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INSTALLATION MANUAL

ALTITUDE REPORTER
(ALTITUDE ENCODER)

MODEL AK - 350

AMERI-KING CORPORATION
17881 Sampson Lane
Huntington Beach, CA 92648
Tel: (714) 842-8555
Fax: (714) 842-4235
Web Site: www.ameri-king.com
Email: sales@ameri-king.com

INSTALLATION MANUAL
ALTITUDE REPORTER (ENCODER), MODEL AK-350

IMPORTANT NOTES:

The followings are General Specifications for different part No.:

* Model AK-350, Part No. AK-350:
  Altitude Range: -1,000ft to +30,000ft
  Temp. Range: -20 deg. C to +55 deg. C

* Model AK-350 Part No. AK-35035
  Altitude Range: -1,000ft to +35,000ft
  Temp. Range: -40 deg. C to +55 deg. C

* Model AK-350, Part No. AK-35040:
  Altitude Range: -1,000ft to +40,000ft
  Temp. Range: -40 deg. C to +55 deg. C

* Model AK-350, Part No. AK-35050:
  Altitude Range: -1,000ft to +50,000ft
  Temp. Range: -50 deg. C to +55 deg. C

* Model AK-350, Part No. AK-35060:
  Altitude Range: -1,000ft to +62,000ft
  Temp. Range: -50 deg. C to +55 deg. C

* Model AK-350, Part No. AK-35080:
  Altitude Range: -1,000ft to +80,000ft
  Temp. Range: -50 deg. C to +55 deg. C

The following pages are applicable to all Part No., for 35,000 ft; 40,000ft; 50,000ft, 60,000ft and 80,000 ft configurations:

* Page 8A: Connector Pin Function Interface with Strobe and None-Strobe type ATC Transponder.

* Page 22A: Data Correspondence Test Point Table.

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SECTION I
GENERAL INFORMATION

1.1 SCOPE

This manual contains information necessary for the installation, calibration, test and operation of the Altitude Reporter, model AK-350, manufactured by Ameri - King Corporation, California, U.S.A.

1.2 DESCRIPTION

The AK-350 Altitude Reporter is an integrated circuit technology based equipment. It is a highest standards of quality and extremely reliable equipment, equipment rack mounted, designed to meet TSO-C88a requirements.

The AK-350 Altitude Reporter is connected to the aircraft pneumatic static system and output to the ATC Transponder. It converts altitude pressure into altitude digital data output to ATC Transponder. When the ground station requests for reporting the altitude, the Transponder will transmit the altitude digital data to ground station, set forth in the International Standard Code for SSR Pressure Altitude Transmission.

The AK-350 model has an altitude range from - 1,000 feet to + 30,000 feet.

INSTALLATION MANUAL
ALTITUDE REPORTER (ENCODER), MODEL AK-350

1.3 TECHNICAL CHARACTERISTICS

SPECIFICATIONS:	CHARACTERISTICS:
TSO COMPLIANCE:	TSO-C88a
PHYSICAL CHARACTERISTICS:	
• Width:	3.50 inches
• Height:	2.00 inches
• Length:	4.75 inches
• Weight:	0.40 lbs
• Mounting:	Equipment Rack Mounting type
ALTITUDE RANGE:	From: –1,000ft To: +30,000ft (Basic Part No.) or +35/40/42/50/60/62/80 Kft (various Part No.)
GENERAL SPECIFICATIONS:	
* Operating Temperature:	-20 deg. C to +55 deg. C
* Storage Temperature:	-55 deg. C to +85 deg. C
* Power Input:	(10-32) Vdc
--After Warm Up:	13.8 Vdc, 0.20 Amp typical 27.5 Vdc, 0.17 Amp typical
--During Warm Up:	13.8 Vdc, 0.60 A for 1 min. 27.5 Vdc, 0.59 A for 1 min.
BLIND ENCODER OUTPUT:	Per the International Civil Aviation Organization altitude transponder code. Referenced to 29.921 in hg at all times. (Mode C). Compatible with all transponders in use today.

SPECIFICATIONS:	CHARACTERISTICS:
ENVIRONMENTAL TEST SPECIFICATIONS:	
RTCA DO-160B ENV. CAT.:	C1BA/SLM/XXXXXXZBBXXXX
* Temp. and Altitude:	Category C1
* Low Operating Temp:	- 20 deg. C
* High Operating Temp:	+55 deg. C
* High Short Op. Temp:	+70 deg. C
* Low Survival Temp:	- 55 deg. C
* High Survival Temp:	+85 deg. C
* Altitude:	+35,000 ft
* Decompression:	Equipment mounted in Pressurized or Non-Pressurized cabin area.
* Overpressure:	- 15,000 ft
* Temp. Variation:	Category B Internal section of aircraft. 2 deg. C minimum per minute.
* Humidity:	Category A Standard humidity of 50 deg. C at 95% RH, reduced to +38 deg. C, 48 hours exposure.
* Vibration:	Categories SLM Equipment mounted on equipment rack or fuselage or inst. panel, for fixed wing, turbojet / reciprocating, turbopropeller / turbojet engine aircraft.
* Shock:	Half sine wave, 6 Gn, total duration of 11 +/- 2 msec.

SPECIFICATIONS: **CHARACTERISTICS:**

* Magnetic Effect: Category Z

* Power Input: Catefory B
Equipment for use on aircraft electrical systems supplied by engine driven alternator / rectifiers or DC generators where battery is floating on the DC bus at all times.

Normal operating condition:

	14 Vdc System	28 Vdc System
Maximum:	15.1	30.3
Nominal:	13.8	27.5
Minimum:	12.4	24.8
Emergency:	10.0	20.0

* Voltage Spike: Category B
Equipment designed to withstand the transient voltage characteristics specified by RTCA DO-160B.

1.4 ACCESSORIES SUPPLIED

1.4.1 Installation Kit:

Part No.:	Description:
IK-3502001	Connector Socket, 15 Pin, with Wiring Harness Assembly.
IK-3502002	Pneumatic Hose
IK-3502003	Pneumatic Fitting, T type
IK-3502004	Pneumatic Fitting, Straight type
IK-3502005	Placarding
IK-3502006	Mounting Tray

SECTION II
INSTALLATION AND TEST

2.1 UNPACKING AND INSPECTING EQUIPMENT

The Altitude Reporter should be unpacked with extremely care. Visual inspection of the equipment for evidence of damage incurred during shipment. Any claim should be promtly filed with the transportation company. Save the shipping container to subtantiate the claim.

2.2 MECHANICAL INSTALLATION

The AK-350 Altitude Reporter is normally mounted in the equipment rack, or cabin area, or beneath the instrument panel, which is the temperature controlled environment, either pressurized or non-pressurized area. It should be located away from heater vents and fresh air vents temperature. Its mounting base should be adequately secured in accordance with all applicable FARs. The mounting location should allow a short pressure line from the digitizer to the same static line as the flight altimeter.

See fugure 2.1 for Installation drawing.

During installation, the installation must provide provisions for access to the two adjustment screws for Calibration purpose.

2.3 ELECTRICAL INSTALLATION

The AK - 350 Altitude Reporter is designed to operate on a +14 Vdc or +28 Vdc aircraft bus.

See Figures 2.2, 2.3 for Connector Pin Function interface with Strobe type Transponder and Non-Strobe type Transponder, repectively.

See Figures 2.4, 2.5 for Power pins interface with Switched power output type Transponder and Non-Switched power output type Transponder, respecttively.

See Figures 2.6 thru 2.20 for Interconnect Schematic Diagrams.

It is recommended that all wires are 22 AWG.

