

SYSTEM OVERVIEW

Kollmorgen GOLDLINE® XT & SERVOSTAR® CD/600 Systems



Kollmorgen GOLDLINE® XT SEE PAGE 24

XT series servomotors provide high performance, cost-effective solutions in compact, rugged packages.

Kollmorgen's patented magnetic design allows high torque-to-inertia for rapid acceleration, while providing extremely low cogging and torque ripple for smooth operation.

The proprietary stator assembly provides more efficient heat transfer for high torque density (compact size), and at the same time increases thermal time constants to allow longer overloads on machines.

The XT series models are designed for use with the SERVOSTAR family of drives for optimum performance. These motors come equipped with an integral resolver or incremental encoder, and rugged CE compliant swivel connectors. Optional sine encoder feedback for extremely high accuracy is also available.

- Four frame sizes from 60 to 174 mm (2.35 to 6.85 in)
- 0.44 to 50.6 N-m (0.32 to 37.3 lb-ft) Continuous
- Up to 152 N-m (112 lb-ft) Peak
- Speeds to 6000 rpm
- Resolver, optical encoder, or sine encoder feedback
- IP65 sealing (IP67 optional)
- Optional integral electrically-released brake (24 or 90 VDC)
- Wide range swivel connectors
- UL Recognized, CE compliant

When combined with the SERVOSTAR digital amplifier series (using Kollmorgen's patented phase angle advance algorithms), the system performance provides the most peak torque and speed in the industry. All motors and drives are UL recognized.

SERVOSTAR® CD SEE PAGE 28

The SERVOSTAR CD amplifier is a compact, fully digital amplifier designed to simplify installation and system set-up. Three control algorithms and self-tuning (to the load) functionality allows high performance operation to be achieved quickly and easily.

Since not one control algorithm is best for all machines, SERVOSTAR CD contains Pole Placement, PI, and PDFF control algorithms. SERVOSTAR CD utilizes PC-based MOTIONLINK® for Windows® which automatically takes you through the key steps of installation and start up.

- 115 to 230 volt single phase or three phase AC input power
- Resolver, encoder, or sine encoder feedback
- Integrated power supply
- Fully digital control



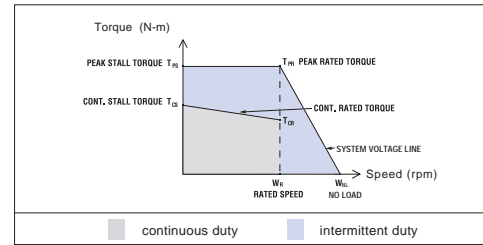
SERVOSTAR 600

SERVOSTAR® 600 SEE PAGE 34

The SERVOSTAR 600 is a high performance, high power drive accepting 208-480 VAC and producing from 3-70 A_{RMS} continuous. In combination with Kollmorgen GOLDLINE series motors (BH, XT, DDR) and Kollmorgen PLATINUM® DDL series motors, it offers the highest power, most advanced features, and broadest connectivity in the global marketplace. The integrated power supply makes it ideal for single and multi-axis applications.

- Fully protected
- Meets CE and UL requirements
- Built-in features minimize total machine cost by eliminating the need for external hardware
- Small footprint - CE Filters in 3-20 A units (standard) and option cards are contained inside the drive
- Digital position and velocity control
- Position generator supports trapezoidal and sinusoidal acceleration
- Motion Tasking support tied to I/O
- Interface through analog command, digital I/O, pulse direction or encoder follower, and fieldbuses
- Built-in CANOpen support

SYSTEM OVERVIEW



RECOMMENDED MOTOR/DRIVE SYSTEMS, 230 VAC

Servo Motor Model	Servo Drive Model	Peak Stall Torque T _{PS} N-m (lb-in)	Peak Rated Torque T _{PR} N-m (lb-in)	Cont. Stall Torque T _{CS} N-m (lb-in)	Cont. Rated Torque T _{CR} ^① N-m (lb-in)	Rated Speed W _R rpm	No-Load Speed W _{NL} rpm	Cont. Stall Current I _{CS} A _{RMS}	Current at Peak Torque I _{PS} A _{RMS}	Inertia J kgm ² (lb-in ²)	Inductance Line-Line L mH
XT Series Motors with SERVOSTAR CD Drives											
MT1502A1 ②	Cx03	1.24 (11.0)	0.93 (8.2)	0.44 (3.9)	0.37 (3.3)	6000	n/a	2.20	7.2	0.0000127 (0.001126)	13.2
MT1504A1 ②	Cx03	2.03 (18.0)	1.66 (14.7)	0.74 (6.5)	0.60 (5.3)	6000	n/a	2.90	9.0	0.0000195 (0.001728)	9.3
MT1506A1 ②	Cx03	3.80 (33.6)	2.30 (20.4)	1.35 (11.9)	1.07 (9.5)	6000	n/a	2.89	9.0	0.0000317 (0.002808)	14.9
MT1506B1 ②	Cx06	3.90 (34.5)	3.15 (27.9)	1.38 (12.2)	1.03 (9.1)	6000	n/a	5.86	18.0	0.0000317 (0.002808)	3.7
MT302A1 ②	Cx03	2.92 (25.8)	1.97 (17.4)	1.21 (10.7)	1.17 (10.4)	4500	n/a	2.44	9.0	0.0000465 (0.000412)	35.0
MT302B1 ②	Cx06	2.98 (26.4)	2.36 (20.9)	1.19 (10.5)	1.07 (9.5)	6000	n/a	4.44	16.5	0.0000465 (0.000412)	11.5
MT304A1 ②	Cx03	6.12 (54.2)	3.35 (29.7)	2.44 (21.6)	2.18 (19.3)	3000	n/a	2.59	9.0	0.0000808 (0.000715)	58.0
MT304B1 ②	Cx06	6.10 (54.0)	3.95 (35.0)	2.37 (21.0)	2.01 (17.8)	6000	n/a	5.26	18.0	0.0000808 (0.000715)	14.0
MT306A1 ②	Cx03	8.60 (76.1)	4.59 (40.6)	3.30 (29.2)	3.05 (27.0)	2500	n/a	2.73	9.0	0.000111 (0.00098)	60.0
MT306B1 ②	Cx06	8.25 (73.0)	5.10 (45.1)	3.24 (28.7)	2.98 (26.4)	4600	n/a	5.35	18.0	0.000111 (0.00098)	17.0
MT308A1 ②	Cx03	11.80 (104.4)	7.00 (62.0)	4.71 (41.7)	4.22 (37.4)	1500	n/a	2.58	9.0	0.000175 (0.00155)	80.0
MT308B1 ②	Cx06	11.80 (104.4)	9.00 (79.7)	4.71 (41.7)	4.01 (35.5)	3000	n/a	5.16	18.0	0.000175 (0.00155)	22.0
MT504B1 ③	Cx10	21.7 (192.0)	11.2 (99.22)	6.6 (58.8)	5.2 (46.02)	3300	n/a	8.6	20.0	0.00093 (0.00828)	10.5
MT504B2 ③	Cx10	21.7 (192.0)	11.2 (99.22)	6.6 (58.8)	5.2 (46.02)	3300	n/a	8.6	20.0	0.00093 (0.00828)	10.5
MT506A1 ③	Cx10	45.1 (398.4)	19.2 (170.2)	10.9 (96.0)	9.5 (84.08)	2200	n/a	8	20.0	0.00181 (0.01608)	14.6
MT506A2 ③	Cx10	45.1 (398.4)	19.2 (170.2)	10.9 (96.0)	9.5 (84.08)	2200	n/a	8	20.0	0.00345 (0.03048)	14.6

