

CONTROL TRANSFORMER PRIMARY CONNECTIONS

INPUT VOLTS	TERMINALS		JUMPER LOCATION
	A	B	
230/240	(H1)	(H4)	(H1) TO (H3) (H2) TO (H4)
460/480	(H1)	(H4)	(H2) TO (H3)

**YASKAWA**  
A World of Automation Solutions™

THIS DOCUMENT AND INFORMATION CONTAINED IN IT ARE CONFIDENTIAL, AND CANNOT BE COPIED OR DISCLOSED IN WHOLE OR IN PART WITHOUT THE EXPRESS WRITTEN CONSENT OF YASKAWA ELECTRIC AMERICA INC.

DRAWN BY: C. VANG	DATE: 1/22/04	TITLE: SCHEMATIC DIAGRAM F7 CONFIGURED WITH OPTION PJ
CHECKED: D.R. CMELAK	DATE: 1/22/04	SIZE: D
TECH: [blank]	DATE: [blank]	REVISION: R00
APPROVED: [blank]	DATE: [blank]	PAGE: 1 of 3
ORIGINAL DESIGN: D.R. CMELAK	DATE: 1/22/04	DRAWING #: F7C-10

\* - INDICATES COMPONENTS NOT SUPPLIED BY YASKAWA.  
 - - INDICATES CUSTOMER WIRING.  
 SEE SHEET 2 AND 3 FOR NOTES AND TABLES.

### CUSTOMER WIRING REQUIREMENTS

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

TABLE 4		EARTH GROUND WIRING		A.C. MOTOR WIRING			OR, WITHOUT OPTION PH, TO STANDARD AC DRIVE
F7 CONFIG. MODEL NO. BASE NUMBER F7C *XXXX		GROUND LUG		WITH OPTION PH, TO LOAD REACTOR L4			
230V	480V	WIRE SIZE RANGE (AWG)	TIGHTENING TORQUE (LB.-IN.)	MFG. PART NUMBER	WIRE SIZE RANGE (AWG)	TIGHTENING TORQUE (LB.-IN.)	
A002	B001	14 - 10	35	RL-0020X	22-14	4.5	CUSTOMER TO SUPPLY A UL LISTED CLOSED-LOOP CONNECTOR, PER THE AC DRIVE TECHNICAL MANUAL
	B002						
A003	B003	14 - 10	35	RL-0040X			
A004							
A006	B004	14 - 10	35	RL-0080X	22-6	16	
	B007						
A009	B011	14 - 10	35	RL-0120X			
A015	B014	14 - 10	35	RL-0180X			
A022		14 - 10	35	RL-02501			
	B021	8	40	RL-02502			
A028	B027	8	40	RL-0350X			
A042		8	40	RL-04501	18-4	20	
	B034	6 - 4	45	RL-03502	22-6	16	
	B040	6 - 4	45	RL-04502	18-4	20	
	B052	6 - 4	45	RL-05502	6-1/0	45	
A054		6 - 4	45	RL-05501			
A068	B065	6 - 4	45	RL-0800X	6-1/0	50	
A080	B077	6 - 4	45	RL-1000X			
	B096						
A104		6 - 4	45	RL-1300X	2-4/0	180	
A130	B124	4 -2/0	120				
A154	B156	4 -2/0	120	RL-1600X	2-4/0	250	
	B180	4 -2/0	120	RL-2500X	2/0-500	250	
A192	B240	4 -2/0	120	RL-2500X	2/0-500	325	
A248							
A312	B302	4 -2/0	120	RL-5000X			
A360	B361						
	B414						
	B477						
	B515	4 -2/0	120	RL-6000X			
	B590						

