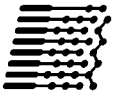
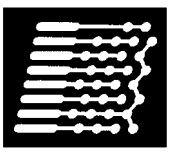
D-75
Digital Audio Console



AUDIOARTS ENGINEERING

TECHNICAL Guide

September 2004





PLUG and PLAY

The D-75 Digital Radio Console Really Makes SENSE!

IT'S GOT THE FEATURES YOU NEED:

Plenty of stereo busses, simple to operate dual phone caller capability, and a comprehensive monitor section providing separate feeds to control room-headphone and studio outputs.

Individual plug-in modules make installation and service a breeze. Configuration is as simple as setting the front panel dipswitches concealed under the hinged meterbridge.

All the input modules have universal opto-isolated mic and line control ports, so you can interface the microphones, mic processors and machines in any combination you wish.

And of course, because it's designed by the Wheatstone engineering team, you know that quality and performance are superior.

D-75 Digital Audio Console

AUDIOARTS ENGINEERING

www.audioarts.net

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AUDIOARTS ENGINEERING

D-75 DIGITAL AUDIO CONSOLE

- *modular plug-in design*
- *compact tabletop installation*
- *external rackmount power supply*
- *optional dual failsafe power supply*
- *four stereo output busses (PGM, AUD, AUX, UTL)*
- *both digital and analog outputs*
- *input channel A/B source select*
- *cue function with auto-dropout*
- *any combination of analog or digital line inputs; up to 8 microphone inputs*
- *field-switchable daughtercard for digital/analog input conversion*
- *available in 13 and 21 input mainframe sizes*
- *32, 44.1 or 48kHz console clock rates*
- *optional phone module with dual caller support*
- *sample rate conversion on all digital inputs*
- *connectorized faders and monitor pots*
- *connectorized channel ON/OFF switches*
- *all switches LED illuminated*
- *digital timer with autostart and manual control*
- *two air tally relays*
- *digital clock (can be slaved to ESE time code)*
- *optional tape remote and line selector modules*
- *built-in headphone amp with concealed output jack*
- *opto-isolated logic control with built-in machine interface*
- *direct digital dual domain LED meter displays (VU and floating fullscale digital peak)*
- *CR and studio outputs with separate independent 4-bus source selection plus external 1 & 2*
- *both PGM VU and SWITCHED meter pair*
- *built-in cue speaker with amplifier and external cue output*
- *hinged meterbridge for easy I/O connector and dipswitch logic access*



13 input mainframe shown;
21 input version also available

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Specifications & features subject to change w/o notice

Installation and Power

Unpacking the Console

The D-75 console is shipped as two packages. One carton contains the console and technical documentation; and the other contains the rackmount power supply, connecting cable, and connector kit .

Countertop Mounting

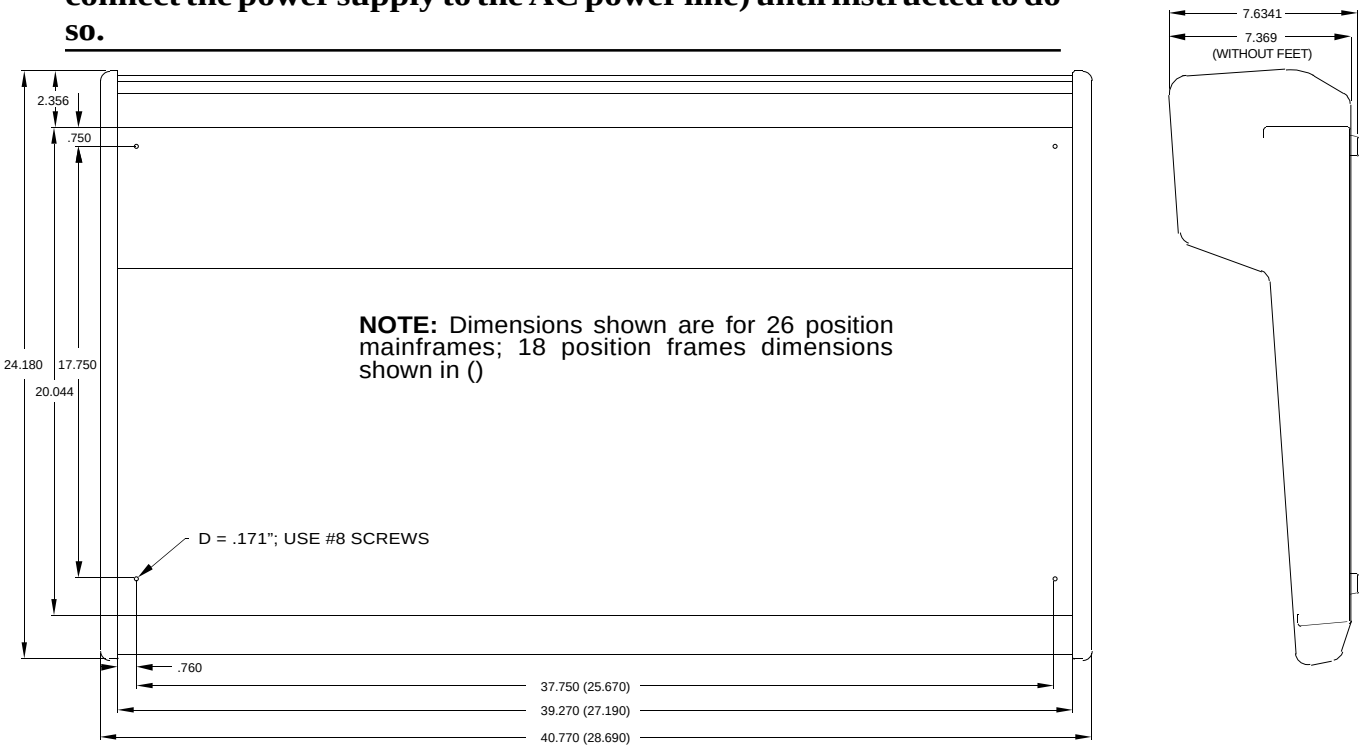
The D-75 audio console is designed for countertop mounting. Console placement should avoid proximity to any electromagnetic fields, such as large power transformers, motors, and fluorescent lighting fixtures. If you will be securing the console to the counter top, you may want to pre-drill the mounting holes (see sketch below).

Set the console in place on the counter, and remove the screws that hold down the first and the last modules in place (two per module). Carefully remove those modules from the frame. Attach the console mainframe to the counter top, using the holes provided in the bottom of the chassis and screws appropriate to the counter material, and reinstall the removed modules.

The console extends approximately 7 5/8" above the countertop at the meterbridge. The hinged meterbridge will require 14" above the countertop surface and 4 3/4" behind the rear meterbridge to open freely.

NOTE: This console contains static-sensitive devices. Normal precautions against static discharge should be observed when handling individual modules.

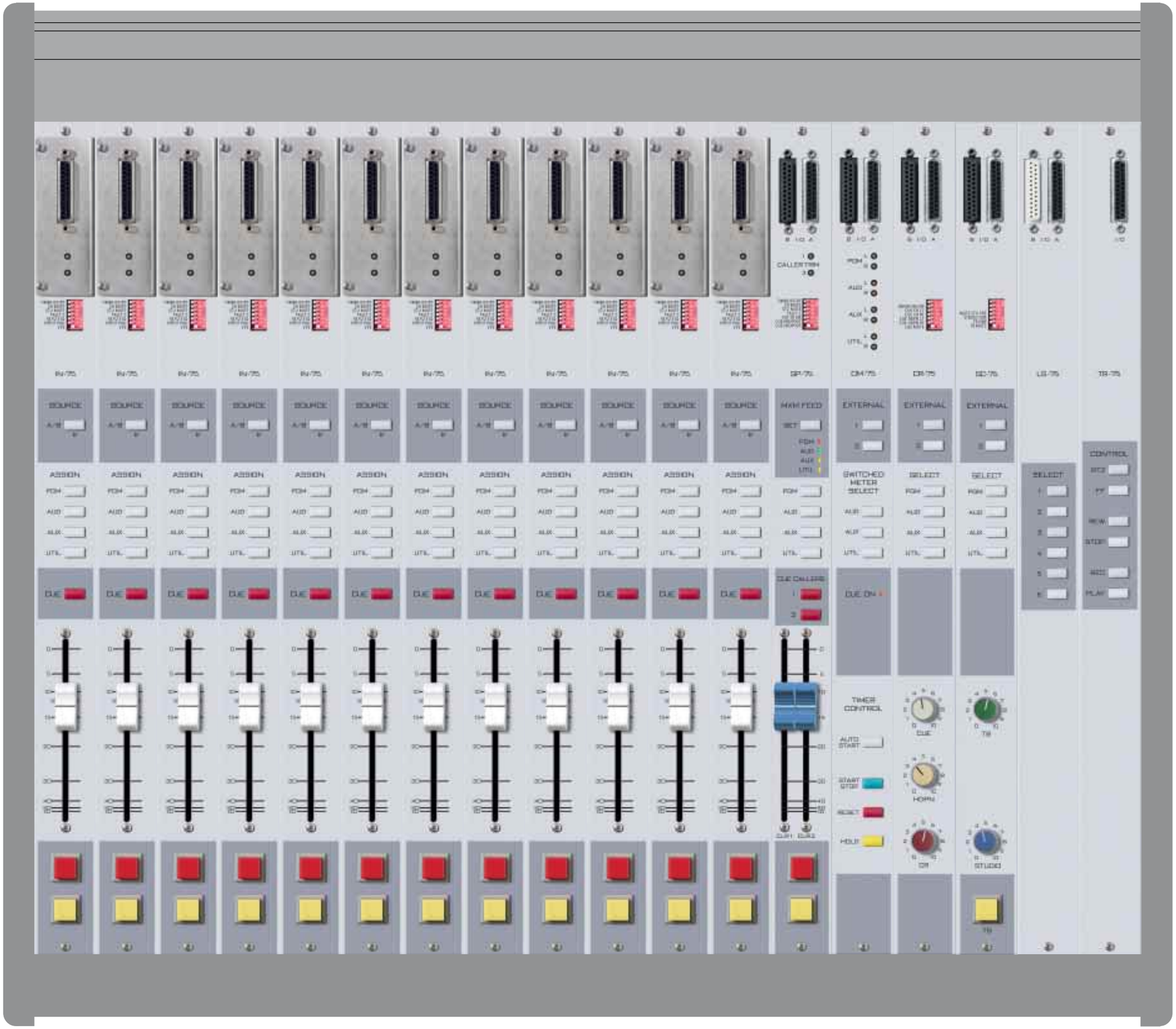
Do not connect the D-75 console to its power supply (and do not connect the power supply to the AC power line) until instructed to do so.





