

BN28 IP65 Specifications

BN28 IP65 SPECIFICATIONS - Continuous Stall Torque 43 - 108 oz-in (0.30 - 0.76 Nm)
Peak Torque 188 - 737 oz-in (1.33 - 5.2 Nm)

Inside Rotor
Brushless Motors

| Part Number* | | BN28-21IP - <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | | | BN28-29IP - <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | | | BN28-36IP - <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | | | BN28-44IP - <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | | |
|--------------------------|--|---|--------|--------|---|--------|--------|---|--------|---------|---|---------|---------|
| Winding Code** | | 01 | 02 | 03 | 01 | 02 | 03 | 01 | 02 | 03 | 01 | 02 | 03 |
| L = Length | inches | 2.10 | | | 2.90 | | | 3.60 | | | 4.40 | | |
| | millimeters | 53.3 | | | 73.7 | | | 91.4 | | | 111.8 | | |
| Terminal Voltage | volts DC | 24.0 | 48.0 | 72.0 | 24.0 | 48.0 | 72.0 | 24.0 | 48.0 | 72.0 | 24.0 | 48.0 | 72.0 |
| Peak Torque | oz-in | 188.0 | 188.0 | 188.0 | 407.0 | 407.0 | 407.0 | 596.0 | 596.0 | 596.0 | 737.0 | 737.0 | 737.0 |
| | Nm | 1.3276 | 1.3276 | 1.3276 | 2.8740 | 2.8740 | 2.8740 | 4.2087 | 4.2087 | 4.2087 | 5.2043 | 5.2043 | 5.2043 |
| Continuous Stall Torque | oz-in | 43.0 | 44.0 | 46.0 | 71.0 | 74.0 | 72.0 | 93.0 | 95.0 | 93.0 | 106.0 | 108.0 | 105.0 |
| | Nm | 0.3036 | 0.3107 | 0.3248 | 0.5014 | 0.5226 | 0.5084 | 0.6567 | 0.6708 | 0.6567 | 0.7485 | 0.7626 | 0.7415 |
| Rated Speed | RPM | 9170 | 9230 | 9240 | 8870 | 8900 | 7890 | 5890 | 5910 | 5230 | 4660 | 4680 | 4120 |
| | rad/sec | 960 | 967 | 968 | 929 | 932 | 826 | 617 | 619 | 548 | 488 | 490 | 431 |
| Rated Torque | oz-in | 31 | 31 | 33 | 40 | 40 | 46 | 68 | 70 | 72 | 84 | 84 | 86 |
| | Nm | 0.2189 | 0.2189 | 0.2330 | 0.2825 | 0.2825 | 0.3248 | 0.4802 | 0.4943 | 0.5084 | 0.5932 | 0.5932 | 0.6073 |
| Rated Current | Amps | 10.26 | 5.13 | 3.63 | 12.67 | 6.33 | 4.29 | 14.31 | 7.35 | 4.51 | 14.25 | 7.13 | 4.35 |
| Rated Power | watts | 210.3 | 211.6 | 225.5 | 262.4 | 263.3 | 268.4 | 296.2 | 306.0 | 278.5 | 289.5 | 290.8 | 262.1 |
| Torque Sensitivity | oz-in/amp | 3.24 | 6.49 | 9.73 | 3.48 | 6.95 | 11.59 | 5.07 | 10.13 | 16.89 | 6.79 | 12.50 | 20.84 |
| | Nm/amp | 0.0229 | 0.0458 | 0.0687 | 0.0246 | 0.0491 | 0.0818 | 0.0358 | 0.0715 | 0.1193 | 0.048 | 0.0883 | 0.1472 |
| Back EMF | volts/KRPM | 2.40 | 4.80 | 7.20 | 2.57 | 5.14 | 8.57 | 3.75 | 7.49 | 12.49 | 5.02 | 9.24 | 15.41 |
| | volts/rad/sec | 0.0229 | 0.0458 | 0.0687 | 0.0246 | 0.0491 | 0.0818 | 0.0358 | 0.0715 | 0.1193 | 0.048 | 0.0883 | 0.1472 |
| Terminal Resistance | ohms | 0.14 | 0.51 | 1.08 | 0.087 | 0.25 | 0.72 | 0.10 | 0.36 | 1.05 | 0.147 | 0.47 | 1.38 |
| Terminal Inductance | mH | 0.18 | 0.72 | 1.62 | 0.11 | 0.43 | 1.19 | 0.17 | 0.69 | 1.92 | 0.24 | 0.97 | 2.69 |
| Motor Constant | oz-in/sq.rt.watt | 8.72 | 9.06 | 9.38 | 13.44 | 13.93 | 13.69 | 16.45 | 16.86 | 16.49 | 17.82 | 18.18 | 17.73 |
| | Nm/sq.rt.watt | 0.062 | 0.064 | 0.066 | 0.095 | 0.098 | 0.097 | 0.116 | 0.119 | 0.11645 | 0.12584 | 0.12835 | 0.12518 |
| Rotor Inertia | oz-in-sec ² x10 ⁻³ | 2.30 | 2.30 | 2.30 | 4.40 | 4.40 | 4.40 | 6.60 | 6.60 | 6.60 | 8.80 | 8.80 | 8.80 |
| | g-cm ² | 162.3 | 162.3 | 162.3 | 310.5 | 310.5 | 310.5 | 465.8 | 465.8 | 465.8 | 621.0 | 621.0 | 621.0 |
| Weight | oz | 23.0 | 23.0 | 23.0 | 35.0 | 35.0 | 35.0 | 48.0 | 48.0 | 48.0 | 61.0 | 61.0 | 61.0 |
| | g | 653.2 | 653.2 | 653.2 | 994.0 | 994.0 | 994.0 | 1363.2 | 1363.2 | 1363.2 | 1732.4 | 1732.4 | 1732.4 |
| # of Poles | | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 |
| Timing | | 120° | 120° | 120° | 120° | 120° | 120° | 120° | 120° | 120° | 120° | 120° | 120° |
| Mech. Time Constant | ms | 4.3 | 4.0 | 3.7 | 3.4 | 3.2 | 3.3 | 3.5 | 3.3 | 3.4 | 3.9 | 3.8 | 4.0 |
| Electrical Time Constant | ms | 1.30 | 1.40 | 1.51 | 1.64 | 1.73 | 1.66 | 1.79 | 1.91 | 1.83 | 1.95 | 2.05 | 1.95 |
| Thermal Resistivity | deg. C/watt | 2.9 | 3.0 | 2.9 | 2.5 | 2.6 | 2.6 | 2.2 | 2.2 | 2.3 | 2.0 | 2.0 | 2.1 |
| Speed/Torque Gradient | rpm/oz-in | 47 | 47 | 47 | 25 | 25 | 25 | 20 | 20 | 20 | 13 | 13 | 13 |

