



### 90-502102-220 Brushless DC Motor Product Datasheet

#### 90-502102-220 BLDC Overview

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

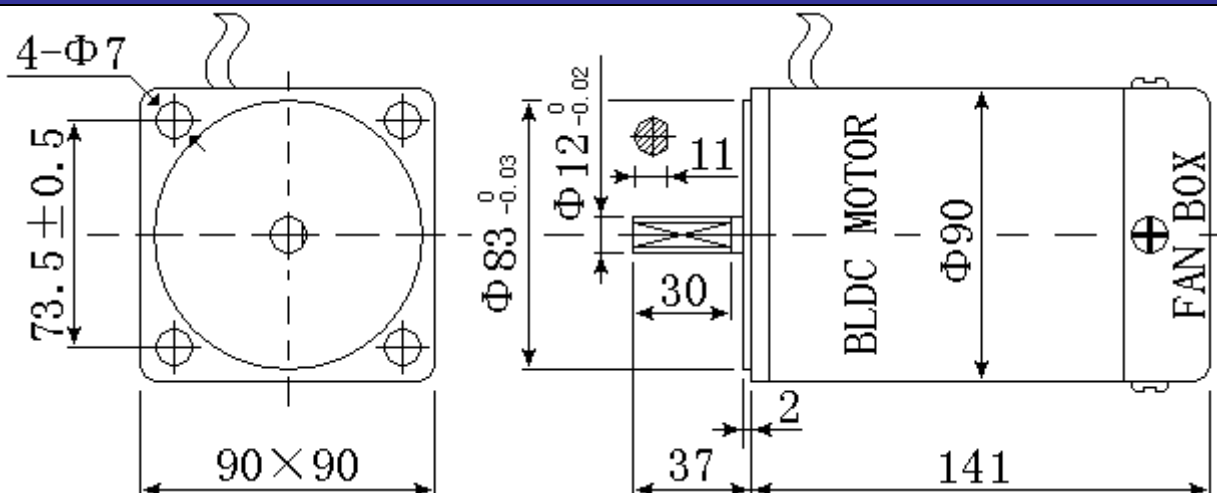


Parameters	90-502102-220 BLDC Absolute Maximum Ratings	Unit
Continuous Current	5.5	A
Speed	5000	rpm
Winding and Rotor Temperature	-20 to +150	°C
Ambient Temperature	-20 to +85	°C

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

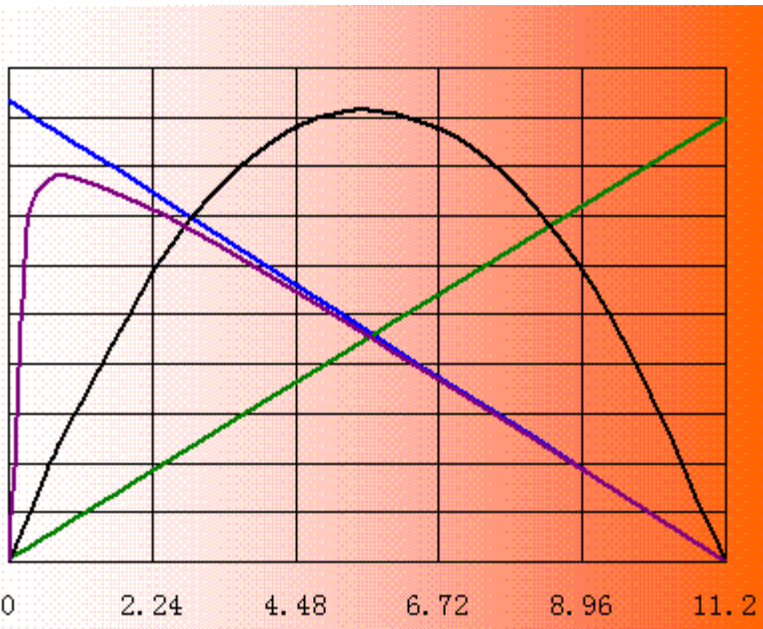
Parameters	90-502102-220 BLDC Intrinsic Characteristics (20°C)	Unit
Resistance (Including 0.5m Line)	19	Ohm
Speed-Torque Gradient	170	rpm/Nm
Torque Constant	1.05	Nm/A
Speed Constant	8	rpm/V
Back-EMF Constant	117	mV/rpm
Rotor Magnetic Poles	4	Poles
Ball Bearing No Load Continuous Life (At Nominal Voltage)	30000	(Please order if have special requirement) Hours
Weight (Including 0.5m Line)	Approximate 2900	g