NOTE: 1. CONSOLE CAN ACCOMMODATE UP TO 20 INPUT MODULES.
2. MASTER OUTPUT, CONTROL ROOM, STUDIO CONTROL AND OPTIONAL SUPERPHONE MODULES HAVE THEIR DEDICATED SLOTS (AS SHOWN).
3. LAST TWO SLOTS AT THE RIGHT END OF THE FRAME SHOULD BE USED FOR OPTIONAL LINE PRESELECT AND TAPE REMOTE MODULES.

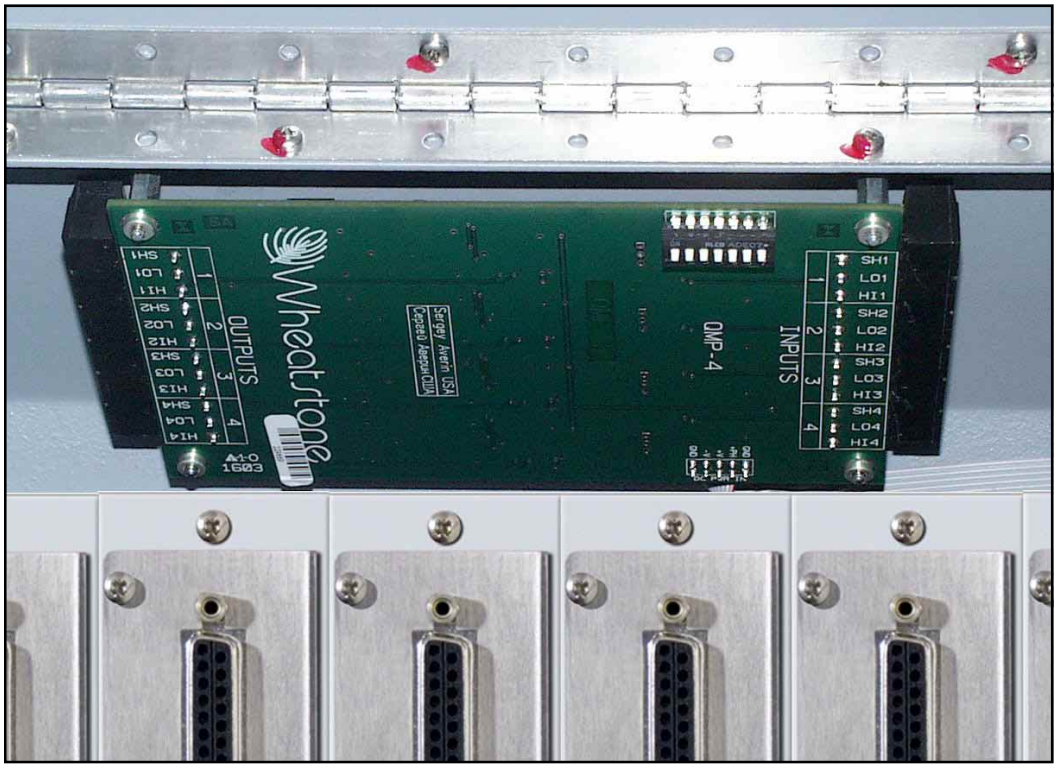
D-75-26 CONSOLE - MODULES LAYOUT



NOTE: 1. CONSOLE CAN ACCOMMODATE UP TO 12 INPUT MODULES.
2. MASTER OUTPUT, CONTROL ROOM, STUDIO CONTROL AND OPTIONAL SUPERPHONE MODULES HAVE THEIR DEDICATED SLOTS (AS SHOWN).
3. LAST TWO SLOTS AT THE RIGHT END OF THE FRAME SHOULD BE USED FOR OPTIONAL LINE PRESELECT AND TAPE REMOTE MODULES.

D-75-18 CONSOLE - MODULES LAYOUT

Quad Mic Preamp
(QMP-4)



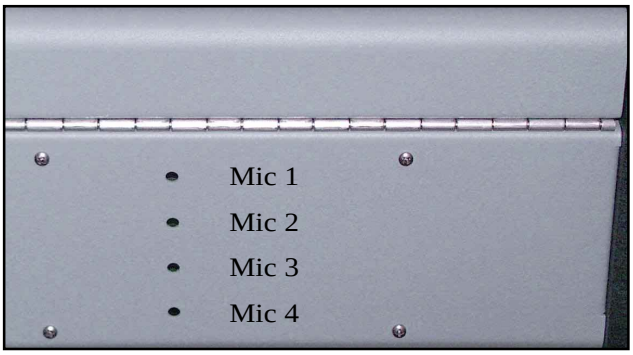
Overview

The QMP-4 is a quad mono microphone preamplifier and is mounted in the left side of the console meterbridge rear. Mic level sources are wired to QMP-4 mic preamp inputs. QMP-4 output signals are then wired to input pins of individual IN-75 input modules. IN-75 module A inputs should be used if you need to have the mic activate control room or studio muting. The IN-75 must be provided with an ADC-75 daugther card.

Phantom power is available at each input port; it may be selectively activated by a dipswitch SW1 (the factory default is OFF).

Recessed meterbridge rear multi-turn trimpots (range 38dB) adjust the level of each input independently.

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



All audio input and output signals are made via two 12-position plug terminals mounted on the QMP-4 PCB.

Internal Programming Options

Internal programming for the quad mic preamp is made via printed circuit board (PCB) mounted seven-position dipswitch SW1. Note that when a dipswitch position is thrown to the right it is ON.

Phantom Power

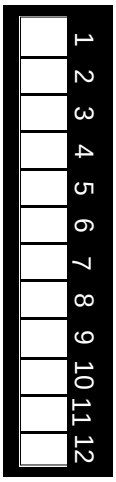
Dipswitch SW1 turns phantom power on for the four microphone input ports.

SW1 position 7 activates phantom power for microphone 1
SW1 position 5 activates phantom power for microphone 2
SW1 position 3 activates phantom power for microphone 3
SW1 position 1 activates phantom power for microphone 4

Note the factory default setting for phantom power is OFF.

Hook-Ups

As stated before, all user wiring to and from the QMP-4 takes place at the 12-position plug terminals mounted on the QMP-4 PCB.



Typical 12-position plug terminal

Installing the Optional Second QMP-4 Mic Preamp



The optional second QMP-4 comes complete with mounting hardware. The ribbon cable, installed at the factory to provide power to the pre-installed QMP-4 card, also includes a second plug ("Connector" on the picture above) for connecting the optional QMP-4 card. Handle the 10-pin plug on the ribbon cable assembly with care. Perform the following steps to install the QMP-4:

• turn off the power to the console;

• swing the meterbridge up and back until it rests in a fully opened position;

• attach the QMP-4 preamp assembly directly to the right of the factory installed preamp (located at the lefthand end of the meterbridge), using four type 4-40x1/4 pan head screws and four nylon standoffs through the four predrilled holes on the meterbridge rear ("Optional QMP-4 Area" on the picture above); orient it to match the factory installed QMP-4;

• plug in the ribbon cable connector to the 10-pin boxed header on the QMP-4 board (CT7);

• connect the required audio wiring to the 12-pin plug terminals on the QMP-4 card, referring to the "Hook-Ups" chart (see pages 2-3 - 2-5);

• close the meterbridge.

