Honeywell

SYSTEM INSTALLATION MANUAL

BENDIX/KING®

KMD 550/850

MULTI-FUNCTION DISPLAY SYSTEM

MANUAL NUMBER 006-10608-0012
Revision 12 *OCTOBER, 2006*

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REVISION HIGHLIGHTS

KMD 550/850

Part Number	Rev	Date	Description
006-10608-0011	11	Sep/2006	Updated EQFs and other misc. updates denoted by revision bar.
006-10608-0012	12	Oct/2006	Updated EQFs.

REVISION HIGHLIGHTS

Part Number	Rev	Date	Description

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SECTION I
GENERAL INFORMATION

1.0 INTRODUCTION

This manual contains information relative to the physical, mechanical and electrical characteristics and installation procedures for the Honeywell KMD 550/850 Multi-Function Display System, hereafter referred to as the KMD 550/850, the Multi-Function Display (MFD), or by its full nomenclature. Installation and operating procedures are also included. Any references to the KMD 540 base unit refer to functionality common to both the KMD 550 and KMD 850 systems. Information relative to the maintenance, alignment, and procurement of replacement parts may be found in the KMD 540 Maintenance Manual, P/N 006-15608-XXXX. This manual also includes similar information for the KAC 501 Weather Radar Module, the KAC 502 EGPWS Module, the KAC 503 FIS Module, and the KAC 504 TRFC Module.

Acronyms and Abbreviations used in this manual are listed in TABLE 1-1 Acronyms/ Abbreviations.

Acronym/Abbreviation	Meaning
aka	also known as
ANSI	American National Standards Institute
ARINC	Aeronautical Radio Incorporated
ART	Antenna Receiver/Transmitter
ASCII	American Standard Code for Information Interchange
AUX	Auxiliary
CNS	Communication, Navigation, Surveillance
CW	Clockwise
CCW	Counter-clockwise
DEG./Deg./deg.	Degrees
EEPROM	Electrically Erasable Programmable Read Only Memory
EFIS	Electronic Flight Instrument System
EGPWS	Enhanced Ground Proximity Warning System (aka TAWS)
FAA	Federal Aviation Administration (United States)
FAR	Federal Aviation Requirements
FIR	Flight Information Region

TABLE 1-1 Acronyms/Abbreviations

Acronym/Abbreviation	Meaning
FIS	Flight Information Services
FPLN	Flightplan
fpm,FPM	feet per minute
ft,FT	feet
GPS	Global Positioning System
HIRF	High Intensity Radiated Field
Hz, hz	Hertz
ICAO	International Civil Aviation Organization
IEEE	Institute of Electrical and Electronics Engineering
IFR	Instrument Flight Rules
in.	inches
KCPB	KC Picture Bus (EGPWS Interface)
lbs.	pounds
Lat	Latitude
LCD	Liquid Crystal Display
LED	Light Emitting Diode
Lon	Longitude
LRU	Line Replaceable Unit
METAR	Aviation Routine Weather Report
MFD	Multi-Function Display
msec	Milli-seconds
N.A.	Not Applicable
NEXRAD	Next Generation of Weather Radar, aka WSR-88D Doppler
NMEA	National Marine Electronics Association
nm,NM	nautical miles
NVM	Nonvolatile Memory
NTSC	National Television Standards Committee
OVLY	Overlay
PCMCIA	Personal Computer Memory Card International Association

TABLE 1-1 Acronyms/Abbreviations

Acronym/Abbreviation	Meaning
PIREP	Pilot Report
PN P/N	Part Number
RF, rf	Radio Frequency
RNG	Range
RTCA	Radio Technical Commission for Aeronautics
RTS	Return To Service (test)
SBY	Standby
sec	second
SMP	Subscription Management Processor
SIM	System Information Message
SPECI	Special Weather Report
sua	Special Use Airspace
TAF	Terminal Area Forecast
TAWS	Terrain Awareness and Warning System (aka EGPWS)
TBD	To Be Determined
TERR	Terrain
TRFC	Traffic
TSO	Technical Standard Order
URL	Uniform Resource Locator or Universal Resource Locator (World Wide Web Address)
UTC	Universal Time Coordinated or coordinated universal time, formerly Greenwich Mean Time (GMT) or Zulu (Z)
VAC	Volts Alternating Current
VDC	Volts Direct Current
VDR	VHF Digital Radio
VFR	Visual Flight Rules
WX, Wx	Weather

TABLE 1-1 Acronyms/Abbreviations

1.1 APPLICABILITY OF THE SYSTEM MANUAL

This manual is applicable only to the following base units and accessories.

ITEM	Part Number
KMD 540 MFD Base Unit	066-04035-0101/-1101 (BLACK)
KMD 540 MFD Base Unit	066-04035-0201/-1201 (GRAY)
KMD 540 MFD Base Unit	066-04035-0301/-1301 (SILVER CROWN+)
KAC 501 Digital Weather Radar Module	071-00159-0111
KAC 502 EGPWS Module	071-00158-0211
KAC 503 FIS Module	071-00168-0311
KAC 504 Traffic Module	071-00166-0411
Data Card	071-00161-0101 (Americas)
Data Card	071-00161-0102 (Pacific International)
Data Card	071-00161-0103 (Atlantic International)

NOTE: Some part numbers may not be currently available. Consult the current Honeywell catalog or contact a Honeywell representative for equipment availability.

1.2 EQUIPMENT DESCRIPTION

The KMD 550/850 systems are based upon the same base unit, the KMD 540. The KMD 540 is a Multi-function Display (MFD) that utilizes a 5" Diagonal AMLCD to display a detailed moving map using data from the front loading datacard. The datacard contains application software and a customized Jeppesen© aeronautical database with airports, victor airways, VORs, NDBs, intersections, and special use airspace (including altitude limits). It is also an enhanced cartographic database and includes rivers, roads, lakes, coastlines, cities, railroad tracks, towers (including AGL and MSL altitudes), regional topographical/elevation information and topographic shading. The Data Card must be installed prior to power up. During power up and normal operation, the KMD 540 will test for the presence of a valid data card. If the card is not installed or a faulty card is installed, the KMD 540 will not continue to operate and will display an error message.

The KMD 540 has the ability to display Goodrich Stormscope information as well as NTSC video input (such as a remote camera). The KMD 540 may host up to four optional modules to expand the capability of the unit. These modules are installed in the unit as part of the aircraft installation. Each is treated as an independent part of the system and has its own top level unit part number and serial tag. The optional modules are described as follows:

The KAC 501 Weather Radar Module is shipped with every KMD 850 and represents the distinction between the KMD 550 and KMD 850 systems. The card allows control and display of the radars listed in TABLE 4-1 Radar Models and Functionality.

The KAC 502 EGPWS Module enables the display of terrain from the KGP 560 EGPWS and other EGPWS units (i.e., Mk VI). This unit complies with TSO C151 Class B for terrain warning devices.

The KAC 503 FIS Module enables the display of Flight Information Services - Broadcast (FIS-B) weather and other flight advisory information from the Honeywell Data Link Weather Service.

The KAC 504 Traffic Module enables the processing and display of traffic from the traffic systems listed in TABLE 4-8 Traffic Interfaces.

1.3 TECHNICAL CHARACTERISTICS

1.3.1 Unit Information

KMD 540 MULTI-FUNCTION DISPLAY

TSO COMPLIANCE:	TSO C113/ETSO-C113 Display functionality of TSO C110a/ ETSO-C110a
SOFTWARE CERTIFICATION CATEGORY:	RTCA/DO-178B Level C
ENVIRONMENTAL CERTIFICATION:	See TSO APPENDIX
TEMPERATURE RANGE:	-20° C to +70° C
ALTITUDE:	35,000 ft.
PHYSICAL DIMENSIONS:	Refer to FIGURE 2-5 KMD 540 Installation Drawing
WEIGHT:	Refer to FIGURE 2-5 KMD 540 Installation Drawing
COOLING REQUIREMENTS:	No external cooling needed. All required cooling provided by internal fan.
INPUT POWER REQUIREMENTS:	10 to 33 V DC, 20 watts nominal, 40 watts maximum
LIGHTING BUS CURRENT	1.3 ma @ +28 VDC 0.6 ma @ +14 VDC 0.2 ma @ + 5 VDC or 5 VAC
MOUNTING	Panel mounted with Honeywell supplied mounting rack.

KAC 501 WEATHER RADAR MODULE

TSO COMPLIANCE:	Display functionality of TSO C63c/ ETSO-2C63c, DO-173, CLASS 7
ENVIRONMENTAL CERTIFICATION:	See TSO APPENDIX
PHYSICAL DIMENSIONS:	
Length:	7.474 in. (18.983 cm.)
Width:	5.047 in. (12.819 cm.)
WEIGHT:	Refer to FIGURE 2-5 KMD 540 Installation Drawing
POWER REQUIREMENTS:	Supplied by KMD 540 base unit

KAC 502 EGPWS MODULE

TSO COMPLIANCE:	Display functionality of C151a/ETSO-C151a
ENVIRONMENTAL CERTIFICATION:	See TSO APPENDIX
PHYSICAL DIMENSIONS:	
Length:	7.474 in. (18.983 cm.)
Width:	5.047 in. (12.819 cm.)
WEIGHT:	Refer to FIGURE 2-5 KMD 540 Installation Drawing
POWER REQUIREMENTS:	Supplied by KMD 540 base unit

KAC 503 FIS MODULE

TSO COMPLIANCE:	C113/ETSO-C113
ENVIRONMENTAL CERTIFICATION:	See TSO APPENDIX
PHYSICAL DIMENSIONS:	
Length:	3.833 in. (9.736 cm.)
Width:	5.047 in. (12.819 cm.)
WEIGHT:	Refer to FIGURE 2-5 KMD 540 Installation Drawing
POWER REQUIREMENTS:	Supplied by KMD 540 base unit

KAC 504 TRAFFIC MODULE

TSO COMPLIANCE:	C113/ETSO-C113
ENVIRONMENTAL CERTIFICATION:	See TSO APPENDIX
PHYSICAL DIMENSIONS:	
Length:	7.474 in. (18.983 cm.)
Width:	5.047 in. (12.819 cm.)
WEIGHT:	Refer to FIGURE 2-5 KMD 540 Installation Drawing
POWER REQUIREMENTS:	Supplied by KMD 540 base unit

1.4 UNITS AND ACCESSORIES SUPPLIED

NOTE: Some part numbers may not be currently available. Consult the current Honeywell catalog or contact a Honeywell representative for equipment availability.

1.4.1 KMD 540 Multi-Function Display

The KMD 540 Multi-Function Display base unit is available in the following versions:
KMD 540 MFD Base Unit - P/N 066-04035-0101/-1101 (BLACK)
KMD 540 MFD Base Unit - P/N 066-04035-0201/-1201 (GRAY)
KMD 540 MFD Base Unit - P/N 066-04035-0301/-1301 (SILVER CROWN+)

1.4.2 KMD 550/850 Accessory Modules/Data Cards

The following are accessory modules and PCMCIA cards for the KMD 540.

KAC 501 Weather Radar Module - P/N 071-00159-0111
KAC 502 EGPWS Module - P/N 071-00158-0211
KAC 503 FIS Module - P/N 071-00168-0311
KAC 504 TRFC Module - P/N 071-00166-0411
Data Card - P/N 071-00161-0101 (Americas)
Data Card - P/N 071-00161-0102 (Pacific International)
Data Card - P/N 071-00161-0103 (Atlantic International)

1.5 INSTALLATION KITS

1.5.1 KMD 540 Multi-Function Display Installation Kit

The Installation Kit (050-03605-0000) for the KMD 540 Multi-Function Display contains the following parts:

SYMBOL	PART_NUMBER	DESCRIPTION	UM	QTY.
	030-00101-0002	PANEL MOUNT PLUG	EA	1
	030-01157-0011	SOCKET CRMP 20G	EA	74
	030-01175-0010	CONN, D-SUB, RECEPT.	EA	2
	047-05959-0002	STRAIN RELIEF W/H	EA	2
	047-05960-0001	STRAIN RELIEF W/F	EA	2
	047-12495-0003	RACK CHASSIS ASSY.	EA	1
	057-05944-0014	KMD KIT TSO LABEL	EA	1
	073-12497-0003	REAR PANEL W/ HARDWARE	EA	1
	089-02353-0001	NUT CLIP 6-32	EA	6
	089-05903-0004	SCR PHP 4-40X1/4	EA	12

SYMBOL	PART_NUMBER	DESCRIPTION	UM	QTY.
	089-06012-0006	SCR FHP 6-32X3/8	EA	6
	089-08252-0030	WASHER	EA	1
	090-00019-0007	RING RTNR .438	EA	1
	155-06053-0000	INSTALL DRAWING	RF	X

1.6 ACCESSORIES REQUIRED, BUT NOT SUPPLIED

None.

1.7 LICENSE REQUIREMENTS

There are no licensing requirements for the KMD 550/850 System.

1.8 CONTINUED AIRWORTHINESS INSTRUCTIONS

1.8.1 KMD 540 Multi-Function Display

If the unit should require maintenance, remove the unit and have it repaired by an appropriately rated Honeywell approved Instrument Service Center. If the aircraft is to fly with the KMD 540 removed, secure the connector(s) as necessary and placard the aircraft accordingly. After reinstallation of the unit, accomplish the appropriate post installation checkout in SECTION IV.

1.8.2 KAC 501 Weather Radar Module

If the unit should require maintenance, remove the unit and have it repaired by an appropriately rated Honeywell approved Instrument Service Center. If the aircraft is to fly with the KAC 501 removed, placard the aircraft accordingly. After reinstallation of the unit, accomplish the appropriate post installation checkout in section 4.3 WEATHER CONFIGURATION PROCEDURE (Wx Radar - KMD 850).

1.8.3 KAC 502 EGPWS Module

If the unit should require maintenance, remove the unit and have it repaired by an appropriately rated Honeywell approved Instrument Service Center. If the aircraft is to fly with the KAC 502 removed, placard the aircraft accordingly. After reinstallation of the unit, accomplish the appropriate post installation checkout in section 4.5 EGPWS CONFIGURATION PROCEDURE (KAC 502 Module).

1.8.4 KAC 503 FIS Module

If the unit should require maintenance, remove the unit and have it repaired by an appropriately rated Honeywell approved Instrument Service Center. If the aircraft is to fly with the KAC 503 removed, placard the aircraft accordingly. After reinstallation of the unit, accomplish the appropriate post installation checkout in section 4.7 FIS CONFIGURATION PROCEDURE (KAC 503 Module).

1.8.5 KAC 504 Traffic Module

If the unit should require maintenance, remove the unit and have it repaired by an appropriately rated Honeywell approved Instrument Service Center. If the aircraft is to fly with the KAC 504 removed, placard the aircraft accordingly. After reinstallation of the unit, accomplish the appropriate post installation checkout in section 4.6 TRAFFIC CONFIGURATION PROCEDURE (KAC 504 Module).

1.8.6 Wires/Coax Cables

During on-condition or regularly scheduled maintenance, inspect the wires and coax cables following the guidelines listed in AC 43,13-1 Chapter 15 as necessary.

1.9 DATABASE UPDATES AND FIS SUBSCRIPTIONS

To order database updates and FIS subscriptions, contact Honeywell International Inc., Wingman Services:

Honeywell International Inc.
Aerospace Electronic Systems
One Technology Center
23500 West 105th Street
Olathe, Kansas 66061 USA
Attn: Navigation Services MS-66

Telephone: (800) 247-0230 within the United States or Canada
(913) 712-3145 outside of the United States or Canada
Fax: (913) 712-3904

e-mail: nav.database@honeywell.com

Website (URL): www.bendixking.com (then select Wingman Services)

NOTE: FIS subscriptions are available only by telephone or from the website.

1.10 ONLINE INFORMATION

The latest software revision information and users manuals are available at the following URL:

www.bendixking.com/kmd

SECTION II
INSTALLATION

2.0 INTRODUCTION

This section provides general suggestions and information for installing the KMD 540. Close adherence to these suggestions will assure optimum performance of the equipment. This section contains pinout diagrams, outline/mounting dimensions and other information pertaining to installation.

The conditions and tests required for the TSO and MOPS approval of this article are minimum performance standards. It is the responsibility of those installing this article either on or with a specified type or class of aircraft to determine that the aircraft installation conditions are within the TSO and MOPS standards. These articles must have separate approval for installation in an aircraft. Any features in this equipment outside the requirements of this applicable TSO and MOPS must be evaluated and approved as part of the installation approval. The article may be installed only if performed under 14 CFR part 43 or the applicable airworthiness requirements.

2.1 UNPACKING AND INSPECTING EQUIPMENT

Exercise extreme care when unpacking the equipment. Make a visual inspection of the unit for evidence of damage incurred during shipment. If a claim for damage is to be made, save the shipping container to substantiate the claim. The claim should be promptly filed with the transportation company.

It would be advisable to retain the container and packaging material after all equipment has been removed in the event that equipment storage or reshipment should become necessary.

2.2 EQUIPMENT INSTALLATION

The following paragraphs contain information pertaining to the installation of the KMD 540 Multi-Function Display. The equipment should be installed in the aircraft in accordance with the instructions set forth in this publication. To ensure that the equipment has been properly and safely installed in the aircraft, the installer should make a thorough inspection and conduct an overall operational check of the system, on the ground, prior to flight. Refer to 2.2.4 Electrical Installation for additional wiring information.

CAUTION: AFTER INSTALLATION OF THE CABLING AND BEFORE INSTALLATION OF THE EQUIPMENT, A CHECK SHOULD BE MADE WITH AIRCRAFT PRIMARY POWER SUPPLIED TO THE MOUNTING CONNECTOR. THIS WILL ENSURE THAT POWER IS APPLIED ONLY TO THE PINS SPECIFIED IN THE INTERCONNECTION DIAGRAMS.

The installation should be installed in accordance with standards established by the customer's installing agency and existing conditions as to unit location and type of installation. However, the following suggestions should be considered before installing the system.

Close adherence to these suggestions will assure a more satisfactory performance from the equipment. The installing agency will supply and fabricate all external cables. The connectors required are supplied by Honeywell.

NOTE: The TSO identifies the minimum performance standards, tests, and other conditions applicable for issuance of design and production approval of the article. The TSO does not specifically identify acceptable conditions for installation of the article. The TSO applicant is responsible for documenting all limitations and conditions suitable for installation of the article. An applicant requesting approval for installation of the article within a specific type or class of product is responsible for determining environmental and functional compatibility.

2.2.1 Cooling Considerations

The KMD 540 is cooled by an internal fan. Ensure that the unit is installed in a location where cabling and other equipment do not block fan circulation.

2.2.2 Mechanical Installation

The installation of the KMD 540 will conform to standards designated by the customer, installing agency, and existing conditions as to unit location and type of installation. The following suggestions will assure a more satisfactory performance from the equipment.

A. Plan a location on the aircraft panel so that the unit is plainly visible to the pilot and so that the pilot has complete access to all front panel controls. Ensure that there is adequate depth behind the panel for the mounting rack and all connectors and cabling. Also, ensure that the mounting location is not close to high heat sources.

B. The KMD 540 is installed in a mounting tray in the instrument panel of the aircraft. The total space required for the KMD 540 can be determined from the outline and mounting diagram, FIGURE 2-5 KMD 540 Installation Drawing. Refer also to FIGURE 2-5 KMD 540 Installation Drawing for panel cut-out dimensions. Mark and cut the opening accordingly.

The mounting tray for the KMD 540 is designed for front loading. Clean all mounting surfaces before installing the mounting tray to ensure a good electrical bond to the airframe. The mounting tray is secured to the instrument panel and airframe with six screws, three on each side.

To install the KMD 540, slide the KMD 540 into its mounting tray. Press on the front of the KMD 540 with one hand while using an 3/32" Allen wrench to engage the locking pawl.

The locking pawl access hole is located near the upper right corner on the front panel of the KMD 540.

2.2.3 Option Module Installation

CAUTION: THIS EQUIPMENT CONTAINS ELECTROSTATIC DISCHARGE SENSITIVE (ESDS) DEVICES AND MUST BE STORED AND TRANSPORTED IN ACCORDANCE WITH PROPER ESDS PRACTICES. PROPER ESDS HANDLING PRACTICES MUST BE OBSERVED DURING THE INSTALLATION OF THE KAC 501, KAC 502, KAC 503, AND KAC 504 OPTION MODULES INTO THE KMD 540 BASE UNIT.

2.2.3.1 KAC 501 Digital Weather Radar Module

To use weather radar capabilities, a KAC 501 module must be installed in the KMD 540 base unit. Install the KAC 501 module in the KMD 540 per FIGURE 2-6 KAC 501 Installation Drawing and following the procedure:

A. Remove screws as shown.
B. Slide Cover and remove.
C. Remove Locking bar.
D. Insert module in proper card slot.
E. Insert and rotate locking bar.
F. Replace cover and screws.
G. Affix KAC 501 Reference Sticker (P/N 057-05998-00XX) to unit as shown.
H. Refer to 4.3.2 KMD 850 Configuration for module configuration and test.

2.2.3.2 KAC 502 EGPWS Module

To use EGPWS capabilities, a KAC 502 module must be installed in the KMD 540 base unit. Install the KAC 502 module in the KMD 540 per FIGURE 2-7 KAC 502 Installation Drawing and following the procedure:

A. Remove screws as shown.
B. Slide Cover and remove.
C. Remove Locking bar.
D. Insert module in proper card slot.
E. Insert and rotate locking bar.
F. Replace cover and screws.
G. Affix KAC 502 Reference Sticker (P/N 057-05999-00XX) to unit as shown.
H. Refer to 4.5.1 KAC 502 Configuration for module configuration and test.

2.2.3.3 KAC 503 FIS Module

To use FIS capabilities, a KAC 503 module must be installed in the KMD 540 base unit. Install the KAC 503 module in the KMD 540 per FIGURE 2-8 KAC 503 Installation Drawing and following the procedure:

A. Remove screws as shown.
B. Slide Cover and remove.
C. Remove Locking bar.
D. Insert module in proper card slot.
E. Insert and rotate locking bar.
F. Replace cover and screws.
G. Affix KAC 503 Reference Sticker (P/N 057-06010-00XX) to unit as shown.
H. Refer to 4.7.2 KAC 503 Configuration for module configuration and test.

2.2.3.4 KAC 504 Traffic Module

To use traffic capabilities, a KAC 504 module must be installed in the KMD 540 base unit. Install the KAC 504 module in the KMD 540 per FIGURE 2-9 KAC 504 Installation Drawing and following the procedure:

A. Remove screws as shown.
B. Slide Cover and remove.
C. Remove Locking bar.
D. Insert module in proper card slot.
E. Insert and rotate locking bar.
F. Replace cover and screws.
G. Affix KAC 504 Reference Sticker (P/N 057-06003-00XX) to unit as shown.
H. Refer to 4.6.2 KAC 504 Configuration for module configuration and test.

2.2.4 Electrical Installation

The KMD 540 will operate with an input voltage of 10 to 33 VDC; however, front panel lighting must be +5 VDC, 5 VAC, +14 VDC, or +28 VDC depending on the aircraft lighting bus. Refer to the unit interconnection diagrams (SECTION III) for specifics.

The KMD 540 uses two 37 pin D-Type connectors to interface between the LRU and the aircraft. Also, the unit uses a BNC connector to interface between the unit and the external video source.

FIGURE 2-1 KMD 540 Exploded Rear Connector Diagram shows an exploded view of the rear of the unit with connector locations and pinout orientation. Refer to FIGURE 2-2 KMD 540 Connector J3001 Pinout Diagram and FIGURE 2-3 KMD 540 Connector J3002 Pinout Diagram for detailed pinout information. Please note the following paragraphs for additional electrical information.

A. The installing facility will supply and fabricate all external cables. The required connectors are supplied as part of the installation kit.

B. The length and routing of the external cables must be carefully planned before attempting the actual installation. Avoid sharp bends or locating the cable near aircraft control cables. The cables should be of a length to allow for a “maintenance loop”. That is, the length should be adequate to access and extend the connectors aft of the panel for future maintenance purposes. Excess cabling should be secured and stowed by tie-wrapping until such maintenance is required.

C. The cables should be supported firmly enough to prevent movement. They should be carefully protected wherever one may chafe against another or against some other object. Extra protection should be provided in all locations where the cables may be subject to abuse. Shields on shielded wires should be grounded as shown on the system interconnection diagrams.

D. Shields should be carried through any obstruction via a thru-bulkhead connector. If shielding cannot be carried through by use of a bulkhead/connector pin, precautions should be taken to ensure each segment of the shielded lead be grounded at only one point. A ground connection of not more than two inches in length should be used. The preceding discussion does not apply to coaxial and quadraxial cable.

E. Avoid routing cabling near high noise and high power sources.

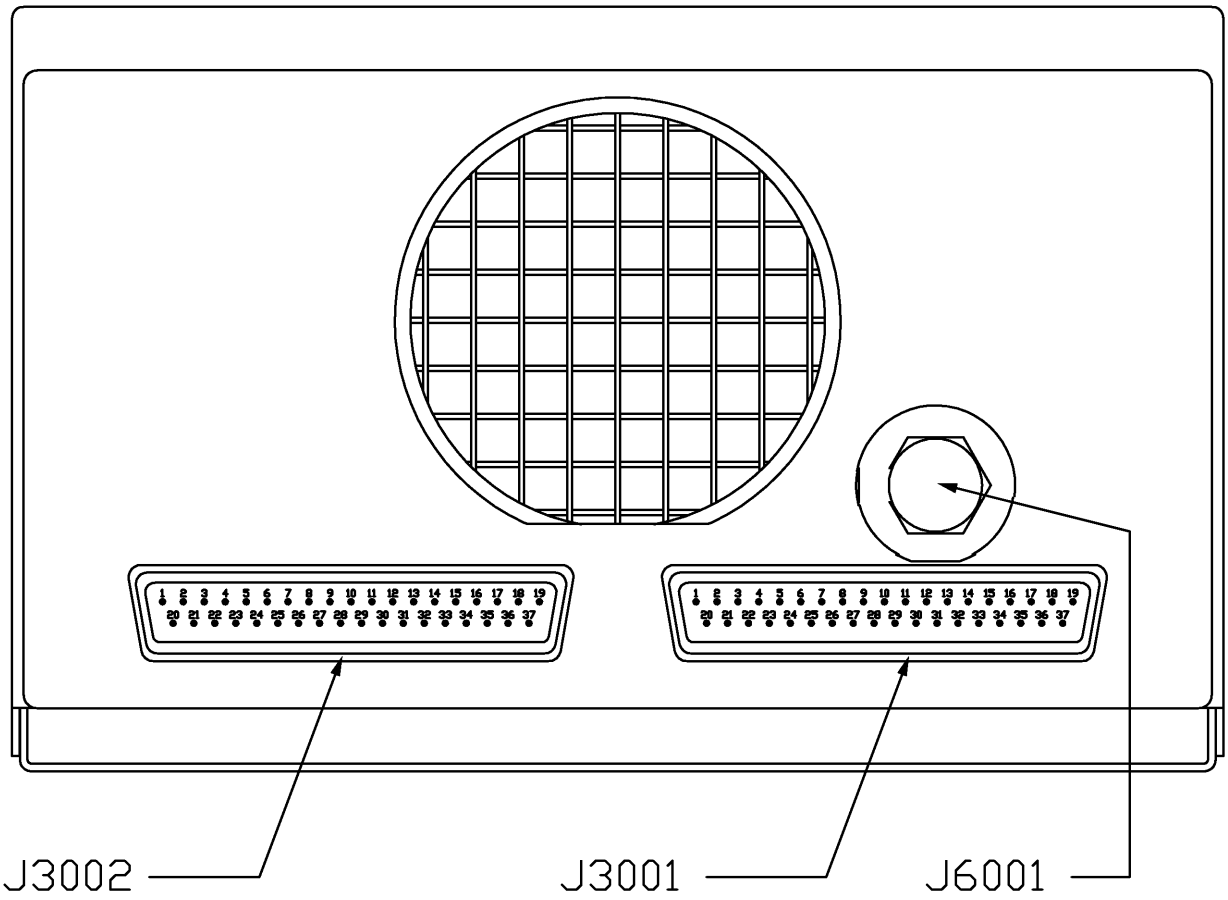
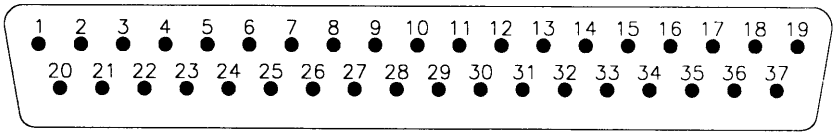


FIGURE 2-1 KMD 540 Exploded Rear Connector Diagram

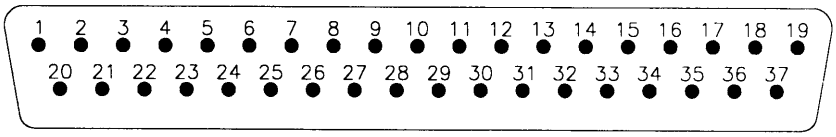


J3001	I/O	PIN NAME	SPECIFICATION
1		RESERVED	N.A.
2	I	GPS RS-232 INPUT	RS-232
3	O	GPS RS-232 OUTPUT	RS-232
4	I	STORMSCOPE GROUND	STORMSCOPE SHIELD RETURN
5	I	ACRFT SUPPLY	+10 VDC TO +33 VDC
6	I	ACRFT SUPPLY	+10 VDC TO +33 VDC
7	O	WX ARINC 429 OUTPUT (A)	ARINC 429 (KAC 501)
8	O	WX ARINC 429 OUTPUT (B)	ARINC 429 (KAC 501)
9	I	WX ARINC 453 SHIELD	ARINC 453 SHIELD RETURN (KAC 501)
10	O	WX RT $\overline{\text{ON}}$/OFF OUTPUT	ENABLE = < 10 OHMS TO GROUND (KAC 501)
11	I	EGPWS ARINC 453 SHIELD	EGPWS SHIELD RETURN (KAC 502)
12	I	EGPWS KCPB INPUT (A)	KCPB (KAC 502)
13	I	EGPWS KCPB INPUT (B)	KCPB (KAC 502)
14	O	TERRAIN INHIBIT	(KAC 502)
15		RESERVED	N.A.
16	I	LIGHTING BUS	+5,+14,+28 VDC OR 5 VAC
17	I	SOFTWARE UPGRADE ENABLE	ENABLE = < 10 OHMS TO GROUND
18	I	FIS INPUT (B)	RS-485 (KAC 503)
19	I	FIS INPUT (A)	RS-485 (KAC 503)
20		RESERVED	N.A.
21	I	GPS GROUND	GPS RS-232 SHIELD RETURN
22	I	STORMSCOPE RS-232 INPUT	RS-232

FIGURE 2-2 KMD 540 Connector J3001 Pinout Diagram
(Sheet 1 of 2)

J3001	I/O	PIN NAME	SPECIFICATION
23	O	STORM SCOPE RS-232 OUTPUT	RS-232
24	I	ACRFT GND	UNIT DC POWER RETURN
25	I	ACRFT GND	UNIT DC POWER RETURN
26	I	WX ARINC 429 SHIELD	WX SHIELD RETURN (KAC 501)
27	I	WX ARINC 453 INPUT (A)	ARINC-453 (KAC 501)
28	I	WX ARINC 453 INPUT (B)	ARINC-453 (KAC 501)
29	O	EGPWS ARINC 429 OUTPUT (A)	ARINC-429 (KAC 502)
30	O	EGPWS ARINC 429 OUTPUT (B)	ARINC-429 (KAC 502)
31	I	EGPWS KCPB SHIELD	EGPWS SHIELD RETURN (KAC 502)
32		N/C	
33		RESERVED	N.A.
34		RESERVED	N.A.
35	O	FIS OUTPUT (B)	RS-485 (KAC 503)
36	O	FIS OUTPUT (A)	RS-485 (KAC 503)
37	I	FIS GROUND	SHIELD RETURN (KAC 503)

FIGURE 2-2 KMD 540 Connector J3001 Pinout Diagram
(Sheet 2 of 2)



J3002	I/O	PIN NAME	SPECIFICATION
1	I	LIGHTNING ARINC 429 INPUT (A)	ARINC-429 (KAC 504)
2	I	LIGHTNING ARINC 429 INPUT (B)	ARINC-429 (KAC 504)
3		RESERVED	N.A.
4	I	TRFC RS-232 GROUND	TRFC PORT SHIELD RETURN (KAC 504)
5		N/C	N/C INTERNAL
6		N/C	N/C INTERNAL
7	O	TRFC ARINC 429 OUTPUT (A)	ARINC-429 (KAC 504)
8	O	TRFC ARINC 429 OUTPUT (B)	ARINC-429 (KAC 504)
9	I	TRFC ARINC 429 INPUT SHIELD	SHIELD RETURN (KAC 504)
10	O	TRFC DISPLAY VALID	OPEN COLLECTOR OUTPUT (KAC 504)
11		RESERVED	N.A.
12	I	FMS/HDG ARINC 429 INPUT (A)	ARINC-429 (KAC 504)
13	I	FMS/HDG ARINC 429 INPUT (B)	ARINC-429 (KAC 504)
14		RESERVED	N.A.
15		RESERVED	N.A.
16		N/C	N/C INTERNAL
17		RESERVED	N.A.
18	I	SYNCHRO HDG X	(KAC 504)
19	I	SYNCHRO HDG Y	(KAC 504)
20	I	LIGHTNING ARINC 429 INPUT SHIELD	SHIELD RETURN (KAC 504)
21	I	CH 1 RS-232 RX (ADC)	RS-232
22	I	TRFC RS-232 INPUT	RS-232 (KAC 504)

FIGURE 2-3 KMD 540 Connector J3002 Pinout Diagram
(Sheet 1 of 2)

J3002	I/O	PIN NAME	SPECIFICATION
23	O	TRFC RS-232 OUTPUT	RS-232 (KAC 504)
24		RESERVED	N.A.
25		RESERVED	N.A.
26	I	TRFC ARINC 429 OUTPUT SHIELD	SHIELD RETURN (KAC 504)
27	I	TRFC ARINC 429 INPUT (A)	ARINC-429 (KAC 504)
28	I	TRFC ARINC 429 INPUT (B)	ARINC-429 (KAC 504)
29		RESERVED	N.A.
30		RESERVED	N.A.
31		FMS/HDG ARINC 429 SHIELD	SHIELD RETURN (KAC 504)
32	I	CH 2 RS-232 RX (PC LINK)	RS-232
33	O	CH 2 RS-232 TX (PC LINK)	RS-232
34		CH 2 RS-232 SHIELD (PC LINK)	SHIELD RETURN
35	I	SYNCHRO HDG REF	(KAC 504) 26 VAC HI
36	I	SYNCHRO HDG VALID	(KAC 504) 28 VDC or Ground
37	I	SYNCHRO HDG GROUND	(KAC 504) 26 VAC LO

FIGURE 2-3 KMD 540 Connector J3002 Pinout Diagram

MANUFACTURER/SOURCE	CRIMP TOOL	POSITIONER 18 AWG	POSITIONER 20-30 AWG
HONEYWELL	005-02012-0034	N.A.	N.A.
MIL-SPEC	M22520/2-01	N.A.	M22520/2-08
DANIELS MFG.	AFM8 (M22520/2-01)	K774	K13-1 (M22520/2-08)
POSITRONICS	9507-0-0	9502-11 (K774)	9502-5 (K13-1)
ASTRO (BUCHANAN)	615717 (M22520/2-01)	N.A.	615724 (M22520/2-08)

MANUFACTURER/SOURCE	INSERTION/EXTRACTION TOOL PART NUMBER
HONEYWELL	005-02012-0025
MIL SPEC	M81969/1-02 (SUPERCEDES MIL SPEC P/N: M24308/18-2) ORDER FROM POSITRONICS, DANIELS, OR ASTRO BY MIL SPEC P/N.

Note: For use with standard D-sub Size 20 Crimp contacts.

Note: Tools and positioners from ASTRO and DANIELS are interchangeable.

Vendor Ordering Information:

Astro Tool Company
21615 SW TV Hwy, Beaverton, OR 97006
(503) 642-9853 * Fax: 503-591-7766 * Email: sales@astrotool.com

Daniels Manufacturing Company (DMC)
526 Thorpe Road, Orlando, FL 32824-8133 USA
Tel: 407-855-6161 * Fax: 407-855-6884 * Email: dmc@dmctools.com

Positronics Industries, Inc.
423 N. Campbell Ave P.O. Box 8247, Springfield, MO 65801
Tel: 800-641-4054 * Fax: 417-866-4115 * Email: info@connectpositronics.com

FIGURE 2-4 KMD 540 Crimp, Insertion, and Extraction Tools

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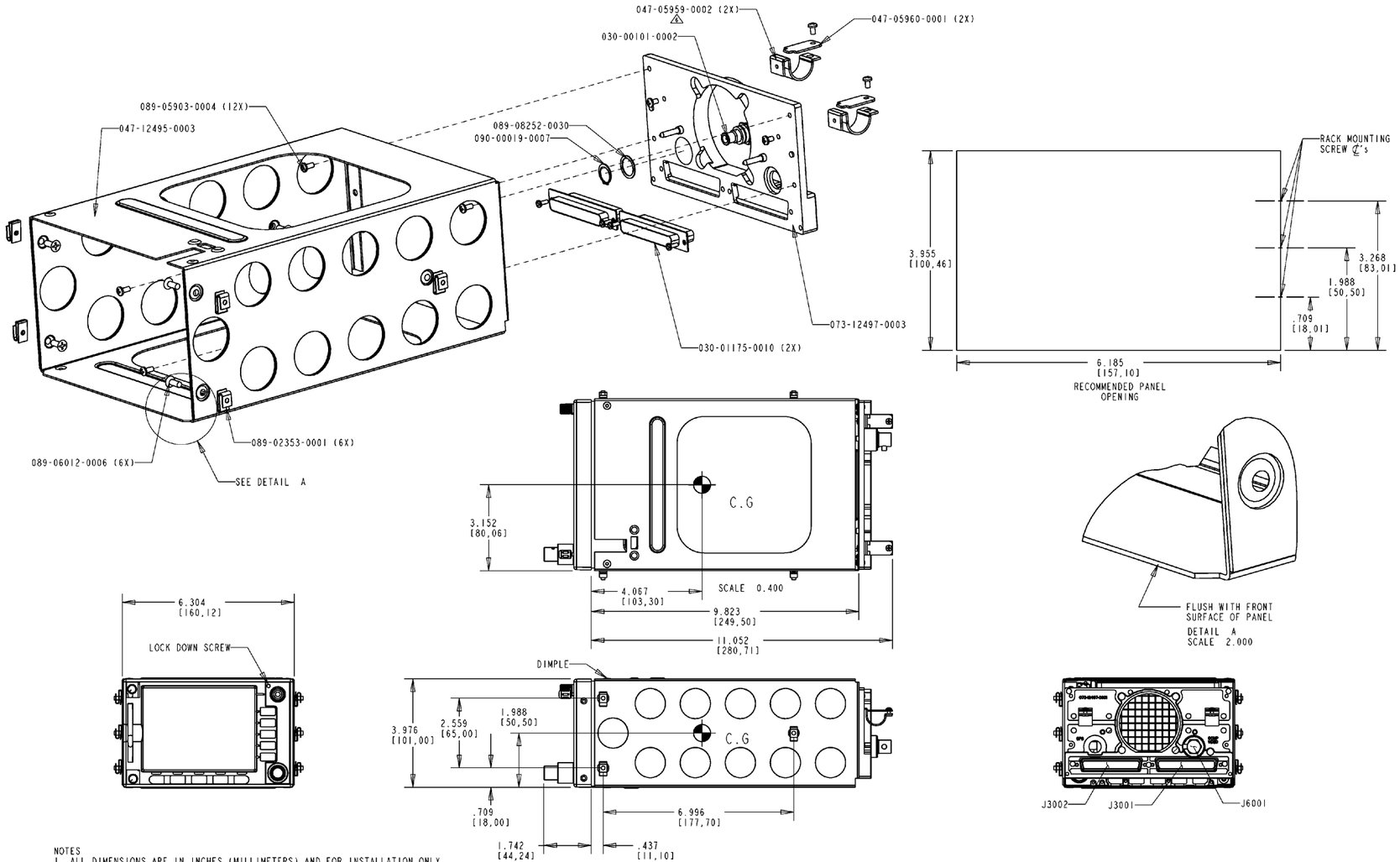

NOTES
1. ALL DIMENSIONS ARE IN INCHES (MILLIMETERS) AND FOR INSTALLATION ONLY
2. ⚠ UNIT WEIGHT: THE UNIT SERIAL TAG SHOW A WEIGHT OF 5.5 LBS (2.5 KG). THIS IS THE NOMINAL WEIGHT OF THE UNIT WITH A TYPICAL SET OF INSTALLED OPTIONS. SEE THE MODULE WEIGHT TABLE TO CALCULATE THE WEIGHT OF A UNIT WITH A SPECIFIC SET OF OPTIONAL MODULES.
3. TOLERANCES FOR PANEL CUTOUTS: +0.030 (+0.76)/-0.000 (-0.00)
4. DETERMINE STACK HEIGHT BY USING THE HEIGHT DIMENSIONS OF THE FRONT BEZEL
5. WHEN INSTALLING TWO OR MORE PANEL MOUNTED UNITS IN A STACK, THE MOUNTING TRAY SHALL BE 0.050 INCH (1.27MM) ⚠ APART. MOUNTING TRAY SHALL HAVE 0.025 INCH (0.63MM) DIMPLES BUILT IN TOP AND BOTTOM SO THAT TWO TRAYS WILL AUTOMATICALLY BE SPACED PROPERLY. PRIOR TO FASTENING 047-05960-0001 TO 047-05959-0002 PROTECT WIRE BUNDLE TO AVOID CHAFING

⚠ MODULE WEIGHT TABLE

COMPONENT	Weight	
	LBS	KG
KMD 540 WITH NO OPTION BOARDS	4.66	2,11
KAC 501	0.29	0,13
KAC 502	0.29	0,13
KAC 503	0.18	0,082
KAC 504	0.30	0,14
MOUNTING RACK	1.05	0,48

REF B/M: 050-03605-0000

FIGURE 2-5 KMD 540 Installation Drawing (P/N 155-06053-0000 Rev. F)

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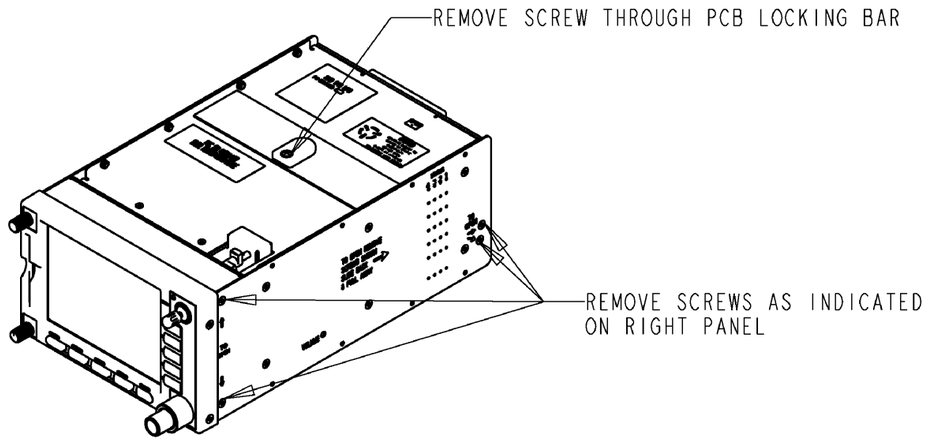

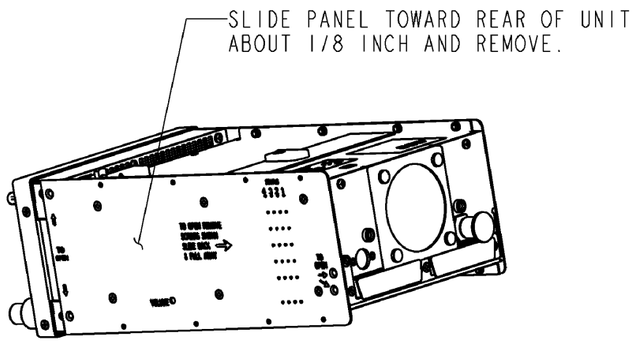

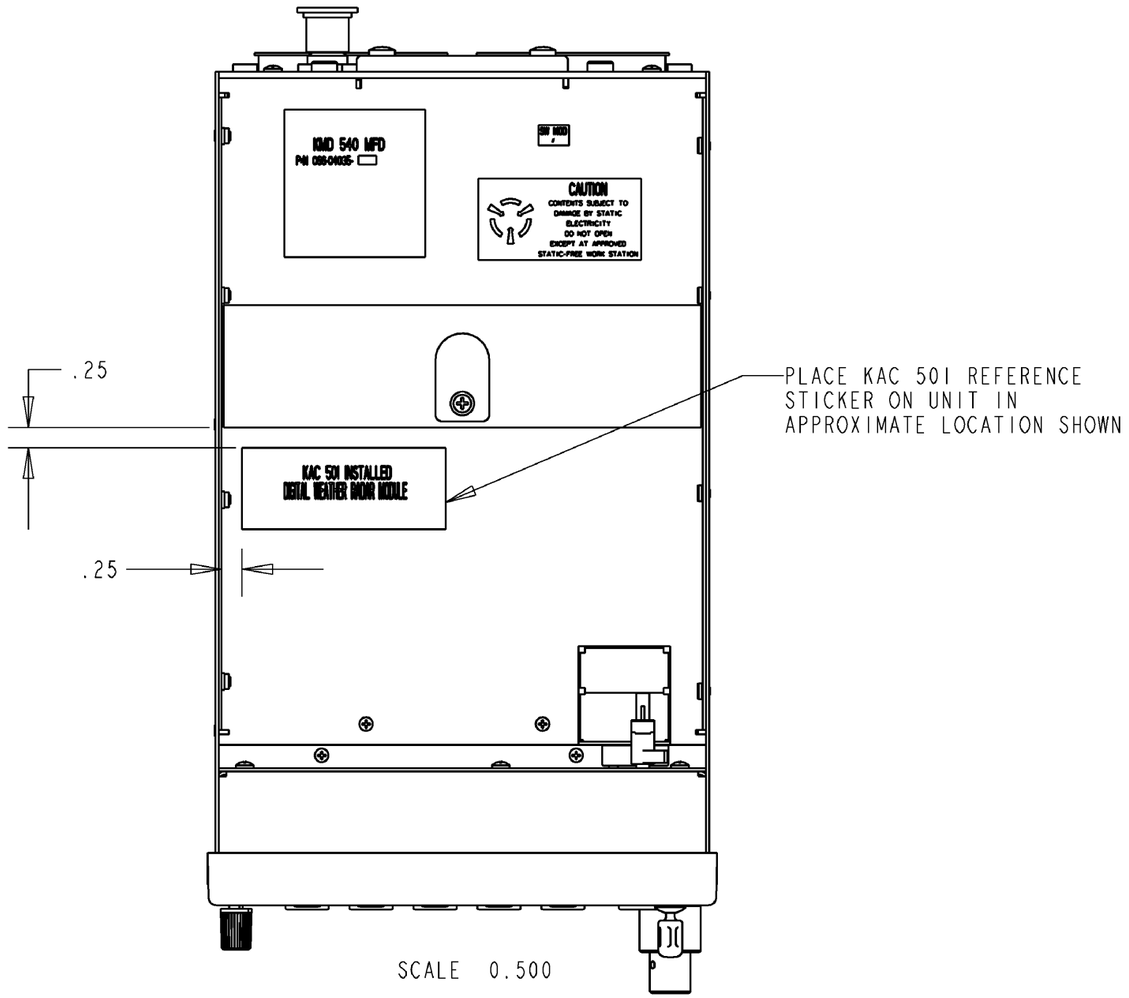

FIGURE 2-6 KAC 501 Installation Drawing (P/N 155-01737-0000 Rev. A, Sheet 1 of 2)

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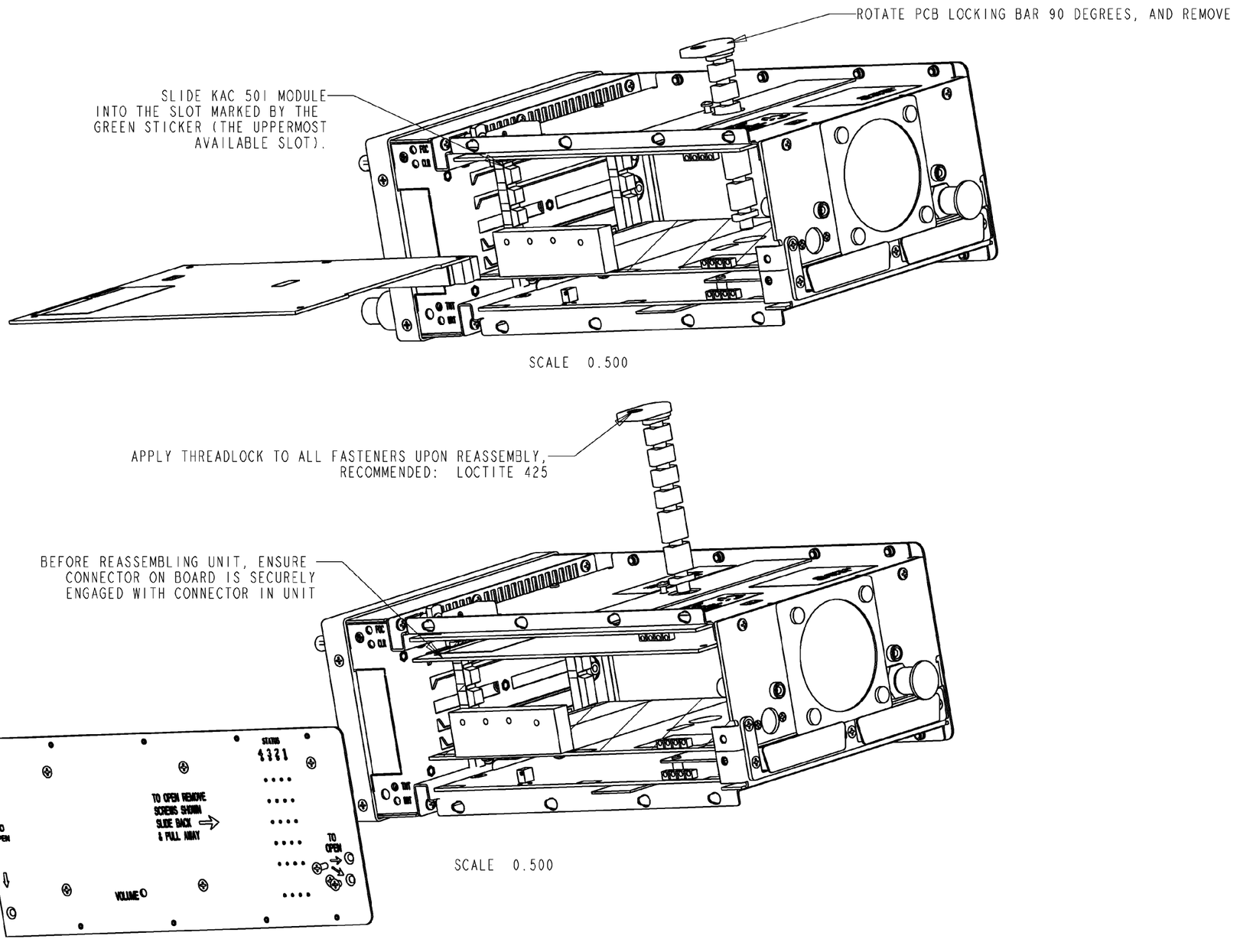

FIGURE 2-6 KAC 501 Installation Drawing
(P/N 155-01737-0000 Rev. A, Sheet 2 of 2)

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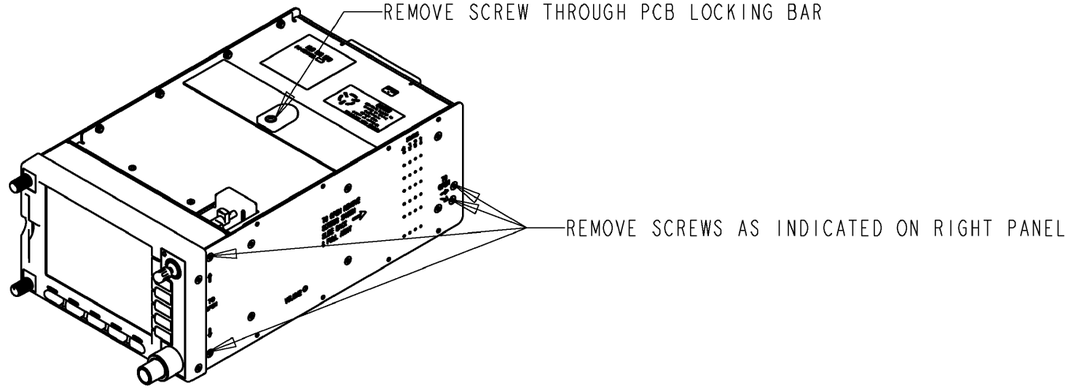

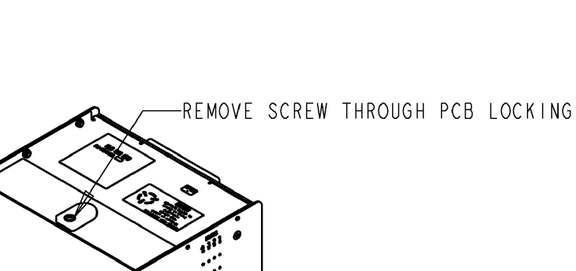

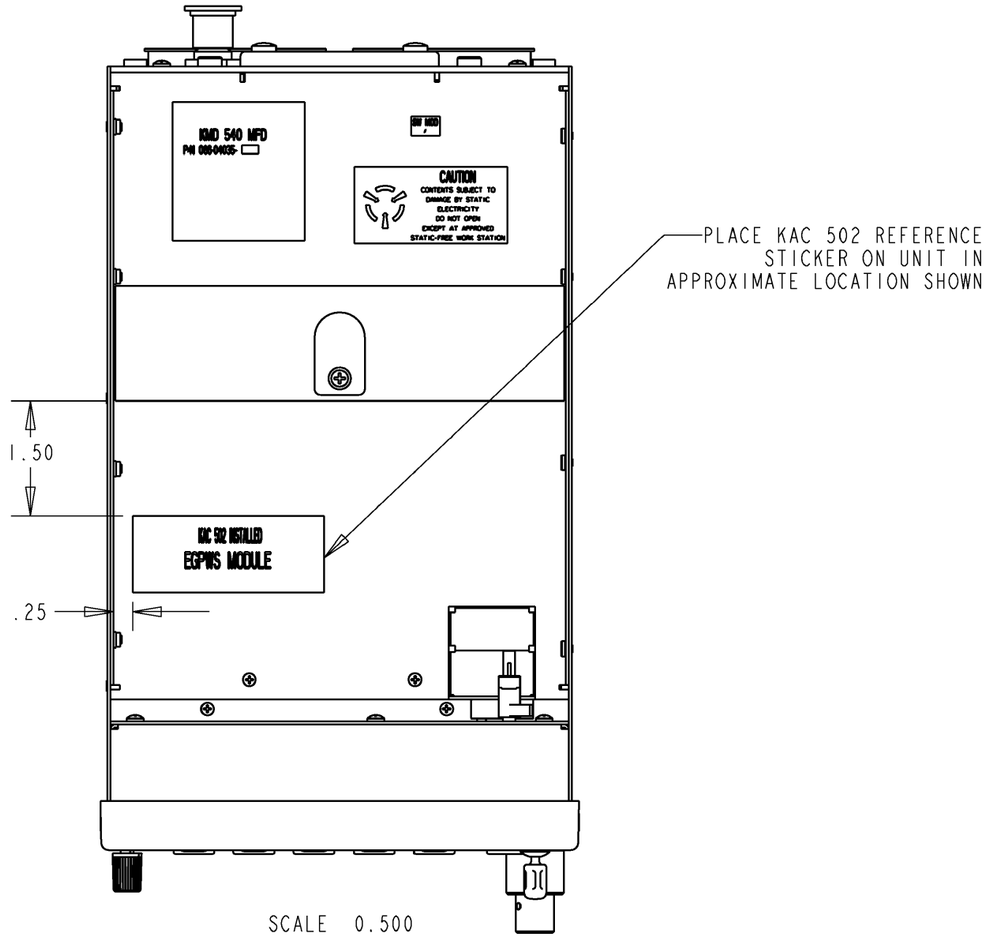

FIGURE 2-7 KAC 502 Installation Drawing (P/N 155-01739-0000 Rev. A, Sheet 1 of 2)

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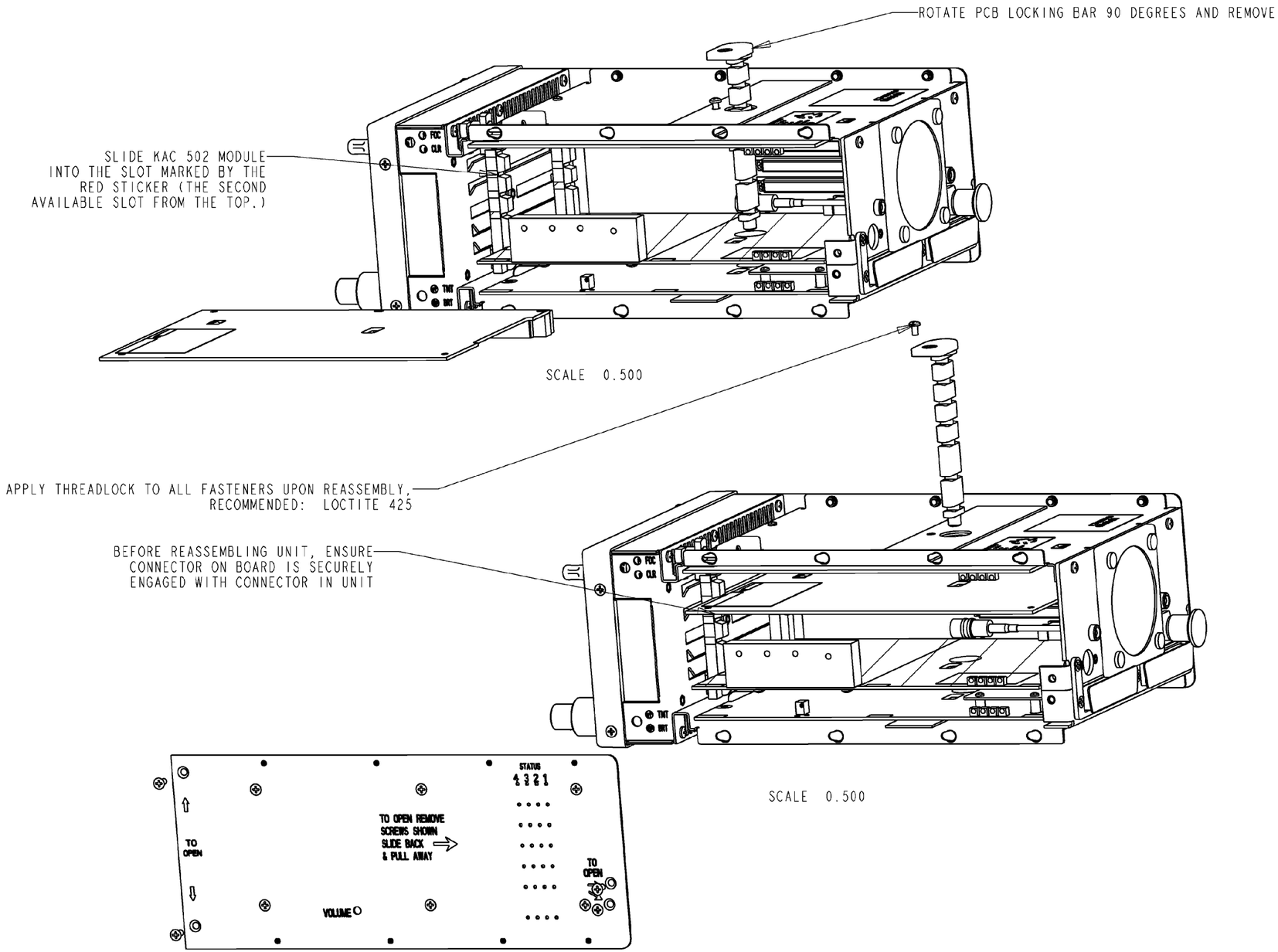

