

TECHNICAL MANUAL

DIRECT SUPPORT MAINTENANCE MANUAL

TRANSMITTING SET, RADAR DATA

AN/AKT-18B

(NSN 5841-01-070-4408)

HEADQUARTERS, DEPARTMENT OF THE ARMY

MARCH 1981



DIRECT SUPPORT MAINTENANCE MANUAL
TRANSMITTING SET, RADAR DATA
AN/AKT-18B
(NSN 5841-01-070-4408)

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 back of this manual direct to: Commander, US Army Communications - Electronics Command and Fort Monmouth, AITN: DRSEL-ME-MP, Fort Monmouth, New Jersey 07703.Paragrph

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

TABLE OF CONTENTS

	Paragraph	Page
CHAPTER 1 INTRODUCTION.....		1-1
CHAPTER 2 PRINCIPLES OF OPERATION.....		2-1
Section I. Overall system operation	2-1	2-1
II. Function of encoding subsystem.....	2-3	2-3
III. Function of data transmitting subsystem.....	2-17	2-20
CHAPTER 3 DIRECT SUPPORT MAINTENANCE INSTRUCTIONS.....		
Section I. General	3-1	3-1
II. Tools and equipment.....	3-4	3-1
III. Troubleshooting	3-6	3-1
IV. Maintenance of Transmitting Set, Radar Data AN/AKT-18B	3-9	3-11
V. Direct support testing procedures	3-24	3-21
VI. Wire lists	3-38	3-48
APPENDIX A REFERENCES.....		A-1
B EXPENDABLE SUPPLIES AND MATERIALS LIST.....		B-1
Section I. Introduction		B-1
II. Expendable Supplies and Materials List		B-2
GLOSSARY	Glossary 1	
INDEX	Index 1	

LIST OF ILLUSTRATIONS

Figure	Title	Page
2-1	Data transmitmg set block diagram	2-1
2 -2	System power distribution and control block diagram	2-2
2-3	Typical data frame structure	2-4
2-4	Encoding subsystem overall block diagram	2-5
2-5	Internal clock generator functional block diagram	2-7
2-6	ADAS input data processing functional block diagram	2-10
2-7	Ground speed input data processing functional block diagram	2-11
2-8	Drift angle input data processing functional block diagram	2-12
2-9	Range and range delay input data processing functional block diagram	2-13
2-10	Output memory functional block diagram	2-16
2-11	Output format generator and receive register block diagram	2-17
2-12	Encoding subsystem power supply and distribution block diagram	2-19
3-1	Encoder and data link control test setup	3-2
3-2	Encoder test point locations	3-12
3-3	Encoder waveforms.....	3-13
3-4	Encoder exploded view (sheet 1 of 8)	3-14
3-4	Encoder exploded view (sheet 2 of 8)	3-15
3-4	Encoder exploded view (sheet 3 of 8)	3-16
3-4	Encoder exploded view (sheet 4 of 8)	3-17
3-4	Encoder exploded view (sheet 5 of 8)	3-18

LIST OF ILLUSTRATIONS-Continued

Figure	Title	Page
3-4	Encoder exploded view (sheet 6 of 8)	3-19
3-4	Encoder exploded view (sheet 7 of 8)	3-20
3-4	Encoder exploded view (sheet 8 of 8)	3-21
3-5	Data link control exploded view	3-27
3-6	Electrical filter assembly 2FL1 parts location and schematic diagram	3-29
3-7	Power supply adjustments and test point locations	3-30
3-8	Typical test setup for circuit card testing	3-33
3-9	Analog-digital converter 2A2 test point locations	3-35
3-10	Test setup for circuit card testing uthzming cable W3	3-36
3-11	MT accumulator memory 2A5/2A6 test point locations	3-37
3-12	Video control 2A7 test point locations	3-38
3-13	MPU/tuning 2A11 test point locations	3-40
3-14	Power fault detector 2A13 test point locations	3-43
3-15	Power fault detector 2A13 waveforms	3-44
3-16	Output memory 2A14 test point locations	3-45
3-17	Video interface 2A17 test point locations	3-48
3-18	Video interface 2A17 waveforms	3-49
3-19	Data transmitting set cabling diagram	3-50
FO-1	Color code markings for MIL-STD resistors and capacitors	Located In back of manual
FO-2	Video input data processing functional block diagram	Located In back of manual
FO-3	Central processing unit (CPU) functional block diagram (Sheet 1 of 2)	Located In back of manual
FO-3	Central processing unit (CPU) functional block diagram (Sheet 2 of 2)	Located in back of manual
FO-4	Encoder schematic diagram	Located in back of manual
FO-5	Data Link control schematic diagram	Located in back of manual

LIST OF TABLES

Number	Title	Page
1-1	Official Nomenclature Cross-Reference List	1-1
3-1	Encoder and Data Link Control Functional Test	3-2
3-2	Encoder and Data Link Control Troubleshooting	3-3
3-3	Physical Inspection Procedure	3-31
3-4	Encoder Circuit Cards to be Tested	3-32
3-5	Test Equipment Required for Circuit Card Testing	3-32
3-6	MT Channel A/D Levels	3-33
3-7	FT Channel A/D Levels	3-34
3-8	Encoder Wire List	3-49
3-9	Electrical Filter Assembly 2FL1 Wire List	3-53
3-10	Data Link Control Wire List	3-53

CHAPTER 1

INTRODUCTION

1-1. Scope

This manual contains Instructions and information for use by direct support personnel applicable to Transmitting Set, Radar Data AN/AKT-18B (hereinafter referred to as data transmitting set)

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, or additional publications pertaining to the equipment

1-3. 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 TM 38-750, The Army Maintenance Management System (TAMMS)

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 73/AFR 400-54/MCO 4430 3E

c. Discrepancy in Shipment Report (DISREP) (SF361) Fill out and forward Discrepancy In Shipment Report (DISREP) (SF 361) as prescribed in AR55-38/NAVSUPINST 4610 33B/AFR 75-18/MCO P4610.19C/DL AR 4500 15

1-4. Reporting Equipment Improvement Recommendations (EIR)

If your data transmitting set 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, New Jersey 07703 We'll send you a reply

1-5. Description

Table 1-1 lists all major components of the data transmitting set Refer to TM 11-5841-287-12 for a description of the Items listed in table 1-1

Table 1-1. Official Nomenclature Cross Reference List

Official nomenclature	Common name
Transmitting Set, Radar Data AN/AKT-18B	Data transmitting set
Encoder, Video KY-865/AKT-18B	Encoder (unit 2)
Control, Data Lmk C-10546/AKT-18B	Data link control (unit 3)
Mounting Base, Electrical Equipment MT-6016/AKT-18B	Encoder mount
Radio Set AN/ARC- 164(V)16	Uhf radio set (unit 1)
Receiver-Transmitter, RADIO RT-1288A/ARC-164(V)	Uhf receiver-transmitter (unit 1A1)
Control, Radio Set C- 10547/A RC- 164(V)	Uhf radio control (unit 1A2)
Mounting Base, Electrical Equipment MT-6017/ARC-164(V)	Uhf radio mount (unit 1A3)
Antenna AT-450/ARC	Uhf antenna (unit 4)

Change 1 1-1