

User Guide

8-fold digital output / switching module / binary output 8 x 8A for 1-Wire Bus system

- 8 power relays with 8x8A continuous power (in total 10A)
- LED display for activated relays
- Switching of DC or AC consumers, such as lighting, heating or sockets
- DIN rail housing for control cabinet installation
- Standardized and simple software control
- Low space requirement in the control Cabinet
- Easy to assemble



1 Introduction

Before you start assembling the **8-fold digital output** 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

With the 8-fold digital output, DC and AC loads with a power of up to 8A continuous current per channel and a total of 10A for all channels can be switched. With non-resistive load the maximum switching capacity is reduced. The output relay can be controlled directly via a 1-wire interface.

Monostable relays with make-contact are used. If the 12V operating voltage fails, all outputs are switched off and remain switched off even after a return. In this case, a new switching command via the 1-Wire interface is required for switching.

To supply the switching module, we recommend the use of one of our 1-Wire Hub modules.

3 Auto-E-Connect® Support

The ESERA **Auto-E-Connect®** 1-Wire Plug and Play system will be used for the 1-Wire Bus supported. This enables fully automatic configurations of 1-Wire sensors and actuators on the 1-Wire bus. It is optimized for industrial applications and enables significant added value beyond the sensor and chip data.



The Auto-E-Connect function automatically recognizes ESERA chips, sensors and actuators, starts suitable libraries and outputs fully formatted data.

The Auto-E-Connect functionality will be available from mid 2020 via 1-Wire Controllers, 1-Wire Gateways and 1-Wire ECO from ESERA available.

Further information on ESERA Auto-E-Connect can be found on the ESERA website, ESERA Config-Tool 3, or in the download area for this article in the ESERA Webshop.

4 Technical data

Switching channels: 8, make contact (relays NO contact)

Switching voltage: Max. 250V, DC or AC voltage

Switching current/power: **Max. 8A continuous current per output** and max. 1840VA continuous power with resistive load. Minimum load 10mA.

Max. 10A total current for all outputs

For capacitive or inductive loads, appropriate additional circuits, e.g. spark quenching capacitors, must be provided. The max. current and the power are reduced.

Fuses: External back-up fuse with 10A recommended

Data interface: 1-Wire bus (12V, data and ground),

1-Wire device: DS2408 (8-fold I/O)

Operating voltage: 12VDC (+/-10%)

Current consumption 12V: Rest state, no output relay active: approx. 10mA

All outputs active: approx. 160mA (max. 1.9W)

Connection: Screw terminals (up to 2.5qmm cable cross-section)

5 Ambient conditions

Temperature, operation: -20°C to +60°C

Humidity: 10 - 92% (non-condensing)

Dimensions: 70 x 90 x 70mm (WxHxD)

Protection class: II

Protection type: IP20

Insulation strength: 500VAC output to 1-Wire Bus

Art. No. 11229 V2

6 Connection plan

The connection plan is available in our web shop as a separate document.

Note: A back-up fuse must be provided for terminal 14 with 10A.

Connection module top side:

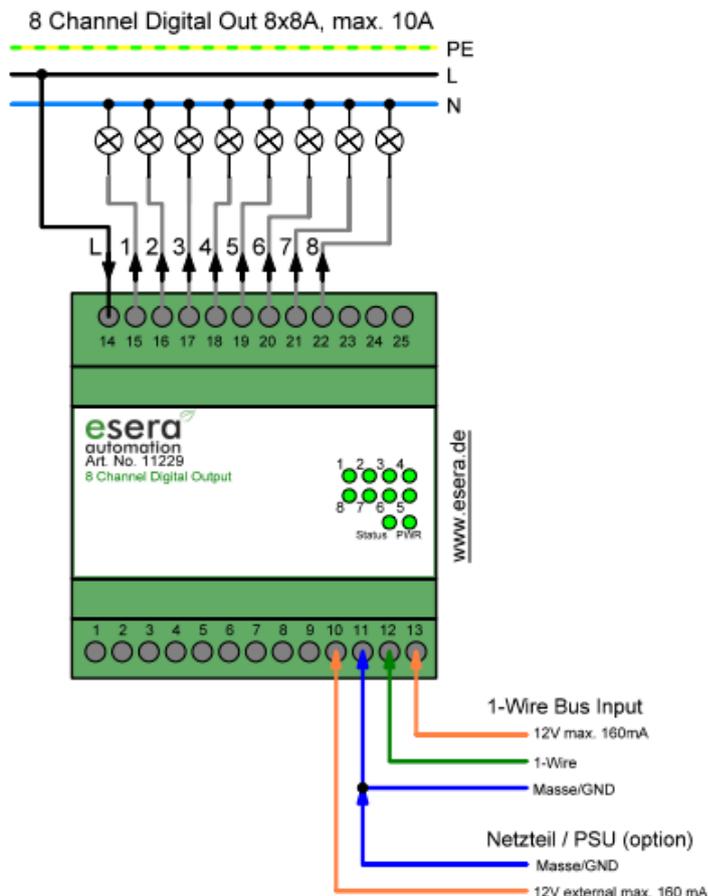
- 14 = Current input
- 15 = Output 1, make-contact
- 16 = Output 2, make-contact
- 17 = Output 3, make-contact
- 18 = Output 4, make-contact
- 19 = Output 5, make-contact
- 20 = Output 6, make-contact
- 21 = Output 7, make-contact
- 22 = Output 8, make-contact

Module bottom side:

1-Wire Bus

- 10 = +12V external voltage* (optional)
- 11 = GND (ground)
- 12 = 1-Wire data line
- 13 = +12V voltage

* If the Bus system is not able to supply the module with sufficient power, an external 12V power supply can be connected as support. This power supply unit must not be used to supply non-Bus modules.



