

SECTION 3 - SPECIFICATIONS

3.1 DRIVER SPECIFICATIONS

Delta S Driver	DS-1.5/RB	DS-1.5/RA	DS-4.25/RB	DS-4.25/RA
Weight	3.3 lb 1.5 kg	3.3 lb 1.5 kg	3.3 lb 1.5 kg	3.3 lb 1.5 kg

Delta S Driver	DS-8.5/RB	DS-8.5/RA	DS-17.5/RA	DS-35/RA	DS-50/RA	DS-70/RA	DS-115/RA
Weight	3.3 lb 1.5 kg	3.3 lb 1.5 kg	5.5 lb 2.5 kg	10 lb 4.5 kg	10 lb 4.5 kg	24 lb 11 kg	35 lb 16 kg

3.1.1 MOTOR OUTPUT

Delta S Driver	DS-1.5/RB	DS-1.5/RA	DS-4.25/RB	DS-4.25/RA
Motor Output	PWM, 3 Phase, sine wave			
Continuous Output Current	1.0 A rms	1.0 A rms	2.8 A rms	2.8 A rms
Max. Output Current See Figure 3.1	1.5 A rms	1.5 A rms	4.25 A rms	4.25 A rms
Motor Ripple Frequency	20 kHz	20 kHz	20 kHz	20 kHz

Delta S Driver	DS-8.5/RB	DS-8.5/RA	DS-17.5/RA	DS-35/RA	DS-50/RA	DS-70/RA	DS-115/RA
Motor Output	PWM, 3 Phase, sine wave						
Continuous Output Current	2.1 A rms	3.4 A rms	5.7 A rms	14.1 A rms	18.4 A rms	28.3 A rms	56.6 A rms
Max. Output Current See Figure 3.1	8.5 A rms	8.5 A rms	17.5 A rms	35.0 A rms	50.0 A rms	70.0 A rms	115.0 A rms
Motor Ripple Frequency	20 kHz	20 kHz	20 kHz	20 kHz	20 kHz	10 kHz	10 kHz

3.1.2 POWER SUPPLY

Delta S Driver	DS-1.5/RB	DS-1.5/RA	DS-4.25/RB	DS-4.25/RA
Main Bus Power Supply Voltage	1 Phase, Nominal: 110 VAC, Max Range: 85-126 VAC, 50/60 Hz	1 Phase, Nominal: 220 VAC, Max Range: 170-264 VAC, 50/60 Hz	1 Phase, Nominal: 110 VAC, Max Range: 85-126 VAC, 50/60 Hz	1 Phase, Nominal: 220 VAC, Max Range: 170-264 VAC, 50/60 Hz
Main Supply Capacity	350 VA	350 VA	350 VA	350 VA
Control Voltage	Powered by main circuit supply			
Control Capacity	Powered by main circuit supply			
Main Circuit Heat Loss	17 W	17 W	17 W	17 W
Control Circuit Heat Loss	23 W	23 W	23 W	23 W
Regeneration Absorption Capacity	13 W + 17 J	13 W + 17 J	13 W + 17 J	13 W + 17 J

Delta S Driver	DS-8.5/RB	DS-8.5/RA	DS-17.5/RA	DS-35/RA	DS-50/RA	DS-70/RA	DS-115/RA
Main Bus Power Supply Voltage	1 Phase, Nominal: 110 VAC, Max Range: 85-126 VAC, 50/60 Hz	1 Phase, Nominal: 220 VAC, Max Range: 170-264 VAC, 50/60 Hz	3 Phase, Nominal: 220 VAC, Max Range: 170-264 VAC, 50/60 Hz				
Main Supply Capacity	570 VA	1.2 KVA	2.5 KVA	5.3 KVA	6.7 KVA	13 KVA	25 KVA
Control Voltage	Powered by main circuit supply			Single phase, 170-264 VAC, 50/60 Hz			
Control Capacity	Powered by main circuit supply			70 VA		80 VA	110 VA
Main Circuit Heat Loss	20 W	27 W	47 W	110 W	130 W	250 W	400 W
Control Circuit Heat Loss	23 W	23 W	23 W	26 W	26 W	30 W	60 W
Regeneration Absorption Capacity	17 W + 17 J	24 W + 17 J	37 W + 22 J	160 W + 38 J	180 W + 54 J	300 W + 94 J	480 W + 188 J

