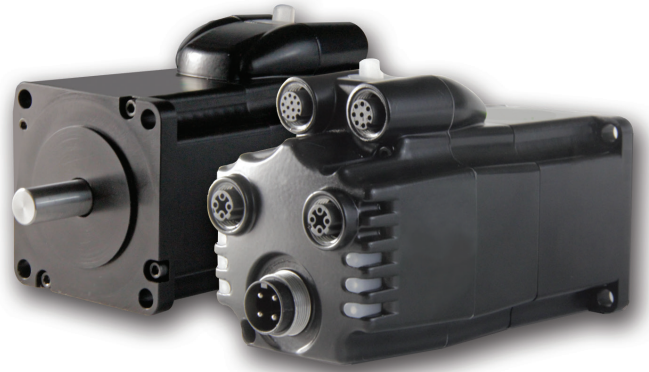


Key Features

- Simplify wiring, reduce cost through the onboard dual-port Ethernet switch
- PROFINET RTC - Real Time Cyclic transfers
 - Class 1 and 2 (certified) - unsynchronized
 - Class 3 (certification pending) - synchronized SmartMotor™ clocks
- PROFINET RTA – Real Time Acyclic protocol
- DCP, LLDP, SNMP, MIB-II, and LLDP MIB support
- Optionally program, configure and get live diagnostics through the USB interface
- Optionally communicate with the motor through the RS-485 half-duplex port, which provides access as a Modbus Remote Terminal Unit (RTU) Slave
- Easily access SmartMotor™ programmable autonomous control features in slave mode, which allows special user-programmed functions
 - Reduce limit switch wiring and PLC programming through adaptable distributed control
 - Accurately capture position for high-speed registration applications
 - Quickly reduce costs and improve reliability through use of programmable homing and limits
 - Precisely define motion profiles with local cam execution
 - Easy configuration and status monitoring of Industrial Ethernet and field buses
 - Actively monitor/troubleshoot each motor through local error reporting and diagnostic codes
- Local/standalone benefits (see manual for details):
 - Simplify programming and calculate 32-bit precision motion parameters on-the-fly with floating-point math and trigonometric functions
 - Govern a move by running it on top of a gearing or camming relationship using the dual-trajectory generators
 - Create precise spooling/winding shapes and control tension through advanced gearing (supports preset traverse/take-up parameters)
 - Create complex patterns through advanced camming (with cubic spline interpolation and dynamic frequency/amplitude)
 - Highly configurable local I/O for motion control and general-purpose use in user programs:
 - Drive enable input, fault output, travel limits, registration and position capture
 - External encoder input supporting A-quad-B or Step-and-Direction
 - Total of 7 configurable inputs
 - High-current outputs with external brake-control function



