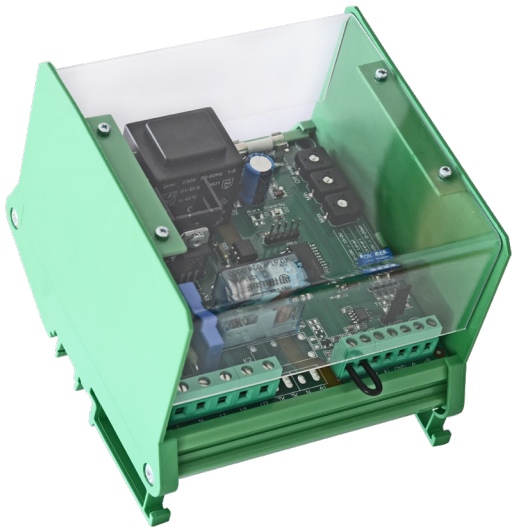
MVS

Electronic fan speed controller for DIN rail

The MVS series consists of fan speed controllers that regulate the speed of single-phase voltage-controllable electric motors (230 VAC / 50—60 Hz) based on a 0—10 / 10—0 VDC or 0—20 / 20—0 mA input control signal. They are equipped with Modbus RTU communication and provide a wide range of functionalities: remote control options, adjustable off level, min. and max. output voltage settings and time-limited motor operation.

Key features

- Invertible analogue input signal: 0—10 / 10—0 VDC or 0—20 / 20—0 mA
- Minimum and maximum output voltage setting via trimmers or Modbus
- Off-level value setting via trimmer or Modbus
- Modbus RTU (RS485) communication
- Kick start or soft start
- Remote control input with selectable functionality (normal or timer mode)
- Analogue input (normal or timer functionality - only for the timer to start)
- 1 regulated output for the motor
- 1 unregulated output (230 VAC / max. 2 A) for 3-wire motor connection or voltage supply
- 1 low voltage supply output (+12 VDC / 1 mA) for external 10 kΩ potentiometer
- DIN rail mounted
- Green LED operating indication



Area of use

- Fan speed control in ventilation systems
- For indoor use only

Technical specifications

Power supply	230 VAC ±10 % / 50—60 Hz	
Regulated output	30—100 % Us	
Maximum load	Depends on the version	
Unregulated output	230 VAC / max. 2 A	
Analogue input	0—10 / 10—0 VDC or 0—20 / 20—0 mA	
Timer input	Timer start (min. 2,5 VDC > 30 ms)	
Off level	0—4 VDC / 0—8 mA for ascending mode 10—6 VDC / 20—12 mA for descending mode	
Minimum output voltage setting, Umin	30—70 % Us	
Maximum output voltage setting, Umax	75—100 % Us	
Supply output	+12 VDC / 1 mA	
Enclosure	PA- UL94 V0, green RAL 6017	
Protections	Overvoltage and overcurrent	
Protection standard	IP20 (according to EN 60529)	
Ambient conditions	Operating temperature	-20—40 °C
	Storage temperature	-40—50 °C

Article codes

Article code	Max. rated current, [A]	Fuse rating	
		Fuse 1	Fuse 2
MVS-1-15CDM	1,5	F 0,630 A H 250 V (5*20 mm)	F 3,15 A H 250 V (5*20 mm)
MVS-1-30CDM	3,0		F 5,0 A H 250 V (5*20 mm)
MVS-1-60CDM	6,0		F 10,0 A H 250 V (5*20 mm)
MVS-1100CDM	10,0		F 16,0 A H 250 V (6,3*32 mm)

Modbus registers

The Sensistant Modbus configurator allows you to easily monitor and/or configure Modbus parameters.

The parameters of the unit can be monitored / configured through the 3SModbus software platform. You can download it from the following link:

https://www.sentera.eu/en/3SMCenter

For more information about the Modbus registers, please refer to the Modbus Register Map of the product.

