1 1/2" Frame Brushless Servo Motors

Motor Data (Sine)

Motor Parameters		Units	401ASE****	401BSE****	401CSE****	402ASE****	402BSE****	402CSE****
Horsepower	Hp Rated	Hp	0.027	0.022	0.016	0.065	0.059	0.054
Kilowatts	Watts Rated	Watts	20.0	16.0	12.0	48.0	44.0	40.0
Max. Operating Speed	N Max	RPM	6000	5200	4400	6000	5200	4400
Speed @ Rated Torque	N Rated	RPM	4800	3600	2500	4800	4100	3500
***Continuous Rated Torque @ Rated Speed**		IN-LBS[Nm]	0.36[0.041]	0.38[0.043]	0.41[0.047]	0.85[0.096]	0.90[0.10]	0.98[0.11]
***Continuous Stall Torque**		IN-LBS[Nm]	0.51[0.058]	0.53[0.060]	0.56[0.063]	1.15[0.13]	1.16[0.13]	1.20[0.14]
Continuous Line Current		AMPS(RMS/ϕ)	1.00	0.50	0.36	2.29	1.10	0.79
Peak Torque	Tpk	IN-LBS[Nm]	1.53[0.173]	1.59[0.180]	1.68[0.190]	3.45[0.39]	3.48[0.39]	3.60[0.41]
Peak Current		AMPS(RMS/ϕ)	2.99	1.51	1.07	6.8 8	3.32	2.35
Max. Theoretical Accel.		RAD/SEC^2	110,000	110,000	120,000	140,000	140,000	140,000
Torque Sensitivity	Kt	IN-LBS/AMP(RMS/ϕ)[Nm/AMP(RMS/ϕ)]	0.51[0.057]	1.05[0.118]	1.56[0.176]	0.51[0.057]	1.05[0.118]	1.53[0.172]
Back EMF (Line to Line)	±10%	Vrms/Krpm	3.2	6.6	9.8	3.2	6.6	9.6
D.C.Resistance (P-P)	±10%	OHMS	5.9	23.0	58.0	2.0	7.7	18.0
Inductance (P-P)	±10%	MILLIHENRIES	1.8	7.3	16.0	0.71	2.8	6.4
Rotor Inertia	Jm	IN-LBS-SEC^2[Kg-M^2]	.000014[.0000016]	.000014[.0000016]	.000014[.0000016]	.000025[.0000028]	.000025[.0000028]	.000025[.0000028]
Static Friction	Tf	IN-LBS[Nm]	0.09[0.010]	0.09[0.010]	0.09[0.010]	0.11[0.012]	0.11[0.012]	0.11[0.012]
Motor Weight		LBS[Kg]	1.0[0.45]	1.0[0.45]	1.0[0.45]	1.2[0.54]	1.2[0.54]	1.2[0.54]
Line Voltage		VAC	54	54	54	54	54	54

