



The EVS-1-XX-DM electronic speed controllers automatically control the speed of single-phase voltage controllable electric motors (230 VAC / 50–60 Hz). These units 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 by trimmers or via Modbus
- Off level setting by trimmer or via 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
- Green LED operating indication
- Illuminated power switch

Technical specifications

Power supply, Us	230 VAC ± 10 % / 50–60 Hz	
Regulated output	30–100 % Us (69–230 VAC)	
Maximum load	Max. 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)	
Minimum output voltage setting, Umin	30–70% Us (69–161 VAC)	
Maximum output voltage setting, Umax	75–100 % Us (175–230 VAC)	
Off level	0–4 VDC / 0–8 mA for ascending mode 10–6 VDC / 20–12 mA for descending mode	
Supply output	+12 VDC / 1 mA	
Protections	Overvoltage and overcurrent	
Protection standard	IP54 (according to EN 60529)	
Ambient conditions	Temperature	-20–40 °C
	Rel. humidity	0–80 % rH (non-condensing)

Area of use

- Fan speed control in ventilation systems
- Applications where Modbus communication or a timer function is needed
- For indoor use only

Modbus registers



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

<http://www.sentera.eu/english/hvac-software-downloads.html>

You can find register maps in the mounting instructions.

Download from:
<http://www.sentera.eu/products>



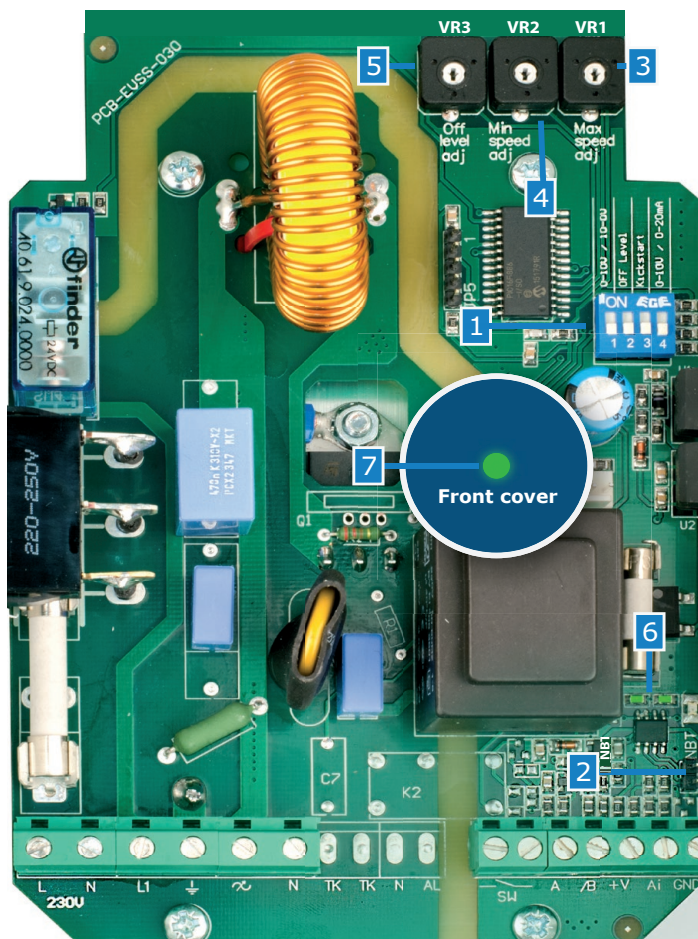
Article codes

	Max. rated current, [A]	Fuse rating (5*20 mm), [A]
EVS-1-15-DM	1,5	F 3,15 A H 250 VAC
EVS-1-30-DM	3,0	F 5,0 A H 250 VAC
EVS-1-60-DM	6,0	F 10,0 A H 250 VAC
EVS-1100-DM	10,0	(6,3*32 mm) F 16,0 A H 250 VAC

Wiring and connections

L	Supply voltage 230 VAC ± 10 % - 50 / 60 Hz	
N	Neutral	
PE	Earth terminal	
L1	Unregulated output (230 VAC / max. 2 A)	
U1, U2	Regulated output to the motor	
SW	Remote control switch / timer start switch	
A	Modbus RTU (RS485) signal A	
/B	Modbus RTU (RS485) signal /B	
+V	Supply output +12 VDC / 1 mA	
Ai	Analogue input 0–10 VDC / 0–20 mA (10–0 VDC / 20–0 mA) / Logic input for timer function	
GND	Ground	
Connections	Cable cross section	max. 2,5 mm ²
	Cable gland clamping range	3–6 mm / 5–10 mm

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!