3.1.3 CONTROL PERFORMANCE

Feedback	Resolver
Feedback Resolution	12000 bits/rev * number of resolver cycles ie. 2X resolver = 2*12000 bits/rev = 24000 bits/rev. See motor drawings in Appendix A.6 for resolver type.
Feedback Accuracy	18 arc minutes spread for motors with 95 mm mounting face or smaller ±20 arc minutes for B series motors 8 arc minute spread for all other motors
Speed Regulation	Load (0%-100%): !0.02% Power (85-126 VAC or 170-264 VAC): !0.02% Temperature (0-55°C/32-131°F): !0.2%
Torque Regulation	Power (85-126 VAC or 170-264 VAC): !2% Temperature (0-55°C/32-131°F): !2%

Feedback	Encoder
Feedback Resolution	See motor drawings in Appendix A.8 for encoder type.
Feedback Accuracy	Less than 2 arc minutes.
Speed Regulation	Load (0%-100%): !0.02% Power (85-126 VAC or 170-264 VAC): !0.02% Temperature (0-55°C/32-131°F): !0.2%
Torque Regulation	Power (85-126 VAC or 170-264 VAC): !2% Temperature (0-55°C/32-131°F): !2%

3.1.4 ENVIRONMENT

Storage Temperature	-10 to 70°C/14-158°F
Operating Temperature	0 to 55°C/32-131°F
Humidity	35 to 90% Relative Humidity, non-condensing
Shock and Vibration	1 G or less
Operating Conditions	Free of dust, liquids, metallic particles and corrosive gases. Use in a pollution degree 2 environment.
Drive Enclosure	The drive is rated as "open type equipment" by Underwriters Laboratories, Inc.

3.1.5 SERCOS INTERFACE

Interface Version	V01.02
Topology	Multi drop fiber optic ring
Transmission Rates	2, 4, 8 and 16 MB/second

3.1.6 STANDARD DIGITAL INPUTS/OUTPUTS

Standard Sinking I/O	Control Input	24 VDC 8 ma: common to +24V, optically isolated
	Control Output	24 VDC 40 ma: common to 24G, optically isolated
Optional Sinking I/O DINT-300K	Control Input	24 VDC 6 ma: common to +24V, optically isolated
	Control Output	24 VDC 400 ma: common to 24G, optically isolated
Optional Sourcing I/O DINT-300S	Control Input	24 VDC 6 ma: common to 24G, optically isolated
	Control Output	24 VDC 400 ma: common to +24V, optically isolated
Internal Power Supply	24 VDC ! 15% 100 ma maximum, ground isolated	
External Power Supply	24 VDC ! 15%	

3.1.7 OPTIONAL DIGITAL INPUTS/OUTPUTS EXPANSION BOARD

3.1.7.1 SOURCING I/O OPTION "J"

Input	24 VDC 5 ma: common to 24G, optically isolated
Output	24 VDC 500 ma common to +24V, optically isolated
Internal Power Supply	24 VDC ! 15%

3.1.7.2 SINKING I/O OPTION "K"

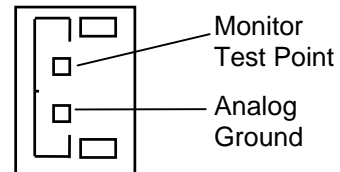
Input	24 VDC 5 ma: common to +24V, optically isolated
Output	24 VDC 500 ma common to 24G, optically isolated
Internal Power Supply	24 VDC ! 15%

3.1.8 PROBE INPUTS

Probe Input 1 Probe Input 2	24 VDC 5 ma
--------------------------------	-------------

