

# SDP-M010-DC | POTENTIOMETER WITH MODBUS RTU, MIN & MAX SETTINGS, DRY CONTACT

Mounting and operating instructions



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## SAFETY AND PRECAUTIONS



Read all the information, the datasheet, Modbus map, mounting and operating instructions and study the wiring and connection diagram before working with the product. For personal and equipment safety, and for optimum product performance, make sure you entirely understand the contents before installing, using, or maintaining this product.



For safety and licensing (CE) reasons, unauthorised conversion and / or modifications of the product are inadmissible.



The product should not be exposed to abnormal conditions, such as extreme temperatures, direct sunlight or vibrations. Long-term exposure to chemical vapours in high concentration can affect the product performance. Make sure the work environment is as dry as possible; avoid condensation.



All installations shall comply with local health and safety regulations and local electrical standards and approved codes. This product can only be installed by an engineer or a technician who has expert knowledge of the product and safety precautions.



Avoid contacts with energised electrical parts. Always disconnect the power supply before connecting, servicing or repairing the product.



Always verify that you apply appropriate power supply to the product and use appropriate wire size and characteristics. Make sure that all the screws and nuts are well tightened and fuses (if any) are fitted well.



Recycling of equipment and packaging should be taken into consideration and these should be disposed of in accordance with local and national legislation / regulations.



In case there are any questions that are not answered, please contact your technical support or consult a professional.

## PRODUCT DESCRIPTION

SDP-M010-DC potentiometer is developed to control equipment that needs a stepless control signal. The supply voltage is 24 VDC (suitable for PoM). The output voltage is adjusted steplessly from  $V_{min}$  to  $V_{max}$  or from  $V_{max}$  to  $V_{min}$  via a rotary knob. More parameters are adjustable via Modbus RTU. It is equipped with a switch (dry contact) for remote ON / OFF switching of external equipment. The potentiometer is suitable for both flush (IP44) and surface mounting (IP54).

## ARTICLE CODES

Code	Supply	Output	Remote ON/OFF
SDP-M010-DC	24 VDC (PoM)	min - max	yes

## INTENDED AREA OF USE

- A variety of applications where a stepless control signal is required
- Applications where manual control and BMS control is combined

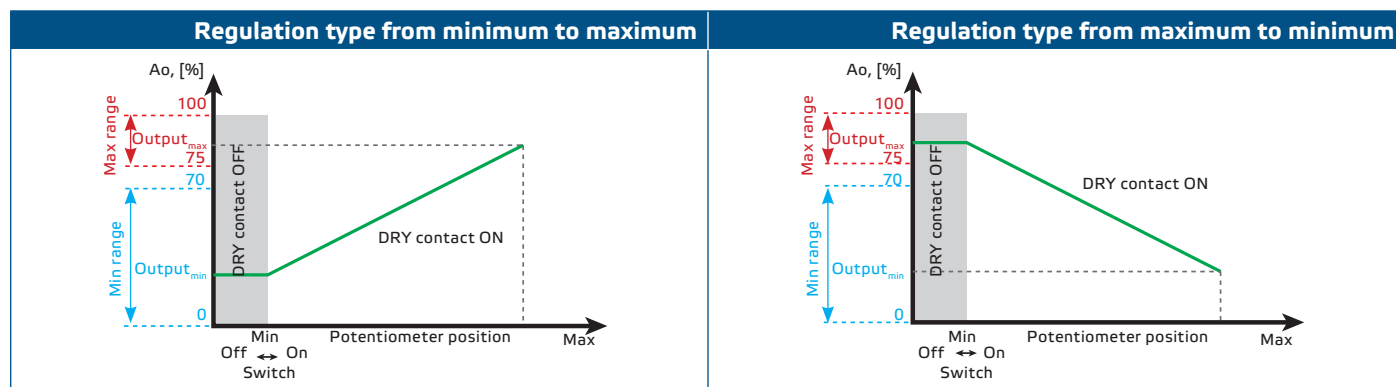
## TECHNICAL DATA

- Supply voltage: 24 VDC
- Selectable analogue / modulating output:
  - ▶ 0–10 VDC mode min. load 50 k $\Omega$  ( $R_L \geq 50$  k $\Omega$ )
  - ▶ 0–20 mA mode max. load 500  $\Omega$  ( $R_L \leq 500$   $\Omega$ )
  - ▶ PWM mode PWM frequency: 1 kHz, min. load 50 k $\Omega$  ( $R_L \geq 50$  k $\Omega$ )
- Enclosure:
  - ▶ ASA, white-ivory (RAL9010), IP54 (according to EN 60529)
- Operating ambient conditions:
  - ▶ temperature: 0–50 °C
  - ▶ rel. humidity: < 95 % rH (non-condensing)
- Storage temperature: -10–55 °C

