

TECHNICAL MANUAL

**OPERATOR, ORGANIZATIONAL, DIRECT SUPPORT,
AND GENERAL SUPPORT MAINTENANCE**

**WATTMETER
AN/URM-120A**

**(SIERRA 164B-G3
(NSN 6625-01-039-1488)**

**This copy is a reprint which includes current
Pages from Changes 1 and 2.**

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**ORGANIZATIONAL, DIRECT SUPPORT, AND GENERAL SUPPORT MAINTENANCE MANUAL
FOR**

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(SIERRA 164B-G3)
(NSN 6625-01-039-1488)**

REPORTING OF ERRORS

You can improve this manual by recommending improvements using DA Form 2028-2 located in the back of the manual. Simply tear out the self-addressed form, fill it out as shown on the sample, fold it where shown, and drop it in the mail.

If there are no blank DA Forms 2028-2 in the back of your manual, use the standard DA Form 2028 (Recommended Changes to Publications and Blank Forms) and forward to the Commander, US Army Communications and Electronics Materiel Readiness Command, ATTN: DRSEL-ME-MQ, Fort Monmouth, NJ 07703.

In either case a reply will be furnished direct to you.

This manual is an authentication of the manufacturer's commercial literature which, through usage, has been found to cover the data required to operate and maintain this equipment. The manual was not prepared in accordance with military specifications; therefore, the format has not been structured to consider categories of maintenance.

TABLE OF CONTENTS

Para		Page
0.	INSTRUCTIONS.	1
1.	GENERAL.	1
2.	DESCRIPTION	2
3.	SPECIFICATIONS	2
4.	THEORY OF OPERATION	4
	Line and Meter Unit	4
	Plug-in Elements	4
5.	OPERATION	4
	Insertion of Plug-in Elements	4
	Removal of Plug-in Elements	5
	Incident Power Measurement	5
	Reflected Power Measurement	5
	VSWR	5
	Power Absorbed by Load	6
	Percentage of Modulation	6
	Directivity Error	6
	Application Note	8
6.	MAINTENANCE	8
	Cleaning and Lubrication	8
	Inspection	8
	Performance Verification	9
	Troubleshooting	9
	Disassembly, Repair, and Replacement	9
7.	STORAGE AND RESHIPMENT	9
8.	REPLACEABLE PARTS	9
	APPENDIX A – REFERENCES	A-1
	APPENDIX B – COMPONENTS OF END ITEM LIST (Not Applicable)	
	APPENDIX C – ADDITIONAL AUTHORIZATION LIST (Not Applicable)	
	APPENDIX D – MAINTENANCE ALLOCATION	D-1

0. INSTRUCTIONS

0-1. Scope.

This manual describes Wattmeter AN/URM-120A and provides maintenance instructions. Throughout this manual, Wattmeter AN/URM-120A is referred to as the Sierra 164B-G3 Bi-Directional Power Monitor Set.

0-2. Indexes of Publications.

a. DA Pam 310-4. Refer to the latest issue of DA Pam 310-4 to determine whether there are new editions, changes, or additional publications pertaining to the equipment.

b. DA Pam 310-7. Refer to DA Pam 310-7 to determine whether there are modification work orders (MWO's) pertaining to the equipment.

0-3. Forms and Records.

a. Reports of Maintenance and Unsatisfactory Equipment. Maintenance forms, records, and reports which are to be used by maintenance personnel at all levels of maintenance are listed in and prescribed by TM 38-750.

b. Report of Packaging and Handling Deficiencies. Fill out and forward DD Form 6 (Packaging Improvement Report) as prescribed in AR 700-58/NAVSUPINST 4030.29/AFR 71-13/MCO P4030.29A and DSAR 4145.8.

c. Discrepancy in Shipment Report (DISREP) (SF 361). Fill out and forward Discrepancy in Shipment Report (DISREP) (SF 361) as prescribed in AR 55-38/NAVSUPINST 4610.33A/AFR 75-18/MCO P4619.19B and DSAR 4500.15.

0-4. Reporting of Equipment Improvement Recommendations (EIR).

EIRs will be prepared using DA Form 2407, Maintenance Request. Instructions for preparing EIRs are provided in TM 38-750, The Army Maintenance Management System. EIR's should be mailed directly to Commander, US Army Communications and Electronics Materiel Readiness Command, ATTN: DRSEL-ME-MQ, Fort Monmouth, New Jersey 07703. A reply will be furnished directly to you.

0-5. Administrative Storage.

Administrative storage of equipment issued to and used by Army activities shall be in accordance with TM 740-90-1.

0-6. Destruction of Army Electronics Materiel.

Destruction of Army electronics materiel to prevent enemy use shall be in accordance with TM 750-244-2.

1. GENERAL

1.01 This manual covers the Sierra 164B-C3 Bi-Directional Power Monitor Set. Included are description, specifications, operation, maintenance, and a replaceable parts list. The components of the Bi-Directional Power Monitor Set are as follows (see Figure 1):

Bi-Directional Power Monitor 164B

Plug-in Element 181A-250

Plug-in Element 181A-1000

Plug-in Element 270A-30

Carrying Case 164B-CC.

1.02 The Bi-Directional Power Monitor Set is a compact, versatile instrument for intermittent or continuous measuring of incident and reflected power or precise convenient matching of loads to lines. Power is read directly on a linear scale with accuracy of $\pm 5\%$. The meter is also calibrated to read VSWR directly. So long as incident power is above a minimum requirement, a simple adjustment makes it possible to read VSWR directly from the meter scale.