3.1.9 ANALOG I/O SIGNALS

Analog Input 1 and Analog Input 2	Maximum Input Voltage: ! 10 VDC Input Impedance: 18 k# A/D resolution: 1/1024 at !10V (10 bit Standard, 14 bit Optional) Scaleable with setup parameter
Monitor Output	Maximum Voltage Swing: ! 3 VDC at 1 ma Output Impedance: 330 # Accuracy: !8% Monitor Scaling Speed: 3V equals motor rated speed Torque: 3V equals motor peak torque C-722006 Monitor Cable Available



3.1.10 HIGH SPEED DIGITAL I/O SIGNALS

Auxiliary Encoder Pulse Input FMA and /FMA FMB and /FMB	On voltage: 5 VDC ! 5% at 17 ma maximum Off voltage: 1 VDC ! 5% less than 1 ma 200 KHz maximum frequency in pulse-pulse or pulse-direction modes 50 KHz in AB quadrature mode Optically isolated
Pulse Output APD and /APD BPD and /BPD ZPD and /ZPD	RS422 output: AM26LS31 or equiv. 400 kHz maximum frequency

3.1.11 PROTECTION

Fault Checks	Under Voltage, Over Voltage, Motor Short, Output Short, Feedback Loss, Regeneration Resistor Over Temperature and Malfunction, Driver Over Temperature, Motor rms Torque (motor overheat) Driver Rated Current, Over Speed, Motor Stall, Dynamic or Mechanical Brake Failure, Following Error, Internal Watchdog Timer, Processor Diagnostics
Output Short Circuit Protection	The drives are suitable for use on a circuit capable of delivering not more than 5000 rms symmetrical amperes, 240 volts maximum when protected by a circuit breaker having an interrupting rating not less than 5000 rms symmetrical amperes, 240 volts maximum.

3.2 MOTOR SPECIFICATIONS

3.2.1 GENERAL

Duty	Continuous at rated speed and rated torque
Type	Permanent magnet synchronous
Insulation	Class F
Sealing	See motor drawings in Appendix A.6, A.7 & A.8
Storage Temperature	-10 to +70°C/14 to 158°F
Ambient Operating Temperature	-10 to +40°C/14 to 104°F
Shock and Vibration	2 G's
Mounting	Motor can be mounted in any position

3.2.2 FEEDBACK DEVICE

Type: Resolver	Resolver control transformer See motor drawings in Appendix A.6 & A.7
Type: Encoder	ABZ plus UVW 5V line driver See motor drawings in Appendix A.8

3.2.3 OTHER

Weight Shaft Loading Brake Specifications Dimensions	See motor drawings in Appendix A.6, A.7 & A.8
Torque Ratings Speed Torque Curves	See specifications in Appendix A.4

