

**Empower your application with Portescap's UltraEC™ 16ECP
Brushless DC Motors**

BLDC slotless motors provide long-life, quiet operation. Have a look at this powerful 16 mm diameter motor using the latest patented Portescap coil innovation.

Portescap introduces the [16ECP motor](#), the newest addition to the Ultra EC™ brushless slotless motor platform. The Ultra EC platform currently includes the 22ECS motor, a 22 mm diameter motor available in 2 lengths, which is specifically optimized and tailored for respirator applications. All products from the Ultra EC platform share a best in class magnetic circuit that provides exceptional efficiency and design flexibility to allow the Ultra EC platform to be optimized for exact customer working points.

The 16ECP is a 16 mm diameter brushless motor that can be adapted and optimized to meet a wide range of different torque and speed working points, thus making the 16ECP an excellent choice for many BLDC motor applications, especially applications requiring high efficiency and long life. The high efficiency of the 16ECP design helps customers reduce the size of their drive system and extend the operating life of battery powered applications.

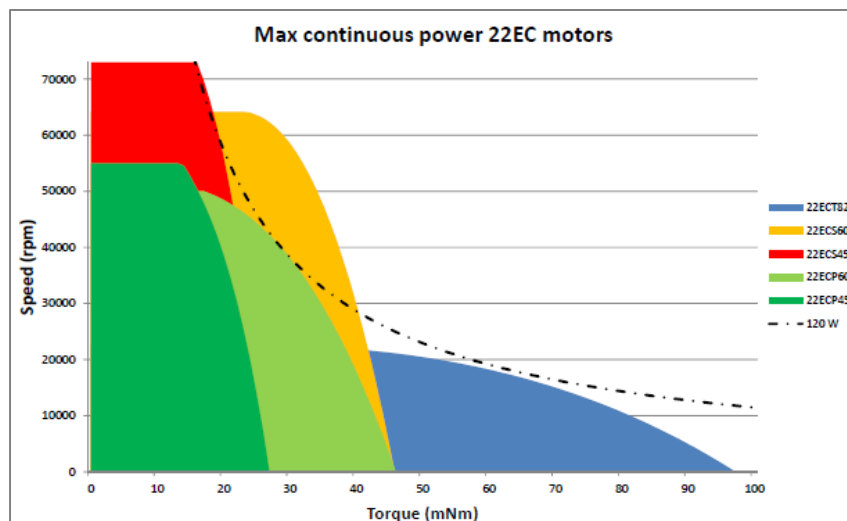


Figure 1- typical power curves comparison for ECS-ECP and ECT motors having similar size

The Ultra EC coil, the heart of this motor, makes it possible to lower the amount of power losses (Joule losses and iron losses) for a given working point to a minimum. Taking advantage of this technology, engineers designed the 16ECP to achieve the following BLDC motor performance:

- ✓ optimized for low to medium speeds
- ✓ impressive maximum continuous torque at low speed (for a 2 pole motor)
- ✓ maximum power between 40 K and 55 K rpm
- ✓ maximum rated speed around 60 K rpm.

The 16ECP performance results are achieved using the right amount of complexity, minimizing motor size and avoiding use of expensive materials to make the 16ECP both high performing and economical. The 16ECP embeds customary Portescap quality design standards for bearings, electronics, and assembly, to ensure motor reliability and long life.

These technology advantages make the 16ECP an optimum coreless BLDC motor for consideration in lower speed applications, such as applications using gears, or the redesign of applications that previously used brushed DC motors. For medium speed applications, the 16ECP's impressive figures of merit will result in lower speed drop and lower heating under torque.

The 16ECP is also an excellent choice for high speed applications that also require high power. Beyond 30 K rpm, the 16ECP can access the challenging above 20 Watts continuous working torque and speed range shown in figure 2. The 16ECP also boasts very low rotor inertia to allow rapid accelerations and decelerations in both direct drive and geared conditions, making the 16ECP a great match for applications requiring high efficiency in start-stop operation.

