

User Guide

1-Wire Dual Dimmer 1 with pushbutton inputs (extension input)

- 2 channel dimmer with smooth dimmer behavior
- max. 460VA/W Power per channel*
- 2 Pushbutton control (extension input)
- 2 buttons on top of module
- Control inputs for 1-wire bus system
- LED display for dimmer values
- **Phase angle control technology** for
 - Dimmable LED lights
 - Halogen lamps high voltage 230V
 - Low-voltage halogen lamps with wound transformers
 - light bulbs
- DIN rail housing for control cabinet installation
- Simple software control
- Low space requirement in the control cabinet
- Simple assembly



1 Introduction

Before you start with the installation of the Dual Dimmer 1 and put the device into operation, please read these installation and operating instructions carefully until the end, especially the section of the safety instructions.

2 Product Description

With the Dual Dimmer 1 you can dim and switch lamps very gently.

The brightness of the connected lamps can be controlled or switched on/off by the push-button dimmer function in the living room (extension input), by push-buttons on the top of the module and electronically via the 1-wire interface. Any buttons from all switch ranges can be used for the push-button dimmer function. The dimmer behavior is always very soft and pleasant.

You can change the brightness by pressing the living area buttons for a long time and switch on/off by briefly pressing the button.

The touch dimmer function works with 12V or 24V DC voltage, which does not give off any disturbance in the living room. This makes the Dual Dimmer 1 ideal for low-radiation areas such as bedrooms and living rooms. The ESERA manual control allows you to operate the lighting reliably. Everything functions as in a "normal house", even without Smart Home control or software.

The 1-Wire Bus interface is available for integration into your Smart Home control system.

* When installed in distribution cabinets with low heat dissipation, e.g. installed in wooden or (RI) plaster walls, the connected load must be reduced by 25%, also when the ambient temperature rises above 25°C.

This dimmer can switch and dim both dimmable LED luminaires, ohmic (e.g. incandescent lamps, HV-halogen) and inductive (e.g. LV-halogen with transformer or fans) loads with corresponding power. Low-voltage halogen lamps may only be operated in conjunction with a wound transformer.

For the living room touch dimmer function, it is sufficient to supply the dual dimmer 1 with the 1-wire bus voltage (12V). This enables a "Smart Home Ready" installation in your building or apartment. This also ensures extremely high reliability, as the lighting functions when the Smart Home control is not yet programmed or has failed.

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

Dimmer channels	2, Phase section Technology
Output:	max. 460W / 460VA When installed in distribution cabinets with low heat dissipation, e.g. installed in wooden or (RI) plaster walls, the connected load must be reduced by 25%, also when the ambient temperature rises above 25°C..
Nominal voltage:	230VAC +/-5% 50Hz
Consumers:	- Dimmable LED luminaires - ohmic loads, e.g. incandescent lamps, HV-halogen - inductive loads, e.g. LV halogen only with wound transformer or fans up to max. 300W / 300VA
Unsuitable consumers	- Fluorescent lamps and energy saving lamps - Low-voltage halogen lamps with electronic transformers - PL, SL, DULUX or Biax light sources
Short-circuit protection:	Fine fuses (3.15A/M) per output channel, changeable without opening the housing
Data interface:	1-Wire Bus (12V, Data und Masse)
Function Data interface:	
1-Wire Module:	DS2408 Interface
Operating voltage:	12VDC (+/-10%)
Current consumption:	max. 25mA at 12V bus voltage
Button Dimmer:	2 binary DC inputs, electrically isolated input voltage 10-30VDC, max. 10mA per input, common ground
Function Touch dimmer:	Long key press: gentle dimming light/dark Short keystroke: on/off The last brightness value is stored permanently. 127 Dimmer steps per channel
Installation:	Cable length for push button dimmer max. 100m
Connection:	Screw terminals (up to 2.5 square mm cable cross-section)

Note on the detection of suitable and unsuitable transformers

For wound transformers, a commercially available resistance meter (multimeter) can be used to measure the Transformer resistance (power 20-250W) with less than 50 Ohm between L and N can be measured.

