



CONTROL TRANSFORMER PRIMARY CONNECTIONS

INPUT VOLTS	TERMINALS		JUMPER LOCATION
	A	B	
208	(H1)	(H2)	NONE
230/240	(H1)	(H4)	(H1) TO (H3)
460/480	(H1)	(H4)	(H2) TO (H3)

CONTACT SEQUENCE CHART FOR S2
X - INDICATES CONTACT CLOSED

CONTACT	POSITION			MANUF. LOCATION
	HAND	OFF	AUTO	
1	X			1RO
2			X	1LO
3	X			2RO

* SCHEMATIC SHOWS THIS POSITION.

OPTION TY
HAND/OFF/AUTO SWITCH

TERMINAL BLOCK TB1
WIRING SPECIFICATIONS:
WIRE RANGE: (22 - 8) AWG
TIGHTENING TORQUE: 16 LB.-IN.



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REVISION

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1	7/12/07	SCHEMATIC DIAGRAM P7 CONFIGURED
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DATE 7/12/07
DATE 5/1/07

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* - INDICATES COMPONENTS NOT SUPPLIED BY YASKAWA.
- - - SEE SHEETS 2 AND 3 FOR NOTES AND TABLES.

NOTES:

- CONNECTED TO THE CABINET. CUSTOMER TO CONNECT THE CABINET GROUND LUGS TO EARTH GROUND AND UTILITY GROUND.
- THE CUSTOMER MUST USE TYPE 3R RATED HUBS OR FITTINGS (OR EQUIVALENT) TO MAINTAIN THE ENCLOSURE RATING.
- WITHOUT THE CIRCUIT BREAKER (OPTION PC) OR DISCONNECT SWITCH (OPTION PD), THE DISCONNECT MEANS MUST BE SUPPLIED BY THE CUSTOMER.
- IF THE CIRCUIT BREAKER (OPTION PC) OR DRIVE INPUT FUSES (OPTION PF) ARE NOT ADDED, THEN BRANCH CIRCUIT PROTECTION (CIRCUIT BREAKER OR AC INPUT FUSES) MUST BE SUPPLIED BY THE CUSTOMER.
- INSULATED TWISTED SHIELDED WIRE IS REQUIRED. 2 CONDUCTOR #18GA. (BELDEN NO. 8760, OR EQUIVALENT). SHIELD TO CONNECT TO PROPER TERMINAL AS SHOWN. CONNECT THE SHIELD ONLY AT THIS END. STUB AND ISOLATE THE OTHER END. DO NOT RUN THESE WIRES IN THE SAME CONDUIT AS THE AC POWER AND AC CONTROL WIRES.
- CUSTOMER TO ADJUST THE THERMOSTAT ON THE SPACE HEATER HR1 FOR THE MINIMUM DESIRED TEMPERATURE INSIDE THE DRIVE CABINET. THIS SET TEMPERATURE IS NORMALLY SELECTED TO BE SLIGHTLY HIGHER THAN THE MINIMUM AMBIENT TEMPERATURE OF THE AIR SURROUNDING THE CABINET, AND IS THE TEMPERATURE AT WHICH THE SPACE HEATER HR1 WILL SHUT OFF.
- SERIAL COMMUNICATION OPTIONS T2, TG, TH, TL, TO, TU OR TV (SEE SH. 3, TABLE 4, OR 5):
 OPTION T2 = ETHERNET/IP, OPTION TG = DEVICENET, OPTION TH = PROFIBUS, OPTION TL = METASYS N2, OPTION TO = LONWORKS, OPTION TU = ETHERNET MODBUS TCP/IP, OPTION TV = APOGEE FLN AND OPTION TV = DRIVE EMBEDDED MODBUS PROTOCOL.
 A. THE HAND/OFF/AUTO SWITCH (IF PRESENT) MUST BE IN THE "AUTO" POSITION, IF SERIAL COMMUNICATION IS TO BE USED TO CONTROL THE DRIVE.
 B. TO OBTAIN AN ANALOG SPEED REFERENCE FROM TERMINAL A2, WITH THE HAND/OFF/AUTO SWITCH PRESENT, THE FOLLOWING JUMPERS MUST BE ADDED TO THE DRIVE TERMINALS:
 1) JUMPER J2, FROM S4 TO SN
 2) JUMPER J5, FROM S5 TO S6
 C. WHEN OPTION TL IS ORDERED, A JUMPER IS REQUIRED FROM DRIVE TERMINALS (S1) TO (SN) (WITHOUT THE HAND/OFF/AUTO SWITCH), OR FROM TERMINAL BLOCK TB1 POINTS (1) TO (2) (WITH THE HAND/OFF/AUTO SWITCH), SO THAT LONWORKS SERIAL COMMUNICATIONS CAN BE USED TO CONTROL THE RUN, STOP AND SPEED OF THE AC MOTOR.
 CUSTOMER TO REPLACE THE JUMPER WITH NORMALLY CLOSED SAFETY INTERLOCKS, OR REMOTE RUN/STOP CONTACT, IF APPLICABLE.
 8. SEE TABLE 4 WITHOUT THE HAND/OFF/AUTO SELECTOR SWITCH OPTION TY, AND USE THE DEFAULT SETTING WITH OPTION TY.
 9. USE THE DEFAULT SETTING WITHOUT THE HAND/OFF/AUTO SELECTOR SWITCH OPTION TY, AND SEE TABLE 5 WITH OPTION TY.

