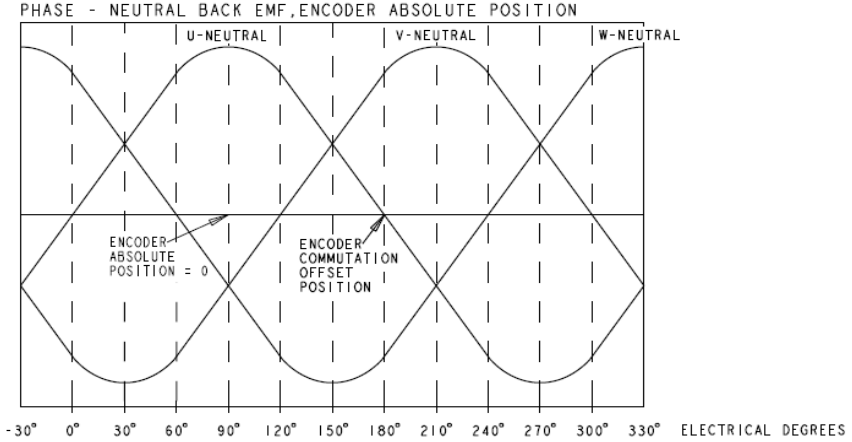
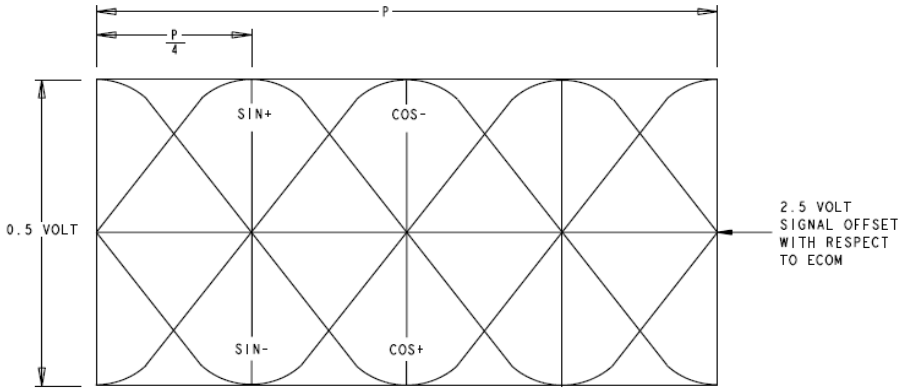
PHASE - NEUTRAL BACK EMF, ENCODER ABSOLUTE POSITION



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



WAVEFORMS PER CW SHAFT ROTATION VIEWING MOTOR MOUNTING FACE

NOTES:

#N/A

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General Specifications:

1. Motor type: 3 phase, wye winding, permanent magnet rotor, totally enclosed, non-ventilated.
2. Motor poles: 10
3. Operating Speed, max: 1235 RPM
4. Base speed (max speed at peak torque), Ref, at 440 VAC RMS operating voltage: 858 RPM
5. Continuous stall torque, max, at max winding temperature in a 40C ambient: 32.7 Nm (289 lb-in)
6. Winding temperature, max, in a 40C ambient: 140 degrees C
7. Continuous stall current, max: 9.9 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: 86.5 Nm (766 lb-in)
10. Peak stall current, max: 27.3 Amps 0 to peak
11. Rated Speed (UL file and motor nameplate Rated RPM): 1235 RPM
12. Continuous power rating, max: 3.64 kW (4.88 hp)
13. Speed at continuous power rating: 1235 RPM
14. Continuous torque, max, at continuous power rating: 28.1 Nm (249 lb-in)
15. Continuous current, Ref, at continuous power rating: 8.9 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: 433 V/kRPM 0 to peak
20. Kt (sine), Ref, at 25C +/- 5C: 3.58 Nm/Amp (31.69 lb-in/Amp) 0 to peak
21. Winding resistance, +/- 10%, phase to phase at 25C +/- 5C: 2.83 ohms
22. Winding inductance, Ref, phase to phase: 34 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%: 0.0094 kg-m² (0.083 lb-in-sec²)
26. Friction torque, Ref: 0.266 Nm (2.35 lb-in)
27. Cogging torque, Ref: 0.30 Nm (2.66 lb-in) peak to peak
28. Thermal resistance, Ref, winding to ambient: 0.332 degrees C/watt
29. Thermal time constant, Ref, winding to ambient: 35 minutes
30. Product weight, Ref: 19.1 kg (42 lb)
31. Shipping weight, Ref: 20.9 kg (46 lb)
32. Operating ambient temperature: 0C to 40C (32F to 104F)
33. Storage ambient temperature: -30C to 70C (-22F to 158F)