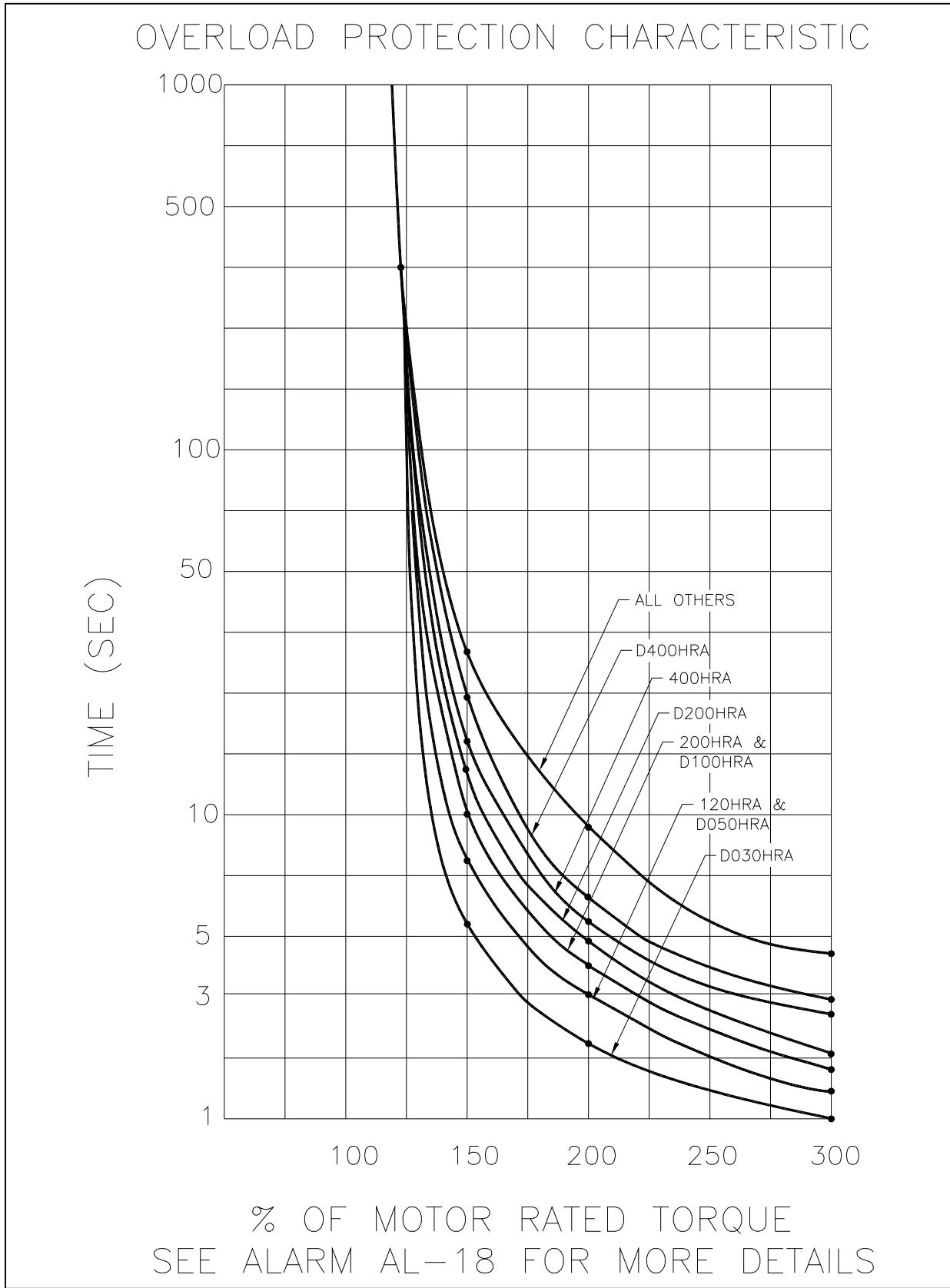


Figure 3.1 - Delta S Overload Protection Characteristic

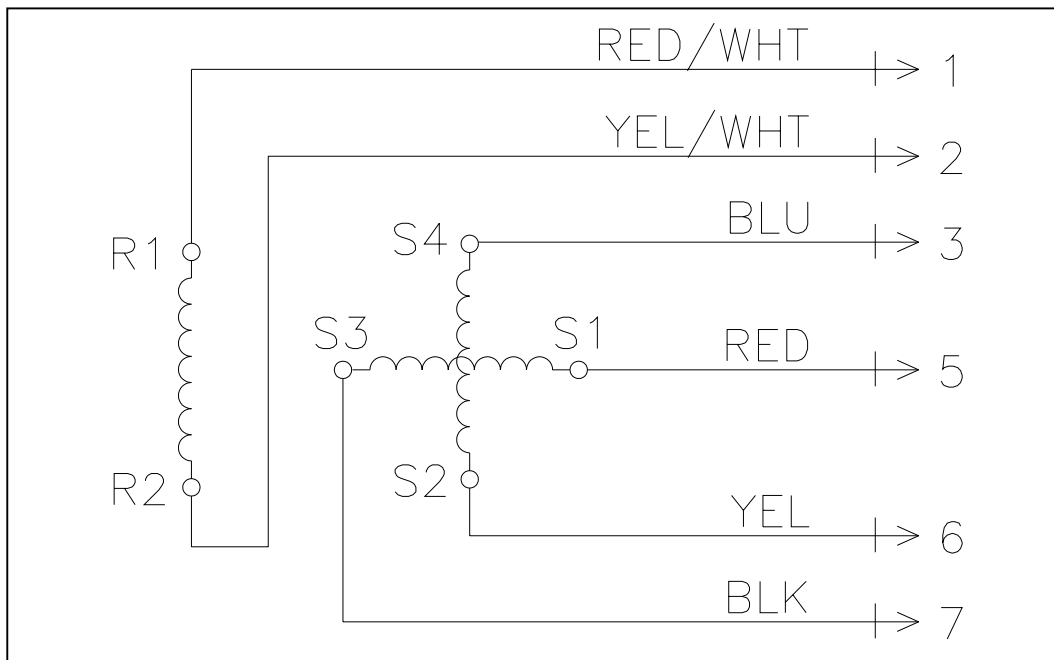


Figure 3.2 - Standard Resolver Wiring Connections