

Hacousto Holland bv Industrieweg 87 2651BC Berkel & Rodenrijs		
4E-I-MATRIX48 installation and user guide	Author:	NR

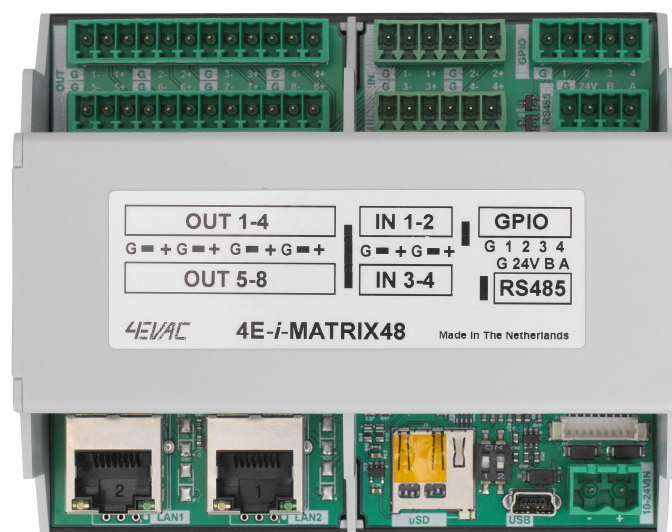
SUMMARY

This document includes both the installation and user guides of the 4E-IMATRIX 4 in / 8 out digital audio matrix, fully programmable and linkable to the maze network, supports real time routing from any input to any output also compactible with 4EVAC voice evacuation systems.

It explains how the 4E-IMatrix 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-Imatrix by the end users as well as technical personnel, such as service technicians.

REVISION AND APPROVAL

Rev.	Date	Nature of Changes	Approved By
01	31-03-2023	Original Draft	NR



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

The 4EVAC Compact 500 / IMPACT SW, MM is a completely integrated Voice Evacuation System, capable of both standalone and network operation. The system 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-IMatrix?



The 4E-IMatrix is a digital audio matrix designed for DIN-rail mounting that features four inputs and eight outputs. While this device is specifically optimized for use with the IMPACT-MM system powered by Maze technology, it can also be integrated with the 4Evac Compact/Impact SW system. In addition to its four physical audio input connections, the iMatrix can receive two audio input channels via streaming from the Maze network, and it can broadcast two audio channels to the Maze network, thereby increasing its total matrix capability to six inputs and ten outputs.

The 4E-IMatrix connects to the Maze (IP) network through its dual built-in Ethernet port. As a component, it offers the following features:

-  Full programmability and controllability using Maze Manager/4EVAC Manager
-  Compatibility with user control panel (UCP) like L-Net paging consoles CMT/FMTC for source selection and zone routing.
-  Programmability with Maze I-Controller for event selections, such as activating an I-Matrix BGM to specific Maze zones and so
-  Standalone DSP processing capabilities, including signal generation, delay, parametric equalization, input noise gating, output compression/limiting, and audio mixing.

2. Where do I start?

First, make sure that you are officially allowed to access the hardware of 4EVAC 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

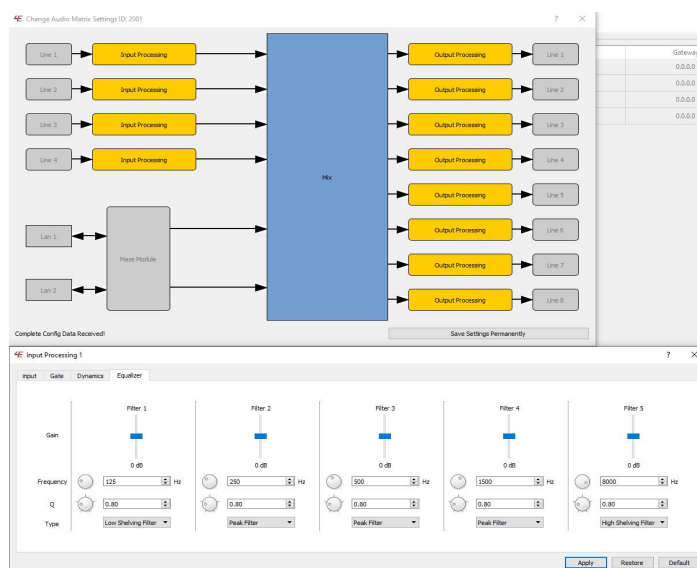
Opening the device housing or tampering with network cabling is restricted. This gives access to all interfaces, internal system connections and sensitive hardware settings that are of high importance to system operation mode, hardware reliability and safety (Access Level 3 according to EN54-16, Annex A). This access level (and higher) is strictly protected by the manufacturer and reserved only for service personnel 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

