AUDIOARTS® ENGINEERING

Air-2+

Because sometimes all you need is a simple analog mixer

- 12 Stereo Input Channels
- A / B Inputs on ever channel
- 2 Microphone Inputs – patchable to any fader channel
- Phone Channel Input – with mix-minus feed back to external hybrid
- 2 Stereo Program Busses
- Control Room, Headphone, & Studio Monitor feeds
- Selectable Control Room Monitor muting logic
- 2 Large, easy to read VU meter pairs with peak indicators
- Internal Cue Speaker
- Modular Construction

Easy Interface

(All specifications subject to change at anytime)

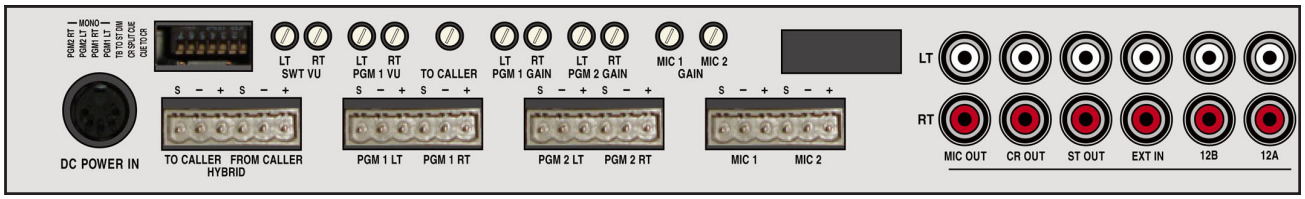
Console Features

Overview

Each AIR 2+ console has two Input panels and one Master panel. The Input panel consists of six faders with associated switches. The Master panel has a PHONE section, a CONTROL section, a HEADPHONE section, and a STUDIO section. Each section is described below.

The basic purpose of the console is to take some of the many audio signals that are wired to the console inputs, and generate several outputs that combine these inputs in various groups and at various degrees of loudness, or signal strength. The typical application is in a radio station where it is desired to develop the signals that the station will broadcast (the on air signal), as well as several additional signals for recording and monitoring.

Inputs



The AIR 2+ console is designed to handle up to 12 analog stereo consumer level (-10dBu unbalanced) inputs, two mono microphone (-50dBu nominal) inputs, and one external stereo line level (-10dBu unbalanced) input that goes directly to control room or studio.

The AIR 2+ also has one analog (+4dBu balanced) input dedicated to use as telephone caller input.

Analog Mono Mic Level Inputs

These inputs are used to connect to microphones, which typically put out signals at relatively low signal strength, and therefore require more amplification (increase in signal strength) to be properly audible in the output. Mic level sources are wired to 6-position plug terminals located on the rear of the console. On the rear of the console also are a pair of the RCA connectors used for MIC outputs, and the MIC 1 and MIC 2 GAIN trimpots for adjusting the level of each microphone input independently.

Example: with a microphone input of –60dBm @150 Ohm at the port, gain trim can set levels from -22dBu to +16dBu (note maximum preamp gain is +76dB) at the PGM 1 or PGM 2 output.

Analog Stereo Line Level Inputs

These inputs are typically used to connect to machines, such as tape decks, cart machines, CD players, etc., that provide analog outputs.

Outputs

The console main analog outputs include two Program stereo buses (PGM 1 and PGM 2). The Program stereo outputs can be programmed to mono outputs via dipswitch SW1 (described in the “Console Internal Programming” section).

Monitor outputs include a stereo Control Room output, a stereo Studio output, a mono cue output, and a stereo headphone jack.

The console’s mono cue signal feeds the internal speaker in the meterbridge, and also provides the cue signal used to interrupt Control Room and headphones, if such interrupt has been enabled by the installer.

Mute and Tally

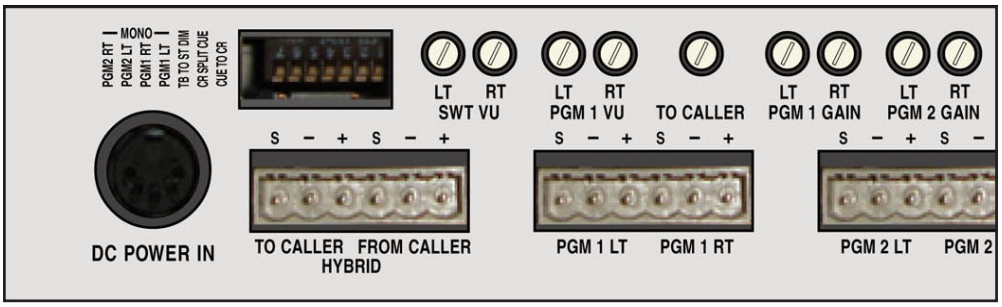
The console has the ability to mute the control room output. The console also has an ON AIR tally output that is used to drive user-provided external circuitry that will in turn operate the control room on air indicator. This tally is automatically activated whenever the control room mute is activated. Thus, turning on any module that activates the control room mute also turns on the ON AIR tally.

See the “Console Programming Options” section for details.

Console Programming Options

All programming (except for headphone split cue option) is made via three PCB mounted dipswitches located on the console's rear panel. One dipswitch (PGM/CUE switch) is on the top left side of the rear, and programs the control room cue, the studio dim function, and the mono program outputs. The two other dipswitches (CR MUTE/AIR TALLY) are in between the two groups of RCA connectors, and activate CR mute and AIR TALLY. Note that when a dipswitch position is in the up position it is ON.

PGM/CUE Dipswitch



Cue Interrupt

The dipswitch pos. 1, when activated, sends cue to the control room.

Split Cue, Control Room

The dipswitch pos. 2, when activated, allows a summed (L+R) version of the regular program to be sent to the right side of the CR monitor stereo output, while CUE is sent to the left side.

Split Cue, Headphone

Consoles are normally programmed at the factory for CUE to appear on the left channel, while L+R sum of the control room output appears on the right. This can be changed with jumper J1 on the back side of the Master Panel. The jumper normally spans pins 2 and 3 of the jumper header. To defeat this split cue option, move the jumper to span pins 1 and 2 instead. Then cue will interrupt both sides of the headphones.

Studio Dim

The dipswitch pos. 3, when activated, allows normal studio audio to DIM (drop -20dB in level) when talkback to studio is engaged. If this dipswitch is not activated, the normal studio audio is completely interrupted by the MIC 1 audio when talkback to studio is engaged.

If the studio is programmed to DIM talkback audio could presumably make it from the studio monitor speakers to the open studio mic.

