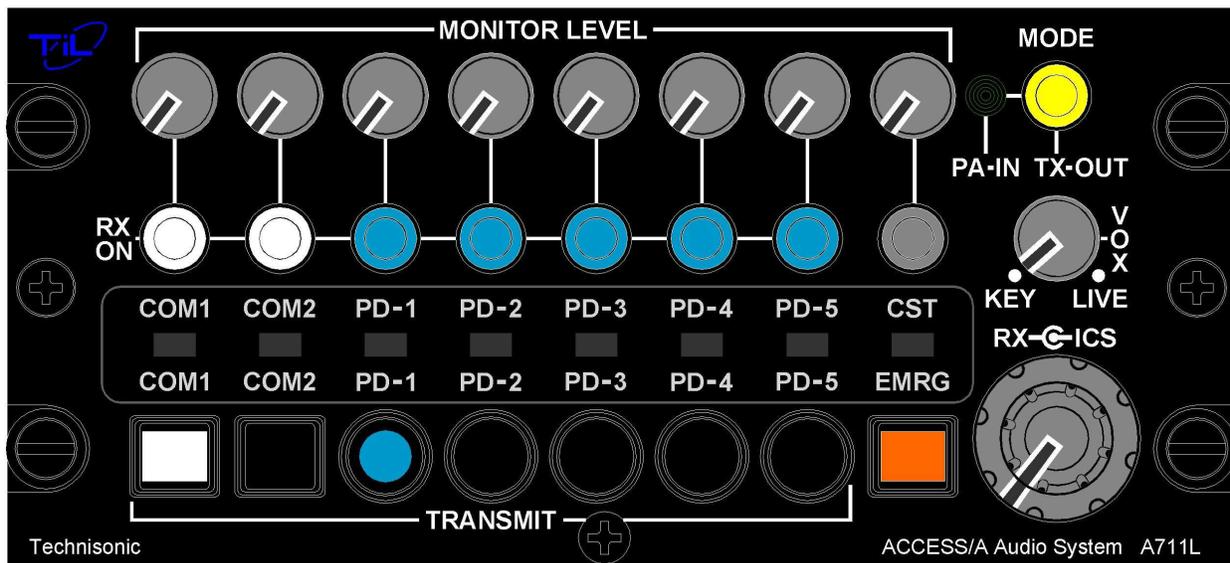


# ACCESS/A™ AUDIO CONTROL SYSTEM

## MODEL: A711 L-Series



## Operating Instructions

TiL Document No.  
09RE417  
Rev. N/C  
January, 2011

### Technisonic Industries Limited

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<b>REVISIONS</b>				
<b>Revision</b>	<b>Page</b>	<b>Description</b>	<b>Date</b>	<b>Approved</b>

 **CAUTION**

This unit contains **static sensitive devices**. Wear a grounded wrist strap and work at a static-safe workstation when handling internal printed circuit boards.

 **WARRANTY INFORMATION**

The Model A711L Audio Controller is under warranty for one year from date of purchase. Failed units caused by defective parts or workmanship should be returned for warranty service to:

**Technisonic Industries Limited**

240 Traders Boulevard  
Mississauga, Ontario L4Z 1W7

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 **TRADEMARK INFORMATION**

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## TABLE OF CONTENTS

### TiL DOCUMENT      09RE417

#### SECTION 1    GENERAL DESCRIPTION

1.1	Introduction .....	1-1
1.2	Description .....	1-1
1.3	Purpose of Equipment .....	1-2
1.4	Model Variations .....	1-2
1.5	Technical Summary .....	1-4
1.6	System Limitations .....	1-5

#### SECTION 2    OPERATION

2.1	Front Panel Operator's Switches & Controls .....	2-1
2.1.1	Intercom Keying Mode & Sensitivity Control .....	2-2
2.1.2	ICS or Intercom Volume Control .....	2-3
2.1.3	RX or Receive Volume Control .....	2-3
2.1.4	RX or Receive Selectors & Level Controls .....	2-4
2.1.5	Option Selector & Level Control .....	2-4
2.1.6	TX or Transceiver Selectors .....	2-5
2.1.7	Emergency Switch Operation & Status LEDs .....	2-6
2.1.8	PA Controls .....	2-7
2.2	Special Signal Considerations .....	2-8
2.2.1	Direct Audio Connections .....	2-8
2.2.2	Sum Node .....	2-8
2.2.3	Tone Alerting .....	2-9
2.2.4	Tone Alerting Functions .....	2-9
2.2.5	Speaker Audio .....	2-9
2.2.6	Passenger Headset Considerations .....	2-9
2.3	Changing Overlay Lighting & Radio Legends .....	2-10
2.4	Product Warranty Details .....	2-11

**LIST OF TABLES**

1-1            A711L General Specifications ..... 1-4

**LIST OF ILLUSTRATIONS**

1-1            A711L Audio Control - General View..... 1-3  
1-2            A711L Audio Control - General View..... 1-4  
2-1            Front Panel Operators Switches and Controls..... 2-1  
2-2            ICS/Intercom Controls ..... 2-2  
2-3            Level/Volume Controls..... 2-3  
2-4            RX Selectors & Level Controls ..... 2-4  
2-4A          Option Selector & Level Control ..... 2-4  
2-5            TX Selectors..... 2-5  
2-6            Status LEDs & Emergency Switch ..... 2-6  
2-7            PA Switch & Annunciator ..... 2-7  
2-8            Overlay & Legend Insert ..... 2-10  
2-9            Removing the Overlay Assembly ..... 2-10

**SECTION 1****GENERAL DESCRIPTION****1.1 INTRODUCTION**

This publication provides operating and installation information on the Model **A711 L-series**, **ACCESS/A** Audio Controls manufactured by Technisonic Industries Limited. For convenience, it is referred to as the “**A711L**” in the manual. This unit is designed to provide high performance cockpit audio control in high noise installations. The unit is plug and pin compatible with the **ACCESS/A** family format, to allow fleet wide compatibility with all **ACCESS/A** installations, *with the following limitations*: The **A711L** has its *extra functions* assigned to the “Alerting” connector, and can also have 3-tone alerting as an internal option. These connections are slightly different than a standard A710/711 unit, and to prevent any airframe problems, the alerting connector has different locks on the A711L, to make it impossible to connect it to an airframe wired for default A710/711 functions. If an existing installation had no alerting connector wiring, then it can be used without difficulty, but note the installation issues regarding annunciator dimming. **The A711L comes ONLY in a 28V panel backlight configuration.**

**1.2 DESCRIPTION**

This high power audio controller delivers at least 332 mW of audio into 150 ohms at less than 2% total distortion to the pilot and co-pilot positions simultaneously. It can deliver lower output powers into 300 and 600 ohm headsets. The pilot's position may also be internally strapped to interface with 8-20 ohm headsets at the same power level. Push-button transmit selector switches allow immediate selection of any of the seven supported aircraft communications transceivers and a PA amplifiers, while additional push-button audio input selector switches allow selection of any or all of the supported transceiver's receive audio lines. In addition, a switched (and adjustable) input is provided for special functions such as Cross-Sidetone (CST), a Nav Aid, or a Music feed. **ACCESS/A** systems have *auto-RX switching* when a transmitter is selected, to reduce pilot workload and avoid operational problems.

