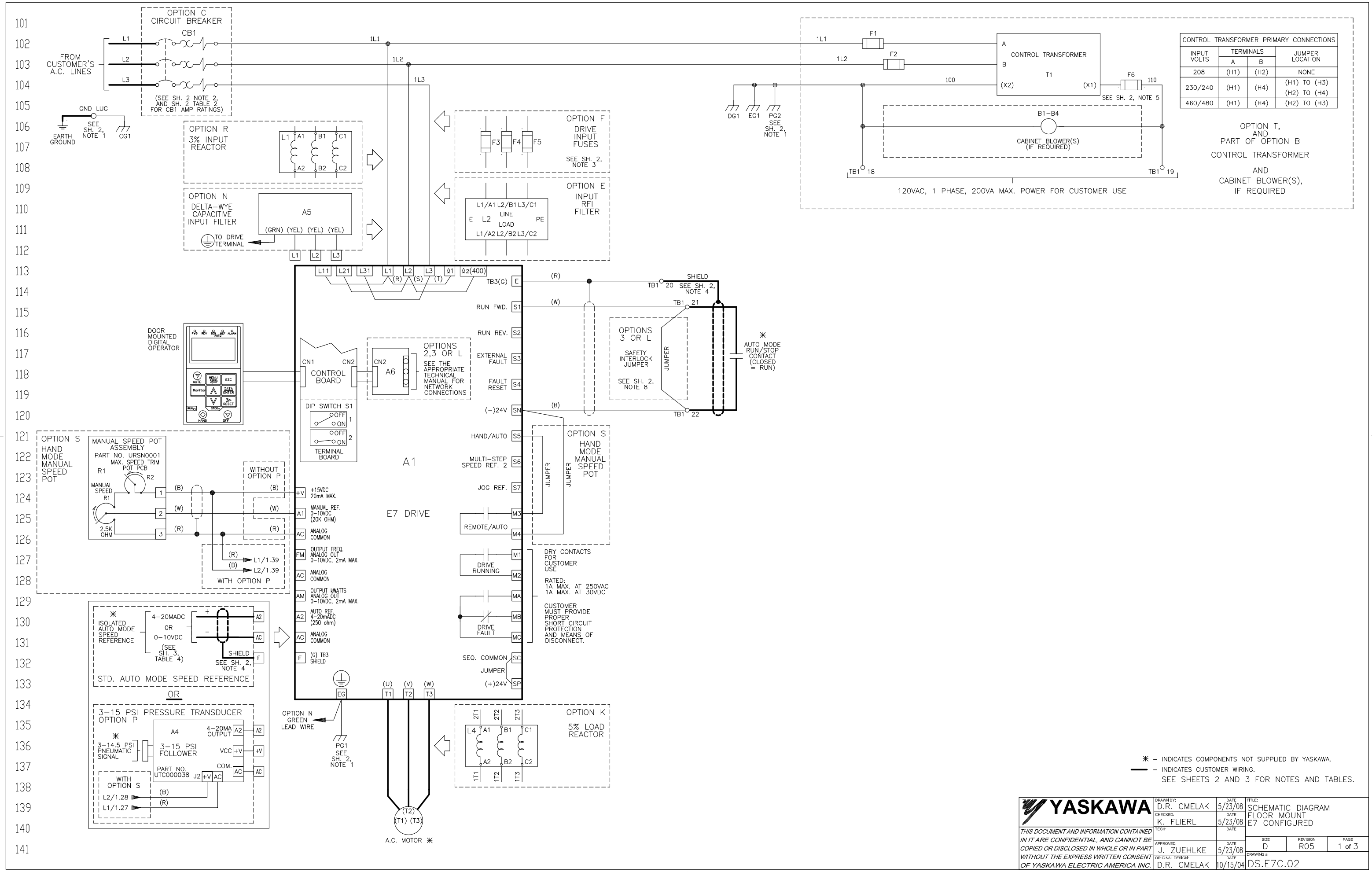

CONTROL TRANSFORMER PRIMARY CONNECTIONS			
INPUT VOLTS	TERMINALS A	TERMINALS B	JUMPER LOCATION
208	(H1)	(H2)	NONE
230/240	(H1)	(H4)	(H1) TO (H3) (H2) TO (H4)
460/480	(H1)	(H4)	(H2) TO (H3)