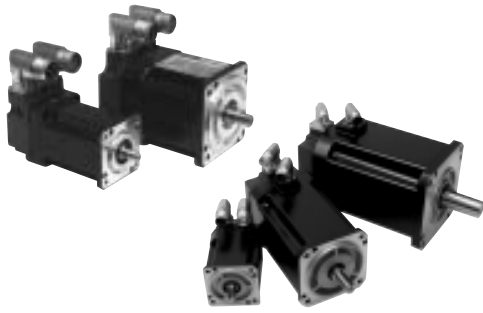
RECOMMENDED MOTOR/DRIVE SYSTEMS, 480 VAC

XT Series Motors with SERVOSTAR 600 Drives											
Servo Motor Model	Servo Drive Model	Peak Stall Torque T _{PS} N-m (lb-in)	Peak Rated Torque T _{PR} N-m (lb-in)	Cont. Stall Torque T _{CS} N-m (lb-in)	Cont. Rated Torque T _{CR} ^① N-m (lb-in)	Rated Speed W _R rpm	No-Load Speed W _{NL} rpm	Cont. Stall Current I _{CS} A _{RMS}	Current at Peak Torque I _{PS} A _{RMS}	Inertia J kgm ² (lb-in ²)	Inductance Line-Line L mH
MT322A1 ②	S603	2.65 (23.5)	2.56 (22.7)	1.21 (10.7)	1.08 (9.6)	6000	n/a	2.01	6	0.0000465 (0.000412)	50.4
MT324A1 ②	S606	6.28 (55.6)	5.56 (49.2)	2.31 (20.4)	1.97 (17.4)	6000	n/a	3.01	12	0.0000808 (0.000715)	38
MT328B1 ②	S606	12.1 (107.1)	9.68 (85.7)	4.41 (39.0)	2.26 (20.0)	5000	n/a	3.65	12	0.000175 (0.00155)	35
MT522B1 ③	S606	8.3 (73.5)	7.15 (63.3)	3.3 (29.2)	2.9 (25.7)	4000	n/a	2.98	12	0.00051 (0.00451)	57
MT522B2 ③	S606	8.3 (73.5)	7.15 (63.3)	3.3 (29.2)	2.9 (25.7)	4000	n/a	2.98	12	0.00108 (0.00956)	57
MT524C1 ③	S610	17.1 (151.3)	15.20 (134.5)	6.3 (55.8)	5.24 (46.4)	4000	n/a	5.4	20	0.00093 (0.00823)	28
MT524C2 ③	S610	17.1 (151.3)	15.20 (134.5)	6.3 (55.8)	5.24 (46.4)	4000	n/a	5.4	20	0.00208 (0.0184)	28
MT526B1 ③	S610	29.2 (258.4)	24.00 (212.4)	10.7 (94.7)	7.80 (69.0)	3600	n/a	5.88	20	0.00181 (0.0160)	30
MT526B2 ③	S610	29.2 (258.4)	24.00 (212.4)	10.7 (94.7)	7.80 (69.0)	3600	n/a	5.88	20	0.00345 (0.0305)	30
MT722B1 ④	S614	49 (433.7)	40.8 (361.1)	22.1 (195.6)	13.3 (117.7)	3000	n/a	10.7	28	0.0054 (0.0478)	26
MT722B2 ④	S614	49 (433.7)	40.8 (361.1)	22.1 (195.6)	13.3 (117.7)	3000	n/a	10.7	28	0.013 (0.115)	26
MT722C1 ④	S614	40.5 (358.5)	29.0 (256.7)	22.1 (195.6)	12.3 (108.9)	3400	n/a	14.0	28	0.0054 (0.0478)	16
MT722C2 ④	S614	40.5 (358.5)	29.0 (256.7)	22.1 (195.6)	12.3 (108.9)	3400	n/a	14.0	28	0.013 (0.115)	16
MT724A1 ④	S620	79.5 (703.6)	65.0 (575.3)	31.6 (279.7)	22 (194.7)	2250	n/a	13.0	40	0.0078 (0.0690)	21
MT724A2 ④	S620	79.5 (703.6)	65.0 (575.3)	31.6 (279.7)	22 (194.7)	2250	n/a	13.0	40	0.019 (0.168)	21
MT724B1 ④	S620	59.5 (526.6)	25.0 (221.3)	31.3 (277.0)	16 (141.6)	3400	n/a	19.2	40	0.0078 (0.0690)	9.7
MT724B2 ④	S620	59.5 (526.6)	25.0 (221.3)	31.3 (277.0)	16 (141.6)	3400	n/a	19.2	40	0.019 (0.168)	9.7
MT726B1 ④	S620	103 (911.6)	89.0 (787.7)	47.7 (422.2)	28.6 (253.1)	2300	n/a	17.3	40	0.0126 (0.112)	18.5
MT726B2 ④	S620	103 (911.6)	89.0 (787.7)	47.7 (422.2)	28.6 (253.1)	2300	n/a	17.3	40	0.039 (0.345)	18.5
MT726C1 ④	S640	115.5 (1022)	92.5 (818.7)	50.6 (447.8)	24.9 (220)	3400	n/a	31.6	80	0.0126 (0.112)	6.4
MT726C2 ④	S640	115.5 (1022)	92.5 (818.7)	50.6 (447.8)	24.9 (220)	3400	n/a	31.6	80	0.0239 (0.212)	6.4

- ① Ambient temperature at 40°C (or less).
- ② Continuous duty is with motor mounted to a 96 in² x 3/8" Aluminum faceplate.
- ③ Continuous duty is with motor mounted to a 300 in² x 3/4" Aluminum faceplate.
- ④ Continuous duty is with motor mounted to a 400 in² x 1" Aluminum faceplate.

