

FlightTech Intercoms



FlightTech Intercoms
ITC-2003 Remote Panel
Mount with Electronic Noise
Reduction Intercom

Introduction

Congratulations on purchasing the new FlightTech ITC-2003 remote panel mount intercom. The ITC-2003 is designed using the latest in technology enabling for the first time, an intercom that can be installed remotely.

No longer is there a concern for behind the instrument space or installing the intercom in a hard to get to location. The ITC-2003 is divided into two parts, the control panel that mounts on the instrument panel and the intercom electronics that can be located in a convenient space.

Through the use of the latest in DC control and switching, there is no audio between the control panel and the intercom box. This eliminates concern for cross talk and RF pick-up.

The ITC-2003 intercom features true stereo auxiliary audio input and output for in-flight enjoyment. The auxiliary audio mutes when either intercom audio or Comm radio audio is present.

For pilot conveyance, there is a Pilot/All switch which allows the pilot to disable passenger audio to the pilots headphones

With proper installation, the ITC-2003 will give many years of reliable cockpit communications for both the pilot and passengers.

FlightTech ITC-2003 Features

Electronic Noise Reduction

The ITC-2003 features Electronic Noise Reduction or ENRI. The ENRI feature will eliminate or greatly reduce all background noise picked up the headsets microphone. Sounds such as engine noise and wind noise that are commonly heard with voice operated intercoms when the microphone circuits are open, are eliminated with ENRI.

Pilot Isolate

At times, it is desirable for the pilot to listen to ATC and allow the passages to commute while not interfering with the pilot. The Pilot Isolate switch in the "ALL" position allows the pilot to hear and talk to every one connected to the intercom. In the "PILOT" position, the pilot will only hear the communication radio audio.

Pilot & Co-Pilot PTT

The ITC-2003 includes PTT functions for both the Pilot and Co-Pilot and depending on which PTT switch is enabled, either the Pilot or Co-Pilot will key the communications radio and be able to speak.

Auxiliary Audio Stereo Input

A Stereo Auxiliary input is provided allowing a tape or CD player to be connected to the ITC-2003.

Auxiliary Audio Muting

The Auxiliary audio will mute or stop when either intercom audio is present or audio from the Communication radio is occurs.

Fail Safe

In the event that power should fail to the intercom, the pilots headset is automatically connected directly to the radio microphone and headphone inputs.

Unpacking

The ITC-2003 intercom comes complete ready for installation and includes the follow.

- Intercom Control Unit
- Intercom Control Panel
- Cable to connect the Control panel to the Control Unit
- Four Stereo 1/4" Headphone Jacks and mounting hardware
- Four Headphone Microphone Jack and mounting hardware
- Connector Housing and hardware for Headphone, Power and Audio connections to the Intercom Control Unit.

- Installation Manual

Carefully review the constantans to ensure that all of the items are included. If you find missing parts, contact the factory.

Installation

The ITC-2003-ENRI panel mount intercom is divided into two parts. A small control panel containing the Volume control and Power Switch and the Pilot/All switch that can be mounted on the instrument panel or other convenient location and the Intercom unit which can be mounted on the firewall or other easily accessible places.

Mounting the Control Panel requires Three holes in the instrument panel and can easily be secured in place by the Volume Control mounting nut. Refer to the DRILL DRAWING (Fig. 1) for correct holes sizes and locations. In addition to the Fig. 1, a separate drilling template is enclosed.

Control Panel Label, After the holes are drilled and the control panel is checked for proper mounting, the Control Panel Label can be applied. Make sure the surface is clean form oil or drill chips. Remove the back protective cover from the label and apply it to the instrument carefully aliening the holes. Insert the control panel and install the Volume control nut.

Mounting the Intercom Unit. The main unit can best be mounted using the supplied VALCRO strips. Clean the surface area before mount the strip and leave it set for a few minutes before attaching the main unit.

