



SMART MOTOR DEVICES
DRIVERS AND CONTROLLERS FOR ELECTROMOTORS

DRIVERS & CONTROLLERS

for stepper
DC brush
BLDC motors



Design and manufacture

Since 2011



SMART MOTOR DEVICES

Smart Motor Devices Ltd. is an Estonian privately owned company founded in Tallinn in 2011

We are a professional motor driver and controller manufacturer from Europe. We sell thousands of smart devices for various areas of different industries worldwide annually.



Our controller product line consists of 5 major types of drivers and controllers: drivers and controllers for stepping motors, integrated drivers for stepping motors, brush motor controllers, brushless motor controllers and integrated drivers for brushless motors.



We provide our smart products to a wide range of companies for the following applications: packing machines, CNC machines, robotics, vending machines, textile machines, metalworking and wood machines, health care equipment, household appliance products, etc.



Our engineering team has many years of experience in designing and implicating new engineering solutions into the modern world of advanced technologies. We produce products of the finest quality and providing our clients with after-sale service and support at the highest level is our number one priority.



Besides our production line in Estonia, where we are based, we have a factory in China, that allows us to provide European quality and to keep the prices on a competitive level with Asian producers. One of our goals is to customize your industrial applications for maximum performance. Our engineering team will develop hardware, firmware, and software solutions directly for the needs of the specific project. We can also provide OEM customers with exclusive solutions and products.



Our main goal is to provide our clients with high-end engineering solutions for their needs and projects on a professional level in order to establish a client-friendly environment for our present and future customers.

SMD-1.6 and SMD-2.8 open frame and carrier kit versions

Stepper motor drivers

Drivers SMD-1.6 and SMD-2.8 are designed to control small and middle-size stepper motors, and are supplied in two versions - without housing (open frame version) and in an open housing with a DIN clamp (carrier kit version). The compact and lightweight drivers are small in size and don't require much space at the installation site.

The drivers operate in microstepping mode up to 1/128, provide smooth stepper motor motion without vibration and noise, and high output torque.

SMD-1.6 open frame version
SMD-2.8 open frame version



SMD-1.6 carrier kit version
SMD-2.8 carrier kit version



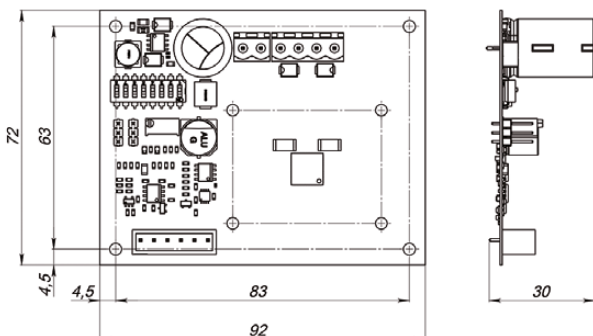
Control methods:

- Pulse position control STEP/DIR;
- Analog speed control:
 - voltage signal 0...10 VDC
 - built-in potentiometer

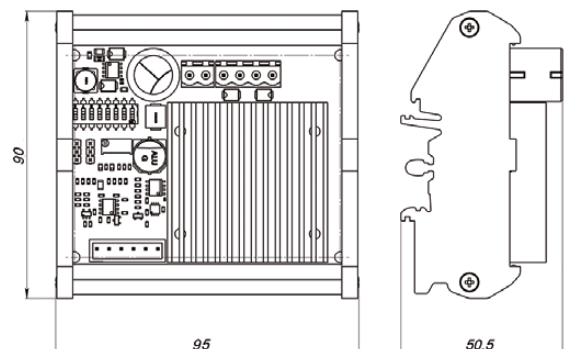
Main technical data

Power supply	12 - 24 VDC
Max. current per phase:	
• SMD-1.6	0.1 - 1.6 A
• SMD-2.8	1.3 - 2.8 A
Microstepping	1/1 - 1/128