This completes the optional QMP-4 installation procedure.

Stereo Line Input (IN-75)



Module Overview

IN-75 modules are for mic inputs signals (from the QMP-4) and stereo line input signals.

At the top of the module, underneath the hinged meterbridge, is a plug-in daughter card that determines if the module is a digital input (SRC-75) or an analog input (ADC-75). If the module is being used to handle mic signals from the QMP-4, it will need to have the ADC-75 daughter card.

The ADC (analog-to-digital converter) version accepts +4dBu balanced analog input signals. PCB-mounted multi-turn trimpots adjust the left and right levels.

The SRC (sample rate converter) version accepts digital (AES is factory default) input signals.

Each module accepts two stereo sources, A and B, switched at the top of the module. Output switches assign the selected source signal to any combination of the console's four stereo outputs—PGM (program), AUD (audition), AUX (auxiliary), and UTIL (utility).

A CUE switch places the module's signal on the console's cue bus, where it may be heard on the meterbridge mounted cue speaker and/or as an interrupt to the console operator's headphones and/or control room monitor speakers. The various cue interrupt modes are programmed at the console's CR-75 (Control Room) module via PCB-mounted dipswitch. See page 5-3.

Level is set by a long-throw fader.

Channel ON (START) and OFF (STOP) switches are at the bottom of the module. In addition to being controlled remotely, these can also be programmed (via internal PCB-mounted dipswitch) to perform a variety of functions, including starting and stopping external source machines, activating control room and studio mutes, external tallies, and timer restart. The STOP switch's LED can be controlled by an external source machine to act as a "ready" indicator.

All audio and control input and output signals are made via the multi-pin DB-25 connector mounted on the top of the module and located underneath the hinged meterbridge.

Internal Programming Options

All internal programming is made via PCB mounted dipswitch SW1 located on the top of the module (beneath the DB-25 connector). Note that when a dipswitch position is thrown to the right it is ON.

Mutes

An IN-75 module can be programmed to mute speakers when the channel is ON. The D-75 console has two mute control lines: control room and studio. Each of these is activated by an A input source.

SW1 position 6 mutes the control room when source A is ON
SW1 position 5 mutes the studio when source A is ON

Tallies

The console has two tallies. The ON-AIR TALLY (see CR-75 chapter) is activated whenever the control room mute is activated. TALLY 2 (see SC-75 chapter) is activated separately, according to the setting of the dipswitch, by an A input source.

SW1 position 4 activates tally 2 when source A is ON

Timer Restart

The console's digital timer can be programmed to automatically reset to zero and begin counting up when the module's ON button is pressed.

SW1 position 7 activates timer restart

Talkback

Typically, one of the D-75 console's input modules will be used for the control room (CR) console operator's microphone. The third position of the dipswitch SW1 allows that microphone to also function as a talkback mic. It places the signal (pre-fader, pre-on/off) onto the console's talkback bus. When the console operator presses a TB switch on the console's SC-75 studio module, the talkback bus (which is carrying his microphone signal) will interrupt the regular monitor signal being fed to the studio and talent will hear his voice through the studio monitor speakers.

To accommodate those situations where more than one operator microphone is used, any number of IN-75 input modules may be assigned to feed the talkback bus.

SW1 position 3 allows the module's audio to feed the talkback bus

In order for the studio to reply to the console operator, the IN-75 module controlling the studio's microphone signal must be routed to the console's cue bus, where it can be heard by the operator. This is accomplished by a user-supplied TB switch in the studio. The switch provides a momentary closure between the module's DB-25 connector "TB to CR" control pin and Digital Ground (see page 3-6 for wiring details). As long as this closure is maintained (i.e., as long as talent holds down the studio TB button) the module's (pre-fader, pre-on/off) signal will be placed on the console's Cue bus.

Attenuation

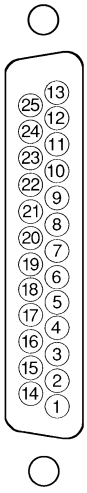
As mentioned in the **Read Me!** pages at the front of the manual, there is a tendency today for CD's to be made with less than 1dB of headroom. Any boosting of level resulting from moving the fader up from the nominal, unity gain, position results in overload distortion. For this reason, dipswitch position 2 is provided to attenuate a channel's signal by 12dB, thus allowing channels being fed by such hot CD's to have their faders moved above nominal without causing distortion. The 12dB attenuation is applied to the four main stereo buses, cue, and talkback — in other words, anywhere in the console that the channel's audio may be routed.

SW1 position 2 applies 12dB of attenuation to the channel for all bus feeds

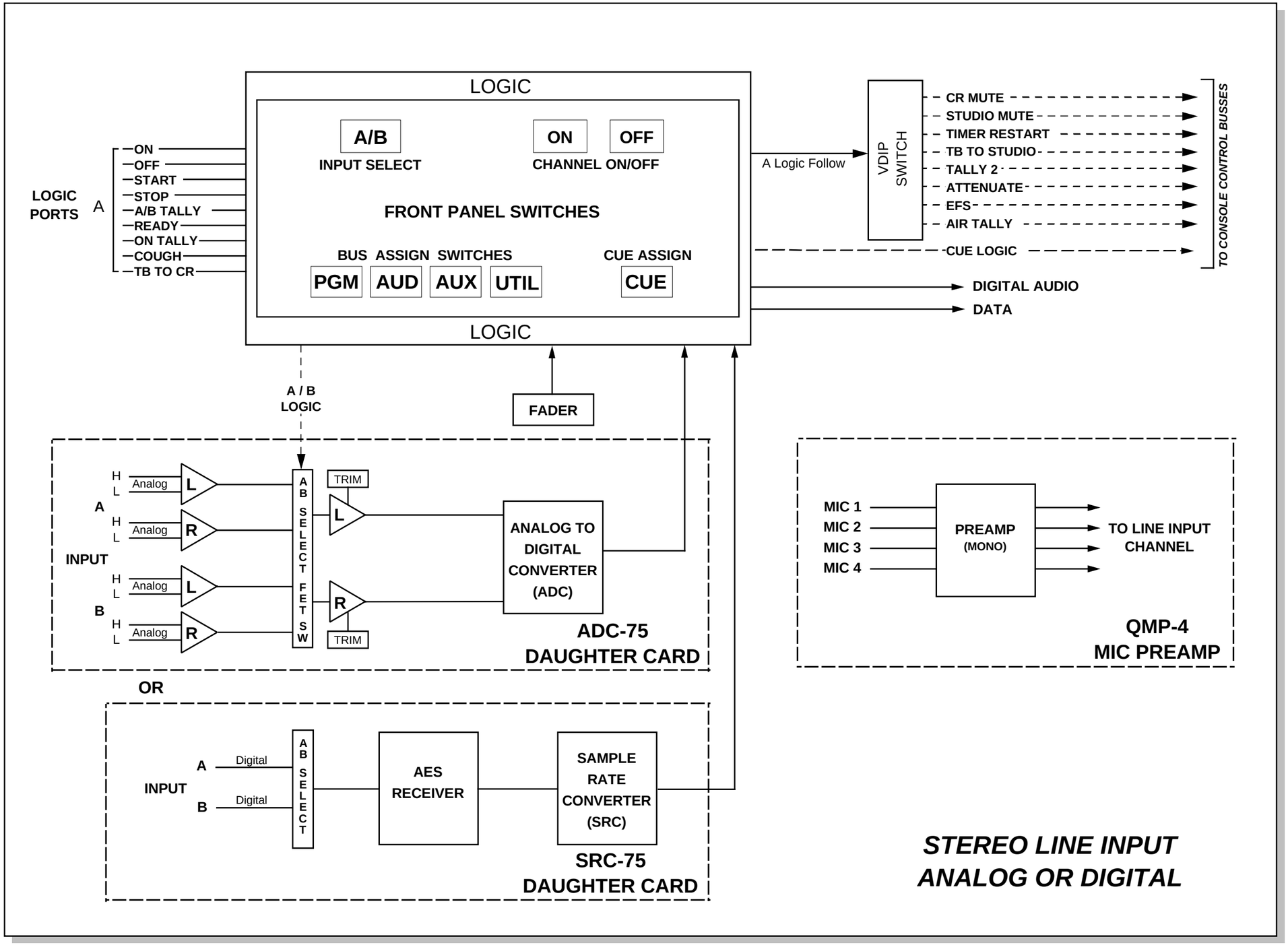
EFS - European Fader Start

In some situations it is desirable to have the channel's on/off status controlled by the position of the fader. In such a scenario, if the fader is all the way down and the channel is off, moving the fader up slightly from the full down position will turn the channel on without the need to press the channel ON button. In a similar manner, if the fader is up from the full down position by at least a small amount and the channel is on, moving the fader to the full down position will turn the channel off without the need to press the channel OFF button. This feature is enabled by moving the dipswitch position 1 to the right (on).

