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

SUMMARY

This document includes both installation and user guides of the 4E-FMTC, the dual-mode (commercial/fireman) microphone station with touchscreen for the Compact 500 Voice Evacuation System. It explains how the 4E-FMTC should be installed and configured. The installation instructions are addressed to trained technical personnel, such as installers, service technicians and commissioning engineers. The user instructions explain how to operate the 4E-FMTC and how to interpret indications by end users as well as technical personnel, such as service technicians.

REVISION AND APPROVAL

Rev.	Date	Nature of Changes	Approved By
01	24-06-2018	Original draft	DD
02	05-06-2020	Corrections	TvdH

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

4EVAC Compact 500 is 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 Construction Products Regulation, mandatory in the European Union.

1. What is the 4E-FMTC?

4E-FMTC is a desktop/wall mounted microphone station with touchscreen panel. It can address up to 255 zones and trigger every source or message available in the entire system. 4E-FMTC features a gooseneck microphone for general paging and a (behind transparent fireman's door) separate, fully monitored fireman microphone.

4E-FMTC offers dual mode operation: a paging mode (fireman's door closed), where only general messages and paging features are available, and emergency mode (fireman's door open), where emergency messages and fireman's microphone is available.

4E-FMTC is connected to the L-Net interface of the Compact 500 main unit and may be daisy-chained with more L-Net devices. The 4E-FMTC is dedicated for call points where both general purpose paging and emergency evacuation management is necessary. 4E-FMTC includes fault monitoring and EVAC functionality, thus is suitable as an emergency microphone.

2. Where do I start?

First, make sure that you are officially allowed to access the hardware of Compact 500 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 the Compact 500 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.

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 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 the 4E-FMTC are included in the configuration file located onto the micro SD memory card installed in the Compact 500 main unit.

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

- zone selection buttons, individual for both paging and emergency mode,
- sources available for audio routing (BGM inputs, general purpose messages)
- microphone volume level, individual for both gooseneck and fireman's mic,
- TALK button mode (PTT/toggle), 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 the 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-FMTC is a remote station connected to the L-Net port of the C500 main unit. Multiple 4E-FMTC stations may be used in the same L-Net, with the following limitations:

- A maximum 8 of stations per L-Net port
- A maximum 16 of stations per single C500 main unit (total sum of all 3 L-net ports)

The microphone station may be also daisy-chained together with other L-Net devices
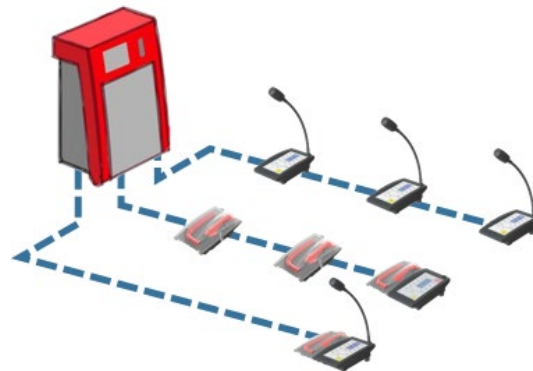
Compact 500 L-Net (local network)

4.1.1. Network ports

4E-CMP offers 2 L-Net ports (RJ-45) for network connections to the C500 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 a redundant L-Net connection to the Compact 500 main unit, connect both L-Net ports of the device to two L-Net ports on the C500 main unit. You can choose any L-Net port on the C500 main unit. This creates a double daisy-chain of the redundant A/B power and data link to the device and ensures fail-safe networking in case of a 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.
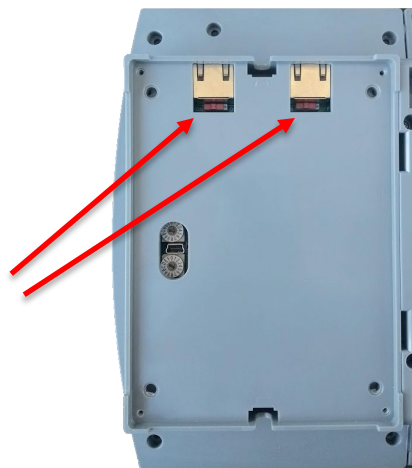
Bottom view - location of power link jumpers
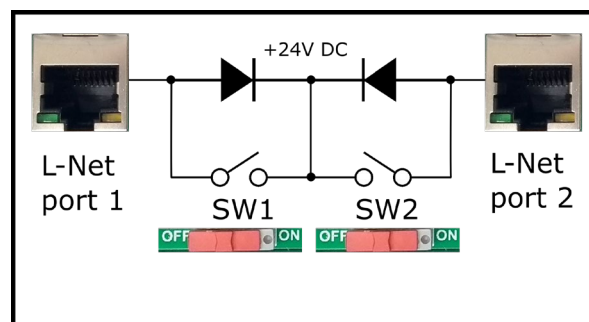
Power link jumpers.