#### 90-502102-220 BLDC Physical Size (Unit: mm)





Parameters	90-502102-220 BLDC Performance Characteristics (20°C)					Unit
Nominal Voltage (RMS)	220					V
Maximum Output Power	549					W
(See Curves Below)	<b>No Load Point</b>	<b>Some Loaded Points Performance</b>				
Output Torque	0	0.7	1.7	2.7	3.7	Nm
Output Speed	1870	1750	1580	1410	1240	rpm
Input Current	0.08	0.75	1.71	2.66	3.62	A
Output Power	0	128	281	399	480	W
Efficiency	0	78	75	68	60	%
Internal Fan Air Blast 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**      **600**      **12**      **2000**

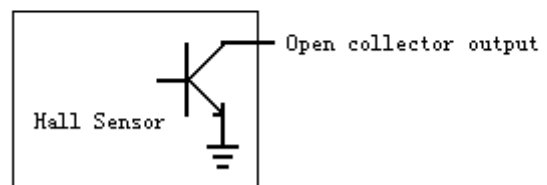
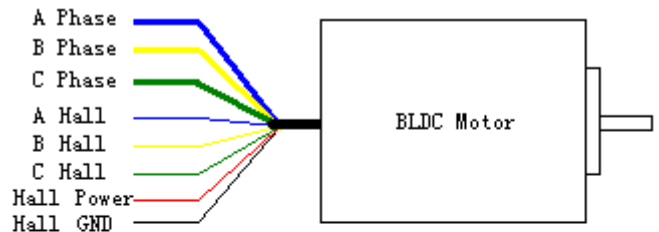
Speed vs. Torque : N -----  
 Current vs. Torque : I -----  
 Output Power vs. Torque : P -----  
 Efficiency vs. Torque : η -----

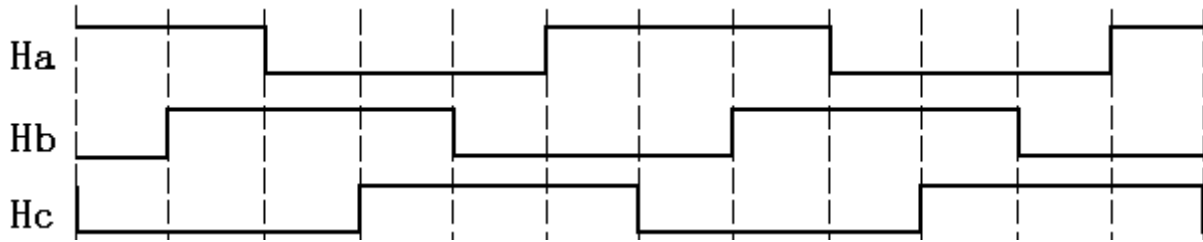
Short Term  
 Operation Range:                     

Torque(Nm)

## 90-502102-220 BLDC Connection Diagram and Hall Output Waveforms

- Connection: Blue thick--A phase, Yellow thick--B phase, Green thick--C phase, 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 30mA
- Hall Output: Open collector. Require external pull-up resistors for proper logical operation. Maximum output voltage is 16V
- Electrical Hall Sensor Phasing: 120°
- Line Length: 0.5m, (Please order if have special requirement)

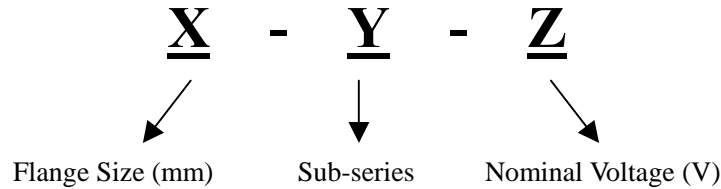




Hall Sensor Output Commutation Waveforms

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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