for DBM-XXX/15R and DBM-500/30R and Larger

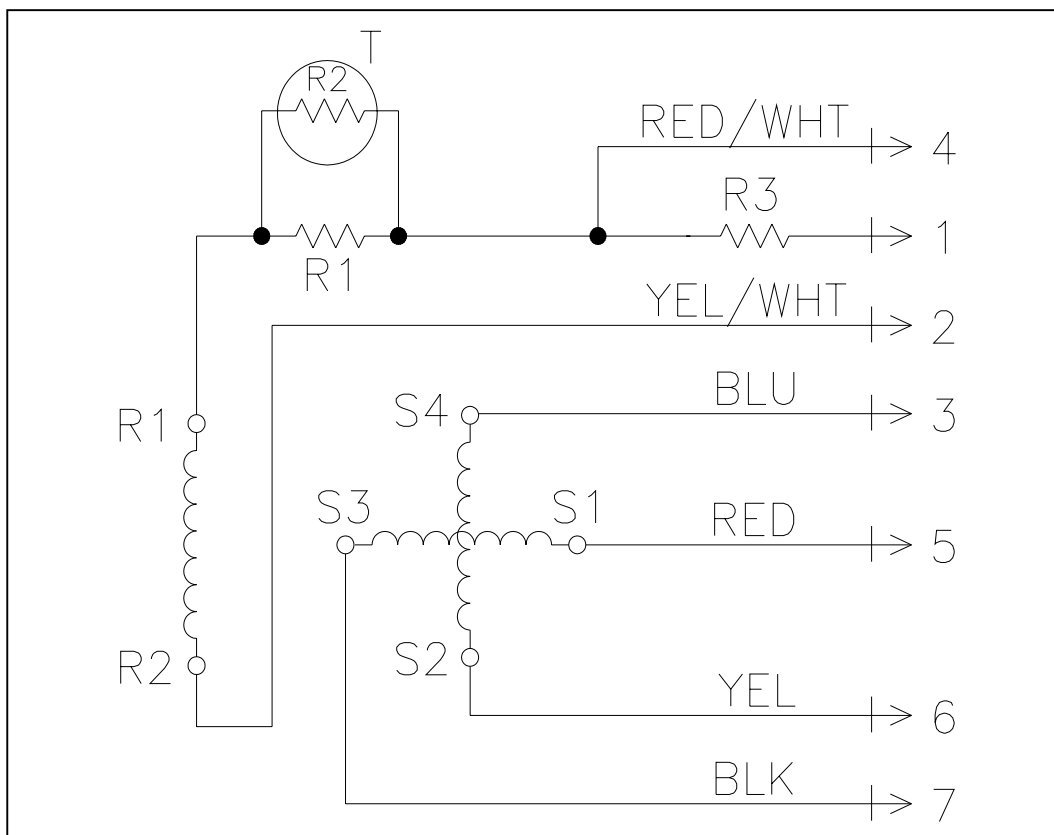


Figure 3.3 - Alternate Resolver Wiring Connections for DBM-XXX/15R and DBM-500/30R and Larger

