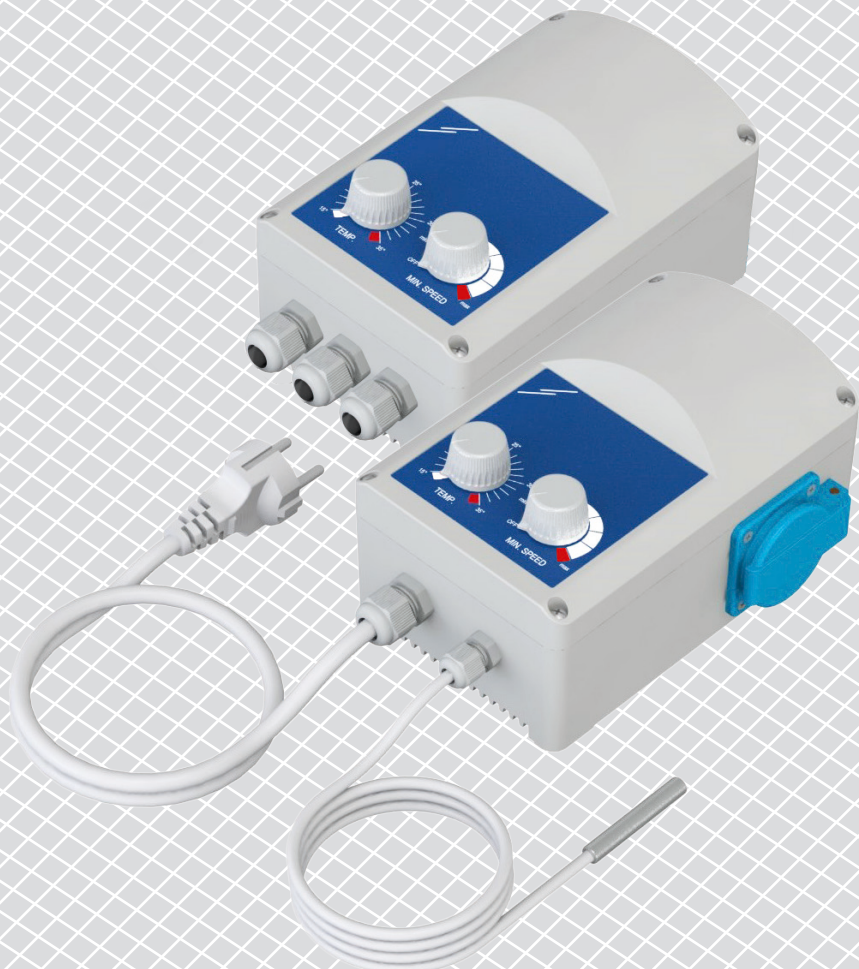


# GTEX1-60 | ELECTRONIC FAN SPEED CONTROLLER

## Mounting and operating instructions



## Table of contents

<b>SAFETY AND PRECAUTIONS</b>	<b>3</b>
-----	
<b>PRODUCT DESCRIPTION</b>	<b>4</b>
-----	
<b>ARTICLE CODES</b>	<b>4</b>
-----	
<b>INTENDED AREA OF USE</b>	<b>4</b>
-----	
<b>TECHNICAL DATA</b>	<b>4</b>
-----	
<b>STANDARDS</b>	<b>5</b>
-----	
<b>WIRING AND CONNECTIONS</b>	<b>5</b>
-----	
<b>OPERATIONAL DIAGRAM</b>	<b>5</b>
-----	
<b>MOUNTING INSTRUCTIONS IN STEPS</b>	<b>6</b>
-----	
<b>VERIFICATION OF INSTALLATION INSTRUCTIONS</b>	<b>9</b>
-----	
<b>MODBUS REGISTERS MAPS</b>	<b>10</b>
-----	
<b>TRANSPORT AND STOCK KEEPING INFORMATION</b>	<b>11</b>
-----	
<b>WARRANTY INFORMATION AND RESTRICTIONS</b>	<b>11</b>
-----	
<b>MAINTENANCE</b>	<b>11</b>
-----	

## SAFETY AND PRECAUTIONS



Read all the information, the datasheet, mounting and operating instructions and study the wiring and connection diagram before working with the product. For personal and equipment safety, and for optimum product performance, make sure you entirely understand the contents before installing, using, or maintaining this product.



