

SD | VARIABLE FAN SPEED CONTROLLER

Mounting and operating instructions



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SAFETY AND PRECAUTIONS



Read all the information in this manual, in the datasheet and in the Modbus Register Map before working with the product. For personal and equipment safety and for optimum product performance, make sure you fully understand the content before installing, using or servicing this product.



For safety and licensing (CE) reasons, unauthorised conversions 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 and avoid condensation.



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



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



Always check that you are connecting the correct power supply to the product and use wires of the correct characteristics and cross-section. Make sure all screws and nuts are properly tightened and fuses (if any) are in place.



Consideration should be given to recycling the equipment and packaging. These should be disposed of in accordance with local and national laws and regulations.



If there are questions that are not answered, contact your technical support or consult a professional.

PRODUCT DESCRIPTION

SD-DT series are variable fan speed controllers, which allow you to manually adjust the rotational speed of single phase AC motors by varying the motor voltage through phase angle control.

- Main characteristics:
 - ▶ supply voltage: 230 VAC \pm 10 % / 50–60 Hz;
 - ▶ output regulation from minimum to maximum (-Y version) or from maximum to minimum (-X version);
 - ▶ suitable for both surface (IP54 protection standard) and inset mounting (IP44).
- Advanced key features:
 - ▶ motor acceleration: kick start (from 2 to 20 seconds) or soft start;
 - ▶ automatic supply voltage frequency detection;
 - ▶ the output voltage can be set locally via the locally via the built-in trimmer - 20–70 % of U_s (factory preset settings - 100 VAC);
 - ▶ phase angle control with zero-cross detection;
 - ▶ regulated output current rating: 1,5 A or 3,0 A depending on the version.

This controller offers a comprehensive solution for precise motor speed management across various industrial and commercial applications.

ARTICLE CODES

Output regulation from low to high	
Code	Current range [A]
SDY-1-15-DT	0,1–1,5
SDY-1-30-DT	0,2–3
Output regulation from high to low	
Code	Current range [A]
SDX-1-15-DT	0,1–1,5
SDX-1-30-DT	0,2–3

INTENDED AREA OF USE

- Manual control of the motor / fan speed in HVAC applications
- For indoor use only