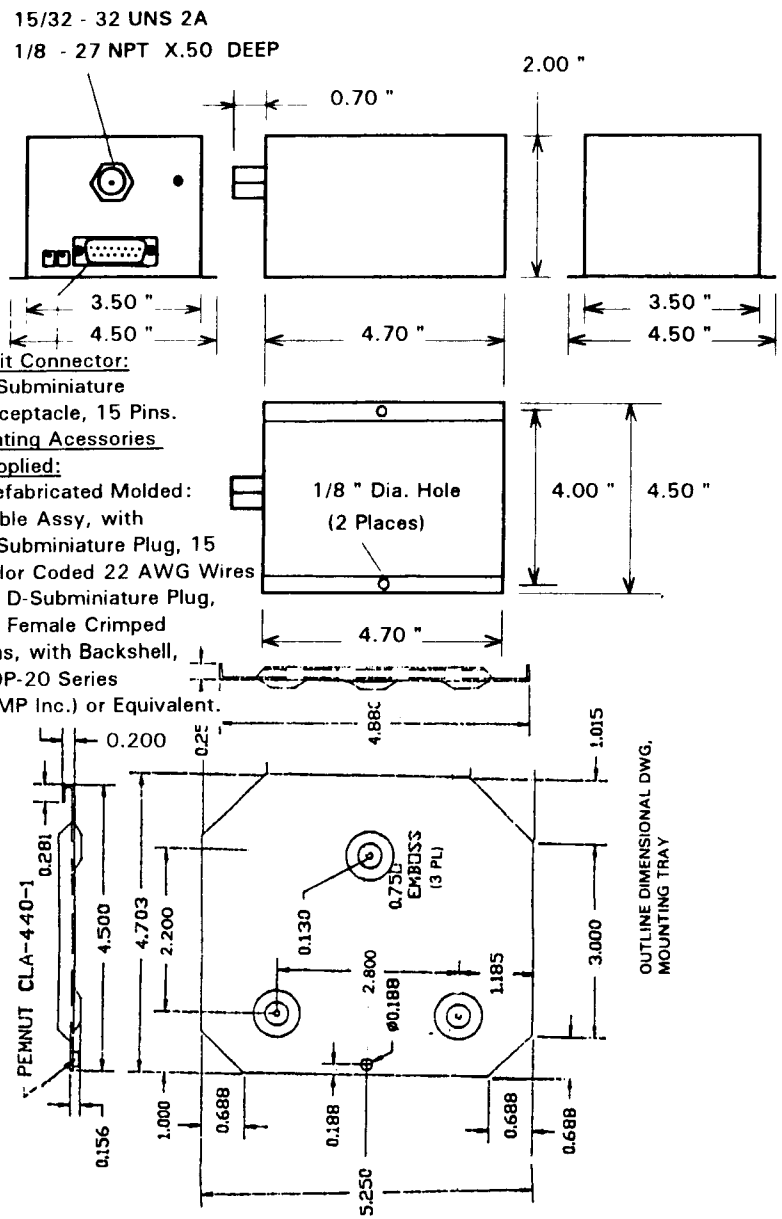


Figure 2.1: Installation Drawing

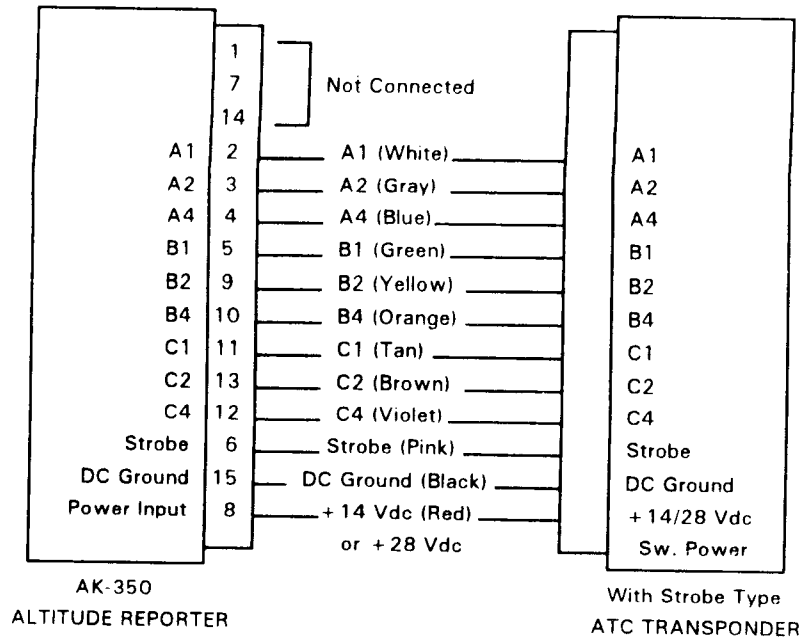


Figure 2.2: Connector Pin Function interface with Strobe type ATC Transponder

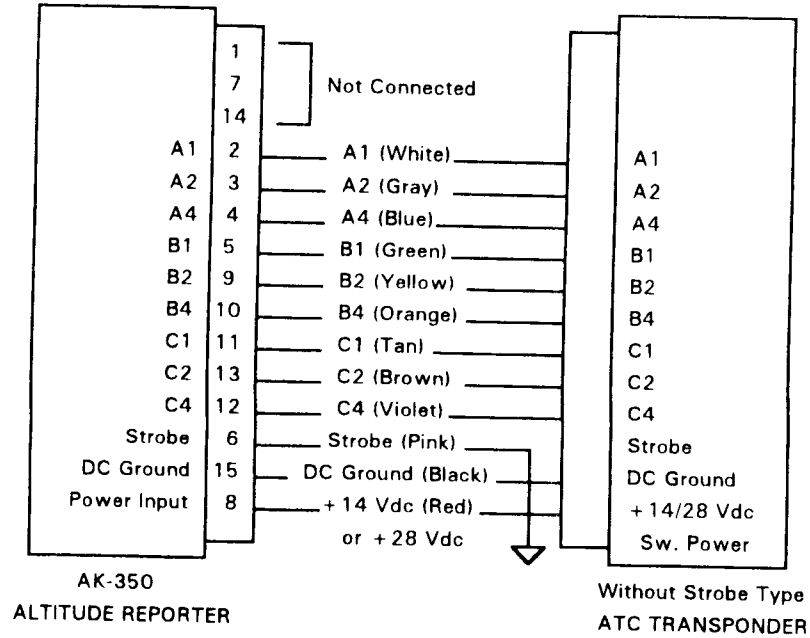


Figure 2.3: Connector Pin Function interface with Non-Strobe type ATC Transponder

