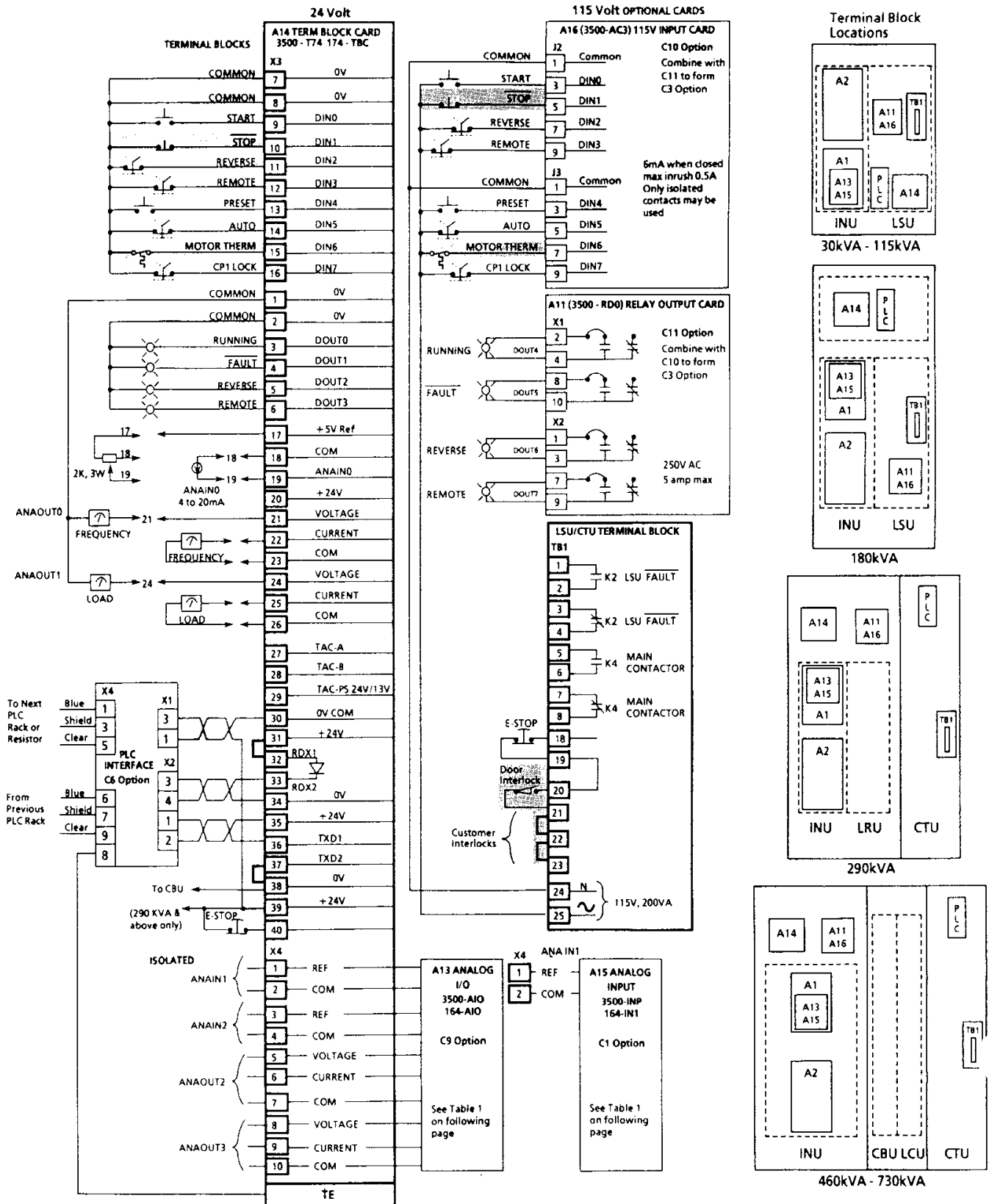


1352 Quick Reference Connection Guide



START-UP -

**Check:** (Refer to 1352C-5.0, Section 5-1)

- Supply and output cables for correct size and connection
- Signal wires and 24 volt control use shielded wire and separate conduit routed away from power wiring
- Grounding is proper per 1352C- 5.0, Section 2-5
- Airflow to and from cabinet is unrestricted
- All packing material is removed
- Motor and cable insulation will withstand 1000 volt minimum
- Incoming power is at correct level on all phases
- 115V AC available at terminals 24 and 25
- 215V AC available at terminals 9 and 12
- Circuit breakers are in "ON" position (F2 on 30kVA to 115kVA, F11 on 180kVA and F11 and F51 on 290kVA and larger)
- Jumpers on Boards (See Table 1)

Adjustments: (Refer to 1352C-5.0, Section 5-5) Note: All parameter values assume use of standard software D-508000-18).

