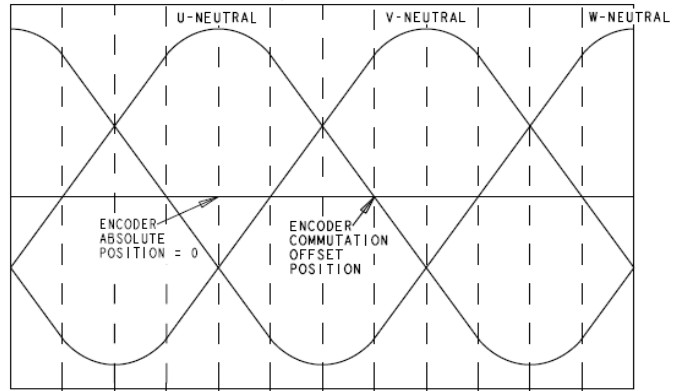
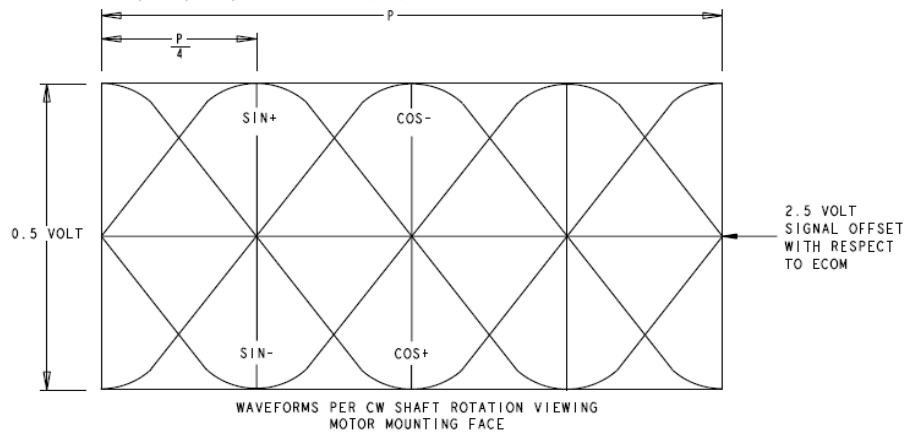


PHASE - NEUTRAL BACK EMF, ENCODER ABSOLUTE POSITION



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

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



NOTES:

#N/A

**Rockwell Automation**

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Engineering Specification Electrical

**RDB-B21529-7B72AA**

Dr. S. Johnson Date 10-13-09

Sheet 1 of #N/A

Size

**A**

**1000065580**

Ver


**01**

**General Specifications:**

1. Motor type: 3 phase, wye winding, permanent magnet rotor, totally enclosed, non-ventilated.	
2. Motor poles: .....	10
3. Operating Speed, max: .....	1035 RPM
4. Base speed (max speed at peak torque), Ref, at 440 VAC RMS operating voltage: .....	743 RPM
5. Continuous stall torque, max, at max winding temperature in a 40C ambient: .....	45.4 Nm (402 lb-in)
6. Winding temperature, max, in a 40C ambient: .....	140 degrees C
7. Continuous stall current, max: .....	12.2 Amps 0 to peak
8. Heatsink size, aluminum, attached to front mounting flange for continuous torque specifications: .....	457 x 457 x 12.7mm (18 x 18 x 0.50 inch)
9. Peak stall torque, max: .....	116 Nm (1027 lb-in)
10. Peak stall current, max: .....	32.8 Amps 0 to peak
11. Rated Speed (UL file and motor nameplate Rated RPM): .....	1000 RPM
12. Continuous power rating, max: .....	4.33 kW (5.81 hp)
13. Speed at continuous power rating: .....	1035 RPM
14. Continuous torque, max, at continuous power rating: .....	39.9 Nm (353 lb-in)
15. Continuous current, Ref, at continuous power rating: .....	10.6 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: .....	518 V/kRPM 0 to peak
20. Kt (sine), Ref, at 25C +/- 5C: .....	4.28 Nm/Amp (37.88 lb-in/Amp) 0 to peak
21. Winding resistance, +/- 10%, phase to phase at 25C +/- 5C: .....	2.30 ohms
22. Winding inductance, Ref, phase to phase: .....	31.3 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: .....	78 dbA
25. Rotor inertia, +/- 10%: .....	0.0126 kg-m <sup>2</sup> (0.112 lb-in-sec <sup>2</sup> )
26. Friction torque, Ref: .....	0.347 Nm (3.07 lb-in)
27. Cogging torque, Ref: .....	0.41 Nm (3.63 lb-in) peak to peak
28. Thermal resistance, Ref, winding to ambient: .....	0.295 degrees C/watt
29. Thermal time constant, Ref, winding to ambient: .....	43 minutes
30. Product weight, Ref: .....	24.5 kg (54 lb)
31. Shipping weight, Ref: .....	26.3 kg (58 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 <b>2</b> of <b>#N/A</b>	
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	Dr. S. Johnson	Date	10-13-09	Ver <b>01</b>	

**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, 35 to 70 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. Multi-turn absolute shaft revolution value range: ..... 0 to 4095 revolutions (12 bit)
- 10. Absolute position data: Binary, value increases with CW shaft rotation viewing motor mounting face.
- 11. Memory storage capacity available for Rockwell parameters, EEPROM, min: ..... 64 words, 16 bits/word
- 12. EPWR 5V (encoder power) input voltage: ..... 3.6 to 14 VDC
- 13. EPWR 5V continuous input current,max, at 5.0 VDC: ..... TBD mADC
- 14. EPWR 5V inrush input current, max, when connected to Kinetix6000 drive: ..... TBD ADC
- 15. TS+, TS- PTC Thermistor transition temperature, +/-5C: ..... 155 degrees C
- 16. TS+, TS- PTC thermistor circuit resistance, Ref, at thermistor transition temperature: ..... 1100 ohms
- 17. TS+, TS- PTC thermistor circuit resistance, Ref, at 25 C +/- 5C: ..... 75 ohms
- 18. TS+, TS- PTC thermistor resistance vs temperature curves applicable standards: ..... DIN 44081 / 44082
- 19. TS+, TS- PTC thermistor circuit configuration (number of thermistors): ..... 1

