

TECHNICAL MANUAL

OPERATOR'S, ORGANIZATIONAL, DIRECT SUPPORT,

AND GENERAL SUPPORT MAINTENANCE MANUAL

INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST

(INCLUDING DEPOT MAINTENANCE REPAIR PARTS

AND SPECIAL TOOLS)

FOR

VOLTMETER, ELECTRONIC AN/URM-145B

(NSN 6625-00-437-4865)

This copy is a reprint which includes current
pages from Changes 1. The title was
changed by Change 1.

HEADQUARTERS, DEPARTMENT OF THE ARMY

31 OCTOBER 1974

TECHNICAL MANUAL

No. 11-6625-524-14-2

HEADQUARTERS
 DEPARTMENT OF THE ARMY
 WASHINGTON, DC, 31 October 1974

**OPERATOR'S ORGANIZATIONAL, DIRECT SUPPORT, AND
 GENERAL SUPPORT MAINTENANCE MANUAL**

**VOLTMETER, ELECTRONIC AN/URM-145B
 (NSN 6625-00-437-4865)**

	Paragraph	Page
CHAPTER 1. INTRODUCTION		
SECTION I. General		
Scope	1-1	1-1
Indexes of publications	1-2	1-1
Forms and records	1-3	1-1
Administrative storage	1-3.1	1-1
Destruction of Army electronics materiel	1-3.2	1-1
Reporting of errors	1-4	1-1
Reporting Equipment Improvement Recommendations (EIR)	1-4.1	1-1
SECTION II. Description and data		
Description and use	1-5	1-1
Technical characteristics	1-6	1-2
Items comprising an operable equipment	1-7	1-2
CHAPTER 2. INSTALLATION		
Unpacking	2-1	2-1
Checking unpacked equipment	2-2	2-1
Cable connections	2-3	2-1
CHAPTER 3. OPERATING INSTRUCTIONS		
General	3-1	3-1
Preliminary operating instructions	3-2	3-1
Controls and indicators	3-3	3-1
Operating procedures	3-4	3-1
CHAPTER 4. OPERATOR'S AND ORGANIZATIONAL MAINTENANCE		
Scope of maintenance	4-1	4-1
Preventive maintenance	4-2	4-1
Preventive maintenance checks and services periods	4-3	4-1
Cleaning	4-4	4-2
Rustproofing and painting	4-5	4-2
CHAPTER 5. CIRCUIT FUNCTIONING		
Block diagram	5-1	5-1
Rf probe	5-2	5-3
Range selector switch	5-3	5-3
Input filter	5-4	5-3
Dc modulator	5-5	5-3
Narrow band preamplifier	5-6	5-3
Driver and output circuit	5-7	5-4
Synchronous demodulator	5-8	5-5
Driver	5-9	5-5
Reference amplifier	5-10	5-6
Dc feedback and calibration controls	5-11	5-6
Output, linearizing networks, and meter circuit	5-12	5-6
Regulated power supply	5-13	5-7

TABLE OF CONTENTS - Continued

		Paragraph	Page
CHAPTER 6.	GENERAL SUPPORT MAINTENANCE INSTRUCTIONS		
SECTION I.	Troubleshooting		
II.	Troubleshooting techniques	6-1	6-1
	Tools and Test Equipment		
	Tools and Test equipment required for troubleshooting	6-2	6-3
	Troubleshooting chart	6-3	6-3
	Signal tracing	6-4	6-3
	Dcresistance of transformers	6-5	6-4
III.	Maintenance		
	Alignment	6-6	6-4
	Removal of pc board	6-7	6-4
	Replacement of pc board	6-8	6-5
CHAPTER 7.	GENERAL SUPPORT TESTING PROCEDURES		
	General testing procedures	7-1	7-1
	Test equipment required	7-2	7-1
	Power supply test	7-3	7-1
	Preamplifier and amplifier test	7-4	7-2
	Voltage accuracy test	7-5	7-2
APPENDIX A.	REFERENCES		A-1
B.	ORGANIZATIONAL, DIRECT SUPPORT, AND GENERAL SUPPORT MAINTENANCE REPAIR PARTS AND SPECIAL TOOLS LIST (INCLUDING DEPOT MAINTENANCE REPAIR PARTS AND SPECIAL TOOLS) (Deleted)		
APPENDIX C.	MAINTENANCE ALLOCATION		
SECTION I.	Introduction		C-1
II.	II. Maintenance allocation chart		C-3
III.	Tool and test equipment requirements		C-4
IV.	Remarks		C-5

