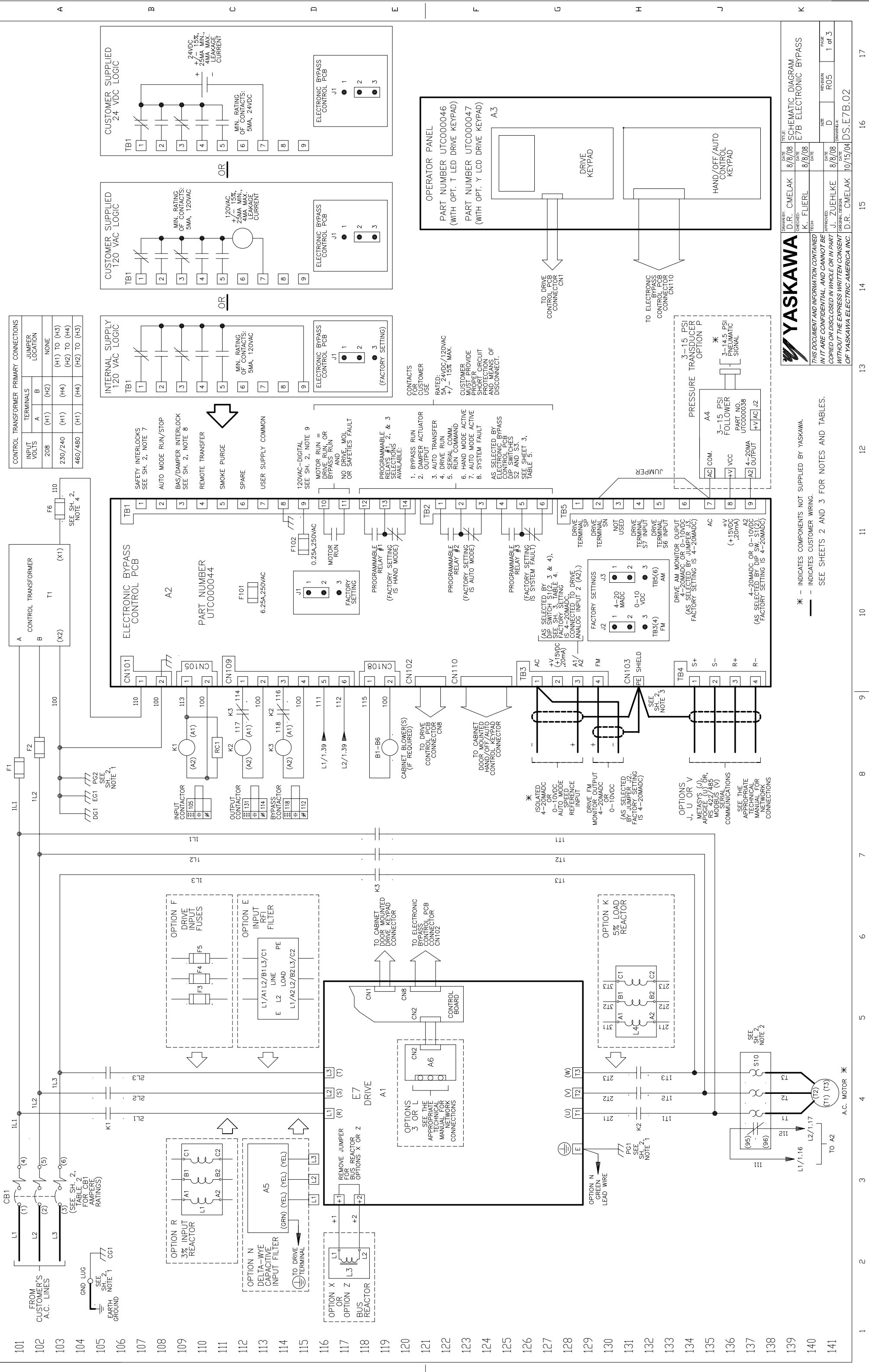


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17



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TITLE: SCHEMATIC DIAGRAM
 E7B ELECTRONIC BYPASS

SIZE: D
 REVISION: R05
 PAGE: 1 of 3

DATE: 10/15/04
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* - INDICATES COMPONENTS NOT SUPPLIED BY YASKAWA.
 - - INDICATES CUSTOMER WIRING.

