

# Preliminary Datasheet Small Brushless DC Motors

## BL30 EB Series Brushless DC Motors with Integral Drive

32 mm diameter, 30 mNm cont. Torque, 11 W output power

The BL30 EB is an extremely compact brushless DC motor with integrated drive electronics. This motor is an outer rotor motor providing a robust bearing system capable of handling high side loads.

High quality components ensure an operating life of min. 20000 hours. The output torque of 30 mNm at a constant speed of 3500 RPM makes this motor ideal for small membrane and peristaltic pumps, laser scanners, high-end fan and medical applications.

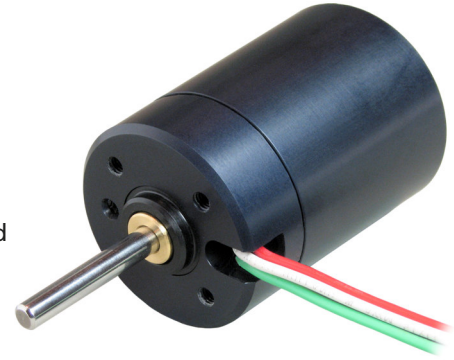
### Features & Benefits

- Integrated speed control loop with a speed set input to adjust motor speed from 200 to 5000 RPM

- Two-wire version is as simple to control as a DC motor, needing only a DC voltage to operate
- Four-wire version with tachometer output (18 pulses per rev) for speed monitoring
- IP54 level protection sealing
- Thermal overload protection with automatic recovery
- Reverse supply voltage protection
- Low EMI – complies with EN 55014

### Options

- Special shaft modifications
- Custom leads and connector configurations
- Alternate flange configurations
- Encoder and/or gearbox



- 32 mm dia., outer rotor, brushless DC motor with integrated drive and robust bearing system
- 30 mNm (4.3 oz-in) cont. torque
- 12 or 24 VDC winding choice

## BL30 EB SPECIFICATIONS

Model	CW <sup>1</sup>	8204 045+	15211	15221
	CCW <sup>1</sup>	8204 045+	15461	15471
Nominal Voltage		V	12	24
Voltage Range		V	10 - 18	10 - 28
Max. Output Power		W	11	
Nominal Torque		mNm (oz-in)	30 (4.3)	
Max. Continuous Torque		mNm (oz-in)	40 (5.7)	
Nominal Speed		RPM	3500	
No-Load Speed		RPM	4600	
Nominal Current		mA	1350	650
Max. Continuous Current		mA	1600	800
No-Load Current		mA	160	93
Torque Constant		mNm/A (oz-in/A)	35 (5)	70 (10)
Rotor Inertia		kgm <sup>2</sup> (oz-in-s <sup>2</sup> )	4.7 E-6 (7 E-4)	
Mechanical Time Constant		ms	12	9
Thermal Resistance Housing-Ambient		°C/W	14	
Weight		g (oz)	113 (4)	
Protection		-	IP54	
Gearbox (option)		-		
Speed Voltage Input (set point) <sup>2,3</sup>		V	0 - 7	
Speed Voltage Input threshold <sup>2</sup>		V	0.2	
Speed Output Signal		PPR	18	
Speed Output Signal low time <sup>4</sup>		usec	195	
Thermal Limit Protection		°C	90 (flange temp., 80 °C restart)	

Notes: Values valid for nominal voltage and T<sub>amb</sub> = 22 °C

1) CW for clock rotation, CCW for counter clockwise rotation

2) Input versus motor speed graph, see next page

3) Input circuit diagram see next page

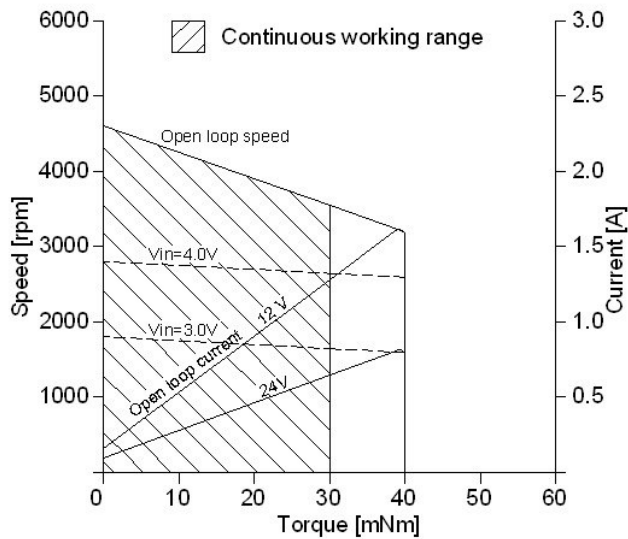
4) Speed output signal and speed output circuit diagram see next page