1. Set Parameter 2000 to motor full load amps (10 = 1 ampere).
2. Set Parameter 2003 for peak motor current. Ensure that Parameter 79 does not exceed 1320.
3. Apply power. Set local frequency reference to 10 Hz. and "bump" motor to check direction of rotation.
4. Adjust IR Compensation by setting Parameter 85 to 3 and Parameter 405 to -1. Start motor and then reset Parameter 405 to 0 while motor is running.
5. Save changes to EEPROM by setting Parameter 8 to - 1 and wait for SA-51 to finish displaying. Then reset Parameter 8 to 0.
6. Jumper terminals X3-16 and X3-8 on 3500-T74 Terminal Block Card to lock out any changes to the program via CP1 Control Panel.

Table 1 Jumpers

BOARD	LOCATION	JUMPER	NUMBER	DEFAULT	ALTERNATE
Standard Boards:					
3500-187	A2	S3		A-B Battery Backup	A-C No Battery
		S4		A-B Save to EEPROM	A-C Disable Saving
		S5		A-B 32K bytes	A-C 64K Bytes
		S6		A-B 32K Bytes	A-C 64K Bytes
3500-CBS	CBU	S1		A-C 460 Volt Input	A-B 575 Volt Input
3500-IOC	A1	S6	ANAIN0	A-B Current Input	A-C Voltage Input
Optional Boards:					
3500-INP	A15	S3 & S4	ANAIN1	A-C Current Input	A-B Voltage Input
		S7	ANAIN1	A-C Zero Min Value	A-B Negative Min Value
3500-A10	A13	S1	ANAOUT2	A-C Current Output	A-B Voltage Output
		S2	ANAOUT3	A-C Current Output	A-B Voltage Output
		S3 & S4	ANAIN1	A-C Current Input	A-B Voltage Input
		S7	ANAIN1	A-C Zero Min Value	A-B Negative Min
		S5 & S6	ANAIN2	A-C Current Input	A-B Voltage Input
		S8	ANAIN 2	A-C Zero Min Value	A-B Negative Min
3500-RDO	A11	S1	DOUT 4	A-B Normally Open	A-B Normally Closed
		S2	DOUT 5	A-B Normally Open	A-B Normally Closed
		S3	DOUT 6	A-B Normally Open	A-B Normally Closed
		S4	DOUT 7	A-B Normally Open	A-B Normally Closed

**Parameter ADJUSTMENTS (Refer to 1352C-5.0, Section 5-8)**

Total Current Limit	2000	Full Load current	10 = 1 Amp
Peak Load	2003	Percent	1200 = 120% Momentary Loading capability
Motoring Current Positive Limit	79	Percent	Internally calculated by drive. Must not exceed 1320. Decrease Parameter 2003 to remain within range.
Regenerative Current Negative Limit	80	Percent	Max setting is the negative value of that in Parameter 79.
Motor Power Factor	1547	Motor Full Load Power Factor (PF)	870 = 0.870 PF
Acceleration Rate	64	200	200 = 20 Sec per 100 Hz
Deceleration Rate	66	200	200 = 20 Sec per 100 Hz
Minimum Frequency	63 1682	0	100 = 1 Hz
Maximum Frequency	62 1683	6000	100 = 1 Hz
#1 Preset Frequency	161	Preset Frequency	100 = 1 Hz