LIST OF ILLUSTRATIONS

Figure No.	Title	Page
1-1	Voltmeter, Electronic AN/URM-145B	1-0
1-2	Input capacitance of RF probe (measured at 10 MHz)	1-2
1-3	Input resistance of rf probe	1-3
2-1	Typical packaging diagram	2-1
3-1	Front panel controls	3-2
3-2	Rear panel controls	3-3
5-1	Block diagram	5-2
5-2	Rf probe, simplified schematic diagram	5-2
5-3	Narrow band preamplifier, schematic diagram	5-4
5-4	Driver and output, schematic diagram	5-4
5-5	Synchronous demodulator, simplified schematic diagram	5-5
5-6	Driver, simplified schematic diagram	5-5
5-7	Reference amplifier, simplified schematic diagram	5-6
5-8	Scale correction network, schematic diagram	5-7
5-9	Regulated power supply, simplified schematic diagram	5-7
5-10	Voltmeter, Electronic AN/URM-145B, schematic diagram	5-7
6-1	Voltage and resistance measurements	6-2
6-2	Amplifier board 3A2, location of parts	6-5
6-3	Calibration board 3A3, location of parts	6-6
6-4	Regulated power supply 3A1, location parts	6-7
7-1	Power supply test setup	7-1
7-2	Preamplifier and amplifier test setup	7-2
7-3	Voltage accuracy test setup	7-3

