MVS

Electronic fan speed controller for DIN rail

Description

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.

The MVS series provides the following benefits:

- Fan Speed Control via Analogue Signal
  - The fan speed can be set using an analogue input signal, which can be either 0—10 V or 0—20 mA.
  - The analogue input mode can be configured as either ascending or descending.
  - In ascending mode, a lower analogue signal (0 V) results in a lower fan speed, while a higher signal (10 V) results in a higher fan speed.
  - In descending mode, the relationship between the analogue signal and fan speed is reversed.
  - If a 0—10 V signal is not available, an external 10 kOhm potentiometer can be connected using the integrated 12 VDC power supply.
- Digital Input for Fan On/Off:
  - The operation of the fan can be enabled or disabled through the connection of an external switch.
- Simple Configuration:
  - For the majority of applications, the device can be used with its default settings.
  - The settings can be customised for a specific application through Modbus RTU communication or the integrated DIP switch and internal trimmers.
- Easy Installation:
  - The controller is designed for DIN-rail mounting, which makes it suitable for installation in electrical cabinets.

With its various features, the MVS series is a reliable solution for optimal fan speed control.

Key Features

- Invertible analogue input signal:
  - 0—10 / 10—0 VDC
  - 0—20 / 20—0 mA
- Modbus RTU (RS485) communication
- Features set through trimmers or Modbus communication:
  - Minimum output voltage setting
  - Maximum output voltage setting
  - Off-level value setting
- Kick start or soft start
- Remote control input with selectable functionality
  - Normal mode
  - 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
  - Voltage supply
- 1 low voltage supply output (+12 VDC / 1 mA) for external 10 kΩ potentiometer
- DIN-rail mountable
- Green LED operating indication

Area of Use

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

Modbus Registers

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.

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)

Technical Specifications

Power supply		230 VAC ±10 % / 50—60 Hz
Regulated output		69—230 VAC
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
Protection		Overvoltage and overcurrent
Protection standard		IP20 (according to EN 60529)
Ambient conditions	Operating temperature	-20—40 °C
	Storage temperature	-40—50 °C

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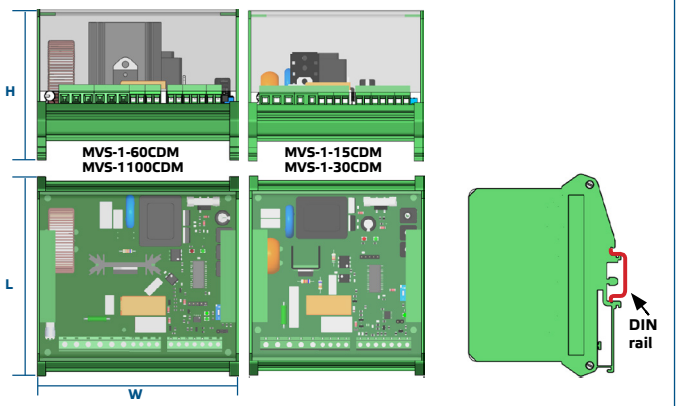
Standards

- Low Voltage Directive 2014/35/EU
- EMC Directive 2014/30/EU
- Commission Delegated Directive (EU) 2015/863 (RoHS 3) 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

Wiring and Connections

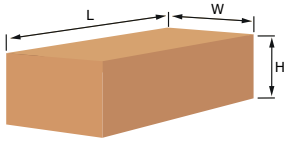
MVS-1-15CDM and MVS-1-30CDM	
L	Supply voltage 230 VAC ±10 % / 50—60 Hz
N	Neutral
L1	Unregulated output (230 VAC / max. 2 A)
U1, U2	Regulated output to the motor
SW	Remote control switch / timer start switch
+V	Supply output +12 VDC / 1 mA
Ai	Analogue input 0—10 VDC / 0—20 mA
GND	Ground
A	Modbus RTU (RS485)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

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 14 (GTIN 14)

Packaging	Unit	Box
MVS-1-15CDM	5401003010556	5401003502235
MVS-1-30CDM	5401003010563	5401003502242
MVS-1-60CDM	5401003010570	5401003502259
MVS-1100CDM	5401003010587	5401003502266

