

SDX-DM | ELECTRONIC FAN SPEED CONTROLLER

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

The SDX-DM series are electronic 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. The output can be regulated from minimum to maximum or from maximum to minimum. The operating mode can be selected via Modbus RTU communication. The output voltage can be set locally via the built-in potentiometer or remotely via Modbus RTU communication. The controller is suitable for both inset (IP44) and surface mounting (IP54). All parameters and settings can be adjusted via Modbus RTU communication.

ARTICLE CODES

Output regulation (from low to high or from high to low)	
Code	Rated current range [A]
SDX-1-15-DM	0,1–1,5
SDX-1-25-DM	0,2–2,5

INTENDED AREA OF USE

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

TECHNICAL DATA

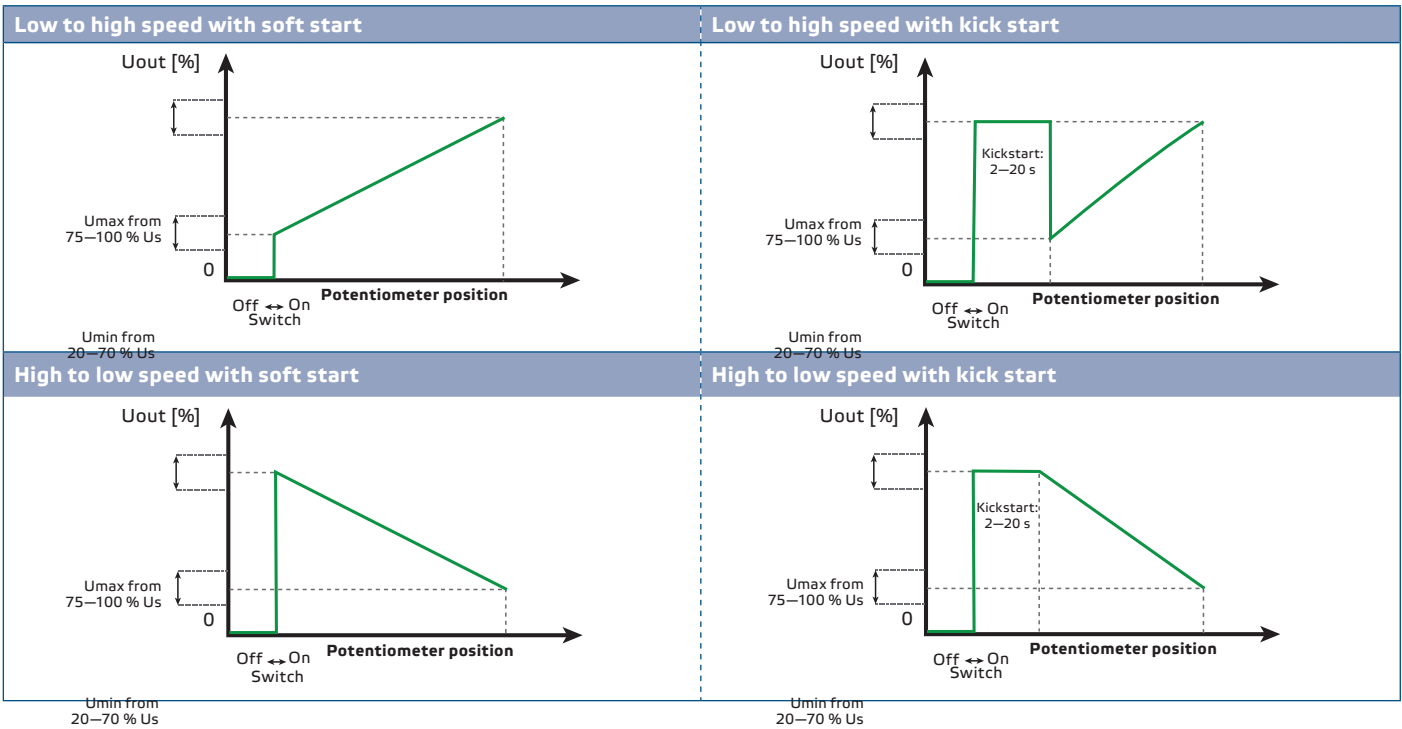
- Inset or surface mounting
- Supply voltage (Us): 230 VAC / 50–60 Hz
- Motor acceleration: kick start (from 2 to 20 seconds) or soft start
- Minimum and maximum output voltage are adjustable via Modbus RTU communication. Vmin: 20–70 % of Us and Vmax: 75–100 % of Us
- Overheating protection
- Operating mode selectable via Modbus RTU: from low to high speed or from high to low speed
- Enclosure:
 - ▶ External: ASA, white colour (28049P), IP54 protection (according to EN 60529)
 - ▶ Internal: ABS, black colour (RAL 9004), IP44 protection (according to EN 60529)
- Operating ambient conditions:
 - ▶ temperature: 0–40 °C
 - ▶ rel. humidity: 5–95 % rH (non-condensing)