FIGURE 2-7 KAC 502 Installation Drawing (P/N 155-01739-0000 Rev. A, Sheet 2 of 2)

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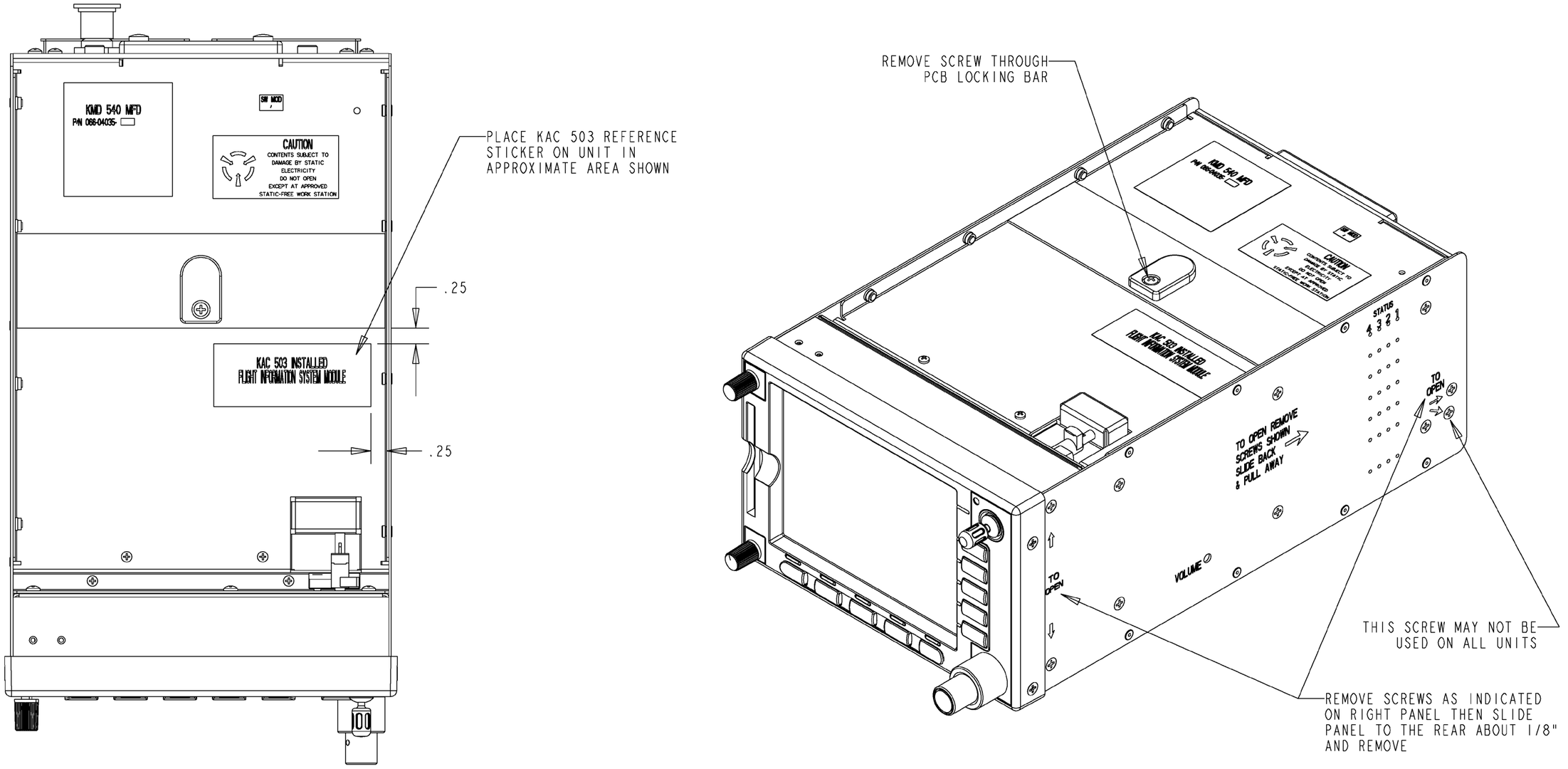

FIGURE 2-8 KAC 503 Installation Drawing
(P/N 155-01744-0000 Rev. -, Sheet 1 of 2)

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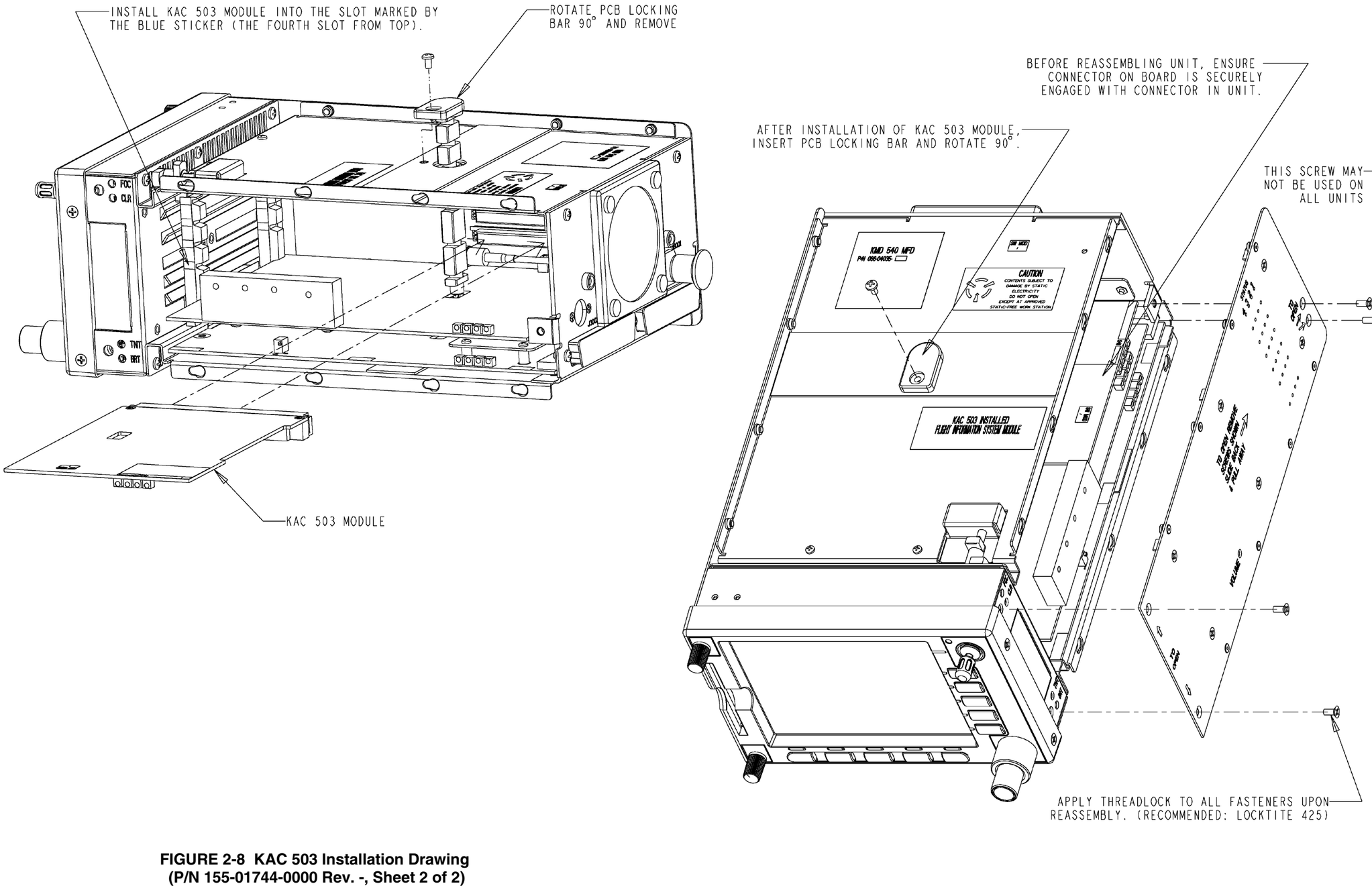

FIGURE 2-8 KAC 503 Installation Drawing
(P/N 155-01744-0000 Rev. -, Sheet 2 of 2)

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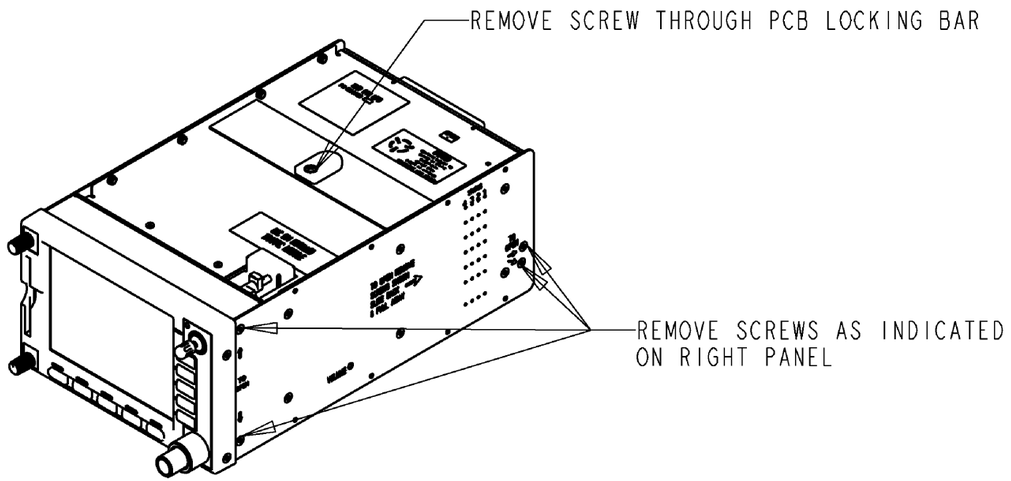

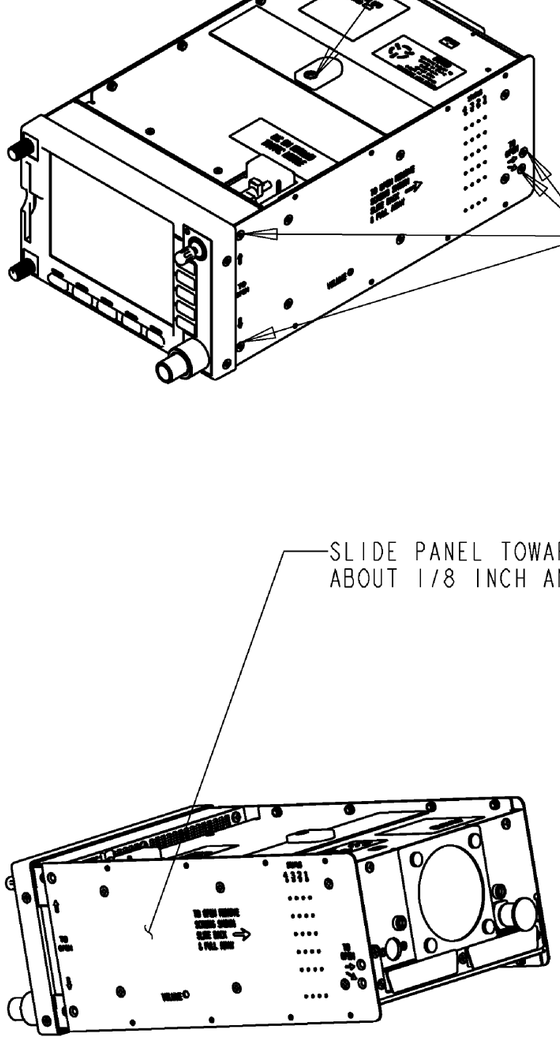

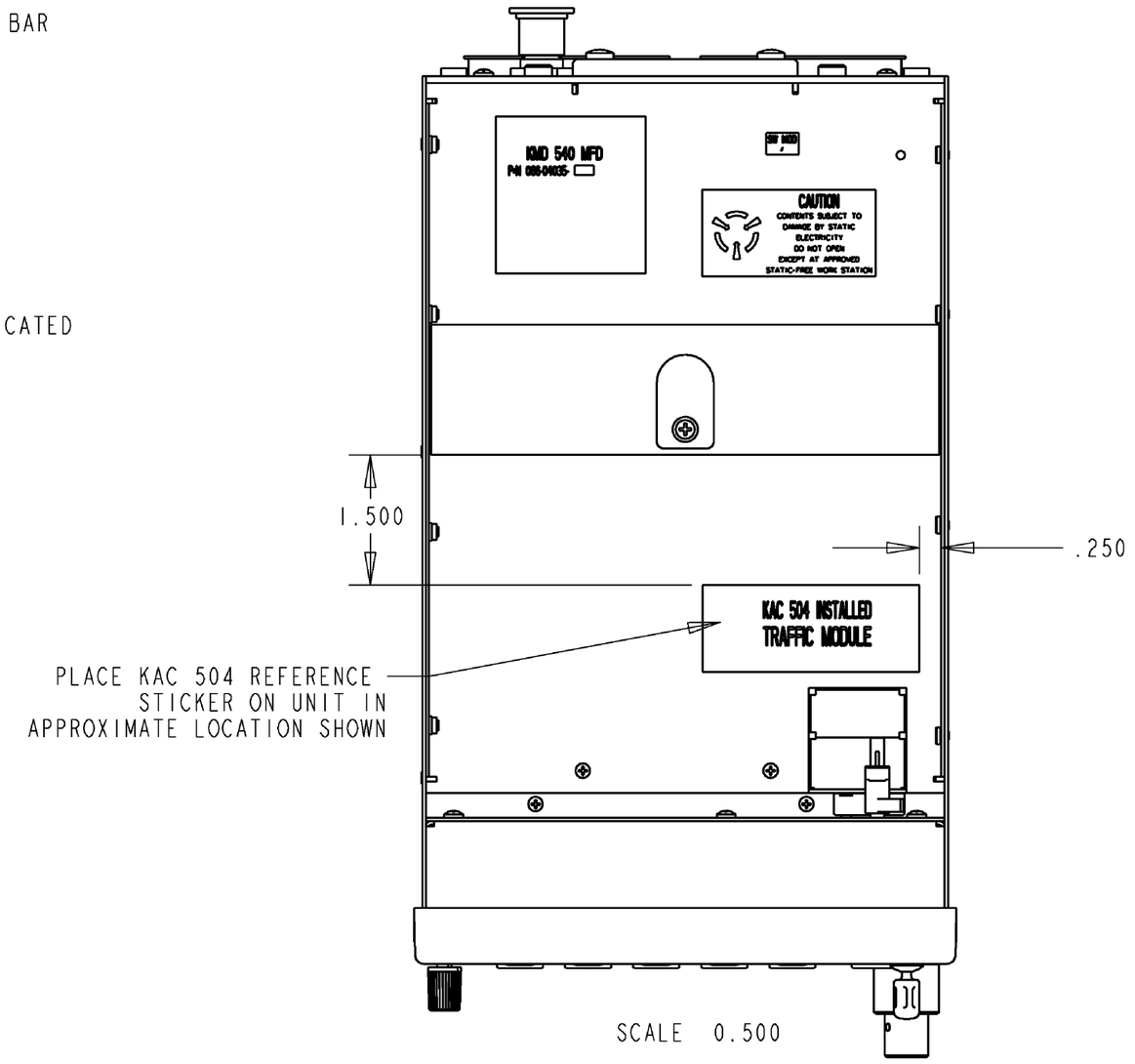

FIGURE 2-9 KAC 504 Installation Drawing (P/N 155-01738-0000 Rev. -, Sheet 1 of 2)

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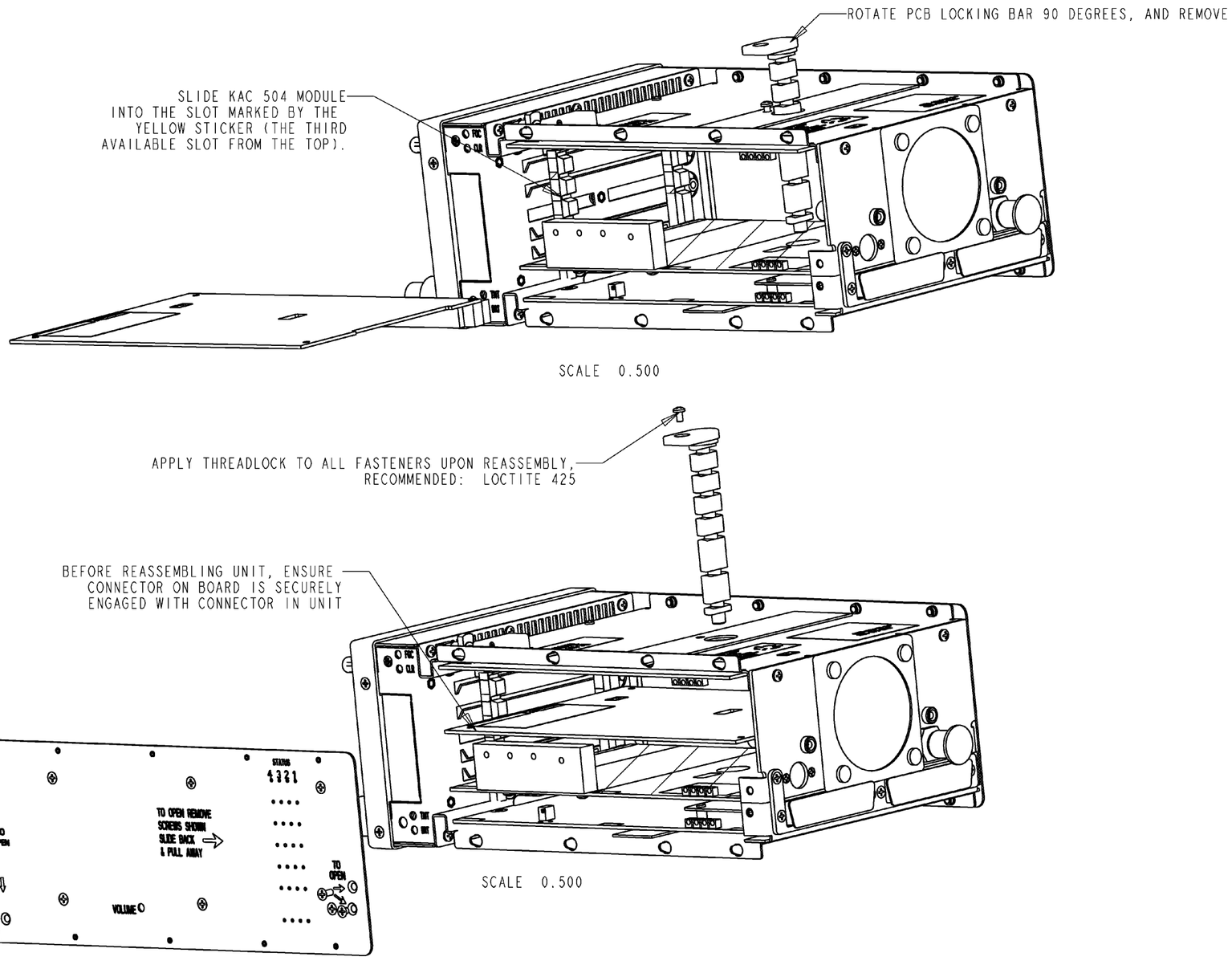

FIGURE 2-9 KAC 504 Installation Drawing (P/N 155-01738-0000 Rev. -, Sheet 2 of 2)

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SECTION III
SYSTEM INTERCONNECTS

3.0 INTRODUCTION

Section III contains information relative to KMD 550/850 system interconnection diagrams, options available to the system planner, and specific electrical characteristics of the various interfaces where applicable. References to the KMD 540 base unit refer to functionality common to both the KMD 550 and KMD 850 systems. Refer also to section 2.2.4 Electrical Installation, and FIGURE 2-1 KMD 540 Exploded Rear Connector Diagram, FIGURE 2-2 KMD 540 Connector J3001 Pinout Diagram and FIGURE 2-3 KMD 540 Connector J3002 Pinout Diagram for additional electrical information. FIGURE 3-1 KMD 540 Interconnect Family provides a matrix of the KMD 550/850 interconnect diagrams. Subsequent figures in Section III contain information for the specific interfaces.

For information regarding the compatibility of equipment not listed in this manual, the installing agency should contact Honeywell at (913) 712-0400 and ask for Product Support. Normal business hours are 8:00 AM to 5:00 PM Central Time, Monday through Friday.

Section III is divided into major sections by interface type or major topic. Each major section describes in detail the specifications for particular types of interfaces connecting to the KMD 550/850.

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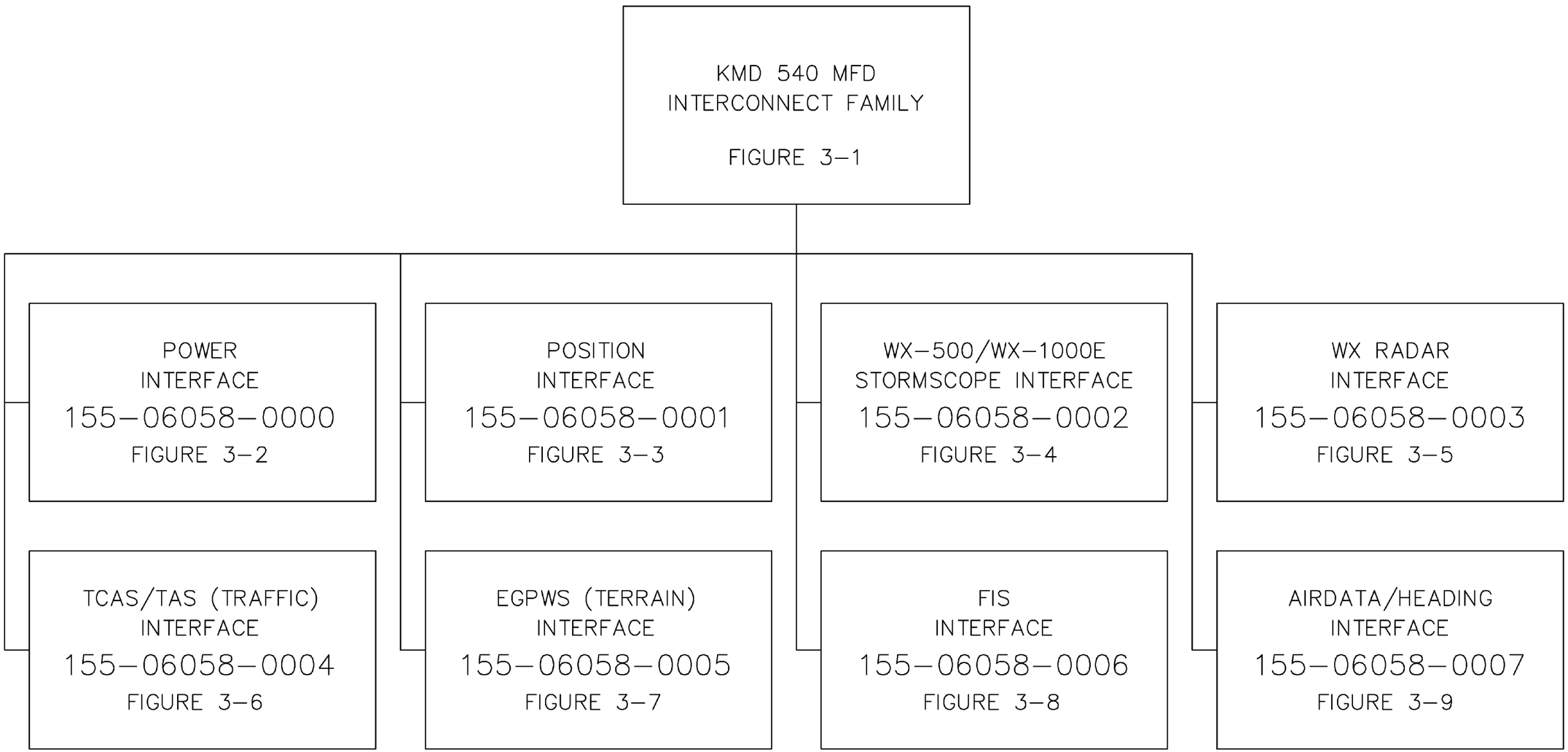

FIGURE 3-1 KMD 540 Interconnect Family

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3.1 KMD 540 POWER INTERFACE

3.1.1 General

The KMD 540 Power Interface contains information relative to both the aircraft power bus and the lighting bus. Also included is information relating to the NTSC video bus and software upgrade enable.

3.1.2 Power Interface

Refer to FIGURE 3-2 KMD 540 Power Interface for specific interconnection information.

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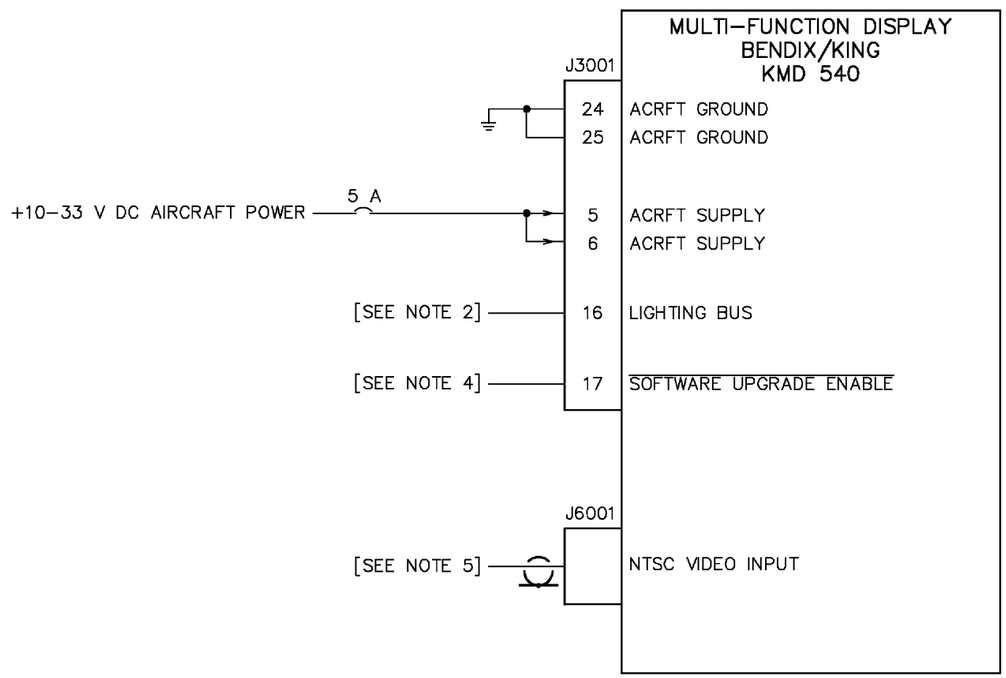

NOTES:

1. ALL STRANDED WIRE SHALL CONFORM TO MIL–W–22759/16 SPEC OR EQUIVALENT. ALL SHIELDED WIRE SHALL CONFORM TO MIL–C–27500 SPEC OR EQUIVALENT. ALL WIRES ARE 22 GAUGE UNLESS OTHERWISE NOTED.
2. +14VDC, +28VDC, +5VDC OR 5VAC LIGHTING BUS VOLTAGE.
3. ⏚ CONNECT THE SHIELD/PIN TO AIRCRAFT CHASSIS WITH AS SHORT A CONDUCTOR AS PRACTICAL.
4. GROUNDED TO ENABLE TRANSFER OF OPERATING SYSTEM FROM PCMCIA CARD TO INTERNAL FLASH MEMORY. THIS SHOULD NOT BE CONNECTED IN THE AIRCRAFT. IT IS FOR MAINTENANCE USE ONLY.
5. NTSC VIDEO INPUT REQURIES A 75 OHM COAXIAL CABLE.

FIGURE 3-2 KMD 540 Power Interface
(P/N 155-06058-0000 Rev. A)

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3.2 POSITION

3.2.1 Position Function

The KMD 540 will utilize position information from a GPS or FMS sensor. It can be configured for either RS-232 or ARINC 429 as the position source. ARINC 429 source options require the installation and proper configuration of a KAC 504 TRFC option card.

The position function provides the information that the MFD needs to properly display and orient the moving map. Most sensors also output flight plan information that can be overlaid on the map and other pages.

3.2.2 Expected ARINC 429/Position Label Information

The following table lists the expected ARINC 429 labels that are provided by an FMS or GPS.

Octal Label	Parameter Name	Maximum Interval	Applicable Notes
074	Data Record Header	See Notes	1, 2
075	Active Waypoint From/To Data	See Notes	1, 2
113	Message Checksum	See Notes	1
114	Desired Track	1 sec	
115	Waypoint Bearing	1 sec	
116	Cross Track Distance	1 sec	
125	GMT	1 sec	
147	Magnetic Variation	1 sec	
251	Distance To Go	1 sec	
260	Date	10 sec	
301	Message Characters 7-9	See Notes	1, 3
302	Message Characters 10-12	See Notes	1, 3
303	Message Length, Type, Number	See Notes	1
304	Message Characters 1-3	See Notes	1
305	Message Characters 4-6	See Notes	1
306	Waypoint Latitude	See Notes	1
307	Waypoint Longitude	See Notes	1
310	Present Position Latitude	1 sec	
311	Present Position Longitude	1 sec	
312	Ground Speed	1 sec	
313	Track Angle - True	1 sec	
320	Magnetic Heading	1 sec	4

Notes:

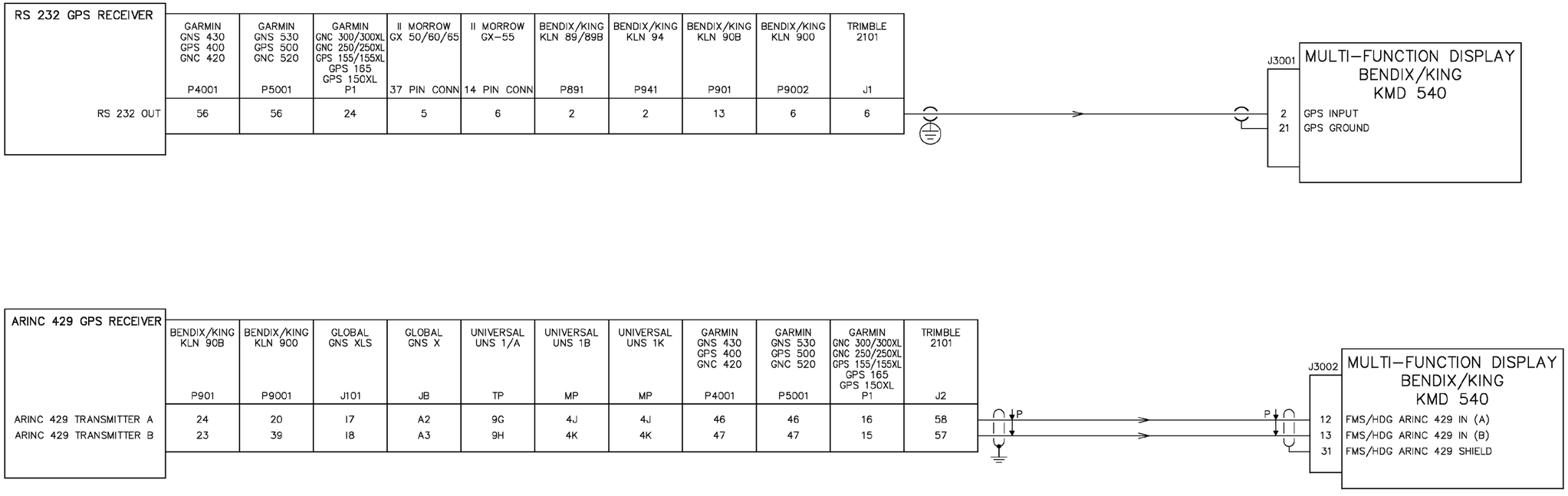
1. Labels 113, 301, 302, 303, 304, 305, 306 and 307 are transmitted in a block with label 113 occurring last. One block is transmitted for each flight plan waypoint with one waypoint transmitted at least every 200 ms.
2. Labels 074 and 075 should be transmitted at the beginning of the sequence of flight plan waypoint blocks (see also note 1).
3. If labels 301 and 302 are present, they will provide a second line of 6 characters displayed below the waypoint identifier (provided in labels 304 and 306).
4. Magnetic Heading (label 320) is not required, but the KMD 550/850 will accept heading from the FMS if it is available.

TABLE 3-1 ARINC 429 Labels Expected on the FMS Interface

3.2.3 Position Interface

Refer to FIGURE 3-3 KMD 540 - Position Interface for specific interconnection information.

NOTE: In order for the KMD 540 to display curved flight plan segments such as DME approaches from a Honeywell KLN 94, the KLN 94 must be configured to output its “enhanced” serial data bus.



NOTES:

1. ALL STRANDED WIRE SHALL CONFORM TO MIL-W-22759/16 SPEC OR EQUIVALENT. ALL SHIELDED WIRE SHALL CONFORM TO MIL-C-27500 SPEC OR EQUIVALENT. ALL WIRES ARE 22 GAUGE UNLESS OTHERWISE NOTED.
2. THE LETTER Z PRECEDING A PIN DESIGNATOR DENOTES LOWER LETTERS.
3. ⏚ CONNECT THE SHIELD/PIN TO AIRCRAFT CHASSIS WITH AS SHORT A CONDUCTOR AS PRACTICAL.
4. CONNECT THESE SHIELD GROUNDS TO UNIT BACKSHELL GROUND.
5. THE KAC 504 CARD MUST BE INSTALLED IN THE KMD 540 BASE UNIT TO USE THE ARINC 429 FMS POSITION INPUT.
6. THE KMD 540 MUST BE PROPERLY CONFIGURED TO SELECT THE CORRECT POSITION SOURCE. IF A KAC 504 CARD IS INSTALLED, IT IS RECOMMENDED THAT THE 429 SOURCE BE USED IF AVAILABLE.

FIGURE 3-3 KMD 540 - Position Interface
(P/N 155-06058-0001 Rev. C)

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3.3 WX-500/WX 1000E STORMSCOPE

3.3.1 WX-500 Function

The Goodrich WX-500 Stormscope is a remote weather mapping sensor which detects and processes lightning strikes. It interfaces with the KMD 540 in order to provide this lightning detection and avoidance information. WX-500 control and display information is communicated by a serial interface between the WX-500 and the KMD 540. Two modes of weather display are available, strike mode and cell mode. The KMD 540 must be configured for WX-500 on the Stormscope source setup page (see FIGURE 4-21 KMD 540 Stormscope Source Page) for the WX-500 function to be displayed.

3.3.2 WX-1000E Function

Like the WX-500, the Goodrich WX-1000E Stormscope is a remote weather mapping sensor which detects and processes lightning strikes. It interfaces with the KMD 540 in order to provide this lightning detection and avoidance information. WX-1000E control and display information is communicated by an ARINC 429 interface between the WX-1000E and the KAC 504 card in the KMD 540. A KAC 504 Traffic module must be installed in the KMD 540, and the KMD 540 must be configured for WX-1000E on the Stormscope source setup page ((see FIGURE 4-21 KMD 540 Stormscope Source Page) for the WX-1000E function to be displayed.

3.3.3 WX-500/WX-1000E Stormscope Interface

Refer to FIGURE 3-4 KMD 540 - Stormscope Interface for specific interconnection information.

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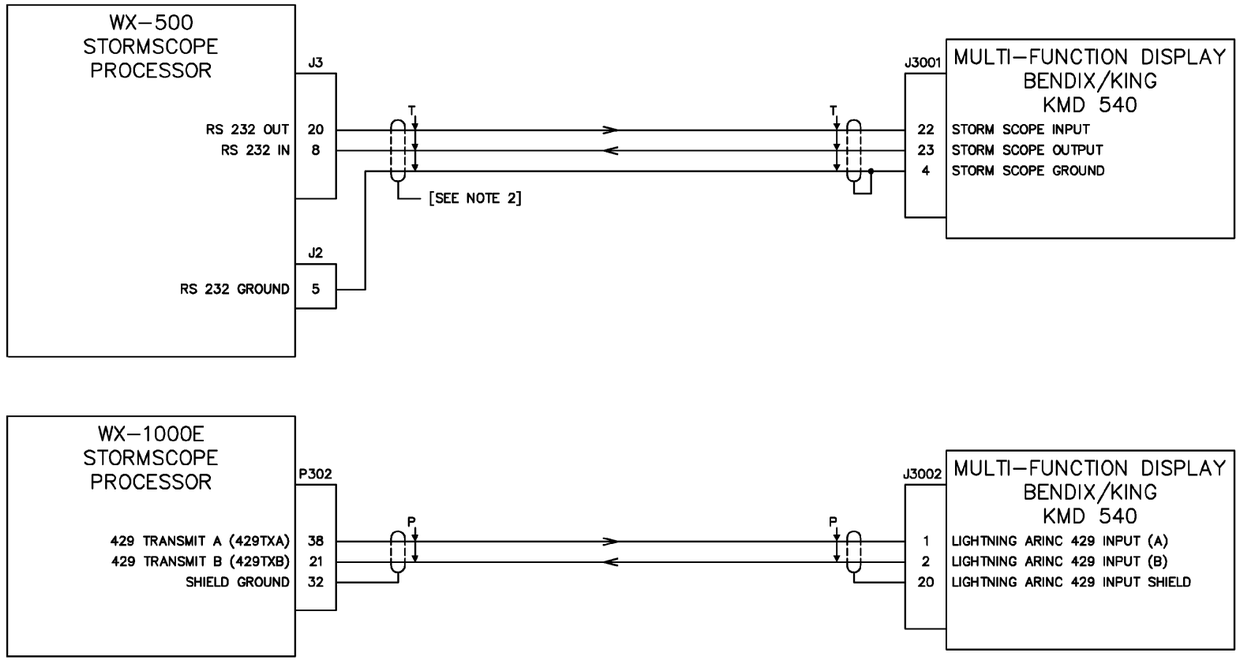

NOTES:

1. ALL STRANDED WIRE SHALL CONFORM TO MIL–W–22759/16 SPEC OR EQUIVALENT. ALL SHIELDED WIRE SHALL CONFORM TO MIL–C–27500 SPEC OR EQUIVALENT. ALL WIRES ARE 22 GAUGE UNLESS OTHERWISE NOTED.
2. REFER TO THE WX 500 INSTALLATION MANUAL FOR SHIELD TERMINATION REQUIREMENTS.
3. ⏚ CONNECT THE SHIELD/PIN TO AIRCRAFT CHASSIS WITH AS SHORT A CONDUCTOR AS PRACTICAL.
4. CONNECT THESE SHIELD GROUNDS TO UNIT BACKSHELL GROUND.
5. THE KAC 504 OPTION CARD MUST BE INSTALLED IN THE KMD 540 BASE UNIT FOR THE WX–1000E FUNCTION TO OPERATE.
6. THE KMD 540 MUST BE PROPERLY CONFIGURED FOR CONTROL AND DISPLAY OF STORMSCOPE INFORMATION.

FIGURE 3-4 KMD 540 - Stormscope Interface
(P/N 155-06058-0002 Rev. B)

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3.4 WX RADAR

3.4.1 RADAR Function

RADAR is an acronym for Radio Detecting And Ranging. It is a method for locating thunderstorms using radio waves. The RADAR transmitter generates microwave energy in the form of pulses which are then transferred to the antenna where they are focused into a beam by the antenna and radiated. When the beam intercepts a target, the energy is reflected as an echo back to the antenna. It is then transferred to the receiver and processing circuits in the receiver/transmitter unit. These echoes are displayed on an indicator, in this case, the KMD 850 System. This function is only available in the KMD 850 System where a KAC 501 module is installed.

3.4.2 RADAR Interface

Refer to FIGURE 3-5 KMD 850 - WX RADAR Interface for specific interconnection information.

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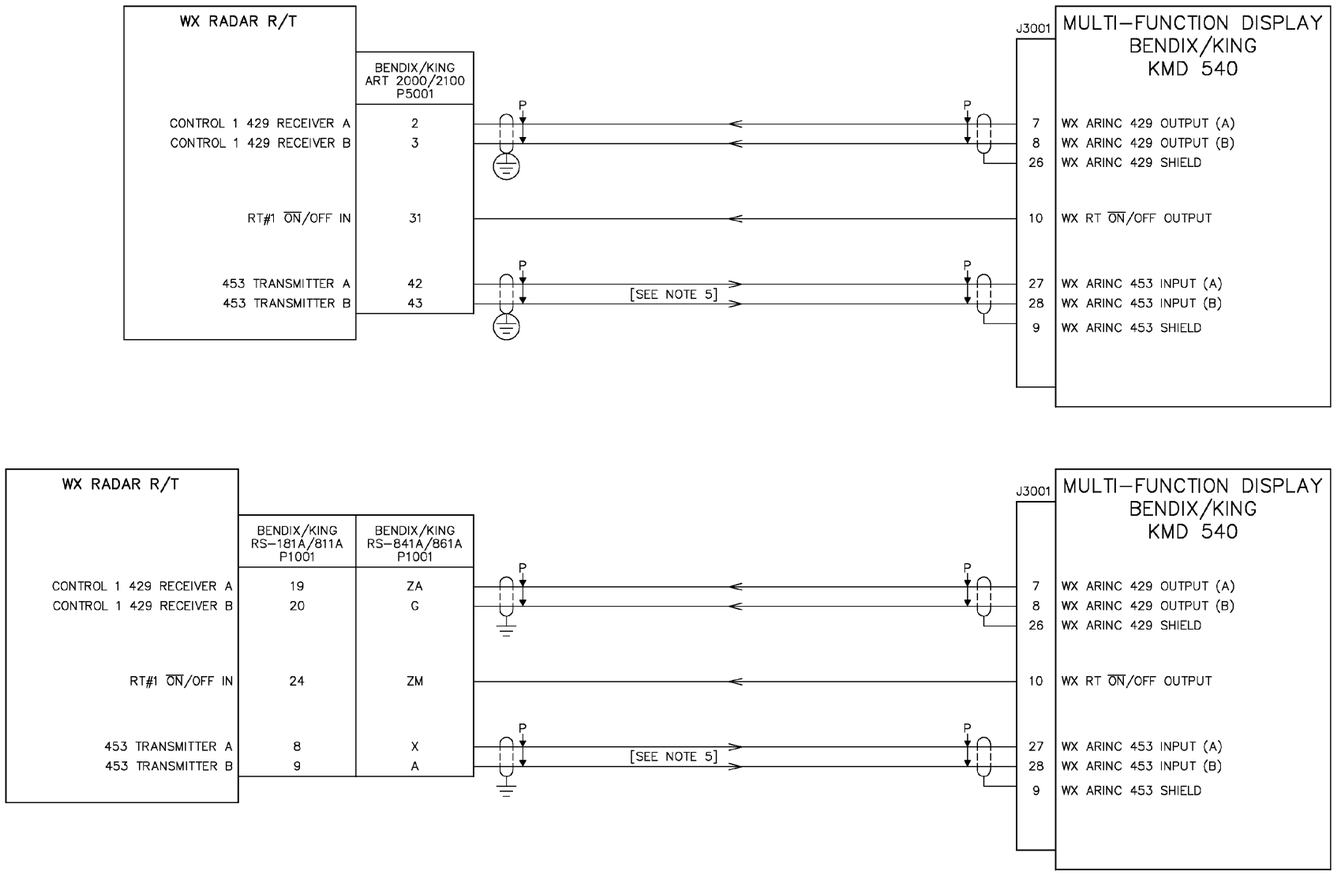

NOTES:

1. ALL STRANDED WIRE SHALL CONFORM TO MIL-W-22759/16 SPEC OR EQUIVALENT. ALL SHIELDED WIRE SHALL CONFORM TO MIL-C-27500 SPEC OR EQUIVALENT. ALL WIRES ARE 22 GAUGE UNLESS OTHERWISE NOTED.
2. THE LETTER Z PRECEDING A PIN DESIGNATOR DENOTES LOWER LETTERS.
3. ⏚ CONNECT THE SHIELD/PIN TO AIRCRAFT CHASSIS WITH AS SHORT A CONDUCTOR AS PRACTICAL.
4. CONNECT THESE SHIELD GROUNDS TO UNIT BACKSHELL GROUND.
5. USE M17/176-00002 WIRE OR EQUIVALENT FOR THE WX 453 INTERFACE. EXISITNG WX RADAR INSTALLATIONS CAN USE THE EXISTING QUADRAX CABLE.
6. THE KAC 501 CARD MUST BE INSTALLED IN THE KMD 540 BASE UNIT FOR THE WEATHER RADAR FUNCTION TO OPERATE.

FIGURE 3-5 KMD 850 - WX RADAR Interface (P/N 155-06058-0003 Rev. C)

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3.5 TCAS/TAS/TIS

3.5.1 TCAS/TAS Function

TCAS (Traffic Alert and Collision Avoidance System) and TAS (Traffic Awareness System) are airborne systems used to detect and track aircraft in the vicinity of a particular aircraft through the interrogation of their transponders. Aircraft detected, tracked, and displayed by the TCAS/TAS systems are referred to as intruders. The system then analyzes the transponder replies to determine range, bearing, and relative altitude. Should the TCAS/TAS processor determine that a possible collision hazard exists, it issues visual and aural warnings. This function is only available when a KAC 504 TRFC module is installed.

3.5.2 TIS Function

Traffic Information Service (TIS) is a data link service that provides information similar to VFR RADAR traffic advisories received over voice radio. The data is received from the terminal Mode S RADAR system through the Mode S transponder to the KMD 550/850 once per RADAR scan (approximately every 5 seconds).

TIS provides the relative position, relative altitude, altitude trend, and estimated ground track angle for as many as eight intruders that are within 7 NM horizontally and +3500/ -3000 feet vertically of the aircraft receiving TIS. This function is only available when a KAC 504 TRFC module is installed.

3.5.3 TCAS/TAS/TIS Interface

Refer to FIGURE 3-6 KMD 540 - TCAS/TAS/TIS Interface for specific interconnection information.

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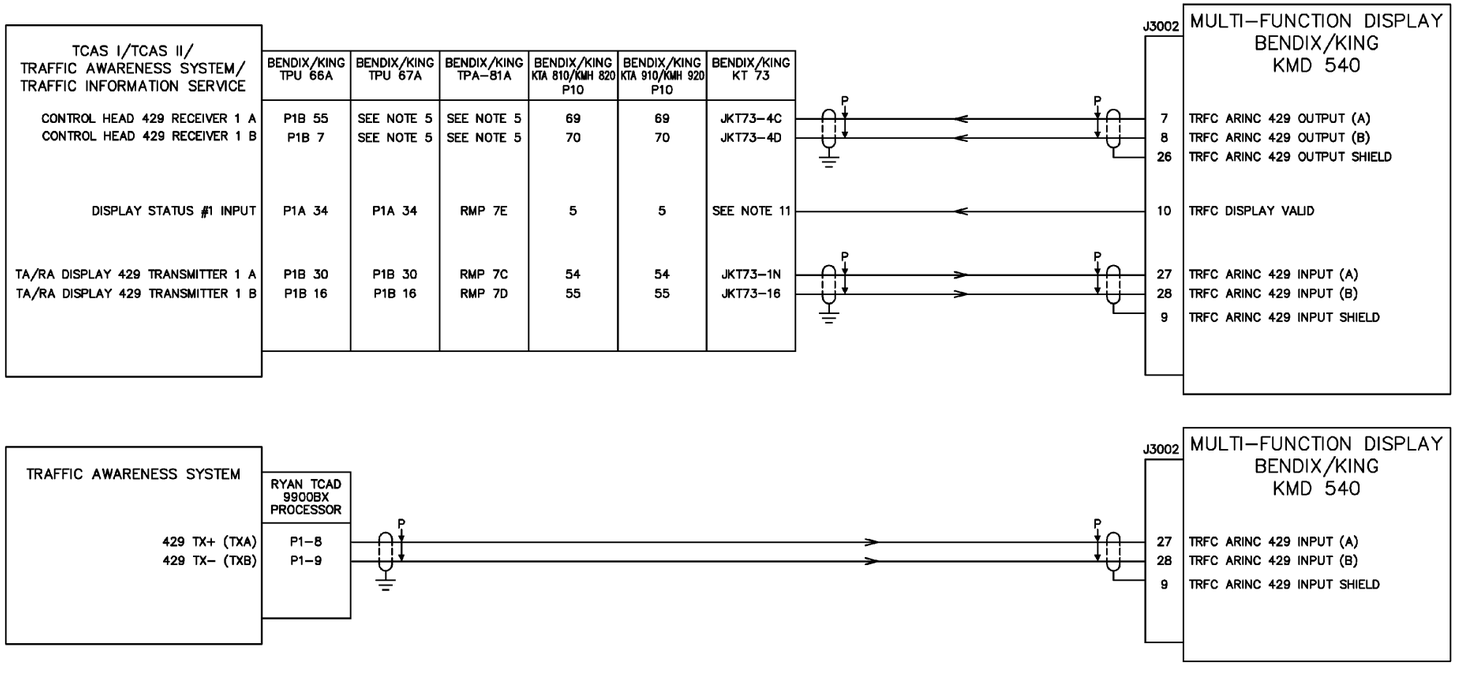

NOTES:

1. ALL STRANDED WIRE SHALL CONFORM TO MIL–W–22759/16 SPEC OR EQUIVALENT. ALL SHIELDED WIRE SHALL CONFORM TO MIL–C–27500 SPEC OR EQUIVALENT. ALL WIRES ARE 22 GAUGE UNLESS OTHERWISE NOTED.
2. THE LETTER Z PRECEDING A PIN DESIGNATOR DENOTES LOWER LETTERS.
3. ⏚ CONNECT THE SHIELD/PIN TO AIRCRAFT CHASSIS WITH AS SHORT A CONDUCTOR AS PRACTICAL.
4. CONNECT THESE SHIELD GROUNDS TO UNIT BACKSHELL GROUND.
5. TPU 67A AND TPA–81A DO NOT USE THE KMD 540 AS A CONTROL HEAD. CONSULT THE APPLICABLE TCAS MANUAL FOR CONTROL HEAD INFORMATION.
6. REFER TO MANUFACTURER'S INSTALLATION MANUAL FOR SHIELD TERMINATION REQUIREMENTS.
7. THE ALT_DISP1 CONFIGURATION PIN MUST BE TERMINATED TO THE CONFIG_GND PIN TO ENABLE ALTERNATE DISPLAY OF TAS ON THE KMD 540.
8. THE KAC 504 OPTION CARD MUST BE INSTALLED IN THE KMD 540 BASE UNIT FOR THE TRAFFIC FUNCTION TO OPERATE.
9. THE KMD 540 MUST BE PROPERLY CONFIGURED FOR CONTROL AND DISPLAY OF TRAFFIC INFORMATION.

NOTES (cont.):

10. THE INSTALLER MUST PROVIDE TWO PUSH BUTTONS TO CONTROL THE OPERATING MODE OF THE GOODRICH TRC 497 OR TRC 899 UNIT. THESE BUTTONS PROVIDE A MOMENTARY CONNECTION TO AIRCRAFT GROUND WHEN PRESSED AND SHOULD BE LABELED AS INDICATED.
11. THE KT 73 DOES NOT USE TRFC DISPLAY VALID.

FIGURE 3-6 KMD 540 - TCAS/TAS/TIS Interface
(P/N 155-06058-0004 Rev. E, Sheet 1 of 2)

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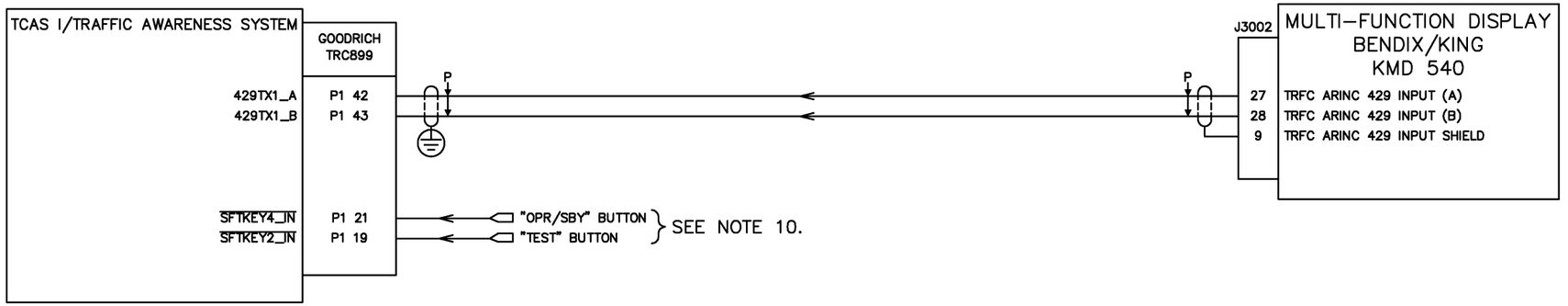

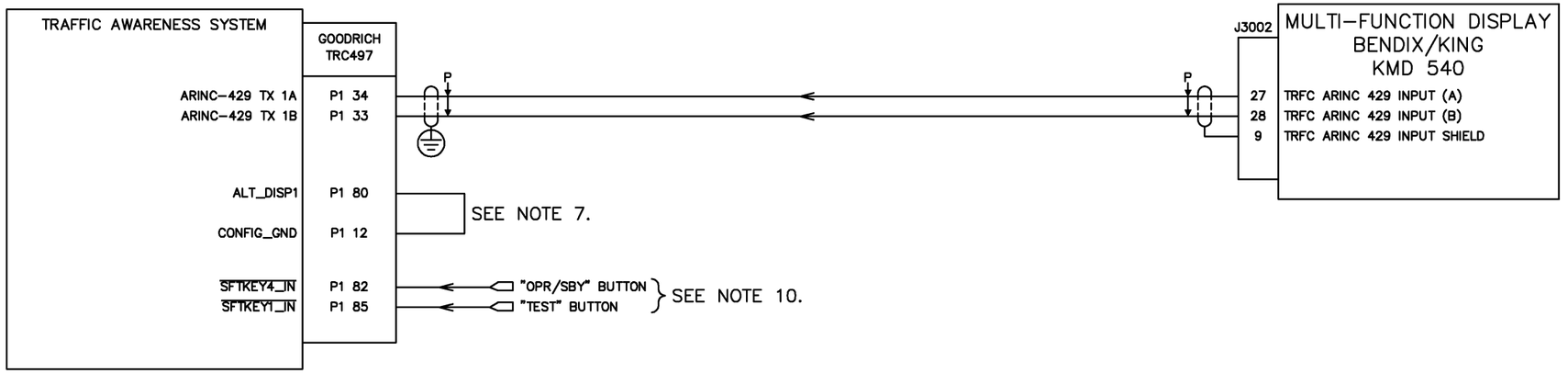

FIGURE 3-6 KMD 540 - TCAS/TAS/TIS Interface
(P/N 155-06058-0004 Rev. E, Sheet 2 of 2)

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3.6 EGPWS (ENHANCED GROUND PROXIMITY WARNING SYSTEM)

3.6.1 EGPWS Function

EGPWS is a terrain awareness and alerting system. It uses aircraft inputs including geographic position, attitude, airspeed and glideslope combined with internal terrain, obstacle, and airport databases to predict a potential conflict between an aircraft's flight path and terrain or an obstacle. This function is only available when a KAC 502 EGPWS module is installed.

3.6.2 EGPWS Interface

Refer to FIGURE 3-7 KMD 540 - EGPWS (Terrain) Interface for specific interconnection information.

3.6.3 Part Number Information

The following are part number families of the EGPWS computers that will interface with the KMD 540 using the KAC 502 EGPWS Module. Note that the minimum EGPWS Software versions (the last six digits) required for compatibility with KMD550/850 installations are as follows:

965-0976-XXX-212-212 Mark V EGPWC
965-0976-XXX-212-212 Mark V EGPWC
965-0976-XXX-212-212 Mark V EGPWC
965-1076-XXX-212-212 Mark VII EGPWC
965-1076-XXX-212-212 Mark VII EGPWC
965-1076-XXX-212-212 Mark VII EGPWC
965-1176-005 Mark VI EGPWC
965-1186-005 Mark VI EGPWC
965-1206-005 Mark VIII EGPWC
965-1216-005 Mark VIII EGPWC
965-1227-0XX Mark XXI EGPWC
965-1590-006 Mark XXII EGPWC
All versions of the KGP 560 EGPWS
All versions of the KMH 880 EGPWS

3.6.4 ARINC 429 Control Information

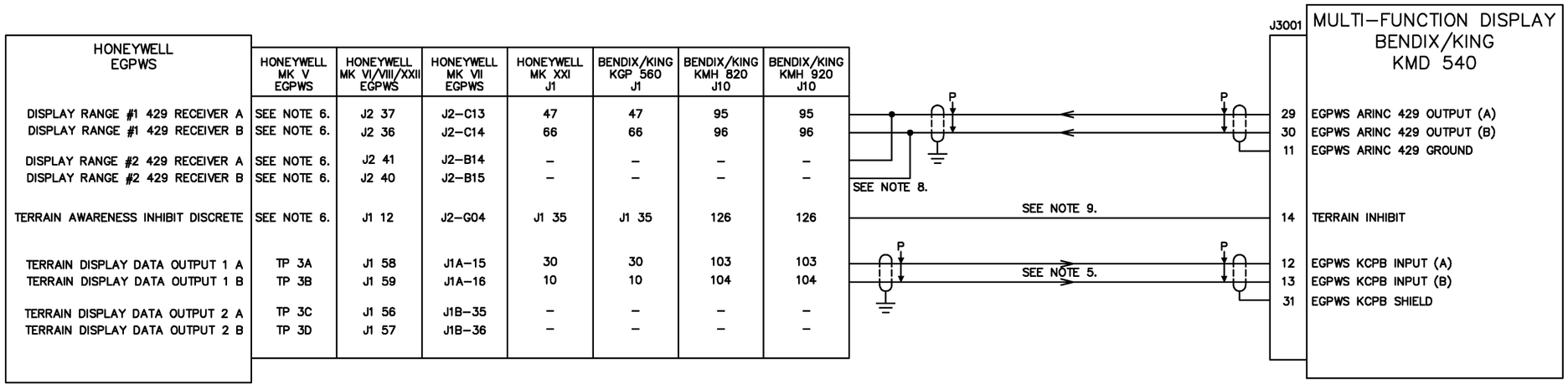
Label 017 (Discretes Data) is added to the ARINC 429 EGPWS output of the KMD 550/850 to implement the new EGPWS control functions.