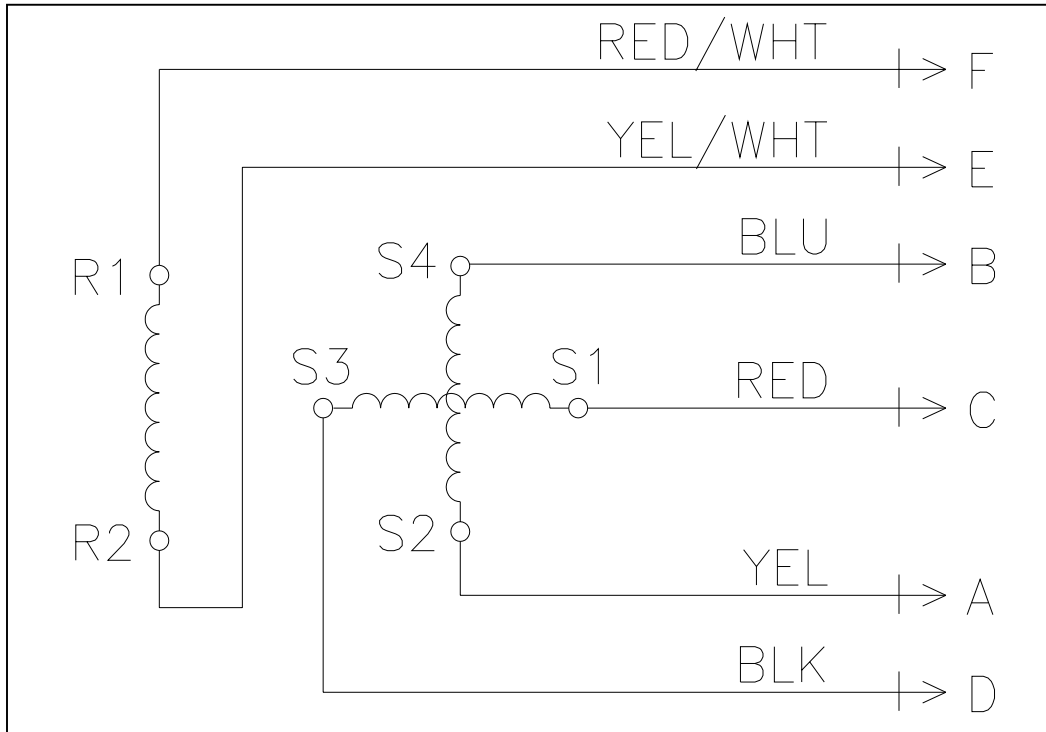


Figure 3.4 - Standard Resolver Wiring Connections for DBM-120/30R, DBM-200/30R, DBM-400/30R, DBM-BXXX/30R, DBM-D30/30R and DBM-D50/30R

