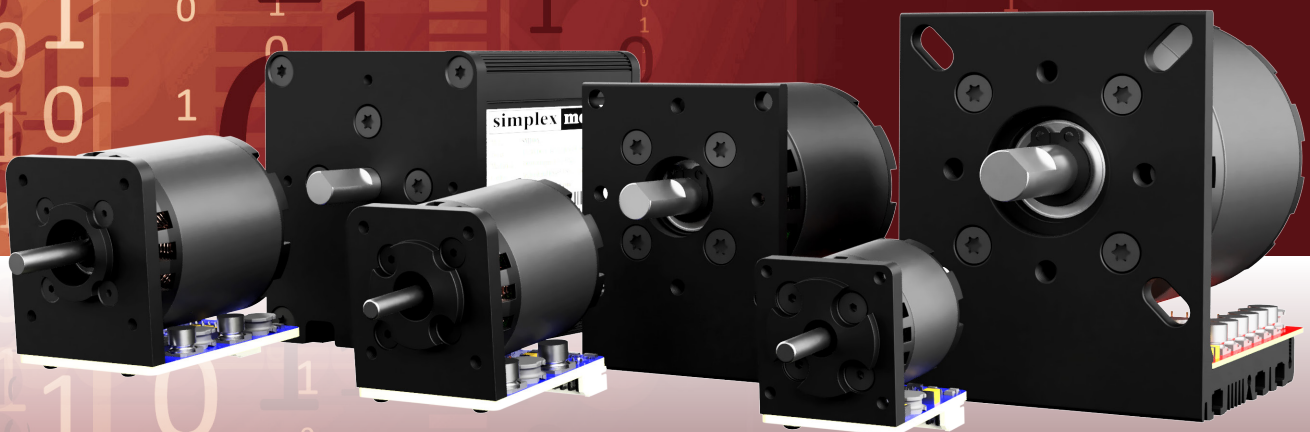


simplex motion

Integrated Servomotors Speed Control Motors

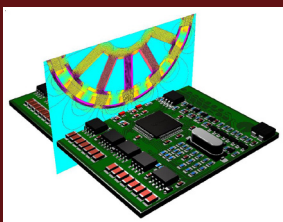
Technical data



MADE IN SWEDEN

Simplex Motion Integrated Servomotors

The Simplex Motion integrated servomotor is a brushless DC motor with integrated electronics and outrunner rotor. The outrunner rotor design, with permanent magnets, makes the motor compact and powerful relative its size.



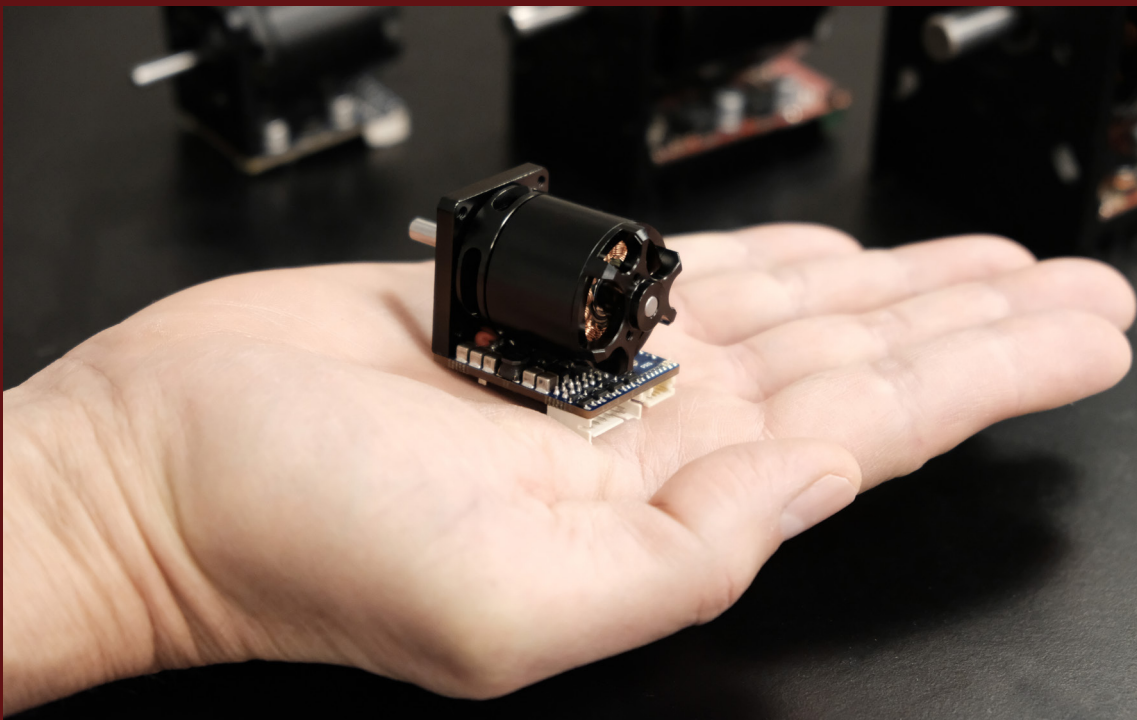
Thanks to a patented sensor technology, the traditional encoder solution is replaced and there are no rotating parts for positioning feedback. The patented sensor technology ensures smooth running and precise control. Together with the integrated drive and control, the servomotors become very energy efficient.

