NVSS8
Electronic fan speed controller

Description

The NVSS8 series consists of electronic fan speed controllers, designed to provide both precise fan speed control and motor protection. The fan speed controllers from this series have a wide range of supply voltage 110–230 VAC ±10 % / 50–60 Hz, making them suitable for various HVAC installations.

Fan speed can be set via Modbus RTU communication by changing the value of Modbus Holding Register 13. This can be done via SenteraWeb — our online HVAC portal, a Building Management System, or any other Modbus master device.

These fan speed controllers feature a digital input for remote switching on and off of the device, which guarantees full control of motor operation.

Key Features

- Modbus RTU communication for remote adjustment of parameters and smooth device integration into HVAC installations
- Selectable output voltage adjustment via Modbus RTU communication:
  - Minimum output voltage: 20–70 % of the supply voltage
  - Maximum output voltage: 75–100 % of the supply voltage
- Thermal protection of the motor via a TK input
- Digital input for remote on / off switching of the device
- RGB LED indication for monitoring the device status
- Enhanced device protection from overheating, overvoltage and overcurrent
- Unregulated output for additional applications
- Improved reliability and extended device lifespan due to phase angle control with zero-cross detection

Area of Use

- Controlled ventilation in buildings, warehouses, industrial environments, etc.
- Fan speed control in HVAC applications.

Standards

- Low Voltage Directive 2014/35/EU
- Electromagnetic Compatibility (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
- WEEE Directive 2012/19/EU

Warnings and Attention Points

- The controller is to be used only with voltage controllable fans / motors. Several motors can be connected to the controller as long as the current limit is not exceeded.
- If the motor has a built-in thermal contact (TK), it can be connected to the fan speed controller to monitor its temperature. In case of overheating, the controller will automatically stop the motor.
- The minimum voltage must be set so that the motor does not stop due to overload or mains voltage variations. The controller restarts after power failure.
- In case of faulty operation, please check if:
  - The right voltage is applied.
  - All connections are correct.
  - The controller is not overheated (check Input Register 10 or the LED indication).
  - The motor is working.
  - Modbus communication is working and all settings are accessible via Modbus RTU.

Article Codes

Article code	Rated output current (A)	Fuse, (A)
NVSS8-30-DM	0,2–3	(5x20 mm) F: 5 A-H
NVSS8-60-DM	0,2–6	(5x20 mm) F: 10 A-H

Technical Specifications

Supply voltage	110–230 VAC ±10 %
Regulated output voltage	20–100 % of supply voltage
Unregulated output voltage / current	Supply voltage / Imax 2 A
Automatic supply voltage frequency detection	50–60 Hz
Motor acceleration (2–20 s)	Kickstart or softstart
Thermal protection input (TK)	Normally closed input
Remote On / Off input (DI)	Normally closed input
Device status indication	Via Modbus RTU and via the RGB LEDs
Storage temperature	-10–50 °C
Operating conditions	
Temperature	-10–40 °C
Relative humidity	5–90 % rH, non-condensing
Enclosure	
Ingress protection	IP54
Colour	Grey (RAL 7035)

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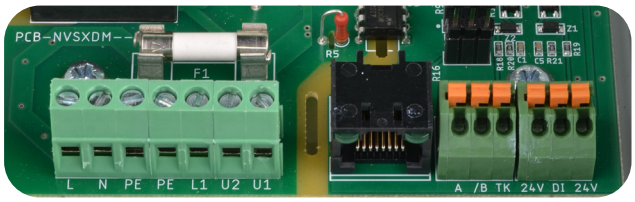
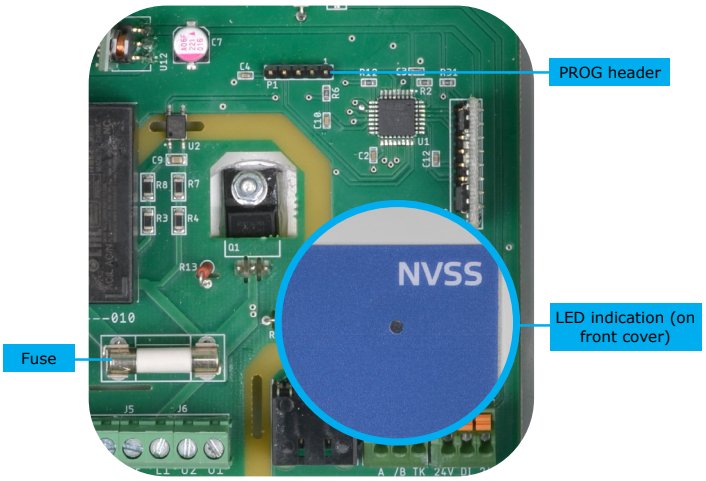
Wiring and Connections



