

User Guide

1-Wire Bus Coupler Ethernet

Configuration:

- Ethernet connection for 1-Wire bus
- Galvanic separation of 1-Wire network and computer
- LED display for power, 1-Wire activity, link and data transfer
- Top-hat rail case for the assembly of the switchboard
- Integrated power adapter for the voltage supply of the 1-Wire bus
- Wide voltage supply range
- Connection for 1-Wire bus via screw terminals
- Easy software-based integration as COM port
- Low space requirement in the switchboard
- Easy to assemble



1 Introduction

Before you start assembling the 1 Wire Bus Coupler Ethernet and before you take the device into operation, please read these assembly and operating instructions carefully to the end, especially the section referring to the safety notes.

2 Product description

The 1-Wire Bus Coupler Ethernet enables a stable and electrically isolated connection of the 1-Wire network to a PC or minicomputer (e.g. Raspberry Pi). Ground loops or fault transmissions between 1-Wire network and computer are prevented by the use of the 1-Wire bus coupler Ethernet.

Within the 1-Wire Bus Coupler, the serial to 1-Wire module DS2480 from Dallas / Maxim is used. This module - in combination with the complex internal power supply and the Ethernet module - are the basis for a very stable 1-Wire network.

The 1-wire master within the 1-wire bus coupler Ethernet (DS2480 module) supports the "Strong Pull Up" function and is therefore particularly suitable for the operation of large 1-wire networks.

To configure the Ethernet interface, a suitable program "Config Tool" is available via the article download. The "Config Tool" is part of the "Software package", which you will find in the article Download.

On computer side, the 1-Wire bus coupler is connected via a "Virtual Serial Port" (VSP). The "VSP_INSTALLER" tool is available for configuring the VSP. Both programs are available for download in our webshop.

On software side, a serial interface (COM port) is available for integration into your application after installation of the VSP.

An external power supply is required to operate the 1-wire Bus Coupler Ethernet module. The outputs of the module (5V and 1-wire bus) are short-circuit-proof and galvanically connected to the supply voltage input. For details on the connection, please refer to the "connection plan".

The 1-Wire Bus Coupler has LED displays for "Power" and "1-Wire activity", "Ethernet Link" and "Traffic".

3 Technical data

Ethernet:

Interface: TCP/IP, UDP (each as server or client)
Ethernet: 10/100 Mbps Ethernet Interface (RJ45)
Auto Negotiation (Full-duplex and Half-duplex)
Auto MDI/MDIX
Ethernet Interface: Ethernet to Serial
Software Interface: Virtual Serial Port (VSP)
Operating systems: VSP for Windows Vista, Windows 7, Windows 10
Windows Server 2003 to 2016, all Windows 64-bit platforms
Software: Support for fixed IP-Addresses or DHCP
Support for DNS
Software for Ethernet, Serial and VSP Configuration

1-Wire Interface:

1-Wire Master: DS2480B (bus-master)
Interface: 1-Wire Bus, 5V, Data (5V signal level) and GND / load
Protection circuit: ESD protection and reverse voltage protection
Connection: Screw terminals (up to 2,5 qmm wire cross section)
Output voltage: 5V (+/-10%), nominally 200mA, max. 300mA
Isolation: Galvanic separation between Ethernet and 1-Wire interface

Ambient conditions:

Temperature, operation: 0°C up to +50°C
Air humidity: 10 - 92% (non-condensing)
Dimensions: 35 x 90 x 70mm (BxHxD)
Protection class: III
Insulation class: IP20

Voltage supply:

Input voltage: 8 - 30VDC
Power consumption typically 250mA (without load at the 5V output)

Note: For the supply of the 1-Wire network, we recommend the use of one of our 1-Wire Hub Modules.

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, Fault-free operation
EN 61000-6-3, Stray radiations
RoHS

5 LED Display

The module has different LED displays. The function of the displays is explained in the following.