SEE SHEETS 2 AND 3 FOR NOTES AND TABLES.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17

NOTES:

- CONNECTED TO THE CABINET. CUSTOMER TO CONNECT THE CABINET GROUND LUG TO EARTH GROUND.
- THE MOTOR OVERLOAD RELAY IS FACTORY SET FOR MANUAL RESET. CUSTOMER TO ADJUST THE MOTOR OVERLOAD RELAY TRIP SETTING FOR THE ACTUAL AC MOTOR'S FULL LOAD AMPS.
- INSULATED TWISTED SHIELDED WIRE IS REQUIRED. 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 THE AC CONTROL WIRES.
- FOR E7B BYPASSES WITH A CONTROL TRANSFORMER, T1, POWER RATING OF 350VA OR GREATER, SECONDARY FUSE F6 IS ADDED.
- SERIAL COMMUNICATIONS OPTIONS 3, J, U, V, AND L (SEE TABLE 6 ON SHEET 3):
OPTION 3 = BACKUP, OPTION J = EMBEDDED APOGEE FLN, OPTION V = EMBEDDED MODBUS AND OPTION L = LONWORKS
THE HAND/OFF/AUTO CONTROL KEYPAD MUST BE IN "AUTO" MODE, IF SERIAL COMMUNICATIONS IS TO BE USED TO CONTROL THE DRIVE.
THERE MUST BE JUMPERS ADDED TO THE BYPASS CONTROL PCB A2, FROM TERMINAL TB1(12) TO TERMINAL TB5(5), AND FROM TB1(13) TO TB5(2).
- ON POWER-UP, THIS DRIVE SYSTEM WILL DISPLAY A RED "SAFETY OPEN" LED IN THE "SYSTEM STATUS" AREA OF THE FRONT CONTROL PANEL. IF A NORMALLY CLOSED "SAFETY INTERLOCK" HAS NOT BEEN INSTALLED BETWEEN TB1-1 AND TB1-9 ON THE BYPASS CONTROL PCB A2, THIS CONDITION WILL PREVENT DRIVE OR BYPASS OPERATION.
ONE OF THE FOLLOWING THREE ITEMS NEEDS TO BE DONE PRIOR TO START-UP:
A. INSTALL A NORMALLY CLOSED SAFETY CONTACT BETWEEN TB1-1 AND TB1-9 ON PCB A2.
B. INSTALL A JUMPER BETWEEN TB1-1 AND TB1-9 ON PCB A2, ONLY IF A SAFETY CONTACT WILL BE ADDED LATER IN THE INSTALLATION, OR DE-ACTIVATE THESE TERMINALS BY MOVING DIP SWITCH S2-7 ON PCB A2 TO THE "ON" POSITION (TOWARDS THE CABINET DOOR). THIS IS TO BE DONE ONLY IF A "SAFETY INTERLOCK" WILL NEVER BE APPLIED TO THIS DRIVE SYSTEM.
C. WHEN A RUN COMMAND IS RECEIVED IN THE HAND OR AUTO MODE, THIS DRIVE SYSTEM WILL DISPLAY A RED "DAMPER/BAS" LED IN THE "SYSTEM STATUS" AREA OF THE FRONT CONTROL PANEL. THIS CONDITION WILL PREVENT DRIVE OR BYPASS OPERATION.
ONE OF THE FOLLOWING THREE ITEMS NEEDS TO BE DONE PRIOR TO START-UP:
A. INSTALL A NORMALLY OPEN BAS (BUILDING AUTOMATION SYSTEM) INTERLOCK, OR NORMALLY OPEN DAMPER END SWITCH, BETWEEN TB1-3 AND TB1-9 ON THE BYPASS CONTROL PCB A2.
B. INSTALL A JUMPER BETWEEN TB1-3 AND TB1-9 ON PCB A2, ONLY IF A BAS INTERLOCK, OR DAMPER END SWITCH, WILL BE ADDED LATER IN THE INSTALLATION, OR DE-ACTIVATE THESE TERMINALS BY MOVING DIP SWITCH S2-8 ON PCB A2 TO THE "ON" POSITION (TOWARDS THE CABINET DOOR). THIS IS TO BE DONE ONLY IF A "BAS INTERLOCK", OR DAMPER END SWITCH, WILL NEVER BE APPLIED TO THIS DRIVE SYSTEM.
C. DE-ACTIVATE THESE TERMINALS BY MOVING DIP SWITCH S2-8 ON PCB A2 TO THE "ON" POSITION (TOWARDS THE CABINET DOOR). THIS IS TO BE DONE ONLY IF A "BAS INTERLOCK", OR DAMPER END SWITCH, WILL NEVER BE APPLIED TO THIS DRIVE SYSTEM.
- TERMINAL TB1(9) OF THE ELECTRONIC BYPASS CONTROL PCB IS ONLY FOR USE IN THE "INTERNAL SUPPLY 120VAC LOGIC" CONNECTION DIAGRAM SHOWN ON SHEET 1.

