



## Product Data Sheet TG2330 DC BRUSHLESS MOTOR

### High Power & Torque Density

- ▶ Continuous Torque: 0.64 Nm
- ▶ Continuous Power: 1 kW
- ▶ Continuous P/W Ratio: 1.8 kW/kg

### Mechanically Flexible

- ▶ Available as framless part set and complete motor
- ▶ Low profile ironless composite stator
- ▶ Easily integrated into a variety of applications

### Smooth & Efficient

- ▶ Zero Cogging Torque
- ▶ Zero Hysteresis Torque
- ▶ Torque Ripple < 0.04 %



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Call for a proposal – all motors are highly customizable for OEM applications

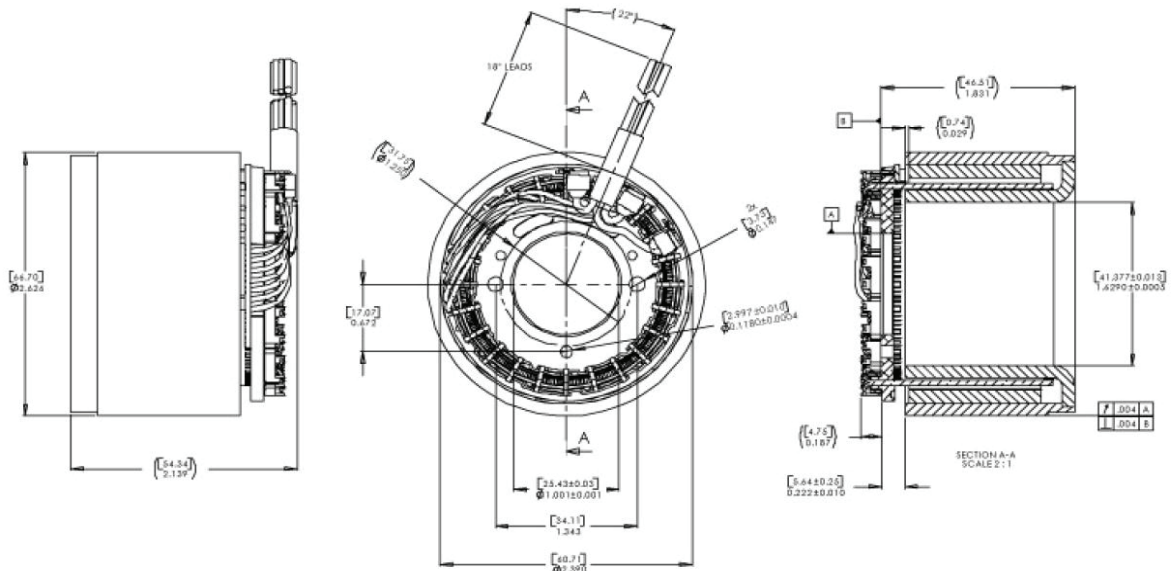
# Detailed Data: TG2330 BLDC Motor

	UNITS		ENGLISH		SI
<b>Continuous Values</b>					
Voltage	Vcont	110	Vdc	110	Vdc
Shaft Power	Pcont	1.34	hp	1000	W
Power Density	-	1.11	hp/lb	1.82	KW/kg
Speed	$\omega_{cont}$	15,000	RPM	15,000	RPM
Torque	Tcont	90	oz-in	0.64	N-m
Current	Icont	13.3	Amps	13.3	Amps
<b>Other Values</b>					
Maximum Locked Rotor Torque	Tlr	73	oz-in.	0.52	N-m
Maximum Locked Rotor Current	Ilr	8	Amps	8	Amps
No Load Voltage	Vnl	105.6	Vdc	105.6	Vdc
No Load Speed	$\omega_{nl}$	15,000	RPM	15,000	RPM
No Load current	I <sub>nl</sub>	1	Amps	1	Amps
Torque Constant - Trap Drive	Kt	9.1	oz-in./Amp	0.06	Nm/Amp
Back EMF Constant	Kv	0.067	Vdc/rad/sec	0.067	Vdc/rad/sec
Back EMF Constant	Ke	142	RPM/Vdc	142	RPM/Vdc
Terminal Resistance	Rt	0.31	ohms	0.31	ohms
Cogging and Hysteresis Torque	Tc/Th	0.00	oz-in.	0.00	N-m
Viscous Drag Torque	Tac	0.8	oz-in./krpm	5.65	mN-m/krpm
Friction Torque	Tfr	0.05	oz-in.	0.35	mN-m
Stator Inductance	L	10	$\mu$ H	10	$\mu$ H
Mechanical Time Constant	Tm	29	ms	29	ms
Electrical Time Constant	Te	0.032	ms	0.032	ms
Maximum System Efficiency	$\eta$	90	%	90	%
Motor Weight (Rotor + Stator)	Wt	19.4	oz	550	gm
Rotor Inertia	J	5.52E-02	oz-in.-sec <sup>2</sup>	3.90E-04	Kg-m <sup>2</sup>
Max Rotor Temperature	-	158	°F	70	°C
Max Stator Winding Temperature	-	212	°F	100	°C
<b>Dimensions</b>					
Rotor O.D.		2.63	inches	67	mm
Rotor I.D.		1.63	inches	41	mm
Stator Hole I.D.		1.0	inches	25	mm
Stator O.D.		2.39	inches	61	mm
Shaft Diameter		0.31	inches	8	mm
Axial Length		2.14	inches	54	mm
<b>Weights</b>					
Rotor		16.6	oz	471	g
Stator		2.8	oz	79	g
Hub		1.3	oz	37	g
Shaft		1.1	oz	31	g
Mount 1 w/Bearings		1.9	oz	54	g
Mount 2 w/Bearings		2.9	oz	82	g
Total Motor Weight - Mount 1		23.7	oz	672	g

