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4E-FMWB installation and user guide	**Author:**	**DD**

SUMMARY

This document includes both the installation and user guides of the 4E-FMWB, the wall-box fireman's microphone dedicated to 4EVAC Voice Evacuation Systems. It explains how the 4E-FMWB should be installed and configured. The installation instructions are addressed to trained technical personnel, such as installers, service technicians and commissioning engineers. User instructions explain how to operate the 4E-FMWB and how to interpret indications by the end users as well as technical personnel, such as service technicians.

REVISION AND APPROVAL

Rev.	Date	Nature of Changes	Approved By
01	30-07-2019	Original draft	DD
02	11-06-2020	Corrections	TvdH

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

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

1. What is the 4E-FMWB?

The 4E-FMWB is a wall mounted microphone paging station with pushbutton panel and fireman microphone. It can address up to 6 zones for emergency EVAC paging. 4E-FMWB includes a fist microphone with a built-in PTT button, which can be pre-programmed to access certain zones or group of zones. The EVAC and ALERT messages may be triggered on the front panel of the 4E-FMWB by means of dedicated buttons.

Additionally, the 4E-FMWB incorporates mandatory EN-54-16 system indications, as well as a fault/emergency buzzer and mandatory manual controls, including a Lamp Test and system reset.

The 4E-FMWB is connected to the L-Net interface of the 4EVAC system main unit (Compact 500 or Impact Controller) and may be daisy-chained with more L-Net devices. The 4E-FMWB is dedicated to EVAC / ALERT messages and live EVAC paging and is not suitable as a commercial or general purpose paging microphone. The 4E-FMWB operates with full fault monitoring of the microphone, where the microphone transducer, PTT button and cable are surveilled.

2. Where do I start?

First, make sure that you are officially allowed to access the hardware of 4EVAC system devices. This is usually the case if:

- you are an authorized representative of 4EVAC;
- you have been trained by 4EVAC or one of its authorized representatives for installation, service and commissioning of 4EVAC Voice Evacuation Systems.

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

Important note: Access level 3 explanation

Opening the device housing or tampering with network cabling is restricted. This gives 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.

3. Configuration settings

The settings for the 4E-FMWB are included in the configuration file located on the micro SD memory card installed in the 4EVAC system main unit (Compact 500 or Impact controller).

The configuration file includes user-defined settings, such as:

1. zone selection buttons,
2. microphone volume level,

The configuration file should be prepared in the 4EVAC Manager. The 4EVAC Manager is GUI software running on Windows OS. More information about 4EVAC Manager can be found in the software manual "4EVAC Manager User Manual".

NOTE: Please make sure that the configuration file is prepared with the version of 4EVAC Manager compatible with the system's firmware.

The installation file of the latest 4EVAC Manager and the manual are available on our website: www.4EVAC.com

4. Hardware installation and settings

4.1. Housing installation

4E-FMWB is dedicated to wall mounting by means of four wall plugs or screws, directly to the wall structure.

Before fixing the housing:

1. Make sure that there is enough room to open the front door after the housing is fixed;
2. Make an opening for the network cable in any wall of the 4E-FMWB (except the front door) and secure it with a cable gland.

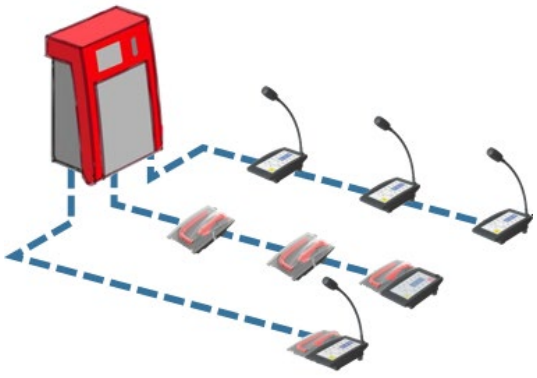
Mount the housing at an average line of sight, with its center approximately 160cm above floor.

