

Brushless DC Motors

High Speed ResMax 28 EE Brushless DC Motors

28 mm diameter, 5.0 mNm cont. torque at 88 kRPM up to 46 W output power

The ResMax 28 EE is a 3-phase brushless DC motor with a two-pole NdFeB magnet rotor. The motor is designed to operate at high speeds of up to 90,000 RPM. Its very low inertia rotor design gives the ResMax 28 motor a time constant of just 4 milliseconds, which makes it ideal for highly dynamic applications like respirators and CPAP equipment. Acceleration capability, even with an extra load, is 0 to 50,000 RPM in only 100 milliseconds.

The ResMax 28 is designed to have low thermal losses at high speeds, which together with its low thermal resistance rating of 1.2 °C/W from winding to housing keeps the motor cool. Lower motor temperature also benefits bearing life; bearing life is 30,000+ hours at high dynamic operating conditions.

These features make the ResMax 28 motor ideally suited for high speed, highly dynamic applications.

Features & Benefits

- Up to 90% efficiency
- Optimized for high speed operation
- Three Hall sensors for external three phase motor control
- Integrated NTC sensor to monitor motor winding temperature
- Compact motor with length of just 40 mm

Options

- Customized shaft
- Customized mounting flange
- Custom leads and/or connector configurations



- 28 mm diameter low inertia brushless DC motor
- Speed up to 90,000 RPM, rated power output of 46 W
- Low time constant of 4 ms
- 24 VDC winding voltage

SPECIFICATIONS

Model		4322 016 20001
Nominal Voltage	V	24
Rated Output Power	W	46
Rated Torque	mNm (oz-in)	5 (0.7)
Maximum Torque	mNm (oz-in)	12 (1.7)
Rated speed	RPM	88000
Speed range	RPM	20000 to 90000
No-load Speed	RPM	100000
Typical no-load Current	mA	160
Rated Current	A	2
Maximum Peak Current	A	5
Torque Constant	mNm/A (oz-in/A)	2.5 (0.354)
Motor terminal resistance phase-to-phase	ohms	0.6
Motor terminal inductance phase-to-phase (at 10 kHz)	mH	0.113
Rotor Inertia	kgm ² (oz-in-s ²)	5 E-8 (0.74 E-4)
Mechanical Time Constant	ms	4.3
Thermal Resistance Winding-Housing	°C/W	1.2
Thermal Resistance Housing-Ambient	°C/W	12
Weight	g (oz)	65 (2.4)
Hall sensor supply voltage	V	3 to 24
Typical Hall sensor current	mA	6
Maximum output current (sink)	mA	25
Maximum output saturation voltage at I _{out} = 25 mA	V	0.6
Nominal resistance NTC* at 25 °C	Ohms	47 k
Maximum flange temperature	°C (°F)	120 (248)
Motor operating flange temperature	°C (°F)	0 – 70 (32 – 158)

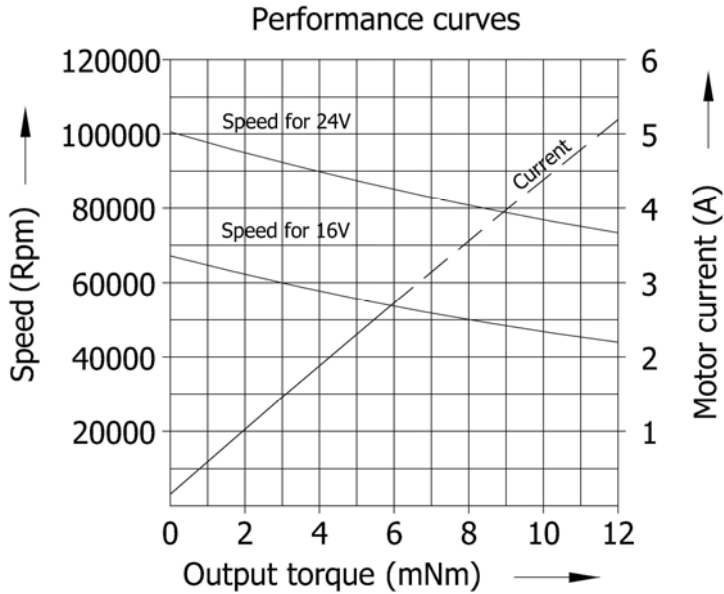
Notes: Values valid for nominal voltage and T_{amb} = 22 °C. Performance measured with Allied Motion reference drive.

* NTC is Vishay NTCS0603E3473JHT

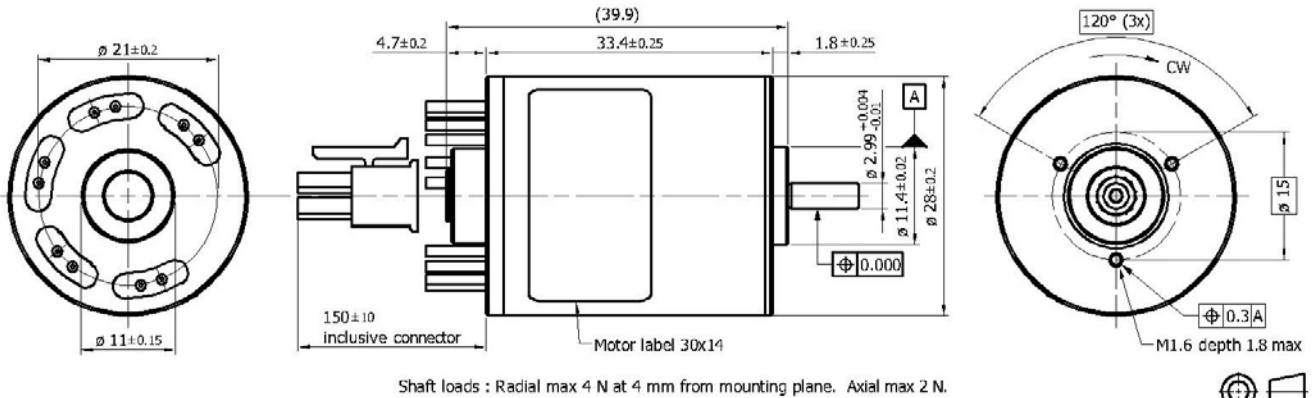
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PERFORMANCE



DIMENSIONS

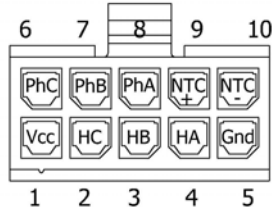


ELECTRICAL INTERFACE

Function	Pin no	Color
Vcc	1	Red
Hall sensor C	2	Brown
Hall sensor B	3	White
Hall sensor A	4	Green
Ground	5	Black
Phase C	6	Blue
Phase B	7	Orange
Phase A	8	Grey
NTC +	9	Yellow
NTC -	10	Violet

All wires: AWG24

Connector housing :
Molex Microfit 43025-1000
Terminals :
Molex Micro-fit 43030-0001



Switching Sequence