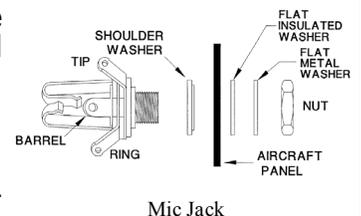
Cable Connections, the Intercom Unit contains two cables and connectors. The DB-25 Plug is for connecting the Power, Audio Inputs and Headphone connections for the Pilot, Co-pilot and passengers.

Power (12 VDC) and Ground wires should be 18 to 20 Gage wire with a 1/2 amp fuse in line with the Plus Voltage line.

Microphone cables should be a shielded cable as well as headphone cables. It has been found that in certain installations, a separate cable for each headphone cable should be ran with all ground or shield connections terminated at one point at the connector. Refer to pages 5 and 7 for connector pin-outs

Mounting Microphone and Headphone Jacks

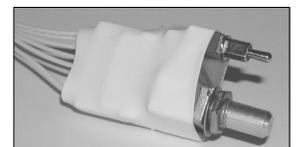
1. Locate the mounting areas making sure that the jacks will not interfere with any aircraft control components. (The jack contacts will expand when a plug is inserted into the jack.)
2. Drill 3/8" diameter holes for the headphone jacks.
3. Drill 1/2" diameter holes for the microphone jacks and install with the insulating washers supplied. (see Fig. 7)



Remote Control Panel, A small, in-line 8 pin Jack (S-4) is for connecting to the Remote Control Panel to the intercom. P-3, a DB-9 plug connects the opposite end of the cable to the intercom. There are a total of five wires in this cable carry D.C. voltages between the Intercom Unit and the Control Panel and the length of the five conductor cable can be up to several feet long. 24 gage wire can be used.

The correct order of connections for S-4, Pin 1 is marked on one end of the connector and pins 2 and 3 are empty. The plug on the Control board has locking pins allows socket S-4 to connect only in one direction. Refer of Fig. 3, page 7 for the wiring diagram.

Before the final installation is done, slip the 1" dia. Shrink tubing over the control board and apply heat to shrink it around the control board. This is to reduce shorting and helps keep dirt and dust from settling on the control board.



Stereo & Mono Headphones

The ITC-2003 is designed to work with Stereo headphones. If Mono headphones are used, damage to the intercom could result. Headphones with a Stereo/Mono switch should have the switch in the STEREO position.

In installations where only MONO headphones are used or a combination of Stereo and Mono headphones, those position jacks should be wired with only one channel wired. The Left or Right channel should be wired to the TIP connection of the jack and the GROUND wired to the Sleeve terminal.

Auxiliary Audio Stereo Input

The Auxiliary Audio input is available for connecting a portable CD Player or other audio device to the intercom system. The Stereo inputs are low level and no control of volume is provided in the intercom.

The Left and Right Channels and ground are connected to pins 21-L, 22-R and 23-Ground of Socket S-1.

Push-to-Talk Switch

The ITC-2003 will accept both Pilot and Co-Pilot PTT switch installation. Standard SPST push button switch's can be used with one terminal connected to ground and the other terminal connected to socket S1-2 for the Pilots PTT and S1-4 for the Co-Pilot's PTT.

Operation of the ITC-2003

The ITC-2003 is one of the simplest intercoms available to operate, plug in the headphones, turn on the power and start talking. It's that easy!

With the ITC-2003 Electronic Noise Reduction circuit, there are no squelch controls or functions to contend with. Since there are no squelch function either manual or automatic, it is not necessary to kick-start the audio with the first spoken word. Also, the missed words due to long pauses are gone. Simply talk.

Volume and Power Control

Turning the Volume control clock wise will turn on power to the intercom and increase the intercom volume. This controls the amplitude of the headsets microphone heard by the pilot and passengers. The volume control has no effect of the auxiliary audio or the communications radio audio level.

Pilot/All Switch

The Pilot/All switch controls the audio heard by the pilot and passengers. In the ALL position, the Pilot, Passengers, Auxiliary audio and Communication Audio can be heard by everyone.