XT SERIES MOTORS

Kollmorgen GOLDLINE® XT & SERVOSTAR® CD Systems



Features

XT Series Motors

Multiple frame sizes and stack lengths

Low and medium inertia versions

Short overall motor lengths

Optimized torque-to-inertia ratios

Low cogging and torque ripple

Increased thermal time constant

English and Metric standard mounting

UL recognized, CE compliant

Optimized windings to match SERVOSTAR drives

Swivel connectors

Resolver, incremental or sine encoder feedback

Built-in thermostat

IP65 sealing

Benefits

Wide range of ratings and sizes to match envelope

Obtain maximum acceleration or optimize for compliant loads

Easier to fit into limited spaces

High acceleration

Extremely smooth low speed operation

Allows for longer overloads

Versatile mounting

International applications

Optimum performance and cost

Accommodate a variety of application environments

Optimize the application for lowest cost or maximum accuracy and resolution

Over-temperature protection

Rugged industrial sealing

XT150 SERIES MOTORS

RATINGS AND CHARACTERISTICS

Motor parameters and winding data. See system data beginning on page 23 for typical torque/speed performance.

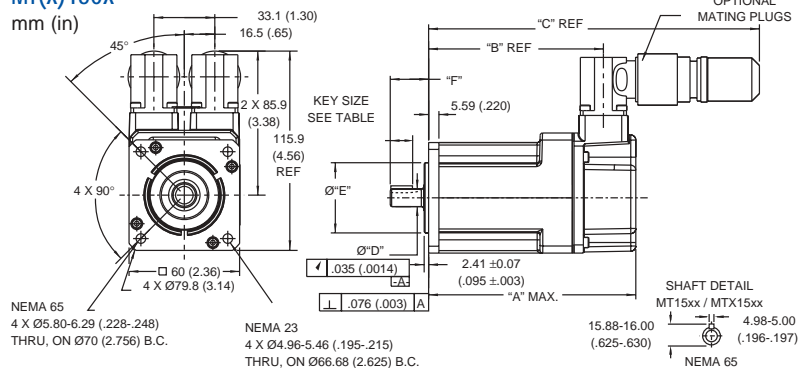
PARAMETER	SYMBOL	UNITS	MT1502A1	MT1504A1	MT1506A1	MT1506B1
Horsepower	HP _{RATED}	hp	0.31	0.50	0.90	0.87
Kilowatts	kW _{RATED}	kW	0.23	0.37	0.67	0.65
Speed at Rated Power	N _{RATED}	rpm	6000	6000	6000	6000
Max Operating Speed	N _{MAX}	rpm	6000	6000	6000	6000
Cont. Torque (Stall) at 40°C	T _{CS}	N-m (lb-ft)	0.438 (0.323)	0.742 (0.547)	1.353 (0.998)	1.384 (1.021)
Cont. Torque (Stall) at 25°C	T _{CS}	N-m (lb-ft)	0.466 (0.344)	0.790 (0.583)	1.441 (1.063)	1.474 (1.087)
Cont. Line Current	I _{CS}	A _{RMS}	2.21	2.93	2.89	5.86
Peak Torque	T _{PS}	N-m (lb-ft)	1.25 (0.92)	2.42 (1.78)	4.62 (3.41)	4.67 (3.44)
Peak Line Current	I _{PS}	A _{RMS}	7.2	11	11.4	22.7
Max Theoretical Acceleration	Z	rad/sec ²	98013	123864	145746	147062
Torque Sensitivity (Stall) ±10%	K _t	N-m (lb-ft) / A _{RMS}	0.202 (0.149)	0.258 (0.190)	0.476 (0.351)	0.240 (0.177)
Back EMF (Line to Line) ±10%	K _b	V _{RMS} / krpm	12.2	15.6	28.8	14.5
Max Line-to-Line volts	V _{MAX}	V _{RMS}	250	250	250	250
DC Res at 25°C (Line-to-Line) ±10%	R _m	ohms	6.85	3.77	5.33	1.34
Inductance (Line-to-Line) ±30%	L _m	mH	13.2	9.3	14.9	3.7
Rotor Inertia	J _m	kg-m ² (lb-ft-sec ²)	0.127 (0.0938)	0.195 (0.144)	0.317 (0.234)	0.317 (0.234)
Weight (without brake)	W _i	kg (lb)	1.1 (2.4)	1.3 (2.9)	1.9 (4.1)	1.9 (4.1)
Weight (with brake)	W _t	kg (lb)	1.5 (3.4)	1.8 (3.9)	2.3 (5.1)	2.3 (5.1)
Static Friction	T _f	N-m (lb-ft)	0.0072 (0.0053)	0.0130 (0.0096)	0.024 (0.018)	0.024 (0.018)
Thermal Time Constant	TCT	minutes	12	15	24	24
Viscous Damping Z Source	F _i	N-m (lb-ft) / krpm	0.0023 (0.0017)	0.0049 (0.0036)	0.0069 (0.0051)	0.0069 (0.0051)
Motor Constant at 25°C	K _m	N-m (lb-ft) / √watts	0.068 (0.050)	0.120 (0.086)	0.18 (0.134)	0.18 (0.135)
Thermal Resistance at Stall	R _{th}	°C / watt	1.33	1.37	0.99	0.96
Number of Poles			8	8	8	8

Notes:

- For models with shaft seals, derate torque at all speeds by 0.059 lb-ft (0.08 N-m)
- Continuous duty operation is based on using 96 in² x 3/8" aluminum plate.

MT(x)150x

mm (in)



Model	"A" MAX. with brake-without brake	"B" REF. with brake-without brake	"C" with brake-without brake	"D" NEMA 23 NEMA 65	"E" NEMA 23 NEMA 65	"F" NEMA 23 NEMA 65	Key Length NEMA 34 NEMA 100
MT(x)1502	158.70 (6.248)-113.4 (4.465)	140.33 (5.525)-95.31 (3.752)	230.38 (9.07)-185.42 (7.30)	9.513 9.525 (0.3745)	13.997 14.006 (0.5511)	38.05 38.15 (1.498)	no keyway
MT(x)1504	174.24 (6.860)-128.94 (5.077)	155.88 (6.137)-110.85 (4.364)	245.87 (9.68)-200.91 (7.91)	9.513 9.525 (0.3745)	13.997 14.006 (0.5511)	38.05 38.15 (1.498)	20 (0.79)
MT(x)1506	205.23 (8.080)-160.03 (6.301)	186.97 (7.361)-141.94 (5.588)	277.11 (10.91)-231.90 (9.13)	9.513 9.525 (0.3745)	13.997 14.006 (0.5511)	38.05 38.15 (1.498)	20 (0.79)

MT150x = without brake
MTB150x = with 90 VDC brake
MTC150x = with 24 VDC brake

XT30/32 SERIES MOTORS

Kollmorgen GOLDLINE® XT & SERVOSTAR® CD/600 Systems

RATINGS AND CHARACTERISTICS

Motor parameters and winding data. See system data beginning on page 23 for typical torque/speed performance.

