

Hacousto Holland bv
Industrieweg 87
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4E-FPI / 4E-RPI L-Net power injector
User and installation manual

Author:

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4E-FPI (Field Power Injector)



4E-RPI (Rack-mount Power Injector)

SUMMARY

This document describes the characteristics of the L-NET line power injector, explains how the power injector works and how it can be used.

REVISION AND APPROVAL

Rev.	Date	Nature of Changes	Approved By
01	30-07-2020	Original document	AJH
02	01-10-2020	Corrections	DD
03			

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1. What is the L-Net power injector?

The L-Net power injector provides additional power injection point to the L-NET (Local Network bus of 4EVAC Voice Evacuation System), where an auxiliary DC power supply may be connected.

i **NOTE: Auxiliary power supply is not included with the injector!**

Thanks to the L-net power injector, more L-Net devices with relatively high power consumption (such as touchscreen paging microphones) can be installed on the same CAT5e cable, devices can be installed in larger distances from the central equipment and further away from each other.

Each L-Net port of 4EVAC voice evacuation central equipment offers 30V DC during operation on mains supply with maximum output of 500mA, feeding L-Net devices.

i **NOTE:** Maximum of 8 L-Net devices can be daisy-chained on one L-Net bus.

Power injector is extremely useful in cases where:

- current consumption of L-Net devices connected to the same bus is higher than 500mA;

i **NOTE:** in order to calculate load of the L-Net bus, please use 4EVAC battery calculator available on 4EVAC website)

- the supply voltage in the L-Net cable under load drops below 20V DC, due to excessive cable resistance caused by:
 - o small wire gauge in the CAT5e L-Net cable;
 - o large distance from the main system.

2. Operation and use

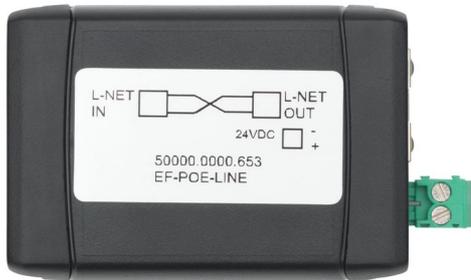
The power injector comes in a small case with two RJ45 ports: IN and OUT for L-Net and 2-pin phoenix power entry for the auxiliary power adapter. (**NOTE: auxiliary power adapter is not supplied with the injector**). The injector isolates the DC power from L-NET IN port, where the incoming cable from central equipment is plugged. The auxiliary DC power supply is mixed into the L-NET OUT port. Data pins pass through the injector uninterrupted.

Both L-Net IN and OUT port are equipped with LEDs indicating presence of supply voltage. L-Net IN port indicates whether there is voltage present on the incoming L-Net cable. L-Net OUT port indicates when there is AUX supply connected.

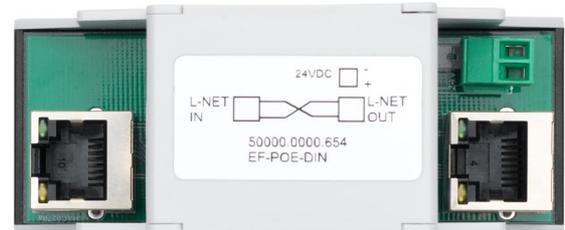
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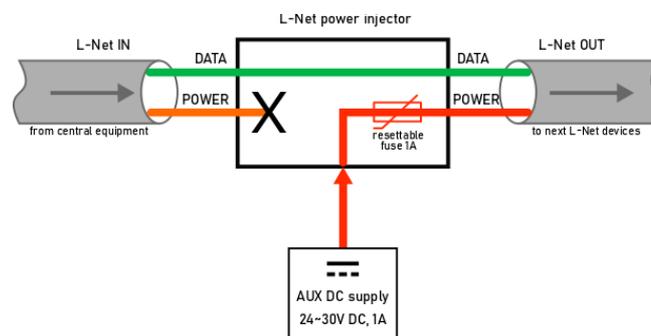
4E-FPI (field in-line variant)