Motor Parameters		Units	403ASE****	403BSE****	403CSE****	404ASE****	404BSE****	404CSE****
Horsepower	Hp Rated	Hp	0.093	0.085	0.078	0.110	0.101	0.093
Kilowatts	Watts Rated	Watts	69.0	63.0	58.0	82.0	75.0	69.0
Max. Operating Speed	N Max	RPM	6000	5200	4400	6000	5200	4400
Speed @ Rated Torque	N Rated	RPM	4800	4100	3500	4800	4100	3500
***Continuous Rated Torque @ Rated Speed**		IN-LBS[Nm]	1.22[0.14]	1.30[0.15]	1.40[0.16]	1.45[0.16]	1.55[0.18]	1.67[0.19]
***Continuous Stall Torque**		IN-LBS[Nm]	1.52[0.17]	1.56[0.18]	1.63[0.18]	1.75[0.20]	1.81[0.20]	1.87[0.21]
Continuous Line Current		AMPS(RMS/ϕ)	3.07	1.53	1.06	3.53	1.78	1.22
Peak Torque	Tpk	IN-LBS[Nm]	3.66[0.41]	4.68[0.53]	4.88[0.55]	5.25[0.59]	5.43[0.61]	5.60[0.63]
Peak Current		AMPS(RMS/ϕ)	7.38	4.60	3.18	10.6	5.35	3.65
Max. Theoretical Accel.		RAD/SEC^2	100,000	130,000	130,000	110,000	110,000	120,000
Torque Sensitivity	Kt	IN-LBS/AMP(RMS/ϕ)[Nm/AMP(RMS/ϕ)]	0.49[0.056]	1.02[0.115]	1.54[0.174]	0.49[0.056]	1.02[0.115]	1.54[0.174]
Back EMF (Line to Line)	±10%	Vrms/Krpm	3.1	6.4	9.7	3.1	6.4	9.7
D.C.Resistance (P-P)	±10%	OHMS	1.1	4.4	9.8	0.86	2.9	7.1
Inductance (P-P)	±10%	MILLIHENRIES	0.42	1.8	4.0	0.36	1.3	3.0
Rotor Inertia	Jm	IN-LBS-SEC^2[Kg-M^2]	.000036[.0000041]	.000036[.0000041]	.000036[.0000041]	.000048[.0000054]	.000048[.0000054]	.000048[.0000054]
Static Friction	Tf	IN-LBS[Nm]	0.13[0.015]	0.13[0.015]	0.13[0.015]	0.15[0.017]	0.15[0.017]	0.15[0.017]
Motor Weight		LBS[Kg]	1.4[0.64]	1.4[0.64]	1.4[0.64]	1.6[0.73]	1.6[0.73]	1.6[0.73]
Line Voltage		VAC	54	54	54	54	54	54

*25° C Ambient with a maximum case temperature of 85° C on motor. Motor mounted on a 6" x 6" x 1/4" aluminum heatsink. Thermostat in stator windings will open if winding temperature exceeds 130° C for an approximate 10% headroom in the continuous torque rating before thermostat opens.

Mechanical Notes:

1. Axial Load: 10 LBS. Max.
2. Radial Load: 15 LBS. Max. @ 1" from face
3. Motor sealed to IP65

Motor Data (Trap)

Motor Parameters		Units	401ATE****	401BTE****	401CTE****	402ATE****	402BTE****	402CTE****
Horsepower	Hp Rated	Hp	0.027	0.022	0.016	0.065	0.059	0.054
Kilowatts	Watts Rated	Watts	20.0	16.0	12.0	48.0	44.0	40.0
Max. Operating Speed	N Max	RPM	6000	5200	4400	6000	5200	4400
Speed @ Rated Torque	N Rated	RPM	4800	3600	2500	4800	4100	3500
*Continuous Rated Torque @ Rated Speed		IN-LBS [Nm]	0.36 [0.041]	0.38 [0.043]	0.41 [0.047]	0.85 [0.096]	0.90 [0.10]	0.98 [0.11]
*Continuous Stall Torque		IN-LBS [Nm]	0.51 [0.058]	0.53 [0.060]	0.56 [0.063]	1.15 [0.13]	1.16 [0.13]	1.20 [0.14]
Continuous Line Current		AMPS	1.41	0.71	0.51	3.24	1.56	1.11
Peak Torque	Tpk	IN-LBS [Nm]	1.53 [0.173]	1.59 [0.180]	1.68 [0.190]	3.45 [0.39]	3.48 [0.39]	3.60 [0.41]
Peak Current		AMPS	4.23	2.14	1.52	9.73	4.69	3.32
Max. Theoretical Accel.		RAD/SEC^2	110,000	110,000	120,000	140,000	140,000	140,000
Torque Sensitivity	Kt	IN-LBS/AMP [Nm/AMP]	0.36 [0.041]	0.74 [0.084]	1.10 [0.124]	0.35 [0.040]	0.74 [0.084]	1.08 [0.122]
Back EMF (Line to Line)	±10%	Vrms/Krpm	3.2	6.6	9.8	3.2	6.6	9.6
D.C. Resistance (P-P)	±10%	OHMS	5.9	23.0	58.0	2.0	7.7	18.0
Inductance (P-P)	±10%	MILLIHENRIES	1.8	7.3	16.0	0.71	2.8	6.4
Rotor Inertia	Jm	IN-LBS-SEC^2[Kg-M^2]	.000014 [.0000016]	.000014 [.0000016]	.000014 [.0000016]	.000025 [.0000028]	.000025 [.0000028]	.000025 [.0000028]
Static Friction	Tf	IN-LBS [Nm]	0.09 [0.010]	0.09 [0.010]	0.09 [0.010]	0.11 [0.012]	0.11 [0.012]	0.11 [0.012]
Motor Weight		LBS [Kg]	1.0 [0.45]	1.0 [0.45]	1.0 [0.45]	1.2 [0.54]	1.2 [0.54]	1.2 [0.54]
Line Voltage		VAC	54	54	54	54	54	54

