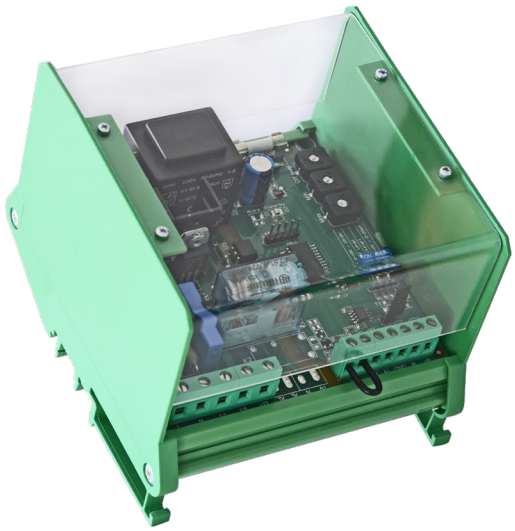
MVS

DIN rail electronic fan speed controller

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 analog 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)
- Analog 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
Analog 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, 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
	Relative humidity	0—80 % rH (non-condensing)

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)

Standards

- Low Voltage Directive 2014/35/EC
- EMC Directive 2014/30/EC
- WEEE Directive 2012/19/EU
- DIN rail EN 50022
- RoHs Directive 2011/65/EU

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.

SENTERA CONTROLS

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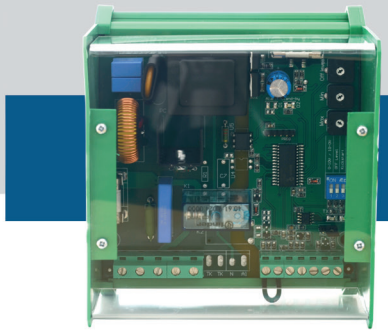

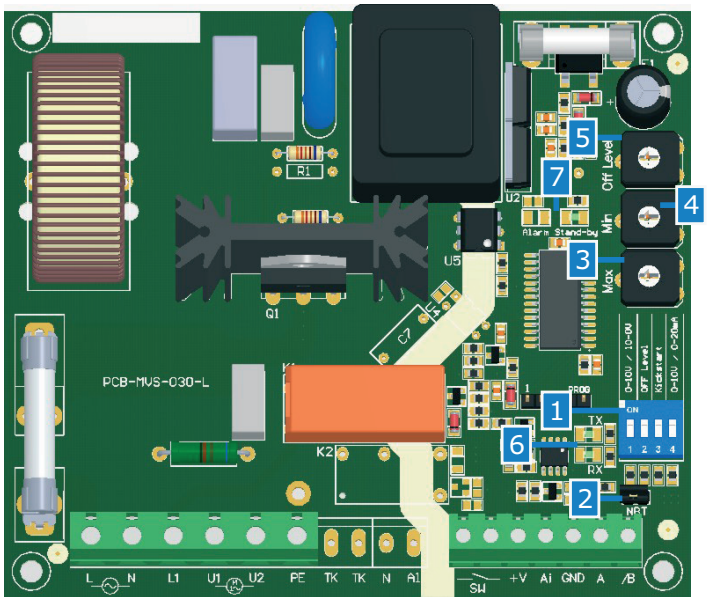

Wiring and connections

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	Analog 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!*

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 closed position of the jumper.*

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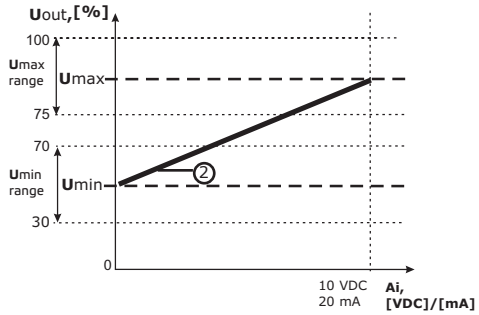
Operational diagrams

