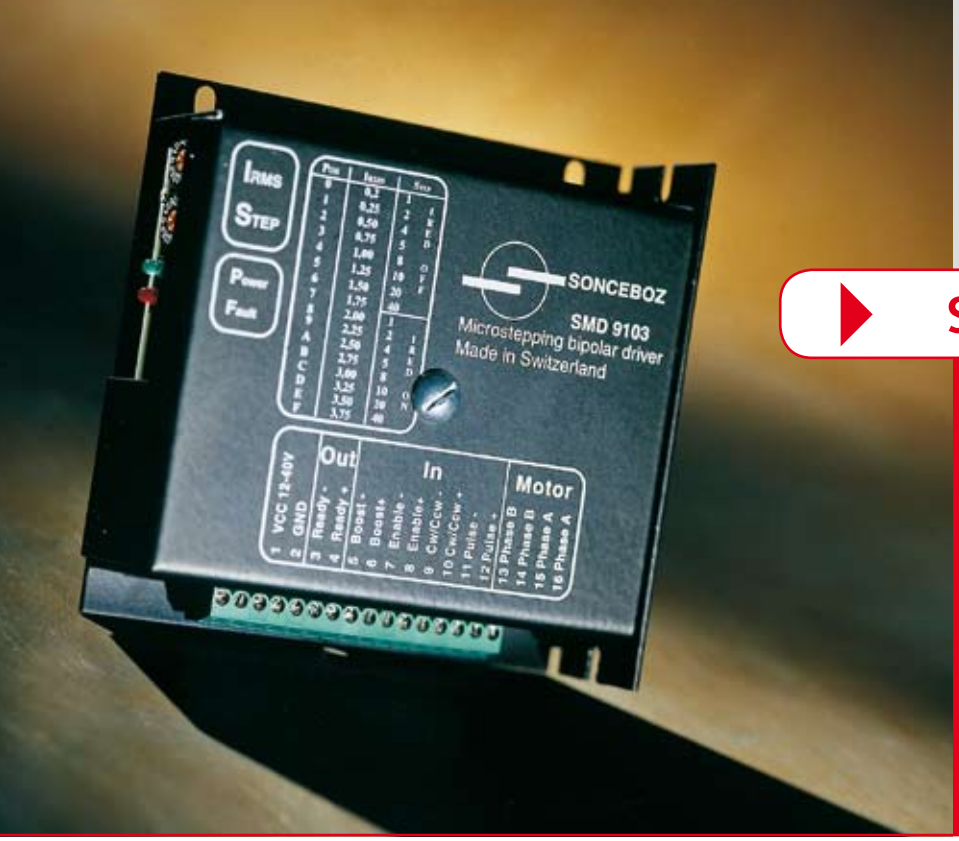

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Stepper motor controller

9103

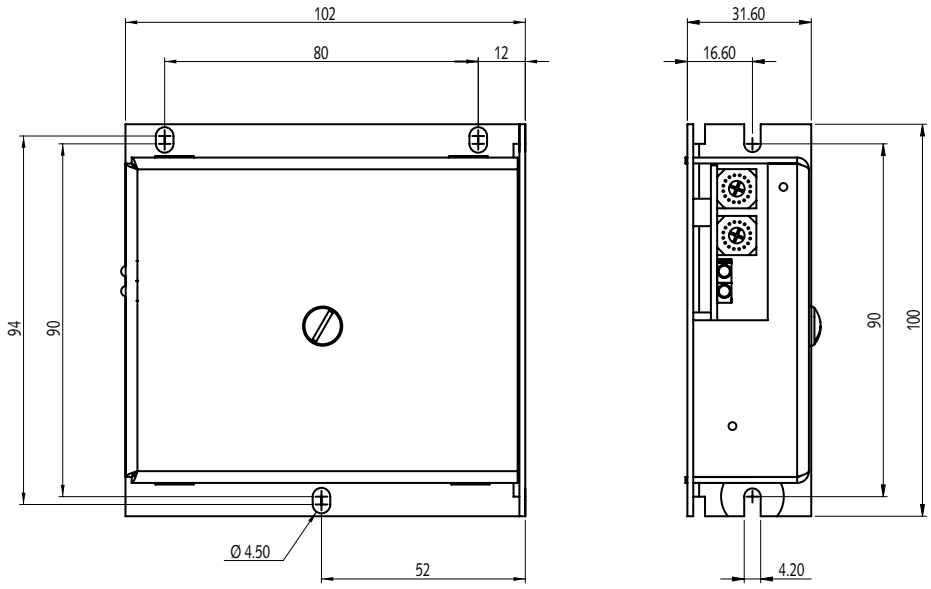
RoHS compliant 2002 / 95 / EC

- Adjustable Microstep ..... 1/2 to 1/40
- Adjustable Motor Current ... 0.2 to 4 Aeff
- Interface ..... Pulse
  Direction
  Boost
  Enable
  Ready (output)
- Dimensions ..... 100x102x32 mm