The motors can be configured for external control systems, programmed to run as

stand-alone or in combination as hybrid control. Programming and configuration is possible with the free software Simplex Motion Tool, a straightforward and easy to use software.

Simplex Motion Speed Control Motors

Simplex Motion speed control motors are based on the same design as the integrated servomotors. The speed motor series is optimized and configured for constant speed and torque control. Driver and I/Os for analog and digital control are integrated and the motors are ready to run when connected.



Half weight – double torque

Reduce weight and maintain high power output – excellent torque/weight ratio

Make slim and **compact designs** – high torque to volume ratio

Reduce components – all in one, motor, encoder and control electronics integrated on the same PCBA

Decentralized control – Use the motor as a control system with the built-in PLC function and let the motor control both the motion and peripheral units.

Enclosed or open design – for the SH motors enclosure is optional. Reduce weight, size, and cost with open design, ideal for designing into machines.

Run the motor **stand-alone** – built-in control functions

Synchronize the motors – built-in master/slave, slave/master communication

Customized application – write your own applications and download to the motor microprocessor for customized motion.

High durability – the only moving parts are the rotor bearings

Less wasted energy – the motors have high efficiency

Easy startup – program and configure with our free software Simplex Motion Tool

Functions

Decentralized functions

Use the motor as a decentralized part of a control system. The stand-alone feature in combination with bus communication, makes it possible to move all, or part of, the logic to the motor.

Master/Slave synchronization

Synchronization of position or speed is done easily when connecting the motors with SMCAN. The motors interact and manage all the synchronization, without the need of any external control system.

Motor information sharing

Apart from synchronizing, the SMCAN makes it easy to share information. Start/stop signals, sensor data, running data etc. can be shared between motors and external systems.

Logic Event programming

Easy programming of complex functionality directly into the motor with simple logic event expressions.

Application Programming

Take motor control to the next level by downloading your customized applications in C code to the motors.

Heating

In cold environments, the motors can be used as a heating source, both when stationary and rotating.

Homing

Homing is standard on all models. The homing is triggered by an external limit switch or by a configured torque limit.

Sequence control

For repetitive motions, the sequence programming can be used to control both position/speed and time.

Systemization

Stand-alone

Let the motor run as stand-alone and take full control by utilizing the built-in functions. The I/Os can be used for controlling the motor, other motors, or peripheral components in a system. Customer specific applications can also be used for complex control.

Motor to motor communication

Simplex Motion servomotors can communicate with each other, without any external control system. Synchronize position, speed, and share other control parameters easily.

BUS communication

Operate the motor with bus communication and access all functions and parameters of the motors. Available interfaces are Modbus, Wireless Modbus, CANOpen and SMCAN.

