
RD Digital Audio Console



TECHNICAL MANUAL
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RD Digital Audio Console Technical Manual - 2nd Edition

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Attention!

This console contains static sensitive devices:

Normal precautions against static discharge should be observed when handling individual modules. In particular, modules being packed for shipping for return or repair must be packed in special static protection bags before packaging. Damage caused by static discharge may not be covered under warranty.

Replacing Modules in a Powered-up Console:

While in an emergency situation it is possible to remove and insert modules on a powered-up console, Wheatstone does not recommend this procedure. Whenever possible it is best to power down the console first before removing or replacing modules.

However, if you find you must proceed with this operation, then be sure to take the following precaution:



When re-inserting a module, take care to replugin it squarely into its mainframe connector socket, so all edgecard fingers make contact simultaneously. In other words, the gold-plated bus connector fingers on the bottom edge of the module's printed circuit board must be inserted squarely (i.e., perpendicular) to the mating socket on the bottom pan of the console mainframe. **The intent is to prevent a situation where one of the module's power pins makes significant contact before the others.** (Naturally, this same precaution must be taken when using extenders.)

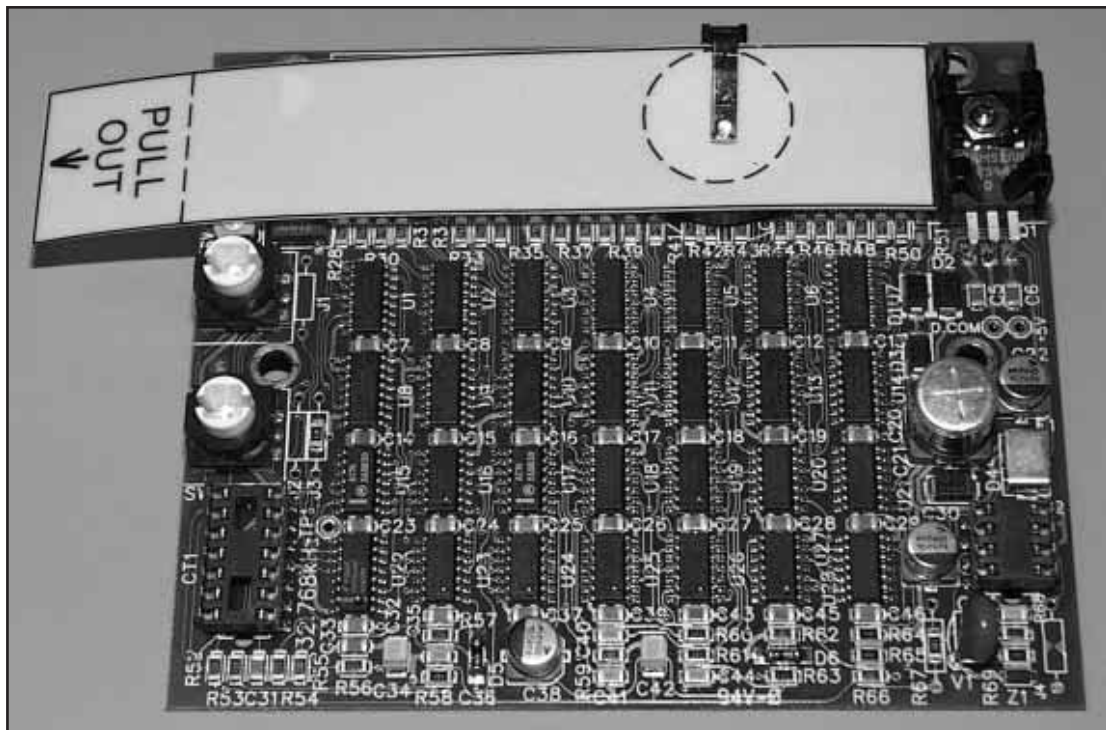
If the above instructions are followed the procedure should be routine; if they are not, you could run the risk of damaging the console's logic chips.

Again, to avoid ANY possibility of this damage, whenever possible we strongly recommend powering down the console *before* replacing any modules.

Attention!

Console Clock Battery Backup

To activate battery backup of the console's clock simply pull out the yellow strip from the clock display card, that is mounted on the inside of console meterbridge, as shown on the picture below.



Console Clock Display Card

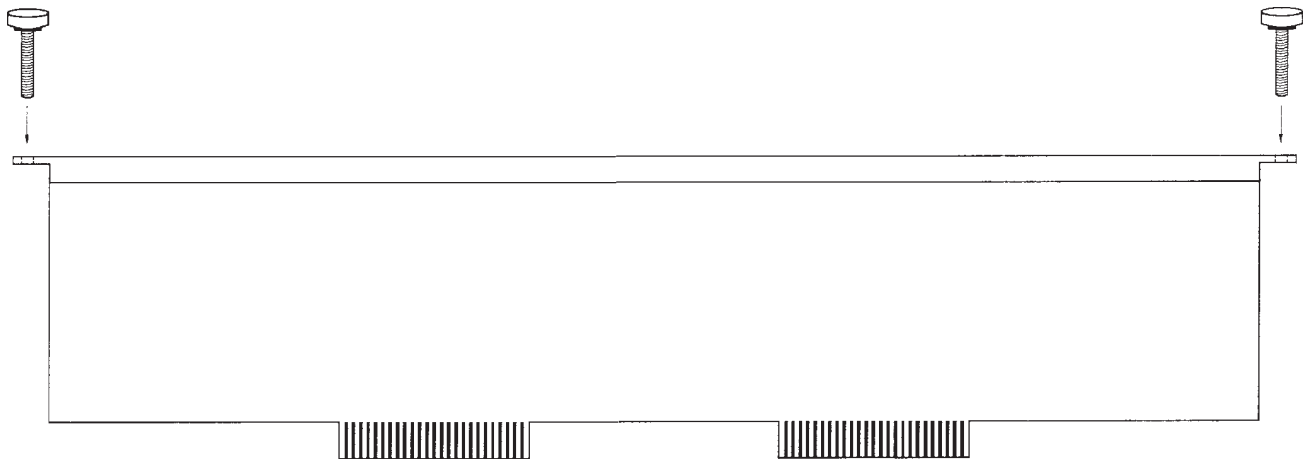
Module Removal Tools

Your Audioarts RD audio console is equipped with two "module extractor tools" which are mounted underneath the console armrest, to the far right (just above and to the left of the righthand mainframe headphone jack).

Main module faceplates are held into the console mainframe by two mounting screws (top and bottom). When removed the screws leave specially threaded holes that accept the two extractor tools.

To remove a module faceplate from the mainframe:

Remove the front top and bottom mounting screws. Remove the extractor tools from underneath the armrest, and screw each tool into a module faceplate mounting hole. *Use only four or five turns* (do not over-insert; you may damage the threaded mainframe hole underneath). Using the extractor tools as handles, pull the module straight up out of the mainframe.



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Installation and Power

Countertop Mounting

The RD digital audio console is designed for countertop drop-in mounting. Console placement should avoid proximity to any electromagnetic fields, such as large power transformers, motors, and fluorescent lighting fixtures. The required cut-out width is 31 5/8" for RD-12 or 43 5/8" for RD-20, and cut-out front-to-back dimension is 18 3/8". The front of the console will extend approximately one inch forward of the cut-out. The console's wooden sidepieces will extend about 7/8" on either side of the cut-out width.

Clearances

Note the two module extractor tools (black thumbwheel screws) mounted in the front surface of console's lower mainframe pan (just above and to the left of the righthand headphone jack). These must be removed before lowering the console into its cutout!



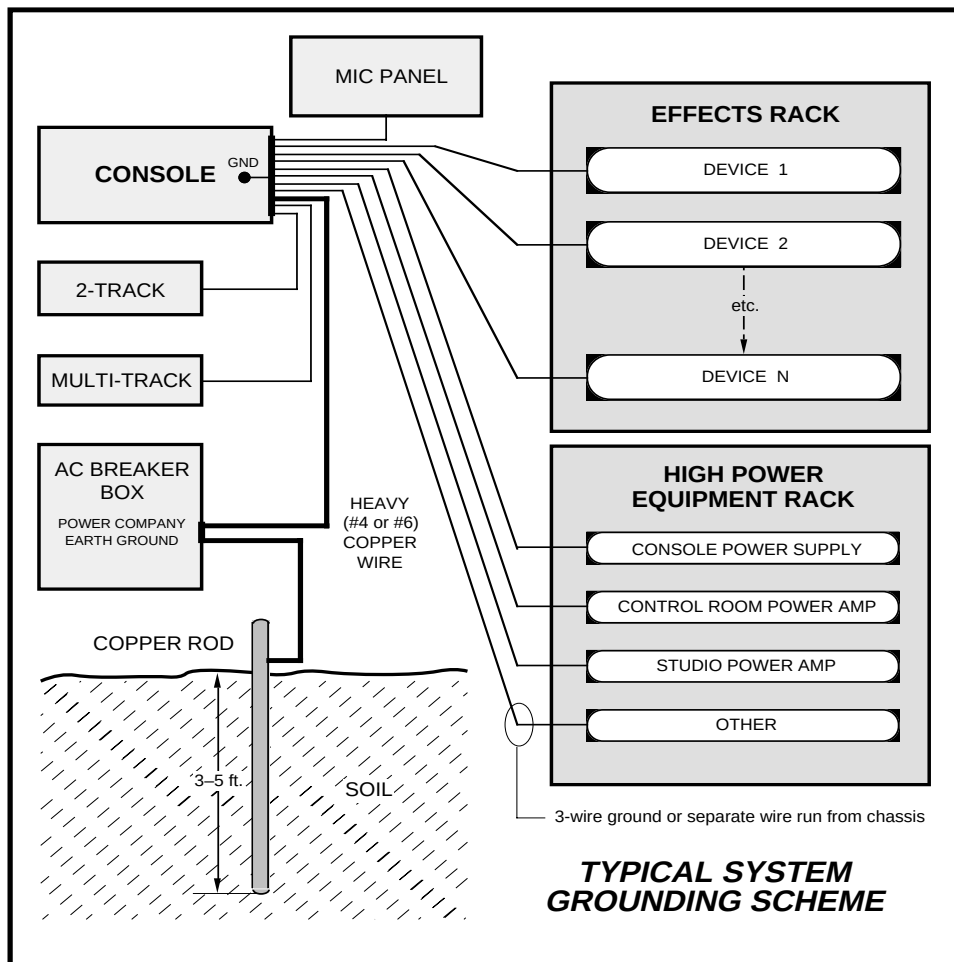
Once in place the console mainframe pan will extend approximately 5 1/2 inches below the countertop surface. Note the hinged meterbridge will require 10 1/2" above the countertop surface to open freely. When fully open the meterbridge will extend 5 1/2" behind the rear line of the cut-out. When closed, the meterbridge will extend 2 1/2" behind this rear cut-out line and 6 1/4" above the countertop surface.

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

System Ground

The first step is to ground the console.

Note that as supplied from the factory, console rackmount power supply common, audio ground, and the RD mainframe are connected together at the console, but are NOT connected to electrical ground and the chassis of the power supply. Safety requirements dictate that a positive connection from the console mainframe to electrical ground be



Tie the console ground lug terminal strip to the system earth ground. Tie every piece of equipment in the entire audio system to the console ground lug terminal strip.

made in the completed installation. Use one of the grounding lugs on the bottom of the mainframe to establish your system ground. The grounding lug terminal strip may be found at the rear of the console, along the bottom edge of the mainframe pan directly under the rightmost mainframe slots (to the lower left if you are looking at the rear of the console).

The system ground serves two important purposes:

- (1) It provides a zero signal reference point for the entire audio system;
- (2) It assures safety from electrical shock.

There exist two terms that one encounters in a discussion of ground:

(A) **EARTH GROUND**, which is usually a heavy copper rod driven into the soil adjacent to the building (around 6 feet down) or a connection to the copper water pipes leading into the building. Either is acceptable (unless, of course, the water pipe is made of plastic).

(B) **THE POWER COMPANY EARTH CONDUCTOR** that enters the building at the power line breaker box; this conductor should be (and is often by code) tied to the above-mentioned earth ground at one point. This point is the **SYSTEM EARTH GROUND**.

TIE THE CONSOLE GROUND LUG TERMINAL STRIP TO THE SYSTEM EARTH GROUND. TIE EVERY PIECE OF EQUIPMENT IN THE ENTIRE AUDIO SYSTEM TO THE CONSOLE GROUND LUG TERMINAL STRIP. If the system earth ground point is inaccessible, tie the console ground terminal strip to the power company earth conductor at the main breaker box (see drawing "Typical Grounding Scheme" on previous page).

Each piece of equipment should be connected by its own ground wire (usually the round third pin on the AC cord). This means that every AC outlet must have a separate conductor run to the console ground lug terminal strip; the outlets cannot be daisy-chained as is normally encountered in commercial and residential AC systems. Any equipment not supplied with 3-wire AC cables must have individual ground wires (16 gauge or larger) connected to their chassis grounds and then run to the console ground lug terminal strip.

Further Grounding Details

Check all equipment to be absolutely certain that each unit is power transformer isolated from the AC mains to prevent safety hazards.

It is assumed that in each piece of audio equipment the audio ground and the chassis are tied together at some point. Any piece of equipment lacking a grounded chassis is likely to be prone to interference problems.

Locate all unbalanced audio equipment in the same rack if possible, to minimize chassis ground potential differences. It may also be helpful to insulate each piece of unbalanced equipment from its mounting rails in the rack by means of nylon 10-32 screws and insulating washers between rails and faceplates.

Once the system is properly grounded, proceed with the console power supply installation and connection (next section).

Power Supplies

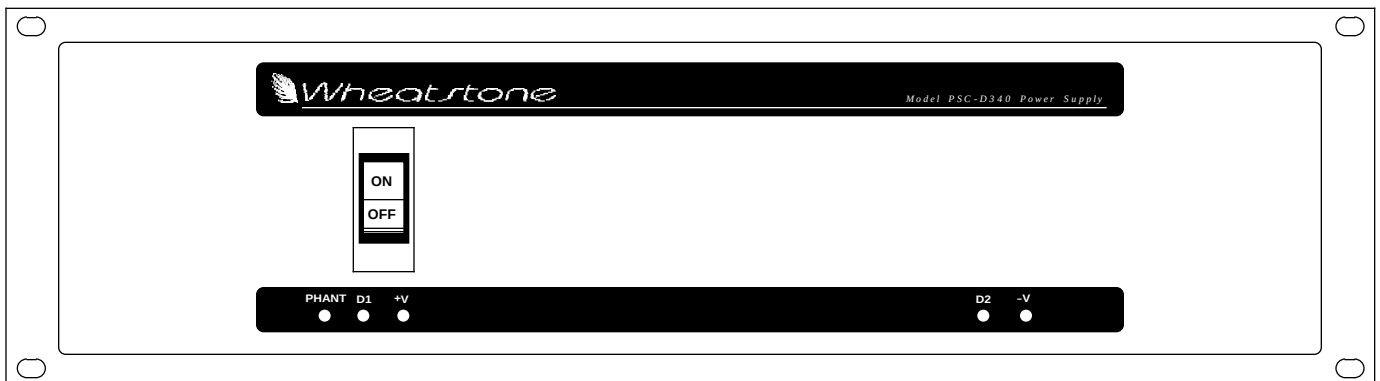
The RD console is powered by a Wheatstone Model PSC-D340 rackmount power supply. This heavy duty unit occupies three 19" wide rack spaces (total height 5-1/4"). Convection cooled, it requires ample ventilation space above and below it. The PSC-D340 generates a lot of heat in the course of normal operation — do *not* mount heat sensitive devices in the same rack cabinet.

Note the power supply (supplies) should be mounted in an equipment rack within fifteen feet of the console (but no closer than 3 feet). Avoid locating any high gain equipment (such as phono preamps, tape recorders, etc.) too near the rackmount supplies, to avoid magnetic interference into that equipment.

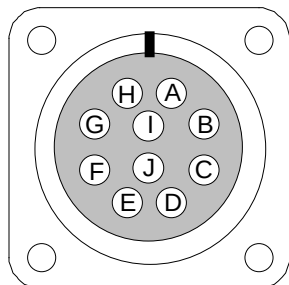
Once the supply is rackmounted, it should be connected to the console using the factory supplied cable. The console's power supply connector is located at the rear of the console, at the right end of the meterbridge bottom pan. Note that the power supply cable's 10-pin female connector has to be rotated until its locating pins match the male connectors on the console. Do not force a connector on; it attaches easily when properly aligned. Connect the cable first to the console, then to the rear of the rackmount power supply.

Note each power supply is fitted with a 3-wire grounded AC cord that should be plugged into a "clean" AC power source. That is, an AC source that feeds only the control room audio gear. This source should be a separate feed from those powering lighting, air-conditioning, or any other non-audio machinery. The third pin ground wire of the AC source should be tied to the central system ground point. *Note that while the AC power cord ground wire terminates at the power supply chassis, it does NOT connect to the RD console common; the console itself must be grounded separately. (See previous section, "System Ground".)*

The power feed recommended in the text is often installed and referred to in studios as an "isolated AC ground" outlet. It is usually orange in color.



The PSC-D340 Power Supply



**TYPICAL POWER
CONNECTOR**
(10-pin)

- A : audio/phantom common
- B : +V audio
- C : -V audio
- D : digital common
- E : phantom power
- F : digital common
- G : +digital
- H : +digital
- I : n/c
- J : n/c

The VU/Timer Cable

Connections from the MOD-5 Meter Output Module to the Meterbridge for VU meter and timer signals are made through a special cable that ships with the console. This cable has a DB-25 at the both ends. Connect the one DB-25 connector to the matching DB-25 connector on the underside of the Meterbridge at the back of the console. Connect the second DB-25 to the upper DB-25 connector on the bottom of the frame at the slot that contains the MOD-5 module.

Energizing

Assuming the RD console mainframe is properly placed and grounded, and its PSC-D340 power supply correctly rackmounted and connected to the console, you may now energize the PSC-D340 rackmount power supply by plugging it into the AC mains and turning it on, using its front panel circuit breaker/switch. The five LEDs on the power supply front panel should light up to indicate the presence of their respective voltages. The console's individual module switches will assume factory default settings.

Once you have verified proper power-up, turn off the rackmount power supplies to de-energize the console. You may now proceed to wire up audio and control connections.

Audio and Control Wiring

All audio and control I/O connections to the RD console are made through multipin DB-25 connectors located on the bottom of the console.

Connection Procedures

As supplied from the factory, the console requires no logic connections to function. Therefore an orderly installation begins with the audio wiring. Note that this manual is organized by module type (inputs, outputs, monitor modules, etc.); each chapter contains detailed wiring instructions for its module type. Proceed through the manual, chapter by chapter, until all modules have been wired to suit your particular installation requirements. Once proper audio operation is verified, go back to each individual chapter and proceed with control wiring.

Digital Audio Connections

CABLE - All AES/EBU input and output digital audio connections are balanced and should be made using a high quality digital audio cable. Be sure to select a digital audio cable with an integral drain wire of the same wire gauge (AWG) as the twisted pair. Typical AES/EBU digital audio cable has a very low characteristic capacitance per ft (pF/ft), and a nominal impedance of 110Ω. High quality digital audio cable offers better signal transmission performance versus typical analog audio cable, especially over long cable runs. Check the cable manufactures data sheet to be sure the cable you plan to use will work in your application.

CONNECTORS - All AES/EBU connections are made with the supplied DB-25 male mating connectors. These crimp style connectors are the insulation displacement type and will accept wire gauge 24 - 22AWG.

SPDIF INPUTS - The SPDIF (Sony/Philips Digital Interface) or “consumer” digital audio interface is a two wire unbalanced signal typically on a single RCA style connector. To connect SPDIF devices to the RD console simply wire the SPDIF center conductor (HOT) to the SLD-5 “HI” input pin and SPDIF shell (ground) to the SLD-5 “LO” input. Connect the SLD-5 “SHIELD” to the DB connector SHELL at the console end only.

Analog Insert Points

Certain module signals have insert patch points in their signal chains to allow outboard audio processing. These include MONO MIC INPUTS (MMD-5) and OUTPUT MODULES (OMD-5).

Normally these points are internally bridged at the factory (via PCB-mounted programming switches) prior to shipment. If you intend to use outboard signal loops at these points, you must reprogram these switches. See pages 2-3 (mic inputs) and 4-3 (output modules) for details.

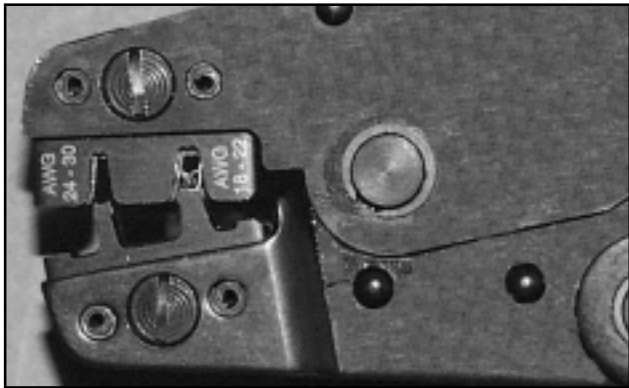
Unbalanced Connections (analog audio)

INPUTS — Wire to the console with typical shielded two conductor cable (like Belden 9451), just as if you were connecting a balanced source. At the unbalanced source machine's output, connect the black wire (LOW) to the shield. If the machine has a -10 dBu output, don't hesitate to turn module input gain as high as is needed.

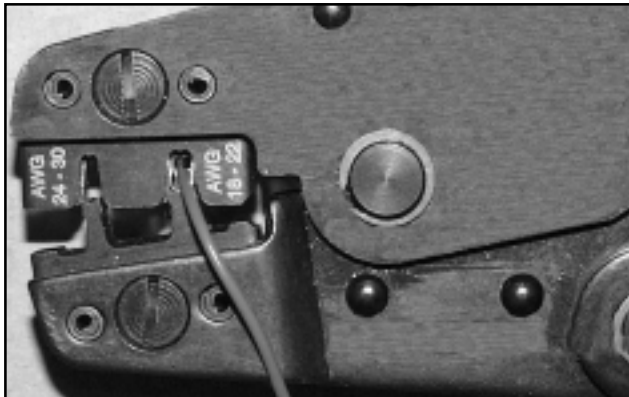
OUTPUTS — RD consoles use a balanced output circuit which behaves exactly like the secondary of a high-quality transformer, with no center tap—this output is both balanced and floating. Either the HIGH or LOW side of the output should be strapped to ground, with the output taken from the other side. (Normally you'd strap LOW to ground, and take HIGH to feed your unbalanced equipment.)

HAND CRIMP TOOL WIRING INSTRUCTIONS

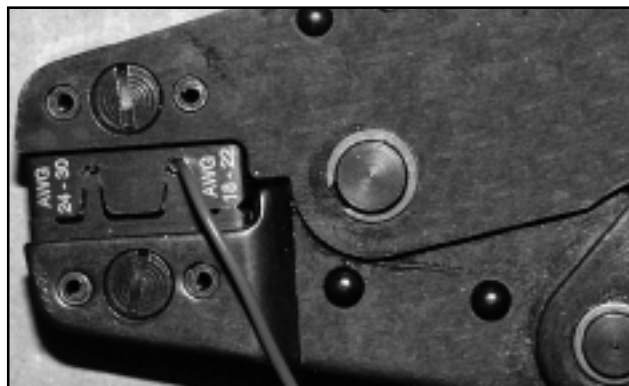
The supplied hand crimping tool (W/S#850067) is used for all I/O wiring connections to and from the console. It is to be used with the supplied pin (figure 1) intended for 22"-28" gauge wire.



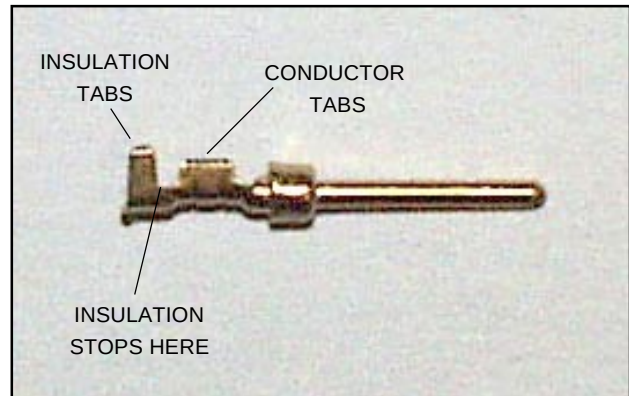
(2) The terminal conductor tabs (pointing UP) are placed in anvil 18-22; the terminal's insulation tabs extend in front towards the camera.



(3) The stripped wire is placed into the terminal and crimped. Note the wire's insulation must stop just short of the conductor tabs (detail)



(4) Final step: jaws fully closed; the insulation tabs have been crimped.



(1) Pin crimp terminal

1) Strip wire approximately 3/16" (insert in proper wire stripper, rotate one half turn, and pull insulation off wire).

2) Leaving wire aside for the moment, with crimping tool fully open (engraved side toward you) bring a terminal into position from the unmarked side of the tool. Place the conductor tabs (inner set as shown in figure 1) on the "18-22" or "24-30" (depending on the wire) anvil (slightly curved surface) so that the circular portion of the tabs rests in the curved surface of the anvil and the two tabs face up into the walls of the female jaw. The insulation tabs will be flush with the top of the tool (figure 2).

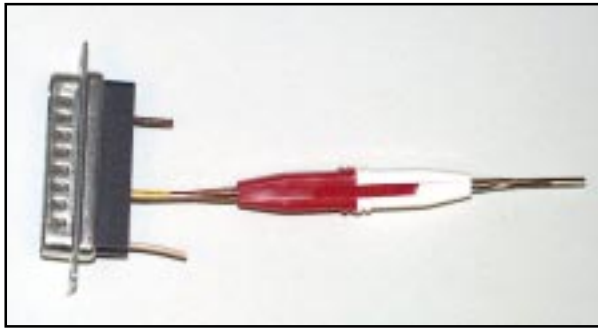
3) Close tool very slightly, only to the point of holding the terminal in position (figure 2).

4) Insert wire into terminal until wire insulation is stopped by conductor tabs (figure 3). CRIMP by squeezing handles until jaws are fully closed (figure 4).

5) If there is an insertion error or if a circuit change is needed, you'll need to use an extractor tool to remove terminals (see next page).

Note that metallized plastic hoods for each connector are also supplied with the console.