SW1 position 1 enables the EFS feature



Typical DB-25 connector


LOGIC
A/B
INPUT SELECT
ON
OFF
CHANNEL ON/OFF
FRONT PANEL SWITCHES
BUS ASSIGN SWITCHES
PGM
AUD
AUX
UTIL
CUE ASSIGN
CUE
LOGIC
LOGIC PORTS
A
ON
OFF
START
STOP
A/B TALLY
READY
ON TALLY
COUGH
TB TO CR
A Logic Follow
VDIP SWITCH
CR MUTE
STUDIO MUTE
TIMER RESTART
TB TO STUDIO
TALLY 2
ATTENUATE
EFS
AIR TALLY
CUE LOGIC
TO CONSOLE CONTROL BUSSES
DIGITAL AUDIO
DATA
A / B LOGIC
FADER
INPUT
A
B
H
L
Analog
L
R
A B SELECT FET SW
TRIM
ANALOG TO DIGITAL CONVERTER (ADC)
ADC-75 DAUGHTER CARD
OR
Digital
A B SELECT
AES RECEIVER
SAMPLE RATE CONVERTER (SRC)
SRC-75 DAUGHTER CARD
MIC 1
MIC 2
MIC 3
MIC 4
PREAMP (MONO)
TO LINE INPUT CHANNEL
QMP-4 MIC PREAMP
STEREO LINE INPUT ANALOG OR DIGITAL



Output Module (OM-75)

Module Overview

The master output module handles the console's Program, Audition, Auxiliary, and Utility outputs. All analog outputs are calibrated with recessed front panel multi-turn trimpots.

The D-75 console has two pairs of left-right VU meters, PGM and SWT (switched), located on the console's meterbridge. The switched meter follows the SELECT switching, allowing the console operator to meter AUD, AUX and UTIL, and two external stereo line signals (analog, +4dBu balanced), which may be brought into the module on its DB-25 connector.

The OM-75 also has a master CUE ON indicator. Whenever any input module is placed in cue the CUE ON indicator lights. At the same time the switched meter pair automatically switches to show the level of audio on the cue bus. While the CUE ON indicator is lit, the selected switched meter source switch light goes off.

At the bottom of module are the timer control buttons (the timer display is mounted in the righthand end of the console meterbridge):

AUTO START – enables timer restart functions from programmed input modules' ON buttons.

START/STOP - halts the timer, holds the last count, and then restarts and accumulates the count when depressed again.

RESET - return to zero (if the timer is stopped it will hold at zero; if it is running it will reset to zero and immediately begin counting up).

HOLD – when held down freezes the timer *display* (the counter keeps on going); when released the display catches up to the current count.

All user wiring to and from the OM-75 module takes place at the two DB-25 multi-pin connectors mounted on top of the module and located underneath the hinged meterbridge. All analog audio is +4dBu balanced. Pinout drawing on page 4-6 shows all wiring connections at a glance.

Internal Programming Options

There are no programming options on the OM-75 output card.

Sampling Frequency for Console Outputs

For stand alone operation, the console output sample rate is determined by crystal Y1, which is installed at the factory for 48 kHz sample rate. An additional crystal oscillator is provided with the console for 44.1 kHz sample rate. Crystals for 32 kHz sample rate are available from the factory as a special order item.

To switch to a different output sample rate, replace crystal Y1 with one of the appropriate frequency as shown in Figure 1 and Table 1.

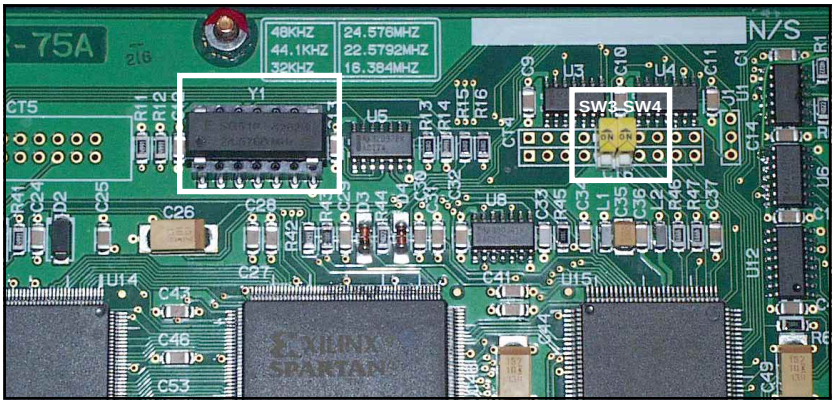


Figure 1. Section of the PR-75 PCB

TABLE 1

SAMPLE RATE	CRYSTAL OSCILLATOR FREQUENCY	WS PART#
48 kHz	24.576 MHz	370012
44.1 kHz	22.579 MHz	370011
32 kHz	16.384 MHz	370010

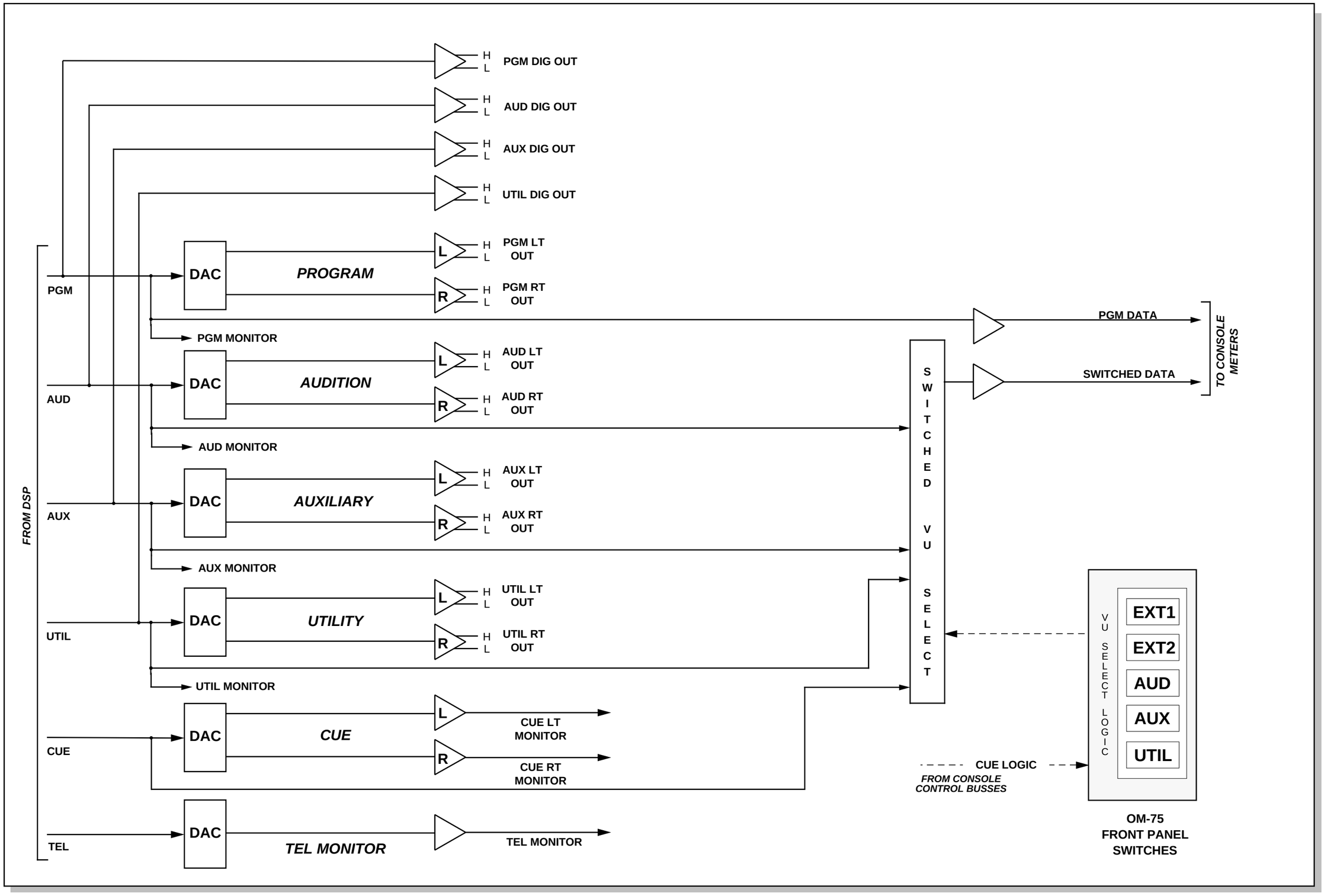
Note that to replace the crystal Y1 you need to open the meterbridge to access the PR-75 board.

