

# Motor Speed Controller

5A 24V 125W, Mains Supplied



Basic Model  
SMD 5 AC

## Features

- DC-motor speed control
- Tacho or armature feedback
- One quadrant drive
- Easy to adjust
- Small size

## Quick reference data

- Supply voltage 230VAC
- Max output voltage 24V=
- I<sub>max</sub> motor cont. 5A
- Reference input Potentiometer 10kΩ
- Ambient temp. 0-40°C

SMD is designed for use with most types of PM-DC-motors with a maximum voltage of 24V and continuous current to 5A.

SMD is switched in contradiction to linear mode drives. This gives the drive a high conversion efficiency and thereof small losses. Additional cooling is not necessary.

SMD has the following functions: speed setpoint input, tacho interfacing, armature feedback, R<sub>x</sub>I compensation, current limit etc.

The SMD can optionally be delivered in special executions.

Here are some related examples from our product line.



SMD 5 DC, 24VDC version



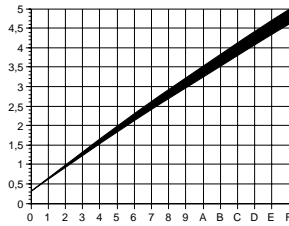
SMD 1 AB, 1A version



TMD 5 AE, encapsulated

## Adjustments

**1) Current limit.** Read the maximum allowed current for your motor from its marking plate or from the manufacturers catalogue. Set the  $I_{max}$  dial to an appropriate value from the graph.



Choose a lower value to protect your motor, or a slightly higher value to get more power (but shorter lifetime).

**2) Feedback.** There are two basic methods for feedback resulting in different speed accuracy:

a) If you are using armature feedback, **close** the **ROTOR/TACHO** switch and turn the **RxI** potentiometer up until the motor becomes unstable i.e. starts hunting or vibrating, and then adjust the potentiometer down about 10%.

b) Or, if you are using tacho feedback, **open** the **ROTOR/TACHO** switch and adjust the **FB** potentiometer until the motor follows a speed input change correctly.

**3) Speed reference.** There are three basic ways of controlling the speed:

a) Connect a 10k $\Omega$  potentiometer to terminals 10-11-12. Adjust the maximum speed with the  $n_{max}$  pot.

b) Link terminals 10 and 11 and set the desired speed with the  $n_{max}$  potentiometer only.

c) Use an external speed control voltage signal connected to terminals 11 and 12.

For a more detailed description of how to connect and adjust the SMD, refer to the users manual.

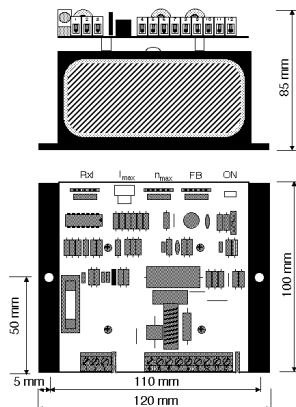
### List of connections:

| TB | Abbr.  | Function             | Comment   |
|----|--------|----------------------|---|
| 13 | AC     | Live                 |   |
| 14 |        |                      |   |
| 15 | AC     | Neutral              |   |
| 4  | +PWR   | +Power supply input  | Unregulated 24VDC output on mains versions.       |
| 5  | 0VPWR  | -Power supply input  | Unregulated 24VDC output on mains versions.       |
| 6  | A+     | +Motor output        |   |
| 7  | A-     | -Motor output        |   |
| 8  | T+     | Tacho feedback input | Use of tacho is optional.                         |
| 9  | T-     | Tacho feedback input | 0V reference                                      |
| 10 | +6V    | +6V output           | for external potentiometer                        |
| 11 | SPEED  | speed input          | Connect to TB10 for $n_{max}$ -pot speed control. |
| 12 | 0VCMDB | speed input          | 0V reference                                      |

Note that 0VPWR and the 0V reference are separate and may not be linked.

|                                | min | typ | max        | unit       | comment                                       |
|--------------------------------|-----|-----|------------|------------|---|
| AC supply voltage              | 195 | 230 | 253        | VAC        | 110V version available.                       |
| Max motor voltage              | 20  | 24  | 26         | VDC        | Valid for above AC supply at 1,0A $I_{motor}$ |
| Current limit max              | 4,6 | 4,8 | 5,0        | A          |   |
| Reference pot                  | 5   | 10  | 100        | k $\Omega$ |   |
| External speed control voltage |     | 6   | 30         | VDC        |   |
| Speed accuracy:                |     |     |            |            |   |
| Armature                       |     | 5   | $\pm$ %rpm |            | Dependant of load characteristics.            |
| Tacho                          |     | 0,5 | $\pm$ %rpm |            | Dependant of tacho, often better.             |
| Motor resistance range         | 0   |     | 2,2        | $\Omega$   | for RxI compensation                          |
| Tacho voltage                  |     |     | 100        | V          |   |

Special executions are available on request.



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SMD 5 AC  
SMD 5 BC