

**TECHNICAL MANUAL  
OPERATOR'S AND  
ORGANIZATIONAL MAINTENANCE  
TEST SET ERROR  
DETECTOR  
TS-3981/P**

**NSN 6625-01-126-4016  
RAYTHEON COMPANY  
CONTRACT NO. DAAB07-82-R-J100**

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**OPERATOR'S AND ORGANIZATIONAL MAINTENANCE MANUAL**

TEST SET ERROR DETECTOR TS-3981/P  
NSN 6625-01-126-4016

**REPORTING ERRORS AND RECOMMENDING IMPROVEMENT**

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, U.S. Army Communications Electronics Command and Fort Monmouth, Attn: DRSEL-ME-MP, Fort Monmouth, New Jersey 07703. A reply will be furnished to you.

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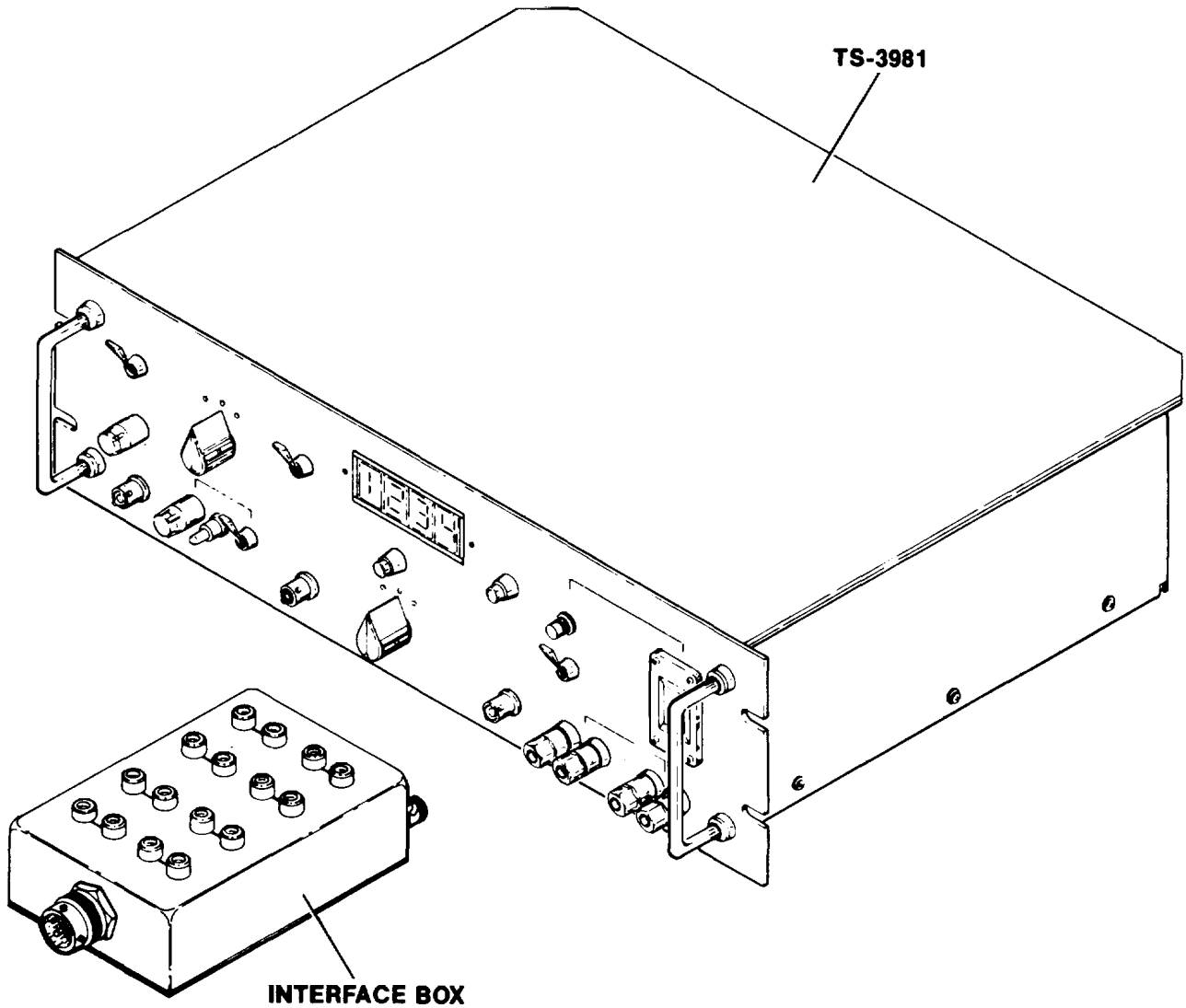
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Chapter 1  
INTRODUCTION



1-1. SCOPE

This manual is for your use in operating and maintaining the Test Set Error Detector TS-3981/P (common name TS-3981). It contains descriptive, operation, application, and maintenance information.