4E-RPI (DIN rail variant)

i **Note: Both IN and OUT L-Net ports require crossover CAT5e (or higher) shielded cable! (injector has data pins crossed-over internally)**

The auxiliary DC input can pass maximum of 1A DC to the output port (feeding following L-Net devices) and is internally protected with resettable fuse. Voltage delivered by the power injector depends on connected auxiliary adapter. Required voltage of the auxiliary supply must be in the range of 24 ~30 V DC.



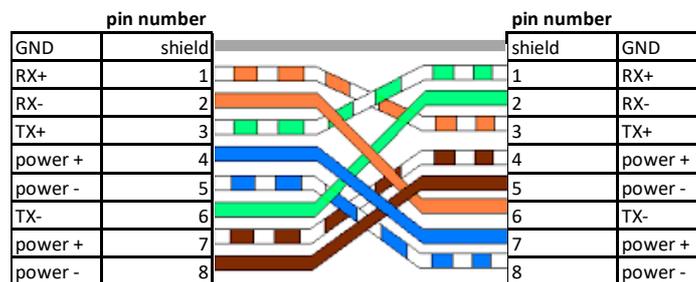
i **NOTE:** Power injector isolates the EN54-4 certified power supply from central Voice Alarm equipment and uses local auxiliary DC supply instead. If simple AC/DC adapter is used as auxiliary, then all following L-Net devices are not supported by the mandatory backup battery supply from central rack. In case of mains failure, those devices will shut down. When using power injectors, make sure if following L-Net devices don't need battery backup, or use an EN54-4 certified supply as auxiliary.

i **NOTE:** When terminating the L-Net cable, please keep the same crossover pinout on every RJ45 termination in the network, including power injectors!

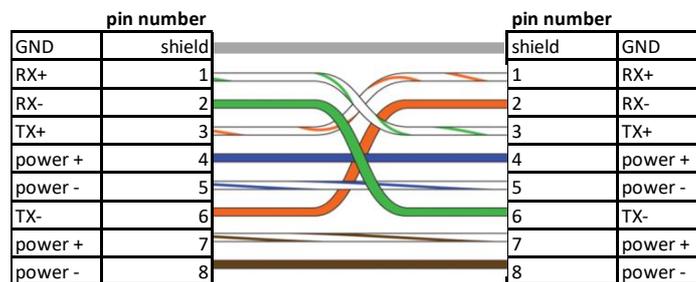
3. Network cabling

4EVAC network features a full duplex RS-422 data link and 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)

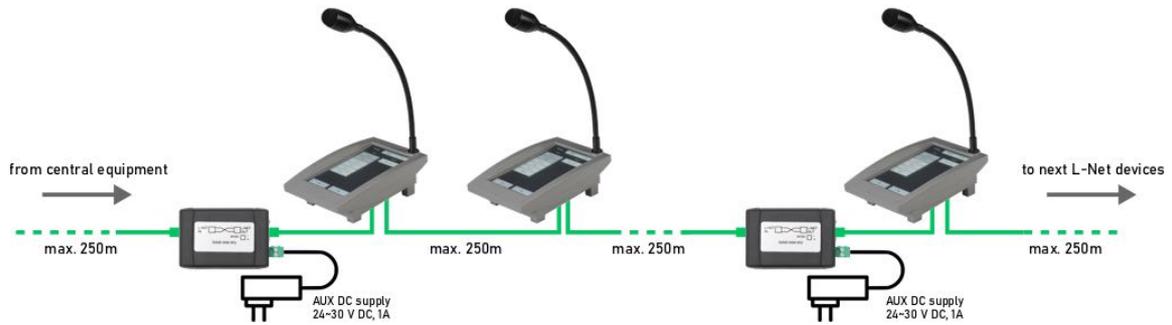


NOTE: If you use a straight cable, the device will power up but the Tx/Rx data terminals will not be properly connected. This will result in a communication fault between the L-Net device and the main controller unit. The L-Net device will not be able to initialize, thus will remain in boot-sequence,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

