Hacousto Holland bv Industrieweg 87 2651BC Berkel & Rodenrijs	4EVAC	
4E-FMT installation and user guide	**Author:**	DD

SUMMARY

This document includes both installation and user guides of 4E-FMT, the emergency fireman microphone station with touchscreen for the 4EVAC Voice Evacuation System. It explains how the 4E-FMT should be installed and configured. Installation instructions are addressed to trained technical personnel, such as installers, service technicians and commissioning engineers. User instructions explain how to operate the 4E-FMT 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	24-09-2019	Original draft	DD
02	09-06-2020	Corrections	TvdH

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

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. 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-FMT?

4E-FMT is a desktop/wall mounted emergency microphone station with a touchscreen panel. It can address up to 255 zones and trigger emergency messages or fireman's microphone priority voice alarm in any zone in the system. 4E-FMT is designed as a purely emergency panel with a fully monitored handheld microphone. 4E-FMT does not support general purpose messaging, BGM or commercial paging features.

4E-FMT only offers emergency mode operation. While the transparent fireman's microphone door is closed, the panel is locked (access level 1) and no paging functions are available. As soon as the transparent door is open, 4E-FMT automatically switches to emergency mode, where full emergency functionality is enabled. This includes one EVAC message, two ALERT messages, silence/reset functions and a fireman's microphone for live evacuation broadcast, and more.

4E-FMT is connected to the L-Net interface of the 4EVAC main unit and may be daisy-chained with more L-Net devices. 4E-FMT is dedicated to call points where emergency evacuation management is necessary. 4E-FMT includes fault monitoring and priority EVAC functionality and thus is suitable as an emergency microphone with full access to all system zones.

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 System.

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.

i 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 who 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

Settings for 4E-FMT are included in the configuration file located on micro SD memory card installed in the 4EVAC system main unit.

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

- zone selection buttons for emergency mode,
- emergency messages available on the panel,
- microphone volume level, etc.

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

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

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

4. Hardware installation and settings

4.1. L-Net

4E-FMT is a remote station connected to the L-Net port of the 4EVAC main unit. Multiple 4E-FMT stations may be used in the same L-Net, with 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 also be daisy-chained together with other L-Net devices.
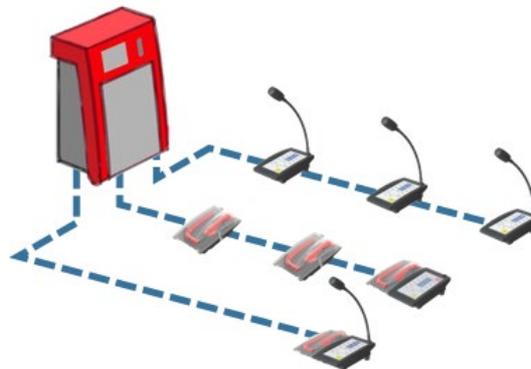
4EVAC Compact 500 L-Net (local network)

4.1.1. Network ports

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

L-Net ports on the back side of 4E-FMTC

4.1.2. Redundant link

If you need to make redundant L-Net connection to the 4EVAC system main unit, connect both L-Net ports of the device to two L-Net ports on the 4EVAC main unit. You can choose any L-Net port on the main unit. This creates a double daisy-chain of redundant A/B power and data links to the device and ensures fail-safe networking in case of single cable or port failure.

Both spurs of the redundant A/B link may be populated with other L-Net devices.

NOTE: The device is equipped with a power link jumper, which by default is in the ON position (pass-through power over L-Net). In order to create a redundant link, the jumper must be moved to the OFF position. The device will be then immune to a single port short-circuit of power bus.

Bottom view - location of power link jumpers
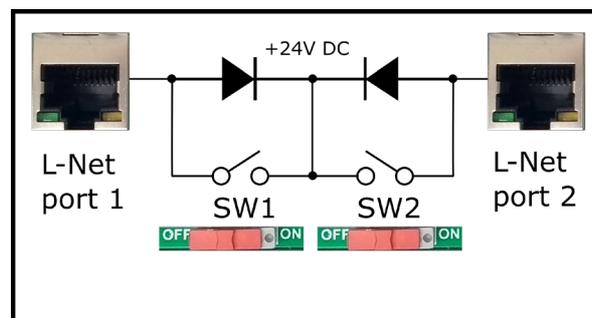
Power link jumpers.