EXTRACTOR PIN INSTRUCTIONS



(5) Place extractor tip over pin terminal to be removed.

If you accidentally insert a crimp terminal pin into the wrong socket, you'll need to use the supplied pin extractor tool (W/S#850069) to remove terminal pin, and correct your mistake without having to sacrifice a connector. Place extractor tip (red side) over terminal pin to be removed (figure 5), and press it downwards motion until tip rests upon Housing. Then pull out the terminal pin from Housing. It should never be necessary to discard a connector due to a wiring error.

Mono Mic Input (MMD-5)

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Mono Mic Input (MMD-5)

MMD-5 modules are for microphone input signals (-50dBu nominal). Each module accepts two mono sources: A and B, switched at the top of the module. Phantom power is available at both input ports; it may be selectively activated by an internal dipswitch (the factory default is OFF). Recessed front panel multi-turn trimpots (range 38dB) adjust input levels.

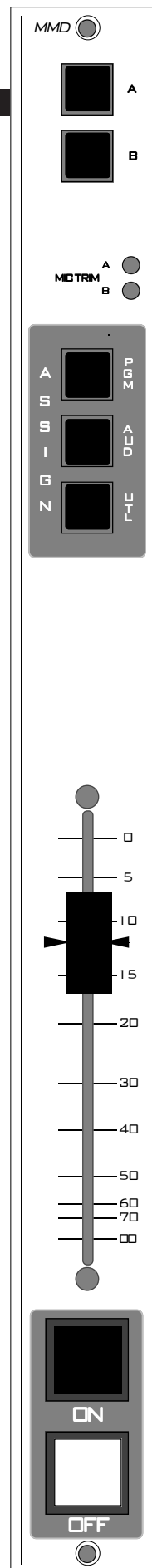
Example: with a microphone input of -60dBm @150Ω at the port, gain trim can set levels from -22dBu to +16dBu (note maximum preamp gain is +76dB).

An analog insert point (+4dBu balanced) is provided: it is post-trim and may be internally bypassed, which is the factory default setting.

Output switches assign the selected source signal to any combination of the console's three stereo outputs: PGM (program), AUD (audition), and/or UTL (utility).

The channel ON and OFF switches are at the bottom of the module. In addition to being controlled remotely, these can also be programmed (via internal PCB-mounted dipswitches) to perform a variety of console control functions, including control room and studio mutes, talkbacks, tallies, and timer restart.

All audio and control input and output signals are made via two multi-pin DB-25 connectors mounted in the bottom of the console's mainframe, directly underneath each individual module.



Internal Programming Options

All internal programming is made via printed circuit board (PCB) mounted switches on the module's main card. With the exception of insert bypass, which is a single-throw slide switch, all programming is via 4-position dipswitches (total six).

For the purposes of this manual, we will assume you are holding the removed module upright, component side towards you, with gold-plated card fingers to the left and the module faceplate to the right. This will enable you to read the control legends silkscreened next to each programming switch. Note when a dipswitch position is thrown to the right (towards the module's faceplate) it is ON.

Insert Bypass

SW7 (a single throw slide switch right next to the card's short upper row of gold fingers) will click the module's insert point in and out of the audio signal chain. Note again that the factory default is "insert bypassed". In other words, when shipped from the factory SW7 is thrown in the direction of the silkscreened arrow on the PCB (to the left). To use the insert point (see "Audio Connections" page 2-5), throw the switch to the right, towards the module faceplate.

Phantom Power

Four-position dipswitch SW1 (upper right corner of card) turns phantom power on and off for the module's two microphone input ports.

Dipswitch position 1 activates phantom power for microphone A
Dipswitch position 2 activates phantom power for microphone B

Note the factory default setting for phantom power is OFF.

Mutes

When a microphone is live in a room, that room's monitor speakers must be muted to prevent feedback. The RD console has three mute control lines: control room, studio one and studio two. Each of these may be activated by either an A or B microphone input. The first three positions of dipswitches SW3 and SW4 (to the left of the fader) program these muting functions:

SW3 position 1 mutes the control room when mic A is live*
SW3 position 2 mutes studio one when mic A is live
SW3 position 3 mutes studio two when mic A is live
SW4 position 1 mutes the control room when mic B is live
SW4 position 2 mutes studio one when mic B is live
SW4 position 3 mutes studio two when mic B is live

*factory default setting

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.

SW3 position 4 activates timer restart for mic A
SW4 position 4 activates timer restart for mic B

Tallies

Turning the module ON can activate a remote tally indicator. There are three tally control lines: on-air, tally 2 and tally 3. The first three positions of dipswitch SW6 (to the left of the fader) program these functions:

SW6 position 1 activates the on-air tally control line*

SW6 position 2 activates tally 2

SW6 position 3 activates tally 3

Remote tallies are hooked-up to the console at the Control Room module (CRD-500)

*factory default setting

Utility Bus Pre-Fader

Dipswitch SW6 position 4, when activated, will cause the module signal assigned to the console's UTL output to be tapped before the fader and the channel ON/OFF switches.

Talkback

Typically, one of the console's RD input modules will be used for the control room (CR) console operator's microphone. The fourth position of dipswitch SW1 allows that microphone to also function as a talkback mic. It places the signal (post-insert, pre-fader, pre-on/off) onto the console's talkback bus. When the console operator presses a TB switch on the console's SCD-5 Studio Control 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.

In order for the studio to reply to the console operator, the MMD-5 module controlling the studio's microphone signal must be routed to the console's cue bus, where it can interrupt the regular control room monitor feed and 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 lower DB-25 connector "TB to CR A" or "TB to CR B" control pins and Digital Ground (see page 2-6 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 (post-insert, pre-fader, pre-on/off) signal will be placed on the console's Cue bus. Simultaneously, the module's regular output will be muted (i.e., Cough will be activated) so the talkback signal doesn't go out over the air.

It is also desirable to mute the studio monitor speakers during talkback operations, not only to reduce ambient noise (i.e., the regular studio monitor signal) but also to prevent potential feedback if both the operator and the studio talent press their respective TB buttons at the same time. Dipswitch SW 5 programs the appropriate muting:

Dipswitch position 1 mutes studio one when microphone A is live

Dipswitch position 2 mutes studio two when microphone A is live

Dipswitch position 3 mutes studio one when microphone B is live

Dipswitch position 4 mutes studio two when microphone B is live

Superphone Output Assign

MMD-5 output assign switches can slave off the console's SPD-5 superphone telephone input module output assign switches.

Example: you are running a call-in show with three studio guests, each with his own microphone and MMD-5 input module. You set up the caller and are ready to go live. By pre-programming your studio guests' mic inputs to follow the superphone module's output assign switch (or switches), all you need do is press the PGM assign button on the phone module; PGM assign switches on guest inputs will simultaneously be activated. Thus, the entire segment can go live with the press of one button.

Dipswitch SW2 on the MMD-5 module (to the left of the fader) will slave selected output assign switches to follow superphone output assign control pulses:

- Dipswitch position 1 links the PGM switch
- Dipswitch position 2 links the AUD switch
- Dipswitch position 4 links the UTL switch

In order for this feature to work, an associated dipswitch on the superphone module PCB (SW1) must be programmed as well (see page 9-4).

Note this feature only works for turning assign switches ON; they will not turn OFF from the superphone module—this must be done manually.

Hook-Ups

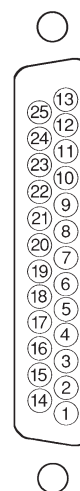
As stated before, all user wiring to and from MMD-5 modules takes place at DB-25 multi-pin connectors mounted directly beneath each module on the console mainframe's bottom pan. There are two connectors per module: the upper one (towards the console meterbridge) handles audio signals; the lower (near the console armrest) control signals. A pinout drawing on page 2-8 shows all wiring connections at a glance.

Audio Connections (upper DB-25)

These include A and B mic inputs, and insert in and out. The mic input level is nominally -50dBu. Insert points are +4dBu balanced in and out. All signals are analog mono.

- Pin 25 – Mic A In SH
- Pin 24 – Mic A In HI
- Pin 12 – Mic A In LO
- Pin 11 – Mic B In SH
- Pin 10 – Mic B In HI
- Pin 23 – Mic B In LO
- Pin 16 – Insert Out SH
- Pin 15 – Insert Out HI
- Pin 3 – Insert Out LO
- Pin 2 – Insert In SH
- Pin 1 – Insert In HI
- Pin 14 – Insert In LO

Note the insert points are normally bypassed by PCB-mounted slide switch SW7 (see page 2-3). Regardless of this switch setting, the Insert Out pins may be used as a channel direct output if desired.

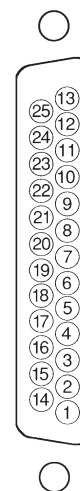


Typical DB-25 connector

Control Connections (lower DB-25)

These include remote on and off, cough, talkback and tally functions. Note each function is available twice, for both A and B source ports, allowing it to follow the module's A/B mic selector switch.

- Pin 1 – Cough A
- Pin 2 – Off Tally A
- Pin 3 – Remote Off A
- Pin 4 – Digital Ground
- Pin 5 – +5V Digital
- Pin 7 – Cough B
- Pin 8 – Off Tally B
- Pin 9 – Remote Off B
- Pin 10 – Digital Ground
- Pin 11 – +5V Digital
- Pin 13 – Audio Ground
- Pin 14 – TB to CR A
- Pin 15 – On Tally A
- Pin 16 – Remote On A
- Pin 17 – Digital Ground
- Pin 20 – TB to CR B
- Pin 21 – On Tally B
- Pin 22 – Remote On B
- Pin 23 – Digital Ground



Typical DB-25 connector

To Turn the Module ON & OFF from a Remote Location

REMOTE ON — Activates the module's channel ON switch. Provide a momentary closure between Pin 16 (Remote On A) or Pin 22 (Remote On B) and Digital Ground (Pins 4, 10, 17 or 23). This will latch the module ON. (User-supplied momentary contact switch required.)

REMOTE OFF — Activates the module's channel OFF switch. Provide a momentary closure between Pin 3 (Remote Off A) or Pin 9 (Remote Off B) and Digital Ground (Pins 4, 10, 17 or 23). This will latch the module OFF. (User-supplied momentary contact switch required.)

COUGH — Temporarily Mutes the module. Provide a closure between Pin 1 (Cough A) or Pin 7 (Cough B) and Digital Ground (Pins 4, 10, 17 or 23). This will turn the module OFF. Note this is a non-latching mode; the module will turn ON again as soon as the closure stops. (User-supplied momentary contact switch required.)

Talkback to Control Room

If an MMD-5 module is being used for a studio microphone, these ports allow talkback from that studio to the console operator. Provide a closure between Pin 14 (TB to CR A) or Pin 20 (TB to CR B) and Digital Ground (Pins 4, 10, 17 or 23). This will cause two things to happen: (1) the module's pre fader signal is sent to the console's Cue bus, where it may be heard by the console operator, and (2) the module's Cough function is activated, muting the module's post fader signal and preventing the TB

signal from going out over other assigned busses (i.e., “live”). This non-latching condition continues until the closure is released. (Requires user-supplied momentary action TALKBACK switch at the studio microphone location.)

See also “Talkback” section earlier in this chapter, (page 2-4).

On Tally

Lets the module’s channel ON switch control an on-air light or other “microphone on” indicator at a remote location. This control function provides a continuous closure (open collector) between Pin 15 (On Tally A) or Pin 21 (On Tally B) and Digital Ground (Pins 4, 10, 17 or 23) whenever the module is ON.

This closure can be used to control an externally powered tally light that requires a continuous closure to function. Or an external tally light (i.e., LED) can be powered from the input module by connecting the external LED to +5V Digital (Pins 5 or 11) and the A or B On Tally ports. In either case, current should not exceed 30 milliamps.

We recommend a series resistor between the LED and +5V digital when you are powering the external tally from the console; a value of 220Ω (1/4W 5%) is suggested.

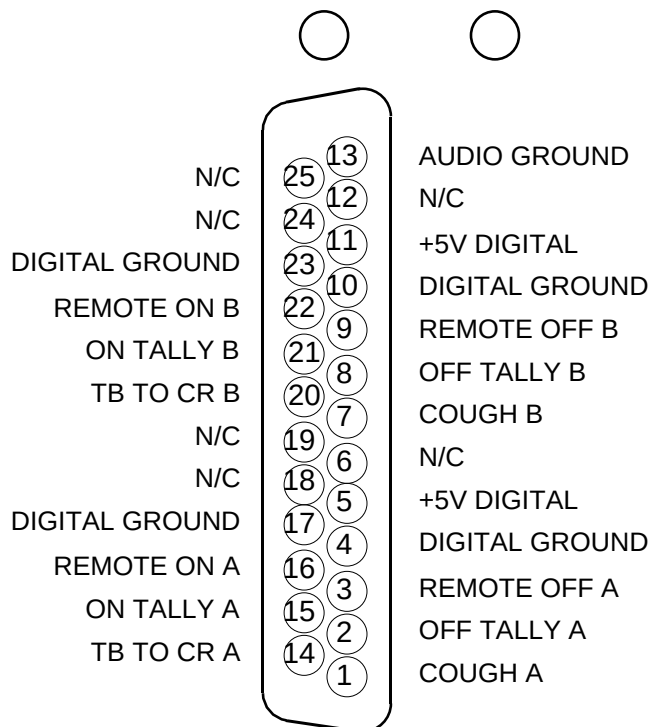
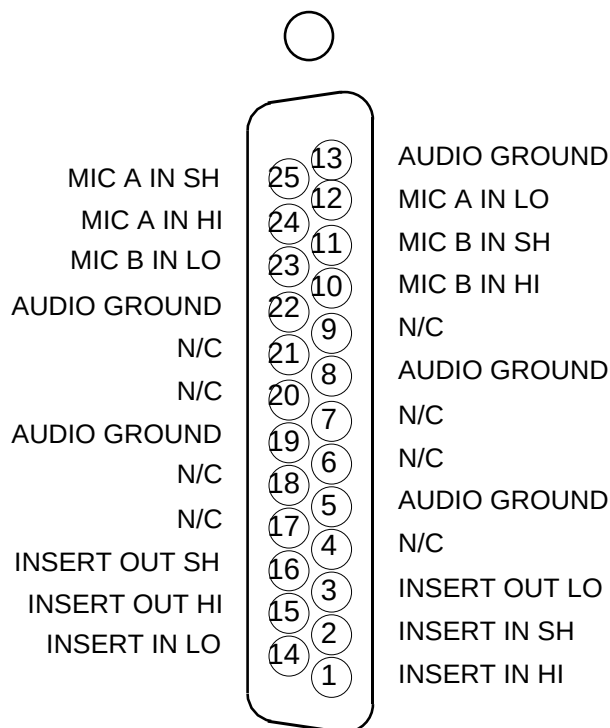
Off Tally

Identical to “On Tally” (preceding), only this tally is active when the module is OFF. Off Tally A is Pin 2; Off Tally B is Pin 8.

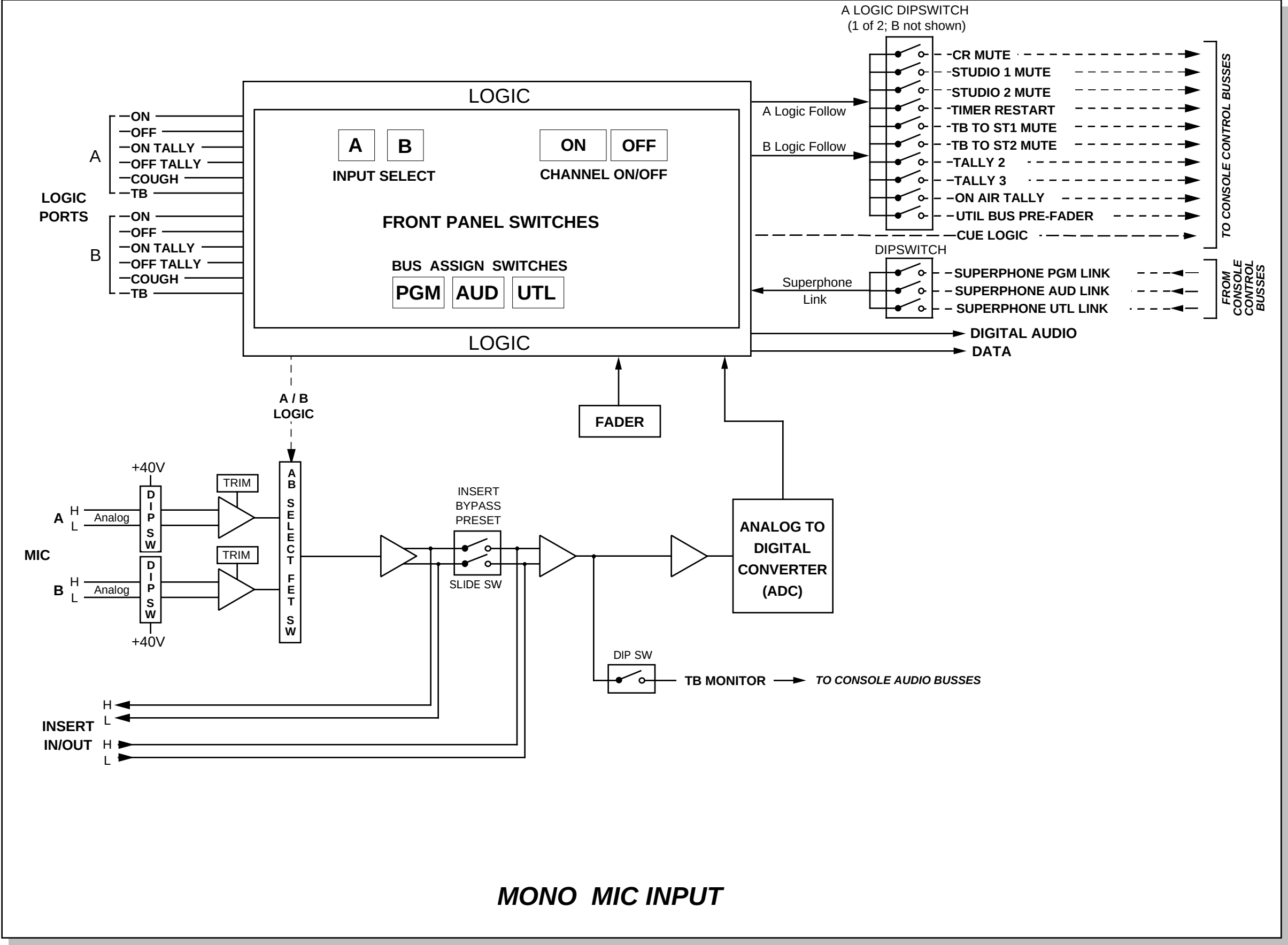
MMD-5 Mono Mic Input

DB Connector Pinouts

ANALOG I/O PORTS (Upper DB-25)



LOGIC I/O PORTS (Lower DB-25)



MMD-5 Mono Mic Input Module - Signal Flow Diagram

Stereo Line Input (SLD-5)

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Stereo Line Input (SLD-5)

Module Overview

SLD-5 modules are for stereo line input signals. They are available in two different versions:

The ADC (analog-to-digital converter) version accepts +4dBu balanced analog input signals. It has L/R front panel input gain trimpots and uses an SLADC-500 piggyback card at the input stage of the module.

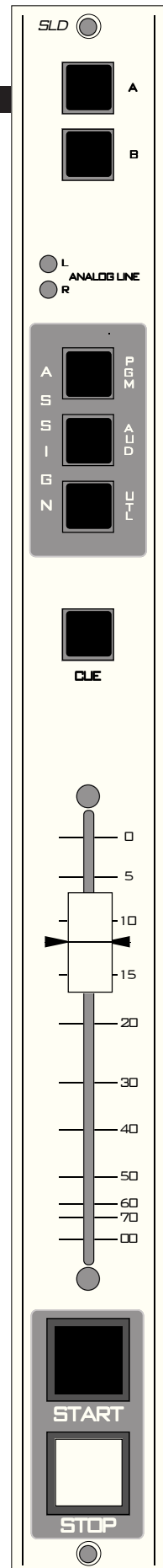
The SRC (sample rate converter) version accepts digital (AES) inputs. It uses an SRC-500 piggyback input card and has no front panel gain trims. The factory default digital format is AES.

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 three stereo outputs: PGM (program), AUD (audition), and/or UTL (utility).

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

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 dipswitches) 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 two multi-pin DB-25 connectors mounted in the bottom of the console's mainframe, directly underneath each individual module.



Internal Programming Options

All internal programming is made via PCB mounted switches on the module's two printed circuit boards.

For the purposes of this manual, we will assume you are holding the removed module upright, component side towards you, with gold-plated card fingers to the left and the module faceplate to the right. This will enable you to read the control legends silkscreened next to each programming switch. Note when a dipswitch position is thrown to the right (towards the module's faceplate) it is ON.

Mutes

Like MMD-5 inputs, an SLD-5 module can be programmed to mute studio speakers when the channel is ON. The RD console has three mute control lines: control room, studio one and studio two. Each of these may be activated by either an A or B input source. The first three positions of dipswitches SW3 and SW4 (to the left of the fader) program these muting functions:

- SW3 position 1 mutes the control room when source A is ON
- SW3 position 2 mutes studio one when source A is ON
- SW3 position 3 mutes studio two when source A is ON
- SW4 position 1 mutes the control room when source B is ON
- SW4 position 2 mutes studio one when source B is ON
- SW4 position 3 mutes studio two when source B 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.

- SW3 position 4 activates timer restart when source A is turned ON*
- SW4 position 4 activates timer restart when source B is turned ON

*factory default setting

Cue Dropout

Dipswitch SW5 position 1, when activated, will cause the module's CUE function to be de-activated whenever the channel ON switch is pressed. This is the factory default setting.

Local/Ready

The module's channel OFF switch normally has its LED indicator controlled by the switch itself ("local"). This is the factory default setting. However, should you wish to have the LED function as a "ready" light for an external source machine, dipswitch SW5 position 2, when thrown to the left (away from the faceplate) passes control to opto-isolated A and B "ready" ports on the module's lower DB-25 connector where a 5 volt signal applied with correct polarity will activate the OFF switch LED. As long as the voltage is maintained, the LED will be lit.

Utility Bus Pre-Fader

Dipswitch SW5 position 4, when activated, will cause the module signal assigned to the console's UTL output to be tapped before the fader and the channel ON/OFF switches.

Tallies

Turning the module ON can activate a remote tally indicator. There are three tally control lines: on-air, tally 2 and tally 3. The first three positions of dipswitch SW6 (to the left of the fader) program these functions:

- SW6 position 1 activates the on-air tally control line
- SW6 position 2 activates tally 2
- SW6 position 3 activates tally 3

Remote tallies are hooked-up to the console at the Control Room and Studio modules (see pages 5-4 and 6-4).

Superphone Output Assign

Like MMD-5 modules, SLD-5 output assign switches can be controlled by the console's SPD-5 superphone module.

Dipswitch SW2 (to the left of the fader on the module's main PCB) will slave selected output assign switches to follow superphone output assign switch control pulses:

- Dipswitch position 1 links the PGM switch
- Dipswitch position 2 links the AUD switch
- Dipswitch position 4 links the UTL switch

In order for this feature to work, an associated dipswitch on the superphone module PCB (SW1) must be programmed as well (see page 9-4).

Note this feature only works for turning assign switches ON; they will not turn OFF from the superphone module—this must be done manually.

Remote ON/OFF — Constant vs. Pulse

Slide switch SW7, located just to the right of the main PCB's upper card fingers, allows you to correct for differing source machine ON/OFF control signals to the SLD-5 module. When set to CONST ("up"), the module will work with most standard source machines. Occasionally, however, the source machine, because of the way it is designed, will send overly long control closures to the module's remote ON and OFF ports—closures so long that they will hang up the module's ON/OFF logic. When this kind of problem manifests itself, setting SW7 to PULSE ("down") will convert the closures to pulses before they get to the channel ON/OFF switch logic.

The factory default setting for SW7 is CONSTANT ("up")

Example: SW7 is set to default CONST (constant). The external source machine reaches end-of-play and sends a five second (or longer) OFF signal to the module, effectively holding it in an Off state. You press the module ON switch but nothing happens—because the OFF switch is locked up. With SW7 set to PULSE this type of problem is eliminated; the module is turned off and left immediately ready for further control input.

Remote START/STOP – Normal vs. EFS

Slide switch SW1 (mounted on the main PCB just to the left of the top of the module's fader) affects the way channel ON/OFF switches send control signals to START and STOP remote source machines.

When SW1 is set to NORMAL ("up") whenever the channel ON switch is pressed a single pulse closure takes place at the A and B START ports. When the OFF switch is subsequently pressed, a single pulse closure takes place at the A and B STOP ports.

When set to EFS ON ("down") a "European fader start" type of constant closure is activated: whenever the channel ON switch is pressed momentarily a constant closure is initiated at the module's A and B START control ports. When the channel OFF switch is subsequently pressed, that closure is broken.

If an SLD-5 module has been equipped with an optional EFS-type fader with a bottom-of-travel switch, it is best to set SW1 to EFS ON.

While no harm will result to any circuitry or hardware if an EFS fader is used with SW1 set to NORMAL, the end result will be an extremely short control pulse at the module's START/STOP control ports—a pulse so short that it may not be detected by all source machines.

The factory default setting is NORMAL.

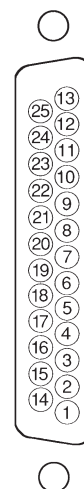
Hook-Ups

As stated before, all user wiring to and from SLD-5 modules takes place at DB-25 multi-pin connectors mounted directly beneath each module on the console mainframe's bottom pan. There are two connectors per module: the upper one (towards the console meterbridge) handles audio inputs; the lower (near the console armrest) control signals. Pinout drawings on pages 3-9 and 3-10 show all wiring connections at a glance.

ADC Module Version (Analog) Audio Connections (upper DB-25)

These include A and B source inputs; level is +4dBu balanced.

Pin 25 – Line A In Lt SH
 Pin 24 – Line A In Lt HI
 Pin 12 – Line A In Lt LO
 Pin 11 – Line A In Rt SH
 Pin 10 – Line A In Rt HI
 Pin 23 – Line A In Rt LO
 Pin 22 – Line B In Lt SH
 Pin 21 – Line B In Lt HI
 Pin 9 – Line B In Lt LO
 Pin 8 – Line B In Rt SH
 Pin 7 – Line B In Rt HI
 Pin 20 – Line B In Rt LO



Typical DB-25
connector

SRC Module Version (Digital) Audio Connections (upper DB-25)

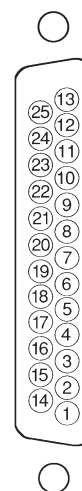
These include A and B source inputs (AES).