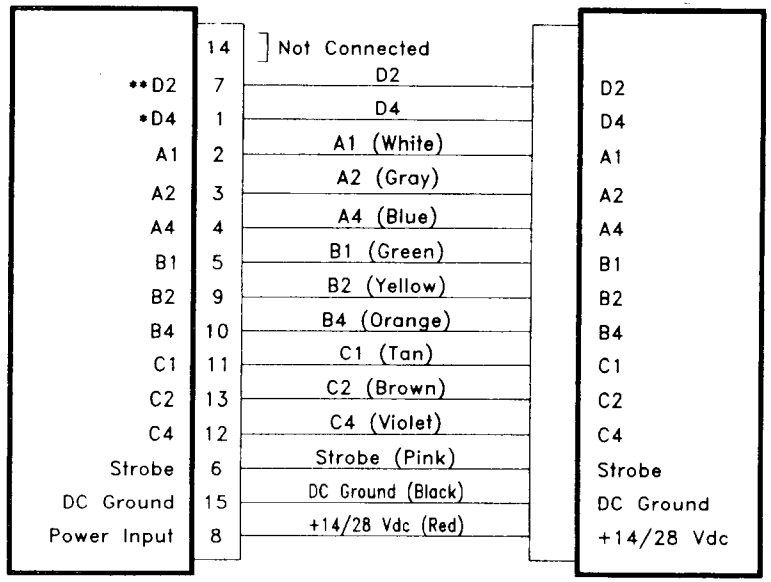


Figure 2.2A: Connector Pin Function interface with Strobe type ATC Transponder

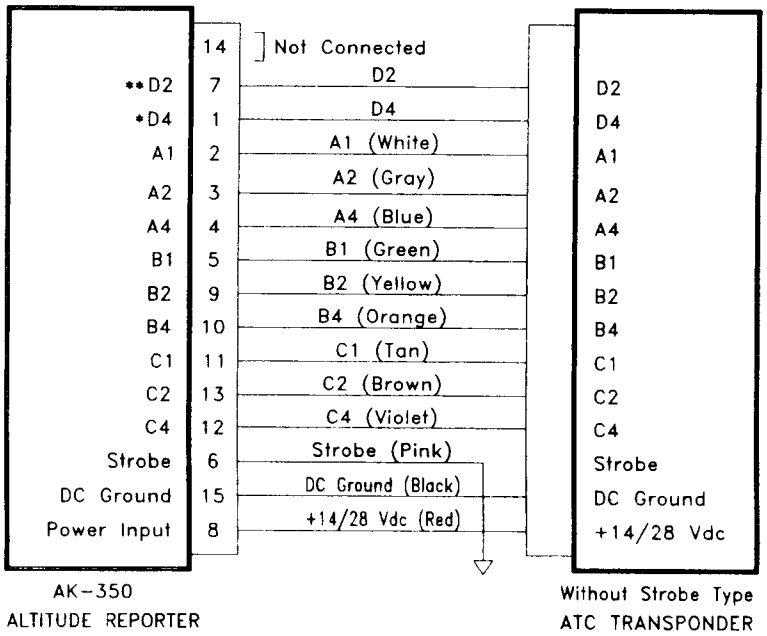


Figure 2.3A: Connector Pin Function interface with Non Strobe type ATC Transponder

NOTES: * Connection required for 35,000 ft; 40,000 ft; 50,000 ft; 62,000 ft & 80,000 ft Configurations only.
** Connection required for 80,000 ft Configuration only.

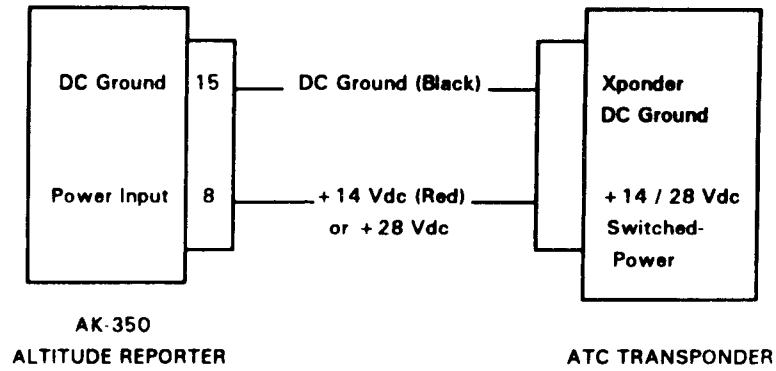


Figure 2.4: Power pins interface with Switched-power output type Transponder. All wires are 22 AWG

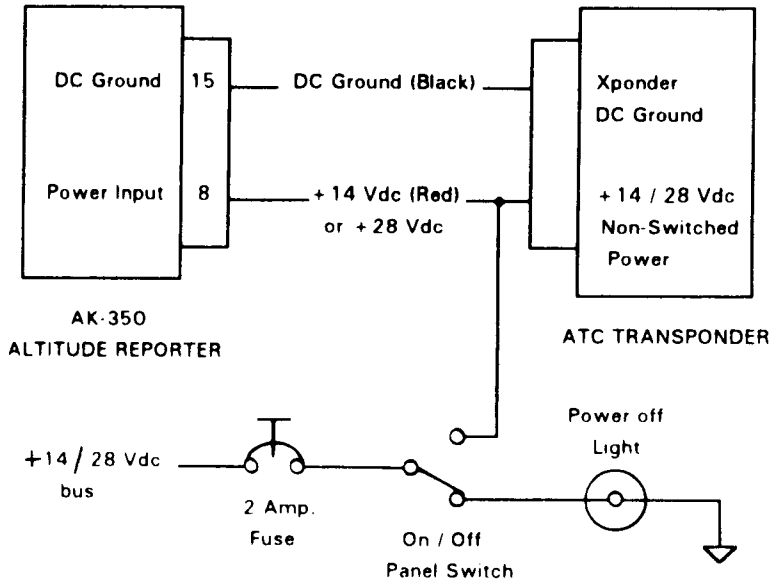


Figure 2.5: Power pins interface with Non-Switched-power output type Transponder. All wires are 22 AWG

ALT ENCODER SIGNAL / FUNCTION	AMERI-KING AK-350 Pin No.(Wire Color)	Transponder GARMIN GTX 320/327 P102 Pin No.:	Transponder UPS TECH SL 70 Pin No.:	Transponder BECKER ATC 2000 Pin No.:	Transponder BENDIX TPR-2060/660 Pin No.:	Transponder COLLINS TDR-950/950L Pin No.:	Transponder TERRA TRT 250 Pin No.:	Transponder KING KT-75 Pin No.:
A 1	2 (White)	3	13	16	4	12	5	6
A 2	3 (Gray)	5	31	15	6	10	17	7
A 4	4 (Blue)	6	12	14	8	7	16	8
B 1	5 (Green)	9	33	17	9	6	15	9
B 2	9 (Yellow)	11	14	19	10	5	2	10
B 4	10 (Orange)	12	32	18	11	4	14	11
C 1	11 (Tan/Brn/Wht)	10	16	22	3	8	3	12
C 2	13 (Brown)	4	34	21	5	11	4	13
C 4	12(Violet/Purple/Blue)	7	15	20	7	9	18	14
D 4	1 (Lt Green) Note 1.	18 (Note 1.)	35 (Note 1.)	23 (Note 1.)	No Connect.	No Connect.	No Connect.	No Connect.
D 2	7 (Blk/Wht) Note 2.	No Connect.	No Connect.	No Connect.	No Connect.	No Connect.	No Connect.	No Connect.
Strobe(DC Ground)	6 (Pink)	13 (DC Gnd)	2 (DC Gnd)	24 (DC Gnd)	DC Ground	DC Ground	12 (DC Gnd)	5 (DC Gnd)
DC Power In	8 (Red)	15 (DC Power)	1 (DC Power)	6 (DC Power)	DC Power	DC Power	DC Power	DC Power
DC Ground	15 (Black)	13 (DC Gnd)	2 (DC Gnd)	24 (DC Gnd)	DC Ground	DC Ground	DC Ground	DC Ground
No Connection	14 (Red/Wht)	No Connect.	No Connect.	No Connect.	No Connect.	No Connect.	No Connect.	No Connect.

Note 2. No Connection (Leave Pin Open) for P/N AK-350; AK-35035; AK-35040; AK-35050; AK-35060.
This Connection is required for P/N AK-35080 only.
Note 1. No Connection (Leave Pin Open) for P/N AK-350.
This Connection is required for P/N AK-35035; AK-35040; AK-35050; AK-35060 & AK-35080 only.
General Note: It is important that Refer to Transponder Manufacturer Installation Manual for Actual Installation.

FIGURE 2.6 ALTITUDE ENCODER INTERCONNECT SCHEMATIC DIAGRAM WITH NON-STROBE TRANSPONDERS.

ALT ENCODER SIGNAL / FUNCTION	AMERI-KING AK-350 Pin No.(Wire Color)	Transponder BENDIX TR-641A/B Pin No.:	Transponder EDO-AIRE RT-777 Pin No.:	Transponder CESSNA RT-359A/459A/859A Pin No.:
A 1	2 (White)	A	7	14
A 2	3 (Gray)	B	5	13
A 4	4 (Blue)	C	3	15
B 1	5 (Green)	D	12	19
B 2	9 (Yellow)	E	13	17
B 4	10 (Orange)	F	14	16
C 1	11 (Tan/Brn/Wht)	H	8	21
C 2	13 (Brown)	J	6	18
C 4	12(Violet/Purple/Blue)	K	4	20
D 4	1 (Lt Green) Note 1.	No Connect.	No Connect.	No Connect.
D 2	7 (Blk/Wht) Note 2.	No Connect.	No Connect.	No Connect.
Strobe	6 (Pink)	S	2	11
DC Power In	8 (Red)	DC Power	9 (DC Power)	9 (DC Power)
DC Ground	15 (Black)	DC Gnd	1 (DC Gnd)	(DC Gnd)
No Connection	14 (Red/Wht)	No Connect.	No Connect.	No Connect.