Motor Parameters		Units	403ATE****	403BTE****	403CTE****	404ATE****	404BTE****	404CTE****
Horsepower	Hp Rated	Hp	0.093	0.085	0.078	0.110	0.101	0.093
Kilowatts	Watts Rated	Watts	69.0	63.0	58.0	82.0	75.0	69.0
Max. Operating Speed	N Max	RPM	6000	5200	4400	6000	5200	4400
Speed @ Rated Torque	N Rated	RPM	4800	4100	3500	4800	4100	3500
*Continuous Rated Torque @ Rated Speed		IN-LBS [Nm]	1.22 [0.14]	1.30 [0.15]	1.40 [0.16]	1.45 [0.16]	1.55 [0.18]	1.67 [0.19]
*Continuous Stall Torque		IN-LBS [Nm]	1.52 [0.17]	1.56 [0.18]	1.63 [0.18]	1.75 [0.20]	1.81 [0.20]	1.87 [0.21]
Continuous Line Current		AMPS	4.34	2.17	1.50	4.99	2.52	1.72
Peak Torque	Tpk	IN-LBS [Nm]	3.66 [0.41]	4.68 [0.53]	4.88 [0.55]	5.25 [0.59]	5.43 [0.61]	5.60 [0.63]
Peak Current		AMPS	10.44	6.51	4.49	15.0	7.56	5.16
Max. Theoretical Accel.		RAD/SEC^2	100,000	130,000	130,000	110,000	110,000	120,000
Torque Sensitivity	Kt	IN-LBS/AMP[Nm/AMP]	0.35 [0.039]	0.72 [0.081]	1.09 [0.123]	0.35 [0.040]	0.72 [0.081]	1.09 [0.123]
Back EMF (Line to Line)	±10%	Vrms/Krpm	3.1	6.4	9.7	3.1	6.4	9.7
D.C. Resistance (P-P)	±10%	OHMS	1.1	4.4	9.8	0.86	2.9	7.1
Inductance (P-P)	±10%	MILLIHENRIES	0.42	1.8	4.0	0.36	1.3	3.0
Rotor Inertia	Jm	IN-LBS-SEC^2 [Kg-M^2]	.000036 [.0000041]	.000036 [.0000041]	.000036 [.0000041]	.000048 [.0000054]	.000048 [.0000054]	.000048 [.0000054]
Static Friction	Tf	IN-LBS [Nm]	0.13 [0.015]	0.13 [0.015]	0.13 [0.015]	0.15 [0.017]	0.15 [0.017]	0.15 [0.017]
Motor Weight		LBS [Kg]	1.4 [0.64]	1.4 [0.64]	1.4 [0.64]	1.6 [0.73]	1.6 [0.73]	1.6 [0.73]
Line Voltage		VAC	54	54	54	54	54	54

*25° C Ambient with a maximum case temperature of 85° C on motor Motor mounted on a 6" x 6" x 1/4" aluminum heatsink. Thermostat in stator windings will open if winding temperature exceeds 130° C for an approximate 10% headroom in the continuous torque rating before thermostat opens.

