TECHNICAL MANUAL

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

LOGIC ANALYZER

TEKTRONIX MODELS 318/338

H E A D Q U A R T E R S , D E P A R T M E N T O F T H E A R M Y

12 SEPTEMBER 1985

TM 11-6625-3145-14

TECHNICAL MANUAL) HEADQUARTERS
) DEPARTMENT OF THE ARMY
No. 11-6625-3145-14) Washington, DC, 12 September 1985

OPERATOR'S, ORGANIZATIONAL,

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MAINTENANCE MANUAL

LOGIC ANALYZER

TEKTRONIX MODELS 318/338

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 Change 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: AMSEL-ME-MP, Fort Monmouth, NJ 07703-5007.

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

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MANUAL REVISION STATUS

PRODUCT: 318/338 Logic Analyzer Service Manual
This manual supports the following versions of this product: All

REV DATE	DESCRIPTION
JAN 1984 NOV 1984	Original Issue Revised Printing: Pages-X1, 1-3, 5-2,-15,-49,-50 and -51, Tab-Fig. 4 Accessories page, Fig. 9-11, Electrical Parts List, Diagrams **< 5>**and **<6>**

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OPERATOR'S SAFETY SUMMARY

The general safety information in this summary is for both operator and service personnel. Specific cautions and warnings are found throughout the manual where they apply, but may not appear in this summary.

TERMS IN THIS MANUAL

CAUTION statements identify conditions or practices that could result in damage to the equipment or other property.

WARNING statements identify conditions or practices that could result in personal injury or loss of life.

TERMS AS MARKED ON EQUIPMENT

CAUTION indicates a personal injury hazard not immediately accessible as one reads the marking, or a hazard to property including the equipment itself.

DANGER indicates a personal injury hazard immediately accessible as one reads the marking.

DANGER -High voltage.

3 Protective ground (earth) terminal.

ATTENTION - refer to manual.

GROUNDING THE PRODUCT

This product is intended to operate from a power source that does not apply more than 250 volts rms between the supply conductors or between either supply conductor and ground. This product is grounded through the grounding conductor of the power cord. To avoid electrical shock, plug the power cord into a properly wired receptacle before connecting to the product. A protective-ground connection by way of the grounding conductor in the power cord is essential for safe operation.

DANGER ARISING FROM LOSS OF GROUND

Upon loss of the protective-ground connection, all accessible conductive parts (including knobs and controls that may appear to be insulating) can render an electric shock.

USE THE PROPER POWER CORD

Use only the power cord and connector specified for your product, and be sure it is in good condition.

Refer to the *Operating Information* section of this manual for information on power cords and connectors.

USE THE PROPER FUSE

To avoid fire hazard, use only a fuse of the correct type, voltage rating, and current rating as specified in the parts list for this product. Also, ensure that the line selector switch is in the proper position for- the power source being used.

BATTERY REPLACEMENT

Refer lithium battery replacement to qualified service personnel.

DO NOT OPERATE IN EXPLOSIVE ATMOSPHERES

To avoid explosion. do riot operate this product in an explosive atmosphere unless it has been specifically certified for such operation.

SERVICE SAFETY SUMMARY

FOR QUALIFIED SERVICE PERSONNEL ONLY
Refer also to the Operator's Safety Summary.

DO NOT SERVICE ALONE

Do not perform internal service or adjustment of this product unless another person capable of rendering first aid and resuscitation is present.

USE CARE WHEN SERVICING WITH POWER ON

Dangerous voltages exist at several points in this product. To avoid personal injury, do not touch exposed connections and components while power is on. Disconnect power before removing protective panels, soldering, or replacing components.

USE CAUTION WHEN SERVICING THE CRT

The CRT should be serviced only by qualified personnel familiar with CRT servicing procedures and precautions.

CRTs retain hazardous voltages for long periods of time after power-down. Before attempting any work inside the monitor, discharge the CRT by shorting the anode to chassis ground. When discharging the CRT, connect the discharge path to ground and then the anode.