Standards

- Low Voltage Directive 2014/35/EU
  - EN 60529:1991 Degrees of protection provided by enclosures (IP Code) Amendments AC:1993, A1:2000, A2:2013, AC:2016-12 and AC:2019-02 to EN 60529
  - EN 60730-1:2016 Automatic electrical controls for household and similar use - Part 1: General requirements Amendments A1:2019, A2:2022 and A11:2024 to EN 60730-1
- EMC Directive 2014/30/EU
  - EN IEC 61000-3-2:2019 Electromagnetic compatibility (EMC) - Part 3-2: Limits - Limits for harmonic current emissions (equipment input current ≤16 A per phase)
  - EN IEC 61000-6-2:2019 Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity standard for industrial environments
  - EN IEC 61000-6-3:2021 Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for equipment in residential environments
- 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
  - EN IEC 63000:2018 Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances Amendment AMD1:2022 to EN IEC 63000

MVS

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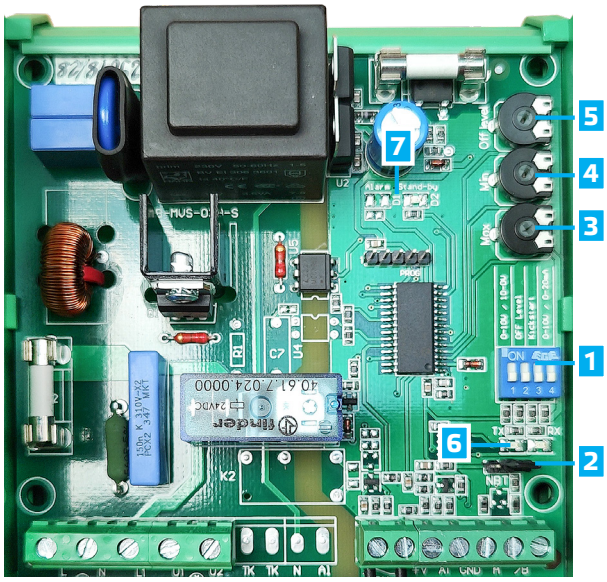
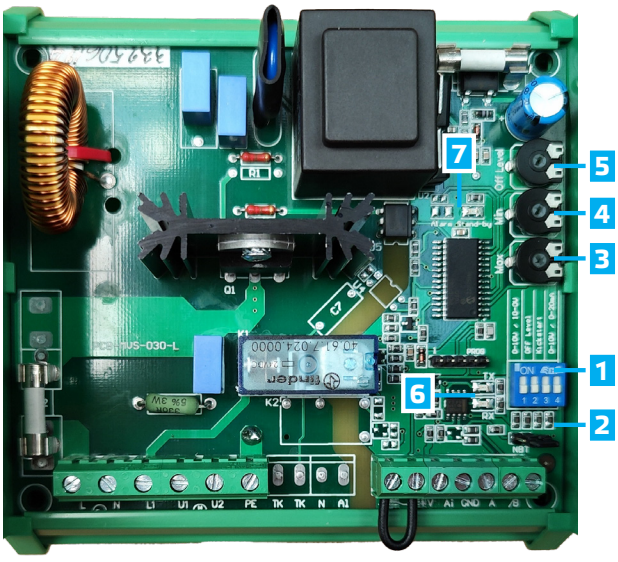
Legend

MVS-1-15CDM and MVS-1-30CDM



MVS-1-60CDM and MVS-1100CDM



Settings

1 - DIP switch settings

Ascending / descending input mode selection (DIP switch, position 1)		ON – Descending mode: 10—0 VDC / 20—0 mA OFF – Ascending mode: 0—10 VDC / 0—20 mA
OFF level selection (DIP switch, position 2)		ON - enabled OFF - disabled
Kick start selection (DIP switch, position 3)		ON – Kick start enabled OFF – Soft start enabled
Input mode selection (DIP switch, position 4)		ON – Current mode (0—20 mA / 20—0 mA) OFF – Voltage mode (0—10 VDC / 10—0 VDC)

