●	●			✓
Zone failure › short-circuit / ground fault / opening › impedance failure › switch to B side of the loop	●	●		✓	
Zone failure confirmed	●	●		✓	
Emergency message playback	●				✓
Warning message playback	●			✓	
Voice message from a fireman microphone		●		✓	
Voice message (from a zone microphone, BGM)		●			✓
Service message playback			●		✓
Zone mute		●	●		✓
Buffering messages when zone is busy			●	✓	
Standby		●	●	✓	

Table 16. LED colors on the control unit front panel

Graphic symbol	Color		EST VES Control Units
		green	POWER
		yellow	FAILURE
		red	ALARM
		yellow	Battery power active
		green	Handheld microphone active
		yellow	CPU-off function active (CPU bypass)

8.1 Normal mode

Power-on LED emits green light. In normal mode (no failure and locks) none of the LEDs in VASCU system emits yellow or red light.

8.2 Alarm mode

In this mode, all devices which are unnecessary during alarm (e.g. zone microphones, other devices which use structural network) are automatically disconnected.

An LED marked as ALARM emits red light on the fireman microphone, zone microphone and on the front panel of the Control Unit. Fire scenario is carried out. Any activities are recorded in the event log.

8.3 Failure mode

In case of damage related to one of the system modules, the system enters failure mode, and information about failure is displayed in the Control Unit and microphones. FAILURE yellow LED lights up. If the microphone has a button programmed as “confirm failure” the built in speaker also signals the failure. When failure is signaled, press the button marked as “confirm failure” to mute the alarm, the system will detect that the failure has just been accepted/confirmed by the Operator (this event is recorded in the event log). The failure LED goes out when the system damage is eliminated and “Failure delete” button is pressed.

8.4 Lock mode

VASCU can lock and unlock sound system zones. In the locked zone, no messages are played back until unlocked.

When the zone is locked, the LED indicator emits yellow color on every microphone.

9. Instruction for performing tests and trials

In order to confirm that EST VES VASCU works properly, perform a series of basic efficiency tests in accordance with the program below. Indicators and manual control elements used to perform the tests have been described in previous chapters.

9.1 Instructions for performing basic functions

9.1.1 Alarm mode

Activating alarm mode

Lift red button flap (alarm button "activate Evacuation") and press it. However EST VES system is not equipped with the red button protected by the flap. That means that pressing once the red button on the front panel of EST VES activates the 5 seconds procedure (Evacuation button starts blinking RED) during which the system waits for second press of the button. Finishing this two steps procedure activates Alarm Mode. Green LED indicators will emit light in all sound system zones. The system enters alarm state and automatically activates all zones. In this state, music background and zone microphones are disconnected. It is still possible to send automatic alarm messages or via fireman microphone. The system awaits messages to given zones. The alarm state applies until the programmed as "cancel alarm" is pressed.

Cancelling alarm

During alarm state, press "Cancel Alarm" button. VASCU enters standby mode, all alarm messages are muted and background music is restored.

Sending evacuation messages

Activate alarm and select zones. A green LED next to the zone name means the zone is ready to transmit. Press "Evacuation" button. A constant red indicator next to green zone selection indicator means that evacuation message is being sent. The evacuation message will be played back in given zones in a continuous way, until the button "cancel alarm" is pressed.

Sending warning messages

Activate alarm and select zones. A green LED next to the zone name means the zone is ready to transmit. Press "Warning" button. A flashing red indicator next to green zone selection indicator means that the warning message is being sent. The warning message will be played back in given zones in a continuous way, until the button "cancel alarm" is pressed.

Sending verbal messages via microphone

Activate alarm and select zones you wish to be received in. A green LED next to the zone name means the zone is ready to transmit. Lift the microphone, press and hold "push to talk" button while speaking.. Speak slowly, loud and clearly.

Message priorities

Activate alarm and select zones. Press "Warning" button – warning message will be played back in given zones. Next, press "Evacuation" button – warning message will stop, and evacuation message will replace it because has a higher priority. Then, press "push to talk" button – all automatic messages will stop and you will be able to transmit a live message via the fireman microphone.

Transmitting automatic messages and microphone messages in various zones

Activate alarm and select one zone. Activate evacuation message or warning message playback in the given zone. Unselect this zone (green indicator goes out, red one still emits a constant light or flashes). Select another zone. To send a verbal message, press and hold "Push to talk" button and speak to the microphone.

Transmitting verbal messages when the central processing unit is faulty – CPU OFF

Set the switch on the front panel in the CPU OFF position. The CPU OFF LED will light up with a steady green light. Press "push to talk" button and speak to the microphone.

⚠ **NOTE!** When the switch is in the CPU OFF position, playback of the alarm messages recorded in the EST VES memory does not work. The processor is bypassed. A direct connection between devices is created: microphone → amplifiers → loudspeakers. Microphone input is broadcasted to the entire system. Amplifiers operate at maximum amplification – be aware that this rises the SPL significantly.

9.1.2 Failure mode

A flashing yellow FAILURE LED means that one of VAS central unit elements or a loudspeaker line is damaged. On EST VES devices and EST-DFMS the system failure will be indicated by an acoustic signal. When the damage is signaled, press "confirm failure" button to mute the alarm sound, and the system will register that the failure was confirmed by the Operator (this event will be recorded in the event log). The failure LED goes out when the system failure is eliminated and "cancel failure" button is pressed.

A system maintenance technician or technical service must be notified of any damage immediately.

9.1.3 Controlling backup power batteries

In the EST VES systems this process is fully automatic. It is realised by monitoring battery internal resistance.

9.2 Testing the system

Instructions for performing tests which will confirm proper efficiency of the VAS central unit.

1. Get familiar with the VAS service manual.
2. Check if VAS system stops performing any functions unrelated to warning while switching into alarm mode.
3. Check if VAS system disconnects secondary sound systems (e.g. local audio systems of room tenants, connected to VAS as sources of background music, adverts, etc.) while switching into alarm mode.
4. Check if the system is capable of sending massages within max. 3 seconds after the fire alarm system central unit sends a fire alarm signal.
5. Check if the system is capable of sending voice massages to one or several areas at a time, in accordance with established alarm schedule.
6. Check if the VAS alarm message control algorithm by FACIE is carried out in accordance with the established fire scenario for the building.
7. Check if transmitting various messages to sound system zones is properly indicated on fireman microphone.
8. Play back alarm messages recorded on a memory card in the given sound system zone in order to confirm quality and comprehensibility of the message (verify all messages recorded in the memory).
9. Check if the verbal message is actually sent to the zone defined on fireman microphone, if sound system zones are actually audible in given sound system zones (do a test for all zones).
10. Check if VAS failure information is sent to FACIE and if this connection is supervised by FACIE.
11. Check if the system detects and signals failure of loudspeaker lines properly (short-circuit, open-circuit, loudspeaker line earthing).
12. Check if the damage in the system is detected within max. 100 seconds.
13. Check if "CPU OFF" switch works properly on the fireman microphone – it is a switch responsible for bypassing the central processor unit.
14. Switch off AC power and check if the system works properly on the backup battery power supply:
    - check if the system performs all functions related to transmitting alarm messages played back from the memory,
    - check if it is possible to send voice messages to particular zones via the fireman microphone,
    - check if the system has disconnected secondary sources of sound connected to VAS cabinet, which do not participate in alarming,
    - check if the sound level while sending messages remains unchanged as a result of switching into backup power,
    - check if the system signals AC power failure.

10. Operation instructions

10.1 Control Unit

It is possible to navigate in EST VES series L and LN devices menu via a touch-screen LCD display and nearby control buttons. The display shows a current VASCU system status. The menu allows the following:

- monitor VASCU system status,
- trigger loudspeaker line impedance measurement,
- check network settings,
- check software and firmware versions.

In case of damage in at least one of the system modules, the LCD display will show information about the fault.

The paragraph below describes operation instructions with an example of microphone panel configuration. The microphones are configured on a case-by-case basis for a specific purpose. During the first training, the person responsible for starting the system provides the microphone operation manual.

10.2 Fireman microphone

Actions described below can executed by authorize personnel only.

Sending verbal messages to given fire zones (fireman microphone)

- Open red "Evacuation" button flap and press it. At this moment VASCU will switch into alarm mode. However EST VES system is not equipped with the red button protected by the flap. That means that pressing once the red button on the front panel of EST VES activates the 5 seconds procedure (Evacuation button starts blinking RED) during which the system waits for second press of the button. Finishing this two steps procedure activates Alarm Mode.
- Press a button applying to a desired zone. You can choose more than one zone. Green LEDs will light up next to selected zones.
- Press "Push to Talk" button, hold the button and speak to the microphone. To finish transmitting, release the button.
- Once the verbal message transmission has finished, the microphone status LED will go out.
- To return to normal mode, press "cancel alarm" button.

Sending verbal messages to all zones

- Open red "Evacuation" button flap and press it. VASCU will switch into alarm mode.
- Press "all zones" button. All of the green LEDs next to buttons corresponding with zones will light up.
- Press "Push to Talk" button. While holding the button, speak to the microphone. To finish transmitting, release the button.
- Once the verbal message transmission is finished, the microphone status LED will go out.
- To return to normal mode, press "cancel alarm" button.

Activating warning message in selected fire zones

» Open red "Evacuation" button flap and press it. At this moment VASCU will switch into alarm mode. Next, choose zones you wish to send the message to.

» Green LEDs corresponding with selected zones will light up on the microphone.

» Press "Warning" button. To deactivate the message, press "Clear" button.

» To return to normal mode, press "cancel alarm" button.

Activating warning message in all zones

» Open red "Evacuation" button flap and press it or press once the red button on the front panel of EST VES and within 5 seconds press the button once again. At this moment VASCU will switch into alarm mode. Next, press the "all zones" button.

» Green LEDs corresponding with all of the zones will light up together with the LED next to the "all zones" button on the microphone.

» Press "warning" button. To deactivate the message, press "clear" button.

» To return to normal mode, press "cancel alarm" button.

Activating evacuation message in selected fire zones

» Open red "Evacuation" button flap and press it or press once the red button on the front panel of EST VES and within 5 seconds press the button once again. At this moment VASCU will switch into alarm mode.

» Press selected zones buttons. You can choose more than one zone. Green LEDs corresponding with selected zones will light up.

» Press "Evacuation" button. To deactivate the message, press "clear" button.

» To return to normal mode, press "cancel alarm" button.

Activating evacuation message in all zones

» Open red "Evacuation" button flap and press it or press once the red button on the front panel of EST VES and within 5 seconds press the button once again. At this moment VASCU will switch into alarm mode. Next, press the "all zones" button.

» Green LEDs corresponding with all of the zones will light up together with the LED next to the "all zones" button on the microphone.

» Press "Evacuation" button. To deactivate the message, press "clear" button.

» To return to normal mode, press "cancel alarm" button.

Mute

» In alarm mode it is possible to mute warning and/or evacuation messages. To do so, choose zone and press "mute" button. The messages will not be audible in this location.

» You can choose all zones and press "mute". Then, messages for the entire system will be muted.

» Remember that alarm mode is active all the time – (the LED next to the ALARM symbol on the microphone chassis is on), contacts, controls and settings assigned to the alarm scenario are maintained. Muting operation is recorded in the event log.

» Choose zone and activate warning or evacuation action to send messages again.

» To return to normal mode, press "cancel alarm" button.

10.3 Zone microphone

Sending voice messages to a selected zones

» Press chosen zone button. You can choose more than one zone. Green LEDs corresponding with the selected zones will light up.

» Press "push to talk" button. Speak to the microphone while holding the button.

Note: Depending on the settings of the "push to talk" button, the button may work in the following way: first press activates the microphone, second press – deactivates.

» The system can generate a gong (sound preceding the message). Once the gong has ended the "microphone active" LED will come back on.

Note: While sending messages from the fireman microphone, the gong is not emitted.

» The verbal message can be sent via the microphone when the "microphone active" LED is on again. To finish transmitting messages, release the PTT button.

» Once the verbal message has finished, LEDs corresponding with the selected zones will go out. The microphone active LED will also deactivate.

Sending verbal messages to all zones

» Press "all zones" button.

» Green LEDs corresponding with all of the zones will light up together with the LED next to the "all zones" button on the microphone.

» Press "Push to Talk" button, hold it and speak to the microphone.

Note: Depending on the settings of the "Push to Talk" button, the button may work in the following way: first press activates the microphone, second press – deactivates.

» The system can generate a gong (sound preceding the message). Once the gong has ended the "microphone active" LED will come back on.

Note: While sending messages from the fireman microphone, the gong is not emitted.

» The verbal message can be sent via the microphone when the "microphone active" LED is on again. To finish transmitting messages, release the button.

» Once the verbal message has finished, LEDs corresponding with the selected zones will go out. The microphone active LED will also deactivate.

Select sound source – dynamic assignment

» Choose zones you wish to assign source of sound to. You can choose more than one zone.

» Choose button defined as source of sound you wish to use.

11. Maintenance and service

11.1 Preparations before VAS system maintenance works

11.1.1 Initial procedures for system testing

Schedule the time of VAS system maintenance works with the building administration, inform the site administrator about activities and range of performed works, as well as about potential inconveniences during VAS inspection.

11.1.2 System testing

Inform the building administrator that VAS system is about to be tested.

Inform the building administrator and staff (e.g. guards) that it is likely that they will experience alarm and warning messages, together with inconveniences arising from system testing procedures.

Inform FACIE monitoring center possible triggering of the remote alarm or damage signal.

Considering hazardous voltage inside the operating devices, maintenance works can be performed only if the source of power has been switched off.

All repairs must be carried out by qualified technicians or engineers. To send a service request, contact your nearest UTC representative.

The manufacturer shall not be held responsible for any damage caused by unauthorized modification or repair.

VAS central unit safety check and electrical inspection:

- Check if the external side of the cabinet complies with IP30 norm.
- Check conformity notification with EN 54-16 in the front of the cabinet.
- Check conformity with EN 54-24 for loudspeakers.
- Check if front and rear doors are closed.
- Check if indicators visibility of VASCU is GOOD.
- Check and measure VASU cabinet earthing connection.
- Check log history – VASU event log.
- Check fire signaling central unit interface together with customer's engineer.
- Check all of the sound correction parameters. Save and compare settings of control elements with previously recorded data. Note and investigate all deviations.
- While evacuation message playback (use external load if the use of main speaker lines is not possible), check output level of the EST VES device. Save and compare with previous data.
- Check automatic system defect monitoring and test by causing a fault.

Loudspeakers:

- Measure total speaker load for each circuit, save and compare with previous results. Inspect all unexpected changes.
- Perform subjective sound quality assesment and audibility tests in all areas with restricted access. Save sound pressure levels (SPL).

Microphone control devices:

» Control condition and proper operation of switches/touch-fields.

» Check microphone overall physical condition.

» Transmit a test message, use a monitoring speaker whenever the use of main speaker lines is not possible.

System condition:

» In case of inside the central unit chassis, it is recommended to clean it with a vacuum cleaner or use compressed air. The Central Unit must remain dry at all times, do not use water to clean it.

On-site changes:

» Survey all areas which were subject to changes (specified by the Customer) and determine if the loudspeaker range is suitable.

Maintenance log:

» After you finish all operations, enter maintenance results to the maintenance log.

Checklist:

» Upon finishing maintenance, get a relevant person to sign your checklist, confirming that the system has been left in a fully operational condition. Documentation should also include your recommendations and remarks.

11.2 System maintenance

11.2.1 Daily review

All abnormalities are usually identified by the staff operating the system. VAS system operators should notify a "responsible person" of any identified problems related to the system. Any remarks should be entered into the maintenance log on a regular basis.

11.2.2 Inspection every 6 months

- ✓ Ask VAS system users about any remarks concerning system operation.
- ✓ Check maintenance log records related to inspections, repairs and controls.
- ✓ Review and read VAS system documentation.
- ✓ Review RACK system cabinet elements condition (pay attention to temperature, corrosion, humidity, cleanliness, etc.).
- ✓ Check connections, clamps and cables between particular VAS devices.
- ✓ Check for any device damage in RACK cabinet.
- ✓ Check if all lights, LEDs and indicators work properly.
- ✓ Check network and battery fuses condition.
- ✓ Check connectors and earthing connections condition.
- ✓ Check batteries in terms of corrosion and ventilation.
- ✓ Check if the battery charger works properly.
- ✓ Switch off AC power and check battery power system operation:
  - › check if the system performs all functions related to transmitting alarm messages recorded in memory,
  - › check if fireman microphone can transmit voice messages to particular zones,
  - › check if the system deactivated other PA sources connected to VAS cabinet – which do not participate directly in alarming,
  - › check if the system signals AC power failure.
- ✓ Check if information about VAS failure is sent to FACIE central unit and if this connection is monitored by FACIE central unit.
- ✓ Check if VAS alarm message control algorithm by FACIE central unit is carried out in accordance with the established fire scenario for the building.
- ✓ Check if the verbal message transmitted to the sound system zone declared on fireman microphone is actually audible in the given sound system zone (do tests for all sound system zones).
- ✓ Check if "CPU OFF" switch works properly on the fireman microphone – activating the central processing unit bypass.
- ✓ Play back alarm messages recorded on the memory card in the given sounds system zone in order to confirm the quality and comprehensibility of the message (check all messages recorded in the memory).
- ✓ Check if connections between SAP and VAS are monitored.
- ✓ Check if VAS system stops performing any functions unrelated to warning when the alarm is triggered.
- ✓ Check if VAS system disconnects all secondary systems when the alarm is triggered.

- ✓ Check if the system is capable of sending warning signals and verbal messages to one or several zones at a time, in accordance with the established fire procedure.
- ✓ Check if the system identifies and signals speaker line failure properly (short-circuit, open-circuit, earthing of loudspeaker line).
- ✓ Check if it takes the system no longer than 100 seconds to detect and signal the fault.
- ✓ Once per 6 months it is necessary to check and confirm proper performance of loudspeakers in 50% of the area of the building (100% of the area must be inspected within a year). The test must be performed by forcing loudspeaker lines to emit any signal (e.g. CD music, via microphone or previously recorded message or test sound) and by checking if all loudspeakers on the given line emit the test signal properly. While carrying out the aforesaid test, you need to check for any changes in the interior requiring relocation of loudspeakers or change of their number. Also inspect if the speaker system has been maintained properly, check for dirt, paint and mechanical damage.
- ✓ Check if transmitting messages to various zones is properly indicated on the fireman microphone.
- ✓ Check cooling fan condition.
- ✓ Disconnect the backup power batteries. Measure voltage on the charger output and on the battery terminals.
- ✓ Use software to check event log and system time clock settings.
- ✓ Use diagnostic software to check the following:
  - › microphones,
  - › power supply system,
  - › power supply manager,
  - › amplifiers,
  - › extension cards.

11.2.3 Annual inspection

All maintenance works included in the 6-month inspection apply here, yet additionally:

- ✓ Perform sound pressure level tests in randomly selected areas of the building in order to verify if there are no changes causing a decrease of parameters below the required values by EN 60849 norm.
- ✓ Check if impedance of particular loudspeaker lines is in compliant with the blueprint.
- ✓ Check alarm message scenarios sent by FAS
- ✓ Measure battery capacity – if the capacity dropped below 80% of the design capacity, batteries must be replaced.
- ✓ Safety inspection must be carried out frequently, at least every 12 months; the manufacturer recommends to take maintenance actions every 6 months.

11.2.4 Manufactures remarks

Please note that UTC Fire & Security is not responsible for results of unauthorized repairs.

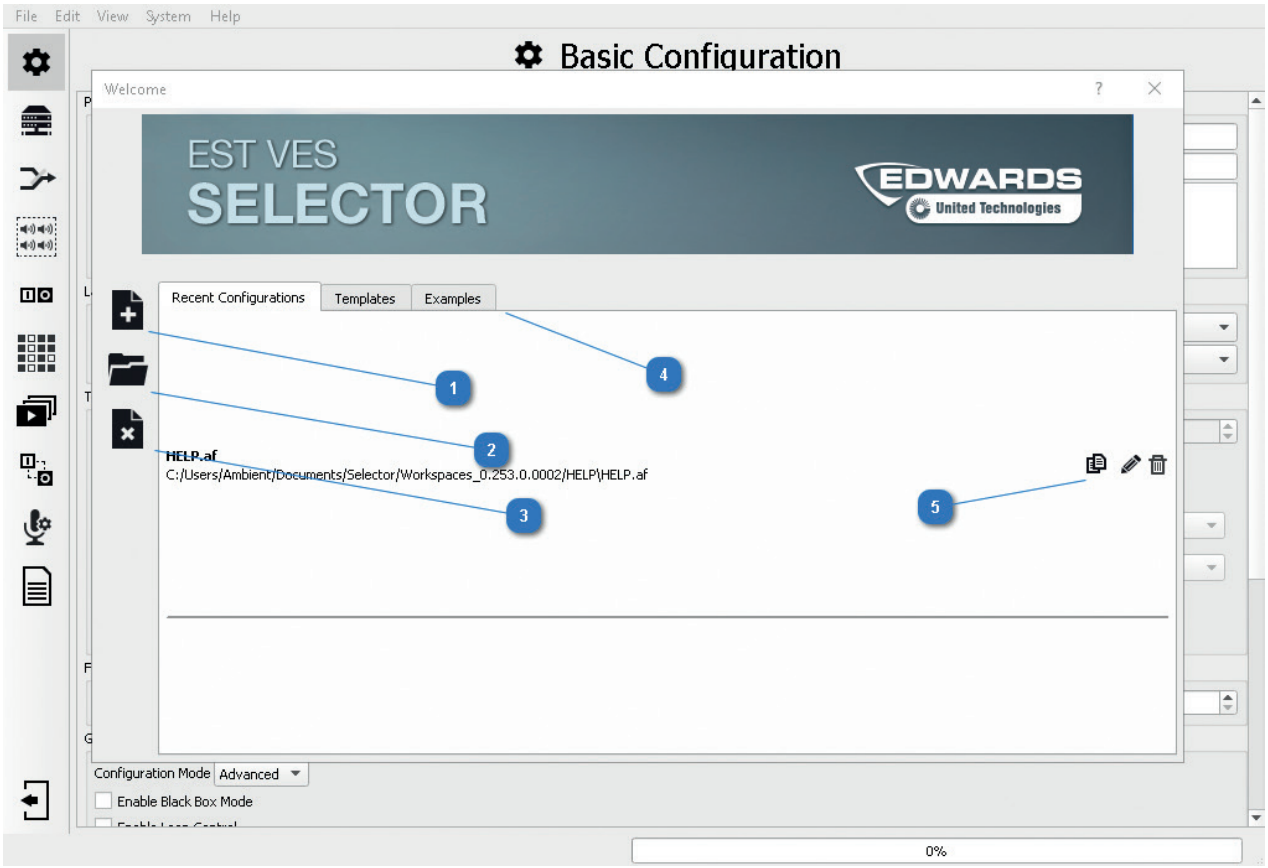
Any repairs of the equipment should be carried out by the UTC or a service centre authorized UTC.

In any unresolved issues, please contact UTC trained personnel. Content contained herein is subject to change without notice.

UTC reserves the right to change or modify the product and conditions applicable to the use of this product at any time.

12. Configuration Software

12.1 Welcome screen



1 **New configuration file localization**
In order to start a project a dedicated folder for the configuration file needs to be created.
Caution: Do not select and existing folder with data, as these will be deleted!

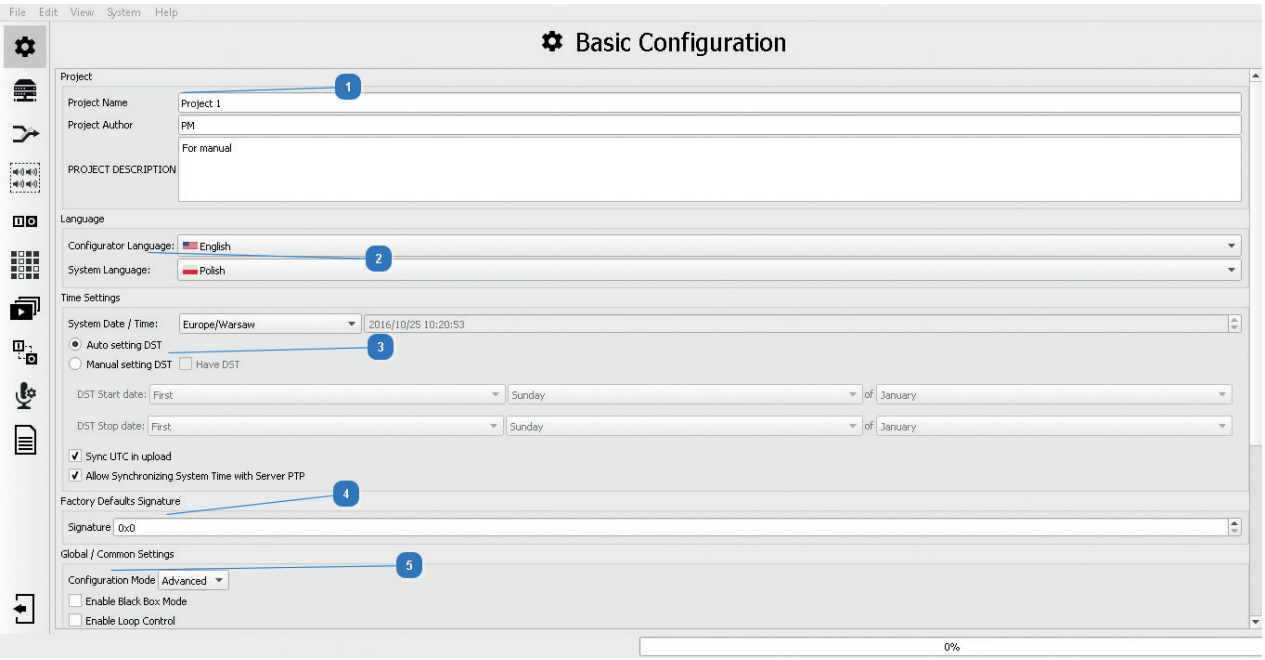
2 **Selection of configuration file from a chosen location**

3 **Creating a new project without saving**

4 **Recent and template configuration file window**

5 **Project cloning, changing and deleting project name**

12.2 Basic Configuration



1 Project name and author window, with designer's note

The Project field contains basic information on configuration of the EST VES system. The name of the project and its author should be supplemented here, as well as a description which should include as many detailed data as possible, such as the place and date launched, specific features of the system, customized functions. The more detailed the project description the easier servicing and making changes in the system at a later date.

2 Language selection

The Language field defines the current language of the software used to configure the EST VES system – Selector Language. System Language defines the current language of all available GUI touch screens in the system.

3 System real-time clock setting

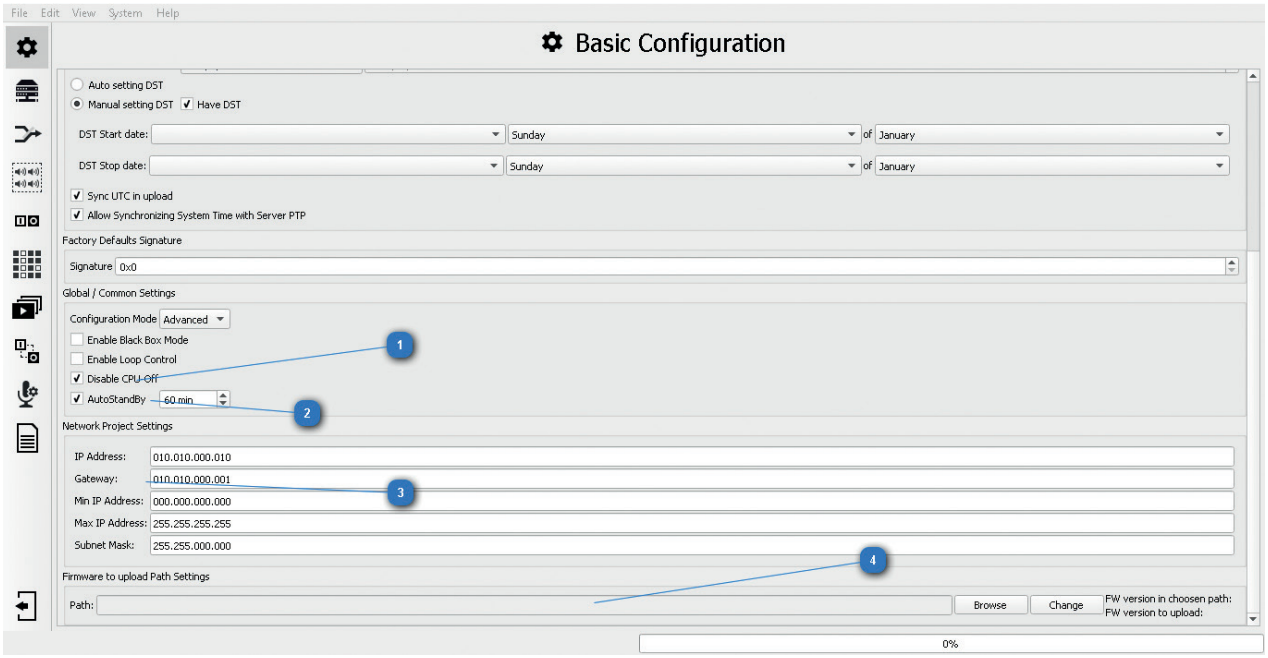
Setting the system valid time. The configurator downloads the UTC from the operating system on which the configurator is installed. In order to load time together with configuration, accept the Sync UTC in upload window and select the appropriate time zone in which the system will be installed. It's possible to turn daylight savings time on and off in this section. Choose Auto setting DST for the time to be advanced by 1 hour on the last Sunday of March at 1:00 universal time and retarded accordingly on the last Sunday of October. This applies to countries within the EU among others (UE 2000/84/EC directive). In this mode if the computer running the software is in a daylight savings zone the Selector software will act accordingly and display DST start and stop dates. It's possible to manually override the transition dates by using the next option Manual setting DST along with use DST (without the latter daylight savings time will be disabled). Additionally time can be updated automatically by a PTP server connected either to the LAN port of the central unit or the LAN/WAN port.

