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S-3260
AUTOMATED TEST SYSTEM

PROGRAMMING THE MC-3 MONITOR/POWER SUPPLY OPTION

Software Manual

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SEMICONDUCTOR TEST SYSTEMS

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Programming the MC-3

Monitor/Power Supply Option

MC-3 is a power supply control and measurement option for use on the S-3260 Automated Test System. MC-3 permits software-controlled current and voltage monitoring of four auxiliary power supplies (VS5 through VS8).

The MC-3 Monitor/Power Supply Option consists of the Current/Voltage Monitor Card (P819), mounting hardware, connecting cables, software, and four auxiliary power supplies, and an optional current supply (IS2).

Power Supply Configurations

Four voltage supplies and one optional current supply, mounted in an 1140A Programmable Power Supply mainframe, form an MC-3 power supply configuration. The supplies VS5 through VS8 are selected from the six basic voltage modules listed in Table 1. The optional IS2 current supply is identical to IS1.

Table 2 shows 14 standard power supply configurations. If your configuration is not listed in this table, use Table 1 (1140A Power Supply Modules) to determine the power supply specifications for your system. Additional information on the current and voltage modules is available in Table 1-1 of the *1140A Programmable Power Supply* manual (070-3108).

To meet any special requirements not covered by the modules, additional supplies are used outside the 1140A. Configurations PS-4 and PS-12 (Table 2) are such examples.

Table 1

1140A Power Supply Modules

V_{max}	I_{max}*	I_{meas}
±7 V	1.9 A	±2.0 A
±15 V	1.4 A	±1.5 A
±21 V	0.9 A	±1.0 A
±40 V	0.45 A	±0.5 A
±72 V	0.2 A	±0.25 A
±100 V	0.12 A	±0.125 A

V_{max} = Maximum Supply Voltage

I_{max} = Maximum Supply Current

I_{meas} = Current Measurement Range

*Maximum sink current on all modules is 100 mA

Table 2

MC-3 Power Supply Configurations

Option No.	VS5			VS6			VS7			VS8			IS2
	V_{max}	I_{max}	I_{meas} Range	V_{max}	I_{max}	I_{meas} Range	V_{max}	I_{max}	I_{meas} Range	V_{max}	I_{max}	I_{meas} Range	
PS-0	±7 V	1.9 A	±2.0 A	±7 V	1.9 A	±2.0 A	±40 V	0.45 A	±0.5 A	±40 V	0.45 A	±0.5 A	Optional 200 mA 20 mA 2 mA Ranges
PS-1	±7 V	1.9 A	±2.0 A	±7 V	1.9 A	±2.0 A	±15 V	1.4 A	±2.0 A	±15 V	1.4 A	±2.0 A	
PS-2	±40 V	0.45 A	±0.5 A	±40 V	0.45 A	±0.5 A	±40 V	0.45 A	±0.5 A	±100 V	0.12 A	±0.125A	
PS-3	±15 V	1.4 A	±2.0 A	±15 V	1.4 A	±2.0 A	±15 V	1.4 A	±2.0 A	±15 V	1.4 A	±2.0 A	
PS-4	±5 V†	5.0 A	±5.0 A	±24 V†	2.0 A	±2.0 A	±50 V†	1.0 A	±1.0 A	±50 V†	1.0 A	±1.0 A	
PS-5	±7 V	1.9 A	±2.0 A	±21 V	0.9 A	±1.0 A	±50 V†	1.0 A	±1.0 A	±72 V	0.2 A	±0.25 A	
PS-6	±40 V	0.45 A	±0.5 A	±40 V	0.45 A	±0.5 A	±100 V*	0.12 A	±0.125 A	±100 V	0.12 A	±0.125 A	
PS-7	±21 V	0.9 A	±1.0 A	±21 V	0.9 A	±1.0 A	±40 V	0.45 A	±0.5 A	±100 V	0.12 A	±0.125 A	
PS-8	±7 V	1.9 A	±2.0 A	±15 V	1.4 A	±2.0 A	±40 V	0.45 A	±0.5 A	±72 V	0.2 A	±0.25 A	
PS-9	±15 V	1.4 A	±2.0 A	±15 V	1.4 A	±2.0 A	±40 V	0.45 A	±0.5 A	±100 V	0.12 A	±0.125 A	
PS-10	±7 V	1.9 A	±2.0 A	±21 V	0.9 A	±1.0 A	±40 V	0.45 A	±0.5 A	±100 V	0.12 A	±0.125 A	
PS-11	±40 V	0.45 A	±0.5 A	±40 V	0.45 A	±0.5 A	±15 V	1.4 A	±2.0 A	±15 V	1.4 A	±2.0 A	
PS-12	±50 V†	5.0 A	±5.0 A	±7 V	1.9 A	±2.0 A	±15 V	1.4 A	±2.0 A	±40 V	0.45 A	±0.5 A	
PS-13	±40 V	0.45 A	±0.5 A	±40 V	0.45 A	±0.5 A	±40 V	0.45 A	±0.5 A	±40 V	0.45 A	±0.5 A	

V_{max} = Maximum Supply Voltage
I_{max} = Maximum Supply Current
I_{meas} = Current Measurement Range

*100-volt supply module only programs to 79.99 volts in 10 mV increments.

† special supplies not part of 1140A

The MC-3 Software

The MC-3 software controls and MC-3 voltage- and current-monitoring functions. The software consists of eight subroutines and eight functions (see Table 3). The same statements program all power supply configurations. (The IS2 current supply is programmed with the IS2 statement as explained in the TEKTEST Language manual.)