When jumper 1 is closed (switch 1 on), the corresponding port 1 will pass through 24V DC from port 2 to devices connected to port 1. Jumper 2 (switch 2) works accordingly, passing 24V DC received from port 1.

The power jumper should be used if the device is supposed to be connected via a redundant link. In this case the device must not pass through power towards the 4EVAC main unit on either of 2 spurs of the redundant link.

4.1.3. Network cabling

The 4EVAC network features 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. Crossover twisted-pair cable (compatible with Ethernet crossover)

xover type A cable

xover type B cable
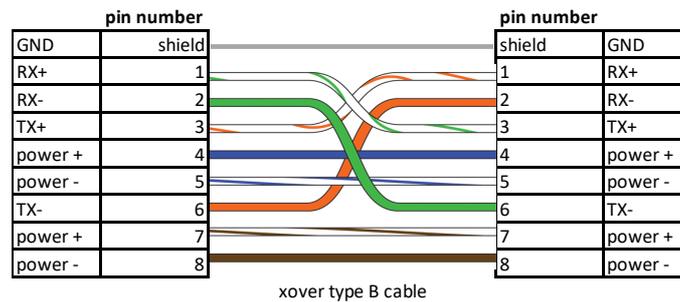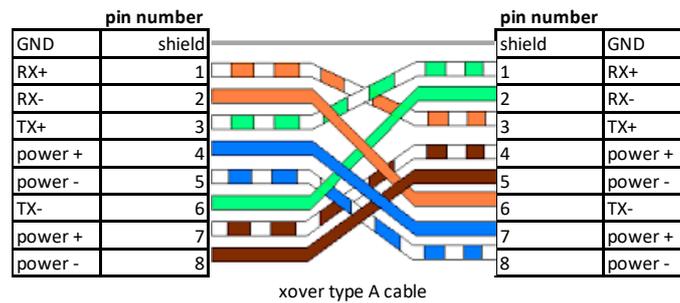
2. CAT5e or higher for a maximum distance of 250m.

3. Non-CAT / lower than CAT5e: 250m not guaranteed.

4. Shield required (at least FTP)

ℹ️ **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 main controller unit. The L-Net device will not be able to initialize and 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.**

4.2. 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 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. Remove the steel plate covering back of the station
2. Identify the high-significant and low-significant rotary switches. The Device ID is a combination [HI LO] of those two digits.
3. 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
4. Set the Device ID value according to the configuration settings of the 4EVAC system.
5. Plug-in the L-Net cable connecting the station with the 4EVAC main unit.
6. Observe the boot sequence and afterwards the unit automatically entering normal operating condition.
7. Assemble the back plate (and optionally the rubber feet).

4E-FMT bottom view: Device ID setting

5. Front Panel

The 4E-FMT front panel comprises of two sections:

- **Touch panel section** with gooseneck microphone
- **Emergency section** with fireman microphone

The emergency section is closed behind the transparent door for access level protection. While the door remains closed, 4E-FMT remains locked (except the lamp test and buzzer silence buttons).

ⓘ NOTE: Opening the transparent door on the left enables emergency mode, where evacuation features are available.
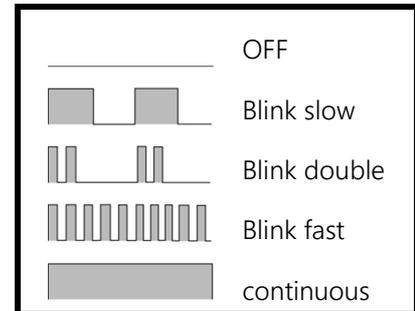

4E-FMT front panel

5.1. LED indicators

5.1.1. POWER

Indicates the operating status of this station.

- 🔻 Continuous: device is powered and ready

- 🔻 Blinking fast: station is booting or not operational

    - o Boot sequence
    - o No communication with main unit
    - o Wrong Device ID

LED indication time chart

———	OFF
⎍⎍	Blink slow
‖‖ ‖‖	Blink double
‖‖‖‖‖‖‖	Blink fast
▬▬▬	continuous

5.1.2. EVAC

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

- 🔻 Continuous: EVAC state

5.1.3. FAULT

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

- 🔻 Continuous: when local station fault is detected
    - o Microphone short or open circuit
    - o PTT button short or open circuit
    - o Network link fault
- 🔻 Blinking slow: when local station is healthy and at least one remote device is reporting fault state

5.1.4. BUSY – blue LED

Zone busy LED. Indicates the current status of zones addressed by this microphone station.