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CHECKED: K. FLIERL	DATE 5/23/08	
TECH:	DATE	SIZE D / REVISION R05 / PAGE 1 of 3
APPROVED: J. ZUEHLKE	DATE 5/23/08	
ORIGINAL DESIGN: D.R. CMELAK	DATE 10/15/04	DRAWING #: DS.E7C.02

NOTES:

1. CONNECTED TO THE CABINET. CUSTOMER TO CONNECT THE CABINET GROUND LUG TO EARTH GROUND.
2. WITHOUT THE CIRCUIT BREAKER (OPTION C), THE DISCONNECT MEANS MUST BE SUPPLIED BY THE CUSTOMER.
3. IF THE CIRCUIT BREAKER (OPTION C) OR DRIVE INPUT FUSES (OPTION F) ARE NOT ADDED, THEN BRANCH CIRCUIT PROTECTION (CIRCUIT BREAKER OR AC INPUT FUSES) MUST BE SUPPLIED BY THE CUSTOMER.
4. 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.
5. FOR AN E7 CONFIGURED WITH A CONTROL TRANSFORMER, T1, POWER RATING OF 350VA OR GREATER, SECONDARY FUSE F6 IS ADDED.
6. WHEN OPTION S IS ORDERED, JUMPERS ARE REQUIRED ON THE DRIVE TERMINALS, FROM S5 TO M3 AND FROM SN TO M4.
7. SERIAL COMMUNICATIONS OPTIONS 2, 3, J, U, V, OR L (SEE TABLE 4 ON SHEET 3):
   OPTION 2 = ETHERNET/IP, OPTION 3 = BACNET, OPTION J = EMBEDDED METASYS N2, OPTION U = EMBEDDED APOGEE FLN, OPTION V = EMBEDDED MODBUS AND OPTION L = LONWORKS
   THE DRIVE KEYPAD MUST BE IN "AUTO" MODE, IF SERIAL COMMUNICATIONS IS TO BE USED TO CONTROL THE DRIVE.
8. WHEN OPTIONS 3 OR L ARE ORDERED, A JUMPER IS REQUIRED FROM TERMINAL BLOCK TB1 POINTS (21) TO (22), SO THAT THE SERIAL COMMUNICATIONS CAN CONTROL THE RUN, STOP AND SPEED OF THE AC MOTOR.
   CUSTOMER TO REPLACE THE JUMPER WITH NORMALLY CLOSED SAFETY INTERLOCKS, IF APPLICABLE.

TABLE 1 FACTORY SET E7 CONFIGURED DRIVE PARAMETERS

PARAMETER	DATA	UNIT	DESCRIPTION/REMARKS
b1-01	SEE TABLE 4	N/A	FREQUENCY REFERENCE SELECTION
b1-02	SEE TABLE 4	N/A	RUN COMMAND SELECTION
b1-08	1	N/A	RUN COMMAND SELECTION DURING PROGRAMMING - ENABLED
b1-12	SEE TABLE 4	N/A	HAND MODE FREQUENCY REFERENCE SELECTION
b5-01	SEE TABLE 4	N/A	PI MODE SETTING
d1-01	10.0	HZ.	FREQUENCY REFERENCE 1 - SEE TABLE 4
E1-01	240(480)	VOLTS	STANDARD INPUT VOLTAGE SETTING
	208		INPUT VOLTAGE SETTING FOR BASE NUMBER "D___"
E1-05	230(460)	VOLTS	STANDARD MAXIMUM OUTPUT VOLTAGE SETTING
	208		MAXIMUM OUTPUT VOLTAGE SETTING FOR BASE NUMBER "D___"
F6-02	SEE TABLE 4	N/A	SERIAL COMMUNICATIONS EXTERNAL FAULT DETECTION SELECTION
F6-03	SEE TABLE 4	N/A	SERIAL COMMUNICATIONS EXTERNAL FAULT STOPPING METHOD SELECTION
H1-03	SEE TABLE 4	N/A	TERMINAL S5 SELECTION
H3-08	SEE TABLE 4	N/A	TERMINAL A2 SIGNAL SELECTION
H3-09	SEE TABLE 4	N/A	TERMINAL A2 FUNCTION SELECTION
H3-13	SEE TABLE 4	N/A	TERMINALS A1 AND A2 MASTER FREQUENCY REFERENCE SELECTION
H5-02	SEE TABLE 4	N/A	SERIAL COMMUNICATIONS SPEED SELECTION BAUD RATE
H5-07	SEE TABLE 4	N/A	REQUEST TO SEND (RTS) CONTROL SELECTION
H5-08	SEE TABLE 4	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

SEE SHEET 3 FOR TABLE 4.