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
 - ▶ 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
 - RoHs Directive 2011/65/EU

OPERATIONAL DIAGRAMS



NOTE

By default, the desired fan speed or output value is set via the built-in potentiometer. It is possible to overrule the built-in potentiometer 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 timeout period elapses, the output is forced to the minimum output value. If timeout is set to zero, this function is disabled.

ATTENTION

Overheating protection is activated when an excessive load is connected to the output or in case the ambient temperature exceeds the maximum allowed operating temperature. When overheating protection is activated, the output is disabled and overheat condition is indicated in Modbus input register 10. When the overheating condition is removed, the device automatically resumes operation.

WIRING AND CONNECTIONS

A	Modbus RTU communication, signals A and /B
/B	
L	Power supply, line (230 VAC ± 10 % / 50–60 Hz)
N	Power supply, neutral
U2	Regulated output to motor, neutral
U1	Regulated output to motor, line
Connections	Screw terminal block, pitch 5 mm maximum cable diameter 2,5 mm ² .

MOUNTING INSTRUCTIONS IN STEPS

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

Inset mounting

1. Disconnect the mains 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. 1 Wiring and connections**).
5. Mount the internal enclosure into the wall according to the mounting dimensions shown in **Fig. 2 Mounting dimensions - inset mounting**.

Fig. 1 Wiring and connections

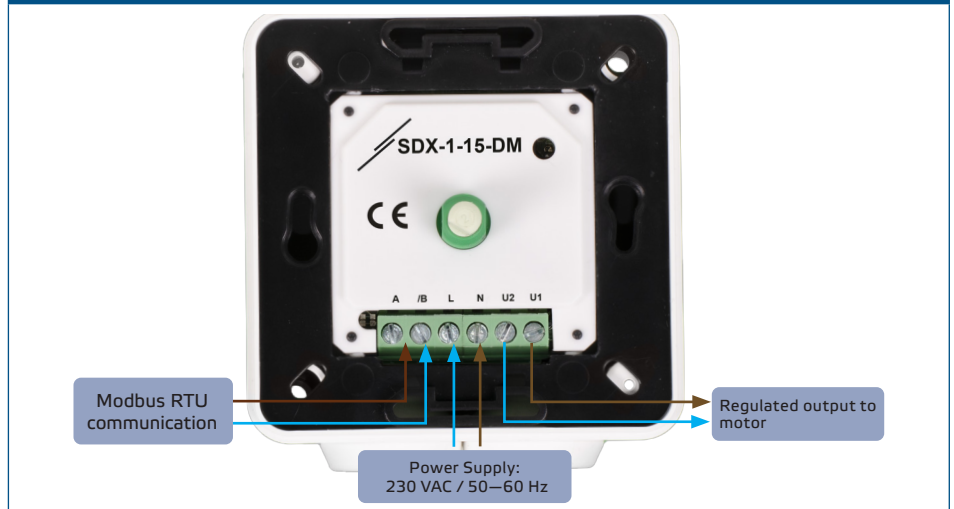


Fig. 2 Mounting dimensions - Inset mounting

	Correct	Incorrect
	Correct	Incorrect

NOTE

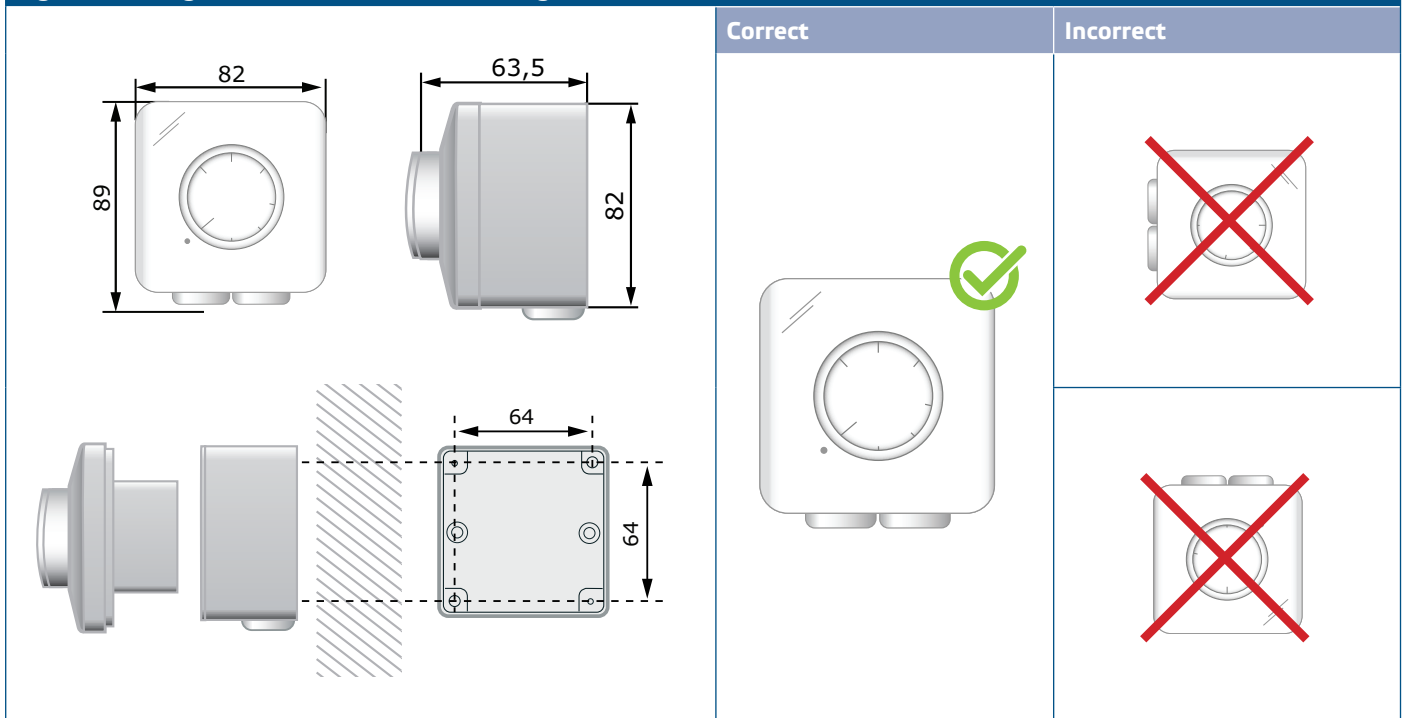
Mount the unit so that the terminal block and connections are at the lower side.

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

Surface mounting

1. Disconnect the mains 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. 3 Mounting dimensions - surface mounting**.

Fig. 3 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. Mount back the cover and secure it with the washer.
9. Put back the knob and turn it to off position.
10. 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 output value should be adjusted so that the motor cannot stall at minimum speed. The controller restarts after power failure.

In case of faulty operation, please check if:

- the right voltage is applied;
- the controller is not overheated;
- the Modbus communication is available;
- all connections are correct;
- the machine to be regulated is functioning.

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.