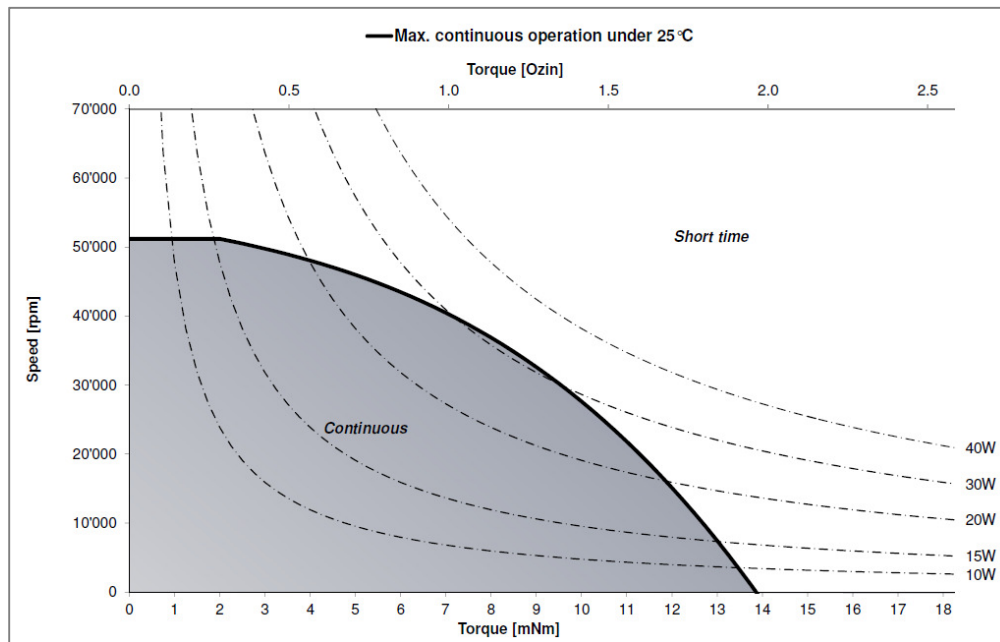


Figure 2- 16ECP52 (52mm long): Maximum continuous working domain with coil below 125°C, and with no help for cooling

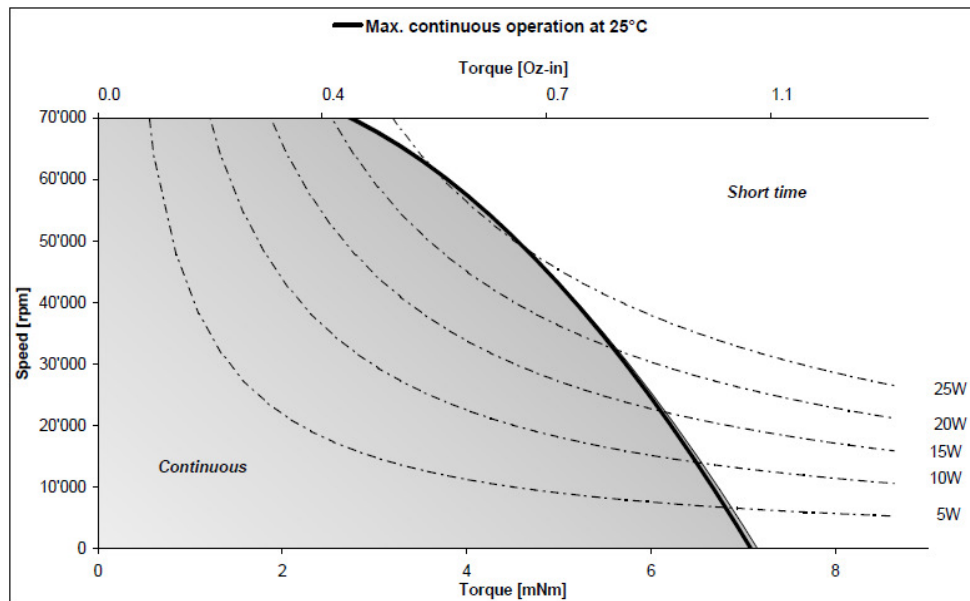


Figure 3- 16ECP36 (36mm long): Maximum continuous working domain with coil below 125°C, and with no help for cooling

The new 16ECP motors are available in 36 mm and 52 mm length ([16ECP36](#) and [16ECP52](#) respectively), with hall sensors and 3 different coils each to match your speed voltage requirements. Contact your local Portescap representative for customization possibilities such as gearboxes, encoders, sensorless versions, different coils, or any mechanical interface modifications.

	commutation	diameter in mm	Power in Watts	Standard coil name	Nominal voltage	No-load speed	Max. continuous torque		Motor regulation R/k2	Mechanical time constant	Electrical time constant	Max. motor speed	Thermal resistance	Mass		Rotor inertia
					V	rpm	mNm	oz-in	10 ³ /Nms	ms	ms			g	oz	
					±0,1	±10%	Typical		typical	typical	typical	typical	typical		typical	
16ECP36 - 380	with hall sensors	16	23	380	24	8100	6.4	0.91	71.9	3.9	0.08	63000	coil-housing: 3.5	36	1.27	0.6
16ECP36 - 245	with hall sensors	16	23	245	24	12420	6.6	0.93	67.8	3.7	0.08		housing-ambient: 20.5			
16ECP36 - 108	with hall sensors	16	23	108	24	29000	6.6	0.93	68.3	3.7	0.08					
16ECP52 - 220	with hall sensors	16	30	220	24	6144	13.2	1.87	18.9	1.9	0.1	40000	coil-housing: 3.0	56	1.98	1
16ECP52 - 112	with hall sensors	16	30	112	24	12100	14.3	2.03	18.3	1.8	0.1		housing-ambient: 18.5			
16ECP52 - 49	with hall sensors	16	30	49	24	27800	14.8	2.10	17.2	1.6	0.1					

Figure 4- 16ECP specifications

Portescap's Ultra EC motor platform also includes more specialized motor series, such as ECS for high speed optimized motors and ECT (coming soon) for high torque/lower speed applications. Several diameters, including 16 and 22mm, will be available.