Standards

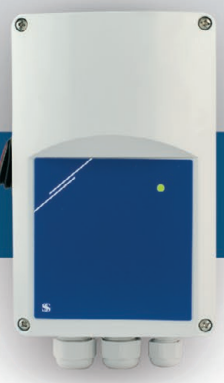
- Low Voltage Directive 2014/35/EC
- EMC Directive 2014/30/EC
- WEEE Directive 2012/19/EU
- RoHS Directive 2011/65/EU



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)		EVS 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 (on the front cover)	Cont. green	Normal operation
	Blinking green	Stand-by mode

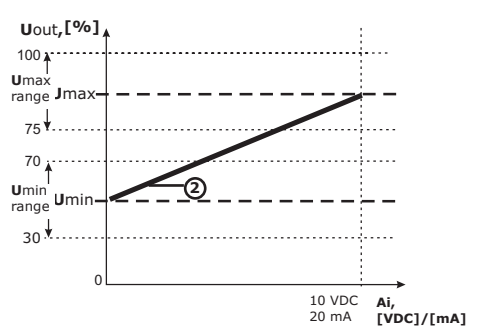
* indicates closed position of the jumper.



Operational diagrams

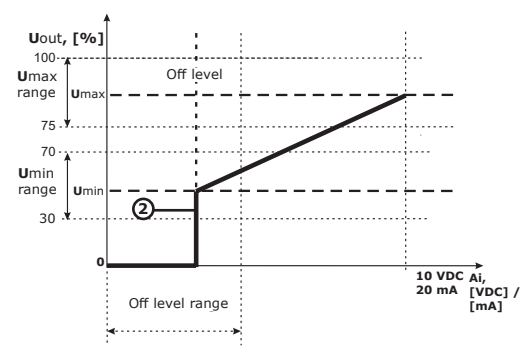
Operating modes

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	$U_{out} = U_{min} + \frac{A_i}{A_{i_{max}}}(U_{max} - U_{min})$

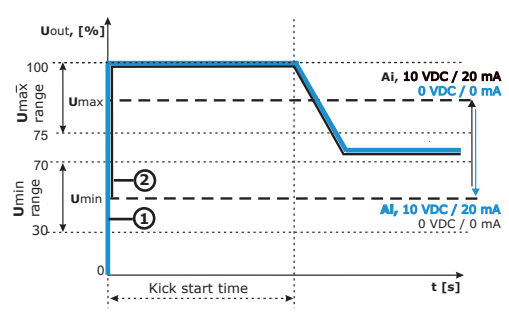
Off level enabled



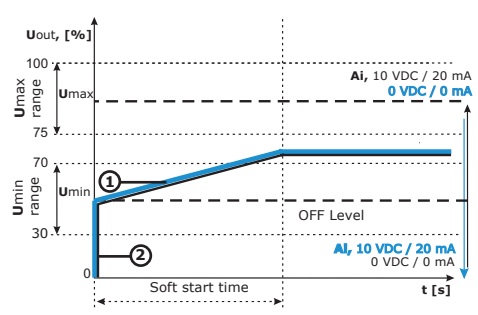
Descending calculation formula	$U_{out} = U_{max} - \frac{A_i - \text{Offlevel}}{A_{i_{max}} - \text{Offlevel}}(U_{max} - U_{min})$
Ascending calculation formula	$U_{out} = U_{min} + \frac{A_i - \text{Offlevel}}{A_{i_{max}} - \text{Offlevel}}(U_{max} - U_{min})$