Hybrid control

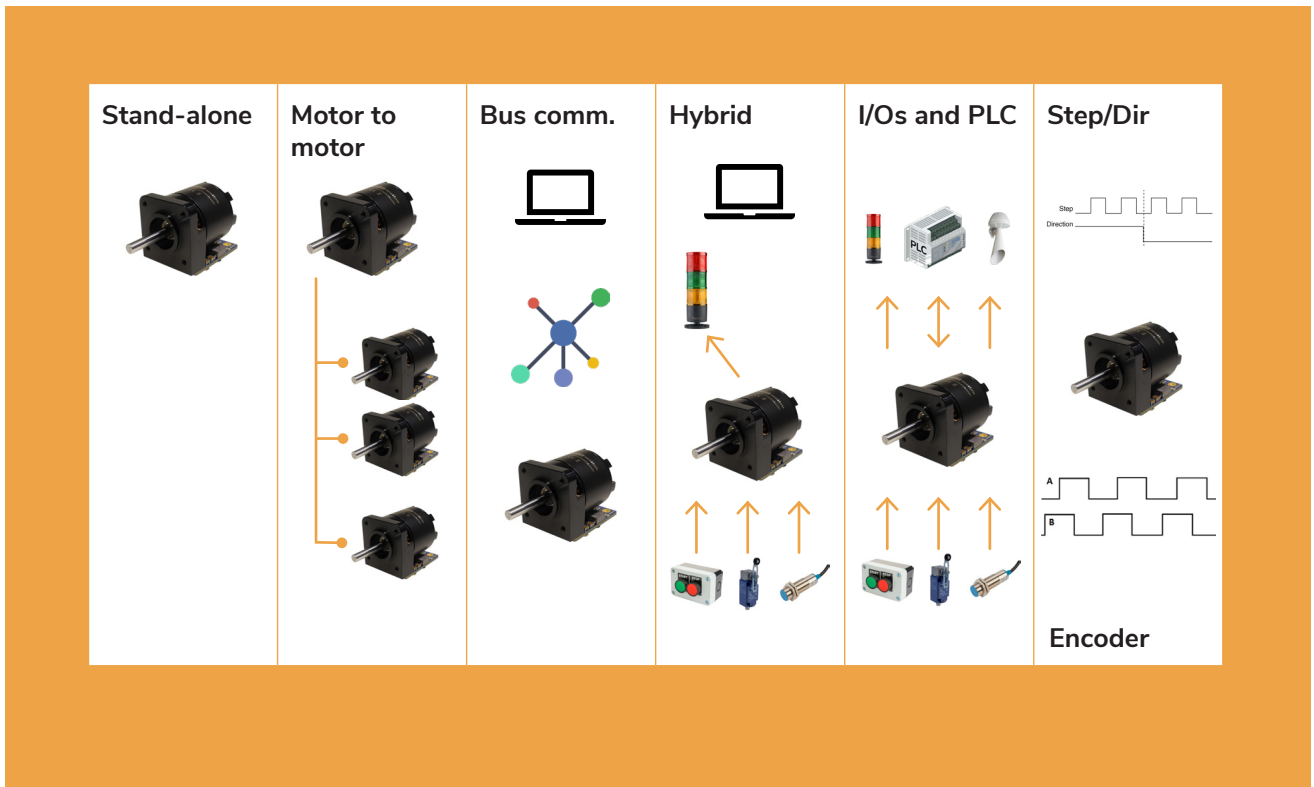
The motors can be controlled with a bus and other external systems in combination with the integrated PLC functions. Control the motor externally, utilize the stand-alone feature and let the integrated PLC function control peripheral components and units.

I/O interface and PLC

Analog inputs and digital I/Os are available for the motor control. Analog inputs for speed, torque, position control etc. Digital inputs for start, direction, limit switches, sensors etc. Digital outputs for relays, indicators, brakes etc.

Step/Dir and Encoder

The motors can be controlled through Step/Dir interface or quadrature encoder signals. This can be used to facilitate a replacement of e.g., a stepper motor.



Accessories

Simplex Motion offers a variety of accessories that can be added to the motors for an even more attractive offer.

Gearboxes

Planetary gearboxes with high precision and low backlash, adapted to fit each motor size. Available in gear ratios between 2:1- 32:1 as standard, others on request.

Brakes

Electromechanical brakes are available in different sizes, depending on the application needs. Brake and holding torque 1-2 Nm. Can be delivered with flange and axis adapter.

Wireless communication

Wireless communication modules for Bluetooth and Wireless Modbus are available. Operate the motor and get condition and parametric data with no cables.

I/O card

Development interface boards, when galvanically isolated I/Os are needed.

