



**SMART MOTOR DEVICE**

*<http://smd.ee>*

**STEP MOTOR DRIVER  
SMD - 4.2HV**

MANUAL

SMD.42HV.002

2019

## 1. Product designation

Step motor driver SMD-4.2HV is an electronic device designed to operate with 2 or 4-phase stepper motor with maximum current per phase up to 4,2 Amp.

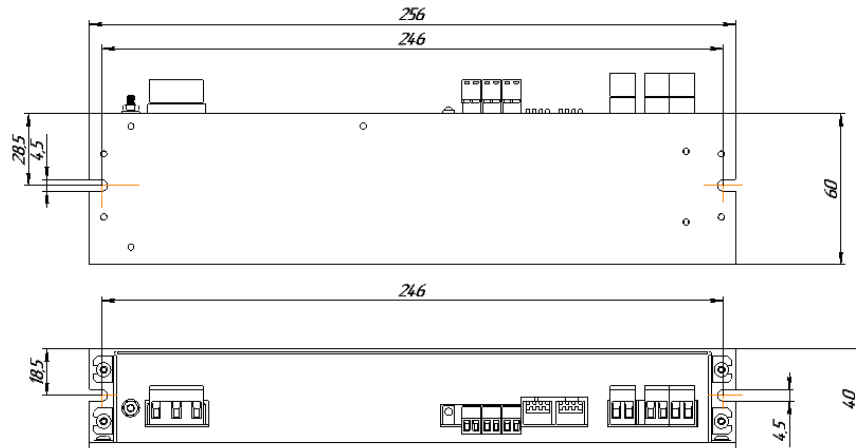
## 2. Technical characteristic

Maximum output current per phase, Amp	4,2
Minimum output current per phase, Amp	1,2
High voltage level, VDC	5..24*
Low voltage level, VDC	0..1
Logic signal current, mA	10...16
Maximum input frequency, kHz	50
Voltage input, VAC	~220V, 50Hz
Minimum "Step" pulse length, $\mu$ s	3
Direction setting time, $\mu$ s	5
Maximum overall dimensions, mm SMD-4.2	40x256x60

### Environmental Condition:

ambient temperature, °C	0...+50
humidity: 90% RH or less upon condition +25°C	
pressure, mm of mercury	650...800

\* Please, connect current-limiting resistance when use high level voltage more, then 5 VDC: 1 kOm and power not less then 0.5 W for 12- 24 VDC.



Img. 1 - Dimensions SMD-4.2HV.

## 3. Construction.

SMD-4.2 is designed as a circuit plate with electronics elements, installed on a heatsink plate and covered with a metal case. Besides electronic components, there are indicating and control elements, connection terminals and connectors on the board:

## 7. Warranty.

The manufacturer guarantees the failure-free operation of the controller for 12 months since date of sale when the operation conditions are satisfied – section 2.

The manufacturer reserves the right to make changes to the design and the scheme of the block which aren't worsening his characteristics.

The manufacturer sales department address: Smart Motor Devices OÜ,  
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Phone: + 372 6559914,  
e-mail: sale@smd.ee  
url: <http://smd.ee>

Date of sale:

- terminal screws for power supply, stepmotor windings and control circuit connection;
- LED for indication of the driver status;
- switches SW1 – SW2 to set the microstepping mode;
- switches SW1 – SW2 to set the microstepping mode;
- switch SW3 – to set full or reduced holding current;
- switch SW3 – to set full or reduced holding current.
- switch SW4– for inversion logic signal « EN ».

The SMD-4.2HV driver receives logic signals “Step”, “Direction” and “Enable” and convert them into motor commutation. The motor’s shaft moves one angle step (or microstep) as the driver receives one “Step” signal. One step (or microstep) executes as the front edge of the voltage pulse on the “STEP” input. Rotation direction depends on the voltage level and switches by changing voltage level on the “DIR” input. The motor can be urgent stopped by the active signal on the “EN” input.

