

Ultra EC™ Brushless Motors 22ECT35 & 48



Ultra high torque in the smallest and lightest package

The Ultra EC range of brushless motors is expanding, with the introduction of the new 22ECT35 and 22ECT48 brushless DC motors. These compact motors offer almost 50% more continuous torque over similar comparative motors without compromising on the smooth operation and long life you expect from Portescap brushless slotless motors. Specifically optimized for high continuous torque at low to medium speeds, these motors are able to maximize power between 10k and 20k RPM.

The 22ECT35 and 22ECT48 motors are powered by our patented Ultra EC coil technology and patented multi polar rotor design, which provides up to 41.6 mNm. These motors weigh almost 28% less than similar motors and are the lightest 4 pole motors which can be used in most applications in the medical and industrial markets to reduce the fatigue of the user. Portescap succeeds in providing a high quality, long lasting and high performance brushless motor which is an ideal choice for geared applications because of its minimal speed drop and low motor heating under load.

These new brushless Ultra ECT motors are available with hall sensors and a total of 3 different coils to match your speed and voltage requirement. Portescap is also able to provide customization options including gearboxes, encoders, coil variations and mechanical interface modifications.

✓ Cont. torque
up to 41.6
mNm

✓ Lightest
4 pole motor

✓ Compact high
torque motor

Key Features

- 4 pole brushless slotless DC motor
- Digital hall sensors
- 3 standard coils available
- Increased Life
- Embedded temperature probe
- High efficiency
- Lightweight & compact design

Applications

- Power hand tools
- Surveillance camera systems
- Screwdrivers
- Electric grippers
- Exoskeleton
- Factory automation equipment
- Robotic applications
- Drills
-

Compatibility & Customization (*)

- Encoders
 - M Sense B
- Gearheads
 - R32
 - R22HT
- Customization*
 - Connectors
 - Different coil impedance
 - Mechanical integration (housing, front & rear flange, shaft)

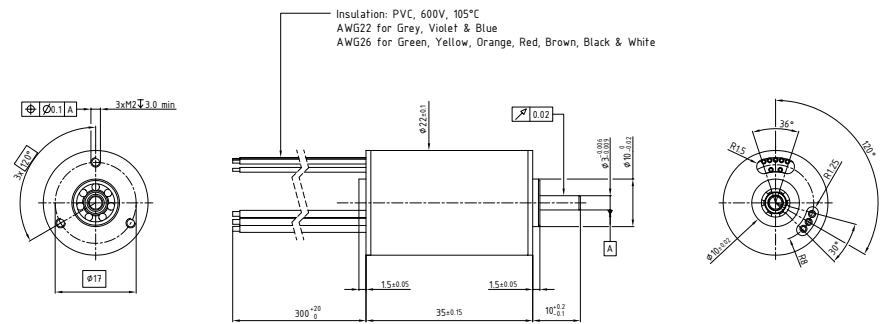
*upon request

22EC35 Ultra EC™

4 pole

Ø22mm

34W



Dimensions in mm

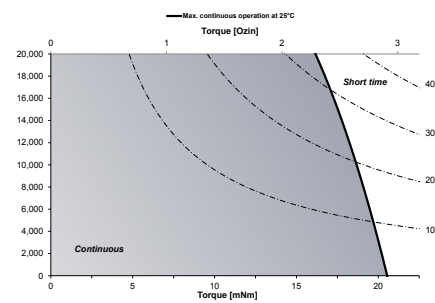
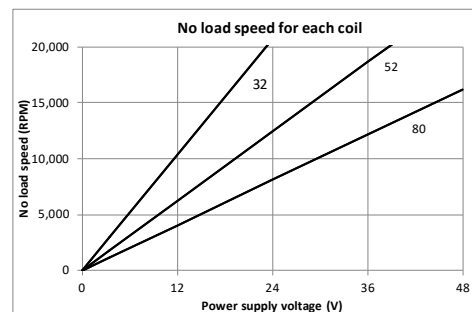
22ECT35 - 10B - **

Electrical Data	**	32	52	80	
1 Nominal Voltage	U_N	12	24	24	Volt
2 Optimization Direction	-	Symetrical	Symetrical	Symetrical	-
3 No-Load Speed	n_0	10,330	12,400	8,100	rpm
4 Typical No-Load Current	I_0	100	90	40	mA
5 Max Continuous Mechanical Power (@25°C)	P_{max}	34.0	34.0	34.0	W
6 Max Continuous Current	$I_{e max}$	1.8	1.1	0.7	A
7 Max Continuous Torque	$M_{e max}$	20 (2.84)	19.9 (2.82)	19.5 (2.77)	mNm (oz-in)
8 Back EMF Constant	K_E	1.14	1.86	2.86	V/1000 rpm
9 Torque Constant	k_M	10.9	17.8	27.3	mNm/A
10 Motor Regulation	R/k^2	11.78	11.77	12.30	$10^3/Nms$
11 Motor Regulation	$k/R^{1/2}$	9.2 (1.31)	9.2 (1.31)	9 (1.28)	mNm/W ^{1/2} (oz-in/W ^{1/2})
12 Internal Resistance - phase to phase	R_i	1.40	3.73	9.20	ohms
13 Line to Line Resistance at Connectors	R_L	1.43	3.76	9.23	ohms
14 Inductance Phase to Phase	L	0.12	0.32	0.75	mH
15 Mechanical Time Constant	t_m	4.2	4.2	4.4	ms
16 Electrical Time Constant	t_e	0.09	0.08	0.08	ms