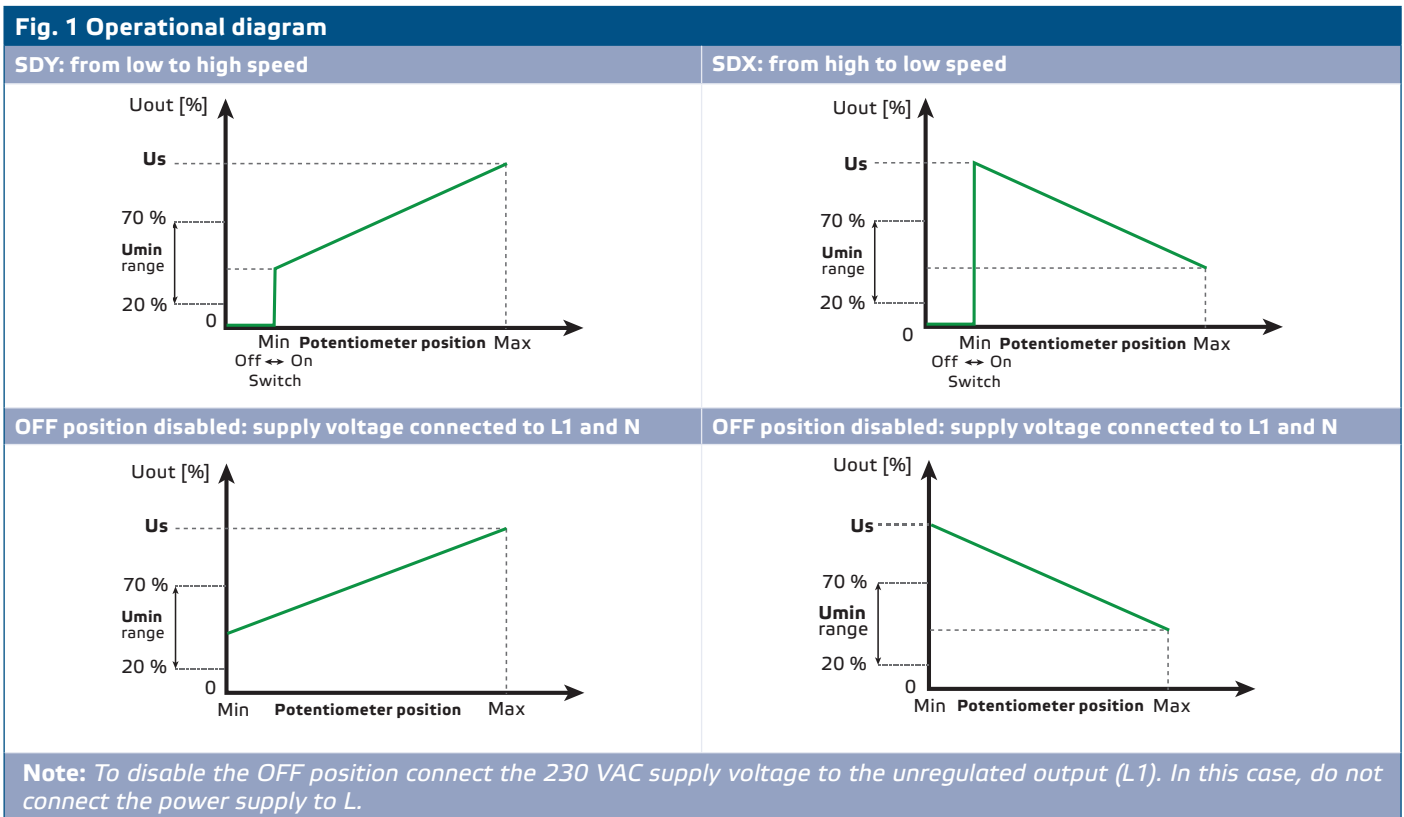
TECHNICAL DATA

- Regulated output to motor: $U_{min}-U_s$
- Unregulated output: 230 VAC / max. 2 A for connecting control indication, a valve or for 3-wire motor connection (auxiliary winding)
- Enclosure:
 - ▶ External: ASA, white colour (28049P), IP54 (according to EN 60529);
 - ▶ Internal: polyamide, black + white, IP44 (according to EN 60529).
- Operating ambient conditions:
 - ▶ temperature: 0–40 °C;
 - ▶ relative humidity: 5–95 % rH (non-condensing).
- Storage temperature: -10–50 °C

STANDARDS

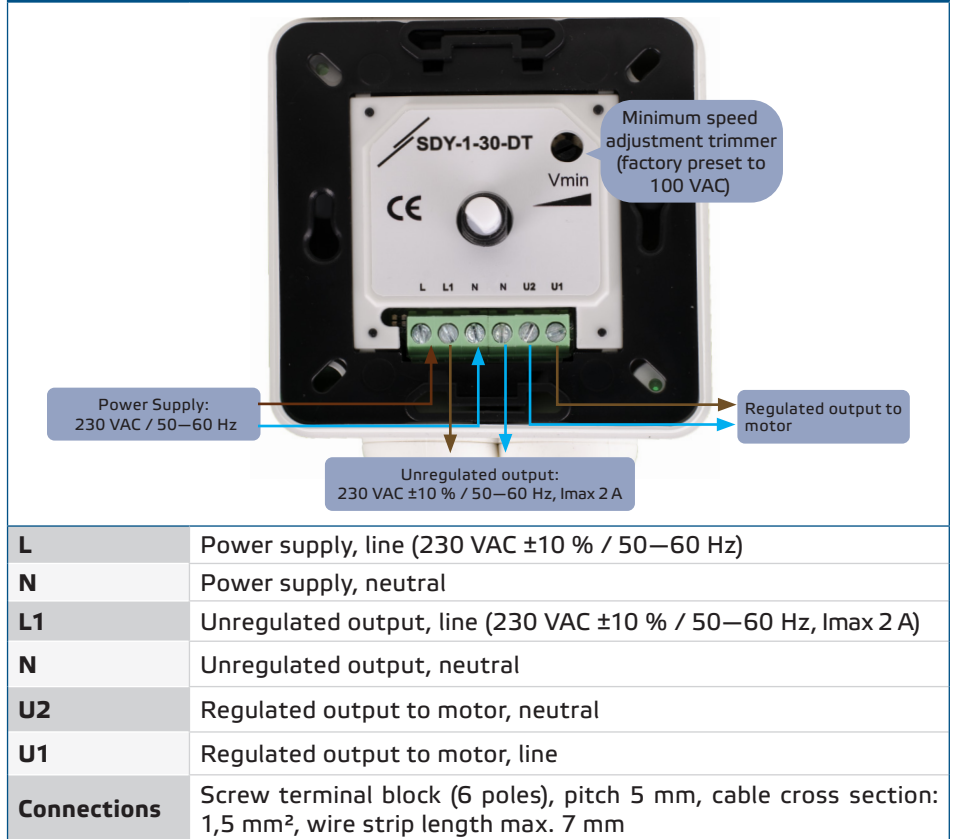
- Low Voltage Directive 2014/35/EU CE
 - ▶ EN 60529:1991 Degrees of protection provided by enclosures (IP Code) Amendments A1:2000, A2:2013, AC:1993, AC:2016-12 and A2:2013/AC:2019-02 to EN 60529:1991.
- EMC directive 2014/30/EU
 - ▶ EN 61000-6-2:2005 Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity for industrial environments Amendment AC:2005 to EN 61000-6-2:2005;
 - ▶ 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 61000-6-3:2007;
 - ▶ EN 61000-3-2:2014 Electromagnetic compatibility (EMC) - Part 3-2: Limits - Limits for harmonic current emissions (equipment input current ≤ 16 A per phase).
- WEEE Directive 2012/19/EU
- Commission Delegated Directive (EU) 2015/863 of 31 March 2015 amending Annex II to Directive 2011/65/EU of the European Parliament and of the Council as regards the list of restricted substances