The **A711L** has front panel selectable and adjustable **VOX**, **LIVE** or **KEYED** intercom (ICS) functions. An **EMERGENCY** mode push-button switch (switch and LED turn red-orange when activated) provides "straight through" or "fail-passive" transmit and receive audio for the pilot on the *selected communications channel*. This switch also provides an implicit pilot **ISOLATION** function, and allows the pilot to isolate himself from the co-pilot (and the ICS system), so that he may access different communications from the other users supported by this panel (in essence, an emergency link to the selected transceiver only). In the **NORMAL** position (switch turns black & LED green), the pilot's audio is provided as selected by all of the panel controls, and is part of the ICS system. Separate **RX** and **ICS volume controls** are provided on the panel along with an **ICS VOX threshold control**. These units can also provide ICS support and boom mic TX support for a complete aircraft crew, including the pilot, co-pilot, and up to 4-6 additional passengers.

### 1.3 PURPOSE OF THE EQUIPMENT

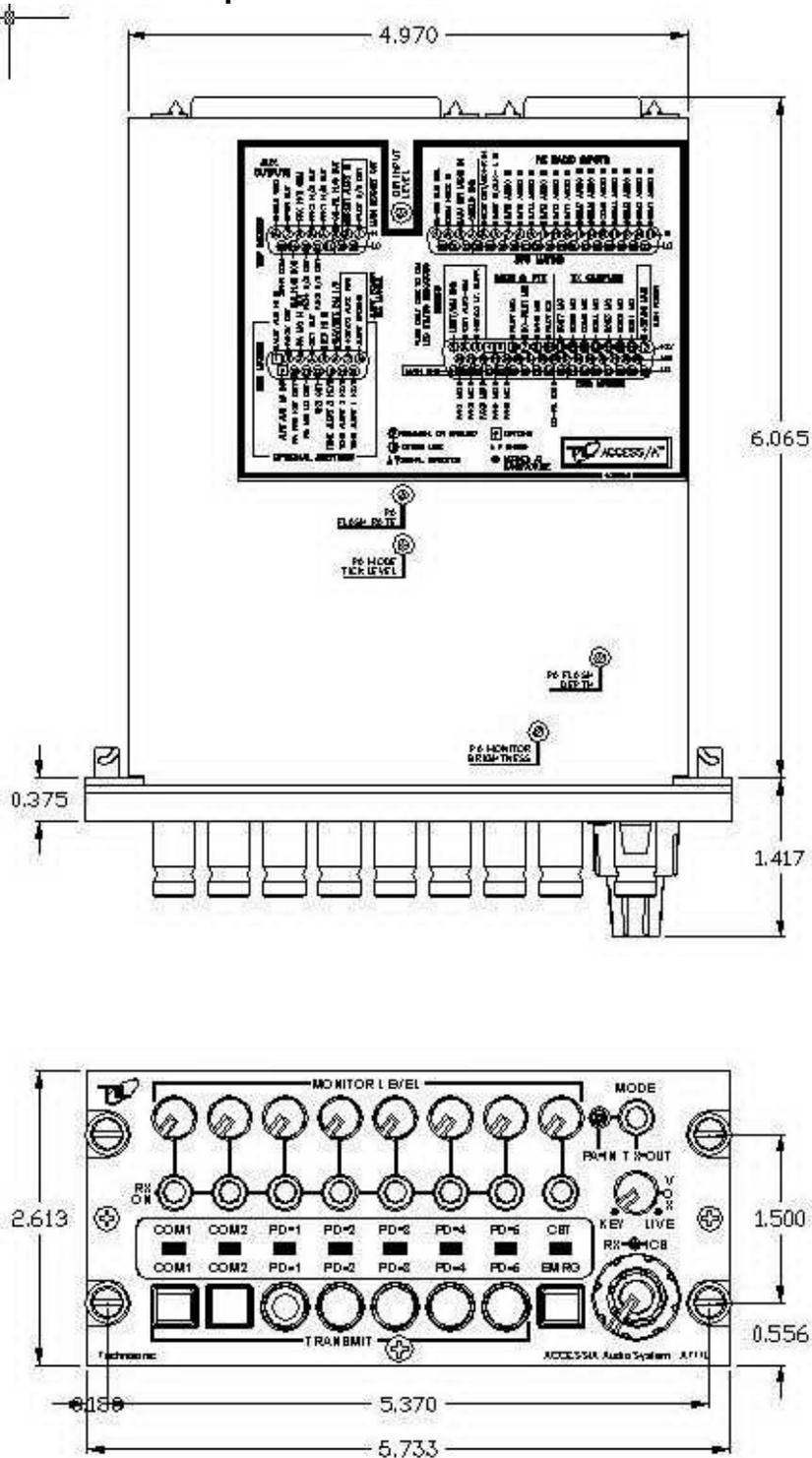
The **A711L ACCESS/A** Audio Controls are designed to provide centralized audio management and control within an airborne communications environment. This includes radio and transceiver selection, intercom, airframe threat alerting, and crew management. These units have been packaged to minimize size and weight characteristics and are ideally suited for helicopter installations, or any other Dzus rail panel location. The A711L meets all of the current requirements of US Forest Service "contractor furnished avionics" and can be used in a dual control installation in conjunction with a TiL FM airborne transceiver to comply with all US Forest Service Contract Requirements. These products are also compliant with **TSO-C50c**. The units were tested according to **RTCA/DO-214** and **RTCA/DO-160C** applicable categories with the exception of the RF Susceptibility Test, which is based upon the requirements of **RTCA/DO-160A**, and the Lightning Induced Transient Susceptibility Test which is not called out under **RTCA/DO-170**.

### 1.4 MODEL VARIATION

The A711L comes in two basic lighting configurations, all with +28VDC panel lighting, a regular version and an NVG optimized panel lighting version. Operationally the two are identical, but the NVG panel is set to a lower intensity range and has a different optical wavelength. The color of the regular solid-state backlighting is "White", the NVG is "Verde" centered at a 505nm wavelength. Panel front color is matte black, and the lighted knobs can be in several formats. The default knob style is all black, except the two ICS knobs (VOX and level), which are gray for easy identification. Units may also be supplied with or without internal 3-tone alerting (w/ground-seeking keylines). See the ACCESS/A price list for model numbers and availability or different versions. All A711L part numbers begin 961072, followed by a dash number. The most common variations are summarized below:

Dash First Digit	Second Digit	Second Digit
-2 Black w/Gray ICS	0 No Alerting, Direct I/P, CST	1 Full Alerting, CST
-3 Gray w/Black ICS	2 No Alerting, Direct I/P, NAV	3 Full Alerting, NAV
-4 All Black Knobs	4 No Alerting, Direct I/P, AUX	5 Full Alerting, AUX
-5 All Gray Knobs		
-6 Black w/Gray ICS NVG		
-7 Gray w/Black ICS NVG		
-8 All Black Knobs NVG		
-9 All Gray Knobs NVG		

Default configurations shown shaded.