- Pin 25 – Line A In SH
- Pin 24 – Line A In HI
- Pin 12 – Line A In LO
- Pin 11 – Line B In SH
- Pin 10 – Line B In HI
- Pin 23 – Line B In LO

Control Connections (lower DB-25)

These are identical for both analog and digital versions of the SLD-5 module. All control ports (except On Tally) are opto-isolated. Functions include remote on and off, on tally, ready, and start/stop for remote source machines. With the exception of On Tally, each function is available twice, for both A and B source ports, allowing it to follow the module's A/B source selector switch.

- Pin 1 – Ready A-
- Pin 2 – Ready A+
- Pin 3 – Start A+
- Pin 4 – Stop A+
- Pin 5 – Start/Stop Com A
- Pin 6 – Start/Stop Com B
- Pin 7 – Stop B+
- Pin 8 – Start B+
- Pin 9 – Ready B+
- Pin 10 – Ready B-
- Pin 11 – Digital Ground
- Pin 12 – On Tally
- Pin 13 – +5V Digital
- Pin 14 – Remote On A-
- Pin 15 – Remote On A+
- Pin 16 – Remote Off A-
- Pin 17 – Remote Off A+
- Pin 18 – Remote Off B+
- Pin 19 – Remote Off B-
- Pin 20 – Remote On B+
- Pin 21 – Remote On B-



Typical DB-25
connector

To Turn the Module ON & OFF from a Remote Location

In the case of stereo line input modules, “remote location” can also refer to a remote source machine that is feeding its audio to the module in question. A 5 volt signal (which may be sourced by the external machine), when hooked up to the control pins with the correct polarity, will activate the module’s channel ON and OFF switches.

REMOTE ON — Activates the module’s channel ON switch. Momentary connect the plus side of a 5 volt signal to Pin 15 and the minus side of the same 5 volt signal to Pin 14 to latch the module ON when input A is selected. Use pins 20 (+) and 21 (-) to latch the module ON when input B is selected.

REMOTE OFF — Activates the module’s channel OFF switch. Momentary connect the plus side of a 5 volt signal to Pin 17 and the minus side of the same 5 volt signal to Pin 16 to latch the module OFF when input A is selected. Use pins 18 (+) and 19 (-) to latch the module OFF when input B is selected.

See also “Remote ON/OFF – Constant vs. Pulse” on page 3-4.

On Tally

Lets the module’s channel ON switch control an on-air light or other indicator at a remote location. This control function provides a continuous +5 volts at Pin 12 (On Tally) relative to Pin 13 (+5V Digital) whenever the module’s channel ON switch is activated.

To START and STOP Remote Source Machines Using Module ON/OFF Switches

EXTERNAL START — Hook up the remote machine’s “start” control pins to the SLD-5 module’s lower DB-25 connector control pins: for A START wire to Pins 3 and 5; for B START wire to Pins 8 and 6.

EXTERNAL STOP — Hook up the remote machine’s “stop” control pins to the SLD-5 module’s lower DB-25 connector control pins: for A STOP wire to Pins 4 and 5; for B STOP wire Pins 7 and 6.

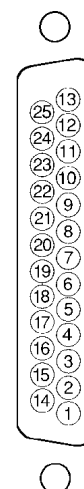
Note that these are opto isolated outputs. START/STOP COM A (Pin 5) and START/STOP COM B (Pin 6) are opto emitters, while the remaining connections (START A, pin 3; START B, Pin 8; STOP A, Pin 4; STOP B, Pin 7 are opto collectors. Correct polarity must be observed in wiring to these connections.

See also “Remote START/STOP – Normal vs. EFS” on page 3-5.

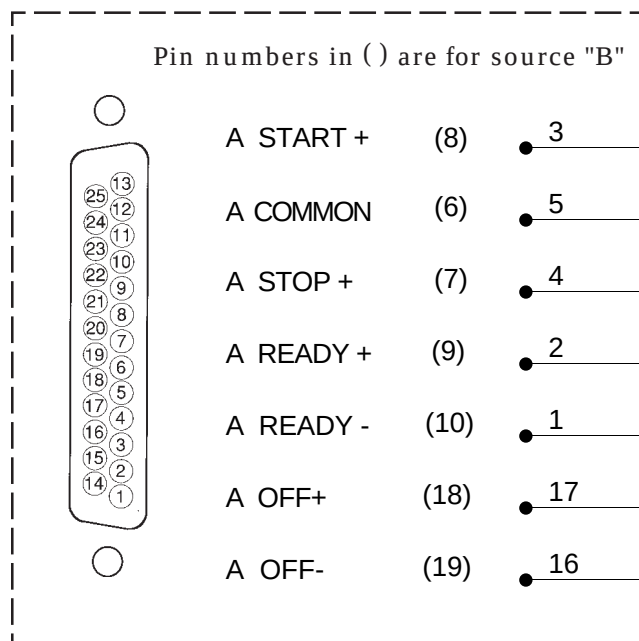
To Control the Module’s OFF Switch LED with an External Source Machine

READY — Hook up the remote machine’s “ready” control pins to the SLD-5 module’s lower DB-25 connector control pins: for A READY provide a 5 volt signal to Pin 2, positive relative to Pin 1; for B READY provide a 5 volt signal to Pin 9, positive relative to Pin 10. As long as the voltage is maintained, the module’s OFF LED will be illuminated.

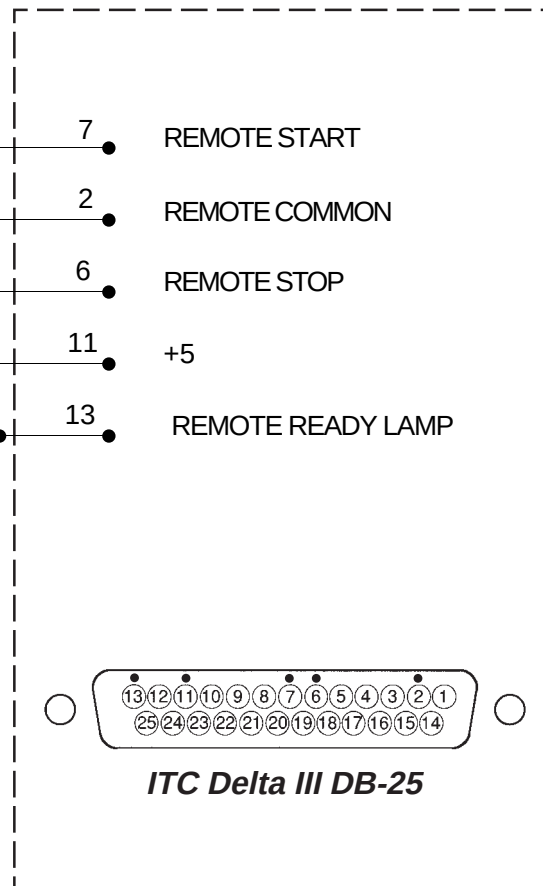
A diagram showing typical connections is shown on the next page.



Typical DB-25 connector

SLD-5 Module Lower DB-25

**Perhaps the easiest way to accomplish these jumps is at the ITC end of the cable. Refer to drawing on page 1-10 ("Wiring Procedure – Double Connection to One Pin") for the recommended procedure.*

ITC Delta III Cart Machine

Connection Instructions

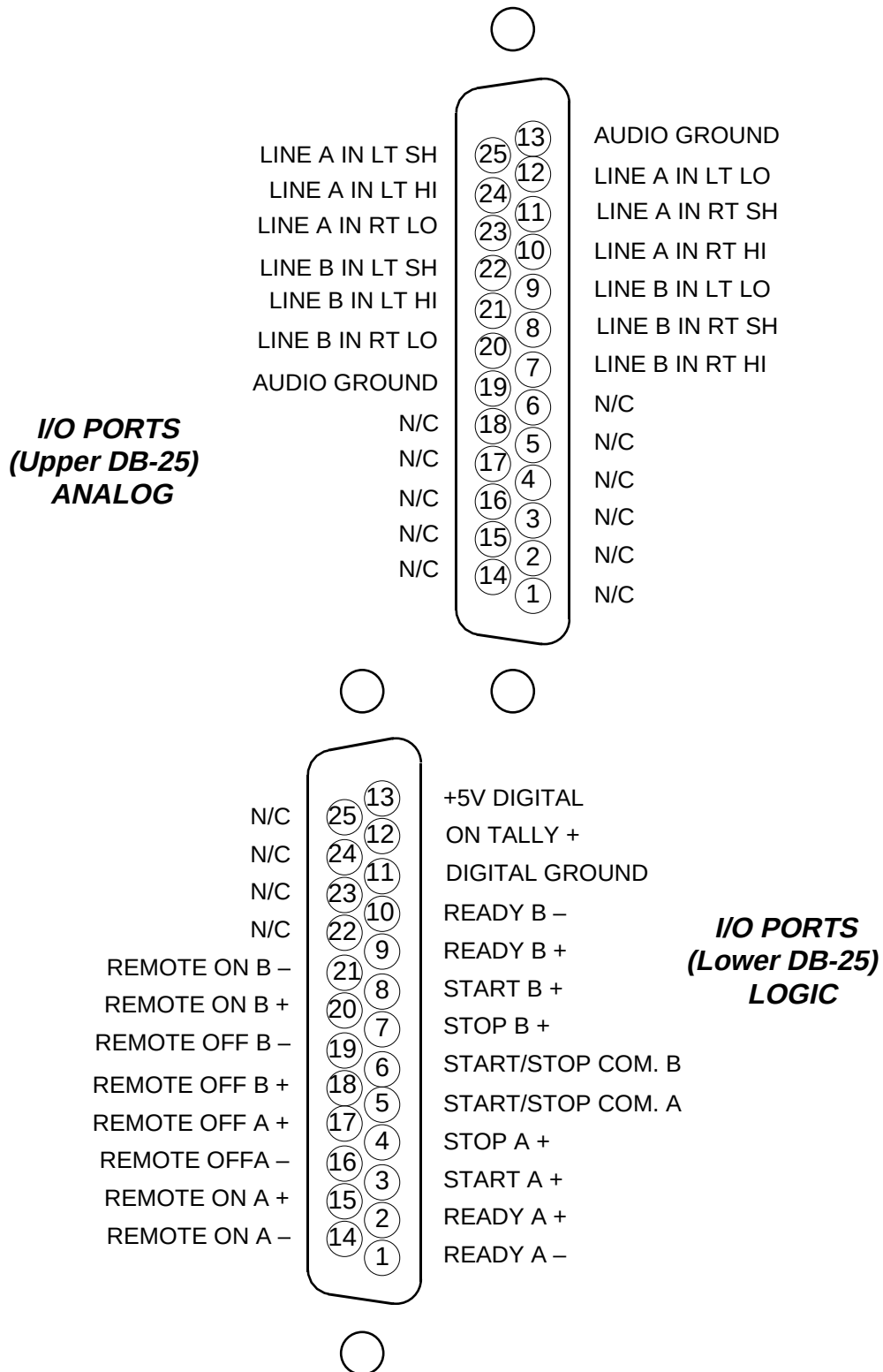
ITC Delta III Cart Player

ref: RD Stereo Line Input Module (SLD-5)

(Use DB-25 male connectors on each end of cable)

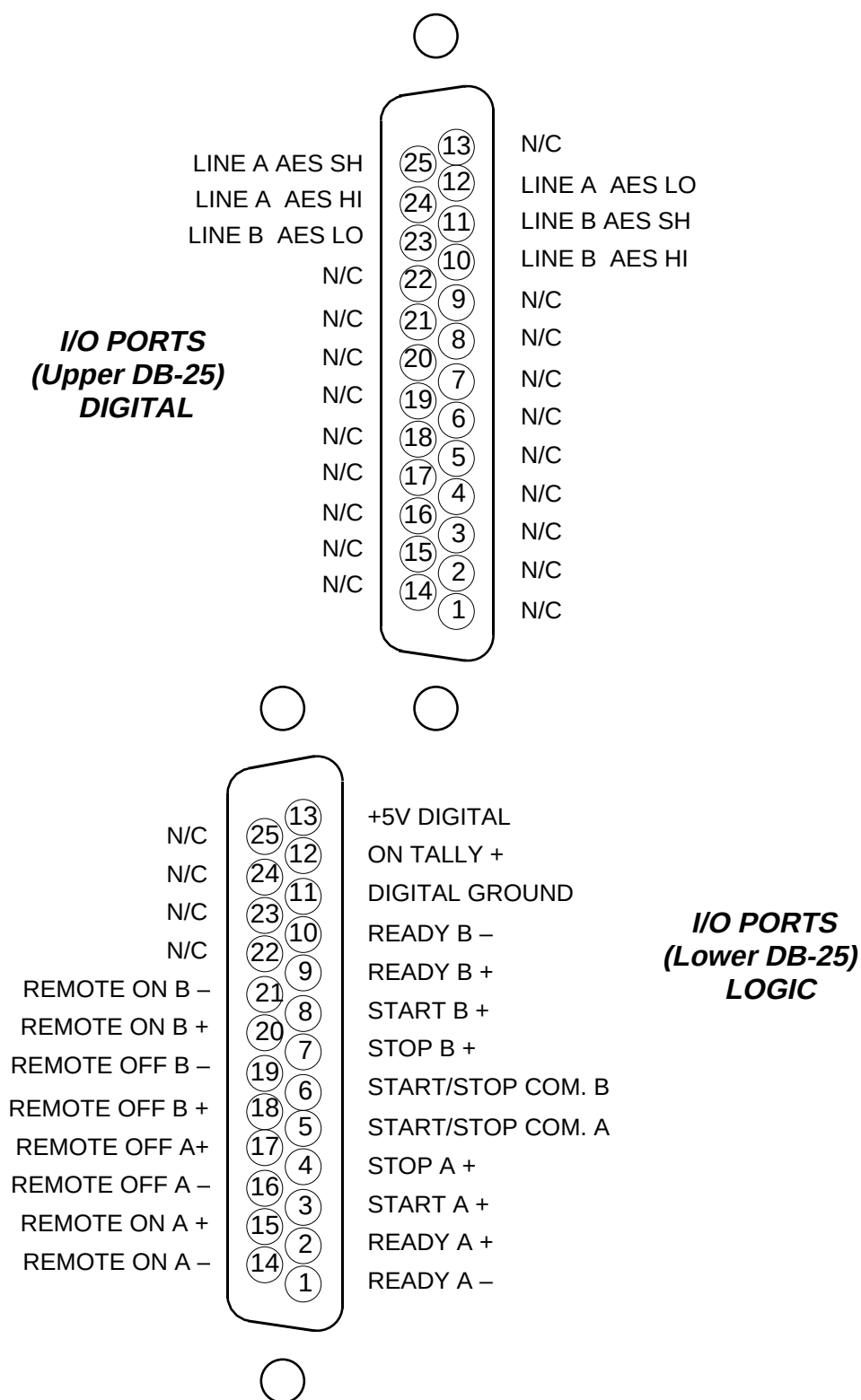
SLD-5 Stereo Line Input

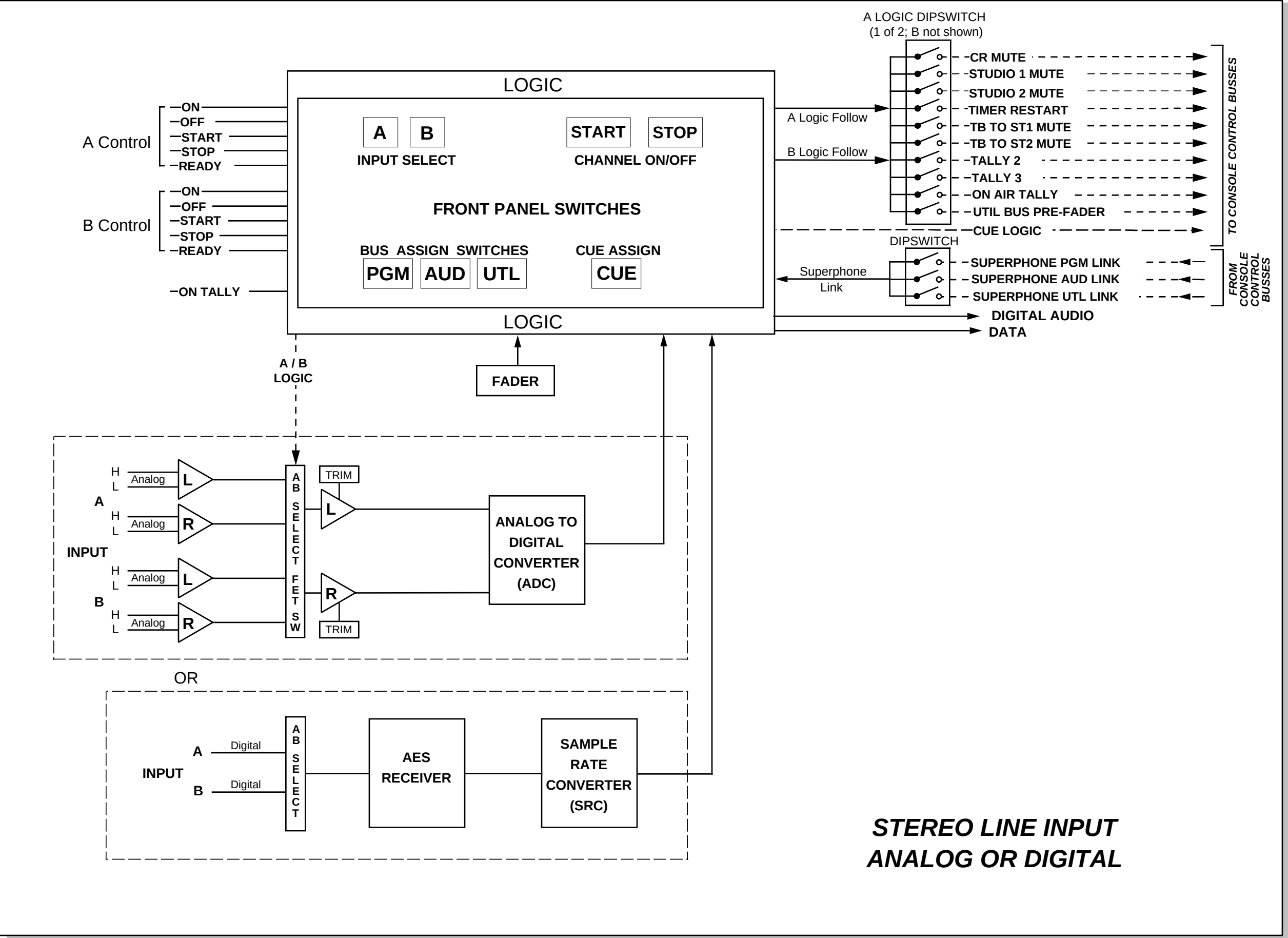
Analog Version DB Connector Pinouts



SLD-5 Stereo Line Input

Digital Version (SRC) DB Connector Pinouts





SLD-5 Stereo Line Input Module - Signal Flow Diagram

Output Modules

(OMD-5)

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Output Modules

(OMD-5)

Module Overview

Each RD console has two master output modules: the first handles the console's Program outputs (OM1), the second Audition and Utility (OM2).

OM1 output module has installed jumpers J3, J4 for Program output; and J11, J12 for CUE monitor signal.

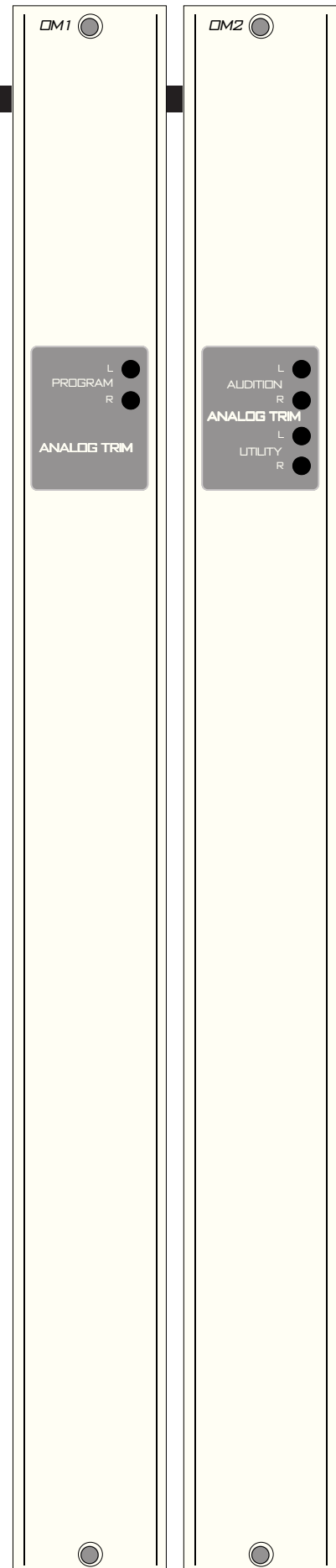
OM2 output module has installed jumpers J5, J6 for Audition output; J9, J10 for Utility output; and J13, J14 for TEL monitor signal.

Either module can be changed to the other by making the appropriate jumper changes.

Both modules output analog and digital signals. Analog outputs may be adjusted using recessed front panel multi-turn trimpots.

OMD-5 modules also generate the console's monitor signals, which feed the Control Room, Studio and Meter Output modules. There are analog stereo insert points for PGM and AUD analog outputs (these may be internally bypassed, which is the factory default setting). Processing done at the insert points will not affect the digital output signals. Regardless of the bypass switch setting, INSERT OUT may be used as an additional direct PGM (or AUD) analog output from a module.

All user wiring to and from OMD-5 modules takes place at DB-25 multi-pin connectors mounted directly beneath the module on the console mainframe's bottom pan. There are two connectors: the upper one (towards the console meterbridge) handles analog outputs and insert points; the lower connector (near the console armrest) digital outputs (AES format). All analog audio is +4dBu balanced. Pinout drawings on pages 4-5 and 4-6 show all wiring connections at a glance.



Internal Programming Options

Insert Bypass

Virtually all internal programming switches on OMD-5 modules are for factory use only. There is one exception, however, and that is the INSERT BYPASS slide switch SW2, located near the top of the PCB just above the four front panel analog trimpots. The factory default for this switch is “down”; i.e., the module’s PGM (or AUD) insert points are bridged. To use the PGM (or AUD) insert points (located on the upper DB-25 connector) throw the switch “up”.

For the purposes of this manual, we will assume you are holding the removed module upright, component side towards you, with gold-plated card fingers to the left and the module faceplate to the right.

Hook-Ups

As stated before, all user wiring to and from OMD-5 modules takes place at two DB-25 multi-pin connectors mounted directly beneath the module on the console mainframe’s bottom pan.

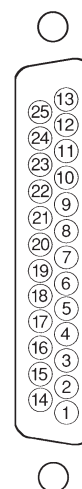
Master Output Module 1:

Upper DB-25 Connector – Analog Audio

Includes Program outputs and Program insert points. All signals are +4dBu balanced.

Pin 25 – PGM Lt Out SH
 Pin 24 – PGM Lt Out HI
 Pin 12 – PGM Lt Out LO
 Pin 11 – PGM Rt Out SH
 Pin 10 – PGM Rt Out HI
 Pin 23 – PGM Rt Out LO
 Pin 19 – PGM Lt Insert Out SH
 Pin 18 – PGM Lt Insert Out HI
 Pin 6 – PGM Lt Insert Out LO
 Pin 5 – PGM Rt Insert Out SH
 Pin 4 – PGM Rt Insert Out HI
 Pin 17 – PGM Rt Insert Out LO
 Pin 16 – PGM Lt Insert In SH
 Pin 15 – PGM Lt Insert In HI
 Pin 3 – PGM Lt Insert In LO
 Pin 2 – PGM Rt Insert In SH
 Pin 1 – PGM Rt Insert In HI
 Pin 14 – PGM Rt Insert In LO

Insert points are normally bypassed at the factory. See “Insert Bypass” (preceding section) if you intend to use these points.



Typical DB-25 connector

Lower DB-25 Connector – Digital Outputs

Handles digital Program outputs (AES format)

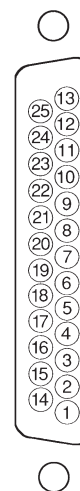
- Pin 2 – PGM AES Out SH
- Pin 1 – PGM AES Out HI
- Pin 14 – PGM AES Out LO

Master Output Module 2:

Upper DB-25 Connector – Analog Audio

Includes Audition, Utility outputs and Audition insert points. All signals are +4dBu balanced.

- Pin 25 – AUD Lt Out SH
- Pin 24 – AUD Lt Out HI
- Pin 12 – AUD Lt Out LO
- Pin 11 – AUD Rt Out SH
- Pin 10 – AUD Rt Out HI
- Pin 23 – AUD Rt Out LO
- Pin 22 – UTIL Lt Out SH
- Pin 21 – UTIL Lt Out HI
- Pin 9 – UTIL Lt Out LO
- Pin 8 – UTIL Rt Out SH
- Pin 7 – UTIL Rt Out HI
- Pin 20 – UTIL Rt Out LO
- Pin 19 – AUD Lt Insert Out SH
- Pin 18 – AUD Lt Insert Out HI
- Pin 6 – AUD Lt Insert Out LO
- Pin 5 – AUD Rt Insert Out SH
- Pin 4 – AUD Rt Insert Out HI
- Pin 17 – AUD Rt Insert Out LO
- Pin 16 – AUD Lt Insert In SH
- Pin 15 – AUD Lt Insert In HI
- Pin 3 – AUD Lt Insert In LO
- Pin 2 – AUD Rt Insert In SH
- Pin 1 – AUD Rt Insert In HI
- Pin 14 – AUD Rt Insert In LO



Typical DB-25 connector

Insert points are normally bypassed at the factory. See "Insert Bypass" (preceding page) if you intend to use these points.