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

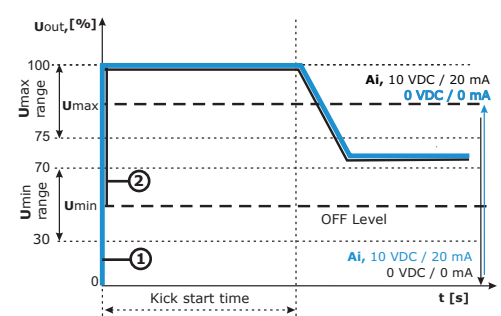
Kick start enabled



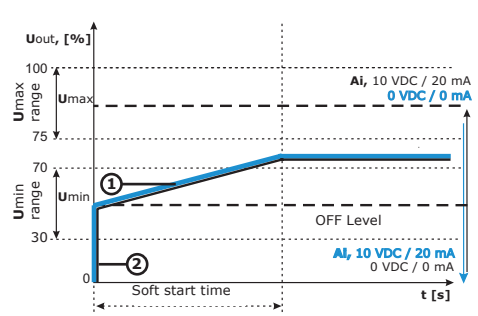
Soft start enabled



Kick start & off level



Soft start & off level



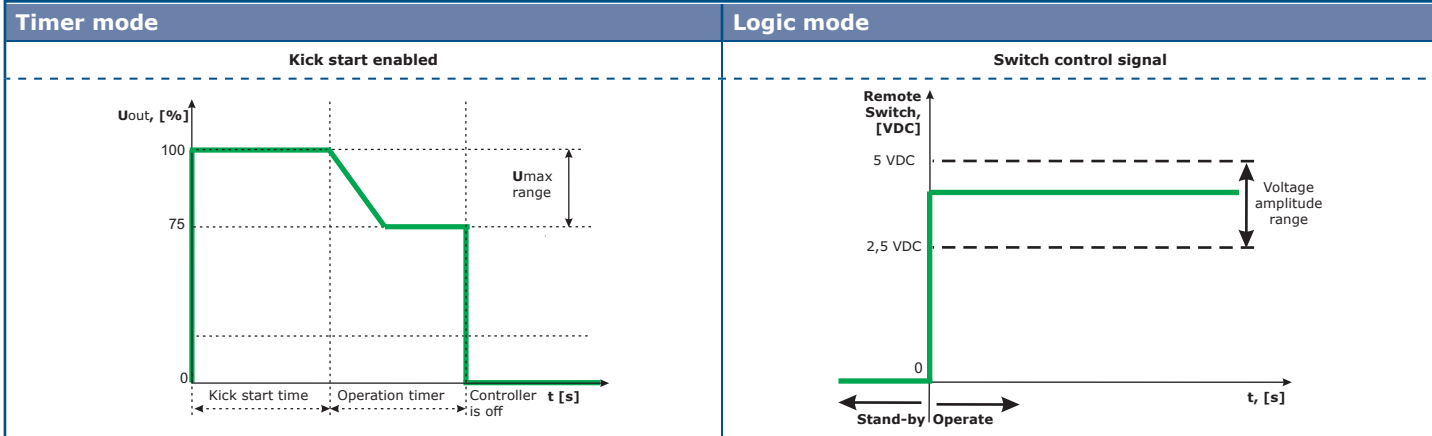
- ① - Descending mode
- ② - Ascending mode