4E-IMatrix can be configured standalone with the help of Maze Manager, the DSP settings are stored in the device itself which includes Input gates, Audio mixing / routing, delays, parametric EQ, volume settings and channels numbers (Broadcast and receive channels).

The maze settings like broadcast channel details are stored in the SD card of 4EVAC equipment's and configuration like Maze BGM routing events and source selections can be configured.

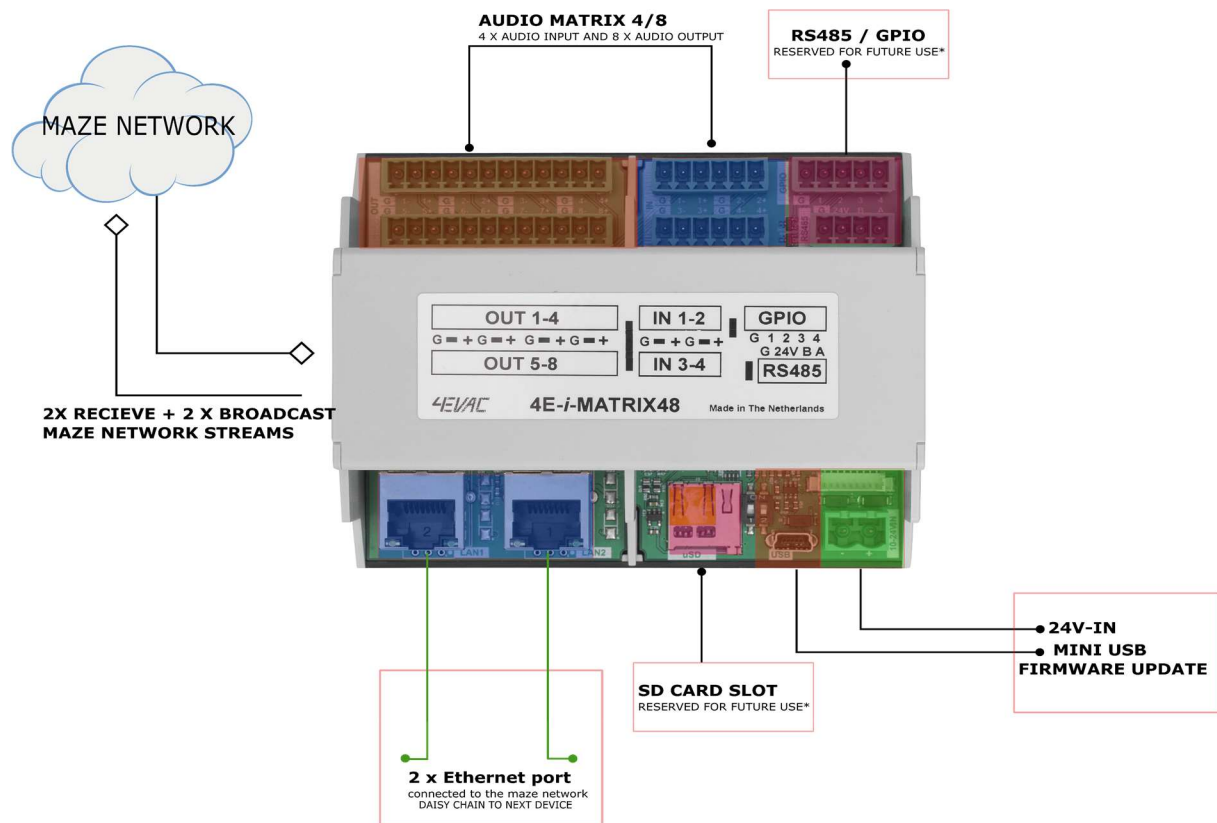


The configuration file should be prepared in the MAZE Manager and 4EVAC Manager which is GUI software running on Windows OS. All configuration settings are explained in the manual "4EVAC Manager guide".