Lower DB-25 Connector – Digital Outputs

Handles digital Audition and Utility outputs (AES format)

- Pin 16 – UTIL AES Out SH
- Pin 15 – UTIL AES Out HI
- Pin 3 – UTIL AES Out LO
- Pin 2 – AUD AES Out SH
- Pin 1 – AUD AES Out HI
- Pin 14 – AUD AES Out LO

OMD-5 (1): PGM Output *DB Connector Pinouts*

I/O PORTS
(Upper DB-25)
ANALOG

PGM LT OUT SH	25	13	AUDIO GROUND
PGM LT OUT HI	24	12	PGM LT OUT LO
PGM RT OUT LO	23	11	PGM RT OUT SH
N/C	22	10	PGM RT OUT HI
N/C	21	9	N/C
N/C	20	8	N/C
PGM LT INS OUT SH	19	7	N/C
PGM LT INS OUT HI	18	6	PGM LT INS OUT LO
PGM RT INS OUT LO	17	5	PGM RT INS OUT SH
PGM LT INS IN SH	16	4	PGM RT INS OUT HI
PGM LT INS IN HI	15	3	PGM LT INS IN LO
PGM RT INS IN LO	14	2	PGM RT INS IN SH
		1	PGM RT INS IN HI

N/C	25	13	N/C
N/C	24	12	N/C
N/C	23	11	N/C
N/C	22	10	N/C
N/C	21	9	N/C
N/C	20	8	N/C
N/C	19	7	N/C
N/C	18	6	N/C
N/C	17	5	N/C
N/C	16	4	N/C
N/C	15	3	N/C
PGM AES OUT LO	14	2	PGM AES OUT SH
		1	PGM AES OUT HI

I/O PORTS
(Lower DB-25)
DIGITAL

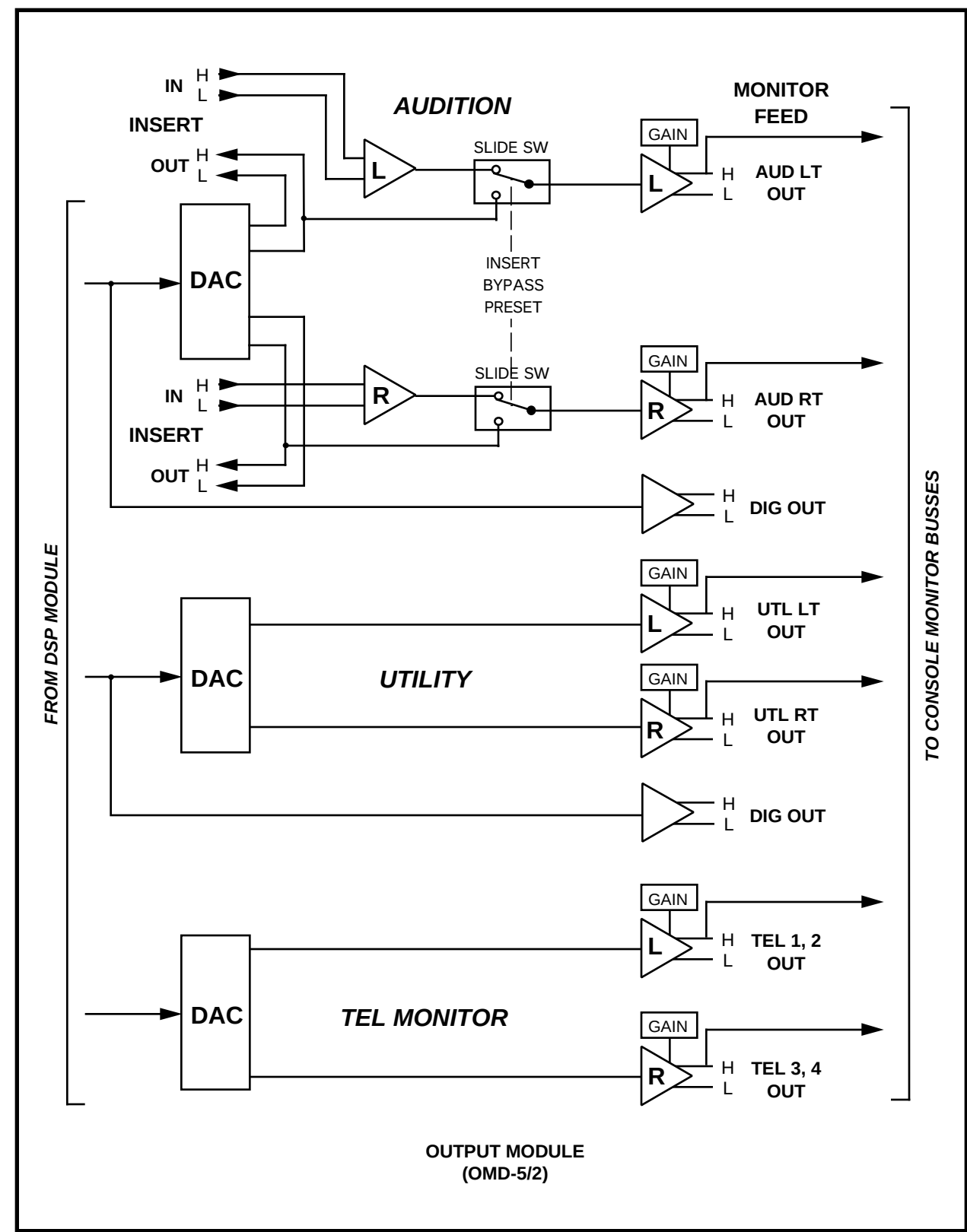
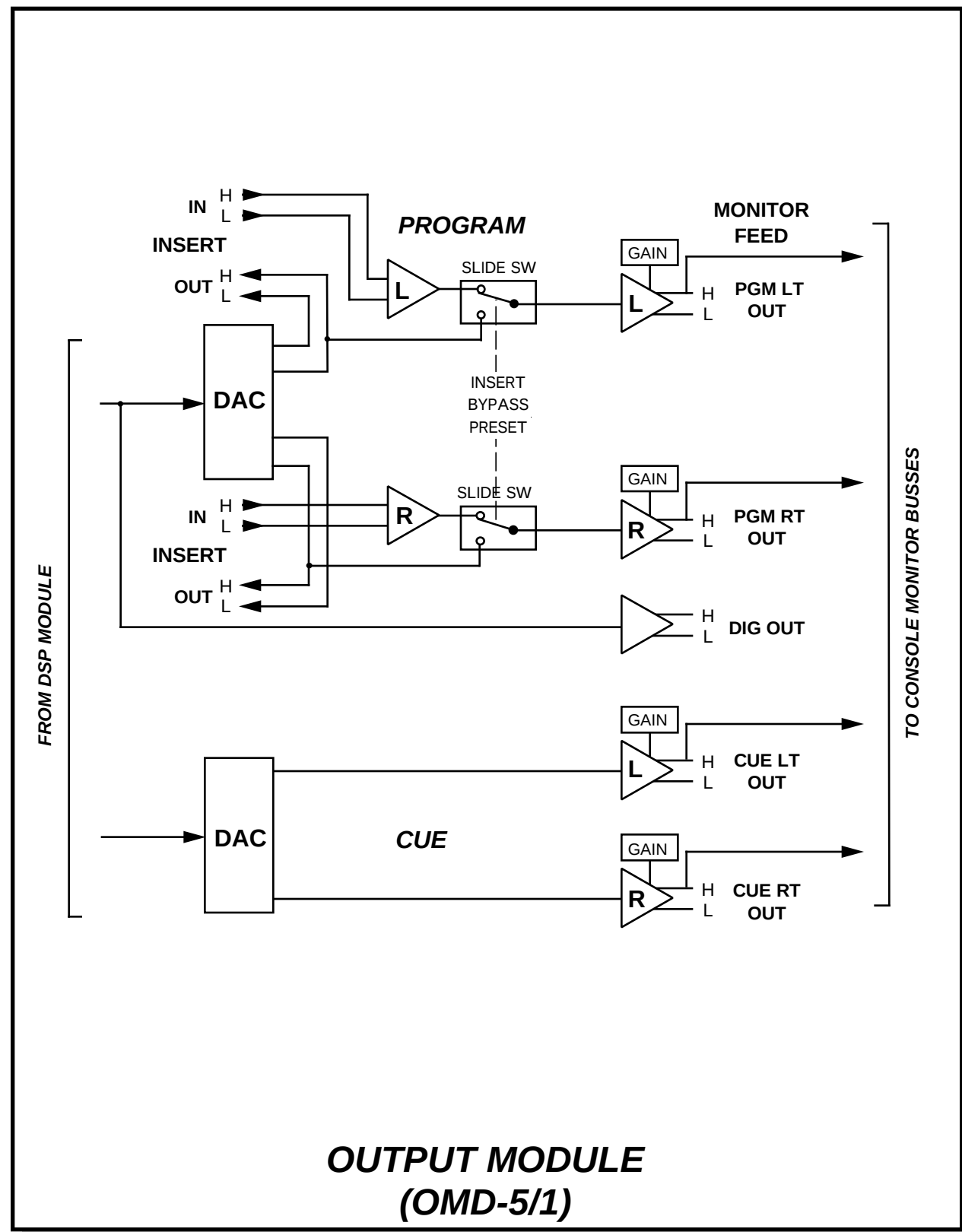
OMD-5 (2): AUD-UTIL Output *DB Connector Pinouts*

I/O PORTS **(Upper DB-25)** **ANALOG**

AUD LT OUT SH	25	13	AUDIO GROUND
AUD LT OUT HI	24	12	AUD LT OUT LO
AUD RT OUT LO	23	11	AUD RT OUT SH
UTIL LT OUT SH	22	10	AUD RT OUT HI
UTIL LT OUT HI	21	9	UTIL LT OUT LO
UTIL RT OUT LO	20	8	UTIL RT OUT SH
AUD LT INS OUT SH	19	7	UTIL RT OUT HI
AUD LT INS OUT HI	18	6	AUD LT INS OUT LO
AUD RT INS OUT LO	17	5	AUD RT INS OUT SH
AUD LT INS IN SH	16	4	AUD RT INS OUT HI
AUD LT INS IN HI	15	3	AUD LT INS IN LO
AUD RT INS IN LO	14	2	AUD RT INS IN SH
		1	AUD RT INS IN HI

I/O PORTS **(Lower DB-25)** **DIGITAL**

N/C	25	13	N/C
N/C	24	12	N/C
N/C	23	11	N/C
N/C	22	10	N/C
N/C	21	9	N/C
N/C	20	8	N/C
N/C	19	7	N/C
N/C	18	6	N/C
N/C	17	5	N/C
UTIL AES OUT SH	16	4	N/C
UTIL AES OUT HI	15	3	UTIL AES OUT LO
AUD AES OUT LO	14	2	AUD AES OUT SH
		1	AUD AES OUT HI



OMD-5 Master Output Module - Signal Flow Diagram

Control Room Module

(CRD-5)

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Lower DB-25 Connector — AUDIO	5-5
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Control Room Module

(CRD-5)

Module Overview

The CRD-5 module is the RD console operator's monitor module. It allows him to listen to the console's three stereo outputs (PGM, AUD & UTL) as well as two external stereo line level inputs brought directly into the module. Source SELECT switching for these signals is at the top of the module.

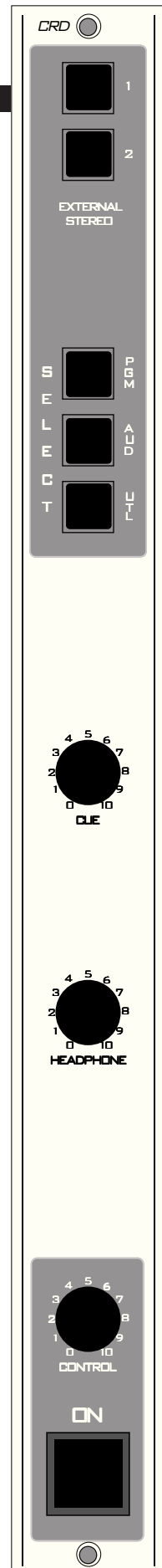
The CRD-5 also houses console HEADPHONE and CONTROL ROOM circuits, which follow the source selection switches.

There are two types of headphone output: the +4dBu balanced output at the module's DB-25 connector (pre-level control), and two headphone jacks mounted left and right on the front of the lower mainframe pan, which are actually outputs from a built-in headphone amplifier. It is this built-in amp that is controlled by the module's front panel HEADPHONE level control.

The CUE master level control is right in the center of the module; this sets the level of the console's cue signal.

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

All user wiring to and from the CRD-5 module takes place at DB-25 multi-pin connectors mounted directly beneath the module on the console mainframe's bottom pan. There are two connectors: the upper one (towards the console meterbridge) handles audio outputs and the console on-air tally control signals; the lower (near the console armrest) accepts the two external source inputs. All audio connections are stereo line level analog signals (+4dBu balanced). A pinout drawing on page 5-6 shows all wiring connections at a glance.



Internal Programming Options

There are two user-programmable switches on the CRD-5. One is a 7-position dipswitch, SW1, located on the module's main PCB slightly above and to the left of the cue master level control. This sets various cue interrupt modes (see below).

There is also a single slide switch, located on the back edge of the module's piggyback PCB, which selects stereo or mono cue (see below).

For the purposes of this manual, we will assume you are holding the removed module upright, component side towards you, with gold-plated card fingers to the left and the module faceplate to the right. This will enable you to read the control legends silkscreened next to each programming switch. Note when a dipswitch position is thrown to the right (towards the module's faceplate) it is ON.

Cue Interrupt

Seven-position dipswitch SW1 determines how the console's Cue function will interrupt regular monitor signals:

- Dipswitch position 1 sends cue to CR left
- Dipswitch position 2 sends cue to CR right
- Dipswitch position 3 sends cue to HDPN left*
- Dipswitch position 4 sends cue to HDPN right*

*factory default settings

Cue Mute

As Cue is also fed to the console's built-in meterbridge speaker, where it can easily be picked up by the console operator's microphone, there is provision to mute Cue whenever that mic is live (i.e., whenever the control room mute function is activated).

Dipswitch SW1 position 7 will mute cue whenever CR is muted (this is the factory default setting)

Mono Cue

Cue is normally a stereo signal; however, mono cue is possible. Simply throw slide switch SW1 on the piggyback "cue" card in the direction of the silkscreened arrow (down). This will send a summed L+R cue signal to both cue left and right signal paths. Note the factory default setting for this switch is stereo cue.

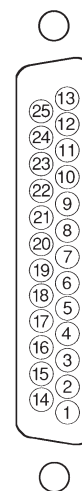
Hook-Ups

As stated before, all user wiring to and from the CRD-5 module takes place at two DB-25 multi-pin connectors mounted directly beneath the module on the console mainframe's bottom pan.

Upper DB-25 Connector — Audio

Includes cue, headphone and control room outputs. All audio signals are +4dBu balanced, analog stereo.

Pin 25 – Cue Lt Out SH
 Pin 24 – Cue Lt Out HI
 Pin 12 – Cue Lt Out LO
 Pin 11 – Cue Rt Out SH
 Pin 10 – Cue Rt Out HI
 Pin 23 – Cue Rt Out LO
 Pin 22 – Hdpn Lt Out SH
 Pin 21 – Hdpn Lt Out HI
 Pin 9 – Hdpn Lt Out LO
 Pin 8 – Hdpn Rt Out SH
 Pin 7 – Hdpn Rt Out HI
 Pin 20 – Hdpn Rt Out LO
 Pin 19 – CR Lt Out SH
 Pin 18 – CR Lt Out HI
 Pin 6 – CR Lt Out LO
 Pin 5 – CR Rt Out SH
 Pin 4 – CR Rt Out HI
 Pin 17 – CR Rt Out LO



Typical DB-25 connector

Upper DB-25 Connector — Control

The console's on-air tally port is on the CRD-5 upper DB-25 connector. This is a simple relay closure that activates whenever programmed input modules are turned ON (see page 2-4). The port can be used to control an externally powered tally light that requires a continuous closure to function.

Pin 14 – On-Air Tally Relay COM
 Pin 1 – On-Air Tally Relay N.O.

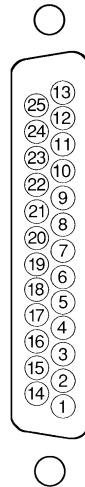


Maximum current through the on-air tally relay closure is 2 amps @30VDC.

Lower DB-25 Connector — Audio

This connector handles the module's source select External Stereo and External CUE inputs.

Pin 25 – Ext Cue In SH
 Pin 24 – Ext Cue In HI
 Pin 19 – Ext 1 Lt In SH
 Pin 18 – Ext 1 Lt In HI
 Pin 6 – Ext 1 Lt In LO
 Pin 5 – Ext 1 Rt In SH
 Pin 4 – Ext 1 Rt In HI
 Pin 17 – Ext 1 Rt In LO
 Pin 16 – Ext 2 Lt In SH
 Pin 15 – Ext 2 Lt In HI
 Pin 3 – Ext 2 Lt In LO
 Pin 2 – Ext 2 Rt In SH
 Pin 1 – Ext 2 Rt In HI
 Pin 14 – Ext 2 Rt In LO

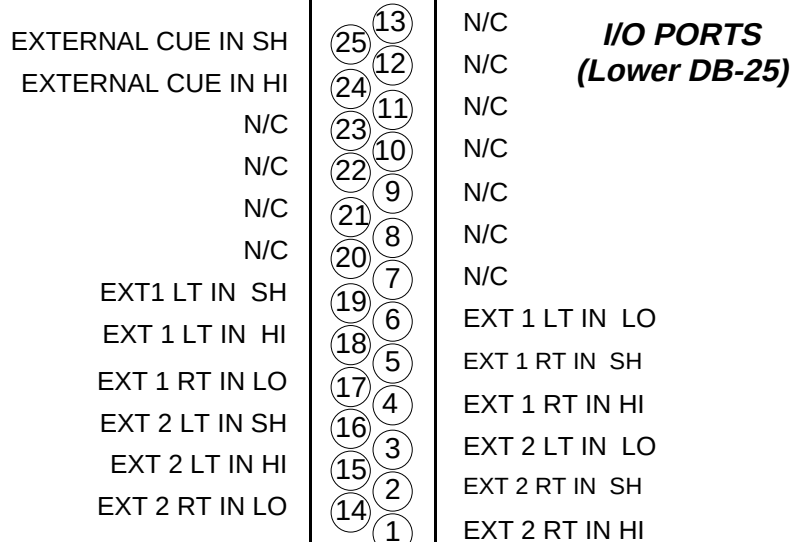
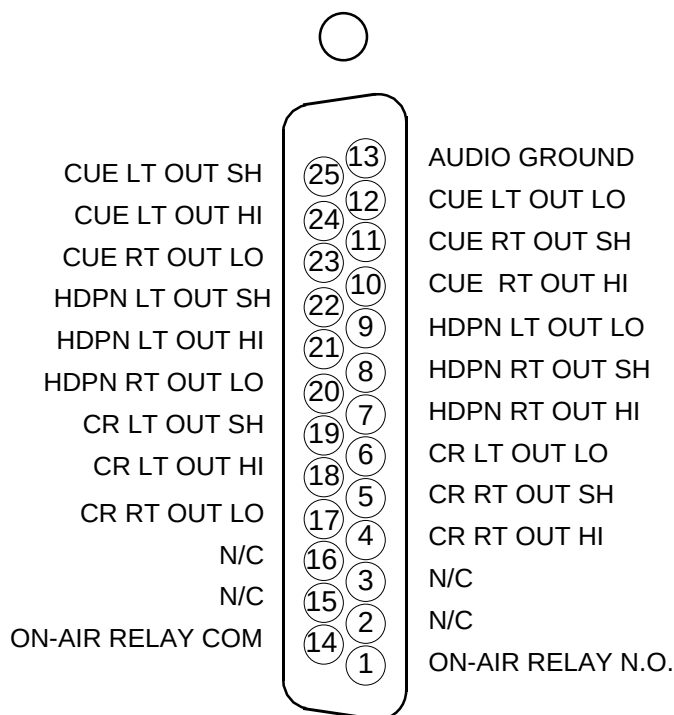


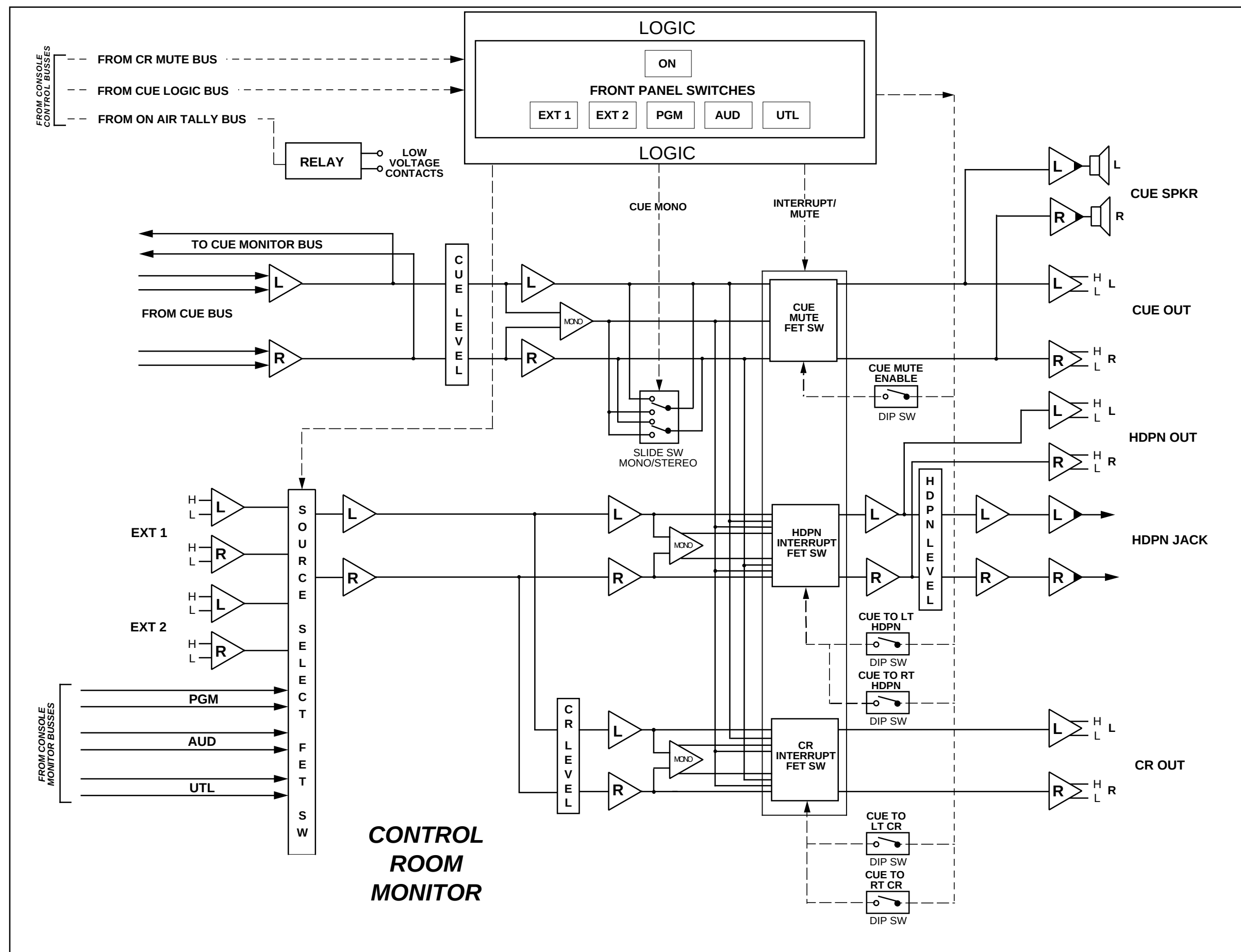
Typical DB-25
connector

CRD-5 Control Room

DB Connector Pinouts

I/O PORTS (Upper DB-25)





CRD-5 Control Room Monitor - Signal Flow Diagram

Studio Control Module

(SCD-5)

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Studio Control Module

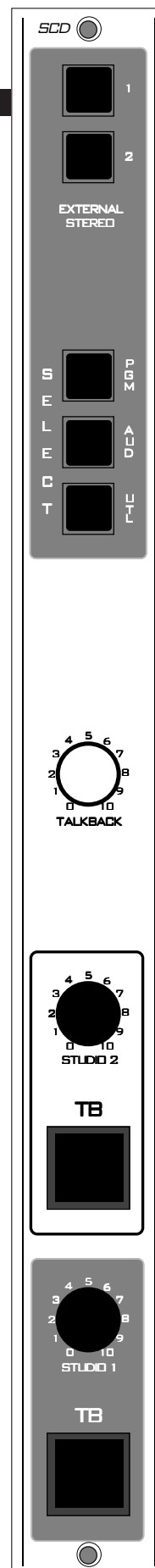
(SCD-5)

Module Overview

The SCD-5 module is similar to the CRD-5 control room module, only it controls monitor audio and talkback to two additional (“non-control room”) studios. The monitor signal being sent to these two studios follows the source select switching at the top of the module; this switching is identical to the control room module’s, and includes the console’s three stereo outputs (PGM, AUD, & UTL), as well as two external stereo line level inputs brought directly into the module.

Each studio has its own level control and talkback switch. While a talkback switch is pressed and held (the switches are momentary action) the console operator’s microphone signal will interrupt the regular monitor signals being sent to the studio in question. The TALKBACK master level control in the center of the module sets the level of this talkback interrupt signal.

All user wiring to and from the SCD-5 module takes place at DB-25 multi-pin connectors mounted directly beneath the module on the console mainframe’s bottom pan. There are two connectors: the upper one (towards the console meterbridge) handles external talkback out and regular studio monitor outputs, plus the console’s Tally 2 and Tally 3 control signals; the lower connector (near the console armrest) accepts the module’s two external source inputs. It also outputs two additional pre-level control studio outputs. All audio connections are (+4dBu balanced) analog signals. A pinout drawing on page 6-6 shows all wiring connections at a glance.



Internal Programming Options

There is one user-programmable dipswitch on the SCD-5. It is a 7-position dipswitch, SW1, located on the module's main PCB slightly above and to the left of the talkback master level control.

For the purposes of this manual, we will assume you are holding the removed module upright, component side towards you, with gold-plated card fingers to the left and the module faceplate to the right. This will enable you to read the control legends silkscreened next to the programming switch. Note when a dipswitch position is thrown to the right (towards the module's faceplate) it is ON.

External Talkback Mute/Dim

There is an independent talkback output from the SCD-5 module. By programming the first two positions of dipswitch SW1, you can make this external talkback output MUTE whenever a studio is muted. You also have the option of making the output DIM (drop -20dB in level) instead of MUTE.