Table 3

Program Statements

Purpose	VS5	VS6	VS7	VS8	
Enable Supply	EVS5	EVS6	EVS7	EVS8	Subroutines
Disable Supply	DVS5	DVS6	DVS7	DVS8	
Measure Voltage on Supply	MVS5 (V)	MVS6 (V)	MVS7 (V)	MVS8 (V)	Functions
Measure Current on Supply	IVS5	IVS6	IVS7	IVS8	

Function and Subroutine Declarations

Functions and subroutines must be declared once in the test program prior to the function or subroutine call. The declarations for the MC-3 functions and subroutines which program VS5 are shown below. (The routines programming VS6, VS7, and VS8 may be similarly declared.)

```
SUBROUTINE EVS5(0),DVS5(0):MC3

FUNCTION MVS5(V),IVS5(0):MC3
```

The EVS, DVS, and IVS subprograms do not require arguments. The MVS subprogram's argument V specifies the voltage measurement range. If the value specified falls between two ranges, the software selects the next higher measurement range.

MC3 is the name of the file that contains the MC-3 functions and subroutines.

Program Example

Let's consider power supply VS8 and its associated program statements: EVS8, DVS8, MVS8, and IVS8. As shown in this example, these statements respectively enable and disable VS8, and measure its voltage and current. The supply's output voltage and current limit were set previously with the VS statement as explained in the TEKTEST Language manual.

Example:

>1.05 FUNCTION MVS8(V),IVS8(0):MC3	(Function declaration)
>1.10 SUBROUTINE EVS8(0),DVS8(0):MC3	(Subroutine declaration)
>1.15 EVS8	(Enable VS8)
>1.20 X=MVS8(10)	(Measure voltage on VS8)
>1.25 Y=IVS8	(Measure current on VS8)
>1.30 DVS8	(Disable VS8)

NOTE

For each voltage or current measurement statement, the DC Subsystem makes 10 measurements (12 measurements on systems operating from a 50 Hz line) and calculates the average value. This value is then returned to the main program.

No check is made for a conflicting DC Subsystem setup by the MC3 voltage or current measurement statements. Any existing setup to measure current/voltage or force current/voltage is disturbed by the MC3 voltage or current measurement statements, and just prior to their completion the DC Subsystem is disabled.

Power Supply Access Locations

Table 4

Access Locations for MC-3 Power Supplies

	LOCAL	REMOTE	
Power Supply Line	1803 Undersocket Connector J50	1843 Undersocket Connector J750	1843 HI, HL, HS Load Boards
VS5 Sense	A1	A1	P38
VS5	A2, A3	A2, A3	P39, P40
VS5 Gnd	A4, A5	A4, A5	P41, P42
VS5 Sense Gnd	A6	A6	P43
VS6 Sense	A7	A7	P44
VS6	A8	A8	P45
VS6 Gnd	A9	A9	P46
VS6 Sense Gnd	A10	A10	P47
VS7 Sense	A11	A11	P48
VS7	A12	A12	P49
VS7 Gnd	A13	A13	P51
VS7 Sense Gnd	A14	A14	P52
VS8 Sense	A15	A15	P53
VS8	A16	A16	P54
VS8 Gnd	A17	A17	P55
VS8 Sense Gnd	A18	A18	P56
IS2	J504 pin 3 DC Load Board	None	P6

Table 4 gives the supplies' access locations for local and remote test stations. On the 1803 Test Station, power supply voltages VS5 through VS8 may be accessed on the A side of the undersocket connector (J50). The current supply IS2 is accessible via the Type DC Load Board (J504, pin 3). IS1 is available on all 1803 sector cards but, unlike IS2, it requires no special wiring. The *1803 Test Station Type D Interconnection System Writing* manual (062-3390) provides additional information.

On systems with an 1843 Remote Test Fixture, the undersocket connector (J750) provides access to VS5 through VS8. The voltage supplies and the current supply are also accessible at the Type HI, HL, and HS load boards at these locations: VS5 through VS8 at the peripheral pogos near sectors 38 through 56, and IS2 at the peripheral pogo P6. For additional information, see also the *Preparing and Programming the 1843 Remote Test Fixture* manual (062-3354).

Wiring Power Supply Ground

For proper operation, the GND and SENSE GND lines must be grounded to the test fixture (see Figure 1). The ground connection supplies a path for the sense-current flowing in the SENSE GND lead.

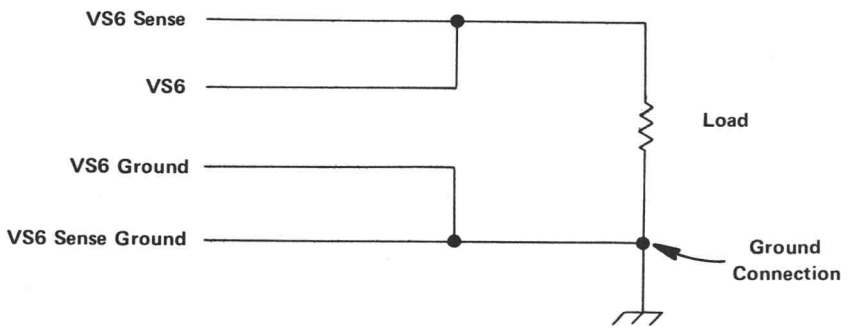

Figure 1. Power Supply Ground Wiring.