

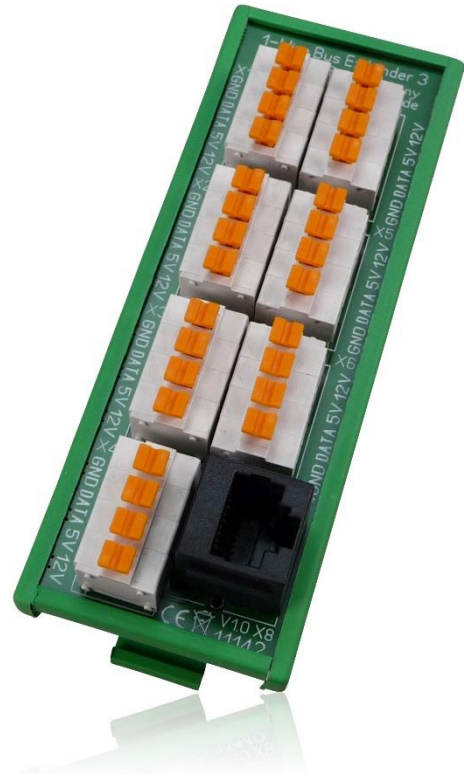
User Guide ESERA Extender 4 Linear Distribution module / Patch panel for 1-Wire Bus system

Performance features

- Distributor for 1-Wire Network in linear topology
- 7 terminals (push-in) for network cable
- 1 modular socket for cabling with CAT network cable
- Patch field for linear topology and star-shaped spatial wiring
- Housing for DIN rail mounting

Typical areas of application

- Central 1-Wire Network distributor
- Sub-distributor for 1-Wire network
- laboratory equipment, scientific equipment



1 Introduction

Before you start to assemble the 1-Wire Extender 4 and put it into operation, please read this manual carefully to the end, especially the section on safety instructions.

2 Product description

We call the product a 1-Wire Extender or Distribution Module. However, the terms patch panel, extender, data distributor or terminal board are also used.

The 1-Wire Extender 4 is designed as a distributor for 1-Wire networks. Due to the 7 push-in terminals no tools are necessary for the connection. With the 1-Wire Extender 4, the installation and cabling of 1-Wire networks in linear topology is greatly accelerated and extremely simplified. The 1-Wire Extender 4 can be used, for example, as a central distributor after a 1-Wire bus coupler / 1-Wire controller or 1-Wire hub. By fitting an 8-pin modular socket, several 1-Wire Extenders 4 can be elegantly connected via CAT network cables can be connected via a 1-Wire Extension 2 distributor.

The 1-Wire Extender 4 is ideally suited for sub-distribution boards or floor distributors in combination with DIN rail modules.

The various **1-Wire Extenders** form a coordinated cabling system.

For coupling to control systems, we recommend the use of an ESERA 1-Wire controller. This simplifies the software connection enormously due to the many automatic functions.

No software is required for this module.