**Notes:**

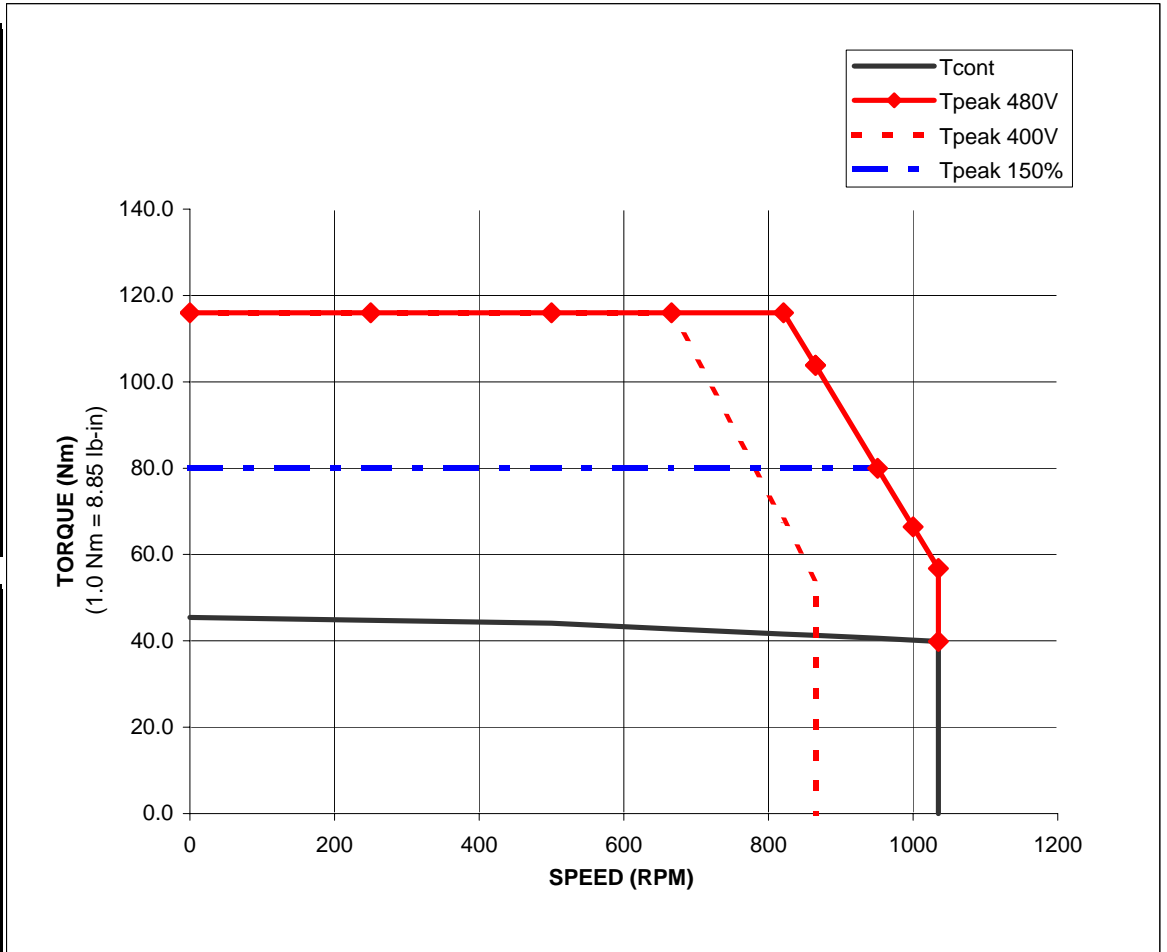
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	Dr. S. Johnson	Date	10-13-09	A	Ver 01

**RDB-B21529-7B72AA Performance with 2094-BC02-M02S  
at 480 and 400 VAC 3 phase Converter Input, 40C Motor Ambient**

SPEED RPM	TORQUE			
	Tcont	Tpeak 480V	Tpeak 400V	Tpeak 150%
	Nm	Nm	Nm	Nm
0	45.4	116	116	80
250	44.8	116	116	80
500	44.1	116	116	80
666	42.8	116	116	80
821	41.6	116	67.9	80
865	41.3	103.8	54.3	80
865	41.3	103.8	0	80
951	40.6	80	#N/A	80
1000	40.2	66.4	#N/A	#N/A
1035	39.9	56.8	#N/A	#N/A
1035	0	39.9	#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	401.8	1026.7	1026.7	708.1
250	396.5	1026.7	1026.7	708.1
500	390.3	1026.7	1026.7	708.1
666	378.8	1026.7	1026.7	708.1
821	368.2	1026.7	601.0	708.1
865	365.5	918.7	480.6	708.1
865	365.5	918.7	0.0	708.1
951	359.3	708.1	#N/A	708.1
1000	355.8	587.7	#N/A	#N/A
1035	353.1	502.7	#N/A	#N/A
1035	0.0	353.1	#N/A	#N/A
#N/A	#N/A	#N/A	#N/A	#N/A



**Notes:**

- "Tpeak 150%" line shown applies when the drive peak current limit is set to 150% of the drive continuous current rating.