1-2. **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, forms, or additional publications pertaining to the equipment.

1-3. **MAINTENANCE FORMS, RECORDS, AND REPORTS**

Reports of Maintenance and Unsatisfactory Equipment: Department of the Army forms and procedures used for equipment maintenance will be those prescribed by TM 38-750, The Army Maintenance Management System.

Report of Packaging and Handling Deficiencies: Fill out and forward SF-364, Report of Discrepancy (ROD), as prescribed in AR 735-11-2.

Discrepancy in Shipment Report (DISREP): Fill out and forward SF-361, Discrepancy in Shipment Report (DISREP), as prescribed in AR 55-38.

1-4. **DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE**

Destruction of Army electronics materiel to prevent enemy use shall be in accordance with TM 750-244-2, Procedures for Destruction of Electronic Materiel to Prevent Enemy Use (Electronics Command).

1-5. **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.

1-6. **REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR)**

If your Test Set Error Detector TS-3981/P 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. Tell us why a procedure is hard to perform. Put it on an SF-368, Quality Deficiency Report. Mail it to: Commander, U.S. Army Communications-Electronics Command and Fort Monmouth, Attn: DRSEL-ME-MP, Fort Monmouth, New Jersey 07703. We'll send you a reply.

The image shows a 'QUALITY DEFICIENCY REPORT (Category II)' form. It is a structured document with multiple sections for data entry. The fields include:

- 1. Type (Designating number)
- 2. Type Name, Duty, Phone and Signature
- 3. Report Control No.
- 4. Date Deficiency Discovered
- 5. National Stock No. (NSN)
- 6. Manufacturer's Code
- 7. Manufacturer's Code (Shipper)
- 8. Mfg. Part No.
- 9. Serial # or Batch No.
- 10. Component/Part Number
- 11. Name
- 12. Date Manufactured
- 13. Operating Time of Failure
- 14. Government Furnished Material
- 15. Quantity
- 16. End Item (if known)
- 17. Type Model Number
- 18. Defective
- 19. Serial No.

