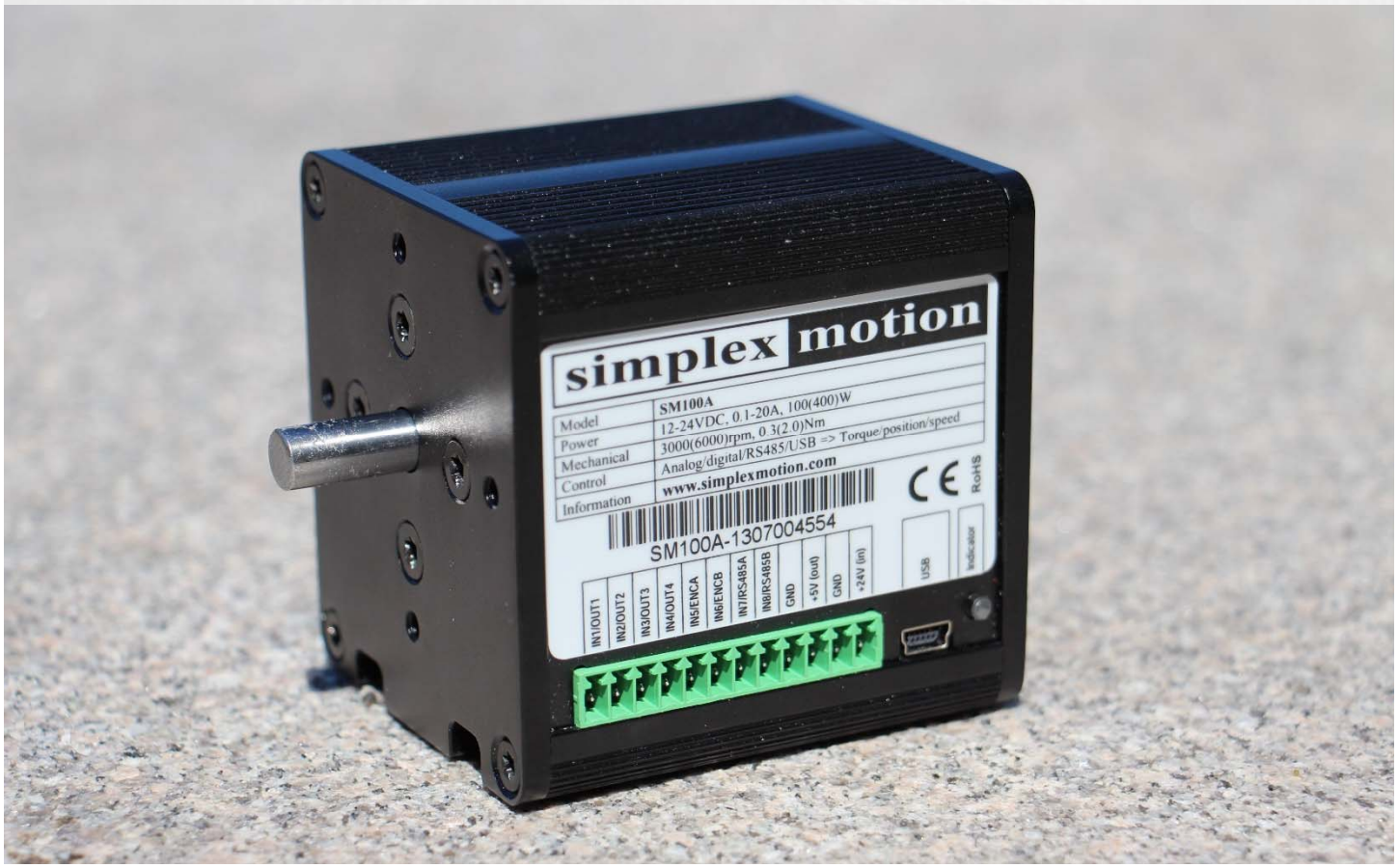
simplex motion

MOTION CONTROL MADE SIMPLE

SM100A

Integrated Servo Motor
Product Information



simplex motion

SM100A

Utilities

Integrated servo motor
High torque outer rotor brushless motor
Patented rotor position sensor with 4096 ppr
High efficiency
Compact design
Easy to use
Cost optimized

Simplex Motion is a motion control company based in Gothenburg, Sweden. We specialize in integrated servo motors using our patented positioning technology. Our integrated motor product SM100A has high torque, high precision and competitive pricing.