Program Mono

The dipswitch pos. 4 - 7, when activated, sums the left and right PROGRAM channels and sends L+R to the appropriate channel:

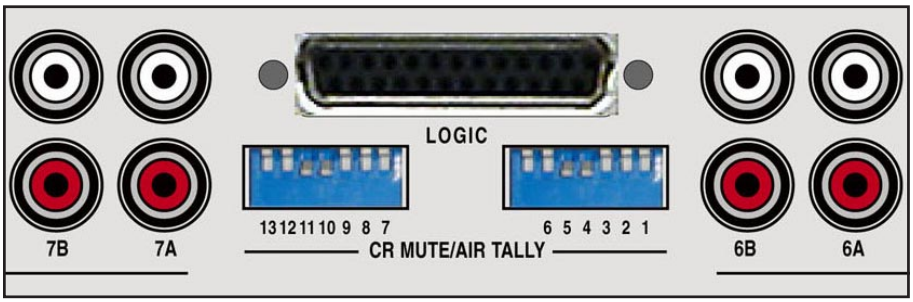
Pos. 4 - sends L+R of the PGM 1 to the PGM 1 LT channel;

Pos. 5 - sends L+R of the PGM 1 to the PGM 1 RT channel;

Pos. 6 - sends L+R of the PGM 2 to the PGM 2 LT channel;

Pos. 7 - sends L+R of the PGM 2 to the PGM 2 RT channel.

CR MUTE/AIR TALLY Dipswitches



CR Mutes

An input channel can be programmed to mute the control room speakers when the channel is ON. Positions 1 through 13 of the dipswitches, when activated, automatically mute the console's control room speakers when the corresponding channels 1 through 13 are turned ON. This is done to prevent feedback from the CR announcer's mic. At the same time the ON AIR LED in the center of the meterbridge will light up.

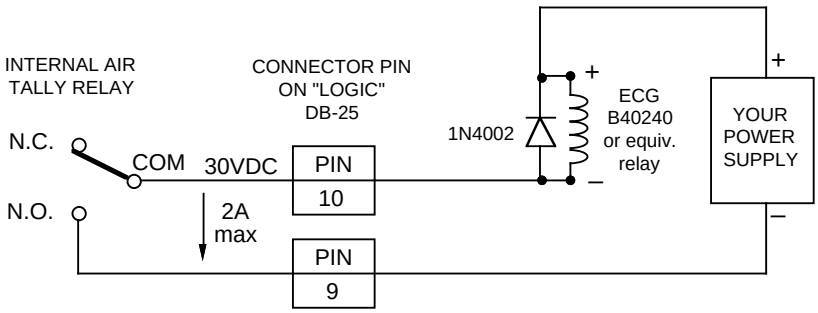
On Air Tally

For controlling the "on-air" tally function, a relay is provided. The tally is activated when any channel set for CR mute is turned on or put into cue.

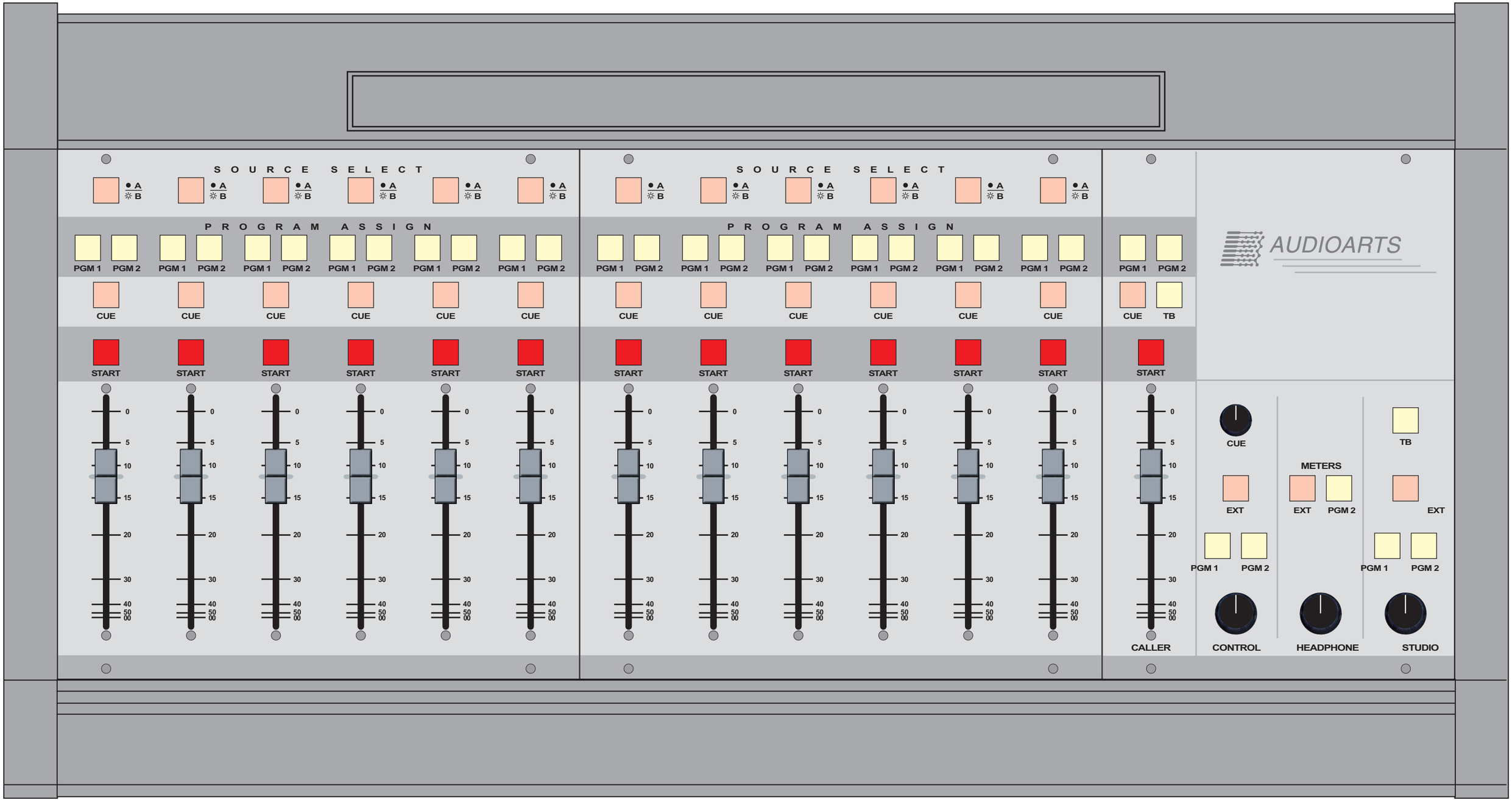
The relay connections are available at the "LOGIC" DB-25 connector mounted on the rear of the console. Connect the on-air light to the external user-provided relay. Do not bring on-air light AC connections to any pin of any connector on the console.

