

SX - SERIES

Explosion-Proof Servo Motor
7" Frame

Motor Data (230V)

Performance Data (40 °C)	Symbol	Unit	M471-H	M473-C	M474-C	M476-C
Continuous Rated Torque (Stall)	T_c	lb-in [Nm]	59.5 [6.72]	142.22 [16.07]	180.57 [20.40]	278.85 [31.51]
Continuous Rated Current (RMS)	I_c	Amps (RMS)	8.82	11.34	15.06	23.10
Max. Continuous Power	P_{max}	HP [kW]	2.31 [1.72]	3.01 [2.24]	3.99 [2.97]	4.89 [3.65]
Torque @ Max. Power	T_p	lb-in [Nm]	44.15 [4.99]	108.33 [12.24]	143.54 [16.22]	181.22 [20.48]
Current @ Maximum Power	I_p	Amps (RMS)	7.94	10.20	13.55	20.79
Speed @ Max. Power (Amp. Dependent)	N_p	RPM	3300	1750	1750	1700
Max. Continuous Speed (Amp. Dependent)	N_{max}	RPM	3169	1937	1971	2001
Maximum Current (RMS)	I_m	Amps (RMS)	37.40	48.07	63.85	97.93
Peak Torque	T_{pk}	lb-in [Nm]	178.5 [20.16]	426.66 [48.21]	541.71 [61.2]	836.55 [94.53]
Rotor Inertia	J_m	lb-in-sec ² [kg-m ²]	0.0151 [0.00171]	0.0454 [0.00513]	0.0659 [0.00744]	0.0909 [0.0103]
Torque Constant (@ Max. Winding Temp.)	K_t	lb-in/Amps [Nm/Amp]	6.75 [0.76]	12.55 [1.42]	11.99 [1.35]	12.07 [1.36]
Back EMF Constant (L-L RMS) @ 25°C (77°F)	K_e	V/KRPM [V*Sec/Rad]	58.78 [0.56]	96.19 [0.92]	94.5 [0.9]	93.1 [0.89]
Stator Resistance ±10% (L-L) @ 25°C (77°F)	R_a	Ohm	1.80	0.80	0.60	0.35
Stator Inductance ±10% (L-L) @ 25°C (77°F)	L_a	millihenry	6.50	4.40	3.10	2.00
Max. Theoretical Acceleration @ Stall [brake]	AE	Rad/sec ²	16655 [15867]	13270 [10379]	11618 [10488]	13009 [11479]
Thermal Time Constant [brake]	T_{th}	minute	35 [38]	40 [43]	45 [48]	55 [58]
Electrical Time Constant	T_e	msec	3.64	5.21	5.18	5.83
Mechanical Time Constant [brake]	T_m	msec	7.12 [7.47]	3.3 [4.23]	3.65 [4.05]	2.96 [3.36]
Static Friction	T_f	lb-in [Nm]	10 [1.13]	10 [1.13]	10 [1.13]	10 [1.13]
Weight	W	lb [kg]	27.5 [12.5]	55.0 [24.9]	66.0 [29.9]	88.0 [39.91]
Line Voltage	V	VAC	230	230	230	230

Brake Information:

			Fail safe, Electric release
Rated Holding Torque	T_s	lb-in [Nm]	354 [40]
Rated voltage	V	VDC	24
Rated current	I	Amp	0.62
Inertia	J_b	lb-in-sec ² [kg-m ²]	0.0024 [0.00023]
Weight Adder	W	lb [kg]	7.2 [3.3]

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Explosion-Proof Servo Motor
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Motor Data (460V)

