



Electrical Data	**	21	17	
1 Nominal Voltage	U_N	24	24	Volt
2 Optimization direction	-	CCW	CCW	-
3 No-Load Speed	n_0	35,000	43,000	rpm
4 Typical no-load current	I_0	190.0	270.0	mA
5 Max continuous mechanical power (@ 25°C)	P_{max}	180.0	180.0	W
6 Max continuous current	$I_{e max}$	7.1	8.7	A
7 Max continuous torque	$M_{e max}$	45.9 (6.5)	44.5 (6.3)	mNm (oz-in)
8 Back EMF Constant	K_E	0.68	0.53	V/1000 rpm
9 Torque Constant	K_M	6.5	5.1	mNm/A
10 Motor regulation	R/k^2	3.6	3.8	$10^3/Nms$
11 Motor regulation	$k/R^{1/2}$	16.7 (2.37)	16.1 (2.28)	$mNm/W^{1/2}$ (oz-in/ $W^{1/2}$)
12 Internal resistance - phase to phase	R_T	0.15	0.10	ohms
13 Line to line resistance at connectors	R_L	0.17	0.12	ohms
14 Inductance phase to phase	L	0.01	0.01	mH
15 Mechanical Time Constant	t_m	1.3	1.3	ms
16 Electrical Time Constant	t_e	0.08	0.09	ms

General Data			
17 Maximum motor speed	n_{max}	73,000	rpm
18 Ambient working temperature range	-	-30 to + 100 (-22 to + 212)	°C (°F)
19 Ambient storage temperature range	-	-40 to + 100 (-40 to + 212)	°C (°F)
20 Ball bearings preload	-	5.5	N
21 Axial static force without shaft support (max)	-	34.0	N
22 Maximum winding temperature	-	125 (257)	°C (°F)
23 Thermal Resistance	R_{th1}/R_{th2}	1.1 / 8.3	°C/W
24 Thermal time constant	t_w	950	s
25 Weight	-	150 (5.3)	g (oz)
26 Rotor Inertia	J	3.500	$g.cm^2$
27 Hall sensor electrical phasing	-	120	Electrical °

22ECS60 - 10B - ** - 01
with hall effect sensors

Wire	Description
Grey	Phase 1
Violet	Phase 2
Blue	Phase 3
Green	3.5 to 27V DC
Yellow	GND
Orange	Sensor 1
Red	Sensor 2
Brown	Sensor 3
Black	NTC 1
White	NTC 2