Note 2. No Connection (Leave Pin Open) for P/N AK-350; AK-35035; AK-35040; AK-35050; AK-35060.
This Connection is required for P/N AK-35080 only.
Note 1. No Connection (Leave Pin Open) for P/N AK-350.
This Connection is required for P/N AK-35035; AK-35040; AK-35050; AK-35060 & AK-35080 only.
General Note: It is important that Refer to Transponder Manufacturer Installation Manual for Actual Installation.

FIGURE 2.7 ALTITUDE ENCODER INTERCONNECT SCHEMATIC DIAGRAM WITH STROBED TRANSPONDERS.

ALT ENCODER SIGNAL / FUNCTION	AMERI-KING AK-350 Pin No.(Wire Color)	GPS/COMM Honneywell KLX 135/135A Pin No.:	GPS/RNAV Honeywell KLN 89B/94 P892	GPS/RNAV Honeywell KLN 90B P901	GPS NAV Honeywell KLN 900 P9001	GPS/GNC/GN Garmin 400/420/430 P4001	GPS/GNC/GN Garmin 500/520/530 P5001	GPS NAV Trimble 2000 P3
A 1	2 (White)	5	22	42	34	69	69	1
A 2	3 (Gray)	22	23	43	35	68	68	14
A 4	4 (Blue)	21	24	44	49	67	67	2
B 1	5 (Green)	19	25	45	17	66	66	15
B 2	9 (Yellow)	18	26	46	54	65	65	3
B 4	10 (Orange)	17	27	47	53	64	64	16
C 1	11 (Tan/Brn/Wht)	14	28	48	45	63	63	4
C 2	13 (Brown)	13	29	49	18	62	62	17
C 4	12(Violet/Purple/Blue)	12	30	50	31	61	61	5
D 4	1 (Lt Green) Note 1.	6(Note 1.)	21(Note 1.)	41(Note 1.)	13(Note 1.)	70(Note 1.)	70(Note 1.)	13(Note 1.)
D 2	7 (Blk/Wht) Note 2.	No Connect.	No Connect.	No Connect.	No Connect.	No Connect.	No Connect.	No Connect.
Strobe(DC Ground)	6 (Pink)	DC Gnd	DC Gnd	DC Gnd	DC Gnd	60 (DC Gnd)	60 (DC Gnd)	18 (DC Gnd)
DC Power In	8 (Red)	DC Power	DC Power	DC Power	DC Power	DC Power	DC Power	DC Power
DC Ground	15 (Black)	DC Gnd	DC Gnd	DC Gnd	DC Gnd	DC Gnd	DC Gnd	DC Gnd
No Connection	14 (Red/Wht)	No Connect.	No Connect.	No Connect.	No Connect.	No Connect.	No Connect.	No Connect.

Note 2. No Connection (Leave Pin Open) for P/N AK-350; AK-35035; AK-35040; AK-35050; AK-35060.
This Connection is required for P/N AK-35080 only.
Note 1. No Connection (Leave Pin Open) for P/N AK-350.
This Connection is required for P/N AK-35035; AK-35040; AK-35050; AK-35060 & AK-35080 only.
General Note: It is important that Refer to GPS Manufacturer Installation Manual for Actual Installation.

FIGURE 2.8 ALTITUDE ENCODER INTERCONNECT SCHEMATIC DIAGRAM WITH NON STROBE GPS .

ALT ENCODER SIGNAL / FUNCTION	AMERI-KING AK-350 Pin No.(Wire Color)	EGPWS Honneywell KGP 560 J1
A 1	2 (White)	12
A 2	3 (Gray)	52
A 4	4 (Blue)	33
B 1	5 (Green)	14
B 2	9 (Yellow)	34
B 4	10 (Orange)	73
C 1	11 (Tan/Brn/Wht)	32
C 2	13 (Brown)	13
C 4	12(Violet/Purple/Blue)	72
D 4	1 (Lt Green) Note 1.	No Connect.
D 2	7 (Blk/Wht) Note 2.	No Connect.
Strobe(DC Ground)	6 (Pink)	DC Gnd
DC Power In	8 (Red)	DC Power
DC Ground	15 (Black)	DC Gnd
No Connection	14 (Red/Wht)	No Connect.

Note 2. No Connection (Leave Pin Open) for P/N AK-350; AK-35035; AK-35040; AK-35050; AK-35060.
This Connection is required for P/N AK-35080 only.
Note 1. No Connection (Leave Pin Open) for P/N AK-350.
This Connection is required for P/N AK-35035; AK-35040; AK-35050; AK-35060 & AK-35080 only.
General Note: It is important that Refer to EGPWS/TAWS Manufacturer Installation Manual for Actual Installation.

FIGURE 2.9 ALTITUDE ENCODER INTERCONNECT SCHEMATIC DIAGRAM WITH NON STROBE EGPWS/TAWS .

ALT ENCODER SIGNAL / FUNCTION	AMERI-KING AK-350 Pin No.(Wire Color)	Transponder GENEVA BETA 5000	Transponder NARCO AT-5 AT-6A	Transponder NARCO AT-50A AT-150	Transponder RADAIR 250
A1	2 (White)	4	2	7	7
A2	3 (Gray)	5	4	6	6
A4	4 (Blue)	6	8	8	13
B1	5 (Green)	7	9	12	9
B2	9 (Yellow)	8	10	10	10
B4	10 (Orange)	9	11	9	11
C1	11 (Tan/Brn/Wht)	10	1	14	14
C2	13 (Brown)	11	3	11	16
C4	12 (Violet/Purple/Blue)	12	5	13	12
D4	1 (Lt Green) Note 1.	No. Connect.	No. Connect.	No. Connect.	No. Connect.
D2	7 (Blk/Wht) Note 2.	No. Connect.	No. Connect.	No. Connect.	No. Connect.
Strobe(DC Ground)	6 (Pink)	3	12	8	19
DC Power In	8 (Red)	2	13	18	22
DC Ground	15 (Black)	DC Ground	14	DC Ground	19
No Connection	14 (Red/Wht)	No. Connect.	No. Connect.	No. Connect.	No. Connect.

Note 2. No Connection (Leave Pin Open) for P/N AK-350; AK-35035; AK-35040; AK-35050; AK-35060
This Connection is required for P/N AK-35080 only.
Note 1. No Connection (Leave Pin Open) for P/N AK-350.
This Connection is required for P/N AK-35035; AK-35040; AK-35050; AK-35060 & AK-35080 only.
General Note: It is important that Refer to Transponder Manufacturer Installation Manual for Actual Installation.

FIGURE 2.11 ALTITUDE ENCODER INTERCONNECT SCHEMATIC DIAGRAM WITH STROBED TRANSPONDERS.