TYPICAL CONTROL ROOM ON-AIR TALLY CIRCUIT

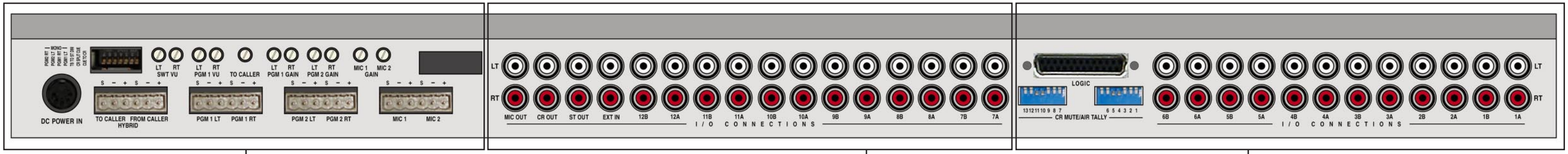
USER-SUPPLIED RELAY TRIGGERED BY CONSOLE CR MUTE CIRCUIT

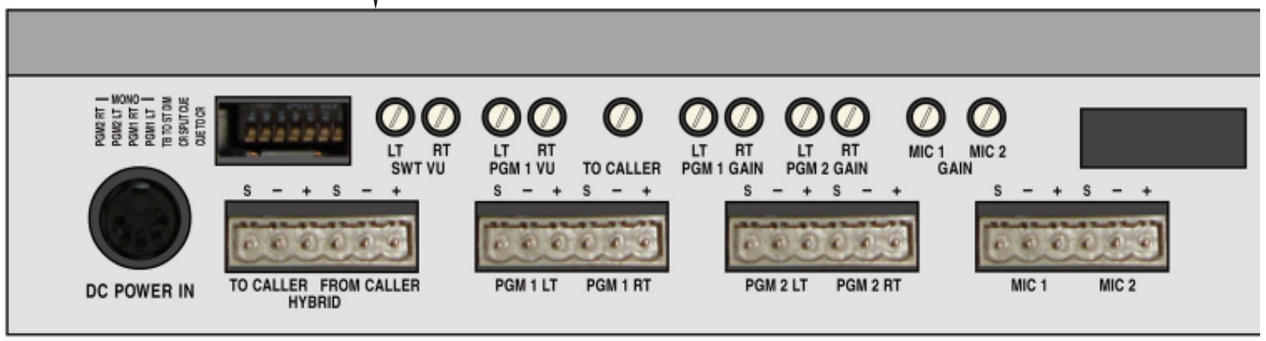


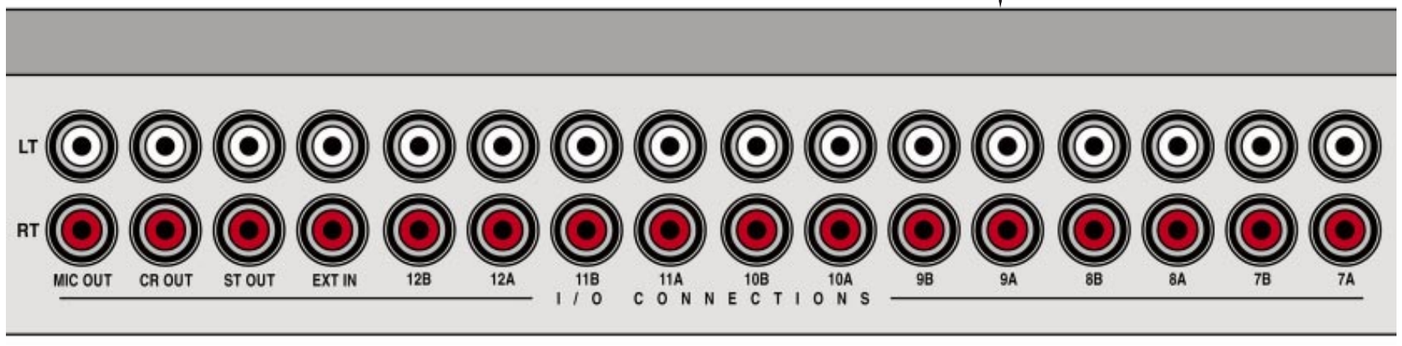
RELAY CIRCUIT POWERED BY USER SUPPLIED EXTERNAL SUPPLY

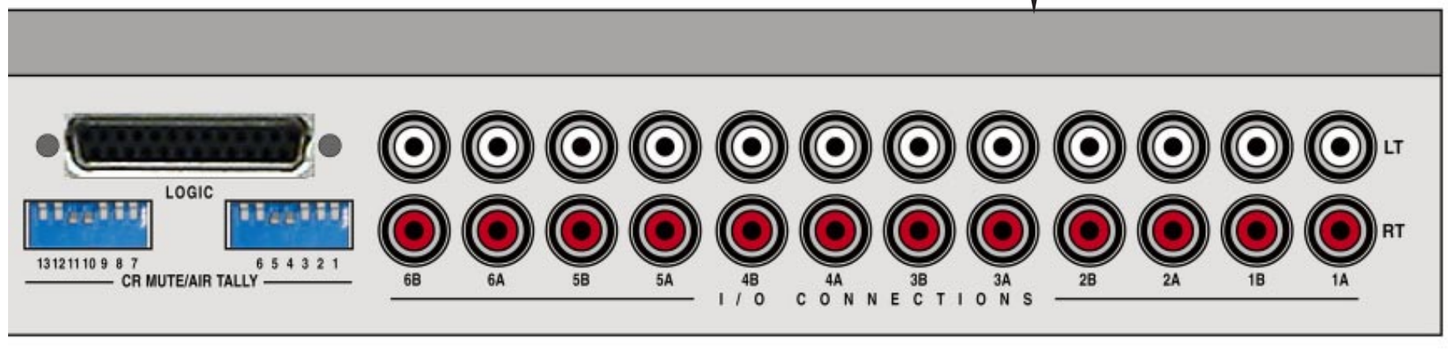


AIR-2+ Console Layout







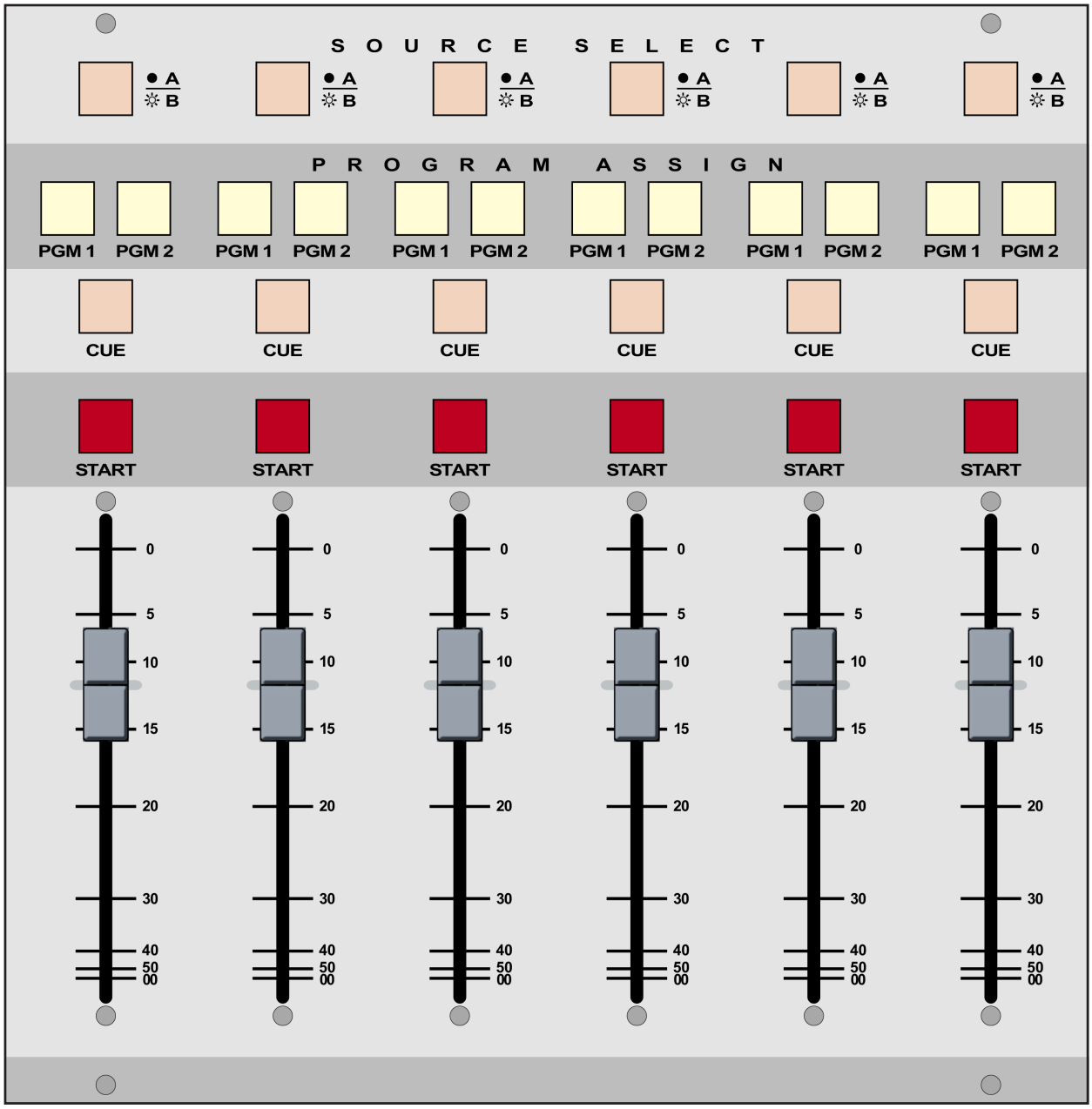


AIR-2+ Console Rear

Controls and Functions

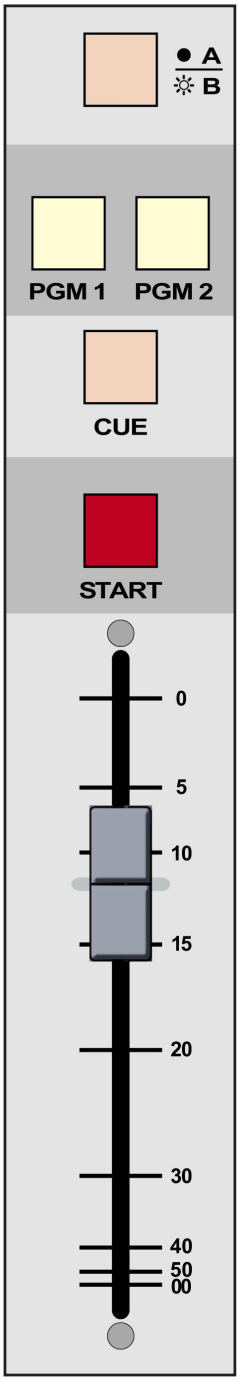
Input Panel (IP-AIR2)

The Input panel of the AIR 2+ console has six identical strips representing six input channels.



Source Select

Each input channel accepts two analog stereo sources: A and B, switched at the top of the panel. The A/B button will be lit when source B is selected.



Program Assign

Output switches assign the selected source signal to any combination of the console's two stereo Program outputs—PGM 1 and PGM 2. The button will be lit when the source is assign to its respective bus. To remove a source from the bus, press the button again; the light will go off to indicate that the source is no longer assigned to that bus. NOTE that when console is powered up all input channels will be off, with source A selected, and assigned to PGM 1.

Recessed rear panel trimpots adjust the left and right levels of PGM 1 and PGM 2 outputs.

Cue Button

A CUE switch places the channel's signal on the console's cue bus, where it may be heard on the meterbridge mounted cue speaker, as an interrupt to the console operator's headphones, and as an interrupt to the control room monitor speakers, if so programmed.

Press the CUE button. The channel's input signal will be included in the console's CUE output at a level that is independent of the FADER setting, and the button will light. The fader does not need to be turned ON. To remove a fader from cue, press the CUE BUTTON again; the light will go off to indicate the channel is no longer assigned to cue.

Fader

Level is set by a long-throw fader. The fader is the sliding mechanism that determines how strong is the presence of the input in some of the various console outputs.