Notes:

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

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

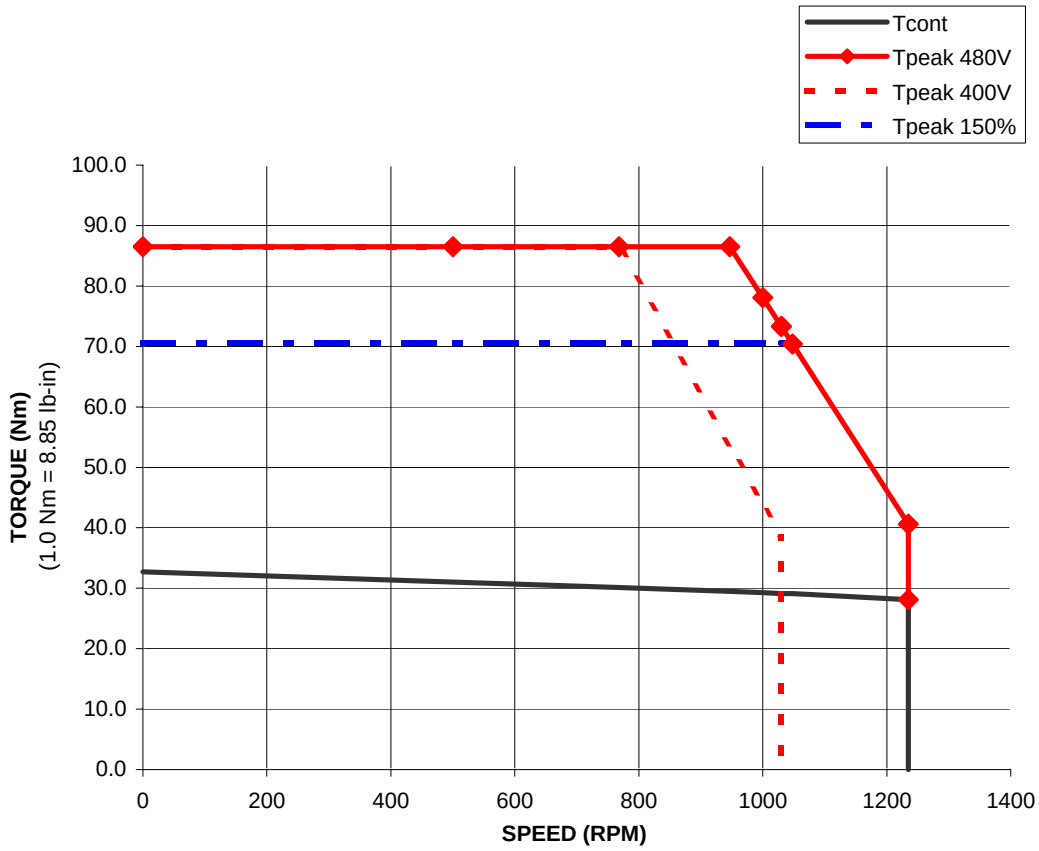
Notes:

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

RDB-B21519-7B72AA 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	32.7	86.5	86.5	70.5
500	31	86.5	86.5	70.5
768	30.1	86.5	86.5	70.5
947	29.5	86.5	53.7	70.5
1000	29.3	78.1	44	70.5
1030	29.1	73.3	38.5	70.5
1030	29.1	73.3	0	70.5
1048	29.1	70.4	#N/A	70.5
1235	28.1	40.6	#N/A	#N/A
1235	0	28.1	#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	289.4	765.6	765.6	624.0
500	274.4	765.6	765.6	624.0
768	266.4	765.6	765.6	624.0
947	261.1	765.6	475.3	624.0
1000	259.3	691.2	389.4	624.0
1030	257.6	648.8	340.8	624.0
1030	257.6	648.8	0.0	624.0
1048	257.6	623.1	#N/A	624.0
1235	248.7	359.3	#N/A	#N/A
1235	0.0	248.7	#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. "Tpeak 150%" line shown applies when the drive peak current limit is set to 150% of the drive continuous current rating.

Engineering Specification Electrical

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Dr. S. Johnson | Date 10-13-09

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