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.

Thanks to Modbus RTU communication, fan speed is regulated effortlessly via SenteraWeb when the device is connected to a Sentera internet gateway. All device parameters can be accessed and adjusted via SenteraWeb.

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
- Free 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 switching on and off of the device
- RGB LED indication for monitoring of 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

- Building and controlled ventilation

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.
- The motor used should be protected internally against overheating.
- The minimum voltage must be set so that the motor does not stop due to 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 the ‘Controller status‘ register).
  - The machine to be regulated is functioning.
  - Modbus communication is working and all setting are accessible via Modbus RTU.

Article Codes

Article code	Rated output current (A)
NVSS8-30-DM	0,2–3
NVSS8-60-DM	0,2–6

Technical Specifications

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

Global Trade Item Numbers 14 (GTIN 14)

Article code	Unit (1 pc.)
NVSS8-30-DM	5401003019030
NVSS8-60-DM	5401003019047

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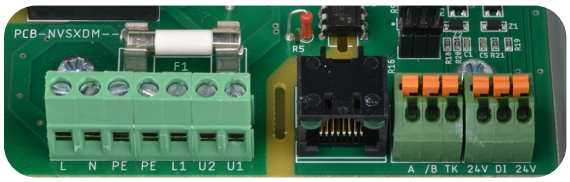
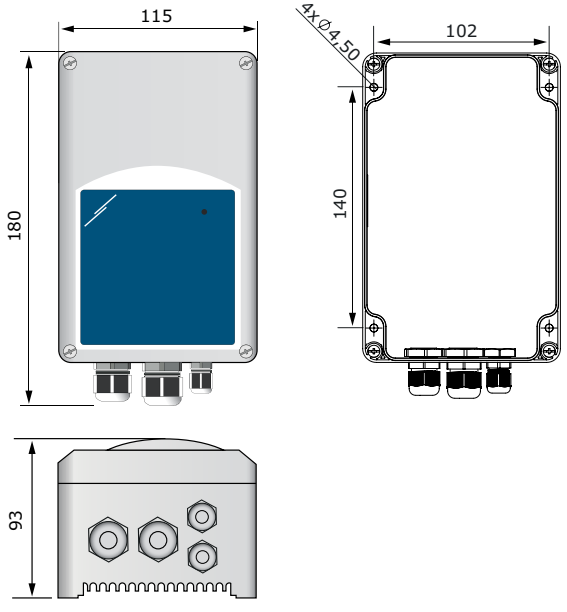
Wiring and Connections



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
Connector type	Cable cross section: 1,5 mm², pitch: 5 mm Wire strip length max: 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 open)
Connector type	Cable cross section: 1,5 mm², pitch: 3,5 mm

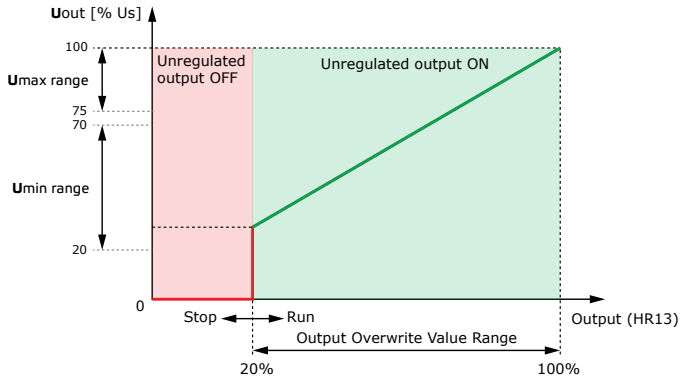
Fixing and Dimensions



Settings and Indications

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

Operational Diagram — Soft Start



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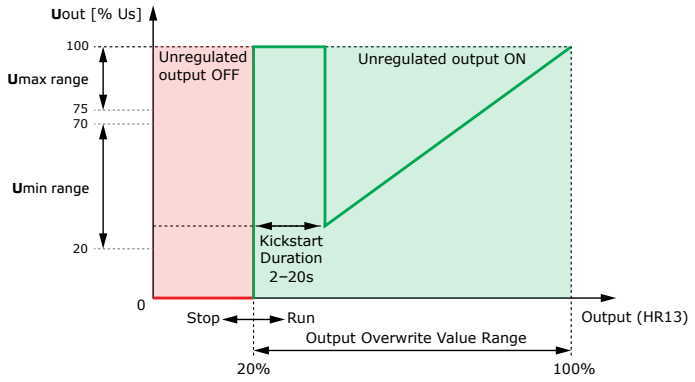
Operational Diagram — Kickstart



Operating Instructions

When turned on, NVSS8 is directly in Run mode (depending 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.

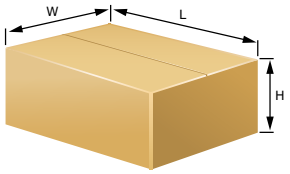
In Run mode there are two parameters to be set for controlling the output:

- 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).

The motor startup mode can be selected via HR18:

- Output Startup Mode (HR18) – The startup mode could be Soft start or Kickstart.

Packaging



Article	Packaging	Length [mm]	Width [mm]	Height [mm]	Net weight [kg]	Gross weight [kg]
NVSS8	Unit (1 pc.)	–	–	–	0,35	0,35
	Carton	–	–	–	–	–
	Box	–	–	–	–	–

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.