With electronic transformers of comparable power, you can usually achieve resistance values of greater than Measure 100,000 Ohm between L and N.

These electronic transformers are not suitable for the dual dimmer 1 (phase angle control).

An already wired electronic transformer must always be disconnected from the mains on the 230 V and low-voltage side. The circuit must be disconnected (see safety instructions).

Make the connection according to one of the following circuit diagrams. The cables to be connected should be stripped approx. 12 mm.

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5 Ambient conditions

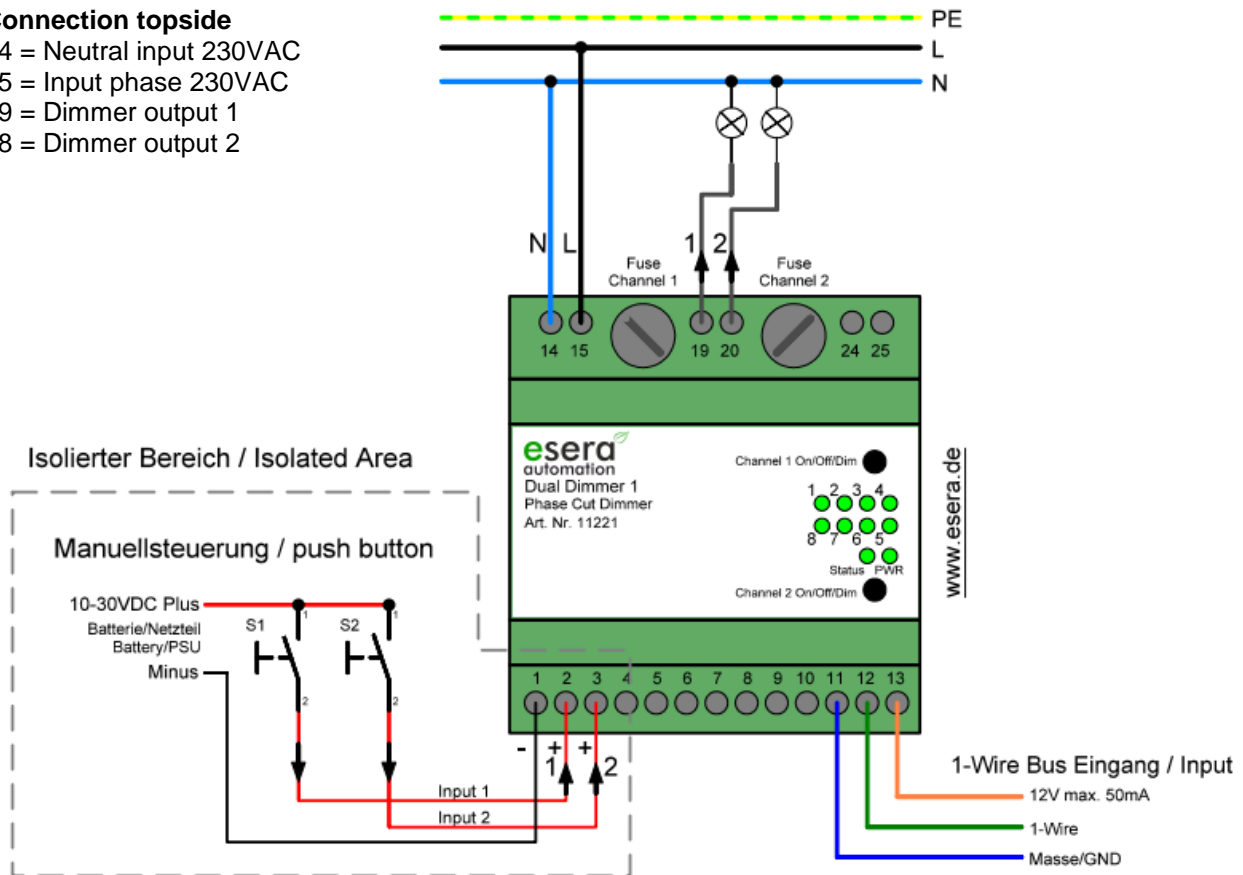
Temperature, operation 0°C to +40°C, from 25°C the output load must be reduced, see technical data
 Air humidity: 10 - 92% (non condensing)
 Dimensions: 70 x 90 x 70mm (WxHxD)
 Protection class: II
 Protection system: IP20
 Insulation strength: 500VAC output to 1-Wire Bus, 500VAC push-button interface to 1-Wire Bus