Maximum phase current and microstepping mode are set by switches at the driver frame.

The SMD-4.2HV driver provides operation with 2 or 4-phase stepper motors, 4, 6 or 8 wires. Connect step motor wires to A+, A-, B+ and B- terminals of SMD-4.2 according to the table 1 provided on page 5.

## 4. Assembly and connection.

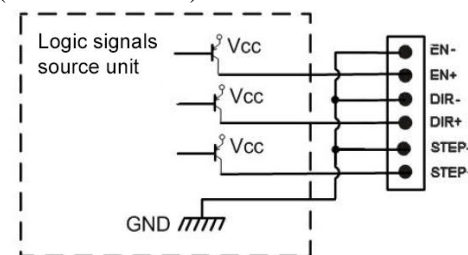
**ATTENTION: Power supply of the controller is dangerous for human’s health and life. It is necessary to observe rules of electro technical safety! You need to ground the controller!**

Please, learn this manual carefully before connection and assembly.

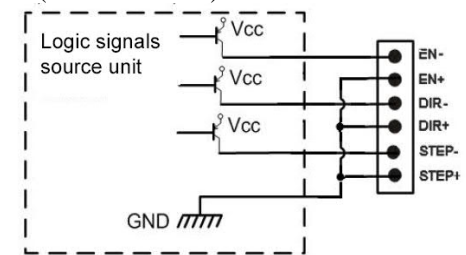
Please, wire just when power is off. Do not attempt to change wiring while the power is on.

Please, provide a reliable contact in connection terminals. During wiring, please, observe the polarity and wire management. Before connecting the power supply unit must be grounded!

Logic signals connection example 1:  
(common cathode)



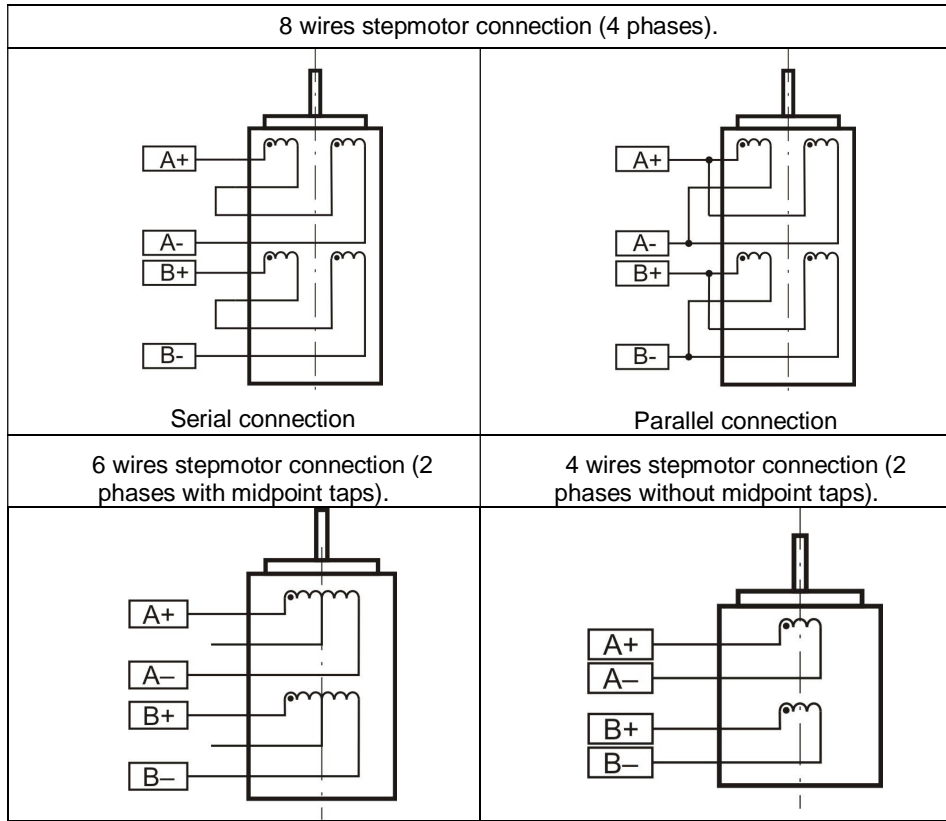
Logic signals connection example 2:  
(common anode)