TABLE 1 FACTORY SET DRIVE PARAMETERS

PARAMETER	DATA	UNIT	DESCRIPTION/REMARKS
b1-01	SEE TABLE 6	N/A	FREQUENCY REFERENCE SELECTION
b1-08	1	N/A	RUN COMMAND SELECTION DURING PROGRAMMING - ENABLED
b2-03	0.0	SEC.	DC INJECTION BRAKING TIME AT START
b5-01	SEE TABLE 6	N/A	PI MODE SETTING
d1-01	10.0	HZ.	FREQUENCY REFERENCE 1 - SEE TABLE 6
d1-02	6.0	HZ.	FREQUENCY REFERENCE 2 - SEE TABLE 6
E1-01	480	VOLTS	STANDARD INPUT VOLTAGE SETTING
	208	VOLTS	INPUT VOLTAGE SETTING FOR BASE NUMBER "D_---"
E1-05	460	VOLTS	STANDARD MAXIMUM OUTPUT VOLTAGE SETTING
	208	VOLTS	MAXIMUM OUTPUT VOLTAGE SETTING FOR BASE NUMBER "D_---"
F6-02	SEE TABLE 6	N/A	SERIAL COMMUNICATIONS EXTERNAL FAULT DETECTION SELECTION
F6-03	SEE TABLE 6	N/A	SERIAL COMMUNICATIONS EXTERNAL FAULT STOPPING METHOD SELECTION
H1-01	70	N/A	TERMINAL S3 SET FOR BYPASS DRIVE ENABLE
H1-02	SEE TABLE 6	N/A	TERMINAL S4 SELECTION
H1-03	SEE TABLE 6	N/A	TERMINAL S5 SELECTION
H1-04	SEE TABLE 6	N/A	TERMINAL S6 SELECTION
H2-02	3B	N/A	TERMINALS M3-M4 SET FOR SERIAL COMM. RUN COMMAND
H3-08	SEE TABLE 6	N/A	TERMINAL A2 SIGNAL SELECTION
H3-09	SEE TABLE 6	N/A	TERMINAL A2 FUNCTION SELECTION
H5-02	SEE TABLE 6	N/A	SERIAL COMMUNICATIONS SPEED SELECTION BAUD RATE
H5-07	SEE TABLE 6	N/A	REQUEST TO SEND (RTS) CONTROL SELECTION
H5-08	SEE TABLE 6	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
o2-01	0	N/A	DRIVE DIGITAL OPERATOR KEYPAD "LOCAL/REMOTE" KEY DISABLED, WITH STD. LED STYLE KEYPAD
o2-02	0	N/A	DRIVE DIGITAL OPERATOR KEYPAD "OFF", OR "STOP", KEY DISABLED
o2-03	1	N/A	USER INITIALIZATION FACTORY SET PARAMETER DEFAULT VALUES (FOUND IN A1-03="1110") (PROGRAM LAST)
o2-15	0	N/A	DRIVE DIGITAL OPERATOR KEYPAD "HAND" KEY DISABLED, WITH OPTION Y LCD STYLE KEYPAD
o3-02	1	N/A	DRIVE DIGITAL OPERATOR KEYPAD READ ALLOWED ENABLED

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.

TABLE 2				A.C. LINE WIRING		EARTH GROUND WIRING	
E7 BYPASS MODEL NO. BASE NUMBER E7B * XXXX/Y	MFG. PART NUMBER	CURRENT RATING (AMPS)	WIRE SIZE RANGE (AWG)	TIGHTENING TORQUE (LB.-IN.)	WIRE SIZE RANGE (AWG)	TIGHTENING TORQUE (LB.-IN.)	GROUND LUG
208V 240V 480V							
B001	FAL36003	3	14 - 4	35	14 - 10	35	
D002	A002	7					
D003	A003						
D004	A006	15					
D007	A009						
D010	A015	30	12 - 4	35			
D016	A022						
D024	A028	50	12 - 1/0	80			
D030	B034						
D046	A042	100	12 - 1/0	80	8	40	
D059	A054						
D065	A068						
D074	A080	150	4 - 350 kcmil	250	6 - 4	45	
D088	A104						
D114	A130	250					
D143	A154	250					
D169	A192						
D211	A248	400	1 x (1-600 kcmil) 2 x (1-250 kcmil)	375 2 x 375			
D273	B302	600	(1-3) x (3/0-500 kcmil)	(1-3) x 300			
D343	A312						
D396	A360	800					
	B477						
	B515						
	B590						

WHERE * = V (NEMA 1) OR B (NEMA 12)

TABLE 3

E7 BYPASS MODEL NO. BASE NUMBER E7B * XXXX/Y	A.C. MOTOR WIRING			CONTROL WIRING		
	MFG. PART NUMBER	WIRE SIZE RANGE (AWG)	MOTOR OVERLOAD RELAY	MFG. PART NUMBER	WIRE SIZE RANGE (AWG)	TERMINAL BLOCKS TB1 - TB5
208V 240V 480V						
B001	LRD06	18 - 8			22 - 14	4.4
D002	A002					
D003	A003					
D004	A004					
D007	A006					
D010	A009					
D016	A015					
D024	A022					
D030	A028					
D046	A042					
D059	A054					
D074	A068					
	A080					
	B077					
D088	B096					
D114	A104					
D143	A130					
D169	A154					
D211	A248					
D273	B302					
D343	A312					
D396	A360					
	B414					
	B477					
	B515					
	B590					

WHERE * = V (NEMA 1) OR B (NEMA 12)



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SEE SHEET 3 FOR TABLES 4, 5 AND 6.