Notes:

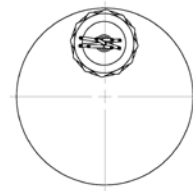
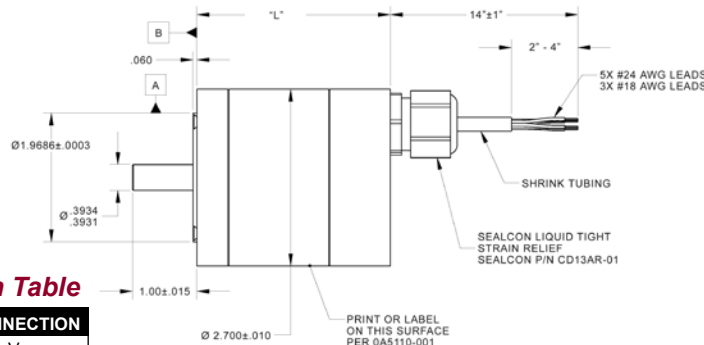
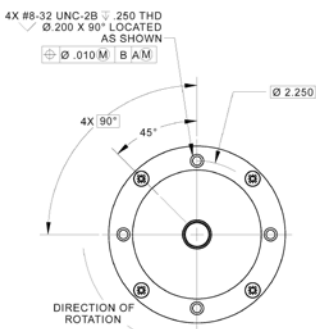
- Motor mounted to a 10 x 10 x 1/4 inches aluminum plate, still air.
- Maximum winding temperature of 155°C.
- Typical electrical specifications at 25°C.
- Motor Terminal Voltages are representative only; motors may be operated at voltages other than those listed in the table. For assistance please contact our applications engineer.
- Calculated (theoretical) speed/torque gradient.
- For MS (military style) connector, please specify connector housing and terminal.
- Data for informational purposes only. Should not be considered a binding performance agreement. For specific applications, please contact the factory.

