


Hacousto Holland bv Industrieweg 87 2651BC Berkel & Rodenrijs		
<b>4EVAC Compact 500 quick guide</b> <b>DoP OD 16.47</b>	<b>Author:</b>	<b>DD</b>
	<b>Design revision:</b>	<b>2.0</b>




## SUMMARY

This document is the quick guide for installation and initial setup of Compact 500 Voice Evacuation System. It explains how the hardware of Compact 500 should be installed and configured. Quick guide is addressed to the trained technical personnel, such as installers, service technicians and commissioning engineers.


## REVISION AND APPROVAL

Rev.	Date	Nature of Changes	Approved By
03	22-09-2017	Corrected audio performance specs	DD
04	25-03-2020	General update	AJH
05	04-06-2020	Corrections	TvdH

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## Table of Contents

1. What's in the box?.....	3
2. What else do I need to make it run? .....	3
3. Where do I start? .....	4
4. Unboxing 4EVAC Compact 500 .....	4
5. Mounting Compact 500 onto a wall.....	5
6. Installation.....	6
6.1. Open the cabinet.....	6
6.2. Mains.....	8
6.3. Battery .....	8
6.4. EVAC / SILENCE / RESET inputs.....	11
6.5. System status relay outputs.....	11
6.5.1. EVAC out.....	12
6.5.2. FAULT out .....	12
6.5.3. RESET out.....	12
6.6. GPI / GPO .....	12
6.7. Loudspeaker lines.....	13
6.7.1. Bridging to 200 W.....	13
6.7.2. EOL board.....	16
6.8. Analog audio input (BGM) .....	17
6.9. Network ports.....	17
6.9.1. Global network (G-Net).....	18
6.9.2. Local network (L-Net) .....	20
6.10. Memory card.....	21
6.11. Device ID setting.....	22
7. Startup and commissioning.....	23
7.1. Power-on / power-off sequence.....	23
7.2. Battery setting.....	23
7.3. Power supply equipment indications .....	25
7.4. Loudspeaker line impedance calibration .....	26
7.5. Amplifier unit indications.....	28
8. Connections and recommended cable types.....	30
9. Technical specifications .....	31

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Thank you for choosing 4EVAC as your Voice Evacuation System solution.

4EVAC Compact 500 is all-in-one-box Voice Evacuation System. The box contains a completely integrated Voice Evacuation System, capable of both standalone and network operation. 4EVAC Compact 500 is certified in accordance to EN54-16 and EN54-4, which are harmonized standards under Construction Products Regulation, mandatory in the European Union.

## 1. What's in the box?

Inside the package you will find the main unit of Compact 500 Voice Evacuation System, which includes:

- 📦 Wall-mounted IP30 housing;
- 📦 Integrated push-button panel and fireman microphone on the front;
- 📦 Mainboard with input and output ports (including screw terminal plugs);
- 📦 Memory card (microSD);
- 📦 DA200 dual-channel amplifier units incl. 100V step-up transformers (number of amplifier units depends on the hardware config you ordered);
- 📦 DIN-rail with 16A fused manual mains switch;
- 📦 Integrated EN54-4 power supply equipment with temperature-compensated charger;
- 📦 Battery leads set with; 20A battery fuse and battery terminal insulating caps;
- 📦 Jumpers for amplifier units (if you're planning to bridge amplifier outputs to 200W)




Before shipping, the hardware is pre-configured in our factory according to your project-specific requirements. This includes:

- 📦 Number of primary amplifier units (1, 2 or 3 units)
- 📦 Optional backup amplifier (0 or 1 unit)

## 2. What else do I need to make it run?



4EVAC Compact 500 needs additional items, which you are responsible to supply on your own. The additional equipment includes:

- 📦 Battery,
- 📦 Mains cord,
- 📦 Wall mounting plugs (5 pieces,  $\varnothing 8\text{mm}$ ),
- 📦 10k $\Omega$  and 4.7k $\Omega$  resistors (for surveillance of EVAC triggering inputs, 1 pair per input);
- 📦 EOL boards for surveillance of loudspeaker lines (available at 4EVAC in packs of 10 pieces);
- 📦 Network cabling (if you are building network system),
- 📦 Configuration file prepared in 4EVAC Manager PC software (software and GUI manual available at 4EVAC)

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### 3. Where do I start?

First, make sure that you are officially allowed to access the Compact 500 hardware. This is usually the case if:

-  you are an authorized representative of 4EVAC;
-  you have been trained by 4EVAC or its authorized representative for installation, service and commissioning of the Compact 500 Voice Evacuation System.

Unauthorized hardware and/or software modifications are against the law and outside of manufacturer's responsibility. If you have doubts about your status and access level permissions, please contact the 4EVAC main office.


#### Important note: Access level explanation

Opening the Compact 500 front door gives physical access to all interfaces, internal system connections and sensitive hardware settings that are of high importance to system operation mode, hardware reliability and safety (Access Level 3 according to EN54-16, Annex A). This access level (and higher) is strictly protected by the manufacturer and reserved only for service personnel which is trained, approved and officially certified by the manufacturer. Any actions carried out in Access Level 3 without the manufacturer's explicit approval may lead to incorrect settings or hardware damage, causing serious system malfunction, and therefore are strictly prohibited and void manufacturer's warranty.



### 4. Unboxing 4EVAC Compact 500


The original shipping package includes a bottom foam protector that allows you to place the main unit in vertical position on the floor after unboxing.

 **Caution! Never put Compact 500 in a vertical position directly on the floor, table or any other hard horizontal surface. Doing this may deform or break bottom parts of the housing.**

Optionally, the cabinet may be temporarily placed on its back, on a flat horizontal surface.

To safely unbox the Compact 500 main unit, follow these steps:

1. Carefully cut the two strapping tapes and remove them.

 **Caution! Strapping tapes may be under very high tension!**

2. Carefully put the package upside-down.
3. Open the bottom side and unfold the bottom panels of the package so that the bottom foam protector is free from obstacles.
4. Carefully flip the package, first on its side and then right-side up.
5. Pull the carton package upwards and remove it.
6. Fold the protective foil down or remove it, leaving the Compact 500 main unit resting in the foam protector until you're ready to hang it on the wall.

## 5. Mounting Compact 500 onto a wall

The Compact 500 main unit is meant to be mounted on vertical structures, such as concrete walls.



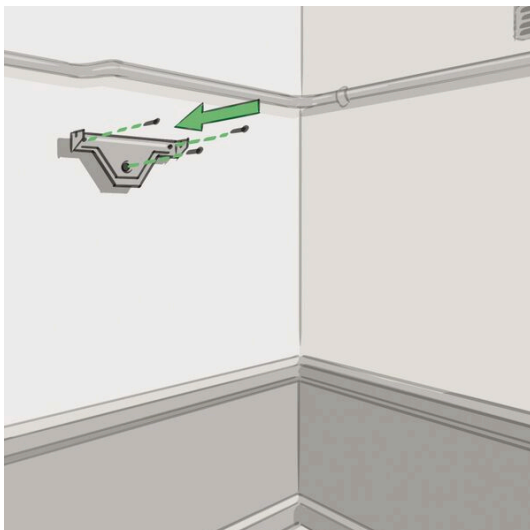
**NOTE:** To provide sufficient ventilation, keep at least 20 cm space on both sides of the cabinet. Keep ventilation grills free of obstacles!

At the back side of the Compact 500 cabinet you will find a wall-mount bracket provided with 3 fixing holes. Note the two slots in the back plate of the cabinet, corresponding to the wall bracket hooks.