**ANALOG INPUT SCALING (Refer to 1352C-5.0, Section 5, Appendix 4)**

Input mA	Drive Output Frequency Hz	Analog Min	Input (1) Max	MUL PARM. 1755	ADD PARM. 2002	Resolution Hz/Bit 10 Bit
0-20	0-60	0	6000	+ 1	0	.058
0-20	0-30	0	3000	+ 1	0	.029
0-20	30-60	0	3000	+ 1	3000	.029
0-20	30-40	0	1000	+ 1	3000	.010
0-20	6-60	0	5400	+ 1	600	.053
4202	0-60	-1500	6000	+ 1	0	.058
4-20	0-30	- 750	3000	+ 1	0	.029
4-20	30-60	- 750	3000	+ 1	3000	.029
4-20	30-40	- 250	1000	+ 1	3000	.010
4-20	6-60	- 1350	5400	+ 1	600	.053
20-4	0-60	- 1500	6000	- 1	6000	.058
20-4	0-30	- 750	3000	- 1	3000	.029
20-4	30-60	- 750	3000	- 1	6000	.029
20-4	30-40	- 250	1000	- 1	4000	.010
20-4	6-60	- 1350	5400	- 1	6000	.053
--10 to + 10V	--60 to + 60	- 6000	6000	+ 1	0	.058

(1) ANALOG INPUT 0

MIN Parameters 1333,1671\*  
MAX Parameters 1332,1672\*\*

FORMULAS:

ANALOG MAX = (MAXFREQ--MINFREQ) X 100

(1) ANALOG INPUT 1

MIN Parameters 1309, 1671\*  
MAX Parameters 1308, 1672\*\*

For 4 to 20 mA signal,

ANALOG MIN =  
ANALOG MAX [((MAXFREQ - MINFREQ) X 100) X 5/4]

(2) Factory Default Setting






\* 1671 is set to the lower of 1333 or 1309

\*\* 1672 is set to the Higher of 1332 or 1308

For 0 to 20 mA (or 0 to 10 volts),

ANALOG MIN = 0

## DISPLAY CODES

	Control Panel 1 Local Frequency Reference (Hertz)
	REMOTE Frequency Reference (Hertz)
	Output Frequency (Hertz)
	Motor Load Current (Amperes)
	Output Voltage

## DIAGNOSTIC CODES

### FAULT ANNUNCIATION

Message	Explanation
FL01	Chopper undervoltage
FL02	Chopper overvoltage
FL03	Auxiliary power fault
FL04	Heatsink overtemp, or fan stopped
FL05	AC current too high
FL06	DC voltage too high
FL07	DC voltage too low

#### Semiconductor Fault

FL09	U-phase, positive leg
FL10	U-phase, negative leg
FL11	V phase, positive leg
FL12	V phase, negative leg
FL13	W phase, positive leg
FL14	W phase, negative leg

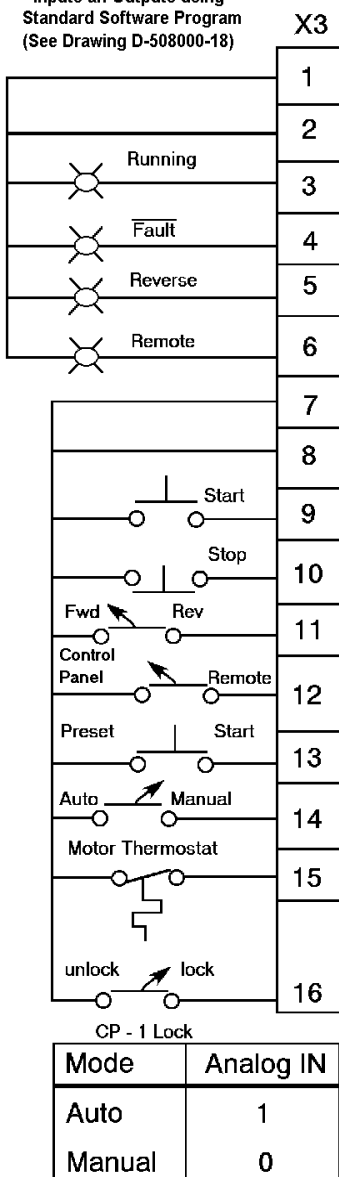
FL15	Output short circuit or ground fault
FL17	Communication Fault
FL18	Tach pulses missing
FL19	Current measurement fault
FL20	Motor stall
FL21	Matching card fault
FL22	Processor failure
FL25	Programmable fault (for customer use)
FL26	Programmable fault (motor overload or electronic overload)