Dipswitch position 1 mutes external TB whenever Studio 1 is muted*

Dipswitch position 2 mutes external TB whenever Studio 2 is muted*

Dipswitch position 7 makes external TB DIM instead of MUTE

*factory default settings

Studio Dim

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

Dipswitch position 5 causes Studio 1 to DIM instead of MUTE

Dipswitch position 6 causes Studio 2 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.

Hook-Ups

As stated before, all user wiring to and from the SCD-5 module takes place at two DB-25 multi-pin connectors mounted directly beneath the module on the console mainframe's bottom pan.

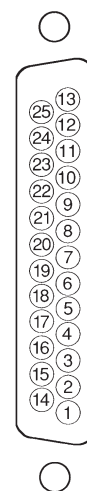
Upper DB-25 Connector — Audio

Includes studio 1, studio 2 and (mono) talkback outputs. All audio signals are analog, +4dBu balanced.

Pin 25 – TB Out SH
 Pin 24 – TB Out HI
 Pin 12 – TB Out LO

 Pin 22 – Studio 2 Lt Out SH
 Pin 21 – Studio 2 Lt Out HI
 Pin 9 – Studio 2 Lt Out LO
 Pin 8 – Studio 2 Rt Out SH
 Pin 7 – Studio 2 Rt Out HI
 Pin 20 – Studio 2 Rt Out LO

 Pin 19 – Studio 1 Lt Out SH
 Pin 18 – Studio 1 Lt Out HI
 Pin 6 – Studio 1 Lt Out LO
 Pin 5 – Studio 1 Rt Out SH
 Pin 4 – Studio 1 Rt Out HI
 Pin 17 – Studio 1 Rt Out LO



Typical DB-25 connector

Upper DB-25 Connector — Control

The console's Tally 2 and Tally 3 control ports are on the SCD-5 upper DB-25 connector. These are simple relay closures that activate whenever programmed input modules are turned ON (see page 2-4). The ports can be used to control externally powered tally lights that requires a continuous closure to function.

Pin 14 – Tally 2 Relay COM
 Pin 1 – Tally 2 Relay N.O.
 Pin 3 – Tally 3 Relay COM
 Pin 15 – Tally 3 Relay N.O.

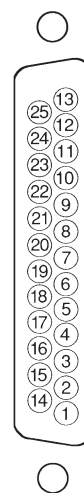


Maximum current through the tally relay closures is 2 amps @30VDC.

Lower DB-25 Connector — Audio

This connector handles the module's source select External Stereo inputs. It also has a second set of studio outputs which are pre-level control. All signals are +4dBu balanced analog stereo.

Pin 25 – Studio 2 Pre Lt Out SH
 Pin 24 – Studio 2 Pre Lt Out HI
 Pin 12 – Studio 2 Pre Lt Out LO
 Pin 11 – Studio 2 Pre Rt Out SH
 Pin 10 – Studio 2 Pre Rt Out HI
 Pin 23 – Studio 2 Pre Rt Out LO
 Pin 22 – Studio 1 Pre Lt Out SH
 Pin 21 – Studio 1 Pre Lt Out HI
 Pin 9 – Studio 1 Pre Lt Out LO
 Pin 8 – Studio 1 Pre Rt Out SH
 Pin 7 – Studio 1 Pre Rt Out HI
 Pin 20 – Studio 1 Pre Rt Out LO
 Pin 19 – Ext 1 Lt In SH
 Pin 18 – Ext 1 Lt In HI
 Pin 6 – Ext 1 Lt In LO
 Pin 5 – Ext 1 Rt In SH
 Pin 4 – Ext 1 Rt In HI
 Pin 17 – Ext 1 Rt In LO
 Pin 16 – Ext 2 Lt In SH
 Pin 15 – Ext 2 Lt In HI
 Pin 3 – Ext 2 Lt In LO
 Pin 2 – Ext 2 Rt In SH
 Pin 1 – Ext 2 Rt In HI
 Pin 14 – Ext 2 Rt In LO



Typical DB-25
connector

SCD-5 Studio Control

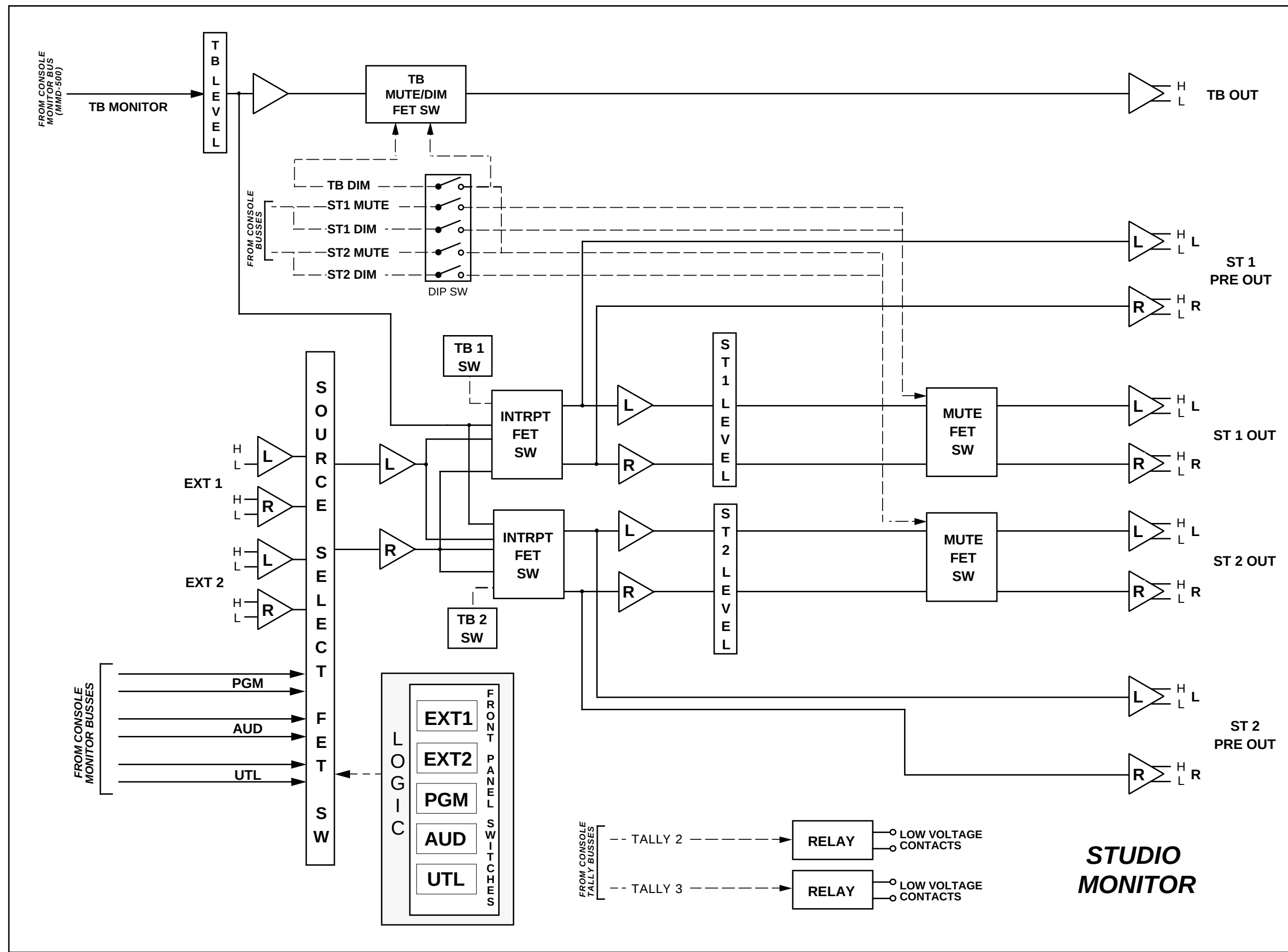
DB Connector Pinouts

I/O PORTS (Upper DB-25)

	13	AUDIO GROUND
TB OUT SH	25 12	TB OUT LO
TB OUT HI	24 11	N/C
N/C	23 10	N/C
STU 2 LT OUT SH	22 9	STU 2 LT OUT LO
STU 2 LT OUT HI	21 8	STU 2 RT OUT SH
STU 2 RT OUT LO	20 7	STU 2 RT OUT HI
STU 1 LT OUT SH	19 6	STU 1 LT OUT LO
STU 1 LT OUT HI	18 5	STU 1 RT OUT SH
STU 1 RT OUT LO	17 4	STU 1 RT OUT HI
N/C	16 3	TALLY 3 RELAY COM
TALLY 3 RELAY N.O.	15 2	N/C
TALLY 2 RELAY COM	14 1	TALLY 2 RELAY N.O.

STU 2 PRE LT OUT SH	25 13	N/C
STU 2 PRE LT OUT HI	24 12	STU 2 PRE LT OUT LO
STU 2 PRE RT OUT LO	23 11	STU 2 PRE RT OUT SH
STU 1 PRE LT OUT SH	22 10	STU 2 PRE RT OUT HI
STU 1 PRE LT OUT HI	21 9	STU 1 PRE LT OUT LO
STU 1 PRE RT OUT LO	20 8	STU 1 PRE RT OUT SH
EXT 1 LT IN SH	19 7	STU 1 PRE RT OUT HI
EXT 1 LT IN HI	18 6	EXT 1 LT IN LO
EXT 1 RT IN LO	17 5	EXT 1 RT IN SH
EXT 2 LT IN SH	16 4	EXT 1 RT IN HI
EXT 2 LT IN HI	15 3	EXT 2 LT IN LO
EXT 2 RT IN LO	14 2	EXT 2 RT IN SH
	1 1	EXT 2 RT IN HI

I/O PORTS (Lower DB-25)



SCD-5 Studio Monitor - Signal Flow Diagram

Meter Output Module

(MOD-5)

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Hook-ups	7-2
Meter Output Module Signal Flow Diagram	7-3

Meter Output Module

(MOD-5)

Module Overview

Each RD console has one meter output module, which drives the console's three pairs of left-right VU meters: PGM, AUD and UTL.

Recessed front panel trim pots calibrate the three meter pairs. A VU TRIM cover strip (not shown) can be used to prevent trimpot access once calibration is set.

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

AUTO – enables timer restart functions from programmed input modules

S/S – Start/Stop

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.

There is a DB-25 connector for factory use only. It sends the module's VU and timer control signals to the meterbridge (a factory-provided cable runs from those connectors to the back of the meterbridge).

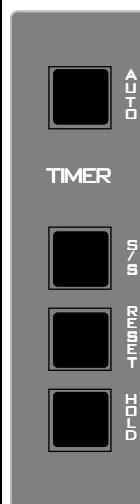
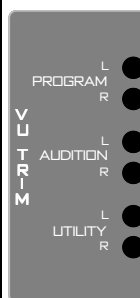
Internal Programming Options

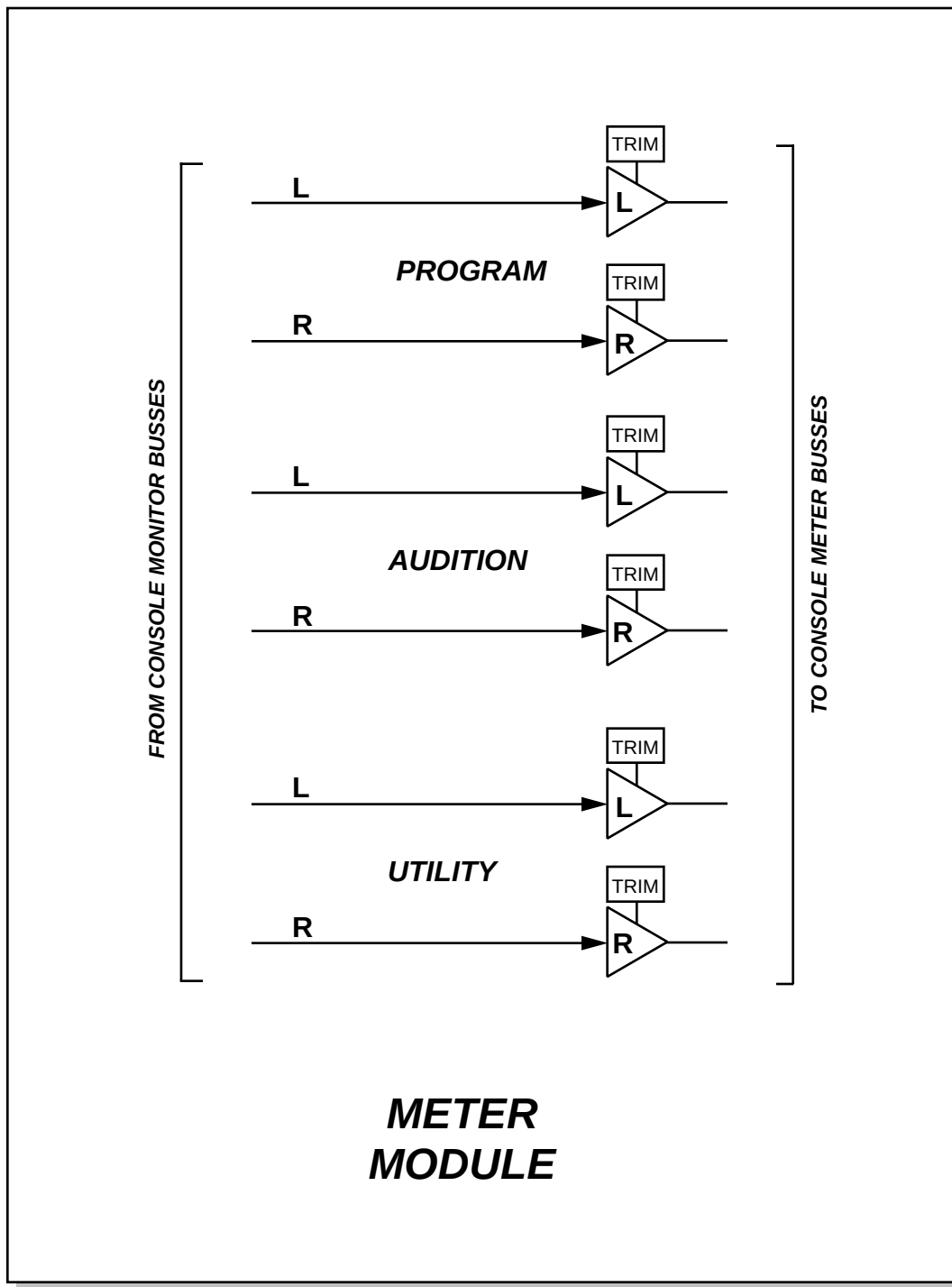
There are no internal programming options on the MOD-5 module.

Hook-ups

All I/O connections from the MOD-5 meter output module are “internal” to the console (i.e., used to route VU and timer signals to the meterbridge) and not normally applicable to end customer use.

MOD





MOD-5 Meter Output Module - Signal Flow Diagram

CPU Central Processor (CPU-5 Module)

DSP Digital Processor (DSP-5 Module)

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CPU-5 Display	8-2

CPU Central Processor (CPU-5 Module)

DSP Digital Processor (DSP-5 Module)

Module Overview

Every RD has these two modules; together they perform all central signal and control processing for the console. The CPU-5 is the console's central controller module; the DSP-5 is the console's digital signal processor. With one exception, AES SYNC (below), both modules are user-transparent—that is, they have no external controls, all their internal programming options are for factory use only, their DB-25 I/O connector ports have no user-applicable pins, there are no user replaceable parts inside (though complete modules may be ordered; see Appendix).

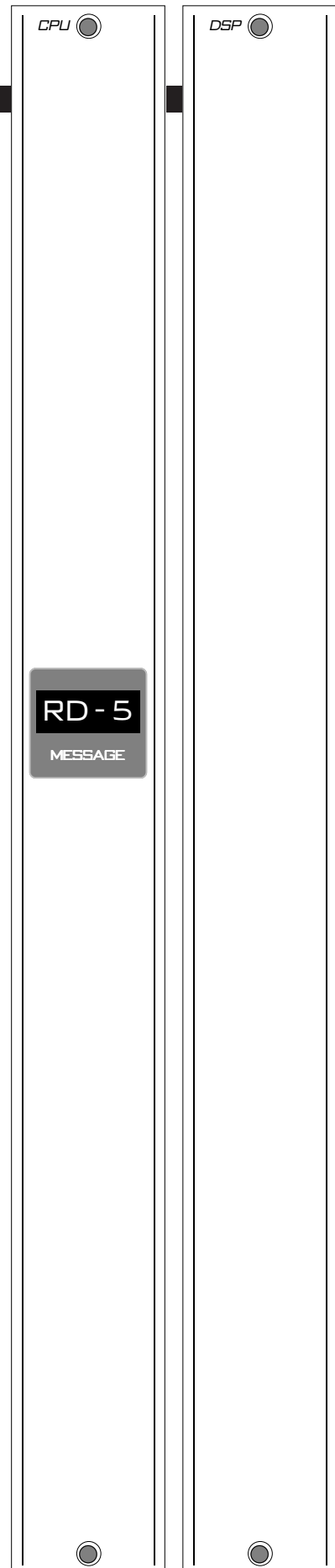
AES Clock Sync

If you wish to sync your RD console off an external clock source (or use the console master clock signal to control an external device) the AES Sync port is available on the DSP-5 module upper DB-25 connector:

- Pin 25 – AES Sync In SH
- Pin 24 – AES Sync In HI
- Pin 12 – AES Sync In LO
- Pin 11 – AES Sync Out SH
- Pin 10 – AES Sync Out HI
- Pin 23 – AES Sync Out LO

CPU-5 Display

The alpha-numeric display on the CPU-5 module is used at the factory for programming purposes. In the field the default display is always “RD-5”, with the dash character flashing. This might occasionally change to show an error message for a second or two (for example, if you have hot-plugged a module into the mainframe), but this should clear quickly.



Superphone Input

(SPD-5)

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Superphone Input (SPD-5)

Module Overview

SPD-5 input modules are used for telephone call-ins. Each module can handle two callers; there can be two modules per console for a total of four callers. Caller signals enter the module from the station hybrid, and each caller has his own fader. Caller input gain trims are provided at the top of the module.

Output switches assign callers to any combination of the console's three stereo outputs: PGM (program), AUD (audition), and/or UTL (utility).

Caller Set-Ups

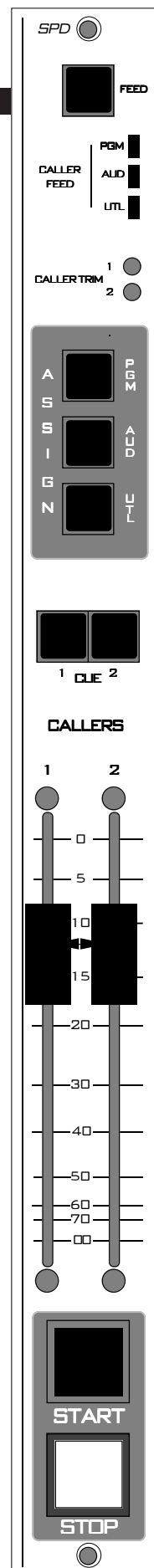
Pre-air segment communication between the console operator (DJ) and callers is via CALLER (CUE) buttons (2) which place the caller's voice on the console's cue speakers (or control room speakers/operator's headphone if the CRD-5 module's cue interrupt function has been so programmed). These cue signals can be internally programmed pre or post fader.

The caller hears the DJ in one of two ways:

1) The DJ can assign his microphone input module to an unused output bus—say UTL—and the DJ then selects the UTL input with the EXT switch at the top of the phone module. This sends a dedicated (digitally generated) version of the UTL bus signal to the SPD-5 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 SLD-5 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.

Remember MMD-5 microphone input modules can be internally programmed to have their Utility bus feed tapped pre-fader, pre-ON/OFF, making this a logical set-up for the DJ's mic input if you do a lot of call-in work, since the DJ's voice will always be present on the console's Utility output bus regardless of fader or ON/OFF settings on his mic module (which must still be assigned to UTL, however).

2) The DJ's voice signal can be inputted through a special EXT IN port at the SPD-5 module's upper DB-25 connector. This second method eliminates the need to select a mix minus input source everytime you want to talk off-air to the caller. An easy source choice here would be DJ mic module's INSERT OUT port.



Automatic Features

Regular mic and stereo line input modules can have their output assign buttons slave off of the SPD-5 telephone module output buttons. If this feature has been programmed on desired source modules, when it's time to go on-air with a phone segment all you need do is hit PGM on the phone module, and the PGM button on, say, your CD input module (and the DJ's mic module) will follow suit.

Note while this feature will turn slaved assign buttons ON, it will not turn them OFF; you must do this manually.

Faders can be optionally equipped with end-of-travel CUE switches, which will allow you to talk off-air with a caller with a simple fader overpress. One of the faders can also have an optional EFS type switch to automatically turn the module on when it is run up.

The channel ON ("START") and OFF ("STOP") 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, timer restart and automatic cue drop-out. The ON switch can also automatically trigger an external tape machine for recording purposes (see page 9-7).

Cue Dropout can also be programmed internally, 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

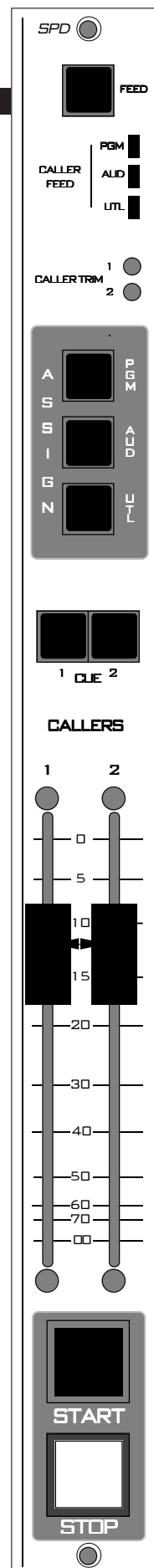
All audio and control signals hook-ups are made via two multi-pin DB-25 connectors mounted in the bottom of the console's mainframe, directly underneath each module. The upper connector handles hybrid input signals (i.e., caller input) and the external input mentioned on page 9-2. The lower connector handles outputs, including the module 1 and 2 feeds to your station hybrid (the phone signals going to your callers).

The module also has three addition output feeds on the lower DB-25 connector. These are generally used for recording purposes:

Composite Out – This includes everything: DJ, callers, music beds, etc. Generally used to to record phone segments in advance of actual airplay.

Composite Minus Callers – This includes everything but the callers.

Callers Only – No talent, no DJs, no music; just caller voices.



Internal Programming Options

Main Printed Circuit Board

Main card internal programming is accomplished via three 4-position printed circuit board (PCB) mounted dipswitches mounted just to the left of the module's faders.

For main PCB programming, we will assume you are holding the removed module upright, component side towards you, with gold-plated card fingers to the left and the module faceplate to the right. This will enable you to read the control legends silkscreened next to each dipswitch. Note when a dipswitch position is thrown to the right (towards the module's faceplate) it is ON.

Output Assign Switch Enable

As previously stated (page 2-5 and 3-4), microphone (MMD) and stereo line (SLD) input modules can have their output assign switches slave off of the SPD-5 phone module output assign switches. Four-position dipswitch SW1 (top dipswitch just to the left of the module faders) enables this feature at the phone module end:

- Dipswitch position 1 activates PGM switch control
- Dipswitch position 2 activates AUD switch control
- Dipswitch position 4 activates UTL switch control

Note this feature only works for turning slaved assign switches ON; they will not turn OFF from the superphone module—this must be done manually.

Mutes

When the SPD-5 phone channel ON switch is pressed, it can activate console mute functions. The first three positions of dipswitch SW2 (just below dipswitch SW1) determines which of the console's three mute lines will be activated:

- SW2 position 1 mutes the control room when the phone module is ON*
- SW2 position 2 mutes studio one when the phone module is ON
- SW2 position 3 mutes studio two when the phone module is ON

*factory default setting

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.

- SW2 position 4 activates timer restart when the phone module's ON switch is pressed*

*factory default setting

Tallies

Turning the module ON can activate a remote tally indicator. There are three tally control lines: on-air, tally 2 and tally 3. The first three positions of dipswitch SW3 (to the left of the fader) program these functions:

- SW3 position 1 activates the on-air tally control line
- SW3 position 2 activates tally 2
- SW3 position 3 activates tally 3

Remote tallies are hooked-up to the console at the Control Room module (CRD-5)

Cue Dropout

Dipswitch SW3 position 4, when activated, will cause CUE (i.e., caller set-up buttons 1 & 2) to turn off when the module's ON switch is pressed. This is the factory default setting.

Gain Trimpots

There are two PCB-mounted trimpots. They are used as follows:

CR1 - sets Callers 1 In port input gain

CR2 - sets Callers 2 In port input gain

Internal Programming Options Piggyback Card

Piggyback card internal programming is accomplished via two PCB-mounted slide switches on the module's piggyback card. This same card also contains PCB-mounted trimpots which may be used to set the module's various output feed levels.

For piggyback card programming, hold the removed module horizontally, component side towards you, with gold-plated card fingers aimed down and the module faceplate on top. This will enable you to read the control legends silkscreened on the PCB.

External In

In addition to feeding the DJ's voice signal to the callers via the module's mix minus source select switching, it may also be brought directly in through an EXT IN port on the module's upper DB-25 connector. PCB-mounted slide switch SW1 (piggyback card left center), activates this external port when thrown to the left (this is the factory default setting).

Cue Pre/Post

The module's CUE signals (caller setup buttons 1 & 2) can tap pre or post fader. When slide switch SW2 (piggyback card lower right) is UP they are PRE, when DOWN they are POST. (Factory default setting is PRE.)

Gain Trimpots

There are six PCB-mounted trimpots to the right of slide switch SW1. They are used as follows:

CR4 – sets the External In port input gain

CR6 – sets the module's output level to Hybrid 1

CR3 – sets the module's output level to Hybrid 2

CR7 – sets the module's "composite" output level

CR8 – sets the module's "composite minus callers" ("talent") output level

CR5 – sets the module's "callers only" output level

Factory default settings for these trimpots is UNITY GAIN.

Hook-Ups

As stated before, all user wiring to and from SPD-5 modules takes place at DB-25 multi-pin connectors mounted directly beneath each module on the console mainframe's bottom pan. There are two connectors per module: the upper one (towards the console meterbridge) handles audio input signals; the lower (near the console armrest) audio outputs and control signals. A pinout drawing on page 9-8 shows all wiring connections at a glance.