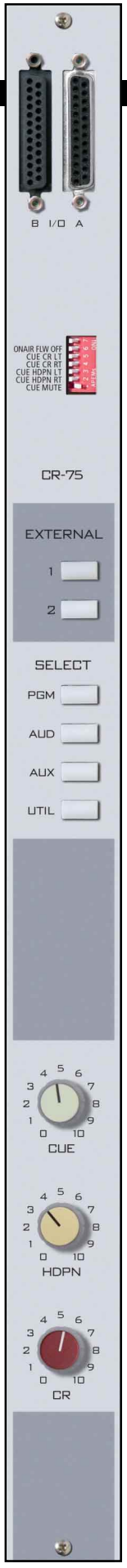
The console must be powered down before changing the sample rate crystal Y1 or damage not covered by warranty may result. Changing the crystal Y1 will change the console output sample rate; however some external digital devices also need the correct sample rate information to be embedded in the AES output data or they will not operate correctly. Therefore, after changing the sample rate crystal Y1, be sure to reset dipswitches SW3 and SW4 on the PR-75 board to correctly embed the sample rate information in the output AES data stream. Table 2 shows the dipswitch settings.

TABLE 2

SW3	SW4	FREQUENCY
OFF	OFF	48 kHz
ON	OFF	44.1 kHz
OFF	ON	32 kHz

*default setting


FROM DSP
PGM
AUD
AUX
UTIL
CUE
TEL
DAC
DAC
DAC
DAC
DAC
DAC
PROGRAM
AUDITION
AUXILIARY
UTILITY
CUE
TEL MONITOR
L
R
H
L
PGM DIG OUT
AUD DIG OUT
AUX DIG OUT
UTIL DIG OUT
PGM LT OUT
PGM RT OUT
PGM MONITOR
AUD LT OUT
AUD RT OUT
AUD MONITOR
AUX LT OUT
AUX RT OUT
AUX MONITOR
UTIL LT OUT
UTIL RT OUT
UTIL MONITOR
CUE LT MONITOR
CUE RT MONITOR
TEL MONITOR
PGM DATA
SWITCHED DATA
TO CONSOLE METERS
SWITCHED VU SELECT
CUE LOGIC
FROM CONSOLE CONTROL BUSSES
VU SELECT LOGIC
EXT1
EXT2
AUD
AUX
UTIL
OM-75 FRONT PANEL SWITCHES



Control Room Module (CR-75)

Module Overview

The CR-75 module is the D-75 console operator's monitor module. It allows the operator to listen to the console's four stereo outputs (PGM, AUD, AUX, & UTIL) and two external stereo line level inputs brought directly into the module.

The CUE master level control sets the level of the console's cue signal.

Whenever CUE is activated elsewhere on the console (stereo line inputs or the superphone module) its signal will appear at the console's built-in cue speaker mounted in the meterbridge. Depending on how the CR-75 module has been programmed, cue can also interrupt the control room monitor speakers and the headphones. The way Cue interrupts the control room and headphone outputs is determined by PCB-mounted dipswitch. See "Cue Interrupt" on page 5-3.

The CR-75 module also houses control room and headphone monitor circuits, which follow the source selection switches:

CONTROL ROOM (CR)—a dedicated output designed to drive a separate, user provided power amp/speaker system in the main control room;

HEADPHONE (HDPN)—an additional output (w/built-in power amp) that drives the console operator's headphones. There are two types of headphone output: the +4dBu balanced output at the module's right DB-25 connector (A), and the headphone jack mounted in the right-hand corner of the console, which is actually the output from a built-in headphone amplifier.

All user wiring to and from the CR-75 module takes place at the DB-25 multi-pin connectors mounted at the top of the module and located underneath the hinged meterbridge. There are two connectors: the left one accepts the two stereo analog external inputs; the right one handles the control room, headphone pre, and stereo cue pre outputs, and the air tally relay. All audio connections are stereo line level analog signals. A pinout drawing on page 5-5 shows all wiring connections at a glance.

Internal Programming Options

Internal programming for the control room module is made via printed circuit board (PCB) mounted dipswitch SW1 located on the top of the module (beneath the DB-25 connectors). Note when a dipswitch position is thrown to the right it is ON.

Cue Interrupt

Dipswitch SW1 pos. 2-5 determines how the console's Cue function will interrupt control room and headphone signals:

SW1 position 5 sends cue to CR left
SW1 position 4 sends cue to CR right
SW1 position 3 sends cue to HDPN left
SW1 position 2 sends cue to HDPN right

Note that when cue is only set to interrupt one side of an output (for example, SW1 position 5 is on and SW1 position 4 is off, so that only the left side of the CR output is interrupted by cue) that side receives a mono mix of the stereo cue signal, while the other side (CR right in our example) receives a mono mix of the selected monitor source.

CR/Cue Mute

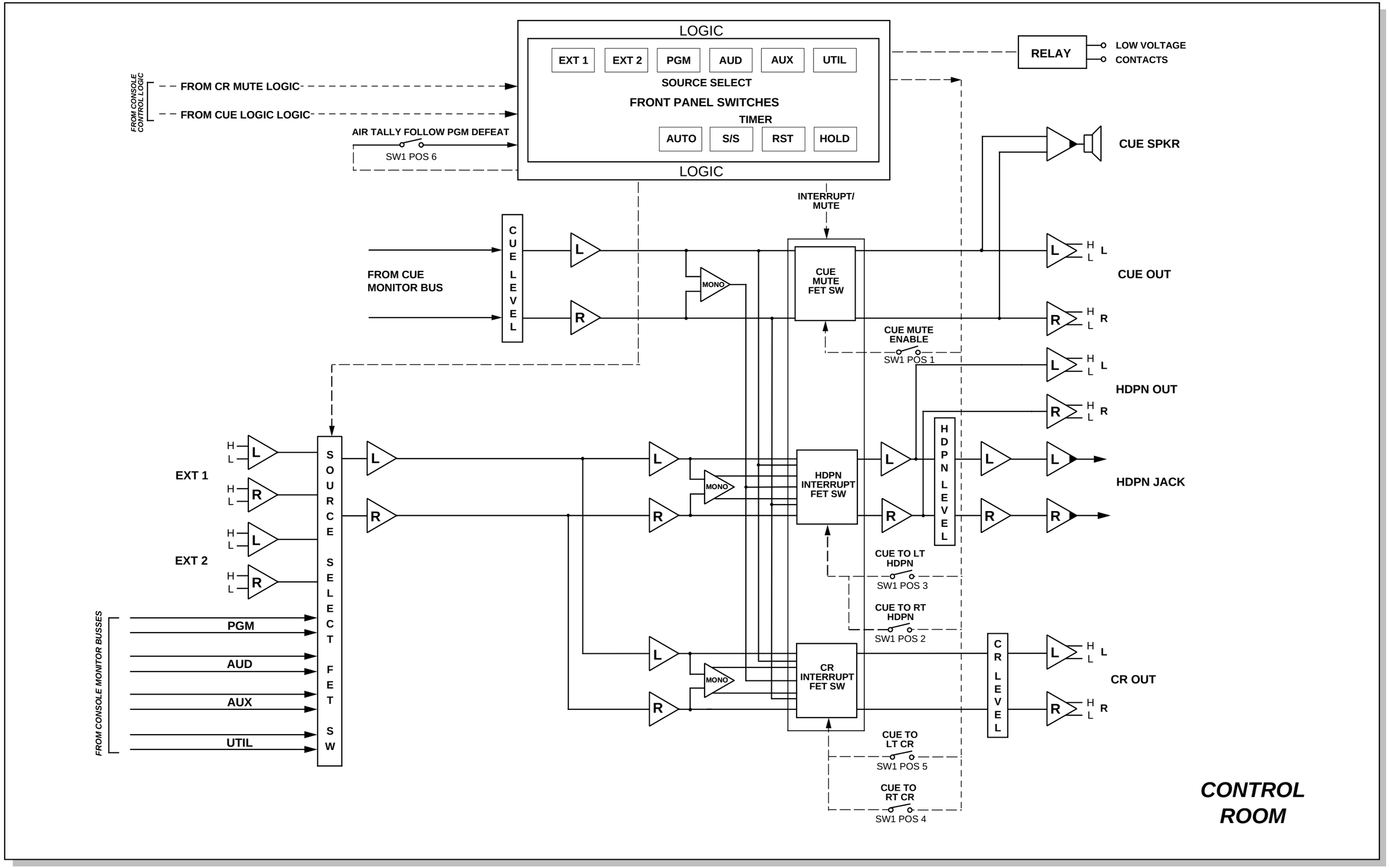
The audio from both the control room speakers and the console's built-in meterbridge speaker can easily be picked up by the console operator's microphone. This is a potential source of feedback. For this reason the console provides muting to the control room output and, optionally, the built-in cue speaker, whenever a mic programmed for control room mute is turned ON with A selected as the input source (see page 3-3).

SW1 position 1 will mute cue whenever the CR output is muted by an input channel set to activate the CR mute

On-Air Tally Follows Program

By default, the on-air tally relay, which is activated whenever an input module having its control room mute enabled is turned on, follows the PGM assignment of the activating input module. In other words, a module has to have its control room mute enabled, and it must be assigned to PGM, and it must be on, in order for it to activate the air tally. A dipswitch setting defeats this PGM assign dependence (the module must still have CR mute enabled and be turned on to activate the air tally).

