

DIGITAL TESTMETER OPTION PCB

46S02509-0010 SCHEMATIC 45S02509-0010

DESCRIPTION

To further assist in monitoring controller performance or diagnosing faults, a Digital Testmeter can be added internally. Mounted to the Inverter Main PCB, the meter features a liquid crystal diode (LCD) digital display and function selector to read and display the following:

- (1) All Low Voltage Power Supplies (6 total)
- (2) Controlled Current Reference
- (3) Controlled Current Feedback
- (4) Drive Output Frequency
- (5) Input Line Volts
- (6) Speed Reference Input
- (7) Inverter Bus Voltage
- (8) Inverter Output Clamp Voltage
- (9) Motor Terminal Volts
- (10) Go/No-Go Test of Rectifier and Inverter Firing Circuit

INSTALLATION

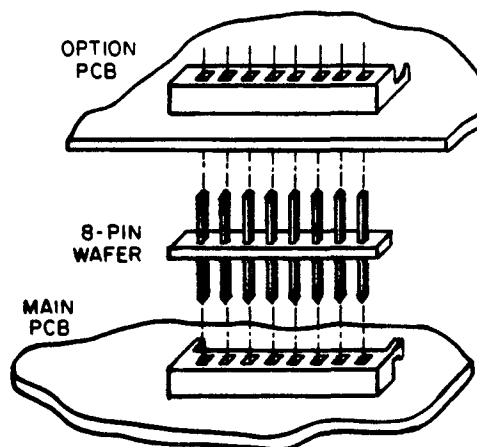
CAUTION

TESTMETER PCB CONTAINS CMOS DEVICES. REFER TO SECTION VI OF INSTRUCTION MANUAL BEFORE REMOVING OR REPLACING PCB. FAILURE TO OBSERVE HANDLING PROCEDURES MAY RESULT IN PCB FAILURE OR PERFORMANCE DEGRADATION.

WARNING

DISCONNECT AND LOCK-OUT INCOMING THREE-PHASE POWER BEFORE REMOVING OR INSTALLING PCB.

The Digital Testmeter PCB mounts to four standoffs located on the top portion of the Inverter Main PCB (See Figure 7-3 in the Instruction Manual). Connection to the Inverter Main PCB is made thru 201CONN and 202CONN located on the bottom of the Digital Testmeter PCB. Connection to the Rectifier Main PCB is made thru ribbon cable 101 CONN. To install the Digital Testmeter PCB, first install the standoffs onto the Inverter Main PCB. Next, insert 8-pin wafers into 201CONN and 202CONN on the Inverter Main PCB (see illustration). Locate the



Digital Testmeter PCB so that pins on the wafers are lined up with holes on the back of the PCB behind 201CONN and 202CONN. Then push the PCB onto the

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1	STD-2305	5/9/85	
2	STD-2426	12/18/85	
3	STD-2582	7/16/86	

wafer pins and standoffs. Finally, connect ribbon cable 101CONN between the Digital Testmeter PCB and the Rectifier Main PCB. Make sure all connectors are snug.

If the Digital Testmeter PCB is being added after the drive has been installed, refer to section 1.2 in the Instruction Manual for instructions on how to update the 53SL number.

ADJUSTMENTS

The Digital Testmeter is factory calibrated and should not be adjusted.

TROUBLESHOOTING WITH TESTMETER

The Testmeter is provided as an aid to troubleshooting in addition to the information provided in the Instruction Manual. The two charts on the Testmeter nameplate provide a listing of signals monitored by the Testmeter, along with expected Testmeter readings for those signals. The same listing is given in Table 1 and 2, with reference to test points located on the Inverter and Rectifier Main PCBs where the signals also may be monitored.

The Logic Flow Charts provided in the Instruction Manual incorporate use of the Testmeter wherever possible. When the Testmeter is used, the step block is divided. The bottom portion pertains

only to use of the Testmeter. The letters TM indicate use of the Testmeter. The numbers in parenthesis after the TM are as follows (Testmeter switch number - switch position). Values given below the switch position number indicate the expected Testmeter reading.

The "SCR" LED on the Digital Testmeter PCB provides indication of proper operation of SCR firing circuits. Switch 2SS determines which SCR firing circuit is being monitored. Positions 1-6 monitor 1-6 SCR-R firing circuits respectively, and positions 7-12 monitor 1-6SCR-I firing circuits respectively. If any of the circuits does not yield the expected results (as given in Table 2), refer to the Instruction Manual to check for proper FET output waveforms. To check for correct FET outputs in the Inverter, the Digital Testmeter PCB must first be removed and all electrical connections disconnected.

The results gained from switch 2SS are dependant on the 1SS position selected. When 1SS is in position 11, the SCR testing circuits associated with 2SS use the Rectifier Refire Pulses for synchronism. When 1SS is in any other position, the SCR testing circuits use the Combined Rectifier Pulses for synchronism. Results for both 1SS switch positions at 6Hz dwell and top speed are given in Table 2.

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Table 1. "Meter" Switch (1SS) Test Data

SWITCH POSITION	SIGNAL	TEST POINT	EXPECTED TM VALUE	CONDITIONS
0	+24VDC	3TP(R)	+25 ±6V	With 460VAC input power applied.
1	-24VDC	9TP(R)	-25 ±6V	With 460VAC input power applied.
2	+15VDC	4TP(R)	+15 ±1V	With 460VAC input power applied.
3	-15VDC	8TP(R)	-15 ±1V	With 460VAC input power applied.
4	+10VDC	5TP(R)	+10 ±.4V	With 460VAC input power applied.
5	-10VDC	7TP(R)	-10 ±.4V	With 460VAC input power applied.
6	I REF	31TP(R)	+7.4 ±.5V	At Full Load Amps.
7	I FDBK	25TP(R)	+5 ±.2V	At Full Load Amps.
8	SPEED REF	3TP(I)	+10 ±.4V	At Top Speed.
9	GENERAL T.P.	N/A	0 to ±19.9V	Signal connected to "TEST POINT" (5TP) on Testmeter.
10	OUTPUT FREQ	8TP(I)	6.0 ±.25V	At Top Speed.
11	SCR PULSES INV	*	N/A	*
12	3Ø LINE VOLTS	13TP(I)	460 ±9.2V	When input voltage is 460VAC.
13	BUS VOLTS	33TP(R)	540 ±80V	At top speed, full load.
14	CLAMP VOLTS	6TP(I)	900 ±100V	At top speed, full load.
15	OUTPUT VOLTS	4TP(I)	460 ±9.2V	At output voltage of 460VAC.

* See Table 2.

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Table 2. "SCR" Switch (2SS) Test Data

SWITCH POSITION	SIGNAL	TEST POINT	"SCR" LED (2LED) INDICATION				
			6HZ DWELL		TOP SPEED		
			1SS POS 11	1SS POS 12	1SS POS 11	1SS POS 12	
0							
1	1SCR-R	1FET-R	Blinks Randomly	Steady Green	Steady Green	Steady Green	
2	2SCR-R	2FET-R	↓	↓	↓	↓	
3	3SCR-R	3FET-R					
4	4SCR-R	4FET-R					
5	5SCR-R	5FET-R					
6	6SCR-R	6FET-R					
7	1SCR-I	1FET-I	Blinks Periodically	Blinks Periodically			
8	2SCR-I	2FET-I	↓	↓			
9	3SCR-I	3FET-I					
10	4SCR-I	4FET-I					
11	5SCR-I	5FET-I					
12	6SCR-I	6FET-I	↓	↓	↓	↓	
13							
14							
15							

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