Performance Data (40 °C)	Symbol	Unit	M471-H	M473-C	M474-C	M476-C
Continuous Rated Torque (Stall)	T_c	lb-in [Nm]	54.1 [6.12]	129.4 [14.62]	164.3 [18.57]	253.8 [28.67]
Continuous Rated Current (RMS)	I_c	Amps (RMS)	4.00	5.20	6.90	10.50
Max. Continuous Power	P_{max}	HP [kW]	2.10 [1.57]	2.74 [2.04]	3.63 [2.71]	4.45 [3.32]
Torque @ Max. Power	T_p	lb-in [Nm]	40.2 [4.54]	98.6 [11.14]	130.6 [14.76]	164.9 [18.63]
Current @ Maximum Power	I_p	Amps (RMS)	3.60	4.60	6.20	9.40
Speed @ Max. Power (Amp. Dependent)	N_p	RPM	3300	1750	1750	1700
Max. Continuous Speed (Amp. Dependent)	N_{max}	RPM	3169	1937	1971	2001
Maximum Current (RMS)	I_m	Amps (RMS)	17.00	21.90	29.20	44.40
Peak Torque	T_{pk}	lb-in [Nm]	162.3 [18.36]	388.2 [43.86]	492.9 [55.71]	761.4 [86]
Rotor Inertia	J_m	lb-in-sec ² [kg-m ²]	0.0151 [0.00171]	0.0454 [0.00513]	0.0659 [0.00744]	0.0909 [0.0103]
Torque Constant (@ Max. Winding Temp.)	K_t	lb-in/Amps [Nm/Amp]	13.5 [1.52]	25.1 [2.83]	23.9 [2.70]	24.2 [2.74]
Back EMF Constant (L-L RMS) @ 25°C (77°F)	K_e	V/KRPM [V*Sec/Rad]	117.6 [1.12]	192.4 [1.84]	189 [1.80]	186.2 [1.78]
Stator Resistance ±10% (L-L) @ 25°C (77°F)	R_a	Ohm	7.82	3.68	2.64	1.54
Stator Inductance ±10% (L-L) @ 25°C (77°F)	L_a	millihenry	26.00	17.50	12.40	8.20
Max. Theoretical Acceleration @ Stall [brake]	AE	Rad/sec ²	15156 [14439]	12076 [9445]	10572 [9544]	11838 [10446]
Thermal Time Constant [brake]	T_{th}	minute	35 [38]	40 [43]	45 [48]	55 [58]
Electrical Time Constant	T_e	msec	3.32	4.75	4.70	5.53
Mechanical Time Constant [brake]	T_m	msec	7.82 [8.21]	3.63 [4.64]	4.03 [4.47]	3.25 [3.68]
Static Friction	T_f	lb-in [Nm]	10 [1.13]	10 [1.13]	10 [1.13]	10 [1.13]
Weight	W	lb [kg]	27.5 [12.5]	55.0 [24.9]	66.0 [29.9]	88.0 [39.91]
Line Voltage	V	VAC	460	460	460	460

Brake Information:

Rated Holding Torque	T_s	lb-in [Nm]	354 [40]
Rated voltage	V	VDC	24
Rated current	I	Amp	0.62
Inertia	J_b	lb-in-sec ² [kg-m ²]	0.0024 [0.00023]
Weight Adder	W	lb [kg]	7.2 [3.3]

Fail safe, Electric release

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Connection Data

Motor Connections

WIRE COLOR	AWG	FUNCTION
BLACK	10	ØA
WHITE	10	ØB
RED	10	ØC
GREEN	10	GROUND

Incremental Encoder Connections

WIRE COLOR	AWG	FUNCTION
RED/BLUE	24	+VDC
BLUE/RED	24	COMMON
WHITE/GREEN	24	OUTPUT A
GREEN/WHITE	24	OUTPUT A'
WHITE/BLUE	24	OUTPUT B
BLUE/WHITE	24	OUTPUT B'
WHITE/ORANGE	24	OUTPUT Z
ORANGE/WHITE	24	OUTPUT Z'
WHITE/GRAY	24	OUTPUT U
GRAY/WHITE	24	OUTPUT U'
WHITE/BROWN	24	OUTPUT V
BROWN/WHITE	24	OUTPUT V'
RED/ORANGE	24	OUTPUT W
ORANGE/RED	24	OUTPUT W'
WHITE	24	CASE GND (NOT USED)
DRAIN WIRE	24	SHIELD
BROWN	18	BRAKE (+) Optional
ORANGE	18	BRAKE (-) Optional
BLUE	18	OTL
BLUE	18	OTL

Absolute Encoder Connections

WIRE COLOR	AWG	FUNCTION
WHITE/BLUE	24	+VDC
BLUE/WHITE	24	COMMON
WHITE/ORANGE	24	+SIN
ORANGE/WHITE	24	REFSIN
WHITE/GREEN	24	+COS
GREEN/WHITE	24	REFCOS
WHITE/BROWN	24	DATA +
BROWN/WHITE	24	DATA -
DRAIN WIRE	24	SHIELD
BROWN	18	BRAKE (+) Optional
ORANGE	18	BRAKE (-) Optional
BLUE	18	OTL
BLUE	18	OTL

Resolver Connections

WIRE COLOR	AWG	FUNCTION
GRAY	24	R1 (+REF)
WHITE	24	R2 (-REF)
RED	24	S1 (+COSINE)
BLACK	24	S3 (-COSINE)
YELLOW	24	S2 (+SINE)
BLUE	24	S4 (-SINE)
GREEN	24	SHIELD
BROWN	18	BRAKE (+) Optional
ORANGE	18	BRAKE (-) Optional
BLUE	18	OTL
BLUE	18	OTL