1-7. **EQUIPMENT DATA**

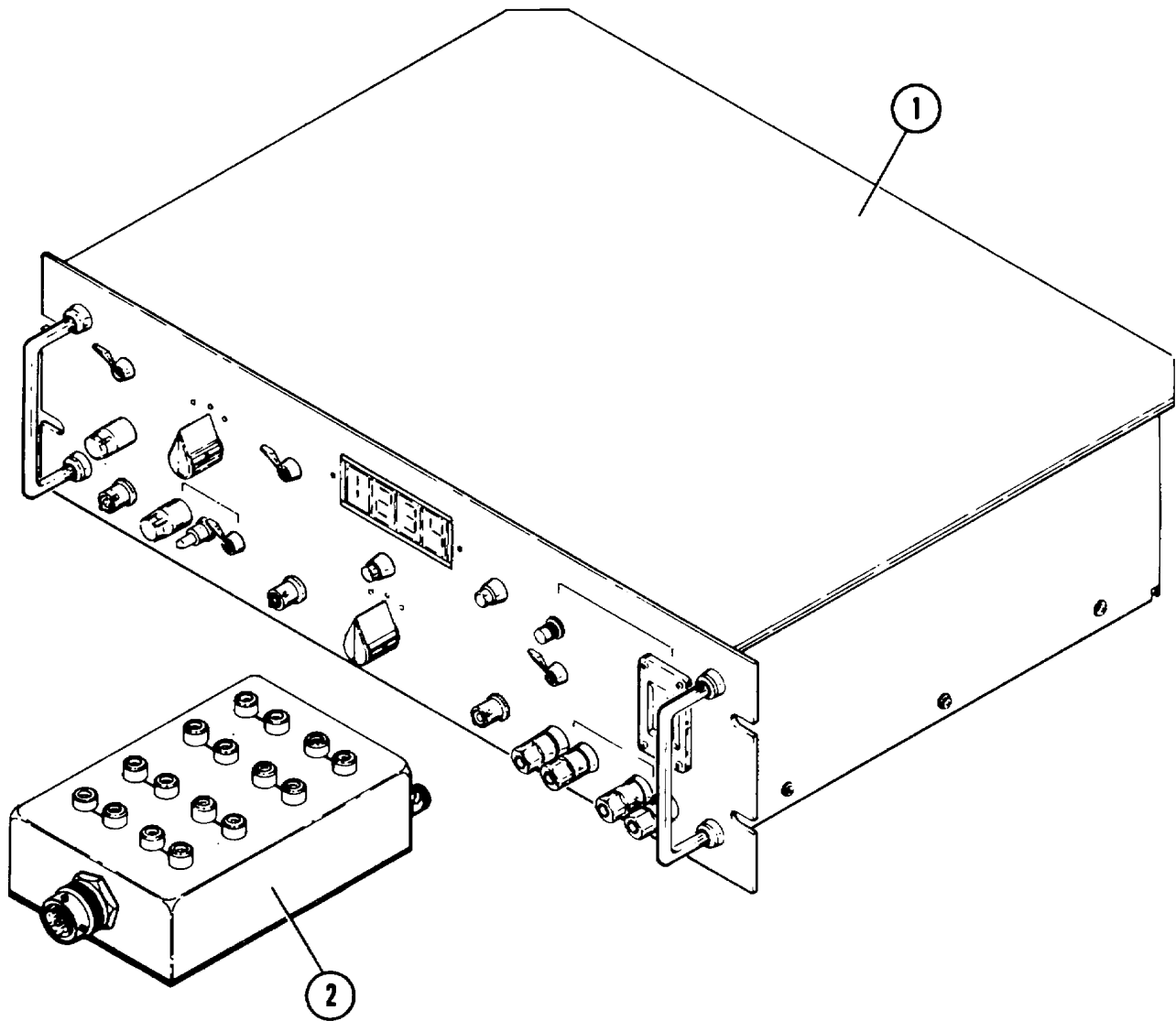
The Test Set Error Detector TS-3981/P tests digital transmission paths and is specially designed to test the Data Buffer TD-1065/G. It includes a transmitter that produces a diphase output and a receiver that accepts a diphase input, detects and counts errors, and measures synchronization time.

Physical	19 in. wide x 5.25 in. high x 14 in. deep overall; 11.5 lb.
Power	105 to 125 volts, 48 to 420 Hz, single-phase, 00 watts maximum. Five-foot, 3-wire power cable permanently attached to rear panel. Spare fuse supplied.
Measurements	Errors and synchronization time.
Data Rate	0.6, 1.2, 2.4, 4.8, 9.6, 16, 32, 32 and 38.4k bits per second; set by front-panel control.
Pattern	Long with length of 215-1 (32,727) bits or short with length of 15 bits; set by front-panel control.
Error Injection	Front-panel pushbutton injects a single error in output pattern each time it is pressed.
Data Output	Unframed, nonconditioned diphase; 4.5 to 5.5 volts peak-to-peak into 600 ohms, balanced. Available at two front-panel binding posts.
Data Input	Unframed, nonconditioned diphase; 5 volts peak-to-peak nominal, down to 5 volts peak-to-peak attenuated by over 3 miles of WF-16 field wire; balanced, 600 ohms input impedance. Applied to two front-panel binding posts. Green front-panel indicator lamp lights when data is being received.
Input/Output Switching	Front-panel control sets input/output for 4-wire operation output connectors wired to output (circuits and input connectors wired to input circuits), 2-wire transmit (output connectors wired to output circuits and input connectors open), and 2-wire receive (output connectors wired to input circuits and input connectors open).
Sync	Front-panel control allows receiver to be operated in one of two modes. Open: received data is loaded continuously into the register and simultaneously compared to the output of the register to detect differences (errors). Closed: the register is first synchronized to the received data, then allowed to run independently and compared to the received data to detect differences (errors).

1-7. **EQUIPMENT DATA (cont)**

Display	Four-digit, seven segment, light-emitting diode. Front-panel control turns display off, sets it to measure errors, or sets it to measure synchronization time in milliseconds.
Monitor Outputs	Three front-panel BNC connectors provide 2.5 to 5.5 volt peak-to-peak signals for errors (one output pulse per error detected), frequency (same rate as data output), and scope sync (1/15 the rate of data output).
Interface Box	An Interface Box is supplied as an accessory. This box allows access to the inputs and outputs of four channels wired to multipin connectors. The wires are brought out to banana jacks on top of the box.

1-8. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS



- ① TS-3981 Error Detector Test Set TS-3981/P.
- ② Interface Box Provides interface between multipin connectors and banana jacks.