ALT ENCODER SIGNAL / FUNCTION	AMERI-KING AK-350 Pin No.(Wire Color)	Transponder KING KT-76 / 78	Transponder KING KT-78A/76C KT-78A/79	Transponder KING KXP-750A	Transponder MICRO AIR T 2000	Transponder BECKER ATC 4401-1	Transponder RADAIR 250	Transponder WILCOX 1014A
A1	2 (White)	6	M	G	9	1	7	k/
A2	3 (Gray)	7	K	H	10	2	6	d/
A4	4 (Blue)	9	J	J	11	3	13	W
B1	5 (Green)	4	E	K	12	14	9	T
B2	9 (Yellow)	1	C	L	13	15	10	L
B4	10 (Orange)	2	B	M	17	16	11	D
C1	11 (Tan/Brn/Wht)	3	D	P	18	17	14	p/
C2	13 (Brown)	8	L	R	19	18	16	f/
C4	12 (Violet/Purple/Blue)	10	H	S	20	19	12	z/
D4	1 (Lt Green) Note 1.	No Connect.	8 (Note 1)	No Connect.	21 (Note1)	20 (Note1)	No Connect.	No Connect.
D2	7 (Blk/Wht) Note 2.	No Connect.	No Connect.	No Connect.	No Connect.	No Connect.	No Connect.	No Connect.
Strobe(DC Ground)	6 (Pink)	12 (Ground)	1 (Ground)	B (Gnd)	22/23(Gnd)	25 (Gnd)	19(Gnd)	t/ (Gnd)
DC Power In	8 (Red)	DC Power	11/12(+Pwr)	A (+Pwr)	24/25(+Pwr)	6 (+Pwr)	22(+Pwr)	DC Power
DC Ground	15 (Black)	12 (Ground)	1 (Ground)	B (Gnd)	22/23(Gnd)	25 (Gnd)	19(Gnd)	t/ (Gnd)
No Connection	14 (Red/Wht)	No. Connect.	No. Connect.	No. Connect.	No. Connect.	No. Connect.	No. Connect.	No. Connect.

Note 2. No Connection (Leave Pin Open) for P/N AK-350; AK-35035; AK-35040; AK-35050; AK-35060
This Connection is required for P/N AK-35080 only.
Note 1. No Connection (Leave Pin Open) for P/N AK-350.
This Connection is required for P/N AK-35035; AK-35040; AK-35050; AK-35060 & AK-35080 only.
General Note: It is important that Refer to Transponder Manufacturer Installation Manual for Actual Installation.

FIGURE 2.10 ALTITUDE ENCODER INTERCONNECT SCHEMATIC DIAGRAM WITH NON-STROBE TRANSPONDERS.

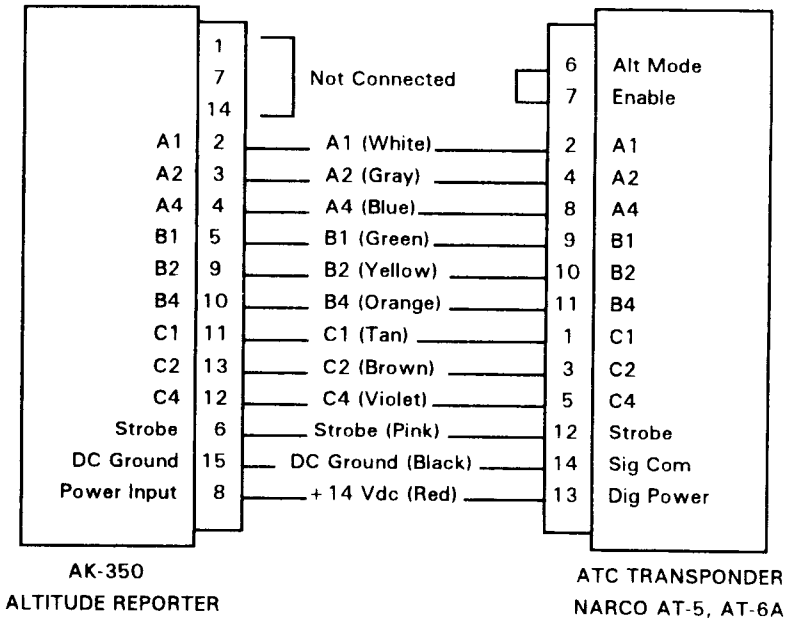


Figure 2.17: Interconnect Schematic Diagram
All wires are 22 AWG

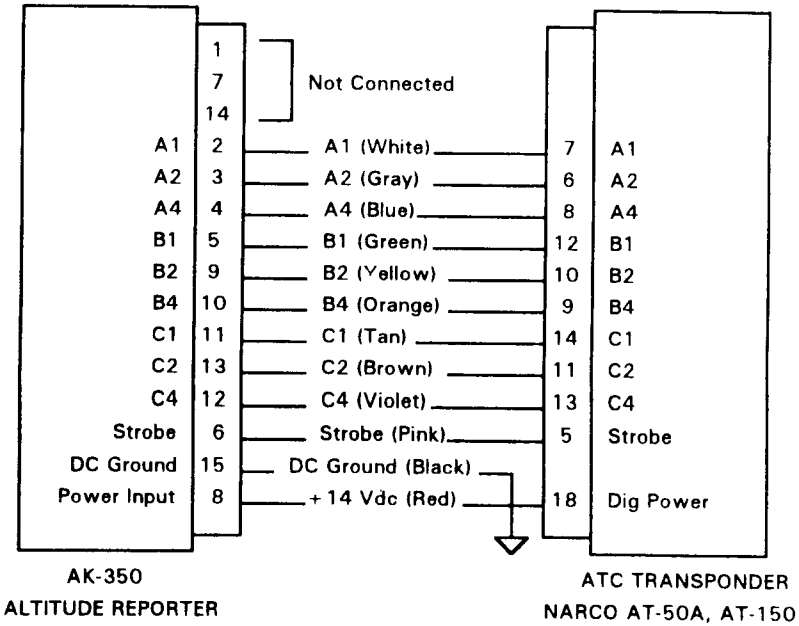


Figure 2.18: Interconnect Schematic Diagram
All wires are 22 AWG

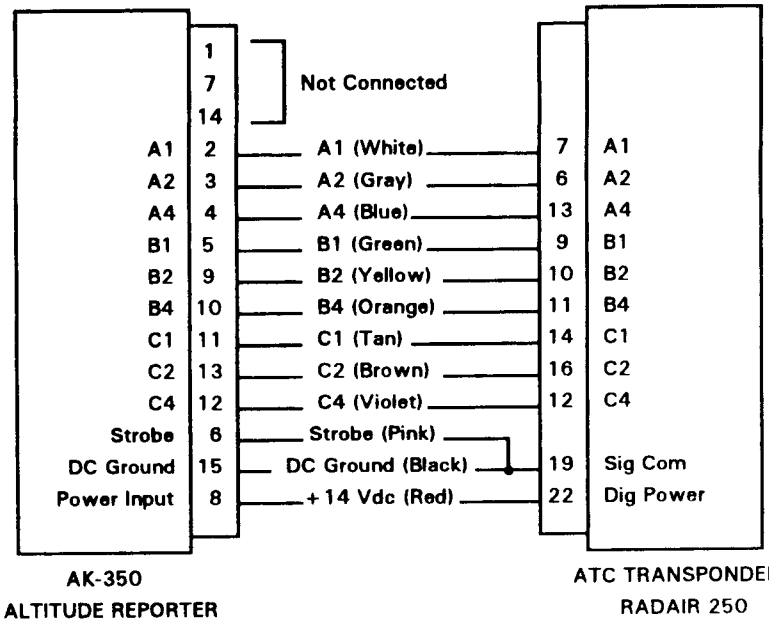


Figure 2.19: Interconnect Schematic Diagram
All wires are 22 AWG

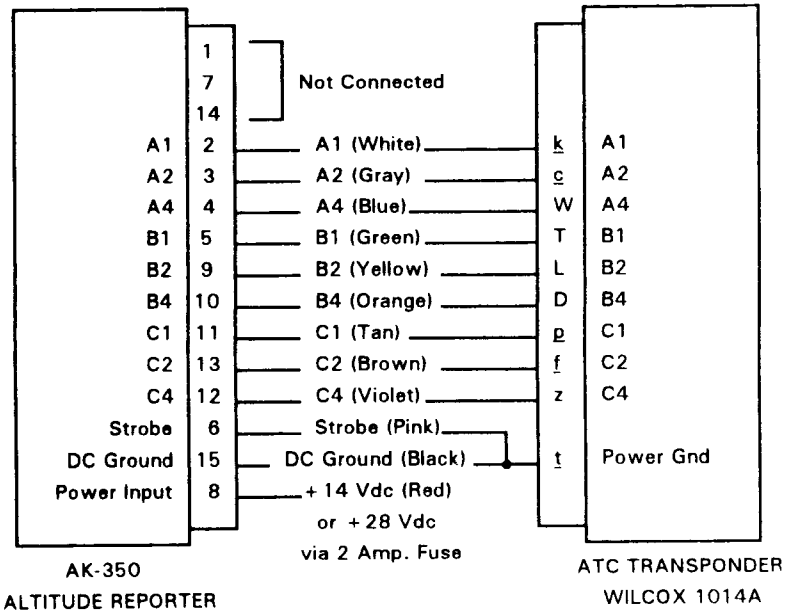


Figure 2.20: Interconnect Schematic Diagram
All wires are 22 AWG

2.4 LIST OF MAJOR COMPONENTS

In addition to the Altitude Reporter AK-350, followings are list of the major components (List of some compatible transponders) which make up the equipment system:

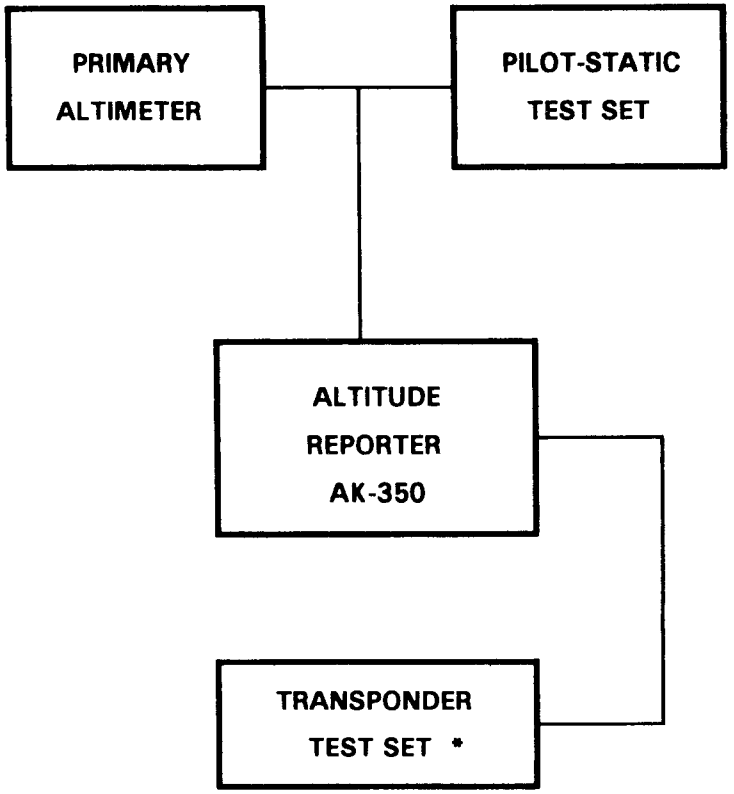
LIST OF SOME COMPATIBLE TRANSPONDERS

MANUFACTURERS	CURRENT MODELS	OLDER MODELS
BENDIX	TR-542 TPR-660	TPR-2060 TR-641A/B
CESSNA	RT-359A	RT-459A RT-859A
COLLINS	TDR-950/950L	
EDO AIR	RT-777	
GENAVE	BETA 5000	
KING	KT-76A KT-79 KT-75	KT-76, KT-78 KT-78A, KXP-750A
NARCO	AT-150	AT-5, AT-6 AT-6A AT-50 AT-50A
RADAIR	250	
TERRA	TRT 250	
WILCOX	1014A	

2.5 CALIBRATION

The AK-350 Altitude Reporter is calibrated at the factory to a pressure data traceable to the National Bureau of Standards

When the AK-350 is installed in the aircraft, it must be calibrated to the primary flight altimeter per Advisory Circular 43-6A so as to comply with FAR 91.36(b) and FAR 91.177.



* Transponder Test Set IFR ATC600A or MICHAEL 730 or Altitude Read-out or equivalent.

Figure 2.21: Test Set Up

2.5.1 Calibration Procedure:

See Figure 2.21 for Test Set Up.

Step 1: Connect a static pressure system tester to the airplane. The AK-350 Altitude Reporter must be connected to the aircraft static line near the flight altimeter and the two altitude adjustment screws must be accessible.

Step 2: Apply power to the AK-350 Altitude Reporter, and the ATC Transponder Test Set. Set primary flight altimeter to 29.92 in hg.

Step 3: Allow a minimum of 15 minutes warm up time.

Step 4: Apply static pressure system tester to obtain a flight altimeter reading of 29,900 ft. Slowly decrease pressure and read the flight altimeter at transition point (29,900 - 30,000 feet). Transition point is indicated on the Transponder Test Set.

If necessary, adjust the "HI" pot of the AK-350, until the transition point at decreasing pressure is 29,950 +/- 20 feet, as read on the primary flight altimeter.

Note 1: The Transponder Test Set reading should match with flight altimeter reading, not with the static pressure system tester.

Note 2: Because mechanical primary flight altimeter pointers are not totally frictionless, therefore tap lightly on the primary flight altimeter with a screwdriver handle to eliminate friction before taking any reading.

Note 3: A leaky static system will make calibration difficult if not possible.

If the aircraft ceiling altitude is less than 30,000 feet, perform the same above procedure for its ceiling altitude, i.e. for a maximum aircraft operating altitude of 20,000 feet, the flight altimeter shall indicate 19,950 +/- 20 feet, at the transition point (19,900 - 20,000 feet).

Step 5: Apply static pressure system tester to obtain a flight altimeter reading of +100 feet. Slowly increase pressure and read the flight altimeter at transition point (+100 - 0 feet). Transition point is indicated on the Transponder Test Set).

If necessary, adjust the "LO" pot of the AK-350, until the transition point at increasing pressure is +50 +/- 10 feet, as read on the primary flight altimeter.

Step 6: Check the transition points, at flight altitude reading of 30,000 feet, for both decreasing and increasing pressure.

The transition point for decreasing pressure should be 29,950 +/- 50 feet.

The transition point for increasing pressure should be 30,050 +/- 50 feet.

Step 7: Check the transition points, at flight altitude reading of 0 feet, for both decreasing and increasing pressure.

The transition point for increasing pressure should be +50 +/- 50 feet.

The transition point for decreasing pressure should be - 50 +/- 50 feet.

Repeat the above procedures until interaction is eliminated.

2.6 DATA CORRESPONDENCE TEST

Reference: FAR 91.36, Appendix E, FAR 43 and Advisory Circular 43-6A.

Set the primary flight altimeter barometric to 29.92 in Hg.

Select several of the following Correspondence test points (chosen by the Calibrating Technician), from - 1,000 feet to the maximum operating altitude of the aircraft or 30,000 feet, for both increasing pressure and decreasing pressure:

Correspondence Test Point	Transition for Decreasing Pressure	Transition for Increasing Pressure
- 1,000 ft	- 1,050 +/- 125 ft	- 950 +/- 125 ft
0 ft	- 50 +/- 125 ft	+50 +/- 125 ft
2,000 ft	1,950 +/- 125 ft	2,050 +/- 125 ft
6,000 ft	5,950 +/- 125 ft	6,050 +/- 125 ft
10,000 ft	9,950 +/- 125 ft	10,050 +/- 125 ft
14,000 ft	13,950 +/- 125 ft	14,050 +/- 125 ft
20,000 ft	19,950 +/- 125 ft	20,050 +/- 125 ft
25,000 ft	24,950 +/- 125 ft	25,050 +/- 125 ft
30,000 ft	29,950 +/- 125 ft	30,050 +/- 125 ft

Maximum Correspondence Error shall be +/- 125 feet, as read on the primary flight altimeter.

NOTE 1: If the aircraft ceiling altitude is less than 30,000 feet, perform the same above procedure for its ceiling altitude, i.e. from -1,000 feet to maximum aircraft ceiling altitude.