TABLE 5		OPTION PJ				CONTROL WIRING	
F7 CONFIG. MODEL NO. BASE NUMBER F7C *XXXX		TO F7 DRIVE		OR, TO CDBR A2, A3, A4		TERMINAL BLOCK TB1	
230V	480V	WIRE SIZE RANGE (AWG)	TIGHTENING TORQUE (LB.-IN.)	WIRE SIZE RANGE (AWG)	TIGHTENING TORQUE (LB.-IN.)	WIRE SIZE RANGE (AWG)	TIGHTENING TORQUE (LB.-IN.)
A002	B001	CUSTOMER TO SUPPLY A UL LISTED CLOSED-LOOP CONNECTOR, PER THE AC DRIVE TECHNICAL MANUAL				22 - 8	16
A003	B002						
A004	B003						
A006	B004						
A009	B011						
A015	B014						
A022	B021						
A028	B027						
A042	B034						
A054							
A068		CUSTOMER TO SUPPLY A UL LISTED CLOSED-LOOP CONNECTOR, PER THE AC DRIVE TECHNICAL MANUAL					
A080	B040						
A104	B052						
A130	B065						
A154	B077						
A192	B096						
A248	B124						
A312	B156						
A360	B180						
	B240						
	B302						
	B361						
	B414						
	B477						
	B515						
	B590						

**NOTES:**

1. CONNECTED TO THE CABINET. CUSTOMER TO CONNECT THE CABINET GROUND LUG TO EARTH GROUND.
2. THE CUSTOMER MUST USE TYPE 12 RATED HUBS OR FITTINGS (OR EQUIVALENT) TO MAINTAIN THE ENCLOSURE RATING.
3. IF DRIVE INPUT FUSES (OPTION PF) 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. 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 F7 CONFIGURED WITH A CONTROL TRANSFORMER, T1, POWER RATING OF 350VA OR GREATER, SECONDARY FUSE F6 IS ADDED.
6. CUSTOMER TO REMOVE JUMPERS J1 AND J4 FOR WIRING TO EXTERNAL CONTROL LOGIC, IF APPLICABLE.
7. IF AC MOTOR IS FURNISHED WITH A N.C. THERMAL SWITCH THEN SET DRIVE PARAMETER H1-06 TO 27. THIS WILL CAUSE THE DRIVE TO COAST TO STOP UPON A AC MOTOR THERMAL FAULT.  
CUSTOMER WIRING:  
A. WITHOUT OPTION TV, WIRE BETWEEN DRIVE TERMINALS S8 AND SN, AS PER NOTE 4 ABOVE.  
B. WITH OPTION TV, WIRE BETWEEN TERMINAL 8 OF THE 120VAC INTERFACE CARD AND THE HIGH SIDE OF THE 120VAC SOURCE.
8. OPTIONS TG, TH, TJ, TL OR TQ CONTROL (SEE TABLE 2):  
OPTION TG = DEVICENET (SI-N1)  
OPTION TH = PROFIBUS  
OPTION TJ = MODBUS PLUS  
OPTION TL = LONWORKS  
OPTION TQ = ETHERNET MODBUS TCP/IP
9. WHEN OPTION TL IS ORDERED, A JUMPER IS REQUIRED FROM DRIVE TERMINALS S1 (OR S2) TO SN, SO THAT THE LONWORKS SERIAL COMMUNICATIONS CAN CONTROL THE RUN, STOP AND SPEED OF THE AC MOTOR.  
CUSTOMER TO REPLACE THE JUMPER WITH NORMALLY CLOSED SAFETY INTELLOCKS, IF APPLICABLE.

**TABLE 1** FACTORY SET F7 CONFIGURED DRIVE PARAMETERS

PARAMETER	DATA	UNIT	DESCRIPTION/REMARKS
A1-02	SEE TABLE 3	N/A	CONTROL METHOD SELECTION
b1-01	SEE TABLE 2	N/A	FREQUENCY REFERENCE SELECTION
b1-02	SEE TABLE 2	N/A	RUN COMMAND SELECTION
d1-01	10.0	HZ.	INITIAL FREQUENCY REFERENCE - SEE TABLE 2
E2-01	---	AMPS	MOTOR FULL LOAD AMPS (MUST BE SET BY USER)
L3-04	3	N/A	STALL PREVENTION WITH DYNAMIC BRAKING RESISTOR
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 2** F7C FACTORY SET DRIVE PARAMETERS