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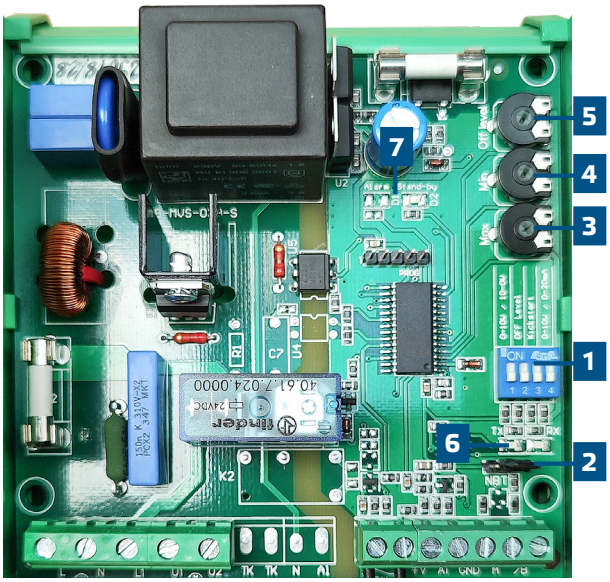
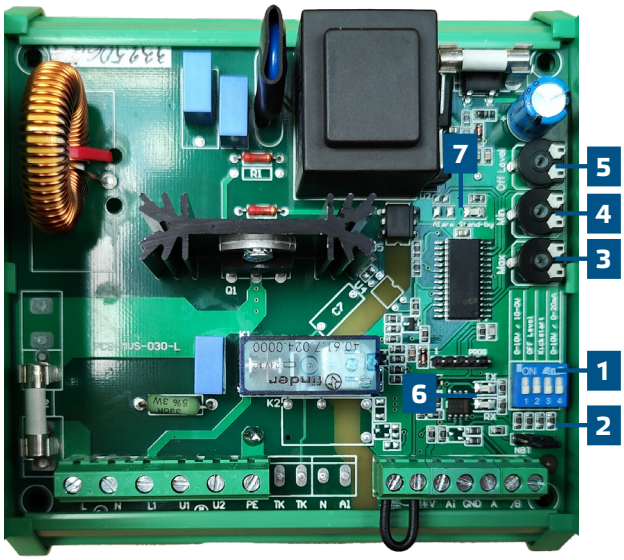
Legend

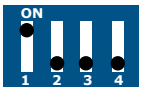
MVS-1-15CDM and MVS-1-30CDM



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
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.*

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-V2 converter. This may cause permanent damage to the communication semiconductors and / or the computer!*

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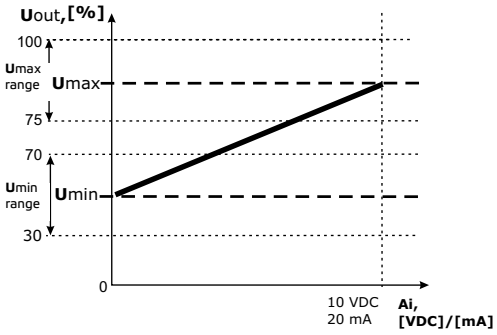
Operational Diagrams

Operating modes

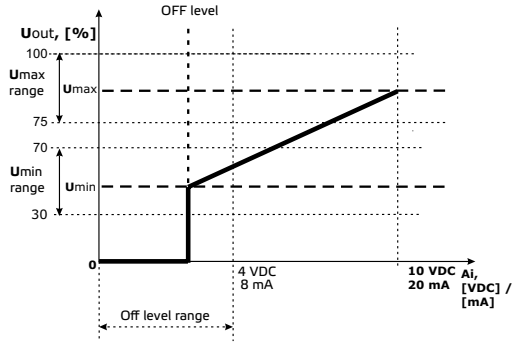
Analogue input function - Normal mode

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

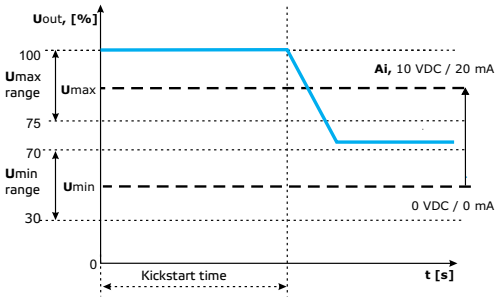
Visualisation of ascending analogue input control