### STATUS ANNUNCIATION

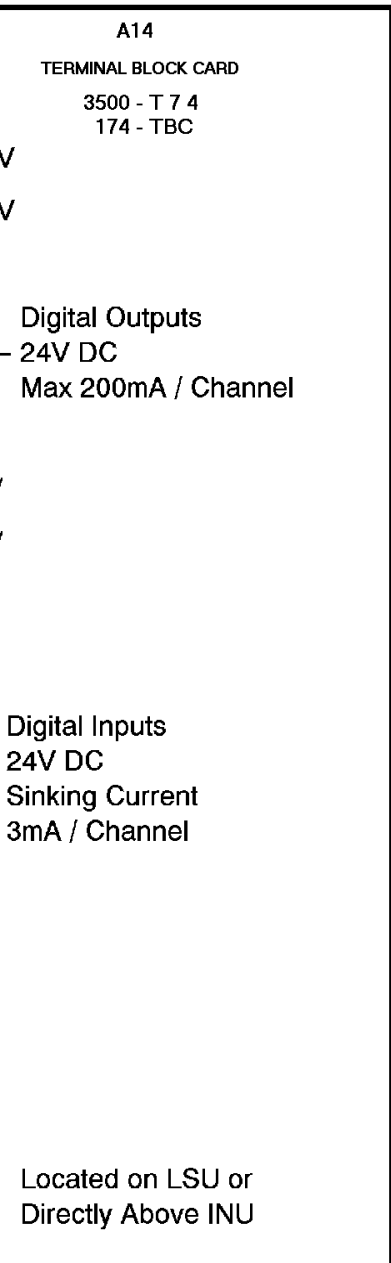
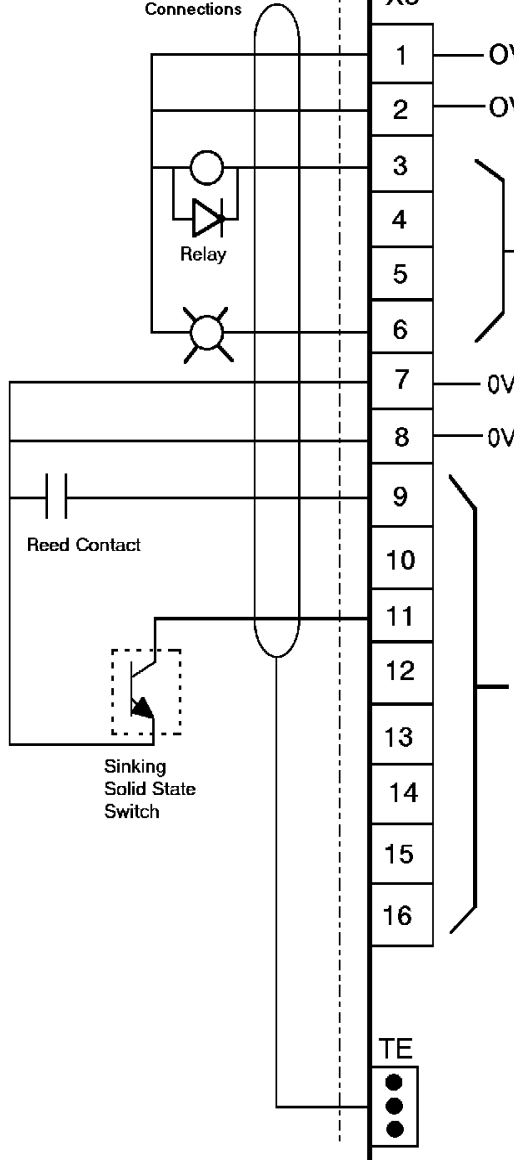
Message	Explanation
SA50	New EEPROM
SA51	EEPROM writing
SA52	Cannot write to EEPROM
SA53	Parameter value too high
SA54	Parameter value too low
SA55	Wrong parameter number
SA56	Battery backup did not work
SA57	Low input voltage
SA58	Start inhibit
SA59	System restart
SAFP11	Auto Baud Rate Identification