4 Signature

Every project is assigned with a unique signature number. If the signatures between the project uploaded to the system and the one on the project in the computer software differ, the system will not allow returning to factory settings.

5 Configurator work mode

In Global Settings you can choose one of the configurator's modes. The Advanced mode, unlike the Simple mode, is able to create speaker zone groups, logical input / output groups, timers and scenarios. Additionally, in the Advanced mode, in editing logical outputs, it is possible to set individual diode operation on zone microphones. The Enable Black Box option – enables the fireman microphone to record audio while the system is in the alarm mode. The Enable Loop Control option – enabling this option turns on reporting of all errors detected in the fibre-optic loop.



Basic Configuration editing window – continued

1 Disable CPU-OFF

This option in it's default setting (on) disables the central processing unit bypass mode. In order to activate the CPU-Off function accessible from the EST-DFMS and EST VES front panel by a dedicated switch, uncheck this box.

2 AutoStandBy

Enabling this mode in the EST VES system results in:

- limiting current draw from the batteries when in emergency power mode;
- limiting heat generated by the amplifier modules during standard operation mode.

The system enters Standby mode when no audio has been transmitted through the system for the time set in the software. The time is set in minutes in the 15 to 300 bracket. The default state of this option is active with the default time set to 60 minutes. *For more details see the appendix section.*

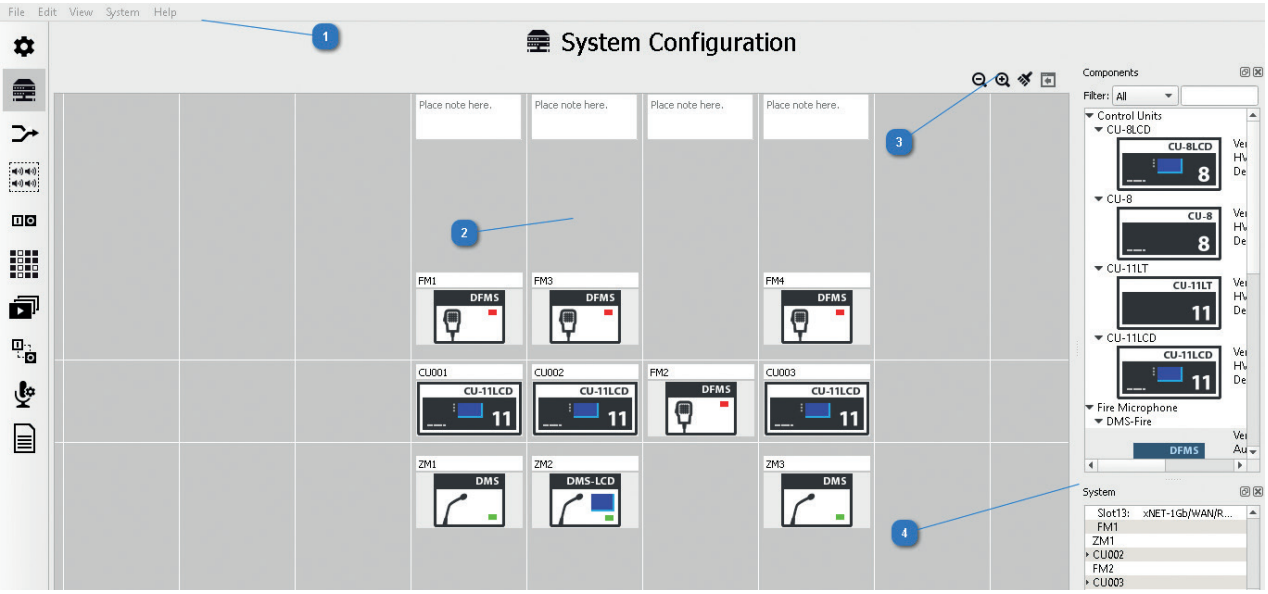
3 Defining IP address pool to assign system devices

This window shows the range the configurator uses to assign IP addresses to all programmable elements of the EST VES system in the internal system network. It is possible to change the settings of the assigned pool, however it is not recommended by the manufacturer. The settings should be changed prior to adding the first device to the workspace.

4 System firmware update field

Every software version has a corresponding firmware that is uploaded to the Central Units, fireman microphones and zone microphones. Every time a new configuration is uploaded to the system, the configurator software compares firmware versions. If a different firmware version than the one in the configurator is detected, it will be overwritten. It's possible to load a different (newer) firmware version than the one supplied with the software. In order to do so you must manually set the new firmware path by clicking browse. The new firmware path will appear in the path window. In order to upload the new firmware to the system, click change – this will display the new firmware version in the FW version to upload field. *For more details see the Appendix section.*

12.3 System Configuration



1 Main Menu bar

File, Edit, System

2 Workspace

The System Configuration tab is one of the most important items in the EST VES system configuration software. The main window, called Workspace, represents system connections by means of vertical and horizontal lines. Placing devices along a vertical line represents a copper wire connection within a single location. The horizontal space between the two lines in the center of the workspace represents a fiber optic connection. Devices placed next to each other within this space ale connected by a fiber optic link and are often separated by a greater distance. Additionaly, all of the connections upwards from the central fiber connection part of the workspace are monitored – the system checks for device and link fault. The system elements placed below the cenral field (zone microphones) will not be monitored.

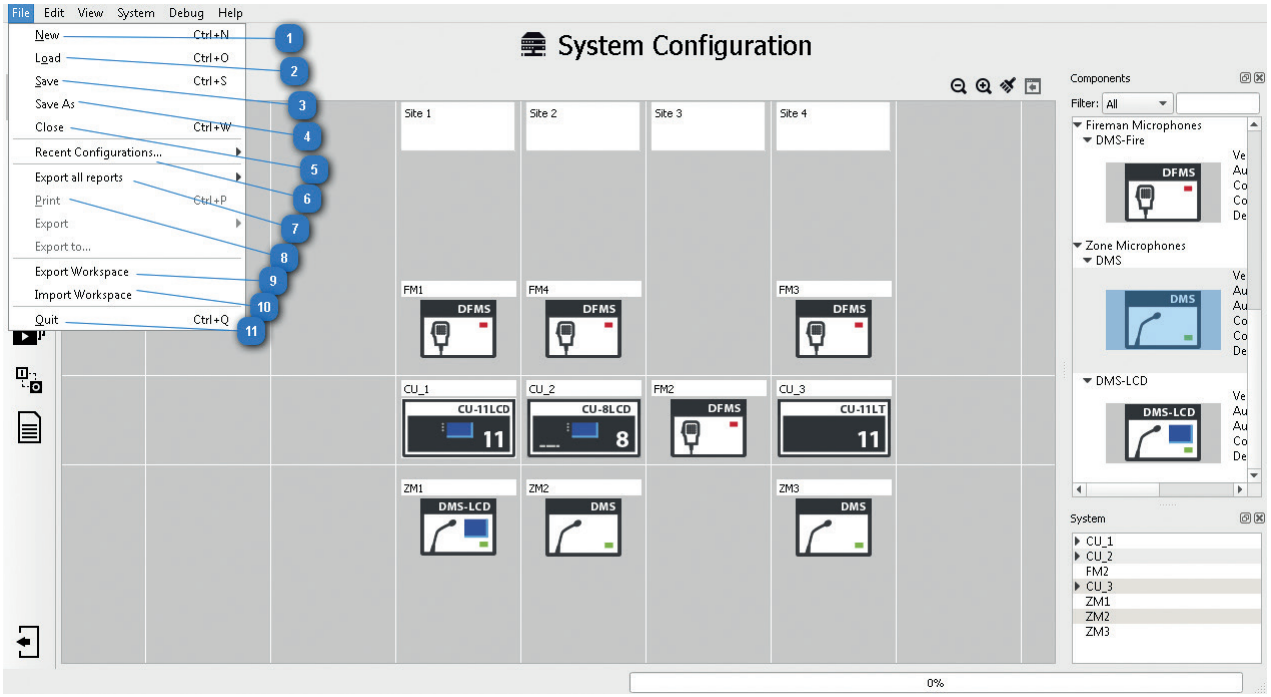
3 Components

In the top right part of the work field there is the tab with all available elements of the EST VES system – the Components tab. Upon starting a new system design, the first component you should drag and drop to the workspace (the configurator will suggest and highlight a proper field) is the central unit. In order to find it press the arrow next to Control Units in the components tab and a list of available units will drop down, next simply use the drag & drop method. The software suggests, with a grey rectangle, where a given element can be placed only if the cursor with the element being drawn is located within the work field. Repeat the procedure for Fireman Microphones and Zone Microphones tabs.

4 System

In the bottom right part of the work field there is the tab System. This tab is used for detailed configuration of the devices and shows allocation of cards in individual control unit slots. Having added a control unit to the work field, the name of the unit will appear in the system tab, as well as a triangle icon meaning a drop-down list. Right-clicking on the name displays the option Go to configuration. When the list drops down, a list of available slots will be displayed. Right-clicking on a slot displays additional option of Go to configuration (card detailed editing), Add Control/Function Card – adding a card to an empty slot or changing allocation of the card in the slot, Remove Card – removal of a card which was assigned to a slot before. In addition, detailed editing of elements from the work field may be triggered by double-clicking of the left mouse button on each of the devices in the work field. If the device contains more elements to be configured, as in the case of control units, then the first double click of the left mouse button results in moving to the next level of editing where we can see all defined cards in a unit. A next double click on any available element means moving to the detailed parameter card of a given element.
A detailed description of the editing window for individual elements of the EST VES system is available in the following tabs: DFMS, DMS, xCtrLine-4.

12.3.1 File



1 **New**

This opton creates a new folder in which all configuration data for a given project will be saved in. In order to create a folder, click the "folder with a plus sign" icon. Creating a new or selecting an existing folder is the first thing to do to be able to go on with the configuration of the system. **Caution:** Selecting a folder with an earlier created configuration results in having the data in this folder completely deleted for the purposes of a new project.

2 **Load**

This loads a system configuration created earlier. The configuration file has the extension *.af.

3 **Save**

This saves a configuration in the created Workspace folder.

4 **Save as**

This saves a configuration in the created Workspace folder enabling a change of the *.af configuration file name.

5 **Close**

This closes the current configuration file.

6 **Recent Configurations**

The configuration software stores up tp 10 recently used system configurations, you can load them using this list.

7 **Export all reports**

This generates tables from the Reports tab in one of the following formats: HTML, PDF, XML, ODF.

8 **Print**

Prints all available reports generated by the configurator.

9 **Export Workspace**

All configuration files, together with messages, are compressed into a file with the extension *.afz. This is a complete record of the configuration, unlike files with the extension *.af which do not contain messages.

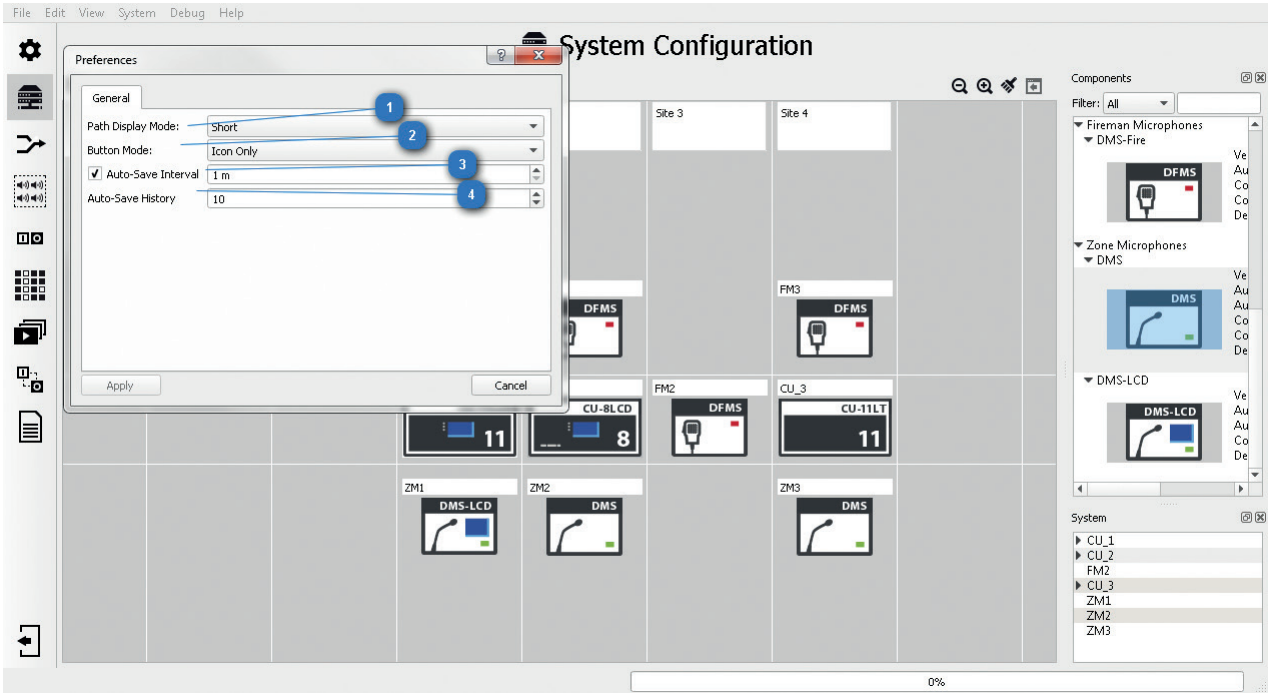
10 **Import Workspace**

Automatic decompression of a *.afz file and loading the complete configuration of the system.
See FAQ 3: cannot open downloaded system configuration.

11 **Quit**

Closing the EST VES system configuration software.

12.3.2 Preferences



1 **Path Display Mode:**

EST VES system component name display mode refers to logical input / output cards, control cards, audio inputs and audio outputs. In the Full Path mode, the name displayed consists of the name of the unit in which a given element is located, followed by a full stop and the name of the card, where the value in the brackets with # means the number of the slot in the unit in which a given card is located, and at the end, also preceded by a full stop, the name of the component is displayed. Here is an example of the full name of a control unit audio output – SM1.cCPU-AudIO-4/12(#12).AO1 which means Audio Output 1 found on Integrated Audio Card 4/12 in Unit SM1.

Short Version – displays the name of a component only

2 **Button Mode:**

This enables personalization of the view of the configuration software. In the Auto-Hide mode, the main Icons, such as Basic configuration, System configuration, Priority Manager, Group Zone Configuration, Matrix, Scenario and Event Configuration have no subtitles and moving the mouse cursor over an icon results in all icon names being displayed:

Text and Icon – icons and names are always visible
Icon only – only icons are always visible
Text only – only names are visible

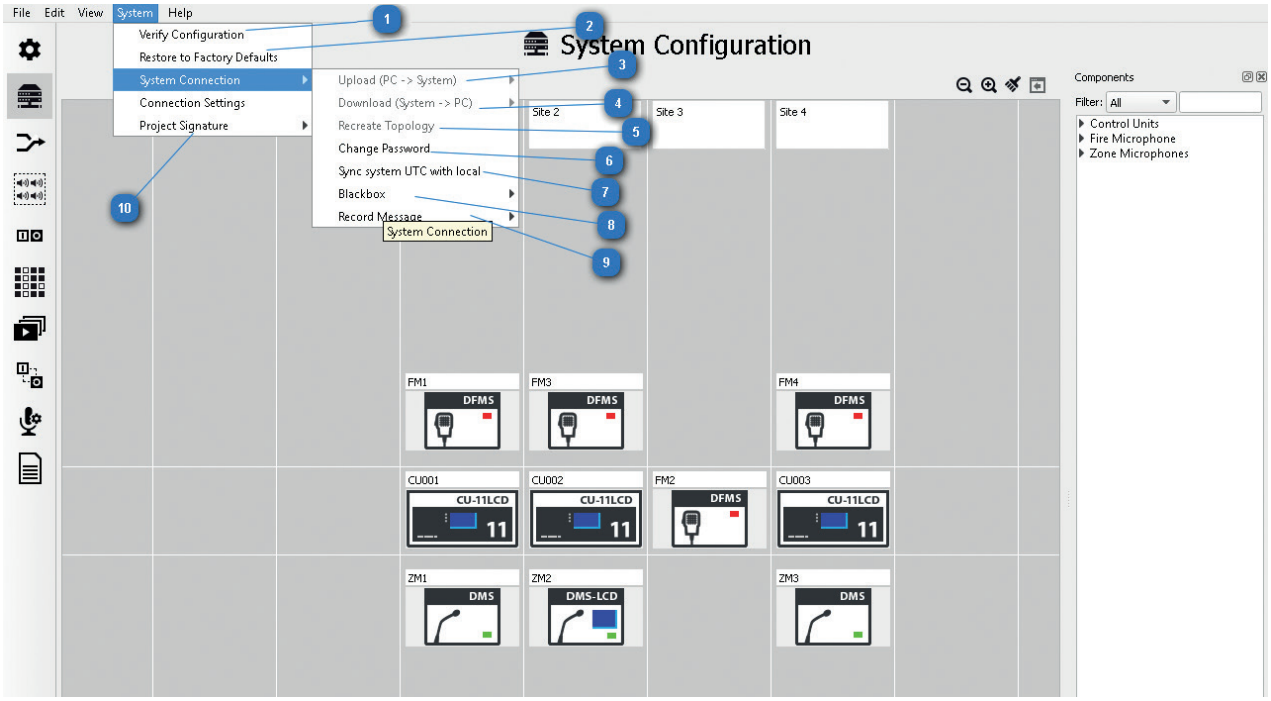
3 Auto-Save Interval

This option, when activated, results in having the current configuration saved into the configuration file at predefined intervals expressed in minutes.

4 Auto-Save History

In this section you declare the number of autosave configurations you wish to be stored in the software. It is closely linked to the autosave interval, if the interval is set to 1 minute and the value of the autosave readout is 10, then the configurator will allow to load the maximum of 10 minutes back. Of course, both the save interval and the number of files to read may assume a value from 1 to 99.

12.3.3 System



1 Verify Configuration

The configurator checks created configuration for it's integrity. It classifies verified elements into 3 groups – Errors, Warnings and Info. If the software detects configuration errors, it will not allow it to be loaded into the system. By selecting Show details, we gain access into the details of the problems which have occurred.

2 Restore to factory defaults

This function completely erases configuration files, logs and audio files from all of the devices connected to the EST VES system. All of the memory cards will be formatted and the devices will be assigned with IP addresses from the 192.18.x.x pool. The packets responsible for the factory settings commands are UDP and are received regardless of the set internal IP addresses in the system. If the System has executed the restore to factory defaults command, the project signature has also been changed, in order to update it in the configurator software you must download the system configuration. You can also select the recreate topology option, enter an empty configuration into the system and then restore the system to factory defaults.

3 **System Connection / Upload (PC -> System)**

This allows to send a configuration, created on a PC running the configurator software to the EST VES system connected to that PC. Prior to sending the configuration to the system, the software verifies the configuration file. Upload full configuration – sends the entire configuration from the PC to the system, including audio files in the PCM format. Loading of a full configuration must be executed for the first time an empty system is being programmed, every successive configuration change which does not require changes in audio files may be loaded into the system via Upload configuration without audio which makes programming of the system much faster.

4 **System Connection / Download (System -> PC)**

This allows to download the current full system configuration or the configuration prior to the current one from system into a PC.

5 **System Connection / Recreate Topology**

This function reads the system architecture. The system is able to identify cards located on a particular slot of the control unit, it detects all zone and fireman microphones connected and the method and place of connection of the units and microphones (optical fibre, cat5). **Caution:** the only element which is not detected by the system recreating topology are microphone extensions.

6 **System Connection / Change password**

Allows to change the previously set password needed to upload the configuration to the system. The change is authorized either by entering the previous password or by generating a token. The token is created by UTC after received a five digit code generated by the Control Unit GUI (applies only to units equipped with LCD screens).

7 **System connection / Sync system UTC with local**

This option synchronizes the system's internal clock with the time on the computer running the configurator software.

8 **System Connection / Blackbox**

The Blackbox function records audio from all connected DFMS fireman microphones while the alarm mode is active. Download blackbox buffer retrieves the data stored in the microphones. Clear blackbox buffer - erases all the messages recorded during alarm mode.

9 **System Connection / Record message**

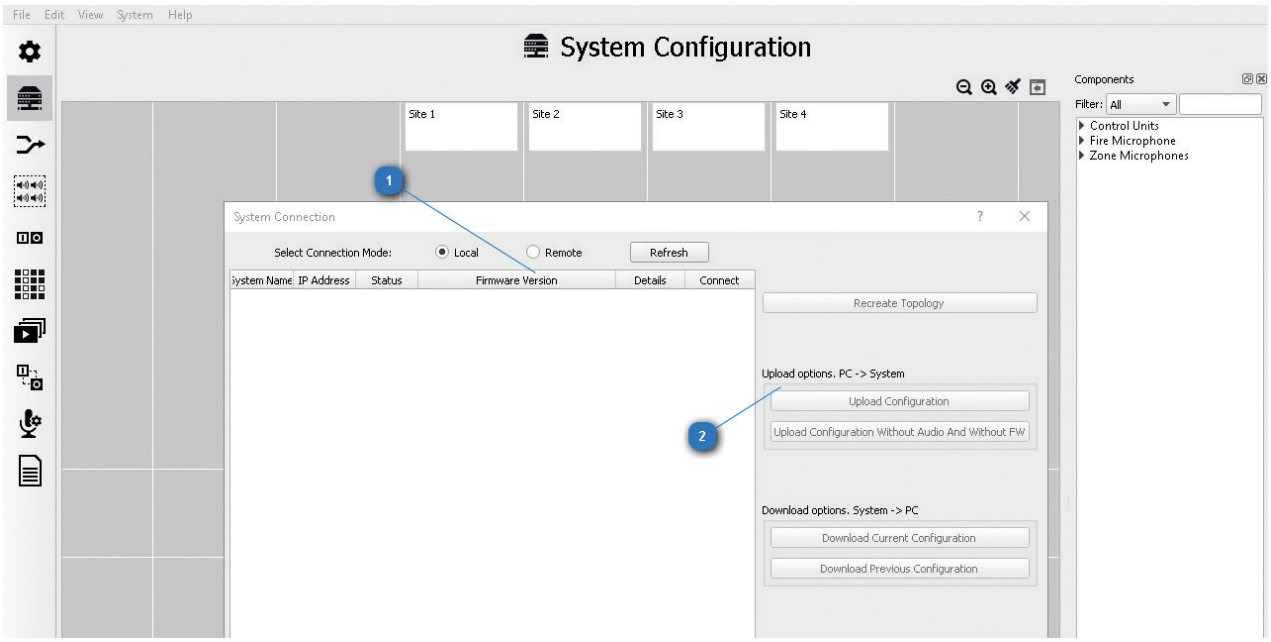
If this function has been enabled in the system you can download the messages recorded by DFMS, DMS or DMS-LCD microphones by clicking Download record message buffer. Clear record message buffer deletes all the messages.

10 **Project signature**

The project signature acts as a key which is needed for remote server access. If the system is set up correctly and the configuration has been sent to all the devices, the project signature should be sent to the remote access server administrator.

NOTE: After changing the signature the server with remote access will no longer be able to connect. The access rights are assigned to the administrator (key), but also to a specific system with given signature.

12.3.4 System Connection Settings



1 Connection Settings

This window allows the system to connect with a PC. If the DHCP server is configured correctly, then in the Connection Settings a server name identical to the one of the unit the PC is connected to should appear. In the case of connecting to a clean unconfigured system, the server will be named NewSystem. It must be remembered that automatic IP address acquisition should be set on the network interface controller of the computer connected to the EST VES system. In case a DHCP server is missing, select from the settings the option of IP address automatic acquisition, the EST VES system will detect the lack of a DHCP server and, using the AutoIP protocol, will assign an address from the special address pool 169.254.x.x to the communications card of the control unit and the computer network interface controller connected to it. If a connected server does not appear in the window – *see FAQ 1 Server not visible in the connection window.* In the case of an external active DHCP server in the network (e.g. a switch) the IP addresses are assigned to both the PC and the EST VES system.

The Remote option – allows the configurator to connect to the EST ENT VES / EST VES global server. Allunits worldwide with an internet connection and the owners consent to do so connect to the global server. Through the EST ENT VES / EST VES global server, the UTC support team may upgrade the software, create configurations and detect system errors.

This window also displays progress while loading a new configuration into the system. Having loaded the configuration, the Connection window will have a message displayed of configuration loading completion and two identical configuration versions existing on the PC and the EST VES system.

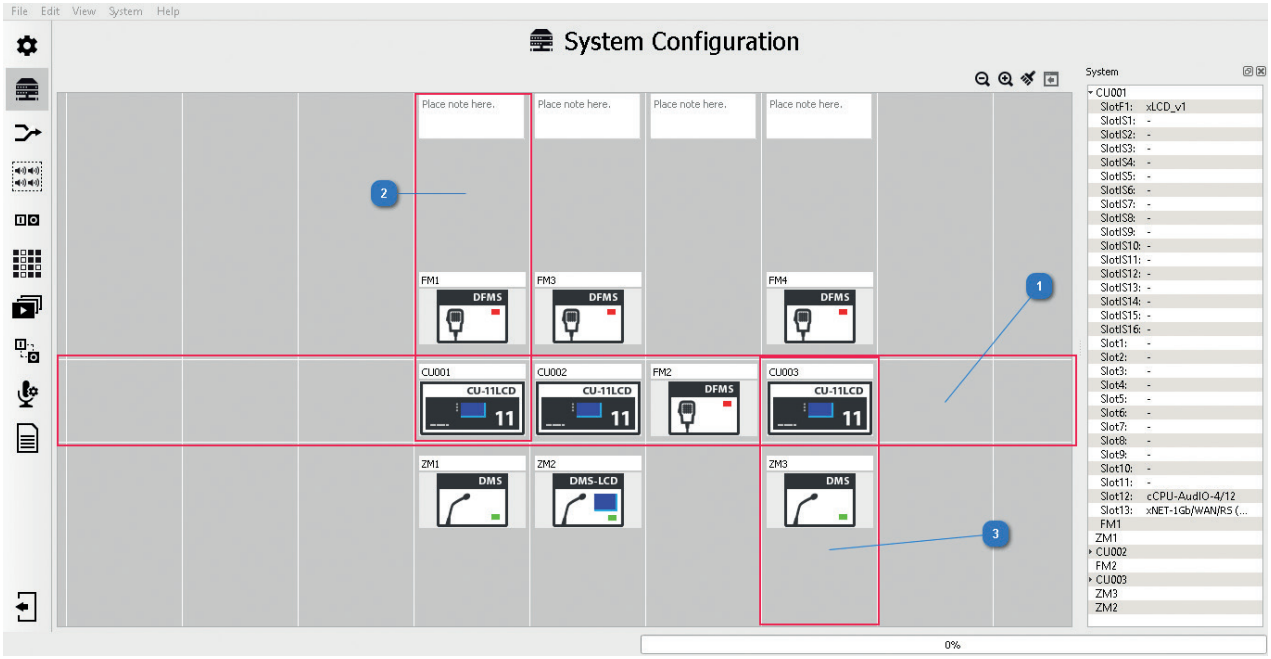
2 System Connection options

Recreate Topology – this function reads the system architecture. The system is able to identify cards located in a particular slot of the control unit, it detects all zone and fireman microphones connected and the method and place of connection of the units and microphones (optical fibre, cat5). **Caution:** the only element which is not detected by the system recreating topology are microphone extensions.