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.
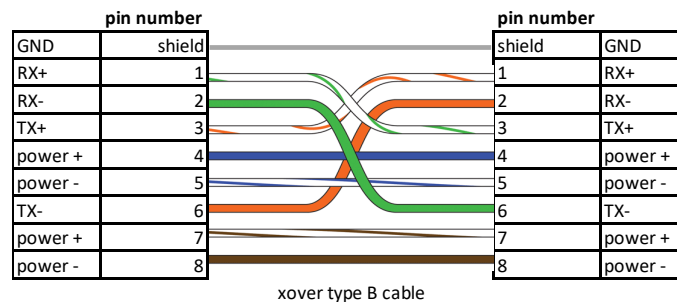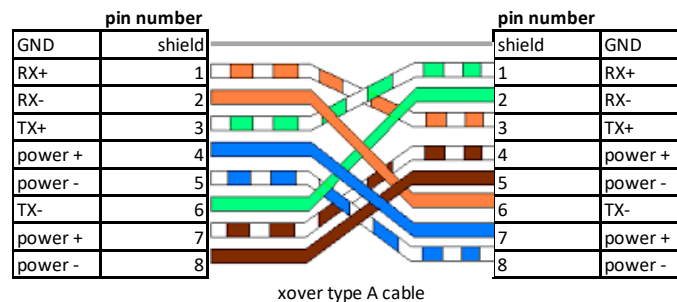
Power jumper should be used if the device is supposed to be connected via redundant link. In this case the device must not pass through power towards the C500 on either of the 2 spurs of the redundant link.

4.1.3. Network cabling

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 following requirements:

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

	pin number				pin number	
GND	shield				shield	GND
RX+	1				1	RX+
RX-	2				2	RX-
TX+	3				3	TX+
power +	4				4	power +
power -	5				5	power -
TX-	6				6	TX-
power +	7				7	power +
power -	8				8	power -

xover type A cable

	pin number				pin number	
GND	shield				shield	GND
RX+	1				1	RX+
RX-	2				2	RX-
TX+	3				3	TX+
power +	4				4	power +
power -	5				5	power -
TX-	6				6	TX-
power +	7				7	power +
power -	8				8	power -

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 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 a 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 to another device. Allowed values: 01-FE
4. Set the Device ID value according to the configuration settings of the Compact 500 system.
5. Plug-in the L-Net cable connecting the station with the C500 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-FMTC bottom view: Device ID setting

5. Front Panel

4E-FMTC front panel comprises of two sections:

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

The emergency section is closed behind a transparent door for access level protection. While the door remains closed, the 4E-FMTC remains in general paging mode

NOTE: Opening the transparent door on the left enables emergency mode, where evacuation features are available. All general paging features are not accessible in emergency mode.
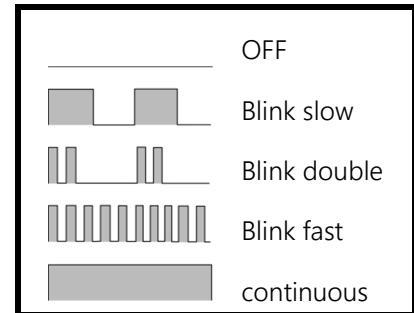

4E-FMTC front panel

5.1. LED indicators

5.1.1. POWER

Indicates operating status of this station.

	OFF
	Blink slow
	Blink double
	Blink fast
	continuous

- 🔺 Continuous: device is powered and ready

- 🔺 Blinking fast: station is booting or not operational

  - o Boot sequence

    LED indication time chart

  - o No communication with main unit

  - o Wrong Device ID

5.1.2. EVAC

Indicates that the system is in the 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 microphone is being used.

- 🔺 Continuous: EVAC state

5.1.3. FAULT

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

- 🔺 Continuous: when a 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 the local station is healthy and at least one remote device is reporting a 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 audio signal from this microphone station.

ⓘ NOTE: BGM transmission is not indicated.