For safety and licensing (CE) reasons, unauthorised conversion and /or modifications of the product are inadmissible.



The product should not be exposed to abnormal conditions, such as: extreme temperatures, direct sunlight or vibrations. Long-term exposure to chemical vapours in high concentration can affect the product performance. Make sure the work environment is as dry as possible; avoid condensation.



All installations shall comply with local health and safety regulations and local electrical standards and approved codes. This product can only be installed by an engineer or a technician who has expert knowledge of the product and safety precautions.



Avoid contacts with energised electrical parts; always treat the product as if it is live. Always disconnect the power supply before connecting, servicing or repairing the product.



Always verify that you apply appropriate power supply to the product and use appropriate wire size and characteristics. Make sure that all the screws and nuts are well tightened and fuses (if any) are fitted well.



Recycling of equipment and packaging should be taken into consideration and these should be disposed of in accordance with local and national legislation / regulations.



In case there are any questions that are not answered, please contact your technical support or consult a professional.

## PRODUCT DESCRIPTION

The GTE fan speed controller automatically regulates the speed of single phase voltage controllable motors (230 VAC / 50–60 Hz) according to the measured temperature values. The maximum speed can be adjusted via an internal trimmer. The minimum speed and temperature setpoint can be adjusted via external potentiometers. There are two product versions: -DM with Modbus RTU communication and -DT with an integrated motor socket and a PT500 temperature probe. The fan speed will increase as the measured temperature exceeds the setpoint temperature.

## ARTICLE CODES

Code	Temperature range	PT500 temperature sensor included	Schuko socket for simple motor connection	Integrated power supply cable	Modbus RTU
<b>GTE21-60-DM</b>	5–35 °C	no	no	no	yes
<b>GTE21-60-DT</b>	5–35 °C	yes	yes	yes	no
<b>GTE-1-60-DM</b>	15–35 °C	no	no	no	yes
<b>GTE-1-60-DT</b>	15–35 °C	yes	yes	yes	no

## INTENDED AREA OF USE

- Greenhouses and temperature controlled ventilation systems
- For indoor use only

## TECHNICAL DATA

- Supply voltage: 230 VAC ± 10 %/ 50–60 Hz
- Output load: max. 6 A
- Potentiometer for minimum speed setting
- Internal trimmer for maximum speed setting
- Adjustable hysteresis and proportional range
- Potentiometer for temperature setpoint range: 5–35 °C or 15–35 °C, depending on the product version
- PT500 temperature probe input (pre-wired for the -DT version and separately available for the -DM version)
- Modbus RTU communication (only in -DM version)
- Schuko socket for motor connection (only in -DT version)
- Euro plug for power supply (only in -DT version)
- Pre-wired temperature sensor and supply cable (only in -DT version)
- Enclosure: plastic R-ABS, V; grey colour (RAL 7035)
- Protection standard: IP54 (according to EN 60529)
- Storage temperature: -40–50 °C
- Operating ambient conditions:
  - ▶ temperature: 0–40 °C
  - ▶ rel. humidity: <95 % rH (non-condensing)
- Storage temperature: -40–50 °C