With the switch in the Pilot position, the pilot will hear audio from the communication radio but not the passengers or the auxiliary audio. There will be no side-tone heard by the pilot.

Headphones and ENRI

As with any intercom installation, the amount of ambient noise heard through the Passive ear cups is dependent on the quality of the headphones. The better the Passive headphones, the better the noise reduction.

What the passive headphones do not do, is reduce or eliminate is the noise picked up by the headsets microphone and heard when the intercoms audio path is open. This where the ENRI function comes into action, eliminating or reducing the background noise heard by the headsets microphone.

NOTE: for best results, it is necessary to speak close to the headsets microphone.

ANR Headsets ANR Headsets provide additional noise reduction at the headset's ear cups but some background audio from the headsets microphone can still be heard. ANR headsets used in conjunction with the ITC-2003 ENRI intercom will have an added benefit of no microphone noise. ANR headsets are not required for the Electronic Noise Reduction circuit to operate.

Push-to-Talk

The ITC-2003 features Pilot and Co-Pilot PTT function allowing either the pilot or co-pilot to key and talk on the communication radio. When ever the pilots PTT is pushed, only the pilot will be able to talk but when the co-pilot PTT is keyed, the audio path is switch from the pilots microphone to the co-pilots microphone. The pilot can still talk through the intercom but not to the radio.

Auxiliary Stereo Audio & Muting Function

When a device such as a CD player is connect to the intercom and stereo headphones are used, pilot and passengers can enjoy music while on long trips. The Auxiliary Audio will mute when one of two things take place.

1. When ever the pilot or passengers speak over the intercom.
2. When ever there is audio present from the communication radio.
3. When the Pilot/All switch is in the PILOT position, the passengers will not hear the comm radio or the pilot talking and the Aux Audio will ONLY be muted when a passenger talks. The auxiliary audio will remain muted for several seconds after the intercom audio or radios audio stops.

Intercom Internal Adjustment

There are several potentiometers located on the main intercom circuit board, Microphone Gain, VR-1 and VR-2 and Noise Reduction adjustments, VR-5 and VR-9.