**FIGURE 1-1 A711L ACCESS/A AUDIO CONTROLLER - GENERAL VIEW**

## 1.5 TECHNICAL SUMMARY

A summary of the relevant electrical, operational, mechanical and physical characteristics of the control panels are given in **Table 1-1**, General Specifications.

**TABLE 1-1 A711 L-Series GENERAL SPECIFICATIONS**

**MODEL A711 L-Series ACCESS/A Audio Controller:**

**PHYSICAL CHARACTERISTICS:**

Width (max.).....	5.75 inches
Height (max.).....	2.625 inches
Depth.....	6.07 inches
Weight (including alerting) .....	3.0 lbs. (1.36 Kg)
Mounting .....	Standard Dzus, 4 fasteners

**POWER SOURCE REQUIREMENTS:**

DC Voltage (MIN, TYPICAL, MAX) .....	20.0V, 28 V, 32.2V
	(System performance will be degraded at upper and lower limits)
DC Current .....	1 A (6 users @150 $\Omega$ , + speaker @8 $\Omega$ )
Backlighting Input:	
Standard.....	28 Vdc @ 200 mA Max.

**TECHNICAL CHARACTERISTICS:**

Input Impedance (Normal Mode, any RX input).....	2K-1.5K $\Omega$ (approx.)
Input Impedance (Emergency Mode, Com1-7 RX Inputs).....	50 $\Omega$ + Headset Z (typical)
Headset Channel Output Impedance.....	8 or 80 $\Omega$ (depending on settings)
H/S Audio Power Output.....	at least 332 mW (primary user) into 150 $\Omega$ with 6 headsets (150 $\Omega$ each) connected.
H/S Audio Power Output.....	at least 500 mW (pilot) into 8-20 $\Omega$
H/S Audio Power Output.....	at least 1500 mW (total) into 6 users @150 $\Omega$
Speaker Power Output.....	at least 2.5 W into 8 $\Omega$
Audio distortion (Speaker or H/S) .....	less than 2% THD @1kHz at total rated output
Audio Frequency Response (ICS) .....	within 3 dB from 300 Hz to 6000 Hz
Audio Frequency Response (Rx & NAV) .....	within 3 dB from 300 Hz to 3000 Hz
Hum and Noise Level.....	better than -60 dB below 500 mW
Input Muting (when mike is keyed).....	adjustable
Input to Input isolation .....	better than -70 dB between inputs
Deselected input isolation .....	better than -65 dB
CST Input/Output Levels.....	100-150mV into 150 $\Omega$ typical for 100mW H/S power

**ENVIRONMENTAL:**

Temperature (operating) .....	-45°C to +70° Celsius
Temperature (survival non-operating) .....	-55°C to +85° Celsius
Humidity .....	95% Non-condensing
Shock .....	12 g (any axis)
Altitude .....	25,000 feet

## 1.6 SYSTEM LIMITATIONS

A summary of the relevant system limitations is given below.

### 1.6.1 Power Limitations

With Standard Set-up, which consists of six headsets connected, a power output of not less than 332 mW is delivered per headset (as represented by 150 ohms) **provided that the Direct Alert Input is terminated in not less than 600 ohms and that nominal input voltages are applied at the applicable channel inputs.** Nominal microphone input: 100 mV<sub>rms</sub>; Nominal Communications/Navigational Input: 5.5 V<sub>rms</sub>.

### 1.6.2 Frequency Response Limitations

In accordance with the provisions made in RTCA/DO-214 Sections 2.8.1 and 1.5.1 the communications transmit out and receiver channels (communications and navigational) possess an effective bandwidth of 300 Hz--3000 Hz with a maximum amplitude variation of 3 dB within the frequency range.

### 1.6.3 Crosstalk Limitations

To ensure that the crosstalk specifications are in accordance with the applicable sections of DO-214, it is essential that 1) manufacturer's maximum **microphone input voltage of -4.7 dBu not be exceeded** in order to avoid jeopardising **input to microphone output crosstalk** results, particularly at the low frequency end, 2) in the instance where only two access units are daisy chained via their ICS tie-lines, **a resistor of not greater than 600 ohms must be maintained across the ICS tie-line** in order to avoid jeopardising **station to station** crosstalk results in Rx mode at the high frequency end.

The phenomenon of music appearing at the headset of the Second Station Panel (SSP or unit at which the crosstalk is measured) for station to station crosstalk considerations is a limitation of the A711L and for which crosstalk at high frequencies (6000 Hz and greater) can fall below 65 dB of attenuation. However music for most intents and purposes may be considered an optional feature, which may be turned off without a negative impact on the essential functioning of the access units.

Further, valid station to station crosstalk measurements were quoted in respect of a half power level at the headset at the First Station Panel (FSP or unit from which the crosstalk originates) as opposed to a half power level at the speaker output of the FSP because it is envisioned in the latter scenario that the substantial speaker level (which will also necessitate very large signal levels at the FSP headset) will have an impact on the listener at the SSP whether a crosstalk signal appears at the SSP listener's headset or not.

When multiple transceivers are selected for simulcast operation, they are bound together at the station output, and thus are also bound together for other stations as well, defeating cross-talk measurements. All measurements are based on single transceiver TX selection.

**1.6.4 Isolation Limitations**

When in Pilot Isolation Mode, the pilot microphone for ICS operation is rendered inactive. Consequently, neither co-pilot nor passengers can receive pilot intercom transmissions while the latter is in Isolation mode.

**1.6.5 Standard Settings Utilised Throughout Testing**

Pilot Headset Settings utilized throughout testing was for the standard 150 ohms impedance headset. The PAL options utilized were applicable to the following configuration: Where Pilot or Co-pilot transmitted on the UUT ICS communication was possible only in the instance where the signal emanated from other unit(s) daisy chained to the UUT via the ICS tie-line. In this event the UUT would receive the ICS transmissions from the other unit(s). It was not possible for the UUT, which transmitted, to export ICS communication to another unit nor was it possible for intra ICS communication to occur between users connected to UUT (i.e. Option 1 not implemented).

**1.6.6 Transmission Priority**

Where Pilot and Co-pilot transmit simultaneously, the Pilot transmissions take precedence over those of the Co-pilot. Co-pilot transmissions in this case would be rendered inactive.