Upload options. PC -> System – this allows to send a configuration, created on a PC running the configurator software to the EST VES system connected to that PC. Prior to sending the configuration to the system, the software verifies the configuration file. Upload full configuration – sends the entire configuration from the PC to the system, including audio files in the PCM format. Loading of a full configuration must be executed the first time an empty system is being programmed, every successive configuration change which does not require changes in audio files may be loaded into the system via Upload configuration without audio which makes programming of the system much faster.

Download options. System -> PC – This allows to download the current full system configuration or the configuration previous the current one from the central unit.

12.3.5 Workspace



1 Fibre-optic link horizontal line

System elements arranged along this line are connected to each other by means of an optical fibre. The fibre-optic link makes the main communication loop of the system. The types of the connectors are specified in the technical documentation.

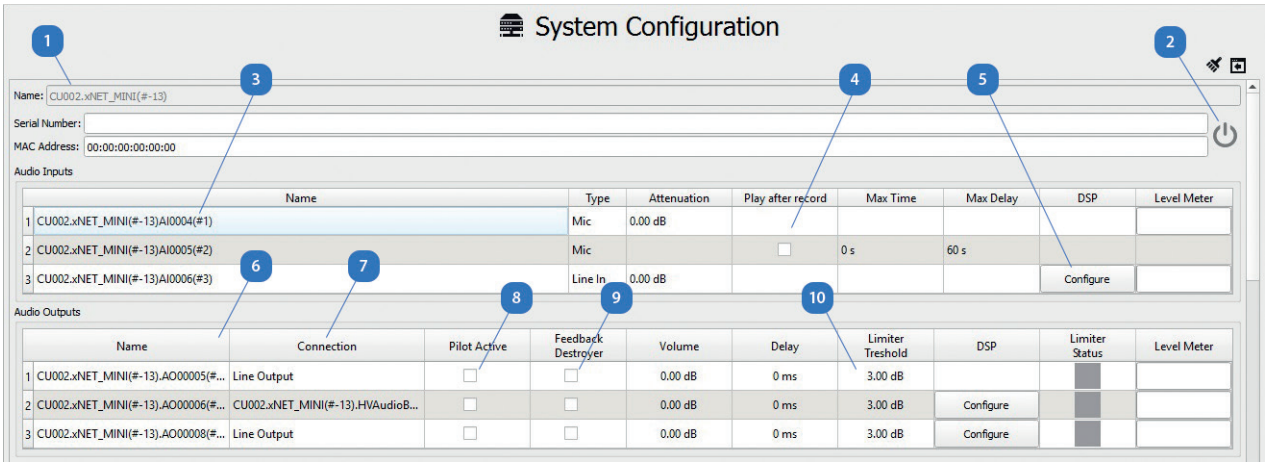
2 Vertical line of system component connection by means of Cat5 UTP cable – monitored

System elements are arranged along a vertical line. Within one column, they connected to each other by means of a Cat5 UTP cable. This is a local connection, monitored within one location, intended only to connect control units and fireman microphones.

3 Vertical line of system component connection by means of Cat5 UTP cable – unmonitored

System elements are arranged along a vertical line. Within one column, they are connected to each other by means of a Cat5 UTP cable. This is a local connection, unmonitored, intended only for zone microphones.

12.3.6 Central Unit Configuration



1 Device name

2 On-Line buton

The online mode offers the user the possibility to view the audio level meter in real time and to adjust the mic volume level. After uploading the configuration into the system you can enter the on-line mode by clicking the icon – it will then change it's color to green indicating active on-line mode.

3 Audio Inputs

The Audio Inputs field contains all available audio inputs on the EST VES central unit. Item 1 is the built in microphone used only in the Alarm mode – as the standard setting, the input at Item 1 always has the highest priority of 0 (see the Priority Manager tab – the built in microphone in alarm mode may have priorities assigned from the range 0-99). Item 2 is the same physical microphone as in Item No 1, however with a General type priority (200-299). The Item 2 microphone is used to transmit ordinary messages in the EST VES system, e.g. Public Address. Double-clicking the name of the audio input enables to change the generic name assigned by the configurator. Item No 3 is the Line in input located on the charger module of the EST VES central unit. This input has a general type priority assigned by default, a double-click on the name field enables to change the generic name.

4 Audio Inputs / Play after record

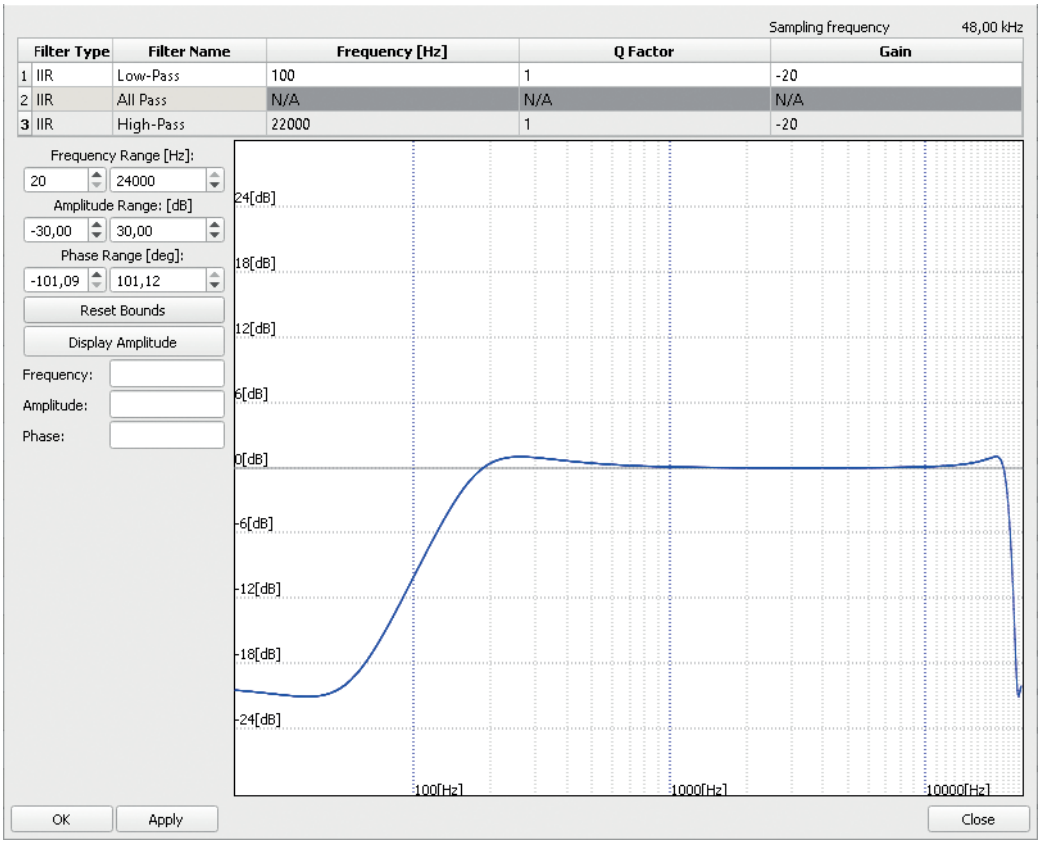
Activating the Play after record option allows recording up to 40 s of a message being transmitted by the built in microphone and playing it back immediately after releasing the PTT button.

Max time – sets the length of recorded message

Max delay – sets the longest time the system will wait for the intended transmission zone to be freed. After the set time the message will be played back from the buffer. If the operator chooses to transmit to more than one zone, the system will play the message in all the available / free zones after the set delay time has passed and erase the message from the buffer.

5 Audio Inputs / DSP Configure

The Line in input has a 3 band parametric equalizer which can be freely configurable in two ways: by uploading the configuration to the system with the center frequency, filter quality and gain settings or by changing the parameters of the filters in on-line mode.



6 Audio Outputs / Name

EST VES has 3 independent audio outputs. Double-clicking the name of the audio output enables to change the generic name assigned by the configurator.

7 Audio Outputs / Connection

This tab displays the internal connection of a given audio output. Unlike the EST ENT VES system these connections are predefined in the EST VES. The first one being wired to the internal speaker, the second one is connected to the internal 100 V bus through the amplifier modules providing 100 V signal to the line control cards and the third one is a line output located on the EST VES charger module. The line output is not monitored by the system. The unit treats the output line as a zone in the system (eg. signal to an independent PA system) to which it can transmit the message.

8 Audio Outputs / Pilot active

Selected Active Pilot option activates the control of the connection between audio output (DSP) and amplifier module. The pilot signal is also used by the line control cards to supervise the speaker lines.

9 Audio Outputs / Feedback Destroyer

Activating Feedback Destroyer means that in places where the speakers are located in close proximity to the system microphone, the effect of acoustic feedback will be significantly limited.

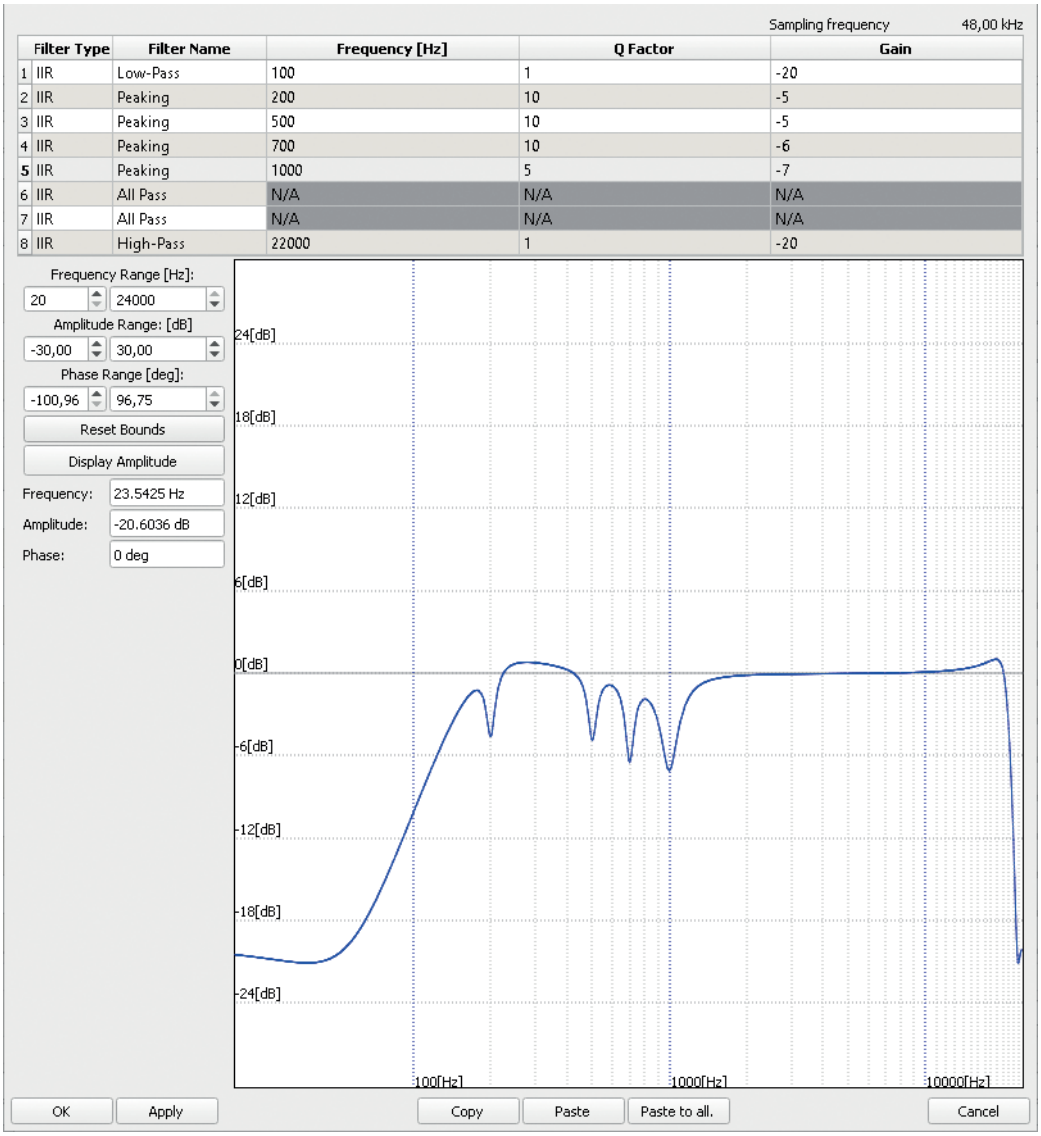
10 Audio Outputs / Signal Processing

The window allows to change parameters like delay, volume level, limiter threshold and EQ. Setting the parameters is possible in two ways:

1. by changing the values in a particular window Volume / Delay and uploading the configuration to the system;
2. by changing the parameters in the Volume / Delay section in on-line mode.

Outputs 2 and 3 of the EST VES Central Unit have an 8 band parametric equalizer which can be freely configurable in two ways:

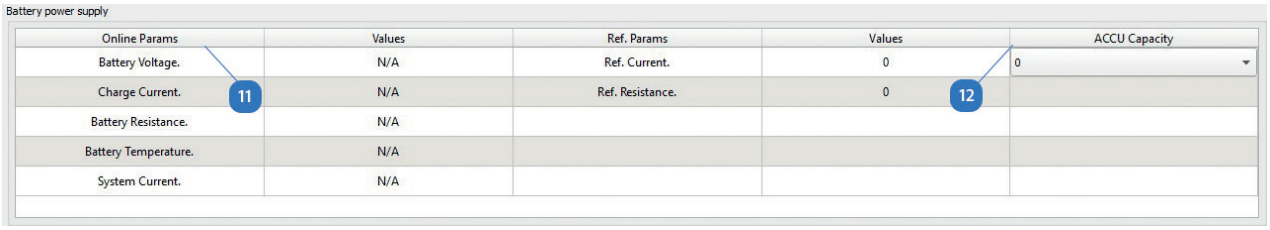
1. by changing the center frequency, filter quality and gain and uploading the configuration to the system;
2. by changing the parameters of the filters in on-line mode.



Paste to all function allows to copy EQ settings to all outputs available in the control unit. To do so select Copy to save the settings of the filters and then select Paste to all to propagate all filters settings to all outputs.

Setting the level of threshold below 0 dB activates the audio limiter. Signal level exceeding threshold is indicated by the red color in the Limiter status. Green indicates that the output is below the threshold. In practice activation of audio limiter means that above a threshold, output signal is not increasing, regardless of what value the input signal reaches. The Limiter allows to protect the system amplifiers from clipping the signal peaks and sharp reduction in high-level transients without affecting the essential content sound material.

Signal Level Meter is only active in on-line mode. The maximum level shown on the indicator corresponds to the voltage of 1 V RMS output codec.



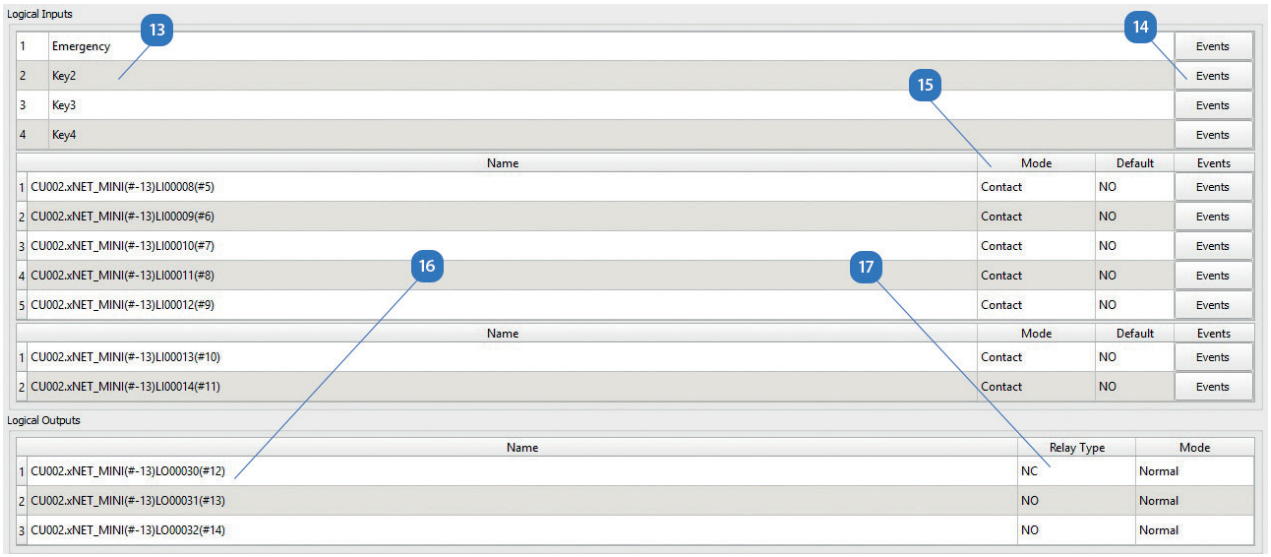
11 Online Parameters

This tab is updated in the online mode, giving the user a live preview of the charger unit parameters. This enables the user to control the state of the battery array.

- Battery Voltage – displays the existent voltage in the battery circuit.
- Charge current – displays the current in the battery circuit, this value is compared with a reference value calculated from the battery capacity.
- Battery Resistance – displays the current battery resistance, , this value is compared with a reference value calculated from the battery capacity.
- Battery Temperature – displays the data from the battery temp. sensor connected to the 3.5 mm jack on the charger unit.
- System Current – splays a total momentary current draw from the main PSU.

12 Accu Capacity

In this field, the capacity of the installed batteries is selected. Choose the capacity of a single battery included in your array. For example, for a 4 x 5 Ah array – choose 5. From this, the system will calculate the reference charge current and battery resistance values.



13 Logical Inputs / buttons

The Logical Inputs tab contains all available buttons as well as logical inputs on the EST VES central unit. The first four items in this section are buttons located on the front panel of the EST VES. The next seven inputs are located on the charger module. Lastly, there are two additional inputs located on the xNET_mini communications card in the xxxxN series devices. A double click on the name of a button / logical input enables to change the generic name assigned by the configurator.

14 Logical Inputs / Events

The Events buttons transfers the programmer directly to the EventConfiguration tab. This enables to assign any function or event group to a selected button. A right-click on the name of a button / logical input in the EventConfiguration tab, as well as selection of Go to definition, enables to return quickly to the editing menu of the Central Unit.

15 Logical Inputs / Mode

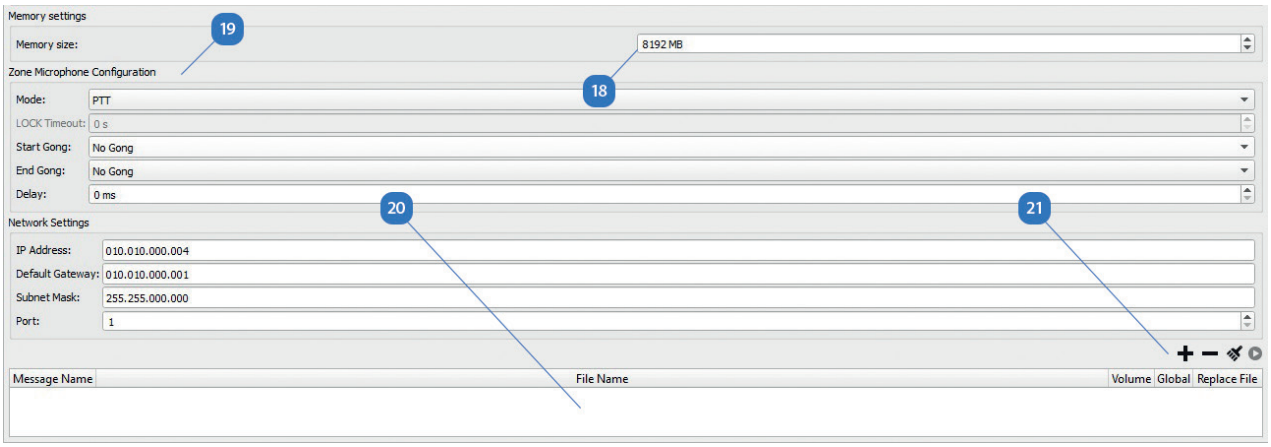
The logical input editing window enables activation of the input monitoring function – Mode Contact / Monitor. In case the Monitor option is selected, it is necessary to install two 4.7 kΩ parametrizing resistors at the end of the line. In the window Default, we select the input status for inactivity for the NC option the system expects a closed circuit, opening the circuit results in activation of the function assigned in EventCongifuration. For NO the situation is reverse: the system expects an open circuit on the input, closing results in activation of the assigned function.

16 Logical Output / Name

The Logical Outputs tab contains all available logical (relay) outputs on the EST VES central unit. A double click on the name of a logical output enables to change the generic name assigned by the configurator. Assigning a function to a chosen relay is possible in the EventConfiguration – select an input event, assign a general function and click Add control outputs action (the circle in a square icon ⧈).

17 Logical Output / Settings

The relay type window informs about the physical type of the relay installed. NC – normally closed, in case of a power cut, the relay will be closed, NO – normally open, in case of a power cut, the relay will open. The Mode window enables to reverse the relay logic, opposite to its behaviour in case of a power cut. The Inverse causes, e.g., that the relay NC / Inverse – in the original status it is a NO relay, and activation of the function to which it is assigned will change the status of the relay into the opposite one, i.e. NC. For NC / Normal in the original status (not triggered by any function) the relay is closed, activation of the function, as assigned to this output, causes that the relay status changes into the opposite one, i.e. open. The values from the windows Relay Type and Mode are also duplicated in the information window below Scenario State and in the EventConfiguration tab the function General – Logical Outputs, also in the information window below State.



18 Memory size

In this field, the capacity of the microSD card on the xNET_mini card is displayed after downloading the system topology.

It is not recommended to modify this value.

19 Microphone configuration

The dedicated section for PTT buton, placed on handheld built in microphone. Apart from the PTT mode – Push to talk in the Mode option, there is a possibility to select LOCK, i.e. having pressed the PTT button, the microphone is active for the time defined in the Lock Timeout window. The maximum microphone activation time is 60 seconds. The Start Gong option – this activates the gong having pressed the PTT button; End Gong will be activated after the PTT button is released.

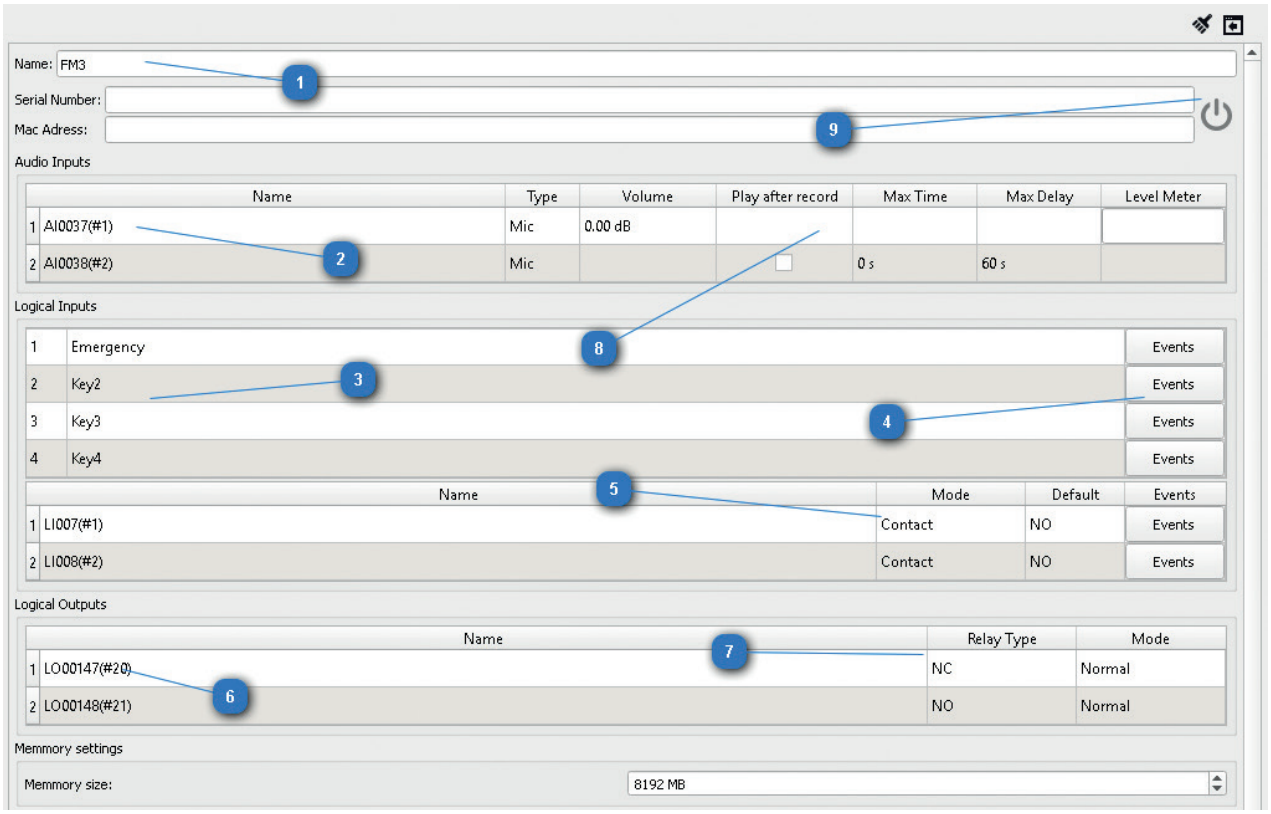
20 Message window

This field contains the names and properties of messages uploaded to the system.

21 Adding messages

By selecting the + icon we add a sound file. The configuration software accepts formats audio MP3 and wav and converts them to the PCM 48 kHz 16 bit format which is used by the EST VES system. In addition, we can attribute an individual name to the added audio file (Message Name), which will enable its identification within the system. The Global option – means that a message will be saved on the memory cards of all available units in the system. The Local Copy option – clicking Copy will result in saving the original audio file (prior to its conversion into PCM) in the Workspace folder. Replace File – this is used to replace a selected audio file with another one. The icon deletes all messages held on the list. The icon is used to hear audio files on a computer on which the configuration software is installed, before these are loaded into the system.

12.3.7 DFMS



1 Name

The name field enables assignment of an individual name to the fireman microphone, other than the generic name assigned by the configurator.

2 Audio Inputs

The Audio Inputs field contains all available audio inputs on the DFMS microphone. Item 1 is the microphone used only in the Alarm mode – as the standard setting, the input at Item 1 always has the highest priority of 0 (see the Priority Manager tab – the fireman microphone may have priorities assigned from the range 0-99). Item 2 is the same physical microphone as in Item No 1, however with a General-type priority (200-299). The Item 2 microphone is used to transmit ordinary messages in the EST VES system, e.g. Public Address. Double-clicking the name of the audio input enables to change the generic name assigned by the configurator.

3 Logical Inputs

The Logical Inputs tab contains all available buttons as well as logical inputs on the fireman microphone. A double click on the name of a button / logical input enables to change the generic name assigned by the configurator.

4 Events

The Events buttons transfers the programmer directly to the EventConfiguration tab. This enables to assign any function or event group to a selected button. A right-click on the name of a button / logical input in the EventConfiguration tab, as well as selection of Go to definition, enables to return quickly to the editing menu of the fireman microphone.

5 Mode / Default

The logical input editing window enables activation of the input monitoring function – Mode Contact / Monitor. In case the Monitor option is selected, it is necessary to install two parametrizing resistors at the end of the line, of 4.7 kΩ.

In the window Default, we select the input status for inactivity for the NC option the system anticipates a closed circuit on the input, opening results in activation of the function assigned in EventCongifuration. For NO the situation is reverse: the system anticipates an open circuit on the input, closing results in activation of the assigned function.