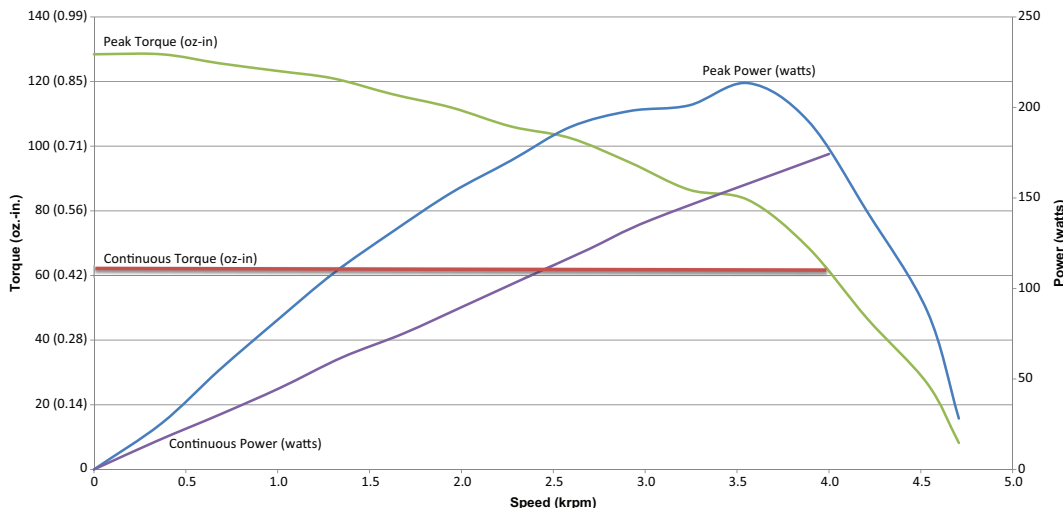
Specifications at 25°C

SmartMotor™ Series	SM23166MT-EPN	
Continuous Torque at 48 volts	68	oz-in
	0.48	N-m
Peak Torque	128	oz-in
	0.90	N-m
Nominal Continuous Power	189	watts
Nominal Peak Power	213	watts
No Load Speed	4,700	rpm
Encoder Resolution	4,000	counts/rev
Weight	1.7	lb
	0.77	kg
Shaft Diameter	0.375	in
	9.53	mm
Shaft, Radial Load	15.0	lb
	6.80	kg
Shaft, Axial Thrust Load	3.00	lb
	1.36	kg

Maximum temperature: 85°C at electronics, 130°C at windings
 Recommended ambient temperature range: 0°C – 50°C
 Storage temperature range: -10°C – 85°C
 Relative humidity: maximum 90%, noncondensing

