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SMS14U
SMS14B

Vers. 3.00

Stepper motor controller

The stepper motor controller SMS14 is used for the control of unipolar and bipolar motors.

Through adjustment of the jumpers (J1-J4), the following settings can be made.

J1	not set	Control of a unipolar step motor in half step mode (8 states)
	set	Control of a bipolar step motor with single-phase full step (4 states)
J2	not set	500 steps
	set	1000 steps
J3	not set	30% holding current, when target position is reached
	set	no holding current
J4	not set	Reference drive sets Closed state, 0% means Closed
	set	Reference drive sets Open state, 0% means Open

If a jumper is set at the bottom (on just one pin), it is in the rest position (= not set).

The positions of the jumpers are only read once as the device boots (= when supplying it with power). If the jumpers are adjusted during operation, their positions will only be updated if the device is restarted.

Reference drive

The SMS14 detects the position of the step motor via a reference drive. The step motor will be closed or opened completely, and the SMS14 gains its orientation via the reference drive.

If Jumper J4 is set, the SMS14 opens the step motor completely, and defines the position "0%" as the step motor being completely open.

If Jumper J4 is not set, the SMS14 closes the step motor completely, and defines the position "0%" as the step motor being completely closed.

The reference drive is carried out once as the device boots (= when power is supplied).

Holding current

If Jumper J3 is <u>not set</u>, the SMS14 outputs 30% of current to the step motor as soon as its target position is reached in order to hold that position.

If Jumper J3 is <u>set</u>, no holding current will be output.
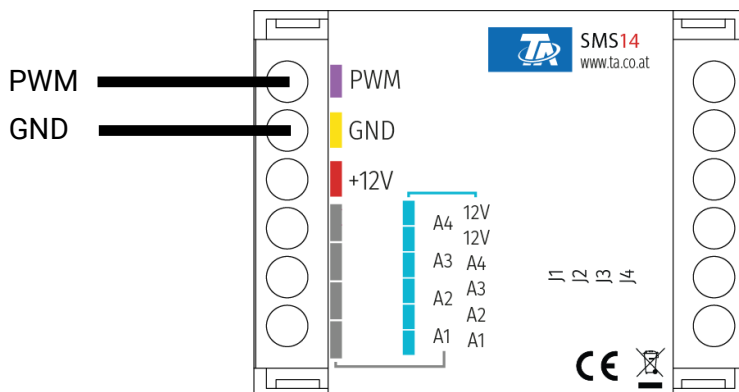
Power supply

The module requires a 12V power supply. Terminals for supply are situated on the left side of the PCB.
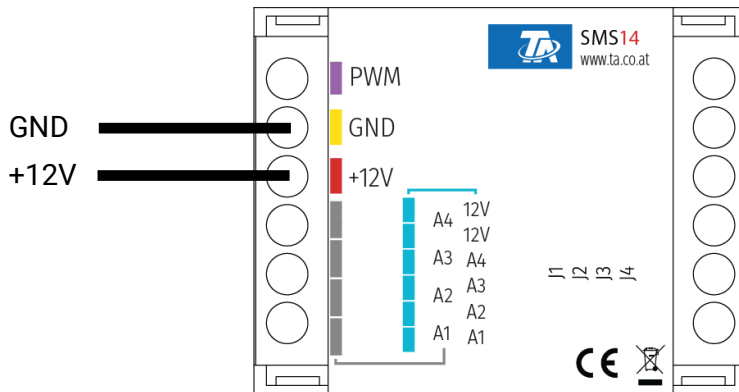
PWM control

The SMS14 has a PWM input. This allows for setting the target position of the connected step motor. Signals with a frequency between 500Hz and 3kHz can be read. 1kHz is recommended.

The PWM signal is interpreted linearly from 5% to 95%.
- <5% PWM: 0% of max. motor position
- 5%-95% PWM: sets target position linearly from 0-100% of max. motor position
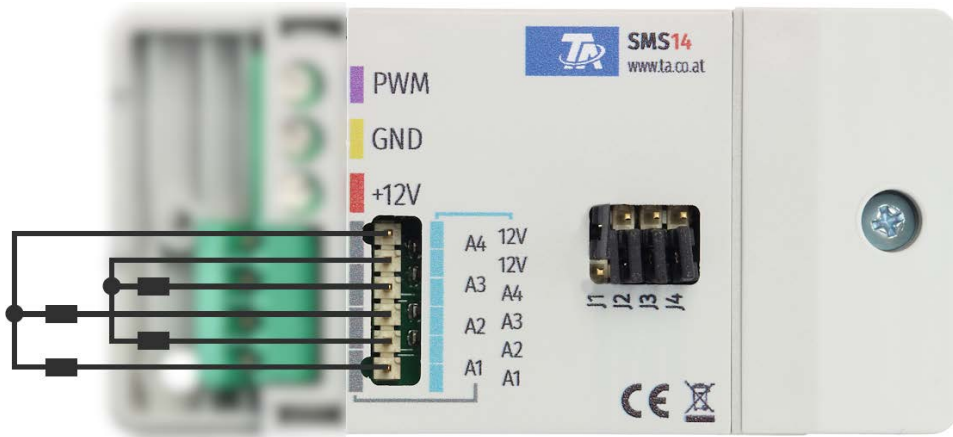- >95% PWM: 100% of max. motor position

Motor connection

Depending on the model of the motor, it is connected using 4 or 6 terminals. Only one motor can be connected.
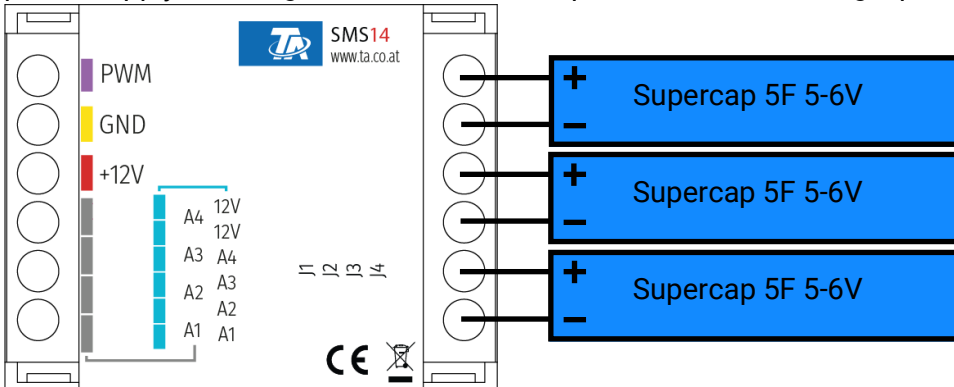
4 poles, bipolar

6 poles, unipolar

Super-capacitors (optional)

3 super-capacitors can be connected on the right side of the module. These serve as emergency power supply, allowing for the valve to the opened or closed during a power outage.

When power is out and super-capacitors are connected, the SMS14 sets the motor to 0% according to the setting of Jumper J4.

Technical data

Suitable for	12 step motor injection valves (unipolar or bipolar, defined by jumper setting J1)
min. coil resistance	>30 Ω
max. coil current	<400 mA
Suitable super-capacitors (not included)	3 x **5F** at **5-6V**