- ▶ Motor testing performed at 22 °C ambient with passive cooling and the M2 motor mount fastened to a 3" x 0.375" x 8" aluminum test stand.
- ▶ Weight shown with flying leads for power and commutation sensors.
- ▶ Tests performed using a 20-amp, 80 VDC trapezoidal BLDC PWM controller configured with 100% duty cycle and a variable bus voltage. A series of other control methods are feasible, but may de-rate motor performance.
- ▶ Contact ThinGap for motor control information.

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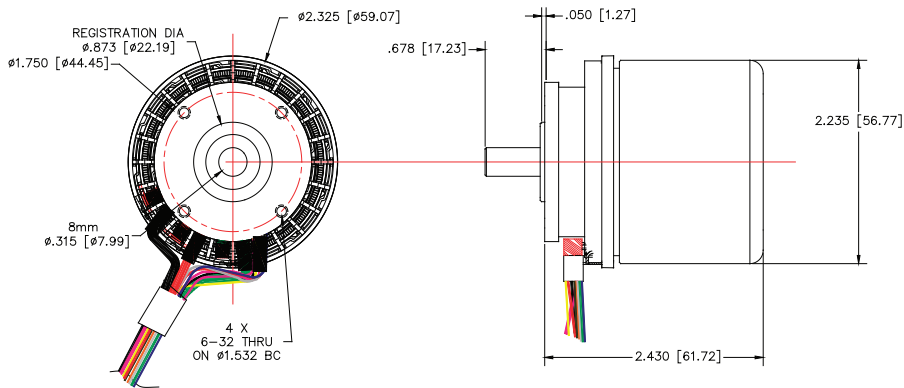
# Part Set: TG2330 BLDC Motor



## Mounting Options: TG2330 BLDC Motor

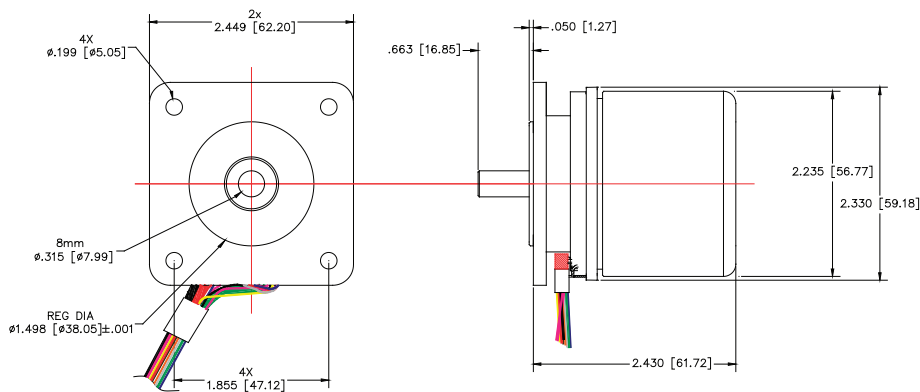
Please Note that The ThinGap Embedded motors can be customized with different Mounting Options as shown below.

### M1 Mount - Small Round Face



MOTOR PHASE	EXCITATION STEP						
	1	2	3	4	5	6	1
A	+	-	-	-	+	+	
B		+	+	-	-		
C	-	-	+	+	-		
HALL SENSORS							
H1	1	1	0	0	0	1	1
H2	0	1	1	1	0	0	0
H3	0	0	0	1	1	1	0

### M2 Mount - NEMA 23 Compatible



PHASE	WIRE COLOR	GAUGE
A	GRN	18
B	BLK	18
C	RED	18

	WIRE COLOR	GAUGE
+5v	YELLOW	24
GND	GREY	24
H1	BROWN	24
H2	ORANGE	24
H3	BLUE	24
CONNECTED TO THE THERMISTOR		
O	VIOLET	24
I	VIOLET	24