NOTE 2: Because mechanical primary flight altimeter pointers are not totally frictionless, therefore tap lightly on the primary flight altimeter with a screwdriver handle to eliminate friction before taking any reading.

NOTE 3: A leaky static system will make calibration and data correspondence test difficult if not possible.

NOTE 4: If the altimeter correspondence error exceeds +/- 125 ft, flight altimeter calibration should be suspected.

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Correspondence Test Point	Transition for Decreasing Pressure	Transition for Increasing Pressure
- 1,000 ft	- 1,050 +/- 125 ft	- 950 +/- 125 ft
0 ft	- 50 +/- 125 ft	+50 +/- 125 ft
2,000 ft	1,950 +/- 125 ft	2,050 +/- 125 ft
6,000 ft	5,950 +/- 125 ft	6,050 +/- 125 ft
10,000 ft	9,950 +/- 125 ft	10,050 +/- 125 ft
14,000 ft	13,950 +/- 125 ft	14,050 +/- 125 ft
20,000 ft	19,950 +/- 125 ft	20,050 +/- 125 ft
25,000 ft	24,950 +/- 125 ft	25,050 +/- 125 ft
30,000 ft	29,950 +/- 125 ft	30,050 +/- 125 ft
35,000 ft	34,950 +/- 125 ft	35,050 +/- 125 ft
40,000 ft	39,950 +/- 125 ft	40,050 +/- 125 ft
50,000 ft	49,950 +/- 125 ft	50,050 +/- 125 ft
60,000 ft	59,950 +/- 125 ft	60,050 +/- 125 ft
70,000 ft	69,950 +/- 125 ft	70,050 +/- 125 ft
80,000 ft	79,950 +/- 125 ft	80,050 +/- 125 ft

Maximum Correspondence Error shall be +/- 125 feet, as read on the primary flight altimeter.

NOTE 1: If the aircraft ceiling altitude is less than 80,000 feet, perform the same above procedure for its ceiling altitude, i.e. from -1,000 feet to maximum aircraft ceiling altitude.

NOTE 2: Because mechanical primary flight altimeter pointers are not totally frictionless, therefore tap lightly on the primary flight altimeter with a screwdriver handle to eliminate friction before taking any reading.

NOTE 3: A leaky static system will make calibration and data correspondence test difficult if not possible.

NOTE 4: If the altimeter correspondence error exceeds +/- 125 ft, flight altimeter calibration should be suspected.

2.7 PLACARDING

The altimeter used for flight reference and the Model AK-350, shall be placarded the following information:

(Placard is included with the Installation Kit)

" Replacement or re-calibration of the altimeter used for flight reference requires re-calibration of Model AK-350 Altitude Reporter "

" Altitude encoded to _____ feet "

SECTION III
OPERATION

3.1 GENERAL

This section describes the operation of the AK-350 Altitude Reporter (Altitude Encoder).

3.2 OPERATION

The AK-350 Altitude Reporter is an integrated circuit technology based equipment. It is a highest standards of quality and extremely reliable equipment, equipment rack mounted, designed to meet TSO-C88a requirements.

The AK-350 Altitude Reporter is connected to the aircraft pneumatic static system and output to the ATC Transponder. It converts altitude pressure into altitude digital data output to ATC Transponder. When the ground station requests for reporting the altitude, the Transponder will transmit the altitude digital data to the ground station, set forth in the International Standard Code for SSR Pressure Altitude Transmission.

The AK-350 model has an altitude range from - 1,000 feet to + 30,000 feet.

The Altitude Reporter AK-350 is a remote mounted equipment that is fully automatic in operation. The companion ATC Transponder normally controls the operation of the Altitude Reporter by automatically enabling or disabling its operation.

This is done by pulling-up to logic LOW (to enable) or pulling-down to logic HIGH (to disable) the STROBE (Pin 6) line of the Altitude Reporter.

It is in operation (enabled) any time the Transponder is set to the Altitude mode (Mode C) of operation.

The digital altitude data is inhibited (disabled) any time the Altitude mode is turned off or to the Ident mode (Mode A).

Power to the Altitude Reporter is automatically turned on, whenever the companion Transpoder is switched to STANBY mode, or ON mode, or ALTITUDE mode.

IMPORTANT OPERATION NOTE:

During in flight operation, if the altitude information is requested to turned off by the ATC Controller, the companion Transponder should be switched to the STANBY mode, not to the OFF mode. When the power is re-activated, a warm-up time is required in order for the Altitude Reporter to function properly.

If the companion Tranponder does not have switched-power output pin to the Altitude Reporter, an ON / OFF Switch and a Power Off Light may be incorporated (See Figure 2.5 above).

SECTION IV
WARRANTY

4.1 LIMITED WARRANTY

All equipments manufactured by Ameri-King Corp. are guaranteed against defective materials and workmanship for a period of one and a half years after purchase.

Any equipment found to be defective due to material and workmanship during this limited warranty will be repaired and put in original manufactured operating condition.

An option of extended three years limited warranty will become valid at the end of the first one and a half years, which will warrant to the original owner.

This Ameri-King Corp. warranty is void unless the Warranty Registration Card is filled out and returned to Ameri-King Corp. within 10 days after original purchase.

Ameri-King Corp.'s liability under this warranty is limited to servicing, repairing, replacing or adjusting any equipment returned prepaid to the factory by express written or oral authorization for that purpose and to repair or replace defective parts thereof. Repaired equipment will be returned to the equipment user freight pre-paid. Shipping charge will be paid one way only by Ameri-King Corp.

Upon discovery of a condition believed to be caused by a defect in manufacturing, Ameri-King Corp. must be notified. No equipment to be shipped to Ameri-King Corp. without prior authorization. Any equipment returned to Ameri-King Corp. should be accompanied by a failure report, in writing, giving full particulars in support of the claim.

This limited warranty does not cover or apply to any of the followings, including: misuse of the equipment; installation or operation not in accordance with factory instructions; accidents or negligent damage; alterations of any manner; repair by other factory; changes in calibration occuring as a result of normal use of the equipment; the cost of labor, material, or other expense incidental to the repair, installation,

removal from the aircraft or replacement of the equipment; damaged during shipment or installation; any personal injuries or damage to property resulting from the installation or the operation of the equipment or the failure of the equipment or any part thereof, the equipment user assumes the risks of all such injuries or damage. In such cases, the repair will be billed at cost. An estimate will be submitted for approval before repair is initiated.

Any equipment which is returned for warranty and found not to be defective shall be charged a minimum handling and service charge and returned C.O.D.

No warranty will be activated for Ameri-King Corp. products unless the installation is approved by an FAA Certified Installer and the warranty card is completed by the supplying dealer or upon receipt by Ameri-King Corp. of form(s) 337 or 8130-().

THE IMPLIED WARRANTY AND ALL OTHER IMPLIED WARRANTIES ARE HEREBY EXCLUDED. AMERI-KING CORP. MAKES NO OTHER WARRANTY OR REPRESENTATION OF ANY KIND WHATSOEVER EXPRESSED OR IMPLIED, AND ALL IMPLIED WARRANTIES INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED.

AMERI - KING CORP.'S MAXIMUM LIABILITY HEREUNDER IS LIMITED TO THE PURCHASED PRICE OF THE PRODUCT. IN NO EVENT SHALL AMERI- KING CORP. BE LIABLE FOR ANY CONSEQUENTIAL, INDIRECT, INCIDENTAL OR SPECIAL DAMAGES OF ANY NATURE ARISING FROM THE SALE OR USE OF THE PRODUCT, WHETHER BASED IN CONTRACT, TORT, STRICT LIABILITY OR OTHERWISE.

4.2 REPAIR SERVICE

All equipments manufactured by Ameri-King Corp. must be repaired at the facility of Ameri-King Corp.

All the repair services shall be performed and completed within 3 days upon repairing estimate is approved by equipment user or installation dealers.

