PS ENGINEERING INCORPORATED ®

9800 Martel Road

Lenoir City, TN 37772

PXE7300
High-fidelity Stereo
In-Flight Entertainment System
With MP3/Compact Disc Player
and Radio Receiver

FAA-STC/PMA Approved

Installation and Operation Manual

In certified aircraft, warranty is not valid unless this product is installed by an Authorized PS Engineering dealer.

Table of Contents

Rev	Reason
4	Corrected photographs
5	Added drawings from MDL for convenience
6	Added European Tuning Version
7	Added information on AM reception
8	Improved rendering of CAD drawings, added note about disc scratch sensitivity
9	Added Tray Shield to parts list for commonality with other products. Added disclaimer in section 1.8 for use with future audio systems

Section I GENERAL INFORMATION

1.1   INTRODUCTION

Quality cockpit and cabin entertainment has long been an elusive dream in general aviation. From marginal performance to unapproved parts, pilots couldn't enjoy the same music in their aircraft as they could in the family car.

The PXE7300-Series represents such a product. This one unit combines a compact disk (CD) player with MP3 capability and an AM/FM radio for ultimate in-flight entertainment capability.

Before installing and/or using this product, please read this manual completely. This will ensure that you will take full advantage of all the advanced features in the PXE7300.

1.2   SCOPE

This manual provides detailed installation and operation instructions for the PS Engineering PXE7300-series of IFE Systems. This includes the following units:

Model	Part Number	Description
PXE7300	11970	Integrated IFE System with CD/MP3/AM/FM
	Option 1	Prerecorded playback
	Option 2	European Version Tuner

Where the functions are identical to all units, it will be referred to herein as a PXE7300. Otherwise, the applicable units will be specified.

1.3   EQUIPMENT DESCRIPTION

The PXE7300 System is a single panel mounted unit that contains a CD player with MP3 media capability and an AM/FM radio receiver. It also contains a high-fidelity stereo amplifier to provide the entertainment output to the aircraft audio system.

An 8-digit LED display provides information about the systems modes and media in use.

1.4   APPROVAL BASIS

The PXE7300, is FAA approved FAA-STC SA02572AT and manufactured under PMA. PQ1336CE.

All systems comply with relevant portions of EUROCAE ED-14D/DO-160D (*Environmental Conditions and Test Procedures for Airborne Equipment*), ED12B/DO-178B (*Software Considerations for Airborne Equipment*) and ED- 18/DO-214 (*Audio Systems Characteristics and Minimum Operational Performance Standards for Aircraft Audio Systems*).

STC SA02572AT can be used as a basis for approval in other aircraft provided the generic installation manual, Document Number 200-973-0002 or later approved revision, is followed.

Advisory Circulars AC43.13-1B Acceptable Methods, Techniques, and Practices - Aircraft Inspection and Repair, and 43.13-2A - Acceptable Methods, Techniques, And Practices - Aircraft Alterations are to be used to resolve any issues not specifically addressed by the Installation Manual. Instructions for Continuing Airworthiness (ICA) are provided in the supplied data.

Operation is subject to the following conditions:
This device may not cause harmful interference.
This device must accept any interference received, including interference that may cause undesired operation.

1.5 SPECIFICATIONS

FAA-PMA COMPLIANCE	
APPLICABLE DOCUMENTS:	RTCA/DO-214
	RTCA/DO-160D
	RTCA/DO-178B (Level E)
	RTCA DO-254 (Level E)
ENVIRONMENTAL Qualifications:	B1CABSXXXXXXZBBBAUHXXX
Temperature Range:	
Operating:	-15° C to 55°C
Storage:	-40° C to 85°C
Altitude:	Up to 25,000 feet in a non-pressurized area of the cockpit.
DIMENSIONS:	Height: 2.0 in. (5.1 cm) Width: 6.25 in. (15.9 cm)
	Depth: 7.7 in. (19.8 cm)
WEIGHT (With Rack & Connectors):	2.6 lb. (1.2 kg)
POWER REQUIREMENTS (Including Internal Lighting):	
Voltage:	11 to 33 VDC
Maximum Current: 11970	1.5 Amp (Externally protected by a 2 Amp circuit pull-type breaker.)
Typical operating current: Lighting Current	800 mA 5 mA
Audio Specifications	
Output Impedance:	150 - 1000 Ω
Audio Output:	38 mW each channel, no clipping <1% THD
Distortion:	<1% THD
Music Freq. Response, 3 dB:	14 Hz –22 kHz
FCC Type Acceptance	
Part 15	Verification to Part 15
Radio Tuning	
North America	AM: 530 – 1710 kHz, 10 kHz steps
	FM: 87.7 – 107.9 MHz, 200 kHz steps
European (Option E)	AM: 531 - 1602kHz, 9kHz steps
	FM: 87.5 - 107.9MHz, 100kHz steps

1.6 EQUIPMENT SUPPLIED

1 ea. of the following units:

Model	Part Number	Description
PXE7300	11970	IFE System with AM/FM CD MP3

PXE7300 Installation Kit: 250-973-0001 as shown

Part Number	Description	Quantity
120-425-4402	44 Pin Connector Key 4/5	1
202-730-00XX	Pilots Guide	1
425-001-0002	Gold Plated Crimp Pins	30
430-730-0010	Tray	1
430-730-8025	Tray Shield	1
475-440-0007	4-40x7/16" Phil-Pan w/Nylon Patch	2
475-630-0002	6-32 Clip Nut	6
475-632-0012	6-32" x ½" Fhp Screw	6
510-730-0001	Passive AM/FM Antenna	1

1.7 EQUIPMENT REQUIRED BUT NOT SUPPLIED

    a)   Circuit Breaker, PULL TYPE: 1 ea. 2 amp
    b)   Aircraft Audio System (See section 1.8 for approved system list)
    c)   Interconnect Wiring

1.8 APPROVED AUDIO SYSTEMS

This is a list of audio system that the PXE7300 should interface with adequately.

Approved Audio Systems, PXE7300

Certified interface is approved only for audio systems that are FAA-TSO approved.

Make	Model	Part Number
PS Engineering	PM1000II	11920,11922
	PM3000	11931, 11932
	PMA6000-Series	6000 (all)
	PMA7000-Series	7000 (all)
	PCD7100	11950, 11951
	PMA4000	11942
	PAC24	050-240-(all)
UPS Aviation Technologies	SL10-Series	430-6060-XX
	SL15-Series	430-6065-XX
Bendix/King	KMA28	066-01176-0101
GARMIN International	GMA340	010-00152-XX

While the output of the PXE7300 is designed to work the majority of intercoms and audio panels at the time of development, PS Engineering cannot guarantee satisfactory results for all devices.

1.9 LICENSE REQUIREMENTS

North America- None

International Customers may need to check with appropriate governing bodies before using the system.

Section II - Installation

2.1 GENERAL INFORMATION

2.1.1 SCOPE

These sections provide detailed installation and interconnect instructions for the PXE7300 In-Flight Entertainment System with integrated Compact Disc (CD) Player and AM/FM radio receiver.

Please read this manual carefully before beginning any installation to prevent damage and post-installation problems. Installation of this equipment requires special tools and knowledge.

NOTE:

An appropriately rated Certified Aircraft Repair Station must install this equipment in accordance with applicable regulations. PS Engineering, Incorporated warranty is not valid unless the equipment is installed by an authorized PS Engineering, Incorporated dealer. Failure to follow any of the installation instructions, or installation by a non-certified individual or agency will void the warranty, and may result in an unairworthy installation.