**1.6.7 Induced Signal Susceptibility, RF Susceptibility and RF Emission**

The wiring connections called out in the Installation and Operating Instructions, chapter 2, describes shield terminations for minimum ground loop noise. The test harnesses used for RTCA/DO-160 sections 19, 20, and 21 – Induced Signal Susceptibility, RF Susceptibility, and Emission of RF Energy respectively - used shield terminations at both ends of the cable. Should RF susceptibility pose a problem in a particular installation the installer may wish to try terminating shields at both ends of the cable, further, if this does not produce satisfactory results then double shielding may be required.

## SECTION 2

## OPERATING INSTRUCTIONS

## 2.1 FRONT PANEL OPERATORS SWITCHES AND CONTROLS

This section explains the operation of the **A711L ACCESS/A** Audio Controls, and how to use the system in a typical aircraft environment. All normal user controls are on the front panel of the unit and are either variable rotating controls, or selectable push-button switches.

The exact radio legends on the face of the **A711L** may vary from the illustration shown, due to customer specifications, and the final legend insert that is installed for the specific aircraft installation. A full view of the controls is given in **Figure 2-1**. All rotary controls are illuminated for night flight.

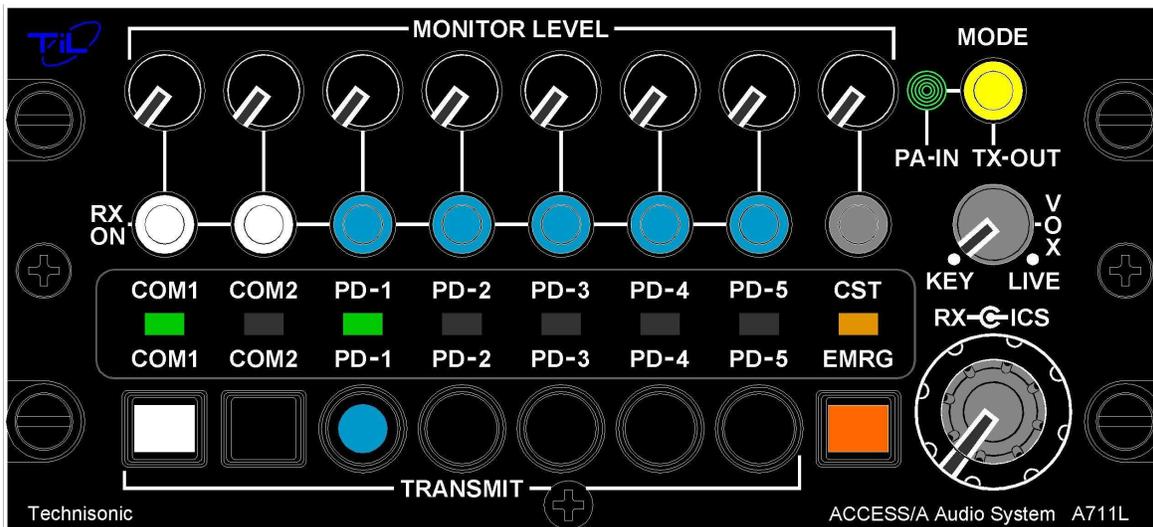


FIGURE 2-1 A711L FRONT PANEL OPERATOR'S SWITCHES AND CONTROLS

- The top row of variable controls sets the level of the incoming **RX** or **RECEIVER** audio and the **special function** (at the right) such as **CST** (Cross Side Tone), **NAV** or **Aux/Music** input signals. To the far right is the **PA MODE** switch (Yellow) which shifts Transmit operation from Radio to PA system operation, and a flashing green LED to the left of this button indicates the **PA Mode** is active.
- The middle row of round push-buttons selects the **RX** or **RECEIVER** audio to be sent to the crew headsets. This is an ON/OFF function.
- The bottom row of square and round push-buttons selects the **TX** or **TRANSCIEVER** to be used when transmitting. The left (square buttons) are normally for AM Com transceivers, the right (round) buttons are for tactical radios. This shape change is to aid tactile identification without looking at the panel. The far right hand square button is to select **EMERGENCY Mode** operation for the designated Pilot position

- Any combination of RX sources may be selected at one time, for system monitoring purposes. Multiple TX destinations may also be selected by pressing in two or more buttons simultaneously to set up simulcast operation. Pressing any TX button in automatically resets any previous selection, but RX selections are independent push on/push off switches.
- The corresponding RX audio of any TX selection is made **AUTOMATICALLY** whenever a TX button is depressed. This function is often referred to as Auto-RX select.
- The knobs at the right side of the unit adjust **ICS VOLUME (intercom)**, **RX VOLUME**, and the trigger or **VOX LEVEL** of the **INTERCOM**, as well as its exact mode of operation, Live, Keyed or VOX.

### 2.1.1 INTERCOM KEYING MODE AND SENSITIVITY CONTROL

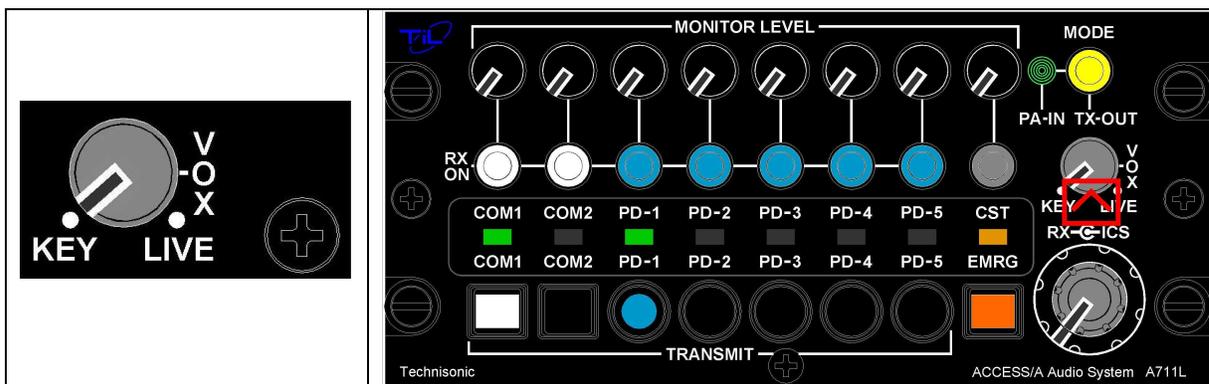


FIGURE 2-2 A711L ICS/INTERCOM CONTROLS

This adjustment selects how the intercom will activate. In the **VOX** (Voice Activated) mode, the audio produced by any of the microphones will break the squelch of the intercom and the audio will be routed through the system. The threshold audio level required to break the squelch is adjusted by this knob. Turning the knob **more clockwise** makes the system **more sensitive** to incoming mic audio. A **fully clockwise** setting on the knob will leave the intercom **on** at all times, giving **LIVE** or **HOT MIC** operation. When set **fully counter-clockwise**, in the switch detent position, the intercom is in the **KEYED** mode, will only produce audio when the intercom PTT line is keyed.