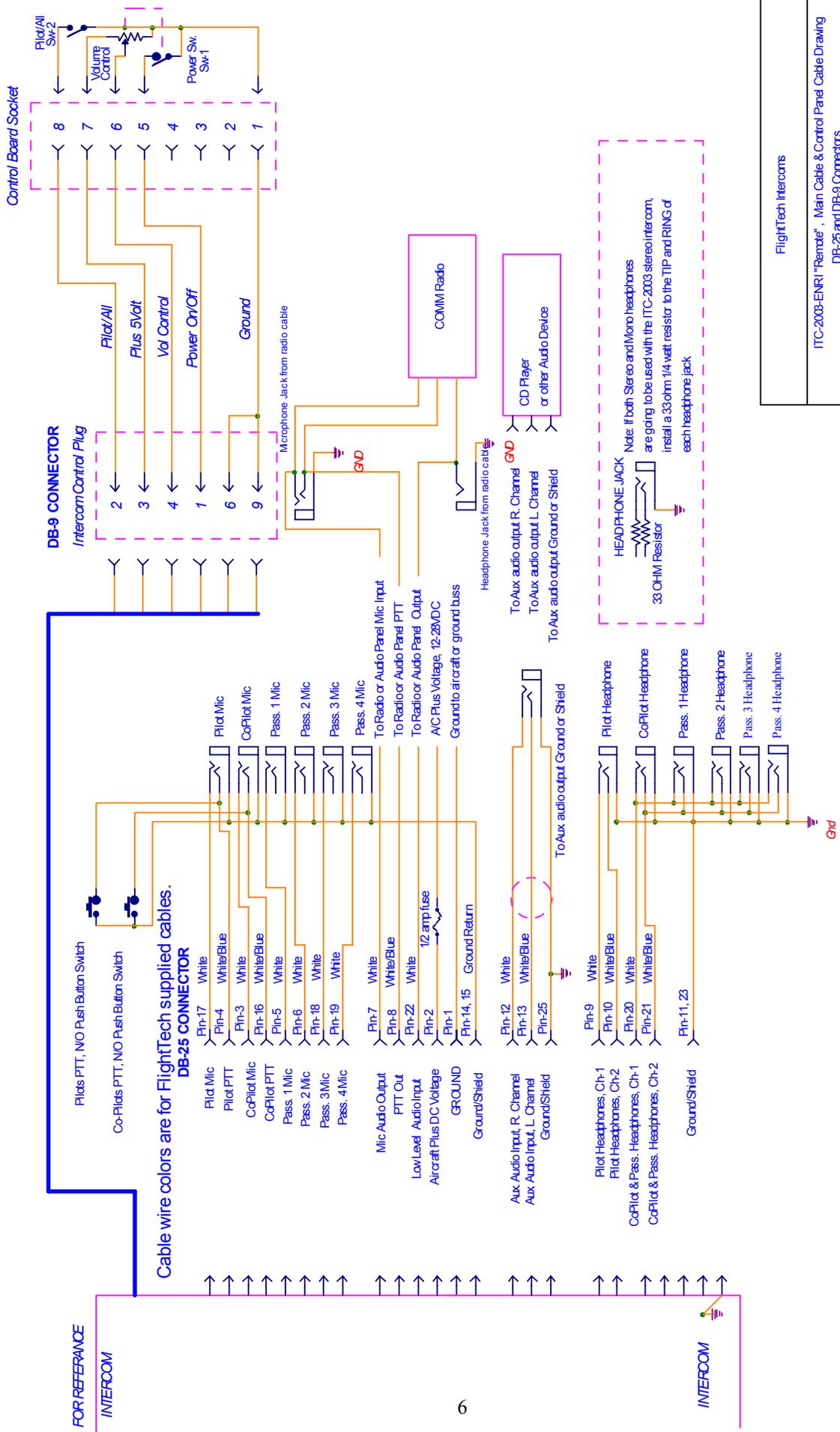
- **VR1 and VR2, Mic Gain.** Pots VR-1 and VR-2 are for the Pilot microphone gain (VR-1) and Copilot/passengers microphone gain (VR1). Adjusting these pots Clock Wise will increase the microphone gain. The gain control should not be adjusted any more then necessary to give a comfortable listing level. As the gain is increased, so is the possibility of picking up some back-ground noise. For best results, the microphone should be used with it next to the mouth or touching the lips and the gain pots adjusted for a minimum level.
- **VR-11, Pilot/All Audio Balance.** VR-11 will allow the balancing of the radio audio input with switching from ALL to the PILOTS position. The adjustment will only effect the pilots head-phones. To adjust VR-11, monitor an active frequency on the Comm radio and switch the Pilot/ All switch back and forth while adjusting VR-11 and listing for equal for equal audio levels between the two positions.

Refer to Fig. 8 for location of VR-1, VR-2 and VR-11

Service

With you new FlightTech ITC-2003 intercom properly installed, you will enjoy many years of trouble free operation. In the event of a problem and after checking the obvious, fuse, jacks or wiring, you should contact the FlightTech Intercom Technical Support center for suggestions or returning the intercom for repair.

The FlightTech phone numbers are located on the back cover of this manual.



FlightTech Intercoms	
ITC-2003-ENR1 "Remote", Main Cable & Control Panel Cable Drawing DB-25 and DB-9 Connectors	
Creation Date	03/23/2005
Sheet Size	B
Modif. Date	05/25/2005
<Rev.>	