SMD-1.6 and SMD-2.8 - open frame version



SMD-1.6 and SMD-2.8 - carrier kit versions



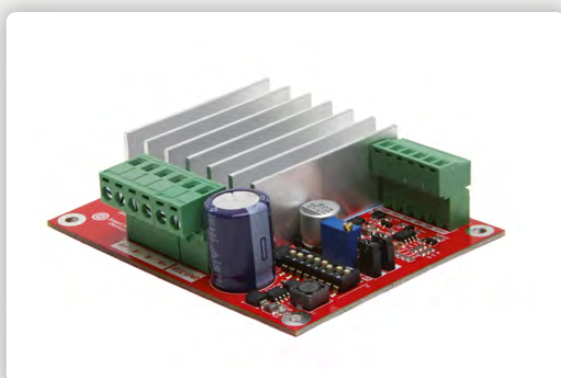
SMD-4.2 and SMD-8.0 open frame and carrier kit versions

Stepper motor drivers

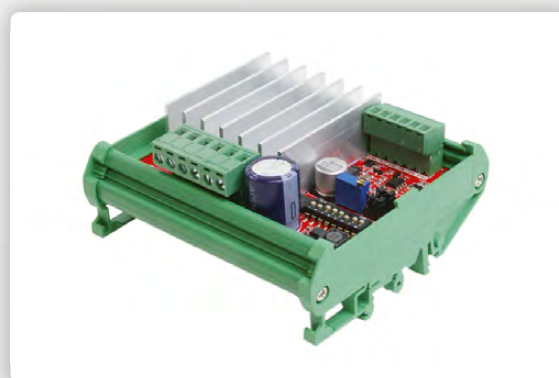
Drivers SMD-4.2 and SMD-8.0 are a good solution for stepper motors with current per phase up to 8 A, suitable for use in conditions of limited space at the installation site. There are two versions - without housing (open frame version) and in an open housing with DIN clamp (carrier kit version).

The drivers provide smooth stepper motor motion without vibration and noise, and high output torque.

SMD-4.2 open frame version
SMD-8.0 open frame version



SMD-4.2 carrier kit version
SMD-8.0 carrier kit version



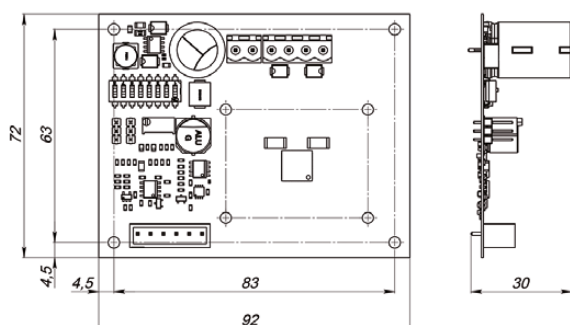
Control methods:

- Pulse position control STEP/DIR;
- Analog speed control:
 - voltage signal 0...10 VDC
 - built-in potentiometer

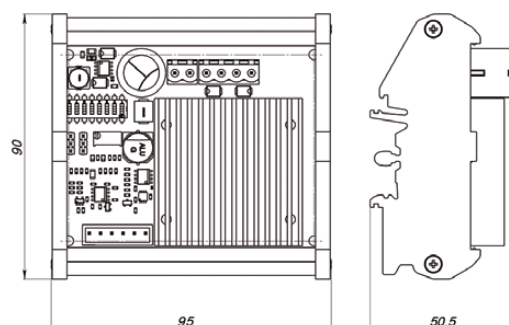
Main technical data

Power supply	12 - 48 VDC
Max. current per phase:	
• SMD-4.2	2.7 - 4.2 A
• SMD-8.0	5.0 - 8.0 A
Microstepping	1/1 - 1/256

SMD-4.2 and SMD-8.0 - open frame version



SMD-4.2 and SMD-8.0 - carrier kit versions



SMD-1.6DIN and SMD-2.8DIN

Stepper motor drivers

The drivers SMD-1.6DIN and SMD-2.8DIN are intended for small and medium size stepper motors with a current per phase up to 2.8 A. The control method is standard STEP/DIR. The driver provides smooth and exact positioning. Holding motor current can be reduced in order to make lower heating and save energy, this function can be switched on or off by a customer.

The drivers have a FAULT status output to monitor and indicate abnormal situations.