3 Technical data

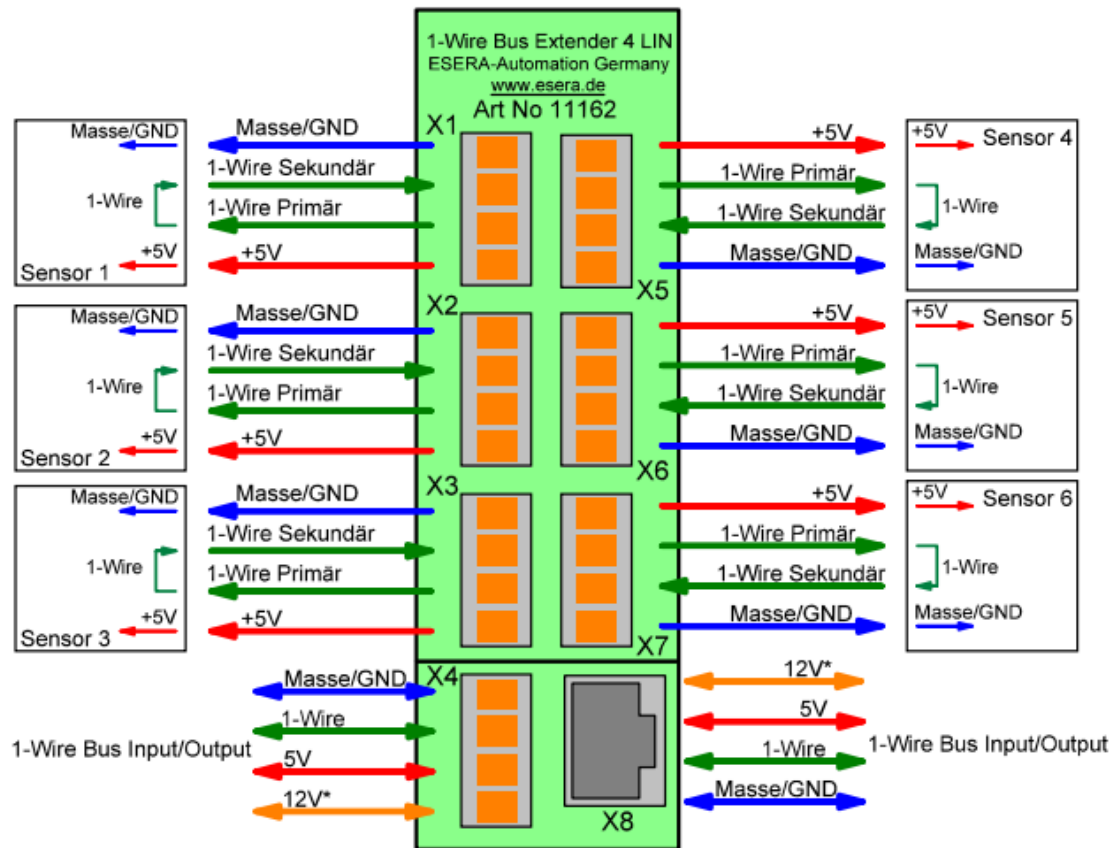
Input and output:	1 x RJ45 sockets connected in parallel (12VDC, 5VDC, GND and Data) on Push In terminal X4
Output:	7 x push-in terminal (5VDC, GND, 1-Wire Data Primary (forward) and 1-Wire Data Secondary (return))
Termination:	A passive bus termination with 4.7kOhm is provided at Push In terminal X7 Use the secondary terminal of the Push In terminal X4
Operating voltage:	5VDC
Operating current:	RJ45 socket max. 1.5A, push-in terminals max. 3A
Protection circuits:	Reverse polarity protection for 5V input/output
Temperature, operation:	-20°C to +60°C
Air humidity:	10 - 92% (non condensing)
Dimensions:	Housing 112x41x 35 (LxWxH)
Protection class:	III
Housing protection type:	IP00

4 Conformity

EN 50090-2-2
EN 61000-4-2, ESD
EN 61000-4-3, HF
EN 61000-4-4, Burst
EN 61000-4-5, Surge
EN 61000-6-1, interference immunity
EN 61000-6-3, interference radiation
RoHS

5 Connection diagram

The Push In terminals X1 - X3 and X5 - X7 are intended for linear topology (network cabling) of 1-Wire sensors. The RJ45 modular jack (X8) and the Push In terminal X4 are connected in parallel. The input signal can be fed to the Push In terminal X4 or the RJ45 modular connector X8. It is also possible to use terminal X4 and the modular connector (X8) as an adapter from network cable to single cable. A passive bus termination with 4.7kOhm is provided at Push In terminal X7. Use the secondary terminal of the Push In terminal X4.



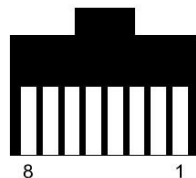
6 Assignment RJ45 socket (input/output)

The Push In terminal and the RJ45 socket are connected in parallel, which means that both connections can be used equally.

Socket assignment

- 1 GND
- 2 +5VDC
- 3 GND
- 4 1-Wire Data
- 5 GND
- 6 unoccupied
- 7 +12VDC
- 8 GND

RJ-45 Buchse



7 1-Wire Network

You can find basic information and tips on the 1-Wire bus system in the ESERA Online Shop at: <https://www.esera.de/1-wire-grundlagen/> or you can find from our eBook in the shop under training/documentation (<https://www.esera.de/service-support/dokumentation/352/grundlagen-1-wire-bus-ebook?number=11901>)

8 What does "Linear Topology" mean?

You wire 1-Wire sensors in your building with individual CAT cables and lead the cables to a central location, e.g. a distribution cabinet. At each 1-Wire sensor you connect the primary and secondary data line in the 1-Wire terminal. In the distribution cabinet, connect the 5V, GND, secondary and primary data lines to one output of the Extender 4.

You start with the cable to the

- first 1-Wire sensor at terminal X3
- second 1-Wire sensor is connected to terminal X2

- third 1-Wire sensor is connected to terminal X1
- and so on
- until you connect the last 1-Wire sensor to terminal X7. The now linear 1-Wire network is terminated with the secondary data line of the last sensor. For this purpose a passive termination resistor of 4.7kOhm is integrated within the 1-Wire Extender 4.

Due to the cabling, your 1-Wire sensors are wired in a "star shape", but electrically in a linear topology, which is the most stable installation form for a 1-Wire network.

Note: Make sure that the total cable length is not more than 50-100m.

