

User guide

1-Wire PWM output

Equipment:

- 1-Wire to PWM output 10V 2kHz
- 8 bit resolution of the DA-converter
- Galvanic isolation of PWM output and 1-Wire Network
- LED display for power and data update
- DIN Rail enclosure for switchboard assembly
- Input and output area with elaborate internal power supplies
- Connection via screw terminals
- Simple installation and software integration
- Output protected against overload and short circuit
- Housing colour Green



1 Introduction

Before you start assembling the 1-Wire PWM output 10VDC and putting the device into operation, please read these assembly and operating instructions carefully until the end, especially the section on safety instructions.

2 Product description

With the 1-Wire PWM output 10VDC, a pulse width modulated square wave signal (PWM signal) with a voltage of 10V and a resolution of 8 bits can be easily output. This square wave signal can be output to control, for example, a heating mixer, dimmer or other power controllers.

The 1-Wire PWM output is galvanically isolated from the 1-Wire bus and the power supply. The isolation avoids ground loops or effects due to potential differences.

3 Technical data

Number of channels:	1
Output voltage:	10 VDC square-wave signal with variable pulse/pause ratio
Output current:	max. 20 mA
Rise time (0-10V):	max. 5 ms
Output frequency:	2 kHz square wave signal with variable pulse-pause ratio
Output resistance:	approx. 100 Ohm
Resolution:	8 Bit
Smallest resolution:	0.4% pulse-pause ratio
Accuracy:	>1% of setpoint value
Isolation:	min. 500VAC between 1-wire bus and analog output
1-Wire device:	DS2408 (8-fold Digital I/O)
Interface:	1-Wire Bus (5V, 12V, Data and Ground)
Operating voltage:	12V= (+/-10%), current consumption max. 30mA
Current consumption:	max. 20 mA (output with 10k load)
Display:	2 x LED green, data update and supply voltage
Connection:	screw terminals (up to 2.5qmm cable cross-section)

Note: A 12V supply voltage is required to operate the module. Recommended is the Use of one of our 1-Wire Hub devices.

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Ambient conditions:

Protection system:	IP20
Protection class:	III
Temperature (operation):	0°C to +50°C
Humidity:	10 - 92% (non-condensing)
Dimensions:	35 x 90 x 70mm (WxHxD)

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, noise immunity
EN 61000-6-3, Interfering radiations
RoHS

5 Wiring diagram

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

Top side:

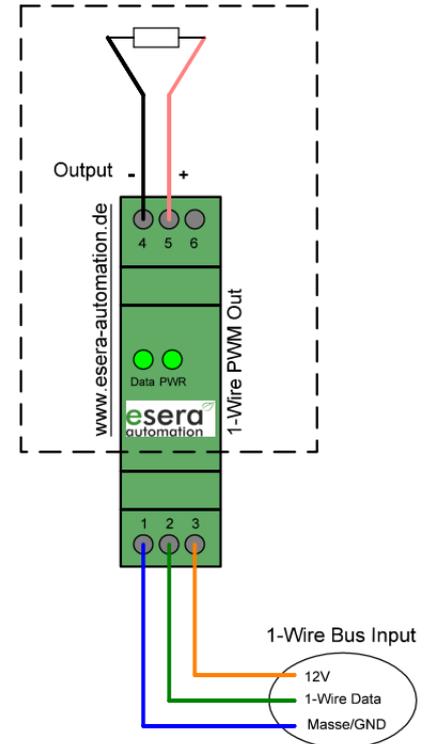
(PWM output)

4 = Minus output
5 = Analog output

Module bottom side:

1-Wire Bus

1 = GND (ground)
2 = 1-Wire Data
3 = +12V voltage



6 Software / Control

The device is controlled by DS2408 1-Wire commands. The DS2408 can represent a maximum of 255 states with its 8 outputs. The individual DS2408 outputs have the following values

Channel 0 = 1, Channel 1 = 2, Channel 2 = 4, Channel 3 = 8, Channel 4 = 16, Channel 5 = 32, etc. The outputs are read by a μ controller and output as a PWM signal.

All 8 outputs 0 = 0V, all 8 outputs 1 (or 255 (decimal) or FF (hex)) = 100% pulse-pause ratio of the output voltage. The logic is inverted. The active outputs are added according to their valence and output as a square wave signal. Details can be found in our example program in the download area of the shop.