CUSTOMER WIRING REQUIREMENTS

- FOR 0 TO 100 AMPS, USE A MINIMUM OF 60°-75°C COPPER WIRE.
- FOR ABOVE 100 AMPS, USE A MINIMUM OF 75°C COPPER WIRE.

(UNLESS SPECIFIED OTHERWISE)

TABLE 2 A.C. LINE WIRING

E7 CONFIG. MODEL NO. BASE NUMBER E7C✳XXXX			WITH OPTION C, TO CIRCUIT BREAKER				OR, WITH OPTION F DRIVE INPUT FUSES F3,F4,F5		
208V	230V	480V	MFG. PART NUMBER	CURRENT RATING (AMPS)	WIRE SIZE RANGE (AWG)	TIGHTENING TORQUE (LB.-IN.)	MFG. PART NUMBER	WIRE SIZE RANGE (AWG)	TIGHTENING TORQUE (LB.-IN.)
	A130		KAL36200	200	4 - 350 kcmil	250	1BS103	(1-2) x (6-250 kcmil)	(1-2) x 275
D143			KAL36225	225					
	A154	B156	KAL36250	250					
D169	A192	B180	LAL36300	300	1 x (1-600 kcmil)	375			
					2 x (1-250 kcmil)	2 x 375			
D211			LAL36350	350	1 x (1-600 kcmil)	375			
					2 x (1-250 kcmil)	2 x 375			
	A248		LAL36400	400	1 x (1-600 kcmil)	375	1BS104	(1-2) x (4-500 kcmil)	(1-2) x 375
					2 x (1-250 kcmil)	2 x 375			
D273			MAL36450	450	(1-3) x (3/0-500 kcmil)	(1-3) x 300			
	A312		MAL36500	500					
		B361	MAL36600	600					
D343	A360		MAL36600	600	(1-3) x (3/0-500 kcmil)	(1-3) x 300	BH3145	(1-2) x (4-500 kcmil)	(1-2) x 375
D396									
		B414	MAL36700	700	(1-3) x (3/0-500 kcmil)	(1-3) x 300			
		B477	MAL36800	800					
		B240	LAL36400	400	1 x (1-600 kcmil)	375	170H3004	CUSTOMER TO SUPPLY A UL LISTED CLOSED-LOOP CONNECTOR	
					2 x (1-250 kcmil)	2 x 375			
		B302	MAL36450	450	(1-3) x (3/0-500 kcmil)	(1-3) x 300			
		B515	MAL36800	800	(1-3) x (3/0-500 kcmil)	(1-3) x 300	BUS BAR		
		B590	MAL36900	900					

E7 CONFIG. MODEL NO. BASE NUMBER E7C✳XXXX			OR, WITH OPTION R LINE REACTOR L1			OR, WITH OPTION E INPUT RFI FILTER L2			OR, WITHOUT OPTIONS C, F, R AND/OR E, TO STANDARD AC DRIVE
208V	230V	480V	MFG. PART NUMBER	WIRE SIZE RANGE (AWG)	TIGHTENING TORQUE (LB.-IN.)	MFG. PART NUMBER	WIRE SIZE RANGE (AWG)	TIGHTENING TORQUE (LB.-IN.)	
	A130		RL-13001	2-4/0	250	RF3-0150-4	2 - 4/0	177	CUSTOMER TO SUPPLY A UL LISTED CLOSED-LOOP CONNECTOR, PER THE AC DRIVE TECHNICAL MANUAL USE 75°C COPPER WIRE ONLY
D143			RL-16001						
	A154	B156	RL-1600X	2-4/0	250	RF3-0330-4	CUSTOMER TO SUPPLY A UL LISTED CLOSED-LOOP CONNECTOR		
D169	A192	B180	RL-2500X	CUSTOMER TO SUPPLY A UL LISTED CLOSED-LOOP CONNECTOR					
D211									
	A248	B240	RL-2500X						
D273		B302	RL-3200X						
	A312		RL-3200X			FS5972-600-99			
D343	A360	B361	RL-4000X						
D396		B414	RL-5000X						
		B477							
		B515	RL-60002						
		B590				FS5972-800-99			

WHERE ✳ = V (NEMA 1) OR B (NEMA 12)

