

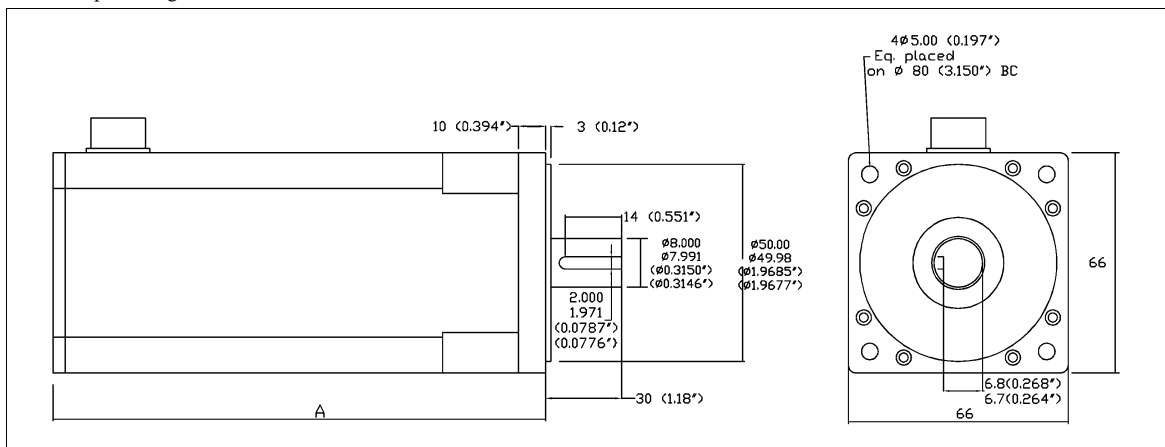
## FM Brushless Motor Performance

### FM50 Series Motor Data 66 mm Frame 230 V

Motor Parameters	Units	FM50A -20	FM50A -23	FM50A -29	FM50B -20	FM50B -29	FM50B -40
Horsepower	HP	0.35	0.31	0.17	0.62	0.57	0.31
Kilowatts	KW	0.26	0.24	0.12	0.47	0.43	0.24
Max. Speed	RPM	6000	5000	2500	6000	5000	2500
Rated Speed	RPM	6000	5000	2500	6000	5000	2500
Continuous Rated Torque	Nm(In-Lbs)	0.41(3.6)	0.45 (4)	0.47 (4.2)	0.75 (6.6)	0.81 (7.2)	0.93 (8.2)
Continuous Stall Torque	Nm(In-Lbs)	0.56 (5)	0.56 (5)	0.56 (5)	1.0 (9)	1.0 (9)	1.0 (9)
Peak Torque	Nm(In-Lbs)	1.4 (13)	1.6 (14)	1.7 (15)	2.6 (23)	2.8 (25)	3.2 (29)
Continuous Line Current	Amps RMS	1.7	1.6	1.3	2.8	2.1	1.7
Peak Current	Amps RMS	5.9	5.5	4.7	10	7.5	6.1
Torque Constant $K_T$	Nm/Amps (RMS)	0.29	0.33	0.42	0.29	0.42	0.58
Back EMF Constant $K_B$	Vrms/Krpm	20.0	23.1	28.7	20.0	28.7	39.9
DC Resistance	Ohms	18.8	24.8	41.5	5.9	12.5	24.8
Inductance	Millihenries	17.2	23	35.6	8.6	17.8	34.3
Rotor Inertia	Kg-M <sup>2</sup> (In-Lbs-Sec <sup>2</sup> )	0.00001 (0.000088)	0.00001 (0.000088)	0.00001 (0.000088)	0.00002 (0.00018)	0.00002 (0.00018)	0.00002 (0.00018)
Static Friction	Nm(In-Lbs)	0.05 (0.4)	0.05 (0.9)	0.05 (0.4)	0.06 (0.5)	0.06 (0.5)	0.06 (0.5)
Motor Weight	Kg(Lbs)	1 (2)	1 (2)	1 (2)	2(3)	2 (3)	2 (3)
Maximum Line Voltage	Vrms	250	250	250	250	250	250
Number of Poles		4	4	4	4	4	4

**Notes:**

1. Continuous rating @25°C. Motor mounted on a 250 mm X 250 mm X 6 mm Aluminum heatsink. Maximum winding temperature 155°C.
2. Test drive input voltage was 220 Vac.



Model	FM50A-20	FM50A-23	FM50A-29	FM50B-20	FM50B-29	FM50B-40
A	150 (5.91")	150 (5.91")	150 (5.91")	175 (6.89")	175 (6.89")	175 (6.89")

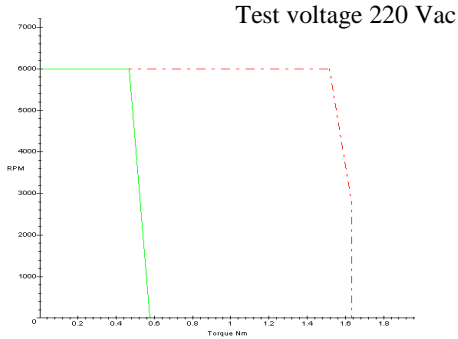
- Notes:**
- IEC mounting dimensions are shown. NEMA mountings are available, please contact Expro Engineering for information.
  - Radial load on output shaft < 89 N (20 Lbs). Axial load should be < 67 N (15 Lbs).
  - All data are subject to change without notice.