## STANDARDS

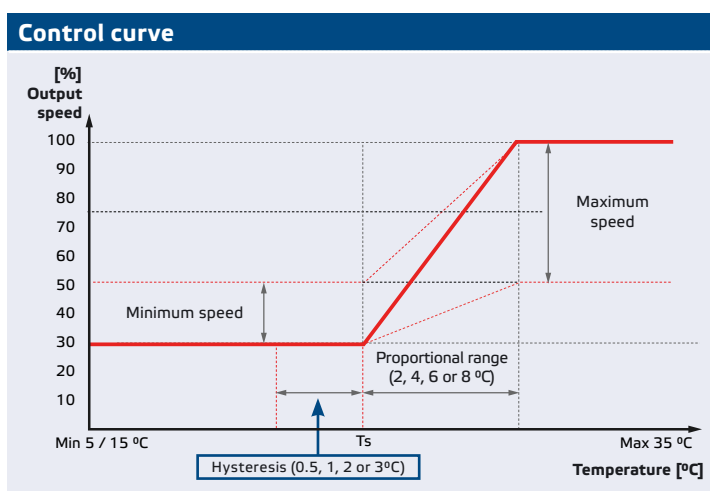
- Low Voltage Directive 2014/35/EC
- EMC Directive 2014/30/EC: EN 61000-3-2:2014, EN 61000-6-2:2005/AC:2005 and EN 61000-6-3:2007/A1:2011/AC:2012
- WEEE Directive 2012/19/EC
- RoHS Directive 2011/65/EC



## WIRING AND CONNECTIONS

GTEX1-60-DM	
L	Supply voltage 230 VAC / 50–60 Hz – mono phase $\pm 10\%$
N	Neutral
L1	230 VAC not regulated output (max. 2 A)
GND, T (TEMP.)	PT500 temperature sensor
A	RS485 signal A
/B	RS485 signal /B
P5	Motor connection
GTEX1-60-DT	
L	Supply voltage 230 VAC / 50–60 Hz – mono phase $\pm 10\%$
N	Neutral
PE	Ground
L1	230 VAC not regulated output (max. 2 A)
GND, T (TEMP.)	PT500 temperature sensor
Schuko socket	Motor connection

## OPERATIONAL DIAGRAM

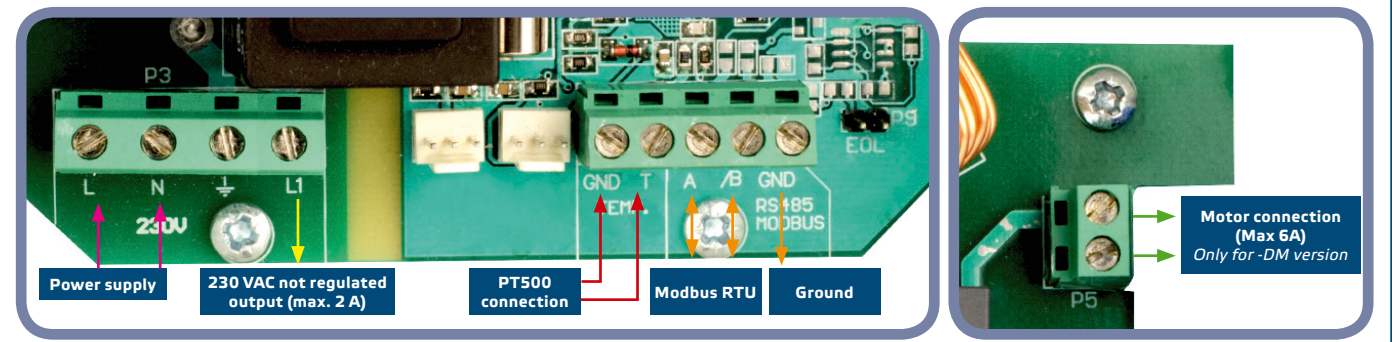


## MOUNTING INSTRUCTIONS IN STEPS

Before you start mounting the GTE controller, read carefully **"Safety and Precautions"**. Choose a flat surface for installation (e.g. a wall, panel, etc.) and follow these steps:

1. Insert the supply and sensor cables through the cable glands and do the wiring according to the information in section "Wiring and connections" and adhering to **Fig. 1** below.