While the co-pilot, pilot and passengers have **individual** mic VOX gates (3 in total), they are controlled from a **common front panel control**. Individual gating reduces the amount of unwanted noise when the intercom is triggered, and makes intercom communication more intelligible as a result. The passengers may have their VOX threshold offset by an internal adjustment (PAX VOX) to accommodate differing headset types or ambient noise conditions, and may also use drop cords..

With only a single A711L control, best operation of all ICS functions is obtained when the **microphones are all of the same type** (or have very similar characteristics). Headsets with significantly different microphones or earpiece efficiencies make it difficult to achieve satisfactory control adjustments for all users, unless they also have individual level controls. Good quality headsets, such as David Clark, Telex or Bose, with noise reducing, amplified dynamic microphones and individual headset volume controls give the most effective and user-adjustable performance, and minimal system difficulties. Use of "clone" headsets that visually resemble these higher quality units, but have much poorer electrical and acoustic performance is strongly discouraged, as the entire system operation will suffer. This is especially true under high noise conditions or continuous rough use. Marginal headsets will compromise the ship's entire audio system.

### 2.1.2 ICS or INTERCOM VOLUME CONTROL

The **ICS LEVEL** knob controls the intercom volume level for all users. Fully clockwise is the maximum volume level and counter-clockwise the minimum. The ICS volume can be set to zero, but has the internal capability to be **preset** to a low minimum value, if desired.

ICS audio is normally muted during TX operations, but may be adjusted internally for a user specified muting depth, or the muting function may be disabled by jumper selection.

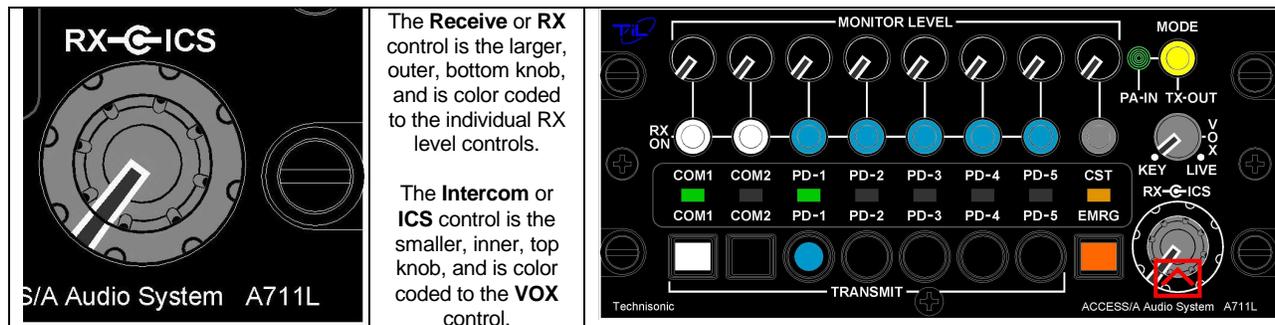


FIGURE 2-3 A711L LEVEL/VOLUME CONTROLS

### 2.1.3 RX or RECEIVE VOLUME CONTROL

The **RX LEVEL** knob controls the volume level of all the system receivers. Fully clockwise is the maximum volume level, and counter-clockwise the minimum. RX audio is derived from both the receivers (such as Nav aids) and the transceivers (Comms, etc.) in the system. The RX audio level **cannot** be set to zero, and has an internal minimum level setting.

RX audio is normally partially muted during TX operations, and is adjustable internally to the desired level for TX sidetone. Note that sidetone must come from the radio itself.

### 2.1.4 RX or RECEIVE SELECTORS & LEVEL CONTROLS

These 7 push-button **RX SELECTOR** switches allow the crew to monitor any combination of the Receivers in the airframe system, independent of the setting of the transceiver selectors. The **RX SELECTORS** have an alternate action; **push in** to activate the audio, **push again** to have the switch return to the **out position and off**.

Any number or combination of RX switches may be used at the same time. Note that the corresponding RX audio is always **automatically selected** by a **TX SELECTOR**, and the matching RX switch does **not** have to be selected as well. The corresponding level control for each RX line is located above the switch, and the individual colors of the RX pushbuttons match the colors of the corresponding TX pushbutton switches. These controls normally go to approximately 2-5% level at the minimum setting (not off), but can be strapped internally to go fully off, if required. Selecting the input "off" is normally done by the setting of the RX monitor switch, **not the level control**.

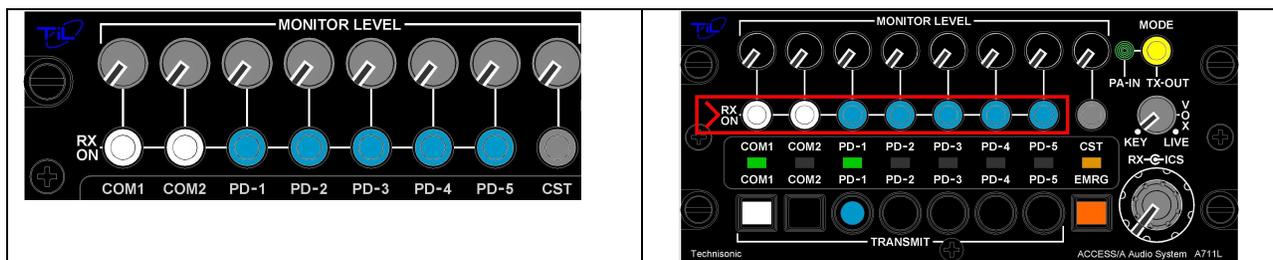
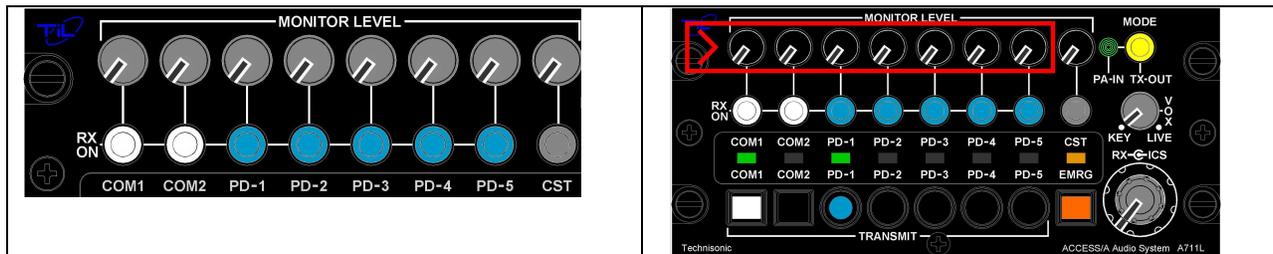


FIGURE 2-4 A711L RX SELECTORS & LEVEL CONTROLS



### 2.1.5 OPTION SELECTOR & LEVEL CONTROL

This single push-button switch and level control allows the crew to monitor either **CST (Cross Side-Tone)** a **Nav** system or **Aux audio or Music**, as determined at manufacture. **CST** allows monitoring of outgoing transmissions on another panel (only one), where you are NOT already monitoring the radios in question. This specific input has soft muting during other ICS and TX functions. The switch has an alternate action; **push in** to activate the audio, **push again** to have the switch return to the **out position and off**.