Communication & configuration board

For easy and quick startup, a communication and configuration board is available. It includes a USB to Modbus functionality for easy communication with Simplex Motion Tool as well as switches and potentiometer for startup and testing.

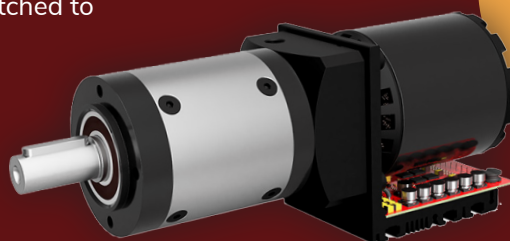
Cables

Cables are available for easy connection between motors and accessories.



Motor Drive Unit

Combine the Simplex Motion integrated servomotor with a brake, a customized gearbox, or both, and get a compact drive unit perfectly matched to your application needs.

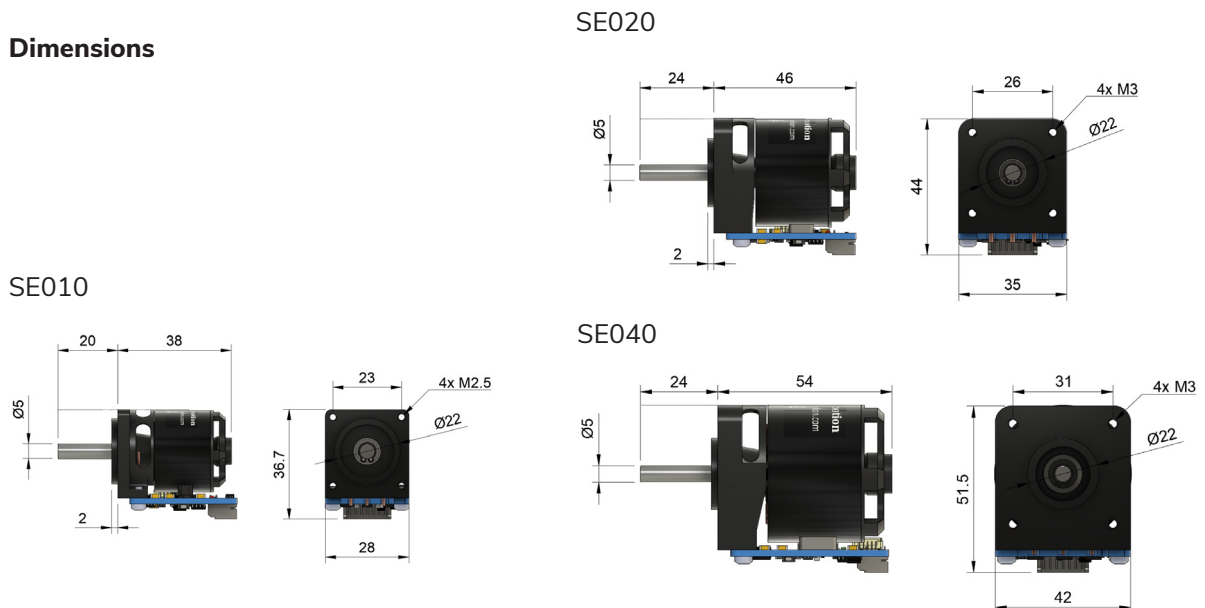


The most compact motor drive unit in the world?