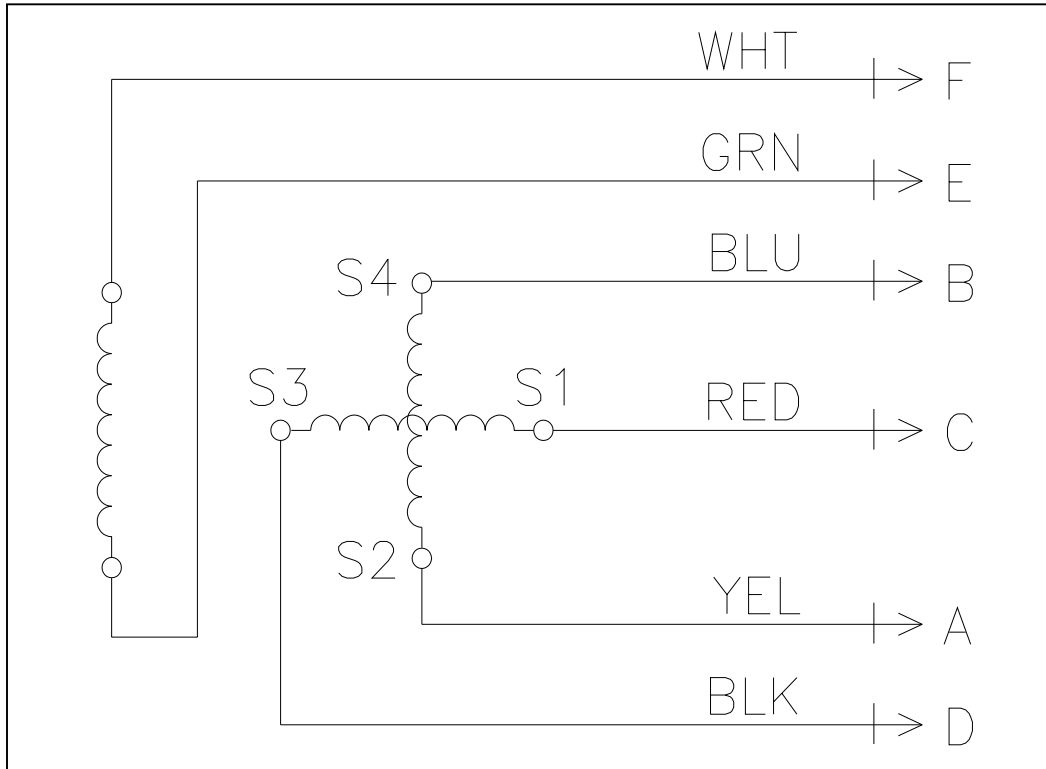
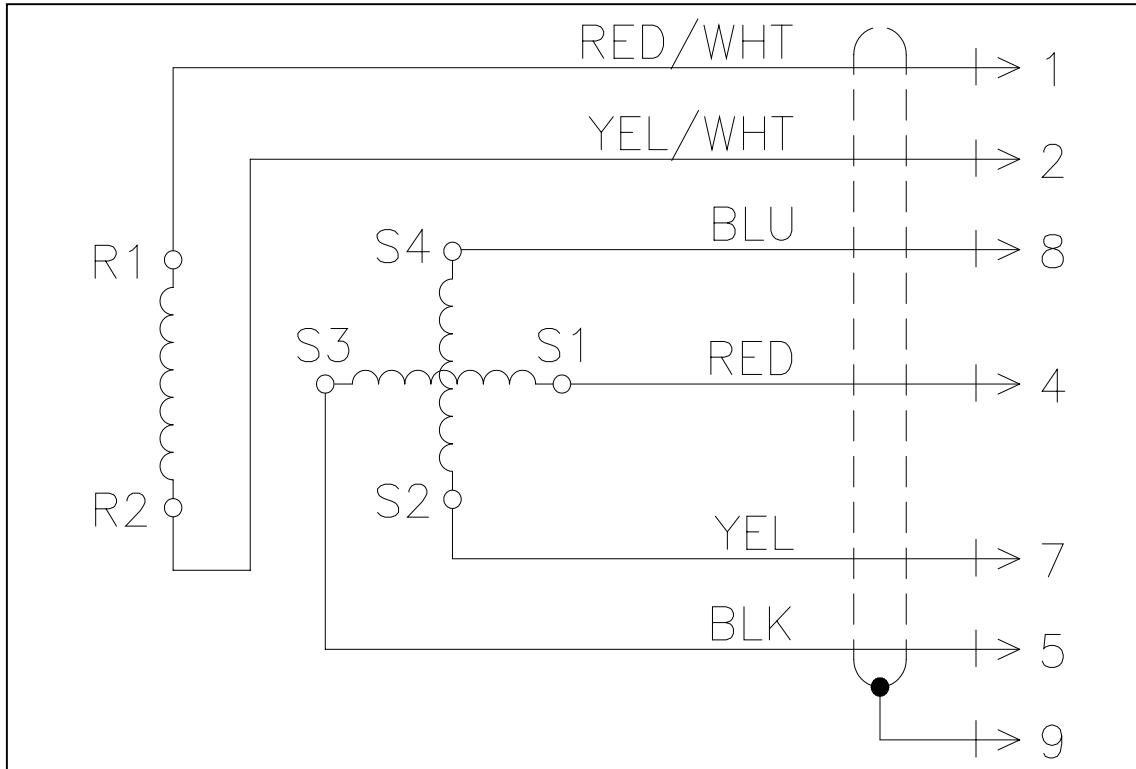


Figure 3.5 - Alternate Resolver Wiring Connections for DBM-120/30R, DBM-200/30R and DBM-400/30R



**Figure 3.6 - Standard Resolver Wiring Connections for
DBM-D100/30R Through DBM-D800/30R**