Currently, the KGP-560, MK XXI and KMH-880 EGPWS units will accept label 017 from the KMD 550/850 starting with the 003 version of the EGPWS software (refer to TABLE 3-2 ARINC 429 Label 017 Control Function Availability In EGPWS Units).

EGPWS UNIT	Minimum EGPWS Software revision level required to support ARINC 429 control					
	TEST	INHIBIT	LO ALT	G/S CANCEL	STEEP APPR	FLAP OVRD
KGP-560	003	003	N/A	N/A	N/A	N/A
KMH-880	003	003	N/A	N/A	N/A	N/A
MK-IV	N/A	N/A	N/A	N/A	N/A	N/A
MK-V	N/A	N/A	N/A	N/A	N/A	N/A
MK-VI	N/A	N/A	N/A	N/A	N/A	N/A
MK-VII	N/A	N/A	N/A	N/A	N/A	N/A
MK-VIII	N/A	N/A	N/A	N/A	N/A	N/A
MK-XXI	003	003	003	N/A	N/A	N/A
MK-XXII	N/A	N/A	N/A	N/A	N/A	N/A

TABLE 3-2 ARINC 429 Label 017 Control Function Availability In EGPWS Units

NOTE: Currently, no EGWPS unit supports control of G/S CANCEL, STEEP APPR or FLAP OVRD via ARINC 429.



NOTES:

1. ALL STRANDED WIRE SHALL CONFORM TO MIL–W–22759/16 SPEC OR EQUIVALENT. ALL SHIELDED WIRE SHALL CONFORM TO MIL–C–27500 SPEC OR EQUIVALENT. ALL WIRES ARE 22 GAUGE UNLESS OTHERWISE NOTED.
2. THE LETTER Z PRECEDING A PIN DESIGNATOR DENOTES LOWER LETTERS.
3. CONNECT THE SHIELD/PIN TO AIRCRAFT CHASSIS WITH AS SHORT A CONDUCTOR AS PRACTICAL.
4. CONNECT THESE SHIELD GROUNDS TO UNIT BACKSHELL GROUND.
5. USE M17/176–00002 WIRE OR EQUIVALENT FOR THE KCPB INTERFACE.
6. REFER TO AIRCRAFT TYPE CONFIGURATION FOR RANGE CONTROL AND TERRAIN INHIBIT INTERFACE.
7. THE KAC 502 EGPWS CARD MUST BE INSTALLED IN THE KMD 540 BASE UNIT FOR THE EGPWS FUNCTION TO OPERATE.
8. EGPWS DISPLAY RANGE #2 INPUTS SHOULD BE CONNECTED ONLY IF THE KMD 540 IS THE ONLY DISPLAY. DO NOT CONNECT FOR A DUAL INDICATOR INSTALLATION.
9. USE OF THE KMD 550/850 TO CONTROL THE EGPWS TERRAIN INHIBIT FUNCTION IS OPTIONAL. IF THE EGPWS SUPPORTS ARINC 429 DISCRETES (LABEL 017) THEN THAT INTERFACE METHOD IS PREFERRED.

FIGURE 3-7 KMD 540 - EGPWS (Terrain) Interface
(P/N 155-06058-0005 Rev. E)

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3.7 FIS (Flight Information Services)

3.7.1 FIS Function

FIS is a flight information service which supplies data linked weather information and other flight advisory information to pilots to enhance their situation awareness.

A free subscription includes services for text METARs, TAFs, and PIREPs. A paid subscription is required to receive services such as NEXRAD images. For FIS subscriptions, refer to section 1.9 DATABASE UPDATES AND FIS SUBSCRIPTIONS. This function is only available when a KAC 503 FIS module is installed.

3.7.2 FIS Interface

Refer to FIGURE 3-8 KMD 540 - FIS Interface for specific interconnection information.

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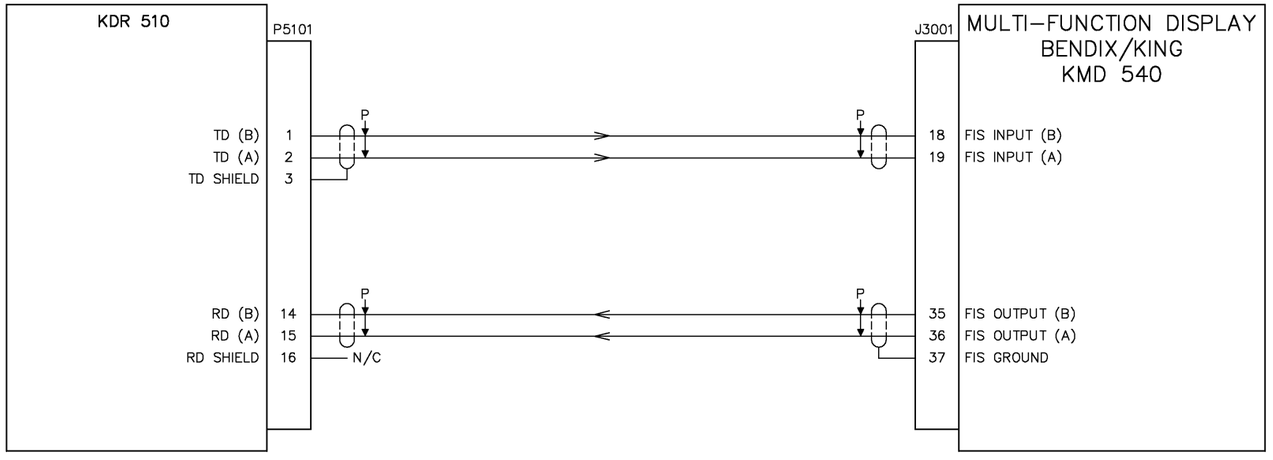

NOTES:

1. ALL STRANDED WIRE SHALL CONFORM TO MIL–W–22759/16 SPEC OR EQUIVALENT. ALL SHIELDED WIRE SHALL CONFORM TO MIL–C–27500 SPEC OR EQUIVALENT. ALL WIRES ARE 22 GAUGE UNLESS OTHERWISE NOTED.
2. THE LETTER Z PRECEDING A PIN DESIGNATOR DENOTES LOWER LETTERS.
3. ⏚ CONNECT THE SHIELD/PIN TO AIRCRAFT CHASSIS WITH AS SHORT A CONDUCTOR AS PRACTICAL.
4. ⏚ CONNECT THESE SHIELD GROUNDS TO UNIT BACKSHELL GROUND.
5. THE KAC 503 CARD MUST BE INSTALLED IN THE KMD 540 BASE UNIT FOR THE FIS FUNCTION TO OPERATE.

FIGURE 3-8 KMD 540 - FIS Interface
(P/N 155-06058-0006 Rev. -)

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3.8 AIRDATA/SYNCHRO HEADING INPUT

3.8.1 Airdata/Heading Function

The KMD 540 is capable of receiving magnetic heading from several sources. They include (in order of priority) synchro XYZ (highest priority), FMS/HDG, TRFC (traffic) ARINC 429, WX-500 Stormscope, and airdata (lowest priority). This heading information is used to correct the difference between heading and track based display pages to allow overlay of flightplan information and other data. This section focuses only on the synchro and airdata interfaces. Refer to section 3.2 POSITION for FMS/HDG, section 3.3 WX-500/WX 1000E STORMSCOPE for WX-500, and section 3.5 TCAS/TAS/TIS for TRFC.

3.8.2 Airdata/Heading Interface

Refer to FIGURE 3-9 KMD 540 - Airdata/Heading Interface for specific interconnection information.

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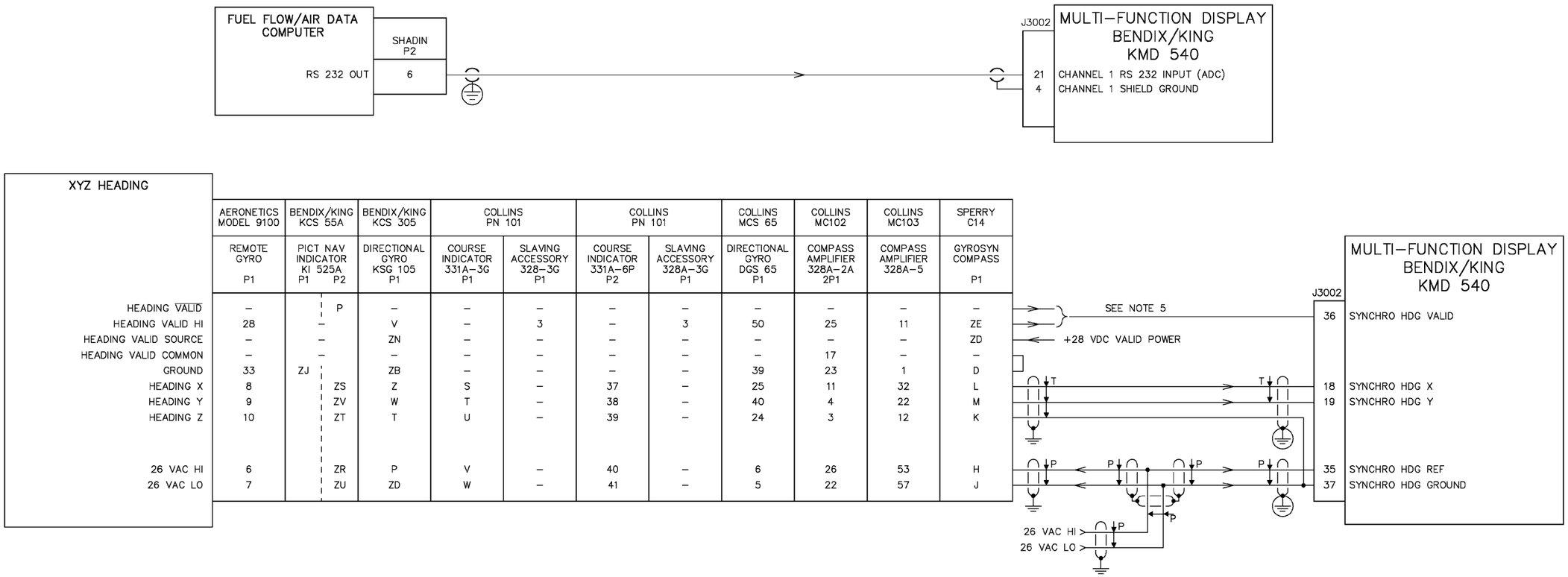

NOTES:

1. ALL STRANDED WIRE SHALL CONFORM TO MIL–W–22759/16 SPEC OR EQUIVALENT. ALL SHIELDED WIRE SHALL CONFORM TO MIL–C–27500 SPEC OR EQUIVALENT. ALL WIRES ARE 22 GAUGE UNLESS OTHERWISE NOTED.
2. THE LETTER Z PRECEDING A PIN DESIGNATOR DENOTES LOWER LETTERS.
3. CONNECT THE SHIELD/PIN TO AIRCRAFT CHASSIS WITH AS SHORT A CONDUCTOR AS PRACTICAL.
4. CONNECT THESE SHIELD GROUNDS TO UNIT BACKSHELL GROUND.
5. THE KMD 540 MUST BE CONFIGURED FOR THE CORRECT HEADING VALID STATE.
6. THE KAC 504 CARD MUST BE INSTALLED IN THE KMD 540 BASE UNIT FOR THE XYZ HEADING TO OPERATE.

FIGURE 3-9 KMD 540 - Airdata/Heading Interface (P/N 155-06058-0007 Rev. A)

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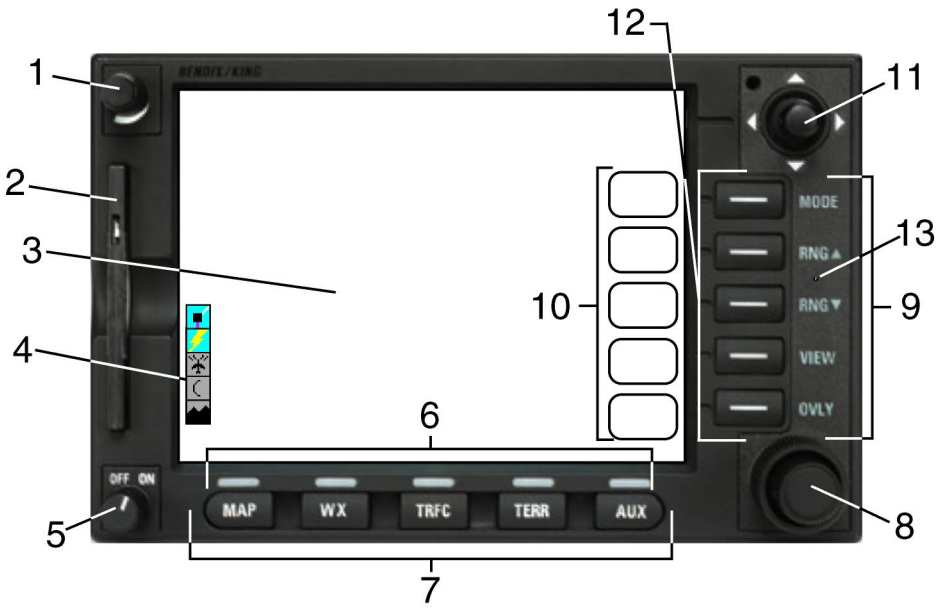
SECTION IV
POST INSTALLATION CONFIGURATION AND CHECK OUT

4.0 INTRODUCTION

This section contains the post installation configuration and checkout procedures for the KMD 550/850. Refer to FIGURE 4-1 KMD 540 Multifunction Display for an illustration of the unit accompanied by a reference to each function or control.



1. Brightness Control
2. Data Card
3. LCD Display
4. Available Function/Overlay Legend
5. On/Off Control
6. Selected Function Indicators
7. Function Select Keys
8. Control Knobs (Inner and Outer)
9. Power Key Labels
10. Soft Labels
11. Joystick
12. Power Keys
13. Fault Indicator

FIGURE 4-1 KMD 540 Multifunction Display

4.1 GENERAL OPERATION (KMD 540)

Configuration of the KMD 540 base unit may be accomplished using the procedures detailed in this section. Refer to FIGURE 4-1 KMD 540 Multifunction Display as required. The diagrams and screen captures shown in this section may not be exactly identical in every configuration.

4.1.1 KMD 540 Controls/Keys

4.1.1.1 Function Select Keys

Function Select Keys select available data sources (as indicated by the key) for display on the LCD. When a function key is pressed, the annunciator above it will illuminate to show that this function is currently being displayed. Pressing the same key multiple times will sequence through the available pages associated with that function. FIGURE 4-2 KMD 540 Function Select Keys Available Pages shows the available pages under each function; however, not all pages will be available in all installations.

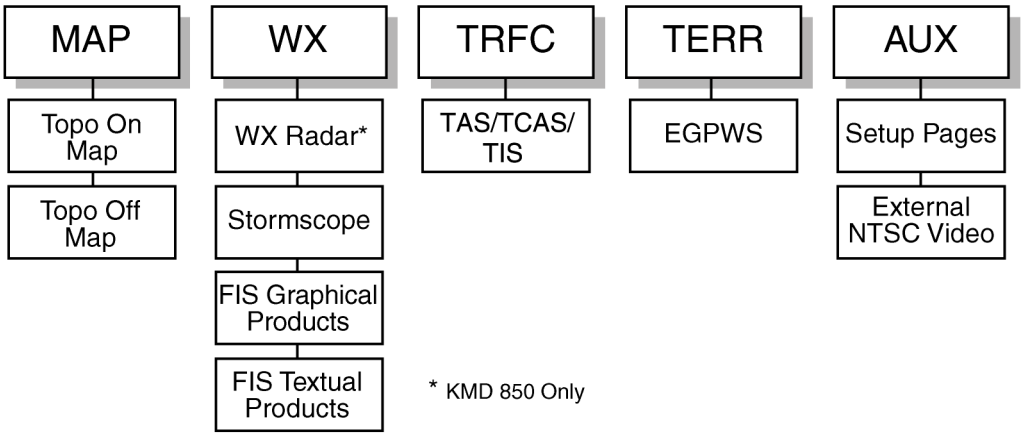


FIGURE 4-2 KMD 540 Function Select Keys Available Pages

4.1.1.2 Power Keys

The five Power Keys are used to manipulate the page being displayed. Their present functionality can be indicated by the use of Soft Labels on the left side of the key or Power Key Labels on the right side of the key.

4.1.1.3 Power Key Labels

When the Power Key Label is illuminated on the right side of the key, that key's function is dedicated to the function described by the label and that function is active. The following is a list of the dedicated functions.

MODE

Pressing this key will sequence through all available modes associated with the displayed page.

NOTE: Power key labels RNG (RANGE) UP AND RNG (RANGE) DOWN, denoted on the KMD 540 unit as shown in FIGURE 4-3 RNG (Range) UP/DOWN Detail, will be listed as and referred to in this manual as RNG UP and RNG DOWN.

FIGURE 4-3 RNG (Range) UP/DOWN Detail

RNG UP

Pressing this key will increase the range scale one level on the displayed page. Range scales on the other pages will not be affected.

RNG DOWN

Pressing this key will decrease the range scale one level on the displayed page. Range scales on the other pages will not be affected.

VIEW

Pressing this key will sequence through the available views associated with the displayed page.

OVLY

Pressing this key allows data from more than one source to be displayed simultaneously on the screen. Soft Labels will indicate which data sources are available for overlay.

4.1.1.4 Soft Labels

Soft Labels are located to the left side of the keys and in the right side of the LCD display area. The description indicated in the label describes the key's present function as related to the displayed page. Whenever a new function is selected by pressing a key with a Soft Label, a new screen is displayed along with its new key labels. The capability of displaying Soft Labels that are only applicable to a particular screen is referred to as 'Soft Keying'. It allows one key to perform multiple functions without multiple key presses.

4.1.1.5 Joystick

This is a pointing device which moves a mouse-like pointer around the display. It is primarily used for pointing at items on the map for further information and for measuring range and bearing to specific points. When the WX radar function is selected, the joystick controls the antenna tilt angle and track. It is also used to modify the configuration settings on the AUX setup pages.

The joystick is used to select and change the settings for a given field, i.e. while in an 'ITEM' or 'SLOT' field, a vertical motion (up and down) of the joystick will move between the various selections of that field. A horizontal motion (side to side) of the joystick will then select the various options for that particular choice.

Once a field is selected, a vertical motion (up and down) of the joystick on that item will cycle through the various options available. In fields where a minimum/maximum range exist, an upward motion will increment the value while a downward motion will decrement the value.

4.1.1.6 Control Knob

The inner and outer Control Knobs, located in the lower right of the unit, have various functions as indicated by a soft label when active. For example, if the weather radar page is selected by pressing the (WX) Function Select Key, the inner knob will control the gain on the weather radar in the ground mapping mode. The outer knob will act as the radar function selector for ON, Standby (SBY) and Test (TST).

4.1.1.7 Hold To Help Function

A "Hold To Help" function is available for all of the active Function Keys plus the VIEW and OVLY keys. The function is activated by pressing and holding any one of the available keys for approximately two (2) seconds. Once active, a dialog box is displayed which indicates the active setting plus the available options.

4.1.1.8 Fault Indicator

The KMD 540 has a fault indicator located between the RNG up and down power key labels. When there is a hardware fault detected the letter "F" in a circle will appear. This fault indicator is intended to indicate one of the following conditions:

- One of the processor boards has failed self test. (This could be due to improper installation or configuration of optional modules.)
- An LED that lights the power keys has failed self test and is probably not lighting a power key label properly.
- The LCD display has failed self test and the display may be inoperable.
- One of the processor boards has stopped communicating with the other boards, this could result in a "frozen" display that does not update correctly

If the fault indicator appears, cycle power on the unit. If the fault re-occurs then either the optional modules are not installed and configured properly, or there is a hardware failure that will need to be repaired by an authorized service center.

NOTE: WHEN THE FAULT INDICATOR IS LIT, ALL DISPLAYED DATA SHOULD BE TREATED AS SUSPECT AND CROSS-CHECKED FOR ACCURACY BEFORE USE.

4.1.2 Unit Functions And Modes

4.1.2.1 Power Up Sequence

Power on the KMD 540 by turning the On/Off Control clockwise. During power up, a sequence of pages will appear. First is the title page with the Bendix/King logo (not shown). Next is the self-test page (similar to FIGURE 4-4 KMD 540 Power Up Self Test Page). If no errors occur during self test, the system will automatically advance to the next page. If errors occur, the Power Key to the right of the 'OK' Soft Label must be pressed to continue. This page also displays the option modules that have been installed in the unit.

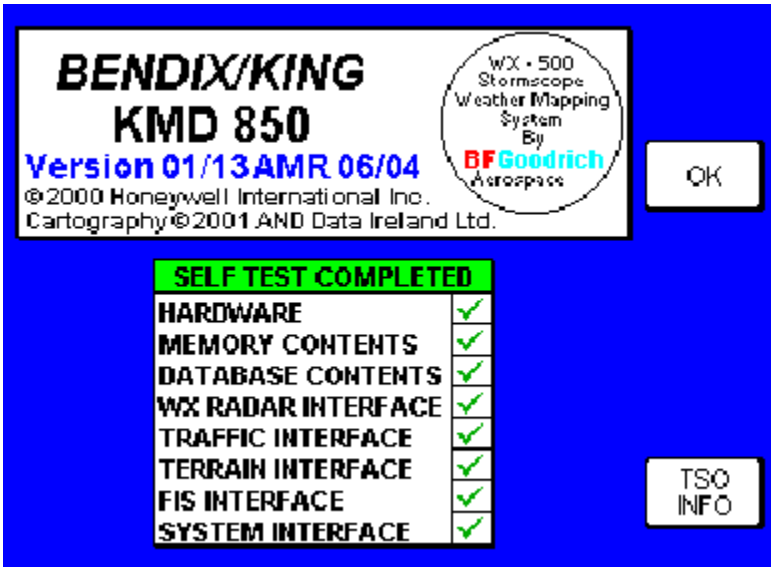


FIGURE 4-4 KMD 540 Power Up Self Test Page

The last page of the sequence, except when the KAC 503 module (FIS option) is installed, is the Jeppesen Database Acknowledgement page (see FIGURE 4-5 KMD 540 Jeppesen Database Page). To continue, press the Power Key to the right of the 'OK' Soft Label.

NOTE: In installations containing the FIS option, the FIS Caution Acknowledgement page (see FIGURE 4-6 KMD 540 FIS Caution Page) will appear in the sequence following the Jeppesen Database Acknowledgement page. This page must also be acknowledged by pressing the Power Key to the right of the 'OK' Soft Label to continue.

FIGURE 4-5 KMD 540 Jeppesen Database Page

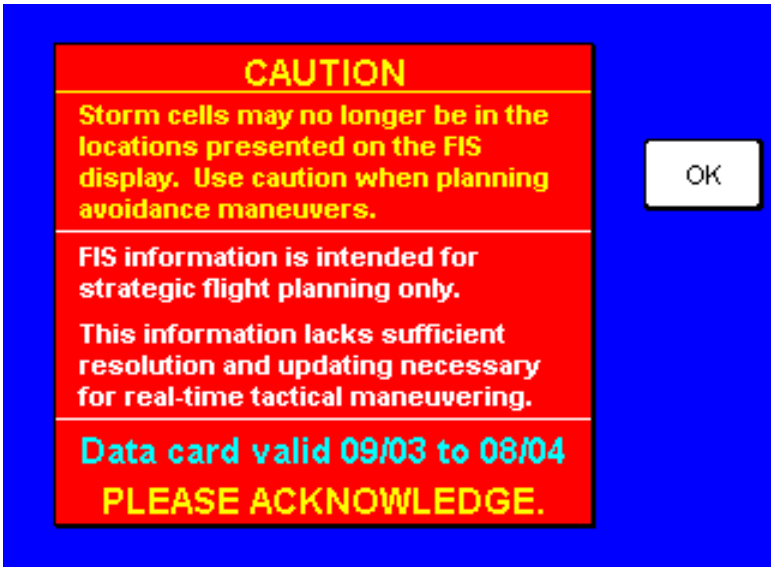


FIGURE 4-6 KMD 540 FIS Caution Page

4.1.2.2 Map Function

After the power up sequence is complete, A 'TOPO ON MAP' page similar to FIGURE 4-7 KMD 540 Topo On Map Page will appear. It corresponds to the Function Select Key 'MAP'. Pressing the 'MAP' key a second time will display a 'TOPO OFF MAP' page (similar to FIGURE 4-8 KMD 540 Topo Off Map Page). Continuing to press the 'MAP' key will toggle between these two pages.

The following control functions are available while the 'MAP' page is displayed.

Control/Key	Function
JOYSTICK	Selects an item on the page.
RESET STICK (Soft Key)	Resets the joystick (only when the joystick is moved).
RNG UP & RNG DOWN	Zoom in and zoom out.
MORE INFO (Soft Key)	Presents information relating to items selected by the joystick (only when the joystick is moved).
OVLY	Displays the OVERLAY SELECT Soft Keys.

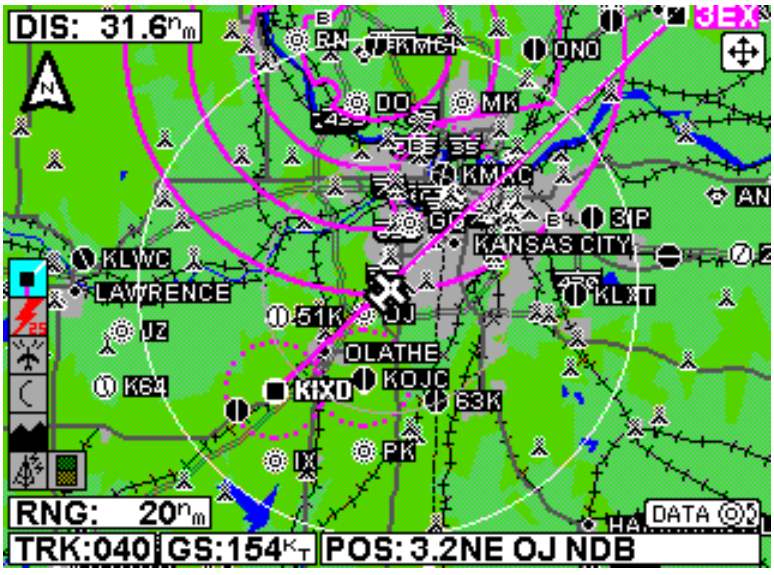


FIGURE 4-7 KMD 540 Topo On Map Page

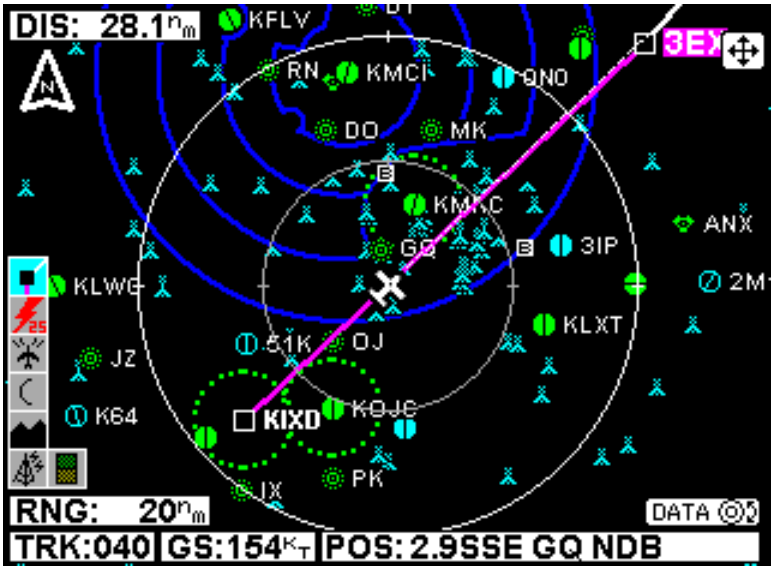


FIGURE 4-8 KMD 540 Topo Off Map Page

4.1.2.3 WX Function

If a KAC 501 WX Radar Card is installed and enabled (see section 4.3 WEATHER CONFIGURATION PROCEDURE (Wx Radar - KMD 850)), pressing the “WX’ key will display a ‘WX Radar’ page similar to FIGURE 4-9 KMD 540 WX Radar Page. If the Stormscope is enabled (see FIGURE 4-18 KMD 540 Data I/O Page), pressing the ‘WX’ key a second time will display a ‘STORMSCOPE’ page similar to FIGURE 4-10 KMD 540 Stormscope (360 Deg. View) Page. If a KAC 503 FIS module is installed, then pressing the WX key a third time will display the FIS graphics page (similar to FIGURE 4-11 KMD 540 FIS Graphics (NEXRAD) Page) and pressing the WX key a fourth time will display the FIS text page (similar to FIGURE 4-12 KMD 540 FIS Text (METAR) Page). Continuing to press the ‘WX’ key will cycle through these pages. Refer to section 4.3 WEATHER CONFIGURATION PROCEDURE (Wx Radar - KMD 850) for configuring WX Radar, section 4.4 WX-500 STORMSCOPE SETUP PROCEDURE for Stormscope, and 4.7 FIS CONFIGURATION PROCEDURE (KAC 503 Module) for FIS settings.

The following control functions are available while the ‘WX RADAR’ page is displayed.

Control/Key	Function
JOYSTICK	Controls tilt and track line.
MODE	Toggles between WX and GND mapping modes.
RNG UP & RNG DOWN	Zoom in and zoom out.
VIEW	Toggles between HORIZONTAL PROFILE VIEW and VERTICAL PROFILE VIEW (if available from the Weather Radar unit).
OVLY	Displays the OVERLAY SELECT Soft Keys.
OUTER KNOB	Selects between STANDBY, TEST, ON, AND SETUP operations

The following control functions are available while the ‘STORMSCOPE’ page is displayed.

Control/Key	Function
JOYSTICK	Clears lightning strikes.
MODE	Toggles between Cell and Strike modes.
RNG UP & RNG DOWN	Zoom in and zoom out.
VIEW	Toggles between 360 deg. view and 120 deg. view.
OVLY	Displays the OVERLAY SELECT Soft Keys.

The following control functions are available while the ‘FIS Graphics’ page is displayed.

Control/Key	Function
JOYSTICK	Pans the map selects desired weather activity for viewing. Provides ‘MORE INFO’ Soft Key option.
RESET STICK (Soft Key)	Resets the joystick (only after the joystick is moved).
MODE	Toggles between NEXRAD and Graphic METARs modes.
RNG UP & RNG DOWN	Zoom in and zoom out.

Control/Key	Function
MORE INFO (Soft Key)	Presents the NEXRAD Intensity Legend (only after the joystick is moved).
OVLY	Displays the Flight Plan and Stormscope (if installed) Soft Keys.
SAVE & EXIT (Soft Key)	Retains selections on the display.

The following control functions are available while the 'FIS Text' (Weather Reports) page is displayed.

Control/Key	Function
JOYSTICK	Left/right movements select available reports.
MODE	Toggles between METARs/SPECIs, PIREPs, and TAFs.
CHANGE AREA (Soft Key)	Cycles through four area field options: DESTINATION, NEAREST, FLPN WPT, AND USER DEFINED.
METAR MAP (Soft Key)	When viewing text METARs, this key selects the Graphical METARs page (if available).
KNOB DATA/ KNOB SCAN (Soft Key)	Toggles the Control Knob function between DATA and SCAN. The Control Knob will be labeled SCAN when the softkey is labeled KNOB DATA and vise versa.
SCAN/DATA (Control Knob) OUTER KNOB/ INNER KNOB operation	SCAN/DATA is only available when USER DEFINED is the selected AREA, and SCAN is only available when FPLN WPT is selected. When the Control Knob function is set to SCAN, rotating the OUTER KNOB moves the cursor to the desired field and allows the selection of the desired number of characters in that field. Rotating the INNER KNOB cycles through the available options for that field. When the Control Knob function is set to DATA, rotating the OUTER KNOB moves the cursor to the desired character in the desired field. Rotating the INNER KNOB selects the desired alpha-numeric character in each field.

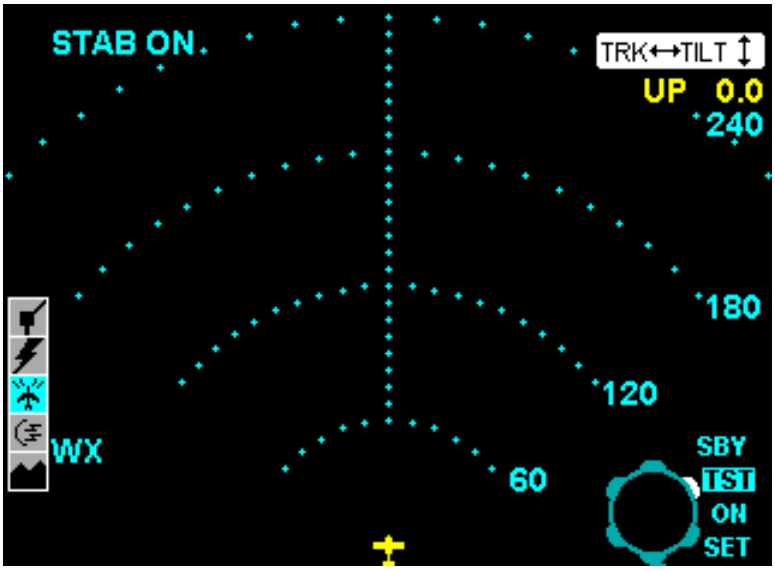


FIGURE 4-9 KMD 540 WX Radar Page

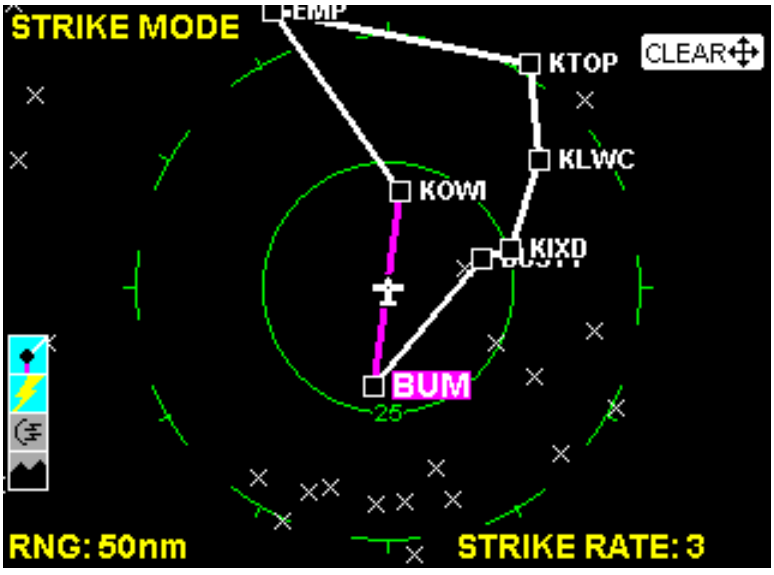


FIGURE 4-10 KMD 540 Stormscope (360 Deg. View) Page

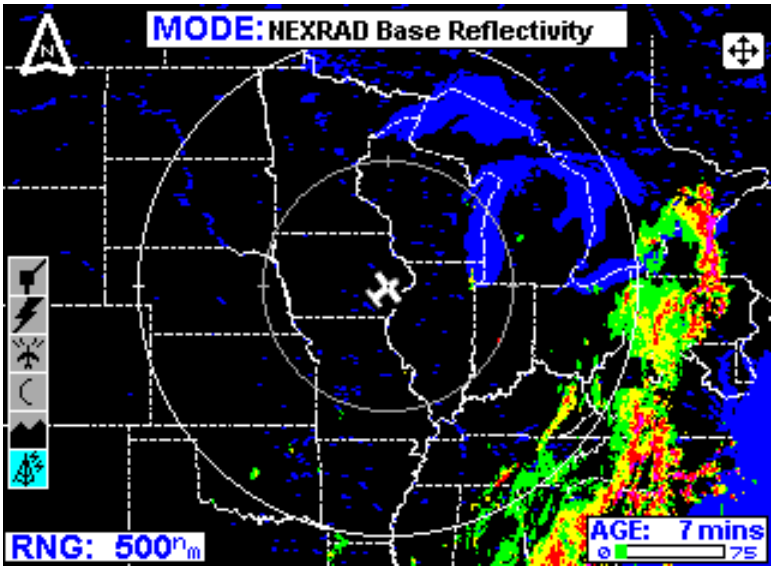


FIGURE 4-11 KMD 540 FIS Graphics (NEXRAD) Page

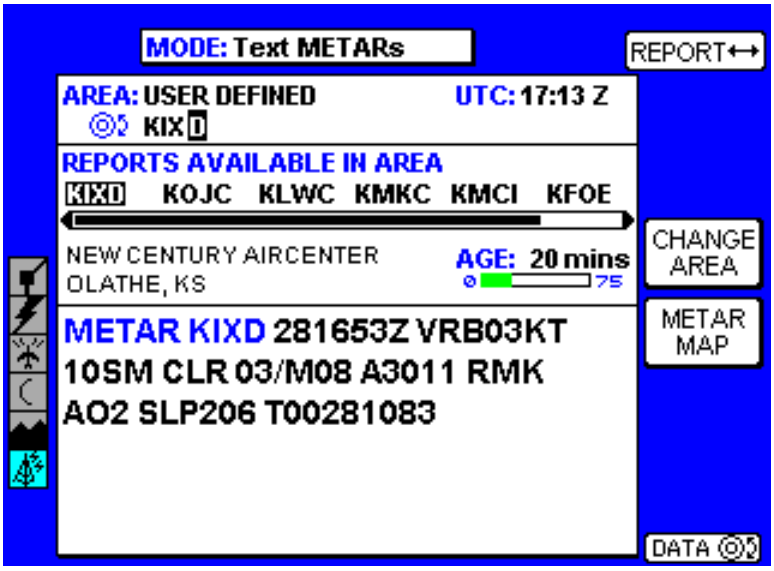


FIGURE 4-12 KMD 540 FIS Text (METAR) Page

4.1.2.4 TRFC Function

If a KAC 504 Traffic module is installed, pressing the “TRFC’ key will display a traffic page similar to FIGURE 4-13 KMD 540 Traffic Page. Refer to section 4.6 TRAFFIC CONFIGURATION PROCEDURE (KAC 504 Module) for configuring traffic functions. The following functions are available while the ‘TRFC’ page is displayed.

Control/Key	Function
MODE	Selects Relative and Absolute altitude tag modes.
RNG UP & RNG DOWN	Zoom in and zoom out.
VIEW (except for TIS)	Selects between Above, Below, Normal and Unrestricted views.
OVLY	Displays the OVERLAY SELECT Soft Keys.
OUTER KNOB (except for TIS)	Selects between Test, Standby, and On operation .
OUTER KNOB (TIS only)	TIS ON and OFF.
INNER KNOB (TIS only)	Sets “TIS UNAVAILABLE” audio mute ON or OFF.

Traffic Overlays may be selected on the following KMD 550/850 display pages via the OVLY key:

- MAP (Topo-On) when heading is available.
- MAP (Topo-Off) when heading is available.
- WX (Radar).
- WX (Stormscope).
- TERR when heading is available.

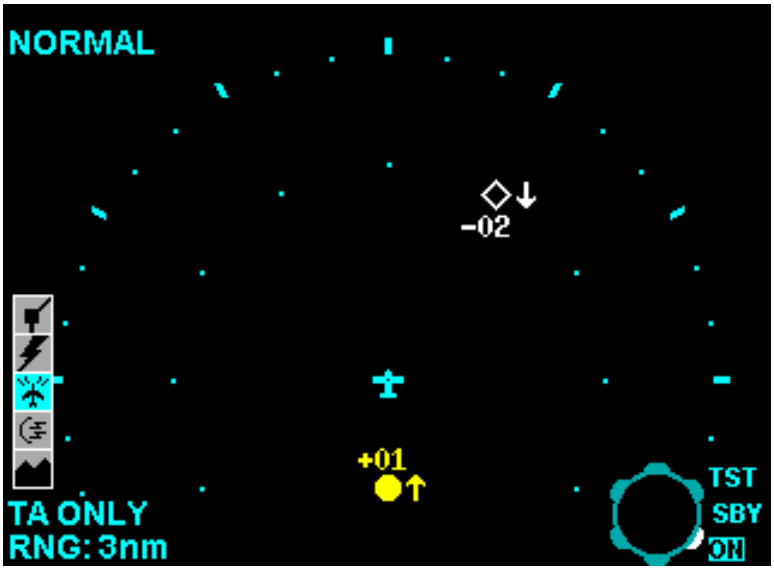


FIGURE 4-13 KMD 540 Traffic Page

4.1.2.5 Terrain Function

If a KAC 502 EGPWS module is installed and enabled (see section 4.5 EGPWS CONFIGURATION PROCEDURE (KAC 502 Module)), pressing the “TERR’ key will display a terrain page similar to FIGURE 4-14 KMD 540 TERR (360 Deg. View) Page. The following control functions are available while the ‘TERR’ page is displayed.

Control/Key	Function
MODE	Inhibits or enables the TERRAIN AWARENESS warnings.
RNG UP & RNG DOWN	Zoom in and zoom out.
VIEW	Toggles between 360 deg. view and 120 deg. view.
OVLY	Displays the OVERLAY SELECT Soft Keys.
OUTER KNOB (Rotary Control)	Selects between TST (test), NRM (normal), and SET (settings) operation.

The MODE KEY must be configured and is only available when the “TERRAIN INHIBIT CONTROL” item is set to “MODE KEY” on “Terrain setup page (1)”, see section 4.5.4 Terrain (TERR) Setup Pages.

The rotary control knob must be configured and is only available when the “EGPWS CONTROL SWITCHES” item is set to ENABLE on “Terrain setup page (2)”, see section 4.5.4 Terrain (TERR) Setup Pages.

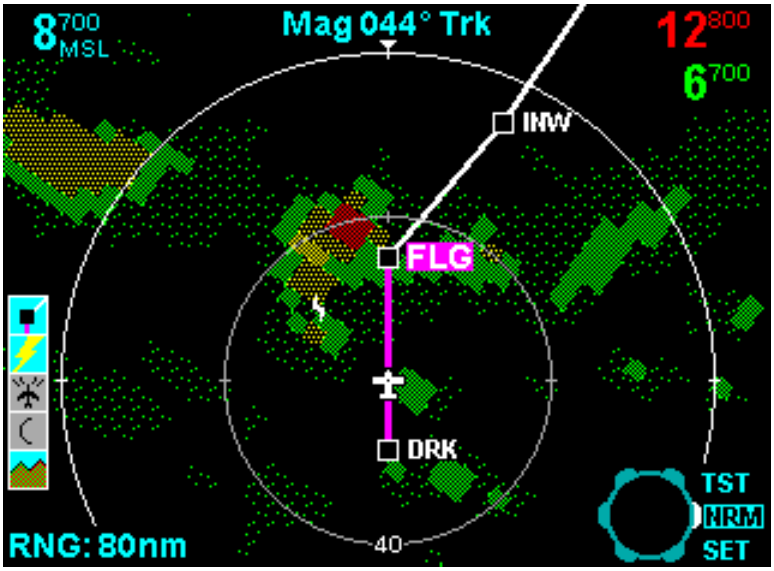


FIGURE 4-14 KMD 540 TERR (360 Deg. View) Page

4.1.2.6 AUX Mode

Pressing the “AUX’ key will display the ‘auxiliary mode cover page’ or AUX page (see FIGURE 4-15 Auxiliary Mode Cover Page) which provides setup options. Pressing the “AUX’ key a second time will display external NTSC video. The ‘auxiliary mode cover page’ (AUX page) provides the user with configuration options for both the base unit and the option modules. When this page is displayed, five setup options are available. They are MAP SETUP, WX SETUP, TRFC SETUP, TERR SETUP, and SYSTEM CONFIG. The first to be discussed is SYSTEM CONFIG. Press the Power Key to the right of the ‘SYSTEM CONFIG’ Soft Label to enter system configuration password screen (see FIGURE 4-16 KMD 540 System Configuration Password Page).

It is recommended by Honeywell that the configurable settings for the base unit and option modules be documented for a specific installation. A configuration worksheet is provided as an appendix to this manual. The completion of this worksheet is recommended by Honeywell as documentation for the installation of the KMD 550/850 system in a specific aircraft.

The external NTSC video page (not shown) allows a NTSC compatible signal from an external video source to be displayed. When no external video source is available, the message “External Video Unavailable” will be displayed.

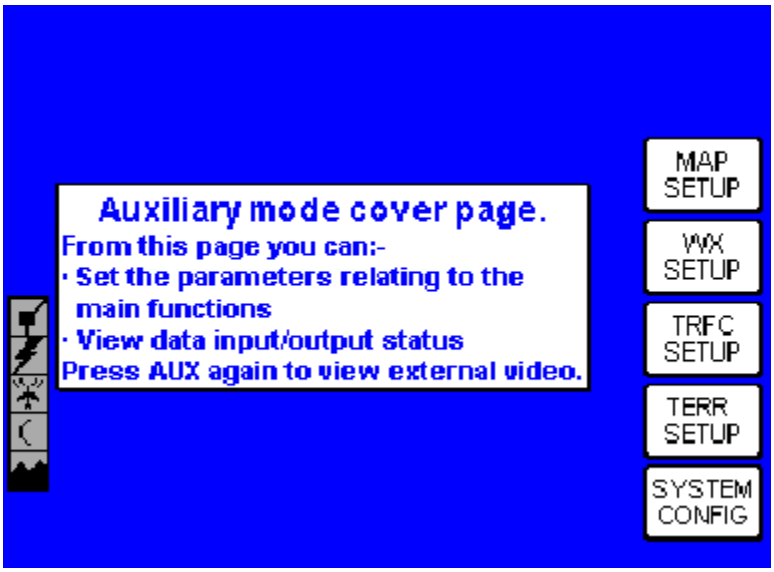


FIGURE 4-15 Auxiliary Mode Cover Page

Enter ‘SYSTEM CONFIG’ (see FIGURE 4-16 KMD 540 System Configuration Password Page) by typing the system configuration password ‘3,3,3,3’.

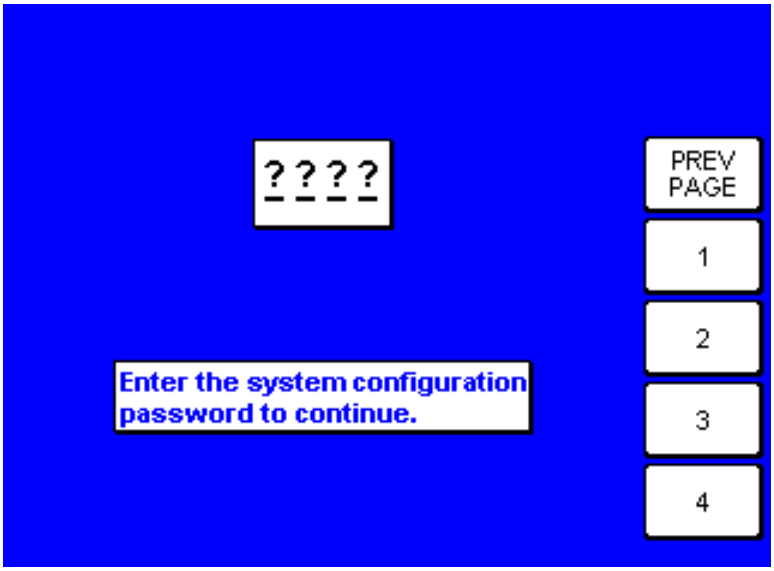


FIGURE 4-16 KMD 540 System Configuration Password Page

Upon entering the final '3', the unit will display the System Configuration Page (FIGURE 4-17 KMD 540 System Configuration Page). Use the Joystick to edit (see section 4.1.1.5 Joystick for joystick operation). Along with providing information on the status of the various slots of the unit, it provides additional setup options. These include 'DATA I/O', 'SYSTEM SETUP', 'TEST PORTS', and 'MORE INFO'. These options will be discussed in sequence from top to bottom beginning with 'DATA I/O'. References to this page will occur each time the functions of a particular option are completed. Press the Power Key to the right of each selection's Soft Label to enter each option.

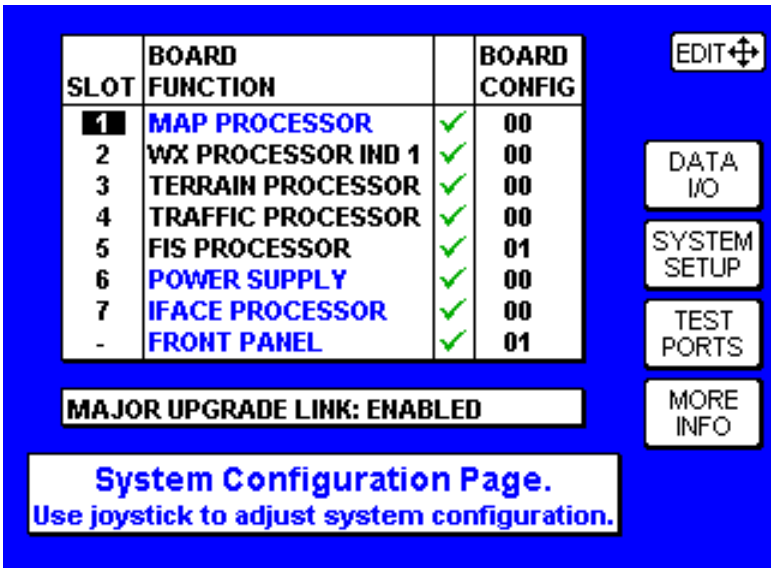


FIGURE 4-17 KMD 540 System Configuration Page

The Data I/O page (FIGURE 4-18 KMD 540 Data I/O Page) provides the status of the various I/O sources of the unit. Along with providing information on Data I/O status, it provides additional setup options including 'HDG SRCS', 'NAV SOURCE' and 'STORM SCOPE'. To return to the previous screen, press the Power Key to the right of the 'PREV PAGE' Soft Label.

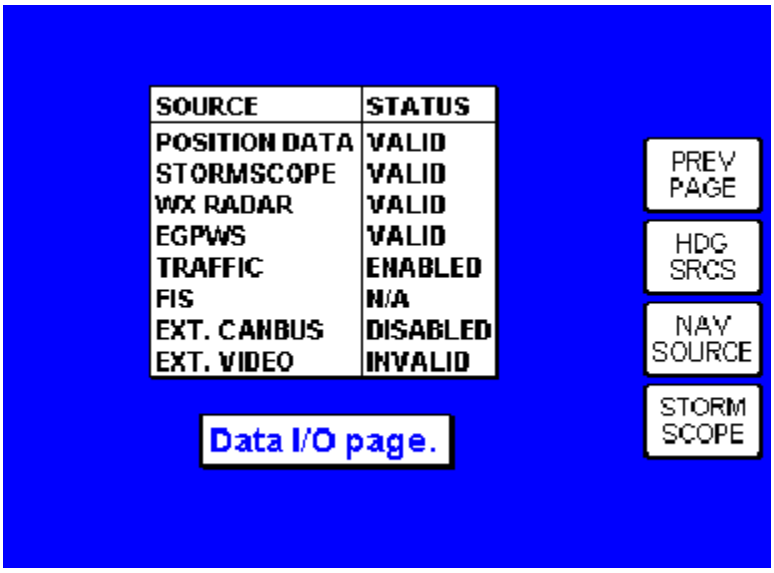


FIGURE 4-18 KMD 540 Data I/O Page

Pressing the Power Key to the right of the 'HDG SRCS' Soft Label enters the Heading Sources Page (FIGURE 4-19 KMD 540 Heading Sources Page). This page is useful for observing the status of the heading sources connected and for troubleshooting any heading problems. Use the joystick to change the synchro heading valid sense setting, if necessary, and enter 'PREV PAGE' to return to the previous screen.

The status of the STORMSCOPE may be identified as STEPPER. This is a type of heading input that is not generally useable by the KMD 550/850.

NOTE: The WX-500 Stormscope may be used as a heading source; however, the WX-1000E does not provide this function.

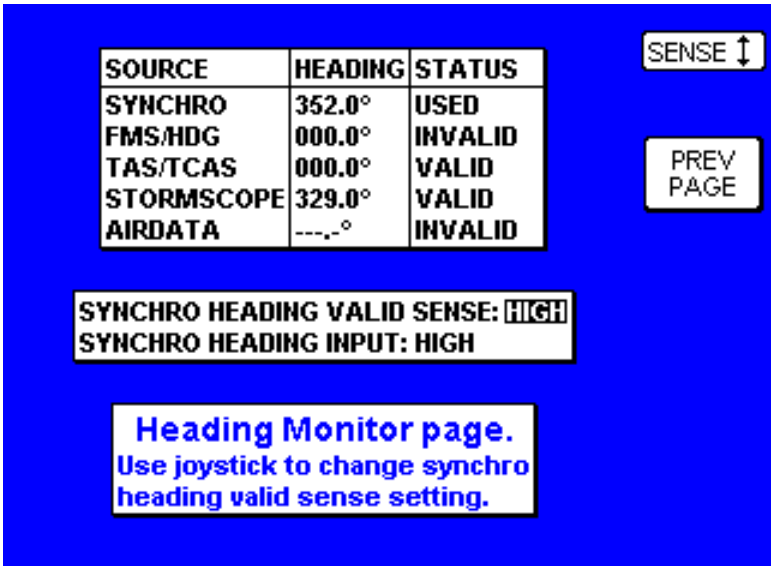


FIGURE 4-19 KMD 540 Heading Sources Page

Pressing the Power Key to the right of the 'NAV SOURCE' Soft Label enters the Nav Source Setup page (FIGURE 4-20 KMD 540 Nav Source Page). This page is used to configure the Nav Position source. Use the joystick to change settings, if necessary. The position source should be set to RS-232 when connected to a GPS with RS-232 output. It should be set to ARINC 429 when connected to an FMS or GPS with ARINC 429 output.

When using an RS-232 position source, the RS-232 type should be set to standard for all units except the Honeywell KLN 94. It should be set to enhanced when connected to a KLN 94. (Note that the KLN 94 must also be configured for enhanced bus).

When using an ARINC 429 position source, the ARINC 429 bus speed must be set to HIGH or LOW to match the speed of the FMS or GPS 429 output. (Reference the installation and configuration documentation for the FMS or GPS to determine the appropriate speed).

Enter 'PREV PAGE' to return to the Data I/O page. Entering 'PREV PAGE' again (from the Data I/O page) returns to the System Configuration page.

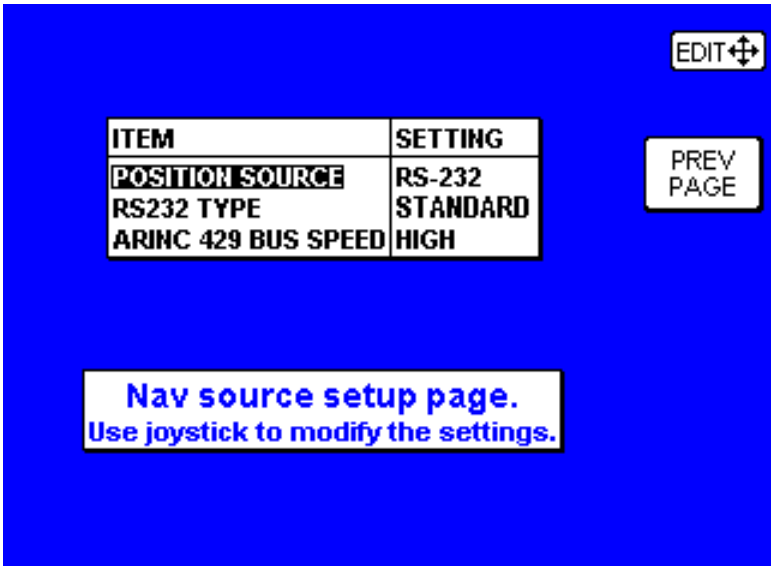


FIGURE 4-20 KMD 540 Nav Source Page

Pressing the Power Key to the right of the 'STORM SCOPE' Soft Label enters the Stormscope Source Setup page (FIGURE 4-21 KMD 540 Stormscope Source Page). This page is used to configure the Stormscope source. Use the joystick to change settings, if necessary. Options include NONE, WX-500, and WX-1000E. When WX-1000E is selected, also set the ARINC 429 Bus Speed. Enter 'PREV PAGE' to return to the Data I/O page.

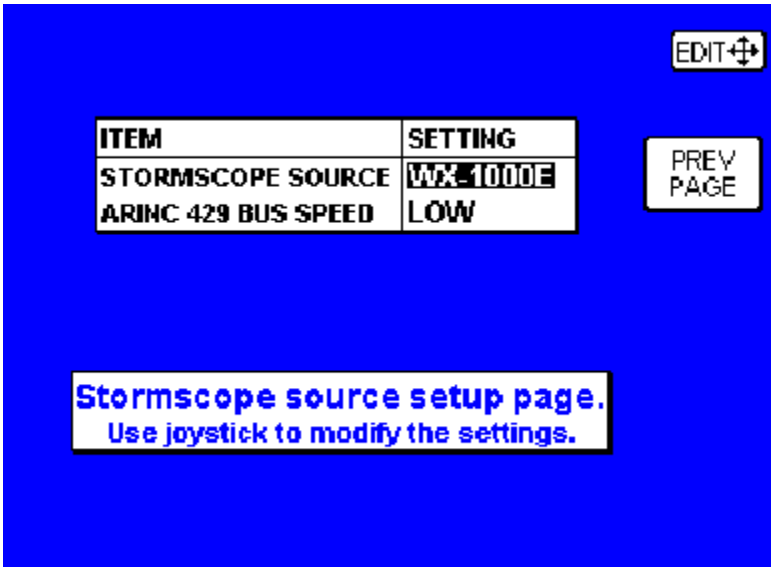


FIGURE 4-21 KMD 540 Stormscope Source Page

Press the System Setup Power Key to enter the System Setup Cover page (FIGURE 4-22 KMD 540 System Setup Cover Page). From this page, the following options are available along with 'PREV PAGE". They include 'LIGHT CURVE', 'SCREEN POS' and "POP-UP ALERTS'.