2.2 Unpacking and Preliminary Inspection

Use care when unpacking the equipment. Inspect the units and parts supplied for visible signs of shipping damage. Examine the unit for loose or broken buttons, bent knobs, etc. Verify the correct quantity of components supplied with the list in Section 1.6 (B). If any claim is to be made, save the shipping material and contact the freight carrier. Do NOT return units damaged in shipping to PS Engineering. If the unit or an accessory shows any sign of external shipping damage, contact PS Engineering to arrange for a replacement. Under no circumstances attempt to install a damaged unit in an aircraft. Equipment returned to PS Engineering for any other reason should be shipped in the original PS Engineering packaging, or other UPS approved packaging.

2.3 Equipment Installation Procedures

2.3.1 Cooling Requirements

Forced air-cooling of the PXE7300 is not required. However, the unit should be kept away from heat producing sources (i.e. defrost or heater ducts, dropping resistors, heat producing avionics) without adequate cooling air provided.

2.3.2 Mounting Requirements

The PXE7300 must be rigidly mounted to the instrument panel or other structure of the aircraft structure and within view and reach of the persons wishing access. Installation must comply with FAA Advisory Circular AC 43.13-2A (or later revision). The unit may be mounted in any area where adequate clearance for the unit and associated wiring bundle exist.

The unit must be installed within ±30° of horizontal along the pitch axis, and ±10° of horizontal along the roll axis in level flight.

Avoid installing the PXE7300 close to high current devices or systems with high-voltage, pulse type outputs, such as DME or transponders.

2.3.3   Mounting Rack Installation

Remove the unit from the mounting tray by unscrewing the 3/32" hex-head screw that is near the left edge of the unit. Carefully slide the unit free of the tray. Set the unit aside in a safe location until needed. Install the tray using six FHP 6-32 x ½" screws. The unit must be supported at front and rear of the mounting tray. See Appendix B.
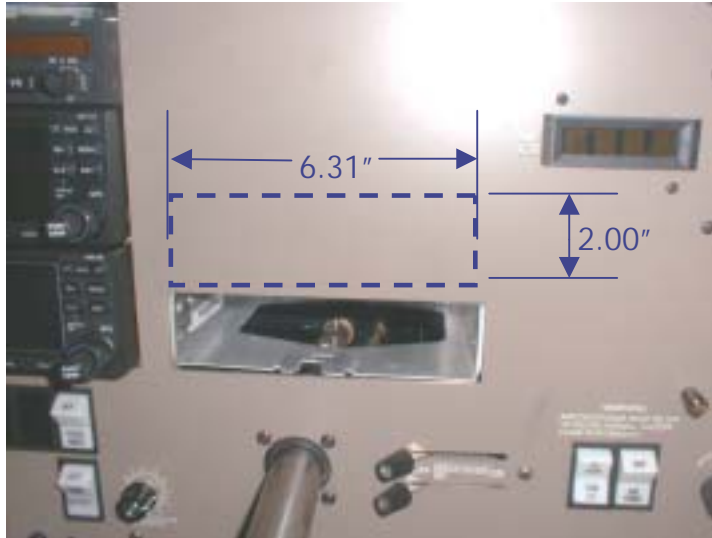
Figure 2-1 Typical Tray Installation Location

The tray mounting can be made in any area that exists for adding additional avionics. Instrument panel mounting is accomplished in accordance with AC 43.13-2A, Chapter 2.
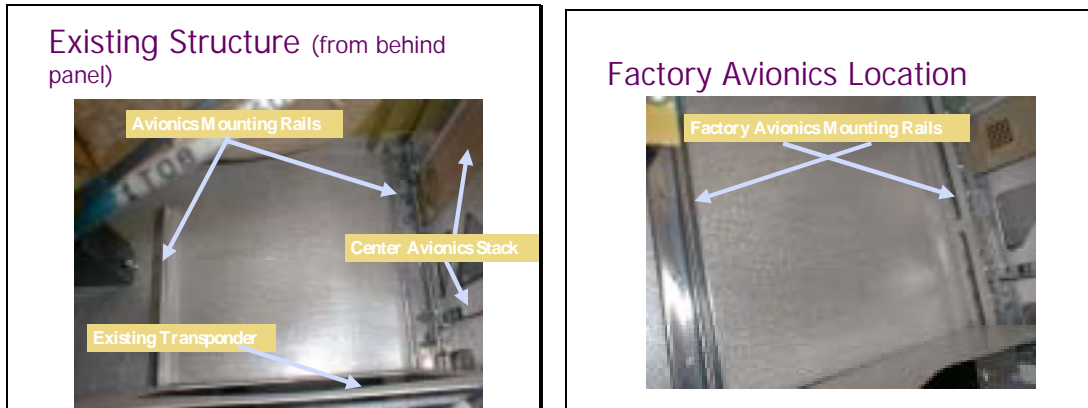
Figure 2-2 Avionics Mounting Rails (Typical)
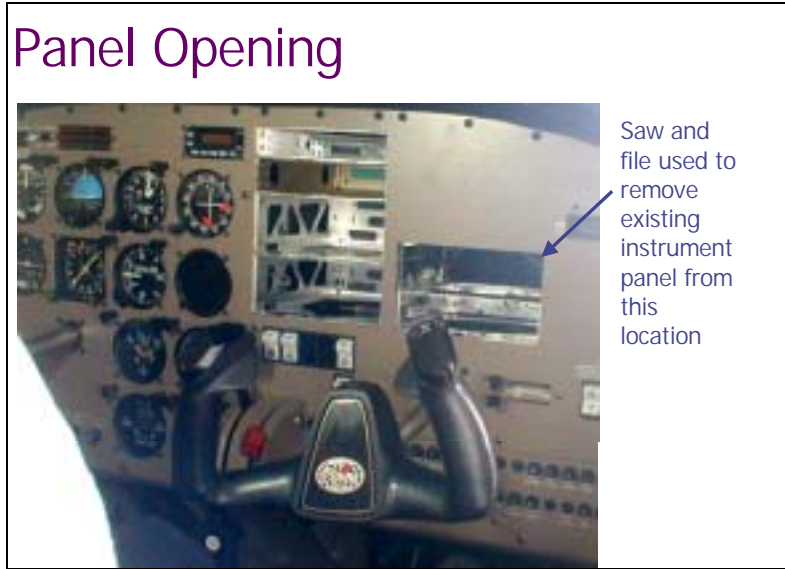
Figure 2-3 Completed panel opening (Typical)

2.3.4 Connector Assembly

The unit connector mates directly with the circuit boards in the PXE7300. The connector (part number 120-425-4402 is a Molex crimp-type, and requires the use of a Molex hand crimp tool, EDP P/N 11-01-0203, CR6115B (or equiv.). The connector is mounted to the unit tray with 2 ea. #4-40 screws, from the inside of the tray. Ensure that proper strain relief and chafing precautions are made during wiring and installation.
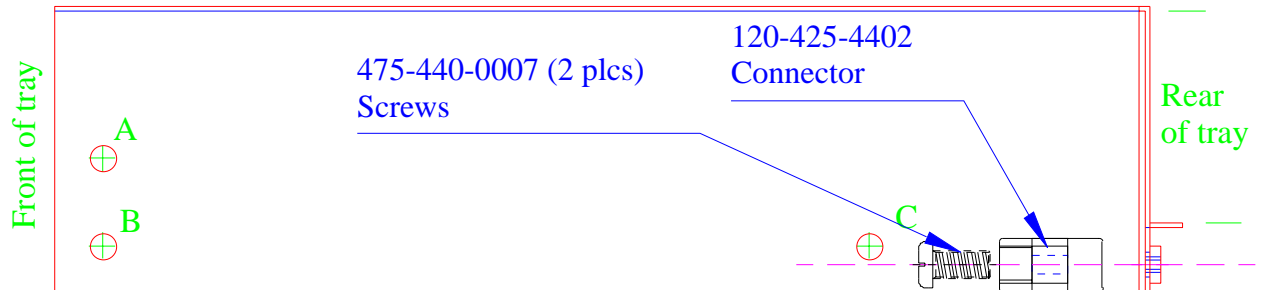
2.4 Cable Harness Wiring

Referring to the appropriate Appendix, assemble a wiring harness as required for the installation. All wires must be MIL-SPEC in accordance with current regulations. Two- and three-conductor shielded wire must be used where indicated, and be MIL-C-27500 or equivalent specification. Proper stripping, shielding and soldering technique must be used at all times. It is imperative that correct wire be used.

