

## Table of Contents

SECTION	TITLE	PAGE
<b>1</b>	<b>INTRODUCTION AND SPECIFICATION .....</b>	<b>1-1</b>
	1-1. INTRODUCTION .....	1-1
	1-7. BASIC CALIBRATION .....	1-1
	1-8. Series Common Features .....	1-1
	1-14. Storage System Models .....	1-2
	1-16. Element Resistant Models .....	1-2
	1-18. OPTIONS .....	1-2
	1-19. Analog Options .....	1-2
	1-21. Interface Options .....	1-2
	1-24. Boost Mode Accessories .....	1-2
	1-25. SPECIFICATIONS .....	1-2
	1-26. Summarized Specifications .....	1-2
	1-28. Complete Specifications .....	1-3
<b>2</b>	<b>OPERATING INSTRUCTIONS .....</b>	<b>2-1</b>
	2-1. INTRODUCTION .....	2-1
	2-3. SHIPPING INFORMATION .....	2-1
	2-5. OPTIONS AND ACCESSORIES .....	2-1
	2-7. INSTALLATION .....	2-1
	2-9. OPERATING FEATURES .....	2-2
	2-10. Front Panel Controls .....	2-2
	2-31. Rear Panel .....	2-2
	2-33. Error Messages .....	2-2
	2-35. List (Storage Only) .....	2-2
	2-40. Program Write-Protect (Storage Only) .....	2-13
	2-42. LOCAL OPERATION .....	2-15
	2-43. Initialization .....	2-15
	2-45. Status During Function Change .....	2-15
	2-47. Meter Connection Procedure .....	2-15
	2-49. DC Voltage Output .....	2-15
	2-51. AC Voltage Output .....	2-16
	2-53. Wideband Output .....	2-17
	2-55. Direct Current Output .....	2-17
	2-57. Alternating Current Output .....	2-18
	2-59. Resistance Output .....	2-19
	2-61. dBm Output (AC Volts Only) .....	2-19
	2-63. Boost Mode Operation .....	2-20
	2-72. Enter Entry Limit .....	2-21
	2-74. Tolerance Limit Entry .....	2-22
	2-76. Error Mode Operation .....	2-22
	2-91. NEW REF/CAL 1Ω Operation .....	2-23

*(continued on page ii)*

**TABLE OF CONTENTS, continued****TABLE OF CONTENTS, continued**

<b>SECTION</b>	<b>TITLE</b>	<b>PAGE</b>
2-97.	Fractional-Scale Operation .....	2-34
2-100.	External Oscillator Operation .....	2-24
2-104.	Recall Operations .....	2-25
2-107.	Storage System Operations (Storage Only) .....	2-25
2-133.	REMOTE OPERATION .....	2-28
2-137.	Initiation Characters .....	2-29
2-148.	String Commands .....	2-30
<b>3</b>	<b>THEORY OF OPERATION .....</b>	<b>3-1</b>
3-1.	INTRODUCTION .....	3-1
3-4.	INSTRUMENT BLOCK DIAGRAM .....	3-1
3-9.	FUNCTIONAL BLOCK DIAGRAM .....	3-1
3-10.	DC Voltage Less Than 20 Volts .....	3-1
3-13.	AC Voltage .....	3-4
3-17.	AC and DC Voltage, 20 Volts and Higher .....	3-4
3-19.	AC Current Under 200 mA .....	3-4
3-22.	DC Current Under 200 mA .....	3-9
3-24.	Direct and Alternating Current >200 mA .....	3-9
3-26.	Resistance .....	3-9
3-28.	Control System .....	3-9
3-38.	DETAILED CIRCUIT ANALYSIS .....	3-14
3-40.	Power Supply Regulator .....	3-14
3-55.	Digital-Analog Converter (DAC) .....	3-16
3-68.	Analog Control .....	3-17
3-82.	Power Amplifier .....	3-18
3-99.	Extended High Voltage .....	3-19
3-105.	Oscillator .....	3-20
3-114.	Ranging Assembly .....	3-21
3-135.	Controller .....	3-22
3-145.	Front Panel .....	3-22
3-151.	Guard Isolator .....	3-22
3-155.	Tape Interface (Storage Only) .....	3-22
<b>4</b>	<b>MAINTENANCE .....</b>	<b>4-1</b>
4-1.	INTRODUCTION .....	4-1
4-3.	SERVICE INFORMATION .....	4-1
4-6.	GENERAL MAINTENANCE .....	4-1
4-7.	Cleaning .....	4-1
4-9.	Air Filter Maintenance .....	4-1
4-11.	Line Voltage Selection .....	4-2
4-13.	Fuse Replacement .....	4-2
4-15.	Instrument Assembly/Disassembly .....	4-2
4-39.	PERFORMANCE TEST .....	4-5
4-43.	Calibration Test Equipment Accuracy Considerations .....	4-5
4-47.	Equipment Preparation .....	4-6
4-49.	DC Offset Voltage .....	4-7
4-51.	DC Voltage Tests .....	4-8
4-53.	DC Ripple and Noise Tests .....	4-9
4-55.	DC Current Tests .....	4-10
4-57.	AC Voltage Tests .....	4-11
4-59.	AC Distortion and Noise Tests .....	4-13
4-61.	Frequency Accuracy Tests .....	4-13
4-63.	Resistance Tests .....	4-14
4-67.	AC Current Tests .....	4-15
4-70.	Overload Tests .....	4-16
4-73.	Storage System Test (Storage Only) .....	4-16
4-76.	CALIBRATION PROCEDURE .....	4-16
4-77.	Introduction .....	4-16
4-81.	Power Supply Calibration .....	4-17

(continued on page iii)

<b>SECTION</b>	<b>TITLE</b>	<b>PAGE</b>
4-83.	Power Amplifier (A17) Calibration .....	4-17
4-90.	Reference Voltage Calibration .....	4-19
4-92.	Low Range Ohms Calibration .....	4-20
4-94.	DC Zero Calibration .....	4-20
4-98.	High Range Ohms Calibration .....	4-21
4-101.	Millivolt Range Calibration .....	4-22
4-103.	AC Calibration .....	4-22
4-105.	Storage System Calibration (Storage Only) .....	4-23
4-107.	Factory Selected Component Replacement .....	4-23
4-117.	TROUBLESHOOTING .....	4-26
<b>5</b>	<b>LISTS OF REPLACEABLE PARTS .....</b>	<b>5-1</b>
5-1.	TABLE OF CONTENTS .....	5-1
5-4.	INTRODUCTION .....	5-2
5-4.	HOW TO OBTAIN PARTS .....	5-2
<b>6</b>	<b>OPTION AND ACCESSORY INFORMATION .....</b>	<b>6-1</b>
6-2.	TABLE OF CONTENTS .....	6-1
<b>7</b>	<b>GENERAL INFORMATION .....</b>	<b>7-1</b>
<b>7A</b>	<b>MANUAL CHANGE INFORMATION .....</b>	<b>7A-1</b>
<b>8</b>	<b>SCHEMATIC DIAGRAMS .....</b>	<b>8-1</b>
8-1.	TABLE OF CONTENTS .....	8-1

mlm