6 Wiring diagram

The connection diagram is available in the shop as a separate document.

Connection topside

14 = Neutral input 230VAC
 15 = Input phase 230VAC
 19 = Dimmer output 1
 18 = Dimmer output 2



Module bottom

Push-button input / manual control

Control voltage 10-30VDC

1 = GND (ground) Push-button Input
 2 = Push-button channel 1, on/off/dimming
 3 = Push-button channel 2, on/off/dimming

1-Wire Bus

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

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, noise immunity
 EN 61000-6-3, Interference radiation
 RoHS

8 Operating mode, display and operation

The Dual Dimmer 1 has two operating modes, normal mode and submenu.
The behavior of the dimmer can be changed via the submenu.

8.1 Normal operation

After commissioning, the device is in normal operation. The two dimmer channels can be controlled via the buttons on the top of the module, the external binary inputs or via the 1-wire interface.
The current dimmer values are shown on the LED display in 25% steps.

8.2 Submenu for dimmer behavior

If you press both buttons on the top of the module simultaneously for 3 seconds, the module switches to the submenu where you can change the dimmer behavior.

If the dual dimmer 1 is in this menu, the status LED flashes continuously fast. The selected menu option is animated by the upper row of LEDs.

If you do not use a button for 3 seconds, the Dual Dimmer 1 automatically switches to normal operation.

Functions of the module buttons in the submenu

Button 1: Select mode (currently the Dual Dimmer 1 has two modes to choose from)

Button 2: Mode on/off.

Mode 1 (LED 25%): dimmer on/off hard or soft

Mode 1 can be used to select how the dimmer behavior is to behave on a short keystroke (output on/off).
You can choose between soft and hard.

Mode 2 (LED 50%): dimmer on/off, 0/100% or 0/last dimmer value

Mode 2 can be used to select whether the dimmer value changes to 100% or to the last stored value after briefly pressing the button.

9 Brightness control Dimmer

The dimmer channels can be controlled directly via the two buttons on the top of the module.

With a short push of a button the corresponding output is switched on or off.

A long press of the button makes the brightness brighter or darker.

The current dimmer value is shown on the LED display on the top of the module in 25% steps.

For further details on the ESERA-Automation lighting system, please refer to the web page

<https://www.esera.de/smart-home/anwendungsbeispiele/lichtsteuerung/>

Display	Designation	Function LED
LED 1-8	Output 1-8	- LED upper row Dimmer value in 25% steps Channel 1 - LED upper row Dimmer value in 25% steps Channel 2
LED PWR	Power	- LED- power indicator
LED Status	Status display	- LED lights up for 2 seconds to start the system - Flashing with new dimmer values

Pushbutton	Designation	Function Pushbutton
Channel 1 Up/Down	Dimmer 1 on/off diming	- Control Dimmer 1: Short press on/off, long press Dimmer brighter/darker - Submenu Selection of the dimmer function
Channel 2 Up/Down	Dimmer 1 on/off diming	- Control Dimmer 2: Short press on/off, long press Dimmer brighter/darker - Submenu Function selection

10 Pushbutton interface

In addition to the manual control (module top) and the 1-wire interface, the Dual Dimmer 1 also has an 8-fold pushbutton interface (8 x binary input) for switching and dimming the outputs.

To switch an output, a short input signal (keystroke) is sufficient, to dim a long input signal to the corresponding input.

