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About This Guide

This procedure is a supplement to and to be used in conjunction with the Installation and Operation Manual for the SP500 Manual for the SP500 A–C Controller I/M D2–3304–1. The procedure is meant to explain and condense the installation and operation manual to the basic and most used applications.

Hardware

Drive Protection

Input Voltage and Motor wiring should be sized in accordance with NEC/CEC and all other local codes. Input fuses should be provided to meet NEC/CEC and all other local codes. Suggested protection is a fused disconnect as described in Section 3.7 of the I/M.

Wiring

Three–phase incoming A–C shall be wired to terminals R, S and T (as shown in figures 1 & 2). Single–phase A–C shall be wired to terminals R and S. A–C input wiring, motor wiring and control wiring should be run in separate conduits. Drive chassis ground and motor frame ground wires should be tied to earth ground.

Figure 1. Power Term 1SU1XXXX and 2SUXXX Controllers

Figure 2. Power Term 1SU4XXXX and 1SU5XXX Controllers

Power Off

Record drive and motor nameplate information including RPM, FLA and HP. Check the drive and motor wiring, with an ohmeter on the highest scale, for grounds. The ohmeter should read in the Megaohm range or totally open. Check that the incoming A–C power is appropriate for the voltage as stated on the nameplate of the drive.

Power On

With motor not wired to the drive, apply power. Drive will go through its own software self–testing procedure for approximately 5 seconds, and then display on the keypad 0.00. At this point you can press the start key on the keypad.

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If FL is displayed on the keypad LEDs, check that there is either a wire or motor thermostat connected between terminals 10, 11 (as shown in figure 3).

WARNING
DRIVE HAS D-C BUS STORAGE CAPACITORS. WITH POWER APPLIED +/- TERMINALS SHOULD = APPROXIMATELY 325 VDC FOR 230 VAC OR 650 VDC FOR 460 VAC DRIVE (AS SHOWN IN FIGURES 1 AND 2.)

Turn off power, allow bus storage capacitors to discharge by letting drive sit without power for 5 minutes or check D–C voltage on +/- terminals. Check motor wiring for the appropriate voltage. Wire motor to U, V and W (as per figure 1 and 2.)

Figure 3. Regulator Terminal Strip

Running the Drive

With motor disconnected from the mechanical load, reapply power and run the drive. With the drive in the local mode (from the keypad), remote led off, press start key and observe motor rotation. If motor rotation is incorrect, turn off power and let bus caps discharge as above, change any two motor leads (at U, V and W).

Run motor up and down the speed range by pressing up/down arrow keys. Connect motor to mechanical load and run drive throughout speed range. Check monitor rpm, percentage load and voltage using mode/enter key. Check calculation in software section for function F–14 motor thermal overload. **Quick start–up is complete.**

If the application requires remote start/stop or analog speed reference read Section 5.0 Adjusting the Values of Drive Functions and Typical Wiring Diagrams, Section 3.0 Installation and Wiring.

Software

For most local applications default values are acceptable as listed on the attached parameter list.

To Change Parameters

- Press stop/reset key to stop the drive.
- Press mode/enter key, Program LED should light.
- Press up/down arrow key until desired function.

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- Press mode/enter button which display value within function.
- Use up/down keys to change parameter content.
- Press mode/enter button.
- Press stop/reset button to exit programming mode.

To View and Clear Error Log

- Press stop/reset key to stop the drive.
- Press mode/enter button to enter program mode.
- Use down arrow key until Err is displayed.
- Press mode/enter keys to scroll through errors.
- Press stop/reset key to clear faults.

Possible Faults

HU D–C high bus voltage condition
LU D–C low bus voltage condition
OL Electronic thermal overload
OH Controller high temperature
OC Overcurrent, short circuit protection
FL External function loss

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Important Parameters to Check

F–00Control source select (0=local, 1=remote control–terminal speed reference, 2=remote start/stop with keypad speed reference, 3=remote tb start/stop with tb multi–speed presets)

F–01Accel time 0.5-30 seconds

F–02Decel time 0.5-30 seconds

F–03Minimum speed

F–04Maximum speed

F–05Current Limit

F–08RPM scaling at abase speed (whatever you want display to read when drive reaches F–07)

F–14Elect thermal overload = (motor overload fla/drive output fla) x 100

Monitoring Speed, Current, Voltage, Percent Speed Reference

While drive is running press mode/enter key until desired LED is lit. RPM LED displays output speed scaled by whatever is in function F–08. Percentage Load LED displays percentage of controller fl output amps. Voltage LED displays motor output voltage. With F–13 set to on, all these LED’s lit, displays remote reference percentage