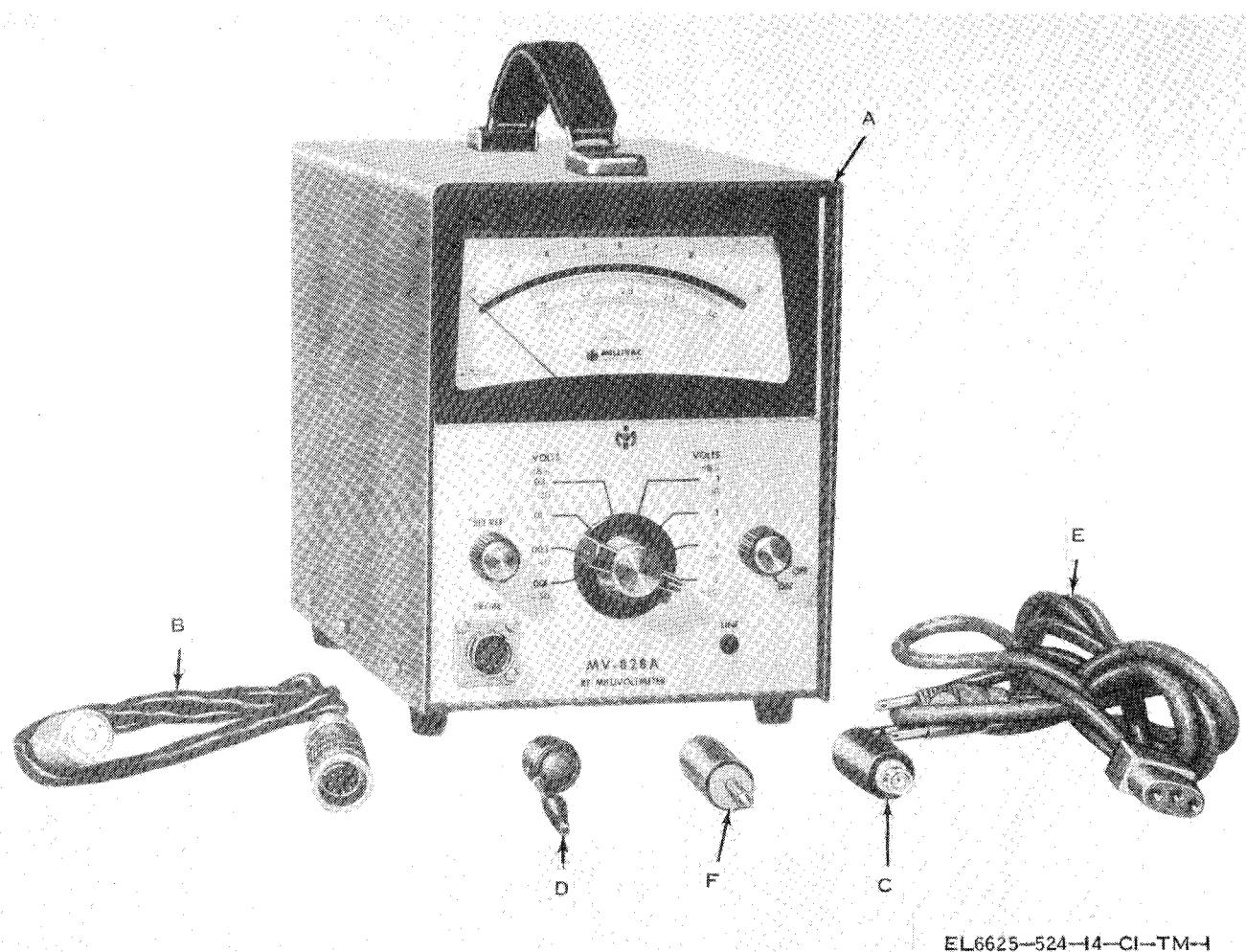


Figure 1-1. Voltmeter, Electronic AN/URM-145B.

EL6625-524-14-CI-TM-1

CHAPTER 1

INTRODUCTION

Section 1. GENERAL

1-1. Scope

This manual describes Voltmeter, Electronic AN/URM-145B (fig. 1-1) and provides instructions for operation and organizational, direct support, and general support (GS) maintenance. Instructions are provided for the operator and the organizational maintenance personnel for installation, operation, preventive maintenance, and replacement of parts available at organizational maintenance. Circuit functioning is included for general support maintenance, together with instructions appropriate to this category of maintenance for troubleshooting, testing, adjusting, aligning and repairing the equipment and replacing maintenance parts.

1-2. 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.

1-3. 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 maintenance levels 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 P4610.19B, and DSAR 4500.15.

1-3.1. Administrative Storage

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

1-3.2. Destruction of Army Electronics Materiel.

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

1-4. Reporting of Errors.

You can help improve this manual by calling attention to errors and by recommending improvements and stating your reasons for the recommendations. Your letter or DA Form 2028 (Recommended Changes to Publications and Blank Forms) should be mailed direct to Commander, US Army Electronics Command, ATTN: DRSEL-MA-Q, Fort Monmouth, New Jersey 07703. A reply will be furnished direct to you.

1-4.1. Reporting Equipment Improvement Recommendations (EIR).

EIR's will be prepared using DA Form 2407 (Maintenance Request). Instructions for preparing EIR's are provided in TM 38-750, The Army Maintenance Management System. EIR's should be mailed direct to Commander, US Army Electronics Command, ATTN: DRSEL-MA-Q, Fort Monmouth, New Jersey 07703. A reply will be furnished direct to you.

Section II. DESCRIPTION AND DATA

1-5. Description and Use

a. Voltmeter, Electronic AN/URM-145B (voltmeter) is a sensitive instrument for the measurement of voltages of 300 microvolt (uv) to 3 volts spanning a frequency range of 20 kilohertz (KHz) to 600 megahertz (MHz). In addition to conveniently measuring voltage levels in a diversity of radiofrequency (rf) circuits, the instrument has application

for many associated tests. Such measurements include the frequency response of both active and passive networks; that is, amplifiers, and filters; voltage standing wave ratio (vswr) anti return loss on transmission lines and attendant systems; attenuation and insertion loss of rf attenuators; and high frequency parameters of transistors. With true root mean square (rms) response below 0.03 volt, wide band noise can be measured, and by use