When the cabinet is mounted, there is a 10 mm space between the cabinet and the wall. This space can be used for cables running from the floor to the top of cabinet.

Prepare wall-plugs and follow these steps:

1. Place the bracket on the wall. Optimal height of the top is 170 cm above floor level.
2. Using wall plugs, fix the bracket in 3 points.
3. Optionally, in the space between the left and right edge of the bracket, place cables flat on the wall, vertically.
4. Lift the Compact 500 cabinet and place it flat against the wall:
  - a. The top of the cabinet should be at least 20 cm above the bracket top edge,
  - b. The side edges of the cabinet should be flat against the wall, hiding the bracket (and cables) behind it.
5. Slide the cabinet down until it hangs on the bracket.
6. Check if the position of the cabinet is straight and all edges at the back are flush with the wall.
7. Check if the cabinet is placed firmly on the bracket and does not move in any direction.
8. Lock with two bottom wall plugs.



**NOTE:** The maximum weight of the main unit (without battery) is 29 kg. We strongly advise that the cabinet should be lifted and hung by at least two persons. Check your local safety requirements on the maximum allowed weight per person.



Caution! Never mount or un-mount the cabinet with battery inside!

## 6. Installation

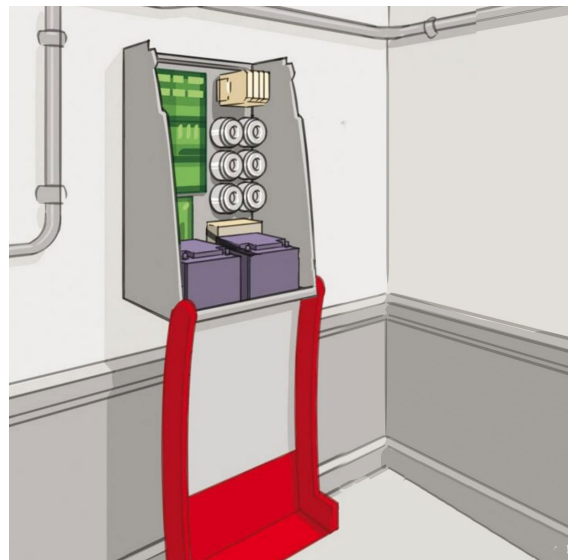
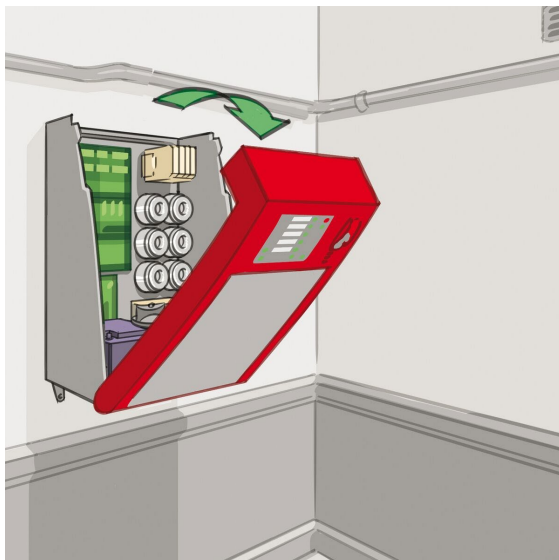


Caution! Risk of electric shock! Keep the mains switch OFF or unplugged from the mains outlet during the entire installation process. Do not install or uninstall any parts of the system while the mains voltage is on.

### 6.1. Open the cabinet

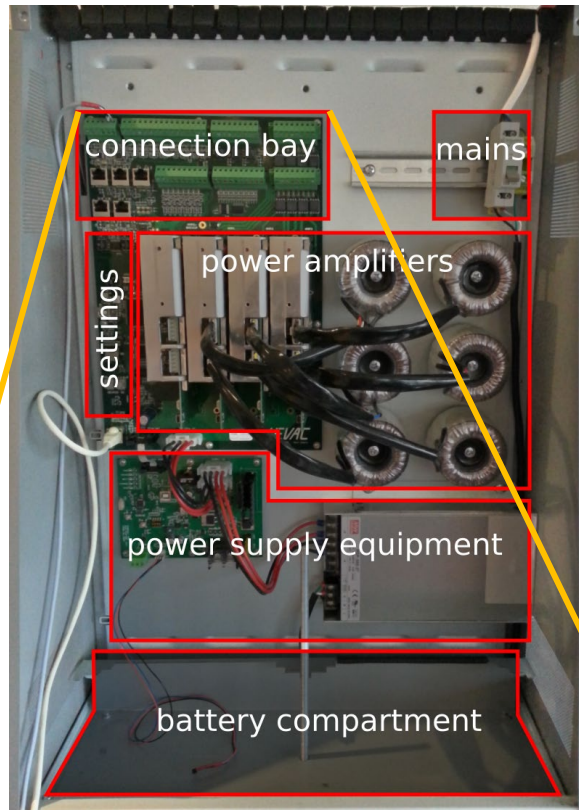
In order to open the cabinet, follow the steps below:

1. Find two round openings in the front top part of the cabinet, where fixing screws are placed.
2. Undo both screws using a hex key (also known as Allen wrench or in-bus).
3. Hold both the left and right top corners of the front door.
4. Open the front door by pulling back the top of the front door. Try to pull both the left and right side simultaneously with the same force.
5. Slowly keep opening the front door until it tilts 180°
6. Leave the front door hanging freely upside-down.
7. Inside the cabinet, locate the hinges on the left and right side of the backplate: Check if the cabinet hangs properly on the wall bracket.

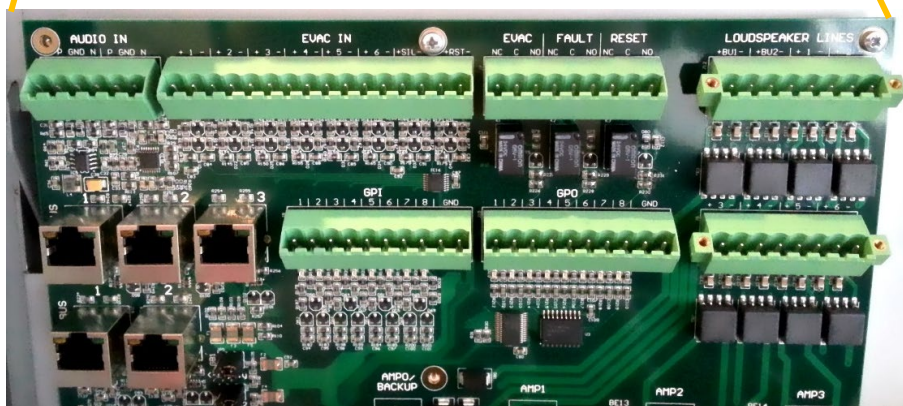




After opening the Compact 500, you should see following functional sections, as shown on the picture below:



Compact 500 – inside main unit



Compact 500 - connection bay

## 6.2. Mains

Connect the 110 ~230V AC mains cable to input of the switch on the DIN rail in the top-right area. Keep the right polarity and connect the ground wire to the ground terminal.



**Caution! Be careful! Make sure that the mains cable is not connected to the electricity network during installation.**

## 6.3. Battery

**NOTE:** Place the battery only when the cabinet of Compact 500 is firmly fixed to the wall.

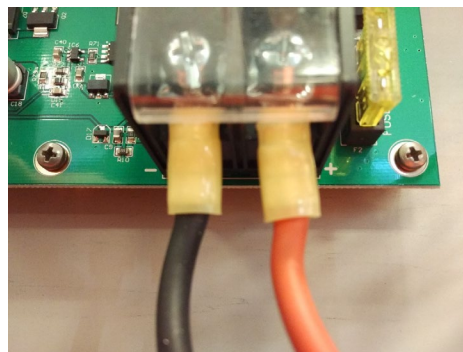
Install only sealed lead-acid batteries for stationary use. Compact 500 is designed to operate with 2 x 12V batteries, each a maximum dimension of 230 x 138 x 207 mm (LxWxH).

