



### Φ37-20215-48 Brushless DC Motor Product Datasheet

#### Φ37-20215-48 BLDC Overview

- Three Phase, Six Step, Full Wave, Y-Circuit
- Sintered Nd-Fe-B Permanent Magnet Rotor
- Hall Sensor / Sensorless
- Step (Cogging)
- Slot

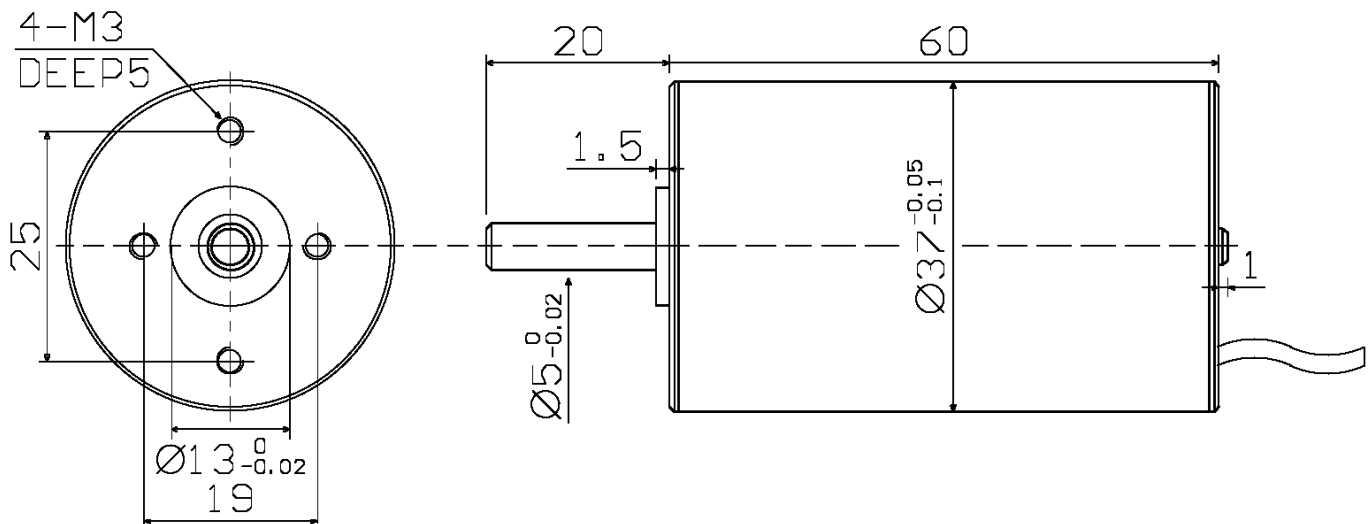


Parameters	Φ37-20215-48 BLDC Absolute Maximum Ratings	Unit
Rotor/Bearing Broken Speed	20000	rpm
Winding and Rotor Temperature	-20 to +130	°C
Ambient Temperature	-20 to +85	°C

**Notice:** The Absolute Maximum Ratings are those values beyond which the safety of the device cannot be guaranteed

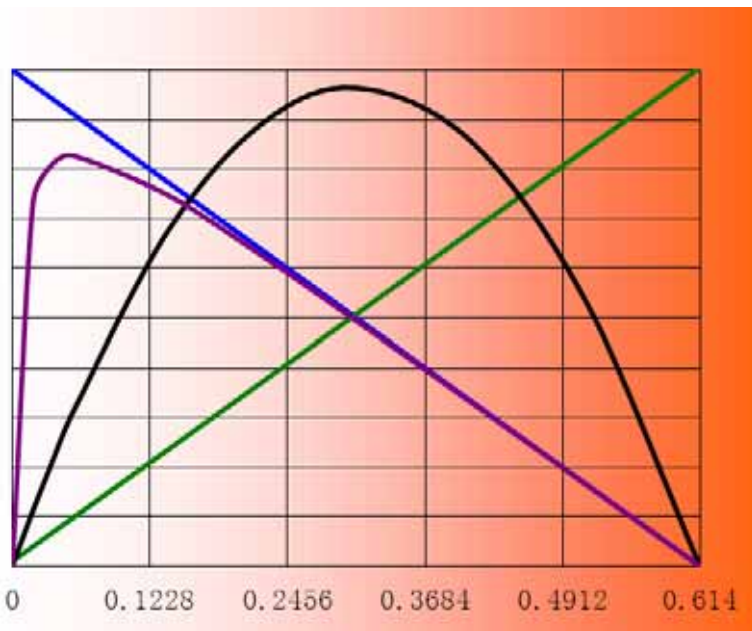
Parameters	Φ37-20215-48 BLDC Intrinsic Characteristics (20°C)	Unit
Resistance (Including Line)	1.6	Ohm
Speed-Torque Gradient	24400	rpm/Nm
Torque Constant	0.031	Nm/A
Speed Constant	313	rpm/V
Back-EMF Constant	3.2	mV/rpm
Rotor Magnetic Poles	4	Poles
Ball Bearing No Load Continuous Life (At Nominal Voltage)	10000	(Please order if have special requirement) Hours
Weight (Including Line)	Approximate	250 g