Audio Connections (upper DB-25)

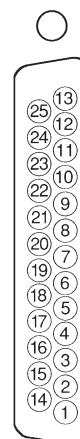
These include External In and station Hybrid 1 & 2 inputs. All are +4dBu balanced analog mono.

- Pin 25 – Ext In SH
- Pin 24 – Ext In HI
- Pin 12 – Ext In LO
- Pin 22 – Hybrid 1 In SH
- Pin 21 – Hybrid 1 In HI
- Pin 9 – Hybrid 1 In LO
- Pin 8 – Hybrid 2 In SH
- Pin 7 – Hybrid 2 In HI
- Pin 20 – Hybrid 2 In LO
- Pins 2,5,11,13,16 and 19 – Audio Ground

Audio and Control Connections (lower DB-25)

These include outputs to the station hybrid, module output composite feeds (for recording) and remote tape machine START/STOP ports.

- Pin 25 – Composite Out SH
- Pin 24 – Composite Out HI
- Pin 12 – Composite Out LO
- Pin 11 – Composite Minus Callers Out SH
- Pin 10 – Composite Minus Callers Out HI
- Pin 23 – Composite Minus Callers Out LO
- Pin 22 – Callers Only Out SH
- Pin 21 – Callers Only Out HI
- Pin 9 – Callers Only Out LO
- Pin 8 – To Hybrid 1 Out SH
- Pin 7 – To Hybrid 1 Out HI
- Pin 20 – To Hybrid 1 Out LO
- Pin 19 – To Hybrid 2 Out SH
- Pin 18 – To Hybrid 2 Out HI
- Pin 6 – To Hybrid 2 Out LO



Typical DB-25 connector

Pin 17 – Start/Stop Common

Pin 16 – Stop

Pin 15 – Start

Pin 4 – Start/Stop Common

Pin 3 – Stop

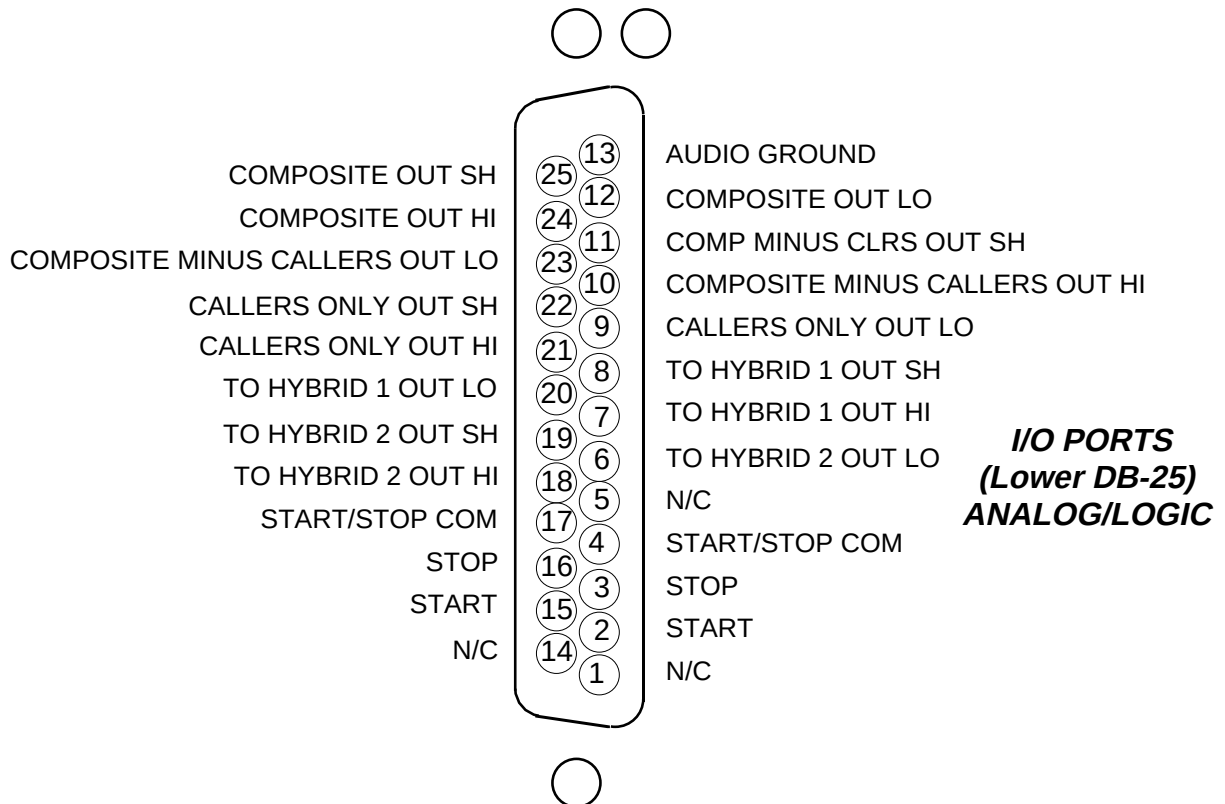
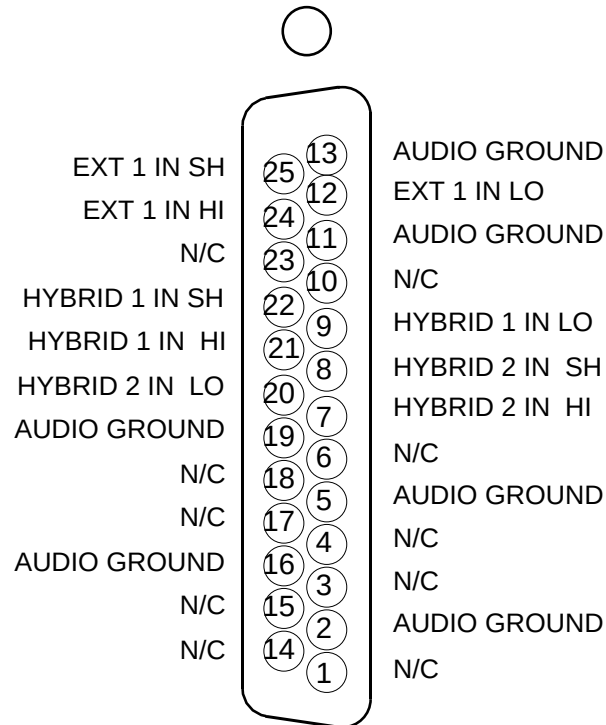
Pin 2 – Start

The last six callouts are simply two parallel-connected sets of pins for the same control port. When the module's ON switch is pressed, a closure takes place between start/stop common and START; when the module's STOP switch is pressed, a closure takes place between start/stop common and STOP. These may be used to control a remote tape machine for recording phone segments. Note that these are opto-isolated outputs; the START/STOP COMMON connections are the emitters, while the START and STOP connections are the collectors, of the opto's NPN transistors. Correct polarity must be observed when using these outputs.

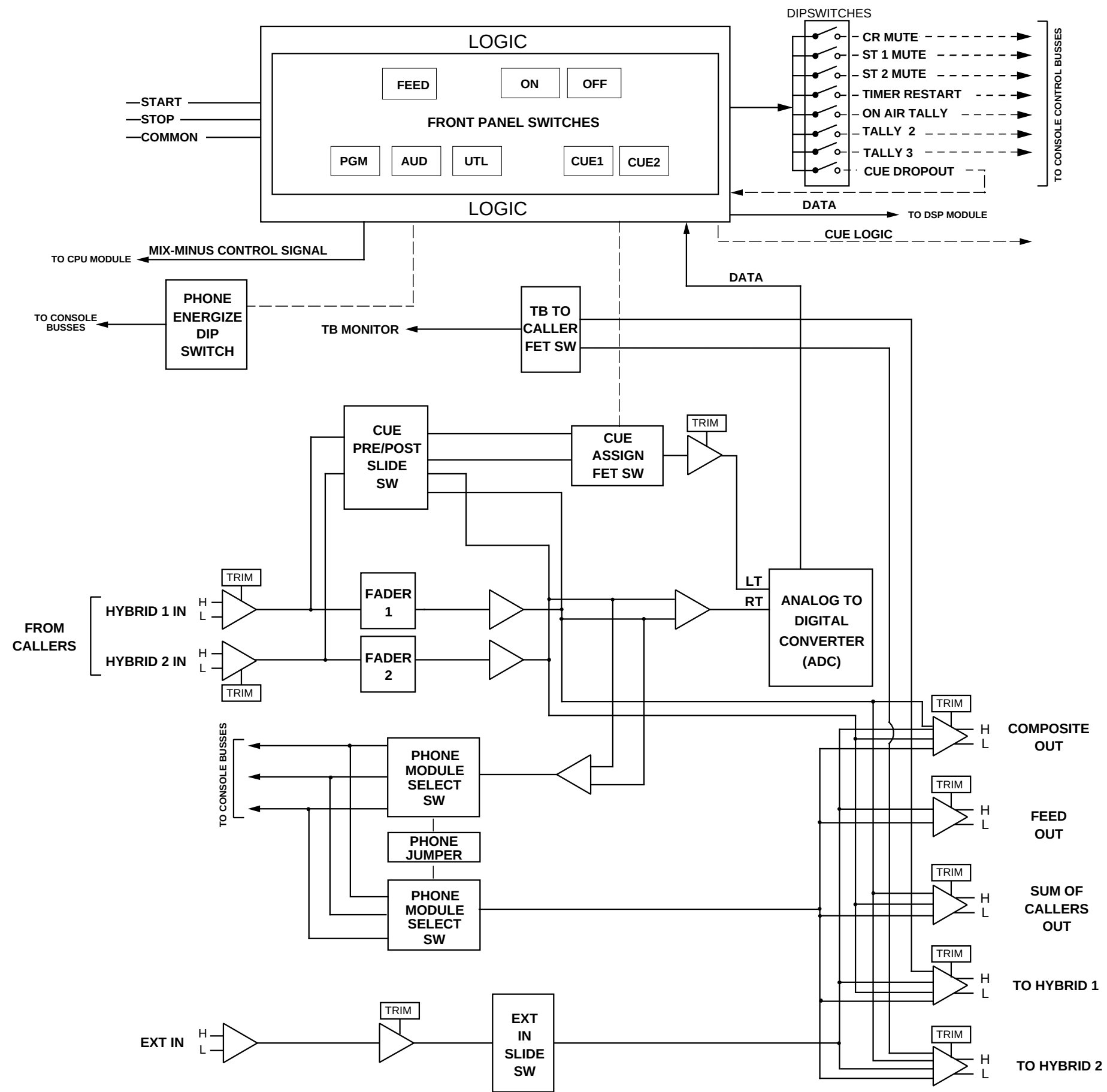
SPD-5 Superphone

DB Connector Pinouts

I/O PORTS (Upper DB-25) ANALOG



I/O PORTS (Lower DB-25) ANALOG/LOGIC



SUPERPHONE INPUT

SPD-5 Superphone Module - Signal Flow Diagram

Line Preselector Module- Analog

(LSA-5; optional)

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DB Connector Pinout Drawing	10-5
Line Preselector (Analog) Signal Flow Diagram	10-6

Line Preselector Module- Analog

(LSA-5; optional)

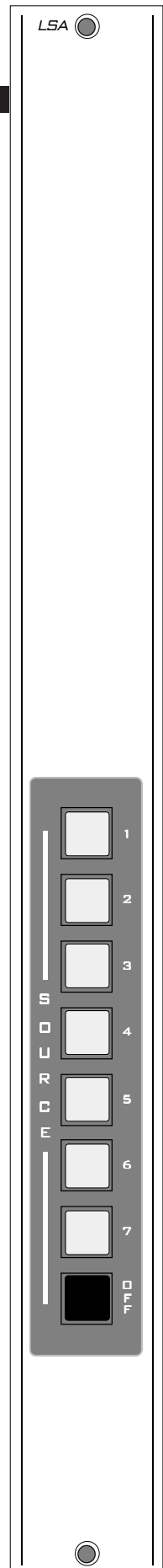
Overview

This optional module electronically selects one of seven 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 multipin DB-25 connectors mounted in the bottom of the console's mainframe, directly underneath this module.

Internal Programming Options

There are no internal programming options on the LSA-5 module.



Hook-Ups

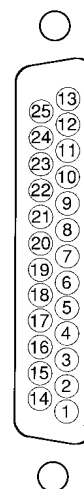
As stated before, all user wiring to and from LSA-5 modules takes place at DB-25 multi-pin connectors mounted directly beneath each module on the console mainframe's bottom pan. There are two connectors per module: the upper one (towards the console meterbridge) handles audio input signals; the lower (near the console armrest) audio input and output signals. A pinout drawing on page 10-5 shows all wiring connections at a glance.

LSA-5 Audio Inputs 1-4 (upper DB-25)

Pin 25 – Line 1 Lt In SH
 Pin 24 – Line 1 Lt In HI
 Pin 12 – Line 1 Lt In LO
 Pin 11 – Line 1 Rt In SH
 Pin 10 – Line 1 Rt In HI
 Pin 23 – Line 1 Rt In LO
 Pin 22 – Line 2 Lt In SH
 Pin 21 – Line 2 Lt In HI
 Pin 9 – Line 2 Lt In LO
 Pin 8 – Line 2 Rt In SH
 Pin 7 – Line 2 Rt In HI
 Pin 20 – Line 2 Rt In LO
 Pin 19 – Line 3 Lt In SH
 Pin 18 – Line 3 Lt In HI
 Pin 6 – Line 3 Lt In LO
 Pin 5 – Line 3 Rt In SH
 Pin 4 – Line 3 Rt In HI
 Pin 17 – Line 3 Rt In LO
 Pin 16 – Line 4 Lt In SH
 Pin 15 – Line 4 Lt In HI
 Pin 3 – Line 4 Lt In LO
 Pin 2 – Line 4 Rt In SH
 Pin 1 – Line 4 Rt In HI
 Pin 14 – Line 4 Rt In LO

LSA-5 Audio Inputs 5-7 (lower DB-25)

Pin 25 – Line 5 Lt In SH
 Pin 24 – Line 5 Lt In HI
 Pin 12 – Line 5 Lt In LO
 Pin 11 – Line 5 Rt In SH
 Pin 10 – Line 5 Rt In HI
 Pin 23 – Line 5 Rt In LO
 Pin 22 – Line 6 Lt In SH
 Pin 21 – Line 6 Lt In HI
 Pin 9 – Line 6 Lt In LO

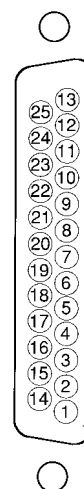


Typical DB-25
connector

Pin 8 – Line 6 Rt In SH
 Pin 7 – Line 6 Rt In HI
 Pin 20 – Line 6 Rt In LO
 Pin 19 – Line 7 Lt In SH
 Pin 18 – Line 7 Lt In HI
 Pin 6 – Line 7 Lt In LO
 Pin 5 – Line 7 Rt In SH
 Pin 4 – Line 7 Rt In HI
 Pin 17 – Line 7 Rt In LO

LSA-5 Audio Outputs

Pin 16 – Line Lt Out SH
 Pin 15 – Line Lt Out HI
 Pin 3 – Line Lt Out LO
 Pin 2 – Line Rt Out SH
 Pin 1 – Line Rt Out HI
 Pin 14 – Line Rt Out LO



Typical DB-25
connector

LSA-5 Line Selector Module

DB Connector Pinouts

INPUT PORTS (Upper DB-25)

LINE 1 LT IN SH
LINE 1 LT IN HI
LINE 1 RT IN LO
LINE 2 LT IN SH
LINE 2 LT IN HI
LINE 2 RT IN LO
LINE 3 LT IN SH
LINE 3 LT IN HI
LINE 3 RT IN LO
LINE 4 LT IN SH
LINE 4 LT IN HI
LINE 4 RT IN LO



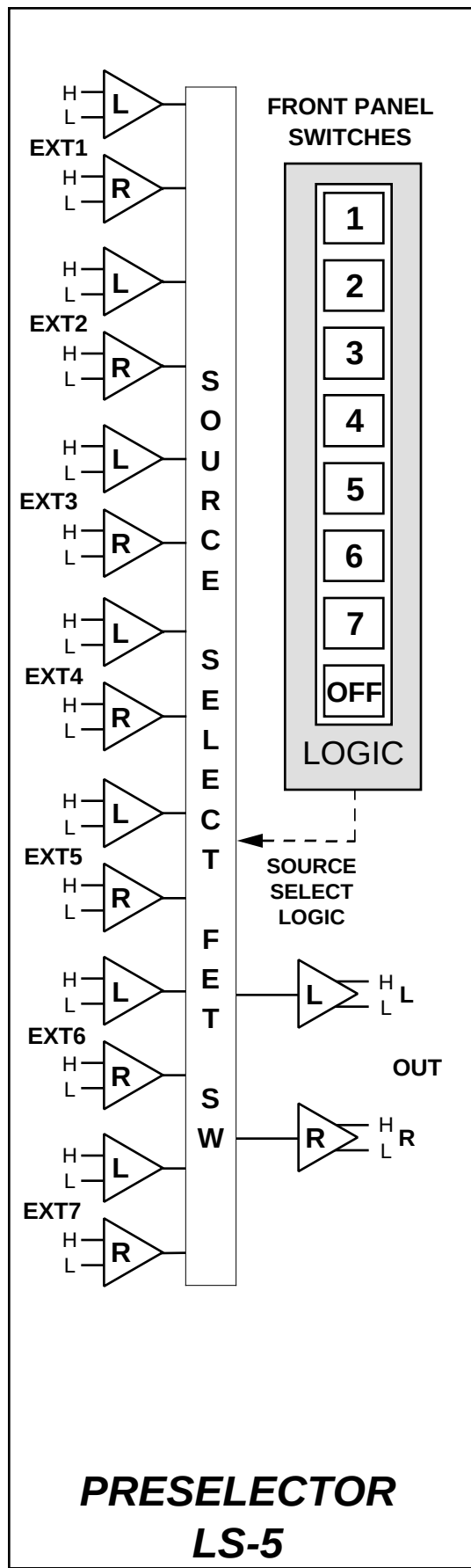
N/C
LINE 1 LT IN LO
LINE 1 RT IN SH
LINE 1 RT IN HI
LINE 2 LT IN LO
LINE 2 RT IN SH
LINE 2 RT IN HI
LINE 3 LT IN LO
LINE 3 RT IN SH
LINE 3 RT IN HI
LINE 4 LT IN LO
LINE 4 RT IN SH
LINE 4 RT IN HI

LINE 5 LT IN SH
LINE 5 LT IN HI
LINE 5 RT IN LO
LINE 6 LT IN SH
LINE 6 LT IN HI
LINE 6 RT IN LO
LINE 7 LT IN SH
LINE 7 LT IN HI
LINE 7 RT IN LO
LINE LT OUT SH
LINE LT OUT HI
LINE RT OUT LO



N/C
LINE 5 LT IN LO
LINE 5 RT IN SH
LINE 5 RT IN HI
LINE 6 LT IN LO
LINE 6 RT IN SH
LINE 6 RT IN HI
LINE 7 LT IN LO
LINE 7 RT IN SH
LINE 7 RT IN HI
LINE LT OUT LO
LINE RT OUT SH
LINE RT OUT HI

I/O PORTS (Lower DB-25)



LS-5 Line Preselector (analog) - Signal Flow Diagram

Line Preselector Module- Digital/Analog

(LSD-5 Control Module and LSR-500 Rackmount Switcher; optional)

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Digital Outputs	11-5
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DB Connector Pinout Drawing (LSR-500)	11-7
Line Preselector (Digital) Signal Flow Diagram	11-9

Line Preselector Module (Digital/Analog)

(LSD-5 Controller Panel) (LSR-500 Rackmount Unit; optional)

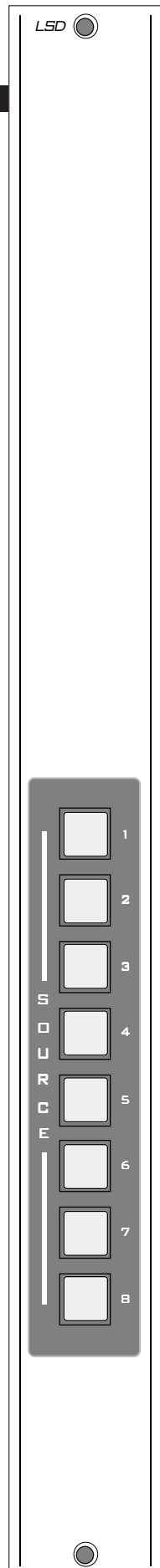
Overview

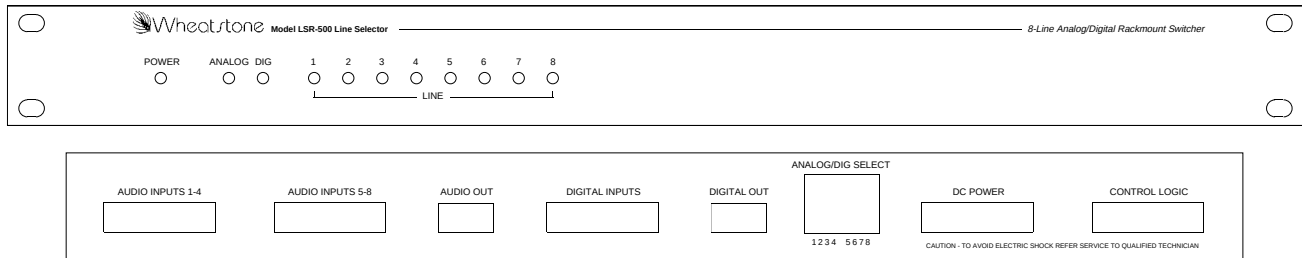
This optional module consists of an 8-switch control module (LSD-5) mounted in the RD console and an associated 19-inch rackmount switcher (LSR-500) that mounts in a remote location. All audio input and output wiring goes to the rackmount unit, which takes its control from the console module.

The rack unit accepts eight stereo analog and digital audio inputs (each input is dipswitch-selectable for either analog or digital) and outputs both an analog and digital stereo signal, which may be wired back to RD console input ports. Wiring between the console's LSD-5 preselector module and the rackmount switcher is via two factory supplied pin-for-pin DB-25 connector cables: the module's upper DB is used for control; the lower for power.

The LSR-500 rackmount unit faceplate has eight indicator LEDs which show which input has been selected at the console and also ANALOG and DIGITAL LEDs which light to show what kind of signal has been selected. A POWER LED is also included. (See drawing next page)

The rear of the LSR-500 has seven I/O connectors: two DB-9s (analog and digital output) and five DB-25s (control and power to the LSD-5 module, analog audio in (2) and digital audio in (1). In the center of the chassis rear is a cutout that allows access to eight dipswitch settings that determine what type of audio (analog or digital) each input accepts. The default setting ("off") is DIGITAL.





The LSR-500 Rackmount Switcher Unit (front & rear)

Internal Programming Options

There are no internal programming options on the LSD-5 module. The LSR-500 rackmount unit has the previously mentioned input select dipswitches (analog/digital).

Hook-Ups

LSD-5 Line Preselector Module

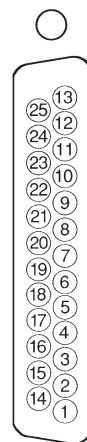
Two DB-25 connectors that wire pin-for-pin to matching DB-25s on the LSR-500 chassis rear. The upper connector is for control; the lower for power. See pinout drawing on page 11-6 for signals.

