



Dimensions in mm

Electrical Data	Symbol	12ECP48 8B xx				Unit
		21	29	46	52	
1 Nominal Voltage	U_N	9	12	18	24	Volt
2 Optimization Direction	-	Symmetrical	Symmetrical	Symmetrical	Symmetrical	-
3 No Load Speed	n_0	36,000	34,000	32,900	38,950	rpm
4 Typical No Load Current	I_0	200	150	100	80	mA
5 Max Continuous Mechanical Power (@25°C)	P_{max}	23	23	23	23	W
6 Max Continuous Current	$I_{e,max}$	3.3	2.4	1.5	1.4	A
7 Max Continuous Torque	$M_{e,max}$	8.1 (1.13)	8.1 (1.13)	8.1 (1.13)	8.1 (1.13)	mNm (oz-in)
8 Back EMF Constant	k_E	0.26	0.36	0.58	0.65	V/1000 rpm
9 Torque Constant	k_M	2.40	3.31	5.26	5.94	mNm/A
10 Motor Regulation	R/k^2	42.85	42.51	40.75	41.22	10 ³ Nms
11 Motor Regulation	$k/R^{1/2}$	4.83 (0.68)	4.85 (0.68)	5.26 (0.74)	4.93 (0.69)	mNm/W ^{1/2} (oz-in/W ^{1/2})
12 Internal Resistance - phase to phase	R_i	0.246	0.465	1.126	1.45	ohms
13 Line to Line Resistance at Connectors	R_L	0.3	0.52	1.18	1.5	ohms
14 Inductance Phase to Phase	L	0.02	0.04	0.09	0.12	mH
15 Mechanical Time Constant	τ_m	1.1	1.1	1.1	1.1	ms
16 Electrical Time Constant	τ_e	0.08	0.08	0.08	0.08	ms

General Data				
17 Maximum Motor Speed	n_{max}	60'000		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	-	3		N
21 Axial Static Force w/o Shaft Support (max)	-	25		N
22 Maximum Winding Temperature	-	125 (257)		°C (°F)
23 Thermal Resistance	R_{th}	2.5 / 24.2		°C/W
24 Thermal Time Constant	τ_w	535		s
25 Weight	-	30 (1.06)		g (oz)
26 Rotor Inertia	J	0.27		g-cm ²
27 Hall Sensor Electrical Phasing*	-	120		Electrical °

*Also available without Hall sensors

Wire	Description
Gray	Phase 1
Violet	Phase 2
Blue	Phase 3
Green	2.5 to 5.5V DC
Yellow	GND
Orange	Sensor 1
Red	Sensor 2
Brown	Sensor 3

with hall effect sensor