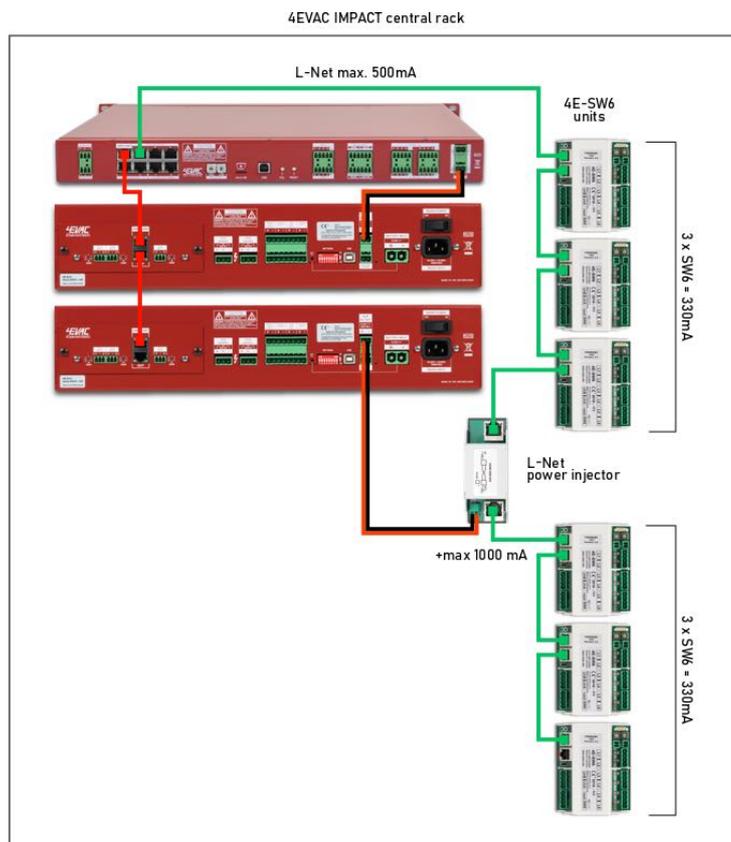


Caution! Use only crossover cables and keep correct pinout! Connecting power pins to data pins will damage the network port.

4. Application examples



High power consumption + long distance, no EN54-4 backup power for microphones.