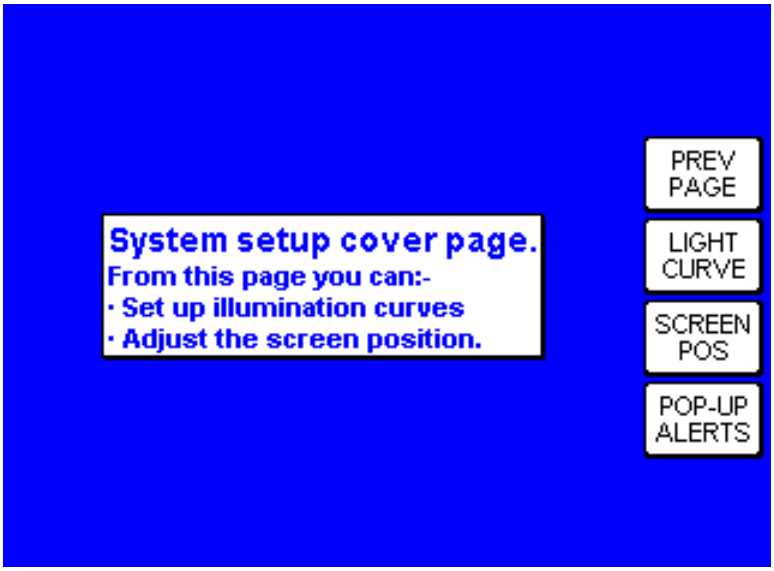
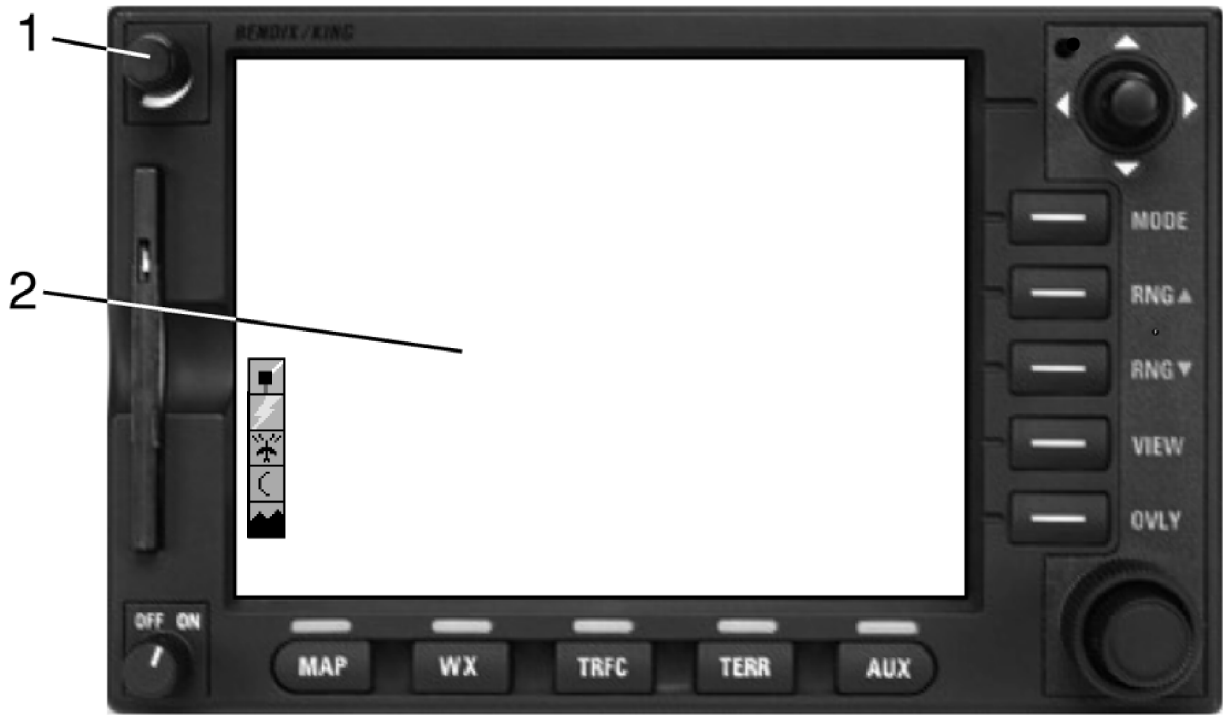


FIGURE 4-22 KMD 540 System Setup Cover Page

Press the Power Key to the right of the 'Light Curve' Soft Label to enter that option. This option, the KMD 540 Light Curve setup pages, allows for complete customization of display and backlighting brightness. This allows the unit to be optimally lit for viewing under all lighting conditions and panel installations.

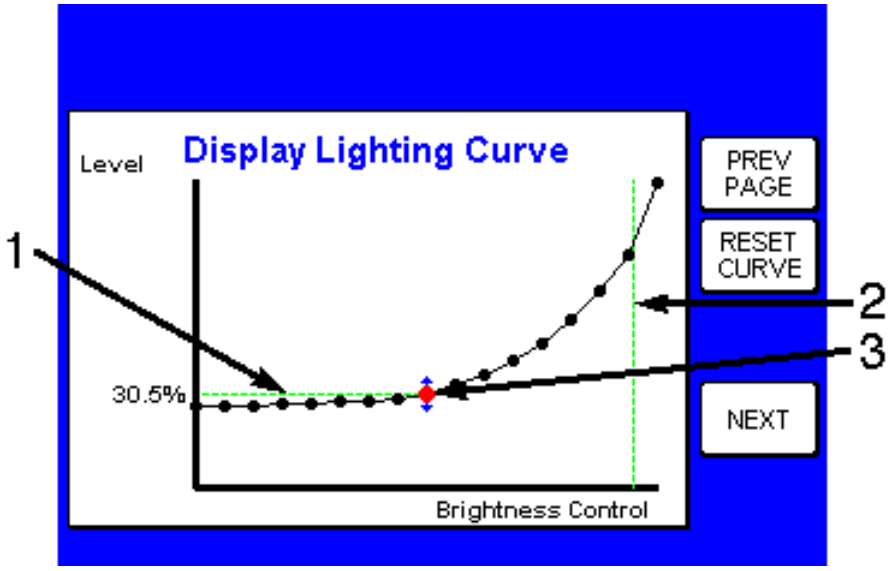
The first page will be the Display Lighting Curve which controls the LCD Display brightness relative to the Brightness Control (FIGURE 4-23 KMD 540 LCD Display Brightness).



1. Brightness Control
2. LCD Display

FIGURE 4-23 KMD 540 LCD Display Brightness

This page (refer to FIGURE 4-24 KMD 540 Display Lighting Page) provides three Power Key options, 'PREV PAGE' (return to the System Configuration page), 'RESET CURVE' (reset to defaults), and 'NEXT' (go to the next page). If a setting other than the default is desired, the joystick control may be used to manually adjust the setting. Each dot on the display represents a configuration setup point that can be adjusted. The vertical line shows the present setting of the brightness knob. Rotate the brightness knob to view. The horizontal line shows the brightness level setting that is associated with the presently selected configuration point. Use the joystick to move this point up and down. Move the joystick left and right to select other points. When the display is adjusted as desired, select 'NEXT' to continue or 'PREV PAGE' to return.



1. Brightness Level Setting Associated To Selected Configuration Point
2. Present Setting of the Brightness Knob
3. Adjustable Configuration Setup Point

FIGURE 4-24 KMD 540 Display Lighting Page

If the 'NEXT' page option is selected, the Indicator Lighting Curve (refer to FIGURE 4-25 KMD 540 Indicator Lighting Page) will appear.

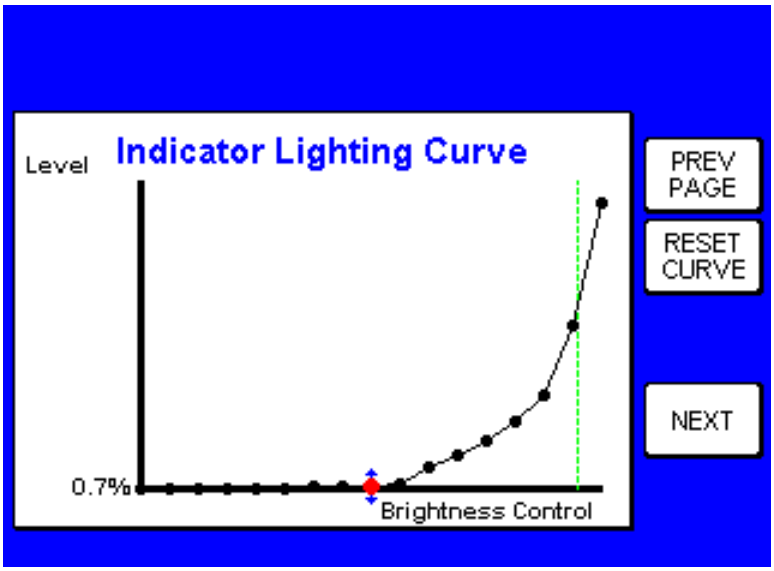
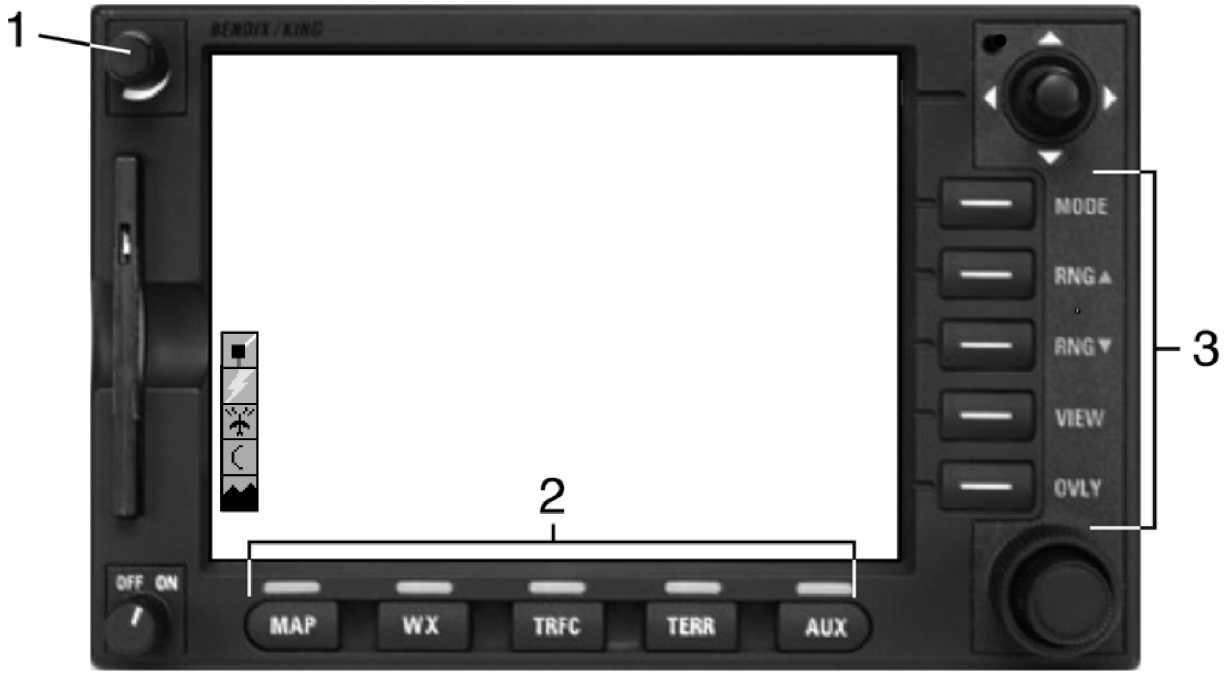


FIGURE 4-25 KMD 540 Indicator Lighting Page

The Indicator Lighting Curve function (refer to FIGURE 4-26 KMD 540 Indicator Brightness) controls the brightness of the Selected Function Indicator green LEDs, and the Power Key Labels, all relative to the Brightness Knob. All Power Key labels will be lit during the adjustment. Functions are the same as with the Display Lighting Curve page. Adjust the display accordingly and continue.



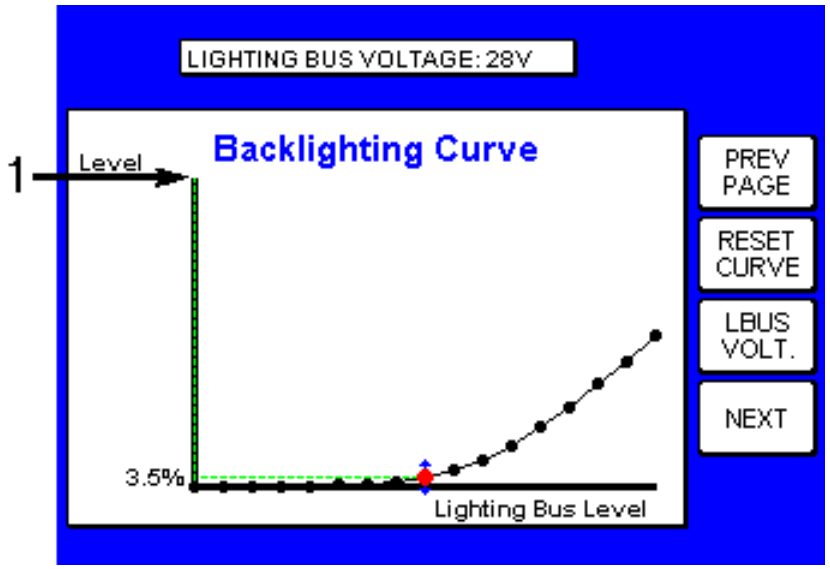
1. Brightness Control
2. Selected Function Indicators
3. Power Key Labels

FIGURE 4-26 KMD 540 Indicator Brightness

If the 'NEXT' page option is selected, the Backlighting Curve page (FIGURE 4-27 KMD 540 Backlighting Page) will appear. This function controls the backlighting of the knobs and keys relative to the lighting bus level. Functions are the same as on the Display Lighting Curve page except that an additional option 'LBUS VOLT.' is available. Pressing the 'Soft Label' next to this toggles the Lighting Bus Input Voltage Configuration between 28Vdc, 14Vdc, 5Vdc, and 5Vac. The 28V page is shown here. Adjust the display accordingly. Pressing 'NEXT' will loop back through the lighting options.

Adjust the aircraft's lighting bus control to change the lighting bus level input and observe the backlighting in a darkened cockpit. Adjust the configuration points as needed to track the brightness of the rest of the cockpit lighting.

If all lighting functions are adjusted as desired, press 'PREV PAGE' to return to the System Configuration page.



1. Lighting Bus Level Input (relative to the Aircraft's Lighting Bus Control)

FIGURE 4-27 KMD 540 Backlighting Page

Note that the lighting adjustment curves will vary depending on aircraft type and installation. The following three figures (FIGURE 4-28 KMD 540 Beech Baron Display Lighting Page, FIGURE 4-29 KMD 540 Beech Baron Indicator Lighting Page, and FIGURE 4-30 KMD 540 Beech Baron Backlighting Page) show the results of an installation in a Beech Baron aircraft.

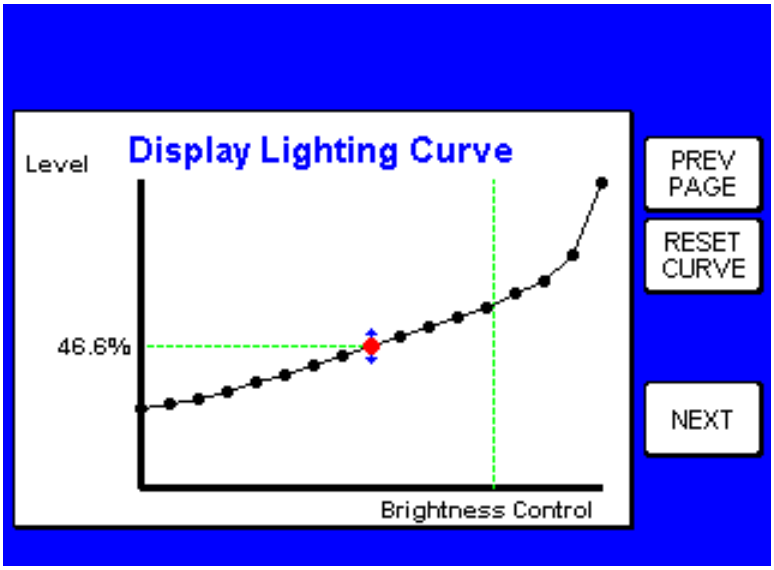


FIGURE 4-28 KMD 540 Beech Baron Display Lighting Page

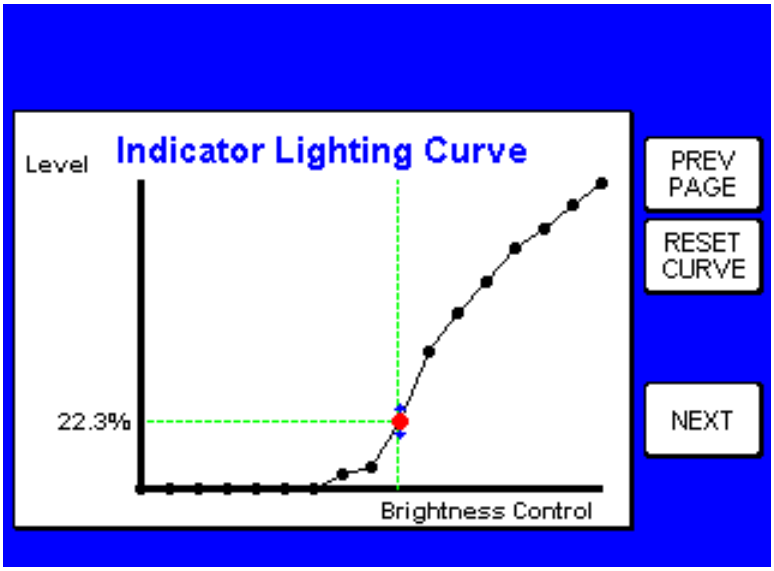


FIGURE 4-29 KMD 540 Beech Baron Indicator Lighting Page

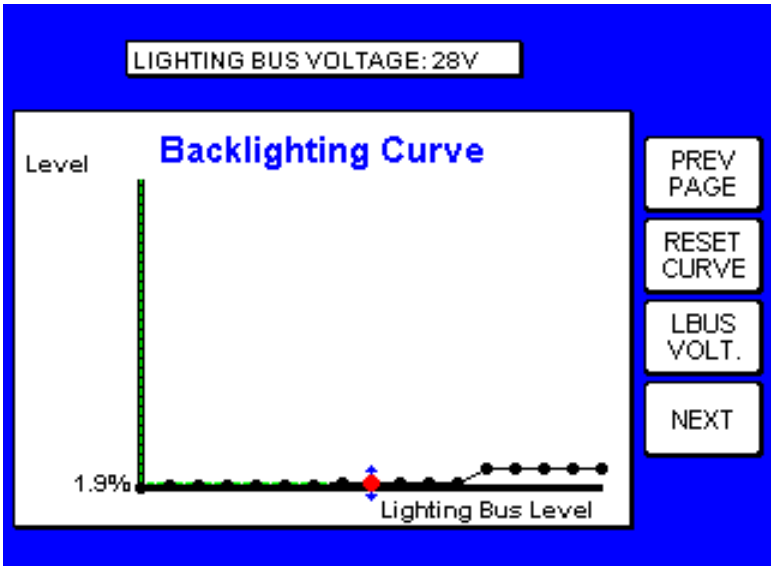


FIGURE 4-30 KMD 540 Beech Baron Backlighting Page

From the System Setup Cover Page, press the Power Key to the right of the 'SCREEN POS' Soft Label to enter that option. Upon entering, a single page (FIGURE 4-31 KMD 540 Screen Position Page) will appear which allows the user to adjust the screen position. Use the joystick to adjust the position. Also, two Power Key options, 'PREV PAGE' (return to the System Configuration page) and 'RESET POS' (set the screen position to the default) are available. Set the screen position as desired and press the 'PREV PAGE' Power Key to return to the System Setup Cover Page.

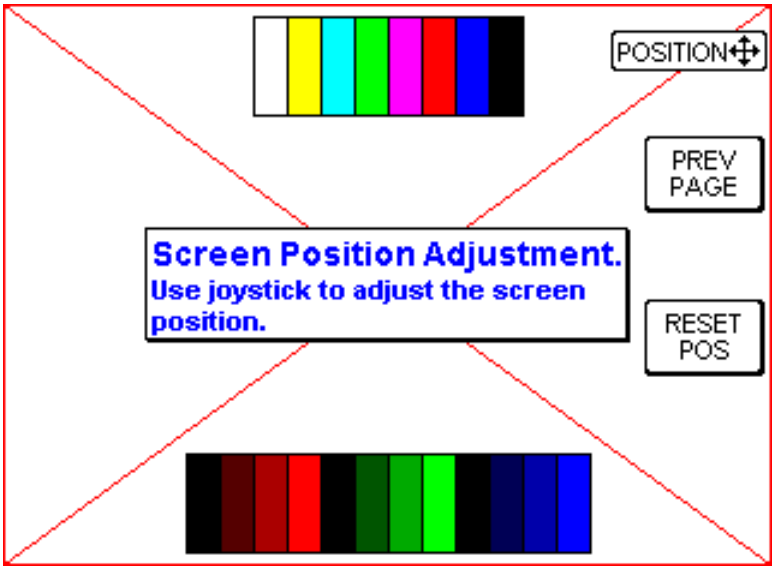


FIGURE 4-31 KMD 540 Screen Position Page

From the System Setup Cover Page, press the Power Key to the right of the 'POP-UP ALERTS' Soft Label to enter that option. Upon entering, a single page (FIGURE 4-32 KMD 540 Pop-Up Alerts Page) will appear which allows the user to enable or disable traffic and terrain auto page pop-up alerts. When the alert is set to pop-up "auto page", an alert or warning will cause the KMD 540 to automatically change to the traffic or terrain page. When the alert pop-up is set to "alert box", an alert or warning will cause a message box to be displayed but not automatically change pages. Use the joystick to modify the settings. Press the 'PREV PAGE' Power Key to return to the System Setup Cover Page.

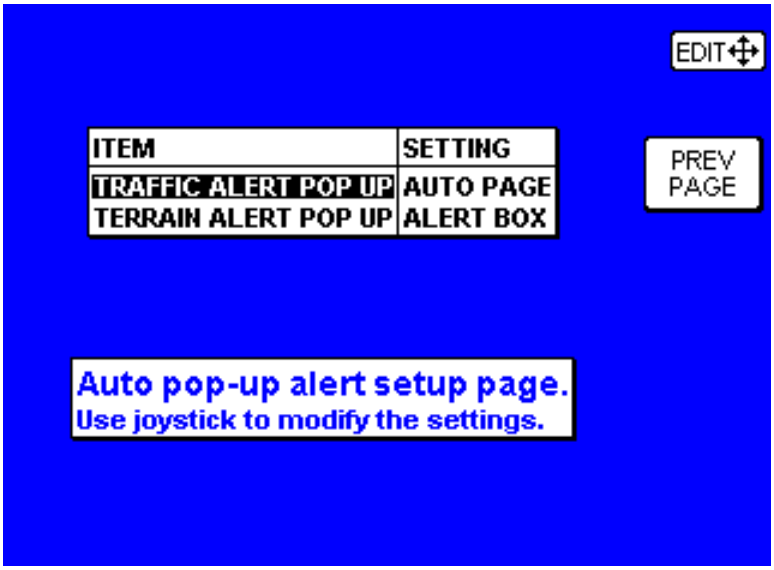


FIGURE 4-32 KMD 540 Pop-Up Alerts Page

Upon returning to the System Configuration Page, press the Power Key to the right of the 'TEST PORTS' Soft Label to enter that option. Upon entering, the first page (FIGURE 4-33 KMD 540 Test Ports Page 1) will be the 'Test ports page 1'. The Test Ports page allows the discrete outputs of the MFD to be controlled manually for wiring checkout or troubleshooting. If the current field shows "Overload", it may indicate a short or installation wiring problem. This page provides two Power Key options, 'PREV PAGE' (return to the System Configuration page) and 'NEXT' (go to the next test ports page). Use the joystick control to modify the port settings. When the discretes are set as desired, select 'NEXT' to continue or 'PREV PAGE' to return.

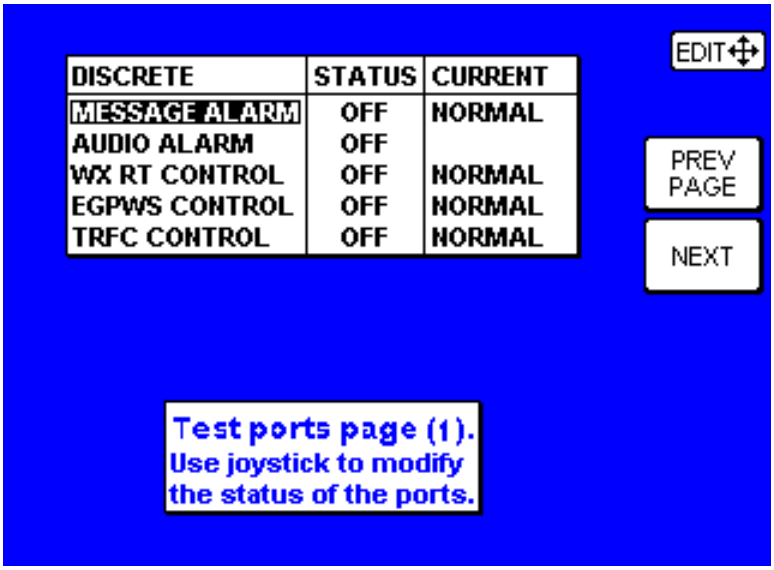


FIGURE 4-33 KMD 540 Test Ports Page 1

If 'NEXT" was selected, a page similar to FIGURE 4-34 KMD 540 Test Ports Page 2 will appear. This page provides two Power Key options, 'OK' (verify and return to the System Configuration page) and 'NEXT' (go to the next test ports page). Select 'NEXT' to continue or 'OK' to return.

This page is intended for use in troubleshooting when connected to a test panel outside the aircraft. It is normal to see red X's and dashed data when installed in the aircraft.

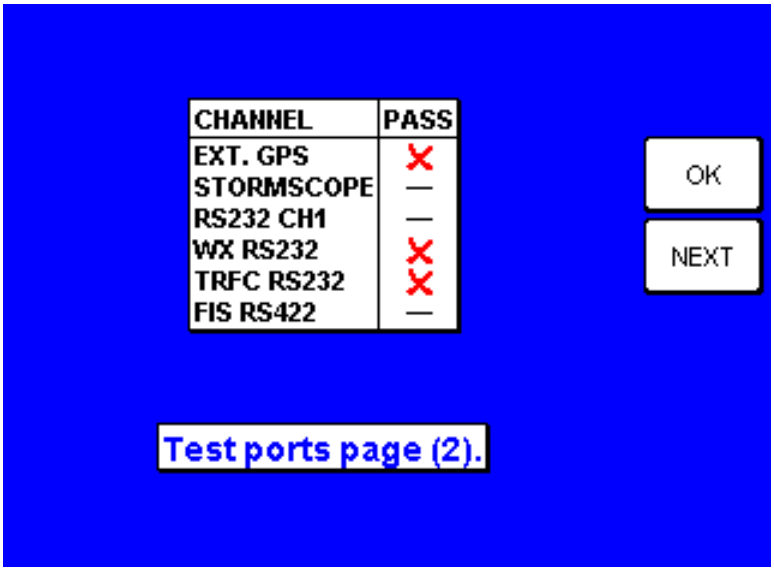


FIGURE 4-34 KMD 540 Test Ports Page 2

If ‘NEXT” was selected, a page similar to FIGURE 4-35 KMD 540 Test Ports Page 3 will appear. This page provides two Power Key options, ‘OK’ (verify and return to the System Configuration page) and ‘NEXT’ (go to the next test ports page which, in this case, loops back to the first test ports page). Select ‘NEXT’ to continue or ‘OK’ to return.

This page is intended for use in troubleshooting when connected to a test panel outside the aircraft. It is normal to see red X’s and dashed data when installed in the aircraft.

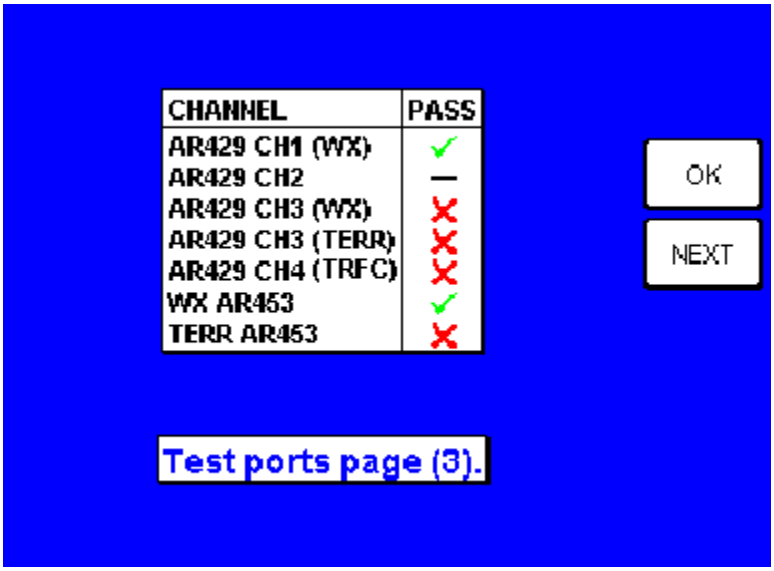


FIGURE 4-35 KMD 540 Test Ports Page 3

If ‘OK’ was selected previously, the unit will return to the System Configuration Page. From the System Configuration Page, press the Power Key to the right of the ‘MORE INFO’ Soft Label to enter that option. Upon entering, a single page (FIGURE 4-36 KMD 540 ‘More Info’ Page) will appear which provides additional information about the board in the slot number selected by the joystick. After viewing this information, press the ‘PREV PAGE’ Power Key to return to the System Configuration Page.

In most cases, the presence of Event Codes does not mean that faults have occurred.

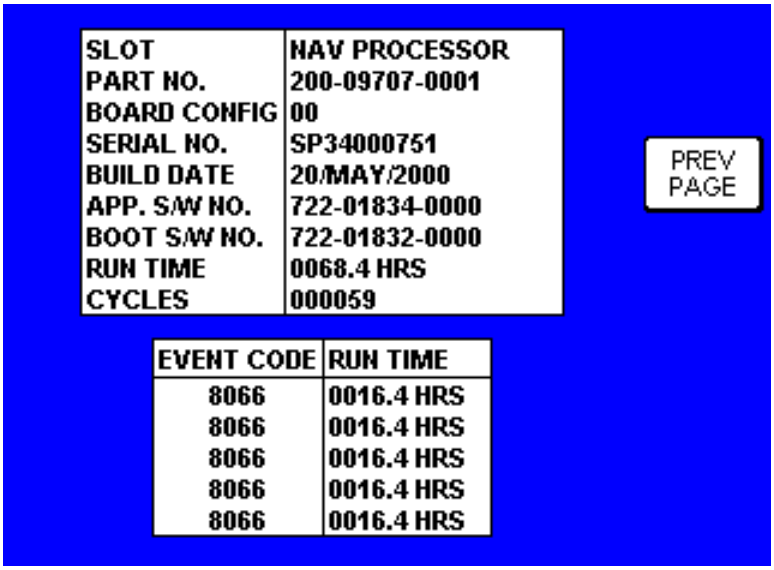


FIGURE 4-36 KMD 540 'More Info' Page

This covers all options within the System Configuration option. Refer to the following sections for the other setup options.

4.2 CONFIGURATION PROCEDURE (Map Setup)

Configuration of the Map may be accomplished by pressing the 'AUX' function on the unit. This will display the 'auxiliary mode cover page' (see FIGURE 4-15 Auxiliary Mode Cover Page). If the 'External Video" page appears, press the 'AUX' key a second time.

The 'auxiliary mode cover page' provides setup pages including the Map. When this page is displayed, press the Power Key to the right of the 'MAP SETUP' Soft Label to enter MAP Setup. A page similar to FIGURE 4-40 KMD 540 Map Setup Page 1 will appear, except when MAP SETUP has been placed behind a system configuration password. In this case, the map setup password page, FIGURE 4-37 KMD 540 Map Setup Password Page will appear. The password PIN must be entered using the same procedure as on the System Configuration Password Page (FIGURE 4-16 KMD 540 System Configuration Password Page). Upon the proper PIN entry, 'Map Setup page (1)' will then appear (FIGURE 4-40 KMD 540 Map Setup Page 1). By default, MAP SETUP does not require a PIN entry. The procedure for "locking" or creating password MAP ACCESS is explained below.

Four pages of Map Setup options (FIGURE 4-40 KMD 540 Map Setup Page 1, FIGURE 4-41 KMD 540 Map Setup Page 2, FIGURE 4-42 KMD 540 Map Setup Page 3, and FIGURE 4-43 KMD 540 Map Setup Page 4) are available. On any of the four pages, use the joystick to select and change the settings for the various fields. While in the 'ITEM' field, a vertical motion (up and down) of the joystick will move between the various choices of that field. A horizontal motion (side to side) of the joystick will select the various options for that particular item. Once a field is selected, a vertical motion (up and down) of the joystick on that item will cycle through the various options. In fields where a minimum/ maximum range exist, an upward motion will increment the value while a downward motion will decrement the value.

Use the "RESET VALUES' Power Key to set values to the defaults. Use the 'NEXT' Power Key to cycle between the pages. When finished, use the 'SAVE & EXIT' Power Key to save changes, exit the setup function, and return to the 'auxiliary mode cover page'.

Map Setup page (1), (FIGURE 4-40 KMD 540 Map Setup Page 1) has an additional Power Key, 'SETUP LOCK' which allows the installer to place MAP SETUP behind the system configuration password (see FIGURE 4-39 KMD 540 Map Setup Access Page). Entry to this page requires the system configuration password (see FIGURE 4-38 KMD 540 Map Setup Access Password Page) if access to MAP SETUP is currently 'unlocked". To "lock" access, use the joystick to select 'LOCKED' and 'SAVE & EXIT' . MAP SETUP will now require the password PIN to access.

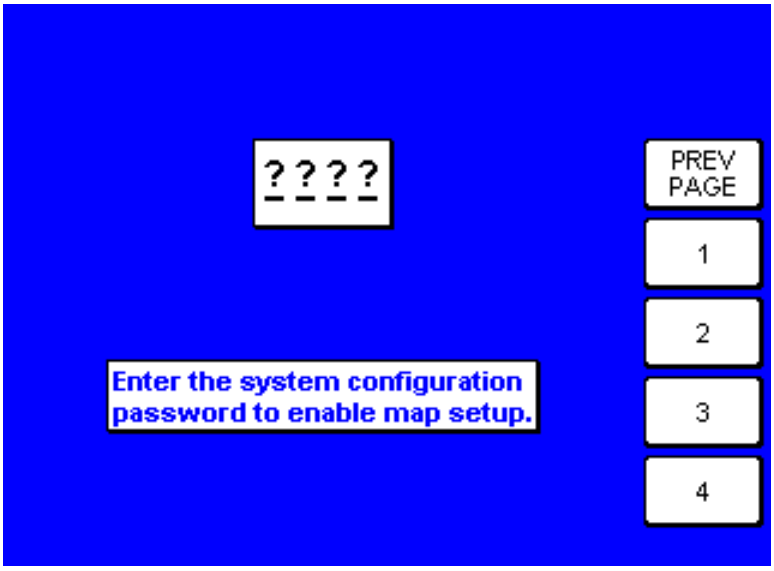


FIGURE 4-37 KMD 540 Map Setup Password Page

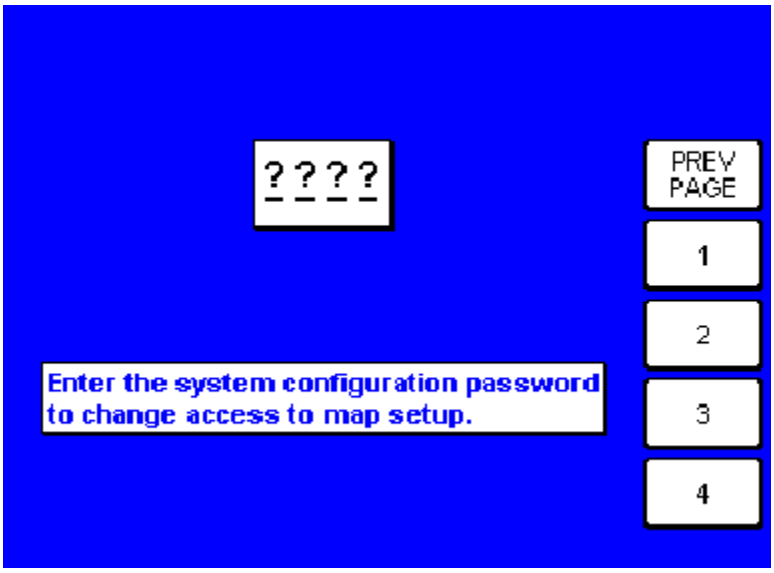


FIGURE 4-38 KMD 540 Map Setup Access Password Page

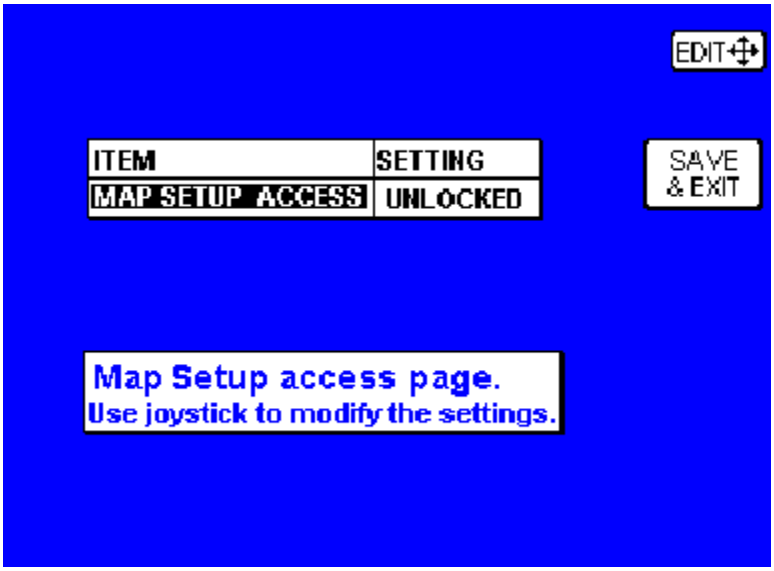


FIGURE 4-39 KMD 540 Map Setup Access Page

FIGURE 4-40 KMD 540 Map Setup Page 1 includes the following fields (use the joystick to select and change).

ORIENTATION:

Set in either Track Up or North Up.

AIRPORT NAME:
Label airports on MAP pages either with ICAO code, airport, or city names.

COORD SYSTEM:
Determines whether the unit operates with reference to Lat/Long, UTM, or OSGB.

EXTENDED TRACK:
Turns on or off the extended track line which is drawn ahead of the present position in the direction of the present track.

RANGE RINGS:
Turns range rings on or off on the MAP pages.

AUTO DECLUTTER:
Turns on or off. If a higher priority icon label (Airport) is found to clash with a lower priority icon label (City) already on the screen, the lower priority icon will be removed.

POSITION REF:
Defines the reference to which the present position is given on the MAP pages, either to all available data, VORs only or VORs and Airports only.

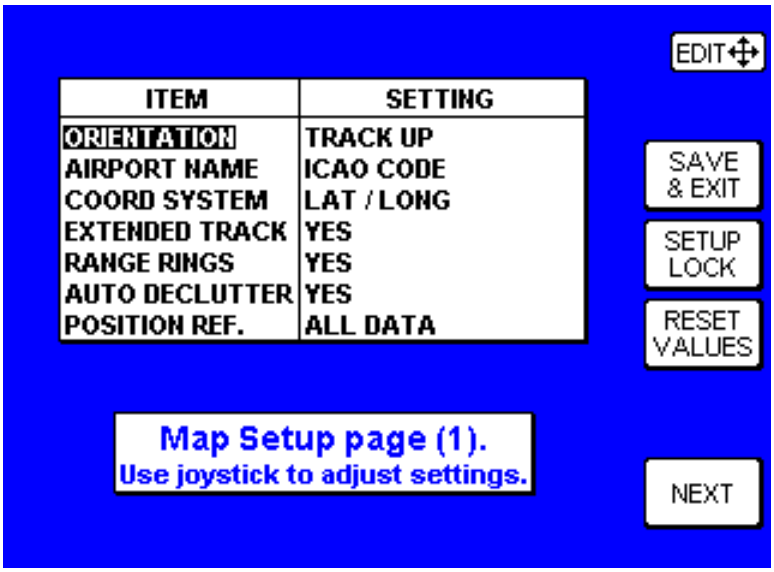


FIGURE 4-40 KMD 540 Map Setup Page 1

FIGURE 4-41 KMD 540 Map Setup Page 2 includes the following fields (use the joystick to select and change).

ICON:
Shows the symbol used to designate the associated item.

TOPO ON/TOPO/OFF:

Shows the color associated with the selected item when the topographic map is on or off.

ICON MAX:
This field can be set to the maximum range, in nautical miles, that this item's symbol is displayed on the map screen.

NAME MAX:
This field can be set to the maximum range, in nautical miles, that the text name of this item is displayed on the map screen.

MIN:
This field can be set to the minimum range, in nautical miles, that this item's symbol and text name is displayed on the map screen.

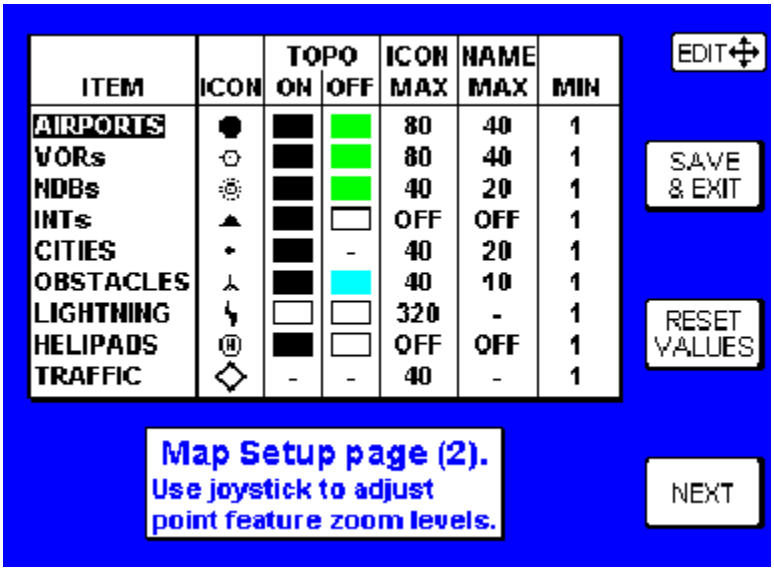


FIGURE 4-41 KMD 540 Map Setup Page 2

FIGURE 4-42 KMD 540 Map Setup Page 3 includes the following fields (use the joystick to select and change).

LINE:
Shows the symbol used to designate the associated item.

TOPO ON/TOPO/OFF:

Shows the color associated with the selected item when the topographic map is on or off.

LINE MAX:
This field can be set to the maximum range, in nautical miles, that this item's symbol is displayed on the map screen.

NAME MAX:
This field can be set to the maximum range, in nautical miles, that the text name of this item is displayed on the map screen.

MIN:
This field can be set to the minimum range, in nautical miles, that this item's symbol and text name is displayed on the map screen.

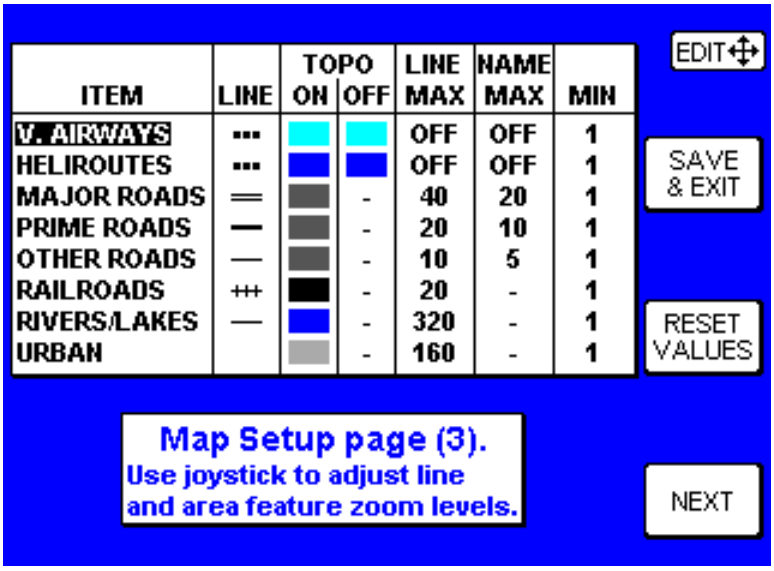


FIGURE 4-42 KMD 540 Map Setup Page 3

FIGURE 4-43 KMD 540 Map Setup Page 4 includes the following fields (use the joystick to select and change).

TOPO ON/TOPO/OFF:

Shows the color associated with the selected item when the topographic map is on or off.

LINE MAX:
This field can be set to the maximum range, in nautical miles, that this item's symbol is displayed on the map screen.

NAME MAX:
This field can be set to the maximum range, in nautical miles, that the text name of this item is displayed on the map screen.

MIN:
This field can be set to the minimum range, in nautical miles, that this item's symbol and text name is displayed on the map screen.

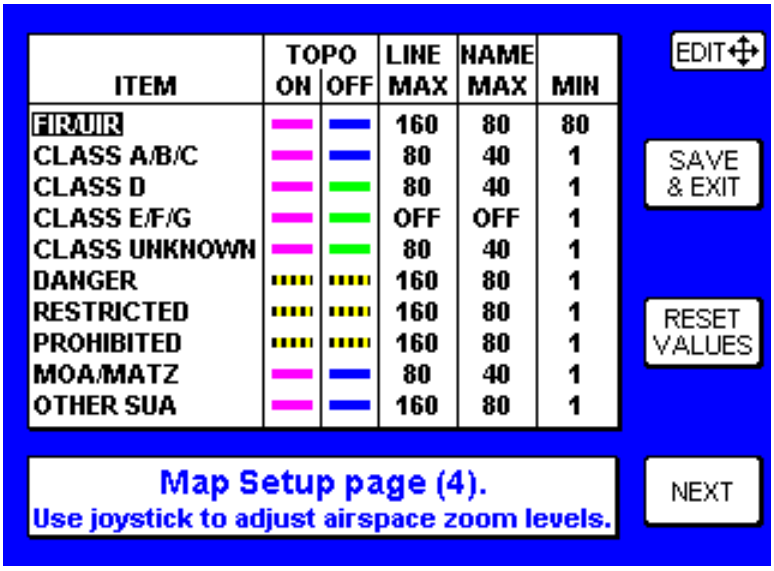


FIGURE 4-43 KMD 540 Map Setup Page 4

4.3 WEATHER CONFIGURATION PROCEDURE (Wx Radar - KMD 850)

4.3.1 KMD 850 to Wx Radar Interfaces

Wx Radar configuration is available only in the KMD 850 system which contains a KAC 501 Weather Radar Module. This module allows the system to control and display certain Honeywell Radars. The KMD 850 can separately enable or disable the Radar Vertical Profile mode (where available). The following Radar devices may be configured with the KMD 850 system.

Radar Type (Note 9)	Horiz. Scan Angle°	Vertical Profile Enable	Vert. Scan Angle °	Auto Tilt	WX Manual Gain	Sector Scan	WX/ARL Mode	5, 320 nm Ranges	Auto Standby
RDR 2000	100 (90)	Enabled	60	N/A	N/A	N/A	N/A	N/A	Enabled
RDR 2100	120 (100)	Enabled	60	Enabled	Disabled	Disabled	Enabled	Enabled	Enabled
RDS 81	90	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Enabled
RDS 82	90	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Enabled
RDS 82VP	90	Enabled	50	N/A	N/A	N/A	N/A	N/A	Enabled
RDS 84	120	N/A	N/A	N/A	N/A	N/A	N/A	Enabled	Enabled
RDS 84VP	120	Enabled	60	N/A	N/A	N/A	N/A	Enabled	Enabled
RDS 86	120	N/A	N/A	Enabled	N/A	N/A	Enabled	Enabled	Enabled
RDS 86VP	120	Enabled	60	Enabled	N/A	N/A	Enabled	Enabled	Enabled
Other	120 (90) (100)	Disabled	60 (50)	Disabled	Disabled	Disabled	Disabled	Enabled	Enabled

Notes:

1. Once a Radar Type is selected, the other setup options will become restricted to values appropriate to that type. Select type "OTHER" to get full flexibility to select individual options.
2. "N/A" in the table designates options that are not selectable (or supported) for the selected Radar Type. The corresponding feature is disabled on the KMD 850.
3. Options that are not adjustable are depicted in blue. Adjustable options are depicted in black.
4. "Enabled" designates that the corresponding KMD 850 feature is enabled by default for the selected radar type. The installer has the option to select "Disabled".
5. "Disabled" designates that the corresponding KMD 850 feature is disabled by default for the selected radar type. The installer has the option to select "Enabled". Note that the Radar R/T may also have to be configured in order to enable the feature.
6. Horizontal and Vertical Scan Angle selection are restricted to default values according to Radar Type. Available alternate (non-default) selections are available as shown in parentheses. Note that selection of non-default values also requires appropriate configuration of the Radar R/T.
7. Pressing the RESET VALUES soft key restores settings to the default values that correspond to the selected RADAR TYPE. Note that RADAR TYPE is not changed by the RESET VALUES soft key.
8. Pressing the SAVE & EXIT soft key causes the new Scan Settings to be saved. The display returns to the WX RADAR MAINTENANCE PAGE.
9. When Auto Standby is enabled, the radar will be automatically switched to standby mode when the ground speed goes below 30 kts. AUTO STANDBY should be set to disabled for helicopter applications.

TABLE 4-1 Radar Models and Functionality

4.3.2 KMD 850 Configuration

Configuration of the KMD 850 Weather Radar System may be accomplished only after the KAC 501 module has been installed (see section 2.2.3 Option Module Installation). Configure using the following procedure.

1. Unit Configuration
   - A. Power on the unit.
   - B. The first time unit is turned on there should be a message saying "Software Upgrade in Progress" and a status bar showing percent complete for WX.
   - C. Acknowledge the self test and data base cycle pages by pressing the OK soft key.
   - D. Press the AUX key then press the System Config soft key (see FIGURE 4-15 Auxiliary Mode Cover Page). The System Configuration Password page will appear (see FIGURE 4-16 KMD 540 System Configuration Password Page).
   - E. Enter 3333. The system configuration page shown below will appear (see FIGURE 4-44 System Configuration Page With Slot 2 'Empty').
   - F. Move the joystick down and to the right to the Board Function position 'EMPTY' for SLOT 2.
   - G. Move the joystick up to change the field from EMPTY to 'WX PROCESSOR IND 1'. If the display is connected to the weather radar as indicator number 2 then move the joystick up again to change the field to 'WX PROCESSOR IND 2'.
   - H. Wait at least 10 seconds. Cycle power and repeat steps C. through E.

   If the KAC 501 module is working properly then there should be a green check mark next to the name in Slot 2 (see FIGURE 4-45 System Configuration Page With Slot 2 As 'WX PROCESSOR IND 1'). If there is a fault or if the module is not installed there will be a red X (see FIGURE 4-46 System Configuration Page With 'WX PROCESSOR IND 1' Fault).

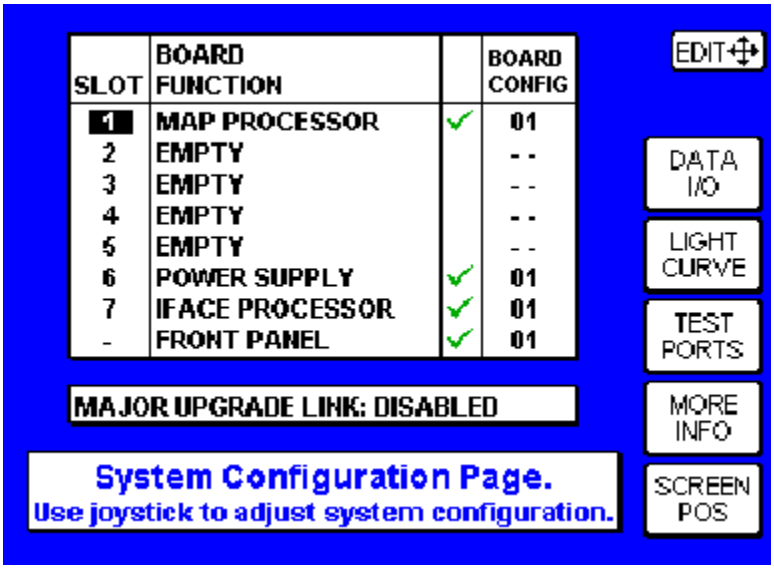


FIGURE 4-44 System Configuration Page With Slot 2 'Empty'

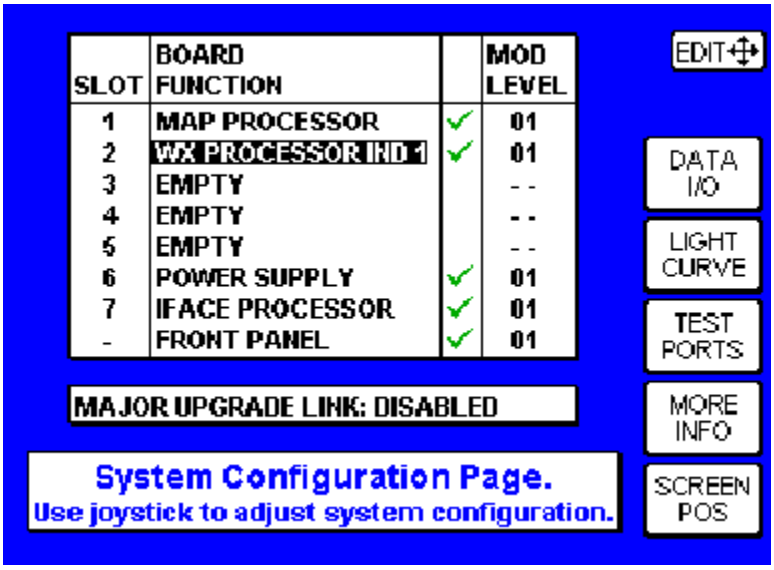


FIGURE 4-45 System Configuration Page With Slot 2 As 'WX PROCESSOR IND 1'

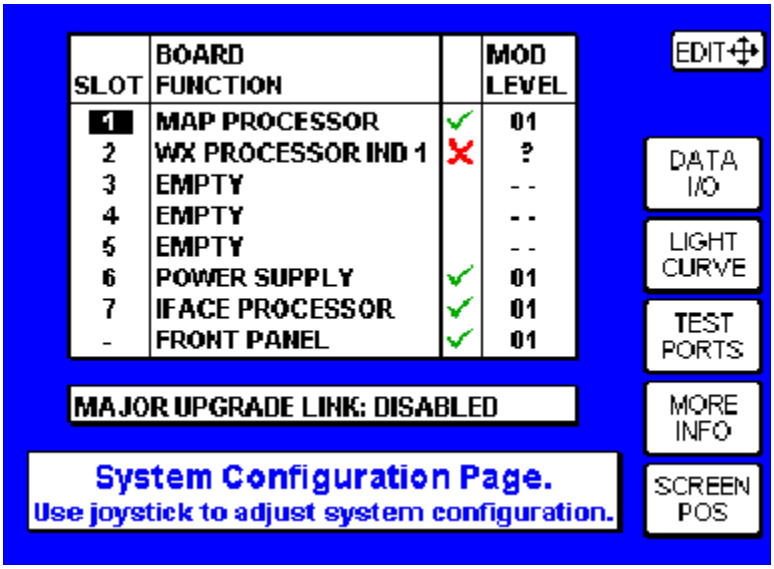


FIGURE 4-46 System Configuration Page With 'WX PROCESSOR IND 1' Fault

2. Set Radar Parameters

   A. Press the AUX key twice to display the Auxiliary mode cover page (see FIGURE 4-47 Auxiliary Mode Cover Page).

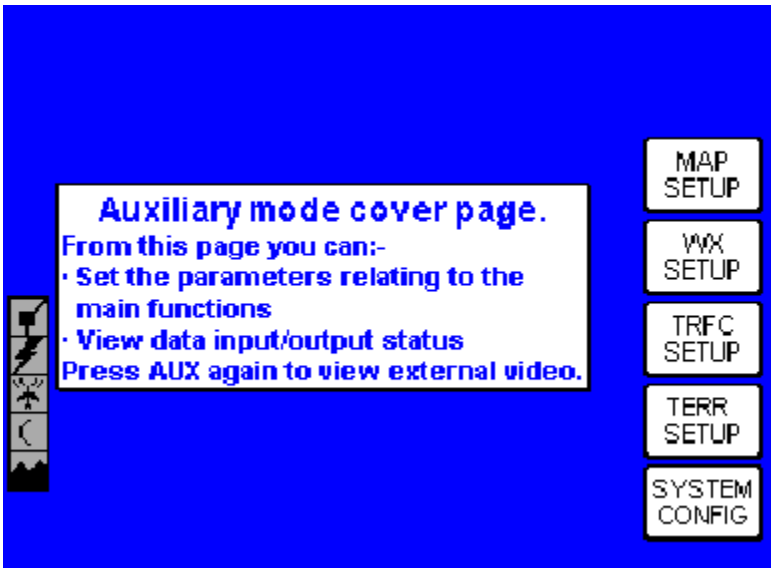


FIGURE 4-47 Auxiliary Mode Cover Page

B. Press WX Setup to display the WX Setup Cover Page (see FIGURE 4-48 WX Setup Cover Page).

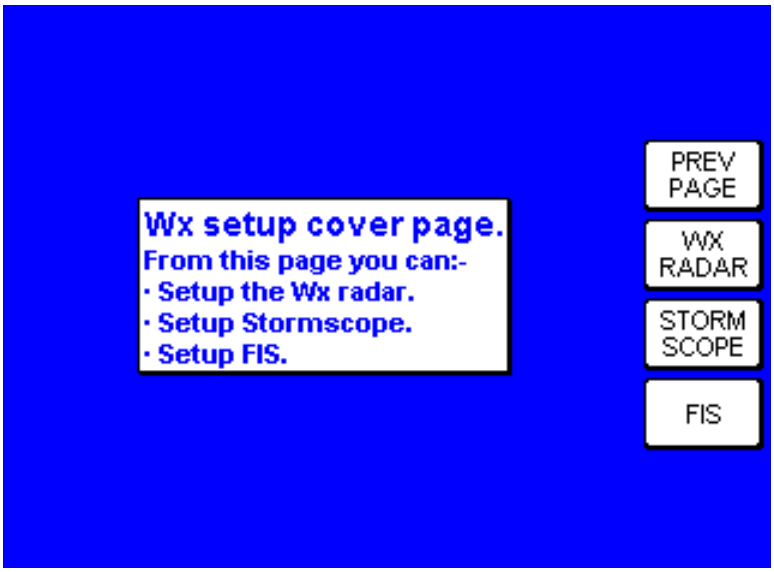


FIGURE 4-48 WX Setup Cover Page

C. Press WX RADAR to display the R/T calibration data page (see FIGURE 4-49 KMD 540 Wx Radar Configuration Page (Calibration Disabled)). Note that calibration functions are disabled.