To safely and properly install the battery circuit, follow the instruction below:

1. Before installing the battery, measure the voltage of each battery separately. Open-circuit voltage of a well-functioning, healthy 12V battery should be in range of: 11,5 V – 13,5 V DC. If the open-circuit battery voltage is out of this range, replace the battery. Always use pairs of batteries with the same open-circuit voltage (as close as possible).
2. Adjust the battery bracket position to make enough room in the battery compartment (bottom of the cabinet).

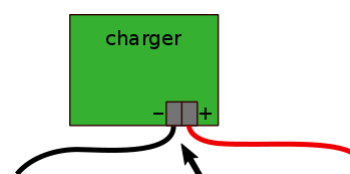
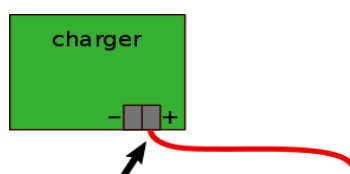


**NOTE:** If your batteries are large, it may be difficult to access the battery connector on the charger board. In this case it's best to connect battery leads to the connector on the charger board first, before putting the battery into the cabinet.



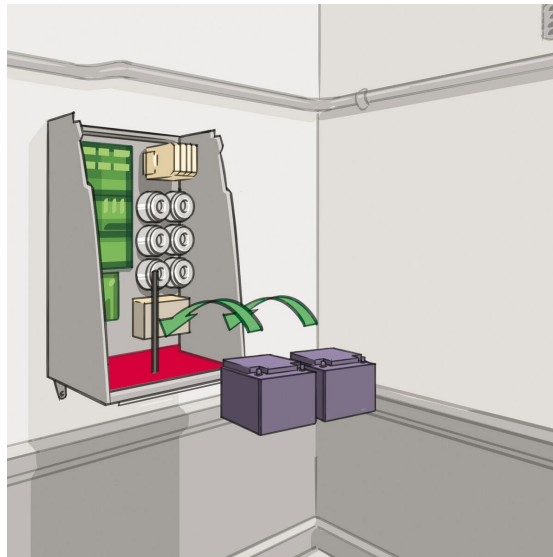
*Battery connector on the charger board.*

1. Take the battery fuse out of the socket on the charger board! You will plug the fuse later, when the system is running on mains supply.
2. Connect battery leads to the charger board.





- Put the battery in the battery compartment.

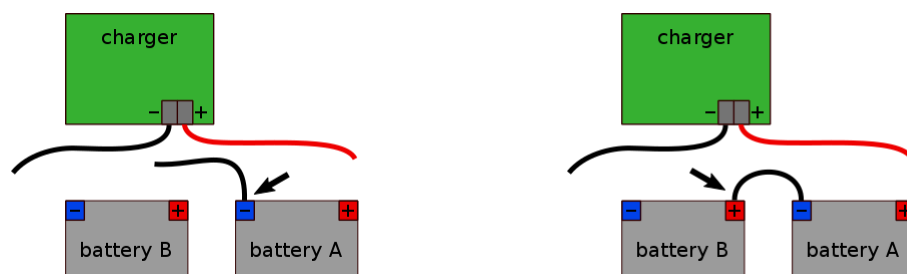


- Make sure that all battery leads are long enough and have rubber insulating caps on their ends.

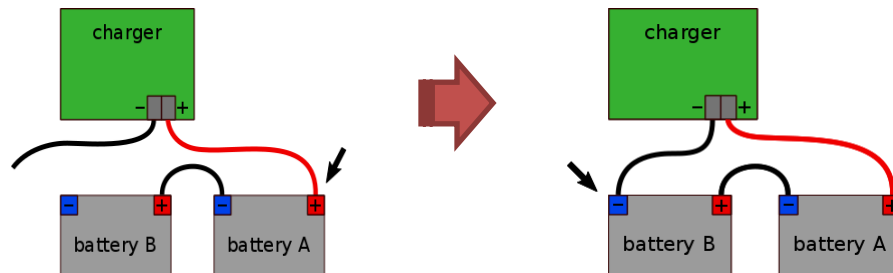


**Caution! Be careful!** The negative pole of the battery connector is directly connected to ground potential and the entire metal housing of Compact 500. Dropping an unprotected battery lead on any part of the hardware, housing or battery brings high risk of a short-circuit and may damage the hardware and the battery. The high electrical current from the battery under short-circuit condition may cause rapid battery discharge and instant heat production. This may also destroy hardware components, cause serious battery capacity degradation or battery damage, cause fire and may be a potential risk to your health.

- Connect the battery jumper (short black) between the negative (-) pin of battery A and the positive (+) pin of battery B.



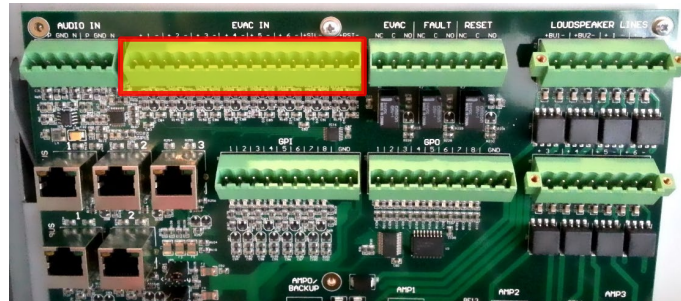
6. Connect the battery leads **in order FROM (+) TO (-)**, as follows:
  - a. First, connect the (+) lead (long red) to the positive (+) pin of battery A;
  - b. Next, connect the (-) lead (long black) to the negative (-) pin of battery B;



7. Check the voltage of each battery again, separately, and the total voltage of both batteries.
8. Cover all battery terminals with insulating rubber caps.
9. Put the thermal sensor inside one of the rubber pads, so that it has good thermal contact with the battery terminal.
10. Fasten the thermal sensor to the battery lead with a tie-wrap.
11. Secure the battery mechanically:
  - a. Fix the bottom bracket,
  - b. Twist the red plastic wing-nut hand-tight.



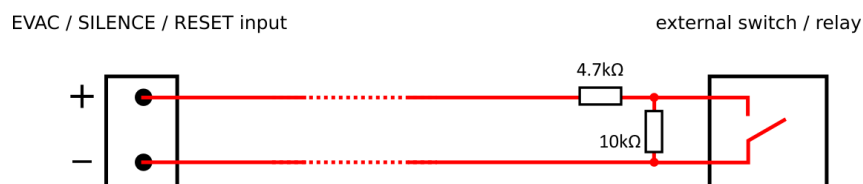
### 6.4. EVAC / SILENCE / RESET inputs



There are 8 monitored inputs dedicated to triggering signals for evacuation, silence and reset instructions from the external fire detection system.