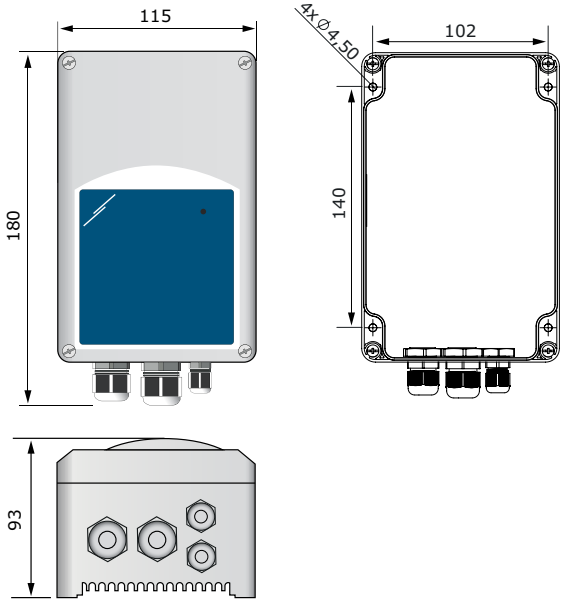
Screw terminal block	
Supply voltage	
L	110–230 VAC ± 10 % / 50–60 Hz
N	Neutral
PE	Protective earth
Unregulated output	
PE	Protective earth
L1	110–230 VAC ± 10 % / Imax 2 A
Regulated output	
U2 (N), U1	20–100 % of supply voltage Adjustable via HR13
Terminal block specifications	Cable cross section: 1,5 mm², pitch: 5 mm Max. wire strip length: 5 mm
RJ45: Modbus RTU	
A	Signal A RJ45, pins 3 and 4
/B	Signal /B, RJ45, pins 5 and 6
Spring clamp terminal block	
A	Modbus RTU (RS485), signal A
/B	Modbus RTU (RS485), signal /B
TK, 24V	Thermal protection input (normally closed)
DI, 24V	Remote on / off input (normally closed)
Terminal block specifications	Cable cross section: 1,5 mm², pitch: 3,5 mm Max. wire strip length: 6–8 mm

Settings and Indications



PROG header, P1	1 2 3 4 5	Put a jumper onto pins 1 and 2 and wait for at least 15 seconds to reset the Modbus communication parameters
Fuse		
		LED indication
RGB LED	Continuous red	Overheating
	Blinking red	Thermal protection activated (Once the thermal protection is triggered, it can only be reset by disconnecting the power supply.)
	Blinking yellow	Problem with the control electronics (zero cross detection failure)
	Continuous green	Device is working properly
	Blinking green	Device stopped by remote on / off

Fixing and Dimensions



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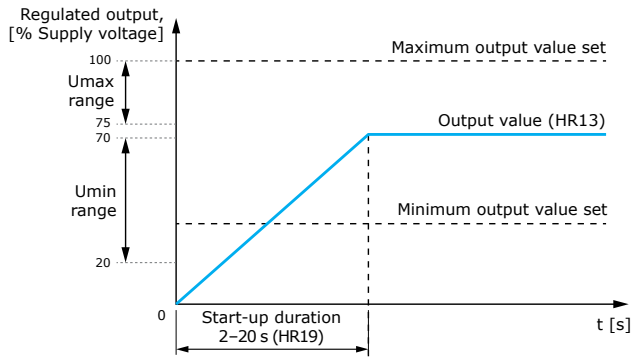
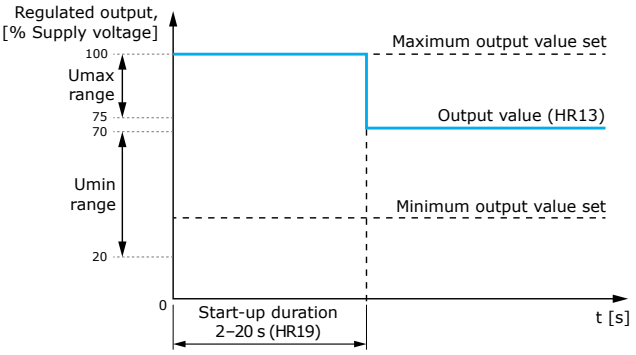
Motor Start-Up Modes (HR18)

Softstart



Kickstart



Operating Instructions

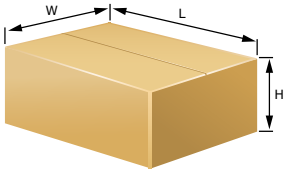
When turned on, NVSS8 is directly in Run mode (depending on the Operating Mode set in HR20, default = Run mode):

- Operating mode Run – The regulated output is turned on.
- Operating mode Stop – The regulated output is turned off.

In Run mode there are two parameters to be set for controlling the output:

- Output Overwrite Value (HR13) – The regulated output is controlled by the value written in Output Overwrite Value between Umin (Minimum Output Value Limit) and Umax (Maximum Output Value Limit).
- Output Start-up Mode (HR18) – The start-up mode can be Softstart or Kickstart.

Packaging



Article code	Packaging	Length [mm]	Width [mm]	Height [mm]	Net weight [kg]	Gross weight [kg]
NVSS8-30-DM	Unit (1 pc.)	220	128	108	0,62	0,72
	Box (15 pcs.)	590	380	280	9,30	11,82
	Pallet (420 pcs.)	1200	800	2160	260,40	350,56
NVSS8-60-DM	Unit (1 pc.)	220	128	108	0,56	0,66
	Box (15 pcs.)	590	380	280	8,40	10,92
	Pallet (420 pcs.)	1200	800	2160	235,20	325,36

Global Trade Item Numbers (GTIN 14)

Article code	Unit	Box	Pallet
NVSS8-30-DM	5401003019030	5401003504482	5401003701478
NVSS8-60-DM	5401003019047	5401003504499	5401003701485

Connect Devices to SenteraWeb

Via a Sentera Internet Gateway you can connect your installation to the SenteraWeb HVAC cloud and:

- Easily change the parameter settings of the connected devices remotely.
- Define users and give them access to monitor the installation via a standard web browser.
- Log data - create diagrams and export logged data.
- Receive alerts or warnings when measured values exceed alert ranges or when errors occur.
- Create different regimes for your ventilation system - e.g. day-night regime.

Please refer to the Modbus Register Map of the product for more details regarding the Modbus registers.