

# MVS

## Electronic fan speed controller for DIN rail

The MVS series control the speed of single-phase voltage controllable electric motors (230 VAC / 50–60 Hz) according to a standard 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 initiated by a logic or switch signal.

### 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)
- Analogue input (normal or logic functionality - only for the timer 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	
Logic 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, U <sub>min</sub>	30–70 % Us	
Maximum output voltage setting, U <sub>max</sub>	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
	Relative humidity	0–80 % rH (non-condensing)

### Modbus registers



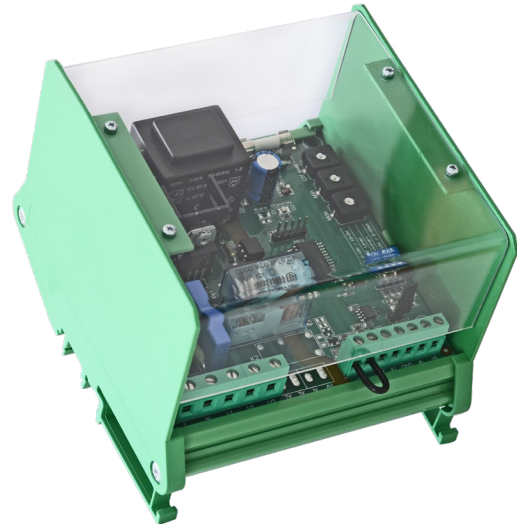
The Sensistant Modbus configurator allows you to easily monitor and/or configure Modbus parameters.

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 product Modbus Register Map.



### 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-1-100CDM	10,0		F 16,0 A H 250 V (6,3*32 mm)

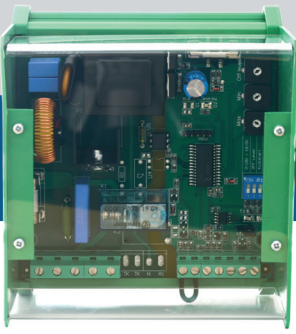
### Standards

- Low Voltage Directive 2014/35/EC
- EMC Directive 2014/30/EC
- DIN rail EN 50022
- RoHS Directive 2011/65/EU



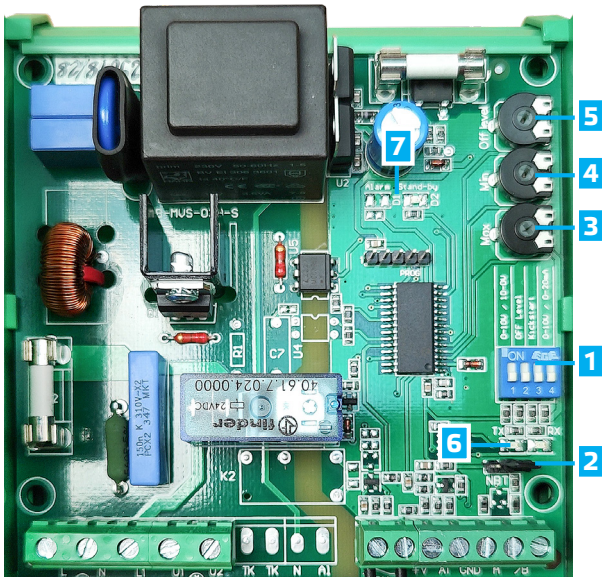
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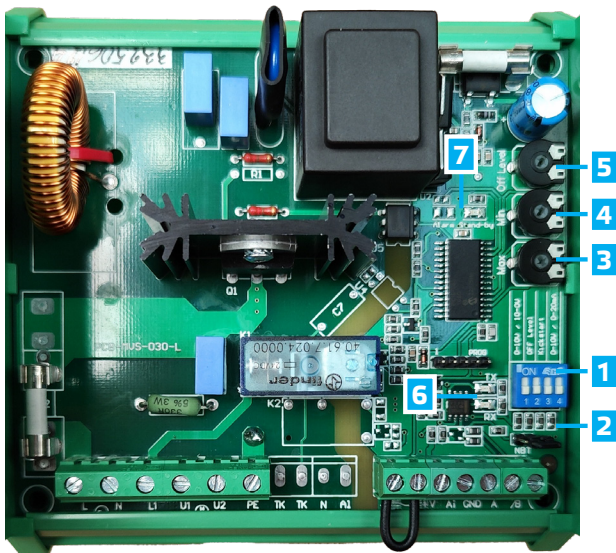


## Legend

### 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
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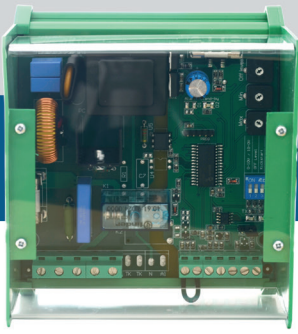
3 - Max. speed trimmer		Adjusts the maximum output voltage from 175 VAC (left) to 230 VAC (right)
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4 - Min. speed trimmer		Adjusts the minimum output voltage from 69 VAC (left) to 161 VAC (right)
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5 - Off level trimmer		<b>Ascending mode</b>
		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
		<b>Descending mode</b>
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
	Cont. green	Normal operation
	Blinking green	Stand-by mode

\* indicates closed position of the jumper.