2 - Network bus resistor jumper (NBT)	*▬	MVS is the first or last unit
3 - Max. speed trimmer		Adjusts the maximum output voltage from 175 VAC (left) to 230 VAC (right)
4 - Min. speed trimmer		Adjusts the minimum output voltage from 69 VAC (left) to 161 VAC (right)
5 - Off level trimmer		**Ascending mode** Off value from 0 VDC (left) to 4 VDC (right) in voltage mode Off value from 0 mA (left) to 8 mA (right) in current mode **Descending mode** Off value from 10 VDC (left) to 6 VDC (right) in descending and voltage mode Off value from 20 mA (left) to 12 mA (right) in descending and current mode
6 - Modbus communication indication	Blinking green	Transmitting / receiving
7 - Operating LED indication	Cont. green	Normal operation
	Blinking green	Stand-by mode

*▬ *indicates that the jumper has been applied.*

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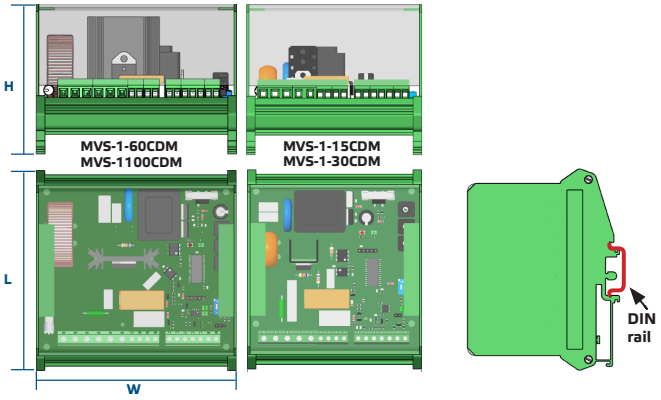
Wiring and connections

MVS-1-15CDM and MVS-1-30CDM	
L	Supply voltage 230 VAC ±10 % / 50—60 Hz
N	Neutral
L1	Unregulated output (230 VAC / max. 2 A)
U1, U2	Regulated output to the motor
SW	Remote control switch / timer start switch
+V	Supply output +12 VDC / 1 mA
Ai	Analogue input 0—10 VDC / 0—20 mA
GND	Ground
A	Modbus RTU (RS485) signal A
/B	Modbus RTU (RS485) signal /B
Connections	Cable cross section: max. 2,5 mm²

MVS-1-60CDM and MVS-1100CDM	
L	Supply voltage 230 VAC ±10 % / 50—60 Hz
N	Neutral
L1	Unregulated output (230 VAC / max. 2 A)
U1, U2	Regulated output to the motor
PE	Protective earth
SW	Remote control switch / timer start switch
+V	Supply output +12 VDC / 1 mA
Ai	Analogue input 0—10 VDC / 0—20 mA
GND	Ground
A	Modbus RTU (RS485) signal A
/B	Modbus RTU (RS485) signal /B
Connections	Cable cross section: max. 2,5 mm²

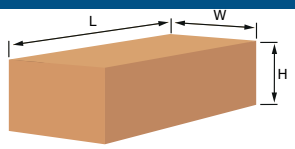
Caution: *If an AC power supply is used with any of the units in a Modbus network, the GND terminal should NOT BE CONNECTED to other units on the network or via the CNVT-USB-RS485 converter. This may cause permanent damage to the communication semiconductors and / or the computer!*

Fixing and dimensions



Articles	Height [mm]	Length [mm]	Width [mm]
MVS-1-15CDM, MVS-1-30CDM	96	127	112
MVS-1-60CDM, MVS-1100CDM			128