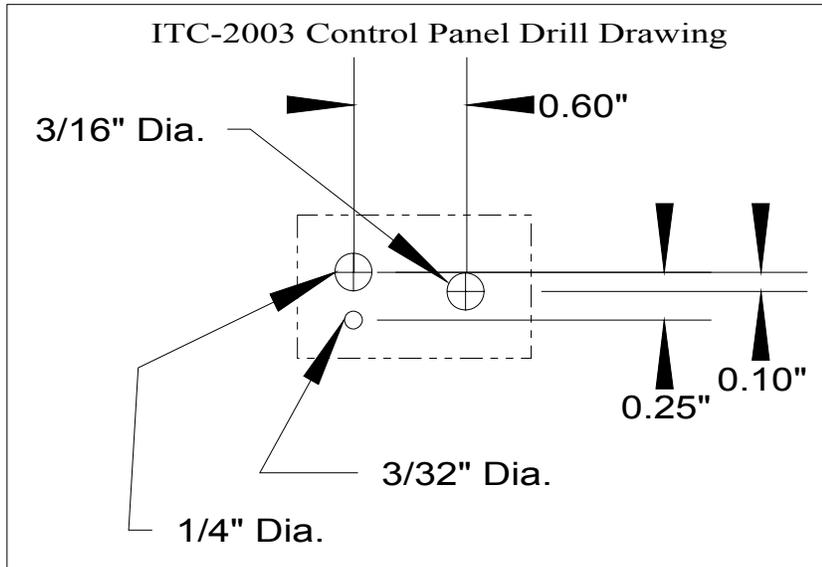
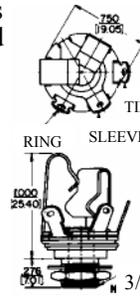


FIG. 1

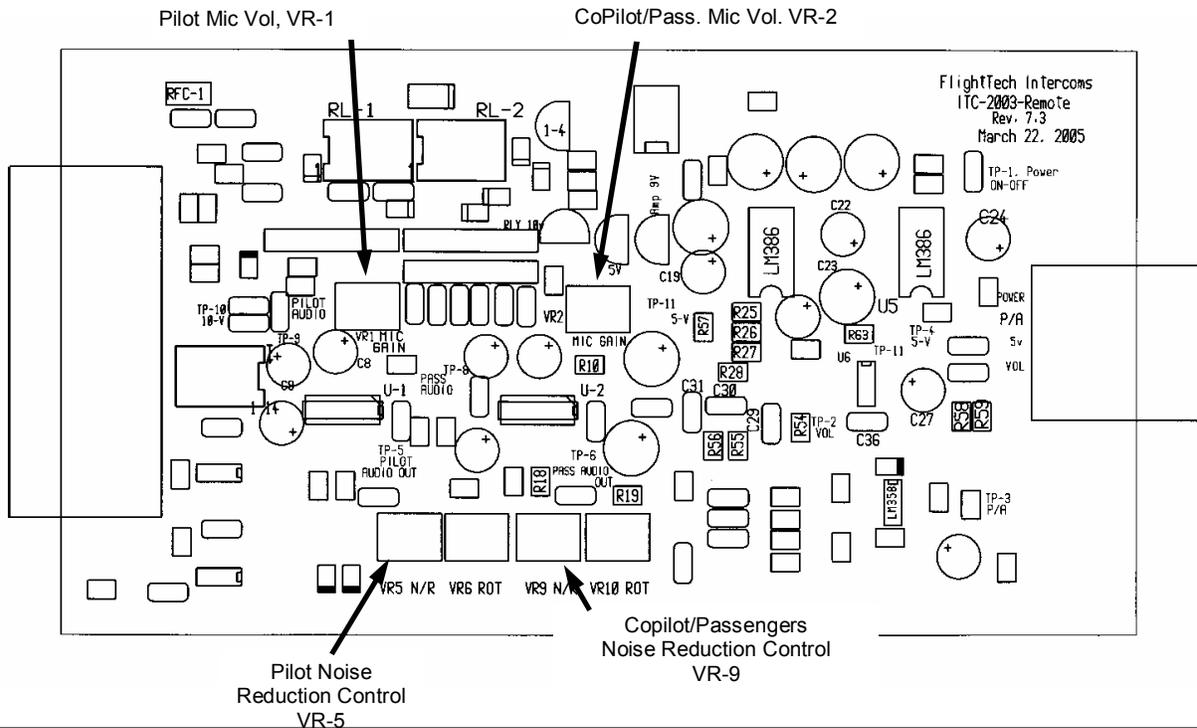
Diagram for microphone and stereo jacks showing location of Tip, Ring and Sleeve.