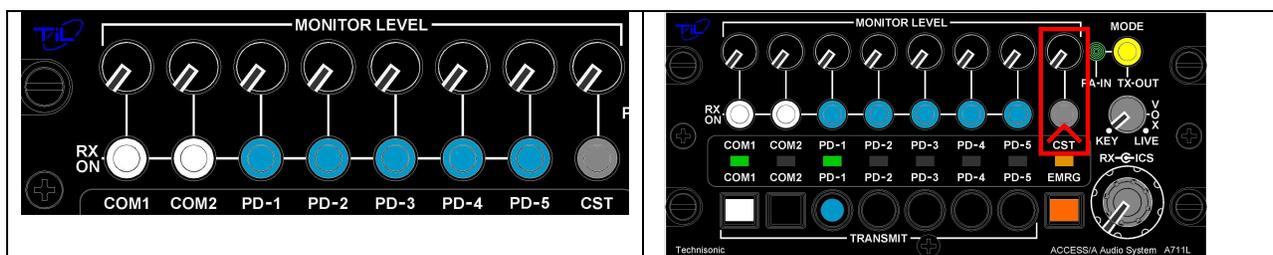


FIGURE 2-4A A711L OPTION SELECTOR & LEVEL CONTROL

## 2.1.6 TX or TRANSCEIVER SELECTORS

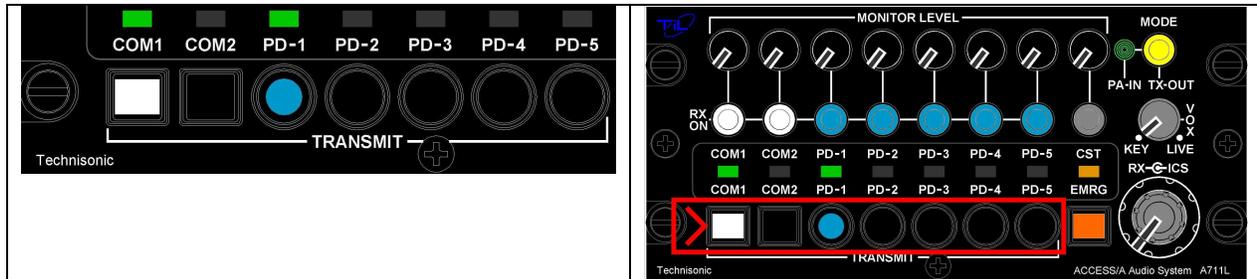


FIGURE 2-5 A711L TX SELECTORS

The setting of the **TX SELECTOR** switches determines *which Transceiver will transmit* the activated microphone audio, and which receiver the system will monitor, independent of the additional RX switch settings. The buttons have an **interlocking action**, and pressing one button will **automatically de-select** any other that is already activated. If two buttons are depressed at the same time, **simulcast operation** (on two radios) is enabled.

The buttons change from **black to white (com radios) or blue (mission radios) when activated**, and a corresponding **STATUS LED illuminates green** above the button. The **LEDs turn yellow when the specific transmitter is activated by the A710/711**, and all the LEDs will extinguish if all transmitter buttons are returned out to the off (black) position, and no transmitter has been selected. This indicates that no valid TX mode has been selected by the crew. **On NVG panels, the status LEDs turn brighter green, not yellow during transmit operation.**

In the **EMERGENCY MODE**, the radio(s) selected by this group of switches is **sent directly** to the **pilot's headset**, bypassing all of the unit's internal power amplifiers and other electronics.

Note, whatever is **bound together by one panel for simulcast is bound together for all** as the switching takes place at the output of the control. Both TX and RX data will be tied. For this reason, the AM Com radios should not ever be bound into a simulcast operation, to prevent accidental or unintended ATC traffic.

### 2.1.7 EMERGENCY SWITCH OPERATION & STATUS LEDs

The operation of the A711L control can be changed from **NORMAL** to **EMERGENCY** operation in two different ways. First, if **DC power fails** to the unit, the internal **auto-emergency function is enabled**; this transfers the unit to a passive emergency mode to enable critical communication to continue **for the pilot**. This auto-switch-over is indicated by all **STATUS LEDs** going black (including the one over the emergency switch).

Second, the **PILOT EMERGENCY SWITCH** can be depressed, (alternate action), which will force this transfer. In this mode, the **STATUS LED** above the switch changes from green to deep orange, and the button itself turns orange. **NVG panels go black**.

In either case, the **PILOT** (or primary user of the control) is **connected directly to the radio** that has been selected by the **TX SELECTOR** switch. Boom Mic Transmit operates normally, as does receive, but the headset power level is reduced to the passive (un-amplified) radio level. All internal electronics are bypassed for the pilot, which permits some level of operation even with massive equipment failure or loss of power.

When the pilot emergency switch is used to shift to emergency operation, the other users of the control are essentially un-affected, and continue to operate on the ICS & music circuit. This mode may also be used as a **“Pilot Isolate” function**, as all radio audio is disabled to the passengers, and only the tape and ICS audio remain.