Use extreme caution when handling the CRT. Rough handling may cause it to implode. Do not nick or scratch the glass or subject it to undue pressure during removal or installation. When handling the CRT, wear safety goggles and heavy gloves for protection.

REMOVE LOOSE OBJECTS

During disassembly or installation procedures, screws or other small objects may fall to the bottom of the mainframe. To avoid shorting out the power supply, do not power up the instrument until such objects have been removed.

LITHIUM BATTERY REPLACEMENT

To avoid personal injury, observe proper procedures for handling and disposal of lithium batteries. Improper handling may cause fire, explosion, or severe burns. Don't recharge, crush, disassemble, heat the battery above 212° F (100° C), incinerate, or expose contents of the battery to water. Dispose of battery in accordance with local, state, and national regulations.

SECTION 0

INTRODUCTION

0-1. SCOPE

This manual describes Logic Analyzer, TEK Model 318/338 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 Logic Analyzer, TEK Model 318/388 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 if on an SF 368 (Quality Deficiency Report). Mail it to Commander, US Army Communications- Electronics Command and Fort Monmouth, ATTN: AMSEL-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 before 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 are covered in section 6.

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.

INTRODUCTION AND SPECIFICATIONS

INTRODUCTION

This manual will help you service both the Sony/Tektronix 318 Logic Analyzer and the Sony/Tektronix 338 Logic Analyzer. The procedures and descriptions contained herein apply to both Instruments. Unless otherwise specified, all screen displays have been developed from the 338S1. The 338S1 contains all the basic features of the standard 338 plus the following additional features: serial state analysis, an RS-232C interface, and non-volatile memory.

DESCRIPTION

The Sony/Tektronix 318 and 338 are keyboard-controlled, multifunction, portable logic analyzers.

Each can operate as a parallel timing analyzer or a parallel state analyzer, and each is provided with composite video output. The Sony/Tektronix 318S1 and 338S1 provide several additional features: serial state analysis, RS-232C interface, and non-volatile memory.

The instruments are menu-driven systems. This means that all operations are set up via menus that are displayed on the monitor screen. There are three menus for setting up parallel data acquisition, three menus for setting up serial data acquisition, one menu for remote operation, one menu for non-volatile memory operation, and two menus for data display.

MODES OF OPERATION

When used as a parallel timing analyzer, the 318 provides a 16-channel-wide input, 50 MHz (maximum) clock speed, and 256 bits/channel memory for data. Glitches are captured on all 16 channels. The 338 provides a 32-channel-wide input, 20 MHz (maximum) clock speed, and 256 bits/channel memory for data. Glitches are captured on eight channels. Three word recognizers can be specified on all channels and used in several different triggering sequences. The digital delay counts up to 65,000 clock cycles. In the 318, data before or after the occurrence of a specified trigger sequence can be acquired and stored at sample intervals ranging from 20 ns to 500 ms with two lock and trigger qualifiers. In the 338, data before or after the occurrence of a specified trigger sequence can be acquired and stored at sample intervals ranging from 50 ns to 500 ms with four clock and trigger qualifiers. The stored data can be displayed on the CRT screen in a timing or state format.

A composite video output for hard-copy units or video terminals is provided. This feature allows documentation of test results and operating parameters.

As a serial state analyzer, the 318S1/338S1 acquires serial data in five, six, seven, eight, or nine bits/character in asynchronous or synchronous timing. Two continuous word recognizers provide triggering upon recognition of preset words. The digital delay counts up to 65,000 words. Data before or after the occurrence of a specified trigger sequence can be acquired and stored at baud rates ranging from 50 to 19.2K baud. The stored data is displayed on the CRT screen in binary, octal, decimal, hexadecimal, ASCII, or EBCDIC format.

The RS-232C interface port allows the 318S1/338S1 to be linked with terminal equipment through an asynchronous, full-duplex modem. In remote control mode, the 318S1/338S1 can receive all control commands, memory control commands, or reference memory data from the terminal equipment instead of the keyboard. It can send the CRT display information or memory data to the terminal equipment via the RS-232C port.