TABLE 3

E7 CONFIG. MODEL NO. BASE NUMBER E7C✳XXXX			A.C. MOTOR WIRING: WITH OPTION K, TO LOAD REACTOR L4			A.C. MOTOR WIRING: OR, WITHOUT OPTION K, TO STANDARD AC DRIVE	EARTH GROUND WIRING: GROUND LUG		CONTROL WIRING: TERMINAL BLOCK TB1	
208V	230V	480V	MFG. PART NUMBER	WIRE SIZE RANGE (AWG)	TIGHTENING TORQUE (LB.-IN.)		WIRE SIZE RANGE (AWG)	TIGHTENING TORQUE (LB.-IN.)	WIRE SIZE RANGE (AWG)	TIGHTENING TORQUE (LB.-IN.)
	A130		RL-13002	2/0, 1/0	180	CUSTOMER TO SUPPLY A UL LISTED CLOSED-LOOP CONNECTOR, PER THE AC DRIVE TECHNICAL MANUAL USE 75°C COPPER WIRE ONLY	4 - 2/0	120	22 - 10	16 - 20
D143	A154	B156	RL-1600X	4/0, 3/0	250					
D169		B180	RL-2000X							
D211	A192	B240	RL-2500X	CUSTOMER TO SUPPLY A UL LISTED CLOSED-LOOP CONNECTOR						
	A248									
D273	A312	B302	RL-3200X							
D343	A360	B361	RL-4000X							
D396		B414	RL-50002							
		B477								
		B515	RL-60002							
		B590								

WHERE ✳ = V (NEMA 1) OR B (NEMA 12)

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TABLE 4 DRIVE OPERATION MODE SELECTION