OPERATIONAL DIAGRAMS



WIRING AND CONNECTIONS

Fig. 2 Wiring and connections



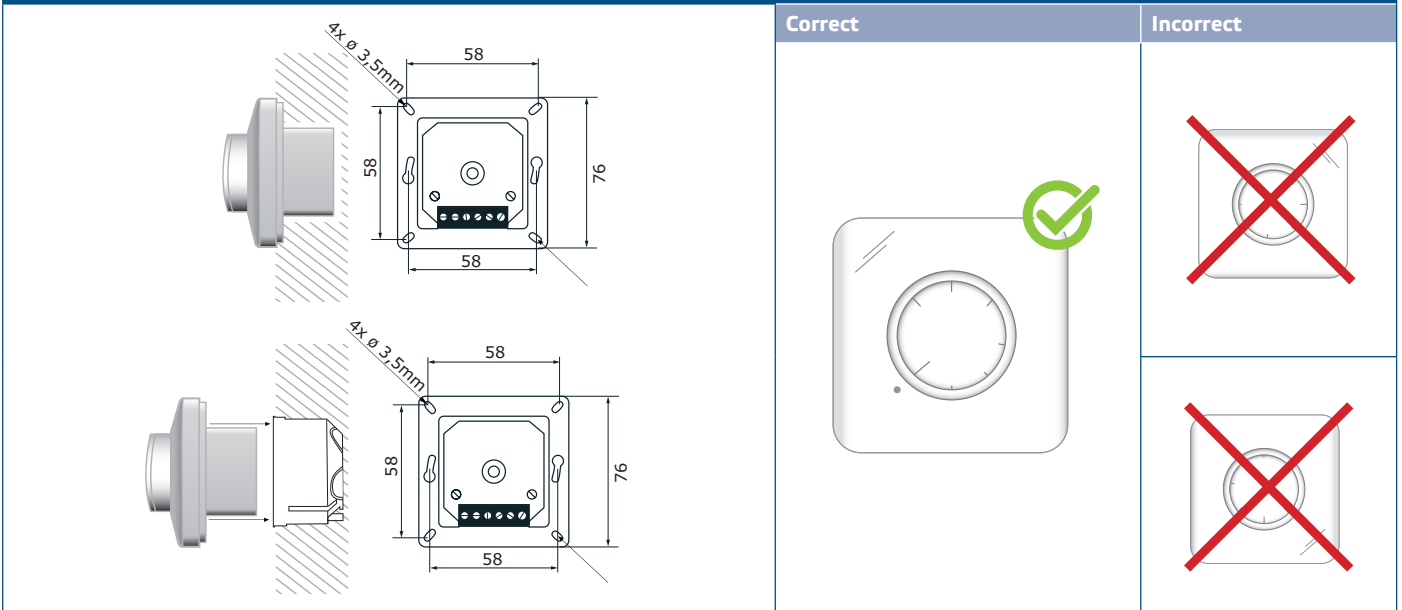
MOUNTING INSTRUCTIONS IN STEPS

Before you start mounting the unit, read carefully **“Safety and Precautions”** and follow these steps:

Flush mounting

1. Turn off the power supply.
2. Remove the knob by pulling it out.
3. Unscrew the washer to remove the cover of the external enclosure.
4. Do the wiring according to the wiring diagram (see **Fig. 2 Wiring and connections**).
5. Mount the internal enclosure into the wall according to the mounting dimensions shown in **Fig. 3 Mounting dimensions - flush mounting**.