SW1 position 6 defeats the air tally dependence on PGM assign



CR-75 Control Room Module - Signal Flow Diagram



Studio Control Module (SC-75)

Module Overview

The SC-75 module is similar to the CR-75 module. The monitor signal being sent to the studio output follows the source select switching. This switching is indentical to the control room module's and includes the console's four stereo outputs (PGM, AUD, AUX, & UTIL), and two external stereo line level inputs brought directly into the module.

The SC-75 module houses a studio monitor circuit, which follows the source selection switches. This is a stereo output intended for a remote studio power amp/speaker system.

The SC-75 module has a talkback switch. When the talkback switch is pressed (it is momentary action), any inputs assigned to the talkback bus (see pages 3-3) will interrupt the regular monitor signal being sent to the studio output. The TALKBACK master level control sets the level of this talkback interrupt signal.

All user wiring to and from the SC-75 module takes place at the DB-25 multi-pin connectors mounted at the top of the module and located underneath the hinged meterbridge. There are two connectors: the left one accepts the two stereo analog external inputs; the right one handles the studio, studio pre, and mono talkback outputs, and the tally 2 relay. All audio connections are stereo line level analog signals. A pinout drawing on page 6-5 shows all wiring connections at a glance.

Internal Programming Options

Internal programming for the studio control module is made via printed circuit board (PCB) mounted dipswitch SW1 located on the top of the module (beneath the DB-25 connectors). Note when a dipswitch position is thrown to the right it is ON.

External Talkback Mute/Dim

There is an independent talkback output from the SC-75 module. A dipswitch settings makes this external talkback output MUTE whenever the studio is muted. You also have the option of making the output DIM (drop -20dB in level) instead of MUTE by a second dipswitch setting.

SW1 position 1 mutes external TB whenever Studio is muted* *factory default settings
SW1 position 2 makes external TB DIM instead of MUTE

If position 2 is on the setting of position 1 is ignored.

Studio Dim

Input modules controlling studio microphones can be programmed to MUTE the studio whenever the module is turned on (i.e., it's microphone is live). If you wish, you can have the studio DIM (drop -20dB in level) instead of MUTE:

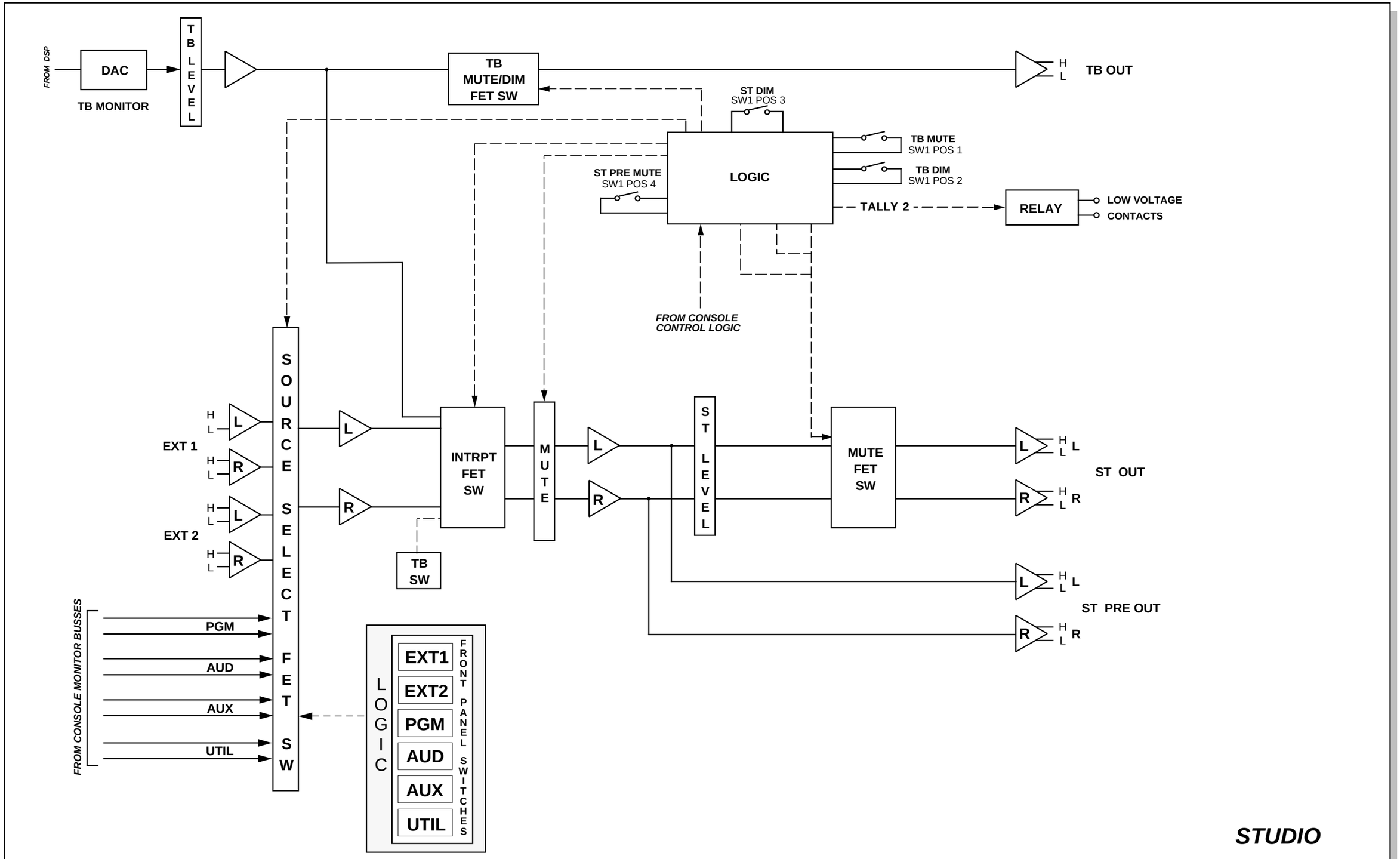
SW1 position 3 causes Studio to DIM instead of MUTE

Note the DIM functions do not affect talkback interrupts, which always completely replace the studio's regular monitor feed with the console operator's TB signal. Note also if a studio is muted, talkback cannot be heard. However, if a studio is programmed to DIM instead of MUTE, talkback audio could presumably make it from the studio monitor speakers to the open studio mic.

Studio Pre Mute

The studio pre output can be made to mute whenever a module programmed for studio mute is turned on. When this is done it overrides the studio dim function (that is, the main studio out will always mute, never dim when studio pre mute is activated).

SW1 position 4 causes studio pre to mute



SC-75 Studio Control Module - Signal Flow Diagram

Superphone Input (SP-75; optional)



Module Overview

The SP-75 input module is used for telephone call-ins, and can handle two callers. Caller signals enter the module from your station hybrid. Each caller has its own fader.

Output switches assign callers to any combination of the console's four outputs: PGM (program), AUD (audition), AUX (auxiliary), and/or UTIL (utility).

Two recessed front panel trimpots at the top of the module adjust the input gain of the two CALLER signals.

Caller Set-Ups

Pre-air segment communication between the console operator (DJ) and callers is via CUE buttons (2) which place the callers' voices on the console's cue speakers (or control room speakers/operator's headphone if the CR-75 module's cue interrupt function has been so programmed). These cue signals can be programmed pre or post fader.

The DJ can assign his microphone input module to an unused output bus—say UTIL—and the DJ then selects the UTIL input with the MXM FEED SET switch. This sends a dedicated (digitally generated) version of the UTIL bus signal to the SP-75 module's hybrid output, where it is ultimately heard by the caller through his telephone. This mix minus source select method can also be used to preplay a musical segment (or any other program content) for the caller off-air. Take the IN-75 input module handling the desired music cut and assign it to an unused output bus; select the same bus as the caller's mix minus source input and he will hear it off-air.

The DJ microphone input module can also be assigned via dipswitch to the console's talkback (TB) bus. Any audio on the TB bus is heard by a caller when that caller's cue button is pressed.

The SP-75 also has an external mono audio input that can be selected via dipswitch to feed both caller outputs. One possible application is to feed the output of the DJ microphone QMP-4 channel both to the IN-75 input and the SP-75 external input. If the SP-75 dipswitch is set to enable the external input the DJ's voice is always sent to the callers.

Automatic Features

The channel ON (red) and OFF (amber) switches are at the bottom of the module. These can be programmed (via internal PCB-mounted dipswitches) to activate control room and studio mutes, tallies, and timer restart.

Automatic cue dropout can also be programmed internally (page 7-4), making it unnecessary to de-activate caller setup buttons before going live; simply pressing the module's ON switch will automatically do this for you.