The inputs of the 8-fold pushbutton interface (extension inputs) are intended for switching and dimming luminaires or luminaire groups in commercial and residential areas. The inputs are controlled with a typical 24V (10-30V) DC voltage. Pushbuttons from any switch manufacturer can be used on the inputs. Any number of push-buttons can be connected in parallel at each input of the push-button interface.

The direct control of the Dual Dimmer 1 via pushbutton interface ensures very fast switching and dimming even without a Smart Home System (software).

In addition to pushbuttons, another pulse control signal can also be used to switch and dim the outputs of the Dual Dimmer 1.

All three interfaces, module push-button, pushbutton interface and 1-wire interface, work in parallel on the outputs. An output switched e.g. by the 1-Wire interface can be switched off or on and dimmed manually or via pushbutton interface.

11 Software / Control

The 1-Wire interface of the Dual Dimmer 1 is controlled by standard commands for the DS2408 module.

The 1-Wire interface can be used to read back every keystroke as well as the dimmer values of the outputs. The dimmer values are output alternately via the 1-wire interface. Channel 2 can be detected by bit 5 (1).

The outputs of the dual dimmer 1 are controlled as follows via the 1-wire interface by byte command:

One output can be controlled per transmitted byte value.

- Bits 0-4 corresponds to the brightness value (32 dimmer levels)
- Bit 5 is reserved, currently no function
- Bit 6 is intended for the selection of the dimmer output.
Channel 1 is addressed with a 0, channel 2 with a 1.
- Bit 7 is reserved, currently no function

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

The control and data output of the Dual Dimmer 1 is very simplified via the 1-Wire Controller / 1-Wire Gateway. The current dimmer values and the status of the push-button interface are output continuously.

In the case of a control signal on the push-button interface or on the top of the module, a separate data record with the normal formatting is output. The following control command can be used to control the dimmer value of one output at a time. There are 32 dimmer values available per output.

11.2 Control Command for Dual Dimmer 1

One output of the Dual Dimmer 1 is controlled per command. To control the dimmer outputs, the following options are available

32 dimmer stages (0-31) per channel available.

Command: SET,OWD,DIM,OWD-number, output, dimmer value

Example: set,owd,dim,2,1,25 => OWD number 2, output 1 is set to dimmer value 25.

After controlling the dimmer, the new dimmer value is output as confirmation.

11.3 Data Output 1-Wire Controller / 1-Wire Gateway

For the Dual Dimmer 1 the following data for push-button interface and outputs are output.

The input and output values are output as decimal values 0-254 and in a second data set binary with 0 and 1. Each input and output has a value which is summed up.

Pushbutton interface input:

Button interface channel 1 = 1, button interface channel 2 = 2, module button channel 1 = 4, module button channel 2 = 8, value 16 - 128 no function (always 0)

Dimmer output:

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 1	=> Controller No._Module No._Data set Decimal value Input
1_OWD1_2 10000001	=> Controller No._Module No._Data set Binary representation Input
1_OWD1_3 16	=> Controller No._Module No._Data set Dimmer value channel 1 stage 16
1_OWD1_4 28	=> Controller No._Module No._Data set Dimmer value channel 2 stage 28

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

12 Operating conditions

The module may only be operated at the voltages, ambient conditions and temperatures specified and consumers. The operating position of the device is preferably vertical.

The device is intended for use in dry and dust-free rooms.

If condensation water forms, wait for at least 2 hours to acclimatize.

Assemblies and components must not be handled by children!

The modules may only be put into operation under the supervision of a qualified electrician.

In commercial facilities the accident prevention regulations of the association of the commercial trade associations for electrical systems and equipment must be observed.

Do not operate the module in an environment in which flammable gases, vapors or dusts are present or could be present.

13 Assembly

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

The device is intended for installation inside a control cabinet as a stationary device.

14 Disposal instructions

Do not dispose of the device in domestic waste! Electronic devices are to be disposed of according to the Directive on waste electrical and electronic equipment (WEEE) on local authorities and collection points for waste electronic equipment!



15 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.

16 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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