



### Φ47-2019.5-24 Brushless DC Motor for Centrifuge Product Datasheet

#### Φ47-2019.5-24 BLDC Overview

- Three Phase, Six Step, Full Wave, Y-Circuit
- Sintered Nd-Fe-B Permanent Magnet Rotor
- Hall Sensor
- Stepless (Coggingless)
- Slotless

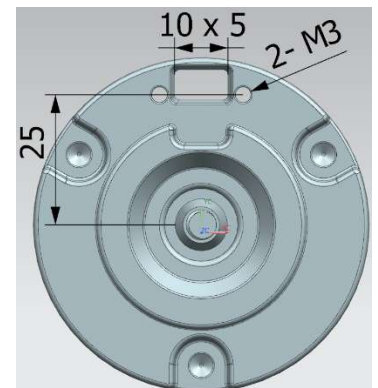
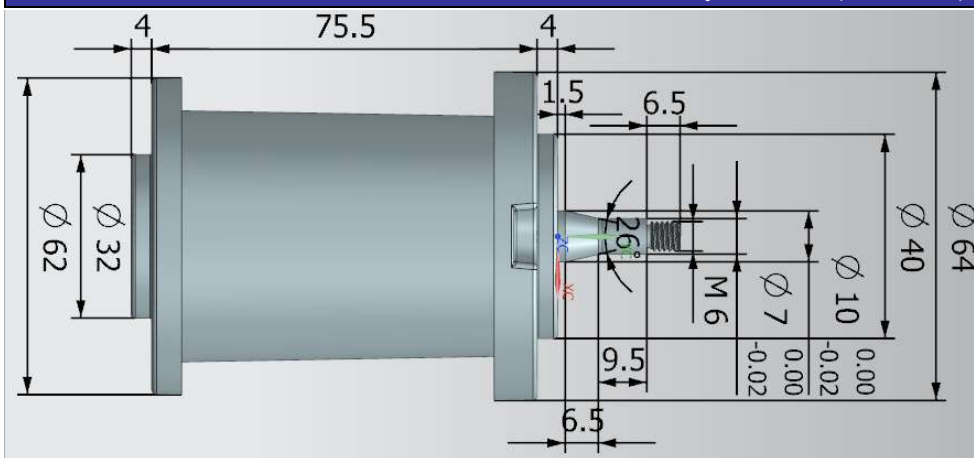


Parameters	Φ47-2019.5-24 BLDC Absolute Maximum Ratings	Unit
Rotor/Bearing Broken Speed	25000	rpm
Winding and Rotor Temperature	-20 to +130	°C
Front/Rear Lids Surface Temperature	0 to 70	°C
HIPOT (Winding to Shell)	200VDC, 1s	

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

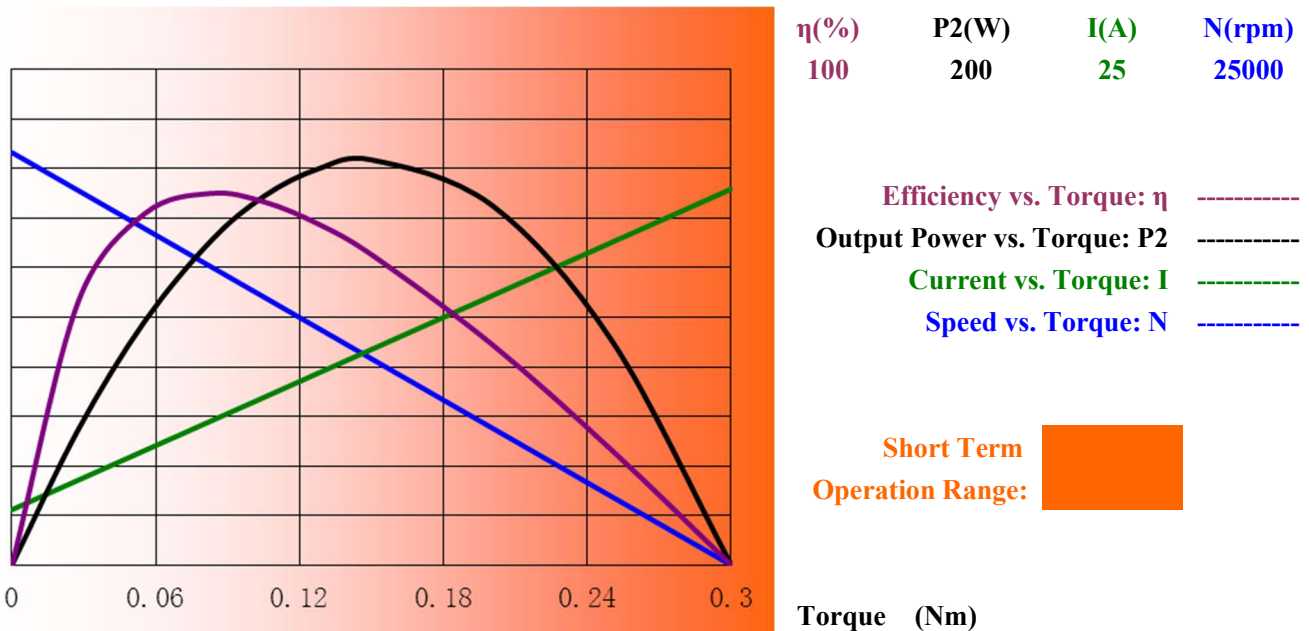
Parameters	Φ47-2019.5-24 BLDC Intrinsic Characteristics (20°C)	Unit
Resistance (Including Line)	0.4	Ohm
Speed-Torque Gradient	69000	rpm/Nm
Torque Constant	0.019	Nm/A
Speed Constant	870	rpm/V
Back-EMF Constant	1.1	mV/rpm
Rotor Magnetic Poles	2	Poles