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## Wiring and connections

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

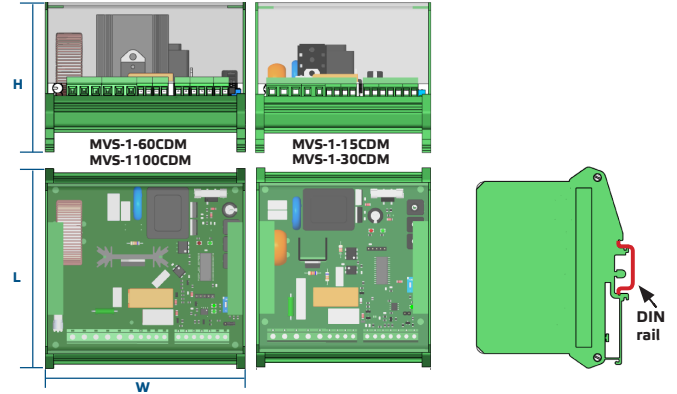
L	Supply voltage 230 VAC ±10 % / 50–60 Hz
N	Neutral
L1	Unregulated output (230 VAC / max. 2 A)
U1, U2	Regulated output to the motor
SW	Remote control switch / timer start switch
+V	Supply output +12 VDC / 1 mA
Ai	Analogue input 0–10 VDC / 0–20 mA
GND	Ground
A	Modbus RTU (RS485) signal A
/B	Modbus RTU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

### 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 mm <sup>2</sup>

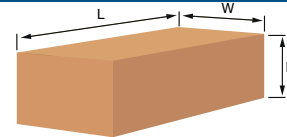
**Caution:** If an AC power supply is used with any of the units in a Modbus network, the GND terminal should NOT BE CONNECTED to other units on the network or via the CNVT-USB-RS485 converter. This may cause permanent damage to the communication semiconductors and / or the computer!

## 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

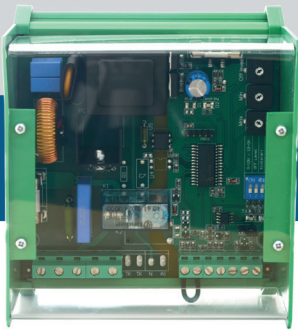
## Packaging



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



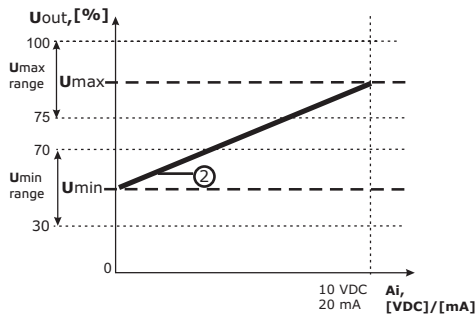
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## Operational diagrams

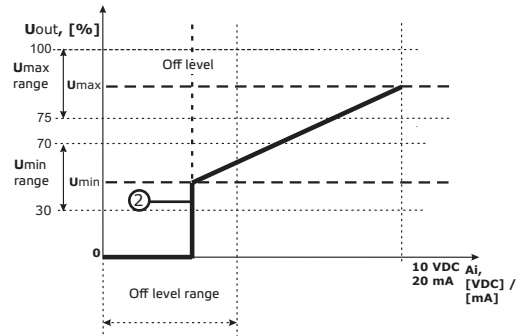
### Operating modes

#### Off level disabled



Descending mode calculation formula	$U_{out} = U_{max} - \frac{A_i}{A_{i_{max}}}(U_{max} - U_{min})$
Ascending mode calculation formula	$U_{out} = U_{min} + \frac{A_i}{A_{i_{max}}}(U_{max} - U_{min})$

