



TVSS5

electronic three phase fan speed controller

The TVSS5 automatically controls the speed of three phase (3x400VAC/50Hz) voltage controllable electric motors with a 0-10 VDC or 0-20 mA control signal. This makes it possible to control these motors automatically with an external PD-controller, remote with a potentiometer or a microprocessor with analog output. There is also a connection for a remote start/stop switch. The working principle of this product series is based on the so-called zero crossing detection. An optotriac combined with a microprocessor ensures flawless and accurate control.

There are two working modes, internally selectable by switch. With kickstart the motor will always start or restart at max. speed for 10 seconds, after which it will automatically follow the position set by the 0-10 VDC or 0-20 mA control signal. Without kickstart the motor starts according to the position set by the 0-10 VDC or 0-20 mA control signal.

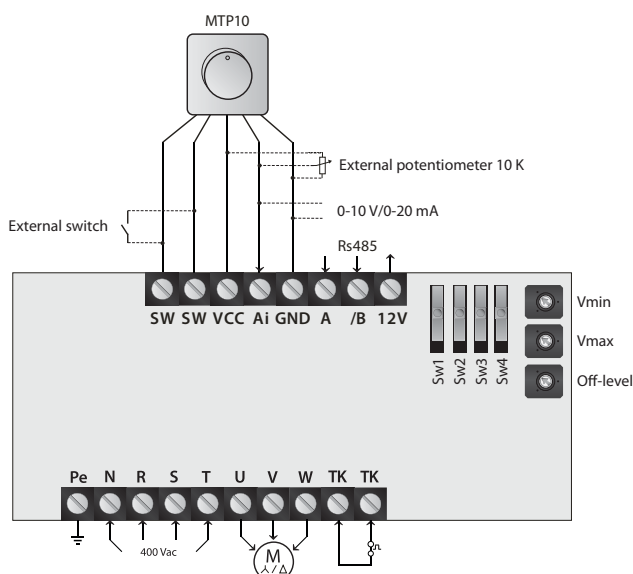
The CNVT-PWM-010V can be connected to provide a conversion of a PWM signal to a 0-10 V signal.

FEATURES

- Power supply 3 x 400 VAC/50Hz
- Infinitely variable control
- Min. and max. speed internally adjustable
- Off-level selectable by slide switch
- Kickstart or soft start selectable by slide switch
- 0-10 VDC/0-20 mA selectable by slide switch
- LED indication normal operation and alarm status
- Maximal ambient temperature: 40 °C
- According to the Low Voltage Directive: 2006/95/EC / the EMC Directive: 2004/108/EC
- RS485 Modbus

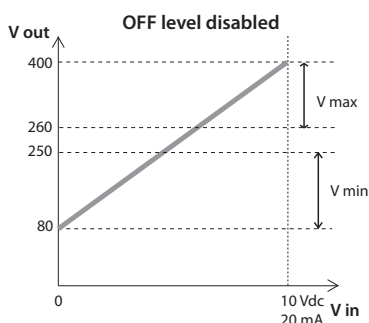
	Current rating	Executions
TVSS5-30-DT	3 A	circuit board only
TVSS5-60-DT	6 A	circuit board only
TVSS5-30-DDT	3 A	DIN rail mounting (EN 50-022)
TVSS5-60-DDT	6 A	DIN rail mounting (EN 50-022)
TVSS5-30-CDT	3 A	fingerproof cover included
TVSS5-60-CDT	6 A	fingerproof cover included

WIRING DIAGRAM

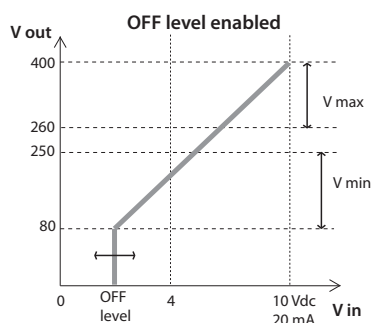


Pe	power earth
N	neutral (optional)
R S T	3-phase power supply
TK	TK terminal contact from motor
SW	remote start/stop
Ai	analog signal (0-10 V/0-20 mA)
A/B	RTU Modbus communication
GND	ground
U V W	regulated output to three-phase motor
VCC	power supply for external potentiometer 12 VDC/1 mA
12V	supply output 12 VDC/100 mA
Vmin	minimum speed adjustment
Vmax	maximum speed adjustment
Off-level	off-level adjustment
Sw1	input signal selection 0-10 VDC/0-20 mA
Sw2	kickstart selection on/off
Sw3	off-level selection on/off
Sw4	0-10 V, 10-0 V selection (from hardware version 3.0)