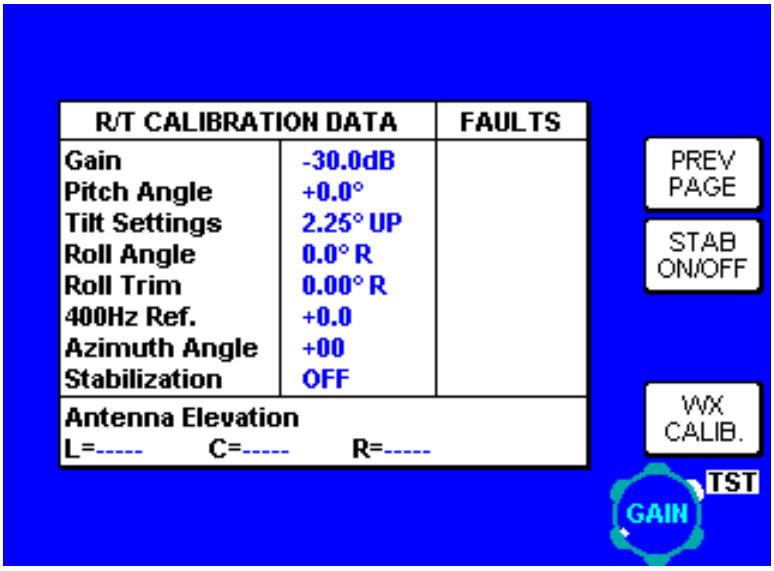


FIGURE 4-49 KMD 540 Wx Radar Configuration Page (Calibration Disabled)

D. Press 'WX CALIB'. Before entering calibration, the Wx Radar Calibration Password Page will appear (see FIGURE 4-50 KMD 540 Radar Configuration Password Page). Password entry functions the same as on the System Configuration Password Page (see FIGURE 4-16 KMD 540 System Configuration Password Page).

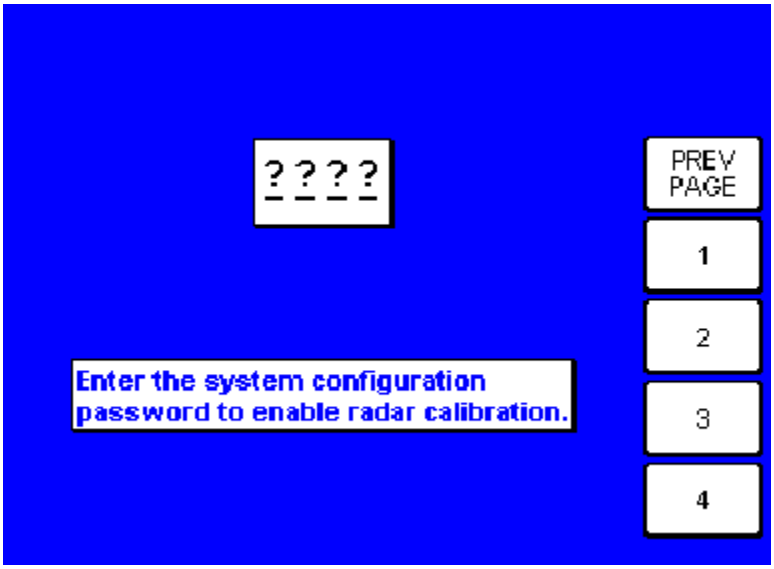


FIGURE 4-50 KMD 540 Radar Configuration Password Page

E. Upon entry of the correct password, the Wx Radar calibration page will appear (see FIGURE 4-51 R/T Calibration Data Page). Note that calibration functions are now enabled.

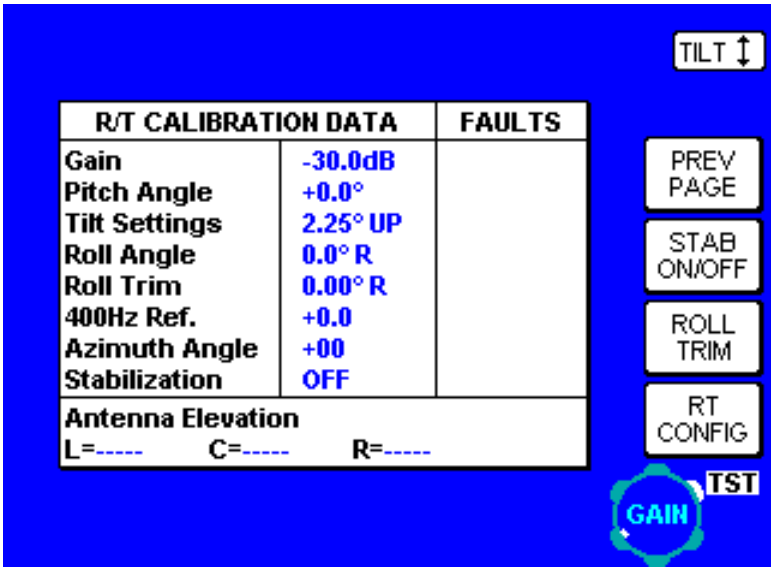


FIGURE 4-51 R/T Calibration Data Page

F. Press ‘RT CONFIG’ soft key to go to the Radar Configuration Page (see FIGURE 4-52 Radar Configuration Page).

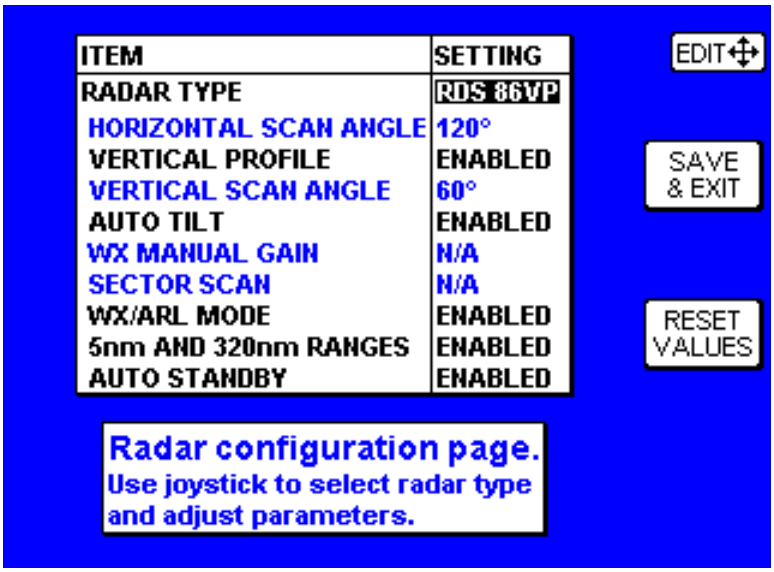


FIGURE 4-52 Radar Configuration Page

G. Use the joystick to enter in the appropriate settings for the radar that will be connected to the display. Refer to TABLE 4-1 Radar Models and Functionality for a list of valid settings:

NOTE: IF THESE SETTINGS DO NOT MATCH THE CONFIGURATION OF THE RADAR THEN THE RADAR OUTPUT MAY NOT BE VISIBLE OR DISPLAY INCORRECTLY ON THE DISPLAY.

4.3.3 KMD 850 Testing

1. Power On Self Test

   Cycle power on the display and verify that the power on self test shows a green checkmark next to "WX RADAR INTERFACE" as shown in FIGURE 4-53 WX Radar Interface Self Test Passed.

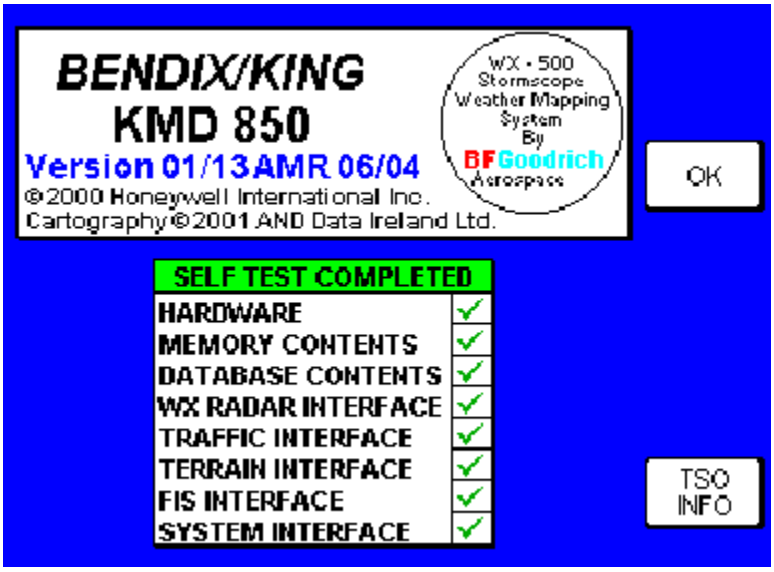


FIGURE 4-53 WX Radar Interface Self Test Passed

FIGURE 4-54 WX Radar Interface Self Test Failed shows the results if the self test Fails. This indicates that the KAC 501 Weather radar module is not installed, has failed, or is not inserted in the proper slot.

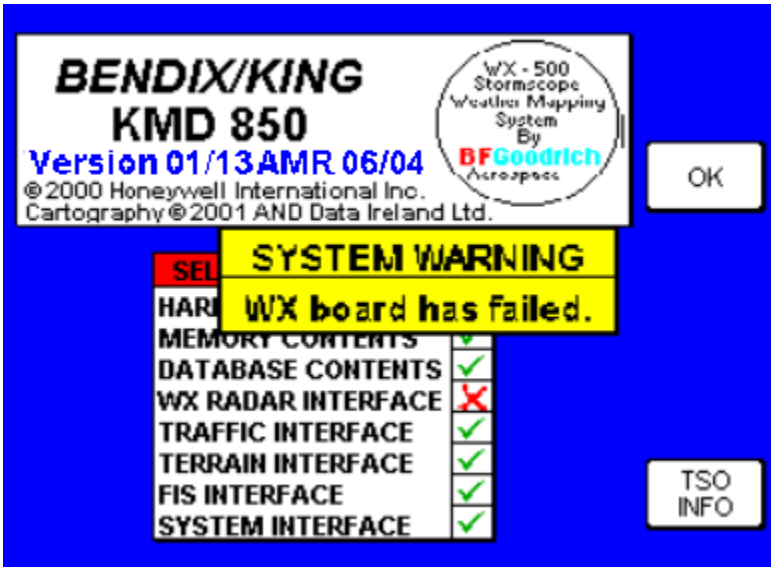


FIGURE 4-54 WX Radar Interface Self Test Failed

2. System Configuration Page Self Test
   A. Confirm the self test and data base effectivity by pressing the OK soft key.
   B. Press the AUX key then press the System Config soft key (see FIGURE 4-15 Auxiliary Mode Cover Page). The System Configuration Password page will appear (see FIGURE 4-16 KMD 540 System Configuration Password Page).
   C. Enter 3333. The system configuration page shown will appear (see FIGURE 4-45 System Configuration Page With Slot 2 As 'WX PROCESSOR IND 1').
   D. Verify that a green checkmark appears next to the WX Processor in Slot 2.
3. Functional Test State
   A. With the display connected to the radar, press the WX function key and rotate the outer knob to put the radar in Test Mode.
   B. Verify that the display shows a test pattern similar to FIGURE 4-55 WX Radar Test Pattern.
   C. Verify that no faults are displayed in the bottom left area of the screen. Note that some radars will display TX FLT while in test mode, this is not a failure.

NOTE: If there are no faults indicated but the test pattern is not being displayed then most likely the display is not configured properly. Refer to section 4.3.2 KMD 850 Configuration and check that the indicator is properly configured as Indicator 1 or 2, and that the scan range is set properly on the Scan Setup Page.

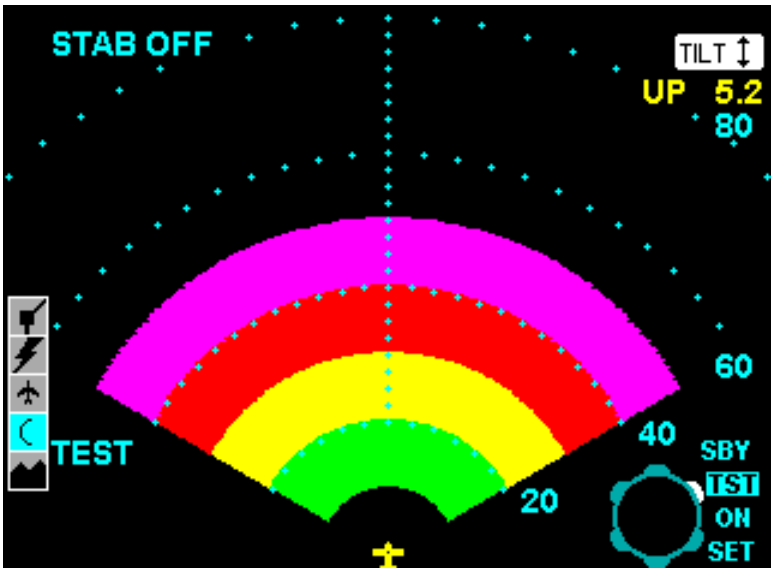


FIGURE 4-55 WX Radar Test Pattern

4.3.4 KMD 850 Controls

4.3.4.1 JOYSTICK

When the JOYSTICK is moved up or down,
- The Tilt may be adjusted if the Radar is not in the STANDBY state.
- Individual stabs of the JOYSTICK will increment or decrement the Tilt angle in steps of 0.25 degrees.
- The tilt value varies from -15.00 deg. to +15.00 deg.

When the JOYSTICK is moved to the left or right,
- The Track Line may be adjusted if the Radar is in the ON state.
- Individual stabs of the JOYSTICK will increment or decrement the Track Line angle in steps of one degree.

When Tilt and Track Line are adjustable, TRK and TILT soft labels will be displayed in the upper right hand corner of the display. The KMD 850 displays the tilt value below the TILT Soft Label.

4.3.4.2 MODE Key

When the MODE key is pressed,
- The mode toggles between WX, WX/ARL (Weather + Automatic Range Limiting), if available, and MAP modes if the Radar is in the ON state.
- The "MODE" label is extinguished if the Radar is in the TEST or STANDBY states.

4.3.4.3 RANGE Keys

The RANGE keys step the Radar selected range up and down through the specific values of 10, 20, 40, 80, 160, and 240 nm. (5 and 320 ranges are also available with some Radars).

When the RNG UP key is pressed,
- The page is redisplayed with the next larger range value.
- If the maximum range value is reached, the "RNG UP " label is extinguished.

When the RNG DOWN key is pressed,
- The page is re-displayed for the next smaller range value.
- If the minimum range value is reached, the "RNG UP " label is extinguished immediately.

4.3.4.4 VIEW Key

When the VIEW key is pressed,
- If the Vertical Profile is enabled and the radar is in the TEST or ON states, the view will toggle between HORIZONTAL PROFILE VIEW and VERTICAL PROFILE VIEW.

- If the Vertical Profile is disabled or if the Radar is in the STANDBY state, the VIEW key will be inactive and the "VIEW" label extinguished.
- The default view is the HORIZONTAL PROFILE VIEW and will occur upon power-up or when the VIEW key is inactive.

4.3.4.5 Overlay Key

When the OVLY key is first pressed,
- All Power Key labels are extinguished.
- The Soft Key labels for the available overlay (Flight Plan, Lightning, etc.) are displayed.
- The SAVE & EXIT Soft Key is displayed.

When the SAVE & EXIT Soft Key is pressed,
- Extinguishes the Soft Key labels for the available overlay (Flight Plan, Lightning, etc.)
- Displays the MODE, "RNG UP", "RNG DOWN", VIEW and OVLY Power Key labels.

4.3.4.6 INNER KNOB

The INNER KNOB adjusts the Radar gain control when the Radar is operating in the MAP mode. It is also available in WX and WX/ARL modes with some Radars. When the gain value is adjustable, it will be displayed as a small white arc surrounding the word, "GAIN" that shrinks or grows corresponding to the amount of gain selected.

When the INNER KNOB is rotated CW,
- The gain is increased.
- The Gain Ring on the Display increases its arc.

When the INNER KNOB is rotated CCW,
- The gain is decreased.
- The Gain Ring on the Display decreases its arc.

4.3.4.7 OUTER KNOB

When the OUTER KNOB is rotated, a four-position selector switch is emulated.
- The operating state sequences back and forth through the STANDBY, TEST ON and SET states.
- The OUTER KNOB switch positions are labeled "SBY", "TST", "ON", and “SET” on the display with the current position highlighted.

4.3.4.7.1 OUTER KNOB FUNCTIONAL STATES

1. ‘TST’ (TEST) (see section 4.3.3. 3. Functional Test State)
2. ‘SBY’ (Standby State)

   To view the Standby state, rotate the outer knob to put the radar in ‘SBY’ Mode. The STANDBY mode is the “ready for operation” state for the Weather Radar Unit. In this state, all WX page symbology is suppressed except the Control Knob and the Icon bar (see FIGURE 4-56 WX Standby Mode).

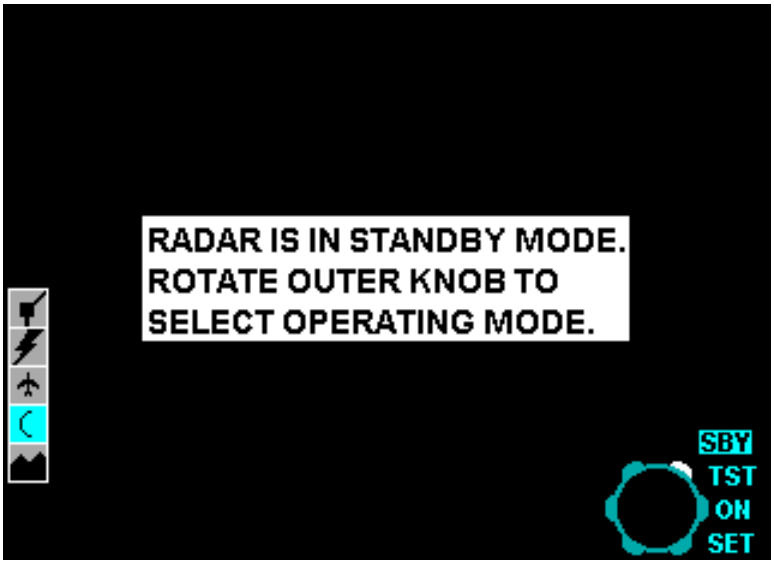


FIGURE 4-56 WX Standby Mode

3. ‘ON’ State

   The ‘ON’ state is the normal operating state of the Radar. Two modes of operation are provided, the WX mode and the ground Map mode.

WARNING: NOTE THE ABOVE ICON WHICH IS LOCATED ON THE ICON BAR. THIS INDICATES THAT RF ENERGY IS BEING RADIATED. ADHERE TO ALL SAFETY WARNINGS APPLICABLE TO RADIATED RF ENERGY.

WARNING: WHENEVER THE RADAR IS OPERATING IN THE ON STATE, RF ENERGY IS BEING RADIATED. DO NOT ALLOW PERSONNEL TO STAND WITHIN 15 FEET OF THE AREA BEING SCANNED BY THE ANTENNA. TESTS INVOLVING THE RADIATION OF RF ENERGY MUST NOT BE MADE IN THE VICINITY OF REFUELING OPERATIONS. ALWAYS USE "TEST" OR "STANDBY" POSITIONS AS APPLICABLE.

A. WX Mode

This is the default mode and provides basic weather operation. This mode is indicated by “WX” in the lower left of the display,

B. Ground Map Mode

The ground MAP mode enables the display of ground features based on Radar echo. This mode is indicated by “MAP” in the lower left of the display.

C. Views

When the VIEW key is active, two selectable views are available for the WX Function, Horizontal Profile View, and Vertical Profile View (see FIGURE 4-57 WX Horizontal Profile View In Ground Mapping Mode and FIGURE 4-58 WX Vertical Profile View). Reference 4.3.4.4 VIEW Key for additional information on the VIEW function.

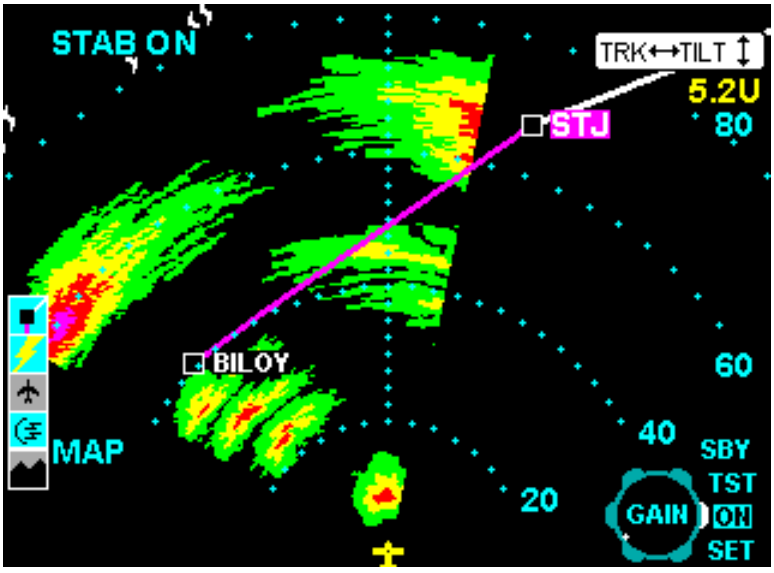


FIGURE 4-57 WX Horizontal Profile View In Ground Mapping Mode

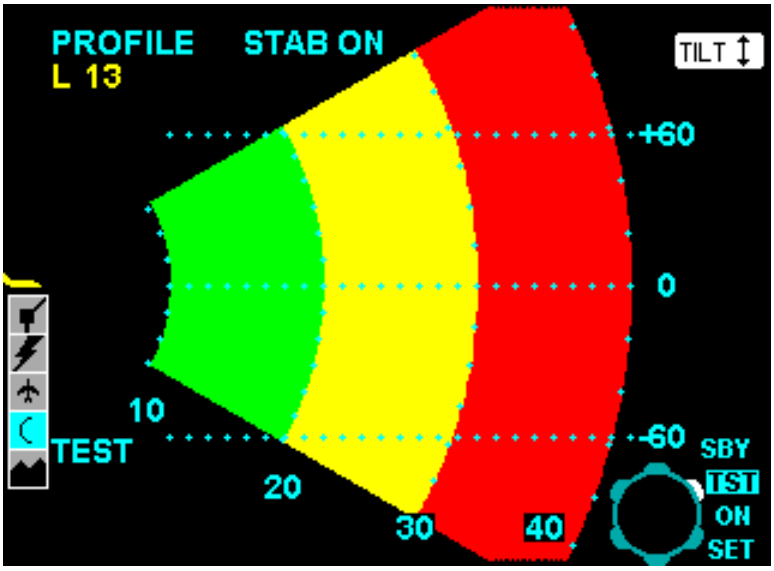


FIGURE 4-58 WX Vertical Profile View

4. 'SET' State

   The 'SET' state offers functionality through the following Soft Keys (depending on configuration).

   A. STAB ON/OFF
      Toggles the antenna stabilization on or off.

   B. AUTO TILT
      Toggles the auto or manual tilt control.

   C. MANUAL GAIN
      Toggles between manual or auto gain control in the WX mode.

   D. SECTOR SCAN
      Toggles between reduced sector scan and full scan modes in the azimuth view.

4.3.5 KMD 850 Radar Faults

The following table shows Radar Fault text as indicated by the Radar unit and displayed by the KMD 850. If multiple faults exist, only the highest priority fault is displayed.

Priority	Fault Text	Meaning
1 (Highest)	ANT/Tx FLT	Loss of Radar configuration data
2	Tx FLT	Transmitter Failure
3	ANT FLT	Loss of antenna position
4	WX FLT	Received Radar data inconsistent with requested Mode, View, or Range
5	STAB LMT	Stabilization exceeding 30 deg. pitch and roll combined
6	429 FLT	Loss of 429 bus data
7	RNG FLT	Incompatible Range
8 (Lowest)	RT FLT	Receiver/Transmitter Failure

TABLE 4-2 Radar Faults Displayed

4.3.6 KMD 850 WX Setup Cover Page

The Wx Setup Cover Page is accessed from the Auxiliary Mode Cover (AUX) Page (FIGURE 4-15 Auxiliary Mode Cover Page or FIGURE 4-47 Auxiliary Mode Cover Page) and is used for KMD 850 systems that are configured for optional Stormscope/FIS interfaces. From the AUX page, press the Power Key to the right of the 'WX SETUP' Soft Label to enter WX setup. Two options will occur.

One option, the 'Wx Setup Cover Page', will appear (see FIGURE 4-48 WX Setup Cover Page or FIGURE 4-59 KMD 540 Wx Setup Cover Page). This occurs if the system is a KMD 850 that is configured for both Wx Radar and WX-500 Stormscope or FIS. From this page, press the 'WX RADAR' Power Key for radar setup (see FIGURE 4-60 KMD 540 Wx Radar Calibration Page (Calibration Disabled)). If the system has no WX Radar, i.e. no KAC 501, this page will be skipped and the Stormscope or FIS configuration will be accessed directly. (refer to the applicable Stormscope/FIS sections for additional information).

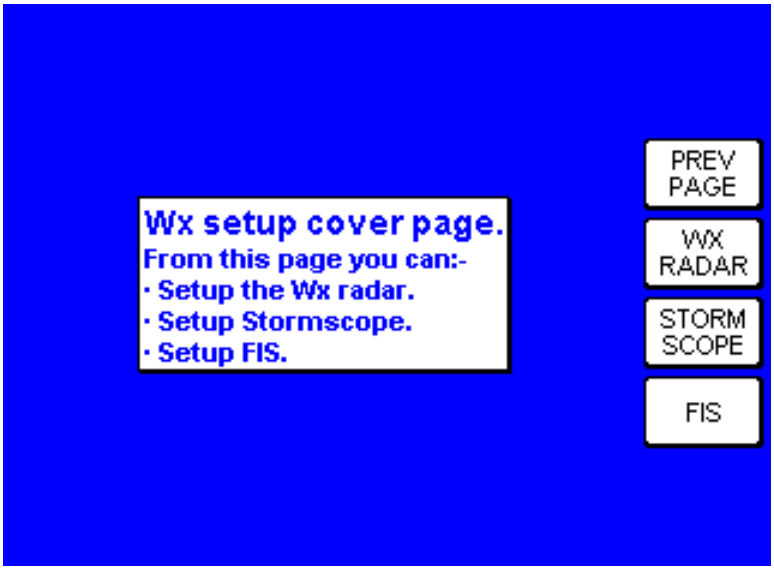


FIGURE 4-59 KMD 540 Wx Setup Cover Page

In the second option, the 'Wx Radar Calibration Page' (see FIGURE 4-60 KMD 540 Wx Radar Calibration Page (Calibration Disabled)) occurs directly if the system is a KMD 850 that is not configured for WX-500 Stormscope or FIS. Note that calibration functions are disabled in either occurrence.

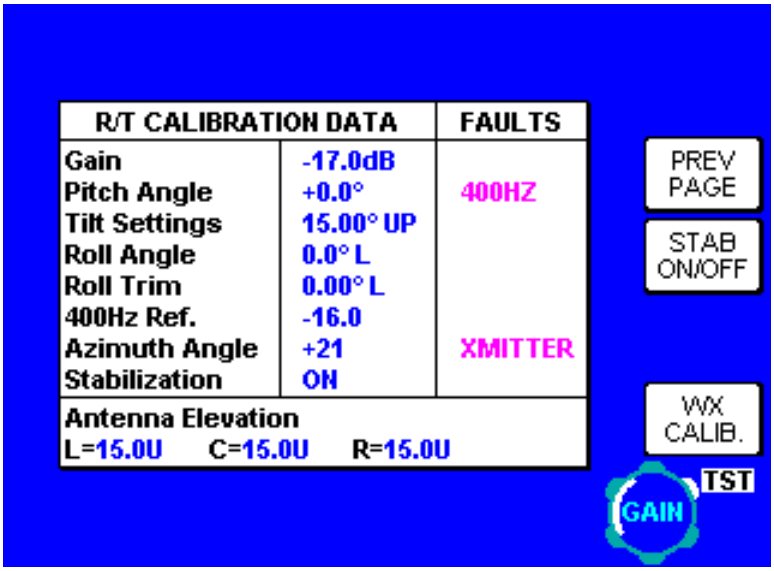


FIGURE 4-60 KMD 540 Wx Radar Calibration Page (Calibration Disabled)

From this page, the following setup options are provided. They include the Gain/Mode Control, 'PREV PAGE', 'STAB ON/OFF', and 'WX CALIB'.

During Wx Radar configuration, the TEST (TST) function of the Gain/Mode Control (refer to sections 4.3.4.6 INNER KNOB and 4.3.4.7 OUTER KNOB) is selected automatically. The OUTER KNOB will indicate 'TST' as the active state. Note that "SBY' and 'ON' are not selectable during Radar calibration.

Pressing the Power Key to the right of the 'PREV PAGE' Soft Label will return the user to the previous screen. Pressing the Power Key to the right of the 'STAB ON/OFF' Soft Label will toggle the Stabilization Control. Pressing the Power Key to the right of the 'WX CALIB.' Soft Label will enter Radar calibration.

Before entering calibration, the Wx Radar Calibration Password Page will appear (see FIGURE 4-61 KMD 540 Radar Calibration Password Page). Password entry functions the same as on the System Configuration Password Page (see FIGURE 4-16 KMD 540 System Configuration Password Page). Note that pressing the Power Key to the right of the 'PREV PAGE' Soft Label will return the user to the Radar Configuration Page.

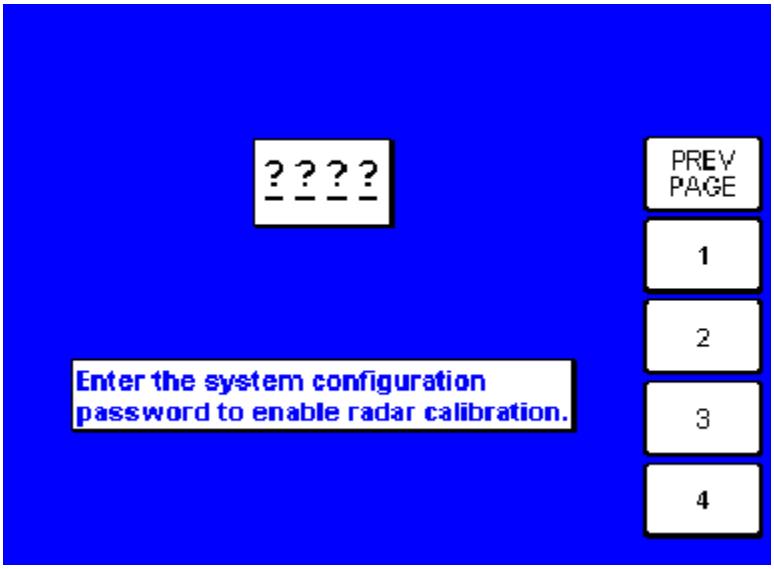


FIGURE 4-61 KMD 540 Radar Calibration Password Page

Upon entry of the correct password, the Wx Radar calibration page will appear (see FIGURE 4-62 KMD 540 Wx Radar Calibration Page (Calibration Enabled)). Note that calibration functions are now enabled. From this page, the Gain/Mode Control, 'PREV PAGE' and 'STAB ON/OFF' are still available and function as before. New calibration options are also provided. These include 'ROLL TRIM', 'RT CONFIG', and 'TILT' (joystick controlled). Pressing the Power Key to the right of the 'ROLL TRIM' Soft Label will enter the Radar Roll Trim Adjust Mode (discussion to follow). Pressing the Power Key to the right of the 'RT CONFIG' Soft Label will enter the Radar Configuration Page (discussion to follow). Refer to section 4.3.4.1 JOYSTICK for 'TILT' (joystick) functions.

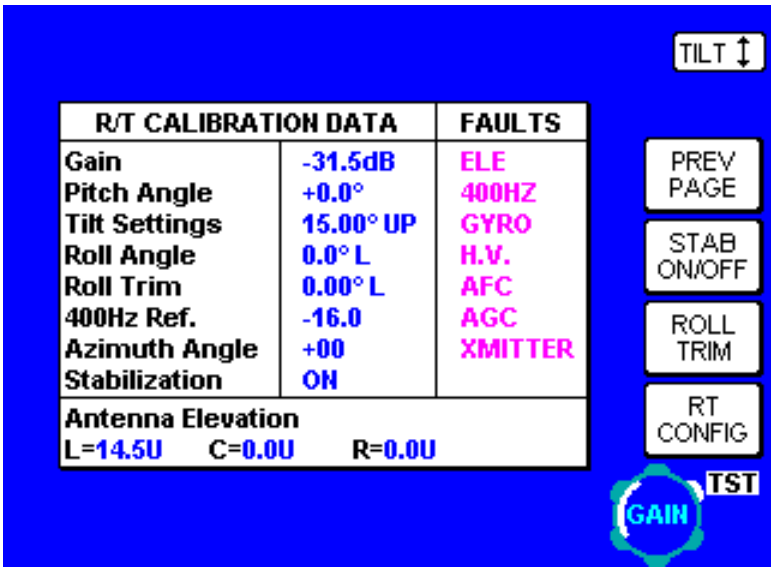


FIGURE 4-62 KMD 540 Wx Radar Calibration Page (Calibration Enabled)

4.3.6.1 Weather Radar Roll Trim Adjustment

When 'ROLL TRIM' is entered from the Radar Configuration Page, the 'ROLL TRIM WARNING' (see FIGURE 4-63 KMD 540 Wx Radar Roll Trim Warning Page) page will appear for the user to acknowledge. While the Warning Page is displayed, the Radar will remain in the TEST mode.

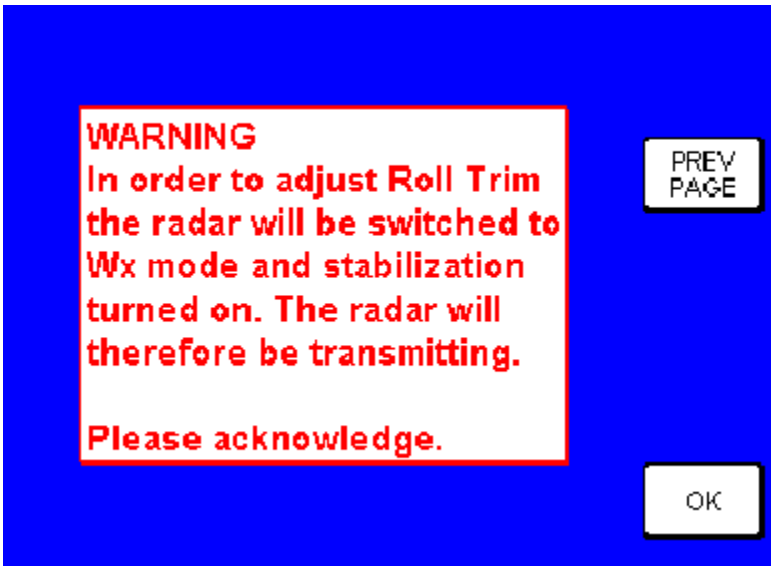


FIGURE 4-63 KMD 540 Wx Radar Roll Trim Warning Page

WARNING: WHENEVER THE RADAR IS OPERATING IN THE WX MODE, RF ENERGY IS BEING RADIATED. DO NOT ALLOW PERSONNEL TO STAND WITHIN 15 FEET OF THE AREA BEING SCANNED BY THE ANTENNA. TESTS INVOLVING THE RADIATION OF RF ENERGY MUST NOT BE MADE IN THE VICINITY OF REFUELING OPERATIONS. ALWAYS USE "TEST" OR "STANDBY" POSITIONS, AS APPLICABLE.

Pressing the Power Key to the right of the 'PREV PAGE' Soft Label will return the user to the previous screen. Pressing the Power Key to the right of the 'OK' Soft Label will enter the Roll Trim Adjust Page (see FIGURE 4-64 KMD 540 Wx Radar Roll Trim Adjust Page). The Radar is now in the ON state with the Wx mode selected.

From this page, the following controls are available. The OUTER KNOB is used to adjust the Roll Trim value. Adjust the Roll Trim over the range of -4.000 deg. to +3.875 deg. A clockwise rotation will increase the Roll Trim value while a counter-clockwise rotation will decrease it. The Roll Trim value will be sent to the Radar as displayed. For 'TILT' (joystick) functions, refer to 4.3.4.1 JOYSTICK. When finished, press the 'SAVE & EXIT' soft label to save the new Roll Trim value and return to the Wx Radar Calibration Page (FIGURE 4-60 KMD 540 Wx Radar Calibration Page (Calibration Disabled)).

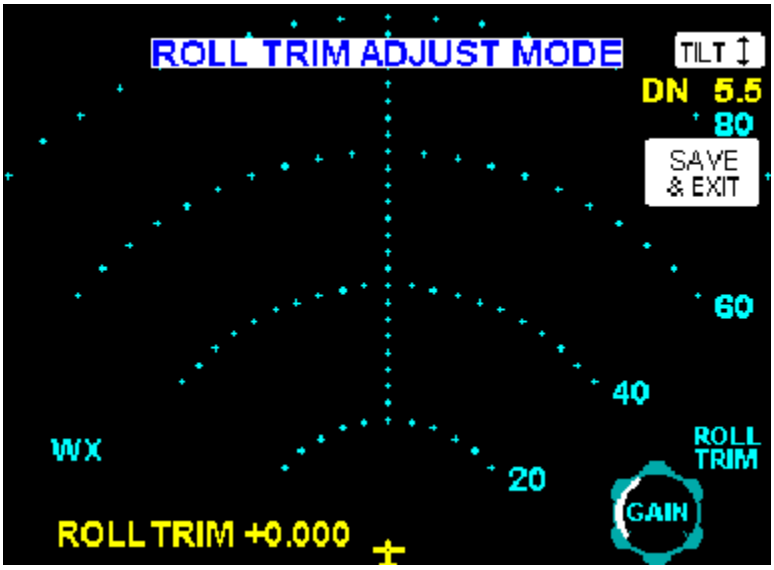


FIGURE 4-64 KMD 540 Wx Radar Roll Trim Adjust Page

4.3.7 RDR 2000/2100 Roll Trim Adjustment

A. Adjust the RDR 2000/2100 Roll Trim per the following procedure:

1. Adjust the Roll Trim per section 2.6.1.C of the RDR 2000/2100 Installation Manual. Reference FIGURE 4-62 KMD 540 Wx Radar Calibration Page (Calibration Enabled), FIGURE 4-63 KMD 540 Wx Radar Roll Trim Warning Page, and FIGURE 4-64 KMD 540 Wx Radar Roll Trim Adjust Page of this manual.
2. Press the ROLL TRIM Soft Key. FIGURE 4-64 KMD 540 Wx Radar Roll Trim Adjust Page will be displayed.
3. Rotate the OUTER KNOB to adjust the Roll Trim setting.

4.3.8 KMD 850 Configuration and Calibration with RDR 2000/2100 RADAR

A. Configure the RDR 2000/2100 Radars using the information from this manual and the RDR 2000/2100 Color Weather Radar System Manual, P/N 006-00643-XXXX.

B. Reference sections 4.0 INTRODUCTION and 4.1 GENERAL OPERATION (KMD 540) of this manual for a general understanding of the functionality of KMD 850 system.

C. Reference section 4.3.4 KMD 850 Controls for specific information relating to the controls and functionality of the KMD 850 Radar system.

D. Reference applicable sections of the RDR 2000/2100 Color Weather Radar System Manual. These include section 2.4.1, 2.4.4.1, 2.5, and 2.6. In sections of the RDR 2000/2100 procedures, the Radar will be in the ON state with RF energy being radiated. When the icon bar is active on the KMD 850, the following icon will be displayed when RF energy is being radiated.

WARNING: NOTE THE ABOVE ICON. THIS INDICATES THAT RF ENERGY IS BEING RADIATED. ADHERE TO ALL SAFETY WARNINGS APPLICABLE TO RADIATED RF ENERGY.

E. Substitute the KMD 850 for the IN 182A radar indicator noted in the applicable sections of the RDR 2000/2100 Color Weather Radar System Manual.

F. Relating to procedures noted in step G, the following controls on the RDR 2000 correspond to controls on the KMD 850. Refer to FIGURE 4-1 KMD 540 Multifunction Display and FIGURE 4-62 KMD 540 Wx Radar Calibration Page (Calibration Enabled) in this manual and the applicable Color Weather Radar System Manual as reference.

RDR 2000	KMD 850
TEST	TST (OUTER KNOB)
GAIN	GAIN (INNER KNOB)
ROLL TRIM	ROLL TRIM Soft Key
TILT (Rotating Knob)	TILT (JOYSTICK Up/Down Movement)
TRACK (Left or Right Arrows)	TRACK (JOYSTICK Left/Right Movement)
MODE	MODE Power Key
RNG UP (RANGE UP)	RNG UP Power Key (RANGE UP)
RNG DOWN (RANGE DOWN)	RNG DOWN Power Key (RANGE DOWN)
BRT	Brightness Control
Wx/WxA (vertical profile mode)	VIEW Power Key (toggle key)
VP (vertical profile mode)	VIEW Power Key (toggle key)

TABLE 4-3 RDR 2000/2100 - KMD 850 Corresponding Controls

G. Enter configuration (maintenance) and calibration for the KMD 850 per the following procedure:

1. Press the WX Function Select Key until the weather radar page is displayed.
2. Rotate the OUTER KNOB to place the radar in the TEST state.
3. Set the RANGE to 240 nm using the RNG keys.
4. Set TILT to 15.0U using the JOYSTICK.
5. Press the AUX key.
6. Press the WX SETUP Soft Key.
7. If Stormscope in installed, Press the WX RADAR Soft Key.
8. Rotate the INNER KNOB to set gain to minimum.
9. Press the WX CALIB Soft Key.
10. Enter '3333' to display the R/T Calibration Page (see FIGURE 4-62 KMD 540 Wx Radar Calibration Page (Calibration Enabled)).
11. All faults should appear momentarily as shown in FIGURE 4-62 KMD 540 Wx Radar Calibration Page (Calibration Enabled) and then all faults should clear. This means that the radar is in the calibration mode.
12. Refer to section 2.4.4.1.F (400 Hz Ref. Gain) in the RDR 2000/2100 Installation Manual and follow the procedure for calibrating the radar.

4.3.9 RDR 2000/2100 Stabilization Calibration

A. 400 Hz REF GAIN

1. Set the tilt table to 0° pitch and roll.
2. Adjust the GAIN knob for a GAIN POT setting between -28 and -30 (see FIGURE 4-65 RDR 2000/2100 Gain Knob Calibration Function). An 01 should be displayed in the AZIMUTH COUNT field (see TABLE 4-4 Calibration Parameters In Azimuth Count Field).

DIGIT IN AZIMUTH COUNT FIELD	CALIBRATION PARAMETER
00	NONE
01	400 HZ REFERENCE
02	PITCH GAIN
03	ROLL GAIN
04	PITCH OFFSET
05	ROLL OFFSET
06	AHRS ARINC 429 PITCH OFFSET
07	AHRS ARINC 429 ROLL OFFSET
08	SAVE CONFIGURATION

TABLE 4-4 Calibration Parameters In Azimuth Count Field

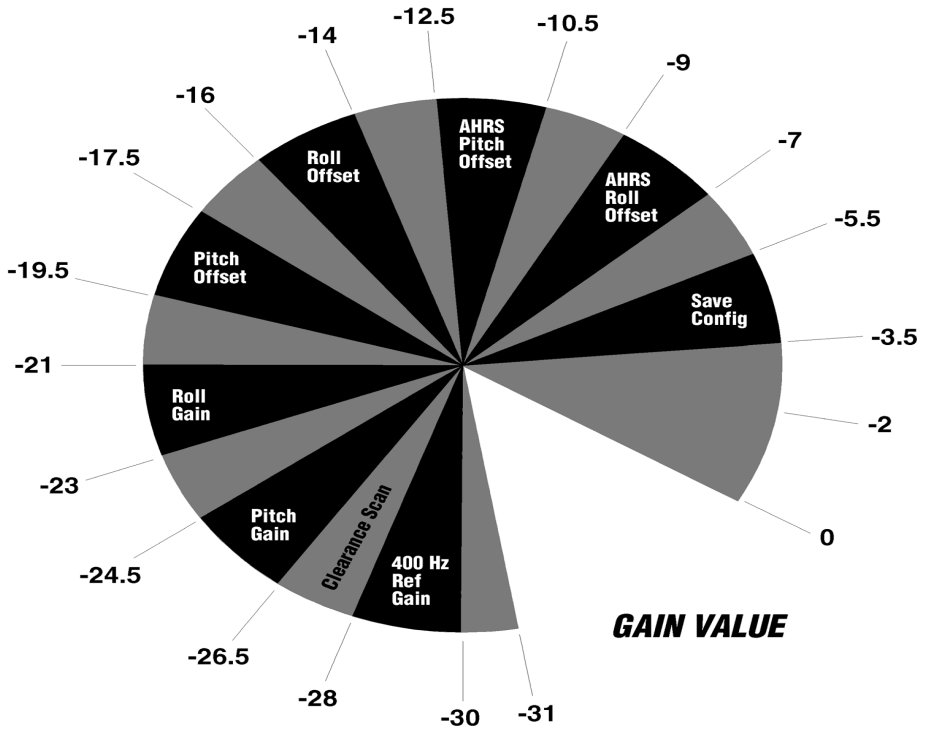


FIGURE 4-65 RDR 2000/2100 Gain Knob Calibration Function

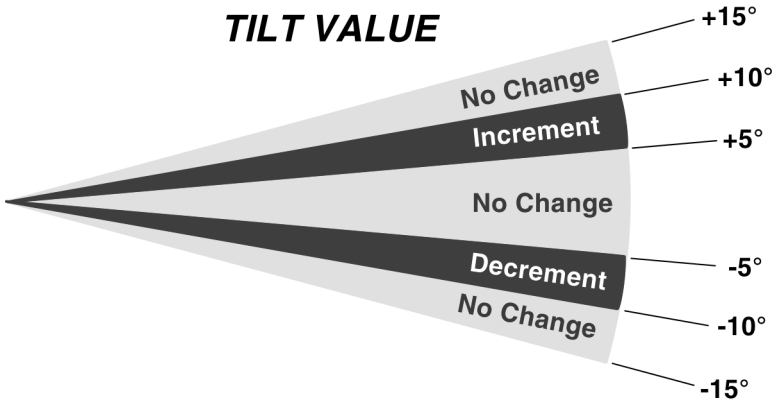


FIGURE 4-66 RDR 2000/2100 TILT KNOB CALIBRATION FUNCTION

3. Adjust the TILT SETTING between 5 and 10 UP to increment the 400 HZ REF field to 0.0 ± 1.0˚ (adjusting the TILT SETTING between 5 and 10 DOWN will decrement the numbers). Upon reaching the desired setting, quickly adjust the TILT SETTING to above 10˚ to lock in the setting. See FIGURE 4-66 RDR 2000/2100 TILT KNOB CALIBRATION FUNCTION.
4. Proceed to Step B.

NOTE: If the 400 Hz REF field is zero (0), and will not change when the TILT knob is adjusted, check that the correct gyro has been selected when programming the Configuration Module.

B. Pitch Offset

1. Adjust the GAIN knob for a GAIN POT setting between -17.5 and -19.5 (see FIGURE 4-65 RDR 2000/2100 Gain Knob Calibration Function). An 04 should be displayed in the AZIMUTH COUNT field (see TABLE 4-4 Calibration Parameters In Azimuth Count Field).
2. Check that the tilt table is set for 0˚ pitch.
3. Adjust the TILT SETTING between 5˚ and 10˚ UP to increment the PITCH ANGLE field to 0.0 ± 1.0˚ (adjusting the TILT SETTING between 5˚ and 10˚ DOWN will decrement the numbers). Upon reaching 0˚ ± 1.0˚, quickly adjust the TILT SETTING to above 10˚ to lock in the setting. See FIGURE 4-66 RDR 2000/2100 TILT KNOB CALIBRATION FUNCTION.
4. Set the tilt table to 10˚ PITCH UP. The value should be 10.0 up ± 1.0˚.
5. Set the tilt table to 10˚ PITCH DOWN. The value should be 10.0 down ± 1.0˚.
6. Set the tilt table to 0˚ PITCH. The value should be 0.0 ± 1.0˚.
7. Proceed to Step C.

C. Roll Offset

1. Adjust the GAIN knob for a GAIN POT setting between -14.0 and -16.0 (see FIGURE 4-65 RDR 2000/2100 Gain Knob Calibration Function). An 05 should be displayed in the AZIMUTH COUNT field (see TABLE 4-4 Calibration Parameters In Azimuth Count Field).
2. Check that the tilt table is set for 0˚ roll.
3. Adjust the TILT SETTING between 5˚ and 10˚ UP to increment the ROLL ANGLE field to 0.0 ± 1.0˚ (adjusting the TILT SETTING between 5˚ and 10˚ DOWN will decrement the numbers). Upon reaching 0˚ ± 1.0˚ , quickly adjust the TILT SETTING to above 10˚ to lock in the setting. See FIGURE 4-66 RDR 2000/2100 TILT KNOB CALIBRATION FUNCTION.
4. Set the tilt table to 10˚ roll right. The value should be 10.0R ± 1.0˚.
5. Set the tilt table to 10˚ roll left. The value should be 10.0L ± 1.0˚.
6. Set the tilt table to 0˚ roll. The value should be 0.0 ± 1.0˚.

7. Proceed to Step D.

D. Pitch Gain

1. Set the tilt table for 5° PITCH UP.
2. Adjust the GAIN knob for a GAIN POT setting between -24.5 and -26.5 (see FIGURE 4-65 RDR 2000/2100 Gain Knob Calibration Function). An 02 should be displayed in the AZIMUTH COUNT field (see TABLE 4-4 Calibration Parameters In Azimuth Count Field).
3. Adjust the TILT SETTING between 5° and 10° UP to increment the PITCH ANGLE field to 5.0 ± 1.0° (adjusting the TILT SETTING between 5° and 10° DOWN will decrement the numbers).

   Upon reaching the desired setting, quickly adjust the TILT SETTING to above 10 to lock in the setting. See FIGURE 4-66 RDR 2000/2100 TILT KNOB CALIBRATION FUNCTION.
4. Set for 5° PITCH DOWN. Repeat steps 2 and 3.
5. Set the tilt table to 0° pitch and roll.
6. Proceed to Step E.

E. Roll Gain

1. In determining the tilt for the table, use the standard rate turn for the aircraft being aligned. Set the tilt table for SRT roll right.
2. Adjust the GAIN knob for a GAIN POT setting between -21.0 and -23.0 (see FIGURE 4-65 RDR 2000/2100 Gain Knob Calibration Function). An 03 should be displayed in the AZIMUTH COUNT field (see TABLE 4-4 Calibration Parameters In Azimuth Count Field).
3. Adjust the TILT SETTING between 5° and 10° UP to increment the ROLL ANGLE field to Standard Rate Turn (SRT) for the aircraft (adjusting the TILT SETTING between 5° and 10° DOWN will decrement the numbers). Upon reaching the desired setting, quickly adjust the TILT SETTING to above 10° to lock in the setting. See FIGURE 4-66 RDR 2000/2100 TILT KNOB CALIBRATION FUNCTION.
4. Set the tilt table for SRT roll left. Repeat Steps 2 and 3 of this section.
5. Set the tilt table to 0° pitch and roll.
6. Proceed to Step F.

F. Save Configuration

1. Adjust the GAIN knob for a GAIN POT setting between -3.5 and -5.5 (see FIGURE 4-65 RDR 2000/2100 Gain Knob Calibration Function). An 08 should be displayed in the AZIMUTH COUNT field (see TABLE 4-4 Calibration Parameters In Azimuth Count Field).
2. Set the TILT SETTING to 15.0 DOWN. The fault fields will flash indicating the save procedure is beginning. If the save procedure is successful, the GYRO fault will disappear and the azimuth count will step.
3. If the GYRO remains unchanged, TILT to 0° and repeat Step 2.

4.4 WX-500 STORMSCOPE SETUP PROCEDURE

This section describes the setup for the WX-500 Stormscope. The Stormscope source must first be valid and configured as WX-500 (see FIGURE 4-18 KMD 540 Data I/O Page and FIGURE 4-21 KMD 540 Stormscope Source Page). Setup of the WX-500 Stormscope may be accomplished by pressing the 'AUX' function on the unit. This will display the 'auxiliary mode cover page' (see FIGURE 4-15 Auxiliary Mode Cover Page). If the 'External Video" page appears, press the 'AUX' key a second time. The 'auxiliary mode cover page' provides setup pages including WX. When this page is displayed, press the Power Key to the right of the 'WX SETUP' Soft Label to enter WX setup.

If at least two weather sensors are configured, the Weather setup page will appear (see FIGURE 4-48 WX Setup Cover Page or FIGURE 4-59 KMD 540 Wx Setup Cover Page) . From this page press the 'STORMSCOPE' Power Key. The following page will appear (FIGURE 4-67 WX-500 Stormscope Maintenance Cover Page).

If WX-500 is the only weather sensor is configured, FIGURE 4-67 WX-500 Stormscope Maintenance Cover Page will be accessed directly from the AUX page. Refer to the WX 500 Stormscope manual as an aid in configuration.

NOTE: The Stormscope setup pages in this section apply only to the WX-500. Refer to section 4.8 WX-1000E STORMSCOPE SETUP PROCEDURE for WX-1000E Stormscope setup.

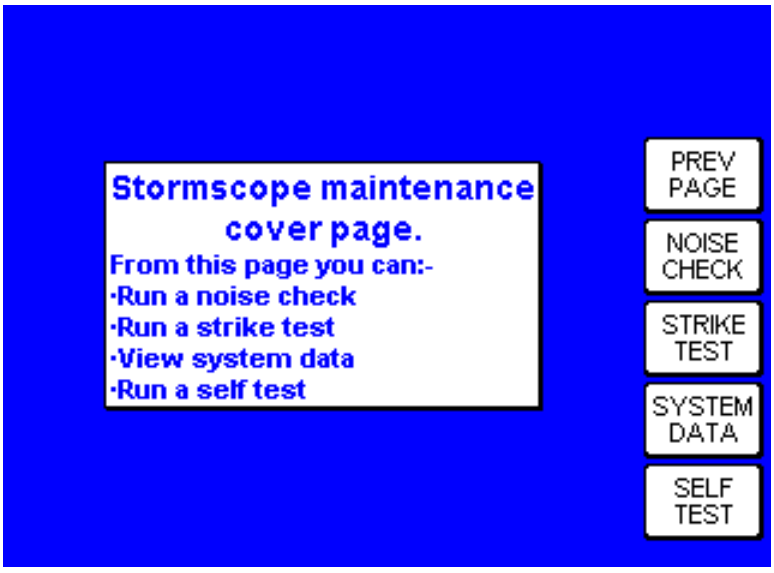


FIGURE 4-67 WX-500 Stormscope Maintenance Cover Page

From this page several options appear. The 'Prev Page' Power Key will return the user to the Weather setup page. Pressing the Power Key next to the 'Noise Check' soft label will bring up a page similar to the following (FIGURE 4-68 WX-500 Stormscope Noise Check).

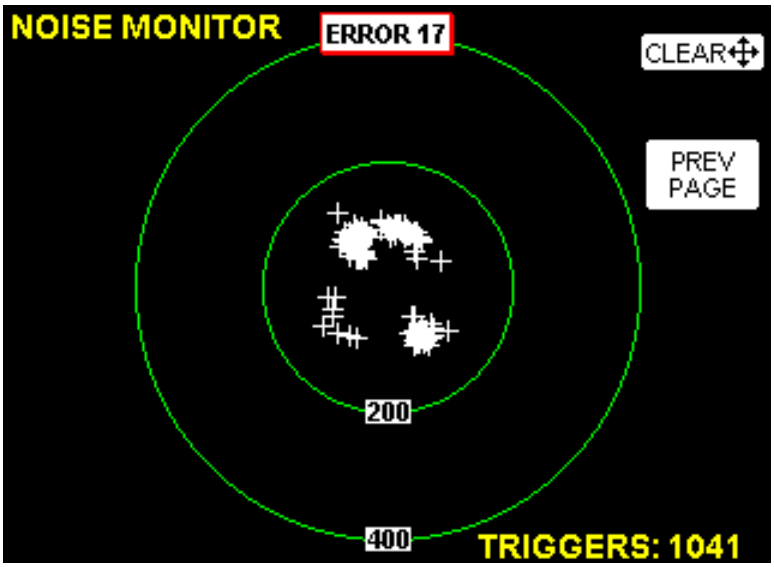


FIGURE 4-68 WX-500 Stormscope Noise Check

Use the joystick to clear if desired. Press the 'Prev Page' Power Key to return the user to the 'Maintenance Cover Page'. To select the next option, Press the Power Key next to the 'Strike Test' soft label which will bring up a page similar to the following (FIGURE 4-69 WX-500 Stormscope Strike Test).