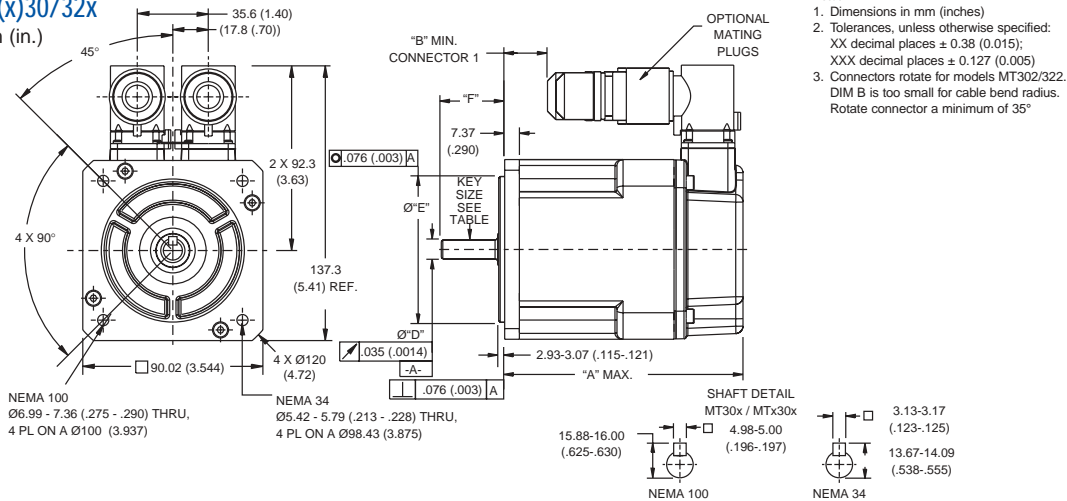
PARAMETER	SYMBOL	UNITS	MT302A1	MT302B1	MT304A1	MT304B1	MT306A1	MT306B1	MT308A1	MT308B1	MT322A1	MT324A1	MT328B1
Horsepower	HP _{rated}	hp	0.79	0.97	0.95	1.76	1.1	1.98	0.90	1.72	0.91	1.65	1.59
Kilowatts	kW _{rated}	kW	0.59	0.72	0.70	1.31	0.82	1.47	0.67	1.28	0.68	1.22	1.18
Speed at Rated Power	N _{rated}	rpm	4500	6000	3000	6000	2500	4600	1500	3000	6000/6000	6000/6000	4200/5000
Max Operating Speed	N _{max}	rpm	4500	6000	3000	6000	2500	4600	1500	3000	6000/6000	6000/6000	4200/5000
Cont. Torque (Stall) at 40°C	T _{cs}	N-m (lb-ft)	1.29 (0.95)	1.27 (0.94)	2.52 (1.86)	2.45 (1.81)	3.32 (2.49)	3.32 (2.45)	4.79 (3.53)	4.79 (3.53)	1.21 (0.89)	2.31 (1.70)	4.41 (3.25)
Cont. Torque (Stall) at 25°C	T _{cs}	N-m (lb-ft)	1.37 (1.01)	1.35 (1.00)	2.68 (1.98)	2.61 (1.93)	3.60 (2.65)	3.54 (2.61)	5.10 (3.76)	5.10 (3.76)	1.28 (0.95)	2.46 (1.81)	4.70 (3.46)
Cont. Line Current	I _{cs}	A _{RMS}	2.44	4.44	2.59	5.26	2.73	5.35	2.58	5.16	2.01	3.01	3.65
Peak Torque	T _{ps}	N-m (lb-ft)	3.23 (2.38)	3.22 (2.38)	7.40 (5.45)	7.41 (5.47)	11.24 (8.29)	11.29 (8.32)	18.76 (13.84)	18.73 (13.81)	3.24 (2.39)	7.41 (5.47)	18.68 (13.78)
Peak Line Current	I _{ps}	A _{RMS}	9.0	16.5	10.0	20.9	11.1	22.2	12.2	24.5	7.9	12.7	18.7
Max Theoretical Acceleration	Z	rad/sec ²	69364	69346	91524	91714	101243	101643	107278	107091	69573	91703	106831
Torque Sensitivity (Stall) ±10%	K _t	N-m (lb-ft)/A _{RMS}	0.540 (0.398)	0.294 (0.217)	0.985 (0.727)	0.473 (0.349)	1.255 (0.926)	0.630 (0.465)	1.898 (1.400)	0.947 (0.699)	0.617 (0.455)	0.779 (0.574)	1.238 (0.913)
Back EMF (Line to Line) ±10%	K _b	V _{RMS} / krpm	32.6	17.8	59.6	28.6	75.9	38.1	114.8	57.3	37.3	47.1	74.9
Max Line-to-Line volts	V _{max}	V _{RMS}	250	250	250	250	250	250	250	250	400/480	400/480	400/480
DC Res at 25°C (Line-to-Line) ±10%	R _m	ohms	7.77	2.24	7.93	1.79	7.75	1.94	8.45	2.11	11.19	5.45	4.22
Inductance (Line-to-Line) ±30%	L _m	mH	35	11.5	58	14	60	17	80	22	50.4	38	35
Rotor Inertia	J _m	kg-m ² (lb-ft-sec ²)	0.0000465 (0.0000343)	0.0000465 (0.0000343)	0.0000808 (0.0000596)	0.0000808 (0.0000596)	0.000111 (0.0000819)	0.000111 (0.0000819)	0.0001749 (0.0001290)	0.0001749 (0.0001290)	0.0000465 (0.0000343)	0.0000808 (0.0000596)	0.0001749 (0.000129)
Weight (without brake)	W _i	kg (lb)	2.5 (5.6)	2.5 (5.6)	3.3 (7.3)	3.3 (7.3)	3.8 (8.4)	3.8 (8.4)	5.1 (11.3)	5.1 (11.3)	2.5 (5.6)	3.3 (7.3)	5.1 (11.3)
Weight (with brake)	W _t	kg (lb)	3.6 (8.0)	3.6 (8.0)	4.3 (9.7)	4.3 (9.7)	4.8 (10.8)	4.8 (10.8)	6.1 (13.7)	6.1 (13.7)	3.6 (8.0)	4.3 (9.7)	6.1 (13.7)
Static Friction	T _f	N-m (lb-ft)	0.030 (0.022)	0.030 (0.022)	0.035 (0.026)	0.035 (0.026)	0.052 (0.038)	0.052 (0.038)	0.0781 (0.106)	0.0781 (0.106)	0.030 (0.00573)	0.035 (0.026)	0.106 (0.0781)
Thermal Time Constant	TCT	minutes	22	22	25	25	31	31	33	33	22	25	33
Viscous Damping Z Source	F _v	N-m (lb-ft)/krpm	0.0078 (0.0057)	0.0078 (0.0057)	0.0112 (0.0083)	0.0112 (0.0083)	0.023 (0.017)	0.023 (0.017)	0.025 (0.018)	0.025 (0.018)	0.00777 (0.00573)	0.01125 (0.00830)	0.02468 (0.01820)
Motor Constant at 25°C	K _m	N-m (lb-ft)/√watts	0.170 (0.125)	0.173 (0.127)	0.307 (0.226)	0.311 (0.229)	0.397 (0.292)	0.398 (0.293)	0.575 (0.422)	0.574 (0.422)	0.162 (0.119)	0.294 (0.216)	0.530 (0.390)
Thermal Resistance at Stall	R _{th}	°C / watt	0.955	1.001	0.828	0.891	0.765	0.795	0.788	0.786	0.979	0.895	0.788
Number of Poles			8	8	8	8	8	8	8	8	8	8	8