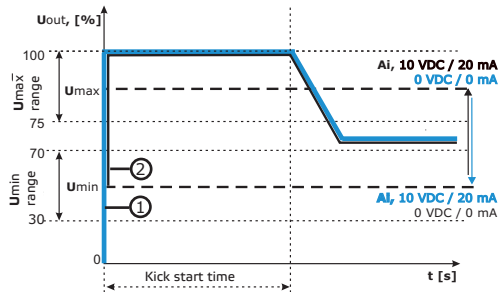
#### Off level enabled



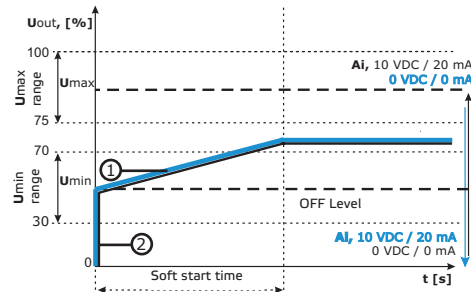
Descending mode calculation formula	$U_{out} = U_{max} - \frac{A_i - \text{Offlevel}}{A_{i_{max}} - \text{Offlevel}}(U_{max} - U_{min})$
Ascending mode calculation formula	$U_{out} = U_{min} + \frac{A_i - \text{Offlevel}}{A_{i_{max}} - \text{Offlevel}}(U_{max} - U_{min})$

**Note:** The operational diagrams for Descending mode are mirror images of the diagrams above for Ascending mode.

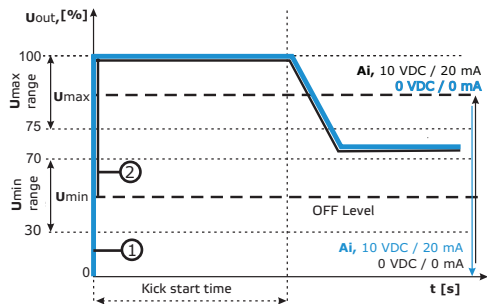
#### Kick start enabled



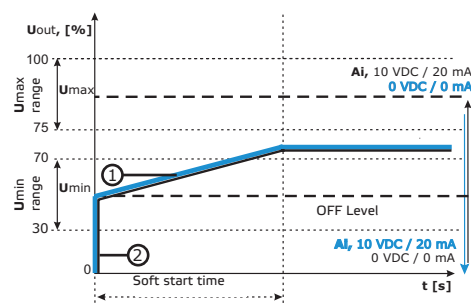
#### Soft start enabled



#### Kick start & off level



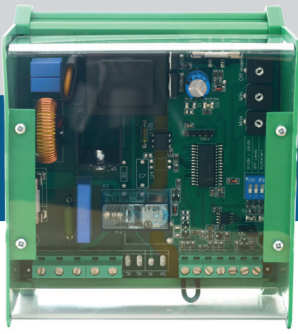
#### Soft start & off level



- ① - Descending mode
- ② - Ascending mode

**Note:** More details about MVS control functionalities you can find in our mounting instruction published on our site. Please follow the link: <http://www.sentera.eu>

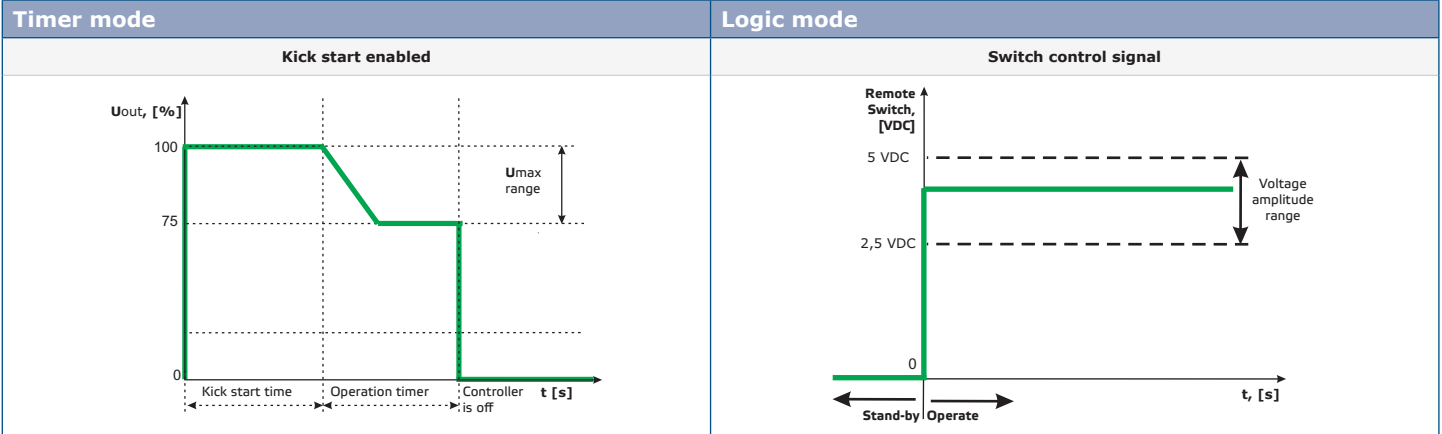
Ascending / Descending input mode



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## Operational diagrams



## Soft start enabled