OPERATION



$$V_{out} = ((V_{in}/10) * (V_{max} - V_{min})) + V_{min}$$



$$V_{out} = (((V_{in} - \text{OFF-level}) / (10 - \text{OFF-level})) * (V_{max} - V_{min})) + V_{min}$$

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MODBUS REGISTERS

Available commands:

- Read input registers

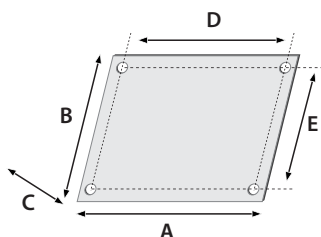
Input registers	Data type	Description	Data	Values
1	Output 1 current value	unsigned int.	Current output voltage	0 - 415
2	Vmin [V]	unsigned int.	Min. speed voltage	80 - 250
3	Vmax [V]	unsigned int.	Max. speed voltage	260 - 415
4	Voff [V]	unsigned int.	Off-level voltage	10-600
5...9			Reserved, returns 0	
10	Alarm TK	unsigned int.	0 - normal, 1 - TK	1 = TK alarm
11	Alarm phase failed	unsigned int.	0 - normal, 1 - Alarm	1 = phase failure alarm
12	Standby - remote	unsigned int.	0 - normal, 1 - Standby	1 = standby/remote
13	Standby - off-level	unsigned int.	0 - normal, 1 - Standby	1 = standby/off-level
14...18			Reserved, returns 0	

Available commands:

- Read holding register
- Write single register
- Write multiple registers

Holding registers	Data type	Description	Data	Values
1	Modbus address	unsigned int.	Device address	1-247 default: 1
2	Modbus baud rate	unsigned int.	Modbus communication baud rate	1=9600 2=19200 default: 2
3	Modbus parity mode	unsigned int.	Parity check mode	0=8N1 1=8E1 2=8O1 default: 1
4	Device type	unsigned int.	Device type: read-only	32= TVSS5
5	HW version	unsigned int.	Hardware version, read-only	XXX
6	SW version	unsigned int.	Software version, read-only	XXX
7	Modbus enable			0, 1 default: 0
8...10			Reserved, returns 0	
11	Kickstart	unsigned int.	Kick start on/off	0, 1 0 off 1 - on
12	Remote	unsigned int.	Remote (BMS) on/off	0, 1 0 off 1 - on
13	Off-level	unsigned int.	Off-level on/off	0, 1 0- off 1 - on
14	0-10 V/10 V-0	unsigned int.	0-10 V/10 V-0	0, 1 0 off 1 - on
15...20			Reserved, returns 0	
21	Vout [V]	unsigned int.	Set output voltage	0, 80 - 415
22	Vmin [V]	unsigned int.	Set min. voltage	0, 80 - 250
23	Vmax [V]	unsigned int.	Set max. voltage	0, 260 - 415
24	Voff [V]	unsigned int.	Set off-level voltage	0, 10 - 600
25...40			Reserved, returns 0	

DIMENSIONS



order code	A	B	C	D	E	net weight	gross weight
TVSS5-30-DT	190	100	45	182	98.5	805 g	835 g
TVSS5-60-DT	190	100	45	182	98.5	745 g	775 g
TVSS5-30DDT	195	125	85	-	-	885 g	915 g
TVSS5-60DDT	195	125	85	-	-	825 g	855 g
TVSS5-30CDT	195	125	100	-	-	965 g	990 g
TVSS5-60CDT	195	125	100	-	-	905 g	935 g