# Digital I/O 24V DC

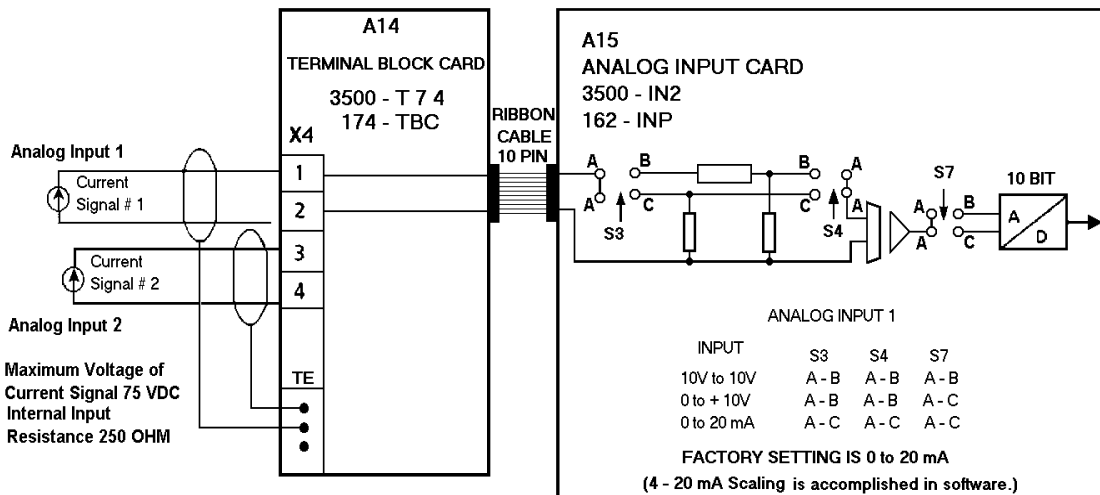
Inputs and Outputs using Standard Software Program (See Drawing D-508000-18)