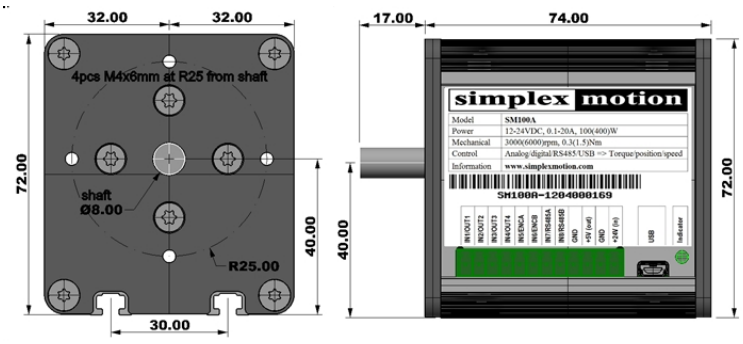
By utilizing a patented sensor system technology, Simplex Motion created an integrated servo motor product which is a compact, high performance and complete motor system. The advantage of the Simplex Motion smart motor is that it is fast to install, easy to use and offers powerful motion control capability. Compared with other existing integrated servo motors on the market, Simplex Motion's current motor excels in output torque and cost efficiency.

The drive unit is controlled by a data bus, such as USB or Modbus RTU (RS485). Power level for SM100A is at a continuous 100W output. It typically allows 4 times higher peak output power. The device performs closed loop control of speed and position, and supports ramping with controlled acceleration. Protection features guard the device from over current, voltage, temperature and torque.

To facilitate standalone operation the unit also has digital and analog inputs and outputs, as well as encoder input and step motor emulation inputs. There are configurable features for simple control interfaces using buttons and potentiometers for standalone applications. For advanced users there is also a possibility to add user application code within the device to realize advanced stand alone operations.

Specifications

Power: 100W
Torque (peak): 0,32 (2,0) Nm
Speed (peak): 3000 (6000) RPM
Precision: 4096 PPR
Weight: 660 gram
Interface: RS485 + USB
Efficiency (up to): 80%



simplex motion

SM100A

Technical Data

Motor specifications		
Torque	Nominal at 3000 rpm	0.32 Nm (45 oz-in)
	Continuous stall	0.55 Nm (78 oz-in)
	Peak	2.0 Nm (280 oz-in)
Speed	Nominal	3000 rpm
	Peak	6000 rpm
Power	Continuous	100 W
	Peak	400 W
Efficiency	Up to	80%
Rotor inertia		78 * 10^{-6} kgm^2
Electrical specifications		
Supply voltage	Min	12 V (absolute minimum 10V)
	Typical	24 V
	Max	28 V (absolute maximum 30V)
Supply Current	Idle	0.1 A
	Continuous	5 A
	Peak	25 A
Controller specifications		
Encoder	Counts per revolution	4096
	Resolution	0.09°
	Precision	+/- 0.5°
Switching frequency		32 kHz
Motor commutation	Method	space vector modulation with field orientation control
	Rate	16 kHz
PID controller	Sample rate	2 kHz
	Control	Torque, Position, Speed
Ramping control	Speed	speed limit + controlled acceleration/deceleration
	Position	controlled speed + acceleration/deceleration
Protection		overcurrent, torque, voltage, temperature, locked shaft
Status indicator		green + red light, blink pattern provides status
Interfaces	USB	Full speed 12Mbit/s
	RS485/RS232 TTL	max 115kBit/s, Modbus RTU protocol
	Step motor interface	direction/step inputs, 5V logic inputs, max 2.2MHz.
	Quadrature encoder	5V logic inputs, max 2.2MHz
	Analog control	voltage 0…+5V
Digital Inputs, IN1-4	Maximum voltage	-0.5..+30V
	Low/high threshold	Configurable 0..+5V
	Pull up/down resistor	10kOhm to +3.3V or GND, or disabled
Digital inputs, IN5-8	Maximum voltage	-0.5..+8.0V
	Low/high threshold	Low < 0.7V, high > 2.4V
	Pull up resistor	none
Analog inputs, IN1-4	Maximum voltage	-0.5..+30V
	Input range	0..+5V
	Resolution	16bits
	Accuracy	10bits
	Input impedance	300kOhm with pullup/down disabled
Digital outputs, OUT1-4	Control	Logic, single pulse, PWM, RC servo control
	Output circuit	Open collector, transistor.
	Maximum voltage	-0.5..+30V
	Maximum current	1A
	Pull up/down resistor	10kOhm to +3.3V or GND, or disabled
Mechanical specifications		
Dimensions	Body (L x W x H)	74 x 64 x 72 mm
	Shaft	D8 x 17 mm
Mounting		M4x6mm screws in front, square nut slots in bottom
Weight		650 g (23.0 oz)
Shaft loading	Radial load	200 N
	Axial load	100 N

SM100A

Simplex Motion Tool PC Software Control via USB

The SMTool software runs on a PC computer in the Windows environment and allows the user to configure and test the Simplex Motion motor units. At the moment the software can be downloaded from the Simplex Motion website.

Our product range is evolving fast to provide our customers with truly unique products. Come and talk to us about what you would like to see in the next Simplex Motion product!

Simplex Motion AB
Stena Center 1D
412 92 Gothenburg, Sweden
www.simplexmotion.com