Img 2. Connection scheme SMD-4.2HV

Please, connect current-limiting resistance when use high level voltage more, then 5 VDC: 1 kOm and power not less than 0.5 W for 12- 24 VDC

Table 1. Motor connection



**5. Before starting.**

1. Make sure the power supply and pulse generator is turned off.
2. Connect stepper motor to the block according to the table 1.
3. Connect logic source signal to the block according to the image 2.
4. Chose suitable for the motor maximum current per phase and set microswitches SW5-SW8 according to the table 2. The output current should be set according the motor's description. Low current leads to a weak torque of the motor, high current leads to the motor heating and can damage the motor.

Table 2. Maximum current per phase settings

Max current per phase, A	1.2	1.4	1.6	1.8	2.0	2.2	2.4	2.6
SW5	Off	On	Off	On	Off	On	Off	On
SW6	Off	Off	On	On	Off	Off	On	On
SW7	Off	Off	Off	Off	On	On	On	On
SW8	Off	Off	Off	Off	Off	Off	Off	Off

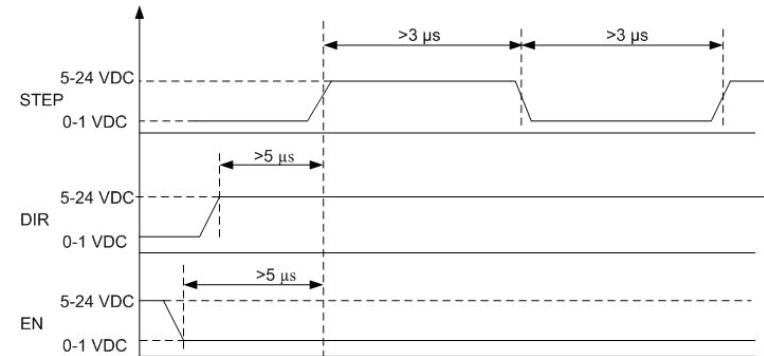
Max current per phase, A	2.8	3.0	3.2	3.4	3.6	3.8	4.0	4.2
SW5	Off	On	Off	On	Off	On	Off	On
SW6	Off	Off	On	On	Off	Off	On	On
SW7	Off	Off	Off	Off	On	On	On	On
SW8	On	On	On	On	On	On	On	On

5. Chose suitable microstepping mode and set microswitches SW1 and SW2 according to the table 3.

Table 3. Microstepping mode settings

	1	1/2	1/4	1/16
SW1	ON	ON	OFF	OFF
SW2	ON	OFF	ON	OFF
Steps number per revolution(for 1.8° motor)	200	400	800	3200

6. Chose holding current – 100% or 70% of maximum current per phase and set SW3: On – 100% and Off – 70%.
7. Turn on the power supply.
8. To control the stepper motor set the required sequence of logic signals “STEP”, “DIR” and “EN” according to the scheme - image 3. One step (or microstep) executes as the front edge of the voltage pulse on the “STEP” input. Direction switches by changing voltage level on the “DIR” input. The motor windings release as the front edge of the high voltage level on the “EN” input.



Img. 3 – STEP, DIR, EN signals for SW4 «on» position

Please, connect current-limiting resistance when use high level voltage more, then 5 VDC: 1 kOm and power not less than 0.5 W for 12- 24 VDC

**6. Delivery in complete sets**

The stepper motor driver SMD-4.2  
Manual SMD.42HV.002.

1pcs.  
1pcs.