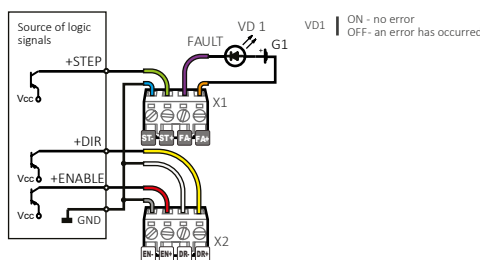
The safety function STO (Safe Torque Off) provides the removal of the holding torque and de-energization of the stepper motor windings in emergency situations.



Main technical data

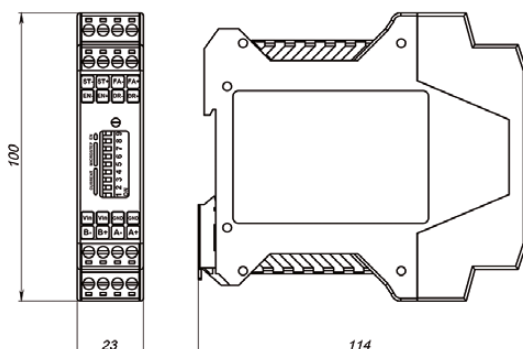
Power supply	12 - 24 VDC
Max. current per phase:	
• SMD-1.6DIN	0.1 - 1.6 A
• SMD-2.8DIN	1.3 - 2.8 A
Inputs STEP, DIR, ENABLE:	
• High voltage level	5 - 12 VDC
• Low voltage level	0 - 1 VDC
Microstepping	1/1 - 1/256
Control method	STEP/DIR

Driver connection diagram



The driver is controlled by standard signals STEP, DIR, and ENABLE. The motor motion is allowed when a signal is present at the «ENABLE» input (this signal can be inverted if needed).

Displacement of a stepper motor by one step or microstep is carried out along the edge of the «STEP» signal, in the direction specified by the «DIRECTION» signal.



FAULT output:

- Signal type – optocoupler output
- Maximum voltage – 48 VDC
- Maximum load – 50 mA
- Resistance of closed contacts in normal operation mode – no more than 100 Ohm

SMD-4.2DIN ver.2 and SMD-8.0DIN ver.2

Stepper motor drivers

The stepper motor drivers SMD-4.2DIN ver.2 and SMD-8.0DIN ver.2 are designed to control motors with current per phase up to 8.0 A. These models provide different control modes, including standard STEP/DIR positioning, analog speed or position control, constant speed rotation.

The drivers provide excellent motor dynamics and high torque performance.



Main technical data

Power supply	12 - 48 VDC
Max. current per phase:	
• SMD-4.2DIN ver.2	0.1 - 4.2 A
• SMD-8.0DIN ver.2	1.0 - 8.0 A
Inputs STEP, DIR, ENABLE:	
• High voltage level	5 - 12 VDC
• Low voltage level	0 - 1 VDC
Microstepping	1/1 - 1/128

Control methods:

SMD-4.2DIN ver.2

- Pulse position control STEP/DIR
- Analog speed or shaft angle control 0...5 VDC
- Analog speed or shaft angle control with built-in potentiometer
- Constant speed rotation

SMD-8.0DIN ver.2

- Pulse position control STEP/DIR
- Analog speed control with built-in potentiometer

FAULT output:

- Signal type – optocoupler output
- Load – max 48 VDC, max. 50 mA
- Resistance of closed contacts:
 - normal operation - no more than 160 Ohm
 - alarm mode - tends to infinity

SMD-4.2HV – stepper motor driver 220 VAC



Main technical data

- Power supply – 220 VAC
- Max. current per phase – 4.2 A
- Microstepping - 1/1 - 1/16
- Control method - STEP/DIR

We also offer stepper motor driver with a built-in power supply unit. The driver SMD-4.2HV is supplied in a metal housing.

Please, contact our sales department for detailed information.

SMSD-4.2Modbus and SMSD-8.0Modbus

Programmable stepper motor controllers

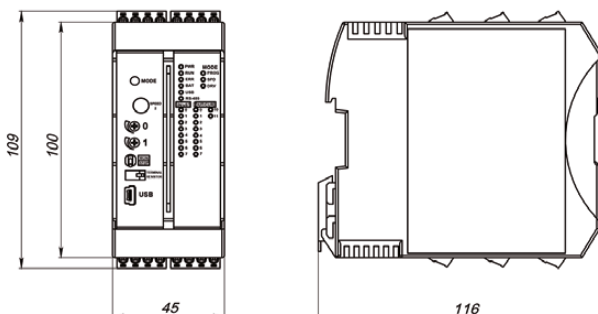
SMSD-4.2Modbus and SMSD-8.0Modbus are programmable stepper motor controllers with extended functionality. The units operate under a PLC or PC control or work autonomously in a standalone mode, according to a custom algorithm stored in the internal memory.