Display	Label	Function
LED Green	Power	Display for 5V output voltage
LED Green	Active	<ul style="list-style-type: none">Flashes in the case of 1-Wire activity.Permanently flashes in the case of the 1-Wire Data Line short-circuit.

6 Software

In the article download section in our webshop, a software package, including installation instructions, is ready for download. The bus coupler operated via 1-Wire commands for the DS2480 component.

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Windows:

For Windows, a bus coupler configuration program (Config-Tool) and a software for the creation of a virtual serial port (VSP-Tool) are available.

Linux:

At the moment we have no available configuration software, respectively connection for Linux.

We would like to refer to the „remserial“ project: <http://lpccomp.bc.ca/remserial/>.

7 Update Ethernet interface (Firmware for interface)

No firmware update of the Ethernet interface should be necessary during the entire lifetime.

If you do, please use the "Config Tool 1" of the software package.

Before starting the update, close all applications and services that could write or read data to the bus coupler! Malfunctions of the 1-Wire bus coupler due to programming or an update are not subject to the warranty conditions.

Should an update nevertheless be necessary, we will be pleased to carry out an update for you as a service. We are also happy to carry out the programming of the network interface for you. In this case, please return the device back to us for further handling.

8 Connection plan

Module top side (1-Wire Bus)

7 + 8 = 1-Wire GND/load

9 + 10 = 1-Wire data

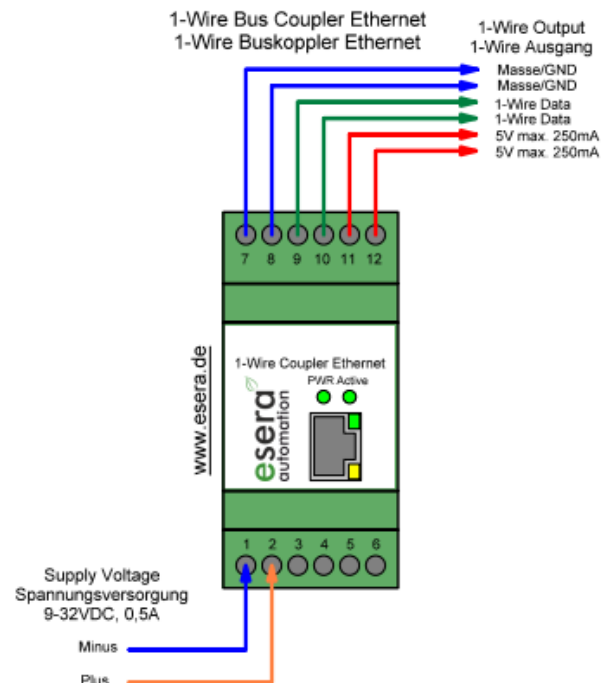
11+12 = + 5V output

Modul bottom side (voltage supply)

1 = Minus input 9-30V

2 = Plus input 9-30V

3 - 6 = not in use



9 Operating conditions

The operation of the assembly group can take place only on condition of observing the required voltage and the ambient conditions. The operating position of the device is irrelevant. The device is meant to be used in dry and dust-free areas.

Should condensed water build up, an acclimatization period of at least 2 hours must pass.

Assembly groups and components do not belong into the hands of children!

The building group can be operated only under the supervision of an electrically skilled person.

In industrial facilities, the accident prevention regulations of the federation of industrial professional associations for electrical installations and equipments must be observed.

Do not operate the assembly group in an environment with inflammable gases, vapours or dusts or in an environment where such gases, vapours or dusts may be found.

10 Assembly

The module may only be operated at the specified voltages and ambient conditions. The device is intended for installation inside a control cabinet as a stationary device.



11 Disposal note

Do not dispose of the device within the household waste!

According to the directive concerning old electrical and electronic appliances, electronic devices must be disposed of via the collecting points for old electronic appliances!

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 BGV A3 / Betriebssicherheitsverordnung must be performed.

13 Warranty

ESERA-Automation (E-SERVICE 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-Automation 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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