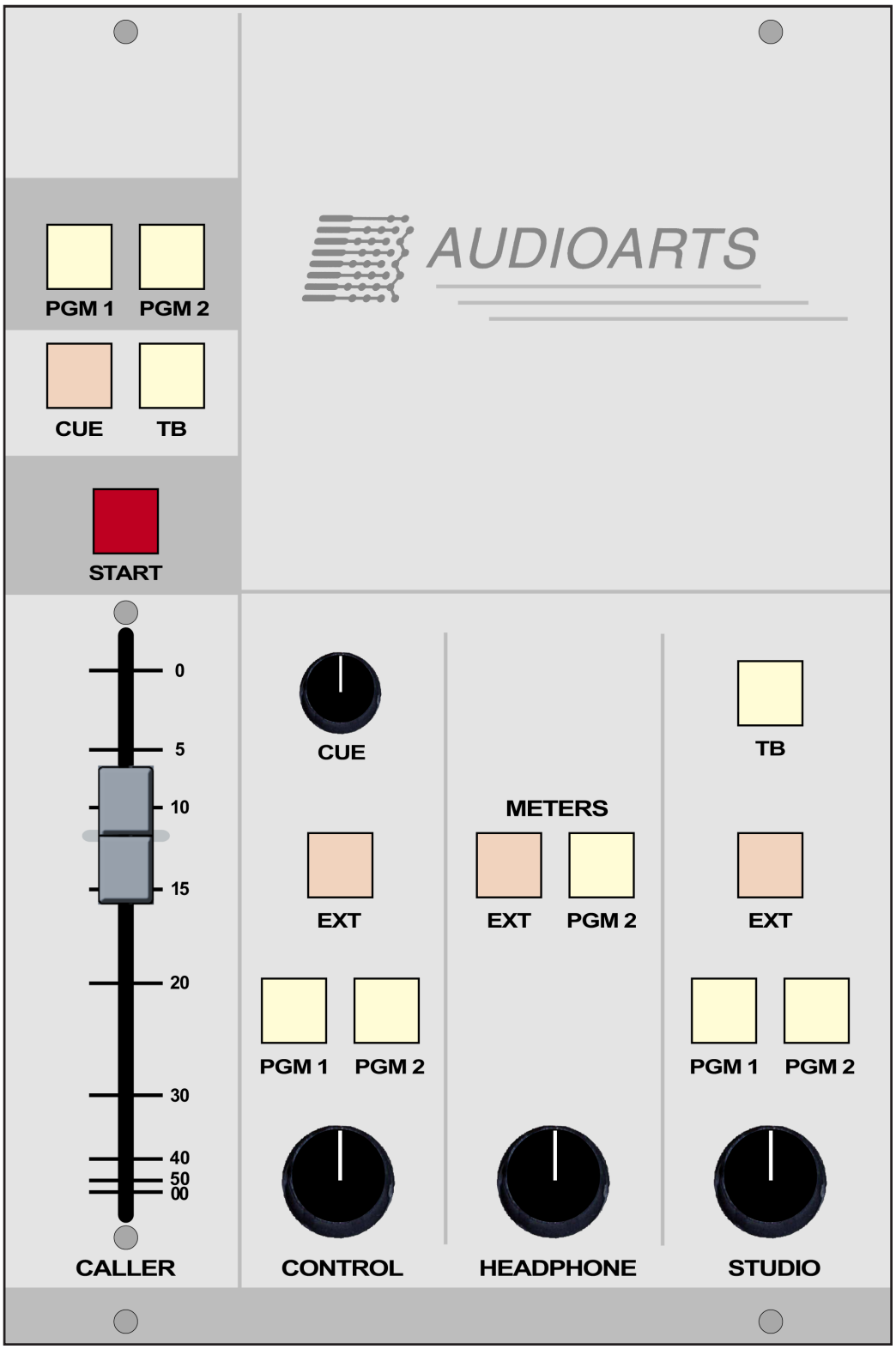
If the fader is all the way down (that is, pulled toward the console operator), the signal will not be present in either of the two program main buses to which it is assigned. As the fader is moved up (that is, pushed away from the console operator) the signal will appear more strongly in each of the main buses to which it is assigned.

START Button

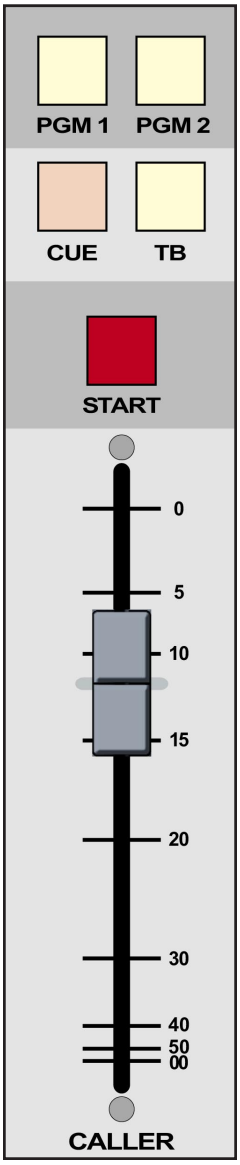
The START button turns the channel on and off by means of electronic switching and can simultaneously start external source machines. The channel is ON when the START button is lit. These can also be programmed (as mentioned in the previous chapter) to activate control room mute and on air tally.

Master Panel (MST-AIR2)

The Master panel includes the Caller Input, Control Room monitor, Studio monitor, and Meters sections.



Caller Input



The caller section is used the for telephone call-in talk segments, and controls the audio for the caller. The caller signal enters the console from your station hybrid.

The caller feed can be either or both of the two Program buses. The caller feed will never contain the caller's own voice.

A recessed rear panel trimpot adjusts the scaller output level.

Program Assign

Output switches assign the caller to any combination of the console's two Program outputs (PGM 1 and PGM 2), and permit live talk-ins.

Pressing either of the two program switches causes the caller's audio to be included in the output mix for that bus, at a level dependent on the FADER setting, as long as the caller section is ON. The button will be lit when the caller is assigned to its respective bus. To remove the caller from a bus to which it is currently assigned, press the button again; the light will go off to indicate that the caller is no longer assigned to that bus.

CUE Button

The CUE button allows interviewing the caller prior to airing by including the caller in the console's cue bus, where it may be heard on the meterbridge mounted cue speaker.

TB Button

When the TB switch is pressed (it is momentary action), the microphone (MIC 1) will interrupt the regular caller signal, thus allowing the DJ to talk to the caller prior to airing.

Fader

The long-throw fader sets the caller's signal level.

If a fader is all the way down the caller's voice will not be present in either of the two Program buses (PGM 1 and PGM 2) to which the phone is assigned. As the fader is moved up the signal will appear more strongly in each of the main buses to which the phone is assigned.

The fader position will also affect the strength of the caller in the cue output.

START Button

The START button determines if sthe phone channel is ON or OFF. The channel is ON when the START button is lit. The button can also be used to provide external start logic for the hybrid.

If the phone channel is OFF, caller signal will not be present in any main bus output, regardless of the status of the PROGRAM ASSIGN buttons or the position of the fader. If the phone channel is OFF its signal will still be present in the cue output if it has been assigned to cue.