LSR-500 Audio Inputs

These are for analog stereo (+4dBu balanced) and digital (AES) signals; there are three DB-25 input connectors on the chassis rear (pinout drawing on the pages 11-7, 11-8):

ANALOG AUDIO INPUTS 1-4:

- Pin 25 – Line 1 Lt In SH
- Pin 24 – Line 1 Lt In HI
- Pin 12 – Line 1 Lt In LO
- Pin 11 – Line 1 Rt In SH
- Pin 10 – Line 1 Rt In HI
- Pin 23 – Line 1 Rt In LO
- Pin 22 – Line 2 Lt In SH
- Pin 21 – Line 2 Lt In HI
- Pin 9 – Line 2 Lt In LO
- Pin 8 – Line 2 Rt In SH
- Pin 7 – Line 2 Rt In HI
- Pin 20 – Line 2 Rt In LO
- Pin 19 – Line 3 Lt In SH
- Pin 18 – Line 3 Lt In HI
- Pin 6 – Line 3 Lt In LO



Typical DB-25 connector

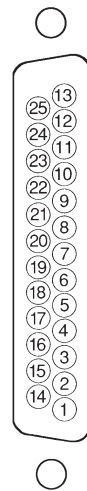
Pin 5 – Line 3 Rt In SH
 Pin 4 – Line 3 Rt In HI
 Pin 17 – Line 3 Rt In LO
 Pin 16 – Line 4 Lt In SH
 Pin 15 – Line 4 Lt In HI
 Pin 3 – Line 4 Lt In LO
 Pin 2 – Line 4 Rt In SH
 Pin 1 – Line 4 Rt In HI
 Pin 14 – Line 4 Rt In LO

ANALOG AUDIO INPUTS 5-8:

Pin 25 – Line 5 Lt In SH
 Pin 24 – Line 5 Lt In HI
 Pin 12 – Line 5 Lt In LO
 Pin 11 – Line 5 Rt In SH
 Pin 10 – Line 5 Rt In HI
 Pin 23 – Line 5 Rt In LO
 Pin 22 – Line 6 Lt In SH
 Pin 21 – Line 6 Lt In HI
 Pin 9 – Line 6 Lt In LO
 Pin 8 – Line 6 Rt In SH
 Pin 7 – Line 6 Rt In HI
 Pin 20 – Line 6 Rt In LO
 Pin 19 – Line 7 Lt In SH
 Pin 18 – Line 7 Lt In HI
 Pin 6 – Line 7 Lt In LO
 Pin 5 – Line 7 Rt In SH
 Pin 4 – Line 7 Rt In HI
 Pin 17 – Line 7 Rt In LO
 Pin 16 – Line 8 Lt In SH
 Pin 15 – Line 8 Lt In HI
 Pin 3 – Line 8 Lt In LO
 Pin 2 – Line 8 Rt In SH
 Pin 1 – Line 8 Rt In HI
 Pin 14 – Line 8 Rt In LO

DIGITAL AUDIO INPUTS 1-8:

Pin 25 – AES 1 In SH
 Pin 24 – AES 1 In HI
 Pin 12 – AES 1 In LO
 Pin 11 – AES 2 In SH
 Pin 10 – AES 2 In HI
 Pin 23 – AES 2 In LO
 Pin 22 – AES 3 In SH
 Pin 21 – AES 3 In HI
 Pin 9 – AES 3 In LO
 Pin 8 – AES 4 In SH
 Pin 7 – AES 4 In HI
 Pin 20 – AES 4 In LO



Typical DB-25
connector

Pin 19 – AES 5 In SH
 Pin 18 – AES 5 In HI
 Pin 6 – AES 5 In LO
 Pin 5 – AES 6 In SH
 Pin 4 – AES 6 In HI
 Pin 17 – AES 6 In LO
 Pin 16 – AES 7 In SH
 Pin 15 – AES 7 In HI
 Pin 3 – AES 7 In LO
 Pin 2 – AES 8 In SH
 Pin 1 – AES 8 In HI
 Pin 14 – AES 8 In LO

LSR-500 Audio Outputs

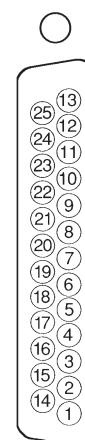
These are for analog stereo (+4dBu balanced) and digital (AES); there are two DB-9 output connectors on the chassis rear (pinout drawing on the page 11-8):

ANALOG OUTPUTS (DB-9):

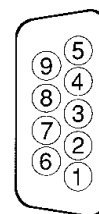
Pin 8 – Line Lt Out SH
 Pin 7 – Line Lt Out HI
 Pin 3 – Line Lt Out LO
 Pin 2 – Line Rt Out SH
 Pin 1 – Line Rt Out HI
 Pin 6 – Line Rt Out LO

DIGITAL OUTPUTS (DB-9):

Pin 2 – AES Out SH
 Pin 1 – AES Out HI
 Pin 6 – AES Out LO



Typical DB-25 connector

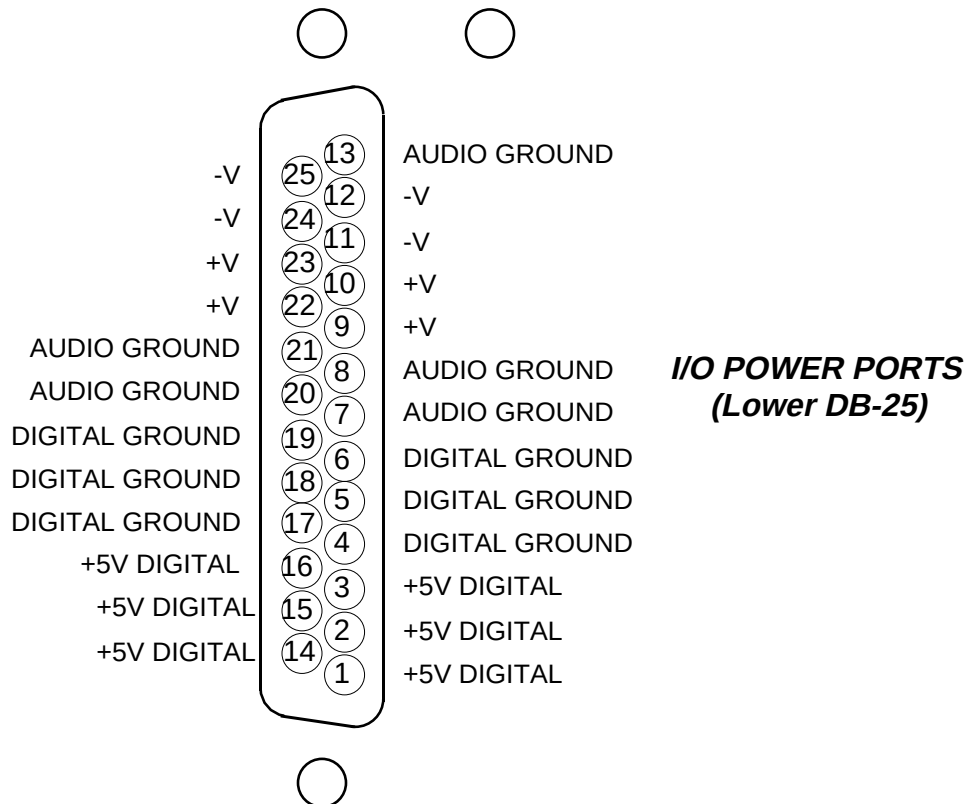
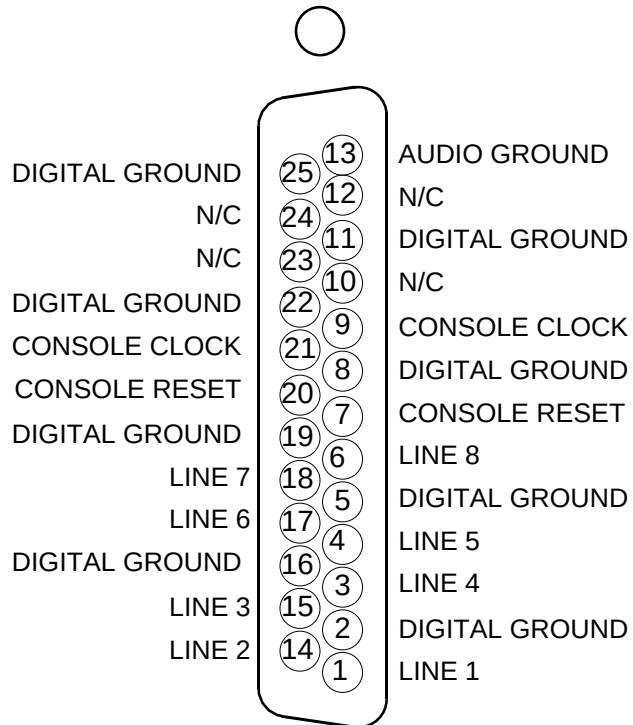


Typical DB-9 connector

LSD-5 Line Preselector Module

DB Connector Pinouts

I/O CONTROL PORTS (Upper DB-25)

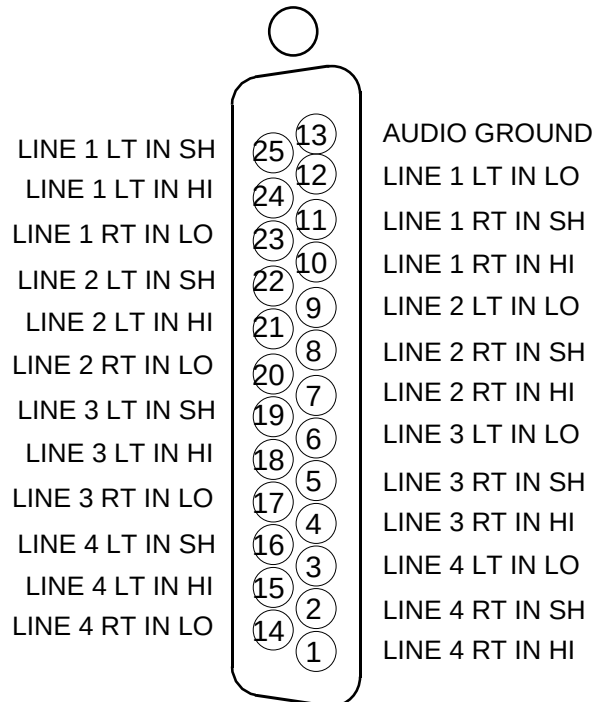


I/O POWER PORTS (Lower DB-25)

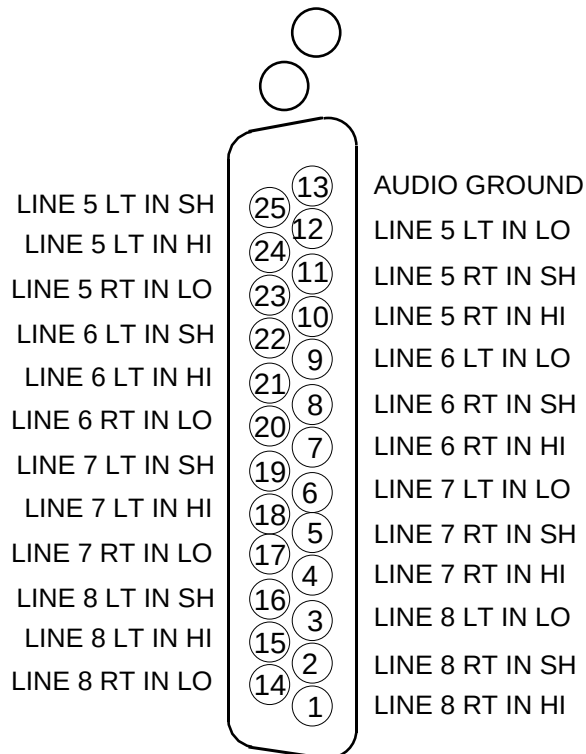
LSR-500 Rackmount Switcher

DB Connector Pinouts

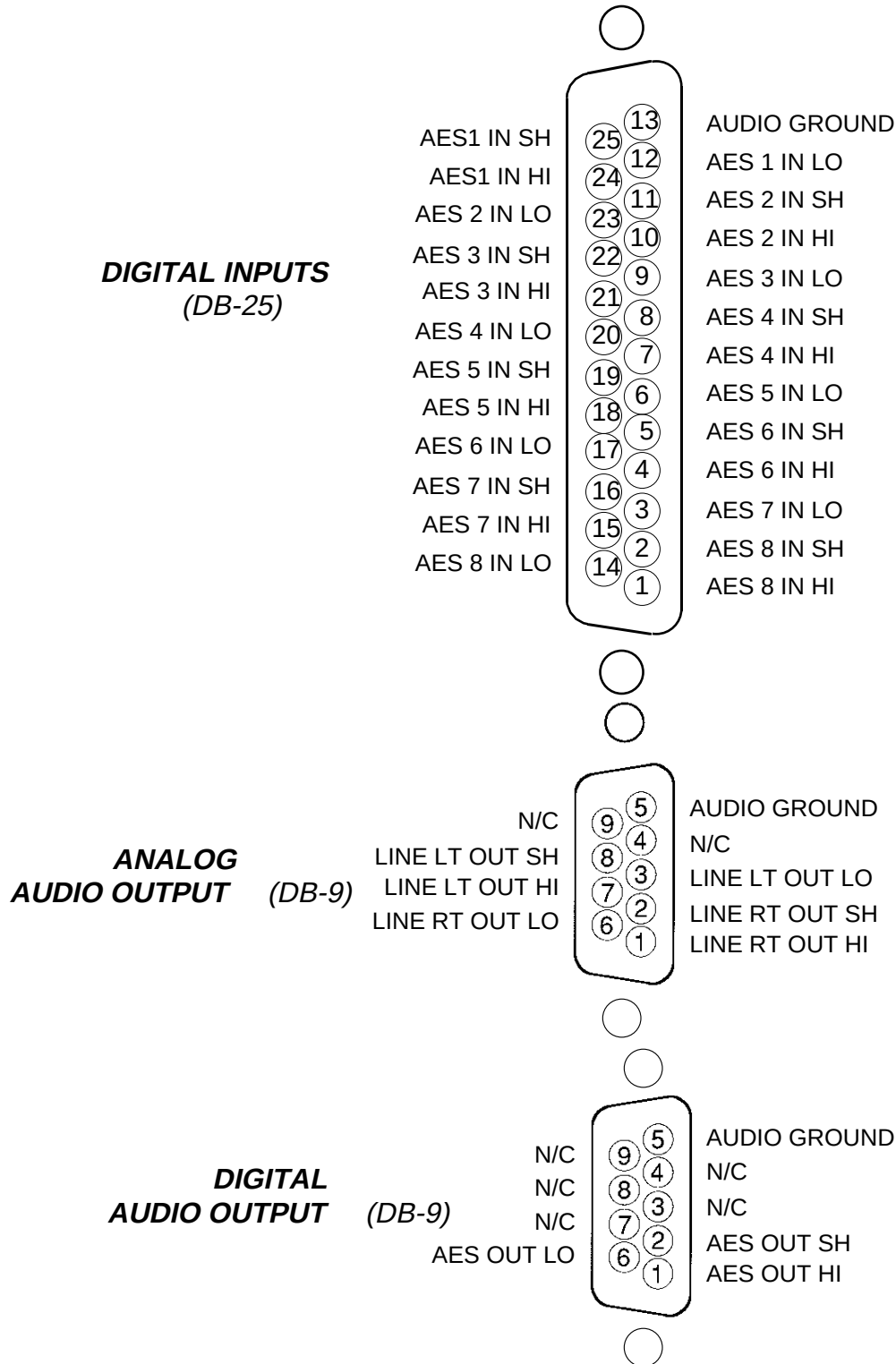
ANALOG INPUTS 1-4 (DB-25)

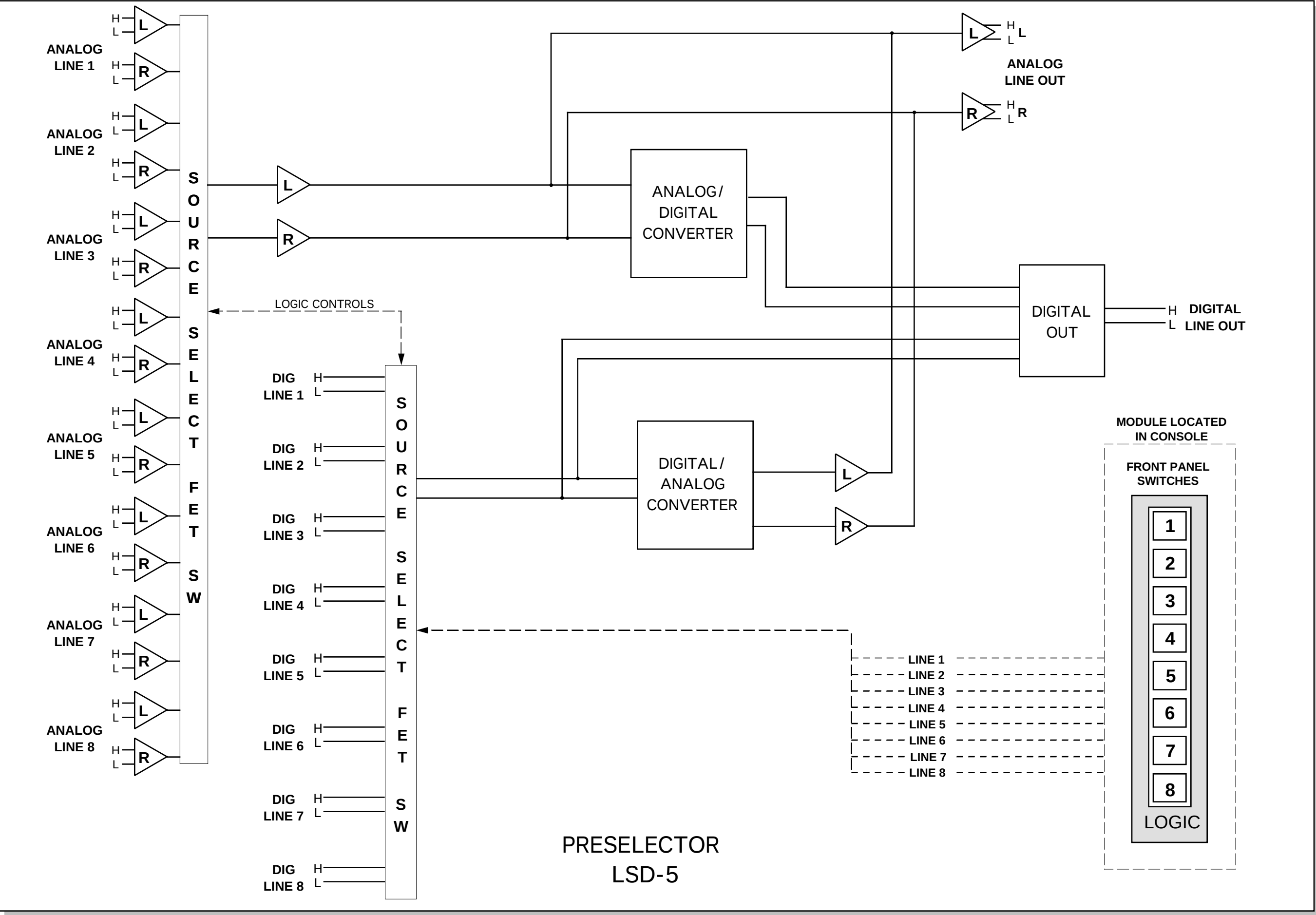


ANALOG INPUTS 5-8 (DB-25)



LSR-500 Rackmount Switcher **DB Connector Pinouts**





LSD-5 Line Preselector (digital) - Signal Flow Diagram

Intercom Module

(ICMD-5; optional)

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Upper DB-25 Connector — CONTROL	12-4
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Lower DB-25 Connector — CONTROL	12-5
DB Connector Pinout Drawing	12-6
Intercom Module Signal Flow Diagram	12-7

Intercom Module

(ICMD-5; optional)

Module Overview

The ICMD-5 Intercom Module is used to communicate with other studios and locations within a broadcast facility. It is designed to interface with other Wheatstone consoles and rackmount intercom units. Up to eight different stations may be connected via a simple daisy-chain hookup. The system is a party line; power for various units can come from their own locations or from other units. A red BUSY LED lights up whenever the system is in use.

The eight station call buttons on the lower half of the module are used to initiate a call; when you press a call button, the button corresponding to your location will illuminate at the other end to let the receiver know who's calling. He can then reply immediately, hands-free, and you will hear him through your console's cue speakers.

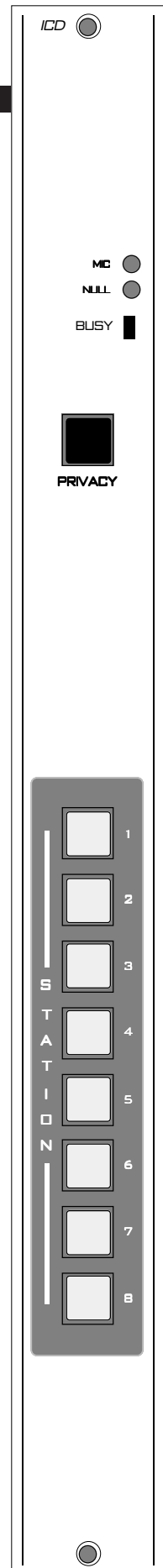
Normally you hear callers over your console's cue speakers. However you can also program the ICMD-5 module (via an internal dipswitch) to perform a cue interrupt function. The caller's voice will then appear at the control room speakers and/or operator headphones, depending on how you have programmed your CRD-5 module to handle CUE.

As the default mode for the system is hands-free reply, a red PRIVACY button is provided to prevent potential eavesdropping. When activated you can hear incoming calls but your own microphone remains off until you disengage the button.

Your microphone signal can tap from the console's talkback bus, where it picks up the regular console operator's microphone, or it can be a separate line level input coming into the ICMD-5 module (internally programmable). In either case, a recessed MIC trimpot at the top of the module sets the level of your voice.

Right next to the MIC trim is a NULL trimpot. This is used to null out your own microphone signal at your location. It is initially set at the factory for a two-station system. However, system loading will vary depending on configuration, and some adjustment may be necessary during initial set-up at your location. Once set however (assuming you don't change the number of stations installed) this control can be left alone.

All wiring to and from the ICMD-5 module takes place at DB-25 multi-pin connectors mounted directly beneath the module on the console mainframe's bottom pan. There are two connectors: the upper one (towards the console meterbridge) handles inputs; the lower connector (near the console armrest) outputs.



Internal Programming Options

All internal programming, except for address selections (see below), is made via printed circuit board (PCB) mounted 4-position dipswitches (total two) on the module's main card.

For the purposes of this manual, we will assume you are holding the removed module upright, component side towards you, with gold-plated card fingers to the left and the module faceplate to the right. This will enable you to read the control legends silkscreened next to the programming switch. Note when a dipswitch position is thrown to the right (towards the module's faceplate) it is ON.

CUE Enable

You can program the ICMD-5 module (via dipswitch SW10) to perform a cue interrupt function. The caller's voice will appear at the control room speakers and/or operator headphones, depending on how you have programmed your CRD-5 module to handle CUE.

Dipswitch SW10 position 1 assign CUE Logic Enable

Input Signal

Your microphone signal can tap from the console's talkback bus, where it picks up the regular console operator's microphone, or it can be a separate line level input coming into the ICMD-5 module.

Dipswitch SW1 position 1 assign line level input into ICMD module

Dipswitch SW1 position 4 allows microphone signal tap from the console's talkback bus

Power for Various ICMs

You can provide power for other Wheatstone rackmount ICMs (via dipswitch SW10)

position 2 - Ext +V

position 3 - Ext -V

position 4 - Ext +D

Station Select

Each ICM in daisy-chain hookup has own address, which is programmed with "stations" slide switches SW2-SW9. Each ICM has only one slide switch "ON".

Hook-Ups

All user wiring to and from the ICMD-5 module takes place at two DB-25 multi-pin connectors mounted directly beneath the module on the console mainframe's bottom pan.

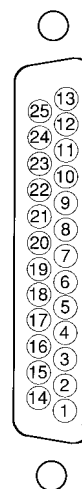
Upper DB-25 Connector — Input Audio

This connector handles the module's source select External Stereo inputs. All audio signals are analog, +4dBu balanced.

- Pin 15 - 2-way audio in HI
- Pin 3 - 2-way audio in LO
- Pin 16 - 2-way audio in SH
- Pin 1 - External Line in HI
- Pin 14 - External Line in LO
- Pin 2 - External Line in SH

Upper DB-25 Connector — Control

- Pin 10 - External digital + power feed
- Pin 23 - External digital common
- Pin 4 - Station call line 1
- Pin 17 - Station call line 2
- Pin 18 - Station call line 3
- Pin 6 - Station call line 4
- Pin 7 - Station call line 5
- Pin 20 - Station call line 6
- Pin 21 - Station call line 7
- Pin 9 - Station call line 8
- Pin 24 - +16V
- Pin 12 - -16V
- Pins 5,8,11,19,22,25 - Audio Common
- Pin 13 - N/C



Typical DB-25 connector

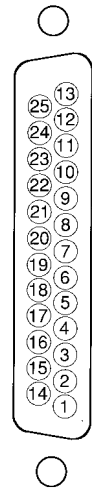
Lower DB-25 Connector — Output Audio

All signals are +4dBu balanced analog stereo.

- Pin 15 - 2-way audio out HI
- Pin 3 - 2-way audio out LO
- Pin 16 - 2-way audio out SH
- Pins 2 - Audio Common

Lower DB-25 Connector — Control

Pin 10 - External digital + power feed
Pin 23 - External digital common
Pin 4 - Station call line 1
Pin 17 - Station call line 2
Pin 18 - Station call line 3
Pin 6 - Station call line 4
Pin 7 - Station call line 5
Pin 20 - Station call line 6
Pin 21 - Station call line 7
Pin 9 - Station call line 8
Pin 24 - +16V
Pin 12 - -16V
Pins 5,8,11,19,22,25 - Audio Common
Pin 13 - N/C