OPTION PRESENT	FACTORY SET E7C CONFIGURED DRIVE PARAMETERS													DRIVE CONTROL BOARD SWITCH S1 SETTING		DRIVE MODE SPEED COMMAND							DRIVE MODE PI CONTROL					DRIVE RUN/STOP CONTROL	
																HAND MODE		AUTO MODE					HAND MODE	AUTO MODE					
																		DRIVE TERMINAL A2 SIGNAL					SPEED CMD.	SETPOINT		FEEDBACK			
																										DRIVE TERMINAL A2 SIGNAL			
	b1-01	b1-02	b1-12	b5-01	F6-02	F6-03	H1-03 (S5)	H3-08	H3-09	H3-13	H5-02	H5-07	H5-08	1	2	DRIVE KEYPAD d1-01	SPEED POT	4-20 MADC	0-10 VDC	3-15 PSI	SERIAL COMM.	SEE SH. 2, NOTE	DRIVE KEYPAD d1-01	DRIVE KEYPAD d1-01	SERIAL COMM.	4-20 MADC	0-10 VDC	HAND MODE	AUTO MODE
NONE +	1 ▪	1 ▪	0 ▪	0 ▪	0 ▪	1 ▪	3 ▪	2 ▪	2 ▪	1	3 ▪	1 ▪	0 ▪	OFF ▪	ON ▪	YES		YES										DRIVE KEYPAD IN THE "HAND" MODE	AUTO MODE RUN/STOP CONTACT AT TB1(21) & TB1(22)
NONE	1 ▪	1 ▪	0 ▪	0 ▪	0 ▪	1 ▪	3 ▪	0	2 ▪	1	3 ▪	1 ▪	0 ▪	OFF ▪	OFF	YES			YES										
P	1 ▪	1 ▪	0 ▪	0 ▪	0 ▪	1 ▪	3 ▪	2 ▪	2 ▪	1	3 ▪	1 ▪	0 ▪	OFF ▪	ON ▪	YES				YES									
S +	1 ▪	1 ▪	0 ▪	0 ▪	0 ▪	1 ▪	3 ▪	2 ▪	2 ▪	1	3 ▪	1 ▪	0 ▪	OFF ▪	ON ▪		YES	YES				6							
S	1 ▪	1 ▪	0 ▪	0 ▪	0 ▪	1 ▪	3 ▪	0	2 ▪	1	3 ▪	1 ▪	0 ▪	OFF ▪	OFF		YES		YES			6							
S AND P	1 ▪	1 ▪	0 ▪	0 ▪	0 ▪	1 ▪	3 ▪	2 ▪	2 ▪	1	3 ▪	1 ▪	0 ▪	OFF ▪	ON ▪		YES			YES		6							
2 +	3	3	0 ▪	0 ▪	0 ▪	1 ▪	3 ▪	2 ▪	2 ▪	0 ▪	3 ▪	1 ▪	0 ▪	OFF ▪	ON ▪	YES					YES	7							AUTO MODE RUN/STOP CONTACT AT TB1(21) & TB1(22)
2	1 ▪	3	0 ▪	0 ▪	0 ▪	1 ▪	3 ▪	0	2 ▪	1	3 ▪	1 ▪	0 ▪	OFF ▪	OFF	YES			YES			7							
2 AND P	1 ▪	3	0 ▪	0 ▪	0 ▪	1 ▪	3 ▪	2 ▪	2 ▪	1	3 ▪	1 ▪	0 ▪	OFF ▪	ON ▪	YES		YES		YES		7							
2 AND S	3	3	1	0 ▪	0 ▪	1 ▪	3 ▪	2 ▪	2 ▪	1	3 ▪	1 ▪	0 ▪	OFF ▪	ON ▪		YES				YES	6,7							
2, S AND P	1 ▪	3	0 ▪	0 ▪	0 ▪	1 ▪	3 ▪	2 ▪	2 ▪	1	3 ▪	1 ▪	0 ▪	OFF ▪	ON ▪		YES			YES		6,7							
3 +	2	2	0 ▪	0 ▪	1	3	3 ▪	2 ▪	2 ▪	0 ▪	3 ▪	1 ▪	0 ▪	OFF ▪	ON ▪	YES					YES	7,8							
3	1 ▪	2	0 ▪	0 ▪	1	3	3 ▪	0	2 ▪	1	3 ▪	1 ▪	0 ▪	OFF ▪	OFF	YES			YES			7,8							
3 AND P	1 ▪	2	0 ▪	0 ▪	1	3	3 ▪	2 ▪	2 ▪	1	3 ▪	1 ▪	0 ▪	OFF ▪	ON ▪	YES		YES		YES		7,8							
3 AND S	2	2	1	0 ▪	1	3	3 ▪	2 ▪	2 ▪	1	3 ▪	1 ▪	0 ▪	OFF ▪	ON ▪		YES				YES	6,7,8							
3, S AND P	1 ▪	2	0 ▪	0 ▪	1	3	3 ▪	2 ▪	2 ▪	1	3 ▪	1 ▪	0 ▪	OFF ▪	ON ▪		YES			YES		6,7,8							
J +	2	2	0 ▪	0 ▪	0 ▪	1 ▪	3 ▪	2 ▪	2 ▪	0 ▪	3 ▪	1 ▪	1	OFF ▪	ON ▪	YES					YES	7							
J	1 ▪	2	0 ▪	0 ▪	0 ▪	1 ▪	3 ▪	0	2 ▪	1	3 ▪	1 ▪	1	OFF ▪	OFF	YES			YES			7							
J AND P	1 ▪	2	0 ▪	0 ▪	0 ▪	1 ▪	3 ▪	2 ▪	2 ▪	1	3 ▪	1 ▪	1	OFF ▪	ON ▪	YES		YES		YES		7							