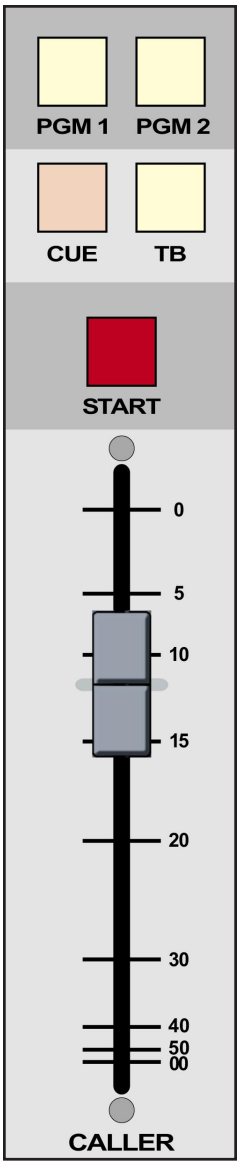
Caller Set-Ups

Pre-air segment communication between the console operator (DJ) and callers is aided by the CUE button, which places the caller's voice on the console's cue speaker and headphones, and (if so programmed) CR speakers. Additionally, pressing the caller TB switch sends the MIC 1 signal to the caller output.

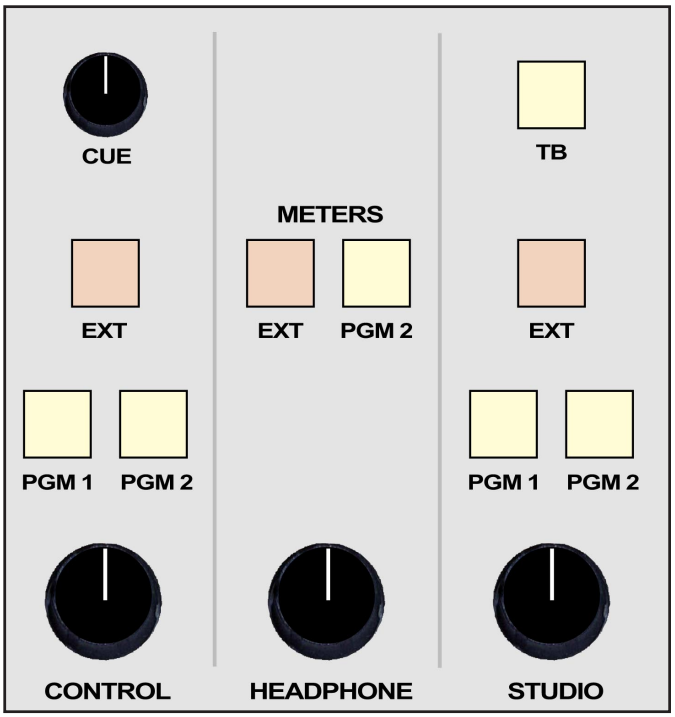
A typical call-in segment might proceed as follows:

Caller phones in, DJ picks up off-air during a track play to set up the call. He places the caller in CUE, and talks to the caller by pressing the TB button. Neither the DJ mic nor the phone channel need to be ON for two-way communication.

When he is ready to take the call on-air, the DJ makes sure his mic and phone are assigned to PGM 1 or PGM2 and turns them ON. He then deactivates caller CUE to hear the normal feed.



Control Room Monitor



This is the console operator's monitor that allows the operator to listen to the console's two stereo Program outputs and an external stereo line level input. This section of the console includes the monitor level controls for the control room, headphone, and cue circuits.

In a typical radio application the console is located in the Control Room. Speakers in the Control Room allow the console operator to listen to the console bus outputs to be assured that the console is performing as desired. These speakers are fed by a stereo signal from the console's Control Room output. In addition to the Control Room output, the operator may also desire to listen to specific isolated faders via the cue system and the console's internal cue speaker, or may want to listen via headphones. Thus, the control room monitor consists of the above mentioned level controls, along with two program assign (PGM1 and PGM 2) buttons, and an external input (EXT) button.

In some instances the console operator may also be performing talent whose voice will be heard over the radio. The operator's microphone may thus provide a part of the signal that is going out over the air. If that signal is the one being monitored with the Control Room speakers, there is the potential for feedback. The amplified signal from the Control Room speakers is picked up by the microphone and preamplified to a new, higher, level, which then is once again picked up by the microphone. The signal quickly rises to an ear-splitting screech. To prevent this, the operator's microphone is normally set to MUTE the Control Room output to prevent the occurrence of feedback.

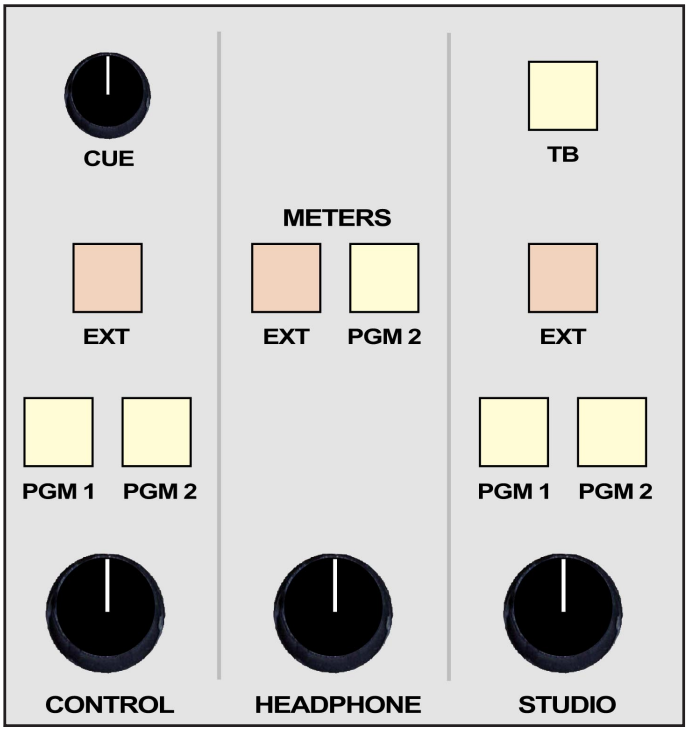
The master CUE circuit drives a meterbridge-mounted speaker through a built-in power amp, and can be programmed to interrupt control room feed, or provide a split feed (program mono sum to right, cue to left) to the control monitor speakers. It also automatically interrupts the headphone feed.

Program Select

Pressing either of the two program (PGM 1 or PGM 2) switches allows the operator to listen to the selected output bus. The button will be lit when the monitor is assigned to its respective bus.

EXT Switch

Pressing the EXT switch allows the operator to pick up the external input (useful for such items as tape recorders or air returns) to listen.



CONTROL ROOM Level Control

The CONTROL level control determines the overall loudness of the signal being monitored as it appears in the Control Room speakers. As the control is turned clockwise, the loudness increases up to a maximum at the limit of mechanical rotation. To decrease the loudness, turn the control in a counterclockwise direction.

NOTE: If the Control Room is muted and you turn the level control all the way up, then remove the condition that has the Control Room muted, the sound in the Control Room speakers will suddenly be VERY LOUD!