**Fig. 1 Wiring diagram**



### NOTE

For the -DT version the power supply and the temperature sensor (PT500) are included in the set and factory connected. Also, the -DT version has a Schuko socket to plug in the motor / fan. If your unit is -DT, please skip step 1.

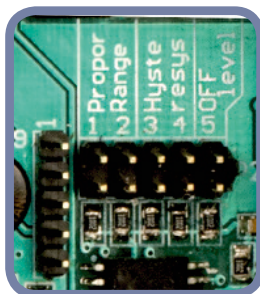
2. Fix the jumpers accordingly - see **Fig. 2 Jumper positions** below.



### NOTE

The -DM version can be used both as a stand-alone unit or in conjunction with a computer and operated by Sentera's 3SModbus software or the Sensistant configurator. When used stand-alone, its jumpers need to be set to the desired values. When used in Modbus mode, its parameters are set via Modbus RTU, so the jumpers can remain in their factory set positions. Refer to the **Modbus Holding Registers Table** below for the relevant settings.

**Fig. 2 Jumper positions**



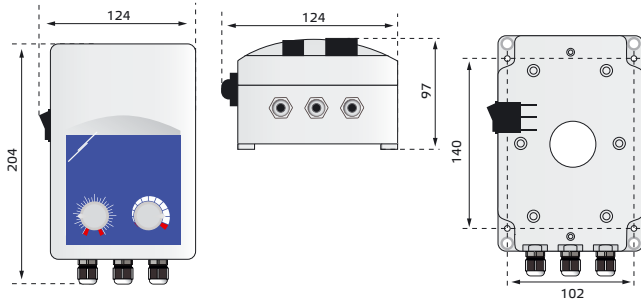
Propor. Range (JP1 & JP2)		Hysteresis (JP3 & JP4)		Off-level (JP5 & JP6)	
1	<input checked="" type="checkbox"/>	3	<input checked="" type="checkbox"/>	5	<input checked="" type="checkbox"/>
2	<input checked="" type="checkbox"/>	4	<input checked="" type="checkbox"/>		
	2 °C		0,5 °C		On
1	<input type="checkbox"/>	3	<input type="checkbox"/>	5	<input type="checkbox"/>
2	<input checked="" type="checkbox"/>	4	<input checked="" type="checkbox"/>		
	4 °C (factory preset)		1 °C		Off (factory preset)
1	<input checked="" type="checkbox"/>	3	<input checked="" type="checkbox"/>		
2	<input type="checkbox"/>	4	<input type="checkbox"/>		
	6 °C		2 °C (factory preset)		
1	<input type="checkbox"/>	3	<input type="checkbox"/>		
2	<input type="checkbox"/>	4	<input type="checkbox"/>		
	8 °C		3 °C		

## -DM version mounting steps:

[Go to -DT version ►](#)

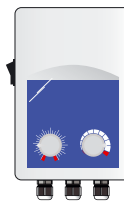
1. Make sure the GTE controller is not connected to the mains supply.
2. Unscrew the front cover and open the enclosure. Mind the wires that connect the potentiometer with the printed circuit board.
3. Fix the unit to the wall or panel using the provided screws and dowels. Mind the correct mounting position and unit mounting dimensions. (See **Fig. 3 Mounting dimensions** and **Fig. 4 Mounting position**).

**Fig. 3 Mounting dimensions**

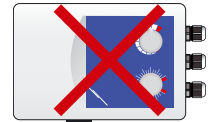


**Fig. 4 Mounting position**

### Acceptable

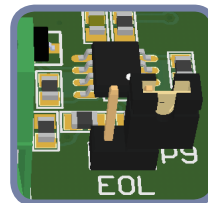


### Not acceptable



4. Set the maximum speed trimmer to the desired value. You can choose from the range 170—230 VAC. The factory setting is 230 VAC.
5. Put back the front cover and fix it.
6. Optional settings:
  - The Network Bus Terminator (NBT) (see **Fig. 5 NBT jumper**) is controlled via Modbus RTU. By default the NBT is disconnected. For more information, see the **Modbus Registers Maps** below.