## STANDARDS

- Low Voltage Directive 2014/35/EU **CE**
  - ▶ EN 60529:1991 Degrees of protection provided by enclosures (IP Code) Amendment AC:1993 to EN 60529
  - ▶ EN 60730-1:2011 Automatic electrical controls for household and similar use - Part 1: General requirements.
- EMC directive 2014/30/EU
  - ▶ EN 60730-1:2011 Automatic electrical controls for household and similar use - Part 1: General requirements
  - ▶ EN 61000-6-1:2007 Electromagnetic compatibility (EMC) - Part 6-1: Generic standards - Immunity for residential, commercial and light industrial environments
  - ▶ EN 61000-6-3:2007 Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environments. Amendments A1:2011 and AC:2012 to EN 61000-6-3
- RoHS Directive 2011/65/EU

## OPERATIONAL DIAGRAMS



### NOTE

Parameters like output signal type, minimum and maximum output, output from low to high or from high to low, etc. can be adjusted via the Modbus registers. Consult the Modbus Register Map for an overview.



### NOTE

By default, the desired fan speed or output value is manually adjustable via the rotary knob. It is possible to overrule this manual control via Modbus RTU communication. Output overwrite can be enabled via Modbus Holding register 12. When output overwrite is enabled, the desired output value can be written in Modbus Holding register 13. In that case it is advisable also to activate Modbus safety timeout by writing a value different from 0 in Holding register 8. After the time out period elapses, the output is forced to the minimum output value. If timeout is set to zero, this function is disabled.

## WIRING AND CONNECTIONS

Us	Supply voltage 24 VDC
GND	Supply voltage, ground
DC	Dry contact for remote ON/OFF
A	Modbus RTU communication, signal A
/B	Modbus RTU communication, signal /B
Ao	Output signal (min - max)
GND	Output, ground
Connections	Spring contact terminal block, stranded wires 0,5–1,5 mm <sup>2</sup> or wires with cable shoe 0,5–1,0 mm <sup>2</sup> , length 9-10 mm

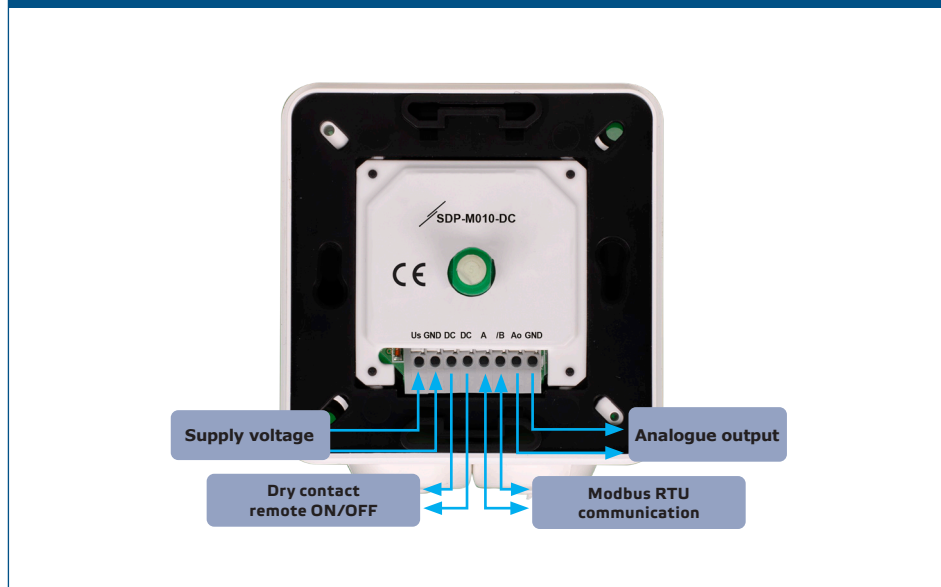
## MOUNTING INSTRUCTIONS IN STEPS

Before you start mounting your potentiometer read carefully **"Safety and Precautions"**. Then proceed with the following mounting steps:

### Flush mounting

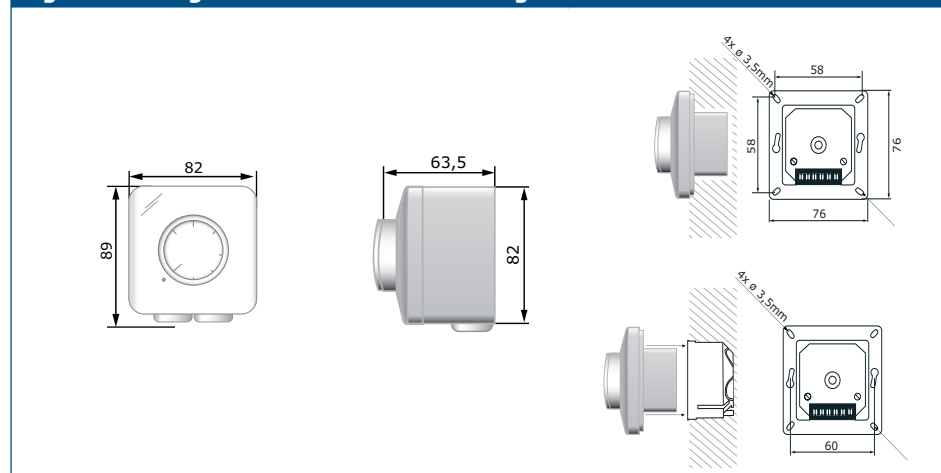
1. Remove the knob by pulling it out.
2. Unscrew the washer to remove the cover of the external enclosure.
3. Do the wiring according to the wiring diagram (see **Fig. 1 Wiring and connections**).

**Fig. 1 Wiring and connections**



4. Mount the internal enclosure into the wall according to the mounting dimensions shown in **Fig. 2 Mounting dimensions - flush mounting**

**Fig. 2 Mounting dimensions - flush mounting**



## NOTE

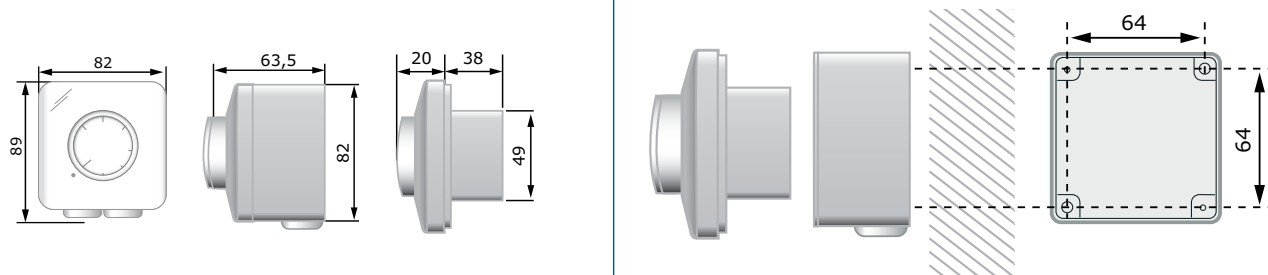
*Mount the unit so that the terminal block and connections are at the lower side.*

5. Mount back the cover and secure it with the washer.
6. Put back the knob and turn it to off position
7. Turn on the power supply.

### For surface mounting

1. Remove the knob by pulling it out.
2. Unscrew the washer to remove the cover of the external enclosure.
3. Mount the external enclosure onto the surface by means of screws and dowels adhering to the mounting dimensions shown in **Fig. 3 Mounting dimensions - surface mounting**.

**Fig. 3 Mounting dimensions - surface mounting**



4. Insert the cables through the grommets.
5. Do the wiring according to the wiring diagram (see **Fig. 1** Wiring and connections)
6. Insert the internal enclosure into the external one and fix it using the screws. Mount back the cover and secure it with the nut.
7. Put back the knob and turn it to off position
8. Turn on the power supply.



## NOTE

*Mount the unit so that the terminal block and connections are at the lower side.*



## NOTE

*A 5 mm hole can be drilled at the bottom of the external enclosure to drain the condensed water.*

## OPERATING INSTRUCTIONS

The potentiometer is intended to manually control EC fan speed, AC fan speed controllers, damper actuators or other devices that require an analogue input signal. Turn the knob to adjust the output voltage.

## VERIFICATION OF INSTALLATION INSTRUCTIONS



## ATTENTION

*Use only tools and equipment with non-conducting handles when working on electrical devices.*

- In case of faulty operation, please check if:
  - ▶ the right voltage is applied;
  - ▶ all connections are correct;
  - ▶ the regulated device is functioning.

## TRANSPORT AND STORAGE

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Avoid shocks and extreme conditions; stock in original packing.

## WARRANTY AND RESTRICTIONS

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Two years from the delivery date against defects in manufacturing. Any modifications or alterations to the product after the date of publication relieve the manufacturer of any responsibilities. The manufacturer bears no responsibility for any misprints or mistakes in this data.

## MAINTENANCE

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In normal conditions this product is maintenance-free. If soiled, clean with a dry or damp cloth. In case of heavy pollution, clean with a non-aggressive product. In these circumstances the unit should be disconnected from the supply. Pay attention that no fluids enter the unit. Only reconnect it to the supply when it is completely dry.