*Many other custom mechanical options are available – consult factory.
**Many other winding options are available – consult factory.

Select your options below and place their code in its corresponding block as shown on page 5.

- | | | |
|---|--|---|
| <input type="checkbox"/> TERMINATION | <input type="checkbox"/> FEEDBACK OPTIONS | <input type="checkbox"/> OTHER OPTIONS |
| L – Leads (std) | H – Hall Effect (std) | D – Drive |
| C – Connector | R – Resolver | E – Encoder |
| M – MS connector | S – Sensorless | G – Gearhead |

BN28 IP65 Typical Outline



Dimensions are in inches

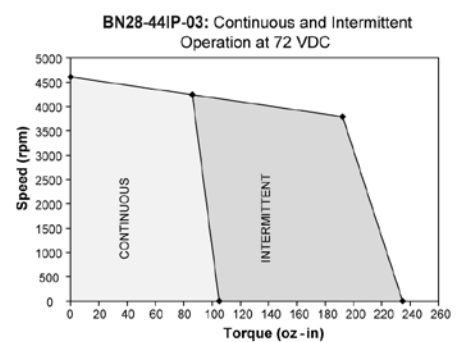
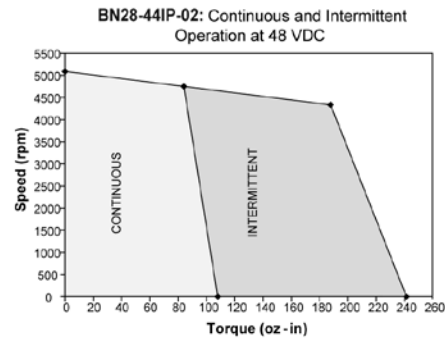
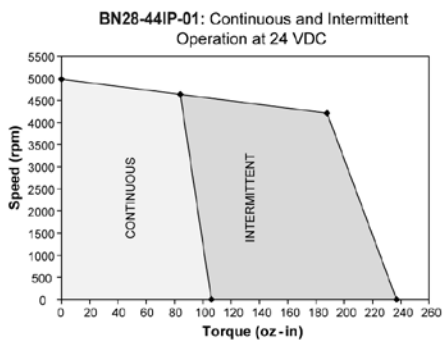
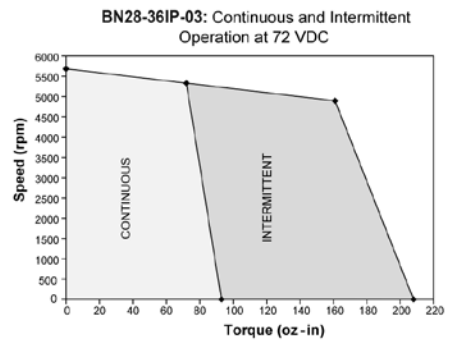
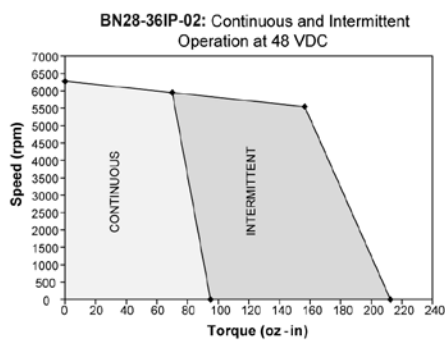