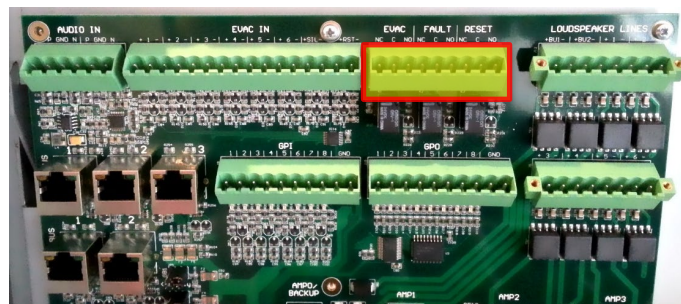
- 6 x EVAC in
- 1 x SILENCE in
- 1 x RESET in

Each of these 2-pin inputs has built-in DC monitoring which requires two resistors of  $4.7k\Omega + 10k\Omega$  in order to detect an input active/inactive state as well as a short and open fault. EOL resistors must be located directly at the triggering output inside of the external device (i.e. fire detection system) to provide reliable surveillance of the entire link.




EVAC / SILENCE / RESET inputs must receive an activation signal of at least 100ms in order to trigger events. Pulses shorter than 100ms will be ignored.

### 6.5. System status relay outputs



There are 3 potential-free relay outputs to external devices. Each output has individual 3 pins:

- normally open,
- normally closed,
- common.

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### 6.5.1. EVAC out

Activated (closed) on EVAC mode, where at least one zone of the voice evacuation system is transmitting an automatic EVAC message or LIVE EVAC signal from the fireman microphone.

### 6.5.2. FAULT out

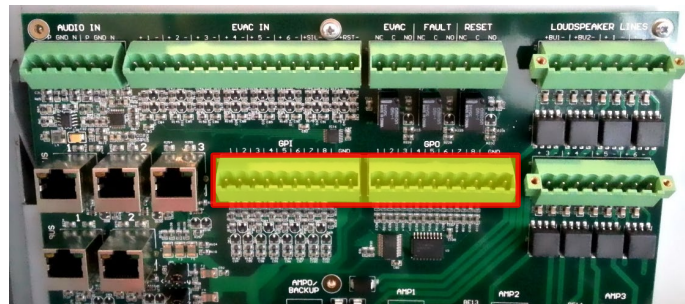
Activated (closed) while the fault status is reported by the voice evacuation system.

Also activated when the Compact 500 is not powered.

### 6.5.3. RESET out

Activated (closed) immediately after a manual reboot of the Compact 500 main unit. The active pulse length is configurable from 0 (disabled) to 5000ms in the configuration settings.

## 6.6. GPI / GPO



8 x general purpose input (pull-down), 8 x general purpose output (open collector)

GPIs and GPOs are programmable in the configuration file. The GPI and GPO can be linked to any system events to trigger or follow system events.

## 6.7. Loudspeaker lines



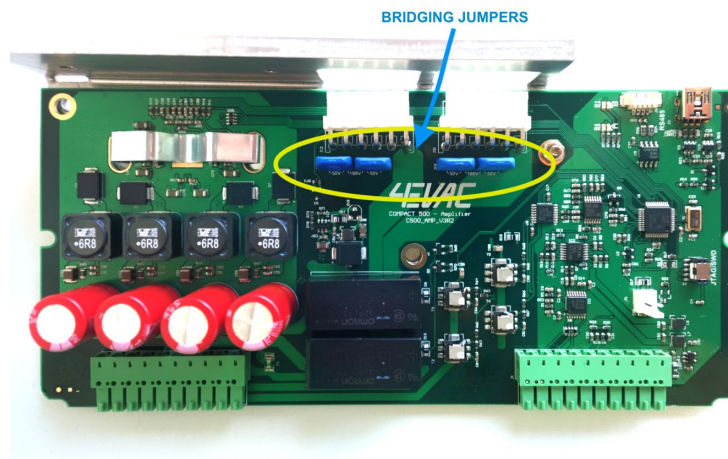
6 outputs to 100V loudspeaker lines (6 x 100W)

**NOTE:** Terminals BU1 and BU2 are not used.

### 6.7.1. Bridging to 200 W

Each amplifier unit in Compact 500 offers 2 audio channels, max. 100W each. By default both channels are working independently, each with a 100V output.

Loads greater than 100W (up to 200W) are handled by bridging outputs of both channels of the amplifier unit into one 200W channel. This is done by lowering the output voltage of both channels to 50V via output voltage jumpers (bridging jumpers) and connecting two 50V output lines in series, at the loudspeaker line connector.



Location of jumpers on the amplifier module

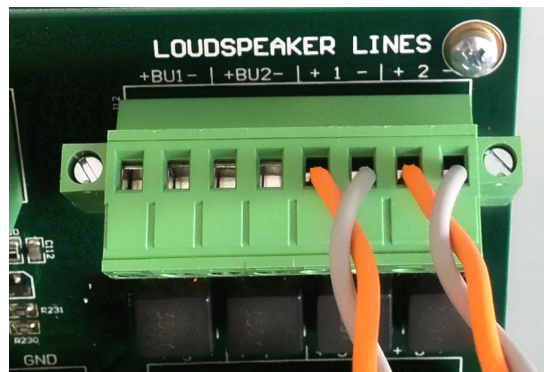


### 6.7.1.1. Single channel

For single channel mode (2x100W), two jumpers on the amplifier unit must be set to the "100V" position (center position). One jumper per channel.



*Jumper setting 100V per channel – amplifier unit*



*Single channel: line 1, line 2 – loudspeaker line output*

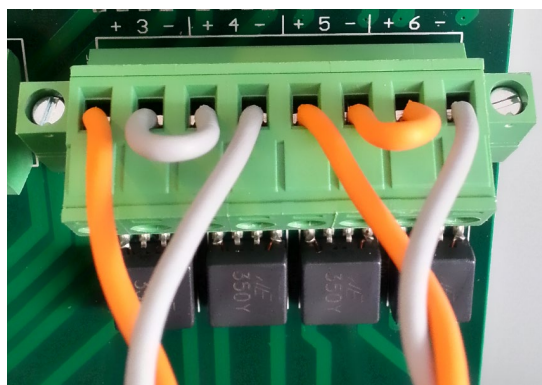


### 6.7.1.2. Bridged

For bridged mode (1x200W), four jumpers must be set to the "50V" position (left & right position). Two jumpers per channel.



*Jumper setting 50V per channel – amplifier unit*



*Bridged lines: 3+4, 5+6 – loudspeaker line output*

### 6.7.2. EOL board

EOL boards are not supplied with the Compact 500 main unit and are available at 4EVAC as a separate product.

4EVAC Compact 500 supports surveillance of loudspeaker lines based on a 20 kHz impedance measurement.

For reliable impedance monitoring of the speaker line, use an EOL board. Connect the EOL board to the end of the loudspeaker line in parallel, preferably inside the last loudspeaker on the line. The EOL is not polarity-sensitive.



*Loudspeaker line with EOL module*

**i** NOTE: The EOL module features a 145°C thermal fuse, minimizing the risk of a line short-circuit under fire conditions. Exposing the EOL board to temperatures exceeding 145°C will damage the EOL circuit and cause an open fault of the loudspeaker line.

The purpose of the EOL is to create a reference load at the monitoring frequency of 20kHz. With the EOL connected, the monitoring of load impedance is more accurate and less sensitive to slow and long-term impedance drift of the loudspeakers due to aging and weather conditions. It also gives more reliable fault indication when a large number of loudspeakers is placed on one long line.

