Φ72-20190-220 Brushless DC Motor for Centrifuge

Product Datasheet

Φ72-20190-220 BLDC Overview

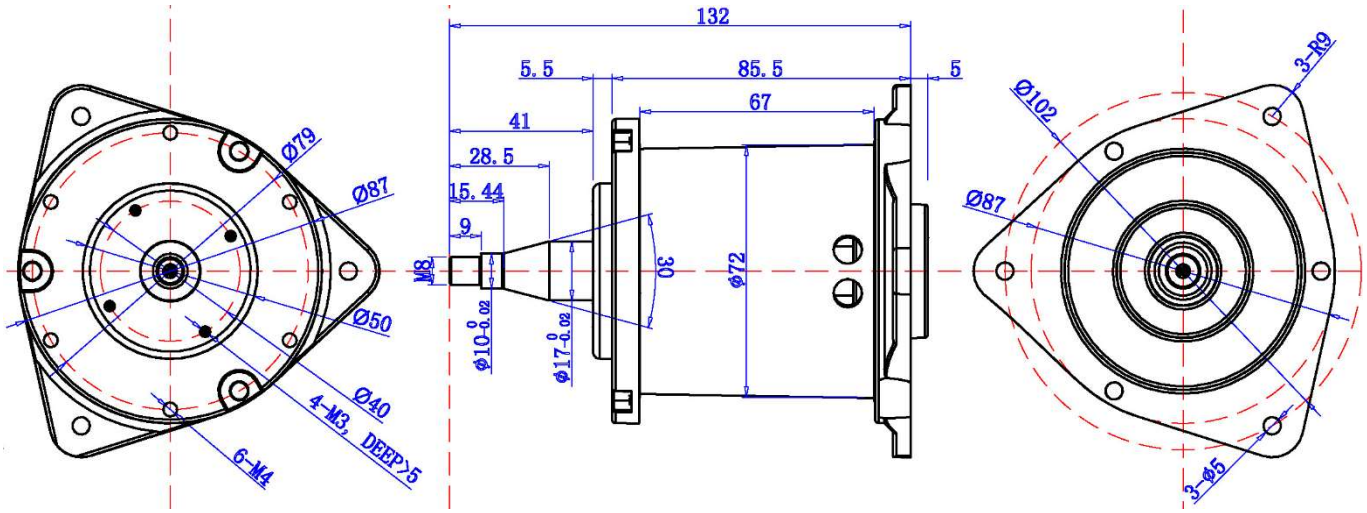
- Three Phase, Six Step, Full Wave, Y-Circuit
- Sintered Nd-Fe-B Permanent Magnet Rotor
- Hall Sensor
- Stepless (Coggingless)
- Slot

Parameters	Φ72-20190-220 BLDC Absolute Maximum Ratings	Unit
Rotor/Bearing Broken Speed	23000	rpm
Winding and Rotor Temperature	-20 to +130	℃
Front/Rear Lids Surface Temperature	0 to 70	℃
HIPOT (Winding to Shell)	2000VDC, 1s	

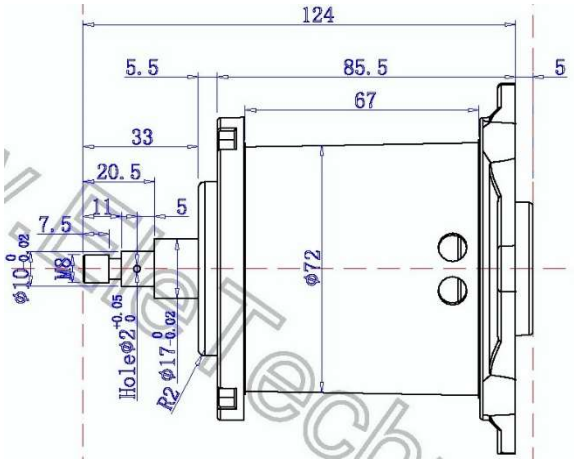
Notice: The Absolute Maximum Ratings are those values beyond which the safety of the device cannot be guaranteed

Parameters	Φ72-20190-220 BLDC Intrinsic Characteristics (20℃)	Unit
Resistance (Including Line)	8	Ohm
Inductance (Including Line)	19	mH
Speed-Torque Gradient	24500	rpm/Nm
Torque Constant	0.12	Nm/A
Speed Constant	95	rpm/V
Back-EMF Constant	10	mV/rpm
Rotor Magnetic Poles	2	Poles
Weight (Including Line)	Approximate 1200	g

Φ72-20190-220 BLDC Physical Size (Unit: mm)