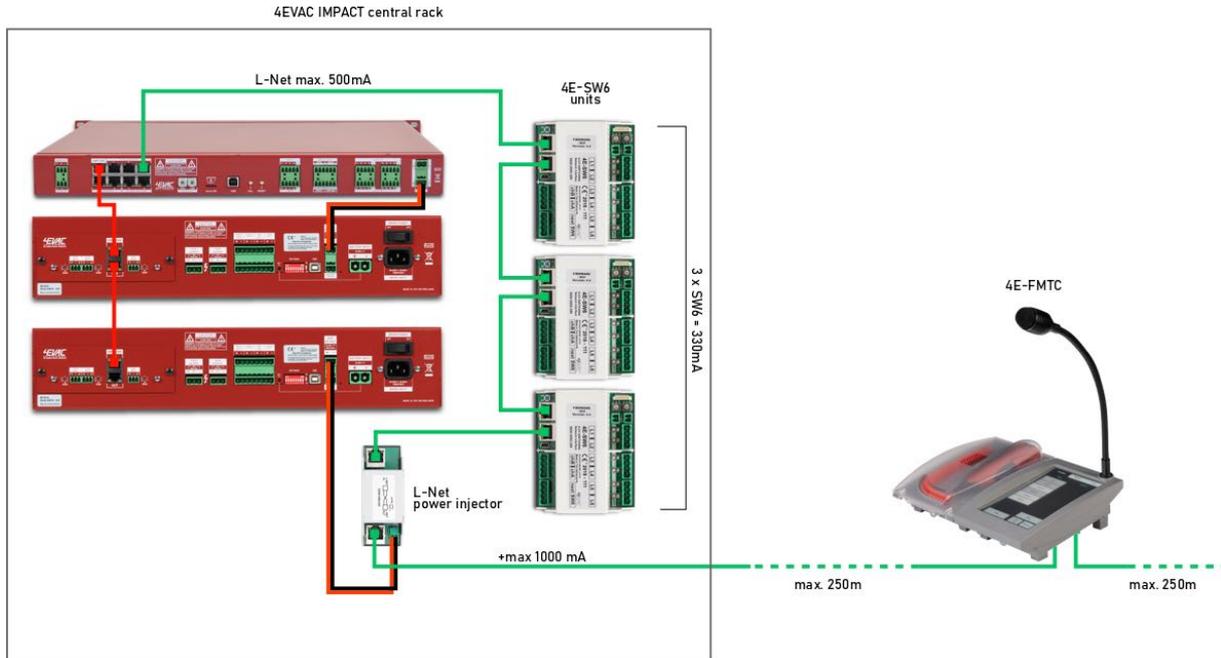


High power consumption local IMPACT rack, with EN54-4 backup power.

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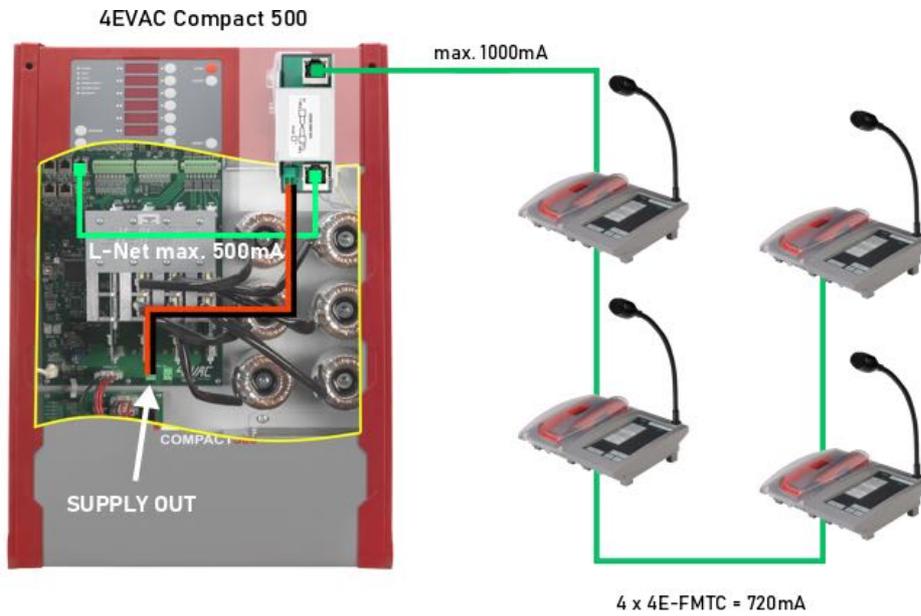


High power consumption local IMPACT rack + long distance, with EN54-4 backup power.