Inputs and Outputs

All audio and control signals hook-ups are made via two multi-pin DB-25 connectors mounted at the top of the module and located underneath the hinged meterbridge. The left connector handles the remote start and stop connections, the audio outputs to the caller hybrids, and the following additional audio outputs:

Composite Out – includes the DJ, callers, and any audio that feeds the callers - generally used for recording phone segments in advance of actual airplay.

Mics Out (also known as Composite Minus Callers) – includes all of the audio at the Composite Out except the callers.

Callers Only – includes only the callers, with no additional audio.

The right connector handles the caller inputs from the callers and the external input.

Internal Programming Options

Internal programming is accomplished via printed circuit board (PCB) mounted dipswitch SW1, located on the top of the module (beneath the DB-25 connectors). Note when a dipswitch position is thrown to the right it is ON. The SP-75 PCB card contains PCB-mounted trimpots which may be used to set the module's output feed levels.

Cue Pre/Post

The module's CUE signals (caller CUE buttons 1 & 2) can tap pre or post fader.

SW1 position 2 activates post-fader cue (default is pre)

Mutes

When the SP-75 phone channel ON switch is pressed, it can activate console mute functions. Dipswitch SW1 determines which of the console's two mute lines will be activated:

SW1 position 6 mutes the control room and activates the air tally when the phone module is ON*

SW1 position 5 mutes studio when the phone module is ON

*factory default settings

Timer Restart

When the module is turned ON, the console's digital timer can be programmed to automatically reset to zero and begin counting up.

SW1 position 7 activates timer restart when the phone module's ON/START switch is pressed*

*factory default settings

Tallies

Turning the module ON can activate a remote tally indicator. There are two tally control lines: on-air and tally 2.

SW1 position 6 activates the on-air tally control line (along with control room mute)

SW1 position 4 activates tally 2

Cue Dropout

CUE (i.e., caller CUE buttons 1 & 2) can be made to turn off when the module's ON/START switch is pressed. This is the factory default setting.

SW1 position 1 activates cue dropout

External Input

A mono input can be activated to feed the module's outputs.

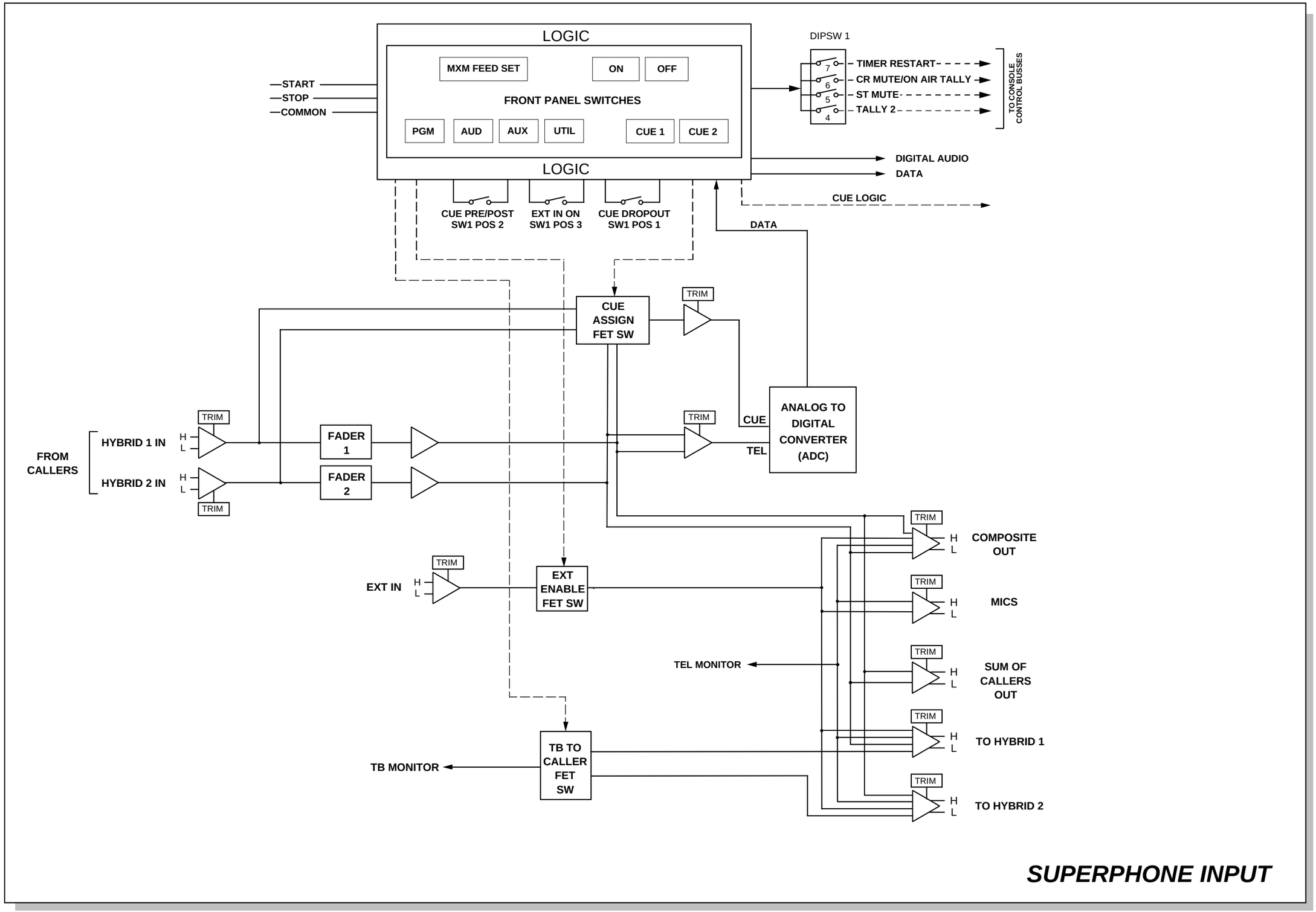
SW1 position 3 activates the external input (default is off)

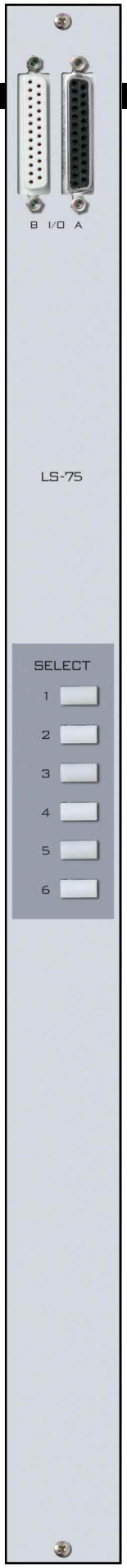
Gain Trimpots

There are eight PCB-mounted trimpots, located on the SP-75 PCB. They are used as follows:

CR1 - sets Callers 1 In port input gain
CR2 - sets Callers 2 In port input gain
CR3 - sets the Ext In port input gain
CR6 – sets the module's "composite" output level
CR7 – sets the module's "composite minus callers" ("mics out") output level
CR8 – sets the module's "callers only" output level
CR9 – sets the module's output level to Hybrid 1
CR10 – sets the module's output level to Hybrid 2

The first two trimpots are accessible through holes in the module faceplate.


LOGIC
MXM FEED SET
ON
OFF
FRONT PANEL SWITCHES
PGM
AUD
AUX
UTIL
CUE 1
CUE 2
LOGIC
START
STOP
COMMON
DIPSW 1
7
6
5
4
TIMER RESTART
CR MUTE/ON AIR TALLY
ST MUTE
TALLY 2
TO CONSOLE CONTROL BUSSES
DIGITAL AUDIO
DATA
CUE LOGIC
CUE PRE/POST SW1 POS 2
EXT IN ON SW1 POS 3
CUE DROPOUT SW1 POS 1
DATA
CUE ASSIGN FET SW
TRIM
FROM CALLERS
HYBRID 1 IN
HYBRID 2 IN
H
L
FADER 1
FADER 2
CUE
TEL
ANALOG TO DIGITAL CONVERTER (ADC)
EXT IN
EXT ENABLE FET SW
TEL MONITOR
TB TO CALLER FET SW
TB MONITOR
COMPOSITE OUT
MICS
SUM OF CALLERS OUT
TO HYBRID 1
TO HYBRID 2
SUPERPHONE INPUT



Line Preselect Module
(LS-75; optional)