#### Φ47-2019.5-24 BLDC Physical Size (Unit: mm)



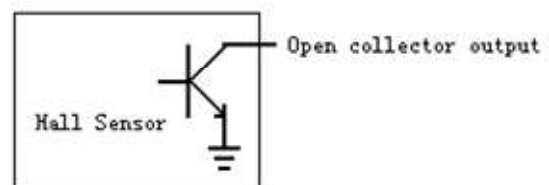
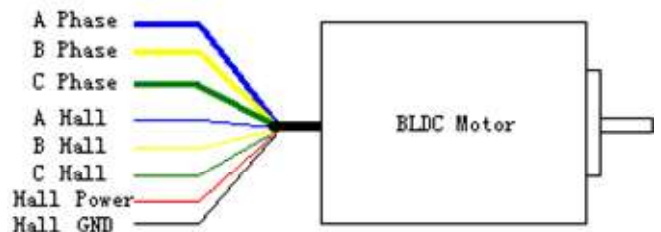


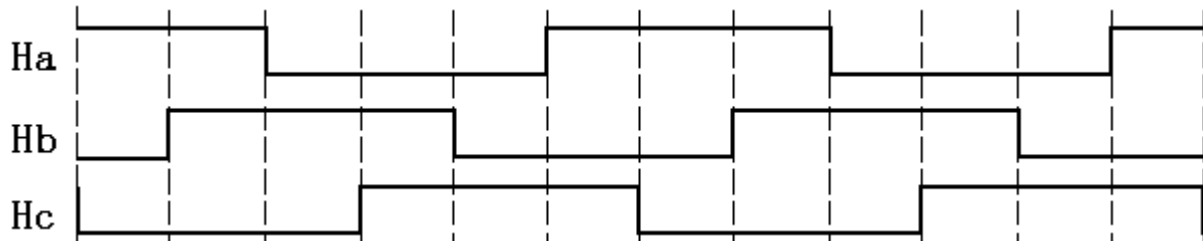
Parameters	Φ47-2019.5-24 BLDC Performance Characteristics (20°C)					Unit
Nominal Voltage	24					V
Maximum Output Power (P2)	163					W
(See Curves Below)	No Load Point	Some Loaded Points Performance				
Output Torque (T)	0	0.02	0.04	0.06	0.08	Nm
Output Speed (N)	20800	19410	18030	16640	15260	rpm
Input Current (I)	2.80	3.88	4.95	6.03	7.11	A
Output Power (P2)	0	41	76	105	128	W
Efficiency (η)	0	44	64	72	75	%
Free-convection Cooling	<u>If the shell temperature of the motor is higher than 85°C, fan or other cooling equipments must be installed. Otherwise the motor may be damaged by hotness.</u>					



### Φ47-2019.5-24 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
- Brown: MZ6-105, Positive Temperature Coef. Resistance
- 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°

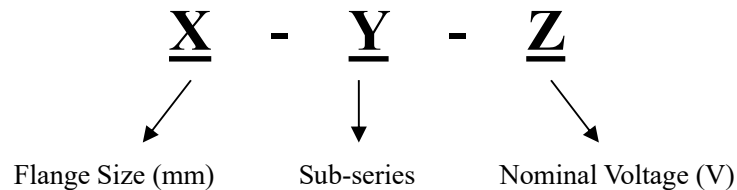




Hall Sensor Output Commutation Waveforms

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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