6 Logical Outputs

The Logical Outputs tab contains all available logical (relay) outputs on the fireman microphone. A double click on the name of a logical output enables to change the generic name assigned by the configurator. Assigning a function to a chosen relay is possible in the EventConfiguration – select an input event, assign a general function and click Add control outputs action (the circle in a square icon).

7 Relay Type / Mode

Relay type is a window to inform of the physical type of the relay installed. NC – normally closed, in case of a power cut, the relay will be closed, NO – normally open, in case of a power cut, the relay will be open.

The Mode window enables to reverse the relay logic, opposite to its behaviour in case of a power cut. The Inverse causes, e.g., that the relay NC / Inverse– in the original status it is a NO relay, and activation of the function to which it is assigned will change the status of the relay into the opposite one, i.e. NC. For NC / Normal in the original status (not triggered by any function) the relay is closed, activation of the function, as assigned to this output, causes that the relay status changes into the opposite one, i.e. open. The values from the windows Relay Type and Mode are also duplicated in the information window below Scenario State and in the EventConfiguration tab the function General – Logical Outputs, also in the information window below State.

8 Audio input options

Activating the play after record option allows recording up to 40 s of a message being transmitted by the EST-DFMS and playing it back immediately after releasing the PTT button.

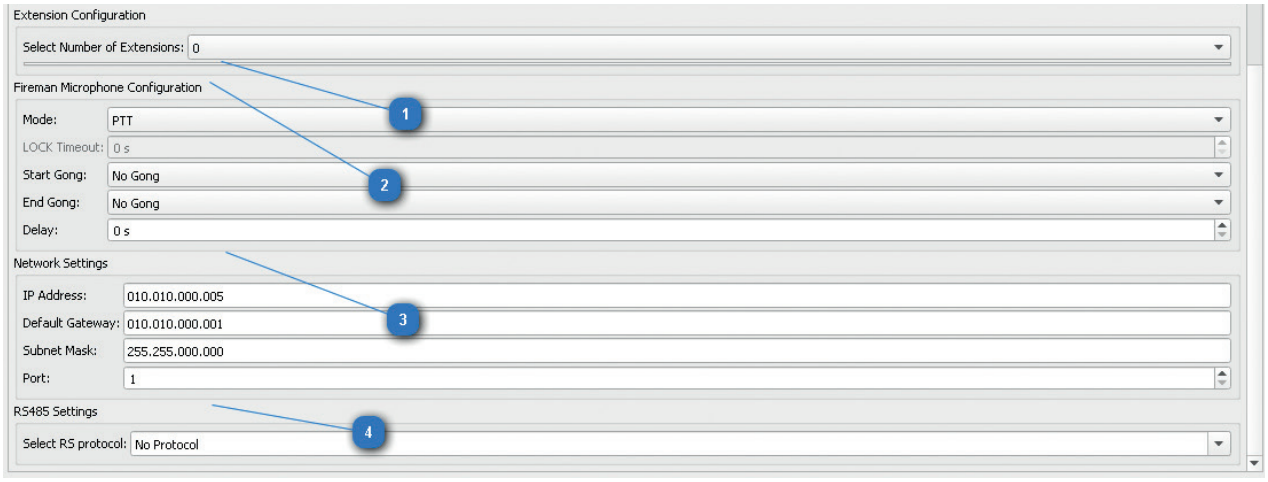
	Name	Type	Volume	Play after record	Max Time	Max Delay	Level Meter
1	AI0037(#1)	Mic	0.00 dB				
2	AI0038(#2)	Mic		☑	40 s	0 s	

Max time – sets the length of recorded message.
Max delay – sets the longest time the system will wait for the intended transmission zone to be freed. After the set time the message will be played back from the buffer. If the operator chooses to transmit to more than one zone, the system will play the message in all the available / free zones after the set delay time has passed and erase the message from the buffer.

	Name	Type	Volume	Play after record	Max Time	Max Delay	Level Meter
1	AI0037(#1)	Mic	0.00 dB				
2	AI0038(#2)	Mic		☐	40 s	60 s	

9 On-line mode

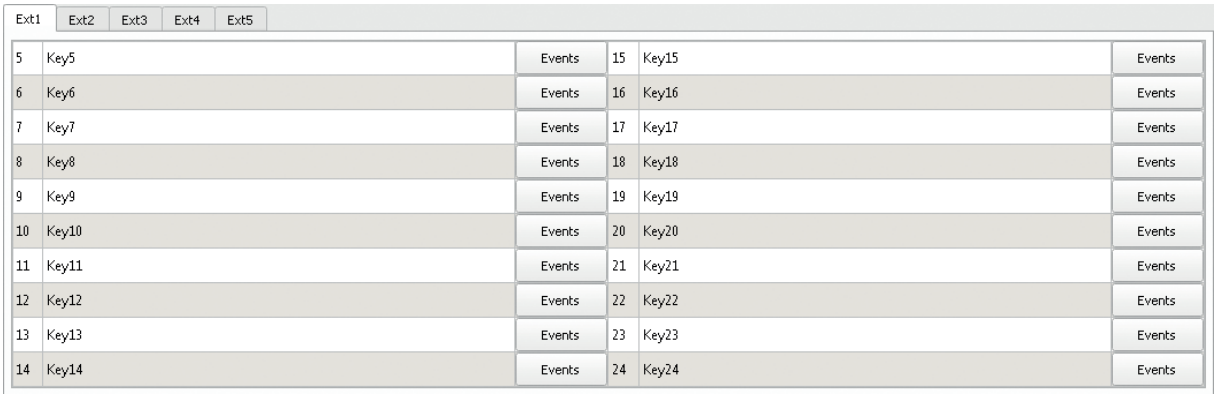
The online mode offers the user the possibility to view the audio level meter in real time and to adjust the mic volume level. After uploading the configuration into the system, you can enter the on-line mode by clicking the icon – it will then change it's color to green indicating active on-line mode .



DFMS editing window – continued

1 Extension Configuration

In this window the user declares the number of connected extensions. The maximum of 5 20-button extensions can be connected to the microphone. Respectively to the selected number of extensions, the configuration window will extend to include the field for additional button name editing and ability to assign a function using the Events button. The extended editing field is shown below:



2 Fireman Microphone Configuration

The fireman microphone PTT button function window. Apart from the PTT – Push to talk mode in the Mode option, there is a possibility to select LOCK, i.e. having pressed the PTT button, the microphone is active for the time defined in the Lock Timeout window. The maximum microphone activation time is 60 seconds.
The Start Gong option – this enables the gong having pressed the PTT button; End Gong will be activated after the PTT button is released.

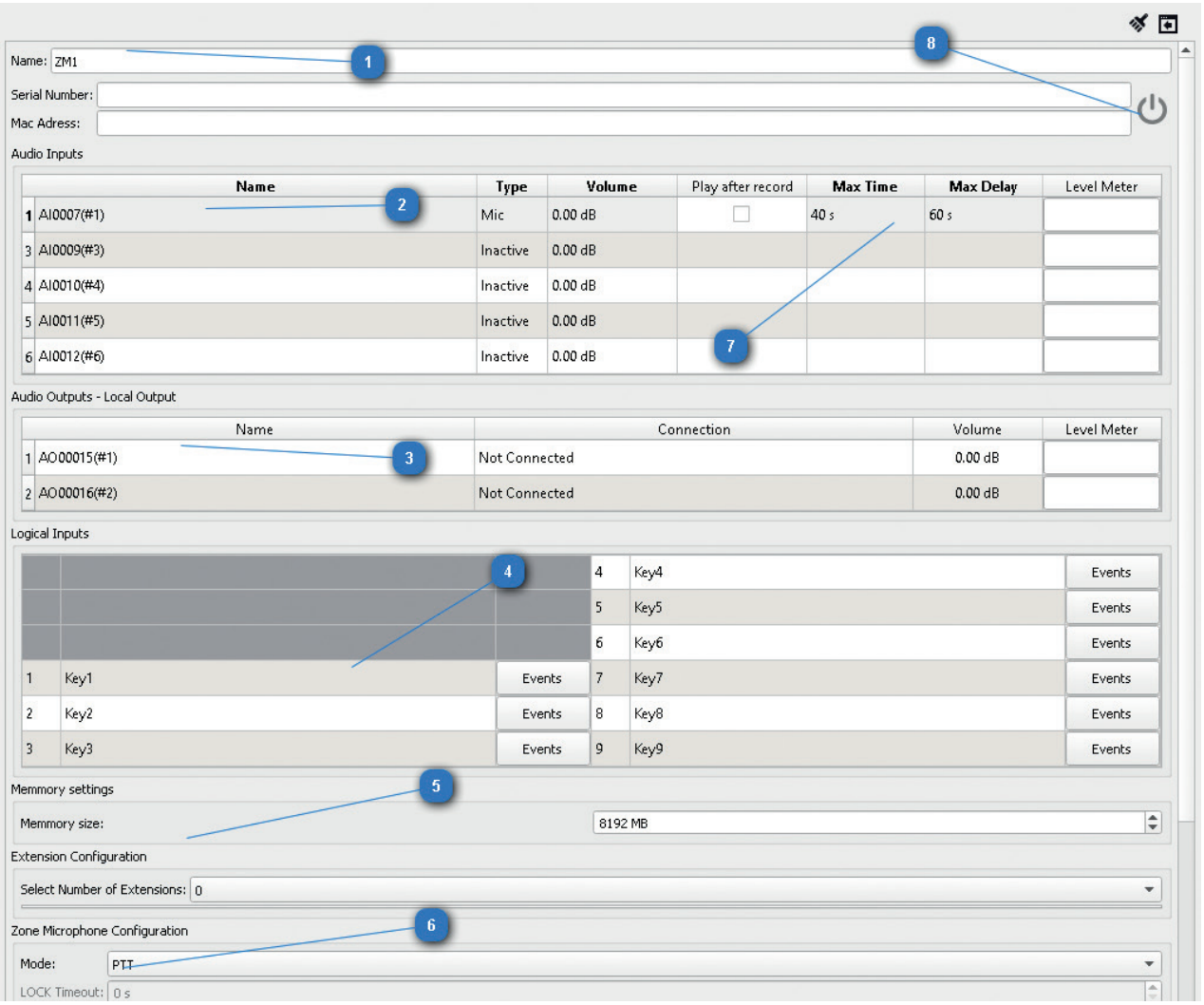
3 Network Settings

This is the address which will be assigned to a physical device having loaded a configuration into the system. Changing IP addresses assigned by the configurator is not recommended.

4 RS485 Settings

The RS485 port allows the system to communicate with external devices. However, this requires selecting the appropriate protocol from the list.

12.3.8 DMS



1 Name

This field enables to assign an individual name to the DMS microphone, other than the generic name assigned by the configurator.

2 Audio Inputs

The Audio Inputs field contains all available audio inputs in the zone microphone. Item 1 on the above figure, is a gooseneck condenser microphone – connected to the built in XLR socket.. As standard, adding a zone microphone sets the gooseneck microphone using the built in XLR as activates the main microphone. Item 2 is a jack TRS 3.5 mm type socket located on the EST-DMS rear panel, intended for electret microphones. The system automatically detects a microphone connected to the TRS jack and disconnects the built in XLR in this event. Items 3,4,5,6 are four unbalanced linear audio inputs. Available via 3,5 mm TRS jack sockets. In one jack 3,5mm socket we have access to 2 channels – Tip: Channel 1+, Ring: Channel 2+, Sleeve 1,2. In order to activate the input, in the Type window change the value Inactive into Line IN on the selected input which we want to activate. Double-clicking the name of the audio input enables to change the generic name assigned by the configurator.

3 Audio Outputs – Local Output

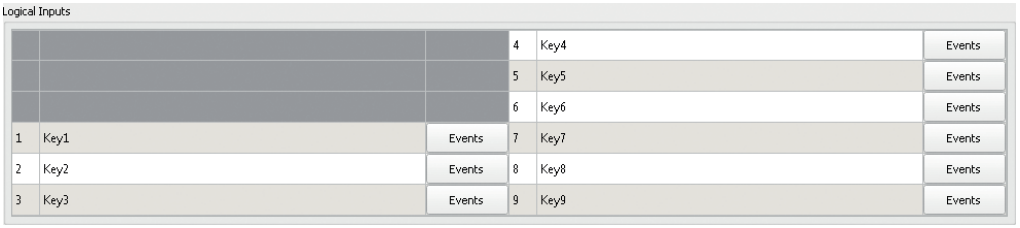
Each zone microphone is equipped with two audio outputs. Item 1 is an output directly connected to the internal amplifier of the built-in speaker. Item 2 is a linear output, socket type TRS. Tip: out2+, Ring: out2+, Sleeve 2-. In order to activate the output, in the Connection window change the value from Not connected into Line output. An activated output is shown as a separate subzone in the system.

4 Logical Inputs

The Logical Inputs tab contains all available buttons on a zone microphone. A double click on the name of a button enables to change the generic name assigned by the configurator. The Events buttons transfers the programmer directly to the EventConfiguration tab. This allows to assign any function or event group to a selected button. A right-click on the name of a button / logical input in the EventConfiguration tab, as well as selection of Go to definition, enables to return quickly to the editing menu of the zone microphone.

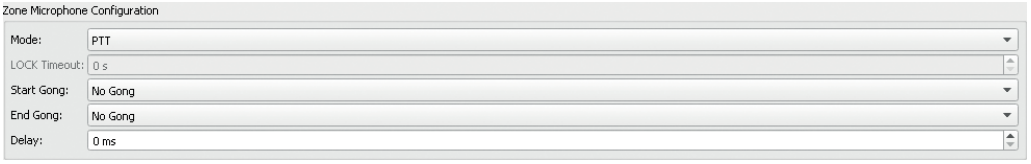
5 Extension Configuration

In this window the user declares the number of connected extensions. The maximum of 5 20-button extensions can be connected to the microphone. Respectively to the selected number of extensions, the configuration window will extend to include the field for additional button name editing and ability to assign a function using the Events button. The extended editing field is shown below:



6 Zone Microphone Configuration

The dedicated section for PTT button is placed on the front panel of the zone microphone function window. Apart from the PTT mode – Push to talk in the Mode option, there is a possibility to select LOCK, i.e. having pressed the PTT button, the microphone is active for the time defined in the Lock Timeout window. The maximum microphone activation time is 60 seconds. The Start Gong option – this enables activation of the gong having pressed the PTT button; End Gong will be activated after the PTT button is released.



7 Audio input options

Activating the play after record option allows recording up to 40 s of a message being transmitted by the EST-DMS and playing it back immediately after releasing the PTT button.

	Name	Type	Volume	Play after record	Max Time	Max Delay	Level Meter
1	AI0037(#1)	Mic	0.00 dB				
2	AI0038(#2)	Mic		☑	40 s	0 s	

Max time – sets the length of recorded message.
Max delay – sets the longest time the system will wait for the intended transmission zone to be freed. After the set time the message will be played back from the buffer. If the operator chooses to transmit to more than one zone, the system will play the message in all the available / free zones after the set delay time has passed and erase the message from the buffer.

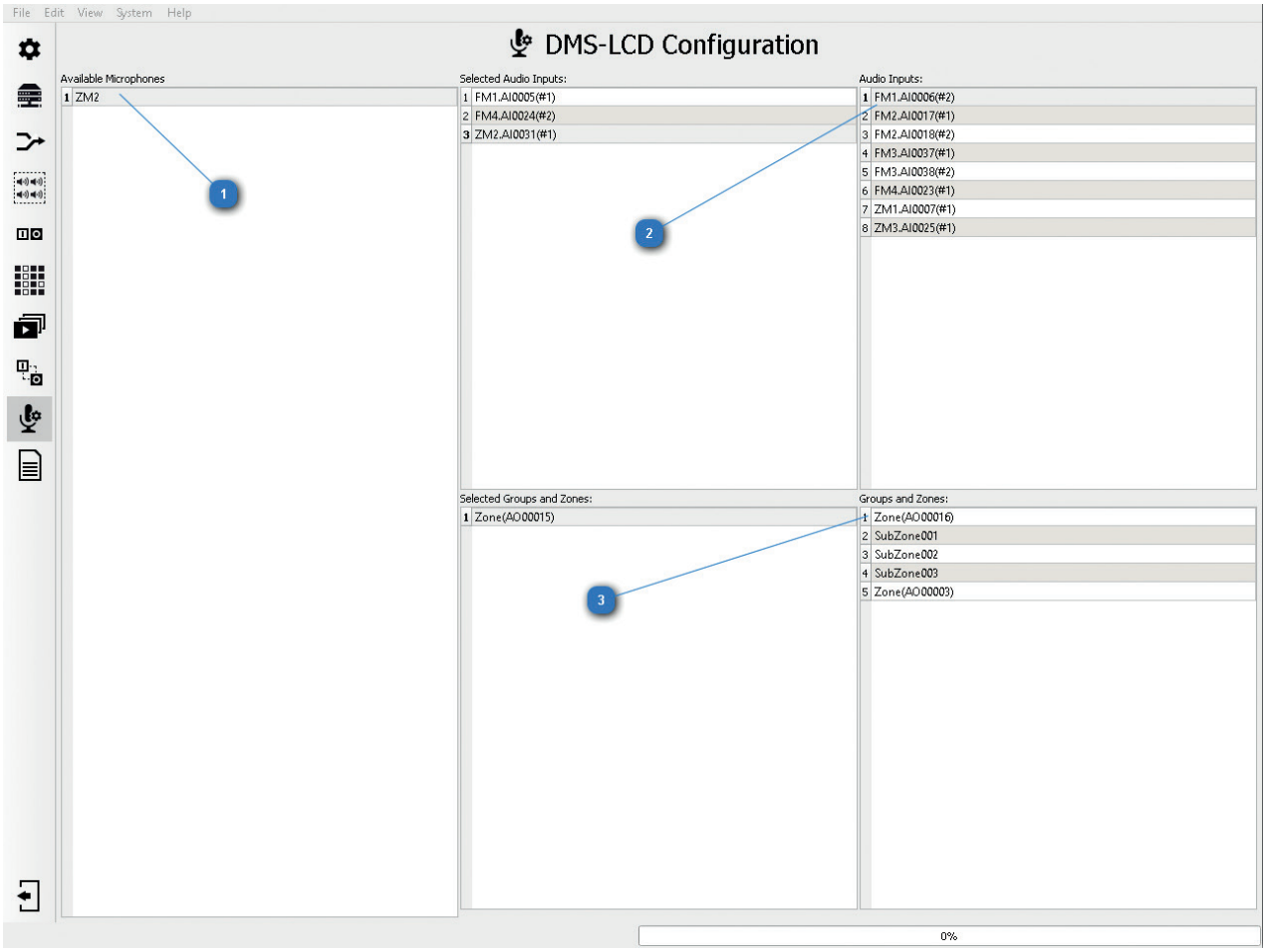
	Name	Type	Volume	Play after record	Max Time	Max Delay	Level Meter
1	AI0037(#1)	Mic	0.00 dB				
2	AI0038(#2)	Mic		☐	40 s	60 s	

8 On-line mode

The online mode offers the user the possibility to view the audio level meter in real time and to adjust the mic volume level. After uploading the configuration into the system, you can enter the on-line mode by clicking the icon – it will then change it's color to green indicating active on-line mode.

12.3.9 DMS-LCD

The DMS-LCD microphone has the same configuration window as the DMS microphone. The only exception being that, to set up the messages and zones visible on the LCD touch panel you should go to the DMS-LCD configuration tab on the left side of the screen menu bar .



1 Available Microphones

A list of available DMS-LCD microphones in the system. Every microphone can have individually programmed access to audio inputs and zones.

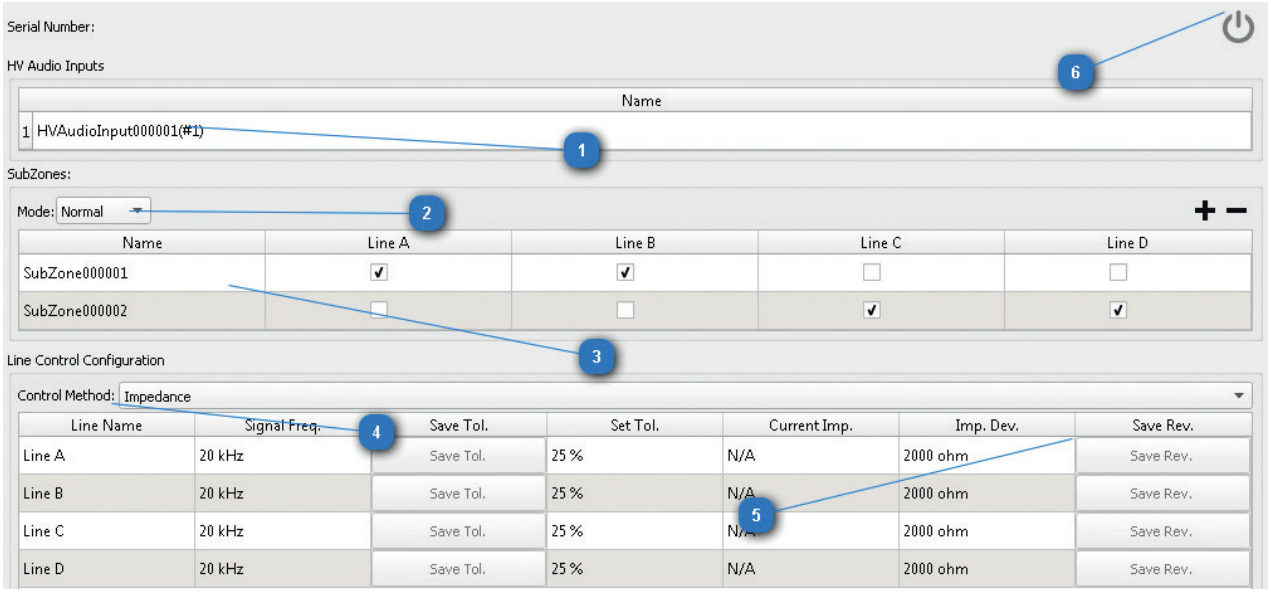
2 Audio inputs

A list of defined audio sources / messages available in the EST VES system. A double-click on the chosen input source will transport it to the Selected Audio Inputs field and add it to the DMS-LCD microphone touch screen menu.

3 Groups and zones

A list of defined audio outputs / zones available in the EST VES system. A double-click on the chosen output transports it to the Selected Groups and Zones field and add it to the DMS-LCD microphone touch screen menu.

12.3.10 xCtrLine-2/4



1 HV Audio Inputs

The name field enables to assign an individual name to the input intended to receive a 100 V signal from an amplifier output. The name is shown on the main AudIO-4/12 editing window, in the Connection tab.

2 SubZones / Mode:

Mode enables switching the card into following modes: Loop – the system detects short circuit / open line as well as ground leakage; Regulator – the volume control mode on the speaker line.

3 SubZones

Speaker zone editing window. It enables changing of the generic name of a zone by double-clicking the name. In addition, it is possible to define which speaker line outputs (A,B,C,D) are assigned to a given zone. Any combination is possible, however the default settings are accordant with the EN54-16, EN54-4 standards and assign two outputs per each zone.

4 Line Control Configuration / Control Method:

Speaker line supervision method window – options include: Impedance method and Switching off the speaker line supervision.

5 Save Rev.

If the system is supposed to supervise speaker lines by means of the impedance method, having loaded a configuration into the system and connected a speaker line of a properly matched power and free of ground faults, load the impedance reference for a given line. In order to do this, select the Save REV button. From now on, the system properly supervises the operation of the speaker line. The impedance method continuously measures the impedance of the speaker line and if the value set in the tolerance window has been exceeded, an error is reported. The impedance method is equipped with a number of algorithms to minimize reporting untrue faults resulting from abrupt temperature changes which affect line impedance, as well as sudden changes of impedance itself. Adequate impedance measurement range on a single speaker line starts at 12.5 Ω, and ends at 10 kΩ, for measured frequency of 20 kHz. A 4-output xCtrLine-4 card (A,B,C,D) can be loaded up to 800 W of total power, the maximum load for a single speaker line is 300 W. In the case of a bridged connection of outputs A+B and C+D, the maximum tolerated power for each pair is 450 W. for a 2-output xCtrLine-2 card (A,B), the correct impedance measurement range on a single speaker line is minimum 12.5 Ω, max 10k ohm, for the reference frequency of 20 kHz. A 2-output card can be loaded up to 400 W of total power, the maximum load for a single speaker line is 300 W. In the case of a bridged connection of outputs A+B and C+D, the maximum supported power for each pair is 450 W.

6 On-line mode

The on-line mode enables to view the impedance values, as measured, as well as record reference impedance into the control card. Having loaded a configuration into the system, a single click on the left mouse button on the grey icon results in entering the real-time view mode and change of the colour of the icon into bright green. A change of tolerance, reference impedance or real-time measurement must be preceded by entering into the on-line mode.

12.4 Priority Manager Configuration

Each zone microphone, fireman microphone or audio input available in the system must have its priority defined in order to ensure correct operation, as intended for sound emergency systems.

1 Message priority mode in case of conflict – FIFO / LIFO

Priority Resolve Mode – this is a global system function which defines the system's behaviour in case a conflict occurs. The conflict being a simultaneous transmission to the speaker zone from two or more audio sources of the same priority.

For FIFO (First in first out) – in the case when Source 1 of Priority X is transmitting to Output Y and after some time Source 2 of Priority X wants to transmit to Output Y too, Source 2 can not transmit until Source 1 has finished transmitting to Output Y.

For LIFO (Last in first out) – in the case when Source 1 of Priority X is transmitting on Output Y (speaker zone) and, after some time, Source 2 of Priority X will start transmitting on Output Y (speaker zone) too, then Source 2 will replace Source 1, as transmitting, and will commence transmitting to Output Y.

Priority Resolve Mode also determines the method of dynamic assignment of a backup power amplifier in case a failure occurs of the amplifier modules which are responsible for transmission of simultaneous messages of the same priorities. In case two equally prioritized messages are executed to various zones, Message 1 of Priority (100), Message 2 of Priority (100) too, which was matriced after Message 1 – when an amplifier module failure occurs for the FIFO mode: the amplifier which supplies Message 1 will not be taken over by Message 2 until Message 1 (matrix) has been completed; for LIFO – the Message 1 amplifier module will be disconnected and assigned as a backup amplifier for Message 2.

2 Audio source type selection: Emergency, General, Service, BGM

The EST VES has 4 priority groups, each of the groups has 99 levels. Priorities are numbered in the reverse order: the fireman microphone in Emergency mode has the highest 0 priority the lowest priority is BGM 399.

Priority types:

Emergency, range 0-99 – audio sources with the assigned priority ranged 0-99 are active only when the system is in the Alarm Mode. The Emergency priority can only be assigned to the EST-DFMS fireman microphone, messages recorded on memory cards and control unit audio inputs.

Service, range 100-199 – can be assigned to every audio source type and does not allow matrix activation in the Alarm Mode. A loss of the 230 V AC basic power supply does not deactivate Service-type source messages. Sources of priorities contained within this group are subject to the Zone(s)off function.

General, range 200-299 – can be assigned to zone microphones and messages. It does not operate in the alarm mode and in case of a loss of the 230 V AC basic power supply. Sources of priorities contained within this group are subject to the Silence, Power Save and Zone(s)off functions.

BGM, range 300-399 – assigned only to audio inputs located in control units and zone microphones. BMG-priority audio source Matrices do not operate in the alarm mode and in case of a loss of the 230 V AC basic power supply. Sources of priorities contained within this group are subject to the Silence, Power Save and Zone(s)off functions.

As standard, the configuration software assigns arbitrarily priorities from the Emergency group, depending on the audio source, that is:

1. For the EST-DFMS fireman microphones – the Emergency Priority NB 0-10 is the highest priority pool reserved only for these devices.
2. Sound messages played back from system memory cards for the Emergency Priority Evacuation checkbox – these are assigned a value ≥ 10.
3. Sound messages played back from system memory cards for the Emergency Priority Warning checkbox – these are assigned a value ≥ 30.
4. For the remaining audio inputs on control units with a possibility of being assigned the Emergency Priority Evacuation checkbox – these are assigned a value ≥ 20, and for the Warning option ≥ 40.

3 Audio source description

The Audio Input and Component items indicate specifically which audio input, zone microphone, fireman microphone or message a selected priority is assigned. The Component tab informs of the location in which a given message was recorded and will be played back from or – in case of audio inputs – specifies the device in which the selected input is located.