Refer to FAA Advisory Circular 43.13-1B and 2A for more information. Failure to use correct techniques may result in improper operation, electrical noise or unit failure. Damage caused by improper installation will void the PS Engineering warranty. PS Engineering can provide a custom made harness, visit www.ps-engineering.com for more information.

2.4.1 Noise

Due to the variety and the high power of radio equipment often found in today's general aviation aircraft, there is a potential for both radiated and conducted noise interference.

The PXE7300 power supply is specifically designed to reduce conducted electrical noise on the aircraft power bus by at least 50dB. Although this is a large amount of attenuation, it may not eliminate all noise, particularly if the amplitude of noise is very high. There must be at least 12 VDC present at the connector pin 21, of the PXE7300 for the power supply to work in its designed regulation. Otherwise, it cannot adequately attenuate power line noise. Shielding can reduce or prevent radiated noise (i.e., beacon, electric gyros, switching power supplies, etc.) However, installation combinations can occur where interference is possible. The PXE7300 was designed in a RFI hardened chassis and has internal Electromagnetic Interference (EMI) filters on all inputs and outputs.

Ground loop noise occurs when there are two or more ground paths for the same signal (i.e., airframe and ground return wire). Large cyclic loads such as strobes, inverters, etc., can inject noise signals onto the airframe that are detected by the audio system. Follow the wiring diagram very carefully to help ensure a minimum of ground loop potential. Use only Mil Spec shielded wires (MIL-C-275000, or better).

2.4.2 Power

The PXE7300-Series units are compatible with both 14 and 28 Volt DC systems. A two (2) Amp PULL-TYPE breaker is required. Power and ground wires must be a underlinetwisted #18 AWG pair. Connect airframe power ground to Pin 22 only.

See Appendix B for typical circuit breaker layout.

Figure 2-4 Circuit breaker location (Typical)

2.4.3 Backlighting

The PXE7300 has an automatic dimming of the pushbutton annunciator LEDs controlled by a photocell. A dimmer control allows the bezel text backlighting to be controlled by the aircraft dimmer. Connect the 14 V dimmer control to pin 1, the 28 V dimmer to pin A, as required.

2.4.4 Antenna

The passive AM/FM antenna, part number 510-730-0001 (included) is optimized for FM radio performance. Therefore, when used for AM reception, the operator may only receive the most powerful 3 to 5 AM stations. In contrast to an ADF, where audio fidelity is not important, the PXE7300 requires higher signal levels to ensure fidelity.

For optimum performance, some installers may desire an external AM/FM antenna. PS Engineering recommends a Comant CI-222-L, installed in accordance with AC43.13-1A, Chapter 3.

Another AM performance-enhancing alternative is to connect the PXE7300 antenna input to an unused VOR port of the VHF NAV antenna splitter. Do NOT add another splitter.

The included antenna can be mounted wherever convenient inside the cockpit, as long as it is in a window. Verify that the antenna is not an impediment to crew vision outside the cockpit when installed,

For optimal operation, it should be near the windshield. Clean the mounting surface with appropriate

Figure 2-5 Antenna Installation

means (glass cleaner, etc), and apply adhesive (supplied with antenna). Route the antenna cable along edge to the glareshield, and then connect to the PXE7300 connector. Avoid running the antenna cable near high-current carrying wires, such as windshield heat, etc.

The antenna cable center conductor is connected to Pin 2, braid is connected to pin B.

2.4.5   Unswitched Summed Audio

PXE7300 units have four audio inputs that are summed together and presented to the audio output, J1 pin 18 WRT V.

NOTE: These can be used to implement additional audio warnings when connected to the appropriate Unswitched audio input of an audio panel. This includes Autopilot warnings, TAWS, GPS alerts, Radio Altimeter, etc.

2.4.6   Aux Entertainment Audio and AUX Enable

Besides the disc and AM/FM, the PXE7300 has the ability to act as a switching control for an additional entertainment input (DVD, external XM Radio tuner, etc.).

The audio input is Pin 16 (R), Pin 17 (L) with respect to Pin K.

To enable the mode, add an internal jumper on the pins marked J2, or apply a ground to Pin 20 of the rear connector.

2.4.7   Special Playback Function (Option 1 only)

The PXE7300 can be used to play up to five specially encoded audio tracks. This can be used for passenger briefings, tour narration, etc. These files will play automatically when a specific pin is grounded on the init connector, activated by a switch or logic input that pulls either to ground or to a positive voltage if the unit is configured properly.

In order to use a positive voltage (>4 VDC), the unit must have jumpers installed at the following locations:

> Input 1 - R134
> Input 2 - R146
> Input 3 - R155
> Input 4 - R135
> Input 5 - R147

Recorded MP3 files must be stored on a disc with the volume label 7300. The individual files shall be labeled 0001.mp3, 0002.mp3, and so on.

The file playback is:

Message Number	Unit connector Pin	Filename
1	5	0001.mp3
2	9	0002.mp3
3	7	0003.mp3
4	10	0004.mp3
5	8	0005.mp3

See the operation manual for details on creating files and discs.

2.5   Internal Adjustments

None

2.6   Post Installation Checkout

After wiring is complete, verify power is ONLY on pin 21 of the connector, and airframe ground on bottom connector pin 22. Failure to do so will cause serious internal damage and void PS Engineering's warranty.

2.7   Unit Installation

To install the PXE7300, gently slide the unit into the mounting rack until the hold-down screw is engaged. While applying gentle pressure to the face of the unit, tighten the 3/32" hex-head in the unit until it is secure. DO NOT OVER TIGHTEN.

> **Warning**: Do not over-tighten the lock down screw while installing the unit in tray. **Internal damage will result.**

2.7.1   System Checkout

1. Insert disc, and verify that the player accepts the disk with about ½ of the diameter in the unit. The player should pull the disk smoothly and drop into place.
2. The player will begin to play, automatically about 20 seconds (after reading the disc).
3. If the unit is in disc mode, with CD inside at power-up, it will play (after reading the disc).
4. Verify that all Disc modes operate.
5. Push the "Eject" button and verify that the disc is ejected within about 10 seconds.
6. Verify radio operation on AM and FM
7. Verify that aux audio is presented to the output (if connected).
8. Evaluate the audio interface to be certain that the IFE audio is muted during intercom and radio communication.
   a. If muting override is provided, evaluate the switch location and verify operation.
   b. Evaluate the audio performance
   c. Evaluate the audio level to verify that the music is adequate under flight conditions.
   d. Evaluate the muting system to demonstrate that the music will be adequately muted if desired, by radio and intercom.
   e. Evaluate the muting override control if equipped.
9. Evaluate failure remediation from crewmember location
   a. Turn unit off
   b. Locate and pull unit circuit breaker
   c. With the disc playing, with minimum volume, listen to the following audio sources (as equipped), adjusted to normal listening level:
      i. Comm 1, comm. 2, comm 3, HF
      ii. Nav 1, Nav 2
      iii. ADF (1 and 2)
      iv. DME (1 and 2)
      v. Marker
      vi. Any other audio sources
10. Select FM Mode, and repeat step 6, listening for interference on the aircraft audio sources. Pay particular attention to the frequencies listed in table.