4.2. L-Net

4E-FMWB is a remote station connected to an L-Net port of 4EVAC main unit. Multiple 4E-FMWB stations may be used in the same L-Net, with the following limitations:

- A maximum of 8 stations per L-Net port
- A maximum of 16 stations per single 4EVAC main unit (total sum of all 3 L-net ports)

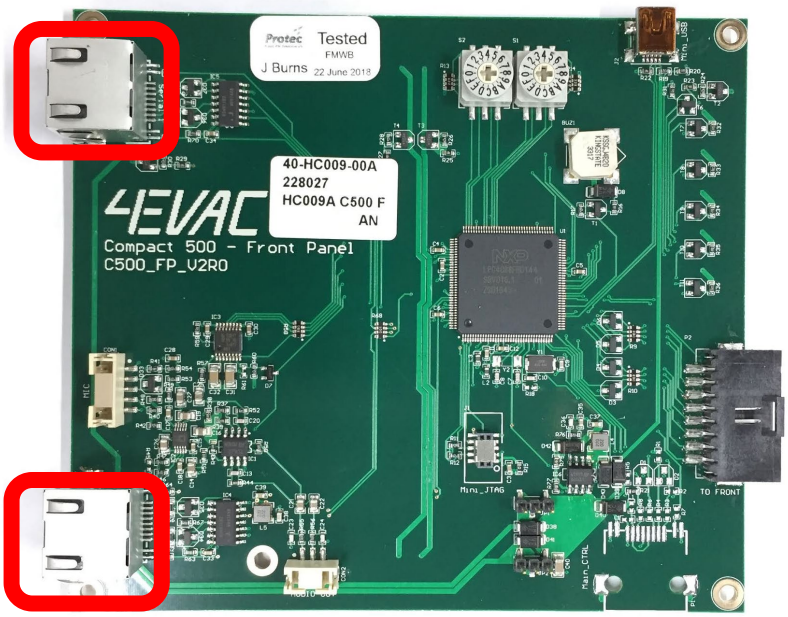
The microphone station may be also daisy-chained together with other L-Net devices



Compact 500 L-Net (local network)

4.2.1. Network ports

4E-FMWB offers 2 L-Net ports (RJ-45) for network connections to the 4EVAC main unit and distributed parts of the 4EVAC Voice Evacuation System. Both L-Net ports are equal, therefore there is no difference which port is connected to which side of L-Net daisy-chain.



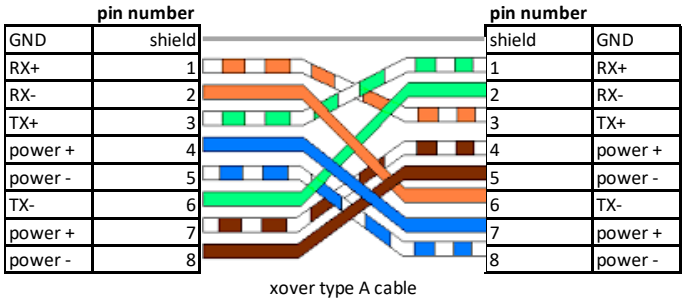
Internal view of 4E-FMWB – L-Net ports

4.2.2. Network cabling

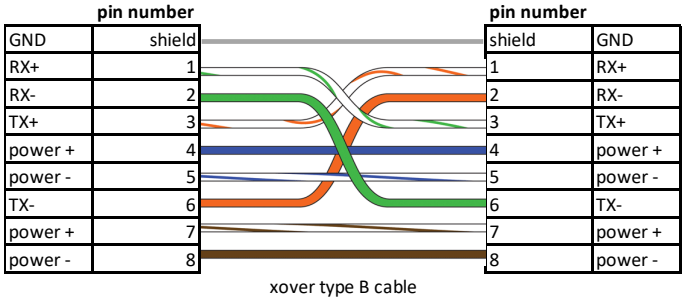
The 4EVAC network features a full duplex RS-422 data link and 24V DC power to remote devices.

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

1. A 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)

NOTE: If you use a straight cable, the device will power up but the Tx/Rx data terminals will not be properly connected. This will result in a communication fault between the L-Net device and the 4EVAC main unit. The L-Net device will not be able to initialize, thus will remain in boot-sequence, not operational.