4 Zone retained signalling mode, Evacuation / Warning modes

Having assigned the Emergency mode to any audio source, the Warning checkbox appears in the right corner. This means that as the initial setting for the Evacuation mode, in case of transmitting a message on a given zone, on the RGB button diode programmed as the Select Zone of this zone, the red LED will be blinking. Ticking the checkbox is equivalent to changing the mode to Evacuation which results in the RGB LED – the red one – being on during a message transmission.

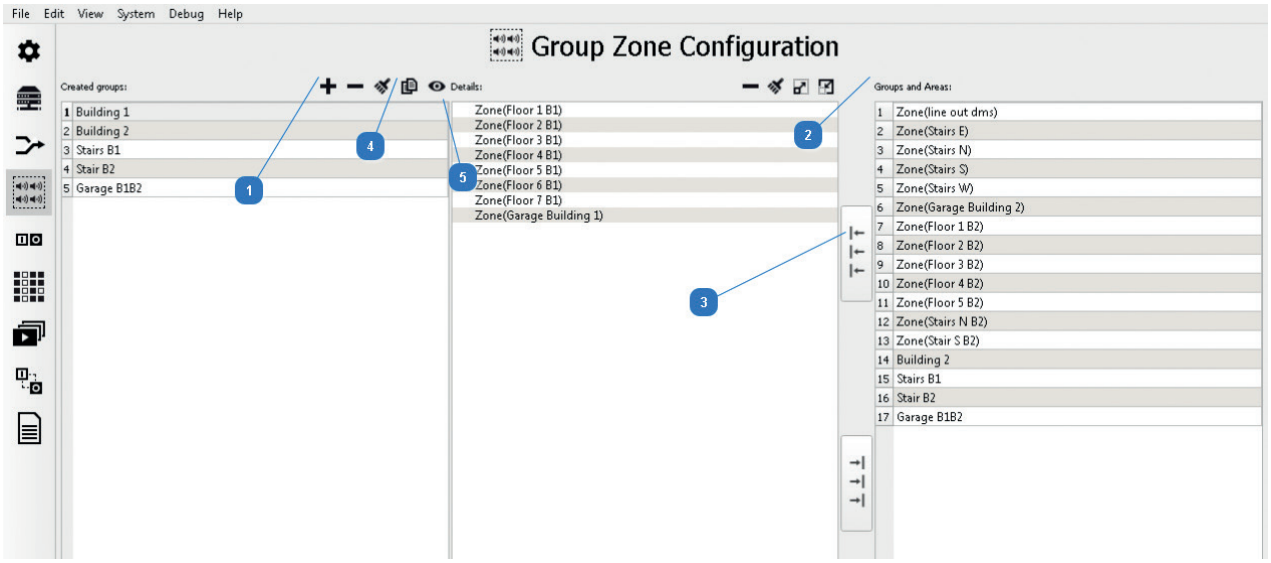
5 Priority group filtering

The filtering tool enables to display all audio sources from a selected priority group. To do this, click the left mouse button once on the All Types tab. This will result in options dropped down, then select a group and confirm activation of the filter by clicking Apply Filters.

6 Coexistence type

This function defines the systems behaviour when an incoming message has superseded the message occupying this zone at the moment. f the superseding message / audio source is defined as Continue After Ending it means that the system will return to transmitting the previous (lower priority) message after a higher priority message has ended. If the superseding message / audio source is defined as Remove All After Ending then after the end of the higher priority (superseding) message, the lower priority message will not be restored.

12.5 Group Zone Configuration



This function is available only from the advanced configurator level – Basic Configuration – Configuration Mode – Advanced. It is used to combine any predefined speaker lines / zones into one. A group created in this way has the same functionalities in the system as a single zone.

In order to create a new group, the following must be done:

1. **Using the + icon**, a new group is created whose generic name is ZoneGroup0000x; the name is editable by moving the mouse cursor over it and pressing the left mouse button.

2. From the **Group and Areas** tab, the column on the right hand side of the screen, move the mouse cursor over available Subzones, Zones and add elements to the group by double-clicking of the left mouse button.

3. It is also possible to add all available subzones and zones by means of the dedicated icon .

4. **Group cloning function: Clone Group** – this is available under the icon . Highlight the previously created group by moving the mouse cursor over its name and by clicking the left mouse button once. Then select the icon . Clone group results in creating a new group of the identical composition as the source group.

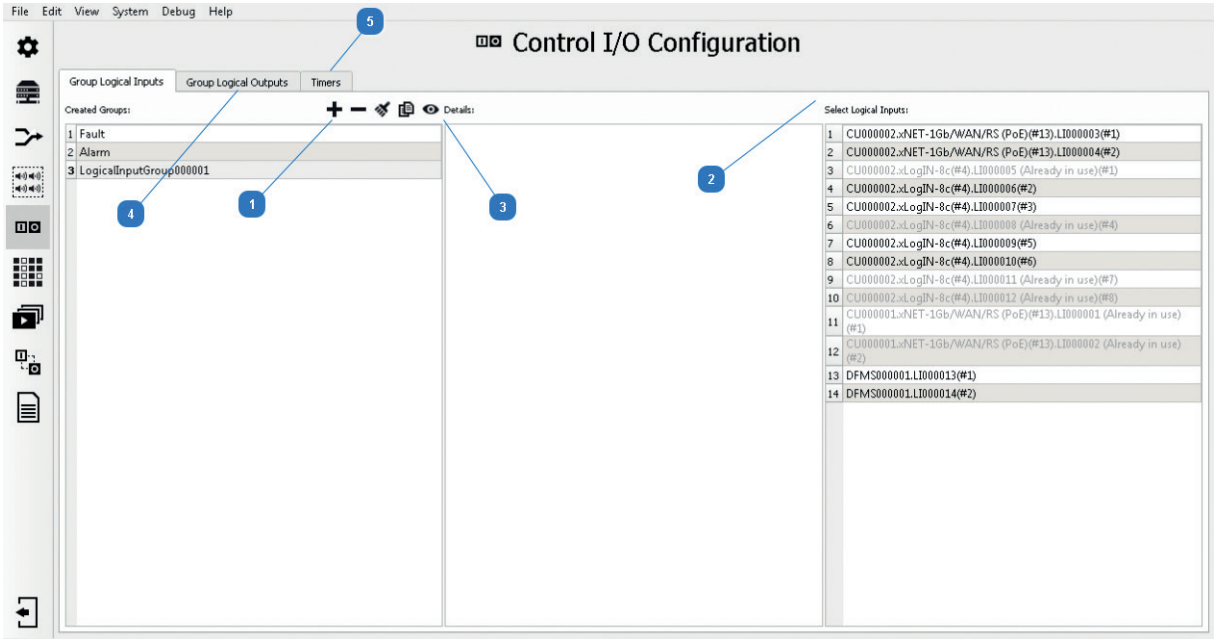
5. **Group element graphic view: Preview Group** – this is available from the icon . This function presents, in a graphic form, in one table, all groups which have been created, as well as their members.

	Zone(Floor 1 B1)	Zone(Floor 1 B2)	Zone(Floor 2 B1)	Zone(Floor 2 B2)	Zone(Floor 3 B1)	Zone(Floor 3 B2)	Zone(Floor 4 B1)	Zone(Floor 4 B2)	Zone(Floor 5 B1)	Zone(Floor 5 B2)	Zone(Floor 6 B1)	Zone(Floor 7 B1)	Zone(Garage Building 1)	Zone(Garage Building 2)	Zone(Stair S B2)	Zone(Stairs E)	Zone(Stairs N B2)	Zone(Stairs N)	Zone(Stairs S)	Zone(Stairs W)
Building 1	●		●		●		●		●		●	●	●							
Building 1_1	●		●		●		●		●		●	●	●							
Building 2		●		●		●		●		●				●	●		●			
Garage B1B2													●	●						
Stair B2																●		●	●	●
Stairs B1															●		●			

12.6 Control I/O Configuration

This tab is only available from the advanced configurator level – Basic Configuration – Configuration Mode – Advanced. The tab consists of 3 pages: Group Logical Inputs, Group Logical Outputs and Timers.

12.6.1 Group Logical Inputs



Group Logical Inputs – this is grouping two or more logical inputs in order to trigger action in the system for a specified condition.
In order to create a group:

1. **Using the + icon**, create a new group with the generic name LogicalInputGroup0000x; the name is editable by moving the mouse cursor over it and pressing the left mouse button.

2. From the **Select Logical Input** tab, using the left mouse button, add elements to the group. Each of the elements can only be assigned to one group.

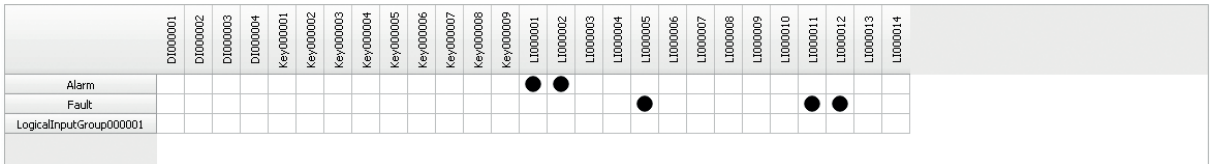
   The created group is shown in the Event Configuration tab, in the Input tab. For a logical input group, execution of the action, as assigned to the group, is determined by fulfilling the Condition from the Event Configuration tab. Condition value =1, =0, = decimal value, < decimal value, > decimal value, <= decimal value, >= decimal value. The decimal value entered is to be interpreted in the following way – each group member has an item assigned: the first added element in the middle table from the Control I/O Configuration tab – Group Logical Inputs comprises the bit of the smallest weight, found in the digital word, rightmost. The last element from the group is the bit of the biggest weight, leftmost. A binary number created in this way must be translated into the decimal system and entered into the condition.

   For NO (Normally Open) Default Logical Inputs – 1 is input closing, 0 – opening. NC (Normally Closed) Default Logical Input – 1 is input opening, 0 – closing. If we want to programme a logical input group, e.g. Input 1 NO, Input 2 NO, to trigger any function following closing of both inputs, enter the condition = 3 (11 in the binary numeral system).

   In case of a 2-input group, we have the following condition options:
   00 = 0 Opening of both inputs,
   01 = 1 Closing of Input 1 and opening of Input 2,
   10 = 2 Opening of Input 1 and closing of Input 2,
   11 = 3 Closing of both inputs;

If we have a group of 3 logical inputs, Input 1 – NO, Input 2 – NO, Input 3 – NO, we have the following condition options:
100 = 4 In 1 open, In 2 open, In 3 closed
101 = 5 In 1 closed, In 2 open, In 3 closed
110 = 6 In 1 closed, In 2 closed, In 3 closed
111 = 7 In 1 closed, In 2 closed, In 3 closed

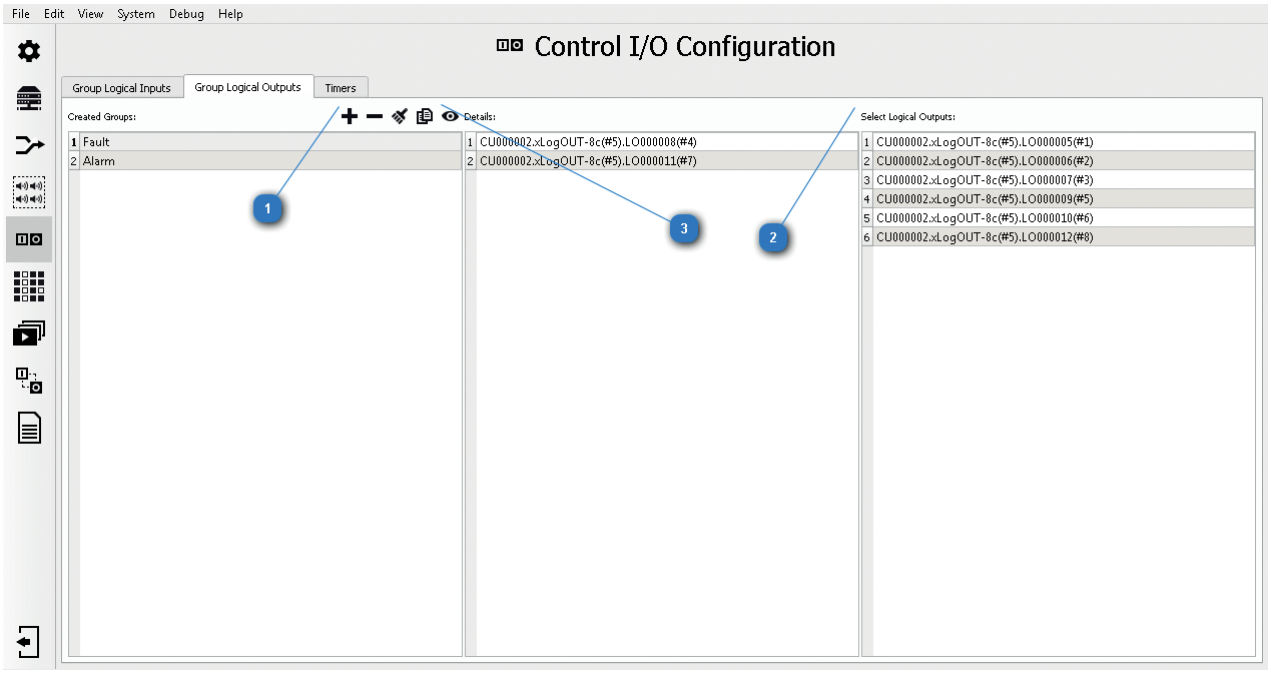
3 **Group element graphic view: Preview Groups** – this is available under the icon . This function presents, in the form of a graphic matrix, in one table, all groups which have been created, as well as their members.



4 **Group Logical Outputs** – this is grouping of two or more logical (relay) outputs in order to simplify assignment of many relay inputs to a given event in the system.

5 **Timers**
The Timers functions serves to create elements triggering given actions in the min**VES** system, using time dependences.

12.6.2 Group Logical Outputs



Group Logical Outputs – this is grouping of two or more logical (relay) outputs in order to simplify assignment of many relay inputs to a given event in the system:

1 **Using the + icon**, create a new group with the generic name LogicalOutputGroup0000x; the name is editable by moving the mouse cursor over it and pressing the left mouse button.

2 From the **Select Logical Outputs** tab, using the left mouse button, add elements to the group. Each of the elements can only be assigned to one group.

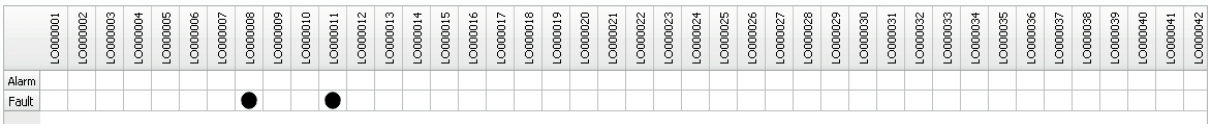
The created group is shown in the Scenario Configuration – Add control outputs action tab, as well as in Event Configuration, having selected any Input, and then assigning the General – Components Groups function to it. For a logical output group, execution of a relay output group is determined by the State parameter which is a decimal number. The decimal value entered is to be interpreted in the following way – each group member has an item assigned: the first added element in the middle table from the element from the Control I/O Configuration tab – Group Logical Outputs comprises the bit of the smallest weight, found in the digital word, rightmost. The last element from the group is the bit of the biggest weight, leftmost. A binary number created in this way corresponds to the states of relay outputs from the group, as set.

For NO-type (Normally Open) Logical Outputs – 1 is a closed output, 0 – opened. For NO Inverted relays: 1 – is an opened output, 0 – closed. For NC-type (Normally Closed) Logical Outputs – 1 is an opened output, 0 – closed. For NC Inverted relays: 1 – is a closed output, 0 – opened.

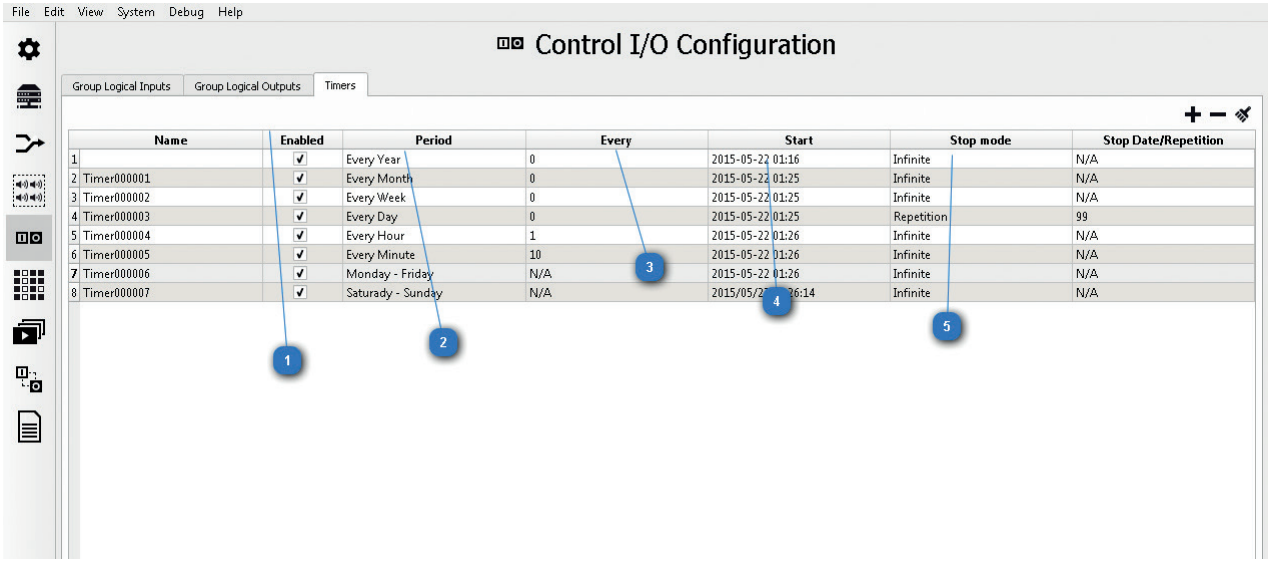
In case of a NO 2-output group, we have the following manipulation options, depending on the State value:
State = 0 Opening of both outputs (00)
State = 1 Closing of Output 1 and opening of Output 2 (01)
State = 2 Opening of Output 1 and closing of Output 2 (10)
State = 3 Closing of both outputs (11)

If we have a group of 3 logical outputs, Output 1 – NC Normal, Output 2 – NC Normal, Output 3 – NC Normal, we have the following manipulation options, depending on the State value:
State = 4 Out 1 close, Out 2 close, Out 3 open (100)
State = 5 Out 1 open, Out 2 close, Out 3 open (101)
State = 6 In 1 closed, In 2 open, In 3 open (110)
State = 7 In 1 open, In 2 open, In 3 open (111)

3 **Group element graphic view: Preview Groups** – this is available under the icon . This function presents, in the form of a graphic matrix, in one table, all groups which have been created, as well as their members.



12.6.3 Timers



This is a function used to create elements activating given actions in the EST VES system. In order to create a timer, click the + icon in the Control I/O Configuration – Timers tab. In this way a timer is created with the generic name Timer00000x; the name is editable by moving the mouse cursor over it and pressing the left mouse button. **Each timer has the following set of parameters:**

1. **Enabled (check box)** – Timer activity window. It is used to deactivate the timer if we do not want a given event, which is triggered by the timer, to be executed, and we do not want to remove the event from the system, then to do this we deactivate a selected timer.

2. **Period – activation period:**
   - annual
   - monthly
   - weekly
   - daily
   - hourly
   - minute
   - (Monday through Friday)
   - (Saturday & Sunday)

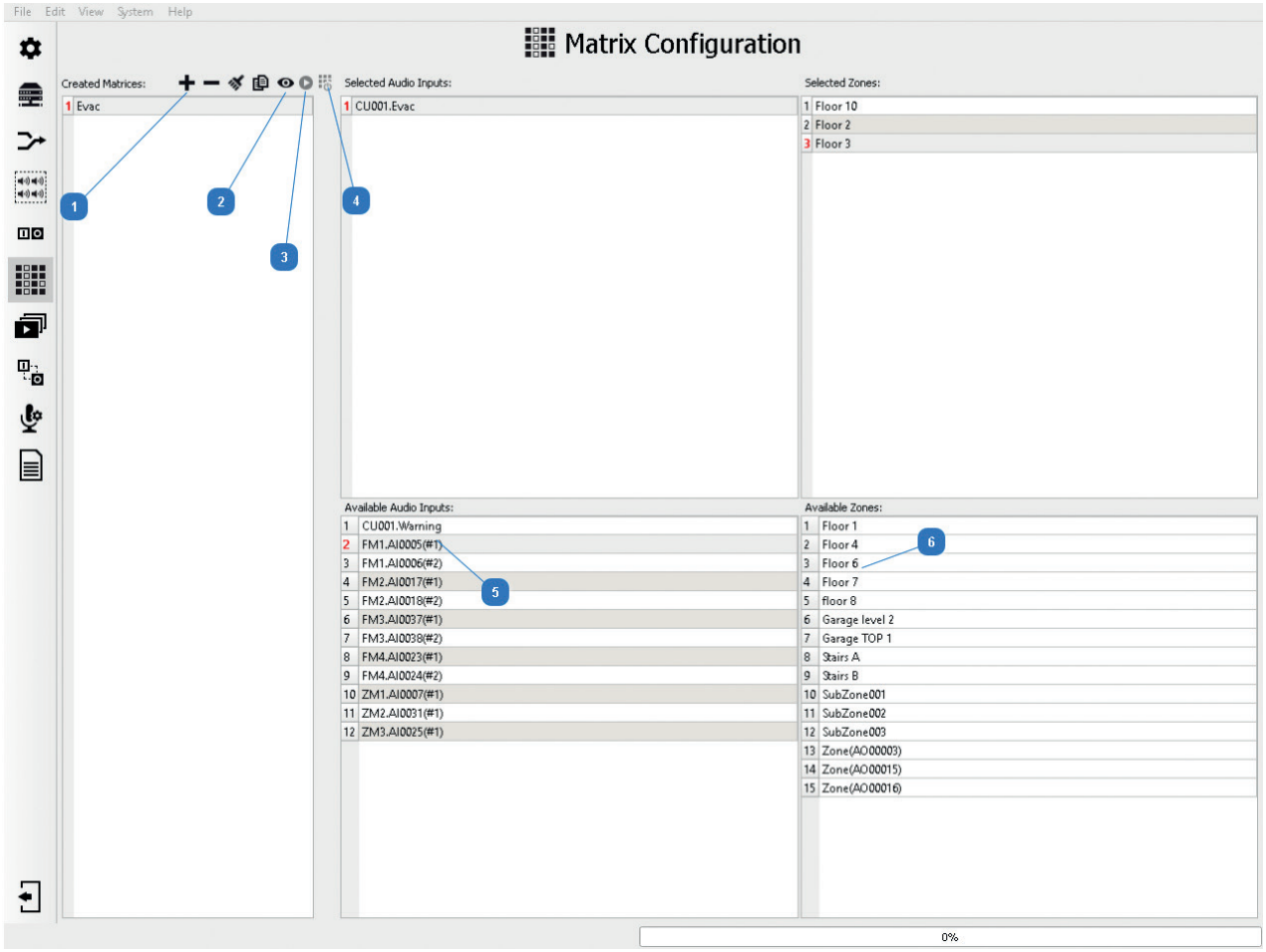
3. **Every** – the time interval number between the activations depending which parameter is selected from the Period window. If Every Minute is selected and the Every parameter is set to 15, this means activation of the timer every 15 minutes.

4. **Start** – defines the exact date and time of the first activation of the timer.

5. **Stop** – defines ending the operation of the timer, the available options being:
   - To date – the date and time to end activation
   - Infinite – activation without defining the end
   - Repetition – the exact specification of the number of repetitions

A defined timer is available in the Event Configuration tab, in the Input column, and all system functions can be assigned to it, as to zone microphone or logical input buttons.

12.7 Matrix Configuration



Matrix Configuration is used to create connections of all audio sources available in the system to audio outputs.
The tab has 3 sections: creating Matrices, audio sources and speaker zones or zone group.

1 Matrix editing tab

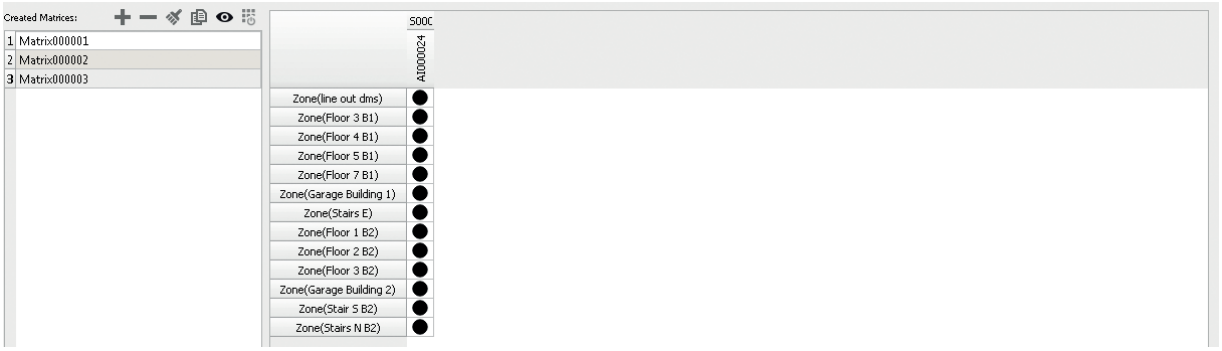
By means of the icon +, a new matrix is created with a generic name which can be change by double-clicking of the left mouse button on the matrix name. Creating the first matrix in the system, we activate the available audio source and available speaker zone field.

Icon − results in deleting the marked matrix completely.

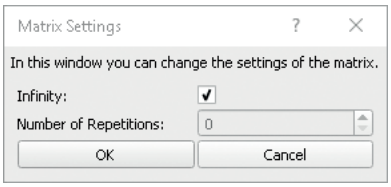
Icon deletes all previously created matrices.

Matrix cloning function: Clone Matrices – this is available under the icon . Highlight the previously created matrix by moving the mouse cursor over its name and by clicking the left mouse button once. Then select the icon . Clone Matrices results in creating a new matrix of the identical composition as the source matrix.

2 Matrix element graphic view: Preview Matrices – this is available under the icon . This function presents, in the form of a graphic matrix, in one table, all created connections of audio sources to the selected matrix outputs. Moving the mouse cursor over the matrix name and clicking the left mouse button once results in displaying the elements of a selected matrix in the Preview Matrices table. The output from the Preview mode is executed by a single click of the left mouse button on the icon .



3 **Matrix settings** – the number of message repetitions specific to the matrix is accessible under the icon . If the Infinity checkbox is ticked the message is played back in a continuous loop. Untick the checkbox to gain access to setting the number of repetitions of the message with the maximum number being 100.



4 **Test dynamic matricing** – available under the icon .

This is a service function which enables creation of dynamic audio connections from the configurator for testing/servicing purposes. This option is active only if and when the system has a configuration loaded and the computer with the configuration software is connected to the system and has the same configuration as the system. Setting a connection is executed by selecting an audio source from the first column – a single click of the left mouse button, and then selecting a speaker zone from the second column – a single click of the left mouse button, followed by selection of the + icon.

The − icon deletes all single connections, whereas selecting the icon deletes all connections which have been set.

5 **Available Audio Inputs**

Audio sources available in the entire system. Double-click a chosen audio source to transport it to the Selected Audio Inputs field.