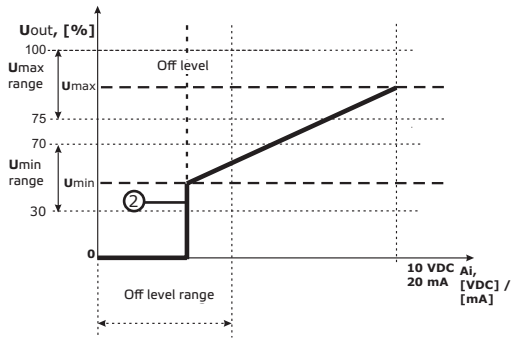
Operating modes

Off level disabled



Descending mode calculation formula	$Uout = Umax - \frac{Ai}{Aimax}(Umax - Umin)$
Ascending mode calculation formula	$Uout = Umin + \frac{Ai}{Aimax}(Umax - Umin)$

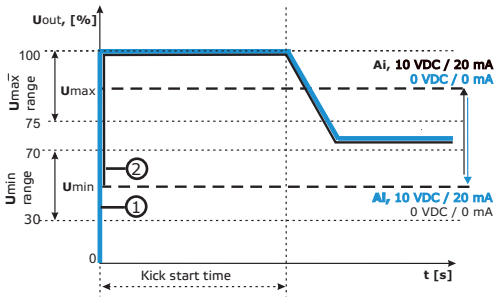
Off level enabled



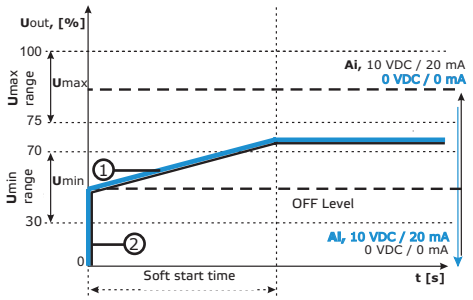
Descending mode calculation formula	$Uout = Umax - \frac{Ai - Offlevel}{Aimax - Offlevel}(Umax - Umin)$
Ascending mode calculation formula	$Uout = Umin + \frac{Ai - Offlevel}{Aimax - Offlevel}(Umax - Umin)$

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

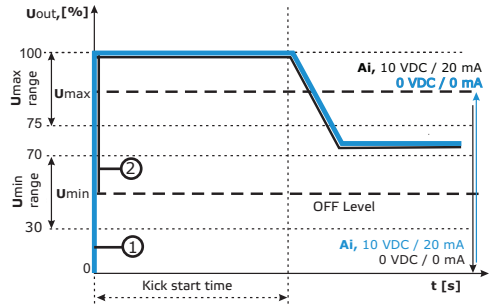
Kick start enabled



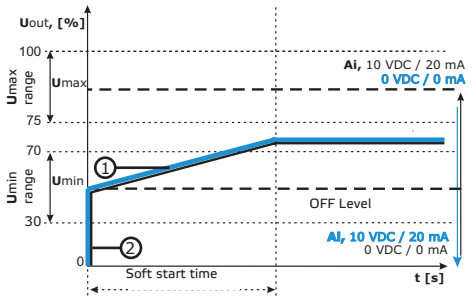
Soft start enabled



Kick start & off level



Soft start & off level



① - **Descending mode**

② - **Ascending mode**

Note: *More details about EVSS 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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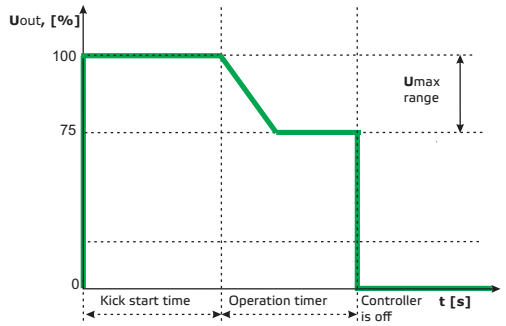
Operational diagrams