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

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

4. Hardware installation and settings



4.1. Audio Matrix 4/8 (4 x Audio Input and 8 x Audio output)

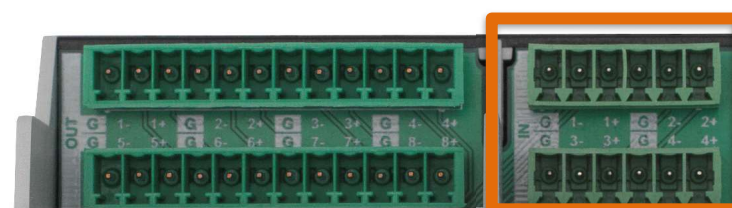
The 4E-Imatrix offers 4 balanced analog signal inputs, accepting line inputs. Input signal characteristics and signal management are adjusted with the help of maze manager application.

Signal input connectors are 3 position screw terminal block, the wiring is:

Direct signal → Terminal +

Inverted signal → Terminal –

Ground → Terminal G



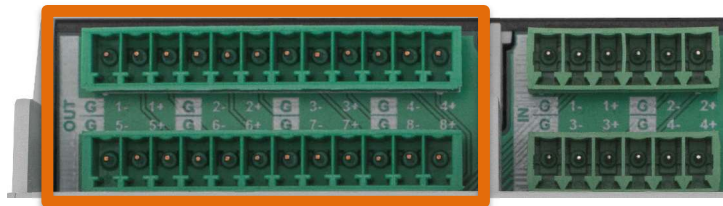
The 4E-IMatrix offers 8 analogue signal outputs all balanced and line level outputs.

Signal output connectors are 3 position screw terminal block, the wiring is:

Direct signal → Terminal +







Inverted signal → Terminal –

Ground → Terminal G



This input may be linked to any of the output with the help of mixing table available in the maze manager. With 2x receive / broadcast maze streams available via maze link the 4E-IMatrix can mix between 6 inputs and 10 outputs.

The user can also set:

-  Input / output gain settings
-  Route / mix inputs and outputs real time
-  Set parametric EQ - 5 band parametric equalizer
-  Set Gain control, delay
-  Set threshold levels and compressor/limiter functions
-  Link analogue inputs to trigger analog outputs etc..






These settings are applied with the help of Maze manager. For more details refer "MAZE Manager" user guide.

4.2. MAZE LINK (IP) – 2 X ETHERNET PORT – 2 x Receive and 2 x Broadcast channels

4EVAC IMatrix controller have 2 inbuild ethernet ports 10/100 Mbps, these ethernet ports are used for inter-connection between Maze devices (i-DCA, i Matrix and i Controller). With its ability to daisy chain between the dual ethernet ports, IMatrix system doesn't need any third party switches for its networking.

A total of 1000 maze iMatrix devices can be connected in maze network. Ethernet link is utilized to stream audio channels both broadcast and receive.

Ethernet link capacity is as below :

-  Maximum 1000 IMatrix devices can be configured.
-  Single IMatrix can broadcast/receive 2 audio streams simultaneously into the maze network apart from its standalone physical 4 input / 8 outputs.
-  In a network maximum 250 audio streams can be simultaneously available.
-  Each iMatrix can be assigned with a static IP address
-  Default IP address - 192.168.100.20

4.3. MINI USB

Level 3 access for software Upgradation. Only trained and qualified field technicians can perform the action.