**Fig. 5 NBT jumper**



<input checked="" type="checkbox"/>	NBT is connected
<input type="checkbox"/>	NBT is disconnected (factory pre-set)

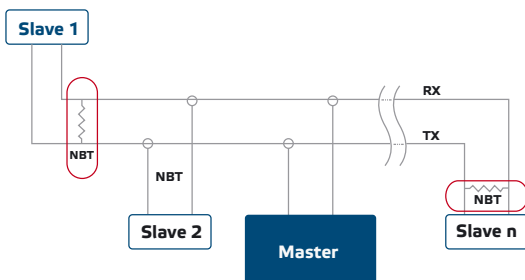


## NOTE

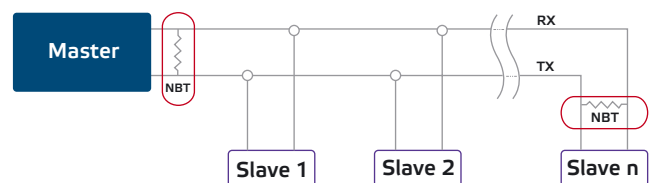
The NBT is to be used only in GTEX1-60-DM with Modbus RTU communication.

- If your unit starts or terminates the network, activate the NBT via Modbus RTU, see the examples below.

**Example 1**



**Example 2**





## NOTE

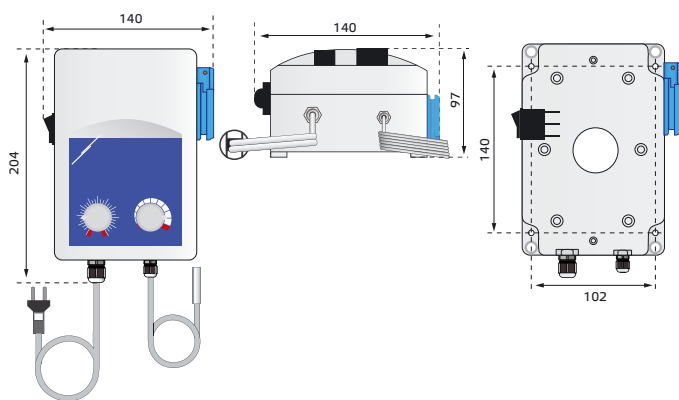
Connect the NBT only in the two most distant units on the network line!

### -DT version mounting steps:

[Back to -DM version ►](#)

1. Make sure the GTE controller is not connected to the mains supply.
2. Unscrew the front cover and open the enclosure. Mind the wires that connect the potentiometer with the printed circuit board.
3. Fix the unit to the wall or panel using the provided screws and dowels. Mind the correct mounting position and unit mounting dimensions. (See **Fig. 6 Mounting dimensions** and **Fig. 7 Mounting position**.)

**Fig. 6 Mounting dimensions**

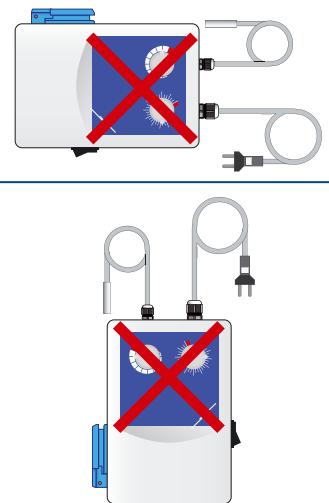


**Fig. 7 Mounting position**

#### Acceptable

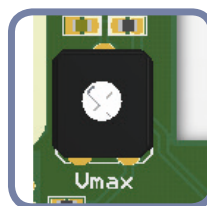


#### Not acceptable



4. Set the maximum speed trimmer to the desired value (see **Fig. 8 Max. speed trimmer**). You choose from the range 170–230 VAC. The factory setting is 230 VAC.