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

4.3. Device ID

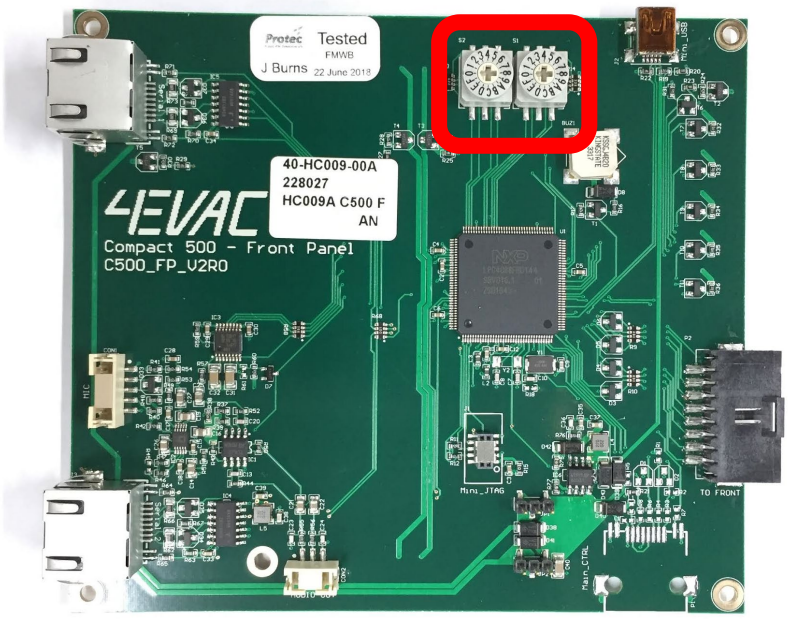
The microphone station needs an ID setting in order to be properly recognized in the network and operate.

If the device ID is duplicated or set to a wrong value, the device will not receive the correct configuration settings from the 4EVAC main unit. In this case the remote station will be stuck in its boot sequence and remain non-operational.

The device ID is set by means of two rotary switches, which define the two-digit hexadecimal value of the ID.

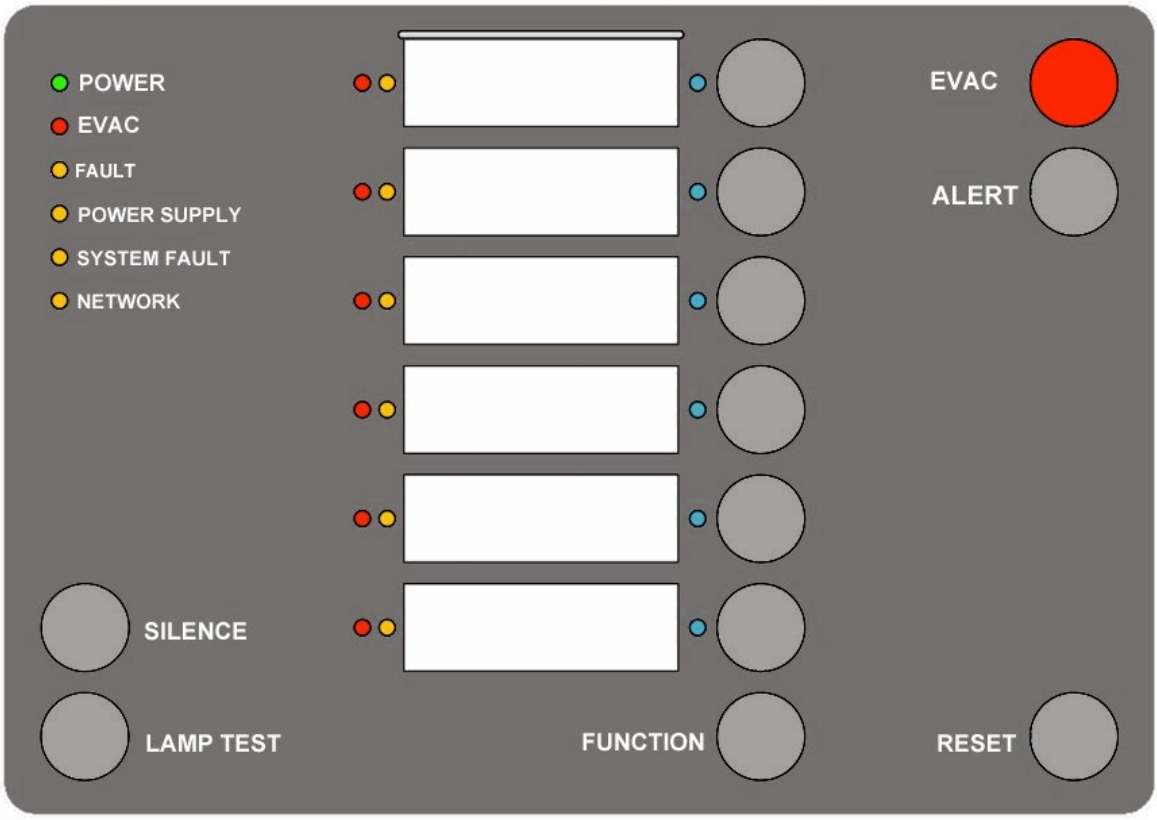
In order to check or set the Device ID, you must access the rotary switches on the back side of the unit:

1. Open the housing
2. Unmount the front plate from the mounting studs
3. Pull the front plate out and turn around to get access to the internal PCB.
4. Identify the high-significant and low-significant rotary switches. The Device ID is a combination [HI LO] of those two digits.
5. Make sure the ID value exists in your configuration settings, relates to the right device type and is not duplicated on another device. Allowed values: 01-FE
6. Set the Device ID value according to the configuration settings of the 4EVAC system.
7. Plug in the L-Net cable connecting the station with the 4EVAC main unit.
8. Observe the boot sequence, after which the system should automatically enter normal operating mode.
9. Put the front plate back in its place and assemble.
10. Close the housing.



4E-FMWB internal view: Device ID setting

5. Front Panel



Compact 500 front panel

5.1. LED indicators

5.1.1. POWER

Indicates the operating status of the 4E-FMWB.

- Continuous: the device is powered and ready
- Blinking fast: the device is booting, not ready for full operation

5.1.2. EVAC

Indicates that the system is in its Voice Alarm state, where at least one zone in the system is occupied by an emergency audio signal, i.e. a pre-recorded EVAC MESSAGE or LIVE EVAC, when a fireman mic is being used.

- Continuous: EVAC state

5.1.3. FAULT

Indicates that the system is in a FAULT condition (general fault indicator), where at least one device in the system is reporting a fault.

- Continuous: when a local fault is detected
- Blinking slow: when a local device is healthy and at least one remote device is reporting a fault state

5.1.4. POWER SUPPLY

Indicates a power supply fault of the local 4EVAC main unit, where at least one of following faults is reported:

- Continuous: mains fault
- Blinking slow: battery-related fault:
  - Loss of battery
  - Loss of charger
  - Battery resistance too high
  - Temperature fault
  - Charger communication fault

5.1.5. SYSTEM FAULT

Indicates a system fault, where:

- A CPU or program execution is stopped or malfunctioning.
- Storage memory containing config settings and audio files (SD card) is corrupted.
- The front panel is not communicating with main board.

Where the system fault is caused by a CPU or memory fault, the system remains in a “safe state”, where critical functions (including audio transmission, reaction on control inputs, etc.) are stopped until the fault is removed.

- Continuous:
  - CPU / program fault
  - front panel fault
- Blinking slow:
  - SD card fault
  - Config file not compatible
  - Wrong ID setting

5.1.6. NETWORK

Indicates when any device or link in the network is missing.

- Blinking slow:

Global ring is broken (any place in the ring)

- Continuous:
  At least one device from the network is missing.

5.1.7. Zone indicators

Zone indicators are strictly related to the corresponding zone button. If a button is not attached to any zone, then the zone indicators for this button are disabled.

Manual zone control

5.1.7.1. Red

Indicates that the zone is in EVAC condition, where the zone is occupied by one of the following audio signals:

- Continuous: LIVE EVAC
- Blinking slow: EVAC Message.

5.1.7.2. Yellow

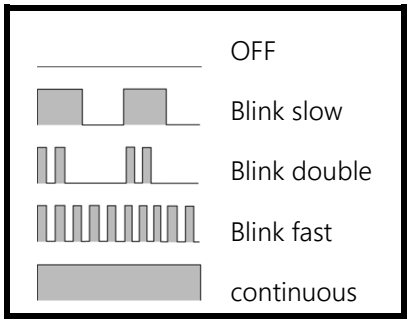
Indicates that the zone is transmitting an ALERT message, and/or is in fault state

- Continuous: Zone fault (fault of any line / amplifier included in this zone)
- Blinking slow: Zone is transmitting an ALERT Message.

5.1.7.3. Blue

Zone busy / zone selection LED.

- Continuous: indicates that the zone is manually selected via the zone selection button on the local panel
- Blinking fast: the zone is occupied by an audio signal, but is in SILENCE mode (triggered by SILENCE input or manual SILENCE button)
- Blinking slow: indicates that the zone is currently transmitting an audio signal (except BGM) from another device.
- Blinking double: indicates that the zone is currently transmitting an audio signal from this microphone station.