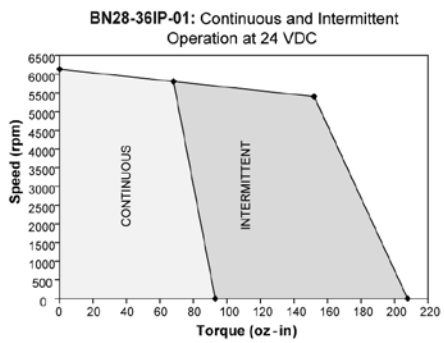
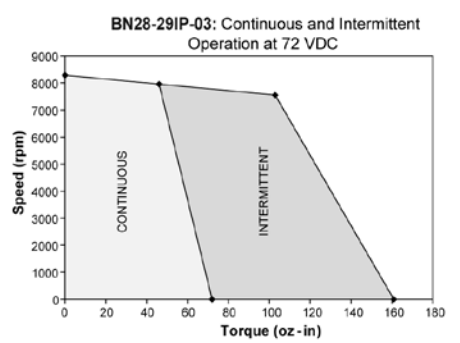
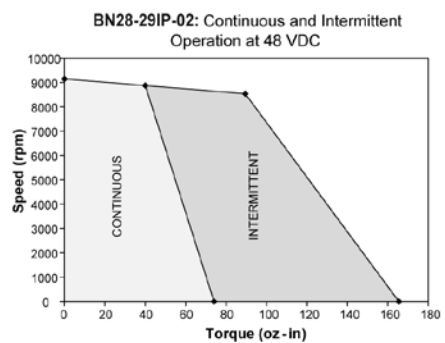
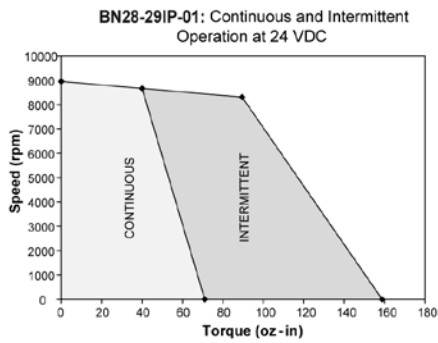
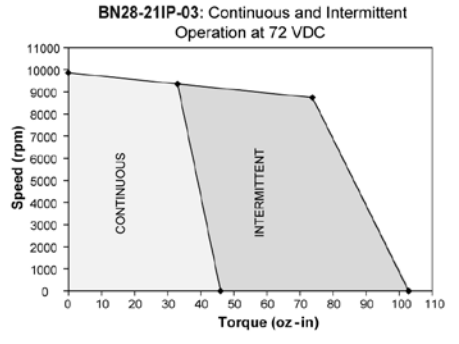
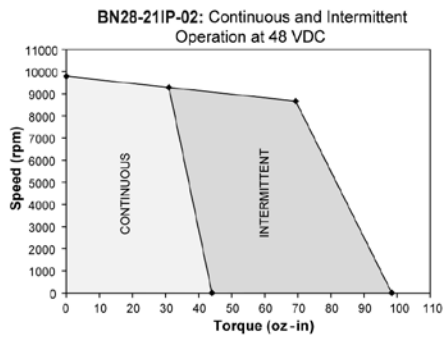
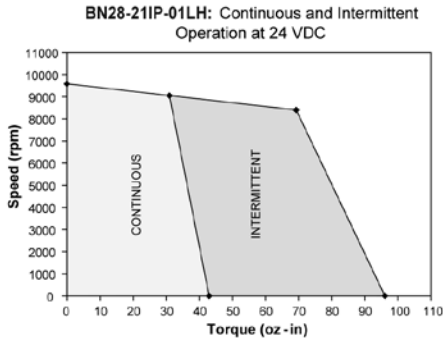
Termination Table

| PIN COLOR | CONNECTION |
|-----------|------------|
| YELLOW | Vcc |
| GRAY | GROUND |
| RED | A COIL |
| BLACK | B COIL |
| GREEN | C COIL |
| BLUE | S2 OUT |
| BROWN | S1 OUT |
| ORANGE | S3 OUT |

BN28 IP65 Performance Curves

Inside Rotor
Brushless Motors

BN28 IP65 Performance Curves



Note: Intermittent operation is based on a 20% duty cycle of one minute on, four minutes off. Please contact the factory regarding the duty cycle of your application.