Packaging



Article	Packaging	Length [mm]	Width [mm]	Height [mm]	Net weight	Gross weight
MVS-1-15CDM	Unit (1 pc.)	220	130	110	0,403 kg	0,505 kg
	Box (15 pcs.)	590	380	280	6,04 kg	8,56 kg
MVS-1-30CDM	Unit (1 pc.)	220	130	110	0,441 kg	0,543 kg
	Box (15 pcs.)	590	380	280	6,615 kg	9,135 kg
MVS-1-60CDM	Unit (1 pc.)	220	130	110	0,496 kg	0,598 kg
	Box (15 pcs.)	590	380	280	7,44 kg	9,96 kg
MVS-1100CDM	Unit (1 pc.)	220	130	110	0,515 kg	0,617 kg
	Box (15 pcs.)	590	380	280	7,725 kg	10,245 kg

Global trade item numbers (GTIN)

Packaging	Unit	Box
MVS-1-15CDM	05401003010556	05401003502235
MVS-1-30CDM	05401003010563	05401003502242
MVS-1-60CDM	05401003010570	05401003502259
MVS-1100CDM	05401003010587	05401003502266

MVS

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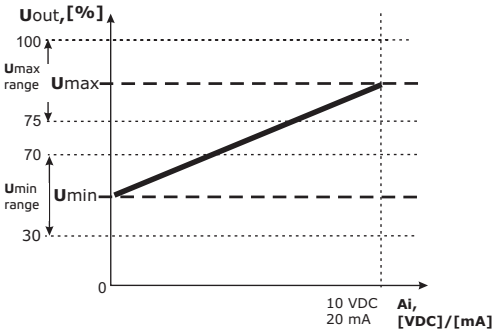
Operational diagrams

Operating modes

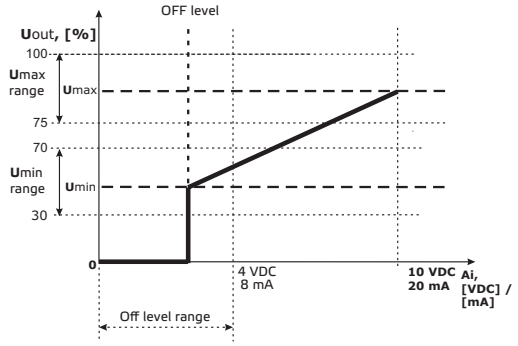
Analogue input function - Normal mode

This mode is activated either directly via the Ai or remotely via a switch (= turning on the controller).

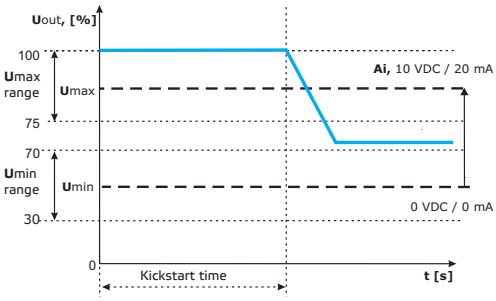
Visualisation of ascending analogue input control



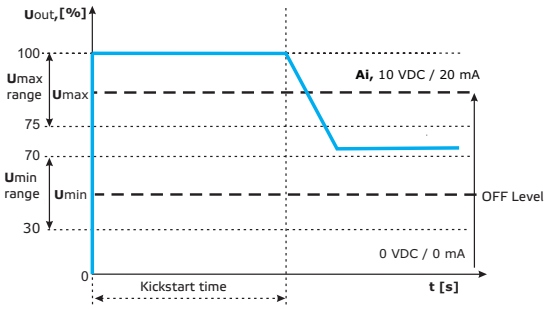
Visualisation of ascending analogue input control and off-level enabled



