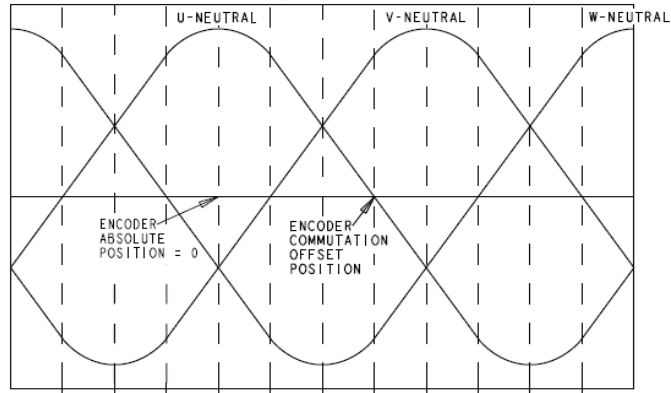
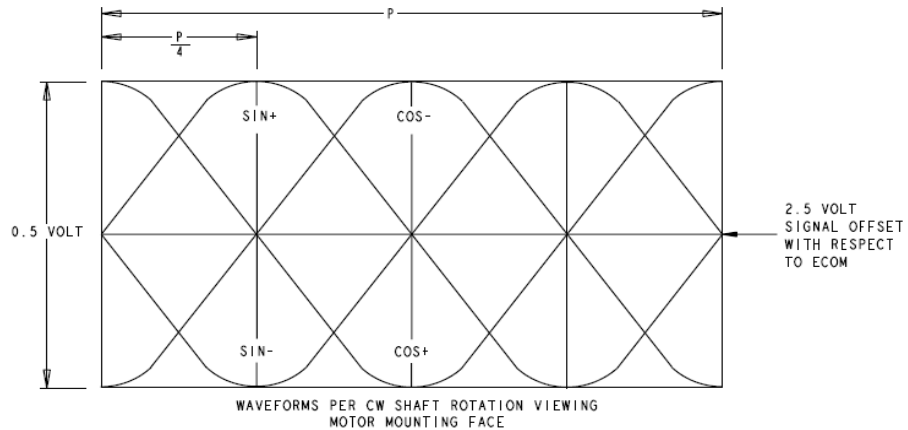


PHASE - NEUTRAL BACK EMF, ENCODER ABSOLUTE POSITION



-30° 0° 30° 60° 90° 120° 150° 180° 210° 240° 270° 300° 330° ELECTRICAL DEGREES

SIN+, SIN-, COS+, COS- ENCODER OUTPUT WAVEFORMS




NOTES:

General Specifications:

| | |
|---|--|
| 1. Motor type: 3 phase, wye winding, permanent magnet rotor, totally enclosed, non-ventilated. | |
| 2. Motor poles: | 46 |
| 3. Operating Speed, max: | 365 RPM |
| 4. Base speed (max speed at peak torque), Ref, at 440 VAC RMS operating voltage: | 191 RPM |
| 5. Continuous stall torque, max, at max winding temperature in a 40C ambient: | 332 Nm (2938 lb-in) |
| 6. Winding temperature, max, in a 40C ambient: | 150 degrees C |
| 7. Continuous stall current, max: | 31.5 Amps 0 to peak |
| 8. Heatsink size, aluminum, attached to front mounting flange for continuous torque specifications: | 508 x 508 x 19.1mm (20 x 20 x 0.75 inch) |
| 9. Peak stall torque, max: | 690 Nm (6107 lb-in) |
| 10. Peak stall current, max: | 95.5 Amps 0 to peak |
| 11. Rated Speed (UL file and motor nameplate Rated RPM): | 350 RPM |
| 12. Continuous power rating, max: | 7.29 kW (9.78 hp) |
| 13. Speed at continuous power rating: | 350 RPM |
| 14. Continuous torque, max, at continuous power rating: | 199 Nm (1761 lb-in) |
| 15. Continuous current, Ref, at continuous power rating: | 17.8 Amps 0 to peak |
| 16. Operating voltage, Ref (Not for direct connection to AC line): | 480 VAC RMS |
| 17. Insulation class: | 155C (Class F) |
| 18. Housing temperature, max: | 125C (257F) |
| 19. Ke, +/-10%, phase to phase at 25C +/- 5C: | 1510 V/kRPM 0 to peak |
| 20. Kt (sine), Ref, at 25C +/- 5C: | 12.49 Nm/Amp (110.5 lb-in/Amp) 0 to peak |
| 21. Winding resistance, +/- 10%, phase to phase at 25C +/- 5C: | 0.66 ohms |
| 22. Winding inductance, Ref, phase to phase: | 12.2 mH |
| 23. Dielectric rating of motor power connections (U,V,W), to ground for 1 second: | 2352 VAC RMS 50/60 Hz |
| 24. Audible noise, Ref, at 1 meter distance: | 70 dbA |
| 25. Rotor inertia, +/- 10%: | 0.225 kg-m ² (1.99 lb-in-sec ²) |
| 26. Friction torque, Ref: | 4.3 Nm (38.1 lb-in) |
| 27. Cogging torque, Ref: | 3.08 Nm (27.3 lb-in) peak to peak |
| 28. Thermal resistance, Ref, winding to ambient: | 0.152 degrees C/watt |
| 29. Thermal time constant, Ref, winding to ambient: | 126 minutes |
| 30. Product weight, Ref: | 108 kg (238 lb) |
| 31. Shipping weight, Ref: | 116 kg (256 lb) |
| 32. Operating ambient temperature: | 0C to 40C (32F to 104F) |
| 33. Storage ambient temperature: | -30C to 70C (-22F to 158F) |