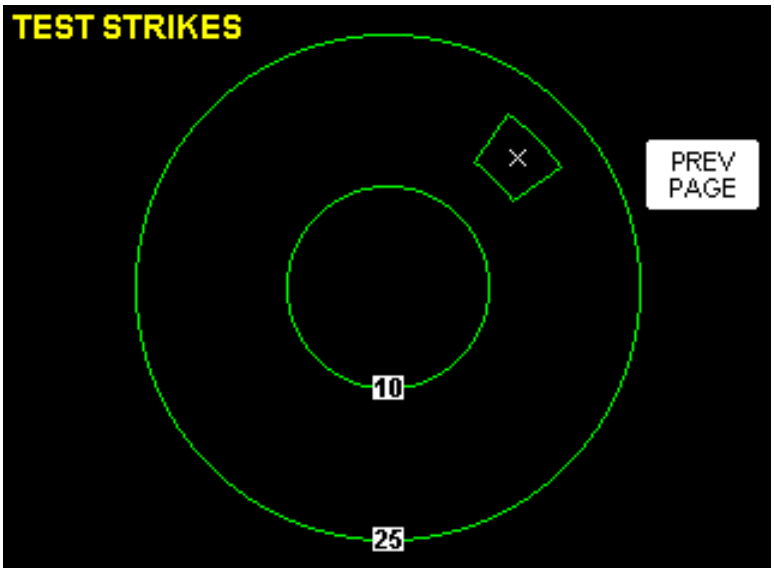


FIGURE 4-69 WX-500 Stormscope Strike Test

Press the ‘Prev Page’ Power Key to return the user to the ‘Maintenance Cover Page’. Pressing the Power Key next to the ‘System Data’ soft label will bring up system data including configuration, software versions, environmental data, and a fault log for the WX 500. The first page to appear will be ‘Configuration’ (see FIGURE 4-70 WX-500 Stormscope System Data Option, Configuration Page).

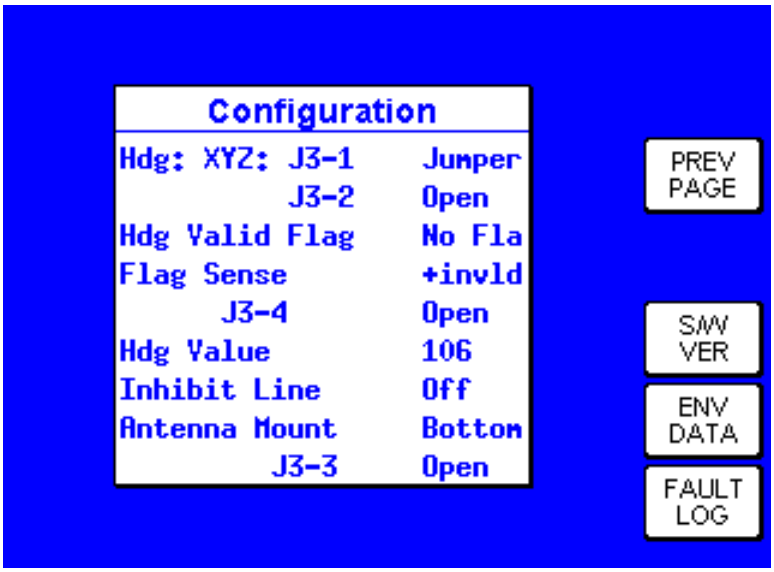


FIGURE 4-70 WX-500 Stormscope System Data Option, Configuration Page

Three other system data options are available plus ‘Prev Page’ option which returns the user to the ‘Maintenance Cover Page’. Note the current page’s Soft Label option is “blanked out”, i.e. while viewing the configuration page, the ‘CONFIG’ option is unavailable. Pressing the ‘S/W VER’ Power Key will display the software versions (see FIGURE 4-71 WX-500 Stormscope System Data Option, Software Versions Page). Note that now the ‘S/W VER’ Soft Label is now unavailable.

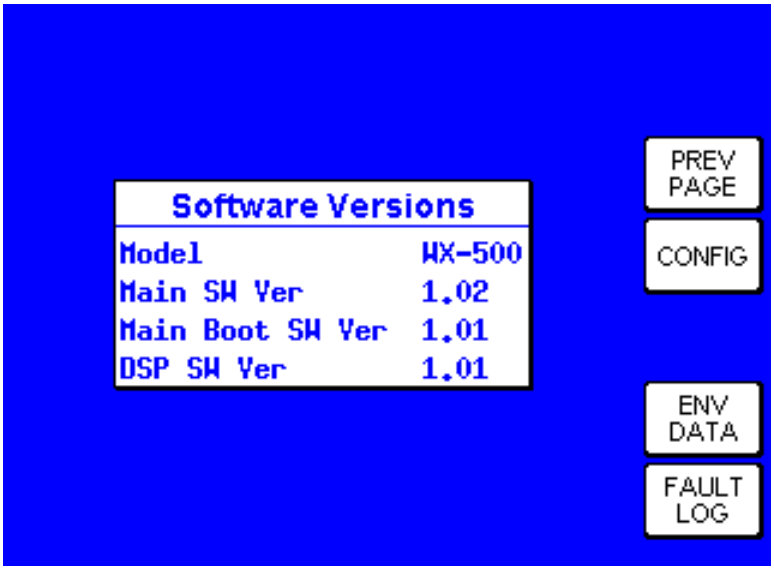


FIGURE 4-71 WX-500 Stormscope System Data Option, Software Versions Page

Pressing the 'ENV DATA' Soft Key will display Environmental Data (see FIGURE 4-72 WX-500 Stormscope System Data Option, Environmental Data Page).

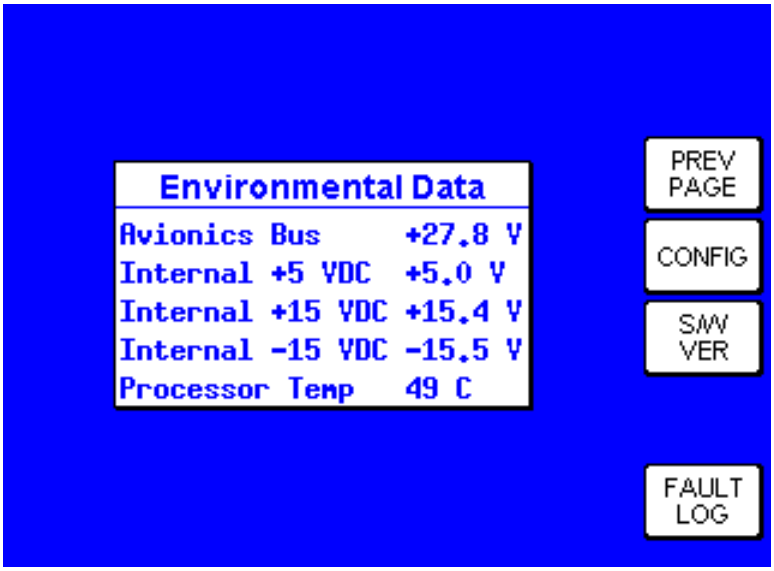


FIGURE 4-72 WX-500 Stormscope System Data Option, Environmental Data Page

Pressing the ‘FAULT LOG’ Soft Key will display Fault Log information (see FIGURE 4-73 WX-500 Stormscope System Data Option, Fault Log Page).

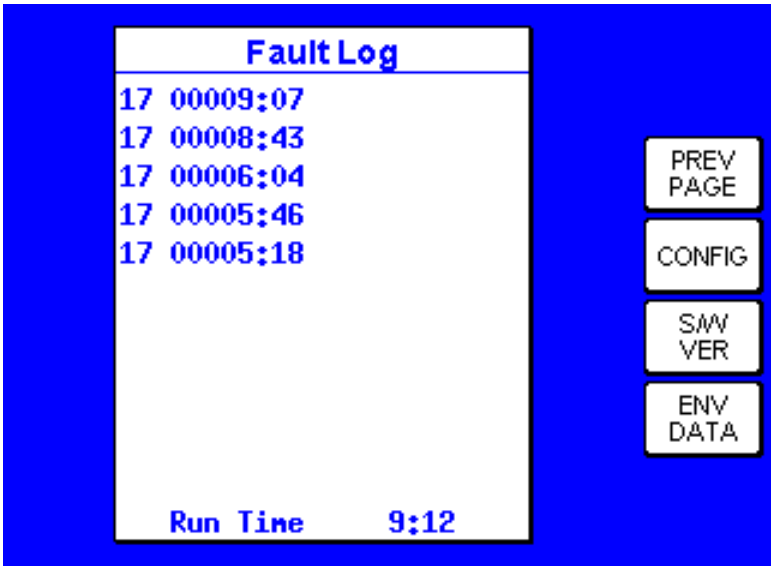


FIGURE 4-73 WX-500 Stormscope System Data Option, Fault Log Page

The final Stormscope option is Self Test. Press the ‘Prev Page’ Power Key to return to the ‘Maintenance Cover Page’. Next, select the self test option by pressing the Power Key next to the ‘SELF TEST’ soft label. The following page will appear (FIGURE 4-74 WX-500 Stormscope Self Test In Progress Page).

FIGURE 4-74 WX-500 Stormscope Self Test In Progress Page

After the self test procedure is complete, a page similar to the following (FIGURE 4-75 WX-500 Stormscope Self Test Complete Page) will appear.

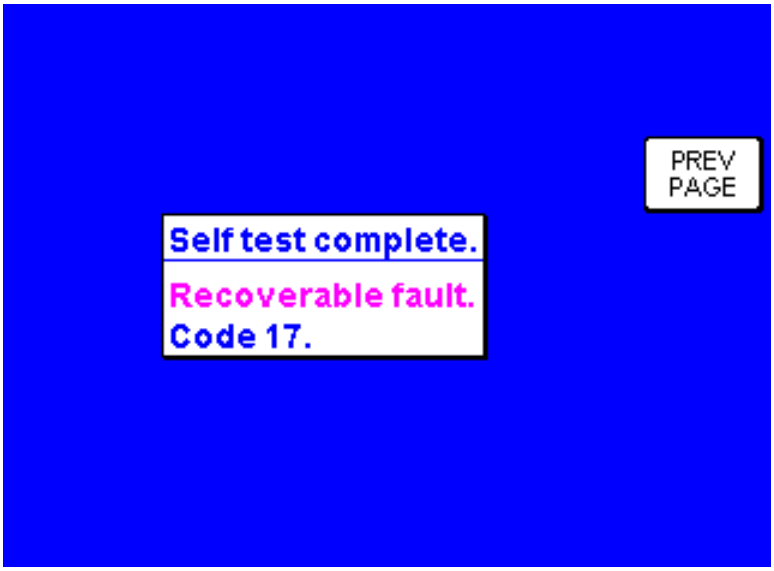


FIGURE 4-75 WX-500 Stormscope Self Test Complete Page

Press the ‘Prev Page’ Power Key to return to the ‘Maintenance Cover Page’.

4.5 EGPWS CONFIGURATION PROCEDURE (KAC 502 Module)

4.5.1 KAC 502 Configuration

Configuration of EGPWS may be accomplished only after the KAC 502 EGPWS module is installed in the KMD 540 base unit (see section 2.2.3 Option Module Installation).

1. Unit Configuration
   - A. Power on the unit.
   - B. The first time unit is turned on there should be a message saying "Software Upgrade in Progress" and a status bar showing percent complete for TERR.
   - C. Acknowledge the self test and data base cycle pages by pressing the OK soft key.
   - D. Press the AUX key then press the System Config soft key (see FIGURE 4-15 Auxiliary Mode Cover Page). The System Configuration Password page will appear (see FIGURE 4-16 KMD 540 System Configuration Password Page).
   - E. Enter 3333. The system configuration page shown below will appear (see FIGURE 4-76 System Configuration Page With Slot 3 'Empty').
   - F. Move the joystick down and to the right to the Board Function position 'EMPTY' for SLOT 3.
   - G. Move the joystick up to change the field from EMPTY to 'TERRAIN PROCESSOR'.
   - H. Wait at least 10 seconds. Cycle power and repeat steps C through E.

     If the KAC 502 module is working properly then there should be a green check mark next to TERRAIN PROCESSOR in Slot 3 (see FIGURE 4-77 System Configuration Page With Slot 3 As 'TERRAIN PROCESSOR'). If there is a fault or if the module is not installed there will be a red X (see FIGURE 4-78 System Configuration Page With 'TERRAIN PROCESSOR' Fault).

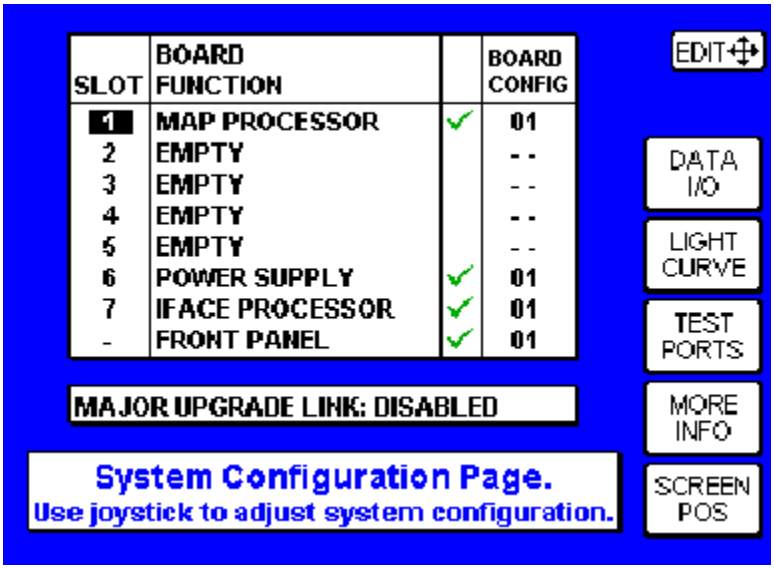


FIGURE 4-76 System Configuration Page With Slot 3 'Empty'

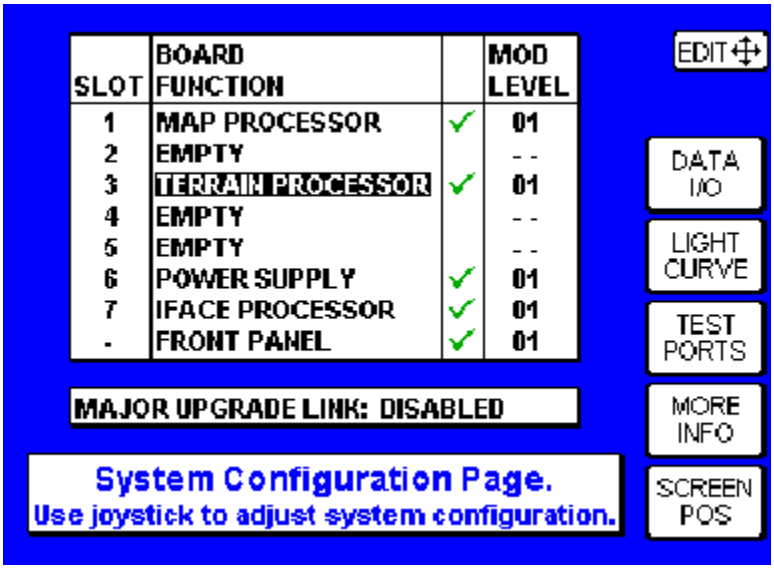


FIGURE 4-77 System Configuration Page With Slot 3 As 'TERRAIN PROCESSOR'

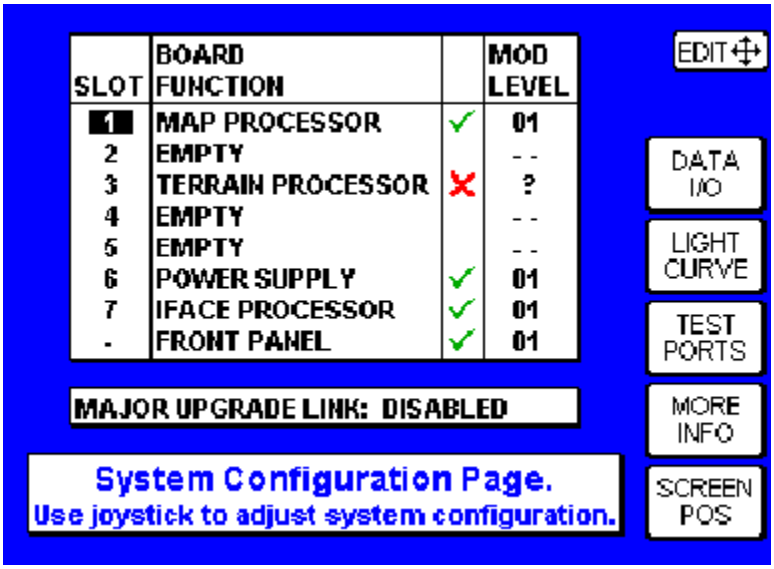


FIGURE 4-78 System Configuration Page With 'TERRAIN PROCESSOR' Fault

4.5.2 Testing

1. Power On Self Test
   A. Cycle power on the display and verify that the power on self test shows a green checkmark next to "TERRAIN INTERFACE" as shown in FIGURE 4-79 Terrain Interface Self Test Passed.

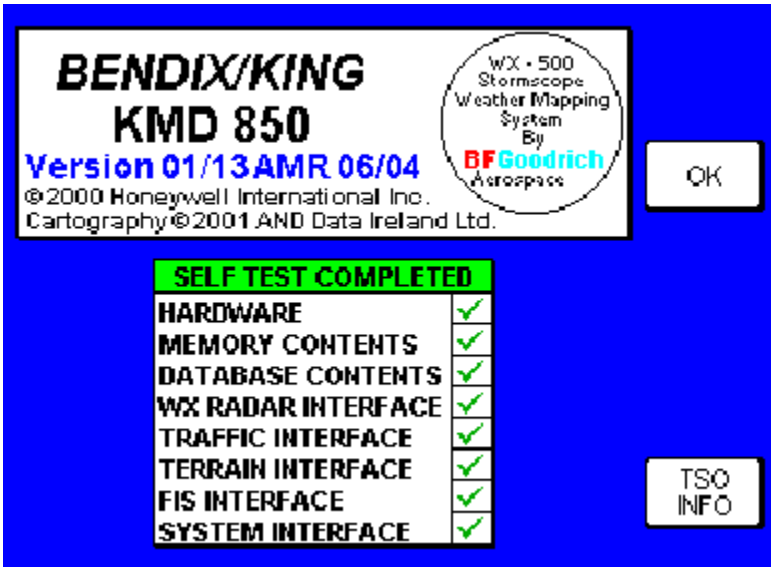


FIGURE 4-79 Terrain Interface Self Test Passed

B. FIGURE 4-80 Terrain Interface Self Test Failed shows the results if the self test Fails. This indicates that the KAC 502 EGPWS terrain module is not installed, has failed, or is not inserted in the proper slot.

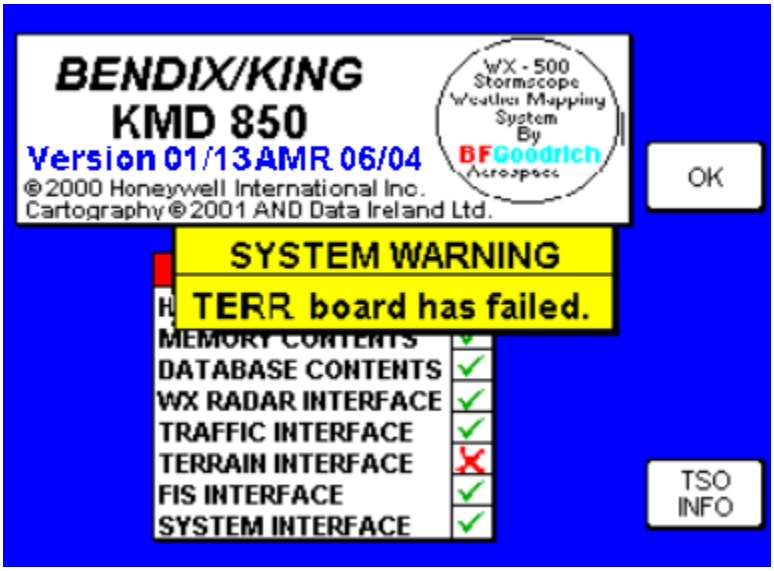


FIGURE 4-80 Terrain Interface Self Test Failed

2. System Configuration Page Self Test
   A. Confirm the self test and data base effectivity by pressing the OK soft key.
   B. Press the AUX key then press the System Config soft key (see FIGURE 4-15 Auxiliary Mode Cover Page). The System Configuration Password page will appear (see FIGURE 4-16 KMD 540 System Configuration Password Page).
   C. Enter 3333. The system configuration page shown will appear (see FIGURE 4-81 System Configuration Page).
   D. Verify that a green checkmark appears next to the Terrain Processor in Slot 3.

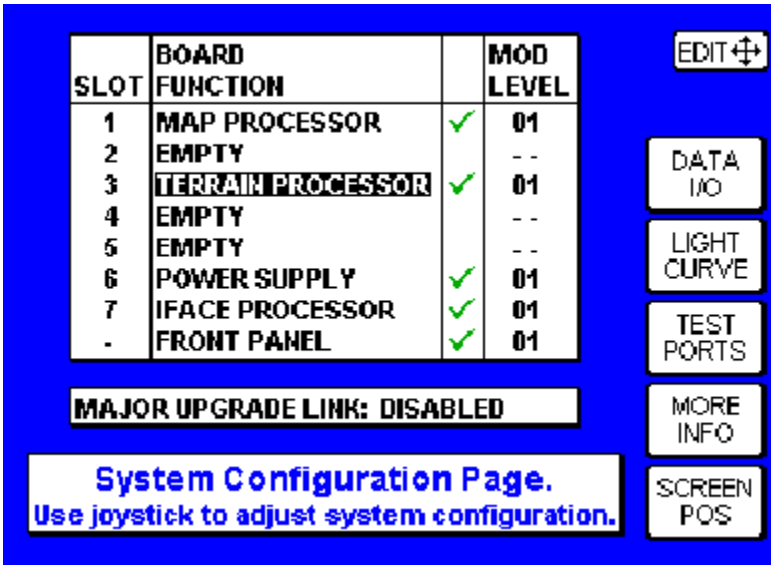


FIGURE 4-81 System Configuration Page

3. Functional Test

   A. External EGPWS Self Test Switch

   With the display connected to the EGPWS, press the EGPWS Self Test switch (this is an external switch, not part of the display). Verify that the display shows a test pattern similar to FIGURE 4-82 EGPWS Self Test Page.

   B. Configurable Rotary Control (Outer Knob)

   With the display connected to the EGPWS, select the 'TST' position on the rotary control. Verify that the display shows a test pattern similar to FIGURE 4-83 EGPWS Self Test Page With Rotary Control.

NOTE: If there are no faults shown on the display but the test pattern is not appearing, it may be due to improper configuration of the EGPWS unit itself. The EGPWS unit must be configured to output to a KCPB display. Refer to the appropriate EGPWS install manual for details.

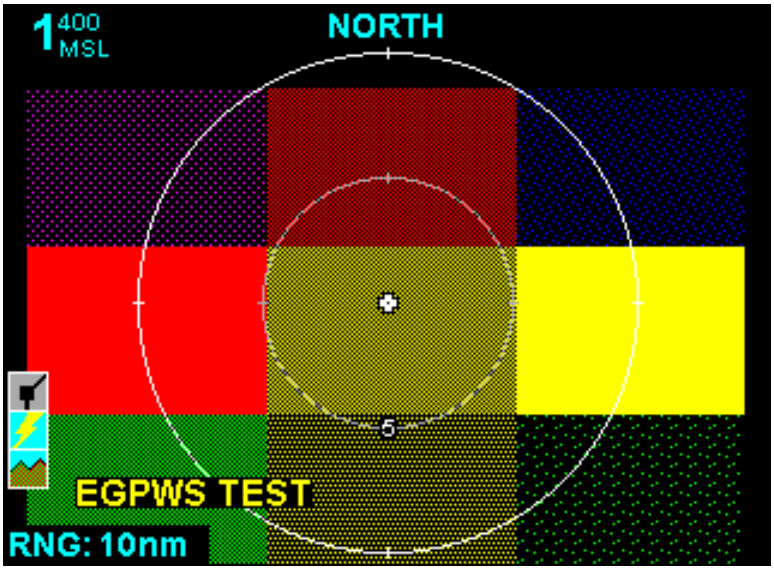


FIGURE 4-82 EGPWS Self Test Page

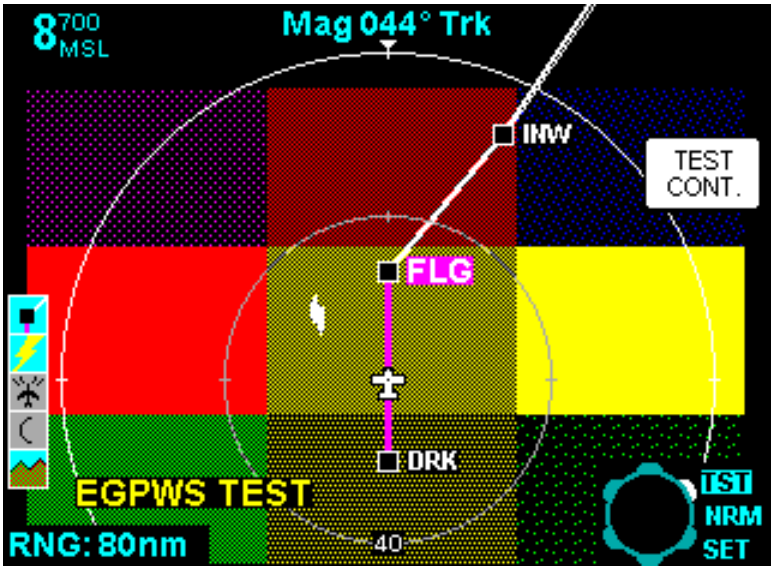


FIGURE 4-83 EGPWS Self Test Page With Rotary Control

4.5.3 Terrain Controls/Functions

4.5.3.1 RNG (Range) Keys

The display range is selectable to discrete ranges of 1, 2.5, 5, 10, 20, 40, 80, 160, and 320 nm. The 10 nm range is the default range at power-up.

When the RNG UP key is pressed,
- The page is redisplayed one zoom level out.
- If the maximum zoom level is reached, the "RNG UP" label is extinguished.

When the RNG DOWN key is pressed,
- The page is redisplayed one zoom level in.
- If the minimum zoom level is reached, the "RNG DOWN" label is extinguished.

4.5.3.2 View Key

The VIEW Power Key is lit and enabled when EGPWS has selected either a Heading-Up or Track-Up display Orientation.

When the VIEW key is pressed, the view sequences among 360° (default) and 120° views.

When the EGPWS selects a North-Up display orientation, the VIEW key is disabled and the North-up view is selected automatically.

If the North-Up view is currently displayed and the EGPWS selects either a Heading-up or Track-up orientation, the KMD 550/850 enables the VIEW key and automatically selects the default 360° (Heading-up or Track-up) view.

4.5.3.3 Overlay Key

When the OVLY key is first pressed,
- All Power Key labels are extinguished.
- The Soft Key labels for the available overlay (Flight Plan, Lightning, Traffic) is Displayed.
- The SAVE & EXIT Soft Key is Displayed.

When the SAVE & EXIT Soft Key is pressed,
- The Soft Key labels for the available overlay (Flight Plan, Lightning, Traffic) are extinguished.
- The "RNG UP", "RNG DOWN", VIEW, and OVLY Power Key labels are displayed.

4.5.3.4 Mode Key

If the corresponding option is selected on the KMD 550/850 Terrain Setup page 1 (see section 4.5.4 Terrain (TERR) Setup Pages), the TERR page MODE key is enabled to control the Terrain Awareness Inhibit Discrete input to the EGPWS unit.

The KMD 550/850 provides an output (J3001-14) to control the EGPWS. The KMD 550/850 provides a switch closure to ground on this pin when Terrain Warnings are to be inhibited (the pin is open when warnings are to be enabled). Pressing the MODE key from the TERR page toggles the state of this pin. This pin is always "open" if the KMD 550/850 is not configured for this capability. The Terrain Inhibit control discrete is also transmitted via the Discretes Data label on the KMD 550/850 GPWS ARINC 429 Output.

CAUTION: WHEN THIS FUNCTION IS USED, THERE MUST BE ONLY ONE SOURCE FOR THE TERRAIN INHIBIT DISCRETE. DO NOT ATTEMPT TO "WIRE OR" TWO OR MORE SOURCES TOGETHER (E.G. KMD 550 PLUS A DEDICATED SWITCH) AS THE KMD 550 WILL NOT BE AWARE OF THE STATE OF THE SECOND DEVICE.

4.5.3.5 Outer Knob (Rotary Control)

The Outer Knob control is present on the page only when “EGPWS CONTROL SWITCHES = ENABLED” is configured on the TERR SETUP page 2 (see section 4.5.4 Terrain (TERR) Setup Pages).

The OUTER KNOB switch positions are labeled "TST", "NRM" and "SET" on the display with the current position highlighted. The "SET" position is available only if there is at least one soft key available on the "SET" menu.

During Power-up or accessing the TERR page, the unit will select "NRM" by default. Leaving the TERR page cancels "TST" or "SET".

4.5.4 Terrain (TERR) Setup Pages

Terrain setup, consisting of two setup pages, is accessed via the AUX page. A password (PIN) is required (see FIGURE 4-84 Terrain Setup PIN Page). Password entry functions the same as on the System Configuration Password Page (see FIGURE 4-16 KMD 540 System Configuration Password Page).

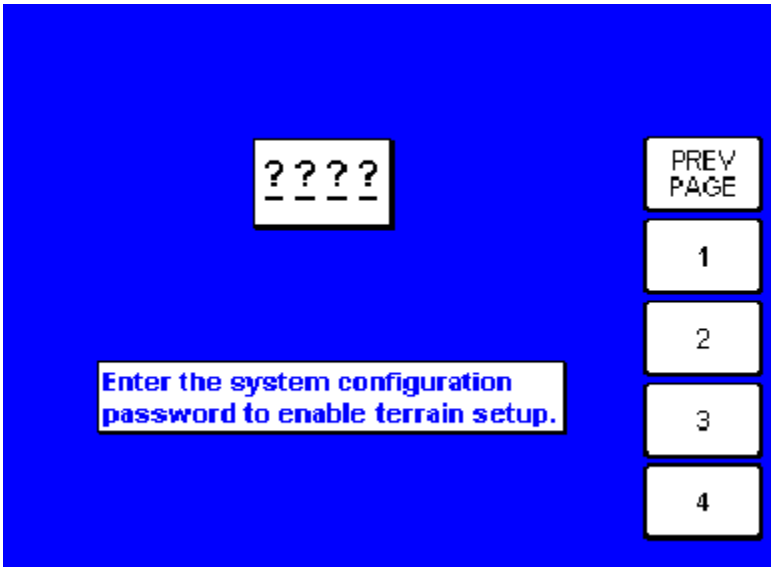


FIGURE 4-84 Terrain Setup PIN Page

When the correct password is entered, 'Terrain setup page (1)' will appear, (see FIGURE 4-85 Terrain Setup Page 1). Use the joystick to select items and their accompanying settings. Set values per TABLE 4-5 Terrain Setup Page 1 Settings, enter 'NEXT" to continue to 'Terrain setup page (2)' (see FIGURE 4-86 Terrain Setup Page 2), and 'SAVE & EXIT' to save settings when complete. Configurable options for 'Terrain setup page (1)' and 'Terrain setup page (2)' are listed in TABLE 4-5 Terrain Setup Page 1 Settings and TABLE 4-6 Terrain Setup Page 2 Settings.

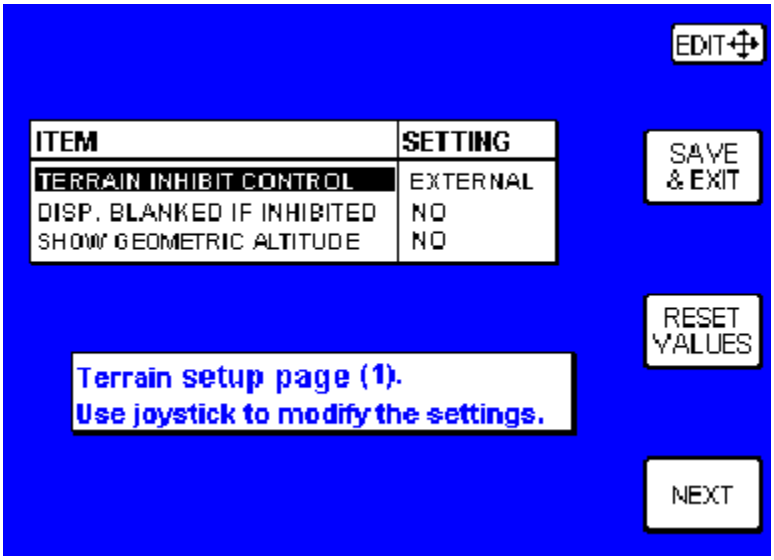


FIGURE 4-85 Terrain Setup Page 1

ITEM	Possible settings	Description
TERRAIN INHIBIT CONTROL	EXTERNAL (default setting)	The Terrain Inhibit Function is controlled by a cockpit switch external to the KMD 550/850.
	MODE KEY	The TERR page MODE key controls the Terrain Inhibit Function. The EGPWS must be configured to accept the Inhibit Signal via ARINC 429 (label 017) or the KMD TERRAIN INHIBIT DISCRETE output must be used to control the EGPWS.
DISP. BLANKED IF INHIBITED	NO (default setting)	The terrain display is available when the Terrain Function is inhibited (only warnings are inhibited).
	YES	The terrain display is blanked when the Terrain Function is inhibited (warnings and the display are both inhibited).
SHOW GEOMETRIC ALTITUDE	AS MSL (Not Usable) * See note below	Geometric Altitude will be displayed on the TERR page with a label of MSL
	NO * See note below	Geometric Altitude will not be displayed on the TERR page
	AS GSL (Recommended) * See note below	Geometric Altitude will be displayed on the TERR page with a label of GSL

TABLE 4-5 Terrain Setup Page 1 Settings

NOTE: The FAA has reviewed the use of Geometric Altitude on Terrain displays and the setting of “NO” or “AS GSL” is acceptable.

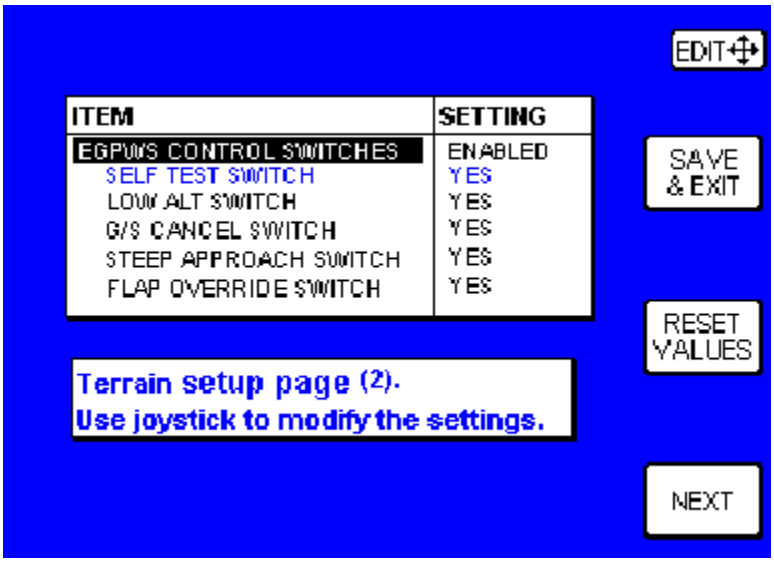


FIGURE 4-86 Terrain Setup Page 2

ITEM	Possible settings	Description
EGPWS CONTROL SWITCHES	DISABLED (default setting)	Disables EGPWS rotary control on the TERR page.
	ENABLED	Enables the EGPWS rotary control. The EGPWS must be configured to accept ARINC 429 discretes (Label 017).
SELF TEST SWITCH	YES	This setting is selected automatically when the EGPWS CONTROL SWITCHES setting is ENABLED (not separately settable).
	N/A	This setting selected automatically when the EGPWS CONTROL SWITCHES setting is DISABLED (not separately settable).
LOW ALT SWITCH	YES	The LOW ALT softkey control and associated annunciator is provided on the TERR page.
	NO	The LOW ALT softkey control and associated annunciator is not provided on the TERR page. This is the default setting for this item when the EGPWS CONTROL SWITCHES setting is changed to ENABLED.
	N/A	This setting selected automatically when the EGPWS CONTROL SWITCHES setting is DISABLED (not separately settable).

TABLE 4-6 Terrain Setup Page 2 Settings
(Sheet 1 of 2)

ITEM	Possible settings	Description
G/S CANCEL SWITCH	YES	The G/S CANCEL softkey control and associated annunciator is provided on the TERR page.
	NO	The G/S CANCEL softkey control and associated annunciator is not provided on the TERR page. This is the default setting for this item when the EGPWS CONTROL SWITCHES setting is changed to ENABLED.
	N/A	This setting selected automatically when the EGPWS CONTROL SWITCHES setting is DISABLED (not separately settable).
STEEP APPROACH	YES	The STEEP APPR softkey control and associated annunciator is provided on the TERR page.
	NO	The STEEP APPR softkey control and associated annunciator is not provided on the TERR page. This is the default setting for this item when the EGPWS CONTROL SWITCHES setting is changed to ENABLED.
	N/A	This setting selected automatically when the EGPWS CONTROL SWITCHES setting is DISABLED (not separately settable).
FLAP OVERRIDE SWITCH	YES	The FLAP OVRD softkey control and associated annunciator is provided on the TERR page.
	NO	The FLAP OVRD softkey control and associated annunciator is not provided on the TERR page. This is the default setting for this item when the EGPWS CONTROL SWITCHES setting is changed to ENABLED.
	N/A	This setting selected automatically when the EGPWS CONTROL SWITCHES setting is DISABLED (not separately settable).

TABLE 4-6 Terrain Setup Page 2 Settings
(Sheet 2 of 2)

4.5.5 'SET' Mode

When 'SET' is selected on the Rotary control, up to four Soft Keys become available for setting EGPWS discrete controls. Pressing a Soft Key toggles the state of the corresponding EGPWS control function. In any given installation, not all of the soft keys will be available. The installer must configure the KMD 550 for the desired controls using 'Terrain setup page 2' (see section 4.5.4 Terrain (TERR) Setup Pages). If a soft key is not configured, then its corresponding annunciator will not be seen on the TERR page. When a configured EGPWS control function is active, the corresponding EGPWS Annunciator at the top of the TERR page is shown (the annunciator is not seen when the function is not active). These annunciators are driven from data provided by the EGPWS on the KCPB bus so that they always indicate the true status of the EGPWS.

The correspondence between EGPWS control softkeys, annunciators, and TERR SETUP page 2 settings is shown in TABLE 4-7 EGPWS Softkeys and Annunciators.

NOTE: The availability of EGPWS Annunciators on the KMD 550 TERR page does not necessarily eliminate the requirement for dedicated annunciators elsewhere in the cockpit.

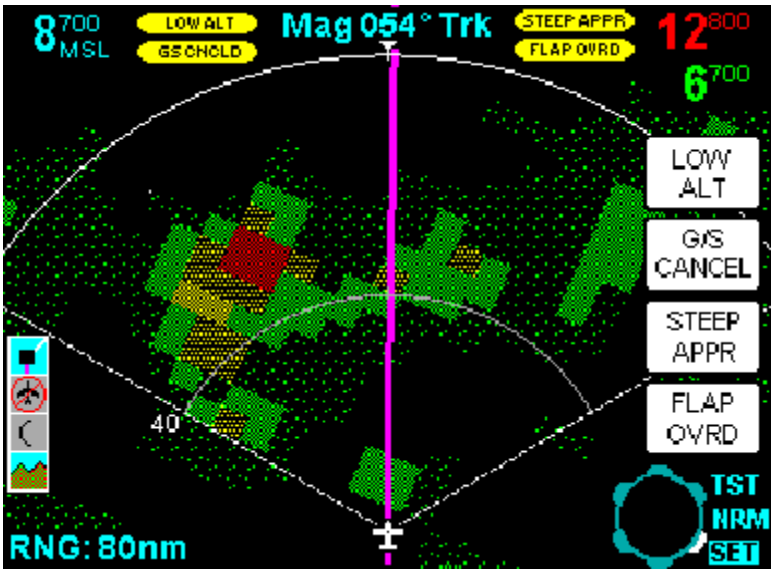


FIGURE 4-87 Terrain Page SET Operation

Softkey Text	Annunciator Text	TERR SETUP Page 2 setting
LOW ALT	LOW ALT	LOW ALT SWITCH
G/S CANCEL	GS CNCLD	G/S CANCEL SWITCH
STEEP APPR.	STEEP APPR	STEEP APPRACH SWITCH
FLAP OVRD	FLAP OVRD	FLAP OVERRIDE SWITCH

TABLE 4-7 EGPWS Softkeys and Annunciators

4.6 TRAFFIC CONFIGURATION PROCEDURE (KAC 504 Module)

4.6.1 KMD 550 Interfaces

Traffic configuration is available only in a KMD 550/850 system which contains a KAC 504 Traffic Module. This module allows the system to control and display certain traffic devices including the following TCAS I/II, TAS (Traffic Awareness Systems) and TIS (Traffic Information Service). The KAC 504 module also allows the system to control and display certain FMS and Weather devices including the WX-1000E even if no traffic sensor is installed.

Manufacturer	Unit	TRAFFIC UNIT Type
-	No Traffic Sensor	NONE
Honeywell	TPU 66A	TCAS I
Honeywell	TPU 67A	TCAS II
Honeywell	TPA 81A	TCAS II
Honeywell	KTA 810	TAS
Honeywell	KMH 820	TAS
Honeywell	KTA 910	TCAS I
Honeywell	KMH 920	TCAS I
Honeywell	KT 73	TIS
Goodrich	SkyWatch HP (TRC899)	TCAS I or TAS (see notes 1,2)
Goodrich	SkyWatch (TRC497)	SKYWATCH (see note 2)
Ryan	TCAD 9900BX	TAS (see note 2)

Notes:

1. If the SkyWatch HP (TRC899) installation is TCAS I compliant , set the traffic unit type to TCAS I; otherwise, set to TAS. Do not set to SKYWATCH as this will cause the incorrect decoding of Traffic System Faults (ARINC 429 label 350). Refer to the SkyWatch HP Installation Manual to determine if the TRC899 installation will be TCAS I compliant.
2. The TRC899, TRC497 and 9900BX units do not accept ARINC 429 control (TST, SBY, ON) from the KMD 550/850; therefore, TRAFFIC CONTROL on the Traffic Setup Page must be set to DISABLED.

TABLE 4-8 Traffic Interfaces

4.6.2 KAC 504 Configuration

Configuration of traffic may be accomplished only after the KAC 504 traffic module is installed in the KMD 540 base unit (see section 2.2.3 Option Module Installation).

1. Unit Configuration
   - A. Power on the unit.
   - B. The first time unit is turned on there should be a message saying "Software Upgrade in Progress" and a status bar showing percent complete for TRAFFIC.
   - C. Acknowledge the self test and data base cycle pages by pressing the OK soft key.
   - D. Press the AUX key then press the System Config soft key (see FIGURE 4-15 Auxiliary Mode Cover Page). The System Configuration Password page will appear (see FIGURE 4-16 KMD 540 System Configuration Password Page).
   - E. Enter 3333. The system configuration page shown below will appear (see FIGURE 4-88 System Configuration Page With Slot 4 'Empty').
   - F. Move the joystick down and to the right to the Board Function position 'EMPTY' for SLOT 4.
   - G. Move the joystick up to change the field from EMPTY to 'TRAFFIC PROCESSOR'.
   - H. Wait at least 10 seconds. Cycle power and repeat steps C through E.

   If the KAC 504 module is working properly then there should be a green check mark next to TRAFFIC PROCESSOR in Slot 4 (see FIGURE 4-89 System Configuration Page With Slot 4 As 'TRAFFIC PROCESSOR'). If there is a fault or if the module is not installed there will be a red X (see FIGURE 4-90 System Configuration Page With 'TRAFFIC PROCESSOR' Fault).

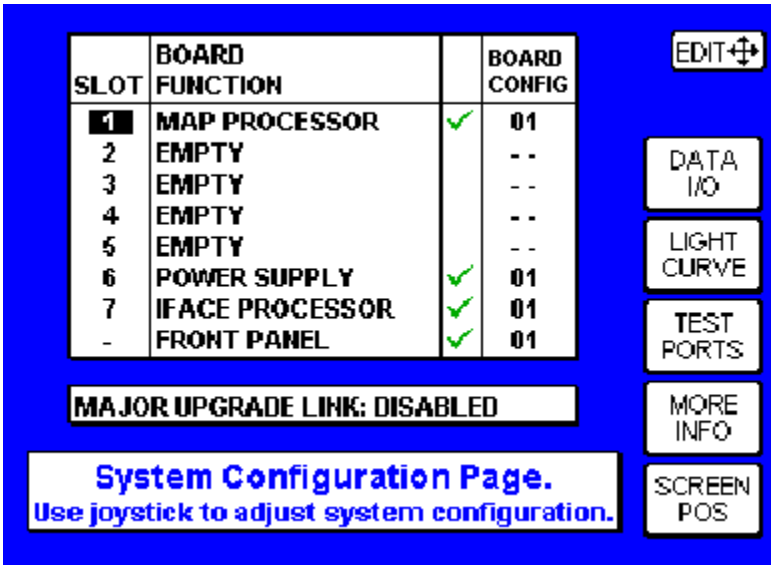


FIGURE 4-88 System Configuration Page With Slot 4 'Empty'

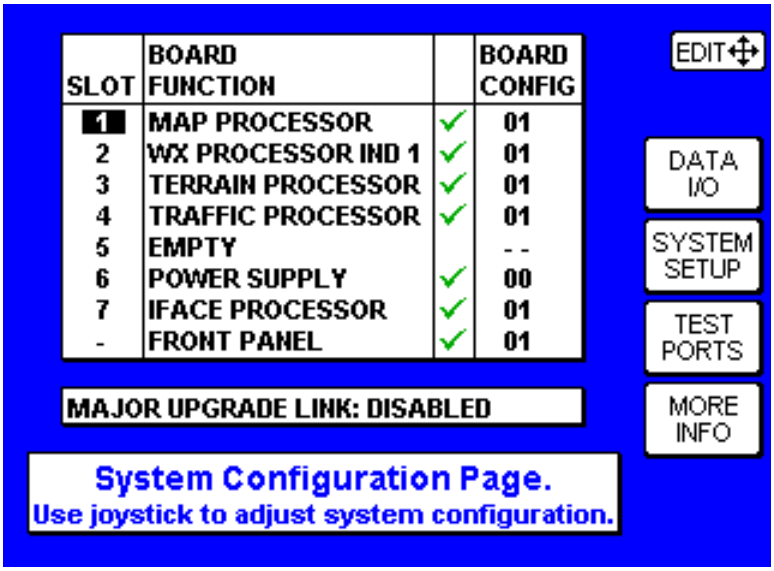


FIGURE 4-89 System Configuration Page With Slot 4 As 'TRAFFIC PROCESSOR'

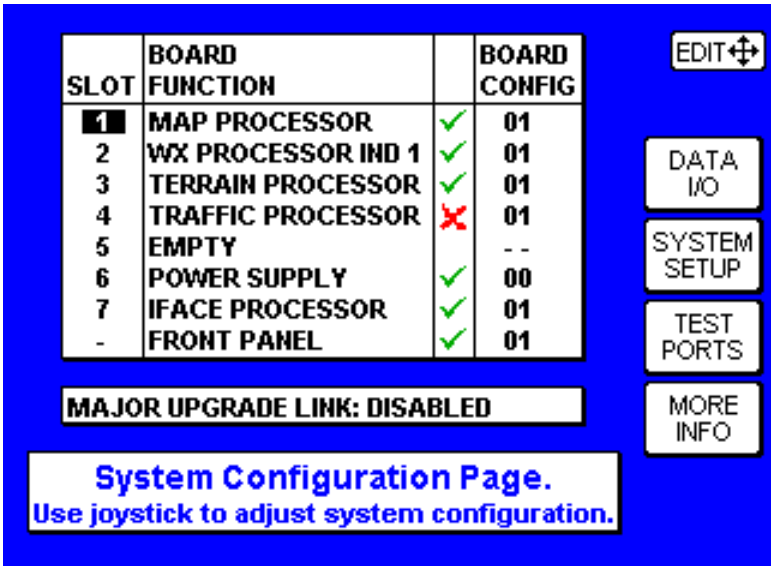


FIGURE 4-90 System Configuration Page With 'TRAFFIC PROCESSOR' Fault

4.6.3 Testing

1. Power On Self Test
   A. Cycle power on the display and verify that the power on self test shows a green checkmark next to "TRAFFIC INTERFACE" as shown in FIGURE 4-91 Traffic Interface Self Test Passed.

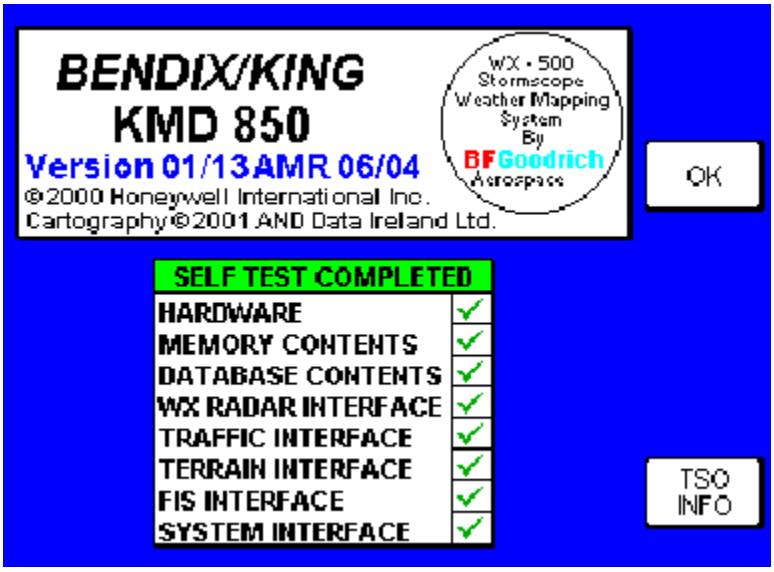


FIGURE 4-91 Traffic Interface Self Test Passed

B. FIGURE 4-92 Traffic Interface Self Test Failed shows the results if the self test Fails. This indicates that the KAC 504 Traffic module is not installed, has failed, or is not inserted in the proper slot.

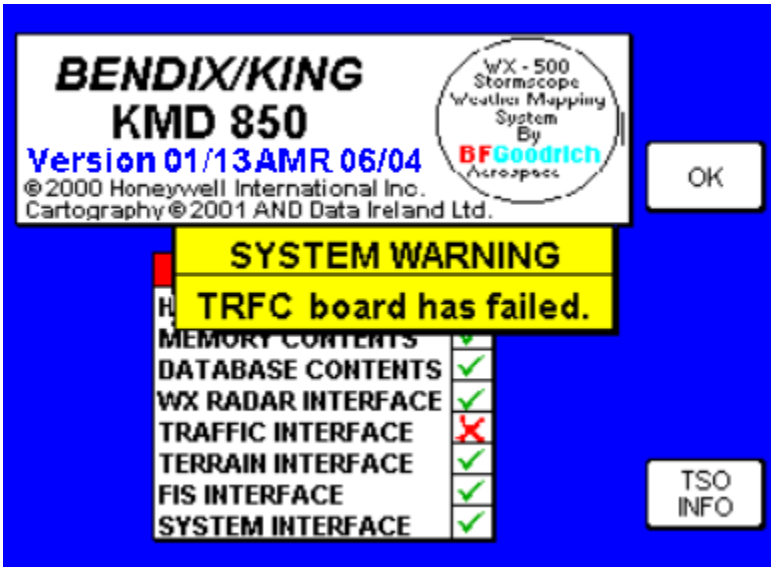


FIGURE 4-92 Traffic Interface Self Test Failed

2. System Configuration Page Self Test
   A. Confirm the self test and data base effectivity by pressing the OK soft key.
   B. Press the AUX key then press the System Config soft key (see FIGURE 4-15 Auxiliary Mode Cover Page). The System Configuration Password page will appear (see FIGURE 4-16 KMD 540 System Configuration Password Page).
   C. Enter 3333. The system configuration page shown will appear (see FIGURE 4-93 System Configuration Page).
   D. Verify that a green checkmark appears next to the Traffic Processor in Slot 4.

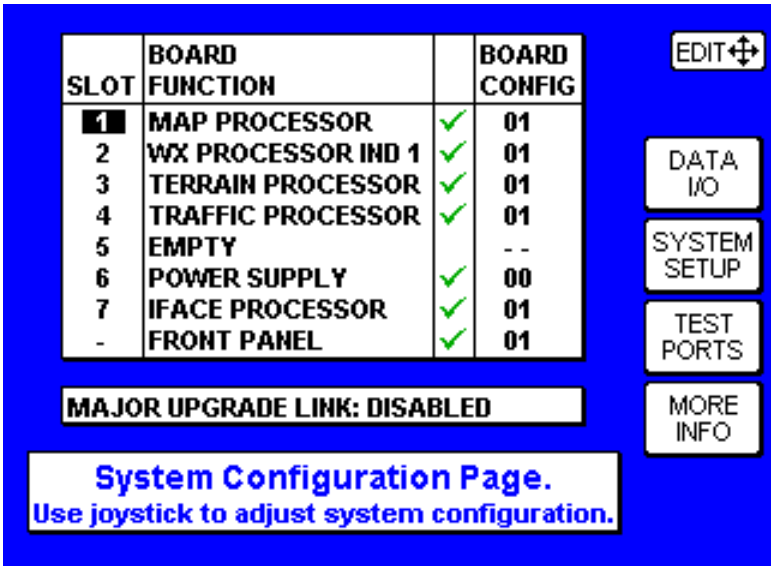


FIGURE 4-93 System Configuration Page

3. Functional Test (TAS/TCAS Only)
   A. While connected to the traffic unit that has been placed in the functional test mode, verify that the display shows a test pattern similar to FIGURE 4-94 Traffic Self Test Page.

NOTE: If there are no faults shown on the display but the test pattern is not appearing, it may be due to improper configuration of the traffic unit itself. Refer to the appropriate traffic installation manual for details.

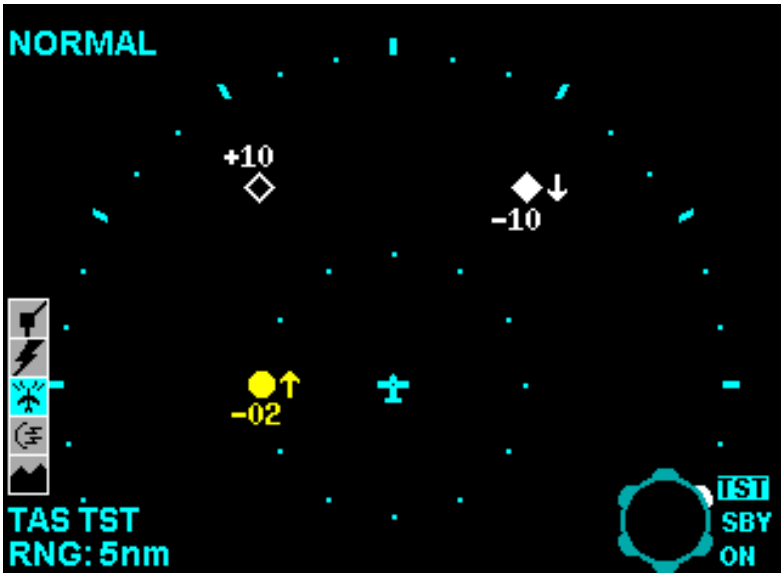


FIGURE 4-94 Traffic Self Test Page

4.6.4 Traffic Controls

4.6.4.1 MODE Key

The MODE key is lit and active only if enabled during traffic setup (see section 4.6.5 Traffic Setup Page). When enabled, pressing the MODE key will toggle Traffic Intruder Altitude tags between Relative and Absolute Flight Level modes. After 15 seconds operation will automatically revert back to Relative mode.

4.6.4.2 RANGE Keys

The RANGE keys step the traffic selected range up and down through the specific values of 2, 2.5, 5, 7, 10, 15, 20, and 40 nm (20nm is maximum for Skywatch, 7nm for TIS).

When the RNG UP key is pressed,
- The page is redisplayed with the next larger range value.
- If the maximum range value is reached, the "RNG UP" label is extinguished.

When the RNG DOWN key is pressed,
- The page is redisplayed for the next smaller range value.
- If the minimum range value is reached, the "RNG DOWN" label is extinguished immediately.

4.6.4.3 VIEW Key

The VIEW key is lit and active only if enabled during traffic setup (see section 4.6.5 Traffic Setup Page). When enabled, pressing the VIEW key will step through the NORMAL, ABOVE, and BELOW and UNRESTRICTED altitude views. The UNRESTRICTED view is only available when enabled on the traffic Setup Options Page (see FIGURE 4-97 Traffic Setup Options Page).

When NORMAL is selected, the altitude volume for the traffic display is +2700 to -2700 feet relative to the own aircraft altitude.

When ABOVE is selected, the altitude volume for the traffic display is +9000 to -2700 feet relative to the own aircraft altitude.

When BELOW is selected, the altitude volume for the traffic display is +2700 to -9000 feet relative to the own aircraft altitude.

When UNRESTRICTED is selected, the altitude volume for the traffic display is +9000 to -9000 feet relative to own aircraft altitude.

4.6.4.4 Overlay Key

When the OVLY key is first pressed,
- All Power Key labels are extinguished.
- The Soft Key labels for the available overlay (Flight Plan) is displayed.
- The SAVE & EXIT Soft Key is displayed.

When the SAVE & EXIT Soft Key is pressed,
- Extinguishes the Soft Key labels for the available overlay (Flight Plan)
- Displays the MODE, RNG UP, RNG DOWN, VIEW, and OVLY Power Key labels.

4.6.4.5 OUTER KNOB

The OUTER KNOB is enabled only during traffic setup (see section 4.6.5 Traffic Setup Page). When enabled, a three-position selector switch (positions include TST, SBY, and ON) is emulated. For TIS function, a two-position selector switch (ON and OFF) is emulated. 'ON' is the default state at power up.

4.6.4.6 INNER KNOB (TIS Only)

The INNER KNOB is a two-position indicator in center displays to mute ON/OFF. 'MUTE OFF" is the default state at power up.

4.6.5 Traffic Setup Page

Traffic setup and diagnostics are accessed via the AUX page. A password (PIN) is required (see FIGURE 4-95 Traffic Setup PIN Page). Password entry functions the same as on the System Configuration Password Page (see FIGURE 4-16 KMD 540 System Configuration Password Page).

