**DEPARTMENT OF THE ARMY TECHNICAL MANUAL**

**OPERATOR'S, ORGANIZATIONAL, DS, GS
AND DEPOT MAINTENANCE MANUAL**

**RADIATION INCORPORATED
DAS-10 DISTORTION ANALYZER SYSTEM**

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

**HEADQUARTERS,  DEPARTMENT OF THE ARMY
SEPTEMBER 1969**

**PART A
DATA TRANSMITTER 7413 and 7413A**

**PART A**

**PART A**

**LIST OF ILLUSTRATIONS**
**PART A**

**PART A**

**LIST OF TABLES**
**PART A**

**iv**

**PART B**
**DATA ANALYZER 7422**

Section                                                                                          Page

v

**PART B**

## LIST OF TABLES

### PART B

**PART C**
**A-SCAN 7431**

**viii**

LIST OF ILLUSTRATIONS
PART C

**LIST OF TABLES**
**PART C**

**TABLE OF CONTENTS**
**PART D**

**x**

**PART A**
**SECTION I**

**INTRODUCTION**

**1-1. Scope**
This manual described the DAS-10 Distortion Analyzer System Model 7010 which consists of Models 7413 and 7413A Data Transmitter, Model 7422 Data Analyzer, and Model 7431 A-Scan manufactured by Radiation Incorporated. It includes operating instructions, installation, and troubleshooting procedures. Each equipment is described in a separate part of the manual.

**NOTE**
**Appendix B is current as of**
**13 September 1969.**

**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 for modification work orders 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 (Report of Packaging and Handling Deficiencies) as prescribed in AR 700-58 (Army)/NAVSUP PUB 378 (Navy/AFR 71-4 (Air Force)/and MCO P4030-29 (Marine Corps).
   *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 (Army)/NAVSUP PUB 459 (Navy)/AFM 75-34 (Air Force)/and MCO P4610.19 (Marine Corps).

**1-3.1. Reporting of Errors**
Report of errors, omissions, and recommendations for improving this publication by the individual user is encouraged. Reports should be submitted on DA Form 2028, Recommended Changes to Publications, and forwarded direct to Commander, US Army Electronics Command, ATTN: AMSEL-MA-C, Fort Monmouth, NJ 07703.

**1-4. Purpose**
The Data Transmitter, Model 7413 (figure 1-1), is a compact, portable, solid-state device, designed to produce a known message, with controlled distortion, at rates up to 9600 bits per second to check the operation of telegraph and data transmission systems.

**1-5. General**
The Data Transmitter incorporates either of two card-selected formats: (1) a standard 880-haracter "Fox" message in five-unit Baudot code; (2) an 8-bits-percharacter, 90-character pattern with internal provision for less than 8-bit code. There is also a single, repetitive, switch-selected character of five, six, seven or eight information bits in any combination of marks and spaces, and an internally selected idle character.
The generated format may be transmitted as START-STOP; or as synchronous, five, six, seven or eight bits per-character.
External timing input is provided for character-bycharacter or bit-by-bit release of the selected format.
Also, clock provided by the Model 7422 Analyzer permits continuous transmission at a switchselected rate. Alternate mark and space elements may be generated at the selected rate, and continuous-mark and continuous-space conditions are selectable.

**1**

**Figure 1-1. Data Transmitter, Model 7413**

Distortion of the generated format is accomplished digitally. The type of distortion may be switched manually or automatically.

Non-standard formats of up to 128 characters, arranged as required, are available on request.
Non-standard speeds, from 10 to 9600 bits per second, are available on request.

**1-5.1. Items Comprising an Operable Radiation Incorporated DAS-10 Distortion Analyzer System.**

| FSN | QTY | NOMENCLATURE, PART NO., AND MFR CODE | FIG. NO. |
|---|---|---|---|
| 6625-930-8525 | | Radiation Incorporated; DAS-10; Distortion Analyzer System consisting of:<br>**NOTE**<br>**The part number is followed by the applicable 5-digit Federal supply code for manufacturers (FSCM) identified in SB 70842 and used to identify manufacturer, distributor, or Government Agency, etc.** | |
| | 1 | Analyzer, 7422, 91417 | 1-1 |
| | 1 | XMTR., 7413, 91417 | 1-1 |
| | 1 | 1A1, Scan, 7431, 91417 | 3-1 |

**1-6. Technical Characteristics**

**1-7. Type of Output Signals**

(*a*) *Polar of Neutral.* Solid-state keying circuitry (dry contact), capable of keying 100 milliamperes maximum. (Maximum contact resistance is approximately 75 ohms at 20 ma Voltage rating is 260 volts maximum for neutral operation, and +130 volts maximum for polar operation. Contacts are fused at 1/8A. (Fuses are accessible from near panel.)

(*b*) *Standard Interface Output.* A polar signal +6 volts (mark = +6 volts, space = -6 volts) into 600-ohm load, with external +6V and 6V supplies.

**1-8. Bias Distortion (Rotary Switch)**

(1) ZERO (perfect data)
(2) MARKING (distortion)
(3) SPACING (distortion)
(4) SWITCHED (distortion)

2