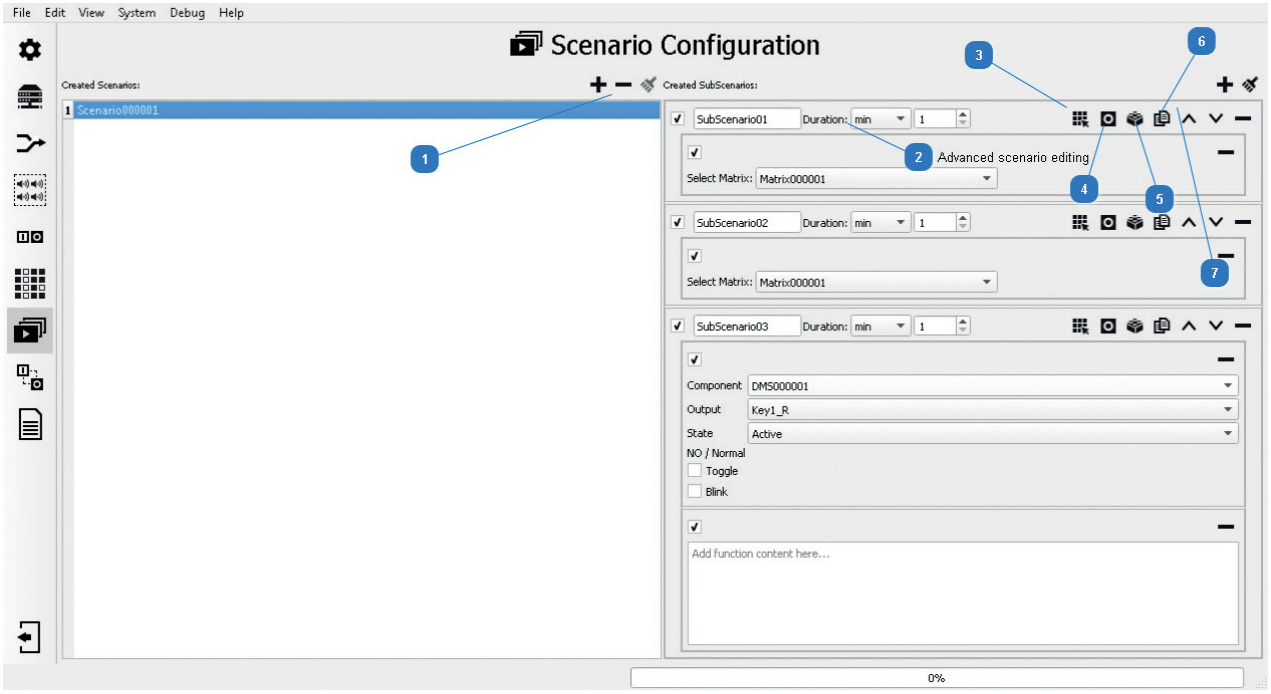
6 **Available Zones**

Available speaker zones, as declared in the system. Double-click a chosen speaker zone to transport it to the Selected Zones field.

In order to create a matrix correctly:

1. **Create a matrix by selecting the + icon**.
2. **Select an audio source** – a double click of the left mouse button on any element from the available audio input list.
3. **Select a zone** – a double click of the left mouse button on any element from the available zone list. Remember that it is possible to assign only one audio source to a given zone within one matrix. Adding another audio source within one matrix makes any previously used zones unavailable for successive sources as they are already used with previously defined audio inputs.

12.8 Scenario Configuration



Scenario Configuration – this enables to create an event sequence that is time-limited in any way and executed one by one (SubScenario after SubScenario). Scenarios can consist of matrixes, logical (relay) outputs and individually created functions in the LUA language.

1 **Scenario editing tab** enables to create new scenarios, changing their names and deleting selected ones.

By means of the icon +, a new scenario is created, whose generic name can be changed by double-clicking the left mouse button on the scenario name.

Icon − results in deleting the marked scenario completely.

Icon deletes all previously created scenarios.

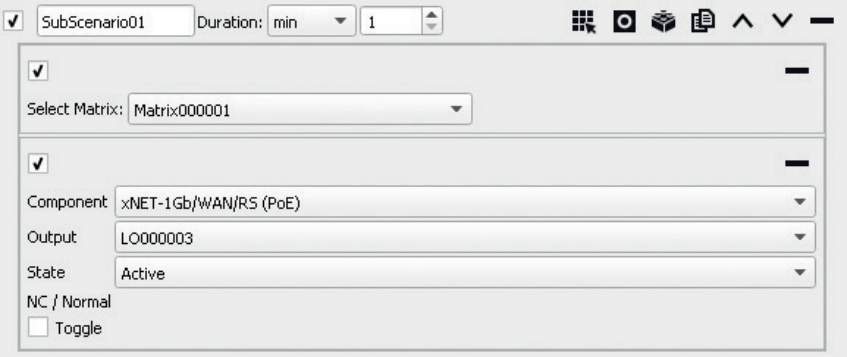
2 **Advanced scenario editing**

Each subscenario has a predefined duration (Duration). Available options include as follows:

- ms – millisecond (1000 ms = 1 second)
- s – second
- min – minutes
- hours
- days
- weeks
- years
- infinite (no end defined)

3 **Icon adds a matrix or a number of matrices to a subscenario**. It must be remembered that after the Duration time has expired, counting from activation of a given scenario, the created matrices are deactivated.

4 **Icon assigns available logical (relay) outputs to a subscenario**. Having added a logical output, the following windows are to be filled:



Component – select an output card or fireman microphone, a communications card containing the output we want to use.

Output – select from the list of available outputs on the device, from the Component tab, the output which we want to control.

State – allows to determine the final state of the relay contacts following activation. Active results in changing the relay state to the opposite one on execution of a scenario. For Inactive, the relay does not change its state when the scenario is activated.

NC/ Normal (Inverse) – informs of the initial state of a relay before activation of the function. If we set Active in the State, then activation of the scenario for an NC/Normal relay causes transition into NO – Normally Open. It must be remembered that after the Duration time has expired, as counted from activation of a given scenario, the assigned logical outputs remain in the state as defined in the subscenario. They do not return to the default settings.

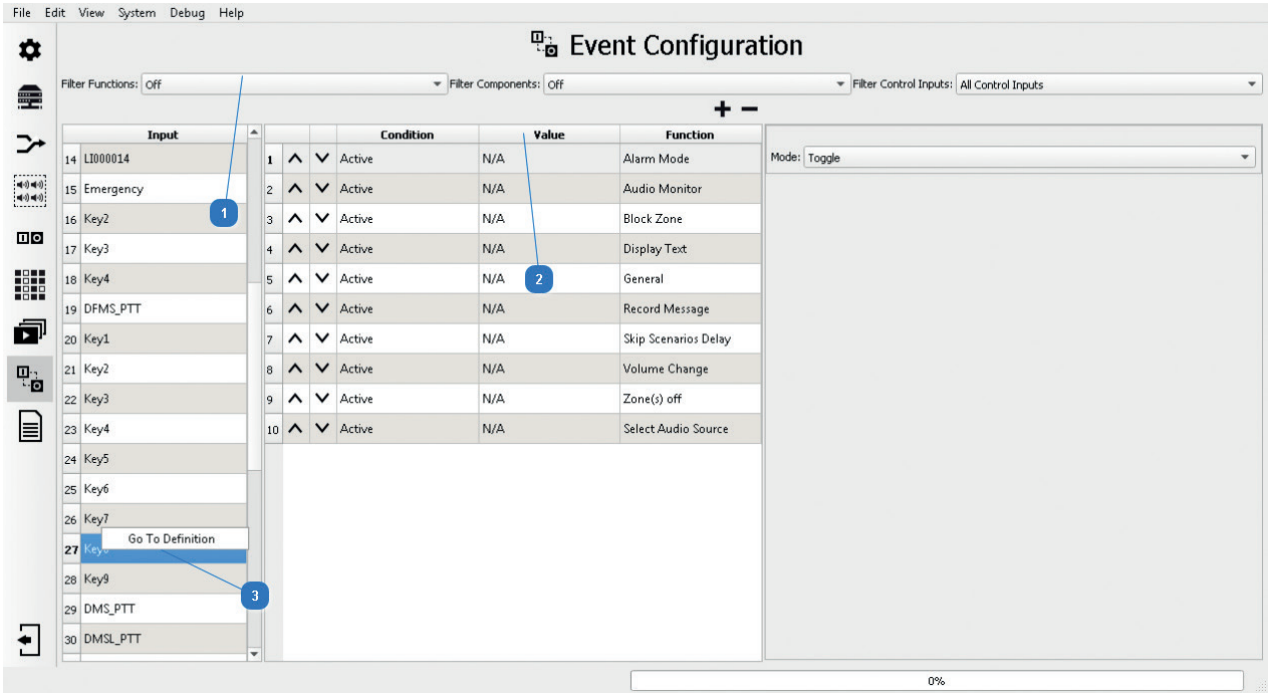
By marking the Toggle option causes that each time when the output assigned to a scenario is activated, then the relay state changes into the opposite to the one which was set at an earlier activation. The default state at the first activation depends of the State field settings.

5 **Add Custom Action** – an editor window in which one's own system function can be written in the LUA scripting language.

6 **Subscenario cloning function: Clone Subscenario** – this is available under the icon . A single click of the left mouse button on the icon creates a new subscenario of the identical composition as the one created before.

7 **Up / Down arrows** – enable to change the order in which scenarios are executed. The order of subscenario execution by the system is top to bottom according to the times, as declared in the Duration window.

12.9 Event Configuration



Event Configuration – this tab enables assignment of a selected system function to each logical input and button available on fireman and zone microphones, as well as scenario and matrix activation / deactivation. Moreover, in the Event Configuration – Inputs tab there are 4 system States available, to which one can assign any function, matrix, scenario, as well as define activation of relay outputs.

The signalled system states include as follows:

- **Alarm Mode** – will activate an assigned action upon the system entering the alarm mode.
- **Error** – will activate an assigned action upon detection of an error in the system.
- **Blocking** – activation of an action when blocking a single speaker zone.
- **Backup power** – activation of an action subsequent to the central unit detecting a 230 V AC power failure and switching to the emergency power source (batteries).

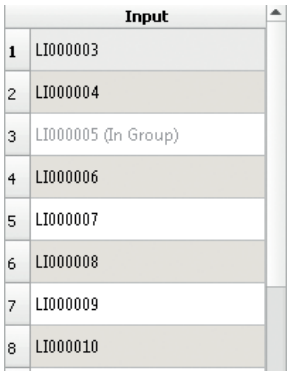
Assignment of any system function / action triggered by one of the above system states has been created to facilitate state signalling on any available element of the system, e.g. any output on a logic output card.

	Input
1	Alarm mode
2	Error
3	Blocking
4	Backup Power

1 The filters in the Event Configuration tab enable to search for any logical input or button sorted by the assigned function – Filter Functions, sorted by the device containing the given element – Filter Components or by using available inputs – Filter control inputs.

2 **In order to assign a function to any button or logical input:**

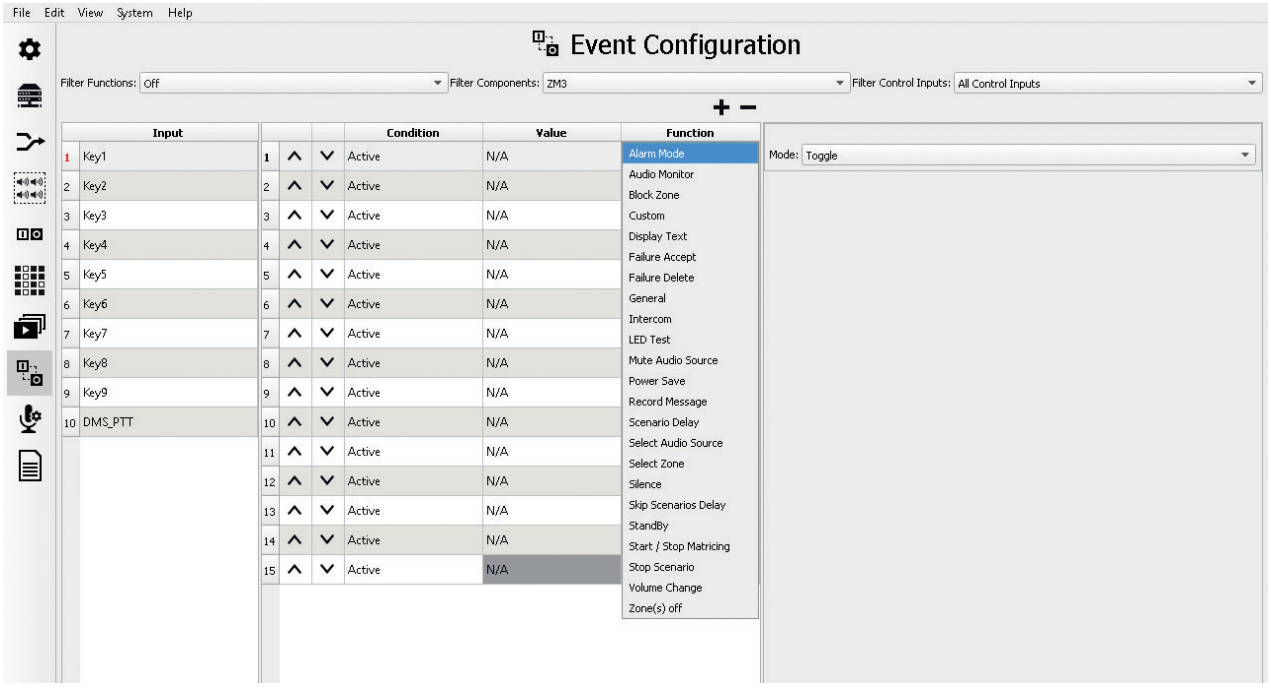
1. Select an element from the Inputs list by single-clicking the left mouse button on the element name.



2. Click the left mouse button once on the icon +, and then select an appropriate function from the Functions column in the window. It is possible to assign many function to one button or logical input.

3 **Go to Definition** is a quick access function which is activated by clicking the right mouse button while moving over onto the name of a logical input and any button in the Event Configuration – Inputs tab. The function results in going to detailed editing of the microphone, card, microphone extension, device in which the element being edited is located.

12.9.1 Functions



Alarm Mode

The alarm mode function results in the system entering into a detected threat warning and evacuation mode. In this mode, fireman microphones and evacuation-type messages are active All the other sources: BGM, General, Service, are inactive until the system goes out of the alarm mode. More information of assigning type to a sound source, message or zone microphone is to be found in the Priority Manager tab. The Alarm Mode can be activated in many ways. Most frequently by the dedicated Evacuation button on the fireman microphone or any programmable logic input located on the EST VES central unit, on the xNET-1Gb/WAN/RS communications card and the fireman microphone. The function itself my operate in three available modes: Start, Stop and Toggle.

Audio Monitor

The audio monitor function enables to hear a message / audio signal, as transmitted, in any zone on the built-in speaker of the EST-DMS and EST-DMS-LCD zone microphones. In order to programme the function in the EST VES, select a zone which we want to preview from the Source zone selection window and from the Target zone selection window below select the zone to which the zone microphone internal speaker is assigned. In order to activate the zone microphone speaker output enter the Zone microphone configuration window in the Audio outputs table, from the first line in the Connections field select the Output line. Having switched from No connection to Output line, the system creates a zone whose generic name is editable in the Name window. In this way a zone has been created consisting only of a zone microphone built-in speaker which is available in the Matrices configuration tab, as well as for all functions referring to speaker zones, including the audio monitor.

Block Zone

This function can have one or many zones assigned to it. Blocking a zone results in a total lack of possibility to transmit sources to a zone or zone group, regardless of the source type. The block zone is signalled by a constant, yellow LED on the button programmed as Zone selection having the highest signalling priority.

Custom

The window of this non-standard function enables to create, programme one's own function or series of actions for the system to execute. The code of the programme which is to be placed in the Custom field must be consistent with the syntax of the LUA language and refer to variables, functions and libraries defined by the UTC in the LUA language implementation instructions in the EST VES system.

Display Text

Activation of the display text function opens a dialogue box on a selected and available GUI screen in the system and prompts display of the text entered into the Text to display window.

Failure Accept

This is a global function which mutes the acoustic signalization of a failure within the entire system. The moment any failure occurs in the system, the yellow LED on the failure accept button blinks additionally on each element of the system equipped with a GUI, the buzzer goes off as well. Having accepted the failure, the yellow LED is lit and the persistent acoustic signal stops.

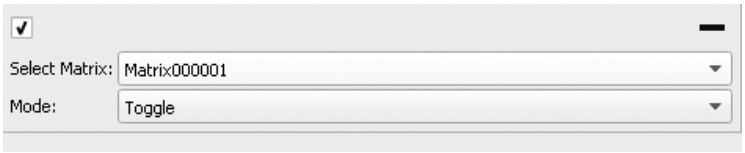
Failure Delete

Deleting a failure is a global function affecting the entire system. The function is active only if and when the system is in the failure status. Activation of the Failure delete results in resetting of the system element in which the failure was detected, and then running the system test procedure.

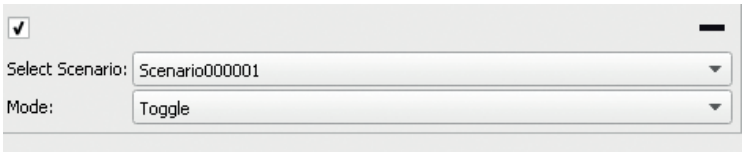
General

This function combines three main functionalities of the EST VES system: Scenarios, Matrices and logical outputs, alongside an access to RGB LED behaviour programming on zone microphones. The General function enables to assign to a logical input or a button of any defined scenario, matrix combination, alongside a possibility to define system LED and logical output activation in an individual way.

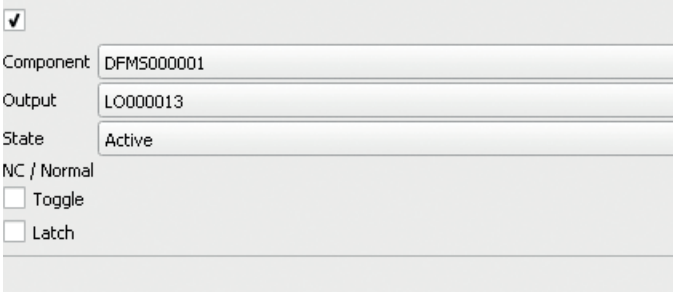
If in the General function, the icon is selected, then this function is assigned a matrix. Activation of the general function enables to activate or deactivate one or multiple matrices defined in the system, using one logical input or button on a zone / fireman microphone. Each matrix can have an individual activation mode assigned to it – start / stop / toggle.



If in the General function, the icon is selected, then this function is assigned a scenario. Activation of the general function enables to activate or deactivate scenarios using one logical input or button on a zone / fireman microphone. Each scenario can have an individual activation mode assigned to it – start / stop / toggle.



If in the General function, the icon is selected, then this function is assigned a selected logical / relay output. The figure below presents the options, as available:



Component – enables to select an output card or fireman microphone from the list, a communications card containing the output we want to use.

Output – enables to select from the available output list on the device, from the Component tab, an output which we want to control.

State – allows to determine the final state of the relay contacts following activation. Active results in changing the relay state to the opposite one on execution of the General for Inactive, the relay does not change its state when the General is activated.

NC/ Normal (Inverse) – this field informs of the initial state of a relay before activation of the function. If we have Active in the State, then activation of the General function for an NC/Normal relay causes transition into NO – Normally Open. If we have Active in the State, then activation of the General function for an NC/Invers will cause transition into NC – Normally Closed.

By marking the Toggle option causes that each time when the output assigned to the General is activated by such a system element as a logical input or button on a zone microphone, the relay state changes into the opposite to the one which was set at an earlier activation. The default state at the first activation depends of the State field settings.

Latch

Marking the Latch option results in a relay output changing its status to the opposite one than specified in the information field located below the State tab (see Figure below) on the first activation of the General function.

The relay does not change its state into the opposite one, does not return to the settings defined in the relay information field on deactivation of the General function.

Intercom

This function sets up an intercom connection between two microphones available in the system. The Select microphone from field is automatically migrated by the device containing the key we are assigning the intercom function to. In the Select microphone to field the recipient of the intercom connection should be chosen. The Enable sound when call appears checkbox lets the user define the acoustic signals for the connection, Select the sound for initialization of call being the sound we hear while waiting for the recipient to answer the call on the device that initializes it. The Select sound for incoming call field defines the sound we hear on the device being a recipient of an awaiting connection.

LED test

The LED test function activates all LEDs on the element to which it is assigned. In addition, activation of this function on the fireman microphone triggers the warning buzzer signal. The function can be activated in three modes.

Mute audio source

This function mutes one selected audio source in all matrices to which it is assigned. In the Source selection window, select from the available and defined audio inputs, microphones and messages in the system to define the function correctly. Stopping the Mute audio source function results in turning up the audio source volume to the full level and restoring the matrices to the state before activation of the mute function.

Power Save

The power save function disconnects all active BGM and General-type sources. The function is activated by dynamic assignment. The function can be activated in three modes. Deactivation of the Power Save function results in restoring the previously disconnected sources.

Record Message

This function is used to record messages directly from the EST-DMS, EST-DMS-LCD zone microphones without having to connect to the system via dedicated software and during the system's normal operation. Messages are recorded in the flash microSD memory on the control unit to which the zone microphone is directly connected. Message recording is signalled by a red LED at the Record Message button. The function records a message into a file whose name is defined in the configurator, in the Message window. In case of filling up the memory, this is signalled by a yellow LED. Replaying of a recorded message is executed via the Select Audio source function for which one of the predefined names is assigned from the list: Message1, Message2, Message3.

Scenario Delay

This function cause a time delay in the scenario execution. The maximum time to declare a delay in a scenario execution is 600 seconds. In order to execute the scenario with a delay, activate the scenario delay function and then activate scenario execution via the General function. The period of the delay from the moment of activation of a scenario is signalled by a purple LED blinking.

Select audio source

This function enables easy execution of the dynamic matricing function. Dynamic matricing consists of creating a matrix (combining a source to speaker lines) from a zone microphone or GUI in any configuration according to the user's current needs. The following items can be assigned as an audio source: messages, fireman microphones and all available zone microphones and their audio inputs. In order to initiate dynamic matricing, select dedicated Zone selection buttons in the given order: highlight the zone or zone group to which we want to transmit to, then – using the Source selection button – initiate transmission of the programmed source into the selected zones.

Select Zone

The zone selection function serves to assign one zone or a zone group to a selected button. Having selected the function in the configurator, assign the selected zone in the Select Zone field, and then select one of the activation modes.

Silence

This is a global function which deletes all active sound sources of the BGM or General priorities. This function is available only for logical inputs and the EST-DFMS fireman microphone buttons and may be activated even if the fireman microphone is not in the alarm mode. If the Silence mode is active (a red LED on the microphone at the Silence function button is on), then BGM and General matrices cannot be activated. Deactivation of the function unblocks priority matricing.

Skip Scenarios Delay

This is a global function and results in prompt execution of all scenarios for which the delay time countdown has started (purple LED blinking).

Stop Scenario

The function results in stopping execution of a scenario, as declared in the configurator. The scenario stop causes switching off all active matrices included in the scenario, whereas the status of the relay outputs which might have been a part of the scenario remains consistent with the programmed state at the moment of stopping the scenario.

Start / stop matricing

The function enables activation or deactivation, via one logical input or button on the zone / fireman microphone, of one or many matrices, as defined in the configurator. Each matrix can be assigned an individual activation mode – start / stop / toggle.

Zone(s) off

The function acts on the principle of dynamic assignment, i.e. in order to activate the function, one needs to follow a predefined order. The first activity is to select a zone or many zones using the programmed button Select Zone, then the Zone(s) off button is selected. Thus activated, the function causes irreversible disconnection of all active sound sources of BGM, General, Service priorities.

External Fault CIN

The External fault CIN can only be assigned to a system logical input. Having activated the logical input to which the function is assigned, in the fault window on the GUI, as well as in system logs, an entry will be displayed with the name of the logical input. Change the name of the logical output in order to identify the fault-reporting device in an unequivocal way.

Volume change

The volume change function controls only the levels of audio outputs in the EST VES system. The function is activated by dynamic assignment. There are two methods of volume change execution in the configurator:

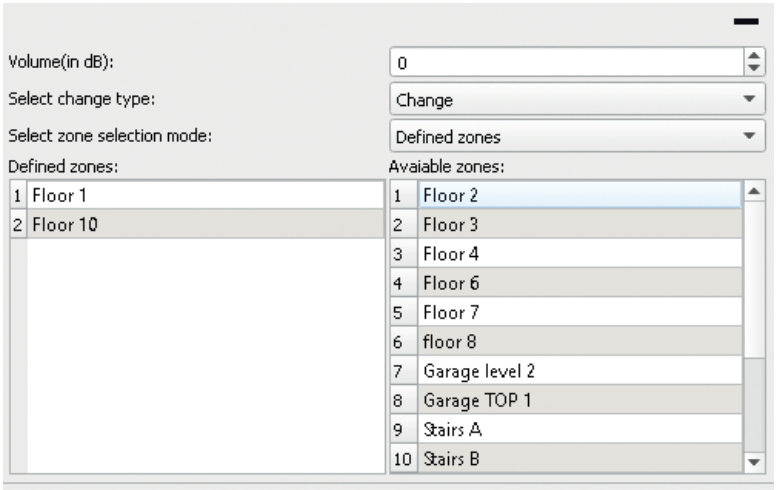
1. Change – the level of signal at an audio output will be decreased or increased by the value declared in decibel in the Volume window compared to the level set in the audio output individual configuration window. Each successive activation of the function within the Change mode results in a decrease or increase by the value with respect to the level having been set.
2. Set – the level of the signal of an audio output will be set to the value declared in decibel in the Volume window.

If the control unit utilizes only matricing using common HVaudioBus, then the Volume change function is not active.

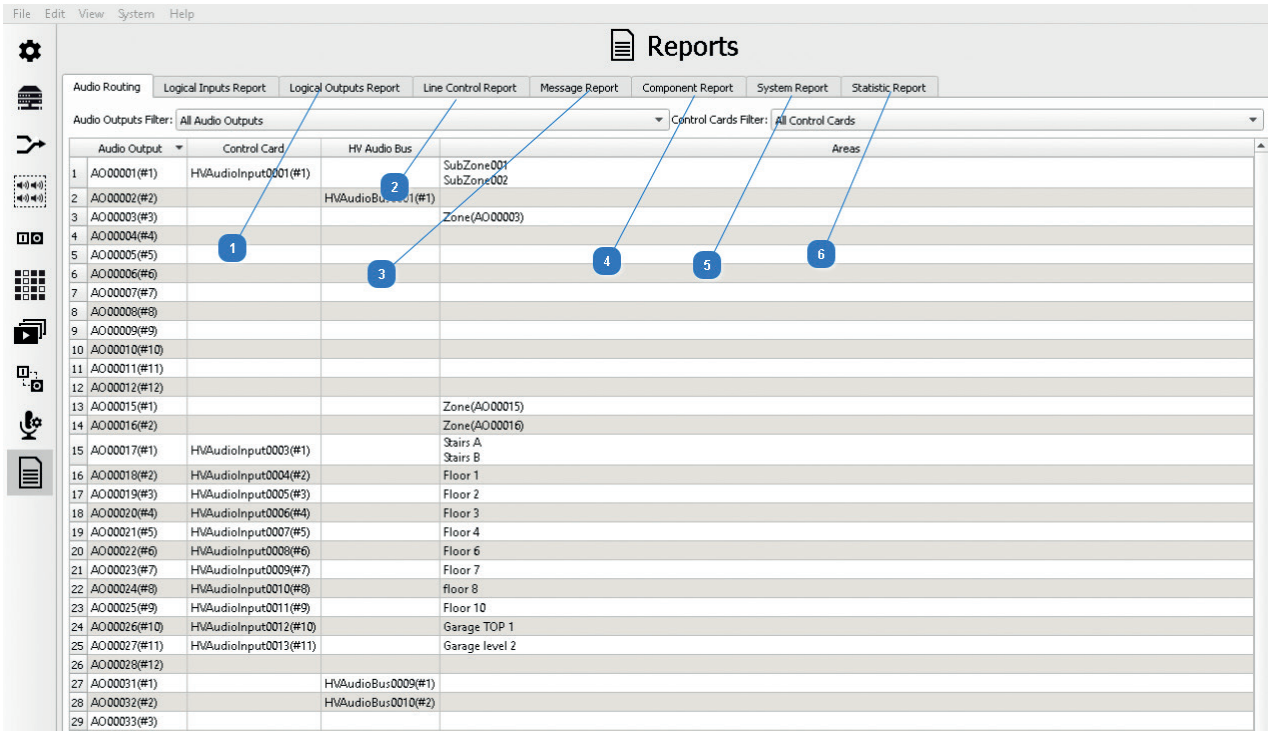
Additionally in the Select zone selection mode field you can choose between:

Selected zones – meaning that dynamic assignment is being applied. Choose the zones by pressing the dedicated zone selection button and then use the volume change function

Defined zones – meaning that the zones affected by the function are predefined. In this mode the volume control is activated immediately after pressing the assigned button with no need of selecting the zones. To predefine affected zones double-click the desired items in the Available zones field.



12.10 Reports



In the Reports tab there is a table containing all of the most important information on the system. The Audio Routing tab represents the place of assignment of all audio outputs. In addition, it shows which speaker zones are handled by the control card and which audio output supplies them. Via the Go to Definition function available for the Audio Output, Control Cards and HV Audio Bus columns in the Audio Routing, it is possible to make changes in the system in a simple and easy way.