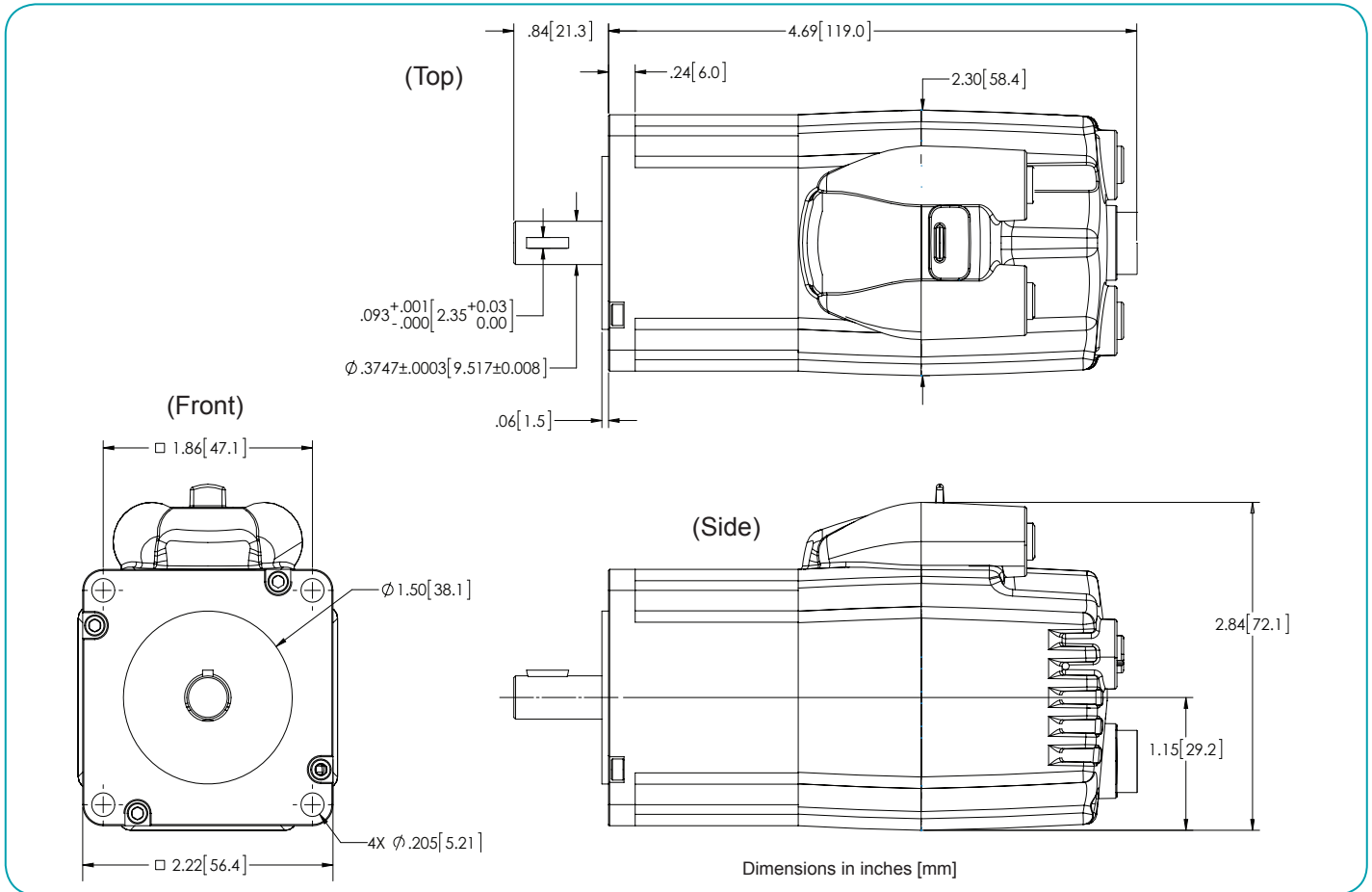
Power Chart

SM23166MT-EPN motor Torque vs. Speed, 48 volts, MDC commutation, 25°C ambient (curves are derated at higher ambient)



Continuous rating based on 25°C ambient temperature, motor mounted to a 6x6x¼ inch aluminum heat sink, and electronics/windings below maximum temperature. Peak torque is available for 3 seconds at a 10% duty cycle.

Dimensional Information



Connections

PIN	FUNCTION	INPUT OR OUTPUT	POSSIBLE (SELECTABLE) FUNCTIONS	DEFAULT
1	IN0	INPUT, DISCRETE OR ANALOG	GENERAL PURPOSE	GENERAL PURPOSE
2	IN1	INPUT, DISCRETE OR ANALOG	GENERAL PURPOSE	GENERAL PURPOSE
3	IN2/POSLIMIT	INPUT	POSITIVE LIMIT OR GENERAL PURPOSE	POSITIVE LIMIT
4	IN3/NEGLIMIT	INPUT	NEGATIVE LIMIT OR GENERAL PURPOSE	NEGATIVE LIMIT
5	IN4	INPUT	GENERAL PURPOSE, OR EXTERNAL ENCODER INDEX CAPTURE	GENERAL PURPOSE
6	IN5	INPUT	GENERAL PURPOSE, OR INTERNAL ENCODER INDEX CAPTURE	GENERAL PURPOSE
7	IN6	INPUT	GENERAL PURPOSE, G COMMAND, OR HOMING INPUT (ETHERCAT ONLY)	GENERAL PURPOSE
8	IN7-DRVEN	INPUT	DRIVE ENABLE	DRIVE ENABLE
9	OUT8-BRAKE	OUTPUT	BRAKE OUTPUT OR GENERAL-PURPOSE OUTPUT	BRAKE OUTPUT
10	OUT9-NOFAULT	OUTPUT	NOT FAULT	NOT FAULT
11	24 VDC OUT*	POWER OUTPUT**	CONTROL I/O POWER	CONTROL I/O POWER
12	GND	N/A	N/A	MOTOR COMMON GROUND

*NOTE: 2 AMPS MAX **SUPPLIED FROM POWER INPUT PIN 1

PROFINET

PIN	FUNCTION
1	+TD
2	+RD
3	-TD
4	-RD

Shield tied to motor housing

POWER INPUT

PIN	FUNCTION	DESCRIPTION
1	24 VDC	CONTROL I/O POWER
2	EARTH	CHASSIS GROUND
3	GND	MOTOR COMMON GROUND
4	48 VDC	MOTOR POWER

COMMUNICATION

PIN	FUNCTION
1	GND-COMMON
2	RS-485B CHO
3	RS-485A CHO
4	ENC A+ (IN/OUT)
5	ENC B- (IN/OUT)
6	ENC A- (IN/OUT)
7	5 VDC OUT
8	ENC B+ (IN/OUT)

RS-485 serial communication uses a voltage differential signal. Appropriate terminating resistors should be included on the RS-485 network to ensure reliable performance. See the Class 6 SmartMotor Installation and Startup Guide.

Specifications are subject to change without notice. Consult website and factory for latest data.