Mechanical Notes:

1. Axial Load: 10 LBS. Max.
2. Radial Load: 15 LBS. Max. @ 1" from face
3. Motor sealed to IP65

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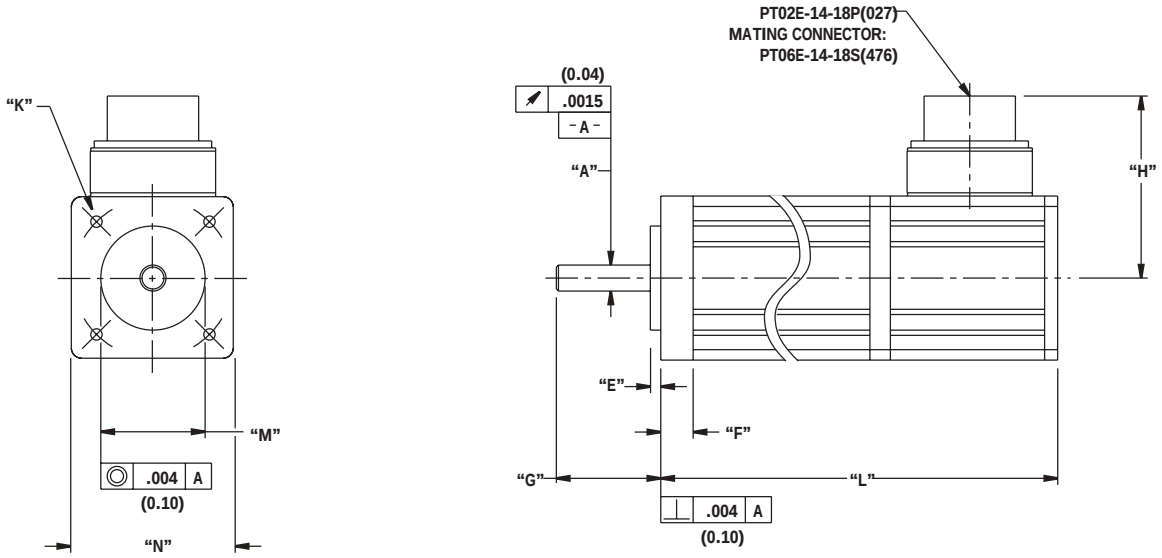
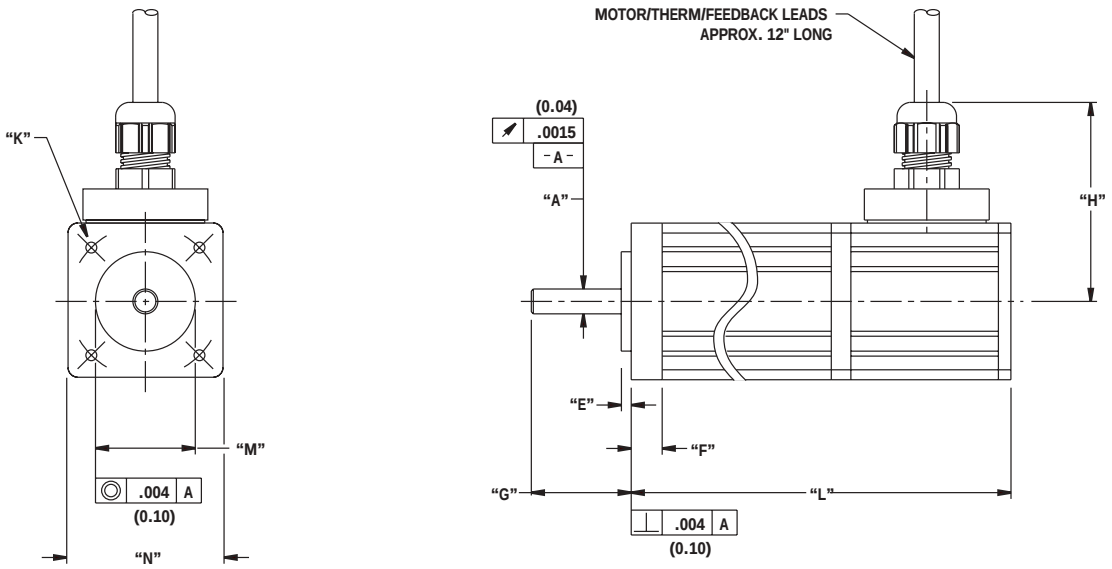