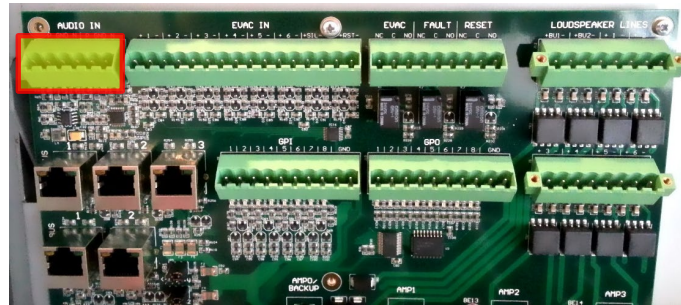


*EOL board*

**i** NOTE: It is required to use an EOL module on every monitored loudspeaker line. To optimally measure the loudspeaker line impedance, you can adjust the impedance of the EOL by breaking out corners of the EOL PCB (using a tool, e.g. pliers or cutters). For the best result of impedance measurements, use settings as described in the table below:

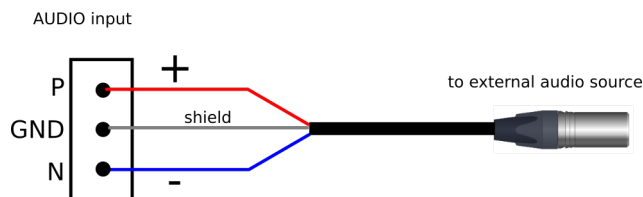
EOL load setting	EOL impedance @20kHz
Normal - tip on (factory original)	320 Ω
Light - tip off	640 Ω

## 6.8. Analog audio input (BGM)



Two analog audio inputs, balanced, line-level.

Connect your auxiliary audio source for background music or low a priority external paging microphone here.



**NOTE:** By default, the Compact 500 includes an integrated fireman microphone, which occupies analog audio input 2. If your system does not require an integrated fireman microphone feature, you can disable it in the configuration settings and use analog audio input 2 as an external audio input for background music.

## 6.9. Network ports

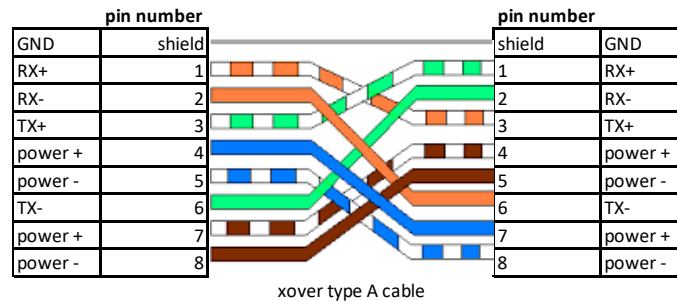
4EVAC Compact 500 offers 5 ports (RJ-45) for network connections between distributed parts of the 4EVAC Voice Evacuation System:

- 2 x G-Net ports (global network)
- 3 x L-Net ports (local network)

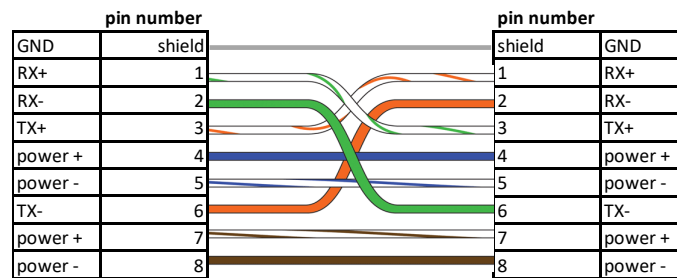
The 4EVAC network features a full duplex RS-422 data link and 24V DC power to remote devices.

If you're building a distributed system using the 4EVAC network, you should make physical links between devices using the right cables. Cabling should meet the following requirements:

1. Crossover twisted-pair cable (compatible with Ethernet crossover)



xover type A cable



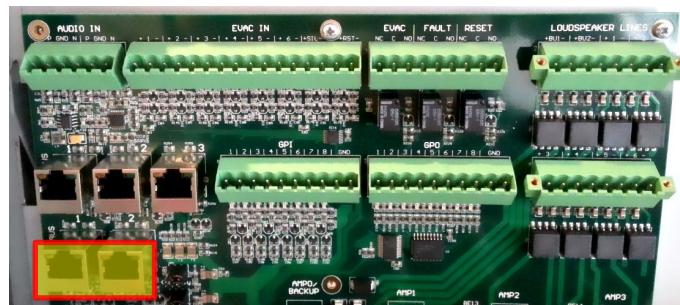
xover type B cable

2. CAT5e or higher for maximum distance of 250m.
3. Non-CAT / lower than CAT5e: 250m not guaranteed.
4. Shield required (at least FTP)



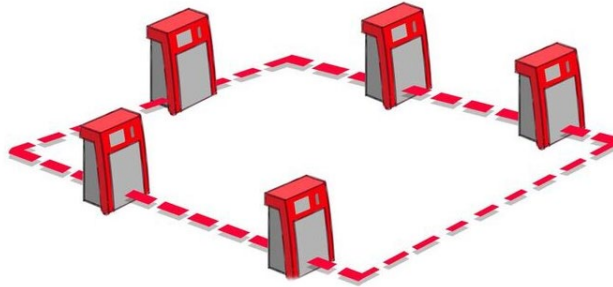
Caution! Use only crossover cables and keep the correct pinout! Connecting power pins to data pins will damage the network port.

### 6.9.1. Global network (G-Net)



G-Net works as a redundant ring between Compact 500 main units. It is dedicated to secure a reliable system bus, which keeps the global system intact in case of single link failure.

To create a redundant G-Net ring between multiple Compact 500 main units, connect both G-Net ports between every unit in the network, so that you create a closed ring.



*G-Net redundant ring topology*

**Power over G-Net**

Both G-Net ports have individual settings for 24V DC power over G-Net for remote G-Net devices. Power over G-Net is set by means of hardware jumpers located next to the G-Net port.

Power over G-Net is dedicated to supply devices connected to the G-net port, such as fiber transceivers.




*Location of G-Net 24V power jumpers*

By default, power over G-Net is off.

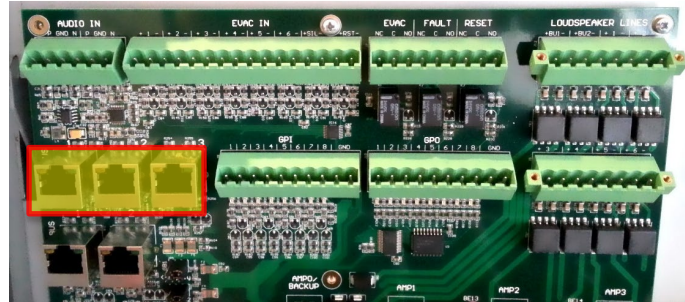
jumpers in the LEFT position:	24V DC power ON
jumpers in the RIGH position (or no jumper):	24V DC power OFF



**NOTE:** If you connect G-Net directly between Compact 500 main units, please leave the power jumpers in the OFF position.



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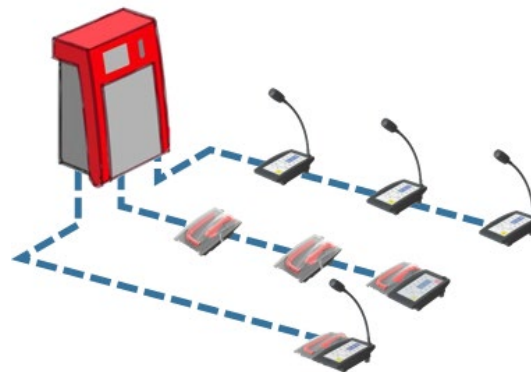
### 6.9.2. Local network (L-Net)



L-Net works as a daisy-chain bus between the Compact 500 main unit and remote network devices, such as paging consoles. It is dedicated to provide a powered bus to peripheral devices. Every L-Net port is powered with 24V DC and power over L-Net is always enabled.

L-Net capacity of single a Compact 500 unit is limited to the following figures:

-  Maximum 8 devices per port,
-  Maximum 16 devices per Compact 500 main unit.