- **Compact:** the integration of a powerful microcontroller offers an user-friendly driver with a high degree of flexibility.
- **Interface:** all digital inputs have optocouplers (isolation). Microsteps and motor current are adjustable when the driver is running.
- **High step input frequency:** the driver allows a step frequency up to 200 kHz.
- **High resolution:** the controller drives motor, with 200 steps per revolution, to rotate practically without vibration and with a resolution from 1.8° (full step) to 0.045° (1/40).
- **Intelligent driver:** enable the boost input increases the torque up to 33 % and is particularly useful for acceleration. In order to minimize the temperature rise, the current is automatically reduced to 2/3 of the nominal value at standstill.

Dimensions

Drawing not to scale. All dimensions in mm.



Technical data

Designation	Value	Unit
Nominal phase current	3.75	A
Max current per phase with Boost	4	A
Motor current selection (Inom)	0.2 ; 0.25 ... 3.75	A
Increment	0.25	A
Boosted current (limited to 4 A max)	133% Inom	-
Reduced current (limited to 0.2 A min)	66% Inom	-
Reduced current delay after last step only available with step selection from 8 to F	100	ms
Power supply: Inom ≤ 2.5 A Inom > 2.5 A	12 ... 40 18 ... 40	V V
Selectable microstep	1/1 ; 1/2 ; 1/4 ; 1/5 ; 1/8 ; 1/10 ; 1/20 ; 1/40	-
Chopper frequency	32	kHz
Maximum step input frequency	200	kHz
Optocoupler inputs for: - motor current on (Enable) - step pulses (Pulse) - direction of rotation (CW/CCW) - motor current boost (Boost)	Typical: 5 16	 V mA
Optocoupler output for: - No default (Ready)	Max: 30 10	 V mA

Error detection and diagnosis

State	Ready output	Green LED	Red LED	Current	Restart
No error	1	ON	OFF	Enabled	-
Motor short-circuit	0	OFF	ON	Disabled	No
Maximum step input frequency	0	ON	Blinking	Disabled	Enable = 0
Overtemperature (> 80° C)	0	Blinking	Blinking	Disabled	T < 75° C and Enable = 0
Power supply undervoltage *< 16 Vdc, **< 11 Vdc	0	Blinking	OFF	Disabled	*>18 Vdc or **>12 Vdc and Enable = 0
Pwer supply overvoltage (> 45 Vdc)	0	Blinking	ON	Disabled	< 40 Vdc and Enable = 0

*≤ 2.5 A ** > 2.5 A

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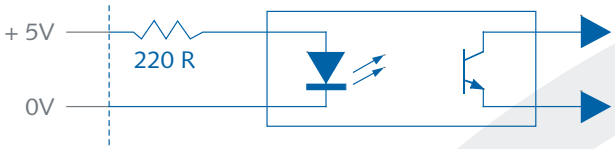
Electrical Interface

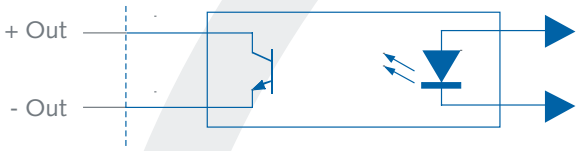
• Inputs

The inputs are compatible with 5 V logic. The increase of logical voltage is allowable up to 24 Vdc when an external resistor is added in order to respect the typical value of the input current.



• Output

The Ready output has an optocoupler link (Open collector). The maximum value is 30 Vdc for the supply and 10 mA for the current.



• Connector pin assignment

Pin N°	Signal	Description
1	VCC +	Supply 12 (18) – 40 Vdc
2	GND	
3	Ready -	No default output
4	Ready +	
5	Boost - (0 V)	Motor current boost input
6	Boost + (5 V)	
7	Enable - (0 V)	Motor current on input
8	Enable + (5 V)	
9	CW/CCW - (0 V)	Direction of rotation input
10	CW/CCW + (5 V)	
11	Pulse - (0 V)	Step pulse input
12	Pulse + (5V)	
13	Phase B2	Phase B of motor
14	Phase B1	
15	Phase A2	Phase A of motor
16	Phase A1	

Directives & Operating conditions

Operating temperature, Inom ≤ 2 A	0… 60° C
Operating temperature, Inom > 2 A	0… 40° C
Storage temperature	-40… + 125° C
Directives	2002/95/EC (RoHS)

Installation

The cables insulation must withstand at mean 85° C. The cables cross-section must be at mean AWG. The cables between the power supply and the controller, and between the controller and the motor must not be longer than 0.3 m.

Ordering information

Type	Ordering code
9103 standard	9103R002

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