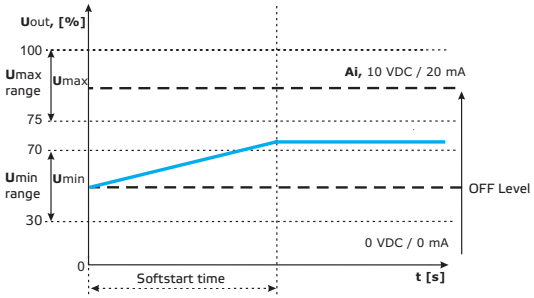
Output with kickstart



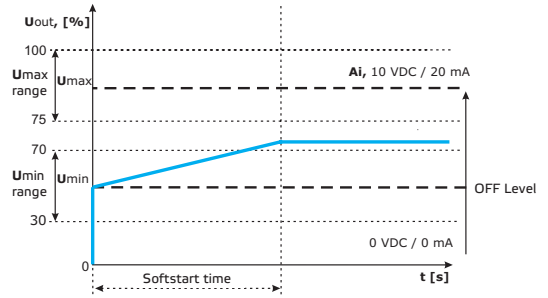
Output with kickstart and off-level enabled



Output with softstart



Output with softstart and off-level enabled



Note: *The operational diagrams for descending mode are mirror images of the diagrams above. You can find more details about MVS control functionalities in our mounting instruction published on our site. Please follow the link: http://www.sentera.eu*

MVS

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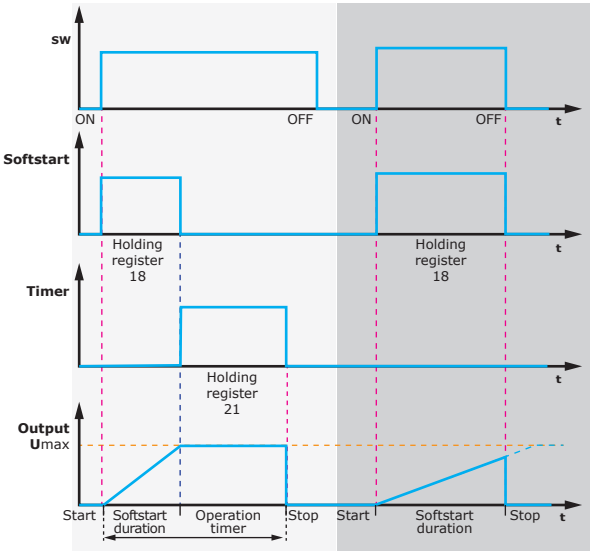
Operational diagrams

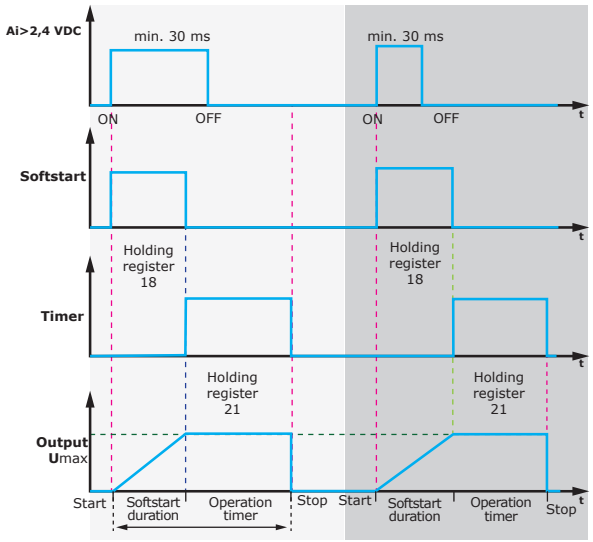
Remote input function - Timer mode*

Pulse given via a remote switch



Analogue input function - Timer mode*

Pulse given directly on the Ai



Timer mode *allows the fan to operate for a predefined period, which is set via the Modbus registers of the MVS series. When Timer mode is selected in remote input function, the controller receives a pulse control signal from the remote control switch. When Timer mode is selected in analogue input function, the controller receives a pulse control signal directly from the Ai input. In both cases, the pulse width is to be more than 30 ms; otherwise, the signal is filtered (left out).*