OPTION PRESENT		PARAMETER	DRIVE CONTROL BOARD SWITCH S1-1 SETTING	DRIVE REFERENCE		DRIVE RUN/STOP CONTROL		
				DRIVE KEYPAD d1-01	0-10VDC AT TERM. A1 OR 4-20MADC AT TERM. A2	SERIAL COMM.	DRIVE TERMINAL S1 OR S2	DRIVE KEYPAD
YES +		1 ■ 1 ■	OFF ■		YES		YES	
YES		0 1 ■	OFF ■	YES			YES	
YES		1 ■ 0	OFF ■		YES			YES
YES		0 0	OFF ■	YES				YES
	YES +	3 3	OFF ■			YES		YES
	YES	1 ■ 3	OFF ■		YES			YES
	YES	0 3	OFF ■	YES				YES
	YES	3 1 ■	OFF ■			YES	YES	
	YES	3 0	OFF ■			YES		YES
		YES +	2 2	ON		YES		YES
	YES	1 ■ 2	ON		YES			YES
	YES	0 2	ON	YES				YES
	YES	2 1 ■	ON			YES	YES	
	YES	2 0	ON			YES		YES

- + = STANDARD F7 CONFIGURED SET UP
- = FACTORY 2-WIRE INITIALIZATION DEFAULT SETTING

**TABLE 3** F7C FACTORY SET DRIVE PARAMETERS

OPTION PRESENT	PARAMETER
TX OR TY	A1-02
NO	2 ■
YES	3

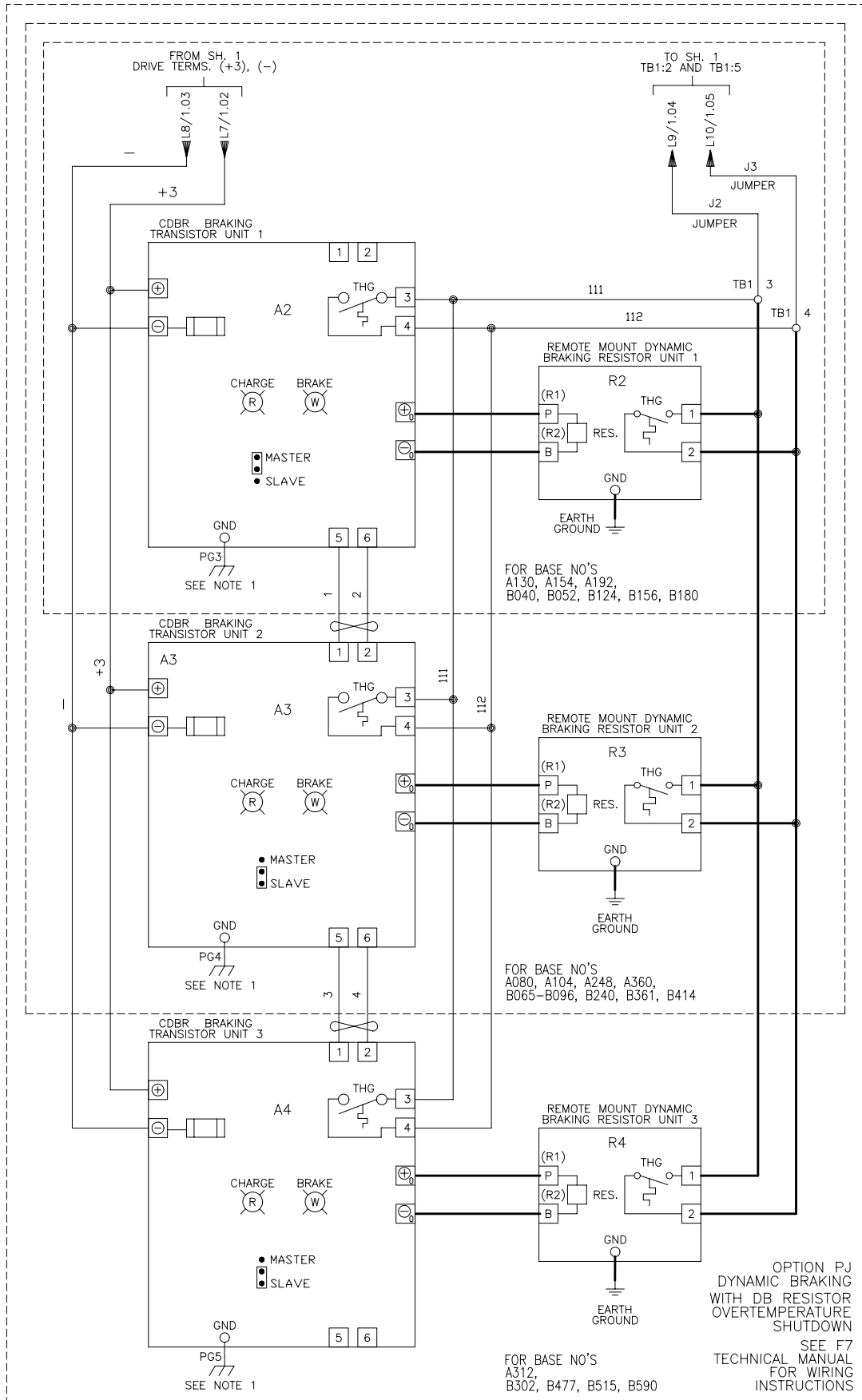
 <b>A World of Automation Solutions™</b>	DRAWN BY: C. VANG	DATE: 01/22/04	TITLE: SCHEMATIC DIAGRAM F7 CONFIGURED WITH OPTION PJ
	CHECKED: D.R. CMELAK	DATE: 1/22/04	
TECH:	DATE:	DATE:	SIZE: D
APPROVED:	DATE:	DATE:	REVISION: R00
ORIGINAL DESIGNER: D.R. CMELAK	DATE: 1/22/04	DATE:	PAGE: 2 of 3
OF YASKAWA ELECTRIC AMERICA INC.	DATE: 1/22/04	DATE:	DRAWING #: F7C-10