Notes:

- For models with shaft seals, derate torque at all speeds by 0.059 lb-ft (0.08 N-m)
- Continuous duty operation is based on using 96 in² x 3/8" aluminum plate.

MT(x)30/32x

mm (in.)



Notes:

- Dimensions in mm (inches)
- Tolerances, unless otherwise specified:
XX decimal places ± 0.38 (0.015);
XXX decimal places ± 0.127 (0.005)
- Connectors rotate for models MT302/322.
DIM B is too small for cable bend radius.
Rotate connector a minimum of 35°

Model	"A" MAX.		"B" MIN.		"D"		"E"		"F" ± 0.76 (± 0.03)		Key Length	
	with brake	without brake	with brake	without brake	NEMA 34	NEMA 100	NEMA 34	NEMA 100	NEMA 34	NEMA 100	NEMA 34	NEMA 100
MT(x)302	165.6 (6.520)	120.1 (4.730)	65.14 (2.565)	19.93 (0.785)	9.512-9.525	14.01	73.05	80.03			no keyway	20 (0.79)
MT(x)304	183.1 (7.210)	137.7 (5.420)	82.67 (3.255)	37.46 (1.475)	(0.3745-0.3750)	13.99	73.00	79.99	31.75	30	19 (0.75)	20 (0.79)
MT(x)306	198.6 (7.820)	153.2 (6.030)	98.16 (3.865)	52.95 (2.085)	12.69-12.70	(0.5515)	(2.876)	(3.151)	(1.250)	(1.181)	19 (0.75)	20 (0.79)
MT(x)308	231.7 (9.120)	186.2 (7.330)	131.2 (5.165)	85.97 (3.385)	(0.4995-0.5000)	0.5511	(2.874)	(3.149)			19 (0.75)	20 (0.79)

MT30/32x = without brake
MTB30/32x = with 90 VDC brake
MTC30/32x = with 24 VDC brake

Sold & Serviced By:
ELECTROMATE

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sales@electromate.com

XT50/52 SERIES MOTORS

Kollmorgen GOLDLINE® XT & SERVOSTAR® CD/600 Systems

RATINGS AND CHARACTERISTICS

Motor parameters and winding data. See system data beginning on page 23 for typical torque/speed performance.

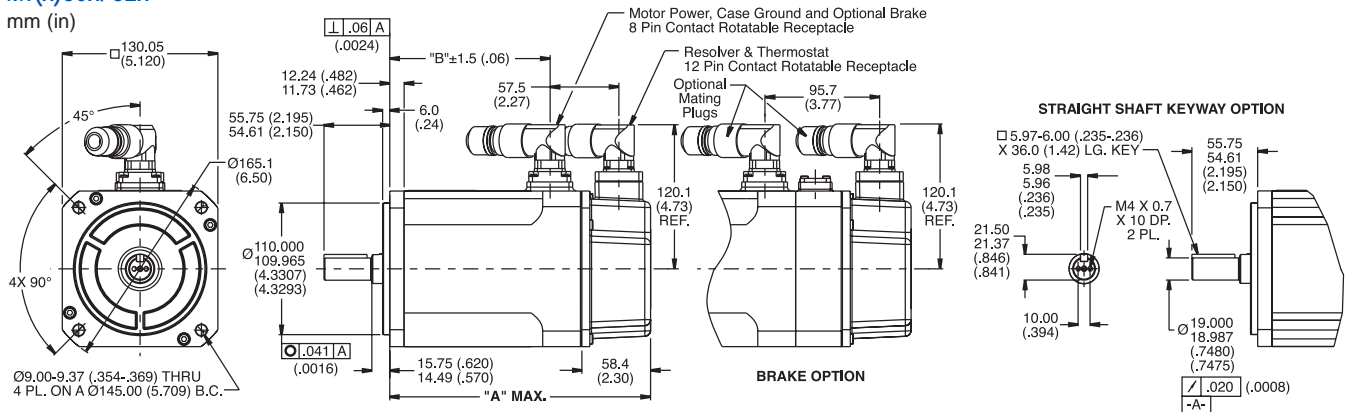
PARAMETER	SYMBOL	UNITS	MT504B1	MT504B2	MT506A1	MT506A2	MT522B1	MT522B2	MT524C1	MT524C2	MT526B1	MT526B2
Horsepower	HP _{rated}	hp	3.2	3.2	3	3	1.6	1.6	2.9	2.9	4.0	4.0
Kilowatts	kW _{rated}	kW	2.4	2.4	2.2	2.2	1.2	1.2	2.2	2.2	3.0	3.0
Speed at Rated Power	N _{rated}	rpm	4000	4000	2300	2300	4000/4000	4000/4000	4000/4000	4000/4000	3000/3600	3000/3600
Max Operating Speed	N _{max}	rpm	4000	4000	2300	2300	4000/4000	4000/4000	4000/4000	4000/4000	3000/3600	3000/3600
Cont. Torque (Stall) at 40°C	T _{cs}	N-m (lb-ft)	6.6 (4.9)	6.6 (4.9)	10.9 (8.0)	10.9 (8.0)	3.3 (2.4)	3.3 (2.4)	6.3 (4.63)	6.3 (4.63)	10.7 (7.91)	10.7 (7.91)
Cont. Torque (Stall) at 25°C	T _{cs}	N-m (lb-ft)	7.03 (5.22)	7.0 (5.2)	11.6 (8.5)	11.6 (8.5)	3.5 (2.6)	3.5 (2.6)	6.7 (4.9)	6.7 (4.9)	11.4 (8.4)	11.4 (8.4)
Cont. Line Current	I _{cs}	A _{rms}	8.6	8.6	8.0	8.0	2.98	2.98	5.4	5.4	5.88	5.88
Peak Torque	T _{ps}	N-m (lb-ft)	21.7 (16.0)	21.7 (16)	45.1 (33.2)	45.1 (33.2)	10.2 (7.5)	10.2 (7.5)	21.7 (16.0)	21.7 (16.0)	45.4 (33.5)	45.4 (33.5)
Peak Line Current	I _{ps}	A _{ms}	34.7	34.7	37.2	37.2	12.1	12.1	23.2	23.2	40.1	40.1
Max Theoretical Acceleration	Z	rad/sec ²	23279	10444	24869	13063	20087	9462	23279	10444	25063	13165
Torque Sensitivity (Stall) ±10%	K _t	N-m (lb-ft)/A _{rms}	0.775 (0.572)	0.775 (0.572)	1.37 (1.01)	1.37 (1.01)	1.11 (0.816)	1.11 (0.816)	1.163 (0.858)	1.163 (0.858)	1.83 (1.35)	1.83 (1.35)
Back EMF (Line to Line) ±10%	K _b	V _{rms} /krpm	46.9	46.9	82.9	82.9	66.9	66.9	70.4	70.4	110.4	110.4
Max Line-to-Line volts	V _{max}	V _{rms}	250	250	250	250	400/480	400/480	400/480	400/480	400/480	400/480
DC Res at 25°C (Line-to-Line) ±10%	R _m	ohms	1.18	1.18	1.46	1.46	8.66	8.66	2.97	2.97	2.65	2.65
Inductance (Line-to-Line) ±30%	L _m	mH	10.5	10.5	14.6	14.6	57	57	28	28	13.1	13.1
Rotor Inertia	J _m	kg-m ² (lb-ft-sec ²)	0.00093 (0.00069)	0.00208 (0.00154)	0.00181 (0.00134)	0.00181 (0.00134)	0.00051 (0.00037)	0.00108 (0.00079)	0.00093 (0.00069)	0.00208 (0.00154)	0.00181 (0.00134)	0.00345 (0.00254)
Weight (without brake)	W _i	kg (lb)	8.0 (17.6)	9.1 (20.1)	11.0 (24.2)	11.0 (24.2)	5.9 (12.9)	6.7 (14.8)	8.0 (17.6)	9.1 (20.1)	11.0 (24.2)	13.1 (28.9)
Weight (with brake)	W _b	kg (lb)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Static Friction	T _f	N-m (lb-ft)	0.115 (0.085)	0.115 (0.085)	0.27 (0.2)	0.27 (0.2)	0.080 (0.059)	0.080 (0.059)	0.115 (0.085)	0.115 (0.085)	0.27 (0.20)	0.27 (0.20)
Thermal Time Constant	TCT	minutes	40	40	47	47	34	34	40	40	47	47
Viscous Damping Z Source	F _v	N-m (lb-ft)/krpm	0.050 (0.037)	0.050 (0.037)	0.107 (0.079)	0.107 (0.079)	0.047 (0.0350)	0.047 (0.035)	0.050 (0.037)	0.050 (0.037)	0.107 (0.079)	0.107 (0.079)
Motor Constant at 25°C	K _m	N-m (lb-ft)/√watts	0.619 (0.455)	0.619 (0.455)	0.983 (0.723)	0.983 (0.723)	0.325 (0.239)	0.325 (0.239)	0.585 (0.43)	0.585 (0.43)	0.968 (0.712)	0.968 (0.712)
Thermal Resistance at Stall	R _{th}	°C / watt	0.549	0.549	0.515	0.515	0.619	0.619	0.55	0.55	0.568	0.568
Number of Poles			8	8	8	8	8	8	8	8	8	8