TABLE 2

P7 CONFIG. MODEL NO. BASE NUMBER P7CRXXXX	WITH OPTION PC, TO CIRCUIT BREAKER CB1				OR, WITH OPTION PD, TO DISCONNECT SWITCH S1				OR, WITHOUT OPTIONS PC OR PD, TO TERMINAL BLOCK TB2	
	MFG. PART NUMBER	CURRENT RATING (AMPS)	WIRE SIZE RANGE (AWG)	TIGHTENING TORQUE (LB.-IN.)	MFG. PART NUMBER	CURRENT RATING (AMPS)	WIRE SIZE RANGE (AWG)	TIGHTENING TORQUE (LB.-IN.)	WIRE SIZE RANGE (AWG)	TIGHTENING TORQUE (LB.-IN.)
208V 240V	B052	80	14 - 1/0	80	BTE10	100	3 - 1/0	45	12 - 1/0	50
	B065	100	14 - 1/0	80					6 - 250 kcmil	375
	B077	125	4 - 350 kcmil	250						
A080	KAL36125	125	4 - 350 kcmil	250	TFB1	200	6 - 300 kcmil	375		
D088	A104	B096	KAL36150	150						
D114	A130	B124	KAL36175	175						
			KAL36200	200						
D143	A154	B156	KAL36225	225						
			KAL36250	250						
D169	B180	LAL36300	300	1 x (1 - 600 kcmil) 2 x (1 - 250 kcmil)		250	4 - 350 kcmil	250		
			LAL36300	300						
D211	A248	B240	LAL36350	350						
			LAL36400	400						
D273	B302	MAL36450	450	(1-3) x (3/0 - 500 kcmil) (1-3) x 300						

TABLE 3

P7 CONFIG. MODEL NO. BASE NUMBER P7CRXXXX	WITH OPTION PH, TO OUTPUT REACTOR L4				OR, WITH OPTION PK, TO OUTPUT REACTOR L4				OR, WITHOUT OPTIONS PH OR PK, TO STANDARD AC DRIVE	
	MFG. PART NUMBER	CURRENT RATING (AMPS)	WIRE SIZE RANGE (AWG)	TIGHTENING TORQUE (LB.-IN.)	MFG. PART NUMBER	CURRENT RATING (AMPS)	WIRE SIZE RANGE (AWG)	TIGHTENING TORQUE (LB.-IN.)	WIRE SIZE RANGE (AWG)	TIGHTENING TORQUE (LB.-IN.)
208V 240V	B052	80	14 - 1/0	80	RL-0550X	6 - 4	6 - 4	45	8	40
	B065	100	14 - 1/0	80	RL-0800X	2 - 1/0	2 - 1/0	50	14 - 2/0	120
A080	B077	125	4 - 350 kcmil	250	RL-1000X	2 - 1/0	2 - 1/0	50		
	B096	150	4 - 350 kcmil	250	RL-1000X	2 - 1/0	2 - 1/0	50		
D088	A104	B124	175	50	RL-1000X	2 - 1/0	2 - 1/0	50		
D114	A130	B156	200	180	RL-1300X	2 - 2/0	2 - 2/0	180		
			225	250	RL-1600X	3/0 - 4/0	3/0 - 4/0	250		
D143	A154	B180	250	250	RL-2000X	3/0 - 4/0	3/0 - 4/0	250		
D169	B211	A192	B240	350	RL-2500X	CUSTOMER TO SUPPLY A UL LISTED CLOSED-LOOP CONNECTOR	CUSTOMER TO SUPPLY A UL LISTED CLOSED-LOOP CONNECTOR	250		
			A248	400	RL-3200X	CUSTOMER TO SUPPLY A UL LISTED CLOSED-LOOP CONNECTOR	CUSTOMER TO SUPPLY A UL LISTED CLOSED-LOOP CONNECTOR	250		
D273	B302	MAL36450	450	(1-3) x (3/0 - 500 kcmil) (1-3) x 300	RL-3200X	CUSTOMER TO SUPPLY A UL LISTED CLOSED-LOOP CONNECTOR	CUSTOMER TO SUPPLY A UL LISTED CLOSED-LOOP CONNECTOR	250		

