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Technical Manual)

No. 11-6625-3071-14)

HEADQUARTERS)
DEPARTMENT OF THE ARMY
Washington, DC, 5 March 1985

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

DIGITAL MULTIMETER HP MODEL 3478A

Serial Numbers: 2136A00101 and Greater

IMPORTANT NOTICE

If the Serial Number of your instrument is lower than the one on this title page, the manual contains revisions that do not apply to your instrument. Backdating information given in the manual adapts it to earlier instruments.

Where practical, backdating information is integrated into the text, parts list and schematic diagrams. Backdating changes are denoted by a delta sign. An open delta (a) or lettered delta (AA) on a given page, refers to the corresponding backdating note on that page.

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. mail your letter, DA Form 2028 (recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in the back of this manual direct to: Commander, US Army Communications-Electronics Command and Fort Monmouth, ATTN: DRSEL-ME-MP, Fort Monmouth, NJ 07703-5007.

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

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SECTION 0 INTRODUCTION

0-1. SCOPE

This manual describes the Digital Multimeter, HP Model 3478A and provides instructions for operation and maintenance.

0-2. CONSOLIDATED INDEX OF ARMY PUBLICATIONS AND BLANK FORMS

Refer to the latest issue of DA Pam 310-1 to determine whether there are new editions, changes or additional publications pertaining to the equipment.

0-3. MAINTENANCE FORMS, RECORDS, AND REPORTS

- a. Reports of Maintenance and Unsatisfactory Equipment. Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA Pam 738-750, as contained in Maintenance Management Update.
- b. Report of Packaging and Handling Deficiencies. Fill out and forward SF 364 (Report of Discrepancy (ROD)) as prescribed in AR 735-11-2/DLAR 4140.55/ NAVMATINST 4355.73A/AFR 400-54/MCO 4430.3F.
- 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 4610.33C/AFR 75-18/MCO P4610.19D/DLAR 4500.15.

0-4. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR)

If your equipment needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design. Put it on an SF 368 (Quality Deficiency Report). Mail it to Commander, US Army Communications-Electronics Command and Fort Monmouth, ATTN: DRSEL-ME-MP, Fort Monmouth, NJ 07703-5007. We'll send you a reply.

0-5. ADMINISTRATIVE STORAGE

Administrative storage of equipment issued to and used by Army activities will have preventive maintenance performed in accordance with the PMCS charts for storing. When removing the equipment from administrative storage the PMCS should be performed to assure operational readiness. Disassembly and repacking of equipment for shipment or limited storage is covered in paragraph 2-27.

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.

SECTION I GENERAL INFORMATION

WARNING

The information in this manual is for the use of Service Trained Personnel. To avoid electrical shock, do not perform any procedures in the manual or do any servicing to the 3478A unless you are qualified to do so.

1-1. INTRODUCTION

1-2. The information in this manual is for the Installation, Operation, Performance, Calibration, and Service of the 3478A Digital Multimeter. The manual is designed for the use of Service Trained Personnel. Other use should refer to the Operators Manual. This manual separated into the following sections.

1-3. Section I, General Information

1-4. A short description of the manual and introduction to the 3478A is in Section 1. The section also lists instrument options, specifications, and accessories.

1-5. Section II, Installation Procedures

1-6. This section explains how the 3478A is prepared for use and includes power requirements, line voltage selection, etc. The section also explains how to connect the multimeter for remote operation.

1-7. Section III, Operation

1-8. The condensed operating instructions of 3478A, for the use of Service Trained Personnel, is this section. For more complete instructions, refer to Operators Manual.

1-9. Section IV, Performance Test and Calibration

1-10. The 3478A's Performance Test and Calibration Procedures are in Section IV. The Required Equipment Table and an abbreviated specification table are also included.

1-11. Section V, Replaceable Parts

1-12. Section V lists the replaceable parts of the 3478A. It also includes pictures and illustrations of chassis and mechanical parts.

1-13. Section VI, Backdating

1-14. This section has information which adapts this manual to 3478A's with serial numbers below the ones shown on the title page.

1-15. Section VII, Service

1-16. The 3478A's Troubleshooting Procedures, Theory Of Operation, and Schematics are in Section VII. The troubleshooting information is in the form of Service Groups which are symptoms oriented (i.e., what is the failure). The complete theory of operation is in Service Group F and the Schematics are in Service Group G (last group).

1-17. Appendix A

1-18. The appendix has a condensed description of the HP-IB (Hewlett-Packard Interface Bus).

1-19. DESCRIPTION

1-20. The -hp- Model 3478A is a versatile multimeter with dc and ac volts, dc and ac currents, and resistance measurement capabilities. The multimeter is excellent for bench use, and since it is remotely programmable, it can be used in measurement systems. A feature of the instrument is that the reading can be displayed in either 5 1/2, 4 1/2, or 3 1/2 digits. Other features are Autozero (for good stability), and an Alphanumeric Liquid Crystal Display.

1-21. Another excellent feature is Electronic Calibration. No mechanical adjustments are necessary to calibrate the 3478A.

1-22. SPECIFICATIONS

1-23. Specifications of the 3478A are the performance characteristics of the multimeter which are certified. The specifications are listed in Table 1-1 and Table 4-1 (in Section IV). They are the performance standards or limits against which the multimeter can be tested.

1-24. INSTRUMENT AND MANUAL IDENTIFICATION

1-25. Instrument Identification is by a serial number located on the multimeter's rear panel. Hewlett-Packard uses a two-part serial number, with the first part (prefix) identifying a series of instruments and the