*L-Net daisy chain topology*

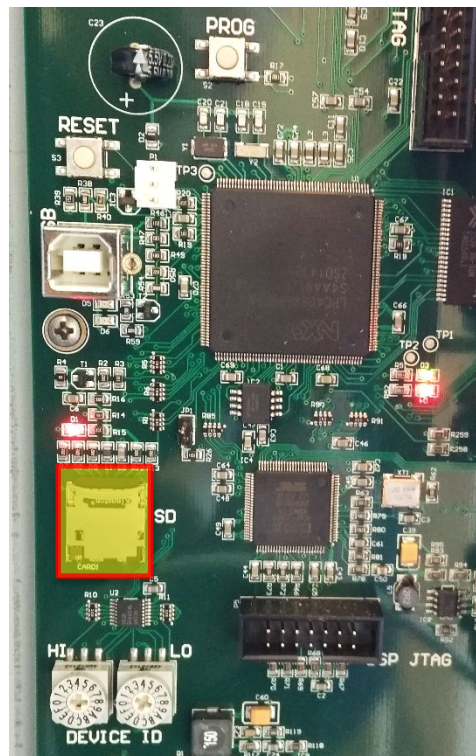
For more information about installation of remote network devices, please go to the network device installation manual.



### 6.10. Memory card

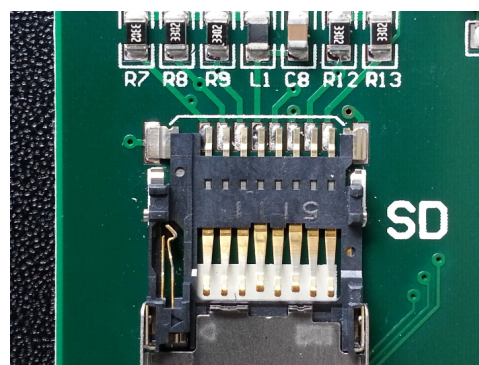
The Compact 500 is supplied with a pre-installed micro SD memory card. The memory card contains a complete Compact 500 system configuration file, including audio messages.

The configuration file is prepared in the 4EVAC Manager - Windows GUI application. More information about creating configuration settings can be found in the 4EVAC Manager User Manual.



Location of memory card on the main board.

The memory card is under constant surveillance, as well as its content. When the memory card is removed, damaged or its contents are corrupted, the Compact 500 will report a system fault. During the system fault caused by a memory error, the Compact 500 enters SAFE STATE, where the system stops all functions and requires a reboot. This state can be reset only through a manual device reset.



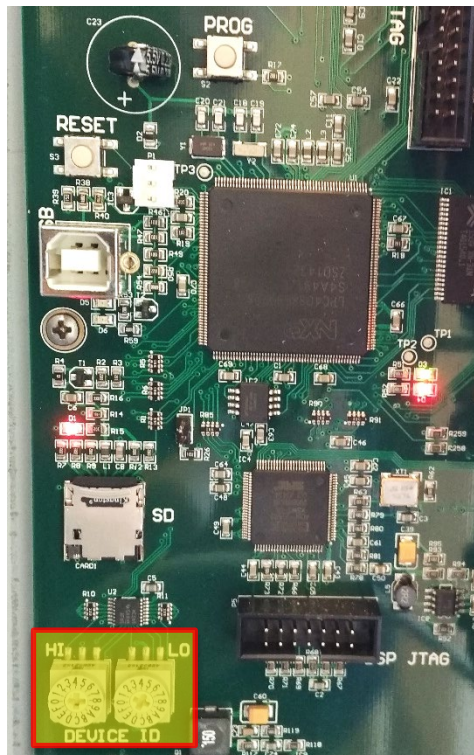
Close-up of memory card socket.

To modify system configuration settings, create a new config file, move it to the micro SD card and replace the memory card on the Compact 500 mainboard. The memory card may be removed and mounted during system runtime (hot plug). Mounting the memory card requires a manual device reset afterwards.

### 6.11. Device ID setting

The compact 500 is equipped with a rotary switch which determines the Device ID (or device address) in the network. Make sure that the Device ID set on the rotary switch complies with the ID defined in the configuration settings for this device.

Wrong ID settings will trigger system faults because of a configuration error.



Double rotary switch - Device ID

## 7. Startup and commissioning

Finally, all hardware is set up, all connections are made and system is ready to run. Time to power it up!

### 7.1. Power-on / power-off sequence



**NOTE:** To avoid unwanted audio and visual effects related to the relatively high energy pulse at system inrush, **always plug or unplug the battery fuse when the system is powered from the mains supply.**

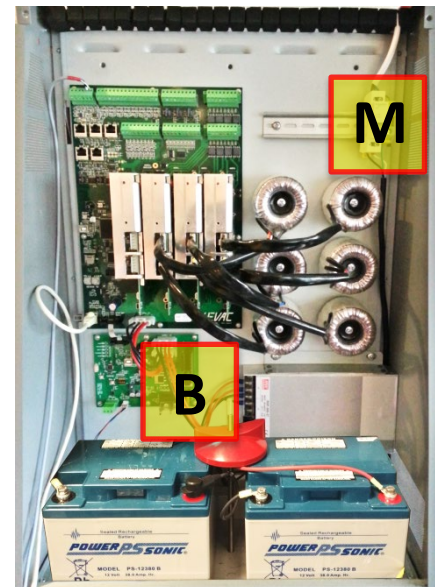
Power the system up and down according to the following steps:

#### Power on sequence:

1. Turn on MAINS switch (M)
2. Plug in the battery fuse (B)

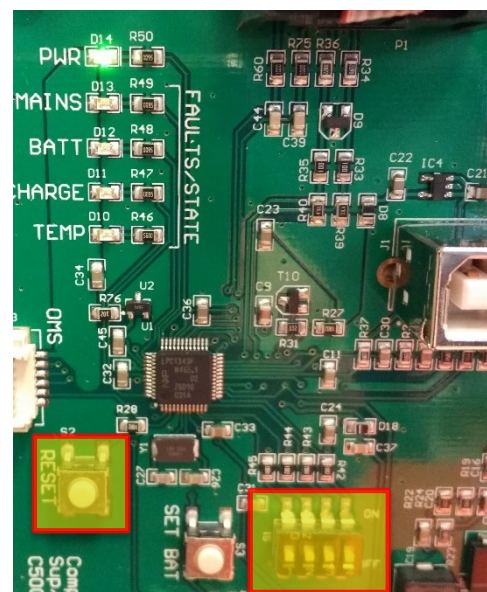
#### Power off sequence:

1. Unplug the battery fuse (B)
2. Turn off MAINS switch (M)



#### Battery setting

There is a DIP-switch located on the charger board. The two last bits (switches) on this 4-bit switch should be adjusted to the rated capacity of the battery, according to the table below.