Headphone Jacks
 Tip- Right Channel
 Ring- Left Channel
 Sleeve- Ground
 For Mono Headphones, use Tip and Sleeve

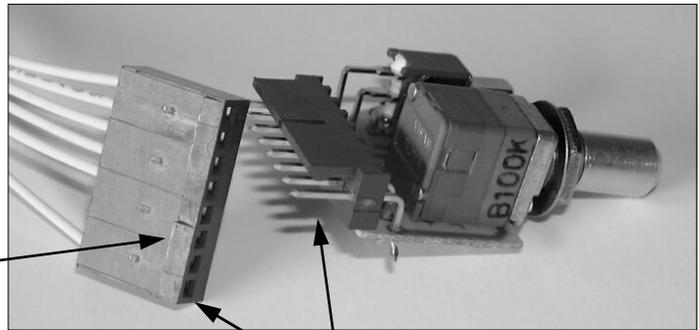
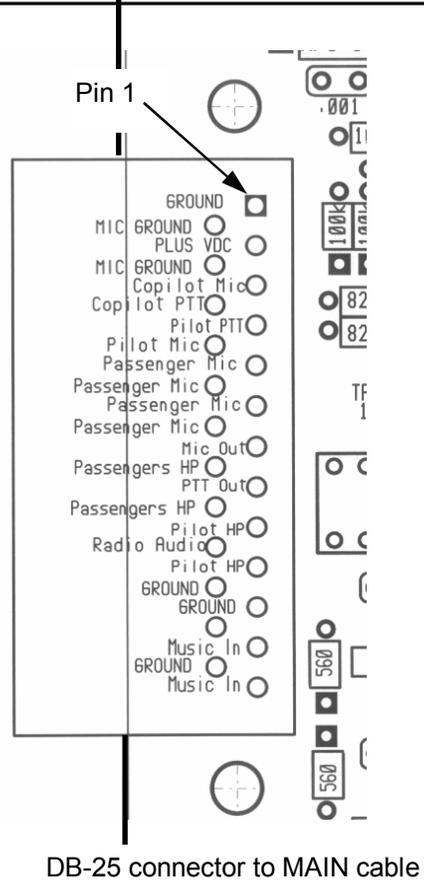


Microphone Jack
 Tip- PTT Line
 Ring- Mic Audio
 Sleeve- Ground

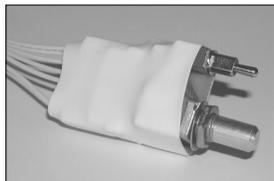
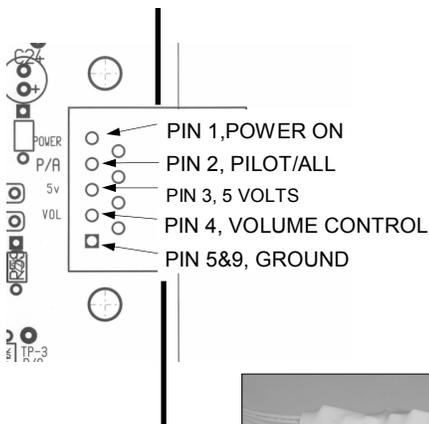
Fig. 6