4.4. POWER SUPPLY

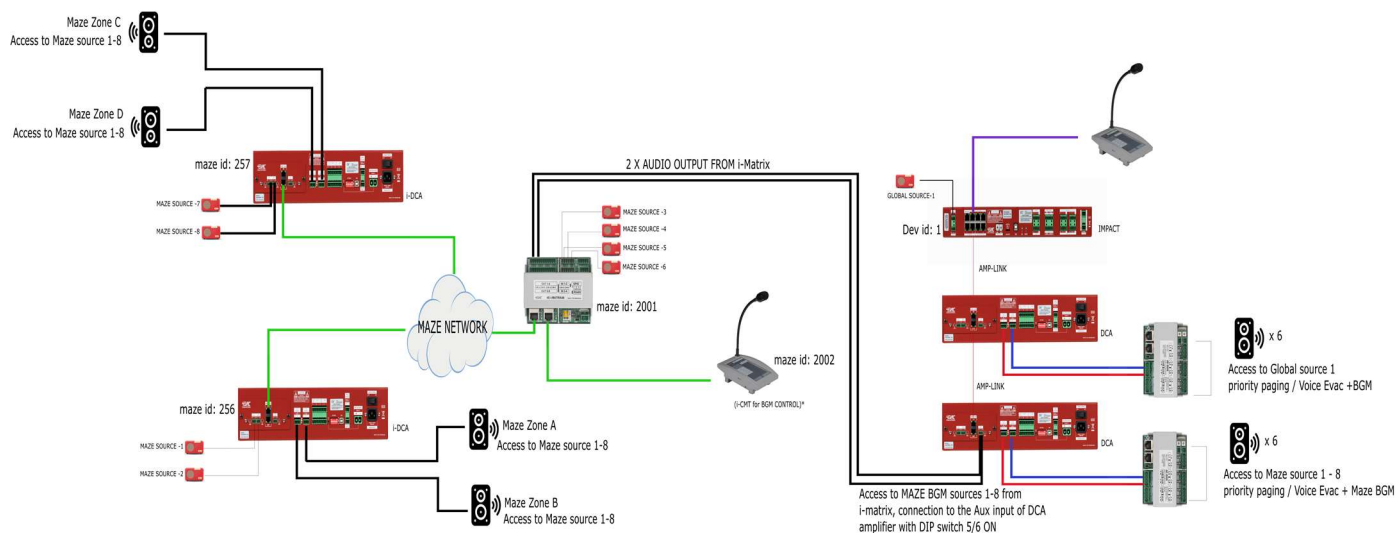
The IMatrix is not powered over the maze link, hence it needs a external power supply for 24VDC input, it can be also taken from the DC supply out of Compact or Impact units.

4.5. RS485 / GPIO / SD CARD SLOT

Reserved for future use*

5. Sample Illustration

Below sample illustration of iDCA amplifiers with IMatrix and Impact SW system. The IMPACT SW system is able to receive Maze streams with the help of IMatrix unit/



6. Technical specifications

4E-IMatrix48

Inputs	
Audio Inputs	4 inputs + 2 Maze inputs(Virtual)
Audio Output	8 Outputs + 2 Maze outputs (Virtual)
Matrix	6 x 10 matrix
Power supply	
Input	24V DC IN
Audio performance	
Frequency response	20Hz – 20KHz, +/- 1 dB
Sampling Frequency	48 KHz
Dynamic Range	A->D (-93dB) / D->A (-97dB)
Distortion	-95dB +/- 5dB (in/out)
A->D Converter	24 bits
D->A Converter	24 bits
EQ/Filter	5-point parametric EQ with predefined IIR filters
Delay	Max. 30 seconds per channel
Volume control	-60...+12dB
Dynamics	Gate with adjustable Threshold -60....0dB
Maze Link	
Architecture	Upto 1000 IMatrix in maze network over IP
Connection	Dual RJ-45, daisy chain, digital audio & control data (2 Receive and 2 broadcast channels simultaneously)
Cabling	FTP straight - CAT6 (or higher)
Max. length of L-Net link	100 m
Mechanical	
Dimensions HxWxD	9 x 11.8 x 6.5 cm
Weight	155 g
Housing material	ABS
IP rating	IP 30
Mounting	DIN rail
Operating conditions	
Temperature	10–40°C
Max Temperature	65°C
Relative humidity	max. 90% (non condensing)
Storage temperature	-40–70°C

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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