Notes:

1. Continuous duty operation is with motor mounted to a 300 in² x 3/4" aluminum faceplate.

MT(x)50x/52x

mm (in)



Model	"A" MAX. with brake-without brake	"B"
MT(x)502	218.8 (8.615)-180.6 (7.110)	98 (3.84)
MT(x)504	255.3 (10.05)-217.1 (8.547)	134 (5.28)
MT(x)506	300.5 (11.83)-262.3 (10.327)	179 (7.06)

Notes:

Dimensions in mm (inches) Motor designed in English, Metric provided for reference only. Tolerances, unless otherwise specified: metric: X decimal place ± 0.4, XX decimal places ± 0.13 inches: XX decimal places ± 0.015, XXX decimal places ± 0.005

MT50/52x = without brake
MTB50/52x = with 90 VDC brake
MTC50/52x = with 24 VDC brake

XT72 SERIES MOTORS

Kollmorgen GOLDLINE® XT & SERVOSTAR® CD/600 Systems

RATINGS AND CHARACTERISTICS

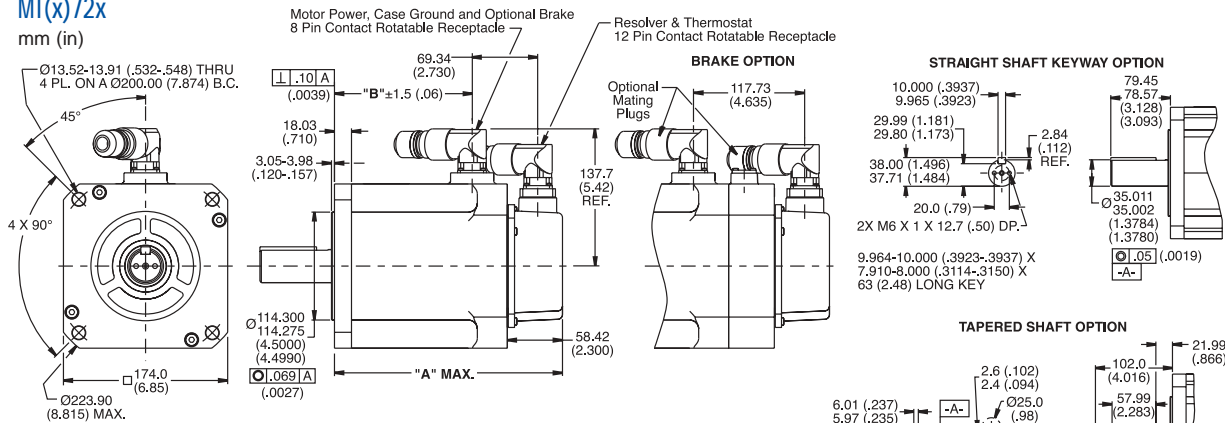
Motor parameters and winding data. See system data beginning on page 23 for typical torque/speed performance.