- 🔻 Blinking fast: the set of zones is occupied by an audio signal, but is in SILENCE mode (triggered by SILENCE input or manual SILENCE button)
- 🔻 Blinking slow: indicates that the set of zones are currently transmitting an audio signal (except BGM) from another device.
- 🔻 Blinking double: indicates that the set of zones is currently transmitting an audio signal from this microphone station.

ⓘ NOTE: BGM transmission is not indicated.

5.2. Locked mode
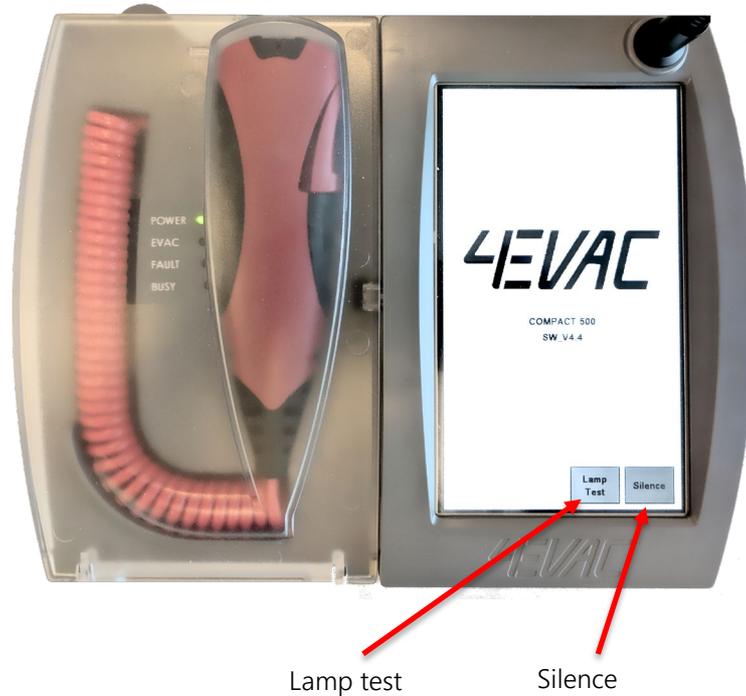
Lamp test   Silence

5.2.1.1. Lamp test

Press and hold in order to perform the LAMP TEST sequence. All LED indicators and the buzzer sound will be activated.

5.2.1.2. Silence

Press this button in order to mute the system buzzer. In case of a new fault event or new emergency event, buzzer will be re-activated.

5.3. Emergency mode

Fireman
PTT button

System
indicators

Zone
selection

Silence
button

Emergency
messages -
Start button

Once the fireman's door is open, access to the EVAC functions is enabled.

5.3.1.1. Zone selection

In order to start emergency paging or messaging, first select the zone or group of zones in the left section of the screen.

If there are more zones accessible than the screen can display at one time, use the scroll "arrow" button to scroll through pages with zone selection.

5.3.1.2. Emergency Message selection

Next, on the left-bottom section of the screen, select the message to be transmitted to selected set of zones.

Once selected, the message will be immediately transmitted to the destination zones.

If no zones are selected, pressing the message button will start message transmission in all zones available on this panel (ALL CALL).

5.3.1.3. Emergency paging

Take the fireman microphone out and use PTT button to start paging in selected zones.

If no zones are selected, pressing TALK button will start paging in all zones available on this panel (ALL CALL).

NOTE: Fireman's microphone is available only in emergency mode.

5.3.1.4. Stop emergency message

Select the zones where the message audio signal is being transmitted and press STOP. This will reset these zones, stopping all audio streams transmitted to these zones. If any other trigger activating that zone is still active (e.g. closed contact on EVAC input), the zone will return to transmitting the pre-programmed message.

5.3.1.5. Silence zone

Select the zones where you need to suppress sound and press SILENCE. This will silence the selected zones, suppressing audio in those zones. Repeat the same sequence to re-enable sound.

6. Technical specifications

4E-FMT	
Number of zones	max. 255 zones (global network access)
Controls and indications	Mandatory LEDs: power, fault, evac, busy, fireman PTT button; RGB touchscreen witch user-configurable buttons: zone / group selection, emergency messages
Emergency microphone	MEMS transducer, handheld, monitored
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 4EVAC 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	
Base dimensions (HxWxL)	6 x 26 x 21 cm
Weight	1720 g
Housing material	Steel / ABS
IP rating	IP 30
Mounting	Desktop wedge / wall-mounted (incl. wall bracket)
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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www.4EVAC.com