Technical data

MOTOR SPEC.		SE010A	SE020A	SE040A
Torque	At nominal rpm	60 mNm (8.5 oz-in)	120 mNm (17 oz-in)	280 mNm (30 oz-in)
	Continuous stall	50 mNm (7.1 oz-in)	100 mNm (14 oz-in)	280 mNm (30 oz-in)
	Peak	200 mNm (28 oz-in)	500 mNm (71 oz-in)	800 mNm (113 oz-in)
Speed	Nominal	4000 rpm	4000 rpm	4000 rpm
	Peak	6000 rpm	6000 rpm	6000 rpm
Power	Continuous	25 W (in open air)	50 W (in open air)	120 W (in open air)
	Peak	75 W	150 W	360 W
Efficiency	Up to	70%	75%	80%
Torque/Weight	Nominal	0,75 Nm/kg	0,75 Nm/kg	1,00 Nm/kg
ELECTRICAL SPEC.				
Supply voltage	Typical (Range)	24 V (12-48 V)	24 V (12-48 V)	24 V (12-48 V)
Supply Current at 24V	Idle	0.03 A	0.03 A	0.03 A
	Continuous	1.5 A	3.0 A	6.3 A
	Peak	4.5 A	9.0 A	19 A
MECHANICAL SPEC.				
Dimensions	Body (L x W x H)	38 x 28 x 36 mm	46 x 35 x 45 mm	54 x 42 x 52.5 mm
	Shaft	D5 x 20 mm	D5 x 24 mm	D5 x 24 mm
Nema size		Nema 11	Nema 14	Nema 17
Mounting Weight		M2.5 screws	M3 screws	M3 screws
		80 g (2.85 oz)	160 g (5.65 oz)	280 g (8.9 oz)
CONTROLLER SPEC.				
Simplex Motion Encoder Solution	Counts per revolution	4096 (12 bits) as default, 8192 (13bits) and 16384 (14 bits) available		
	Resolution	0.09° as default, 0.044° and 0.022° available		
Protection		overcurrent, torque, voltage, temperature, locked shaft		
Interfaces		USB / RS485 / RS232 TTL / CAN / Step/Dir / Quadrature Encoder / Analog input / Digital I/O		
Digital Inputs, IN1-8	Maximum voltage	-0.5..+6.0 V		
Analog inputs, IN1-4	Maximum voltage	-0.5..+6.0 V		
	A/D range	0..+3.3 V		
Digital outputs, OUT1-4	Control	Logic, single pulse, PWM, RC servo control		
	Maximum voltage	-0.5..+6.0V		

Dimensions

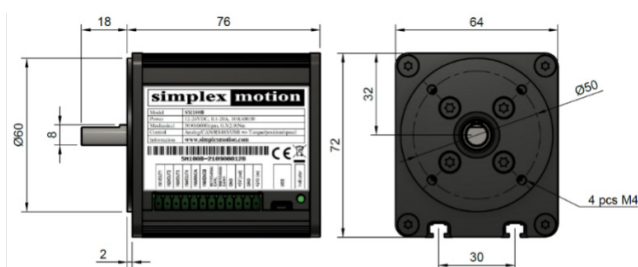


Technical data

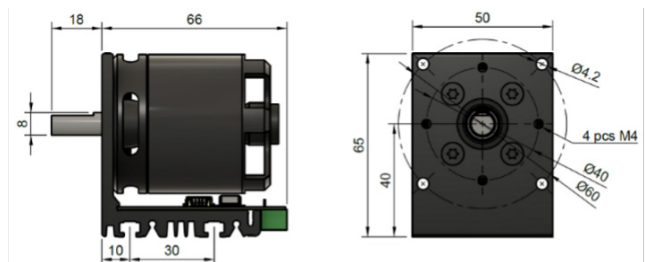
MOTOR SPEC.		SM100	SH100	SH200
Torque	At nominal rpm	0.32 Nm (45 oz-in)	0.51 Nm (72 oz-in)	0.72 Nm (100 oz-in)
	Continuous stall	0.55 Nm (78 oz-in)	0.55 Nm (78 oz-in)	1.10 Nm (150 oz-in)
	Peak	2.00 Nm (280 oz-in)	2.00 Nm (280 oz-in)	4.00 Nm (565 oz-in)
Speed	Nominal	3000 rpm	3000 rpm	4000 rpm
	Peak	6000 rpm	6000 rpm	6000 rpm
Power	Continuous	100 W (in open air)	160 W (in open air)	300 W (in open air)
	Peak	400 W	400 W	900 W
Efficiency	Up to	80%	80%	86%
Torque/Weight	Nominal	0,49 Nm/kg	1,02 Nm/kg	0,64 Nm/kg
ELECTRICAL SPEC.				
Supply voltage	Typical (Range)	24V (12-24V)	24V (12-24V)	48V (12-48V)
Supply Current at 24V	Idle	0.1 A	0.1 A	0.05 A
	Continuous	8 A	8 A	8 A
	Peak	25 A	25 A	25 A
MECHANICAL SPEC.				
Dimensions	Body (L x W x H)	74 x 64 x 72 mm	71 x 50 x 65 mm	83.5 x 64 x 80mm
	Shaft	D8 x 18 mm	D8 x 16 mm	D10 x 22 mm
Mounting		M4 Screws	M4 Screws	M5 Screws
Weight		0.65 kg (22,9 oz)	0.5 kg (17,6 oz)	1.13 kg (39,9 oz)
CONTROLLER SPEC.				
Simplex Motion Encoder Solution	Counts per revolution	4096 (12 bits) as default, 8192 (13bits) and 16384 (14 bits) available		
	Resolution	0.09° as default, 0.044° and 0.022° available		
Protection		overcurrent, torque, voltage, temperature, locked shaft		
Interfaces		USB / RS485 / RS232 TTL / CAN / Step/Dir / Quadrature encoder / Analog control / I/O		
Digital Inputs, IN1-4	Maximum voltage	-0.5..+30 V		
Digital inputs, IN5-8	Maximum voltage	-0.5..+8.0 V		
Analog inputs, IN1-4	Maximum voltage	-0.5..+30 V		
	A/D range	0..+5 V		
Digital outputs, OUT1-4	Control	Logic, single pulse, PWM, RC servo control		
	Maximum voltage	-0.5..+30 V		