LED indication time chart

NOTE: BGM transmission is not indicated.

Zone indicators are strictly related to the corresponding zone button. If a button is not attached to any zone, then zone indicators for this button are disabled.

5.2. Manual controls

5.2.1. SILENCE

Press to mute the sound of the buzzer in the entire system.

5.2.2. LAMP TEST

Press to verify visual (LEDs) and audible indications (buzzer) of the local front panel.

5.2.3. ZONE selection

Press to select a zone. Press again to deselect.

NOTE: Zone selection will clear automatically after the timeout triggers, which is defined in the configuration settings.

5.2.4. RESET

Press to clear your current zone selection.

5.2.5. FUNCTION button

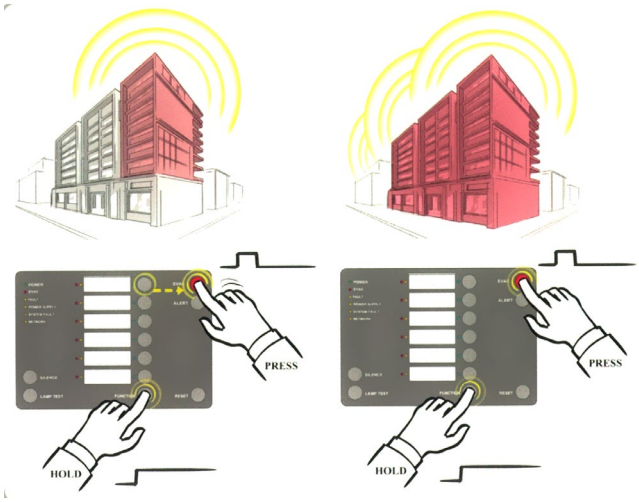
Press and hold the FUNCTION button to enable Access level 2. In access level 2 you are able to manually change the status of the system by triggering a voice alarm message or resetting the system.

NOTE: Press the FUNCTION button first and hold it down before pressing another button.

5.2.5.1. FUNCTION + EVAC / FUNCTION + ALERT

Use this combination in order to trigger an EVAC or ALERT message on the previously selected zones.

If no zones are selected, EVAC or ALERT will be triggered to all zones accessible from local front panel.



Triggering manual EVAC

5.2.5.2. FUNCTION + SILENCE

Use this combination to trigger the silence instruction to the previously selected zones. If no zones are selected, this starts silence on all zones accessible from local front panel.

NOTE: If any EVAC input is active during manual zone silence, the activation trigger will override SILENCE mode.

5.2.5.3. FUNCTION + RESET

Use this combination to reset the Compact 500 system. In a network system this will reboot the entire network. If reset was triggered successfully, all local LED indicators should start their fast blinking sequence during reboot.

6. Integrated fireman mic

The front panel of the 4E-FMWB is equipped with a Fireman Microphone. Take out the handheld microphone and press the PTT button to enable LIVE EVAC signal transmission to all zones available on the local panel. This signal is a top priority audio stream and will override any other type of audio signal in the system.

If any zone was previously selected, you will start transmitting only to the selected zones.

7. Technical specifications

4E-FMWB	
Number of zones	max. 6 zones (global network access)
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 consumption	
24V (L-Net)	max. 180mA
Audio	
Frequency response	100 Hz – 12 kHz
Digital audio format	24 kHz sampling, ADPCM compressed
Audio processing	Fixed BP filter, fixed dynamics compression
Local network interface	
Architecture	Master-slave, up to 16 slave devices per C500 main unit
Connection	RJ-45, powered daisy chain, digital audio & control data
Cabling	X-over FTP CAT5e (or higher)
Current rating via single link	max. 500 mA (up to 8 slave devices) via L-Net port,
Max. length of L-Net link	250 m
Mechanical	
Dimensions (HxWxD)	38.5 x 44 x 13.5 cm
Weight	6.2 kg
Housing material	Steel / glass
IP rating	IP 44
Mounting	Wall-mounted, 4 x wall plug 6 x 60mm minimum
Operating conditions	
Temperature	10–40°C
Relative humidity	max. 90% (non condensing)
Storage temperature	-40–70°C

4EVAC is a trade name of:

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2651BC Berkel & Rodenrijs
The Netherlands

www.4EVAC.com