XT70/72 SERIES MOTORS	PARAMETER	SYMBOL	UNITS	MT722B1	MT722B2	MT722C1	MT722C2	MT724A1	MT724A2	MT724B1	MT724B2	MT726B1	MT726B2	MT726C1	MT726C2
	Horsepower	HP _{rated}	hp	5.6	5.6	5.5	5.5	6.95	6.95	7.63	7.63	13.21	13.21	11.9	11.9
	Kilowatts	KW _{rated}	kW	4.2	4.2	4.1	4.1	5.2	5.2	5.7	5.7	9.8	9.8	8.8	8.8
	Speed at Rated Power	N _{rated}	rpm	2500/3000	2500/3000	3200/3400	3200/3400	2000/2250	2000/2250	3150/3400	3150/3400	2000/2300	2000/2300	3200/3400	3200/3400
	Max Operating Speed	N _{max}	rpm	2500/3000	2500/3000	3200/3400	3200/3400	2000/2250	2000/2250	3150/3400	3150/3400	2000/2300	2000/2300	3200/3400	3200/3400
	Cont. Torque (Stall) at 40°C	T _{cs}	N-m (lb-ft)	22.1 (16.3)	22.1 (16.3)	22.4 (16.5)	22.4 (16.5)	31.6 (23.3)	31.6 (23.3)	31.3 (23.1)	31.3 (23.1)	50.4 (37.2)	50.4 (37.2)	50.6 (37.3)	50.6 (37.3)
	Cont. Torque (Stall) at 25°C	T _{cs}	N-m (lb-ft)	23.5 (17.4)	23.5 (17.4)	23.9 (17.6)	23.9 (17.6)	33.7 (24.8)	33.7 (24.8)	33.3 (24.6)	33.3 (24.6)	53.7 (39.6)	53.7 (39.6)	53.9 (39.7)	53.9 (39.7)
	Cont. Line Current	I _{cs}	A _{max}	10.7	10.7	14.0	14.0	13.0	13.0	19.2	19.2	18.3	18.3	31.6	31.6
	Peak Torque	T _{ps}	N-m (lb-ft)	62.2 (45.9)	62.2 (45.9)	62.2 (45.9)	62.2 (45.9)	90.6 (66.8)	90.6 (66.8)	90.6 (66.8)	90.6 (66.8)	152.3 (112.3)	152.3 (112.3)	152.3 (112.3)	152.3 (112.3)
	Peak Line Current	I _{ps}	A _{max}	36.7	36.7	47.0	47.0	45.6	45.6	67.1	67.1	64.7	64.7	110.0	110.0
	Max Theoretical Acceleration	Z	rad/sec ²	8459	4779	8462	4780	11623	4774	11624	4774	12079	6383	12074	6380
	Torque Sensitivity (Stall) ±10%	K _t	N-m (lb-ft)/A _{max}	2.07 (1.53)	2.07 (1.53)	1.62 (1.20)	1.62 (1.20)	2.43 (1.79)	2.43 (1.79)	1.65 (1.22)	1.65 (1.22)	2.75 (2.03)	2.75 (2.03)	1.62 (1.19)	1.62 (1.19)
	Back EMF (Line-to-Line) ±10%	K _e	V _{max} / krpm	125.4	125.4	98	98	147.1	147.1	100	100	166.5	166.5	97.9	97.9
	Max Line-to-Line volts	V _{max}	V _{max}	400/480	400/480	400/480	400/480	400/480	400/480	400/480	400/480	400/480	400/480	400/480	400/480
	DC Res at 25°C (Line-to-Line) ±10%	R _m	ohms	1.205	1.205	0.718	0.718	0.887	0.887	0.416	0.416	0.553	0.553	0.189	0.189
Inductance (Line-to-Line) ±30%	L _m	mH	26	26	16	16	21	21	9.7	9.7	18.5	18.5	6.4	6.4	
Rotor Inertia	J _r	kg-m ² (lb-ft-sec ²)	0.0054 (0.004)	0.013 (0.0096)	0.0054 (0.004)	0.013 (0.0096)	0.0078 (0.0058)	0.019 (0.014)	0.0078 (0.0058)	0.019 (0.014)	0.0126 (0.0093)	0.0239 (0.0176)	0.019 (0.014)	0.0126 (0.0093)	
Weight (without brake)	W _i	kg (lb)	22.5 (49.6)	24.2 (53.4)	22.5 (49.6)	24.2 (53.4)	30.0 (66.1)	36.0 (79.3)	30.0 (66.1)	36.0 (79.3)	36.0 (79.3)	42.0 (92.5)	36.0 (79.3)	42.0 (92.5)	
Weight (with brake)	W _b	kg (lb)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
Static Friction	T _f	N-m (lb-ft)	0.237 (0.175)	0.237 (0.175)	0.237 (0.175)	0.237 (0.175)	0.353 (0.260)	0.353 (0.260)	0.353 (0.260)	0.353 (0.260)	0.584 (0.431)	0.584 (0.431)	0.584 (0.431)	0.584 (0.431)	
Thermal Time Constant	TCT	minutes	45	45	45	45	60	60	60	60	72	72	72	72	
Viscous Damping Z Source	F _v	N-m (lb-ft)/krpm	0.114 (0.084)	0.114 (0.084)	0.114 (0.084)	0.114 (0.084)	0.168 (0.124)	0.168 (0.124)	0.168 (0.124)	0.168 (0.124)	0.281 (0.207)	0.281 (0.207)	0.281 (0.207)	0.281 (0.207)	
Motor Constant at 25°C	K _m	N-m (lb-ft)/watts	1.673 (1.23)	1.673 (1.23)	1.686 (1.24)	1.686 (1.24)	2.283 (1.679)	2.283 (1.679)	2.267 (1.667)	2.267 (1.667)	3.274 (2.407)	3.274 (2.407)	3.293 (2.421)	3.293 (2.421)	
Thermal Resistance at Stall	R _{th}	°C / watt	0.335	0.335	0.328	0.328	0.307	0.307	0.301	0.301	0.248	0.248	0.243	0.243	
Number of Poles			8	8	8	8	8	8	8	8	8	8	8	8	

- Notes:
1. Continuous duty operation is with motor mounted to a 400 in² x 1" aluminum faceplate.