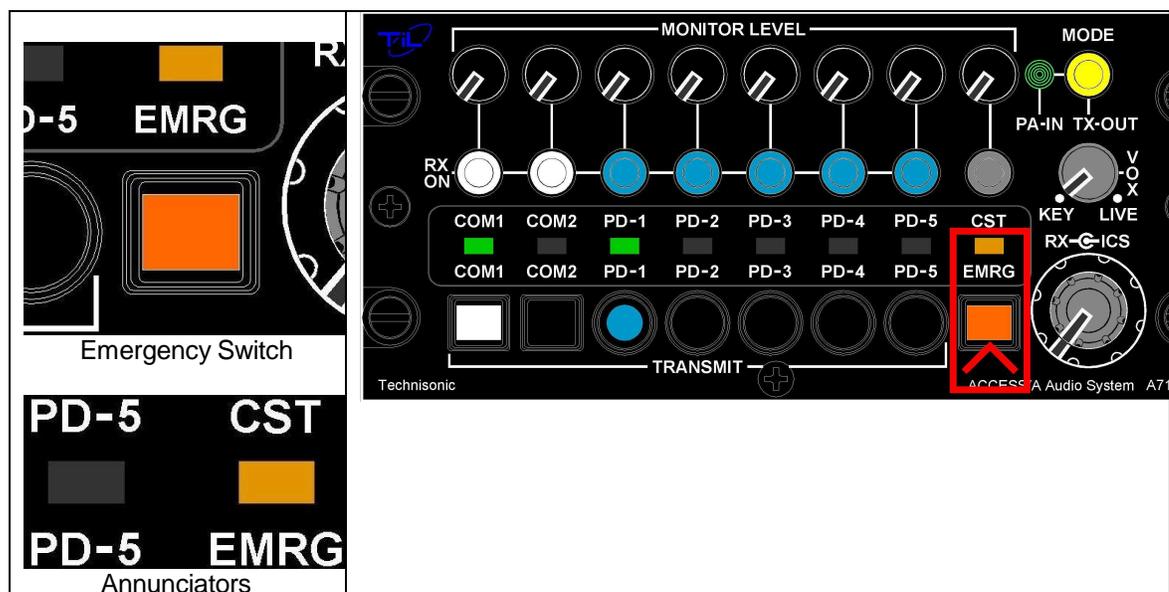


FIGURE 2-6 A711L STATUS LEDs & EMERGENCY SWITCH

## 2.1.8 A711L PA CONTROLS

The **A711L** control differs slightly from the other **A710/A711** series in that a **single button transfer is incorporated for shifting from any preset TX mode to PA mode, and back again**. This allows simulcast settings to remain undisturbed and provides a very fast way of shifting TX modes in flight. PA operation has some hazards for the flight crew, however. To guard against accidental PA operation, a green LED to the left of the yellow **PA** button flashes while in the **PA Mode** (rate and intensity are field adjustable), and an optional audible “tick” can be programmed to come on to warn users they will be talking on the PA system, not a radio. This is a safety feature, to prevent accidental transmission over the PA system which can have significant repercussions.

This function is a push-on (**IN=PA MODE**), push-off control (**OUT=TX MODE**). If the PA system supports it, additional features such as remote PA ON/OFF, and side tone input are also provided.

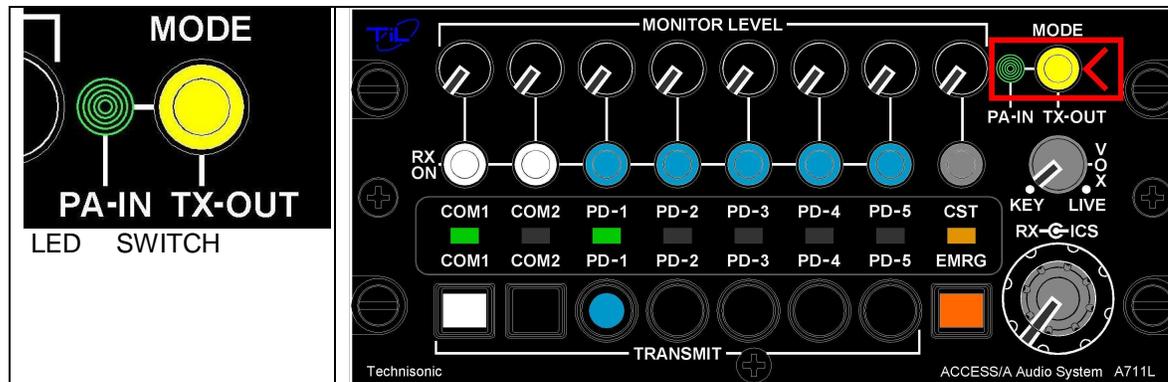


FIGURE 2-7 A711L PA SWITCH &amp; ANNUNCIATOR

## 2.2 SPECIAL SIGNAL CONSIDERATIONS

There are several special signals and lines related the A711L, which require careful installation planning, and understanding by the flight crew.

### 2.2.1 DIRECT AUDIO CONNECTIONS

The A711L has *two different un-switched, direct audio inputs*. One is routed *directly* to the *Pilot's headset output via a resistive pad*. This is used when an existing airframe threat alerting system must be tied directly to the pilot's headset. This function is active when in either the normal or emergency mode, and its volume is a function of the external generating source, and the headset impedance. This should be tested (if implemented) to insure adequate headset level is possible in the specific application. Note that this connection may be *unusable* in the **LOW IMPEDANCE** (8-20 ohm) headset mode, if the alerting system cannot deliver enough level. Excessive loading back through this connection may reduce headset volume, or adversely affect the pilot's headset, **so be certain this function is correctly implemented**.

The second direct input is un-switched only, and is *mixed with the regular RX audio bus*. It will be partially *muted* during TX operation, and must be used carefully to insure correct system operation. This signal should **NOT be wired in the harness if not needed**, as it will serve merely as a source of noise if left stowed in the aircraft wiring. It cannot be switched off, and **will be lost during emergency operation, as only the 7 transceivers are routed to the emergency headset bus**.

### 2.2.2 SUM NODE

This line is used to *expand the RX input bus* of the A711L control, and allows many supplemental receivers to be attached with high isolation from other signals. Use of either the A770 or A775 eyebrow expansion units is required to tie to this line. Signals directed to this input will be muted during TX operation, just as for any other RX input. This can be used to add switched or variable NAV aids and other sources to the system control area.

### 2.2.3 TONE ALERTING

The A711L supports the installation of **optional tone alerting**. The alerting tones function as follows:

Alerting tones are activated by a ground trigger at the corresponding input pin, and play once the alert line is triggered. The #3 (DH) alert is timed, and the #2 alert, (Low Rotor) over-rides tone #1 (Engine Failure). The tone level, frequency, pulse rate and time are all field adjustable for the best match to existing Sonalerts in the cockpit and user preferences. Always confirm alerting is working correctly and is at an acceptable level before completing any installation.

### 2.2.4 TONE ALERTING FUNCTIONS

Alert Function	Corresponding Tone Input	Format	Input Pin
Engine Failure	1 (steady tone)	Repeat continuously	Pin 15, Alert 1
Low Rotor RPM	2 (pulsing tone)	Repeat continuously, over-rides tone 1	Pin 14, Alert 2
Decision Height	3 (two-tone)	Timed, 2-3 sec. typical	Pin 1, Alert 3

### 2.2.5 SPEAKER AUDIO

The **A711L** has a speaker channel that may be used to provide cabin monitoring of signals when parked on the ramp, during troubleshooting, or for in-flight use if cabin noise permits. This is an **optional connection** and **does not have to be used**. The speaker level is driven by the same controls as the headset level, but it does not provide any microphone related audio (to avoid feedback), such as ICS.