FM	COM
107.3	118.000
107.5	118.200
107.7	118.400
107.9	118.600

FM/COM Cross Reference

11. Select AM Mode, and repeat step 6, listening for interference on the aircraft audio sources.
12. Select COM 1 for transmit. Tune COM 1 to 118.00, and the PXE7300 to 107.3 MHz. Transmit a test count and evaluate the unit display and audio output for inconsistencies

13. Repeat step 10 for COM 2, and other transmitters.
    a. Tune Nav 1 to local station and perform a standard VOT test in accordance with 14 CFR 91.171.
    b. Note the indicated VOR bearing on both systems.
    c. Turn the PXE7300 on and off, and observe any change in the VOR indication that could be attributed to the PXE7300.

2.8   Final Inspection

Verify that the wiring is bundled away from all controls and no part of the installation interferes with aircraft control operation. Move all controls through their full range while examining the installation to see that no mechanical interference exists. Verify that the cables are secured to the aircraft structure in accordance with good practices, with adequate strain relief. Ensure that there are no kinks or sharp bends in the cables and coaxial cables. Verify that the cables are not exposed to any sharp edges or rough surfaces, and that all contact points are protected from abrasion.

Complete logbook entry, FAA Form 337, weight and balance computation and other documentation as required. Sample text for FAA Form 337 and instructions for continuing airworthiness can be found in Appendix F.

Return completed warranty registration application to PS Engineering.

Section III OPERATION

GENERAL INFORMATION

3.1   SCOPE

This section describes the operation of the PXE7300 In-Flight Entertainment system.

Operating controls consist of two rotary knobs with push-push switches, and four buttons.

Figure 3-1 Front Panel Controls

3.2   Operating Controls

The single-disk player is designed for simple operation. The Disc player will begin to play automatically when a Disc is inserted (unless the disc is specially formatted as 7300 volume, see section 3.4). The disc will play through in order, and then stop at the end. If a disc is not inserted, the unit will be in the FM radio mode.

> NOTE:
> When a disc is inserted, the display will show "Reading . . ." for up to 20 seconds, depending on the media and amount of information contained.

> NOTE:
> The MP3 mechanism in the PXE7300 is more sensitive to scratches on the play side of the disc than traditional CD players. It is suggested to use CDs that have few to no scratches for optimum performance.

The PXE7300 system is turned on and off by pushing the volume (left hand) knob. The left knob is the volume control. Turning the knob clockwise will increase the volume.

3.2.2   Stop/Eject Button (2)

The Stop/Eject button will stop the disc. Hold for 3 seconds to eject the disc.

In AM or FM Radio Mode, this button scans up the frequency band for a strong signal.

3.2.3   Play/Pause Button (3)

Pressing the play/pause button momentarily will pause the player. Press for about one second to advance the track or select another random track. Press and hold the PLAY/PAUSE to for an INTRO SCAN that plays a few seconds of each track before advancing.

Momentarily pressing STOP/EJECT & PLAY/PAUSE buttons at the same time will cause the track to jump backward.

In AM or FM Radio Mode, this button scans down the frequency band for a strong signal.

3.2.4   The R/S Button (4)

This selects random or sequence play in the disc mode.

3.2.5   The Data Knob (5)

In the Disc mode (CD or MP3), the knob will advance (CW) or decrease (CCW) the track. Track number is displayed when the knob is in motion. Then it will display the track name and then begin to play.

In AM or FM radio mode, this knob can be used to tune the radio directly.

If the playing media is an MP3 format, the pushing the DATA knob will display the data (if stored and available) from the playing tracks in sequence when the knob is pushed.
- Song Name
- MP3 Actual File Name
- Album
- Artist

Depending on the total size of the information stored on the disc, the available data may be truncated in the following manner: Small number of files, Actual File Name, Larger number of files, Truncated File Name, Most files, Track Number.

3.2.6   The MODE Button (6)

This button cycles through the operating modes, Disc, FM, AM, and AUX (if enabled).

3.3   Radio Reception

The passive AM/FM antenna, part number 510-730-0001 (included) is optimized for FM radio performance. Therefore, when used for AM reception, the operator may only receive the most powerful 3 to 5 AM stations. In contrast to an ADF, where audio fidelity is not important, the PXE7300 requires higher signal levels to ensure fidelity.

For optimum performance, some installers may desire an external AM/FM antenna. PS Engineering recommends a Comant CI-222-L.

Another alternative is to connect the PXE7300 antenna input to an unused VOR port of the VHF NAV antenna splitter. Do NOT add another splitter.

3.4   Radio Preset Function

The PXE7300 can save up to nine AM and nine FM frequencies for future recall. Select the desired radio frequency.

To set press the "R/S" button (4). The next available slot will be displayed as "S#." (# being the available memory location). Within five seconds, select the desired frequency using the DATA knob (if not already displayed). Press the R/S (4) again to save the selection. The display will flash, indicating a successful save.

You can select the "S" slot by pressing the Stop (up) and play (down) buttons.

To access the channel, press the DATA knob (5) the radio mode, and select the preset with the DATA knob or scan up (2) and down (3) buttons.

Action	Disc Result	Radio Result
Stop/Eject short press	Stop	Frequency Scan Up
Stop/Eject long press	Eject (also in AUX)	Frequency Scan up
Play/Pause short press	Pause	Frequency Scan Down
Play/Pause Medium press (3 sec)	Select next track/file and keep playing or a random track if in the random mode	Frequency Scan Down
Play/Pause Long press (> 3 sec)	Intro Scan, Plays first few seconds of each song, and advances	Frequency Scan Down
MODE press	Change to FM, AM, AUX (if enabled)	Change from FM to AM, to AUX to (if enabled) to DISC
R/S press	Toggle into Random or normal Sequence play	Enter the preset "Set" mode
DATA knob CW	Select next track and play	Increase radio frequency or preset channel
DATA knob CCW	Select previous track and keep playing	Decrease radio frequency or preset channel
DATA knob Push	Show data on file (if available)	Enter Pre-select Frequency Recall Mode

Table 1- Modes

3.5   Pre-recorded File Playback (Option 1 ONLY)

The PXE7300 is designed to play up to five special files on a recorded MP3 disc. This can be used for passenger briefing, tour narration, or other in flight uses.

When one of the five inputs is triggered, a corresponding file on a specially encoded disc will start to play, regardless of the mode in use.

When the file has completed play, the unit will return to the previous mode and track, but it will be paused.

The special disc must be labeled as the volume 7300, and the tracks 0001.MP3 through 0005.MP3. Other files, such as music, can be stored on this disc. The normal files will play, but files with the filename 0001.MP3 through 0005.MP3 will not play unless the respective input is activated, OR specifically selected from the front panel. This section can be used to test the disc and determine which files are stored.

See Appendix A for details on storing MP3 files.

3.6   Display Dimming (7)

The display is automatically adjusted for ambient light conditions by a photocell. The backlighting is adjusted by the aircraft dimmer circuit.

Section IV- Warranty and Service

4.1   Warranty

In order for the factory warranty to be valid, the installations in a certified aircraft must be accomplished by an FAA-certified avionics shop and authorized PS Engineering dealer. If the unit is being installed by a non-certified individual in an experimental aircraft, a factory-made harness must be used for the warranty to be valid.