J AND S	2	2	1	0 ▪	0 ▪	1 ▪	3 ▪	2 ▪	2 ▪	1	3 ▪	1 ▪	1	OFF ▪	ON ▪		YES				YES	6,7							
J, S AND P	1 ▪	2	0 ▪	0 ▪	0 ▪	1 ▪	3 ▪	2 ▪	2 ▪	1	3 ▪	1 ▪	1	OFF ▪	ON ▪		YES			YES		6,7							
U +	2	2	0 ▪	0 ▪	0 ▪	1 ▪	3 ▪	2 ▪	2 ▪	0 ▪	2	1 ▪	2	OFF ▪	ON ▪	YES					YES	7							
U	1 ▪	2	0 ▪	0 ▪	0 ▪	1 ▪	3 ▪	0	2 ▪	1	2	1 ▪	2	OFF ▪	OFF	YES			YES			7							
U AND P	1 ▪	2	0 ▪	0 ▪	0 ▪	1 ▪	3 ▪	2 ▪	2 ▪	1	2	1 ▪	2	OFF ▪	ON ▪	YES		YES		YES		7							
U AND S	2	2	1	0 ▪	0 ▪	1 ▪	3 ▪	2 ▪	2 ▪	1	2	1 ▪	2	OFF ▪	ON ▪		YES				YES	6,7							
U, S AND P	1 ▪	2	0 ▪	0 ▪	0 ▪	1 ▪	3 ▪	2 ▪	2 ▪	1	2	1 ▪	2	OFF ▪	ON ▪		YES			YES		6,7							
V +	2	2	0 ▪	0 ▪	0 ▪	1 ▪	3 ▪	2 ▪	2 ▪	0 ▪	3 ▪	1 ▪	0 ▪	OFF ▪	ON ▪	YES					YES	7							
V	1 ▪	2	0 ▪	0 ▪	0 ▪	1 ▪	3 ▪	0	2 ▪	1	3 ▪	1 ▪	0 ▪	OFF ▪	OFF	YES			YES			7							
V AND P	1 ▪	2	0 ▪	0 ▪	0 ▪	1 ▪	3 ▪	2 ▪	2 ▪	1	3 ▪	1 ▪	0 ▪	OFF ▪	ON ▪	YES		YES		YES		7							
V AND S	2	2	1	0 ▪	0 ▪	1 ▪	3 ▪	2 ▪	2 ▪	1	3 ▪	1 ▪	0 ▪	OFF ▪	ON ▪		YES				YES	6,7							
V, S AND P	1 ▪	2	0 ▪	0 ▪	0 ▪	1 ▪	3 ▪	2 ▪	2 ▪	1	3 ▪	1 ▪	0 ▪	OFF ▪	ON ▪		YES			YES		6,7							
L +	2	2	0 ▪	0 ▪	0 ▪	1 ▪	3 ▪	2 ▪	2 ▪	0 ▪	3 ▪	0	0 ▪	ON	ON ▪	YES					YES	7,8							
L	1 ▪	2	0 ▪	0 ▪	0 ▪	1 ▪	3 ▪	0	2 ▪	1	3 ▪	0	0 ▪	ON	OFF	YES			YES			7,8							
L AND P	1 ▪	2	0 ▪	0 ▪	0 ▪	1 ▪	3 ▪	2 ▪	2 ▪	1	3 ▪	0	0 ▪	ON	ON ▪	YES		YES		YES		7,8							
L AND S	2	2	1	0 ▪	0 ▪	1 ▪	3 ▪	2 ▪	2 ▪	1	3 ▪	0	0 ▪	ON	ON ▪		YES				YES	6,7,8							
L, S AND P	1 ▪	2	0 ▪	0 ▪	0 ▪	1 ▪	3 ▪	2 ▪	2 ▪	1	3 ▪	0	0 ▪	ON	ON ▪		YES			YES		6,7,8							
PI CONTROL	1 ▪	1 ▪	0 ▪	1	0 ▪	1 ▪	19	2 ▪	B	0 ▪	3 ▪	1 ▪	0 ▪	OFF ▪	ON ▪								YES	YES		YES			AUTO MODE RUN/STOP CONTACT AT TB1(21) & TB1(22)
PI CONTROL	1 ▪	1 ▪	0 ▪	1	0 ▪	1 ▪	19	0	B	0 ▪	3 ▪	1 ▪	0 ▪	OFF ▪	OFF								YES	YES			YES		
2 AND PI	3	3	0 ▪	1	0 ▪	1 ▪	19	0	B	0 ▪	3 ▪	1 ▪	0 ▪	OFF ▪	OFF							7	YES		YES		YES		SERIAL COMMUNICATIONS
3 AND PI	2	2	0 ▪	1	1	3	19	0	B	0 ▪	3 ▪	1 ▪	0 ▪	OFF ▪	OFF							7,8	YES		YES		YES		
J AND PI	2	2	0 ▪	1	0 ▪	1 ▪	19	0	B	0 ▪	3 ▪	1 ▪	1	OFF ▪	OFF							7	YES		YES		YES		
U AND PI	2	2	0 ▪	1	0 ▪	1 ▪	19	0	B	0 ▪	2	1 ▪	2	OFF ▪	OFF							7	YES		YES		YES		
V AND PI	2	2	0 ▪	1	0 ▪	1 ▪	19	0	B	0 ▪	3 ▪	1 ▪	0 ▪	OFF ▪	OFF							7	YES		YES		YES		
L AND PI	2	2	0 ▪	1	0 ▪	1 ▪	19	0	B	0 ▪	3 ▪	0	0 ▪	ON	OFF							7,8	YES		YES		YES		

+ = STANDARD E7C CONFIGURED SET UP

▪ = FACTORY 2-WIRE INITIALIZATION/DEFAULT SETTING

SEE SHEET 2 FOR NOTES, AND TABLES 1, 2 AND 3.

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