TABLE 1 FACTORY SET P7 CONFIGURED DRIVE PARAMETERS

PARAMETER	DATA	UNIT	DESCRIPTION/REMARKS
b1-01	SEE TABLE 4 OR 5	N/A	FREQUENCY REFERENCE SELECTION
b1-02	SEE NOTE 8	N/A	RUN COMMAND SELECTION
b1-08	1	N/A	RUN COMMAND SELECTION DURING PROGRAMMING - ENABLED
d1-01	10.0	HZ.	FREQUENCY REFERENCE 1 - SEE TABLE 4 OR TABLE 5
d1-02	6.0	HZ.	FREQUENCY REFERENCE 2 - SEE TABLE 5
d1-04	40.0	HZ.	FREQUENCY REFERENCE 4 - SEE TABLE 5
E1-01	240(480)	VOLTS	STANDARD INPUT VOLTAGE SETTING
	208	VOLTS	INPUT VOLTAGE SETTING FOR BASE NUMBER "D_--"
E1-05	230(460)	VOLTS	STANDARD MAXIMUM OUTPUT VOLTAGE SETTING
	208	VOLTS	MAXIMUM OUTPUT VOLTAGE SETTING FOR BASE NUMBER "D_--"
H1-02	SEE NOTE 9	N/A	TERMINAL S4 SELECTION
H1-03	SEE NOTE 9	N/A	TERMINAL S5 SELECTION
H3-08	SEE TABLE 4 OR 5	N/A	TERMINAL A2 SIGNAL SELECTION
H3-09	SEE NOTE 9	N/A	TERMINAL A2 FUNCTION SELECTION
H3-13	SEE TABLE 4 OR 5	N/A	TERMINALS A1 AND A2 MASTER FREQUENCY REFERENCE SELECTION
H5-02	SEE TABLE 4 OR 5	N/A	SERIAL COMMUNICATIONS SPEED SELECTION BAUD RATE
H5-07	SEE TABLE 4 OR 5	N/A	REQUEST TO SEND (RTS) CONTROL SELECTION
H5-08	SEE TABLE 4 OR 5	N/A	SERIAL COMMUNICATIONS PROTOCOL SELECTION
H5-09	10.0	SEC.	SERIAL COMMUNICATIONS ERROR DETECTION TIME
L4-05	0	N/A	FREQUENCY REFERENCE LOSS DETECTION DISABLED
L5-01	10	N/A	NUMBER OF AUTO RESTART ATTEMPTS
L5-03	10.0	SEC.	MAXIMUM RESTART TIME AFTER FAULT
o2-03	1	N/A	USER INITIALIZATION FACTORY SET PARAMETER DEFAULT VALUES (FOUND IN A1-03="1110")
o3-02	1	N/A	DIGITAL OPERATOR KEYPAD READ ALLOWED ENABLED