Example of Customer Connections

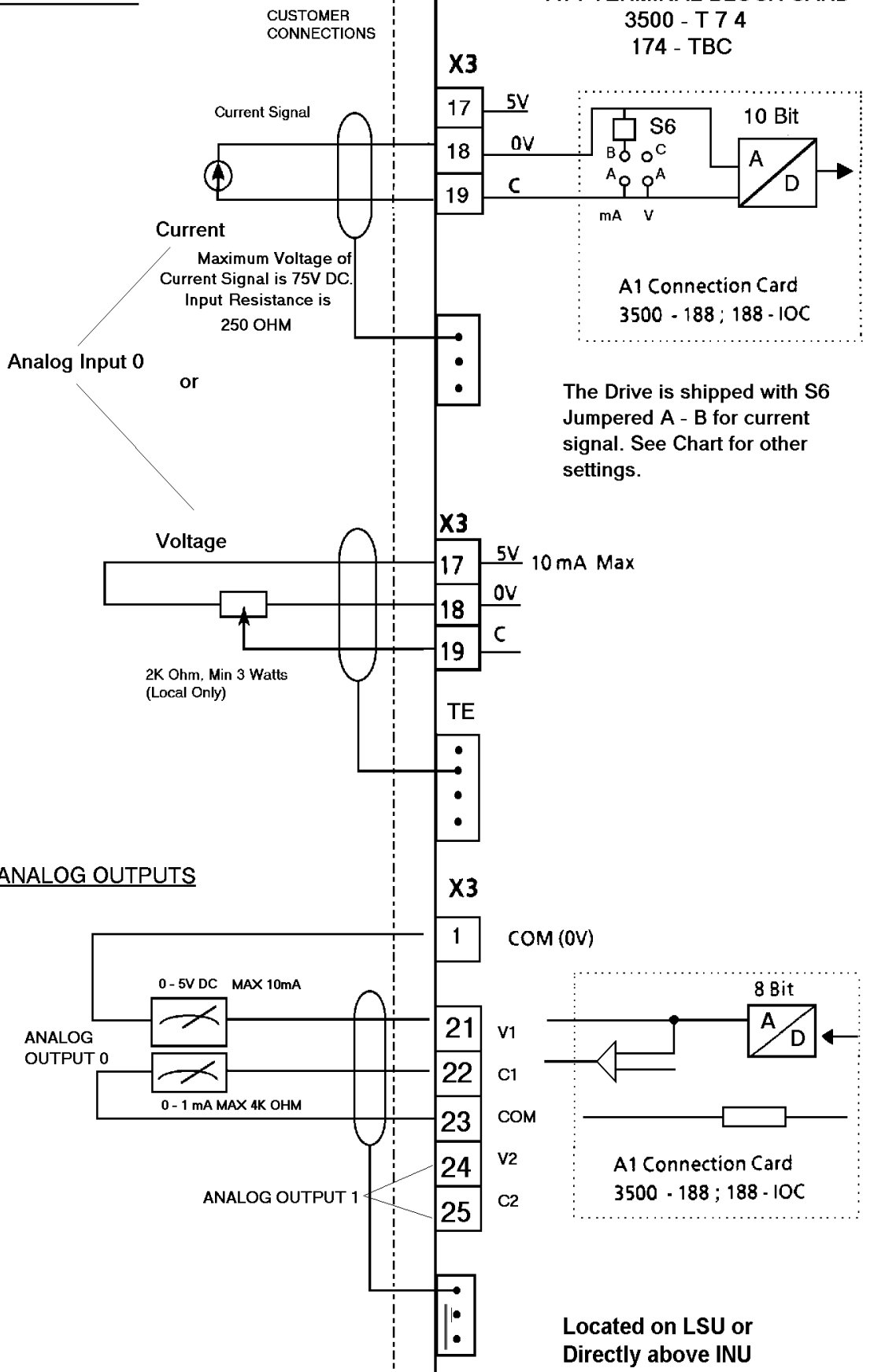


# ISOLATED ANALOG INPUT

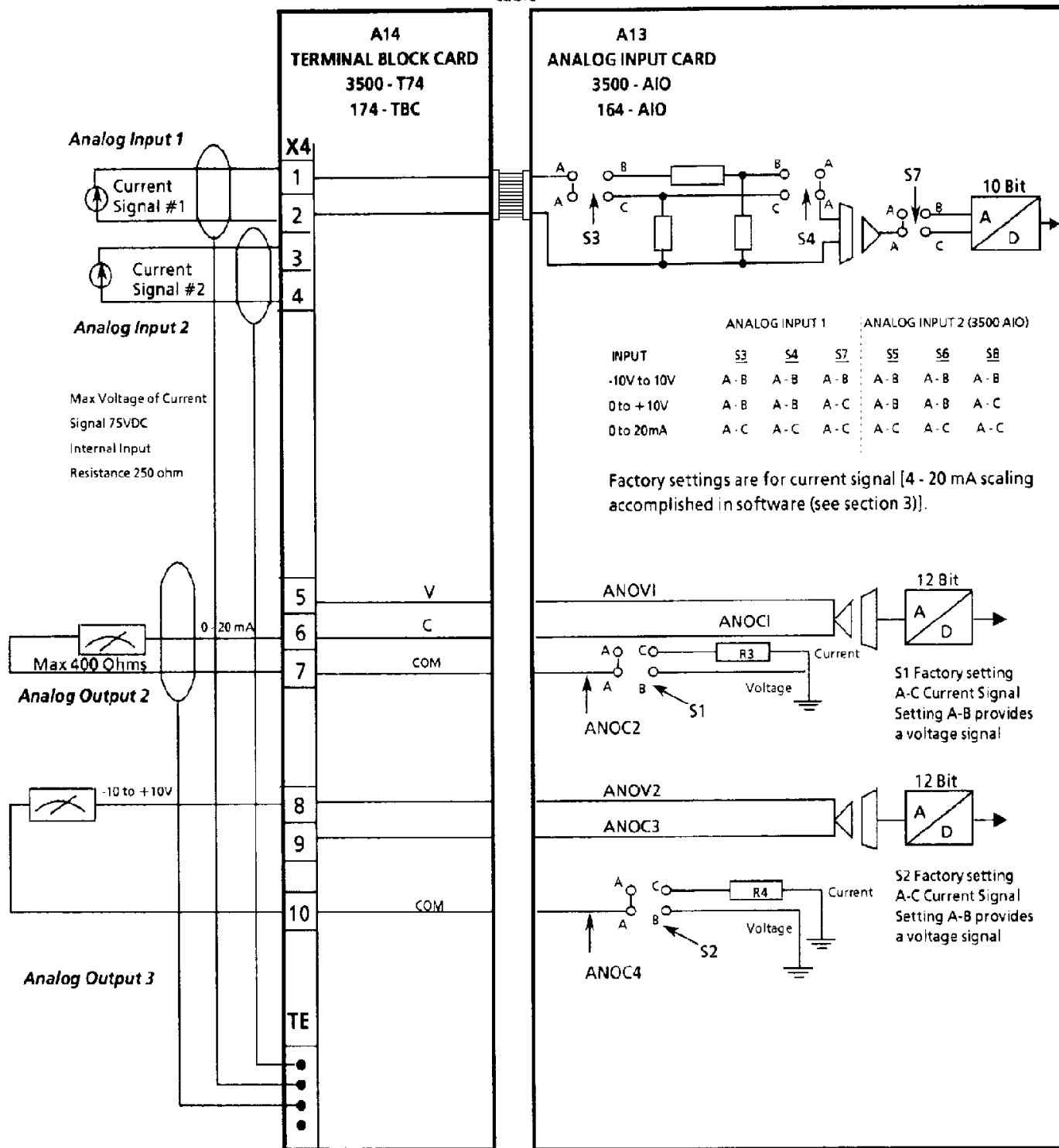


# Non-Isolated Analog Input & Analog Output

## ANALOG INPUT



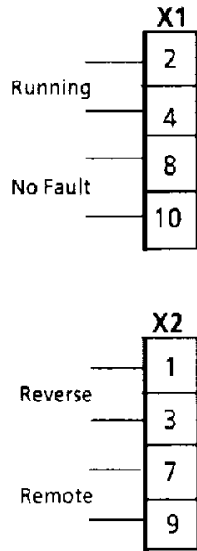
10 Pin Ribbon Cable



Isolated Analog Input & Analog Output

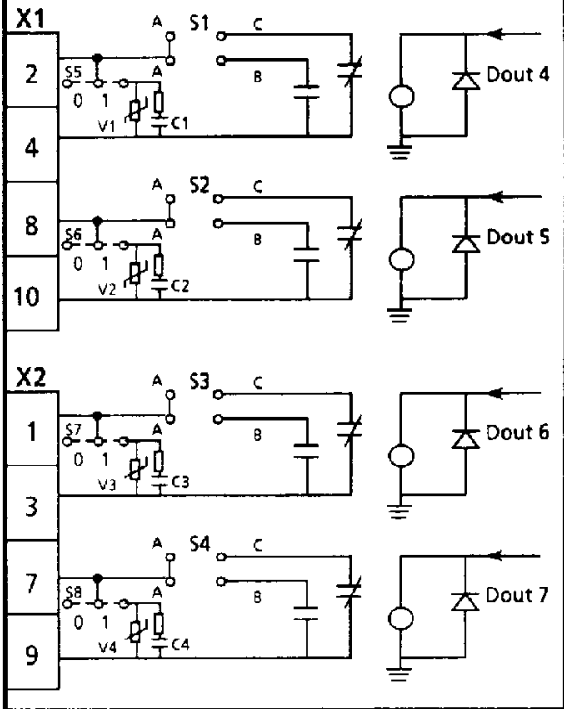
Located on LSU or in INU Bay on large kVA Units

Standard Software Program