**Expro Engineering**                      **Phone:**                      **Fax:**                      **Email:**  
 7500 Thunderbird Rd. Liverpool, NY 13088    (315) 453-0515            (315) 451-5193            contact@exproengineering.com

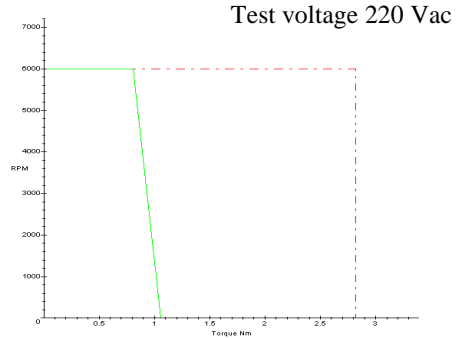
# FM Brushless Motor Performance

## FM50 Series Motor Data      66 mm Frame    230 Vac

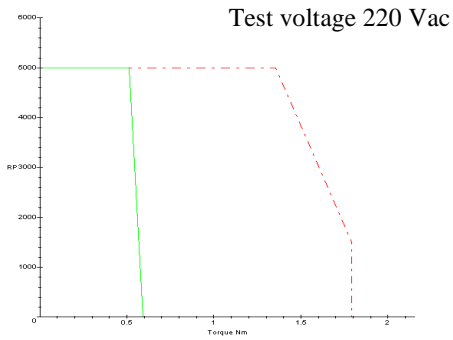
FM50A-20 PERFORMANCE



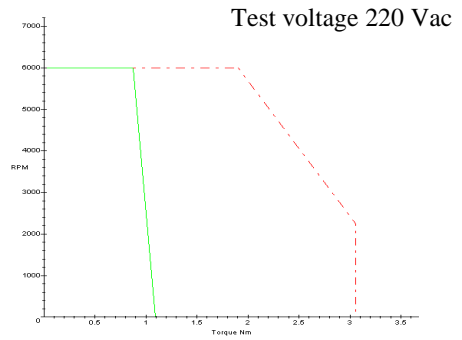
FM50B-20 PERFORMANCE



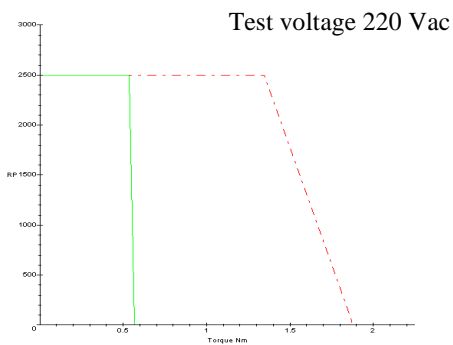
FM50A-23 PERFORMANCE



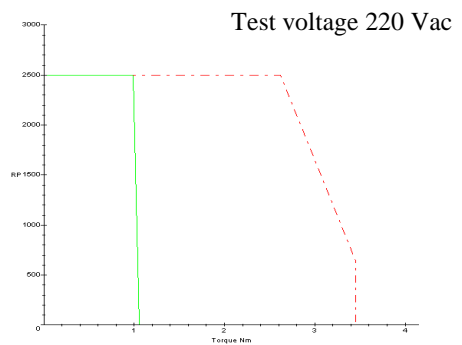
FM50B-29 PERFORMANCE



FM50A-29 PERFORMANCE



FM50B-40 PERFORMANCE



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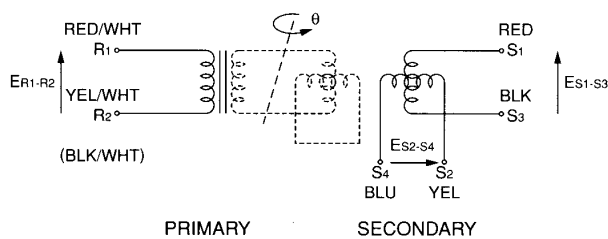
## FM50 Motor Connectors and Connector Pin Outs

<b>Resolver Connector(PT02E-14-18P) Straight Mating Plug: PT06E-14-18S</b>		
<b>Pin</b>	<b>Function</b>	<b>Wire Color</b>
A	$\phi U$	Red
B	$\phi V$	Black
C	$\phi W$	White
D	GND	Green
E	COS-(S1)	Red
F	COS+(S3)	Black
G	SIN-(S2)	Yellow
H	SIN+(S4)	Blue
J	Excit (R1)	Red/White
K	Excit GND (R2)	Yellow/White
L	THERM	Green
M	THERM	Green
N		
P	* BRK(+)	
R		
S		
T	* BRK(-)	
U		

\* For brake option only.

### RESOLVER ELECTRICAL SPECIFICATIONS:

1. Operation temperature: -55°C to 155°C
2. Maximum speed: 10,000 rpm
3. Dielectric strength: Vac 500, 1 minute
4. Excitation voltage: 7 Vrms 10 KHz
5. Electric error:  $\pm 10'$  Max.
6. Transformation ratio: 0.5 nominal



Excitation :  $E_{R1-R2} = E_{sin} \omega t$   
 Output :  $E_{S1-S3} = K E_{R1-R2} \cos \theta$   
            $E_{S2-S4} = K E_{R1-R2} \sin \theta$   
 K : Transformation Ratio

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