Note:

After switching on the supply voltage, the module starts from standby to normal operation after a PWM signal of less than 100% pulse/pause ratio has been output once. In standby mode the DATA LED flashes and the output voltage is 0V. In normal operation a voltage between 0-100% pulse-pause ratio can be output.

7 Display LED

The module has a green LED display which lights up when the module is supplied with 12V supply voltage.

Display	Designation	Function
LED Green	PWR	Display for power supply <ul style="list-style-type: none"> • Standby Mode: LED Flashes after switching on the supply voltage. The output voltage in this operating mode is 0V. • Mode of operation: Lights up permanently in normal mode <p>Note: The module starts into normal operation after switching on the supply voltage, after a PWM signal smaller than 100% has been output once.</p>
LED Green	Data	Flashes when a new data value is received and output (data update).

8 Operating conditions

The module may only be operated at the specified voltages and ambient conditions. The device can be operated in any position. The device is intended for use in dry and dust-free rooms. If condensation is formed, allow at least 2 hours for the unit to acclimatize. Assemblies and components should not be handled by children! The modules may only be put into operation under the supervision of a qualified electrician. The accident prevention regulations of the Verband der gewerblichen Berufsgenossenschaften für elektrische Anlagen und Betriebsmittel must be observed in commercial facilities. Do not operate the module in an environment in which flammable gases, vapours or dusts are present or may be present.

9 Assembly

The installation site must be protected from moisture. The device may only be used in dry indoor rooms and in protected outdoor areas. The device is intended for installation inside a switch cabinet as a stationary device.

10 Safety Instructions

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

- All termination and wiring work must only be carried out when the power is disconnected.
- Before opening a device, always pull the mains plug or ensure that the device is de-energised.
- Components, assemblies or devices may only be put into operation if they have been installed in a housing in a touch-proof manner beforehand. They must be de-energized during installation.
- Tools may only be used on devices, components or assemblies if it is ensured that the devices are disconnected from the supply voltage and that electrical charges stored in the components inside the device have been discharged beforehand.
- Live cables or wires to which the device, component or assembly is connected must always be checked for insulation faults or breakages.
- If a fault is detected in the supply line, the device must be taken out of operation immediately until the defective line has been replaced.
- When components or assemblies are used, strict compliance with the characteristics for electrical quantities specified in the corresponding description must always be pointed out.
- If it is not clear from the present description for the non-commercial end user which electrical characteristic values apply to a component or assembly, how external wiring is to be carried out or which external components or accessories may be connected and which connection values these external components may have, a qualified electrician must be consulted.
- Before commissioning a device, it must generally be checked whether this device or the module is basically suitable for the application for which it is to be used.
- In case of doubt, it is absolutely necessary to consult experts, experts or the manufacturer of the modules used.
- We accept no liability whatsoever for operating and connection errors beyond our control.

- In the event of non-function, kits should be returned with an exact description of the fault and the associated assembly instructions without housing. A repair is not possible without a fault description. Time-consuming assembly or disassembly of enclosures must be charged additionally.
- The relevant VDE regulations must be observed during installation and when handling parts that later carry mains voltage.
- Devices which are operated at a voltage greater than 35 VDC/ 12mA may only be connected and commissioned by qualified electricians.
- Commissioning may only be carried out if the circuit is installed in a housing in a touch-proof manner.
- If measurements are unavoidable when the housing is open, a safety isolating transformer must be connected upstream or a suitable power supply unit must be used for safety reasons.
- 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.

11 Warranty

ESERA-Automation (E-SERVICE GmbH) guarantees that the sold goods are free of material and manufacturing defects at the time of transfer of risk and have the contractually assured properties. The statutory warranty period of two years from invoicing shall apply. The warranty does not cover normal wear and tear. Claims of the customer 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.. Except for this, ESERA shall be liable in the absence of a warranted quality, in the case of intent or gross negligence. Claims from the product liability law are not affected by this. Should defects occur for which ESERA-Automation is responsible, and should the replacement delivery also be defective in the case of exchange of the goods, the purchaser shall be entitled to conversion or reduction. ESERA-Automation accepts no liability for the constant and uninterrupted availability of ESERA-Automation nor for technical or electronic errors in the online offer.

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