CUE Level Control

The CUE level control determines the overall loudness of the cue signal as it appears in the console's cue speaker (located behind the grill in the METERBRIDGE).

Like the Control Room speakers, the cue speaker also has the potential for feedback. To avoid this situation, operator mics that mute the Control Room will also mute the cue speaker.

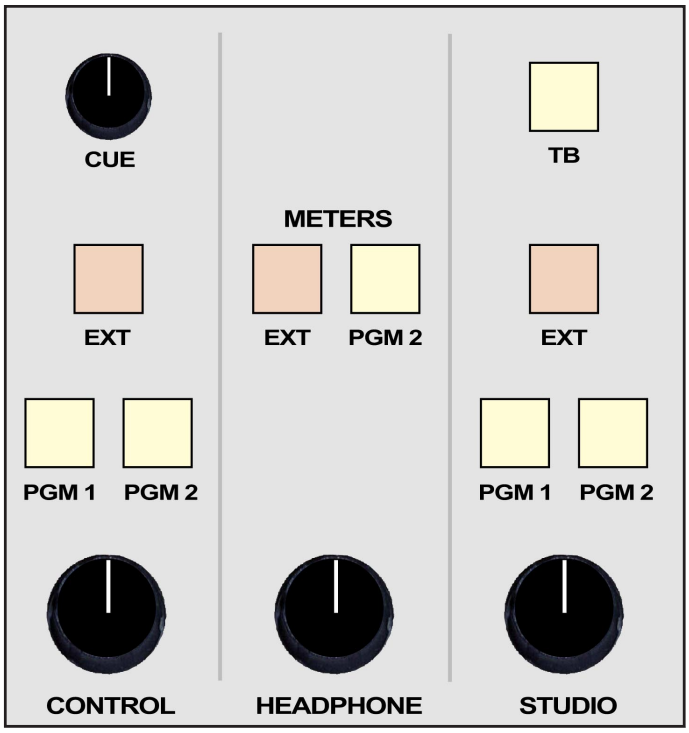
NOTE: If cue is muted and you turn the level control all the way up, then remove the condition that has the cue muted, the sound in the cue speaker will suddenly be VERY LOUD!

HEADPHONE Level Control

The HEADPHONE level control determines the overall loudness of the headphone output signal, which monitors the same source (PGM 1, PGM 2, or EXT) as the Control Room speakers.

The headphone output signal appears at the HEADPHONE JACK, located beneath the armrest near the right side of the console. The jack is provided as a place to plug in user-supplied **stereo** headphones having an impedance of **60 Ohms or higher**.

Studio Monitor



In addition to the Control Room, there is a Studio in which one or more performers will be assembled, usually with microphones so that their voices can become part of the mix. Speakers may be provided in the Studio to allow the talent to listen to the console bus outputs at times that they are not actually on air. These speakers are fed from the console's stereo Studio output.

The studio monitor consists of a STUDIO level control, a TB (talkback) button, two program assign (PGM 1 and PGM 2) buttons, and an external input (EXT) button.

A connection is provided on the console's DB-25 connector to wire up a MIC 2 TB to CUE/CR switch provided by the user. This switch enables a guest using MIC 2 to talk back to the Control Room over the console's cue system.

Program Select

Pressing either of the two program PGM 1 or PGM 2 switches allows the selected output bus to be heard in the studio. The button will be lit when the monitor is assigned to its respective bus.

EXT Switch

Pressing the EXT switch allows the external balanced input (such as tape recorders or air returns) to be heard in the studio.

STUDIO Level Control

The STUDIO level control determines the overall loudness of the signal being monitored as it appears in the Studio speakers.

TB (Talkback) Button

The TB button lets the operator's microphone signal interrupt the normal feed to the studio speakers. If the Studio Dim dipswitch (described in Chapter 2) is set to the ON position, the normal studio feed is not completely removed, but is dimmed by 20dB.

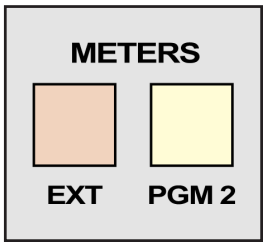
There may be times when the console operator wants to talk to one of the performers in the Studio. When the TB button in the Studio is pressed the speaker's feed, that is normally heard in the studio, will be dimmed.

Meters (VU-AIR2)

The METERS section consists of two VU meter pairs on the console's meterbridge and a METERS select button, located on the Master panel.

VU Meter Pairs

VU meter pairs (PROGRAM 1 VU and SWITCHED VU) are stereo LED bargraph type meters.



The level of the signal being metered is indicated by the number of display elements that are lighted. The more elements lighted, the stronger is the signal being displayed. The right four LEDs in each bargraph are red to indicate when the signal level is approaching a clipping (distorted) level. The next four LEDs are yellow, indicating a normal level range, and the remaining LEDs are green. The top member of the pair indicates the level of the signal's left channel, while the bottom member of the pair indicates the level of the signal's right channel. Peak (CLIP) indication is also provided.

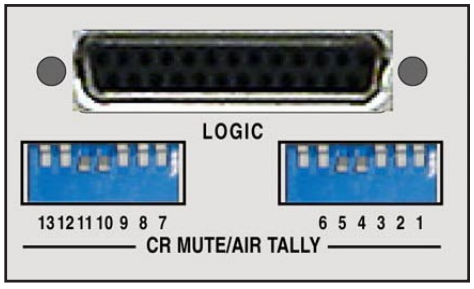
The left VU meter pair shows the level of the PGM 1 output, while the right VU meter pair (the SWITCHED VU) shows the level of the signal that is selected for it (PGM 2 or EXT).