# Small Brushless DC Motors

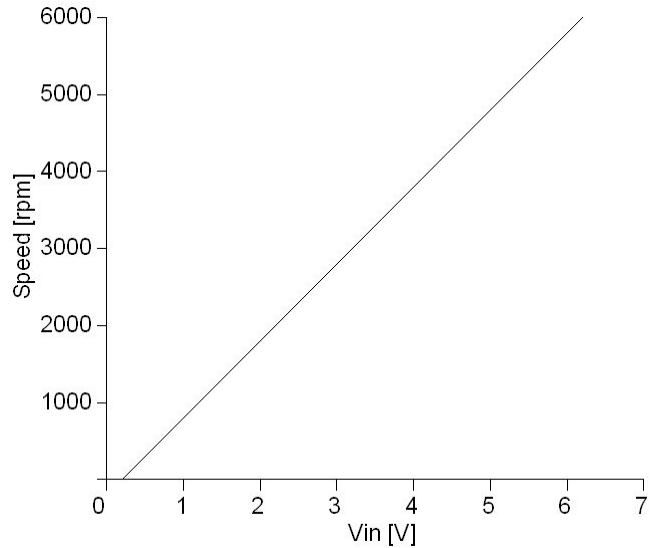
## BL30 EB Series BLDC Motors

### PERFORMANCE

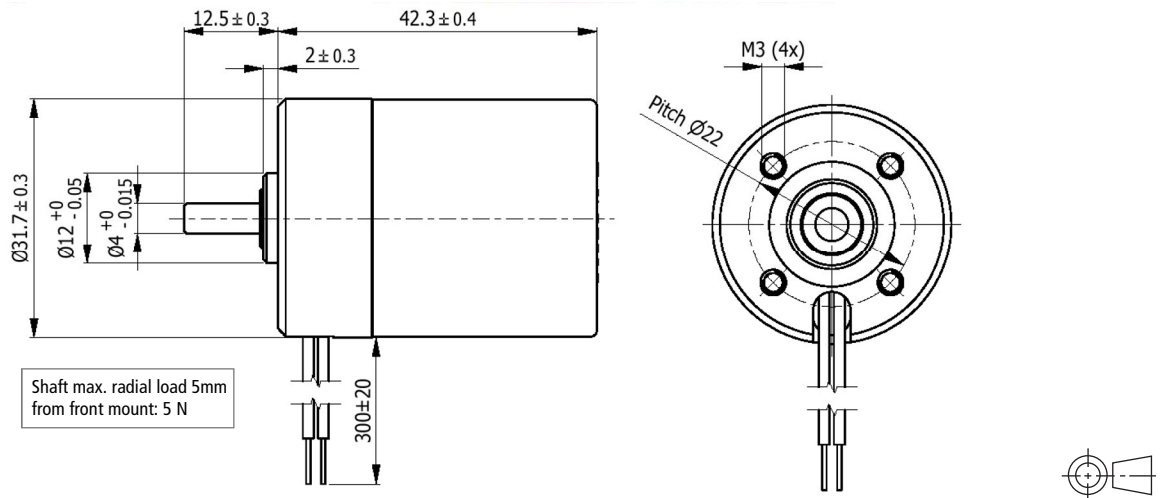
#### BL30 EB 11W



#### Vin versus speed



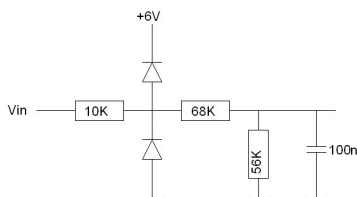
### DIMENSIONS



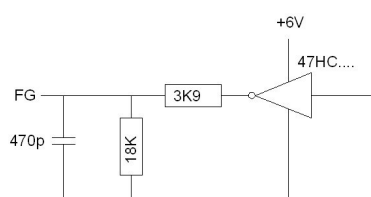
### CONNECTIONS

Version	Connection	Color	Size
2-wire	Supply	Red	AWG26
	Common	Blu	AWG26
4-wire	Supply	Red	AWG26
	Common	Blu	AWG26
	Speed set point ( $V_{in}$ )	White	AWG26
	Speed output (FG)	Green	AWG26

#### Speed Input circuit diagram



#### Speed Output circuit diagram



#### Speed Output signal