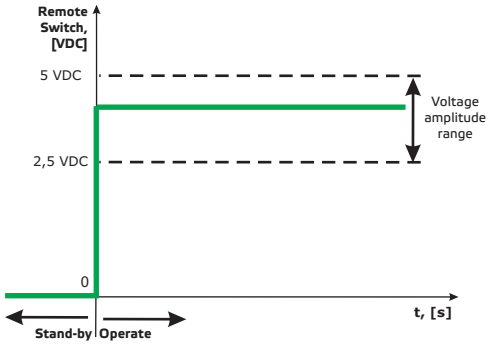
Timer mode

Kick start enabled



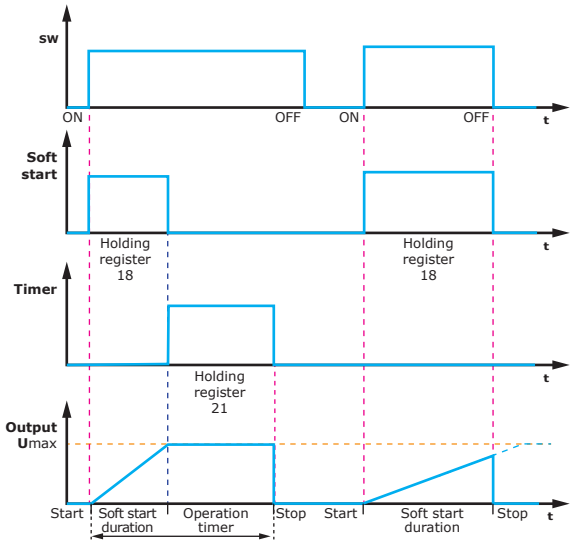
Logic mode

Switch control signal

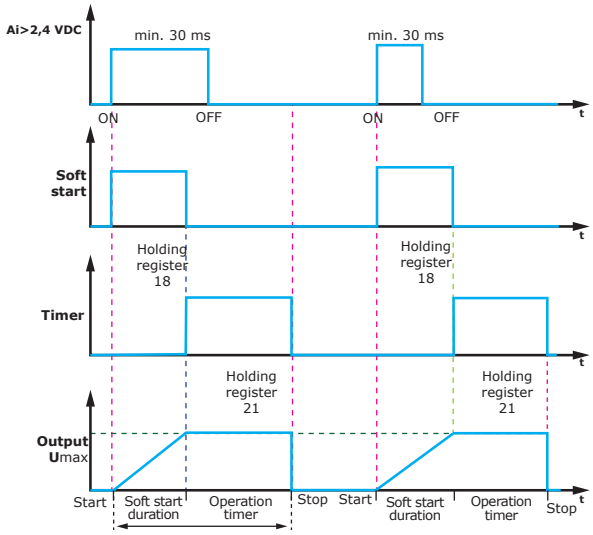


Soft start enabled

Switch control signal



Ai control signal



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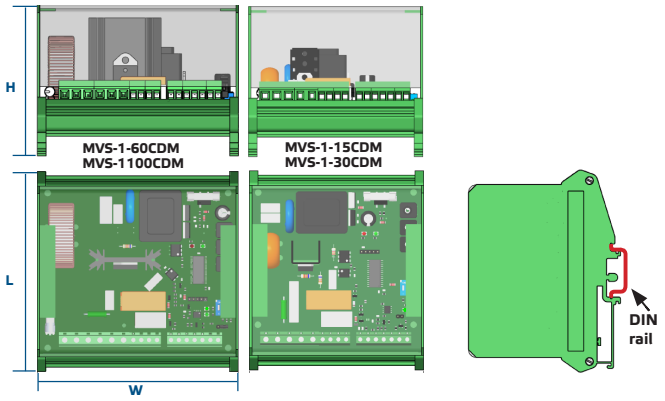
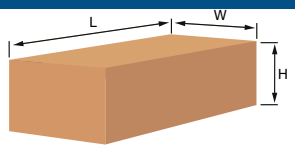
Fixing and dimensions



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	0,36 kg	0,46 kg
	Box (15 pcs.)	590	380	280	5,40 kg	7,70 kg
MVS-1-30CDM	Unit (1 pc.)	220	130	110	0,36 kg	0,46 kg
	Box (15 pcs.)	590	380	280	5,40 kg	7,70 kg
MVS-1-60CDM	Unit (1 pc.)	220	130	110	0,49 kg	0,59 kg
	Box (15 pcs.)	590	380	280	7,35 kg	9,65 kg
MVS-1100CDM	Unit (1 pc.)	220	130	110	0,50 kg	0,60 kg
	Box (15 pcs.)	590	380	280	7,50 kg	9,80 kg