1.03 Principal features of the 164B-G3 are:

- Measures incident and reflected power, 2 MHz to 1000 MHz.
- Any one of the plug-in elements offers a selection of four switchable power levels over a given frequency range.
- Covers a power range from 100 mw to 1000 watts, depending on frequency (see Table 3-2).
- Meter reads VSWR directly.
- Designed to operate in 50-ohm coaxial systems.

1.04 The 164B measures power flowing in 50-ohm coaxial transmission line systems. Using specially designed plug-in elements, the instrument measures incident or reflected average power up to 1000 watts. The meter

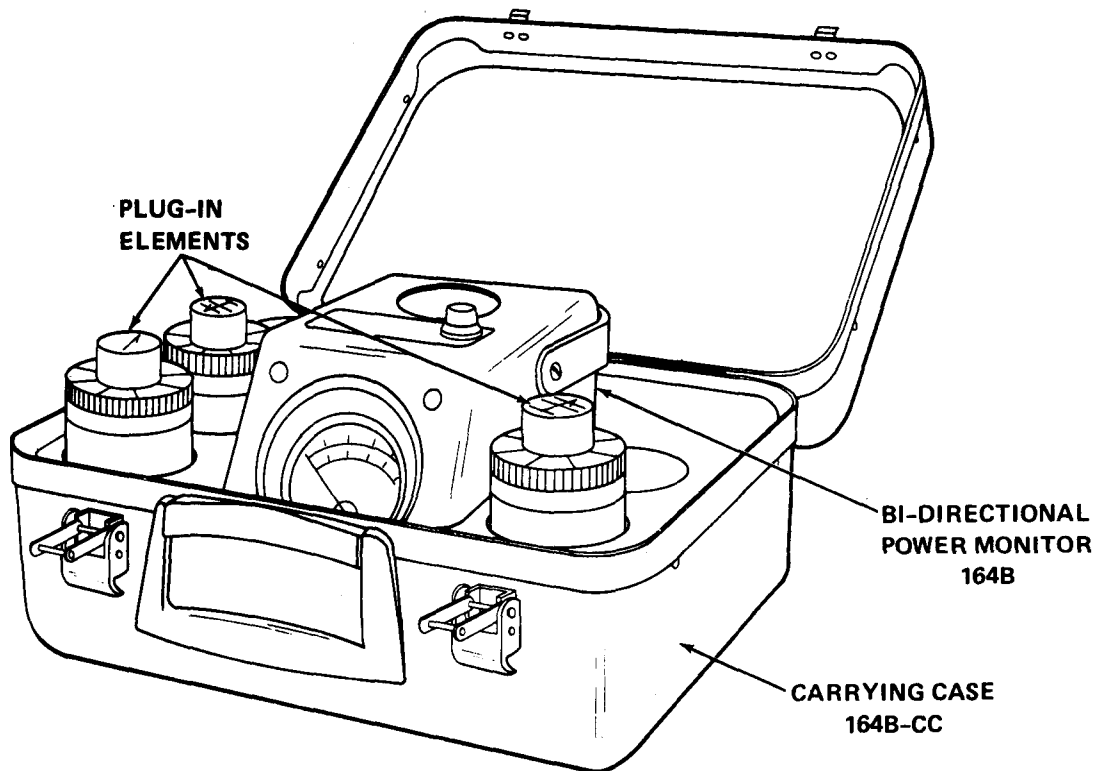


Figure 1. Sierra 164B-G3 Bi-Directional Power Monitor Set

scale is also calibrated to read VSWR directly. The frequency range covered is 2 to 1000 megahertz. Each element covers a specific frequency range and four power ranges. (See Table 3-2.)

1.05 The 164B is designed to be connected in series with the coaxial transmission line being tested at any point between the rf source and the load. Rotation of the element is all that is required to read incident or reflected power in any power range.

2. DESCRIPTION

2.01 The 164B is contained in a small, lightweight metal case. The indicating meter is shock mounted in a die-cast case to provide protection in normal field use. This case is equipped with a carrying strap for maximum portability. All other parts are of rugged construction to assure continuous service and long life. Both meter and plug-in element may be easily removed from the case for remote monitoring.

2.02 The plug-in element projects through a hole in the top of the case. On the exposed end of the element there is an etched dial and a knob by which the desired power range is selected. The outer rim of the element is knurled so that it may be easily turned. 180 degrees ro-

tation selects the direction in which power flow along the coaxial line is to be measured. A pin stop determines the element position in either direction.

2.03 Plug-in Elements 181A-250 and 270A-30 have a frequency correction chart mounted on the power range selector knob. The multiplier is to be applied to power readings taken at or near the frequencies indicated. No correction is required for the remainder of the frequency range.

2.04 The upper and lower parts of the case are held together with fasteners which permit easy access to the element, the primary line body and the indicating meter. The case must be opened in order to remove or replace the element. Three nylon wedges hold the insert firmly in place. These wedges are held in position by a clamp located on the primary line body.

2.05 The instrument is entirely self-contained and requires no external source of power, aside from that which is being measured.

3. SPECIFICATIONS

3.01 Table 3-1 lists the overall specifications for the 164B-G3.