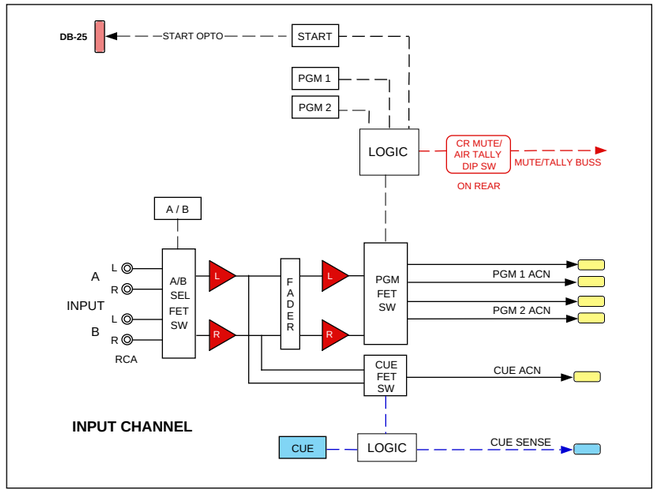
METERS Select Button

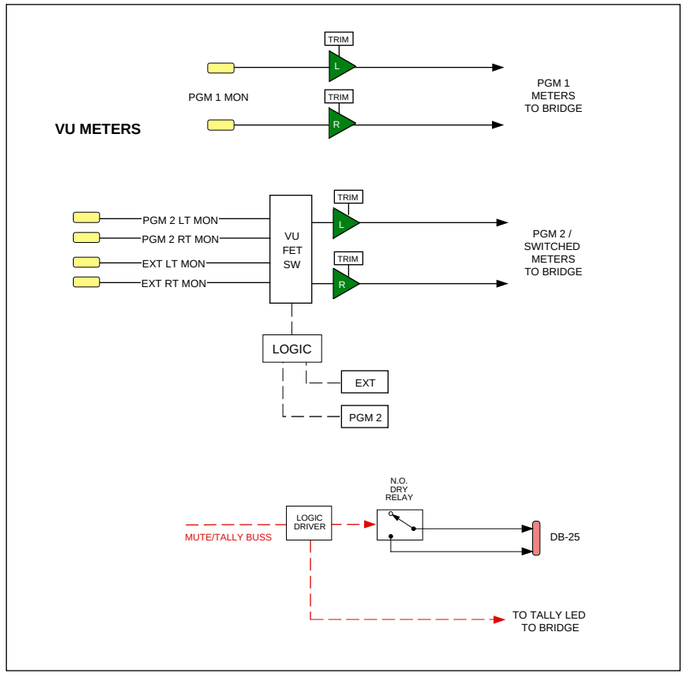
The METERS buttons select the source for the switched meter pair, as indicated above.

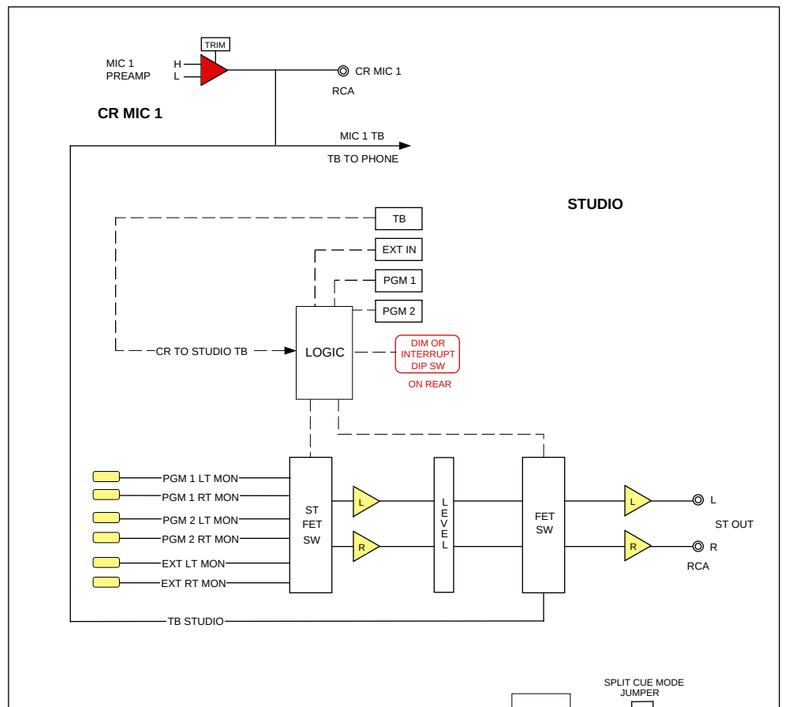
On Air LED

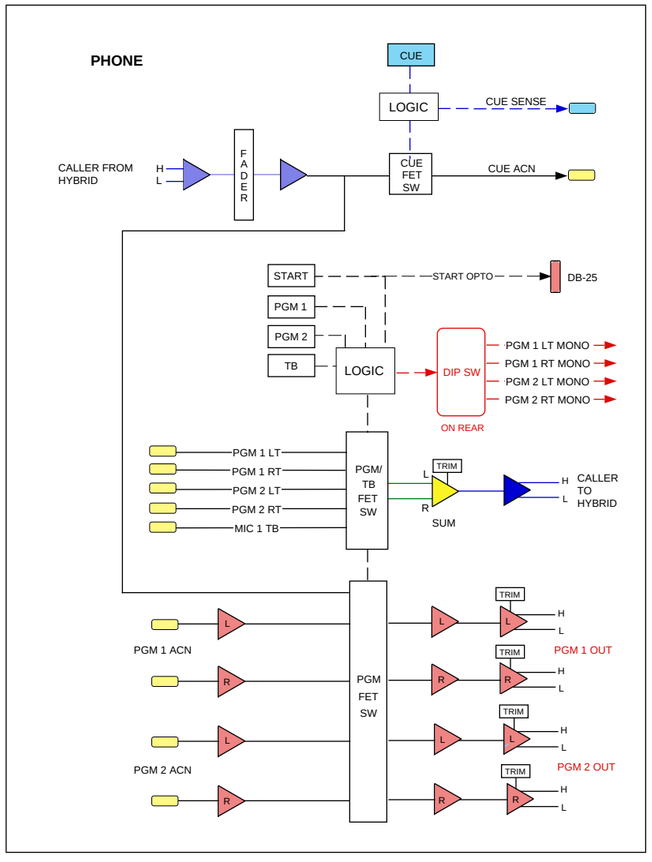
The ON AIR LED, located in the middle of the meterbridge, lights up when any input channel is programmed by dipswitch to have the CR MUTE/AIR TALLY dipswitch activated, and is also ON.

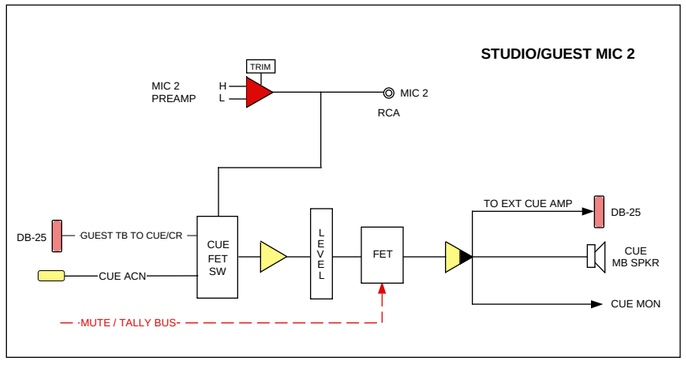


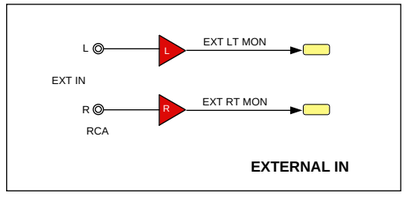












AIR 2+ System Flow Diagram