1 1/2" (40) English and Metric Connectorized Termination-Option 1 Motors

Model	"A"	"D"	"F"	"G"	"H"
MPM401***6***	ø.2500(6.350) .2495(6.337)	.10(2.5)	31(7.9)	1.02(25.9) .98(24.9)	1.76(44.7) Max
MPM401***7***	ø6.000(.2362) 5.992(.2359)	2.5(.10)	7.9(.31)	25.4(1.00) 24.4(.96)	44.7(1.76) Max
MPM402***6***	ø.2500(6.350) .2495(6.337)	.10(2.5)	31(7.9)	1.02(25.9) .98(24.9)	1.76(44.7) Max
MPM402***7***	ø6.000(.2362) 5.992(.2359)	2.5(.10)	7.9(.31)	25.4(1.00) 24.4(.96)	44.7(1.76) Max
MPM403***6***	ø.2500(6.350) .2495(6.337)	.10(2.5)	31(7.9)	1.02(25.9) .98(24.9)	1.76(44.7) Max
MPM403***7***	ø6.000(.2362) 5.992(.2359)	2.5(.10)	7.9(.31)	25.4(1.00) 24.4(.96)	44.7(1.76) Max
MPM404***6***	ø.2500(6.350) .2495(6.337)	.10(2.5)	31(7.9)	1.02(25.9) .98(24.9)	1.76(44.7) Max
MPM404***7***	ø6.000(.2362) 5.992(.2359)	2.5(.10)	7.9(.31)	25.4(1.00) 24.4(.96)	44.7(1.76) Max

Model	"K"	"L"	"M"	"N"
MPM401***6***	#6-32UNC-2B↧ 250(6.35)(4)EQ SPD AS SHOWN ON Ø 1.531(38.89) B.C.	3.83(97.3) Max	ø1.000(25.40) .998(25.35)	☐ 1.575(40.00)
MPM401***7***	M3 X .5↧ 6.35(.250)(4)EQ SPD AS SHOWN ON Ø 46.00(1.811) B.C.	97.3(3.83) Max	ø30.00(1.181) 29.79(1.173)	☐ 40.00(1.575)
MPM402***6***	#6-32UNC-2B↧ 250(6.35)(4)EQ SPD AS SHOWN ON Ø 1.531(38.89) B.C.	4.33(110.0) Max	ø1.000(25.40) .998(25.35)	☐ 1.575(40.00)
MPM402***7***	M3 X .5↧ 6.35(.250)(4)EQ SPD AS SHOWN ON Ø 46.00(1.811) B.C.	110.0(4.33) Max	ø30.00(1.181) 29.79(1.173)	☐ 40.00(1.575)
MPM403***6***	#6-32UNC-2B↧ 250(6.35)(4)EQ SPD AS SHOWN ON Ø 1.531(38.89) B.C.	4.83(122.7) Max	ø1.000(25.40) .998(25.35)	☐ 1.575(40.00)
MPM403***7***	M3 X .5↧ 6.35(.250)(4)EQ SPD AS SHOWN ON Ø 46.00(1.811) B.C.	122.7(4.83) Max	ø30.00(1.181) 29.79(1.173)	☐ 40.00(1.575)
MPM404***6***	#6-32UNC-2B↧ 250(6.35)(4)EQ SPD AS SHOWN ON Ø 1.531(38.89) B.C.	5.33(135.4) Max	ø1.000(25.40) .998(25.35)	☐ 1.575(40.00)
MPM404***7***	M3 X .5↧ 6.35(.250)(4)EQ SPD AS SHOWN ON Ø 46.00(1.811) B.C.	135.4(5.33) Max	ø30.00(1.181) 29.79(1.173)	☐ 40.00(1.575)

English = 6 Units: in (mm)
Metric = 7 Units: in (mm)