Dimensions

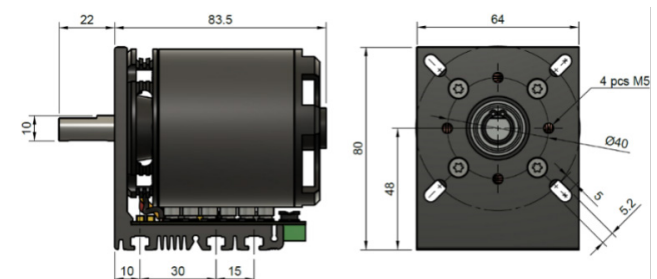
SM100



SH100



SH200



Speed Control Motors

Simplex Motion speed control motors are ready to run and optimized for speed and torque control. The motors are based on the integrated servomotor series, for dimensions, see page 6-7.

- Motor for **speed** and **torque control**
- **Reduce weight** – excellent torque/weight ratio
- Integrated electronics with I/Os – **plug and play** solution
- Built-in control allows for **speed regulation from 0 rpm**
- **Reduce components** – driver integrated with motor
- **Improved** speed control **accuracy** with low-speed mode enabled (0-400 rpm)
- **High durability** – only wearing parts are the high-quality bearings
- Brushless DC motor for **increased lifetime**
- Program the motor for your application needs with 3 **different ramping modes**

MOTOR SPEC.	SCM010	SCM020	SCM040	SCM100-E	SCM100	SCM200
Speed	0-6000 rpm					
Speed nominal	4000 rpm	4000 rpm	4000 rpm	3000 rpm	3000 rpm	4000 rpm
Torque peak	0,2 Nm	0,5 Nm	0,80 Nm	2,0 Nm	2,0 Nm	4,0 Nm
Torque nominal	0,06 Nm	0,12 Nm	0,28 Nm	0,32 Nm	0,51 Nm	0,72 Nm
Power nominal	25 W	50 W	120 W	100 W	160 W	300 W
Supply	12-48 VDC	12-48 VDC	12-48 VDC	12-24 VDC	12-24 VDC	24-48 VDC
Control	0 – 3,3 V	0 – 3,3 V	0 – 3,3 V	0 – 5 V	0 – 5 V	0 – 5 V
Weight	0,08 kg	0,16 kg	0,28 kg	0,65 kg	0,50 kg	1,13 kg
Torque*/Weight	0,75 Nm/kg	0,75 Nm/kg	1,00 Nm/kg	0,49 Nm/kg	1,02 Nm/kg	0,64 Nm/kg

*nominal

The company

Simplex Motion AB is an agile and innovative company located in Gothenburg, Sweden. The company develops and manufactures integrated servomotors with an outstanding torque/weight ratio.

In addition, the company provides brushless DC motors for speed control with integrated electronics. The speed control motors are plug and play with built-in driver and I/Os.

Simplex Motion AB was initially founded around a patent for sensor technology replacing the traditional encoder solution. The patented technology provides smooth running and precise control. Together with the integrated drive and control, the servomotors become very energy efficient.

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simplex motion