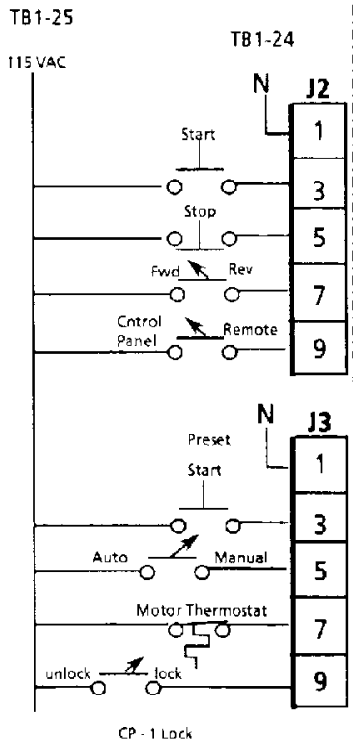


Isolated Contacts rated  
250V AC, 5A  
Max inrush 5A  
Factory Jumper Setting  
A-B (Normally Open)

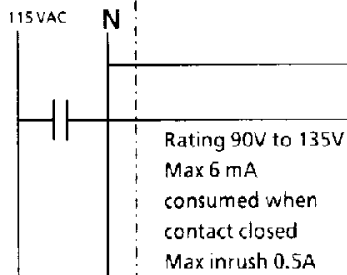
**All RELAY OUTPUT CARD (Option)**  
3500 - RDO  
175 - RDO



Located on LSU

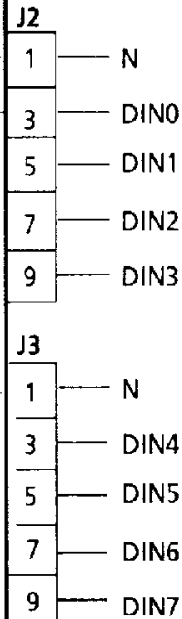


Possible Customer Connection



NOTE: Only isolated contacts may be used.

**A16 INPUT CARD (Option)**  
3500 - AC3



Digital I/O 115V AC