The specific audio sources routed to the speaker channel may be programmed with jumpers internally, and it may be used as a "music only" feed for a passenger cabin area if desired. **Alerting is NOT routed to the speaker channel.**

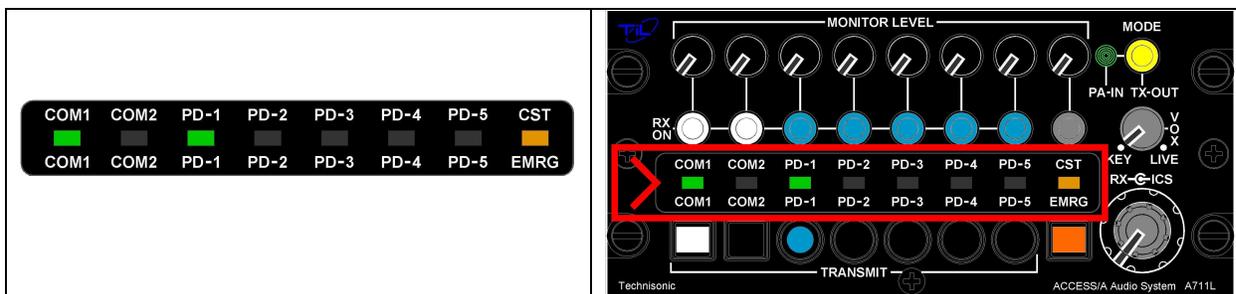
### 2.2.6 PASSENGER HEADSET CONSIDERATIONS

The **A711L** has the ability to drive passenger ICS in both PTT or VOX modes, but you must consider this: **Loose passenger headsets lying in the cabin MUST be properly accounted for.** If the headsets are wired in directly, the loose headsets will be a continual source of intercom noise, rattling around the cabin. They have to be un-plugged when not in use, or connected via a drop cord that provides either PTT or continuous mic connection. This is VERY important, and must be considered during installation and operation both. The industry default is to use a drop cord of some type, but other methods are possible, just be certain this issue has been resolved to the satisfaction of the flight crew BEFORE flight.

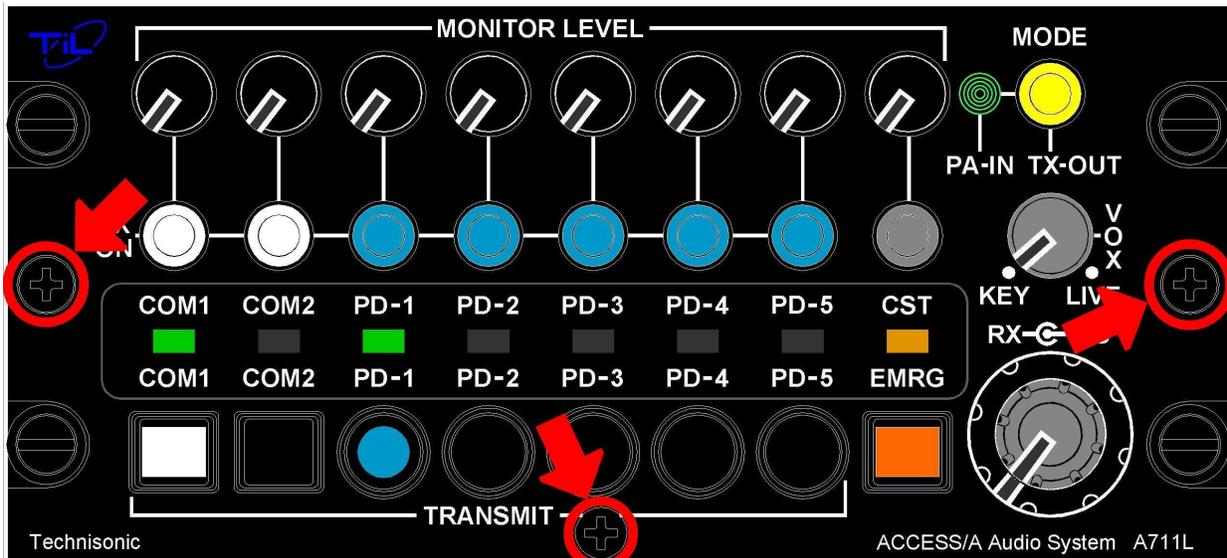
**2.3 CHANGING OVERLAY LIGHTING & RADIO LEGENDS**

The legends on the **A711L** front panels, and the overlay color and lighting type can all be easily changed in the field to suit special requirements. The entire lighted overlay is changed by removing three screws, as illustrated below. Remove the knobs (use an Allen/Hex key to undo the set screws), and the overlay assembly will pull off. A small polarized square plug on the rear mates with the lighting assembly, and can be pulled off to allow the overlay to be completely removed and exchanged. See the service manual for more details.

The legend insert is adhesive, and can be removed by lifting a corner free with a sharp X-acto knife blade, and then gently pulling the entire Lexan strip free. Remove the backing from a new legend strip (with the desired legends), line it up evenly, and press it into place on the overlay recess. The adhesive will cure fully in 48 hours. Be sure any bubbles are pressed out, and that all edges are firmly attached, with no exposed lighted edges.



**FIGURE 2-8 OVERLAY & ADHESIVE LEGEND INSERT**



**FIGURE 2-9 REMOVING THE ENTIRE OVERLAY ASSEMBLY  
(Remove the 3 screws indicated, after removing all knobs)**

## 2.4 Product Warranty Terms

**Technisonic Industries Limited**  
240 Traders Blvd., Mississauga, ON Canada L4Z 1W7  
Tel: (905) 890-2113 Fax: (905) 890-5338

### **IMPORTANT! PRODUCT WARRANTY**

All communication equipment manufactured by Technisonic Industries Limited is warranted to be free of defects in Material or Workmanship under normal use for a period of one year from Date of Purchase by the end user.

Warranty will only apply to equipment installed by a factory approved and/or authorized facility in accordance with Technisonic published installation instructions. Equipment falling under the following is not covered by warranty:

- equipment that has been repaired or altered in any way as to affect performance,
- equipment that has been subject to improper installation,
- equipment that has been used for purposes other than intended,
- equipment that has been involved in any accident, fire, flood, immersion or subject to any other abuse.

Expressly excluded from this warranty are changes or charges relating to the removal and re-installation of equipment from the aircraft. Technisonic will repair or replace (at Technisonic's discretion) any defective transceiver or audio system (or part thereof) found to be faulty during the Warranty Period.

Faulty equipment must be returned to Technisonic (or its authorized Warranty Depot) with transportation charges prepaid. Repaired (or replacement) equipment will be returned to the customer with collect freight charges. If the failure of a transceiver occurs within the first 30 days of service, Technisonic will return the repaired or replacement equipment prepaid.

Technisonic reserves the right to make changes in design, or additions to, or improvements in its products without obligation to install such additions and improvements in equipment previously manufactured. This Warranty is in lieu of any and all other warranties expressed or implied, including any warranty of merchantability or fitness, and of all other obligations or liabilities on the part of Technisonic.

This Warranty shall not be transferable or assignable to any other persons, firms or corporations.

**For warranty registration please complete the on-line  
Warranty Registration Form found at [www.til.ca](http://www.til.ca).**