Operation algorithms (user programs) are executed like PLC programs and support more than 200 types of commands, including mathematical and logical functions, interruptions, timers, and counters.



Main technical data

Power supply	12 - 48 VDC
Max. current per phase:	
• SMSD-4.2Modbus	up to 4.2 A
• SMSD-8.0Modbus	up to 8.0 A
Microstepping	1/1 - 1/256
Interfaces	RS-485, USB
Communication protocol	Modbus (ASCII/RTU)
Programmable inputs/outputs	8 inputs 10 outputs



Control methods:

- Real-time control with commands via Modbus protocol
- Program control mode - operation according to a user program
- Analog speed or position control with built-in potentiometer
- Pulse position control STEP/DIR

SMSD-4.2RS – programmable stepper motor controller



Main technical data

- Power supply - 12 - 48 VDC
- Max. current per phase - 0.2 - 4.2 A
- Microstepping - 1/1 - 1/16

Control methods:

- Real-time control with commands via RS-232/RS-485
- Program control mode - operation according to a user program
- Analog speed control with built-in potentiometer
- Pulse position control STEP/DIR

BMD-20DIN, BMD-20DIN ver.2, BMD-40DIN

DC brush motor drivers

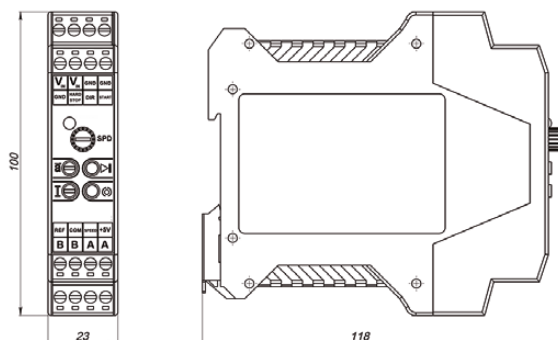
BMD-20DIN, BMD-20DIN ver.2, and BMD-40DIN are speed drivers for DC brush motors. Motor speed is regulated by an analog signal or can be adjusted by an internal potentiometer. Acceleration and deceleration time is also adjusted by potentiometers.

The speed controller provides a current limitation function to prevent motor overloading. The units provide a «Safe Stop 1» function, which turns the motor to emergency stop state in case of a break in the electrical protection circuit «HARD STOP».



Main technical data

Power supply	12 - 24 VDC
Motor current (adjusted):	
• BMD-20DIN and BMD-20DIN ver.2	0.1 - 20 A
• BMD-40DIN	1.0 - 40 A
Short circuit protection:	
• BMD-20DIN and BMD-20DIN ver.2	30 A, 15 μ s
• BMD-40DIN	100 A, 15 μ s
Speed control range	1:100



Control methods:

BMD-20DIN and BMD-40DIN

- internal potentiometer;
- external potentiometer;
- analog signal 0...5 VDC;

BMD-20DIN ver.2

- analog signal 4...20 mA;
- analog signal -10...+10 VDC;
- PWM regulation;
- internal potentiometer;
- external potentiometer;
- analog signal 0...5 VDC;

Parameters of external direction and start/stop signals:

- input type: clean contact;
- maximum resistance of the closed contacts: 4.7 kOhm;
- maximum input current: 0.5 mA;
- «START/STOP» and «DIR» inputs logic can be easily adjusted by a customer: the inputs can operate both as per signal level and as per a front of the signal; the default setting is operation as per a front of the signal for «START/STOP» input and as per a level of the signal for «DIR» input.