MT(x)72x

mm (in)



Model	"A" MAX. with brake-without brake	"B"
MT(x)702	350 (13.78)-308 (12.1)	205 (8.071)
MT(x)704	411 (16.18)-369 (14.53)	265.89 (10.468)
MT(x)706	300.5 (11.83)-262.3 (10.327)	179 (7.06)

MT72x = without brake
MTB72x = with 90 VDC brake
MTC72x = with 24 VDC brake

Notes:
Dimensions in mm (inches) Motor designed in English, Metric provided for reference only.
Tolerances, unless otherwise specified: metric: X decimal place ± 0.4, XX decimal places ± 0.13 inches: XX decimal places ± 0.015, XXX decimal places ± 0.005

SERVOSTAR® CD DRIVES

Kollmorgen GOLDLINE® XT & SERVOSTAR® CD System



SERVOSTAR® CD FEATURES

Servo Control

- Advanced patented sinewave commutation technology provides smooth, precise low-speed control and high-speed performance
- Accurate torque control due to precision balanced current loops with closed loop sensors
- Velocity loop bandwidths to 400 Hz
- Self-tuning to the load
- S-curve acceleration feature for reducing acceleration “jerk” and machine wear
- Patented torque angle control enhances motor performance
- Fully digital control loops
- Compact and attractive rugged metal package for space-saving, modern appearance - metal package minimizes electrical noise emission and susceptibility
- Pole Placement, PI, and PDFF control options
- Low Pass or Notch Filters for compliant & resonant machines
- Command modes: Torque (analog or serial); Velocity (analog or serial); Position (analog, serial, stored or pulse)
- Three current ratings: 3/9, 6/18 & 10/20 amp RMS/phase continuous/peak current
- 3 to 1 peak/continuous current rating (2 to 1 on 10 amp product)

Analog Command:

- 14 Bit analog conversion
- Simple absolute & incremental moves thru internal profile generator

Easy Connectivity

- Built in encoder equivalent output can eliminate the need for an additional position feedback device
- RS232 or RS485 Communication
- Unique multi-drop configuration allows a PC or PLC to communicate to multiple SERVOSTAR CD amplifiers via single RS-232 connection
- SERVOSTAR CD's versatile communication capabilities make it easy to integrate machine control data directly from the factory floor to your information system
- Analog ± 10 V, pulse/direction, master encoder, serial port, command options
- SERCOS interface™

Robust Design

- Protection against miswired connection on 24 volt I/O
- ESD rugged circuit design and fully metallic enclosure
- Self-protecting intelligent power modules
- Full protection against short circuit, overvoltage, undervoltage, heatsink overtemperature, motor overtemperature, overspeed, overcurrent, and feedback loss
- UL , cUL listed, and CE
- Flash memory

Windows® Start-up Environment – MOTIONLINK®

- Advanced motion “wizard” automatically walks you through set-up
- Auto configuration function checks for correct wiring of motor and feedback
- PC “Oscilloscope” for measuring real-time motion performance

Motion Indexing

- Stores up to 4 motion profiles in memory
- Start motion through serial command or digital I/O
- Homing functions

Configurable I/O

- 3 digital inputs, 1 digital output, & 1 analog output can be configured to a variety of functions to customize the SERVOSTAR CD to individual machines

SERVOSTAR® CD DRIVES

Kollmorgen GOLDLINE® XT & SERVOSTAR® CD System

AMPLIFIER SPECIFICATIONS

Electrical characteristics

- Closed loop velocity bandwidth up to 400 Hz
- Motor current ripple frequency (16-32 kHz)
- Long term speed regulation (0.01%)
- Position loop update rate 500 μ s (2 kHz)
- Velocity loop update rate 250 μ s (4 kHz)
- Commutation update rate 62.5 μ s (16 kHz)
- Current loop update rate 62.5 μ s (16 kHz)

Fault protection

- Output phase to phase short circuit protection
- Overvoltage
- Undervoltage
- Overtemperature (motor and amplifier)
- Overspeed
- Overcurrent
- Feedback loss
- Foldback
- Supply loss
- Excessive position error

Environmental

- Operation range
 - Ambient 5 to 45°C
 - Storage -20°C to 70°C
- Humidity (non-condensing) 10% to 90%

Velocity Loop Compensation

- Vel: PI, PDFF or Pole Placement selectable algorithms
- Factory preset or field tunable
- **MOTIONLINK** software provides tuning programming via RS-232 or RS-485 serial interface
- Adjustable filters

Position Loop Compensation

- PID

Operational modes

- Torque control — from analog or serial command
- Velocity control — from analog or serial command
- Pulse following/Up-Down count
- Gearing from quad encoder input
- Position control

Inputs

- Analog command: ± 10 V
- Remote enable: 24 V
- Three multi-purpose 24 V inputs configurable to: CW limit switch, CCW limit switch, gear enable, start motion, second current limit, change velocity to torque mode, home switch, search for home, move to home registration capture, active disable, control fault relay, hold position plus using two inputs, up to four stored indexes or speeds can be executed
- Pulse command: up/down, pulse/direction, pulse or quadrature encoder format into RS-485 receivers or opto isolators

Communications

- RS-232 or RS-485 serial interface 9600 or 19.2 kb
- Drive-to-Drive multidrop
- SERCOS interface™

Outputs

- Fault: contact closure rated for 1 amp, 24 volt
- One multi-purpose 24 V output configurable to: speed exceeded, current exceeded, amplifier in foldback, brake enable, motion complete, in position, zero speed detect, encoder INIT complete
- ± 10 V, 12-bit analog output, configurable, for monitoring of various parameters

Diagnostics

- Seven segment LED display
- Error history log
- Internal variable monitoring
- PC scope

Motor Feedback

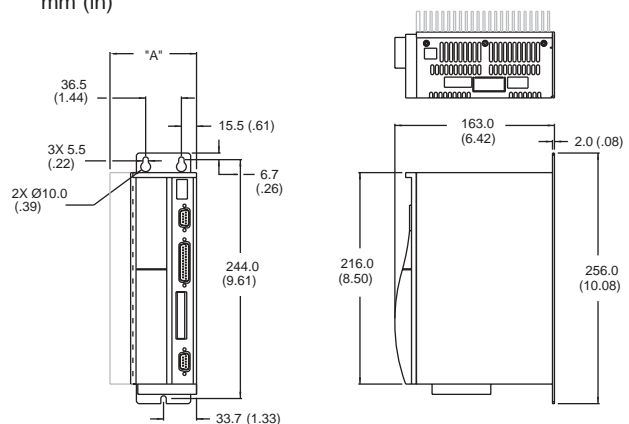
- Resolver, Incremental Encoder, Sine Encoder (including HEIDENHAIN EnDat™ support) or halls-only operation
- Auxiliary encoder feedback, used for Dual Loop or Master/Slave Operation.
- Commutation initialization with minimal motion

AMPLIFIER RATINGS

Model	Cx03	Cx06	Cx10
Output Continuous Current Per Phase (RMS/phase)	3	6	10
Output Peak Current Per Phase (1/2 sec)	9	18	20
Rated Output Continuous Power (kW)	1.1	2.2	3.5
Internal Power Dissipation (watts)	60	80	132
PWM Switching Frequency (kHz)	16	8	8
AC Input Line Voltage (V) (1 phase)	115-230	115-230	230, 3 phase
Rated Input Power (kW)	1.7	2.8	4.6

SERVOSTAR CD Cx03/06/10

mm (in)



MODEL	SIZE (amp)	DIM. "A"
Cx03	3	67.4 (2.65)
Cx06	6	88.4 (3.48)
Cx10	10	99.1 (3.90)