General Data

17 Maximum Motor Speed	n_{max}	20,000		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	-	6.8		N
21 Axial Static Force w/o Shaft Support (max)	-	45		N
22 Maximum Winding Temperature	-	125 (257)		°C (°F)
23 Thermal Resistance	R_{th1}/R_{th2}	2.3 / 13		°C/W
24 Thermal Time Constant	t_w	829		s
25 Weight	-	67 (2.37)		g (oz)
26 Rotor Inertia	J	3.6		g.cm ²
27 Hall Sensor Electrical Phasing	-	120		Electrical °

With hall effect sensors	
Wire	Discription
Grey	Phase 1
Violet	Phase 2
Blue	Phase 3
Green	3.5 to 24V
Yellow	GND
Orange	Sensor 1
Red	Sensor 2
Brown	Sensor 3
Black	Therminstor (+)
White	Therminstor (-)

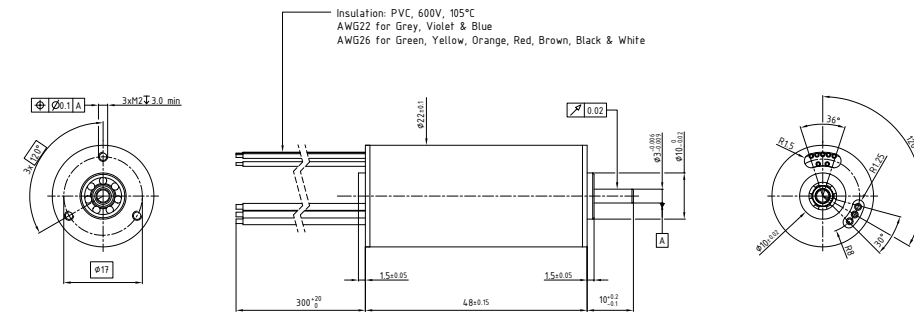


22ECT48 Ultra EC™

4 pole

Ø22mm

54W



Dimensions in mm

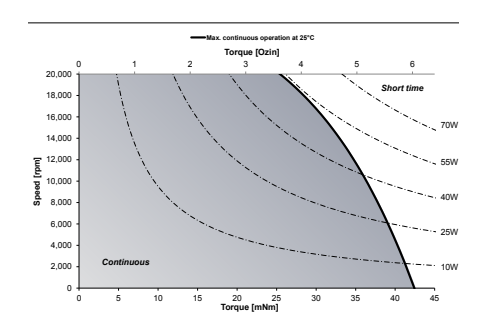
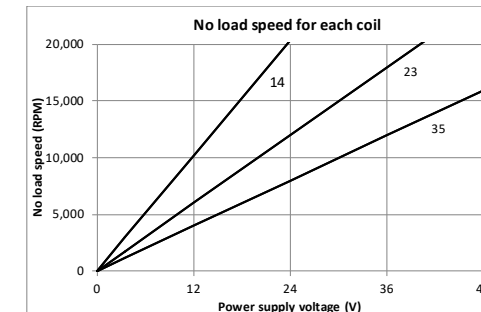
22ECT48 - 10B - **

Electrical Data	**	14	23	35	
1 Nominal Voltage	U_N	12	24	24	Volt
2 Optimization Direction	-	Symetrical	Symetrical	Symetrical	-
3 No-Load Speed	n_0	10,140	11,950	7,950	rpm
4 Typical No-Load Current	I_0	155	120	70	mA
5 Max Continuous Mechanical Power (@25°C)	P_{max}	54.0	54.0	54.0	W
6 Max Continuous Current	$I_{e max}$	3.7	2.2	1.5	A
7 Max Continuous Torque	$M_{e max}$	41.6 (5.9)	41.1 (5.82)	40.8 (5.78)	mNm (oz-in)
8 Back EMF Constant	K_E	1.17	1.95	2.94	V/1000 rpm
9 Torque Constant	k_M	11.2	18.6	28.1	mNm/A
10 Motor Regulation	R/k^2	2.95	3.01	3.04	$10^3/Nms$
11 Motor Regulation	$k/R^{1/2}$	18.4 (2.61)	18.2 (2.58)	18.1 (2.57)	mNm/W ^{1/2} (oz-in/W ^{1/2})
12 Internal Resistance - phase to phase	R_i	0.37	1.04	2.40	ohms
13 Line to Line Resistance at Connectors	R_L	0.40	1.07	2.43	ohms
14 Inductance Phase to Phase	L	0.04	0.11	0.24	mH
15 Mechanical Time Constant	t_m	1.8	1.9	1.9	ms
16 Electrical Time Constant	t_e	0.11	0.10	0.10	ms

General Data

17 Maximum Motor Speed	n_{max}	20,000		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	-	6.8		N
21 Axial Static Force w/o Shaft Support (max)	-	45		N
22 Maximum Winding Temperature	-	125 (257)		°C (°F)
23 Thermal Resistance	R_{th1}/R_{th2}	2.1 / 12		°C/W
24 Thermal Time Constant	t_w	962		s
25 Weight	-	98 (3.46)		g (oz)
26 Rotor Inertia	J	6.3		g.cm ²
27 Hall Sensor Electrical Phasing	-	120		Electrical °

With hall effect sensors	
Wire	Discription
Grey	Phase 1
Violet	Phase 2
Blue	Phase 3
Green	3.5 to 24V
Yellow	GND
Orange	Sensor 1
Red	Sensor 2
Brown	Sensor 3
Black	Therminstor (+)
White	Therminstor (-)



Ultra EC™

Learn More.
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