#### Φ37-20215-48 BLDC Physical Size (Unit: mm)





Parameters	Φ37-20215-48 BLDC Performance Characteristics (20°C)					Unit
Nominal Voltage	48					V
Maximum Output Power (P2)	241					W
(See Curves Below)	No Load Point	Some Loaded Points Performance				
Output Torque (T)	0	0.06	0.08	0.1	0.12	Nm
Output Speed (N)	15000	13540	13050	12560	12070	rpm
Input Current (I)	0.20	2.15	2.79	3.44	4.09	A
Output Power (P2)	0	85	109	132	152	W
Efficiency (η)	0	83	82	80	77	%
External Forced Ventilation Cooling	<u>If the shell temperature of the motor is higher than 85°C, more effective cooling equipments must be installed. Otherwise the motor may be damaged by hotness.</u>					



η(%)      P(W)      I(A)      N(rpm)  
**100**      **250**      **20**      **15000**

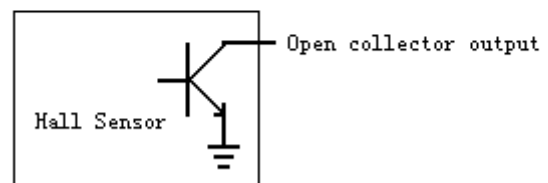
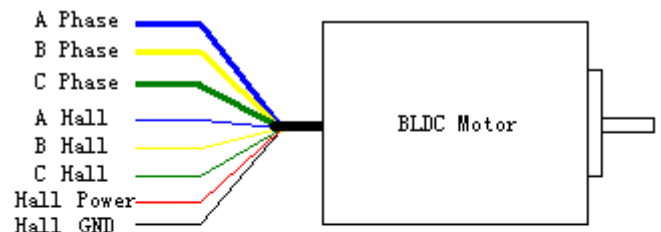
Speed vs. Torque : N -----  
 Current vs. Torque : I -----  
 Output Power vs. Torque : P -----  
 Efficiency vs. Torque : η -----

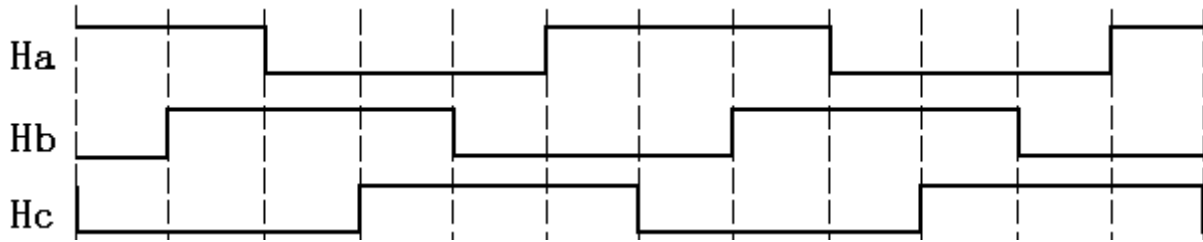
Short Term  
 Operation Range:

Torque (Nm)

### Φ37-20215-48 BLDC Connection Diagram and Hall Output Waveforms

- Three Phases: AWG18, Blue thick--A phase, Yellow thick--B phase, Green thick--C phase
- Halls: AWG24, Blue thin--A hall, Yellow thin--B hall, Green thin--C hall, Red thin--Hall power supply, Black thin--Hall GND
- Hall Supply Voltage: 4.5 to 16VDC Regulated Supply
- Hall Power Supply Current: Less than 20mA
- Hall Output: Open collector. Require external pull-up resistors. Maximum output voltage is 16V
- Electrical Hall Sensor Phasing: 120°
- Line Length: 0.5m, (Please order if have special requirement)

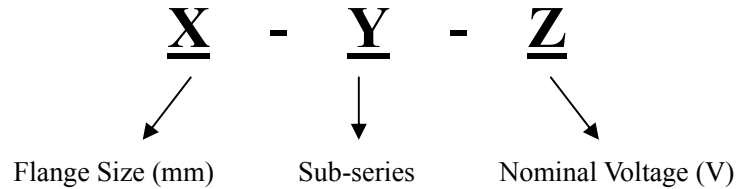




Hall Sensor Output Commutation Waveforms

Notice: The A, B, C three windings and Ha, Hb, Hc three hall sensors must be connected correctly, otherwise the controller and motor may be damaged.

### Eletechnic BLDC Motor Product Code Regulation



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