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APPENDIX A
TSO Approved Letters from FAA USA; GERMANY and SWITZERLAND

US Department of Transportation
Federal Aviation Administration

NORTHWEST MOUNTAIN REGION
TRANSPORT AIRPLANE DIRECTORATE
AIRCRAFT CERTIFICATION SERVICE
LOS ANGELES AIRCRAFT CERTIFICATION OFFICE
3229 EAST SPRING STREET
LONG BEACH, CA 90806-2425

FEB 2 0 1990

Ameri-King Corp.
20902 Brookhurst Street, Unit 107
Huntington Beach, California 92646

Gentlemen:

Ameri-King Corp., Automatic Pressure Altitude
Reporting Code Generating Equipment, Model AK-350;
Technical Standard Order C88a

Your applications dated August 22, 1988 and December 29, 1989, requesting the issuance of a Technical Standard Order (TSO) authorization in accordance with the procedural requirements of Federal Aviation Regulation (FAR) Part 21, Subpart O, has been reviewed. Based upon your data and statement of conformance certifying your article has met the requirements of FAR Part 21, Subpart O, and the minimum performance standards of TSO C88a (Ref. FAR 21.305(b)), authorization is hereby granted.

The following technical data are considered to fulfill the requirements for a TSO authorization and are being retained in our files:

1. Drawing Nos.: 350201; AK-350121, Rev. A

2. Document Nos.: IM-3501001, dated 8/17/89;
QTP-3501005, dated 8/17/89;
ATP-3501002, dated 8/18/89;
TSPQ-3501000, dated 8/18/89

The quality control procedures contained in your quality control manual, Ameri-King Corp., Quality Assurance Manual, Revision A, dated November 9, 1989; is currently on file at the Los Angeles Manufacturing Inspection District Office, and your statement that those procedures will be applied to the manufacture of the subject article at the above address, are considered adequate in accordance with FAR 21.143.

Effective this date, you are authorized to use TSO procedures for the subject Automatic Pressure Altitude Reporting Code Generating Equipment. You may identify this article with the applicable TSO markings as required by TSO C88a.

As recipient of this TSO authorization, except as provided in FAR 21.3(d), you are required to report any failure, malfunction, or defect in any product or part manufactured by you or your contracted suppliers, and which you have determined has resulted or could result in any of the occurrences listed in FAR 21.3(c). The report should be communicated initially by telephone to the Manager, Technical and Administrative Branch, ANM-103L, (213) 988-5300, within 24 hours after it has been determined the failure has occurred, and followed up with a written notice. FAA Form 3330-2 (Malfunction or Defect Report) or other appropriate format is acceptable in transmitting the required details. As required by FAR 21.613(b), you must also notify the FAA when you no longer manufacture a TSO approved article.

This authorization pertains only to manufacturing operations at the above address. This office must be notified in advance of any proposed facility relocation to preclude interruption while awaiting quality control approval of that facility.

Sincerely,

for Frederick Lee
Manager, Los Angeles Aircraft
Certification Office

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Luftfahrt-Bundesamt

Luftfahrt-Bundesamt Postfach 3054 D-3300 Braunschweig
Einschreiben

Ameri-King Corp.
20902 Brookhurst St.
Unit 107
Huntington Beach
CA 92646

USA

Ihre Zeichen und Nachricht vom	(Bitte bei Antwort angeben) Unsere Zeichen	Unsere Durchwahl	Braunschweig
	I 522-10.221/6/8.92	414	Aug. 10, 1992

Subj.: Request for LBA-Approval for Altitude Encoder AK-350
Ref.: Your application dated June 22, 1992
Encls.: 1 Type Certificate
1 Technical Data Sheet
1 Bill of Costs

Dear Sirs:

This letter is to notify you that the Altitude Encoder AK-350 designed and manufactured by Ameri-King Corp. has received type approval.

The Type Certificate No. 10.221/6 is issued on the basis of the pertinent rules in the German Aviation Act and paragraph 4 of the Certification Regulations as in force today. The type approval is valid as determined in the associated Technical Data Sheet No. 10.221/6, issue 1.

The technical data sheet can be obtained from Verlag

R. Eisenschmidt GmbH
Frankenallee 25

6000 Frankfurt/Main

after printing.

The type approval will be promulgated in the "Nachrichten für Luftfahrer".

In compliance with paragraph 5 of the Certification Regulations this office must be notified of any minor or major design change by the manufacturer.

Dienstgebäude Braunschweig | Telefon (0531) 2355-0 Telex 952701 LBA | Bundeskasse Hannover | Postgiroamt Hannover | Landeszentralbank Hannover

Ameri-King Corp. is committed to supply to this office all future revision sheets to the Installation Manual, Service Bulletins and other pertinent data on the Altitude Encoder AK-350 as and when these are published.

Yours faithfully

Werner K. Kapalle
Chief, Certification Equipment Section

INSTALLATION MANUAL
ALTITUDE REPORTER (ENCODER), MODEL AK-350

BUNDESREPUBLIK DEUTSCHLAND

LUFTFAHRT-BUNDESAMT

MUSTERZULASSUNGSSCHEIN

Type Certificate

Nr.: 10.221/6

Das nachstehend bezeichnete Luftfahrtgerät ist als Muster zugelassen auf Antrag von:

Ameri-King Corporation
Huntington Beach, CA 92646, USA

Dieser Musterzulassungsschein ist auf Grund der die Musterzulassung betreffenden Bestimmungen des Luftverkehrsgesetzes und der Luftverkehrs-Zulassungs-Ordnung in der am Tage der Ausstellung geltenden Fassung erteilt.

Die Musterzulassung gilt gemäß zugehörigem Geräte-Kennblatt-Nr.: 10.221/6

Bezeichnung des Gerätemusters: AK-350

Geräteart: Kodierender Höhenmesser ohne Anzeige

Die Musterzulassung kann in den in § 4 Abs. 2 der Luftverkehrs-Zulassungs-Ordnung vorgesehenen Fällen widerrufen werden.

On application of and in accordance with the German Certification Regulations as in force to day for the following product the Type Certificate is issued.
The Type Certificate Data Sheet No. is part of the Type Certificate.
The type certification may be revoked by the LBA in cases provided in the German Certification Regulations.

Datum der Ausstellung
Date of issue

Braunschweig, 10. August 1992

LUFTFAHRT-BUNDESAMT BRAUNSCHWEIG 10

Unterschrift
Signature

(Kapalle)

Bundesamt für Zivilluftfahrt (BAZL)
Office fédéral de l'aviation civile (OFAC)
Ufficio federale dell'aviazione civile (UFAC)
Federal Office for Civil Aviation (FOCA)

Aeromeccanica SA
Aeroporto Cantonale di Locarno
6596 Gordola

Authorisation for Installation and Operation of Ameri-King, AK-350, Blind Altitude Encoder

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Based on the documents listed in attachment 1, the Swiss Federal Office for Civil Aviation authorizes the installation and operation of the AK-350 Altitude Reporter in Swiss registered aircraft in the

authorisation class 2

Base of conformance: TSO: C88a;
RTCA: DO160B.

Limitations:
- The limitations stated by the environmental categories must be considered.

The system approval includes the following components:

Component	Description	Part.No.	DO-160B Env. Categories
AK-350	Altitude Reporter	---	C1BA/SLM/XXXXXXZBBXXXX

The Swiss type acceptance is based on chapter 3 of "Verordnung über die Zulassung und den Unterhalt von Luftfahrzeugen", dated July 8, 1985.

The documentation provided to the Federal Office for Civil Aviation in support of the acceptance process is listed below and will be kept in our files.

Aromeccanica application with Ameri-King Specification AK-350 Encoder 2 March 1993

Performance and accuracy of production components must correspond to the type approved. The applicant (manufacturer) will inform the Federal Office for Civil Aviation about all further design changes or modifications (Service Bulletins)

The present authorization is limited to components imported and identified with applicable TSO markings as approved by the FAA.

Berne, 4 March 1993

Section for Type Certifications
b.o.

John Dütsch