5.2. Paging mode

5.2.1. PAGING tab

Zone selection

Source selection
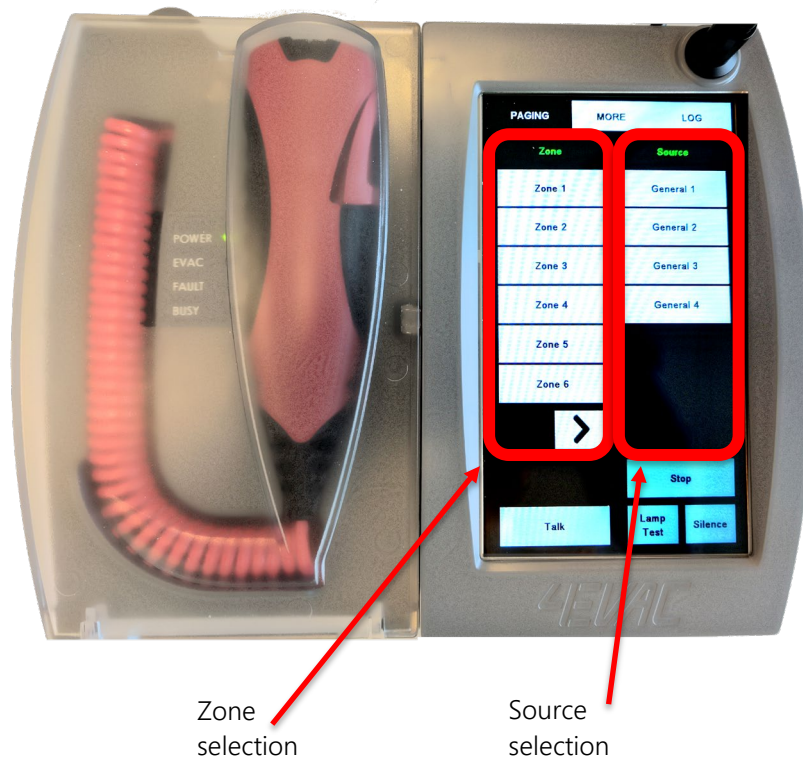
5.2.1.1. Zone selection

In order to start paging / message, first select the zone or group of zones on the left section of the screen.

If there are more than 6 zones accessible, use the scroll "arrow" button to scroll through pages with zone selection.

5.2.1.2. Source selection

Next, on the right section of the screen, select the source to be transmitted to the selected set of zones.

Once selected, the source will be immediately be routed to destination zones.

If there are more than 6 sources accessible, use the scroll "arrow" button to scroll through pages with source selection.

5.2.1.3. Start paging

TALK button	STOP button	SILENCE button
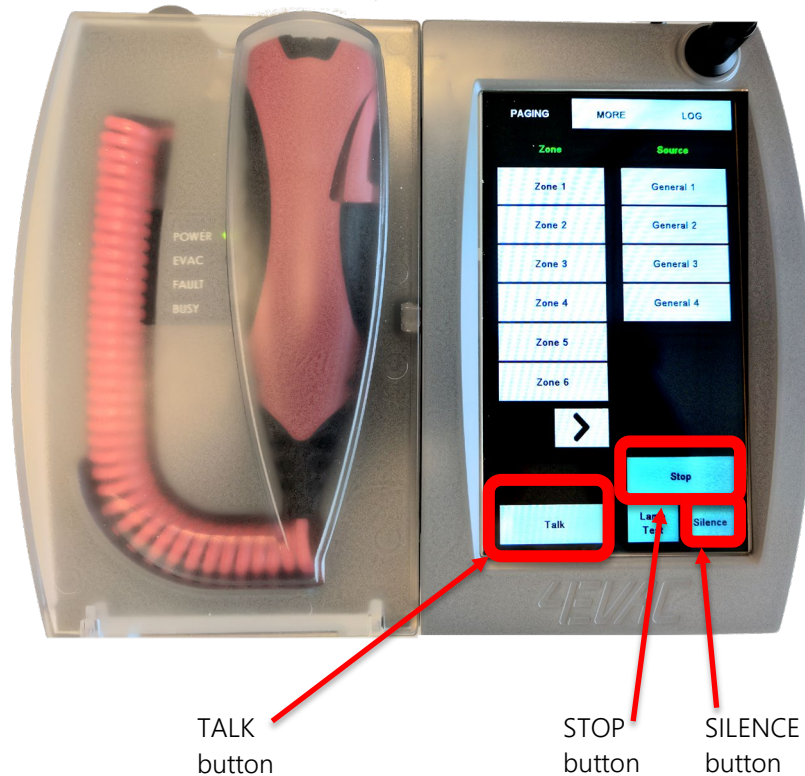
Use the TALK button to start paging in selected zones.

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

NOTE: In paging mode you can use only gooseneck microphone.

5.2.1.4. Stop message / BGM

Select zones where the message / BGM audio signal is being transmitted and press STOP. This will reset these zones, stopping all audio streams transmitted to these zones.