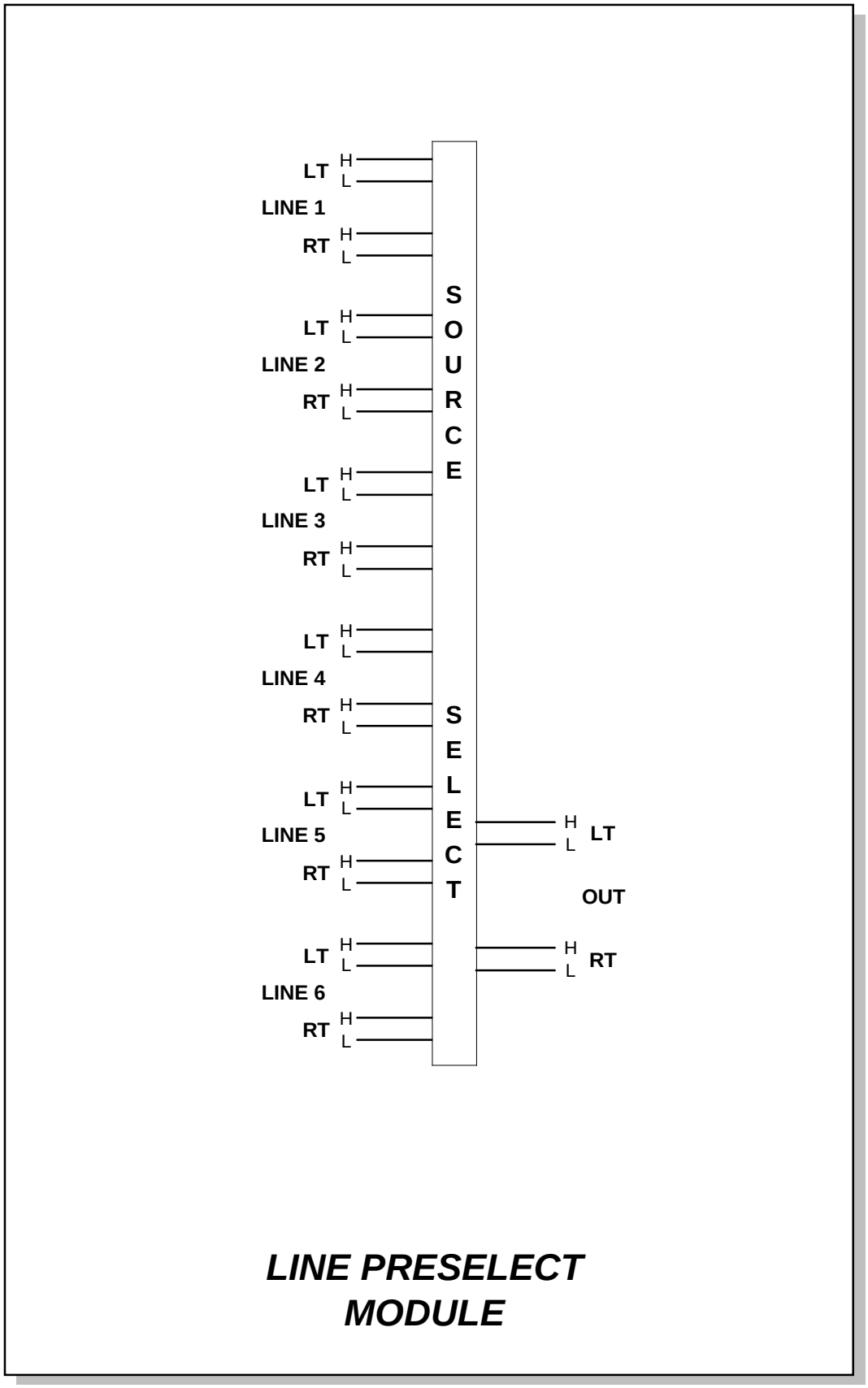
Module Overview

This optional module selects one of six stereo line sources and routes it to one stereo output, allowing you to expand the source capability of an input channel or monitor module.

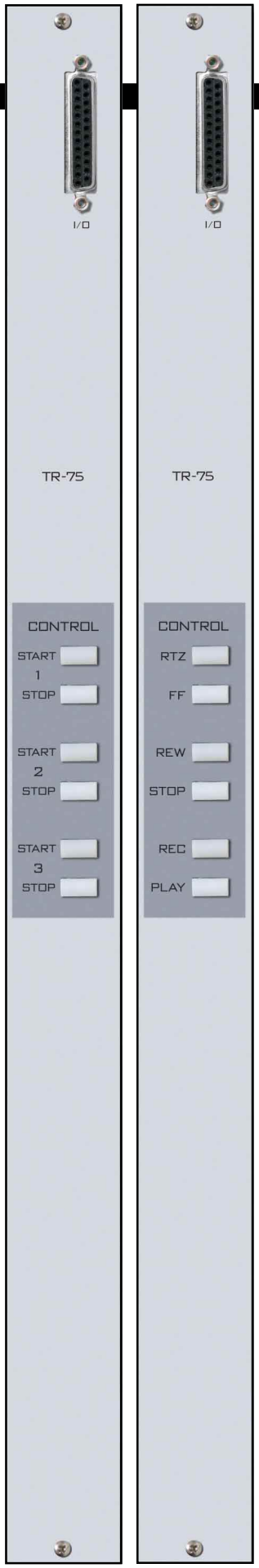
All audio input and output signals are made via two DB-25 multi-pin connectors mounted at the top of the module and located underneath the hinged meterbridge.

Internal Programming Options

There are no internal programming options on the LS-75 module.



LS-75 Line Preselect Module (analog) - Signal Flow Diagram



Tape Remote Module (TR-75; optional)

Module Overview

This optional module is available in two versions. The START/STOP version offers three sets of START and STOP buttons to provide start-stop control of three remote reel-to-reel machines. The full function version provides RTZ, FF, REW, STOP, REC, and PLAY buttons for a single machine. LED indicators in each switch function as tallyback indicators and are powered by the source machine. There are no internal connections between the tape remote panel and the console's power rails.



Meterbridge

Overview

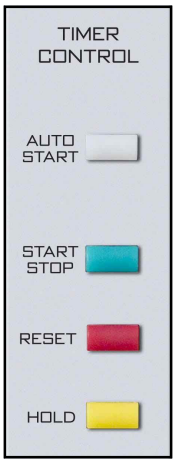
The console's meterbridge houses two pairs of left-right LED meters (Program and Switched; see "Output Module" Chapter 4), the digital timer display, the cue speaker, and the console clock.

The meterbridge assembly hinges open for easy access (setting the clock). Simply swing the bridge up and back until it rests in a fully opened position.

Digital Timer

The console timer control buttons are located on the OM-75 Output Module (see page 4-2).

The timer is provided with an AUTO-RESTART function so programmed input modules can automatically reset the timer display to zero and start a new count, allowing the announcer to easily track his own pace.



The START/STOP button halts the timer, holds the last count, and then restarts and accumulates the count when depressed again–perfect for compiling tapes of desired duration.

RESET has a dual-mode capability:

- if you depress it while the timer is counting, the display will instantly reset to zero and start a fresh count;

- if the timer is already stopped, depressing this button will reset the timer to zero, where it will hold until start is pressed.

HOLD button allows you to hold the display for a longer viewing duration, while still allowing the counter to continue in the background. Releasing the button will then display the current count.

Console Clock

The Wheatstone digital clock is a six-digit time-of-day clock with LED display. The clock is designed with CMOS circuits and an on-board crystal-controlled time base oscillator. Clock set controls may be accessed by opening the meterbridge cover.

Controls

The clock is controlled by two switches mounted on the VU/clock/timer PCB assembly.

Setting the Time

The setting controls consist of two switches: MODE and SET. To set the clock, open the meterbridge cover:

1) The control switches (mounted on the main clock PCB assembly) are labelled "M" and "S". "M" (Mode) is used to scroll from seconds to minutes to hours; "S" is used to Set the time. The procedure is to set the clock slightly ahead of the current time, hold the second count at "00" until the current time catches up, and then release the count.
2) Press the MODE button until the hour digits blink. Depress the SET button until the desired hour is displayed.
3) Press the MODE button until the minute digits blink. Depress the SET button until the desired minute count is displayed.
4) Press the MODE button until the second digits blink. Depress and hold the SET button; the seconds display will hold at "00". When the current time catches up to the display, release the SET button. The clock will start counting. Hit the MODE button once more to place the clock into working mode.

Capacitor Backup

With the meterbridge open note the super capacitor at C35. This super capacitor is self charging. Note that the super capacitor does NOT light up the clock display; it powers the clock crystal to keep it from losing count (it will do this for several days).

Operational Modes

The standard factory default clock configuration is crystal-controlled, 12 hour mode, stand-alone operation. However, some operational features can be modified using programmable dipswitch SW1 on the VU-75 PCB.

24 Hour Mode

The clock can be made to run in 24 hour mode.

SW1 position 1 enables 24 hour mode

External Sync

The clock can be synchronized to an external 1Hz signal (input on pin 2 of CT3, referenced to digital common at pin 5 or 6 of CT3) or an external 60Hz signal (input on pin 1 of CT7, referenced to digital common at pin 2 of CT7).

SW1 position 2 enables synchronization to the 1Hz input

SW1 position 3 enables synchronization to the 60Hz input

Additionally, the clock can be synchronized from an ESE master generating TC-76, TC-89, or TC-90 time code, brought in on pin 1 of CT8 and referenced to digital common at pin 2 of CT8.

Dim

The timer and clock displays can be dimmed for operation in areas with low ambient lighting.

SW1 position 4 enables clock and timer display dimming