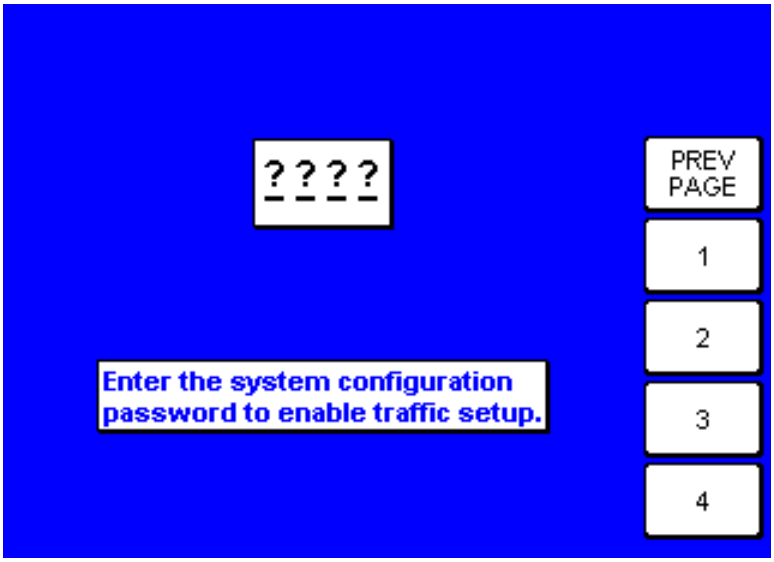


FIGURE 4-95 Traffic Setup PIN Page

Diagnostics are only available for the KTA 810/KMH 820 TAS processor. If diagnostics are available, entry of the correct password will display Traffic Auxiliary Cover Page (FIGURE 4-96 Traffic Auxiliary Cover Page). From the page, 'TRFC SETUP' (traffic setup), 'Diag Menu' (diagnostics), and 'PREV PAGE' (returns the user to the previous page) may be accessed. Refer to FIGURE 4-97 Traffic Setup Options Page for Traffic Setup and FIGURE 4-98 Traffic Diagnostics Cover Page for KTA 810/KMH 820 and KTA 910/KMH 920 TAS processor diagnostics.

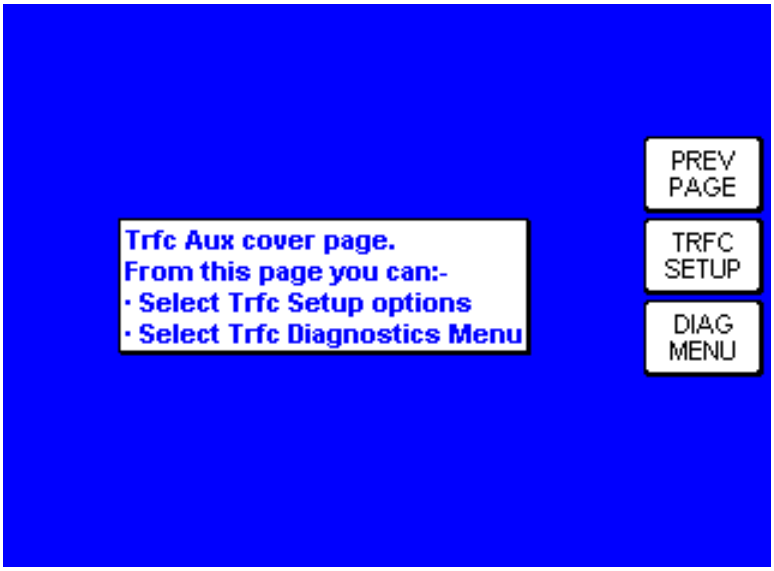


FIGURE 4-96 Traffic Auxiliary Cover Page

If diagnostics are not available, the Traffic Auxiliary Cover Page will be skipped and the Traffic Setup Page (FIGURE 4-97 Traffic Setup Options Page) will be accessed directly. From the Traffic Setup Page, the traffic unit type, traffic control mode (not applicable for TCAS II or Skywatch), mode control, view control, and unrestricted view may be selected. View control and unrestricted view options are disabled for TIS. Use the joystick to make changes. Enter "Save & Exit' when complete.

Set the traffic unit type to NONE if the KAC 504 module is being used for the WX-1000E and/or FMS and no TCAS/TAS system is installed; otherwise, see TABLE 4-8 Traffic Interfaces for correct setting.

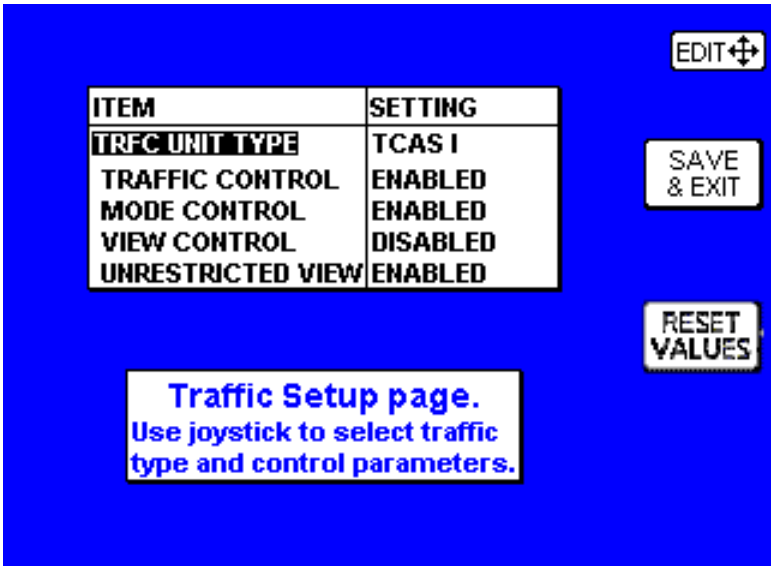


FIGURE 4-97 Traffic Setup Options Page

Diagnostic options (for the KTA 810/KMH 820 and KTA 910/KMH 920 TAS processors only) are shown below. Options include 'I/O MENU' (see FIGURE 4-99 Traffic I/O Menu Page), 'DIAG LOG' (see FIGURE 4-102 TAS Diagnostics Log Page), 'SYSTEM STATUS' (see FIGURE 4-103 TAS System Status Page), 'SW INFO' (see FIGURE 4-104 TAS Software Version Page), and 'PREV PAGE' (returns the user to the previous page).

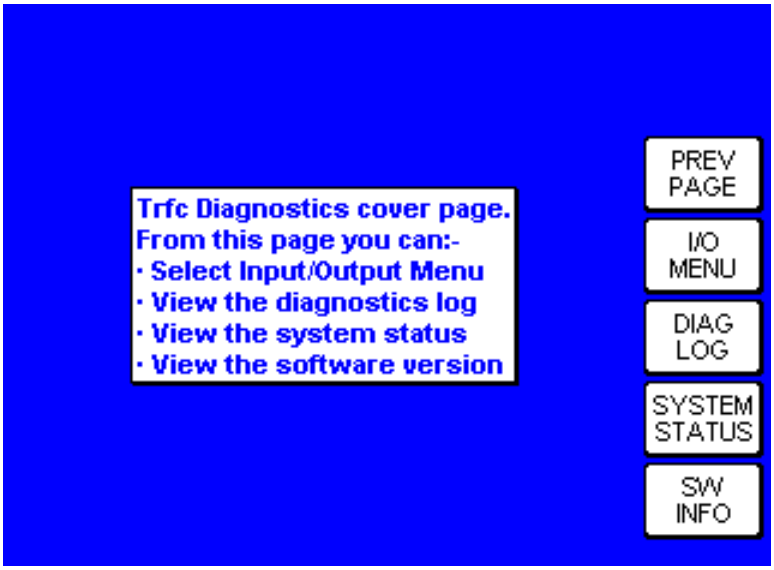


FIGURE 4-98 Traffic Diagnostics Cover Page

The traffic diagnostics I/O menu contains the following options, ‘I/O DATA’ (see FIGURE 4-100 TAS I/O Data Page) and ‘STRAP DATA’ (see FIGURE 4-101 TAS Strap Data Page).

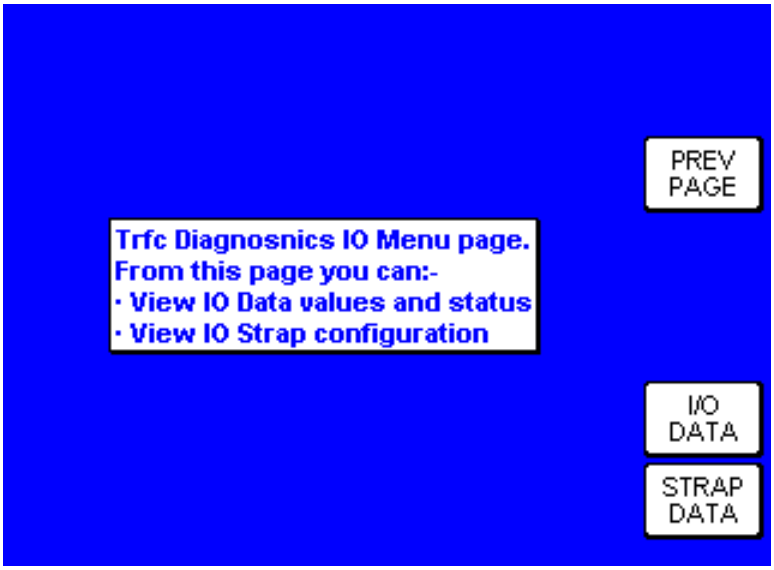


FIGURE 4-99 Traffic I/O Menu Page

FIGURE 4-100 TAS I/O Data Page displays the I/O Data Page. The Joystick may be used to scroll through data parameters. Use ‘START UPDATE’ to update parameters and “PREV PAGE’ to return to the menu page.

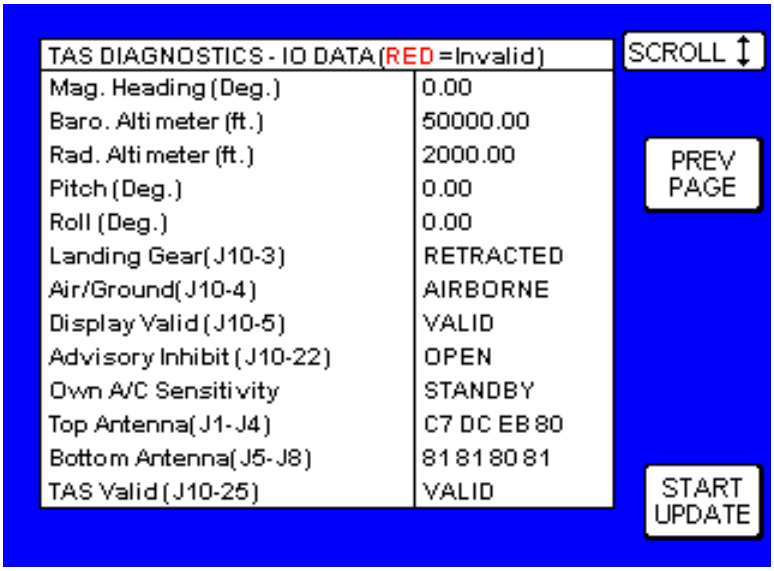


FIGURE 4-100 TAS I/O Data Page

FIGURE 4-101 TAS Strap Data Page displays the Strap Data Page. The Joystick may be used to scroll through data parameters. Use “PREV PAGE’ to return to the menu page.

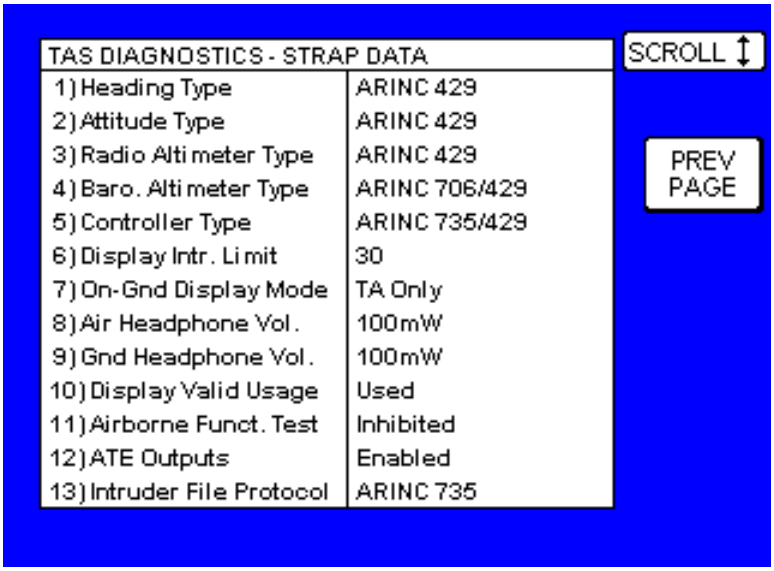


FIGURE 4-101 TAS Strap Data Page

FIGURE 4-102 TAS Diagnostics Log Page displays the TAS Diagnostics Log Page. The Joystick may be used to scroll through data parameters or use the ‘PAGE DOWN” button to scroll a page. Use “PREV PAGE’ to return to the previous page.

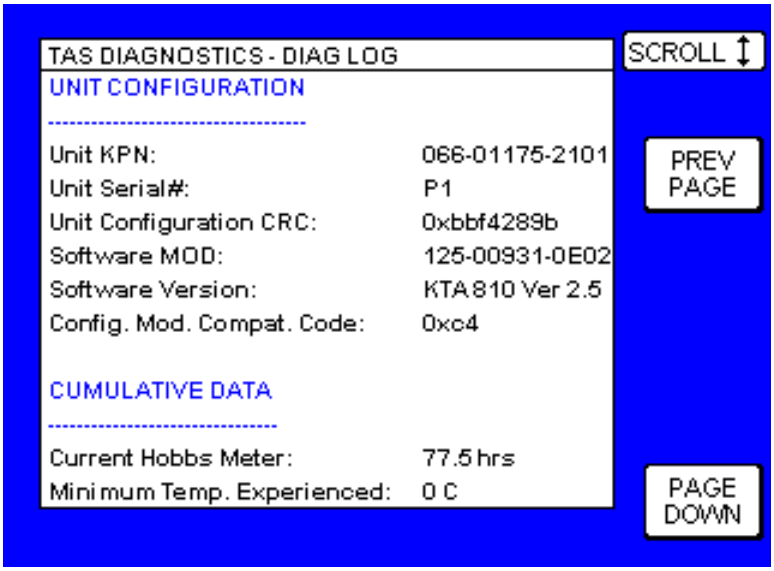


FIGURE 4-102 TAS Diagnostics Log Page

FIGURE 4-103 TAS System Status Page displays the TAS Diagnostics System Status Page. The Joystick may be used to scroll through data parameters. Use 'START UPDATE' to update parameters and "PREV PAGE' to return to the previous page.

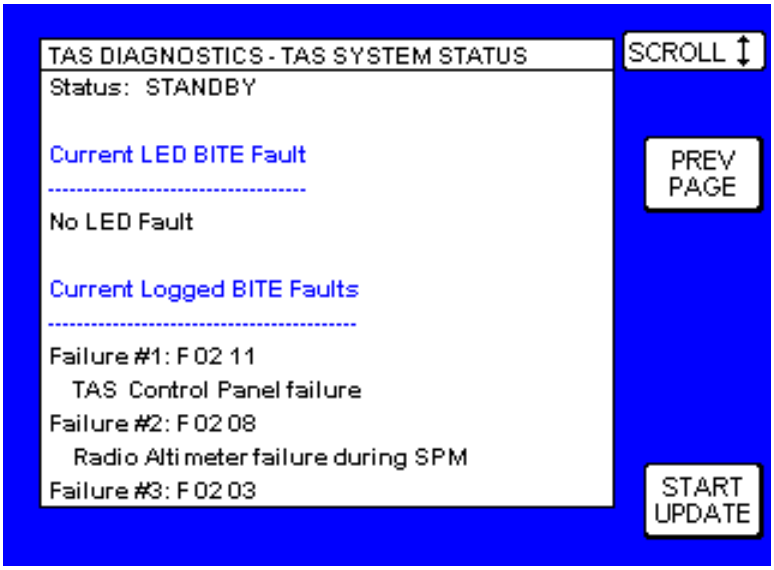


FIGURE 4-103 TAS System Status Page

FIGURE 4-104 TAS Software Version Page displays the TAS Diagnostics Software Version Page. The Joystick may be used to scroll through data parameters. Use "PREV PAGE' to return to the previous page.

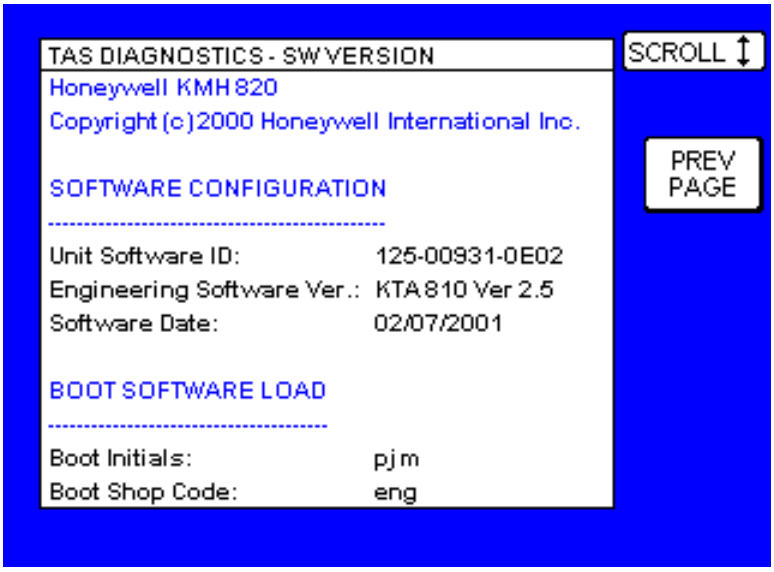


FIGURE 4-104 TAS Software Version Page

4.6.6 Traffic System Fault Messages

FIGURE 4-105 Traffic System Faults Page provides an example of traffic sensor fault messages. TABLE 4-9 Traffic Faults provides a list of common traffic faults. Note that the format consists of a header describing the general nature of the fault followed by a bulleted list of individual faults. Refer to the applicable traffic processor installation manual for detailed information relating to its traffic faults and corrective procedures.

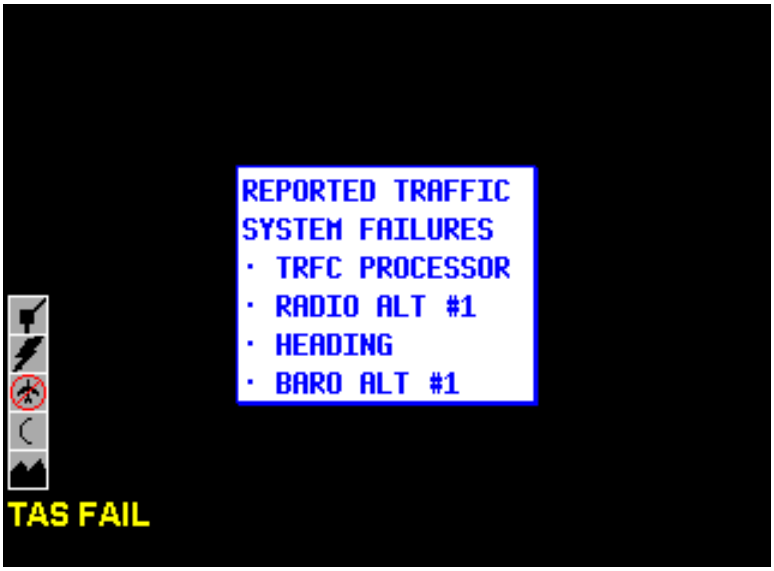


FIGURE 4-105 Traffic System Faults Page

Source of Failure	Header Text	Failure Text
TCAS I/II/TAS system failures from Labels 350 and 351. When the Label 350 TAS SYSTEM STATUS bit is set, display of these faults is enabled.	"REPORTED TRAFFIC SYSTEM FAILURES"	
Label 350 TAS COMPUTER UNIT	Same	"TRFC PROCESSOR"
Label 350 UPPER ANT	Same	"TRFC UPPER ANT"
Label 350 LOWER ANT	Same	"TRFC LOWER ANT"
Label 350 RADIO ALTITUDE INPUT #1	Same	"RADIO ALT #1"
Label 350 RADIO ALTITUDE INPUT #2	Same	"RADIO ALT #2"
Label 350 RADIO ALTITUDE INPUT #1 and RADIO ALTITUDE INPUT #2	Same	"RADIO ALT #1 & #2"
Label 351 ALTITUDE INPUT #1	Same	"BARO ALT #1"
Label 351 ALTITUDE INPUT #2	Same	"BARO ALT #2"
Label 351 ALTITUDE INPUT #1 and ALTITUDE INPUT #2	Same	"BARO ALT #1 & #2"
Label 350 ATC/MODE-S TRANSPONDER #1 and (Label 351 ALTITUDE INPUT #1 or ALTITUDE INPUT #2).	Same	"#1 XPNDR ALT DATA"

TABLE 4-9 Traffic Faults

Source of Failure	Header Text	Failure Text
Label 350 ATC/MODE-S TRANSPONDER #2 and (Label 351 ALTITUDE INPUT #1 or ALTITUDE INPUT #2).	Same	"#2 XPNDR ALT DATA"
Label 350 ATTITUDE INPUT BUS	Same	"ATTITUDE"
Label 350 MAGNETIC HEADING INPUT BUS	Same	"HEADING"
Label 350 TA 1 DISPLAY SYSTEM STATUS	Same	"TA DISPLAY #1"
Label 350 TA 2 DISPLAY SYSTEM STATUS	Same	"TA DISPLAY #2"
Label 350 TA 1 DISPLAY SYSTEM STATUS and TA 2 DISPLAY SYSTEM STATUS	Same	"TA DISPLAY #1 & #2"
Label 350 RA 1 DISPLAY SYSTEM STATUS	Same	"RA DISPLAY #1"
Label 350 RA 2 DISPLAY SYSTEM STATUS	Same	"RA DISPLAY #2"
Label 350 RA 1 DISPLAY SYSTEM STATUS and RA 2 DISPLAY SYSTEM STATUS	Same	"RA DISPLAY #1 & #2"
Label 351 CONTROL DATA SOURCE SELECTION	Same	"CONTROL DATA"
Label 350 ATC/MODE-S TRANSPONDER #1 and Label 351 CONTROL DATA SOURCE SELECTION	Same	"#1 XPNDR CONTROL DATA"
Label 350 ATC/MODE-S TRANSPONDER #2 and Label 351 CONTROL DATA SOURCE SELECTION	Same	"#2 XPNDR CONTROL DATA"
Label 350 ATC/MODE-S TRANSPONDER #1	Same	"#1 XPNDR DATA BUS"
Label 350 ATC/MODE-S TRANSPONDER #2	Same	"#2 XPNDR DATA BUS"
Label 351 TCAS INPUT DATA	Same	"XPNDR TCAS DATA"
Label 351 UPPER ANT	Same	"XPNDR UPPER ANT"
Label 351 LOWER ANT	Same	"XPNDR LOWER ANT"
Label 350 ATC/MODE-S TRANSPONDER #1 and ATC/MODE-S TRANSPONDER #2	Same	"#1 XPNDR, #2 XPNDR"
Label 275* BITS 23 AND 25 = 1	Same	“TIS CONTROL”
Label 275* BITS 24 AND 25 = 1	Same	“TIS PROCESSOR”

TABLE 4-9 Traffic Faults

* Label 275 - Honeywell TIS Proprietary

4.7 FIS CONFIGURATION PROCEDURE (KAC 503 Module)

4.7.1 General

The KMD550/850 interfaces with the Honeywell KDR 510 VDR via the KAC 503 option module to provide the FIS function. This section covers the configuration, testing, and setup for the FIS function.

4.7.2 KAC 503 Configuration

Configuration of FIS may be accomplished only after the KAC 503 FIS module is installed in the KMD 540 base unit (see section 2.2.3 Option Module Installation).

1. Unit Configuration
   - A. Power on the unit.
   - B. The first time unit is turned on there should be a message saying "Software Upgrade in Progress" and a status bar showing percent complete for FIS.
   - C. Acknowledge the self test and data base cycle pages by pressing the OK soft key.
   - D. Press the AUX key then press the System Config soft key (see FIGURE 4-15 Auxiliary Mode Cover Page). The System Configuration Password page will appear (see FIGURE 4-16 KMD 540 System Configuration Password Page).
   - E. Enter 3333. The system configuration page shown below will appear (see FIGURE 4-106 System Configuration Page With Slot 5 'Empty').
   - F. Move the joystick down and to the right to the Board Function position 'EMPTY' for SLOT 5.
   - G. Move the joystick up to change the field from EMPTY to 'FIS PROCESSOR'.
   - H. Wait at least 10 seconds. Cycle power and repeat steps C through E.

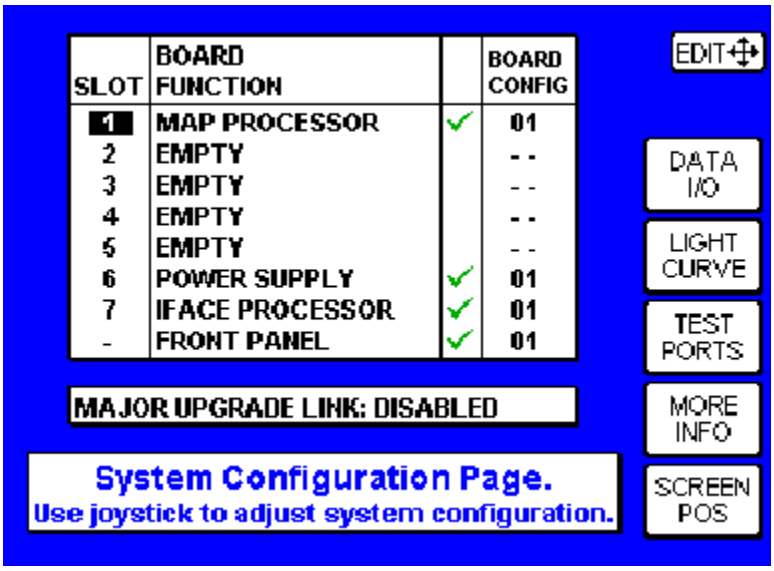


FIGURE 4-106 System Configuration Page With Slot 5 'Empty'

If the KAC 503 module is working properly then there should be a green check mark next to FIS PROCESSOR in Slot 5 (see FIGURE 4-107 System Configuration Page With Slot 5 As 'FIS PROCESSOR'). If there is a fault or if the module is not installed there will be a red X (see FIGURE 4-108 System Configuration Page With 'FIS PROCESSOR' Fault).

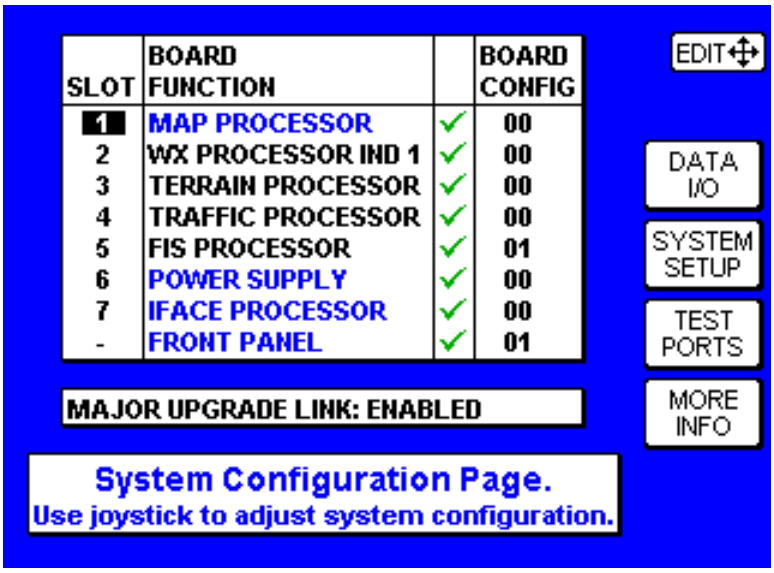


FIGURE 4-107 System Configuration Page With Slot 5 As 'FIS PROCESSOR'

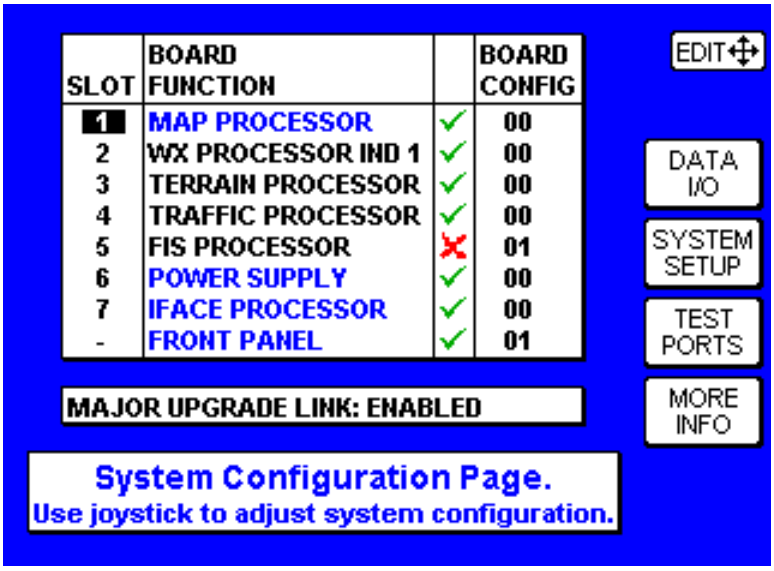


FIGURE 4-108 System Configuration Page With 'FIS PROCESSOR' Fault

4.7.3 Testing

1. Power On Self Test
   A. Cycle power on the display and verify that the power on self test shows a green checkmark next to "FIS INTERFACE" as shown in FIGURE 4-109 FIS Interface Self Test Passed.

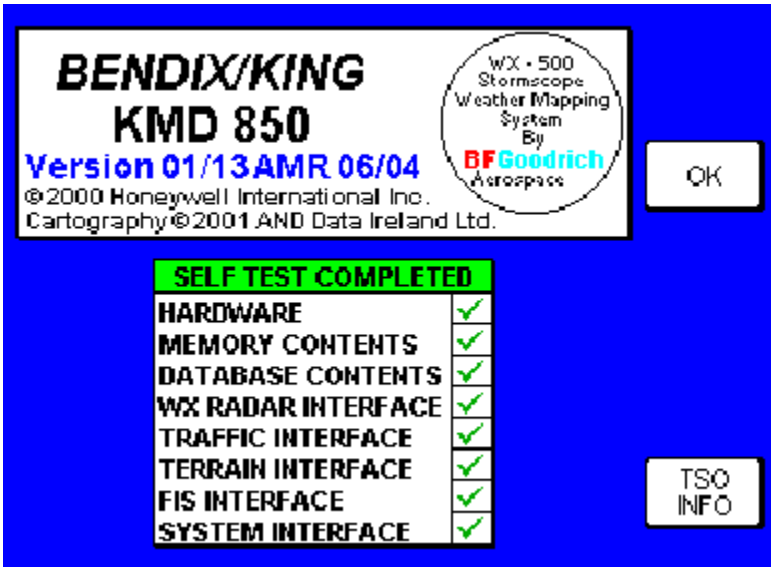


FIGURE 4-109 FIS Interface Self Test Passed

B. FIGURE 4-110 FIS Interface Self Test Failed shows the results if the self test Fails. This indicates that the KAC 503 FIS module is not installed, has failed, or is not inserted in the proper slot.

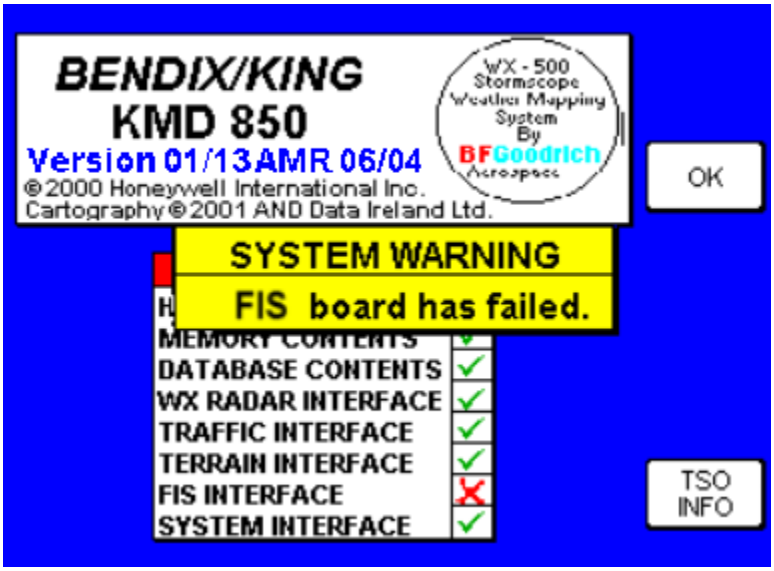


FIGURE 4-110 FIS Interface Self Test Failed

2. System Configuration Page Self Test
   A. Confirm the self test and data base effectivity by pressing the OK soft key.
   B. Press the AUX key then press the System Config soft key (see FIGURE 4-15 Auxiliary Mode Cover Page). The System Configuration Password page will appear (see FIGURE 4-16 KMD 540 System Configuration Password Page).
   C. Enter 3333. The system configuration page shown will appear (see FIGURE 4-111 System Configuration Page).
   D. Verify that a green checkmark appears next to the FIS Processor in Slot 5.

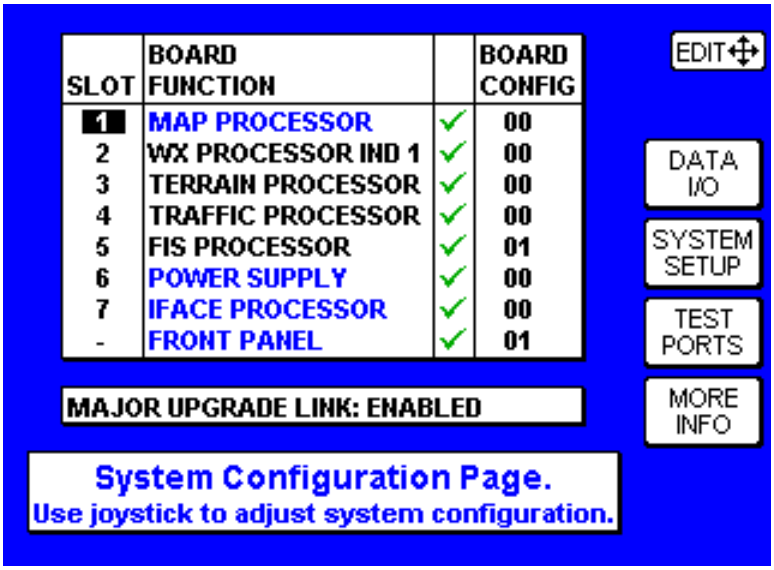


FIGURE 4-111 System Configuration Page

3. Functional Test

   Refer to the post installation check out procedures in section 2.4 of the KDR 510 installation manual, P/N 006-10632-00XX.

4.7.4 FIS Controls

Refer to control functions available for FIS graphics and FIS Text in section 4.1.2.3 WX Function.

4.7.5 FIS Setup

Access the FIS setup pages by first accessing the AUX page (FIGURE 4-15 Auxiliary Mode Cover Page) and then the WX setup page (FIGURE 4-48 WX Setup Cover Page or FIGURE 4-59 KMD 540 Wx Setup Cover Page). From the WX page, select FIS. The FIS setup cover page (similar to FIGURE 4-112 FIS Setup Page) will appear.

If FIS is the only weather sensor installed, pressing the WX SETUP option from the AUX page will directly access the FIS setup cover page (below).

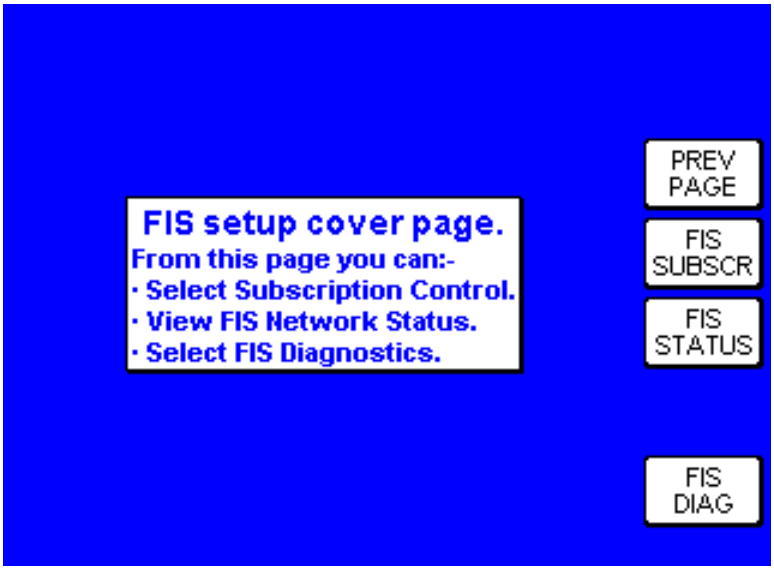


FIGURE 4-112 FIS Setup Page

Pressing the power key next to 'FIS SUBSCR' will enter the FIS Subscription Status Page (see section 4.7.5.1 FIS Subscription Setup). This section will explain the FIS subscription process in general, as well as, specifics relating to subscription information entry and status.

Pressing the power key next to 'FIS STATUS' will enter the FIS Network Status Control Page (refer to the pilot's guide for detailed information on this option).

Pressing the power key next to 'FIS DIAG' will enter the FIS Diagnostic Pages (see section 4.7.5.2 FIS Diagnostic Pages).

Pressing the power key next to 'PREV PAGE' will return to the previous screen.

4.7.5.1 FIS Subscription Setup

4.7.5.1.1 FIS SUBSCRIPTION PROCESS OVERVIEW

A valid FIS subscription must be in effect to receive FIS services, including no-charge products. A subscription can be obtained either via website, (http://www.BendixKing.com), then selecting Wingman Services, Data Link Weather, or alternatively by contacting Wingman Services at 800-247-0230 (or 913-712-3145).

FIS subscription options include fee-based products, such as such as NEXRAD images, graphical METARs, graphical AIRMETS, graphical SIGMETS, graphical CONVECTIVE SIGMETS, graphical weather watches (AWW), and/or basic textual products, such as text METARs, TAFs, and PIREPs, AIRMETS, SIGMETS, CONVECTIVE SIGMETS, weather watches (AWW), which are free-of-charge.

NOTE: Although the basic textual products are free of charge, they still require a subscription to receive the service as well as a current data card.

To accommodate users with varying service needs (for example, during different flying seasons over the course of a year), the display unit allows storage for up to four individual subscriptions, in much the same way that a computer can support multiple user accounts with different passwords. Once entered, the display unit manages selection of the appropriate subscription without any operator intervention. A subscription code must be entered into the display unit whenever a subscription is added or renewed.

When subscribing for a FIS service package, both the date when service shall commence and the duration may be specified. If subscriptions are to be multiple packages, the start date and duration of each can differ (if desired). For instance, a user may select the free text weather package for an entire year and also choose a graphical weather package for part of the year.

During the subscription process, 1 to 4 subscription codes will be received which must be entered into the display unit to permit access to all products. A subscription code is an alphanumeric sequence that permits access to the FIS broadcast network in much the same way that a computer password permits access to a computer network. When subscribing for FIS services, the online system will ask for a FIS Display ID in order to provide the subscription code. The FIS Display ID is a unique alphanumeric serial number associated with the display unit. This ID is obtained by viewing the FIS Subscription Status page on the display unit. After obtaining the subscription code (from either bendixking.com or via a phone call to Wingman Services), this code must be entered into the display unit. The subscription code tells the display what service(s) have been subscribed to and for what period of time.

Also, the data card must be updated at least once a year for continuance of FIS subscription service. The validity period for the subscription data on the data card is shown on the FIS Caution page at power up and also on the FIS Subscription Status Page. The data card contains both subscription data that is needed to access FIS products as well as the latest operating software. By updating the data card at least once a year prior to the expiration date will ensure uninterrupted FIS service and also that the latest version of software is installed in order to utilize new FIS products as they become available. Note that data card updates are available every 28 days and also include the latest version of Jeppesen navigation data.

Refer to FIGURE 4-113 FIS Subscription Flowchart for a depiction of the FIS subscription process.

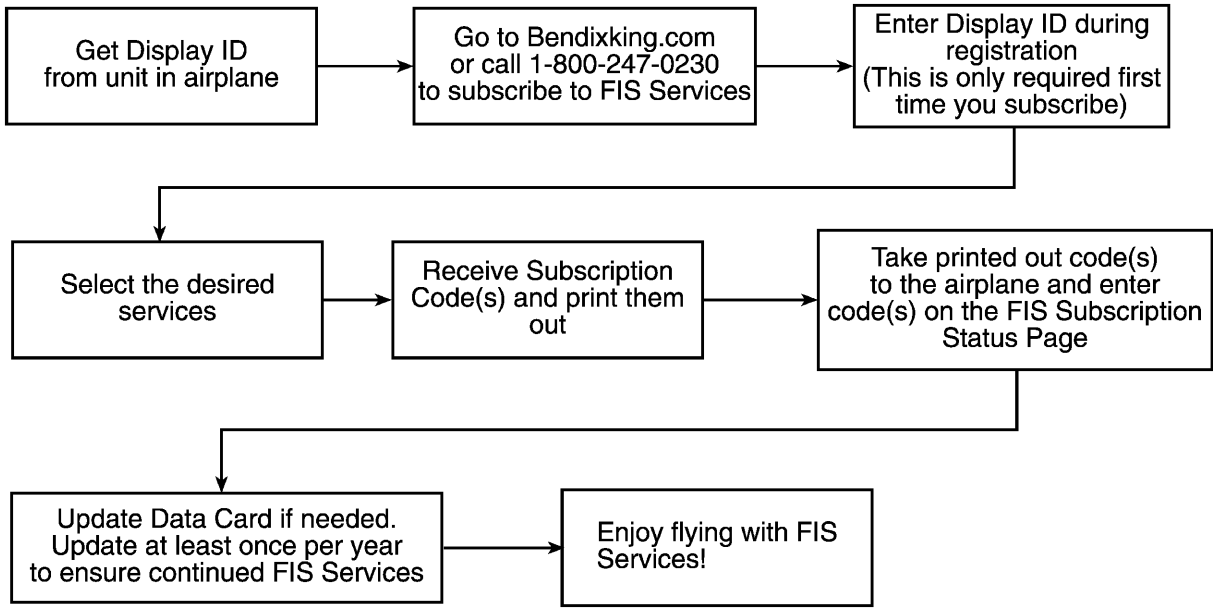


FIGURE 4-113 FIS Subscription Flowchart

4.7.5.1.2 FIS SUBSCRIPTION STATUS PAGE

The FIS Subscription Status Page (see FIGURE 4-114 FIS Subscription Status Page) displays the FIS Display ID, subscription information, and data card validity. Subscription information includes the subscription number, validity period, and current status of up to four subscriptions. The subscription status is noted by a graphic icon as depicted in TABLE 4-10 FIS Subscription Status Icons. FIGURE 4-114 FIS Subscription Status Page shows two subscriptions each with a valid subscription status.

Pressing the 'ADD SUBSCR' power key enters the FIS Subscription Entry Page (FIGURE 4-115 FIS Subscription Entry Page). Pressing the 'PREV PAGE' power key will return to the previous screen.

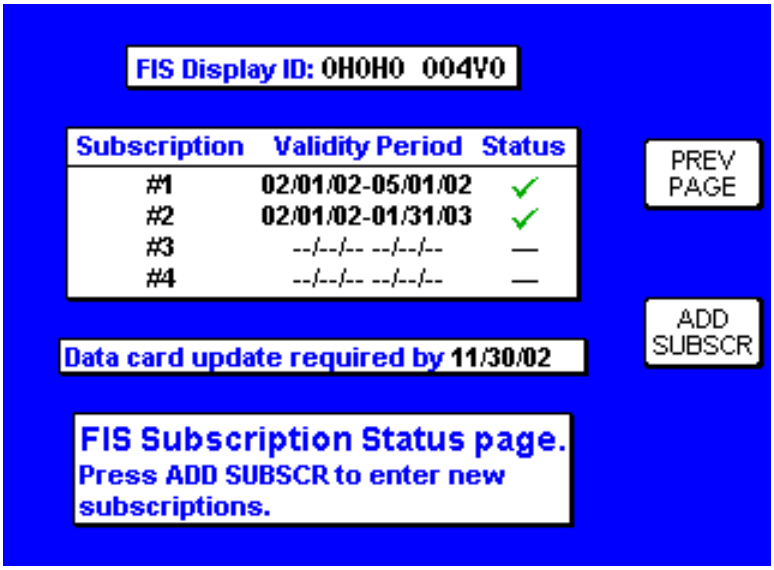


FIGURE 4-114 FIS Subscription Status Page

NOTE: The FIS Display ID is a unique alphanumeric serial number associated with the KAC 503 FIS module installed in the display unit. This ID, which is viewable on the FIS Subscription Status page (FIGURE 4-114 FIS Subscription Status Page), must be provided during the Wingman Services on-line or telephone FIS subscription registration process.

Subscription Status	Graphic Icon	Logic
Unknown	—	The system time is not known or no subscription is programmed. When no subscription is programmed, the validity period is displayed as dashes.
Future	!	The current system time is prior to the displayed starting date. This subscription is not valid for enabling access to FIS today but will become valid at some point in the future.
Valid	✓	The current system time is after the displayed starting date and before the displayed ending date.
Almost Expired	✓	The current system time is within seven (7) days of the displayed ending date.
Expired	✗	The current system time is beyond the displayed ending date.

TABLE 4-10 FIS Subscription Status Icons

FIS Subscriptions may be ordered from Honeywell International, Wingman Services as identified in section 1.9 DATABASE UPDATES AND FIS SUBSCRIPTIONS of this manual. When ordering by website or telephone, the FIS Display ID from the FIS Subscription Control Page (see FIGURE 4-114 FIS Subscription Status Page) must be provided in order to obtain a subscription. Once a subscription is acquired, a unique alphanumeric subscription code will be provided. The FIS Subscription Entry Page (see FIGURE 4-115 FIS Subscription Entry Page) allows the entry of this subscription code information.

New subscription codes are entered using the inner and outer knobs. Rotating the inner knob sequences through the characters while rotating the outer knob sequences through the 19 character fields. The cursor moves between the groups of 4 and 5 characters. When 19 characters have been entered, a softkey labeled “ENTER” is displayed (see FIGURE 4-116 FIS Subscription Entry Page with Enter Key). Pressing “ENTER” checks the subscription code for validity.

FIGURE 4-115 FIS Subscription Entry Page

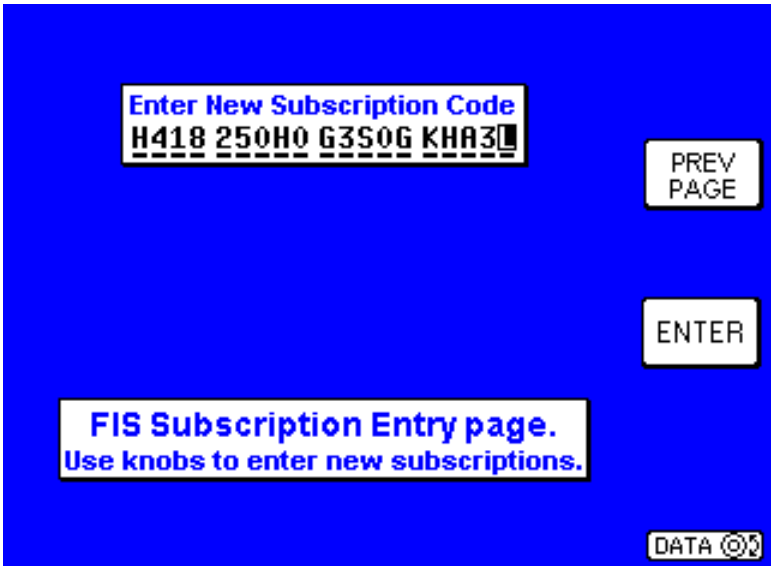


FIGURE 4-116 FIS Subscription Entry Page with Enter Key

If the subscription code is accepted, “Subscription Code Accepted Please wait...” will be displayed (FIGURE 4-117 FIS Subscription Code Accepted). After a delay, the display will return to the FIS Subscription Control page (FIGURE 4-114 FIS Subscription Status Page) automatically which is then updated to show the new subscription.

FIGURE 4-117 FIS Subscription Code Accepted

If an invalid subscription code is entered, an “Invalid Entry” pop-up screen will appear (see FIGURE 4-118 FIS Invalid Subscription Code). When an error pop-up occurs, pressing the ‘OK’ Softkey will clear the message. The code, however, will not be cleared and may be edited for correction.

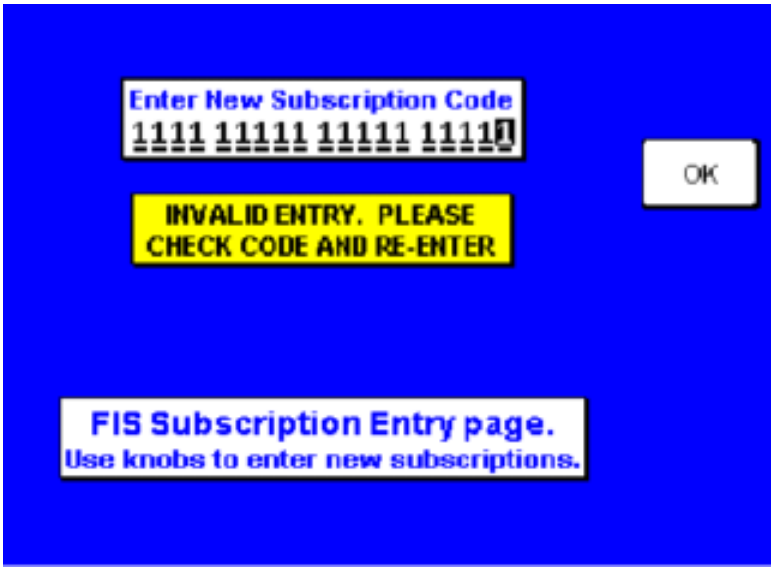


FIGURE 4-118 FIS Invalid Subscription Code

If there is a failure which prevents processing of the subscription code, a pop-up error message will be displayed as depicted in FIGURE 4-119 Subscription Processing Fault.

FIGURE 4-119 Subscription Processing Fault

If a decryption failure is detected, a pop-up error message will be displayed as depicted in FIGURE 4-120 Decryption Failure. A decryption failure may indicate that a unit is not of the correct MOD status to process subscriptions.

FIGURE 4-120 Decryption Failure

4.7.5.2 FIS Diagnostic Pages

When the 'FIS DIAG' power key is pressed, a password (PIN) entry is required (see FIGURE 4-121 FIS Setup PIN Page) in order to enter the diagnostic pages. The password entry functions the same as on the System Configuration Password Page (see FIGURE 4-16 KMD 540 System Configuration Password Page).

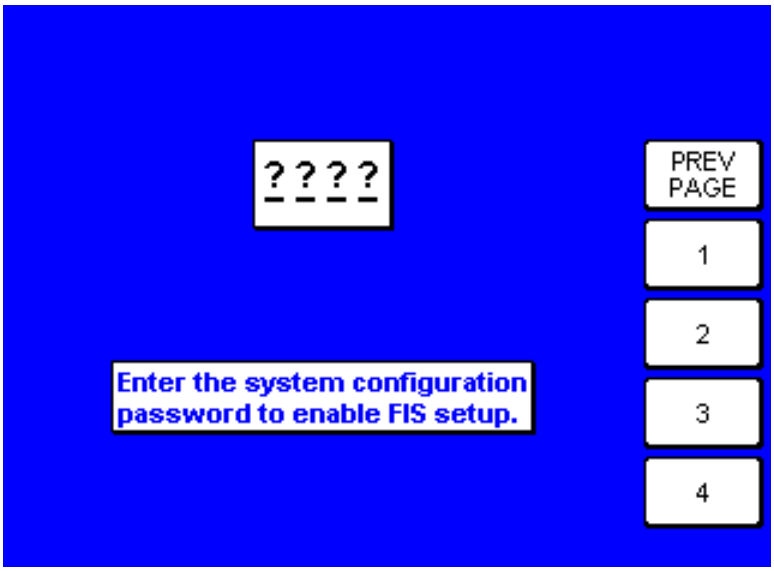


FIGURE 4-121 FIS Setup PIN Page

Upon entry of the password (PIN), the VDR status page will appear (similar to FIGURE 4-122 VDR Status Page). The VDR status page is used to view the revision status and self test results of the VDR. Pressing the 'FIS DATA' soft key will enter the FIS data page (similar to FIGURE 4-123 FIS Data Page). Pressing the 'SMP STATUS' soft key will enter the SMP STATUS page (similar to FIGURE 4-124 SMP Status Page). Pressing 'OK' will return to the FIS setup cover page.

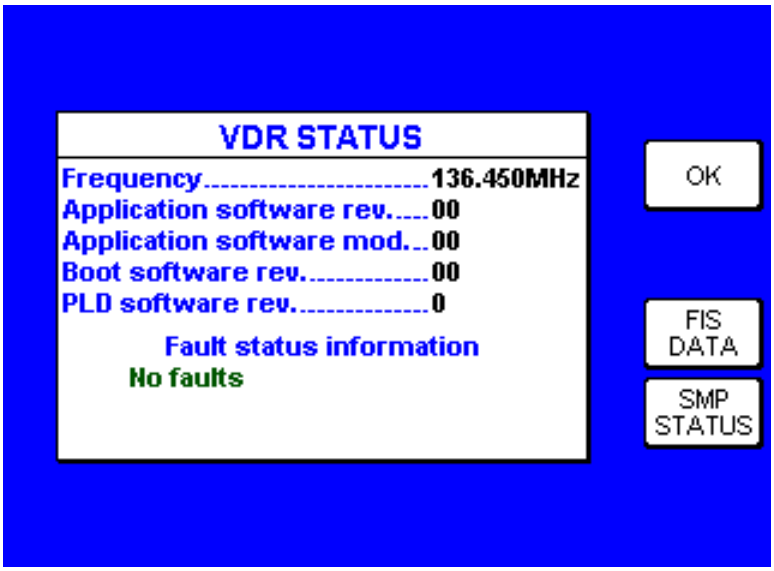


FIGURE 4-122 VDR Status Page

The FIS data page is used to view details of the data packets being received from the VDR. This information may be useful in troubleshooting VDR installations.

The FIS data page provides five options. First is the 'FREQ <up/down>' soft key which is operated by the up/down movement of the joystick. This movement will increment (up) or decrement (down) the frequency by 0.025 MHz. The frequency ranges from 136.000 MHz to 136.975 MHz. FIS currently uses 136.450 and 136.475 MHz frequencies. Note that once the frequency is manually adjusted using the joystick, the unit will no longer attempt to autotune the VDR until after power has been cycled.

The second option, the 'OK' soft key, will return to the FIS setup cover page. The third, 'VDR STATUS', returns to the VDR status page. The fourth, the 'SMP STATUS' soft key will enter the SMP STATUS page (similar to FIGURE 4-124 SMP Status Page). The fifth, 'CLEAR DATA', clears all FIS data including system time. Also, all counts are reset to zero. An explanation of the various fields shown on the FIS data page is shown in TABLE 4-11 Explanation of Fields - FIS Data Page.

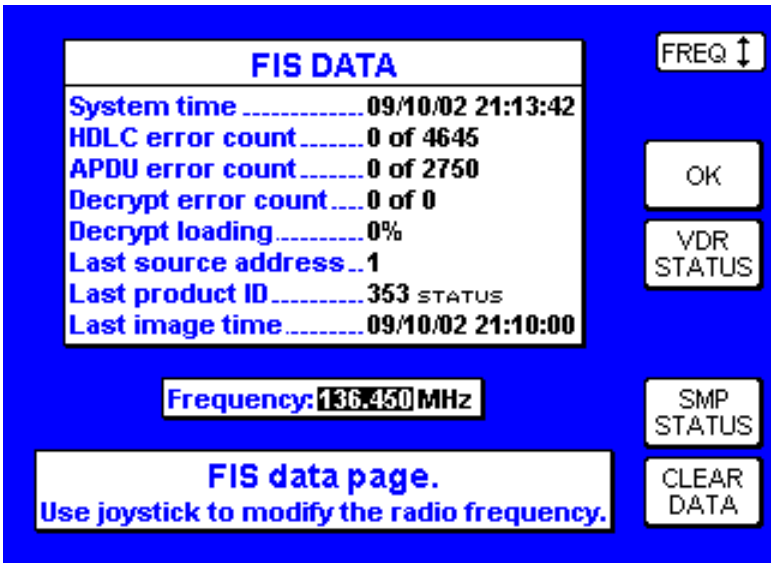


FIGURE 4-123 FIS Data Page

Field	Explanation
System Time	Current UTC time (will not be available if valid FIS data is not received for over two hours).
HDLC error count	The number of data packets received from the VDR and associated error count. If a VDR is connected and working, the number of total HDLC frames received should steadily count up even if the VDR is not receiving FIS data from a ground transmitter.
APDU error count	The number of FIS data packets that have been received from a FIS ground transmitter and associated error count. The APDU count will only increment when in FIS coverage.
Decrypt error count	The number of FIS data packets that contained errors relative to the total number of valid frames processed by the SMP.
Decrypt loading	Relative measure of decryption activity and authorization.
Last source address	The identifier of the last FIS ground station for the most recent data received.
Last product ID	The identifier of the last complete set of product data that was received. The following are the product IDs available: 351 - FIS TIME 353 - STATUS 401 - NEXRAD 402 - METAR 402 - PIREP 402 - TAF
Last image time	The time stamp of the last NEXRAD image received.

TABLE 4-11 Explanation of Fields - FIS Data Page

The SMP status page provides information about the SMP decryption hardware. This data is primarily for factory and repair usage only and not needed during normal installation.

The SMP status page provides three options. First is the 'OK' soft key, will return to the FIS setup cover page. The second, 'VDR STATUS', returns to the VDR status page. The third, the 'FIS DATA' soft key returns to the FIS DATA page. An explanation of the various fields shown on the SMP Status page is shown in TABLE 4-12 Explanation of Fields - SMP Status Page.