8.1 Assignment of CAT cables (ESERA, Maxim and 1-Wire.org)

The ESERA-Automation standard for 1-wire cabling is based on a standardization proposal of 1-Wire.org (http://www.1wire.org/en-us/p_2.html).

The following definition is an extension of, and does not contradict, the above standard.

1-Wire Pin Assignment (colour specifications according to EIA/TIA 568A (left) or EIA/TIA 568B (right))

1	Green/White	Main supply GND	Orange/White
2	Green	Main supply + (preferably +5V/50mA for 1-Wire devices)	Orange
3	Orange/White	Secondary 1-Wire Bus GND	Green/White
4	Blue	Primary 1-Wire Bus	Blue
5	Blue/White	Primary 1-Wire Bus GND	Blue/White
6	Orange	Secondary 1-Wire Bus	Green
7	Brown/White	Auxiliary supply + (for other consumers, e.g. +12V/200mA)	Brown/White
8	Brown	Auxiliary supply GND	Brown

The only difference between the two colour versions is the interchange of the wire pairs green / green-white and orange / orange-white. The decisive factor is compliance with the pin numbers.

Note:

The shields and filler wires are not connected in terminal points or network sockets.

We recommend connecting the sensors one after the other, starting a search run via the control software and carrying out the assignment (name / designation). Temperature sensors can also be easily distinguished with the help of cold spray or heating by hand or hair dryer.

Before commissioning self-wired RJ45 jacks or plugs, we recommend measuring the cables with appropriate cable test equipment. Incorrect assignment can easily damage bus components.

9 Operating conditions

The device may only be used in dry indoor rooms. The module can be operated in any position.

The device is intended for mounting on top-hat rails, such as those used in fuse cabinets.

10 Assembly

The installation site must be protected against moisture. The device may only be used in dry indoor and protected outdoor areas.

The device is intended for mounting inside a switch cabinet as a stationary device.

11 Disposal information

Do not dispose of the device in household waste! Electronic devices must be disposed of in accordance with the Directive on Waste Electrical and Electronic Equipment on local Dispose of at collection points for old electronic equipment!



12 Safety instructions

When using products that come into contact with electrical voltage, the valid VDE regulations must be observed, especially VDE 0100, VDE 0550/0551, VDE 0700, VDE 0711 and VDE 0860

- All final or wiring work must be carried out with the power turned off.
- Before opening the device, always unplug or make sure that the unit is disconnected from the mains.
- Components, modules or devices may only be put into service if they are mounted in a contact proof housing. During installation they must not have power applied.

- Tools may only be used on devices, components or assemblies when it is certain that the devices are disconnected from the power supply and electrical charges stored in the components inside the device have been discharged.
- Live cables or wires to which the device or an assembly is connected, must always be tested for insulation faults or breaks.
- If an error is detected in the supply line, the device must be immediately taken out of operation until the faulty cable has been replaced.
- When using components or modules it is absolutely necessary to comply with the requirements set out in the accompanying description specifications for electrical quantities.
- If the available description is not clear to the non-commercial end-user what the applicable electrical characteristics for a part or assembly are, how to connect an external circuit, which external components or additional devices can be connected or which values these external components may have, a qualified electrician must be consulted.
- It must be examined generally before the commissioning of a device, whether this device or module is basically suitable for the application in which it is to be used.
- In case of doubt, consultation with experts or the manufacturer of the components used is absolutely necessary.
- For operational and connection errors outside of our control, we assume no liability of any kind for any resulting damage.
- Kits should be returned without their housing when not functional with an exact error description and the accompanying instructions. Without an error description it is not possible to repair. For time-consuming assembly or disassembly of cases charges will be invoiced.
- During installation and handling of components which later have mains potential on their parts, the relevant VDE regulations must be observed.
- Devices that are to be operated at a voltage greater than 35 VDC / 12mA, may only be connected by a qualified electrician and put into operation.
- Commissioning may only be realized if the circuit is built into a contact proof housing.
- If measurements with an open housing are unavoidable, for safety reasons an isolating transformer must be installed upstream or a suitable power supply can be used.
- After installing the required tests according to DGUV / regulation 3 (German statutory accident insurance https://en.wikipedia.org/wiki/German_Statutory_Accident_Insurance) must be carried out.

13 Warranty

ESERA GmbH guarantees that the goods sold at the time of transfer of risk to be free from material and workmanship defects and have the contractually assured characteristics. The statutory warranty period of two years begins from date of invoice. The warranty does not extend to the normal operational wear and normal wear and tear. Customer claims for damages, for example, for non-performance, fault in contracting, breach of secondary contractual obligations, consequential damages, damages resulting from unauthorized usage and other legal grounds are excluded. Excepting to this, ESERA GmbH accepts liability for the absence of a guaranteed quality resulting from intent or gross negligence. Claims made under the Product Liability Act are not affected.

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