

PMSM with feedback sensors

Accessory for Mercury motion controller

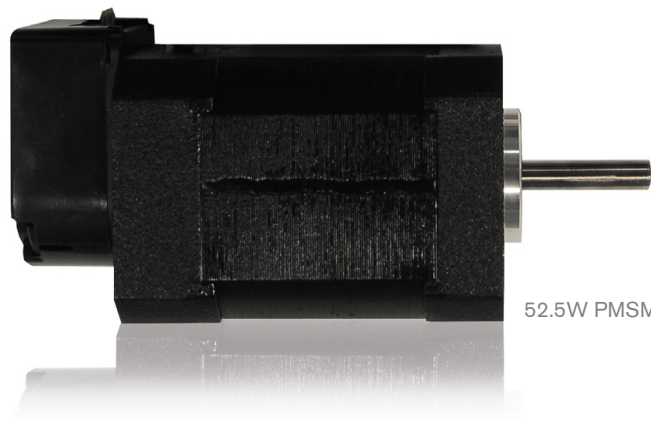


Overview

The competitive electronically commutated permanent magnet synchronous motors (PMSM) also named 3-phase brushless motors are especially suited for applications requiring high running smoothness and lifetime.

The highly energetical permanent magnets allow for a very good degree of efficiency, fast acceleration as well as high rotational speeds.

Three 120° shifted hall sensors electronically provide feedback about the rotor position for high speed applications. Included encoder allows a high resolution positioning control.



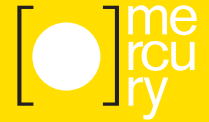
52.5W PMSM

Motor specifications

Electrical	
Connection	Delta
Number of poles / Phases	8 / 3
Rated voltage (V)	24
No load / Rated / Peak current (A)	0.25 / 3.25 / 10.6
Resistance / Phase to phase (Ohms) @25°C	0.8 + 15%
Inductance / Phase to phase (mH) @1KHz	1.2 + 20%
Rated / Peak Torque (Nm)	0.125 / 0.38
Torque constant / Voltage constant (Nm/A) (Vrms/KRPM)	0.041 / 3.35 = BEMF
Power rated (W)	52.5
Rated / No load speed (RPM)	4000 / 5700
Rotor inertia (Kg·m ²)	4.8 x 10 ⁻⁶
Weight (Kg)	0.45
Temperature rise (°C)	Max. 80
Ambient temperature (°C)	-10 ~ 50
Insulation resistance (MOhm)	100 (Under normal temperature/humidity)
Insulation class (°C)	500 VAC for 1 min. (Between the motor coils and the motor case)
Dielectric strenght	B 130
Ambient humidity	Max. 85% (No condensation)

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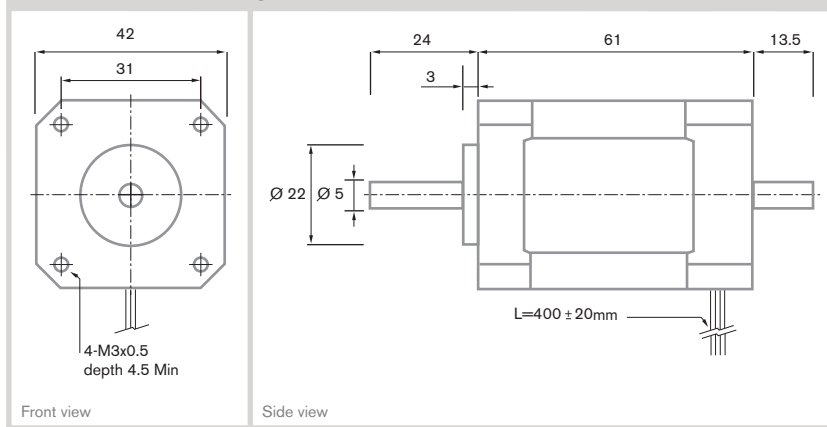
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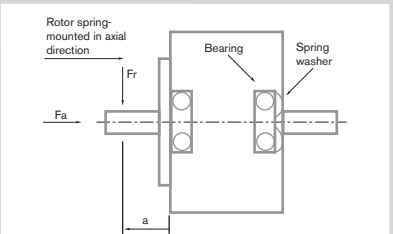
Phases wiring

Motor phases	Color	Function	Lead gauge	
	Yellow	U	UL1007	delta connection phase U Yel
	Red	V	AWG26	
	Black	W		

2D motor drawings (mm)



Permissible radial+axial force



Axial-Force Fa (N)	Fa=10	
Distance a (mm)	20	
Radial-Force Fr (N)	28	
	Axial	Radial
Shaft play (mm)	0.08	0.02
At load max. (N)	4.5	4.5

Feedback sensors specifications

Halls wiring

Halls	Color	Function	Lead gauge
	Red	+5V	UL1007 AWG20
	Black	GND	
	Green	H3	
	White	H2	
	Blue	H1	

Encoder

Encoder	Pin	Function
	1	GND
	2	Index
	3	Channel A
	4	VCC
	5	Channel B

2D encoder drawings (mm)