Fig. 3 Mounting dimensions - flush mounting



NOTE

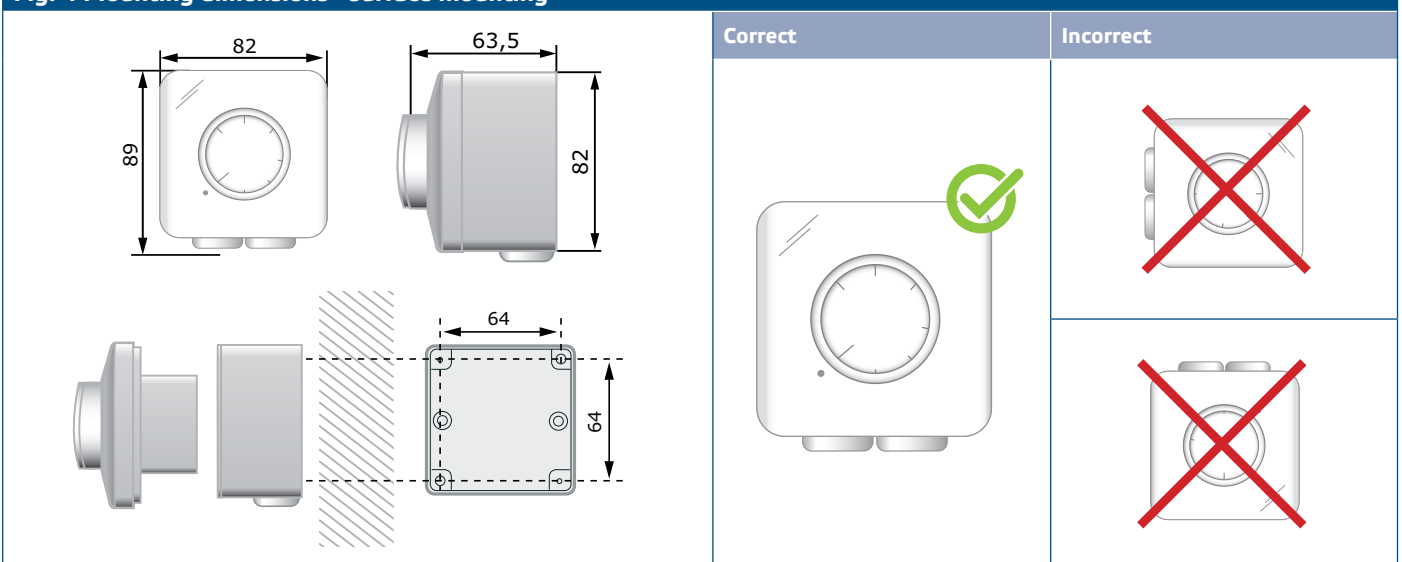
Mount the unit so that the terminal block and connections are at the lower side.

6. Adjust the Vmin trimmer in order to set the minimum speed. The factory setting is 100 VAC.
7. Mount back the cover and secure it with the washer.
8. Put back the knob and turn it to off position.
9. Turn on the power supply.

Surface mounting

1. Turn off the power supply.
2. Remove the knob by pulling it out.
3. Unscrew the washer to remove the cover of the external enclosure.
4. Mount the external enclosure onto the surface by means of the screws and dowels adhering to the mounting dimensions shown in Fig. 4 Mounting dimensions - surface mounting.

Fig. 4 Mounting dimensions - surface mounting



5. Insert the cables through the grommets.
6. Do the wiring according to the wiring diagram (see **Fig. 1** *Wiring and connections*).
7. Insert the internal enclosure into the external one and fix it using the screws.

**NOTE**

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

8. Adjust the Vmin trimmer in order to set the minimum speed. The factory setting is 100 VAC.
9. Mount back the cover and secure it with the washer.
10. Put back the knob and turn it to off position.
11. Turn on the power supply.

OPERATING INSTRUCTIONS

**ATTENTION**

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

The controller is to be used only with voltage controllable fans / motors. You can connect several motors to the controller as long as the current limit is not exceeded. The motor should be protected against overheating.

The minimum speed trimmer should be adjusted so that the motor cannot stall at minimum speed. The controller restarts after power failure.

TROUBLESHOOTING

After finishing installation of the product, if the device is still not operating, check if there are not any serious external damages to the enclosure. In case of faulty operation, please check if:

- the right voltage is applied;
- the controller is not overheated;
- all connections are correct;
- the wires are the correct ones and not damaged;
- the cables are tightly plugged in;
- the applied supply voltage is correct;
- the motor to be regulated is functioning.

Then proceed with the following steps:

- disconnect the mains supply before servicing the product;
- wait for the controller to cool if it's overheated;
- check the connections and, if necessary, rearrange the wires;
- check if the right supply voltage is applied. If needed, measure the supply voltage to see if the it's below or way above the maximum required supply voltage.
- check if the minimum speed value is set (factory preset value - 100 VAC);

TRANSPORT AND STORAGE

Avoid shocks and extreme conditions; stock in original packing.

WARRANTY AND RESTRICTIONS

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

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.