7 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

8 Operation mode, display

After the device has been put into operation, all LEDs of the relay outputs will light up briefly. From this moment on, the 8-fold switch module is ready for operation and switching commands can be sent via the 1-wire interface. The corresponding status LEDs of the active relays will light up.

Display	Designation	LED function
LED 1-8	Output 1-8	- LED lights up for 2 seconds to start the system - LED indicator lights up when the respective output is active
LED PWR	Power	- LED flashing lights up 2 seconds to start the system - LED display for operational readiness
LED Status	Status display	- LED lights up for 2 seconds to start the system - Flashes when controlled via the bus interface

9 Software / Control

The 1-Wire interface is controlled by standard commands for the DS2408 device.

10 Control via 1-Wire Controller / 1-Wire Gateway

The 1-Wire interface of the 8-fold digital output 8 is controlled by standard commands for the device DS2408. The 8-way switching module can be easily controlled via a 1-wire controller / 1-wire gateway. Two commands are available for this purpose. Please refer below for the two commands.

10.1 Switching an output relay

To switch a relay output, use the following command to set only the selected output to 0 or 1.

Command: SET,OWD,OUT,OWD-number, output value

Example: set,owd,out,2,1,1 => OWD number 2, output 2 is switched to "On". After switching the output, the new status is output as confirmation.

10.2 Switching of all output relays (Port)

There are applications and modules where it is necessary to switch all outputs with one command.

With only one command, all outputs of the 1-wire block are set to a certain state, which means that the previous output status will be overwritten.

The 1-wire controller / the 1-wire gateway takes over the command adaptation to the connected module 8-fold digital output 8.

The output value is output as decimal value 0-254. Each relay output has a value that is summed up.

Output 1 = 1, output 2 = 2, output 3 = 4, output 4 = 8, output 5 = 16, output 6 = 32,

Output 7 = 64, output 8 = 128.

If, for example, you want to switch outputs 1, 3 and 5 to 1, add the output values together.

Here e.g. $1 + 4 + 16 = 21$

All other relay outputs are switched to 0. If all outputs are to be set to 0 or switched off, the output value is 0.

Permissible output values for 1-Wire digital outputs: 0 - 255

Command: SET,OWD,OUTH,OWD-number, output value

Example: set,owd,outh,2,15 => OWD number 2, output 1 to 4 is switched to "On"

After switching the output, the new status is output as confirmation.

10.3 Data output 1-Wire controller / 1-Wire gateway

For the 8-fold digital output 8 the following data are output for the relay outputs.

The status and the output value are output as decimal value 0-254 and in a second data set binary with 0 and 1.

Each output has a value that is summed up in each case.

The data of OWDx_3 and OWDx_4 are relevant for this module.

Relay output and status:

Output 1 = 1, output 2 = 2, output 3 = 4, output 4 = 8, output 5 = 16, output 6 = 32, output 7 = 64, output 8 = 128.

Data output:

1_OWD1_1 7	=> Controller No._device no._data record status decimal value
1_OWD1_2 0000111	=> Controller No._device no._data record binary display of status
1_OWD1_3 7	=> Controller No._device no._data record decimal value output
1_OWD1_4 0000111	=> Controller No._device no._data record binary display output

Further information on possibilities and commands can be found in the current 1-Wire Controller /1-Wire Gateway documentation.

11 Operating conditions

The device may only be operated at the specified voltages and ambient conditions. The device may only be used in dry indoor areas.

If condensation forms inside the unit, allow at least 2 hours for the unit to acclimatize. Do not operate the module in an environment in which flammable gases, vapors or dusts are present or could be present. 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 equipment must be observed.

Art. No. 11229 V2

12 Assembly

The location of the assembly must be protected against humidity. The device may be used only in dry inside spaces and protected outside areas. Ensure that the installation is free of draughts. The device is designed to be assembled as a fixed device within a switchboard.

13 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!



14 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.

15 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.

If defects occur for which the ESERA GmbH is responsible, and in the case of replacement goods, the replacement is faulty, the buyer has the right to have the original purchase price refunded or a reduction of the purchase price.

ESERA GmbH accepts liability neither for the constant and uninterrupted availability of the ESERA GmbH or for technical or electronic errors in the online offer.

We develop our products further and we reserve the right to make changes and improvements to any of the products described in this documentation without prior notice. If you need documentation or information about older product versions, contact us by email at info@esera.de.

16 Trademarks

All mentioned designations, logos, names and trademarks (including those which are not explicitly marked) are trademarks, registered trademarks or other copyright or trademarks or titles or legally protected designations of their respective owners and are hereby expressly recognized as such by us. The mention of these designations, logos, names and trademarks is made for identification purposes only and does not represent a claim of any kind on the part of ESERA GmbH on these designations, logos, names and trademarks. Moreover, from their appearance on ESERA GmbH webpages it cannot be concluded that designations, logos, names and trademarks are free of commercial property rights. **ESERA and Auto-E-Connect are registered trademarks of ESERA GmbH.**

17 Contact

ESERA GmbH
Adelindastrasse 20
87600 Kaufbeuren
GERMANY
Tel.: +49 8341 999 80-0
Fax: +49 8341 999 80-10
www.esera.de
info@esera.de
WEEE-Number: DE30249510