Portescap

Ultra EC™
Brushless DC Motors

22ECP - Optimally Balanced Speed & Torque

- 2 poles BLDC motor
- Innovative patented design
- High torque capability at medium speeds
- High performance-to-price ratio

The new 22ECP brushless motor, part of the Ultra EC™ innovative line of brushless DC mini motors, provides all the benefits one requires of a high end BLDC motor. This 2 poles brushless motor offers superior torque density for medium speed applications within a simple and reliable construction and for long service life.

Featuring the patented EC coil, this motor was created to fulfill typical needs for BLDC motors: high continuous and peak torques with limited core losses over a wide range of working speeds, and without friction or brush wear. Associated with high precision bearing assembly, this provides a very reliable solution to upgrade your application from conventional brushed DC motor to brushless DC motors, but also allows you to downsize your electromechanical system, thereby taking advantage of higher mechanical power if used at higher speed.

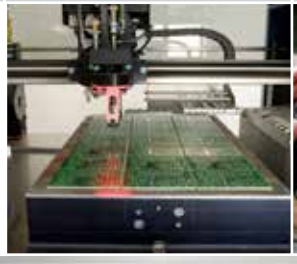
The result is that the new 22ECP45 and 22ECP60 can be adapted to most of applications in the Medical and Industrial segments, where you will enjoy the flexibility of their design, that allows customization of coil, motor length, electrical and mechanical interfaces.

OUTPUT AND PERFORMANCE

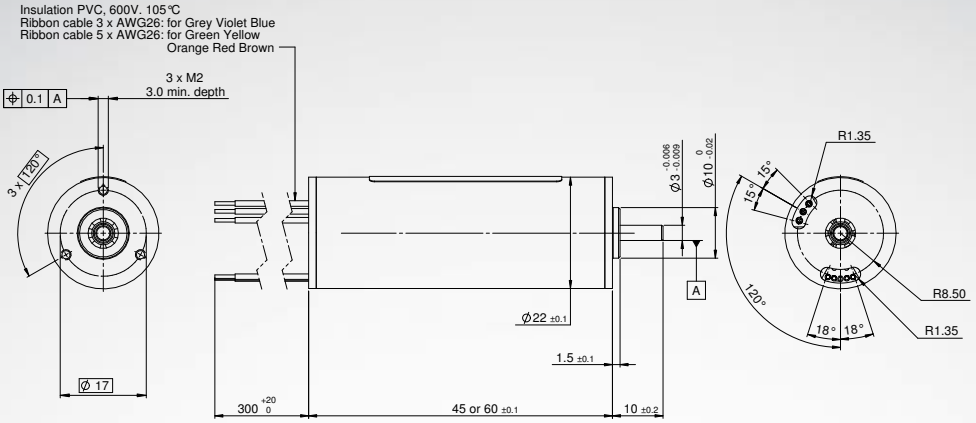
- Up to 50mNm continuously in a 22mm package
- Optimized for speeds below 40krpm
- Available in lengths of 45mm and 60mm

KEY FEATURES

- Torque performance allows superior dynamics, harder work cycles, and cooler operation
- Covers typical DC motor application speed range and use with gear trains
- Can also be applied to some faster high power applications
- Compact 22mm diameter design

Robotics: Humanoid robots, exoskeletons	**Factory Automation:** Material handling, machine axis	**Automation:** Pick and place	**Other:** Power tools, hand tools, pruning shears
			

For more information, please visit www.Ultraec.com

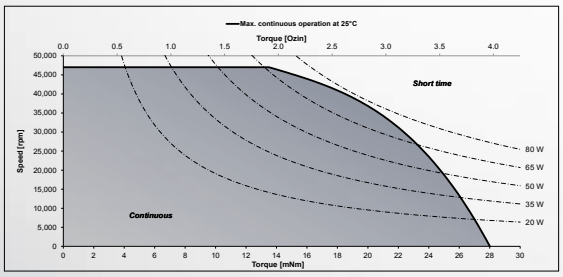


Electrical Data	Symbols	22ECP45 8B 84	22ECP45 8B 154	22ECP60 8B 90	Units
1 Nominal Voltage	U_N	24		24	Volt
2 Optimization Direction		Symmetrical		Symmetrical	
3 No-Load Speed	n_o	8,370	15,700	8,050	rpm
4 Typical No-load Current	I_o	25	60	40	mA
5 Max Continuous Mechanical Power (@ 25°C)	P_{max}	80	80	120	W
6 Max Continuous Current	$I_{e\,max}$	1.0	2.0	1.8	A
7 Max Continuous Torque	$M_{e\,max}$	27.7 (3.92)	29.4 (4.16)	50.5 (7.15)	mNm (oz-in)
8 Back EMF Constant	K_E	2.82	1.53	2.96	V/1000 rpm
9 Torque Constant	k_M	27.0 (3.82)	14.6 (2.07)	28.3 (4.00)	mNm/A
10 Motor Regulation	R/k^2	7.97	7.03	2.98	10^3/Nms
11 Motor Regulation	$k/R^{1/2}$	11.2 (1.59)	11.9 (1.69)	18.3 (2.59)	mNm/$W^{1/2}$ (oz-in/$W^{1/2}$)
12 Internal Resistance - Phase to Phase	R_l	5.8	1.5	2.38	ohms
13 Line to Line Resistance at Connectors	R_L	5.83	1.53	2.41	ohms
14 Inductance - Phase to Phase	L	0.94	0.226	0.475	mH
15 Mechanical Time Constant	t_m	1.8	1.6	1	ms
16 Electrical Time Constant	t_e	0.16	0.18	0.2	ms

General Data

17 Maximum Recommended Motor Speed	n_{max}	47,000		38,000	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			N
22 Maximum Winding Temperature		125 (257)			°C (°F)
23 Thermal Resistance	R_{th1}/R_{th2}	2 / 9.7		1 / 8.4	°C/W
24 Thermal Time Constant	τw	850		1100	s
25 Weight		100 (3.53)		140 (4.94)	g (oz)
26 Rotor Inertia	J	2.3		3.5	g.cm²
27 Hall Sensor Electrical Phasing		120			Electrical °

Power Curve 22ECP45



Power Curve 22ECP60