**Fig. 8 Max. speed trimmer**



Vmax set from 170 VAC (left) to 230 VAC (right) (factory pre-set to max.)

6. Put back the front cover and fix it.
7. Plug the motor / fan cable into the Schuko socket.

## VERIFICATION OF INSTALLATION INSTRUCTIONS

### ⚠ ATTENTION

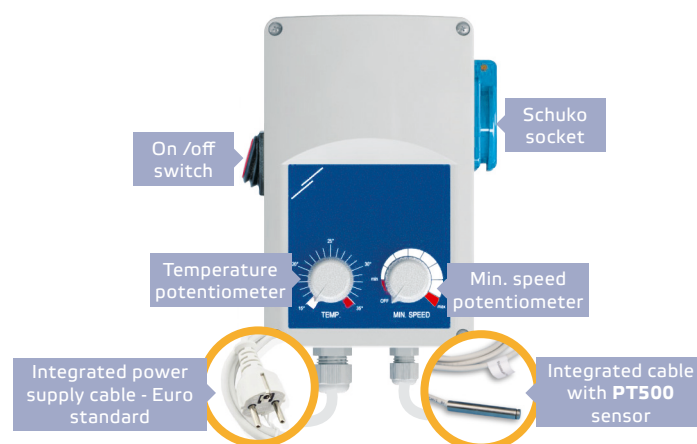
*Mind that the cables are live. Take the relevant safety measures.*

1. Plug the in the supply cable.
2. Switch on the controller via the illuminated ON/OFF switch.
3. Position the TEMP. potentiometer to max. position (35 °C). (See **Fig. 9 -DM version** and **Fig. 10 -DT version**)

**Fig. 9 -DM version**



**Fig. 10 -DT version**



4. The connected motor will run at min. speed.
5. Adjust the TEMP. potentiometer to temperature equal to the ambient temperature.
6. The motor / fan will run at min. speed and speed up if the ambient temperature rises (hold the temperature probe in your hands to check).
7. Adjust the temperature potentiometer to the min. position (5 °C for GTE21-60-DM and GTE21-60-DT or 15 °C for GTE-1-60-DM and GTE-1-60-DT)
8. The motor will run at max. selected speed if the difference between the setpoint temperature and the ambient temperature is more than the value of the selected proportional range.
9. If the unit does not operate as explained above, check the connections and settings.

## MODBUS REGISTERS MAPS

INPUT REGISTERS (Read-only)						
		Data type	Description	Data	Values	
1	Temperature input	unsigned int.	Analogue temperature input	0—600	0 = 600 =	0,0 °C 60,0 °C
2	Vmax	unsigned int.	Max. motor speed value	170—230	170 = 230 =	170 VAC 230 VAC
3	Vmin	unsigned int.	Min. motor speed value	80—160	80 = 160 =	80 VAC 160 VAC
4	Output voltage	unsigned int.	Current output voltage	0,80—230	0 = 80 = 230 =	0 VAC 80 VAC 230 VAC
5	Temperature setpoint	unsigned int.	Temperature setpoint value	GTE21-60-DM 50—350 GTE-1-60-DM 150—350	50 = 150 = 350 =	5,0 °C 15,0 °C 35,0 °C
6	Proportional range	unsigned int.	Proportional temperature value	1—4	1 = 2 = 3 = 4 =	2 °C 4 °C 6 °C 8 °C
7	Hysteresis	unsigned int.	Hysteresis value	1—4	1 = 2 = 3 = 4 =	0,5 °C 1 °C 2 °C 3 °C
8	Off level	unsigned int.	Off level value	0, 1	0 = 1 =	OFF ON
9	Sensor status	unsigned int.	Input sensor status	0, 1	0 = 1 =	sensor connected sensor disconnected
10			Reserved, Returns '0'			

Note: The input registers can be read via the Modbus command: "Read input registers".