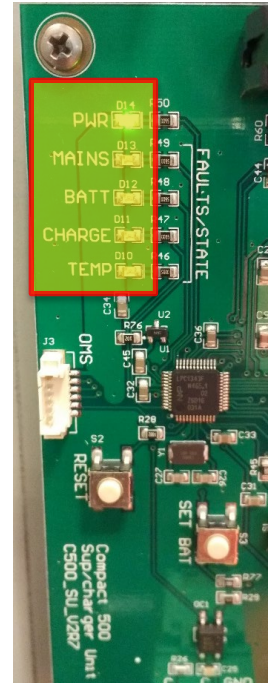
DIP switch setting				Rated capacity range	Reference battery type (example)
1	2	3	4		
0	0	0	0	10 – 19,5 Ah	Powersonic PS-12120 F1
0	0	0	1	20 – 34,5 Ah	Powersonic PS-12260 B
0	0	1	0	35 – 49,5 Ah	Powersonic PS-12380 B
0	0	1	1	50 - 55 Ah	Powersonic PS-12550 B

After changing a battery setting you should reboot the charger board. Press the RESET button on the charger board

Why is it important? The power supply equipment of the Compact 500 implements a very precise voltage- and current-controlled charger with additional temperature compensation. It also keeps the battery under constant surveillance, including measurement of internal battery resistance in the order of milliohms, with accuracy within 1 mΩ. The battery capacity setting is necessary to cover a whole range of different battery sizes and provide optimal charging parameters.

## 7.2. Power supply equipment indications

In the top-left area of the charger board you will find 5 LED indicators, where you can observe the current status of the power supply, battery and charger.



### PWR (green)

Indicates that the PSE is supplying power.

ON	Power is supplied to output
OFF	No power

### MAINS fault (yellow)

Indicates fault of main power supply

OFF	Main power supply OK
Blink (single)	Main power supply output voltage low (<27.5 V DC)
Blink (double)	Main power supply output voltage high (>33 V DC)
ON	Main power supply not detected

### BATT fault (yellow)

Indicates battery fault:

OFF	Battery OK
Blink (single)	Battery voltage low (<25.8 V DC)
Blink (double)	Battery voltage high (>29.4 V DC)
Blink (triple)	Battery internal resistance high
ON	Battery not detected

### CHARGE (green)

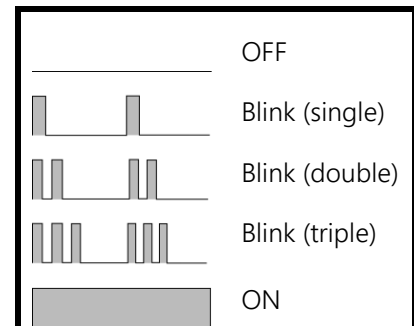
Indicates stage of charging process.

OFF	No charging
Blink (single)	Trickle mode (battery full)
Blink (double)	Pre-charging mode (battery empty)
ON	Charging


### TEMP fault (yellow)

Indicates temperature fault.

OFF	Temperature OK
Blink (single)	Temperature low ( $T < 0^{\circ}\text{C}$ )
Blink (double)	Temperature high ( $T > 50^{\circ}\text{C}$ )
ON	Temperature critical ( $T > 70^{\circ}\text{C}$ )





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	<b>Design revision:</b>	<b>2.0</b>

### 7.3. Loudspeaker line impedance calibration

Once the loudspeaker lines are connected and the EOL boards mounted at the end of every line, you can calibrate the impedance measurement to the currently detected value. As a result of calibration the reference impedance value is saved for every line to the internal system memory.

It is highly recommended to re-calibrate the impedance measurement:

- 📌 After every modification of the loudspeaker line installation,
- 📌 After replacing the power amplifier unit.

**i** **NOTE:** Before calibrating impedance, please check the health state of every line with an impedance meter:

1. Check load: measure every loudspeaker line individually with an impedance meter and check if the load is as expected. During measurement, the lines should be disconnected from the Compact 500 output.
2. Check EOL: make sure that the EOL board is properly connected at the end of every loudspeaker line. Check if the impedance setting is correct on each EOL board.

Calibration is done manually, for all lines at once. If any line would not calibrate, it will stay in the “not calibrated” state, which is indicated on the amplifier unit (see amplifier indications in next chapter). Other lines will calibrate independently.

**i** **TIP:** If the buzzer on the front panel is giving a fault warning (beeping sound), you can mute it. In order to clearly hear the calibration feedback sound, press the SILENCE button on the front panel of the Compact 500. This will mute the buzzer on the front panel.

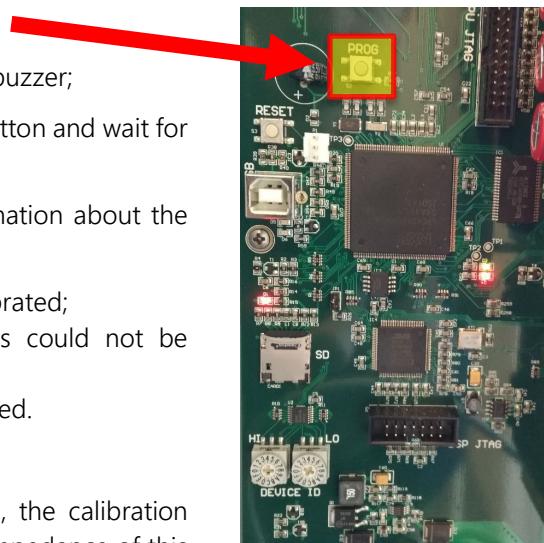
In order to start calibration, use the PROG button located above the CPU on the mainboard.

1. Press and hold the PROG button.  
You will hear a continuous beep sound from the buzzer;
2. When the beep sound stops, release the PROG button and wait for another sound sequence of the buzzer;
3. The system will give sound feedback with information about the calibration result:

- 📌 **Single beep:** all lines are successfully calibrated;
- 📌 **Double beep:** at least one of the lines could not be calibrated;
- 📌 **Triple beep:** all lines could not be calibrated.


If the impedance of the line is within acceptable range, the calibration should be successful. If line calibration is not successful, impedance of this line is not acceptable. This could be caused by one of the following faults:



- 📌 line is overloaded,
- 📌 line is shorted,
- 📌 line is open,



*Location of the PROG button*



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-  EOL is disconnected,
-  EOL impedance setting is incorrect.

In case of one or more lines not calibrating, follow the indications on the amplifier units (next chapter) to identify the faulty line.

### 7.4. Amplifier unit indications

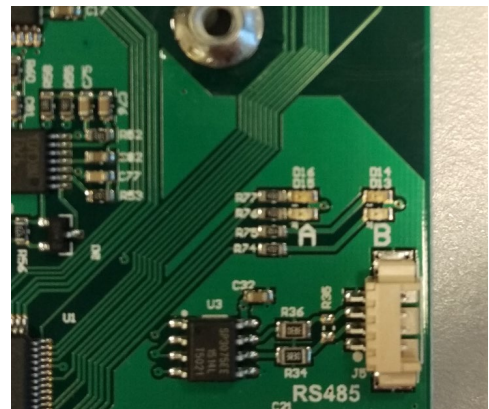
Each amplifier unit has LED indicators onboard. There are 2 indicators per channel:

- GREEN LED: amplifier power-on/fault status;
- RED LED: impedance measurement



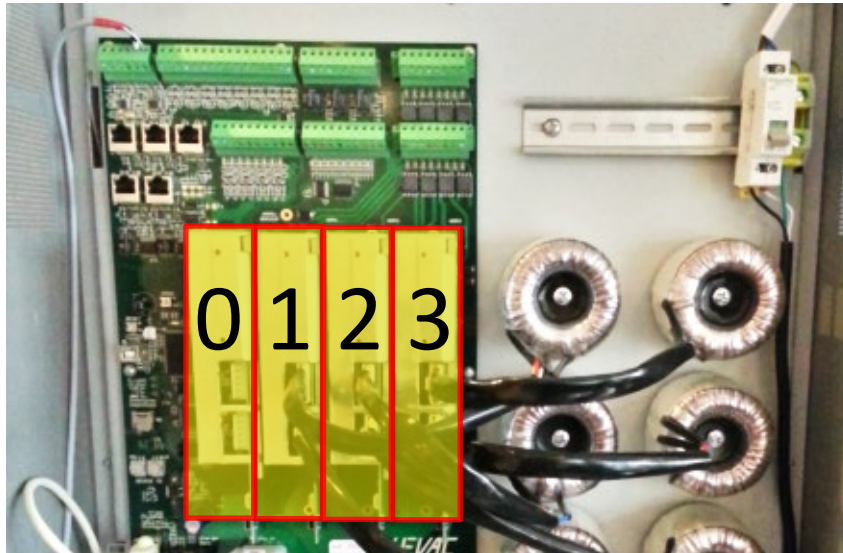
*LED indicators on amplifier units*

You can identify the status of every channel and line according to the table below:




	Visual blinking sequence	GREEN (amplifier status)	RED (impedance measurement)
OFF	-	Sleep mode	Not calibrated
Blink (short )		-	Calibrated – impedance OK
Blink slow		Amp fault	Impedance high (line open)
ON		Running	Impedance low (line short)

Every amplifier channel corresponds to the loudspeaker line as follows:




*Amplifier slots*

AMP 0	AMP 1		AMP 2		AMP 3	
	A	B	A	B	A	B
Backup amplifier	Line 1	Line 2	Line 3	Line 4	Line 5	Line 6

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	Design revision:	2.0

## 8. Connections and recommended cable types


	How many	Connector type	Signal type	Additional information	Recommended cable (minimum)	Max. length
Analog audio in	2	pluggable screw terminal block 5.08 mm	Analog balanced mono audio, 0dBu	n/a	Balanced shielded microphone cable, typ. 2 x 0.25mm <sup>2</sup>	100m
EVAC / SILENCE / RESET in	8		Pull-down input with fault detection (open/short)	EOL resistors 10kΩ + 4.7kΩ in series	Depends on length, typ. N x 0.75~1.5mm <sup>2</sup> (N – number of individual triggering signals from / to fire detection system)	1000m
EVAC / FAULT/ RESET out	3		Potential-free relay output	n/a		1000m
GPI	8		Pull-down input	n/a	Depends on length, typ. N x 0.75~1.5mm <sup>2</sup> (N – number of individual triggering signals from / to external devices)	1000m
GPO	8		Open collector output	n/a		1000m
Loudspeaker line	6			100V audio 100Hz – 12kHz	passive EOL module for 20kHz line monitoring	Depends on length and load, typ. 2 x 0.75~1.5mm <sup>2</sup>
G-Net port	2	RJ-45	Full duplex RS-422	Redundant ring with power delivery	FTP CAT5e	250m (to next device)
L-Net port	3			Daisy chain with power delivery		250m (total length)
Mains	1	screw terminal	110-230V AC 50/60Hz	n/a	3 x 1.5mm <sup>2</sup>	50m
Battery	1	screw terminal	24V DC	optimal for spade (fork) cable termination	1 x 4 mm <sup>2</sup>	1 m (total length)

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	Design revision:	2.0

## 9. Technical specifications

Standalone system	
Number of zones	max. 6 local zones
Maximum total loudspeaker load	600 W RMS (420W RMS pure sinewave according to EN54-16)
Power amplifiers	6 x 100 W, modular (2 channels per module), bridgeable up to 3 x 200 W
Standby power amplifiers	2 x 100 W / 1 x 200 W dedicated backup amplifiers
Loudspeaker line monitoring	
Built-in	20kHz AC monitoring with EOL module, short/open/impedance deviation
Loopdrive	loop DC monitoring with short-circuit isolators, short/open/earth leakage, EN54-17 certified
Loudspeaker type	with 100V step-down transformer
Voice messages	
Storage	max. 16 audio files x 1 minute each, micro-SD card with content monitoring
Message player	Max. 2 simultaneous local message playback
Controls and indications	
General controls / indications	Lamp test button, silence button, power, evac, general fault LED indicators
Fault indications	Power supply, system fault, network, zone fault
Zone controls / indications	6 x configurable zone selection button, zone EVAC/FAULT/BUSY LED indicators
Evac manual control	EVAC message, ALERT message, SILENCE, RESET, fireman mic with PTT button
Fireman microphone	Integrated Fireman Mic with priority and electrical monitoring
Power supply equipment	Built-in power supply system, EN 54-4 certified.
AC supply	110 – 230 V AC, 50/60Hz
AC current consumption	max. 5.3A @115V AC / 2.65A @230V AC
Inrush current	20A @115V AC, 40A @230V AC
Power supply protection	Overload current limiting, over voltage shutdown, over temperature shutdown.
Battery requirements	
Type	Sealed, rechargeable lead-acid battery for stationary use
Capacity	10 – 55 Ah
Charging time (80% capacity)	< 24 h
Rated voltage	24 V DC (2 x 12V)
Battery dimensions	2 batteries, each of max. 230 x 138 x 207 mm (LxWxH)
Battery weight	max. total 32.6 kg
Inputs	
2 x BGM	2 x independent balanced analogue in, line-level mono, 22kΩ input impedance
6x EVAC in, 1x SILENCE in, 1x RESET in	monitored logic inputs, 4.7kΩ +10kΩ EOL resistors
8 x GPI	unmonitored logic inputs (pull-down, configurable active low/hi)
Outputs	
EVAC out, FAULT out	Potential-free relay output (configurable NO/NC)
GPO	8 x Open collector output (configurable NO/NC)
Loudspeaker out	6 x 100V transformer output, 20 kHz AC monitoring with EOL
Amplifiers	
Type	Class D
Protection	over load shutdown, over temperature shutdown
Backup amplifiers	2 dedicated backup channels, auto backup at end stage failure, auto restore
Efficiency	80% @ rated power




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Output voltage	max. 100V RMS
Rated power	100W per channel, 200W bridged
Output bandwidth	50 Hz – 20 kHz
SNR	>80 dB
THD + N	0.1% @ rated power
<b>Audio</b>	
Frequency response	
Local BGM	50 Hz – 20 kHz
Messages, network streaming	100 Hz – 12 kHz
Analog input- output latency	< 10 ms (stand-alone system)
Network audio stream format	24 kHz sampling, ADPCM compressed
Message file input format	24 kHz, 16 bit, mono WAV
DSP features	HP/LP filter, multipoint parametric EQ, delay
<b>Mechanical</b>	
Dimensions (HxWxD)	80 x 52 x 28 cm
Weight (full config, without batteries)	29 kg
Housing material	Steel / ABS
IP rating	IP 30
Mounting	Wall-mounted box

<b>Network system</b>	
Max. number of devices in the network	255
Max. number of zones	255
Max. total system output power	102 kW
Number of simultaneous network audio channels	2
Network audio transmission latency	0.3 ms per device
<b>Local network</b>	
Architecture	Master-slave, up to 16 slave devices per C500 main unit
Connection	3 x L-Net port, RJ-45, powered daisy chain, digital audio & control data
Cabling	X-over FTP CAT5e (or higher)
Current consumption	max. 500 mA (up to 8 slave devices) per L-Net port,
Max. length of local bus	
default	250 m
with twisted-pair extender	500 m
<b>Global network</b>	
Architecture	Peer-to-peer, up to 255 C500 main units
Connection	2 x G-Net port, RJ-45, powered redundant ring, digital audio & control data
Cabling	X-over FTP CAT5e (or higher) / multimode optical fiber
Current consumption	max. 500 mA per port, reserved only for network extenders
Max. distance between devices	
default	250 m
with copper extenders	750 m
with fiber extenders	2500 m

All information provided in this document is subject to change without notice. 4EVAC may also make improvements and/or changes in the products described in this information at any time without notice.

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