**CUSTOMER WIRING REQUIREMENTS**

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

**TABLE 6** A.C. LINE WIRING

F7 CONFIG. MODEL NO. BASE NUMBER F7C *XXXX		TO CIRCUIT BREAKER CB1			
240V	480V	MFG. PART NUMBER	CURRENT RATING (AMPS)	WIRE SIZE RANGE (AWG)	TIGHTENING TORQUE (LB.-IN.)
A002	B001	FAL36003	3	14 - 4	35
	B002				
A003	B003	FAL36007	7		
A004	B004				
A006	B007	FAL36015	15		
A009	B011				
A015	B014	FAL36030	30		
A022	B021			14 - 1/0	80
A028	B027	FAL36050	50		
	B034				
A042	B040	FAL36100	100		
A054	B052				
A068	B065				
	B077				
A080	B096	KAL36150	150	4 - 350 kcmil	250
A104					
A130	B124	KAL36250	250		
A154	B156				
A192	B180				
A248	B240	LAL36400	400	1 x (1-600 kcmil)	1 x 375
A312	B302			2 x (1-250 kcmil)	2 x 375
A360	B361	MAL36600	600	(1-3) x (3/0-500 kcmil)	(1-3) x 300
	B414				
	B477	MAL36800	800		
	B515				
	B590				



- INDICATES CUSTOMER WIRING. SEE SHEET 2 FOR NOTES.

<p><b>YASKAWA</b> A World of Automation Solutions™</p> <p>THIS DOCUMENT AND INFORMATION CONTAINED IN IT ARE CONFIDENTIAL, AND CANNOT BE COPIED OR DISCLOSED IN WHOLE OR IN PART WITHOUT THE EXPRESS WRITTEN CONSENT OF YASKAWA ELECTRIC AMERICA INC.</p>	DRAWN BY: C. VANG CHECKED: D.R. CMELAK TECH:	DATE: 01/22/04 DATE: 1/22/04 DATE:	TITLE: SCHEMATIC DIAGRAM F7 CONFIGURED WITH OPTION PJ
	APPROVED:	DATE:	ORIGINAL DESIGN: D.R. CMELAK DATE: 1/22/04