HOLDING REGISTERS (Read/write)						
		Data type	Description	Data	Default	Values
1	Address	unsigned int.	Modbus device address	1—247	1	
2	Modbus baud rate	unsigned int.	Modbus communication baud rate	1—4	2	1 = 9,600 2 = 19,200 3 = 38,400 4 = 57,600
3	Modbus parity mode	unsigned int.	Parity check mode	0—2	1	0 = 8N1 1 = 8E1 2 = 8O1
4	Device type	unsigned int.	Device type (Read only)	GTE21-60-DM=3013 GTE-1-60-DM=3003		
5	HW version	unsigned int.	Hardware version of the device (Read only)	XXXX	GTE21-60-DM GTE-1-60-DM	0x0210 = HW version 2.10 0x0200 = HW version 2.00
6	SW version	unsigned int.	Software version of the device (Read only)	XXXX	GTE21-60-DM GTE-1-60-DM	0x0300 = SW version 3.00 0x0230 = SW version 2.30
7	Operating mode	unsigned int.	Mode of operation	0—1	0	0 = Standalone mode 1 = Modbus mode
8	Output overwrite	unsigned int.	Output overwrite mode	0—1	0	0 = Disabled 1 = Enabled
9-10			Reserved, return '0'			
11	Vmax	unsigned int.	Max. motor speed value	170—230	230	170 = 170 VAC 230 = 230 VAC
12	Vmin	unsigned int.	Min. motor speed value	80—160	80	80 = 80 VAC 160 = 160 VAC
13	Temperature setpoint	unsigned int.	Temperature setpoint value	GTE21-60-DM 50—350 GTE-1-60-DM 150—350	150	50 = 5,0 °C 150 = 15,0 °C 350 = 35,0 °C
14	Proportional range	unsigned int.	Proportional range value	1—4	2	1 = 2 °C 2 = 4 °C 3 = 6 °C 4 = 8 °C
15	Hysteresis	unsigned int.	Hysteresis value	1—4	3	1 = 0,5 °C 2 = 1 °C 3 = 2 °C 4 = 3 °C
16	Off level	unsigned int.	Off level value	0—1	0	0 = OFF 1 = ON
17	Modbus time-out control	unsigned int.	Modbus time-out control value	0—1	0	0 = Disabled 1 = Enabled
18	Modbus time-out	unsigned int.	Modbus time-out value	0—60	1	1 = 1 min 60 = 60 min.
19	Vout	unsigned int.	Set override output voltage	0,80—230	0	0 = 0 VAC 80 = 80 VAC 230 = 230 VAC
20			Reserved, returns '0'			

Note: The holding registers can be managed via the following Modbus commands: "Read Holding Registers", "Write Single Register" or "Write Multiple Registers".

If you want to find out more about Modbus over serial line, please visit: [http://www.modbus.org/docs/Modbus\\_over\\_serial\\_line\\_V1\\_02.pdf](http://www.modbus.org/docs/Modbus_over_serial_line_V1_02.pdf)

## TRANSPORT AND STOCK KEEPING INFORMATION

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Avoid shocks and extreme conditions; stock in the original packing.

## WARRANTY INFORMATION AND RESTRICTIONS

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Two years from the delivery date against defects in manufacturing. Any modifications or alterations to the product after the date of publication relieve the manufacturer of any responsibilities. The manufacturer bears no responsibility for any misprints or mistakes in this data.



### ATTENTION

*Use only fuses of the type and rating specified above; otherwise, loss of warranty will ensue.*

## MAINTENANCE

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In normal conditions this product is maintenance-free. If soiled, clean with a dry or dampish cloth. In case of heavy pollution, clean with a non-aggressive product. In these circumstances the unit should be disconnected from the supply. Pay attention that no fluids enter the unit. Only reconnect it to the supply when it is completely dry.