PS Engineering, Inc. warrants this product to be free from defect in material and workmanship for a period of one (1) year from the <u>date of installation as recorded in aircraft logbook and/or on FAA Form 337</u>. During the **twelve (12) months**, PS Engineering, Inc., at its option, <u>will send a replacement unit</u> at our expense if the unit should be determined to be defective after consultation with a factory technician.

All transportation charges for returning the defective units are the responsibility of the purchaser. All domestic transportation charges for returning the exchange or repaired unit to the purchaser will be borne by PS Engineering, Inc. The risk of loss or damage to the product is borne by the party making the shipment, unless the purchaser requests a specific method of shipment. In this case, the purchaser assumes the risk of loss.

This warranty is not transferable. Any implied warranties expire at the expiration date of this warranty. PS Engineering SHALL NOT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES. This warranty does not cover a defect that has resulted from improper handling, storage or preservation, or unreasonable use or maintenance as determined by us. This warranty is void if there is any attempt to dissemble this product without factory authorization. This warranty gives you specific legal rights, and you may also have other rights, which may vary from state to state. Some states do not allow the exclusion of limitation of incidental or consequential damages, so the above limitation or exclusions may not apply to you.

All items repaired or replaced under this warranty are warranted for the remainder of the original warranty period. PS Engineering, Inc. reserves the rights to make modifications or improvements to the product without obligation to perform like modifications or improvements to previously manufactured products.

4.2   Factory Service

The unit is covered by a one-year limited warranty. See warranty information. Call PS Engineering, Inc. at (865) 988-9800 before you return the unit. This will allow the service technician to provide any other suggestions for identifying the problem and recommend possible solutions.

After discussing the problem with the technician and you obtain a Return Authorization Number, ship product to:

PS Engineering, Inc.
Attn: Service Department
9800 Martel Rd
Lenoir City, TN 37772
(865) 988-9800   FAX (865) 988-6619

Email: support@ps-engineering.com

NOTE: PS Engineering will not be responsible for any units shipped in the U. S. Mail.

Units received without either a Return Authorization or a contact telephone number will be refused and returned to the sender.

Appendix A – MP3 Creation

5.1 Creating MP3s from an Audio CD

1. Start MusicMatch JukeBox.(www.musicmatch.com) Press the recorder button, which is the small red dot located in the top right corner. This will open the recorder window located at the bottom of the screen.

2. Insert an audio CD into the CD drive. MusicMatch will automatically read the disc and display the contents in the recorder window. Press the REFRESH button to check the Internet database for CD information, such as artist, song title, or album. If this information is available, it will automatically be updated in the file.

3. Select Options->Recorder->Format and select either MP3 or MP3PRO format. You may also set the MP3 file quality under the Options->Recorder->Quality menu.

4. Select the tracks to be copied to MusicMatch by checking the box next to the desired track. Press the record button in the lower left corner when complete

5. MusicMatch will then convert the files from the audio CD to MP3 and display them in the Music Library box located in the middle of the screen

6. To edit the MP3 information, select a file in the Music Library and press the TAG button in the top right corner of the Music Library box. This will display the MP3 tagged information screen. Select the General tab to show the information that can be modified for the PXE7300.

7. The PXE7300 can display song name, artist, album, and filename. This corresponds to the Track title, Artist, Album, and Track Filename fields shown on the screen. Each of these fields can be modified to the user's preference. Note: The PXE7300 is limited to displaying up to 22 characters in each of these fields. Click on the appropriate field to modify the track title, artist, or album. To modify the filename, select the Rename Files button in the lower left corner. Click on the field labeled New File Name and press OK to change the file name. Press the Apply and OK buttons to update the information

5.2 Creating Playback Files Using MusicMatch (Option 1 units only)

1. Create up to five MP3 files with the desired playback messages. These files must be named **0001.MP3** to **0005.MP3**. File 0001 corresponds to playback input 1, etc.

2. Start MusicMatch JukeBox. Click the **ADD** icon in the Music Library window to bring up the file dialogue box. Select the files **0001.MP3** – **0005.MP3** and click the **ADD** button. This will transfer a copy of the files to the Music Library.

3. Select a file in the Music Library box and click on the **TAG** button to access the MP3 tagged information screen. Select the General tab to show the MP3 file information. Fill in the **Track Title** field. This information will be displayed on the PXE7300 when the file is active. This field may be up to 22 characters in length.

4. Select **File->Create CD** to open the CD burner window.

5. Select the MP3 disc icon to burn an MP3 disk.

6. Double click on the **Volume Name** box, located to the right of the three disc types. Type **7300** in the window and press RETURN to update the CD volume name.

7. Select the **ADD** icon (+ sign) to open the file dialogue box. Select the files 0**001.MP3 – 0005.MP3** and press the **ADD** button. **Make sure these files are located in the root directory of the disc.** Select any other MP3 files you wish to add to the disc. **Note: These files must not begin with a "000" prefix or the PXE7300 will play the incorrect tracks!** Files can also be dragged from the Music Library box.

8. Place the blank CD in the drive and select the BURN icon to burn the CD.

Appendix B – Installation Drawings

Figure 6-1 Panel Location Drawing (Typical) 120-973-8801

PLAN VIEW

Instrument Panel
FS 59.9

Existing
bundle

Existing
Audio Panel

PXE7300

Power to Circuit Breaker
(Note 1)

FS 76.5
Top of windshield

H

Antenna

NOTE:
Install wire bundle and cable clamps as required IAW AC43.13-1B:
Section 8, WIRING INSTALLATION INSPECTION REQUIREMENTS
Section 9, ENVIRONMENTAL PROTECTION AND INSPECTION
Section 11, CLAMPING
Clean antenna area with solution approved by aircraft manufacturer.
Use 3M Self-adhesive tape (supplied) to secure antenna to windshield.
Verify that vision is not obscured from any crew position.

ELEV VIEW
From Copilot Side

Antenna

PXE7300

Antenna Coax
(Note 1)

Power to Circuit Breaker
(Note 1)

Audio Wiring to
Audio Panel
(Note 1)

REV		ACTIVITY		DESCRIPTION			ECO		BY		DATE
0		NEW RELEASE					-----		GLP		GLP 8-28-02
1				Clarified Cable clamps and item locations			-----		-----		GLP 09-16-02

MATERIAL

REVISIONS

	NAME	DATE
DRAWN BY:	GLP	08-28-02
CHECKED BY:	MSS	09-17-02
APPROVAL:		

ENGINEERING INCORPORATED
9800 Martel Road
Lenoir City, Tn 37772
(865) 988-9800

TITLE
PXE7300 Installation Diagram

SIZE A

CAGE CODE

DRAWING NUMBER
120-973-2488

REV 1

SCALE NONE

SHEET 1 OF 1

Figure 6-2 PXE7300 Installation Diagram (Typical) 120-973-2488

6.25

1.97

Existing Avionics
Mounting Rails
(see detail A)

Detail A

A

B & C

A

B & C

A

A

#6-32 Screws
475-632-0012 (6 plcs)

Clipnuts
475-630-0002 (6 plcs)