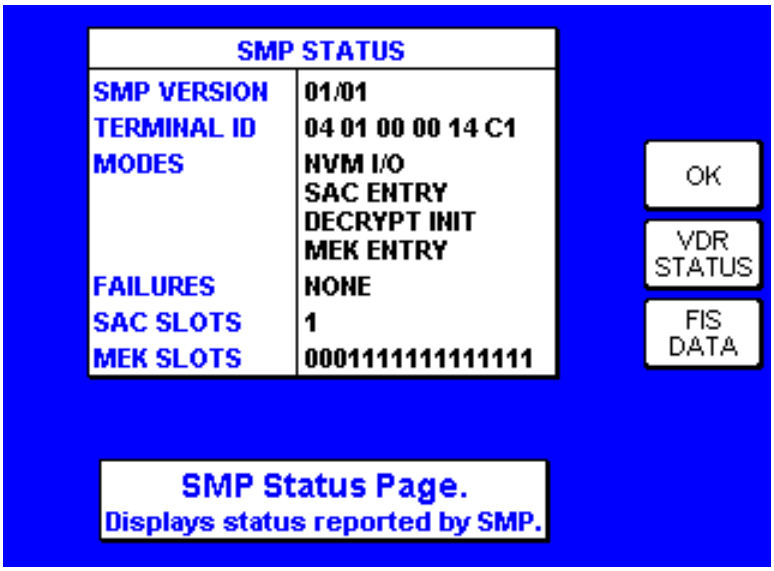


FIGURE 4-124 SMP Status Page

Field	Explanation
SMP Version	SMP firmware version number.
Terminal ID	Hexadecimal 12 digit unique terminal identification number
Modes (SMP)	A list of Modes (commands) that the SMP will allow. If no modes are allowed, “NONE” will be indicated in Red (as an error). Otherwise, the list will indicate one or more of the following: “NVM I/O” “SAC ENTRY” DECRYPT INIT” “DECRYPT BLOCK” “MEK ENTRY” “KEK ENTRY” “PERS. INIT” “PERS. FINISH” “PERS. INIT” and “PERS. FINISH”, which indicate an SMP which has not been personalized, are indicated in Red. All others are Black.
Failures (SMP)	A list of failures reported by the SMP. If no failures are reported, “NONE” will be indicated in Black. Otherwise, the list will indicated one or more of the following in Red: “ROM CRC” “AES ENCRYPT” “ARC4 CRYPT” “PERS CRC”
SAC Slots	A non-zero value indicates that at least one valid subscription has been loaded.
MEK Slots	A non-zero value indicates that the data card has a valid subscription database.

TABLE 4-12 Explanation of Fields - SMP Status Page

If no SMP is detected, the SMP STATUS will indicate “NO SMP PRESENT, OR SMP FAILED SWITCH UNIT OFF AND ON AGAIN” in red text within the status box as shown in FIGURE 4-125 SMP Status Page (No SMP Detected). If the SMP was detected at power-up but has failed since that point, the message will read “AN SMP FAILURE HAS BEEN DETECTED SWITCH UNIT OFF AND ON AGAIN”.

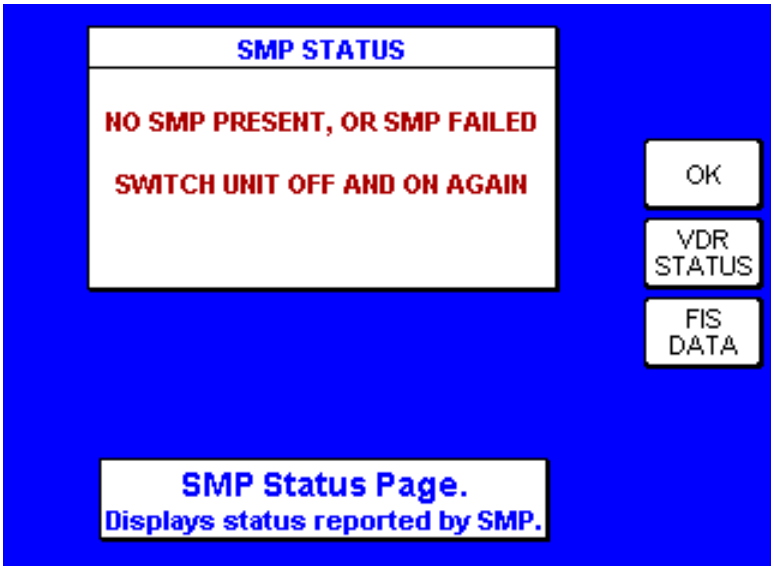


FIGURE 4-125 SMP Status Page (No SMP Detected)

4.7.5.3 FIS System Alert Messages

The KAC 503 will detect certain FIS system faults and respond with an appropriate “FIS ALERT” pop-up message on the display as detailed in this section. Along with this pop-up, a soft key labeled "OK" will also be displayed . The message pop-up will be cleared when the "OK" soft key is pressed (it will clear automatically if the condition clears itself). None of the fault alerts noted in this section will activate the fault indicator.

All pop-ups will appear with black text, a yellow background, and a black border. “FIS ALERT” will be displayed as the header followed by the specific alert text message. Refer to FIGURE 4-126 FIS ALERT MESSAGE EXAMPLE as a specific example for the fault alert detailed in sub-section 4.7.5.3.1 Loss of FIS Data for Greater Than 15 Minutes and as a general example for alerts noted in the remaining sub-sections.

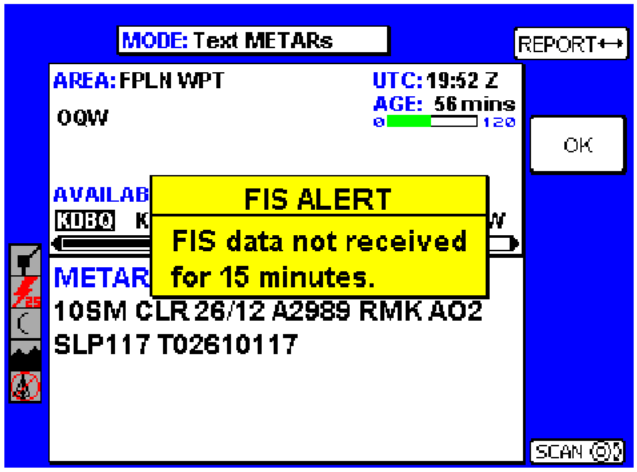


FIGURE 4-126 FIS ALERT MESSAGE EXAMPLE

4.7.5.3.1 LOSS OF FIS DATA FOR GREATER THAN 15 MINUTES

A system alert message will be displayed as shown in FIGURE 4-126 FIS ALERT MESSAGE EXAMPLE when FIS data has not been received for 15 minutes after having been received. The message reads "FIS data not received for 15 minutes". It will be cleared by pressing the "OK" softkey or if valid FIS data is received. The message will not be seen again until valid data has been received and then an additional 15 minutes of no data has occurred.

4.7.5.3.2 NO VALID FIS SUBSCRIPTIONS

The "No valid FIS subscriptions" message is triggered when unit detects that none of the subscription slots have a subscription that is valid to enable FIS access. This would include the following type of subscriptions:

- A subscription that has not been programmed.
- A subscription that has expired (Red "X" in the status column).
- A subscription that will become valid in the future (Black "!" on a Green circle in the status column).

4.7.5.3.3 FIS SUBSCRIPTIONS CLOSE TO EXPIRING

The "FIS subscriptions close to expiring" message is triggered when unit detects that at least one subscription is within Seven (7) days prior to its displayed ending date (Yellow check mark in the Status Column).

4.7.5.3.4 FIS SUBSCRIPTIONS HAVE EXPIRED

The "FIS subscriptions have expired" message is triggered when unit detects that at least one subscription has expired.

4.7.5.3.5 DATA CARD UPDATE REQUIRED

The "Data card update required" message is triggered when the unit detects that the current system time is within 30 days of the ending date on the data card subscription database.

4.7.5.3.6 NEW DATA CARD NOT YET VALID

The "New data card not yet valid" message is triggered when the unit detects that the current system time is prior to the starting date of the data card subscription database.

NOTE: The data card cannot provide access to FIS prior to the starting date of its subscription database.

4.7.5.3.7 DATA CARD EXPIRED

The "Data card expired" message is triggered when the unit detects that the current system time is after the ending date of the data card subscription database.

4.7.5.3.8 FIS SUBSCRIPTION ERROR

The "FIS subscription error" message is triggered if the unit's display ID is not on the data card subscription database.

NOTE: The most likely cause of this failure is bad information in the subscription database on the data card.

4.7.5.3.9 FIS DECRYPTION FAILURE

The "FIS decryption error" message is displayed if a decryption hardware failure is detected.

4.8 WX-1000E STORMSCOPE SETUP PROCEDURE

4.8.1 General

The KMD/850 interfaces with the Goodrich WX-1000E Stormscope via the KAC 504 option module to provide the WX-1000E Stormscope function. The KAC 504 is required in order to interface with the WX-1000E Stormscope Processor (even if no Traffic Sensor is used).

NOTE: The Stormscope setup pages in this section apply only to the WX-1000E. Refer to 4.4 WX-500 STORMSCOPE SETUP PROCEDURE for WX-500 Stormscope setup.

4.8.2 WX-1000E Installation and Configuration

1. Install the KAC 504 Traffic Module in the KMD 540 Base unit as described in section 2.2.3 Option Module Installation of this manual.
2. Enable the KAC 504 Traffic Module as described in section 4.6 TRAFFIC CONFIGURATION PROCEDURE (KAC 504 Module) of this manual. If no traffic sensor will be used, set the TRFC UNIT TYPE to NONE on the Traffic Setup page (see section 4.6.5 Traffic Setup Page).
3. Access the DATA I/O page via the SYSTEM CONFIG section under the AUX key as described in section 4.1.2.6 AUX Mode and FIGURE 4-18 KMD 540 Data I/O Page and FIGURE 4-21 KMD 540 Stormscope Source Page of this manual.
4. From the Data I/O page (FIGURE 4-18 KMD 540 Data I/O Page), select the STORM SCOPE soft key to bring up the Stormscope Source Page (FIGURE 4-21 KMD 540 Stormscope Source Page).
5. Using the Joystick, select WX-1000E as the STORMSCOPE SOURCE and select the desired ARINC 429 BUS SPEED. In most cases, select LOW speed because Goodrich WX-1000E Processor units are normally shipped from the factory set to the LOW speed.

NOTE: If an existing KMD 550/850 installation using the WX-500 Stormscope is updated with the software version 01/10 or later KMD 550/850 Datacard, the STORMSCOPE SOURCE will be set to WX-500 automatically.

4.8.3 WX-1000E Checkout

With both the KMD 550/850 MFD and the WX-1000E operating, select the Stormscope page under the WX key. The WX-1000E interface is operating correctly as long as no fault message is displayed on the KMD 550/850 Display:

FIGURE 4-127 WX-1000E (Stormscope) Display with Fault Message shows a sample fault display. TABLE 4-13 WX-1000E Stormscope Faults shows faults that could be indicated on the KMD 550/850 display.

Refer to the Goodrich WX-1000 Install manual for additional checkout required for the WX-1000E processor.

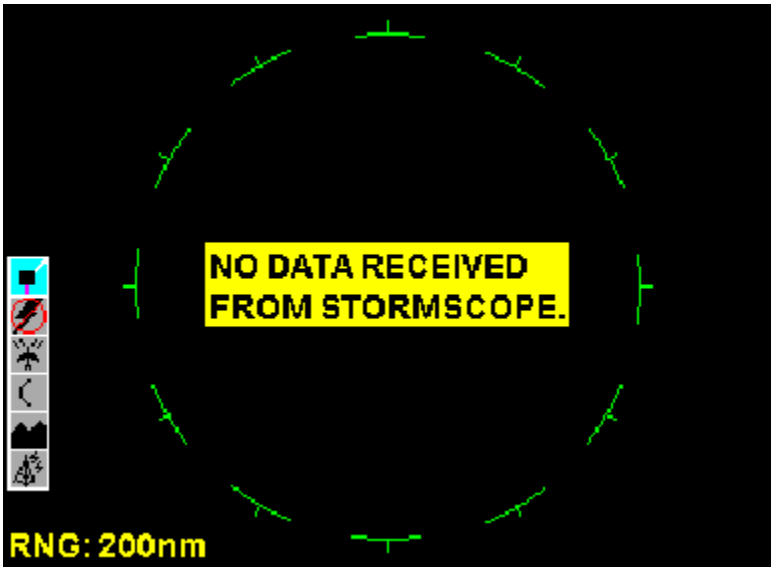


FIGURE 4-127 WX-1000E (Stormscope) Display with Fault Message

Fault Message	Cause:
NO DATA RECEIVED FROM STORMSCOPE.	The KMD 550/850 unit is not getting data from the WX-1000E unit
STORMSCOPE CONFIGURATION FAULT	The KMD 850/550 unit is not compatible with the WX-1000E unit's LSZ-850 configuration option.
STORMSCOPE PROCESSOR FAULT	Processor faults indicated by the WX-1000E unit.
STORMSCOPE ANTENNA FAULT	Antenna fault indicated by the WX-1000E unit.
STORMSCOPE STUCK MIC KEY FAULT	Mic key input to WX-1000E unit asserted for more than 1 minute.

TABLE 4-13 WX-1000E Stormscope Faults

4.8.4 WX-1000E Stormscope Operation

The Stormscope page is available under the WX function key. The VIEW key may be used to select either a 360 degree view or a 120 degree view (FIGURE 4-128 WX-1000E (Stormscope) 360 Degree View, FIGURE 4-129 WX-1000E (Stormscope) 120 Degree View). The RNG keys may be used to adjust the range to values between 25 nm and 200 nm.

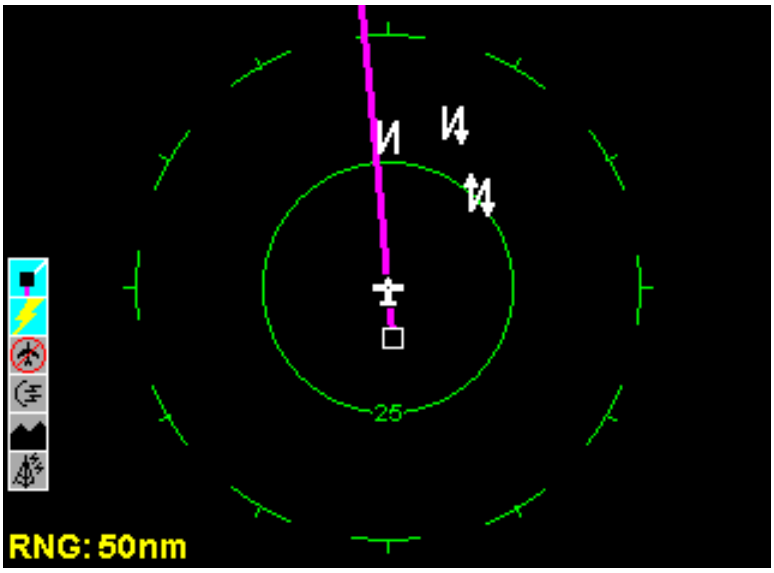


FIGURE 4-128 WX-1000E (Stormscope) 360 Degree View

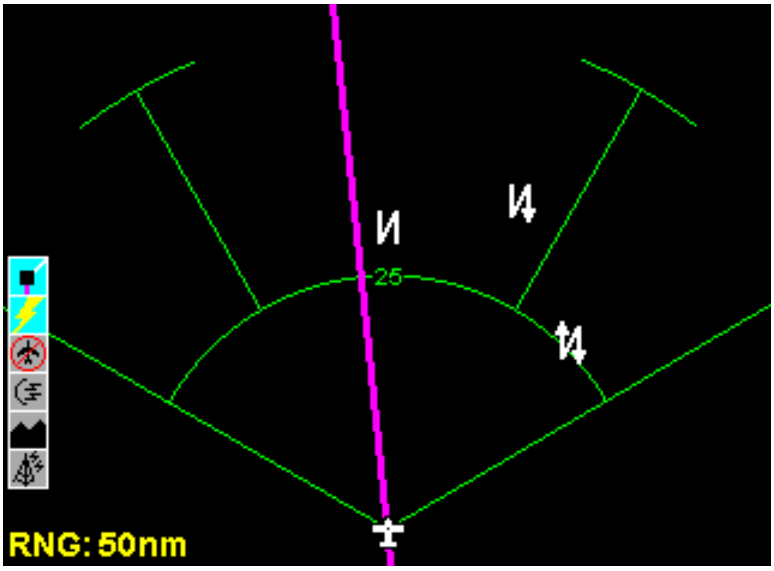


FIGURE 4-129 WX-1000E (Stormscope) 120 Degree View

SECTION V
OPERATION

5.0 INTRODUCTION

Refer to SECTION IV of this manual for the operating instructions relating to the post installation checkout.

Refer to the KMD 540 Pilot's Guide, P/N 006-18222-0000 (Base Unit Guide) and, if applicable, 006-18235-0000 (KAC 501 Wx Module Addendum), 006-18236-0000 (KAC 502 EGPWS Module Addendum), 006-18237-0000 (KAC 503 FIS Module Addendum), and 006-18238-0000 (KAC 504 Traffic Module Addendum) for complete operating instructions.

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CONFIGURATION WORKSHEET APPENDIX

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1.0 Configuration Worksheet

The following worksheet is provided to document the configuration settings for the KMD 540 unit. Completion of this worksheet is recommended by Honeywell International and a copy should remain with the aircraft to document its specific installation.

1.1 Revision

This worksheet is applicable starting with version 01/13 software and until superseded.

1.2 Installation Information

Company: _____

Address: _____

_____

Date: _____

1.3 Aircraft Identification

Manufacturer: _____

Model No: _____

Serial No: _____

Registration No: _____

1.4 KMD 540 Base Unit Version (check one)

- ☐ 066-04035-0101 (Black)
- ☐ 066-04035-1101 (Black)
- ☐ 066-04035-0201 (Gray)
- ☐ 066-04035-1201 (Gray)
- ☐ 066-04035-0301 (Silver Crown +)
- ☐ 066-04035-1301 (Silver Crown +)

1.5 KMD 550/850 Accessory Modules (check all that apply)

- ☐ 071-00159-0111 (KAC 501)
- ☐ 071-00158-0211 (KAC 502)
- ☐ 071-00168-0311 (KAC 503)
- ☐ 071-00166-0411 (KAC 504)

1.6 KMD 540 Data Card (check one)

- ☐ 071-00161-0101 (Americas)
- ☐ 071-00161-0102 (Pacific Intl.)
- ☐ 071-00161-0103 (Atlantic Intl.)

2.0 Configuration Settings (AUX)

2.1 System Configuration Page (check one for each slot)

Slot 2

- ☐ WX Processor Ind 1
- ☐ WX Processor Ind 2
- ☐ Empty

Slot 3

- ☐ Terrain Processor
- ☐ Empty

Slot 4

- ☐ Traffic Processor
- ☐ Empty

Slot 5

- ☐ FIS Processor
- ☐ Empty

2.1.1 Data I/O Page

2.1.1.1 Heading Sources Page

Synchro Heading Valid Sense

- ☐ High
- ☐ Low
- ☐ N/A

2.1.1.2 Nav Sources Page (check one for each option)

Position Source

- ☐ RS-232
- ☐ ARINC 429

RS-232 Type (if RS-232)

☐ Standard

☐ Enhanced

ARINC 429 Bus Speed

☐ High

☐ Low

☐ N/A

2.1.1.3 Stormscope Sources Page (check one for each option)

Stormscope Source

☐ NONE

☐ WX-500

☐ WX-1000E

ARINC 429 Bus Speed

☐ N/A

☐ LOW

☐ HIGH

2.1.2 System Setup

2.1.2.1 Light Curves

2.1.2.1.1 Display Lighting Curve

☐ Default

☐ Custom (Explain below)

_____

_____

_____

2.1.2.1.2 Indicator Lighting Curve

☐ Default

☐ Custom (Explain below)

_____

_____

_____

2.1.2.1.3 Backlighting Curve

☐ Default

☐ Custom (Explain below)

_____

_____

_____

Lighting Bus Voltage

☐ 5 V ac

☐ 5 V dc

☐ 14 V dc

☐ 28 V dc

2.1.2.2 Screen Position

☐ Default

☐ Custom (Explain below)

_____

_____

_____

2.1.2.3 Pop-Up Alerts Page (check one for each option)

Traffic Alert Pop-Up

☐ Auto Page

☐ Alert Box

☐ N/A

Terrain Alert Pop-Up

☐ Auto Page

☐ Alert Box

☐ N/A

2.1.2.4 Test Ports Page

Troubleshooting/Testing Screens only

2.1.2.5 “More Info” Page

Information only, not configurable settings

2.2 Configuration Settings - Map

2.2.1 Map Setup Page 1 (check one for each item)

Setup Lock - Map Setup Access

- ☐ Unlocked
- ☐ Locked

If locked, note specific Map Setup below

Orientation

- ☐ Track Up
- ☐ North Up

Airport Name

- ☐ ICAO Code
- ☐ Airport
- ☐ City Name

Coord System

- ☐ Lat/Long
- ☐ UTM
- ☐ OSGB

Extended Track

- ☐ Yes
- ☐ No

Range Rings

- ☐ Yes
- ☐ No

Auto Declutter

- ☐ Yes
- ☐ No

Position Ref

- ☐ All Data
- ☐ VORs only
- ☐ VORs and Airports only

2.2.2 Map Setup Page 2

☐ Default

☐ Other (note below)

	Icon Max	Name Max
AIRPORTS	_____	_____
VORs	_____	_____
NDBs	_____	_____
INTs	_____	_____
CITIES	_____	_____
OBSTACLES	_____	_____
LIGHTNING	_____	_____
HELIPADS	_____	_____
TRAFFIC	_____	_____
VRPs	_____	_____

2.2.3 Map Setup Page 3

☐ Default

☐ Other (note below)

	Line Max	Name Max
V. AIRWAYS	_____	_____
HELIROUTES	_____	_____
MAJOR ROADS	_____	_____
PRIME ROADS	_____	_____
OTHER ROADS	_____	_____
RAILROADS	_____	_____
RIVERS/LAKES	_____	_____
URBAN	_____	_____

2.2.4 Map Setup Page 4

☐ Default

☐ Other (note below)

	Line Max	Name Max
FIR/UIR	_____	_____
CLASS B/CTA	_____	_____
CLASS C/TMA	_____	_____
CLASS D/CTR	_____	_____
TOWER/CTZ	_____	_____
DANGER	_____	_____
RESTRICTED	_____	_____
PROHIBITED	_____	_____
MILITARY	_____	_____
OTHER SUA	_____	_____

2.3 WX Setup

2.3.1 WX Radar

☐ N/A (No KAC 501 module installed)

2.3.1.1 Radar RT Configuration

	Setting
RADAR TYPE	☐ RDR 2000 ☐ RDR 2100 ☐ RDS 81 ☐ RDS 82 ☐ RDS 82VP ☐ RDS 84 ☐ RDS 84VP ☐ RDS 86 ☐ RDS 86VP ☐ Other
HORIZONTAL SCAN ANGLE	☐ 90 degrees ☐ 100 degrees ☐ 120 degrees
VERTICAL PROFILE	☐ Enabled ☐ Disabled ☐ N/A
VERTICAL SCAN ANGLE	☐ 50 degrees ☐ 60 degrees ☐ N/A
AUTO TILT	☐ Enabled ☐ Disabled ☐ N/A
WX MANUAL GAIN	☐ Enabled ☐ Disabled ☐ N/A
SECTOR SCAN	☐ Enabled ☐ Disabled ☐ N/A
WX/ARL MODE	☐ Enabled ☐ Disabled ☐ N/A
5 nm AND 320nm RANGES	☐ Enabled ☐ Disabled ☐ N/A
AUTO STANDBY	☐ Enabled ☐ Disabled ☐ N/A

2.3.1.2 Radar Roll Trim (enter value)

	Setting
Roll Trim	_____

2.3.2 Stormscope

Maintenance functions are provided but the Stormscope configuration settings are made on the WX-500 unit itself (not on the KMD 550/850).

2.4 Terrain Setup - (EGPWS Configuration Settings)

☐ N/A (No KAC 502 module installed)

2.4.1 Terrain Setup Page 1 (check one for each item)

TERRAIN INHIBIT CONTROL

☐ EXTERNAL

☐ MODE KEY

DISPLAY BLANKED IF INHIBITED

☐ YES

☐ NO

SHOW GEOMETRIC ALTITUDE

☐ AS MSL

☐ NO

☐ AS GSL

2.4.2 Terrain Setup Page 2 (check one for each item)

EGPWS CONTROL SWITCHES

☐ ENABLED

☐ DISABLED

SELF TEST SWITCH

☐ YES

☐ NO

☐ N/A

LOW ALT SWITCH

☐ YES

☐ NO

☐ N/A

G/S CANCEL SWITCH

☐ YES

☐ NO

☐ N/A

STEEP APPROACH SWITCH

☐ YES

☐ NO

☐ N/A

FLAP OVERRIDE SWITCH

☐ YES

☐ NO

☐ N/A

2.5 TRFC Setup

☐ N/A (No KAC 504 module installed)

2.5.1 Traffic Setup Options Page (check one for each item)

TRFC UNIT TYPE

☐ NONE

☐ TAS

☐ TCAS I

☐ SKYWATCH

☐ TCAS II

☐ TIS

TRAFFIC CONTROL MODE

☐ ENABLED

☐ DISABLED

☐ N/A

MODE CONTROL

☐ ENABLED

☐ DISABLED

☐ N/A

VIEW CONTROL

☐ ENABLED

☐ DISABLED

☐ N/A

UNRESTRICTED VIEW

☐ ENABLED

☐ DISABLED

2.6 FIS Setup

Troubleshooting/Testing Screens Only

CONFIGURATION WORKSHEET SUPPLEMENT

UK REGISTERED AIRCRAFT OVER 2700 KG

UK REGISTERED ROTOTCRAFT OVER 3175 KG

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1.0 UK Registered Aircraft Configuration Settings

Aircraft with a UK Registration will have the KMD 550/850 configuration settings set in accordance with the following table. The Configuration Worksheet Appendix in this manual will be completed and will be included with the aircraft documentation. All aircraft in the operator's fleet will be configured in an identical manner.

1.1 Revision

The configuration settings are applicable to software starting with revision 01/07 until superseded.

1.2 Configuration

Configuration Worksheet Reference	Sub-item	Required Setting	Applicability
2.1.2.3	Traffic Alert Pop-Up	Auto Page	TCAS Installation
2.1.2.3	Terrain Alert Pop-Up	Auto Page	TAWS Installation
2.2.1	Setup Lock - Map Setup Access	Locked	All Installations
2.4.1	Display Blanked If Inhibited	Yes	GA-EGPWS Installation

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RS-232 APPENDIX

GPS RS-232 INPUT DATA FORMAT

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1.1 Standard GPS RS-232 Input Data Format

1.1.1 Navigation and Self-Test Data

RS 232 data will be output with the following format:

<STX><id><dddd><it><id><dddd><it>...<id><dddd><it><ETX>

<STX> ASCII start of text character
<id> item designator
<dddd>item data
<it> item terminator: <CR>
<ETX> ASCII end of text character

item desg	item format	field width	item description
	1 2 3 4 5 6 7 8 9 0		
A	s d d m m h h	9	present latitude s-sign: N for north, S for south dd-degrees mm-minutes hh-hundredths of minutes
B	s d d d m m h h	10	present longitude s-sign: E for east, W for west ddd-degrees mm-minutes hh-hundredths of minutes
C	d d d	3	track (magnetic) - - dashed if groundspeed < 2KT ddd-degrees
D	d d d	3	ground speed ddd-knots
E	d d d d d	5	distance to active waypoint ddddd-nm * 10
G	s d d d d	5	cross track error s-sign: R for aircraft position right of course L for aircraft position left of course dddd-nm * 100
I	d d d d	4	desired track (magnetic) * 10 dddd-degrees * 10
K	d d d d d	5	active waypoint identifier ddddd-ASCII active waypoint identifier
L	d d d d	4	bearing to active waypoint (magnetic) dddd-degrees * 10
Q	s d d d	4	magnetic variation s-sign: E for east, W for west dddd-degrees * 10
T	- - - - - - - - -	9	this field will always be dashed
j	h h : m m : s s	8	present UTC time in hours, minutes, seconds
l	d d d d d d	6	distance to destination dddddd-nm * 10
w	(described later in this section)		flight plan data

If data is invalid, transmit the item designator and fill the rest of the field with dashes.

Blank or space character occurs in the item format field will be sent as ASCII character 20H.

The following table defines the output data for track, desired track, bearing to active waypoint, and magnetic variation in LEG and OBS modes. The following definitions are used:

TK	angle of the course that the aircraft is flying relative to true north.
DTK	angle of the course line at the point nearest the present position relative to true north.
RAD	true radial from the active waypoint to the present position (angle is measured at the waypoint)
MSC	angle of the course line at the active waypoint relative to magnetic north; if the waypoint is a VOR or an approach waypoint, magnetic north is based on the published magnetic variation for that VOR.
LMV	magnetic variation at present position
WMV	magnetic variation at the active waypoint; if the active waypoint is a VOR or an approach waypoint, its published magnetic variation is used, otherwise the computed magnetic variation at that point
BRG	true bearing from the present position to the active waypoint

Description	LEG mode	OBS mode
trackT	TK - LMV	TK - WMV
desired track	DTK - LMV	MSC
bearing to active waypoint	BRG - LMV	RAD - WMV ±180°
magnetic variation	LMV	WMV

Flight Plan Data

Item designator, sequence number, waypoint identifier, latitude/longitude, and magnetic variation of each waypoint defined in the active flight plan are transmitted with the following format: No information is transmitted for waypoints beyond a fence in a flight plan when the active waypoint is before the fence. Likewise, no information is transmitted for waypoints after the beginning of a DME arc that is part of a procedure if the active waypoint is before the last waypoint on the arc. No information is transmitted for waypoints prior to the last waypoint on the DME arc if the active waypoint is after the arc.

Item Designator

wdd w - 'w'
dd - 01 to 99

Note: A maximum of 32 waypoints will be transmitted.

Sequence Number

Byte 1
Bit 76543210
xlannnn

x - undefined
nnnnn - Sequential waypoint number, Unsigned binary
a - 1 if waypoint is active
l - 1 if last waypoint of flight plan

Waypoint Identifier

Byte	2	3	4	5	6
Bit	76543210	76543210	76543210	76543210	76543210
	aaaaaaaa	aaaaaaaa	aaaaaaaa	aaaaaaaa	aaaaaaaa

aaaaaaaa - ASCII characters of five-character identifier

Note: A value of 7FH in byte 2 indicates that the waypoint identifier is unknown and bytes 2 through 6 should be ignored

Latitude/Longitude

Latitude and longitude of waypoint. Packed, unsigned binary values for degrees, minutes, and hundredths of minutes.

Byte	7	8	9
Bit	76543210	765 4 3 2 1 0	76543210
	sdddddd	xxmmmmmm	xhhhhhhh

s	-	0 North latitude
s	-	1 South latitude
x	-	Undefined
dddddd	-	Longitude degrees
mmmmmm	-	Longitude minutes
hhhhhh	-	Longitude hundredths of minutes

Magnetic Variation

Byte	14	15
Bit	76543210	76543210
	nnnnnnnn	nnnnnnnn

nnnnnnnnnnnnnnnn- Magnetic variation at waypoint. Two's complement binary in sixteenths of degrees. Easterly variation is positive.

Note: A value of 7FH in byte 14 indicates that magnetic variation is not presently available and bytes 14 and 15 should be ignored.

If the flight plan is invalid no flight plan data will be transmitted.

The data, including all of the waypoints in the active flight plan, is output every 2 sec ± 0.5 sec.

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RS-232 AIRDATA/HEADING APPENDIX

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1.1 RS-232 Airdata/Heading Interface

PIN	Description	Function	Specification
J3002-21	CH1_RS232_RX (ADC)	Communication	RS-232
J3002-4	RS232_SHLD	Shield Ground	<0.1 Ohm

TABLE 4-1 Airdata / Heading Physical Interface

The Airdata / Heading input meets EIA RS232C and support the following characteristics:

Data Rate	9600 baud
Parity	None
Data Bits	8
Start Bits	1
Stop Bits	1
Maximum Recommended Cable Length	15 meters
Data Definition	1.1

The KMD 550/850 system accepts either format "C" or format "D" as described in the following sections.

A grace period of 2.4 sec, in addition to the 1.6 sec transmission interval, is given to every data transmission. The KMD 550/850 considers the data to be invalid if not received for 4.0 sec ± .40 sec.

The KMD 550/850 system uses only the heading. All other data is ignored.

1.1.1 Format C

Format C (108 bytes ASCII string)

Byte	Description/Format
1	STX (ASCII code 02H)
2	Unit of Measure G = 1 gallon L = 1 liter K = 1 kilogram B = 1 pound
3-8	Total Fuel Remaining ASCII-coded decimal format (least significant digit is tenths), LSB first. Example: A fuel remaining value of 543.2 would be sent as "2.3450" (32H, 2EH, 33H, 34H, 35H, 30H).

Byte	Description/Format
9	Total Fuel Remaining checksum Break each decimal value into its BCD representation. Using BCD arithmetic, sum the 4 BCD values and convert the lower-order BCD digit to an ASCII coded numeric digit. Example: The checksum for a value of 543.2 would be "4" (34H).
10-15	Total Fuel Flow Rate ASCII-coded decimal format as for Total Fuel Remaining.
16	Total Fuel Flow Rate Checksum Sum of fuel flow bytes computed as for Total Fuel Remaining.
17-22	Engine One Fuel Flow Rate ASCII-coded decimal format as for Total Fuel Remaining.
23	Engine One Fuel Flow Rate Checksum Sum of Left Engine Fuel Flow Rate bytes computed as for Total Fuel Remaining.
24-29	Engine Two Fuel Flow Rate ASCII-coded decimal format as for Total Fuel Remaining.
30	Engine Two Fuel Flow Rate Checksum Sum of Right Engine Fuel Flow Rate bytes computed as for Total Fuel Remaining.
31-36	Total Fuel Used ASCII-coded decimal format as for Total Fuel Remaining.
37	Total Fuel Used Checksum Sum of Total Fuel Used bytes computed as for Total Fuel Remaining.
38-43	Engine One Fuel Used ASCII-coded decimal format as for Total Fuel Remaining.
44	Engine One Fuel Used Checksum Sum of Left Engine Fuel Flow Rate bytes computed as for Total Fuel Remaining.
45-50	Engine Two Fuel Used ASCII-coded decimal format as for Total Fuel Remaining.
51	Engine Two Fuel Used Checksum Sum of Left Engine Fuel Flow Rate bytes computed as for Total Fuel Remaining.
52-54	Indicated Airspeed (IAS, knots) ASCII-coded decimal format (least significant digit is units), LSB first. Example: An IAS of 298 knots would be sent as "892" (38H, 39H, 32H).

Byte	Description/Format
55	Indicated Airspeed Checksum Break each decimal value into its BCD representation. Using BCD arithmetic, sum the 3 BCD values and convert the lower-order BCD digit to an ASCII coded numeric digit. Example: The checksum for "892" would be "9" (39H).
56-58	True Airspeed (TAS, knots) ASCII-coded decimal format as for IAS.
59	True Airspeed Checksum Sum for TAS bytes computed as for IAS.
60-62	MACH (airspeed/speed of sound) ASCII-coded decimal format with an implicit leading decimal point (least significant digit is thousandths). Example: A MACH value of .492 would be sent as "294"(32H, 39H, 34H).
63	MACH checksum Sum for MACH bytes computed as for IAS.
64-69	Pressure Altitude (PALT, feet) ASCII-coded decimal format with a sign character. Example: A PALT of 34500 feet would be sent as "00543+" (30H, 30H, 35H,34H,33H, 2BH).
70	Pressure Altitude Checksum Sum for PALT bytes, excluding the sign character. Example: The sum for -850 feet would be "3" (33H).
71-76	Density Altitude (DALT, feet) ASCII-coded decimal format with a sign character, as for PALT.
77	Density Altitude Checksum Sum for DALT bytes, excluding the sign character, as for PALT.
78-80	Total Air Temperature (°C) ASCII-coded decimal format with a sign character. Example: An OAT of 25 °C would be sent as "52+".
81	Total Air Temperature Checksum Sum for total air temperature bytes, excluding the sign byte, as for PALT.
82-84	Wind Direction (degrees from true North) ASCII-coded decimal format. Example: 122 °C would be sent as "221" (32H, 32H, 31H).
85	Wind Direction Checksum Sum for wind direction bytes, as for IAS.
86-88	Wind Speed (knots) ASCII-coded decimal format, as for IAS.

Byte	Description/Format
89	Wind Speed Checksum Sum for wind speed bytes, as for IAS.
90-92	Drift (degrees) ASCII-coded decimal format with a direction character. Example: 7° right would be sent as "70R", 14° left would be sent as "41L".
93	Drift checksum Sum for drift bytes, excluding the direction character. Example: The sum for "41L" would be "5" (35H).
94-98	Rate of change of PALT (feet/minute) ASCII-coded decimal format with a sign character. Example: A PALT rate of change of -210 ft/min (descent), would be "0120-" (30H, 31H, 32H, 30H, 2DH).
99	Rate of change of PALT Checksum Sum for PALT rate of change bytes, excluding the sign character, as for PALT.
100-102	Magnetic Heading (degree from magnetic North) ASCII-coded decimal format, as for wind direction.
103	Magnetic Heading Checking Sum for magnetic heading bytes, as for IAS.
104-106	Static Air Temperature (°C) ASCII-coded decimal format with a sign character. Example: A static air temperature of -2 °C would be sent as "20-".
107	Static Air Temperature Checksum Sum for static air temperature bytes, excluding the sign character, as PALT.
108	ETX (ASCII code 03H)

Notes To Table 3:

1. In the case of single engine aircraft, all Engine One and Engine Two data (including checksums) will be asterisks (ASCII code 2AH).
2. This 108 byte record will be transmitted every 1.6 sec ± .16 sec.

1.1.2 Format D

Format D (121 bytes ASCII string)

Byte	Description/Format
1-107	Same as Format C described above except that bytes 3 through 9 will be filled with asterisks if total fuel remaining is not available.
108-112	Barometric setting (Inches HG) ASCII-coded decimal format (least significant digit is hundredth of inches), LSB first. Example: An barometric setting of 29.83 inches hg would be sent as "38.92" (33H, 38H, 2EH, 39H, 32H).
113	Barometric setting Checksum Break each decimal value into its BCD representation. Using BCD arithmetic, sum the 4 BCD values and convert the lower-order BCD digit to an ASCII coded numeric digit. Example: The checksum for a value of 29.83 would be "2" (32H).
114-119	Baro-corrected altitude (feet) ASCII-coded decimal format with a sign character. Example: A baro-corrected altitude of +11000ft, would be "00011+" (30H, 30H, 30H, 31H, 31H, 2BH);
120	Baro-corrected altitude Checksum Sum for baro-corrected altitude bytes computed, excluding sign character, as for pressure altitude.
121	ETX (ASCII code 03H)

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STC APPENDIX

SUPPLEMENTAL TYPE CERTIFICATE FORMS

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United States of America
Department of Transportation -- Federal Aviation Administration

Supplemental Type Certificate

Number SA00920WI-D

This certificate issued to Honeywell International Inc.
23500 W. 105th Street
Olathe, KS 66061

certifies that the change in the type design for the following product with the limitations and conditions therefor as specified hereon meets the airworthiness requirements of Part 3 *of the* Civil Air *Regulations* and additional requirements as specified in TCDS 3A16.

Original Product- -Type Certificate Number: 3A16
Make: Beech
Model: 95-B55, 95-B55A, 95-B55B, 95-C55, 95-C55A, D55, D55A, E55, E55A, 58/58A s/n TH-1 thru TH-1395 except TH-1389

Description of Type Design Change:
Installation of the Bendix/King KMD 550/850 Multi-Function Display (MFD) system, optional Bendix/King RDR 2000 Wx Radar System, optional Bendix/King KGP 560 General Aviation Enhanced Ground Proximity Warning System (GA-EGPWS) and optional BF Goodrich WX 500 Stormscope.
REQUIRED DATA: 1. Master Drawing List 159-08244-0001, Revision A, dated 10-4-00 and 2. If KGP 560 is installed, Airplane Flight Manual Supplement 006-00880-0000, Revision -, dated 11-3-2000.
Later FAA approved revisions to the above listed data are incorporated without further revision to this Supplemental Type Certificate.

Limitations and Conditions:
This approval should not be extended to other specific airplanes of this model on which other previously approved modifications are incorporated, unless it is determined that the interrelationship between this change and any of those other previously approved modifications will introduce no adverse effect upon the airworthiness of that airplane.
If the holder agrees to permit another person to use this certificate to alter the product, the holder shall give the other person written evidence of that permission.
This certificate and the supporting data which is the basis for approval shall remain in effect until surrendered, suspended, revoked or a termination date is otherwise established by the Administrator of the Federal Aviation Administration.

Date of application: 10-16-2000
Date of issuance: 11-3-2000
Date reissued:
Date amended: 11-8-2000

By direction of the Administrator

(Signature)
for Chris Durkin
DAS Coordinator, DAS-500863-CE
(Title)

Any alteration of this certificate is punishable by a fine of not exceeding $1,000, or imprisonment not exceeding 3 years, or both.

FAA Form 8110-2(10-68) PAGE 1 of 2 PAGES *This certificate may be transferred in accordance with FAR 21.47.*

INSTRUCTIONS: The transfer endorsement below may be used to notify the appropriate FAA Regional Office of the transfer of this Supplemental Type Certificate.

The FAA will reissue the certificate in the name of the transferee and forward it to him.

TRANSFER ENDORSEMENT

Transfer the ownership of Supplemental Type Certificate Number _____

to *(Name of transferee)* _____

(Address of transferee) _____
(Number and street)

_____ _____
(City, State, and ZIP code)

from *(Name of grantor)* *(Print or type)* _____

(Address of grantor) _____
(Number and street)

_____
(City, State, and ZIP code)

Extent of Authority (if licensing agreement): _____

_____

_____

_____

Date of Transfer: _____

Signature of grantor *(In ink)*: _____

☆ U.S.G.P.O.: 1989-662-030

TSO APPENDIX

ENVIRONMENTAL QUALIFICATION FORMS

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RTCA/DO 160D

ENVIRONMENTAL QUALIFICATION FORM

NOMENCLATURE:	KMD 540 Multi Function Display (MFD)
PART NUMBER:	066-04035-0101, 0201, 0301 MFD 050-03605-0000 MFD Installation Kit 071-00161-0101, 0102, 0103 MFD Datacard
TSO NUMBER:	TSO C113, TSO C110a
MANUFACTURER'S SPECIFICATION:	MPS 004-02195-4000
MANUFACTURER:	Honeywell International Inc.
ADDRESS:	ONE TECHNOLOGY CENTER 23500 W. 105th STREET OLATHE, KS 66061 U.S.A

Section	Condition	Category	Description
4.0	Temp & Altitude	A2C1	-20 to +70C operating, 35,000ft
4.5.4	In Flight Loss Of Cooling	V	30 minutes minimum
5.0	Temp Variation	B	5 deg/min
6.0	Humidity	A	Standard Humidity
7.0	Operational Shock & Crash Safety	B	Standard Operational Shock & Crash Safety
8.0	Vibration	S	Zone 2 (see Note 2)
9.0	Explosion	X	Not required
10.0	Drip Proof	X	Not required
11.0	Fluid	X	Not required
12.0	Sand & Dust	X	Not required
13.0	Fungus	X	Not required
14.0	Salt Spray	X	Not required
15.0	Magnetic Effect	Z	Less than 0.3 meter
16.0	Power Input	B	Standard Battery System (see Note 3)
17.0	Voltage Spike	A	High degree of voltage spike protection
18.0	Audio Frequency Conducted Susceptibility – Power Inputs	BZ	
19.0	Induced Signal Susceptibility	A	Interference Free Operation
20.0	Radio Frequency Susceptibility (Radiated & Conducted)	RRR	See Note 4
21.0	Emission of Radio Frequency Energy	M	
22.0	Lightning Susceptibility	A3E3	
23.0	Lightning Direct Effects	X	Not Required
24.0	Icing	X	Not Required
25.0	ESD	A	Equipment in Aerospace Environment

RTCA/DO 160D

ENVIRONMENTAL QUALIFICATION FORM

Notes

1. Vibration, Critical Frequencies:

   The following critical frequencies are mechanical resonances of the unit under test that have peak acceleration amplitudes greater than twice the input acceleration amplitude. In each case, the data was taken from the tenth vibration sweep in each plane.

Vertical Plane (Up Down Axis)	Longitudinal Plane (Aft Fwd Axis)	Lateral Plane (Left Right Axis)
28 - 88 Hz	85 - 180 Hz	50 – 200 Hz
120 - 160 Hz	220 - 255 Hz	
380 – 420 Hz	290 - 430 Hz	

2. Vibration, Additional Testing

   The KMD 540 MFD and enclosed modules KAC 501 and KAC 502 also passed DO 160 C Helicopter Test Curve Y.

3. Emergency Operation Voltage

   The emergency operation voltage is 10.0 v.

4. RF Susceptibilities

   The KMD 540 display was affected during Radiated Susceptibility testing within the frequency ranges indicated below. No ambiguous or erroneous data was displayed during the affected periods and the unit's recovery was immediate and automatic when the radiated fields were removed.

   354.81 MHz to 1148.2 MHz, 1230.3 MHz to 1349 MHz, 1548.8MHz, 1698.2 MHz to 1737.8 MHz

RTCA/DO 160D

ENVIRONMENTAL QUALIFICATION FORM

REVISION HISTORY

REVISION	PRN/CO NO.	DATE
-	175769	October 9, 2000
A	772117	September, 2006
B	772928	October, 2006

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RTCA/DO 160D

ENVIRONMENTAL QUALIFICATION FORM

NOMENCLATURE:	KMD 540 Multi Function Display (MFD)
PART NUMBER:	066-04035-1101, 1201, 1301 MFD 050-03605-0000 MFD Installation Kit 071-00161-0101, 0102, 0103 MFD Datacard
TSO NUMBER:	TSO C113, TSO C110a
MANUFACTURER'S SPECIFICATION:	MPS 004-02195-4000
MANUFACTURER:	Honeywell International Inc.
ADDRESS:	ONE TECHNOLOGY CENTER 23500 W. 105th STREET OLATHE, KS 66061 U.S.A

Section	Condition	Category	Description
4.0	Temp & Altitude	A2C1	-20 to +70C operating, 35,000ft
4.5.4	In Flight Loss Of Cooling	V	30 minutes minimum
5.0	Temp Variation	B	5 deg/min
6.0	Humidity	A	Standard Humidity
7.0	Operational Shock & Crash Safety	B	Standard Operational Shock & Crash Safety
8.0	Vibration	S	Zone 2 (see Note 2)
9.0	Explosion	X	Not required
10.0	Drip Proof	X	Not required
11.0	Fluid	X	Not required
12.0	Sand & Dust	X	Not required
13.0	Fungus	X	Not required
14.0	Salt Spray	X	Not required
15.0	Magnetic Effect	Z	Less than 0.3 meter
16.0	Power Input	B	Standard Battery System (see Note 3)
17.0	Voltage Spike	A	High degree of voltage spike protection
18.0	Audio Frequency Conducted Susceptibility – Power Inputs	BZ	
19.0	Induced Signal Susceptibility	A	Interference Free Operation
20.0	Radio Frequency Susceptibility (Radiated & Conducted)	TTT	
21.0	Emission of Radio Frequency Energy	M	
22.0	Lightning Susceptibility	A3E3	
23.0	Lightning Direct Effects	X	Not Required
24.0	Icing	X	Not Required
25.0	ESD	A	Equipment in Aerospace Environment

RTCA/DO 160D

ENVIRONMENTAL QUALIFICATION FORM

Notes

1. Vibration, Critical Frequencies:

   The following critical frequencies are mechanical resonances of the unit under test that have peak acceleration amplitudes greater than twice the input acceleration amplitude. In each case, the data was taken from the tenth vibration sweep in each plane.

Vertical Plane (Up Down Axis)	Longitudinal Plane (Aft Fwd Axis)	Lateral Plane (Left Right Axis)
28 - 88 Hz	85 - 180 Hz	50 – 200 Hz
120 - 160 Hz	220 - 255 Hz	
380 – 420 Hz	290 - 430 Hz	

2. Vibration, Additional Testing

   The KMD 540 MFD and enclosed modules KAC 501 and KAC 502 also passed DO 160 C Helicopter Test Curve Y.

3. Emergency Operation Voltage

   The emergency operation voltage is 10.0 v.

RTCA/DO 160D

ENVIRONMENTAL QUALIFICATION FORM

REVISION HISTORY

REVISION	PRN/CO NO.	DATE
-	739874	May 14, 2004

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RTCA/DO 160D

ENVIRONMENTAL QUALIFICATION FORM

NOMENCLATURE:	KAC 501 Weather Radar Module
PART NUMBER:	071-00159-0111 KAC 501 Module
TSO NUMBER:	TSO C63c
MANUFACTURER'S SPECIFICATION:	MPS 004-02196-4000
MANUFACTURER:	Honeywell International Inc.
ADDRESS:	ONE TECHNOLOGY CENTER 23500 W. 105th STREET OLATHE, KS 66061 U.S.A

Section	Condition	Category	Description
4.0	Temp & Altitude	A2C1	-20 to +70C operating, 35,000ft
4.5.4	In Flight Loss Of Cooling	V	30 minutes minimum
5.0	Temp Variation	B	5 deg/min
6.0	Humidity	A	Standard Humidity
7.0	Operational Shock & Crash Safety	B	Standard Operational Shock & Crash Safety
8.0	Vibration	S	Zone 2 (see Note 2)
9.0	Explosion	X	Not required
10.0	Drip Proof	X	Not required
11.0	Fluid	X	Not required
12.0	Sand & Dust	X	Not required
13.0	Fungus	X	Not required
14.0	Salt Spray	X	Not required
15.0	Magnetic Effect	Z	Less than 0.3 meter
16.0	Power Input	B	Standard Battery System (see Note 3)
17.0	Voltage Spike	A	High degree of voltage spike protection
18.0	Audio Frequency Conducted Susceptibility – Power Inputs	BZ	
19.0	Induced Signal Susceptibility	A	Interference Free Operation
20.0	Radio Frequency Susceptibility (Radiated & Conducted)	RRR	
21.0	Emission of Radio Frequency Energy	M	
22.0	Lightning Susceptibility	A3E3	
23.0	Lightning Direct Effects	X	Not Required
24.0	Icing	X	Not Required
25.0	ESD	A	Equipment in Aerospace Environment

RTCA/DO 160D

ENVIRONMENTAL QUALIFICATION FORM

Notes

1. Vibration, Critical Frequencies:

   The following critical frequencies are mechanical resonances of the unit under test that have peak acceleration amplitudes greater than twice the input acceleration amplitude. In each case, the data was taken from the tenth vibration sweep in each plane.

Vertical Plane (Up Down Axis)	Longitudinal Plane (Aft Fwd Axis)	Lateral Plane (Left Right Axis)
28 - 88 Hz	85 - 180 Hz	50 – 200 Hz
120 - 160 Hz	220 - 255 Hz	
380 – 420 Hz	290 - 430 Hz	

2. Vibration, Additional Testing

   The KMD 540 MFD and enclosed modules KAC 501 and KAC 502 also passed DO 160 C Helicopter Test Curve Y.

3. Emergency Operation Voltage

   The emergency operation voltage is 10.0 v.

RTCA/DO 160D

ENVIRONMENTAL QUALIFICATION FORM

REVISION HISTORY

REVISION	PRN/CO NO.	DATE
-	175769	October 9, 2000
A	772346	September, 2006
B	772928	October, 2006

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RTCA/DO 160D

ENVIRONMENTAL QUALIFICATION FORM

NOMENCLATURE:	KAC 502 EGPWS Module
PART NUMBER:	071-00158-0211 KAC 502 Module
TSO NUMBER:	TSO C151a
MANUFACTURER'S SPECIFICATION:	MPS 004-02197-4000
MANUFACTURER:	Honeywell International Inc.
ADDRESS:	ONE TECHNOLOGY CENTER 23500 W. 105th STREET OLATHE, KS 66061 U.S.A

Section	Condition	Category	Description
4.0	Temp & Altitude	A2C1	-20 to +70C operating, 35,000ft
4.5.4	In Flight Loss Of Cooling	V	30 minutes minimum
5.0	Temp Variation	B	5 deg/min
6.0	Humidity	A	Standard Humidity
7.0	Operational Shock & Crash Safety	B	Standard Operational Shock & Crash Safety
8.0	Vibration	S	Zone 2 (see Note 2)
9.0	Explosion	X	Not required
10.0	Drip Proof	X	Not required
11.0	Fluid	X	Not required
12.0	Sand & Dust	X	Not required
13.0	Fungus	X	Not required
14.0	Salt Spray	X	Not required
15.0	Magnetic Effect	Z	Less than 0.3 meter
16.0	Power Input	B	Standard Battery System (see Note 3)
17.0	Voltage Spike	A	High degree of voltage spike protection
18.0	Audio Frequency Conducted Susceptibility – Power Inputs	BZ	
19.0	Induced Signal Susceptibility	A	Interference Free Operation
20.0	Radio Frequency Susceptibility (Radiated & Conducted)	RRR	
21.0	Emission of Radio Frequency Energy	M	
22.0	Lightning Susceptibility	A3E3	
23.0	Lightning Direct Effects	X	Not Required
24.0	Icing	X	Not Required
25.0	ESD	A	Equipment in Aerospace Environment

RTCA/DO 160D

ENVIRONMENTAL QUALIFICATION FORM

Notes

1. Vibration, Critical Frequencies:

   The following critical frequencies are mechanical resonances of the unit under test that have peak acceleration amplitudes greater than twice the input acceleration amplitude. In each case, the data was taken from the tenth vibration sweep in each plane.

Vertical Plane (Up Down Axis)	Longitudinal Plane (Aft Fwd Axis)	Lateral Plane (Left Right Axis)
28 - 88 Hz	85 - 180 Hz	50 – 200 Hz
120 - 160 Hz	220 - 255 Hz	
380 – 420 Hz	290 - 430 Hz	

2. Vibration, Additional Testing

   The KMD 540 MFD and enclosed modules KAC 501 and KAC 502 also passed DO 160 C Helicopter Test Curve Y.

3. Emergency Operation Voltage

   The emergency operation voltage is 10.0 v.

RTCA/DO 160D

ENVIRONMENTAL QUALIFICATION FORM

REVISION HISTORY

REVISION	PRN/CO NO.	DATE
-	175769	October 9, 2000
A	772346	September, 2006
B	772928	October, 2006

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RTCA/DO 160D

ENVIRONMENTAL QUALIFICATION FORM

NOMENCLATURE:	KAC 504 Traffic Module
PART NUMBER:	071-00166-0411 KAC 504 Module
TSO NUMBER:	TSO C113
MANUFACTURER'S SPECIFICATION:	MPS 004-02206-4000
MANUFACTURER:	Honeywell International Inc.
ADDRESS:	ONE TECHNOLOGY CENTER 23500 W. 105th STREET OLATHE, KS 66061 U.S.A

Section	Condition	Category	Description
4.0	Temp & Altitude	A2C1	-20 to +70C operating, 35,000ft
4.5.4	In Flight Loss Of Cooling	V	30 minutes minimum
5.0	Temp Variation	B	5 deg/min
6.0	Humidity	A	Standard Humidity
7.0	Operational Shock & Crash Safety	B	Standard Operational Shock & Crash Safety
8.0	Vibration	S	Zone 2 (see Note 2)
9.0	Explosion	X	Not required
10.0	Drip Proof	X	Not required
11.0	Fluid	X	Not required
12.0	Sand & Dust	X	Not required
13.0	Fungus	X	Not required
14.0	Salt Spray	X	Not required
15.0	Magnetic Effect	Z	Less than 0.3 meter
16.0	Power Input	B	Standard Battery System (see Note 3)
17.0	Voltage Spike	A	High degree of voltage spike protection
18.0	Audio Frequency Conducted Susceptibility – Power Inputs	BZ	
19.0	Induced Signal Susceptibility	A	Interference Free Operation
20.0	Radio Frequency Susceptibility (Radiated & Conducted)	RRR	
21.0	Emission of Radio Frequency Energy	M	
22.0	Lightning Susceptibility	A3E3	
23.0	Lightning Direct Effects	X	Not Required
24.0	Icing	X	Not Required
25.0	ESD	A	Equipment in Aerospace Environment

RTCA/DO 160D

ENVIRONMENTAL QUALIFICATION FORM

Notes

1. Vibration, Critical Frequencies:

   The following critical frequencies are mechanical resonances of the unit under test that have peak acceleration amplitudes greater than twice the input acceleration amplitude. In each case, the data was taken from the tenth vibration sweep in each plane.

Vertical Plane (Up Down Axis)	Longitudinal Plane (Aft Fwd Axis)	Lateral Plane (Left Right Axis)
28 - 88 Hz	85 - 180 Hz	50 – 200 Hz
120 - 160 Hz	220 - 255 Hz	
380 – 420 Hz	290 - 430 Hz	

2. Vibration, Additional Testing

   The KMD 540 MFD and enclosed modules KAC 501, KAC 502, and KAC 504 also passed DO 160 C Helicopter Test Curve Y.

3. Emergency Operation Voltage

   The emergency operation voltage is 10.0 v.

RTCA/DO 160D

ENVIRONMENTAL QUALIFICATION FORM

REVISION HISTORY

REVISION	PRN/CO NO.	DATE
-	183396	March 13, 2001
A	772346	September, 2006
B	772928	October, 2006

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RTCA/DO 160D

ENVIRONMENTAL QUALIFICATION FORM

NOMENCLATURE:	KAC 503 FIS Module
PART NUMBER:	071-00168-0311 KAC 503 Module
TSO NUMBER:	TSO C113
MANUFACTURER'S SPECIFICATION:	MPS 004-02205-4000
MANUFACTURER:	Honeywell International Inc.
ADDRESS:	ONE TECHNOLOGY CENTER 23500 W. 105th STREET OLATHE, KS 66061 U.S.A

Section	Condition	Category	Description
4.0	Temp & Altitude	A2C1	-20 to +70C operating, 35,000ft
4.5.4	In Flight Loss Of Cooling	V	30 minutes minimum
5.0	Temp Variation	B	5 deg/min
6.0	Humidity	A	Standard Humidity
7.0	Operational Shock & Crash Safety	B	Standard Operational Shock & Crash Safety
8.0	Vibration	S	Zone 2 (see Note 2)
9.0	Explosion	X	Not required
10.0	Drip Proof	X	Not required
11.0	Fluid	X	Not required
12.0	Sand & Dust	X	Not required
13.0	Fungus	X	Not required
14.0	Salt Spray	X	Not required
15.0	Magnetic Effect	Z	Less than 0.3 meter
16.0	Power Input	B	Standard Battery System (see Note 3)
17.0	Voltage Spike	A	High degree of voltage spike protection
18.0	Audio Frequency Conducted Susceptibility – Power Inputs	BZ	
19.0	Induced Signal Susceptibility	A	Interference Free Operation
20.0	Radio Frequency Susceptibility (Radiated & Conducted)	RRR	
21.0	Emission of Radio Frequency Energy	M	
22.0	Lightning Susceptibility	A3E3	
23.0	Lightning Direct Effects	X	Not Required
24.0	Icing	X	Not Required
25.0	ESD	A	Equipment in Aerospace Environment

RTCA/DO 160D

ENVIRONMENTAL QUALIFICATION FORM

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RTCA/DO 160D

ENVIRONMENTAL QUALIFICATION FORM

REVISION HISTORY

REVISION	PRN/CO NO.	DATE
-	707062	10/19/2001
A	772346	September, 2006
B	772928	October, 2006

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