1 1/2" (40) English and Metric Flying Leads Termination-Option 4 Motors

Model	"A"	"E"	"F"	"G"	"H"
MPM401*6***	ø.2500 (6.350) .2495 (6.337)	.10 (2.5)	31 (7.9)	1.02 (25.9) .98 (24.9)	2.00(58.0) Max
MPM401*7***	ø6.000 (.2362) 5.992 (.2359)	2.5 (.10)	7.9 (.31)	25.4(1.00) 24.4(.96)	50.8(2.00) Max
MPM402*6***	ø.2500 (6.350) .2495 (6.337)	.10 (2.5)	31 (7.9)	1.02 (25.9) .98 (24.9)	2.00(58.0) Max
MPM402*7***	ø6.000 (.2362) 5.992 (.2359)	2.5 (.10)	7.9 (.31)	25.4(1.00) 24.4(.96)	50.8(2.00) Max
MPM403*6***	ø.2500 (6.350) .2495 (6.337)	.10 (2.5)	31 (7.9)	1.02 (25.9) .98 (24.9)	2.00(58.0) Max
MPM403*7***	ø6.000 (.2362) 5.992 (.2359)	2.5 (.10)	7.9 (.31)	25.4(1.00) 24.4(.96)	50.8(2.00) Max
MPM404*6***	ø.2500 (6.350) .2495 (6.337)	.10 (2.5)	31 (7.9)	1.02 (25.9) .98 (24.9)	2.00(58.0) Max
MPM404*7***	ø6.000 (.2362) 5.992 (.2359)	2.5 (.10)	7.9 (.31)	25.4(1.00) 24.4(.96)	50.8(2.00) Max

Model	"K"	"L"	"M"	"N"
MPM401*6***	#6-32UNC-2B↧ 250(6.35)(4)EQ SPD AS SHOWN ON Ø 1.531(38.89)B.C.	3.83(97.3) Max	ø1.000(25.40) .998(25.35)	☐ 1.575(40.00)
MPM401*7***	M3 X .5↧6.35(.250)(4)EQ SPD AS SHOWN ON Ø 46.00 (1.811)B.C.	97.3(3.83)Max	ø30.00(1.181) 29.79(1.173)	☐ 40.00(1.575)
MPM402*6***	#6-32UNC-2B↧ 250(6.35)(4)EQ SPD AS SHOWN ON Ø 1.531 (38.89)B.C.	4.33(110.0)Max	ø1.000(25.40) .998(25.35)	☐ 1.575(40.00)
MPM402*7***	M3 X .5↧6.35(.250)(4)EQ SPD AS SHOWN ON Ø 46.00(1.811)B.C.	110.0(4.33)Max	ø30.00(1.181) 29.79(1.173)	☐ 40.00(1.575)
MPM403*6***	#6-32UNC-2B↧ 250(6.35)(4)EQ SPD AS SHOWN ON Ø 1.531 (38.89)B.C.	4.83(122.7) Max	ø1.000(25.40) .998(25.35)	☐ 1.575(40.00)
MPM403*7***	M3 X .5↧6.35(.250)(4)EQ SPD AS SHOWN ON Ø 46.00(1.811)B.C.	122.7(4.83)Max	ø30.00(1.181) 29.79(1.173)	☐ 40.00(1.575)
MPM404*6***	#6-32UNC-2B↧ 250(6.35)(4)EQ SPD AS SHOWN ON Ø 1.531 (38.89)B.C.	5.33(135.4)Max	ø1.000(25.40) .998(25.35)	☐ 1.575(40.00)
MPM404*7***	M3 X .5↧6.35(.250)(4)EQ SPD AS SHOWN ON Ø 46.00(1.811)B.C.	135.4(5.33)Max	ø30.00(1.181) 29.79(1.173)	☐ 40.00(1.575)

English = 6 Units: in (mm)
Metric = 7 Units: in (mm)

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1 1/2" Motor with Resolver Feedback

Option 1

Motor Therm Resolver Connector 270-00024 (PT02E-14-18P(027))	
Pin	**Function**
A	ϕR
B	ϕS
C	ϕT
D	PE GND
U	THERM
N	THERM
H	SIN
G	COS GND
S	COS
F	SIN GND
R	REF GND
E	REF
J	RES SHLD
K	-
L	-
M	-
P	-
T	-

Option 2 and 3-Not Available
Brake Option-Consult Factory
Encoder Option-Consult Factory

Option 4

Connection Chart	
Function	**Wire Color**
ϕR	RED
ϕS	BLACK
ϕT	BLUE
PE GND	GRN/YEL
THERM	WHITE
THERM	WHITE
SIN	YELLOW
COS GND	BLACK
COS	RED
SIN GND	BLUE
REF GND	YEL/WHT
REF	RED/WHT
RES SHLD	GRN/YEL