Front of tray

A

B

0.92 in

0.32 in

0.32 in

5.57 in

7.71 in

475-440-0007 (2 plcs)
Screws

120-425-4402
Connector

C

Rear
of tray

1	Clarify rail mounting assy			GLP	09-16-02
0	NEW RELEASE			GLP	08-28-02
REV	DESCRIPTION		DATE	BY	DATE

REVISIONS

ENGINEERING
INCORPORATED

9800 Martel Road
Lenoir City, Tn 37772
(865) 988-9800

PXE7300 Tray Installation Drawing

A   120-973-0430

NONE   1 OF 1
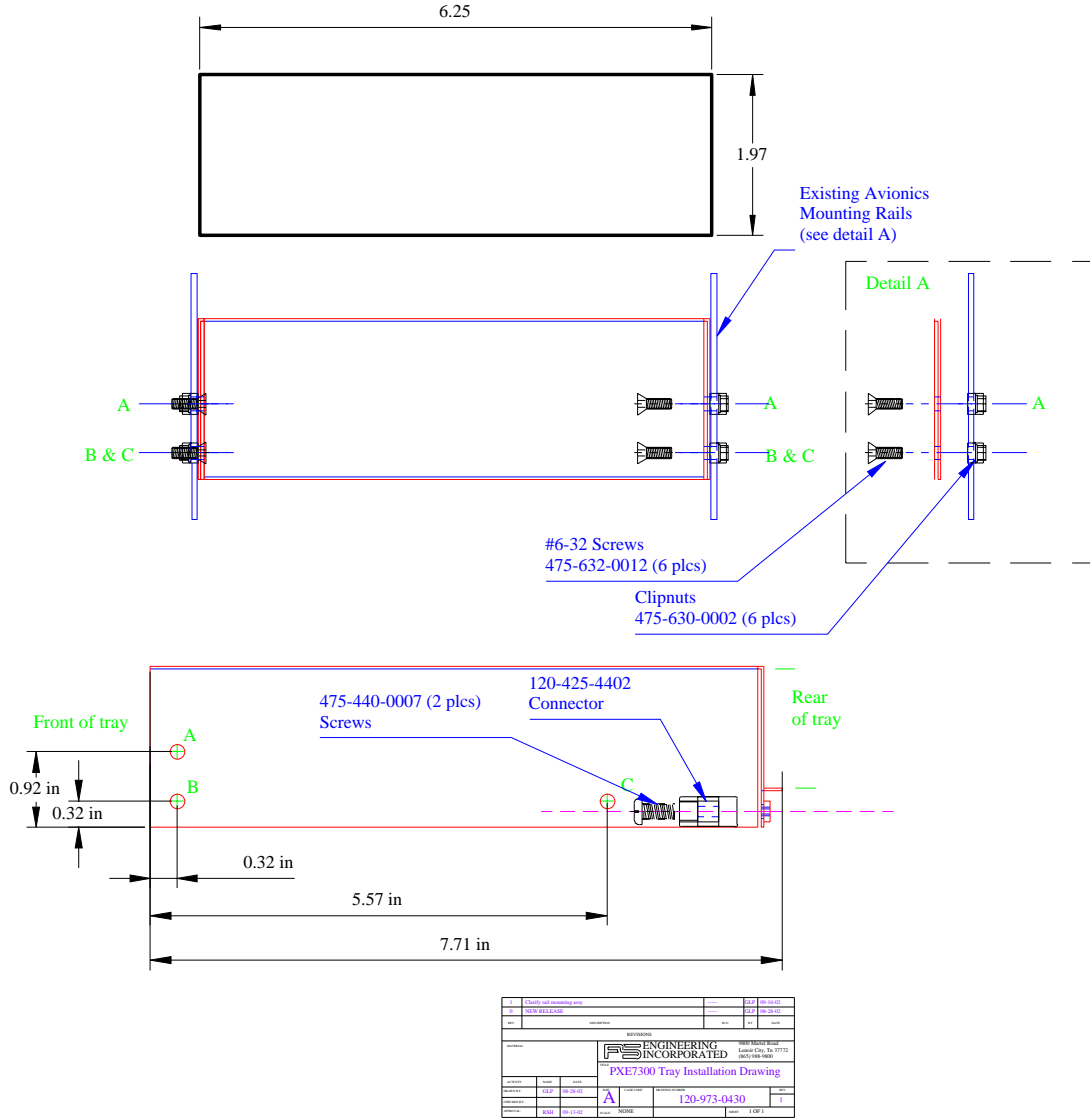
Figure 6-3 Tray Installation Drawing, 002-973-0430

Connector viewed from the rear

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22

J1

A B C D E F H J K L M N P R S T U V W X Y Z

Connector viewed from the FRONT of unit tray

Connector Key

22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1

J1

Z Y X W V U T S R P N M L K J H F E D C B A

Connector Orientation, PXE7300
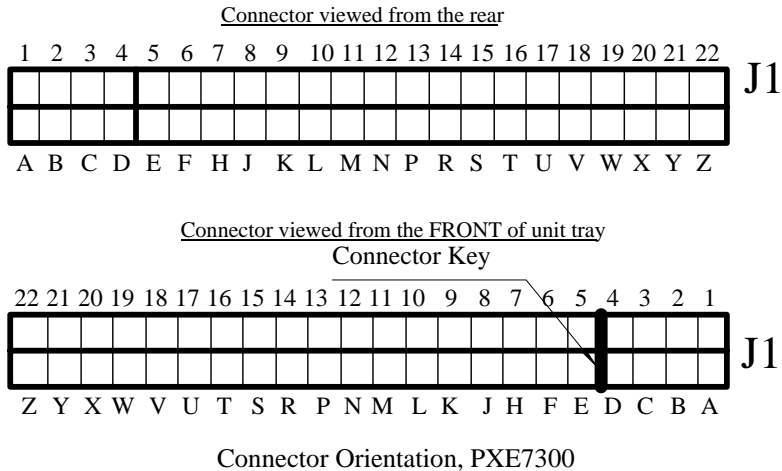
Figure 6-4 Circuit breaker installation drawing 120-973-8802 (typical)