1. **Logical Output Report** – this is a list of all logical inputs with information about the current operating mode NO / NC.

2. **Line Control Report** – the list of measured impedance references saved in the system.

3. **Message Report** – summary of all reference impedance values saved in the system.

4. **Component Report** – a quantitative list of all cards, zone/fireman microphones, touch screens included in the EST VES system. In addition, there is a summary of available audio inputs and outputs, logical inputs and individual component software versions.

5. **System Reports** – a list of all failures and software events that occurred during normal operation. The system is capable of storing and reading over 100 thousand single events. An advanced filtering method, using date, unit and system state, makes it much easier to identify a problem which occurred in the system.

6. **Statistic Report** – enables displaying of all available service data from diagnostic modules located on SFP slots. This is a unique function which shortens the time needed to verify the quality of the optical fibre and eliminate communications faults by displaying, among others, the strength of the signal transmitted and received, the number of lost packages or the internal temperature of the SFP insert.

12.11 Basic steps required to program the system

In order to program a basic EST VES configuration and make the system fully operational, follow these steps:

1. **Logical output OUT1 – assign the Error event and change it's generic name to Fault**
2. **Logical output OUT2 – assign the Alarm mode event and change the generic name to Alarm ACK**
3. **Add the alarm (evacuation) message and change it's generic name to Evacuation. Set it's priority to 10**
4. **Change the generic name of the Audio input no.3 to Local Audio IN**
5. **Change the generic name of the built in firemans microphone (audio input no.1) to Fire Mic estves XXXX**
6. **Change the generic name of the built in microphone in general mode (audio input no.2) to Local Mic**
7. **On the line control cards, change the generic names:**
   - **ESTVES2001**
     Zone 1 – lines A+B, Zone 2 – lines C+D, control method: impedance
   - **ESTVES4001**
     card in slot 1: Zone 1 – lines A+B, Zone 2 – lines C+D, control method: impedance
     card in slot 2: Zone 3 – lines A+B, Zone 4 – lines C+D, control method: impedance
   - **ESTVES4002**
     card in slot 1: Zone 1 – lines A+B, Zone 2 – lines C+D, control method: impedance
     card in slot 2: Zone 3 – lines A+B, Zone 4 – lines C+D, control method: impedance
     card in slot 3: Zone 5 – lines A+B, Zone 6 – lines C+D, control method: impedance
     card in slot 4: Zone 7 – lines A+B, Zone 8 – lines C+D, control method: impedance
8. **Create a Zone group – All Zones and add all of the available zones depending on the EST VES type**
9. **Create a new matrix and name it Evacuation – add the Evacuation message from the available Audio inputs field and the All zones zone group**
10. **Logical input INPUT1, contact mode – assign the following events:**
    - Active – Alarm mode (start) and General – add the Evacuation matrix (start)
    - Inactive – Alarm mode (stop)

    Change the generic name of the input to Evac activation.
11. **In the Events configuration tab:**
    - Assign the built in Emergency buton (1) to Alarm mode event (start) and the select zone event choosing All zones
    - Key 2 – change the generic name to Evacuation Start and assign the start/stop matricing event (toggle)
    - Key 3 – change the generic name to LED test and assign the led test event
    - Key 4 – change the generic name to Stop Evacuation and assign the Alarm mode (stop)

12.12 Glossary

Function activating modes

Start – selected button or logical input only activates a function programmed in the system.

Stop – selected button or logical input only deactivates a function programmed in the system.

Toggle – selected button or logical input triggers, a change of state to the opposite upon every next activation, acting like an on / off switch. In case of logical inputs, a necessary condition for reactivation of the function in the toggle mode is returning to the input's idle state.

Dynamic assignment

In order to trigger a function whose activation relies on dynamic assignment, follow the predefined order. The first activity is selection of a zone or multiple zones by means of the programmed Select Zone button, in this way we highlight which zone(s) the function is to affect, then select the button assigned to the function which we want to execute.

Audio inputs – these are all analogue inputs available in the EST VES system to which external sound sources can be connected to.

Audio outputs – these are all outputs available in the EST VES system, whose parameters are compatible with the audio inputs of the amplifier modules. Control units are equipped with audio outputs, e.g. EST-CU-11 has 12 audio outputs, as well as zone microphones which are equipped with 4 outputs.

Audio source – in the EST VES system, an audio source is both a recorded message, regardless of its priority, a linear audio input on a unit and a zone microphone, as well as the microphone itself.

Individual HV Audio In – this is an input found on each xCtrLine-4 /xCtrLine-2 control card which is used to connect an amplifier modules 100 V output to the card. In the EST VES system it is used exclusively in the 4002 series units to drive two of the four xCtrLine-2 cards.

System states – there are 4 system states available in the configurator: Alarm mode, Error, Blocking, Backup Power due to which any function can be activated or an element available in the system can be controled.

Go to Definition is a quick access function which is activated by clicking the left mouse button while moving over onto the name of any element in the system. This function results in a transition to the card, microphone, device microphone extension detailed editing window.

Configurator

Software supplied with the EST VES system with the help of which it is possible to manage and program system devices.

FIFO (First IN, First OUT) – in case of conflict of two audio sources of the same priority, where Source 1 is already transmitting to the zone and Source 2 is also to begin transmitting to the same zone, Source No 1 will not be removed in order to make the zone available for Source No 2 until Source No 1 (matrix) has concluded transmission.

LIFO (Last IN, First OUT) – in case of conflict of two audio sources of the same priority, where Source 1 is already transmitting to the zone and Source 2 is also to begin transmitting to the same zone, Source No 1 will be disconnected from the zone and Source No 2 will transmit to the zone.

LUA – scripting language used to extend the functionality of the EST VES system. This language is implemented as the C language library, written according to ANSI C, providing: simplicity, performance and code transferability.

Signalization priority

	PRIORYTET (0 – highest)
Block zone	0
Zone failure › closing / shorting / opening › no EOL › impedance error › switching into LOOP ……	1
Zone failure confirmed	1
EVACUATION MESSAGE playback	2
WARNING MESSAGE playback	2
Spoken message from fireman microphone	2
Spoken message from zone or BGM microphone	2
Volume change	3
Audio Monitor	4

12.13 FAQ

1. No visible EST VES server in the System Connection window

In order to either upload a configuration onto a system, go into the on-line mode or download system reports, the configurator must be connected to a server visible in the system connection window. The first thing one must do in this situation, is to make sure that the IP configuration of the computer running the software is not set to a static IP adress. To do so, check the Local area connection properties in the Internet protocol version 4 (TCP/IPv4) tab, the „obtain an IP adress automatically" option should be checked. The next step should be deactivating the Windows internal firewall. Go to the Control Panel –> System and Security –> Windows Firewall –> Turn Windows Firewall on or off apply this to both the private and public network. If the server is still not visible in the connection window, please check the computer for running antivirus software such as Eset, Avast, AVG, if the computer is running this software, disable it for the time of system configuration. It is recommended to add the EST VES connection to a list of safe connections in the OS.

2. Configuration of a running EST VES system impossible to download

In order to correctly download the configuration, follow these steps:

1. Start the configurator
2. Select Create a new configuration – **IMPORTANT!**
3. Connect to the system by clicking System –> Connection Settings and the Connect button
4. Then in the same window choose the Download current configuration option

3. A downloaded running EST VES system configuration cannot be opened

The downloaded file from the system, config.afz can be found in the tab Documents –> Selector –> Workspaces_x.x.x (where x indicates the version of the software) –> downloadedConfiguration. To run the downloaded file from the system (* .afz) you need to:

1. Select in the configuration software: File –> Import working area
2. As a standard, the configuration software creates files and saves them under: C:\Users\Documents\Selector\ Workspaces_x.x.x \downloadedConfiguration. If you have chosen a different access path, please choose from it the appropriate file with the .afz extension and then select option Open.
3. When you select Open option, the system asks for the indication of a new folder in order to copy the imported content from the system configuration. You should create a new folder, give it any name, select it and choose Select Folder option. **Please note that it is a very important step!**
4. Select YES option in the window if you want to open the imported configuration
5. The configuration will be loaded – in the System connection window with the Connect option, the Same configuration status should be shown. If Different configuration status is shown in the window, please select File –> Load –> the newly created folder while importing the file with the .afz extension. There are configuration.afz files available in the location they were created when configuring the system. You have to load those files and then check the status until it shows the Same configuration status.

4. DFMS, DMS or DMS-LCD microphone reboots when connected to the system

If you additionally connect a microphone to a properly functioning system, and it resets after connection this means that the microphone does already have a preloaded configuration in it's internal memory which is different from the configuration of the system. In this situation the factory (default) settings should be restored to the microphone and then the microphone should be reconnected.

5. The configuration software suspends while trying to compare the topology of the configuration created in offline mode

If the system cannot properly detect the devices available on the EST VES network and prevents assigning MAC addresses to the configuration items created in offline mode it means that the list of devices in the Working area is different from what is visible in the system. The solution to this, is to create a new project, which does not include any devices in the workspace and then select the Recreate topology option (System –> Connection Settings). In this way you get to know the correct arrangement of the system devices in the workspace.
The arrangement of devices in the workspace should be restored to it's original configuration created in offline mode and then option Recreate topology –> Compare should be reselected. Followed by a table appearing with all elements available in the system. To fill in the missing MAC adresses and serial numbers, use the FIX button.

6. The system does not respond to command Restore to Factory Defaults

Each project possess its own unique Factory Defaults signature, which is available in the window: Basic Configuration –> Factory Defaults. Every time you call the Default settings, the system checks the validity of the system signature with the one located in the configurator. Lack of compatibility will cause the command disregard.

7. How should I transfer a configuration that can be opened on another computer?

Full configuration means the device settings, source audio files, and summary of matrix, scenarios, zones etc. after conversion to pcm. It is written via Export workspace function in the File tab.

12.14 Appendix

1. AutoStandby mode

The purpose of the operation in Standby mode is:

- limiting the power consumption from the battery while the primary AC 230 V power is lost;
- reduction of heat generated by the amplifier modules while working on the primary power source at any preset time, if the system does not have any active matrices it goes into standby / idle mode.

Principle of Standby operation

Standby mode is activated automatically and every time when the following conditions are met simultaneously:

- there has been a loss of primary power supply (230 V) and the system switched to battery power
  or
- system has no active audio matrices and operates in Normal mode (no Alarm).

While working in active Standby mode the EST VES system periodically changes its operating states to the following sample states:

- *active_state*
- *suspended_state*

Duty cycle of the above conditions is as follows:

- *suspended_state* – 85 seconds
- *active_state* – 5 seconds

Central processing unit actions in Standby mode:

- Periodically sends signals to the amplifiers indicating the current mode and operating state to enter amplifiers into power saving mode.
- Periodically sends signals to all the control cards (xCtrl-2, xCtrl-4) informing cards about the current state of work (*active_state* / *suspended_state*) to force a power saving state to control cards (or exit from this state).
- Each time while sending a command to change the state of the control card – it verifies whether the card has changed its state and if it properly reacts to read state.
- Switching control and error reporting is done automatically after sending commands to change the status on *active_state* and confirmation from the card it has exited this mode.

Amplifier module actions in Standby mode:

- During operation in the *suspended_state* amplifier modules enter a reduced power mode (amplifiers stop working and do not consume energy or consume a minimum value of it).
- During operation in the *active_state* amplifier modules that entered a reduced power mode return to normal operation.

Standby mode is called using the Standby function.

- That function can be activated by using:
  - timers (it can be called in a cyclic manner at any preset time);
  - any logic inputs;
  - programmable "Key" push buttons;
  - automatic run in the absence of active matrices defined by the user time [min] AutoStandby.
- This function can be activated under the following conditions:
  - system is not in alarm mode;
  - there are no active audio matrices with Emergency / Service priority;
  - system is powered from the primary source 230 VAC (while switching to emergency battery power it happens automatically if the system is not in alarm mode and there are no active Emergency / Service matrices).

AutoStandby – the function is activated / deactivated by the user on the level of the configuring software in the form of a check-box. The function is activated in the absence of active audio matrices of Emergency / Service priorities after the time defined in the Configurator has passed.

The time is determined in minutes / The time interval [15 ... 300 minutes]
Default state – checkbox enclosed, active function
Default activation time: 60 minutes

AutoStandby function is available in the Basic Configuration:

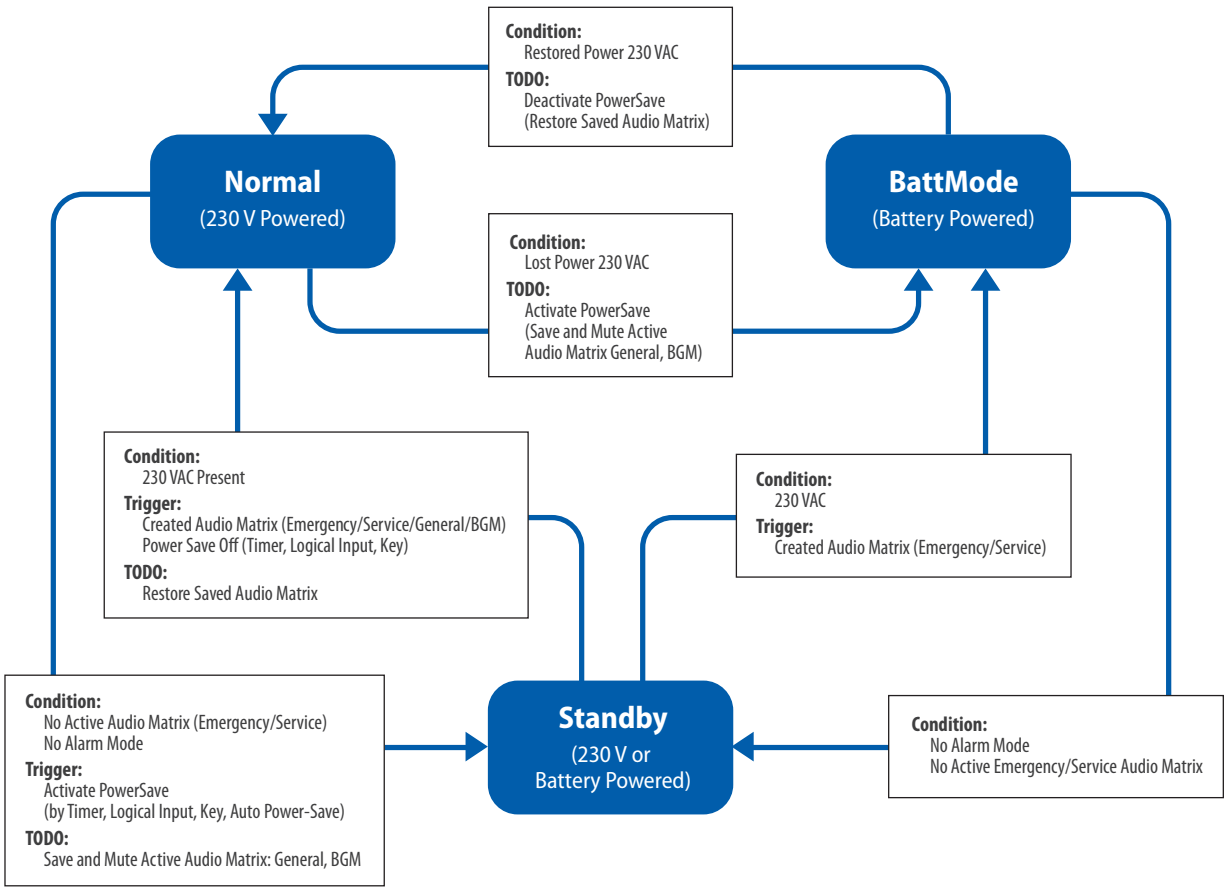
Each attempt of audio broadcasting while Standby is active causes:

- » exit from Standby to the Normal mode (when operating on the primary power source), regardless on the priority of a message ;
- » exit from Standby mode to the BattMode (when there is lack of primary power supply) only when messages will have Service / Emergency priority.

The maximum duration of the activation process of exit from Standby mode to broadcasting message is shorter than 500 ms.

Because the function has been implemented in Phase 1 of EST VES development and its activation is dynamic (Zone selection then pressing Power Save button) there is need to change the way of its implementation from the dynamic to static (PA zones strictly defined in the configurator are to be deactivated / activated by friendly Power Save features.

Diagram of transition Normal mode – Battery mode – Standby mode is shown below:



2. The list of faults reported by the system

E: Error – fault description visible on GUI of the control unit
W: Warning – access to this type of the information via Selector software – System Report only
I: Info – access to this type of the information via Selector software – System Report only

"E0002" – "Function backplane power failure" – no 12 V in the functional part
"E0001" – "Function backplane power failure" – no 5 V in the functional part
"E0003" – "Function backplane power failure" – no -12 V in the functional part
"E0011" – "Control backplane power failure" – no 5 V control part
"E0012" – "Control backplane power failure" – no 12 V control part
"E0013" – "Control backplane power failure" – no -12 V control part
"E0023" – "Power control system failure" – damage control system functional part
"E0022" – "Power control system failure" – damage control system control part
"E0101" – "Device do not respond"
"E0102" – "Logical input open"
"E0103" – "Logical input short"
"E0104" – "Speaker line ground fault"
"E0105" – "Speaker line short"
"E0106" – "Files integrity error"
"E0107" – "Speaker line impedance error"
"E0108" – "Speaker line open"
"E0109" – "EOL error"
"E0110" – "Interruption of the audio path"
"E0111" – "Battery failure"
"E0112" – "Backup power / PSM missing"
"E0113" – "230V AC power failure"
"E0114" – "Amplifier overheat"
"E0115" - "Fuse failure"
"E0116" - "Power system manager failure"
"E0117" - "48 V DC error"
"E0118" – "No communication with EST-ISLE"
"E0119" – "Loop link error"
"E0200" – "EST-DFMS missing"
"E0201" – "Evacuation button error"
"E0202" – "Backup audio path interruption"
"E0203" – "CPLD verification error"
"E0204" – "Interruption of the audio path in EST-DFMS capsule"
"E0205" – "Internal hardware error"
"E0206" – "Error triggered from logical input"
"E0207" – "Integrity state error"
"E0208" – "Test generator failure"
"E0209" – "No conditions for measurement"
"W0001" – "Function backplane power overload" – over current power supply 5 V functional part
"W0002" – "Function backplane power overload" – over current power supply 12 V functional part
"W0003" – "Function backplane power overload" – over current power supply -12 V functional part
"W0011" – "Control backplane power overload" – over current power supply 5 V control part
"W0012" – "Control backplane power overload" – over current power supply 12 V control part
"W0013" – "Control backplane power overload" – over current power supply -12 V control part
"W0021" – "Power supply overheat" – power supply overheat functional part
"W0022" – "Power supply overheat" – power supply overheat control part
"W0031" – "System operates on battery power"
"W0101" – "Standby mode activation"
"W0102" – "Standby mode deactivation"
"W0103" – "Device Initialization error, dev=%x"
"I0101" – "Alarm mode activation"
"I0102" – "Alarm mode deactivation"
"I0103" – "Event activation %xx"

"I0104" – "Event deactivation %x"
"I0105" – "Matrix activation %x"
"I0106" – "Matrix deactivation %x"
"I0107" – "Failure Accept"
"I0108" – "Failure Delete"
"I0109" – "Device start, dev=%x"
"I0110" – "Connection state 0x%x->0x%x: %d"
"I0111" – "Logical input 0x%x state changed %d"
"I0112" – "Logical output (Relay) 0x%x state changed to the value %d"
"I0119" – "Backup link activation"

3. The size of memory card in the control unit compared to available length of the message played, recorded and the number of entries in reports

SD Card [MB]	512	1024	2048	4096	8192	16348	32768
System / CFG **	104	144	224	384	704	1344	2624
Audio Message 16 bit / 48 kS/s	110 (20 min)	220 (40 min)	440 (80 min)	880 (160 min)	1760 (320 min)	3520 (640 min)	7040 (1280 min)
Reports	6,5 (100 k)	13 (200 k)	26 (400 k)	52 (800 k)	104 (1600 k)	208 (3200 k)	416 (64000 k)
BlackBox	165 (60 min)	330 (120 min)	660 (240 min)	1320 (480 min)	2640 (960 min)	5280 (1920 min)	10560 (3840 min)
RecordMessage	75 (20 min)	150 (40 min)	300 (80 min)	600 (160 min)	1200 (320 min)	2400 (640 min)	4800 (1280 min)
Service / Debug / Logs	32	32	32	32	32	32	32

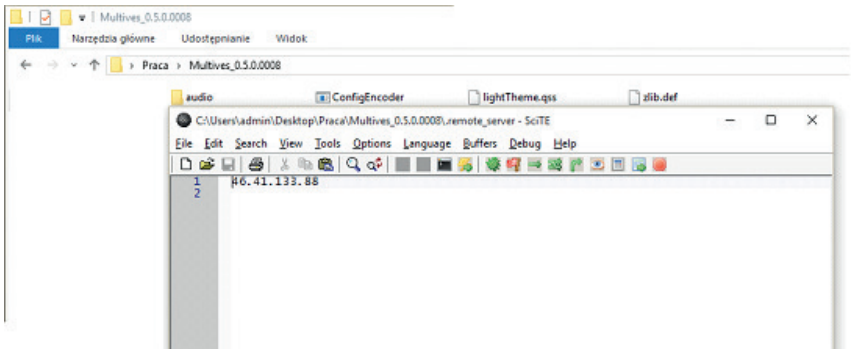
4. Simplified installation scheme of adding the system to the server

4.1. In order to enable remote access, the system must be configured locally. To do this, upload the proper configuration in which the connection path to remote server is described. This can be either a simplified or a full system configuration.

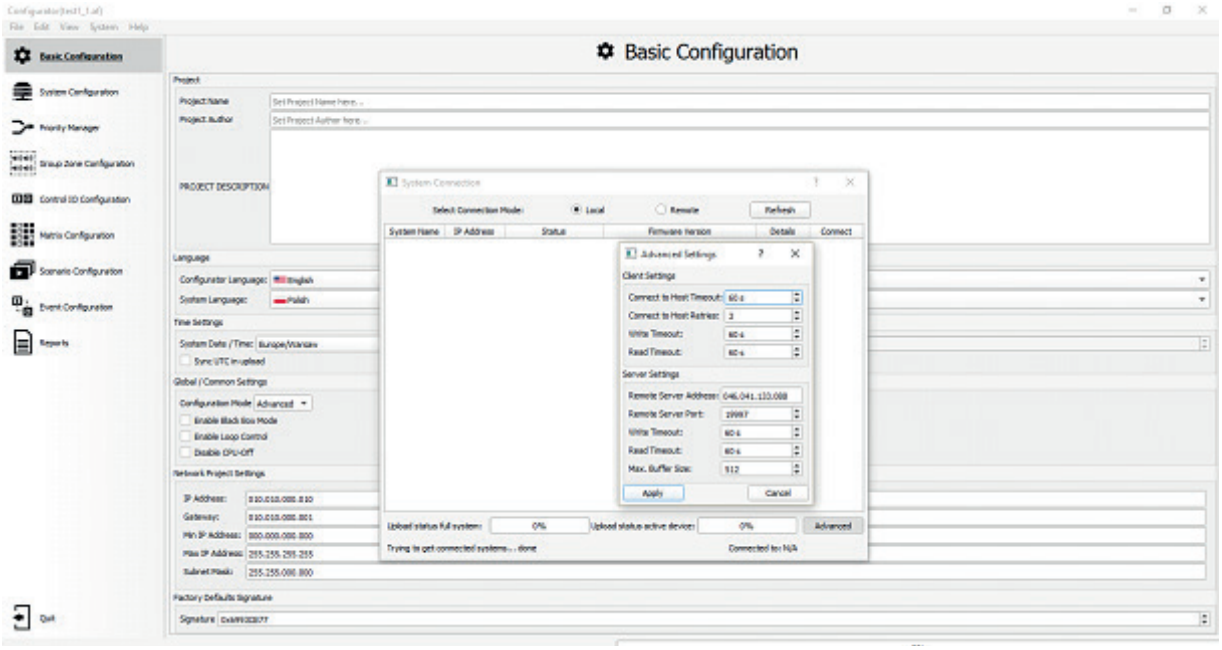
4.2. Server sharing configuration

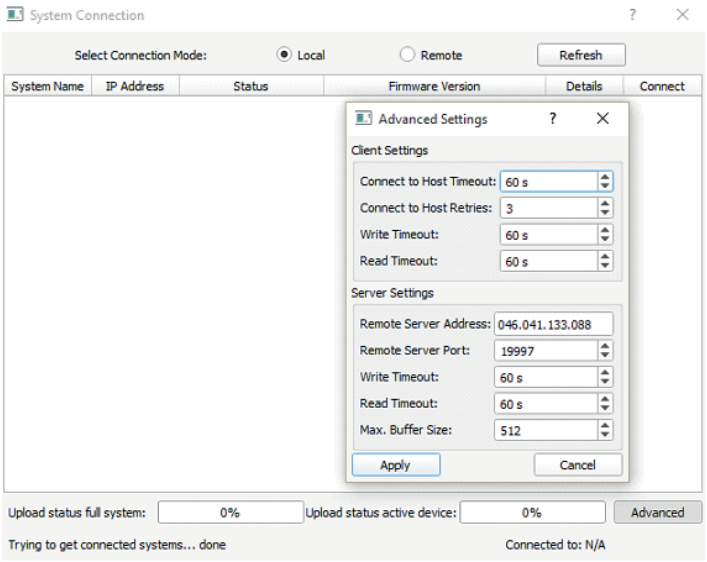
You should enter the folder where Selector application is installed, then open the file *.remote_server* (preferably with a notepad), and add the IP address (or preferred domain) of the server to which you want to connect the Selector. Then save and close.
.remote_server – is a file with information to the system how it should connect while using remote connection.

Current IP: 46.41.133.88
Domain: vps-1124638-8824.cp.homecloud.pl



Configurator Application – please enter the tab: System –> Connection Settings –> Advanced Settings –> Set the IP server.
Then set the Remote Server Port: 19997

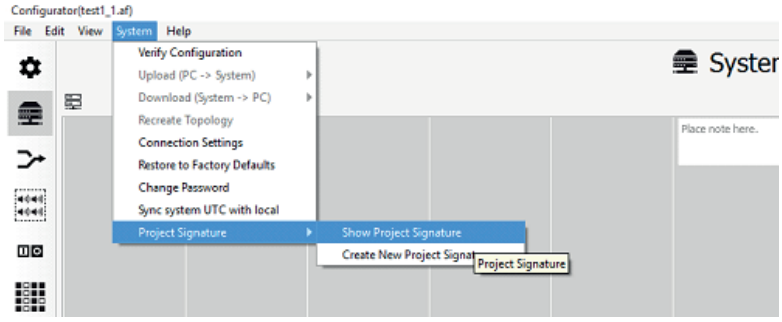


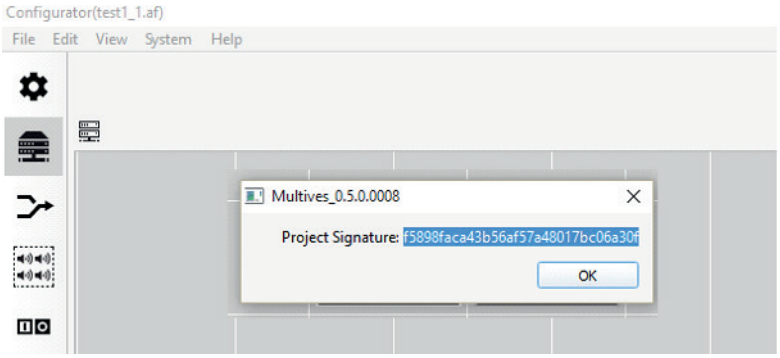


After completion we can move on to configuration sending.

4.3. If the system has been configured properly (configuration has been spread in the system), the access key to the system (project signature) should be made available. To do this please enter the tab System –> Signature Project, and then it depends on you whether you will show the current key or generate a new one. The signature key should be sent to the administrator of remote access server.

Note: If you change the signature of the project it may turn out that the person who had remote access has been deprived of it! Access rights are assigned not only to a person (key) but also to a specific system with a particular signature.