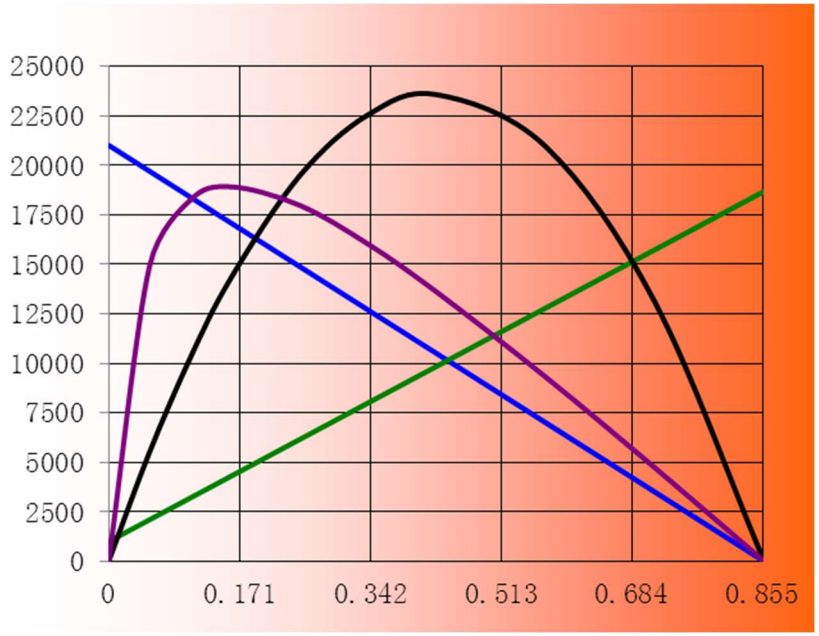


Taper Shaft



Multi-step Shaft

Parameters	Φ72-20190-220 BLDC Performance Characteristics (20℃)					Unit
Nominal Voltage	220					V
Maximum Output Power (P2)	471					W
(See Curves Below)	**No Load Point**	**Some Loaded Points Performance**				
Output Torque (T)	0	0.1	0.15	0.2	0.25	Nm
Output Speed (N)	21000	18550	17330	16100	14880	rpm
Input Current (I)	0.40	1.23	1.64	2.05	2.46	A
Output Power (P2)	0	194	272	337	390	W
Efficiency (η)	0	72	76	75	72	%
Free-convection Cooling	If the shell temperature of the motor is higher than 85℃, fan or other cooling equipments must be installed. Otherwise the motor may be damaged by hotness.					



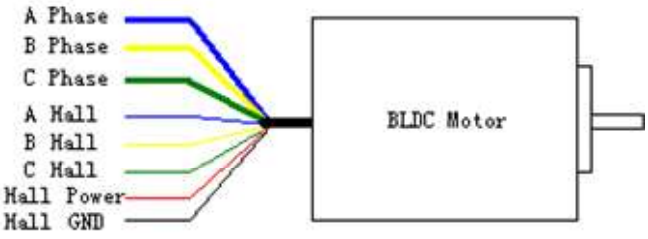
η(%)	P2(W)	I(A)	N(rpm)
100	500	10	25000

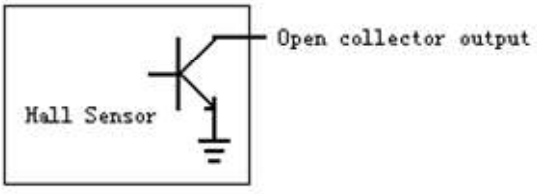
Efficiency vs. Torque: η ----------
Output Power vs. Torque: P2 ----------
Current vs. Torque: I ----------
Speed vs. Torque: N ----------

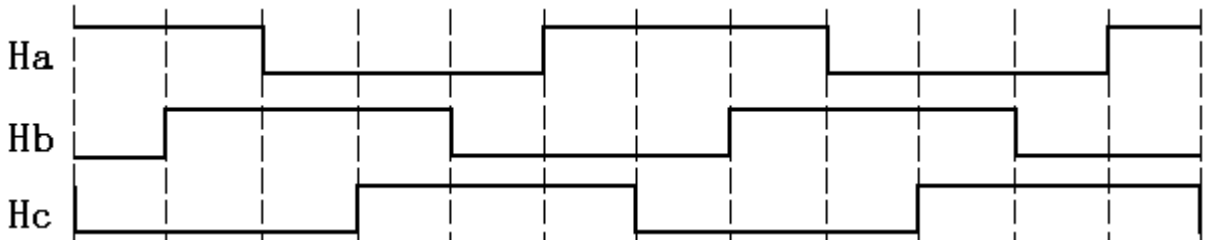
Short Term Operation Range:

Φ72-20190-220 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
- Three Encoder Halls: AWG24, Purple, Gray, White
- 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°







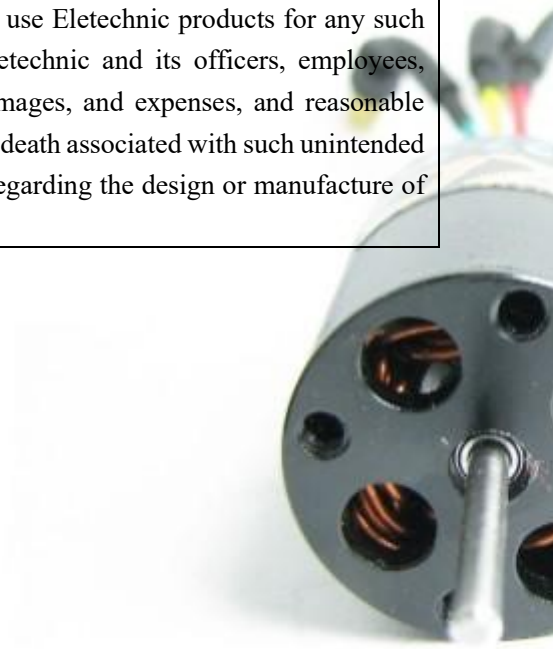
Hall Sensor Output Commutation Waveforms

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

X - Y - Z

Flange Size (mm) | Sub-series | Nominal Voltage (V)



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