BMSD-20Modbus and BMSD-40Modbus

Programmable DC brush motor controllers

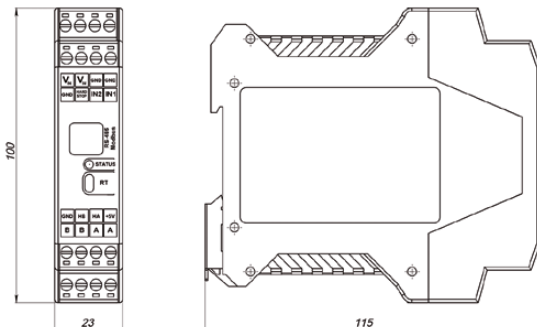
BMSD-20Modbus and BMSD-40Modbus are programmable controllers for DC brush motors. The controllers regulate motor speed, set the direction of rotation, provide positioning and speed stabilization when using a motor with Hall sensors, control acceleration, and deceleration. The units can be controlled via RS-485 Modbus (ASCII or RTU) or operate in a standalone mode according to a stored user program.

The current limitation function is provided and protects the motor from overloads. The controllers provide an emergency stops function – motor stop in case of a break in the electrical protection circuit «HARD STOP».



Main technical data

Power supply	12 - 24 VDC
Motor current (adjusted):	
• BMSD-20Modbus	1 - 20 A
• BMSD-40Modbus	2 - 40 A
Short circuit protection:	
• BMSD-20Modbus	30 A, 15 μ s
• BMSD-40Modbus	100 A, 15 μ s
Speed control range	1:100



Control methods

- Autonomous standalone operation according to the control user program;
- Control from PC or PLC via Modbus protocol;
- Combined mode – execution of a given operation algorithm and execution of commands transmitted via Modbus.

Programming

The programming function allows creating and storing user programs in the unit's memory. We provide a software for setting up, programming and state control of the drive.

The next functionality is available for programming:

- setting movement parameters (speed, acceleration, positioning);
- arithmetic and logical operators;
- loops and branches;
- two programmable inputs.

BLD-20DIN and BLSD-20Modbus

BLDC motor controllers

We offer two control units for BLDC motors – BLD-20DIN and BLSD-20Modbus. The controllers are intended for small and medium size DC brushless motors with Hall sensors.

BLD-20DIN is a simple speed driver. The unit controls motor speed and direction, provides smooth start and stop.

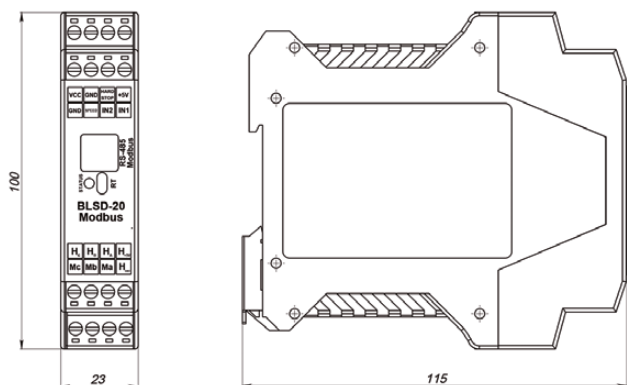
BLSD-20Modbus is a programmable controller. This model provides RS-485 Modbus ASCII/RTU communication for programming, setting of operation parameters and state control. BLSD-20Modbus provides speed and position control, holding possibility. The controllers have active braking capability and provide four-quadrant control of a DC brushless motor. The programming function of BLSD-20Modbus allows creating and storing user programs in the unit's memory. Arithmetic and logical operators, loops, and branches are available for programming. 2 programmable inputs are available to be used in user programs.

The controllers provide setting the motor current limit, which protects a system from damage. The controllers provide an emergency stop function – motor stop in case of a break in the electrical protection circuit «HARD STOP».



Main technical data

Power supply	12 - 48 VDC
Motor current (adjusted)	0.1 - 20 A
Max. motor current	80 A
Speed control range	1:100



Control methods

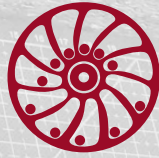
BLD-20DIN

Analog speed control:

- 0...5 VDC;
- built-in potentiometer

BLSD-20Modbus

- Real-time speed and position control by commands via RS-485 Modbus;
- Program control mode according to a user program, stored in the device memory;
- Analog speed control with built-in potentiometer;
- Analog speed control with voltage signal 0...5 VDC.



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DRIVERS AND CONTROLLERS FOR ELECTROMOTORS



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