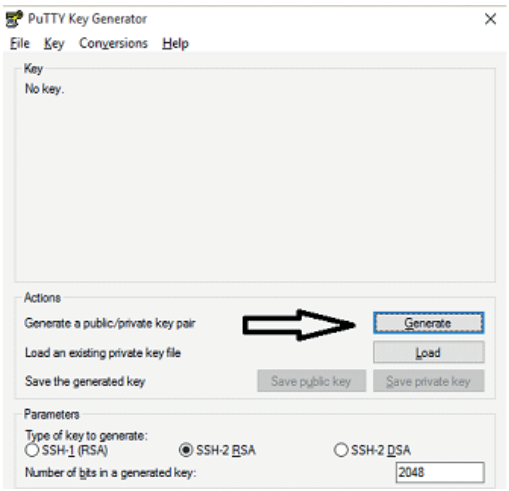


4.4. When installation is finished, please disconnect the device from the LAN/WAN port and connect the network cable to the same port.

5. Simplified scheme of remote connection with miniIVES system for service technicians

Sample programs, e.g. **Puttygen**, **Pageant** that are necessary can be downloaded for free from: www.winscp.net/eng/download.php

5.1. In order to generate private and public RSA keys, please open the **Puttygen program**, press **Generate** button and wait until the progress bar reaches 100%.

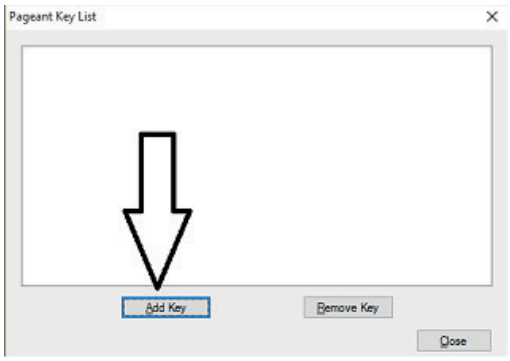


After the **key generation proces** (results will appear in the Key table), you must save the public and private keys by pressing the **Save public key** and **Save private key** buttons (they will be needed later on).

5.2. The public key must be sent to the administrator of the remote server for the purpose of granting the access rights to the service technician. If everything has been done properly, Puttygen program will no longer be needed and can be deleted.

5.3. Please open **Pageant** program (it is possible that the program window will not automatically open, therefore we should see it in the bar on the right-hand side).

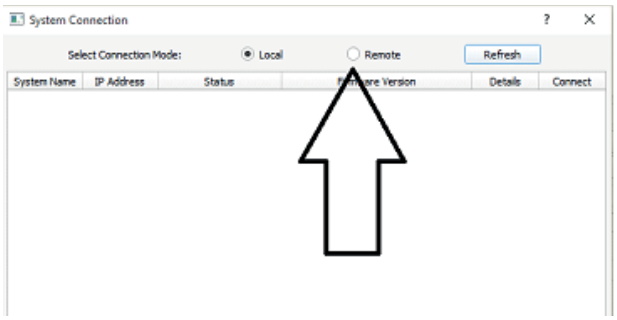
Press **Add Key** button.



Select the key that has been already saved to drive (Private Key).

5.4. You only need to grant the service technician remote access which can be activated by entering service mode on the GUI, select remote access for a certain time period. If remote access has been selected, the service technician should:

› move on to Connection Settings window in configurator;
› then select Connection Mode –> Remote and press the Refresh button.



The unit should appear in the window if everything has been properly configured.
Note: the remote unit will be able to connect only after granting of the server remote access by the administrator.

5.5. Possible errors:

If on the bottom of the Connection Settings window the message in red will be displayed, please check the access to the server using Putty and if appropriate rights have been given by the administrator.
The first remote access connection to the server from your computer may require consent for remote connection and saving so called fingerprint. To do this, using e.g. Putty try to connect to the server. During the first attempt you will be asked for permission and you should save this consent, please DO NOT LOGO ON but Disconnect and connect again.

6. Software compatibility

The official versions possess three identification characters:

x.y.z

For the official version it is acceptable (but not preferred) to have four-character marking, but in this situation the last character always has to be zero "0":

x.y.z.0

Subsequent version numbers may only increase (in time), however increasing the number of the more significant character is always accompanied by resetting the less significant character.

The importance of the individual characters:

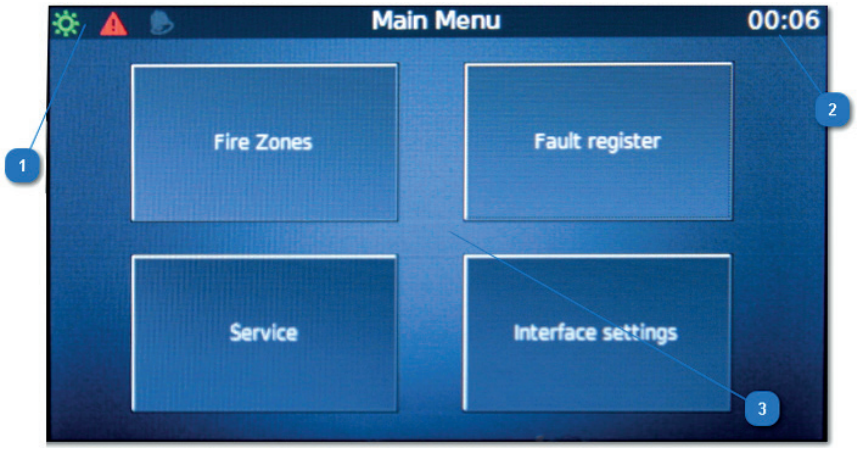
X (major number) – it is a so called major version. This number is changed only in special cases, while introducing major changes to the functioning and structure of the software.
It is forbidden to interchange software versions with different major number. Such a change could mean eg. change of the operating system, framework, core libraries, and will almost always results in a lack of backwards compatibility. Also, there is no guarantee of correct functioning of the hardware. In particular, substitution of software – even if successful – can cause permanent damages to the device. There is also no guarantee of proper functioning of the equipment after returning to the previous version of the software. Replacement of the software in this case should always be consulted with the software provider.

Y (API number / feature) – this number is always increased at the time when differences at the *Application Programming Interface* level occur – that is, very often when adding new functionality to the officially released version. Additional bug fixes may also appear but this is not a rule. Changing the number on the Y level due to other (e.g. new) functionality will usually mean the lack of full software compatibility, but does not exclude that the new functionality does not affect compatibility. Such a change ensures no damage to the equipment after replacing the software. Information of software backwards compatibility should always be provided during the official release.

Z (bug number) – number incremented always at the subsequent bug fixes. Compatibility of hardware and software backwards is guaranteed. There is no new functionality resulting in the lack of backwards compatibility. This means that the FW / SW is fully compatible when X.Y are the same (the difference being fixed errors or minor adjustments).

13. Manual touch-screen system

This guide describes the available features and how to use the touch screen located on the front panel control units EST-CU-8LCD and EST-CU-11LCD.



1 System Status Icons

In the upper left area of the screen the information contained in what state system EST VES is currently.

When only the green power icon is displayed that indicates that the system is in normal operation (no alarm) and not detected any faults. If green power icon is replaced by blue color icon that indicates that the system is in standby mode.

Icon triangle with an exclamation mark indicates that internal mechanisms to monitor the state of the system detected damage. Details of the fault are available after selecting windows Fault register.

Icon red bell means that the system is in alarm mode, and only audio signals Priority Emergency may be active.

2 The field displays the time the internal system clock

3 The four main icons to navigate between the different functions available from the home screen

13.1 Fire zones

Fire Zones tab allows routing stored messages / audio input to the selected zones as well as view the status of the speaker lines: Damage, Blocking, information about broadcasting sources.

Note – the arrows up / down and return are carried out on the buttons placed on the right side of the screen.

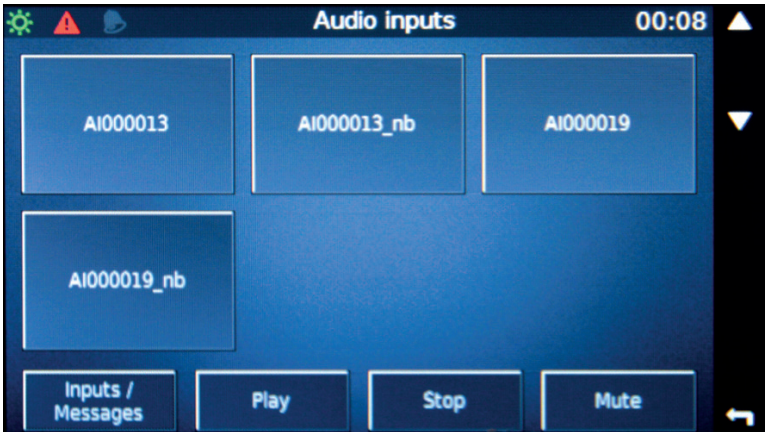
In order to route the audio source to the selected zones do the following actions:

1. Select the icon with the name of the zone – select the icon is highlighted in yellow.
2. Select the icon Source:

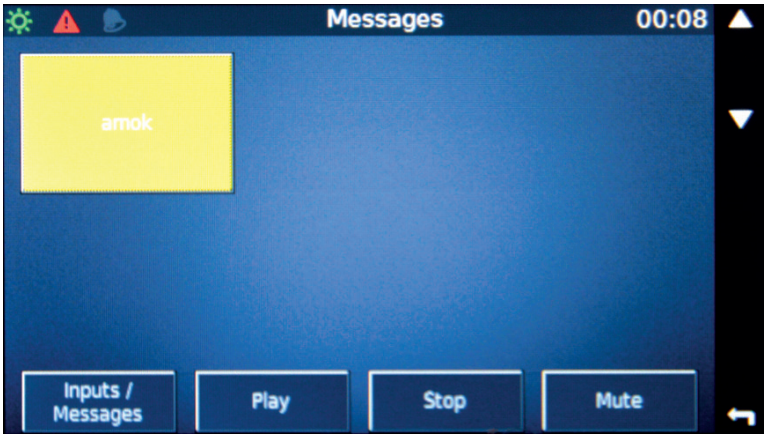
   Select from a list of available audio source or switch icon through Inputs / Messages on the available messages loaded into the system memory – select from a list and then select Play.

   This creates a matrix and its activation – selected audio source to the selected zones. To stop playing the audio source, select the source again and press the Stop icon.

Audio Inputs window



Message window – select the bottom left icon Inputs / Messages

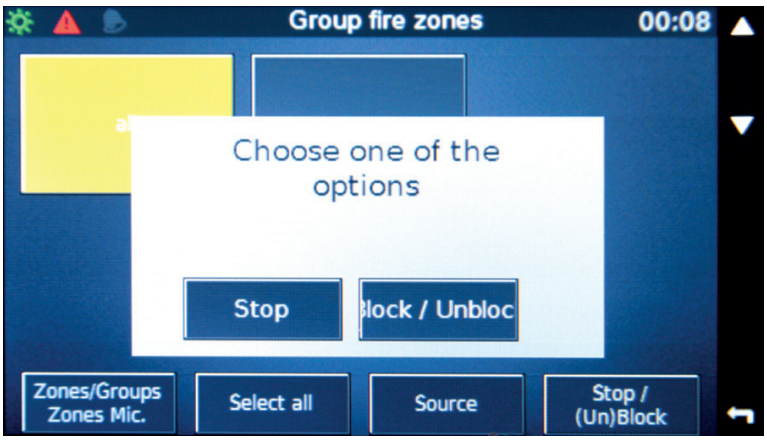


Mute function is used to mute the audio source globally throughout the system. Select the source, the source selected is highlighted in yellow and then select Mute.

By selecting the button back, positioned next to the icon , you go to the main window Fire zone, where you can verify that the selected our zone plays back the selected source.

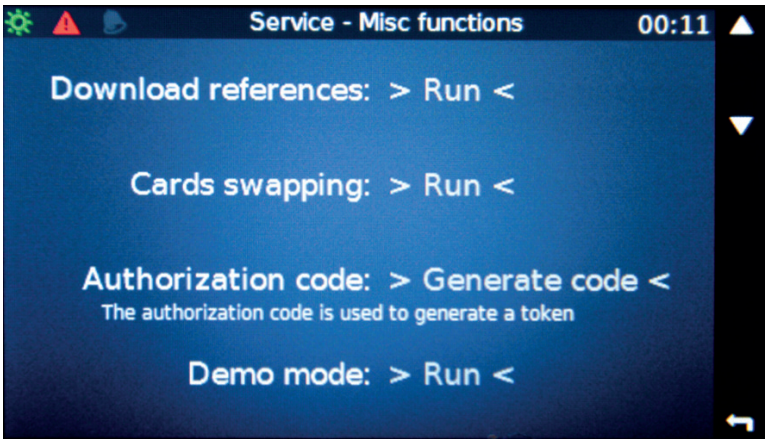
Access to defined groups – fire zones is displayed when you select the icon Zones / Groups (bottom left corner) from the main menu Fire Zones.

To disable a zone (stop playing messages or audio input) or complete blockage, select the zone / group (will be highlighted in yellow) and then select the icon Stop / (Un)block, which is placed in the lower right corner – the main menu – Fire zones. After selecting the appropriate option Stop, or Block / Unblock will perform the function.



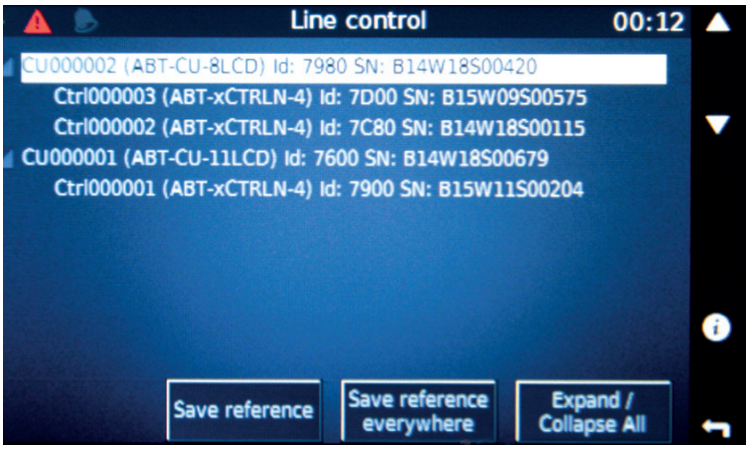
13.2 Service

Service tab allows access to basic functionality needed for service or system startup. You can preview the impedance on each line card control, save a reference impedance globally or to a selected input, generating code authentication is used to generate the token as well as the evaporation zone configuration of microphones and a fireman for the substitution of physical devices.



In order to get a reference impedance line speaker box, select the Run position Download references:

In the Line control, we have a choice of using the icons at the top / bottom and return select the unit and then after selecting the name of the tab control (also see the serial number) by the icon display the currently measured impedance values.



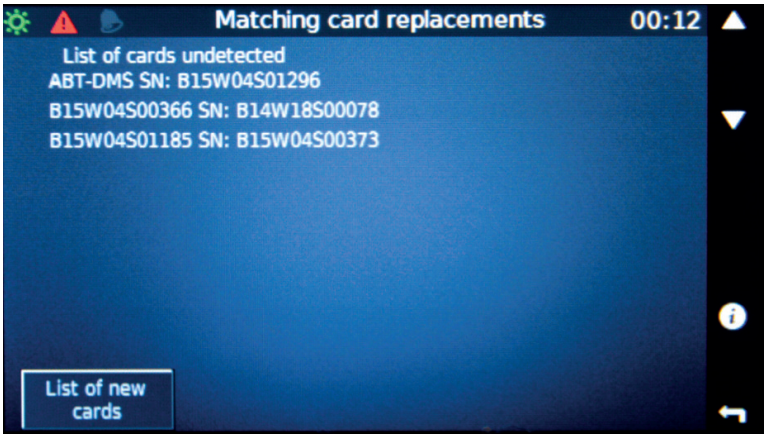
To save the reference impedance of the selected control card must be using the icons at the top / bottom and return select the tab control and then select Save reference – will be saved reference only to the selected tab.

Selecting Save reference everywhere will record a reference impedance globally for all control charts available in the system.

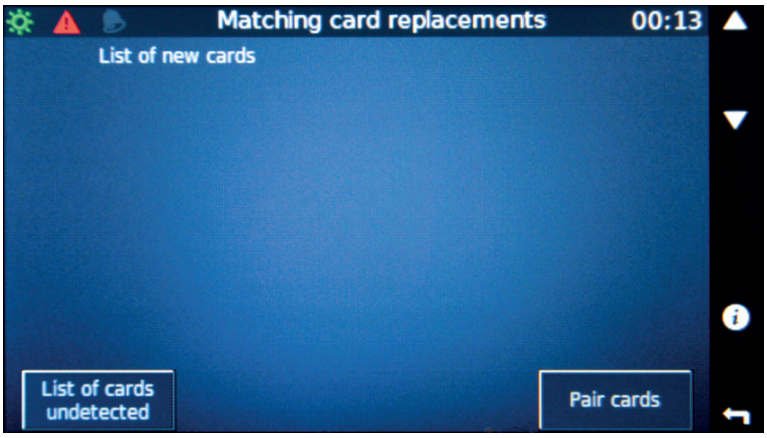
Icon Expand / Collapse All displays serial numbers only control units available in the system (optional Collapse All) or all units with a control card (optional Expand).

Option Cards Swapping is used to swapping configuration files microphones DMS / DFMS for substitution without new configuration. In order to replace equipment not available in the system but with the configuration on the available (active) but no configuration and make the storage configuration on a new device, select the Run box option Swapping Cards.
Then, using the icons at the top / bottom and return choose from the list of inaccessible devices microphone, which has been removed from the system (List of cards undetected), then select List of new cards and select a new microphone which is active but is not set up. Is used to identify in this case, the individual serial number of the microphone. To assign configuration, select the icon pairing (Pair cards).

The list of devices (microphones) not active in the system

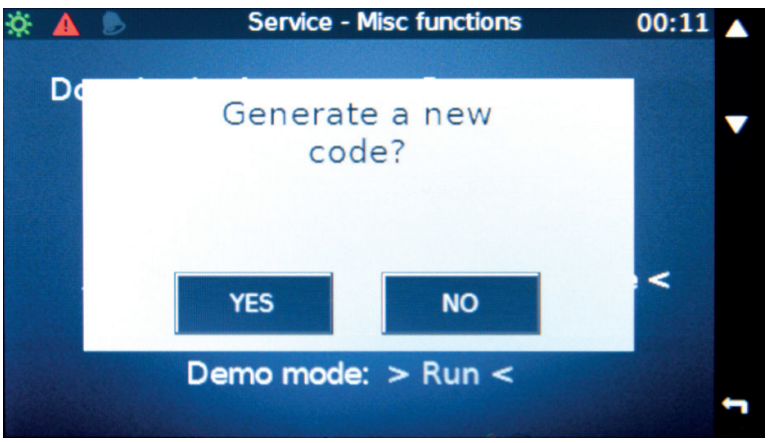


List of active devices but without the configuration of the icon used to pairing

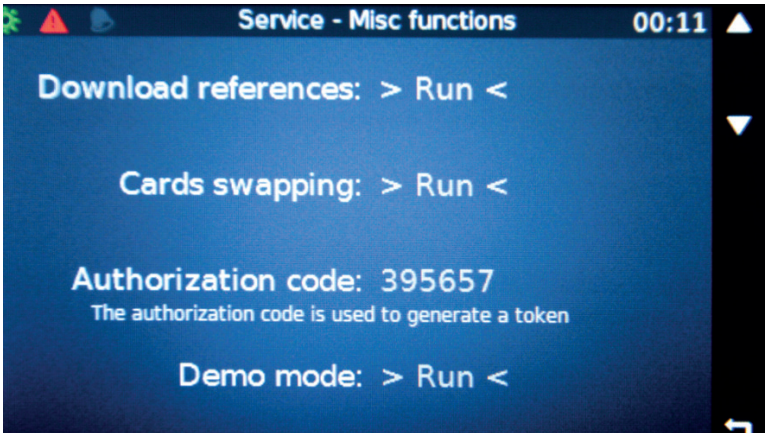


Code generation

Option to restore access to the system in the absence of an access password. If the system is passworded and the password is unknown, there is a way to overwrite the old password through authorized in the configuration software using the token. When you select Generate code in the main menu is displayed Service 6 digit number, which must be sent to the UTC Fire & Security to generate a token authorization.

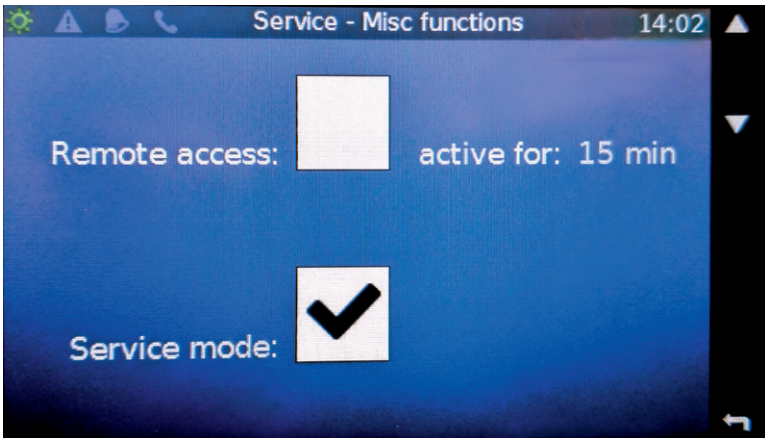


Displaying the code needed to create the token by UTC Fire & Security

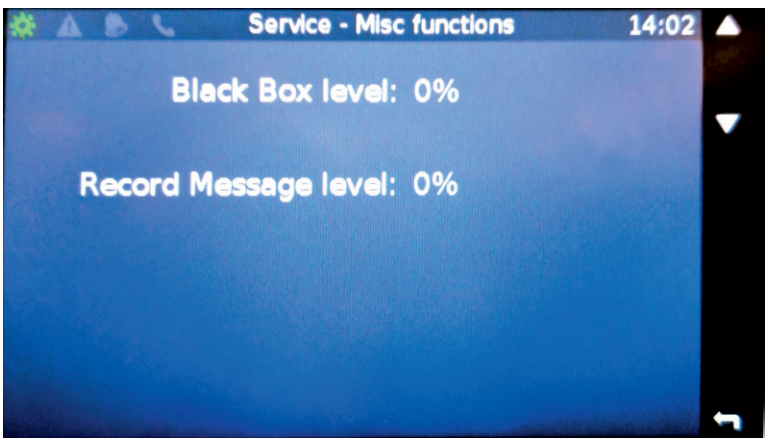


From the Service menu by pressing the icon-up / down we can access additional features available on the GUI:

1. This is an option allowing the system to connect to a remote server. Activation Remote access disconnects the local server to connect to a computer through Selector software. Time connection to the remote server is defined by the field Active for.

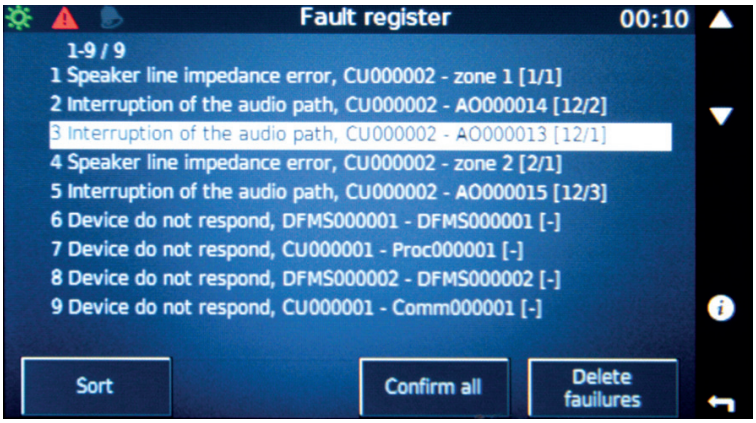


2. Back button will take you up to the last tab showing the occupancy of buffers Record Message and BlackBox.



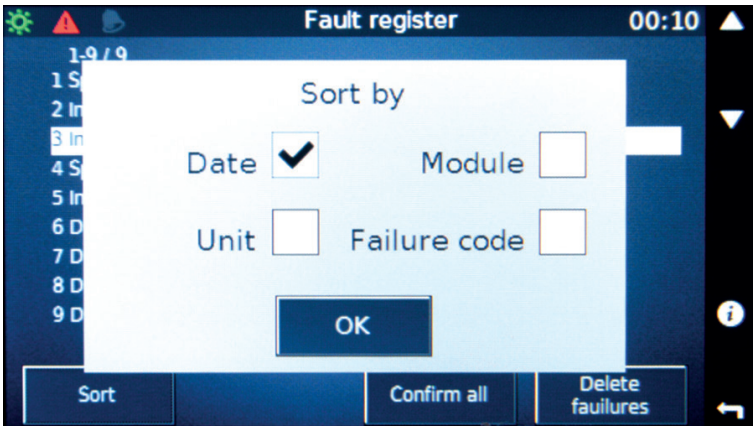
13.3 Fault register

Fault register tab allows you to view both current system faults and enables confirmation of the faults. Confirm all button is turning off acoustic signaling of the faults. Delete failures button will re-check the entire system.



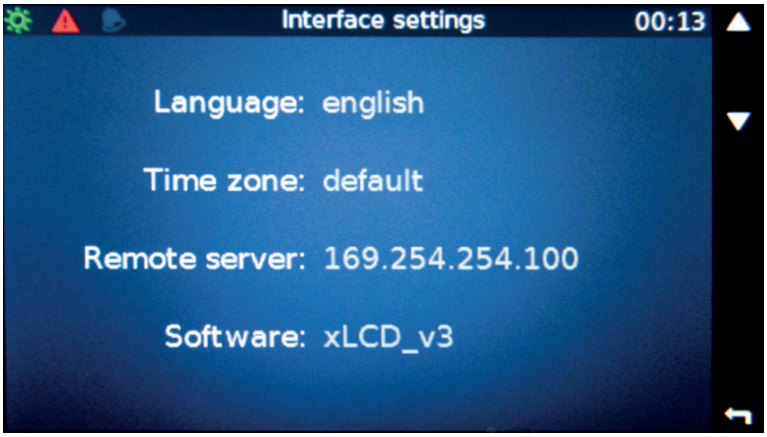
The list of faults scroll using the button next to the icons up / down .
To view a detailed description of the problem push button next to the icon information . A detailed description of the information includes: date and time of the fault, the fault description and a detailed description of faulty device (control unit, the name of the card slot, the line – assigned to output audio).

Choosing Sort dialog allows you to sort the list of damage after the date module, error code, unit.

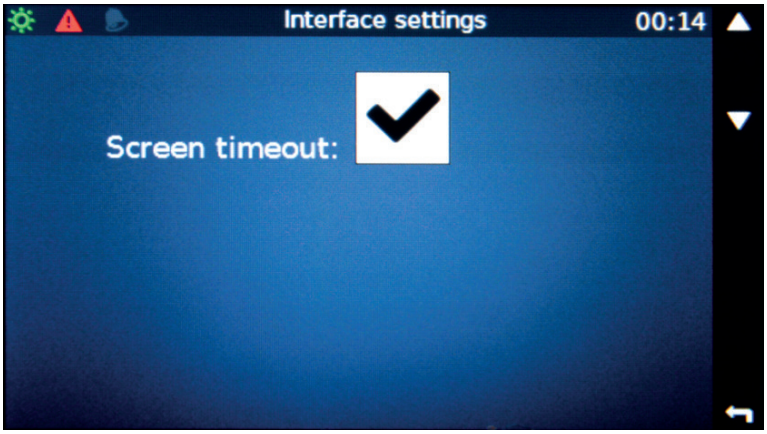


13.4 Interface settings

Interface settings tab is used to set the language in which the display is supported, change the time zone and displays a supported version of the software template with information about the expected IP address of the remote server.



Use the button next to the up / down icons to access the screen timeout which switches the display to power-saving state.



14. Annexes

» List of certified switches to connect devices in CHAIN topology

15. Certificates

16. Glossary

AFL
UTC Flex Language – internal script language based on LUA language. LUA is covered by X11 license.

AVB
Audio Video Bridging – technology of sending audio and video streams a computer network.

FACIE
Fire Alarm Control and Indicating Equipment – central part of fire signaling system powering fire detectors and receiving fire detection signals in order to trigger the alarm.

VASCU
Voice Alarm System Central Unit – central unit managing the voice alarm system.

TDM
Time-division multiplexing – method of realizing two or more communication channels in one transmission medium. Multiplexing allows limiting the number of transmission mediums.

17. List of tables

18. List of drawings

Notes