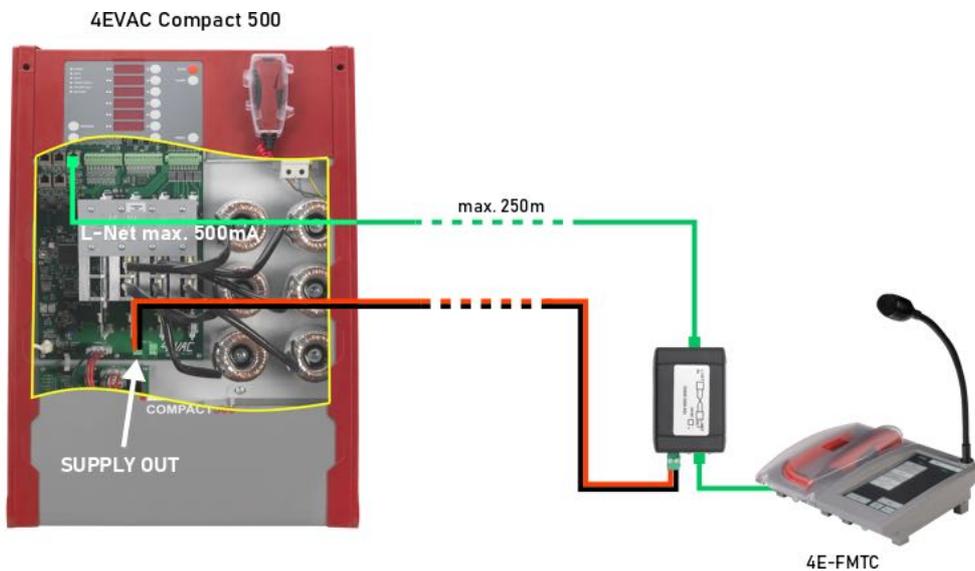
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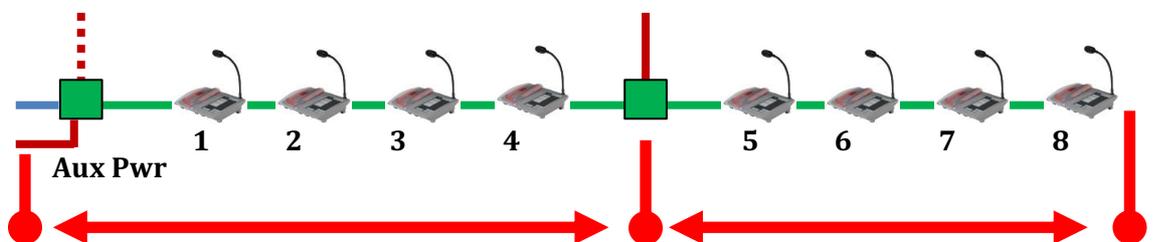
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Compact500: high power consumption, with EN54-4 backup.



Compact500: long distance, with EN54-4 backup.



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AWG26: 53m
AWG24: 85m
AWG22: 136m

AWG26: 53m
AWG24: 85m
AWG22: 136m

No. of Devices	Max Overall Distance @ AWG26 (13.39ohms / 100m)	Max Overall Distance @ AWG24 (8.42ohms / 100m)	Max Overall Distance @ AWG22 (5.24ohms / 100m)	Method of Power	Current Draw
1	250m	250m	250m	From L-NET	180mA
2	186m	170m	250m	From L-NET	360mA
3	107m	170m	250m	Power injector	540mA
4	71m	113m	182m	Power injector	720mA
5	53m	85m	136m	Power injector	900mA

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5. Technical specifications

L-Net power injector	4E-FPI	4E-RPI
Auxiliary power supply NOT included	24~30 V DC, max. 1000mA	
Maximum L-Net devices load	1000mA per injector (check battery calculator)	
Maximum L-Net devices	8 per L-Net bus	
Mechanical		
Dimensions (HxWxD)	22 x 40 x 60 / 68 mm (without / with power connector)	90 x 36 x 60 mm
Weight	30 g	40 g
Housing material	ABS	
IP Rating	IP 30	
Mounting	in-line with field L-Net cable	DIN rail
Operation conditions		
Temperature	-5 °C ~ 40 °C	
Relative humidity	max. 90% (non condensing)	
Storage temperature	-40 ~ 70°C	

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4EVAC is a trade name of:

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www.4EVAC.com