For Remote Start/Stop via Terminal Board with Speed Pot Reference

F-00=1

NOTES
(1)J6 Speed Ref
Pins 1–2 0–10 VDC
Pins 2–3 0–20 mA
(2)Output 0–10 VDC
Volts, RPM or Percent Load
Depending On Mode On
Mode/Enter Display
(3)Relay Configurable
Function F09
0 Controller Running
1 IET Active
2 Drive at Speed
(4)Connection Must Be
Made To Run

For Multi–Speed Application via Terminal Board with Remote Analog Ref and 3 Multi–Speed Presets

F–00=3 presets are set with functions F–23, F–24 and F–25 as per table in note 5.

NOTES
(1)Open = Stopped
Closed = IET Reset/Start
(2)Output 0–10 VDC
Volts, RPM or Percent Load
Depending On Mode On
Mode/Enter Display
(3)Relay Configurable
Function F09
0 Controller Running
1 IET Active
2 Drive at Speed
(4)Connection Must Be
Made To Run

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For Remote Start/Stop via Terminal Board with Speed Pot Reference.

F–00=1

NOTES
(1)J6 Speed Ref
   Pins 1–2 0–10 VDC
   Pins 2–3 0–20 mA
(2)Output 0–10 VDC
   Volts, RPM or Percent Load
   Depending On Mode On
   Mode/Enter Display
(3)Relay Configurable
   Function F09
   0 Controller Running
   1 IET Active
   2 Drive at Speed
(4)Connection Must Be
   Made To Run

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SP500 I/M D2-3304-1 Parameter List

Function	Description	Range	Default
F-00	CONTROL SOURCE SELECT	0 = LOCAL 1 = REMOTE TB CONTROLS ANA REF 2 = REMOTE TB CONTROLS LOCAL REF 3 = REMOTE TB CONTROLS, MULTI SPD PRESETS	0
F-01	ACCEL RATE	0.5-30 SECONDS	5.0
F-02	DECEL RATE	0.5-30 SECONDS	5.0
F-03	MINIMUM SPEED	0.5-30 Hz	5.0
F-04	MAXIMUM SPEED	30-240 Hz	60
F-05	CURRENT LIMIT	10-150 PERCENT	150
F-06	MAN TORQUE BST	2-10	2
F-07	VOLTZ/HERTZ	3-240 Hz	60
F-08	RPM SCALING@BASE	10-9999	1750
F-09	CONFIG OUTPUT RELAY	0=CONTROLLER RUNNING 1=IET ACTIVE 2=DRIVE AT SPEED	0
F-10	CARRIER FREQ	4,6,8 kHz	4
F-11	REMOTE REF GAIN	60-100%	100
F-12	REMOTE REF OFFSET	0-40%	0
F-13	PER SEL SPD REF	ON, OFF ON=ENABLED	OFF
F-14	ELECTR THERM OVLD	20-100%	100
F-15	ELEC THERM ENABLE	OFF, ON	ON
F-16	COAST STOP ENABLE	OFF, ON	ON
F-17	REVERSE DISABLE	OFF, ON	OFF
F-18	RPM SETPOINT ENABLE	OFF, ON	OFF
F-19	POWER-UP START ENAB	OFF, ON	OFF
F-20	PASSWORD LOCKOUT	OFF, ON	OFF
F-21	AVOIDANCE FREQ	MIN-MAX FREQ	5
F-22	AVOIDANCE BAND	0-10.0 (HZ)	0.0
F-23	MULTI-SPD PRESET	MIN-MAX FREQ	20
F-24	MULTI-SPD PRESET 2	MIN-MAX FREQ	20
F-25	MULTI-SPD PRESET 3	MIN-MAX FREQ	20
F-26	AUTO RESTART NUMBER ATTEMPTS	0-10 RESETTABLE FAULTS OVERTEMP - OT OVERCURRENT - OC HIGH BUS - HU LOW BUS - LU THERMAL OVERLOAD - OL	0
F-27	AUTO RESTART RETRY WAIT TIME	1-30 SECONDS	1.0
F-28	CONTROL VOLTAGE	INPUT VOLTAGE DEPENDENT	
F-49	SOFTWARE VERSION		
ERR	ERROR LOG		

EReliance Electric Company, 1995.

NOTE: This material is not intended to provide operational instructions. Appropriate Reliance Electric Industrial Company instruction manuals and precautions should be studied prior to installation, operation or maintenance of equipment.

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