TABLE 5

A.C. MOTOR WIRING		GROUND WIRING	
OR, WITH OPTION PH, TO OUTPUT REACTOR L4	OR, WITH OPTION PK, TO OUTPUT REACTOR L4	OR, WITHOUT OPTIONS PH OR PK, TO STANDARD AC DRIVE	OR, WITHOUT OPTIONS PC OR PD, TO TERMINAL BLOCK TB2
MFG. PART NUMBER	MFG. PART NUMBER	MFG. PART NUMBER	MFG. PART NUMBER
CURRENT RATING (AMPS)	CURRENT RATING (AMPS)	CURRENT RATING (AMPS)	CURRENT RATING (AMPS)
WIRE SIZE RANGE (AWG)	WIRE SIZE RANGE (AWG)	WIRE SIZE RANGE (AWG)	WIRE SIZE RANGE (AWG)
TIGHTENING TORQUE (LB.-IN.)	TIGHTENING TORQUE (LB.-IN.)	TIGHTENING TORQUE (LB.-IN.)	TIGHTENING TORQUE (LB.-IN.)
RL-0550X	RL-0550X	RL-0550X	BTE10
RL-0800X	RL-0800X	RL-0800X	TFB1
RL-1000X	RL-1000X	RL-1000X	
RL-1300X	RL-1300X	RL-1300X	
RL-1600X	RL-1600X	RL-1600X	
RL-2000X	RL-2000X	RL-2000X	
RL-2500X	RL-2500X	RL-2500X	
RL-3200X	RL-3200X	RL-3200X	

TABLE 6

OR, WITH OPTION PH, TO OUTPUT REACTOR L4	OR, WITH OPTION PK, TO OUTPUT REACTOR L4	OR, WITHOUT OPTIONS PH OR PK, TO STANDARD AC DRIVE	OR, WITHOUT OPTIONS PC OR PD, TO TERMINAL BLOCK TB2
MFG. PART NUMBER	MFG. PART NUMBER	MFG. PART NUMBER	MFG. PART NUMBER
CURRENT RATING (AMPS)	CURRENT RATING (AMPS)	CURRENT RATING (AMPS)	CURRENT RATING (AMPS)
WIRE SIZE RANGE (AWG)	WIRE SIZE RANGE (AWG)	WIRE SIZE RANGE (AWG)	WIRE SIZE RANGE (AWG)
TIGHTENING TORQUE (LB.-IN.)	TIGHTENING TORQUE (LB.-IN.)	TIGHTENING TORQUE (LB.-IN.)	TIGHTENING TORQUE (LB.-IN.)
RL-0550X	RL-0550X	RL-0550X	BTE10
RL-0800X	RL-0800X	RL-0800X	TFB1
RL-1000X	RL-1000X	RL-1000X	
RL-1300X	RL-1300X	RL-1300X	
RL-1600X	RL-1600X	RL-1600X	
RL-2000X	RL-2000X	RL-2000X	
RL-2500X	RL-2500X	RL-2500X	
RL-3200X	RL-3200X	RL-3200X	

TABLE 7

OR, WITH OPTION PH, TO OUTPUT REACTOR L4	OR, WITH OPTION PK, TO OUTPUT REACTOR L4	OR, WITHOUT OPTIONS PH OR PK, TO STANDARD AC DRIVE	OR, WITHOUT OPTIONS PC OR PD, TO TERMINAL BLOCK TB2
MFG. PART NUMBER	MFG. PART NUMBER	MFG. PART NUMBER	MFG. PART NUMBER
CURRENT RATING (AMPS)	CURRENT RATING (AMPS)	CURRENT RATING (AMPS)	CURRENT RATING (AMPS)
WIRE SIZE RANGE (AWG)	WIRE SIZE RANGE (AWG)	WIRE SIZE RANGE (AWG)	WIRE SIZE RANGE (AWG)
TIGHTENING TORQUE (LB.-IN.)	TIGHTENING TORQUE (LB.-IN.)	TIGHTENING TORQUE (LB.-IN.)	TIGHTENING TORQUE (LB.-IN.)
RL-0550X	RL-0550X	RL-0550X	BTE10
RL-0800X	RL-0800X	RL-0800X	TFB1
RL-1000X	RL-1000X	RL-1000X	
RL-1300X	RL-1300X	RL-1300X	
RL-1600X	RL-1600X	RL-1600X	
RL-2000X	RL-2000X	RL-2000X	
RL-2500X	RL-2500X	RL-2500X	
RL-3200X	RL-3200X	RL-3200X	

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SEE SHEET 3 FOR TABLES 4 AND 5.