5.2.1.5. Silence zone

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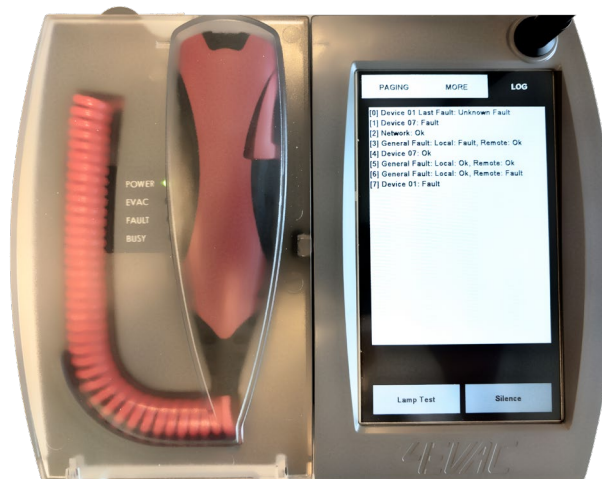
5.2.2. MORE tab

Under the "MORE" tab you will find buttons used for starting and stopping user programmable events; for example starting transmission of a pre-defined BGM input to pre-defined group of zones.

For more information about programming events, please look in the user manual of the 4EVAC Manager, where all configuration settings are explained.
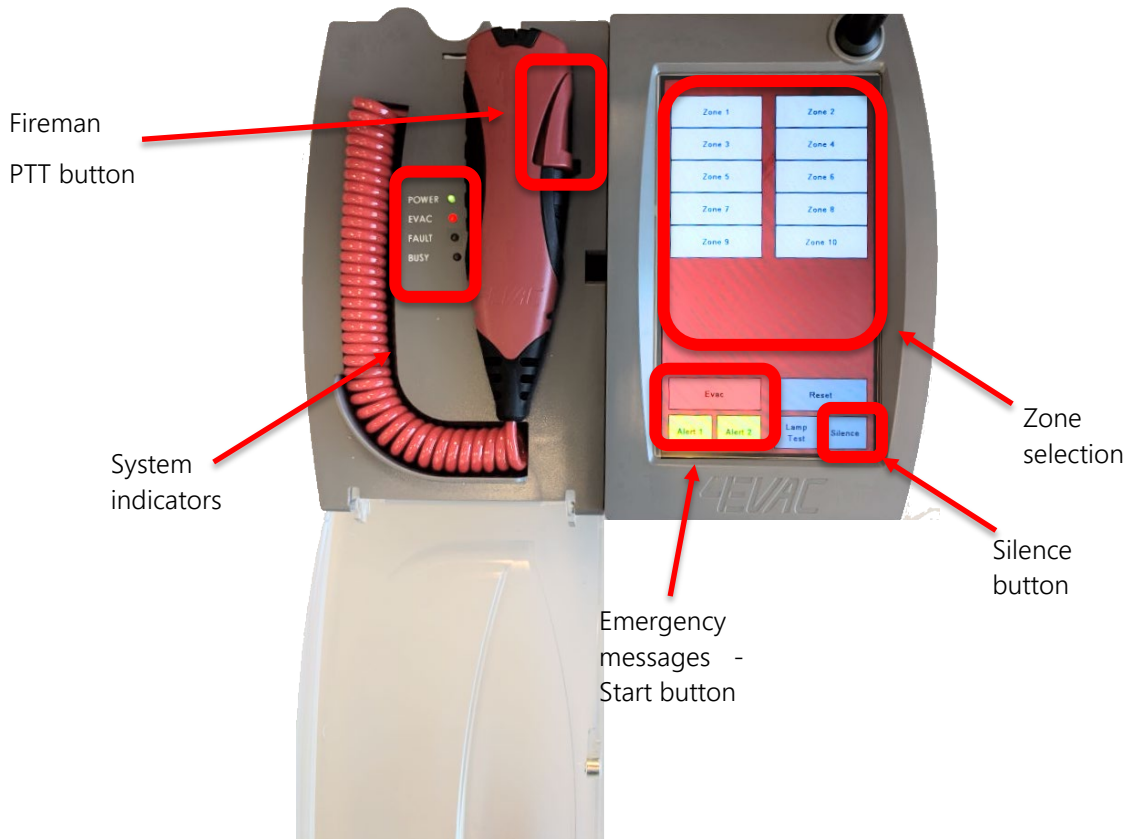
5.2.3. LOG tab

Under the "LOG" tab you will find a system log, which shows list of 100 most recent system events that occurred since last system reboot. The system log displays information collected from the entire system network, including:

- Start / stop of events
- Start / stop of paging / live EVAC status
- Fault codes (individual for each device in the network)

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 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 on 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 a message to be transmitted to the selected set of zones.

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

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

NOTE: In emergency mode you can only use the fireman's microphone.

5.3.1.3. Emergency paging

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

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

NOTE: In emergency mode you can only use the fireman's microphone.

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 the audio. Repeat the same sequence to re-enable sound.

6. Technical specifications

4E-FMTC	
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, sources, events, fault/event logging
Microphone (dual)	
General paging	Condenser, gooseneck
Emergency	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 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	
Base dimensions (HxWxL)	6 x 26 x 21 cm
Gooseneck mic length	31.5 cm
Weight	1850 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

COMPACT500

M A D E   I N   T H E   N E T H E R L A N D S

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