Notes:

- "Ref" denotes untoleranced specifications, provided for reference only.
- Speed, torque and current specifications are for operation with Allen Bradley drives.

| | | | | | |
|---|---|--------------------------------------|----------|----------------------------|-------------|
|  | CONFIDENTIAL AND PROPRIETARY INFORMATION | Engineering Specification Electrical | | Sheet 2 of 4 | |
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| | Dr. S. Johnson | Date | 10-13-09 | Ver 00 | |

General Specifications, continued:

- 34. Relative humidity, non-condensing: 5% to 95%
- 35. Liquid / dust protection: IP65
- 36. Shock, max, 6 msec duration: 20 g peak
- 37. Vibration, max, 30 to 2000 Hz: 2.5 g peak
- 38. Bearing arrangement: None internal to motor. Shaft is supported by customer's shaft / bearing system.
- 39. Shaft material: Steel
- 40. Paint color, gloss level, except rear cover: Black, 20 to 35 gloss units
- 41. Rear cover color (Pantone color code), painted or exposed material color: Cool gray # 5, 0 to 20 gloss units
- 42. Shaft, key (if provided), front mounting surface, and connectors are not painted.

Feedback Specifications:

- 1. Feedback interface type (encoder supplier proprietary), order designation: Endat, 2.2/01
- 2. SIN, COS waveform output signals/rev: 2048 sinusoids/rev
- 3. SIN, COS waveform amplitude, measured differentially from SIN+ to SIN-, or COS+ to COS-: 0.75 to 1.2 VAC peak to peak
- 4. SIN, COS voltage offset with respect to ECOM, +/- 0.5 VDC: 2.5 VDC
- 5. DATA+, DATA-, CLK+, CLK- signals applicable standard, signals type: RS 485, Synchronous
- 6. CLK+, CLK- clock frequency, Ref, when operating with Kinetix Endat adapter kit: 468.75 kHz
- 7. Communication hierarchy: Encoder is slave, communication is externally initiated.
- 8. Single turn absolute position value range: 0 to 8191 (13 bit)
- 9. Absolute position data: Binary, value increases with CW shaft rotation viewing motor mounting face.
- 10. Memory storage capacity available for Rockwell parameters, EEPROM, min: 64 words, 16 bits/word
- 11. EPWR 5V (encoder power) input voltage: 3.6 to 14 VDC
- 12. EPWR 5V continuous input current,max, at 5.0 VDC: TBD mADC
- 13. EPWR 5V inrush input current, max, when connected to Kinetix6000 drive: TBD ADC
- 14. TS+, TS- PTC Thermistor transition temperature, +/-5C: 160 degrees C
- 15. TS+, TS- PTC thermistor circuit resistance, Ref, at thermistor transition temperature: 1100 ohms
- 16. TS+, TS- PTC thermistor circuit resistance, Ref, at 25 C +/- 5C: 160 ohms
- 17. TS+, TS- PTC thermistor resistance vs temperature curves applicable standards: DIN 44081 / 44082
- 18. TS+, TS- PTC thermistor circuit configuration (number of thermistors): 2 in series

Notes:

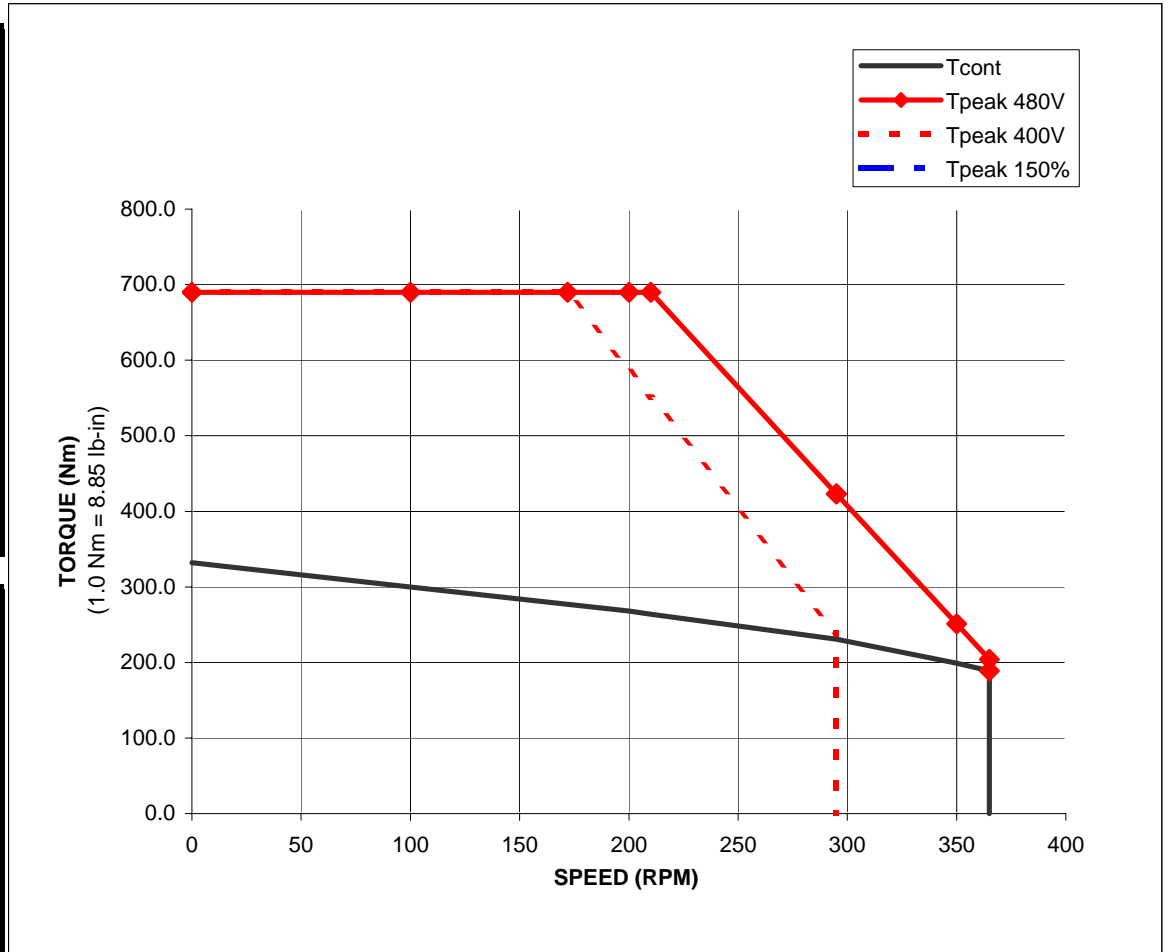
- 1. "Ref" denotes untoleranced specifications, provided for reference only.

| | | | | | |
|---|---|--------------------------------------|----------|----------------------------|------------|
|  | CONFIDENTIAL AND PROPRIETARY INFORMATION | Engineering Specification Electrical | | Sheet 3 of 4 | |
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| | Dr. S. Johnson | Date | 10-13-09 | Ver 00 | |

**RDB-B41024-3B72AA Performance with 2099-BM06S
at 480 and 400 VAC 3 phase Drive Input, 40C Motor Ambient**

| SPEED RPM | TORQUE | | | |
|--------------|--------|------------|------------|------------|
| | Tcont | Tpeak 480V | Tpeak 400V | Tpeak 150% |
| | Nm | Nm | Nm | Nm |
| 0 | 332 | 690 | 690 | #N/A |
| 100 | 300 | 690 | 690 | #N/A |
| 172 | 277 | 690 | 690 | #N/A |
| 200 | 268 | 690 | 587 | #N/A |
| 210 | 264 | 690 | 551 | #N/A |
| 295 | 231 | 423 | 239 | #N/A |
| 295 | 231 | 423 | 0 | #N/A |
| 350 | 199 | 251 | #N/A | #N/A |
| 365 | 189 | 204 | #N/A | #N/A |
| 365 | 0 | 189 | #N/A | #N/A |
| #N/A | #N/A | #N/A | #N/A | #N/A |
| #N/A | #N/A | #N/A | #N/A | #N/A |

| SPEED RPM | TORQUE | | | |
|--------------|--------|------------|------------|------------|
| | Tcont | Tpeak 480V | Tpeak 400V | Tpeak 150% |
| | lb-in | lb-in | lb-in | lb-in |
| 0 | 2938 | 6107 | 6107 | #N/A |
| 100 | 2655 | 6107 | 6107 | #N/A |
| 172 | 2452 | 6107 | 6107 | #N/A |
| 200 | 2372 | 6107 | 5195 | #N/A |
| 210 | 2337 | 6107 | 4877 | #N/A |
| 295 | 2045 | 3744 | 2115 | #N/A |
| 295 | 2045 | 3744 | 0 | #N/A |
| 350 | 1761 | 2222 | #N/A | #N/A |
| 365 | 1673 | 1806 | #N/A | #N/A |
| 365 | 0 | 1673 | #N/A | #N/A |
| #N/A | #N/A | #N/A | #N/A | #N/A |
| #N/A | #N/A | #N/A | #N/A | #N/A |



Notes:

1. Nm torque values shown are converted from tested lb-in data.
2. "Tpeak 150%" line shown applies when the drive peak current limit is set to 150% of the drive continuous current rating.