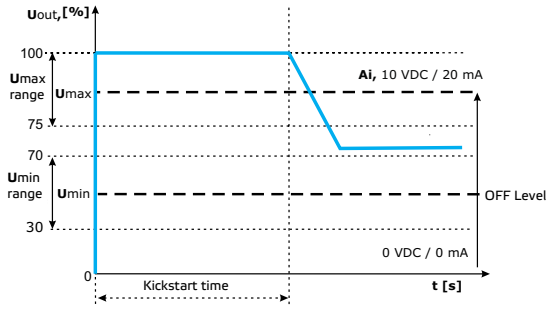
Visualisation of ascending analogue input control and off-level enabled



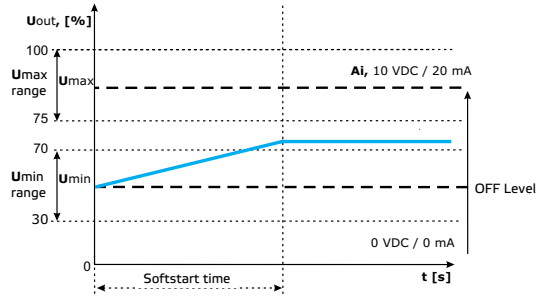
Output with kickstart



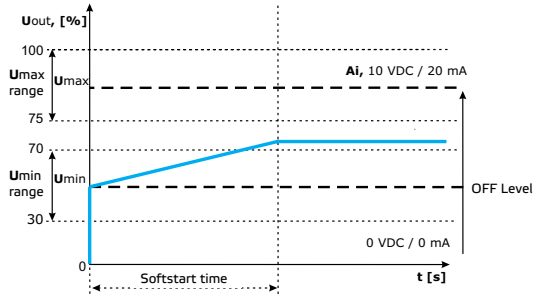
Output with kickstart and off-level enabled



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*

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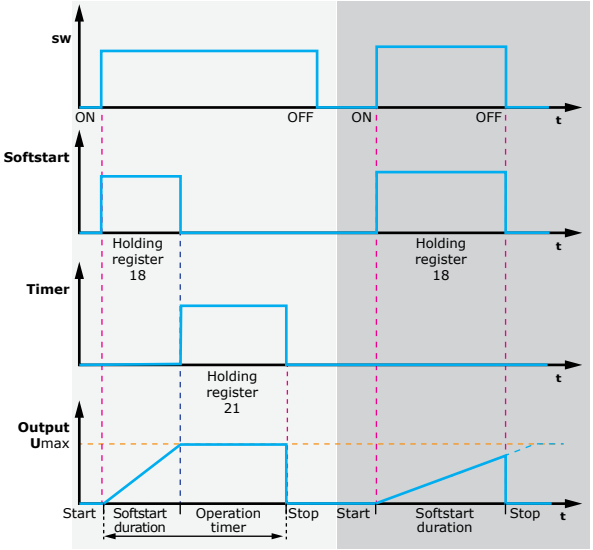
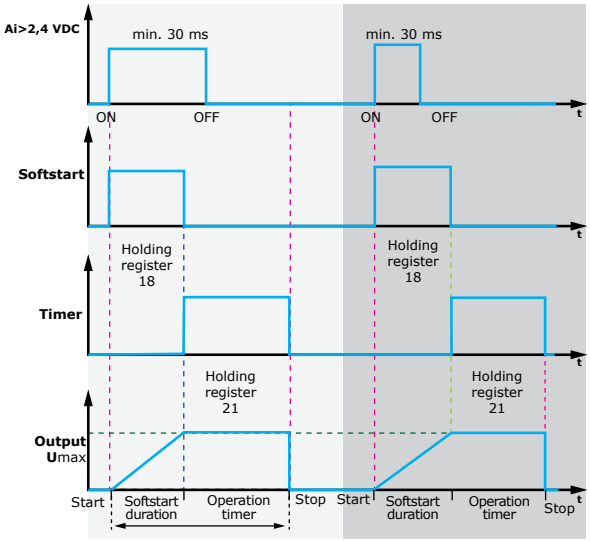
Operational Diagrams

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).*