Pin-1	GROUND
Pin-2	PLUS VOLTAGE, 12-28
Pin-3	COPILOT MIC
Pin-4	PILOT PTT IN
Pin-5	PASSENGER MIC
Pin-6	PASSENGER MIC
Pin-7	MIC OUT TO RADIO
Pin-8	PTT OUT TO RADIO
Pin-9	PILOT HP CHANNEL 1
Pin-10	PILOT PH CHANNEL 2
Pin-11	GROUND
Pin-12	AUX IN CHANNEL 1
Pin-13	AUX IN CHANNEL 2
Pin-14	MIC GROUND
Pin-15	MIC GROUND
Pin-16	COPILOT PTT IN
Pin-17	PILOT MIC IN
Pin-18	PASSAGNER MIC
Pin-19	PASSENGER MIC
Pin-20	PASSENGER HP CH. 1
Pin-21	PASSENGER PH CH 2
Pin-22	RADIO AUDIO IN
Pin-23	GROUND
Pin-24	
Pin-25	GROUND



DB-9 connector for Remote Control Unit



DB-9	DB-9 PIN	REMOTE 8 PIN CON.
PIN-5	GROUND	PIN-1
PIN-4	VOLUME CONTROL	PIN-6
PIN-3	5 VOLTS	PIN-7
PIN-2	PILOT/ALL	PIN-8
PIN-1	POWER ON/OFF	PIN-5
PIN-9	GROUND	PIN-1
PIN-6	SPAIR	
PIN-7	SPAIR	
PIN-8	SPAIR	

Instructions for FAA Form 337

The ITC-2003-ENRI can usually receive an airworthiness approval by submitting the FAA form 337, *Major Repair and Alteration (Airframe, Power plant, Propeller or Appliance)*. For the ITC-2003-ENRI, the following text can be used as a guide.

1. Installed FlightTech ITC-2003-ENRI Panel Mount Intercom, as per the manufactures instructions provided by the manufacturer, DesignTech Systems.
2. Installed intercom unit (location in instrument panel) in plane sight of the pilot and connected to the avionics buss through a 1 Amp fuse. Jacks were installed on each side (location). Push-To-Talk buttons installed (locations).
3. This unit has a fail-safe feature built-in, in the event of a power failure to the intercom, the pilots headset can be connected directly to the radio headphone input and microphone.
4. All work was done in accordance with manufacturer's instructions, FAR43, AC43.13-1B Chapter 11 (Electrical Systems), Section 5 (electrical wire rating), Section 6 (aircraft electrical wire selection), Section 7 (table of acceptable wires), Section 8 (wiring installation requirements), Section 9 (environment protection and inspection), Section 11 (clamping), Section 12 (wire insulation and lacing string tie), Section 13 (splicing), Section 15 (grounding and bonding), Section 17 (connectors), AC43.13-2A Chapter 2 (Radio Installations).
- 5 Weight and Balance/Equipment list was amended.
- 6 Instructions for continued airworthiness: Annual visual and operational inspection as per AC43.13-1B, Chapter 12, Section 1, -1 (Avionics equipment maintenance), 12-9a (inspection of avionics systems).

Specifications

Dimensions.

Main Unit: 5.3" x 3.4" x 1.5", weight: approximately 8 oz

Control Unit: 1"w x .75"h x 1.2"d, weight: approximately 1 oz

Electrical.

Operating voltage range: 11 to 28 VDC

Operating Current:

1. Without headphones connected, <60 ma.
2. Add 10 ma for each headphone microphone connected.

Headphone Impedance: 150 - 1000 ohms.

Aircraft Radio impedance, 560 ohm.

3-YEAR UNCONDITIONAL WARRANTY

“FlightTech Intercoms” are warranted against defects for three years from date of purchase from authorized distributors and dealers. Within the three year period, the FlightTech Intercom will be repaired or exchanged (at our option) without charge for parts or labor. Simply return your intercom along with proof of purchase, return postage of \$10.00 (within USA) and it will be repaired or replaced within two weeks. Warranty does not cover transportation cost or product misuse, accidental damage, owner tampering or reworking.

Except as provided herein, either FlightTech Intercoms or DesignTech Systems makes no warranties, expressed or implied, including warranties or merchantability and fitness for a particular purpose.

NOTE: Some states do not permit limitations or exclusions of implied warranties, therefore, the aforesaid limitations (s) may not apply to the purchaser.

FlightTech Intercoms

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