Appendix C Connector Interconnect

PXE7300 Connector

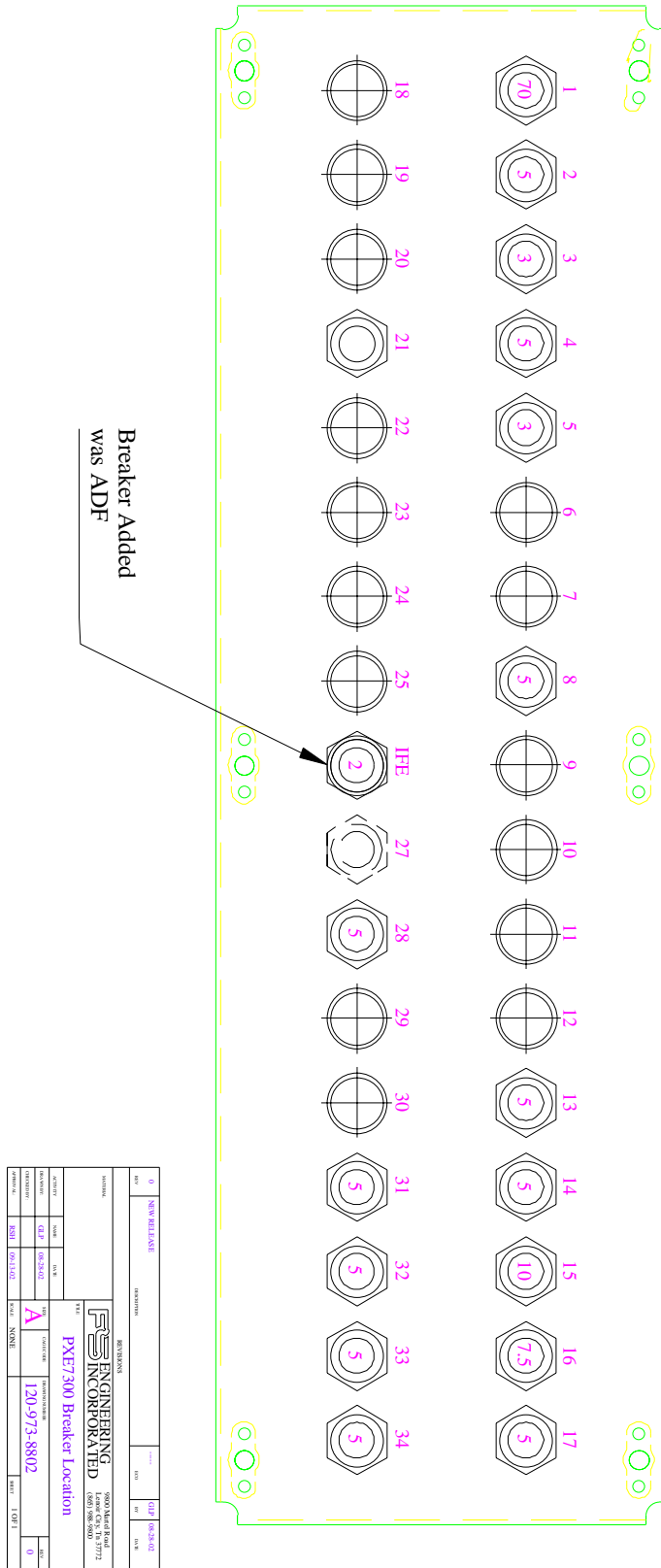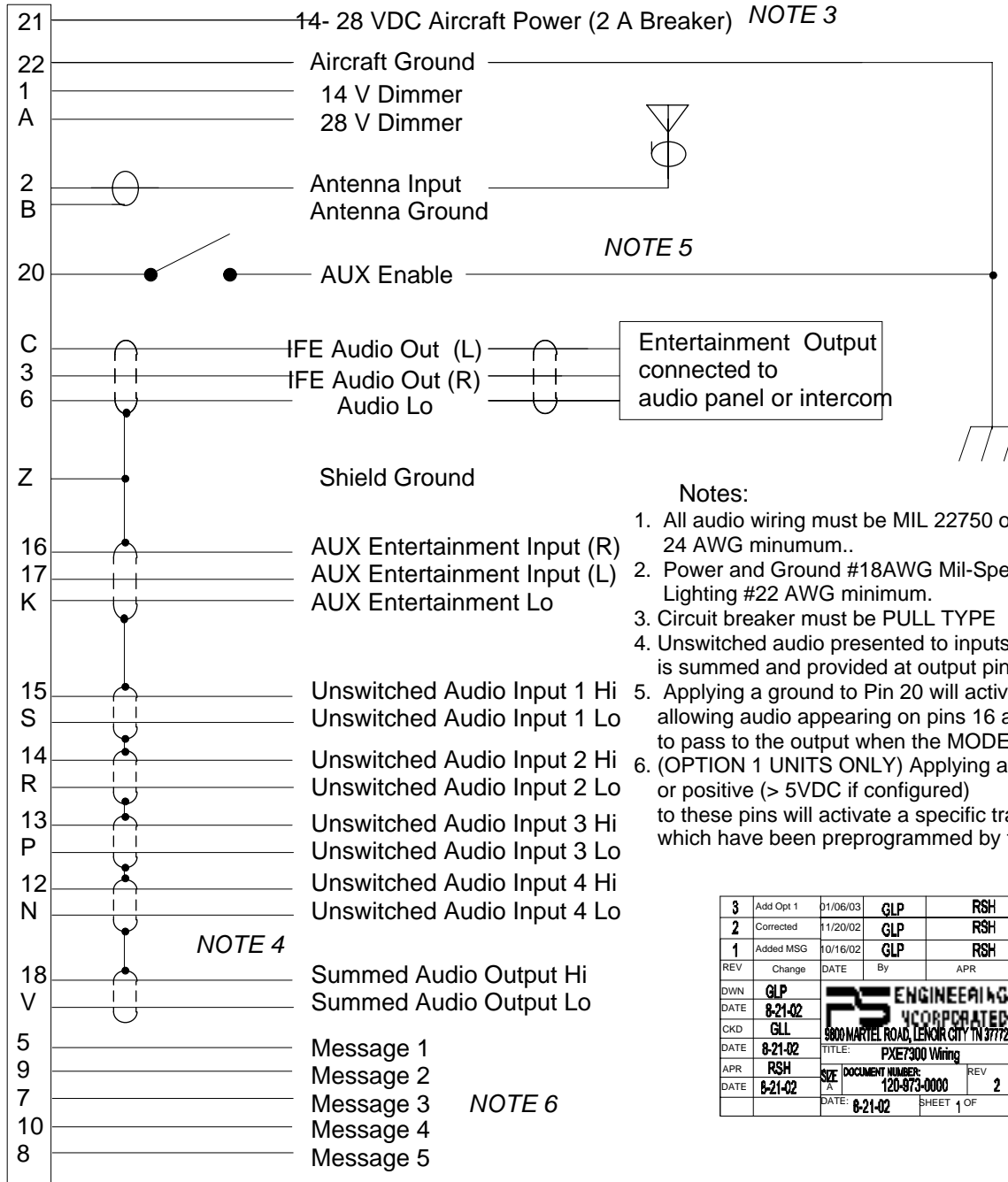|	
21	14- 28 VDC Aircraft Power (2 A Breaker) *NOTE 3*
22	Aircraft Ground
1	14 V Dimmer
A	28 V Dimmer
2	Antenna Input
B	Antenna Ground
20	AUX Enable *NOTE 5*
C	IFE Audio Out (L)
3	IFE Audio Out (R)
6	Audio Lo
Z	Shield Ground
16	AUX Entertainment Input (R)
17	AUX Entertainment Input (L)
K	AUX Entertainment Lo
15	Unswitched Audio Input 1 Hi
S	Unswitched Audio Input 1 Lo
14	Unswitched Audio Input 2 Hi
R	Unswitched Audio Input 2 Lo
13	Unswitched Audio Input 3 Hi
P	Unswitched Audio Input 3 Lo
12	Unswitched Audio Input 4 Hi
N	Unswitched Audio Input 4 Lo
	NOTE 4
18	Summed Audio Output Hi
V	Summed Audio Output Lo
5	Message 1
9	Message 2
7	Message 3 *NOTE 6*
10	Message 4
8	Message 5

Entertainment Output
connected to
audio panel or intercom

Notes:
1. All audio wiring must be MIL 22750 or 27500
    24 AWG minumum..
2. Power and Ground #18AWG Mil-Spec Tefzel minimum.
    Lighting #22 AWG minimum.
3. Circuit breaker must be PULL TYPE
4. Unswitched audio presented to inputs 1 thru 4
    is summed and provided at output pin 18 WRT V.
5. Applying a ground to Pin 20 will activate the AUX mode.
    allowing audio appearing on pins 16 and 17
    to pass to the output when the MODE is set for AUX.
6. (OPTION 1 UNITS ONLY) Applying a low (ground)
    or positive (> 5VDC if configured)
    to these pins will activate a specific track on discs
    which have been preprogrammed by the user.

3	Add Opt 1	01/06/03	GLP		RSH
2	Corrected	11/20/02	GLP		RSH
1	Added MSG	10/16/02	GLP		RSH
REV	Change	DATE	By		APR
DWN	GLP				
DATE	8-21-02		**PS ENGINEERING**		
CKD	GLL		**INCORPORATED**		
DATE	8-21-02		9800 MARTEL ROAD, LENOIR CITY TN 37772		
APR	RSH		TITLE: PXE7300 Wiring		
DATE	8-21-02		SIZE A	DOCUMENT NUMBER: 120-973-0000	REV 2
			DATE: 8-21-02	SHEET 1 OF	1

Appendix D- STC information and instructions for continuing airworthiness

8.1   Instructions for FAA Form 337, PXE7300s

STC SA02572AT applied, with an FAA-Approved Model List (AML) to a broad range of aircraft makes and models. Consult www.ps-engineering.com/STC-AML.shtml for the list.