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

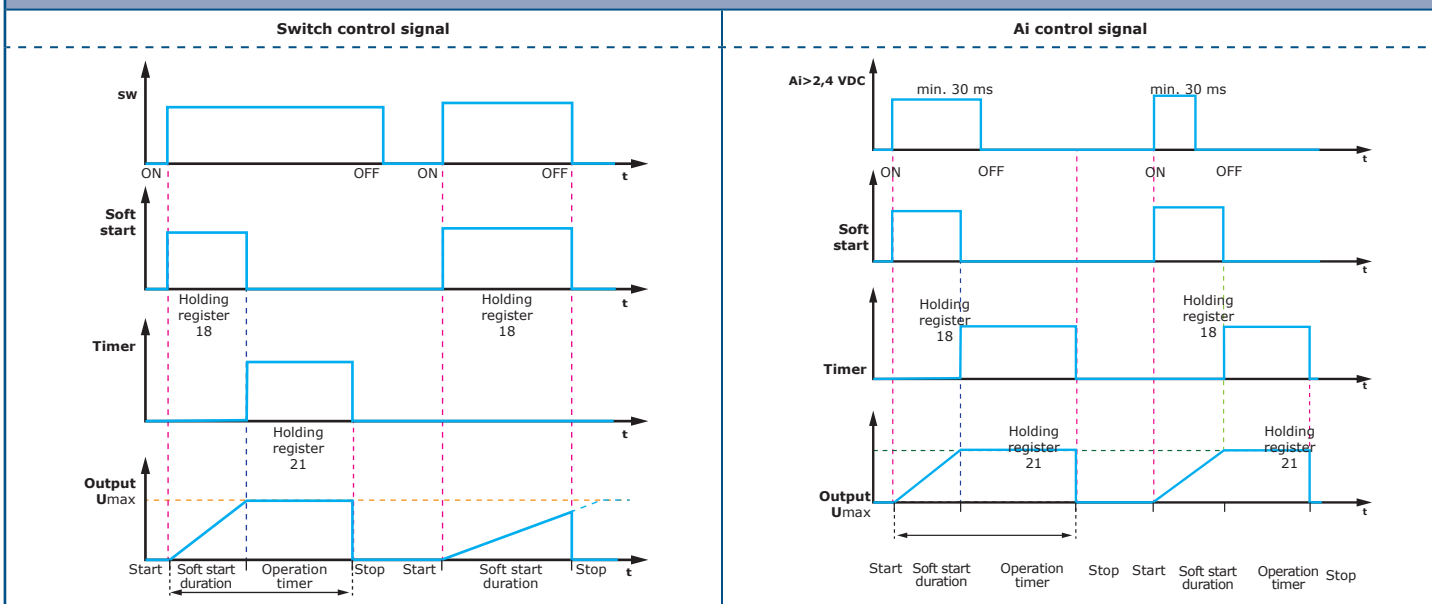
Ascending / Descending input mode



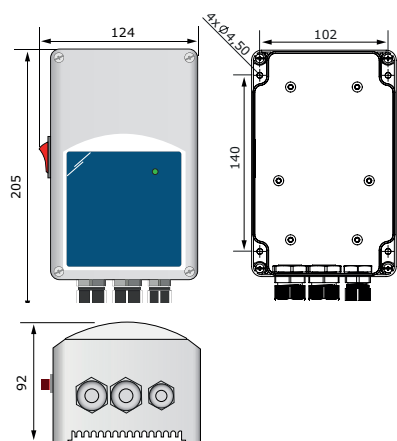
Operational diagrams



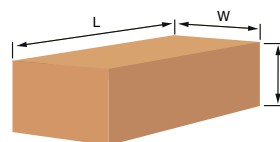
Soft start enabled



Fixing and dimensions



Packaging



Article	Packaging	Length [mm]	Width [mm]	Height [mm]	Net weight	Gross weight
EVS-1-15-DM	Unit (1 pc.)	208	128	108	0,63 kg	0,80 kg
	Box (15 pcs.)	545	405	245	9,50 kg	12,84 kg
EVS-1-30-DM	Unit (1 pc.)	208	128	108	0,68 kg	0,84 kg
	Box (15 pcs.)	545	405	245	10,16 kg	13,44 kg
EVS-1-60-DM	Unit (1 pc.)	208	128	108	0,84 kg	1,00 kg
	Box (15 pcs.)	545	405	245	12,54 kg	15,84 kg
EVS-1100-DM	Unit (1 pc.)	208	128	108	0,91 kg	1,08 kg
	Box (15 pcs.)	545	405	245	13,65 kg	17,04 kg