One method of airworthiness approval in other aircraft is through an FAA Form 337, *Major Repair and Alteration (Airframe, Powerplant, Propeller, or Appliance)* In the case of the PXE7300, you may use the following text as a guide.

> This unit is installed in accordance with FAA-STC SA02572AT, which specifically references the installation manual.

> Installed IFE System, PS Engineering PXE7300, part number 1197 (X) in (_location_) at station _____. Installed per *AC43.13-2, Chapter 2, paragraph 23* (Instrument Panel Mounting). Installed per PS Engineering *Installation Operators Manual* p/n 200-971-(XXXX), revision (), dated ( ).

> Interface to existing aircraft radios in accordance with installation manual and in compliance with practices listed in *AC43.13-2*, Chapter 2. All wires are Mil-Spec 22759 or 27500. Connection to aircraft dimmer bus is _____. Power is supplied to the unit through a __A circuit breaker (type and part number), and total electrical load does not exceed ____% of the electrical system capacity with the PXE7300 added.

> Aircraft equipment list, weights and balance amended. Compass compensation checked. A copy of the operation instructions, contained in PS Engineering document 200-973-( ), revision ( ), dated ( ), is placed in the aircraft records. All work accomplished listed on Work Order_____.

8.2   Instructions for Continuing Airworthiness, PXE7300s

Sample ICA Checklist for PS Engineering PXE7300s:

Section	Item	Information
1	Introduction	Installation of In-Flight Entertainment system.
2	Description	Installation as described in manufacturer's installation manual referenced on FAA Form 337, including interface with other avionics audio as required.
3	Controls	See installation and operator's guide referenced on FAA Form 337.
4	Servicing	None Required
5	Maintenance Instructions	On Condition, no special instructions
6	Troubleshooting	In the event of a unit problem, place the unit into "off," or pull circuit breaker labeled"IFE.". Follow checkout instructions in the installation manual referenced on the FAA Form 337. For a specific unit fault, contact the manufacturer at (865) 988-9800 for special instructions.
7	Removal and replacement information	Removal: Using a 3/32" Allen-head wrench, carefully unscrew the locking screw located in the center of the unit. While turning the wrench CCW, gently pull on the EDGES of the bezel until the unit is free from the mounting tray. Installation: Engage the locking screw at the back. Turn the locking screw CW, while applying slight pressure to the edges of the bezel. Do not over tighten!
8	Diagrams	Not applicable
9	Special Inspection Requirements	Not Applicable
10	Protective Treatments	Not Applicable
11	Structural Data	Not Applicable
12	Special Tools	None
13	Not Applicable	Not Applicable
14	Recommended Overhaul Periods	None
15	Airworthiness Limitations	Not Applicable
16	Revision	To be determined by installer

8.3   Master Drawing List

The following drawings are contained on the FAA-Approved Master Drawing List:

Title	In this manual	Part Number	Revision	Date
Installation Manual	X	200-973-0002	5	12-Dec-02
Installation Wiring	X	120-973-0000	1	20-Nov-02
Tray Installation Drawing	X	120-973-0430	1	16-Sep-02
PXE7300 Installation Diagram	X	120-973-2488	1	16-Sep-02
PXE7300 Panel Location	X	120-973-8801	New	28-Aug-02
PXE7300 Breaker Location	X	120-973-8802	New	28-Aug-02
Users Guide		202-730-0001	1	Nov-2002

8.4   Use of Approved Model List

STC SA02572AT can be used as a basis for approval in those airplanes listed in the Approved Model List (AML, Document Number 002-730-1080) provided the generic installation manual, Document Number 200-973-0002 or later approved revision, is followed.

Advisory Circulars AC43.13-1B Acceptable Methods, Techniques, and Practices - Aircraft Inspection and Repair, and 43.13-2A - Acceptable Methods, Techniques, And Practices - Aircraft Alterations are to be used to resolve any issues not specifically addressed by the Installation Manual. Instructions for Continuing Airworthiness (ICA) are provided in the supplied data.

United States of America

Department of Transportation — Federal Aviation Administration

Supplemental Type Certificate

Number SA02572AT

This certificate issued to

PS Engineering Incorporated
9800 Martel Road
Lenoir City, TN 37772

*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 * of the * Regulations.*

Original Product · Type Certificate Number : * See attached

Make : FAA Approved Model List (AML)

Model : Document 002-730-1080 for a list of Approved Airplane Models

Description of Type Design Change:

Installation of a PXE7300, In-Flight Entertainment System with AM/FM Radio Receiver in accordance with Master Drawing List 002-730-2001, Revision New, dated September 18, 2002, or later FAA Approved Revision.

Limitations and Conditions :

This approval should not be extended to other aircraft of this model on which other previously approved modifications are incorporated unless it is determined by the installer that the interrelationship between this change and any of those other previously approved modifications will produce no adverse affect 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 : July 01, 2002

Date of issuance : October 15, 2002

Date reissued :

Date amended : February 13, 2003

By direction of the Administrator

(Signature)

Melvin D. Taylor, Manager,
Atlanta Aircraft Certification Office

(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 1 PAGES   This certificate may be transferred in accordance with FAR 21.47.

200-973-0002   Appendix E   April 2006

Appendix E RTCA DO160D/EUROCAE ED-14D Environmental Qualification Form

Part Number: 1197( )

Manufacturer: PS Engineering Incorporated 9800 Martel Road   Lenoir City TN 37772

Conditions	Section	Conducted Tests
Temperature and Altitude	4.0	Equipment tested to CAT B1
Low Temperature	4.5.1	-55° C Storage, -20°C Low Operating
High Temperature	4.5.2	+85°C Storage, +70°C High Operating
In-flight Loss of Cooling	4.5.4	Not Applicable, no cooling required
Altitude	4.6.1	25,000' unpressurized
Decompression	4.6.2	Not Applicable
Overpressure	4.6.3	Not Applicable
Temperature variation	5.2	Equipment tested to Category C
Humidity	6.0	Equipment tested to Category A
Shock	7.0	Equipment tested to Operational test only
Operational	7.2	Equipment tested Category B
Crash Safety	7.3	
Vibration	8.0	Equipment tested to Category S
Explosion	9.0	Category X, not tested
Waterproofness	10.0	Category X, not tested
Fluids Susceptibility	11.0	Category X, not tested
Sand and Dust	12.0	Category X, not tested
Fungus	13.0	Category X, not tested
Salt Spray	14.0	Category X, not tested
Magnetic Effect	15.0	Equipment tested to Category Z
Power input	16.0	Equipment tested to Category B
Voltage Spike	17.0	Equipment tested to Category B
Audio Frequency Susceptibility	18.0	Equipment tested to Category B
Induced Frequency Susceptibility	19.0	Equipment tested to Category A
Radio Frequency Susceptibility	20.0	Equipment tested to Category U
Radio Frequency Emission	21.0	Equipment tested to Category H
Lightning Induced Transient Susceptibility	22.0	Category X not tested
Lightning Direct Effects	23.0	Category X not tested
Icing	24.0	Category X, not tested
Electrostatic Discharge	25.0	Category X, not tested
Other Tests		Passed FM Emissions testing in accordance with CFR 47, Part 15.109.