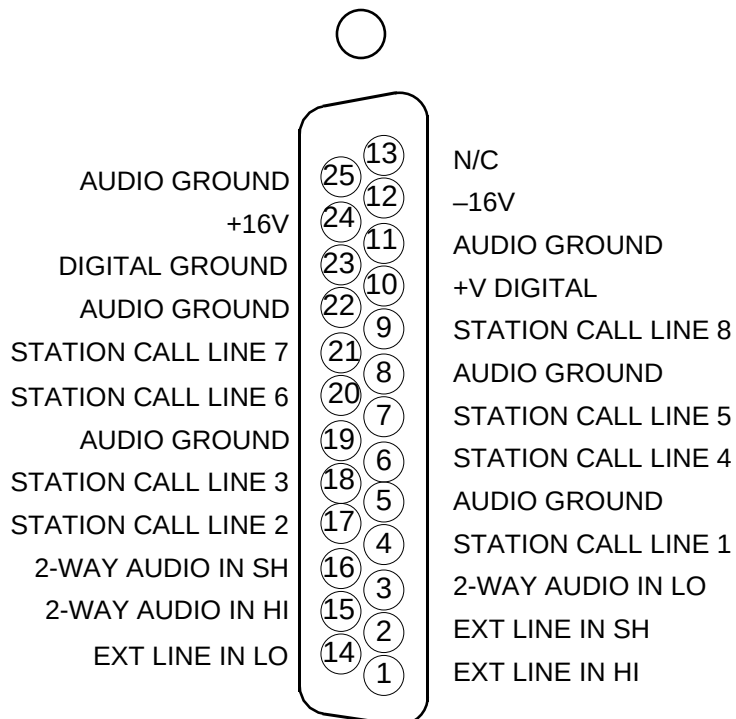


Typical DB-25
connector

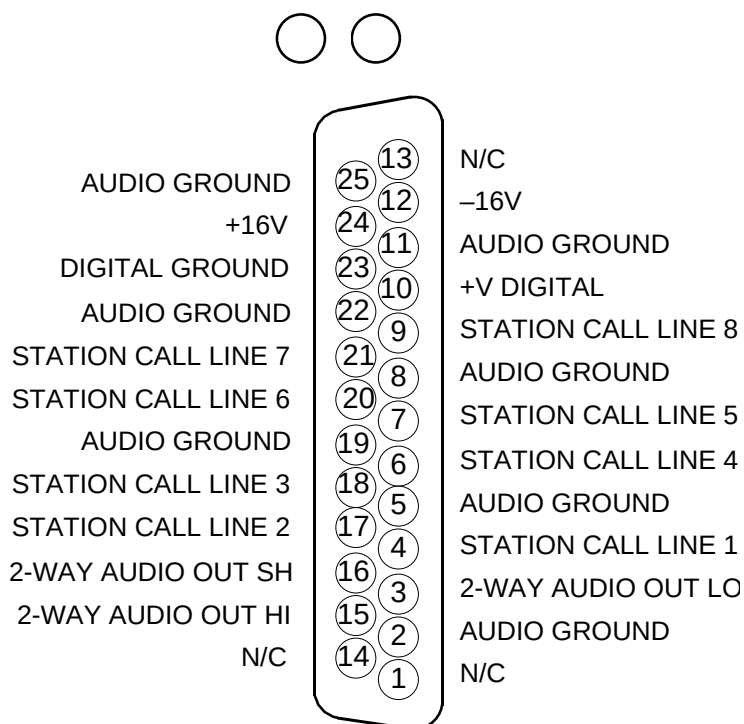
ICMD-5 Intercom Module

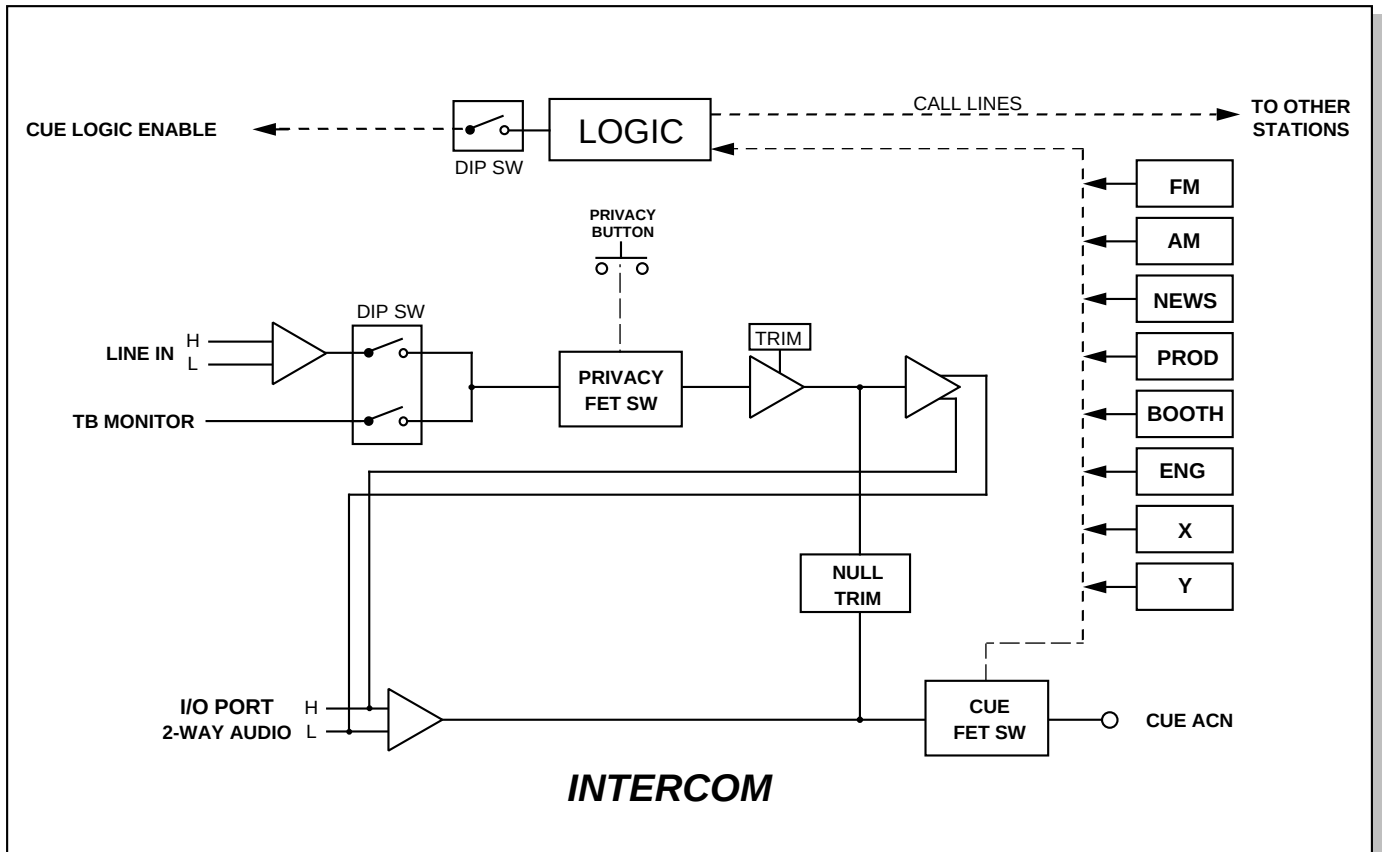
DB Connector Pinouts

I/O PORTS



I/O PORTS





ICMD-5 Intercom Module - Signal Flow Diagram

Tape Remote Module

(TRD-5; optional)

Chapter Contents

Module Overview	13-2
DB Connector Pinout Drawing	
STOP/START Function Control	13-3
Full-Function Control	13-4

Tape Remote Module

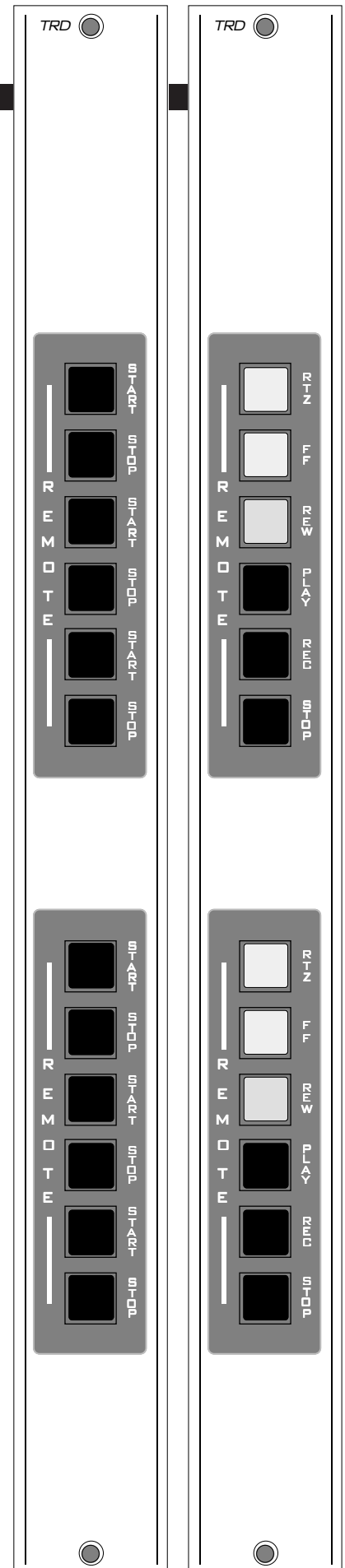
(TRD-5; optional)

Module Overview

This optional module has two versions:

- start-stop control of six reel-to-reel tape machines using six pair of START/STOP buttons;
- full-function control of two tape machines with buttons marked as RTZ, FF, REW, PLAY, REC and STOP.

LED indicators in each switch function as tallyback indicators and are powered by the source machines. There are no internal connections between the tape remote panel and the console's power rails.



TRD-5/SS Tape Remote Module

DB Connector Pinouts

SW1

SW2

SW3

SW4

SW5

SW6

I/O CONTROL PORTS (Upper DB-25)

SW6 (STOP) COMMON

SW6 (STOP) LED-

SW5 (START) COMMON

SW5 (START) LED-

SW4 (STOP) COMMON

SW4 (STOP) LED-

SW3 (START) COMMON

SW3 (START) LED-

SW2 (STOP) COMMON

SW2 (STOP) LED-

SW1 (START) COMMON

SW1 (START) LED-

13

12

11

10

9

8

7

6

5

4

3

2

1

N/C

SW6 (STOP) N.O.

SW6 (STOP) LED+

SW5 (START) N.O.

SW5 (START) LED+

SW4 (STOP) N.O.

SW4 (STOP) LED+

SW3 (START) N.O.

SW3 (START) LED+

SW2 (STOP) N.O.

SW2 (STOP) LED+

SW1 (START) N.O.

SW1 (START) LED+

SW1

SW2

SW3

SW4

SW5

SW6

SW6 (STOP) COMMON

SW6 (STOP) LED-

SW5 (START) COMMON

SW5 (START) LED-

SW4 (STOP) COMMON

SW4 (STOP) LED-

SW3 (START) COMMON

SW3 (START) LED-

SW2 (STOP) COMMON

SW2 (STOP) LED-

SW1 (START) COMMON

SW1 (START) LED-

13

12

11

10

9

8

7

6

5

4

3

2

1

N/C

SW6 (STOP) N.O.

SW6 (STOP) LED+

SW5 (START) N.O.

SW5 (START) LED+

SW4 (STOP) N.O.

SW4 (STOP) LED+

SW3 (START) N.O.

SW3 (START) LED+

SW2 (STOP) N.O.

SW2 (STOP) LED+

SW1 (START) N.O.

SW1 (START) LED+

I/O CONTROL PORTS (Lower DB-25)

TRD-5/FF Tape Remote Module

DB Connector Pinouts

SW1

SW2

SW3

SW4

SW5

SW6

I/O CONTROL PORTS (Upper DB-25)

SW6 (STOP) COMMON

SW6 (STOP) LED-

SW5 (REC) COMMON

SW5 (REC) LED-

SW4 (PLAY) COMMON

SW4 (PLAY) LED-

SW3 (REW) COMMON

SW3 (REW)LED-

SW2 (FF) COMMON

SW2 (FF) LED-

SW1 (RTZ)COMMON

SW1 (RTZ) LED-

13

12

11

10

9

8

7

6

5

4

3

2

1

N/C

SW6 (STOP) N.O.

SW6 (STOP) LED+

SW5 (REC) N.O.

SW5 (REC) LED+

SW4 (PLAY) N.O.

SW4 (PLAY) LED+

SW3 (REW) N.O.

SW3 (REW) LED+

SW2 (FF) N.O.

SW2 (FF) LED+

SW1 (RTZ) N.O.

SW1 (RTZ) LED+

SW1

SW2

SW3

SW4

SW5

SW6

SW6 (STOP) COMMON

SW6 (STOP) LED-

SW5 (REC) COMMON

SW5 (REC) LED-

SW4 (PLAY) COMMON

SW4 (PLAY) LED-

SW3 (REW) COMMON

SW3 (REW)LED-

SW2 (FF) COMMON

SW2 (FF) LED-

SW1 (RTZ)COMMON

SW1 (RTZ) LED-

13

12

11

10

9

8

7

6

5

4

3

2

1

N/C

SW6 (STOP) N.O.

SW6 (STOP) LED+

SW5 (REC) N.O.

SW5 (REC) LED+

SW4 (PLAY) N.O.

SW4 (PLAY) LED+

SW3 (REW) N.O.

SW3 (REW) LED+

SW2 (FF) N.O.

SW2 (FF) LED+

SW1 (RTZ) N.O.

SW1 (RTZ) LED+

I/O CONTROL PORTS (Lower DB-25)

Meterbridge and Clock

Chapter Contents

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Clock	14-2
Controls	14-2
Setting the Time	14-3
Battery Backup	14-3
Operational Modes	14-3
Schematic	14-4
Load Sheet	14-5

Meterbridge and Clock

Overview

The console's meterbridge houses three pairs of left-right LED meters (Program, Audition, and Utility; see "Meter Output Module" Chapter 7), the digital timer display (timer control buttons are on the MOD-5 Meter Output Module; see page 7-2), left and right cue speakers (controlled by the CRD-5 Control Room Module; see page 5-2), and the console clock (next section). Each LED meter pair is switchable to either VU or PPM (peak Program Meter) modes. The slide switch for each pair is located on the rear of face of the LED meter PC board.

The meterbridge assembly hinges open for easy access setting the clock. Simply remove the three black #4 flathead screws along the bottom lip of the meterbridge, just above the tops of the console modules and swing the bridge up and back until it rests in a fully opened position.

Replacement Parts

Clock, timer and VU meters cards and replacement cue speakers are available. See Appendix for specific ordering information.

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. There are two basic parts to the clock: a main PCB containing the clock displays and circuits (including battery backup), and a remote switch card containing controls for setting the clock. The remote switch card is mounted in the bottom of the console meterbridge; it may be accessed by opening the hinged meterbridge (see above).

Controls

The clock is controlled by a trimmer and two switches; the trimmer is mounted on the main clock PCB assembly and the switches are mounted on the control card.

The trimmer alters the frequency of the quartz-controlled oscillator, which in turn causes the clock to run slightly slower or faster. In order to keep accurate time, the oscillator must run at 32.768 KHz, which is divided down internally to yield 1.000000 Hz at the input of the counter. The oscillator is set to this frequency at the factory. However, due to the nature of quartz/crystal-controlled oscillators, there may be a slight change in the frequency of the oscillator during the first few months of operation due to the aging effect of quartz crystals. A minor readjustment of the trimmer will compensate for this effect.

A buffered output of the oscillator is available at pin #9 of IC #U22 to assist in adjusting the oscillator. This testpoint "TP1" is right between the 14-pin ribbon cable header and IC "U22" in the upper right corner of the main display PCB (as you are looking at the card with the meterbridge hinged fully open).

Setting the Time

The setting controls consists of two switches: MODE and SET. To set the clock, open the meterbridge and stand behind the console (this will enable you to see the display):

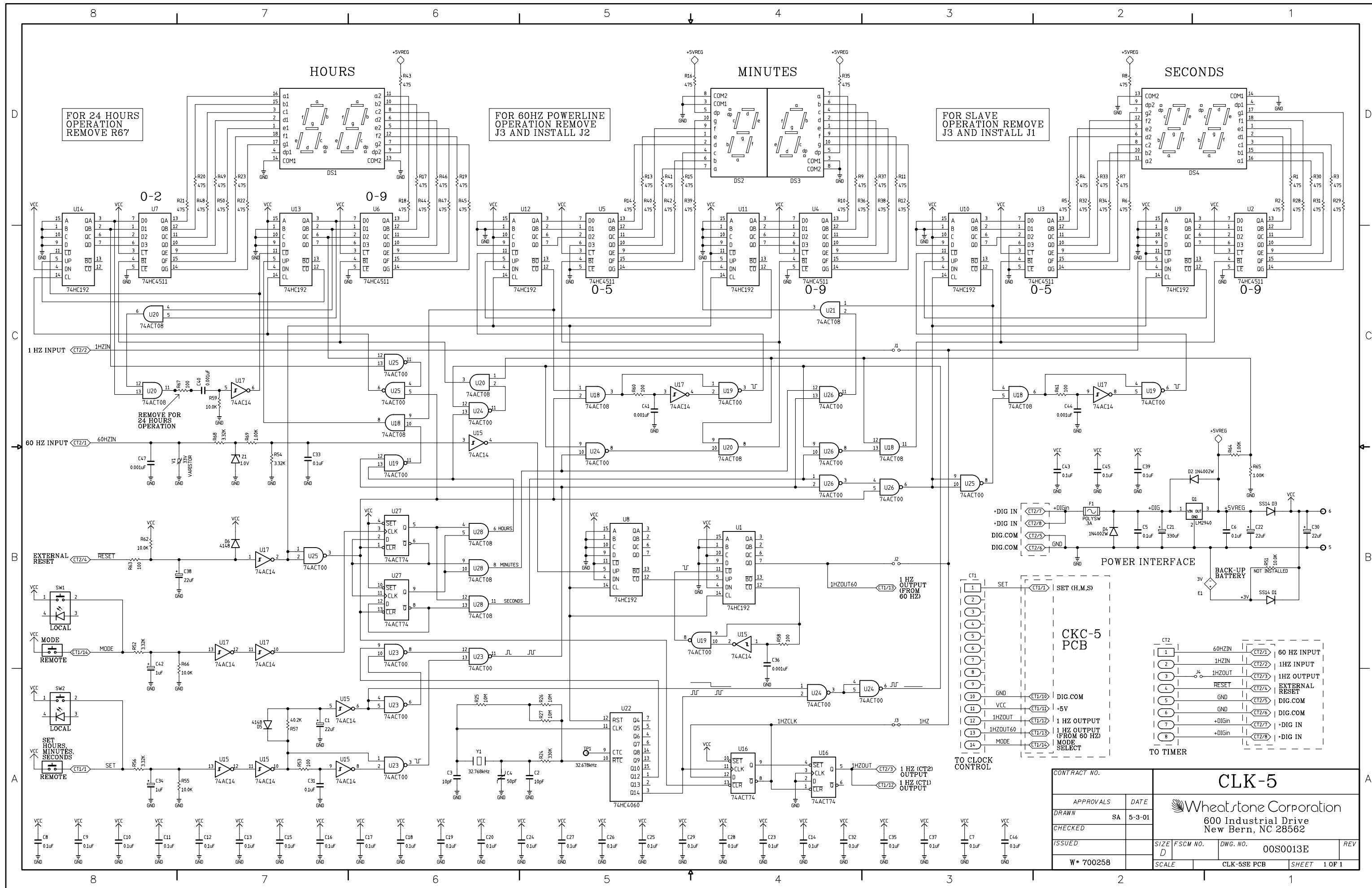
- 1) The control switches (mounted inside the meterbridge bottom) are labelled "M" and "S". "M" (Mode) is used to scroll from seconds to minutes to hours; "S" is used to Set the time. The procedure is to set the clock slightly ahead of the current time, hold the second count at "00" until the current 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" (blinking once per second). When the current time catches up to the display, release the SET button. The clock will start counting. Hit the MODE button one more time to place the clock into working mode.

Battery Backup

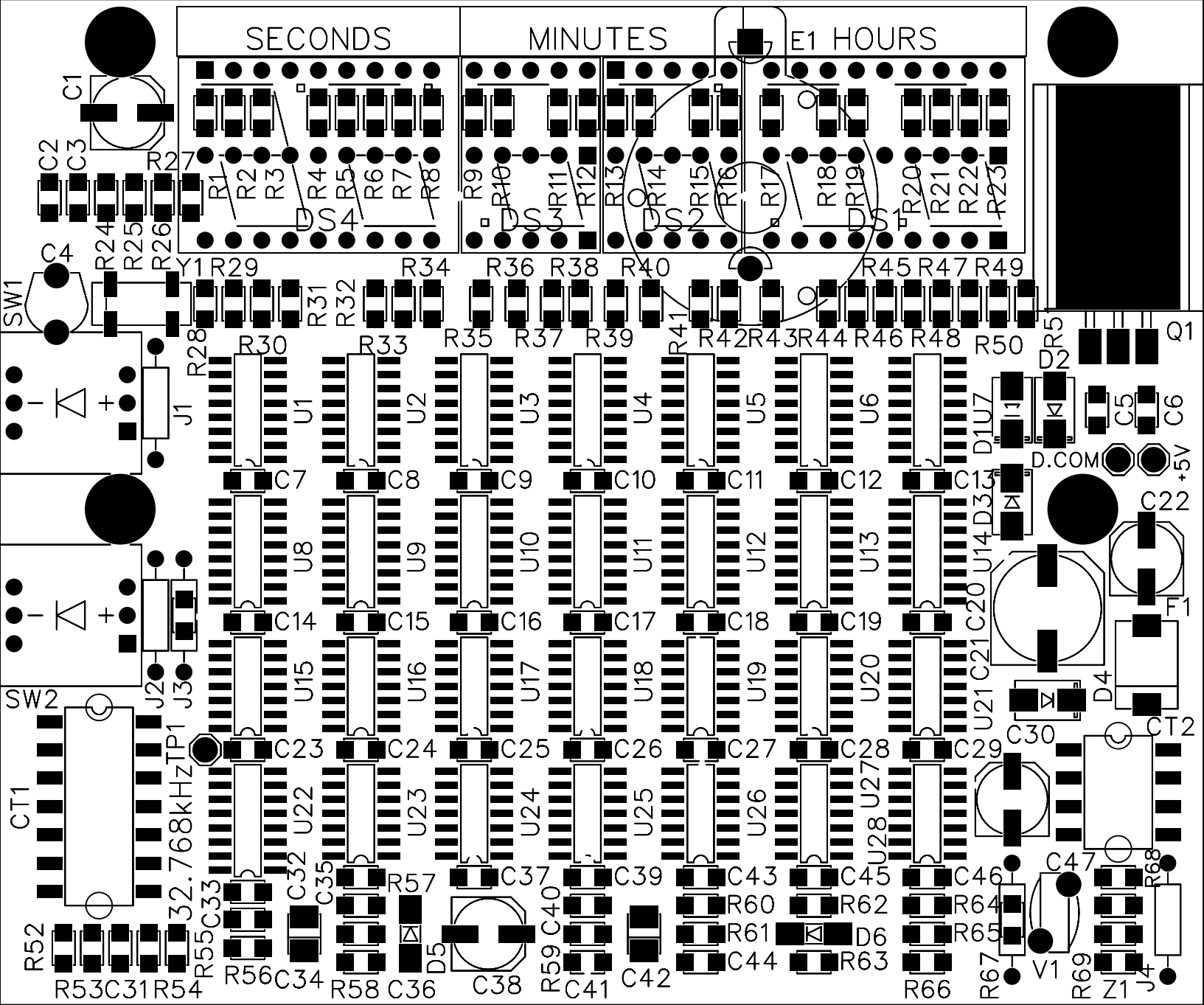
With the meterbridge open, note the nickel-sized round Duracell DL2032/3V long-life lithium battery (it goes into the socket negative side in). Note the battery does NOT light up the clock display; it powers the clock crystal to keep it from losing count (it will do this for 3 to 4 weeks).

Operational Modes

The standard factory default clock configuration is crystal-controlled, 12 hour mode, stand-alone operation. However, the clock will operate either from the internal crystal controlled time base or from a 60 Hz power line signal. It can also be programmed to count in either 12 hour or 24 hour modes, and the internal counters can be slaved from another clock or other sources of 1 Hz timing signals (TTL levels). Contact factory technical support for further information.



Clock Schematic - Sheet 1 of 1



I/O Schematic Drawings

Chapter Contents

Mono Mic Input Module Schematic (MMD-500).....	15-2
Stereo Line Input Module Schematic (SLD-500).....	15-4
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Analog Stereo Line Input Card Schematic (SLADC-600)	15-6
Output Module Schematic (OMD-500)	15-7
Control Room Module Schematic (CRD-500)	15-8
Studio Control Module Schematic (SCD-500).....	15-11
Digital Superphone I/O Card Schematic (SPND-500)	15-13
Analog Superphone I/O Card Schematic (SPNA-600).....	15-14
Digital/Audio Line Select Rackmount Schematic (LSR-500)	15-15
Tape Remote Module Schematic (TRD-500).....	15-17
Intercom Module Schematic (ICMD-500)	15-18
Analog Line Select Module Schematic (LSA-5)	15-19

74ABT244
IC PINOUT
VIEWED FROM ABOVE
(COMPONENT SIDE)

74ABT245
IC PINOUT
VIEWED FROM ABOVE
(COMPONENT SIDE)

74HC373
IC PINOUT
VIEWED FROM ABOVE
(COMPONENT SIDE)

49FCT805
IC PINOUT
VIEWED FROM ABOVE
(COMPONENT SIDE)

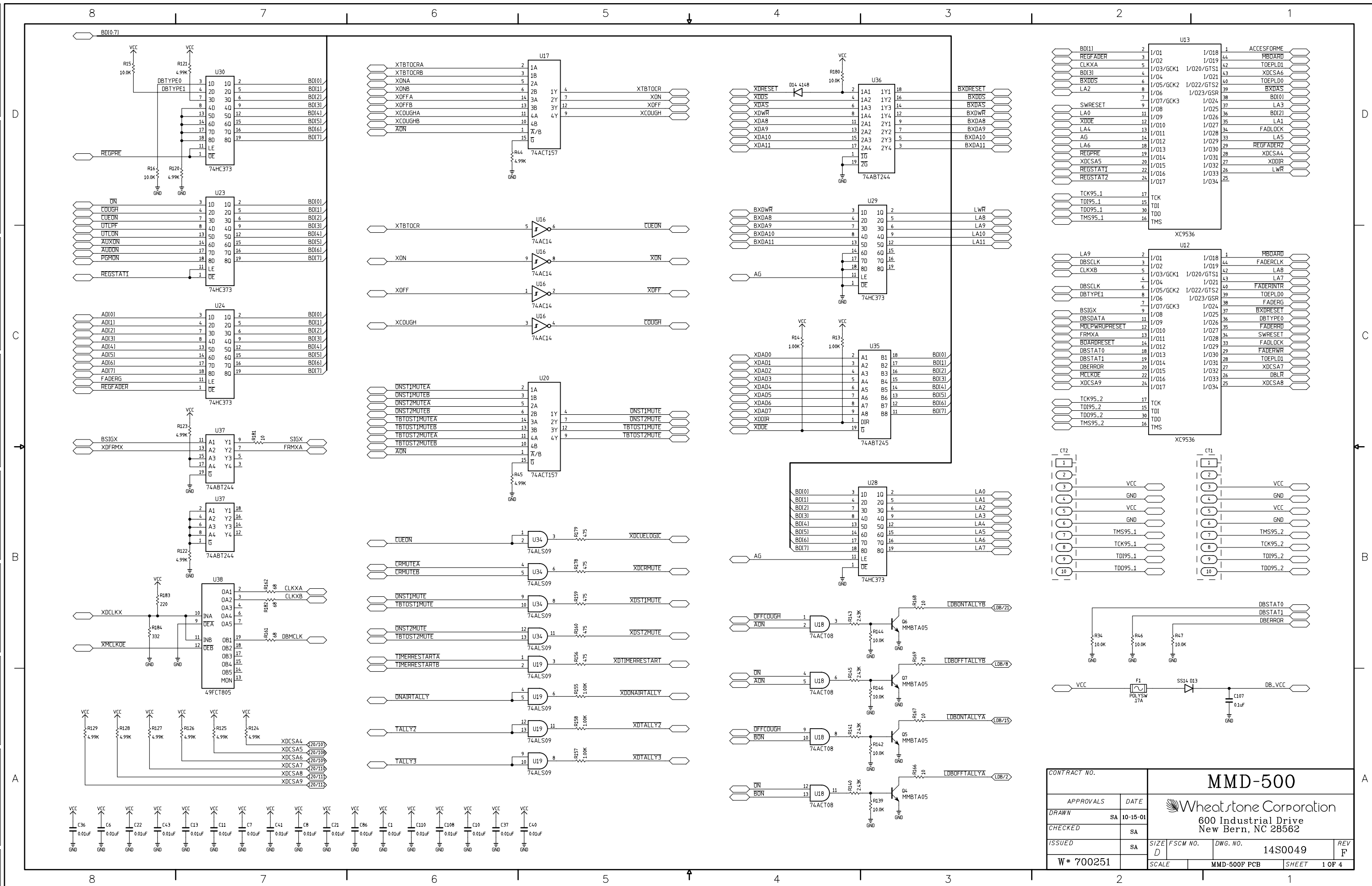
74AC08/09
IC PINOUT
VIEWED FROM ABOVE
(COMPONENT SIDE)

74AC32
IC PINOUT
VIEWED FROM ABOVE
(COMPONENT SIDE)

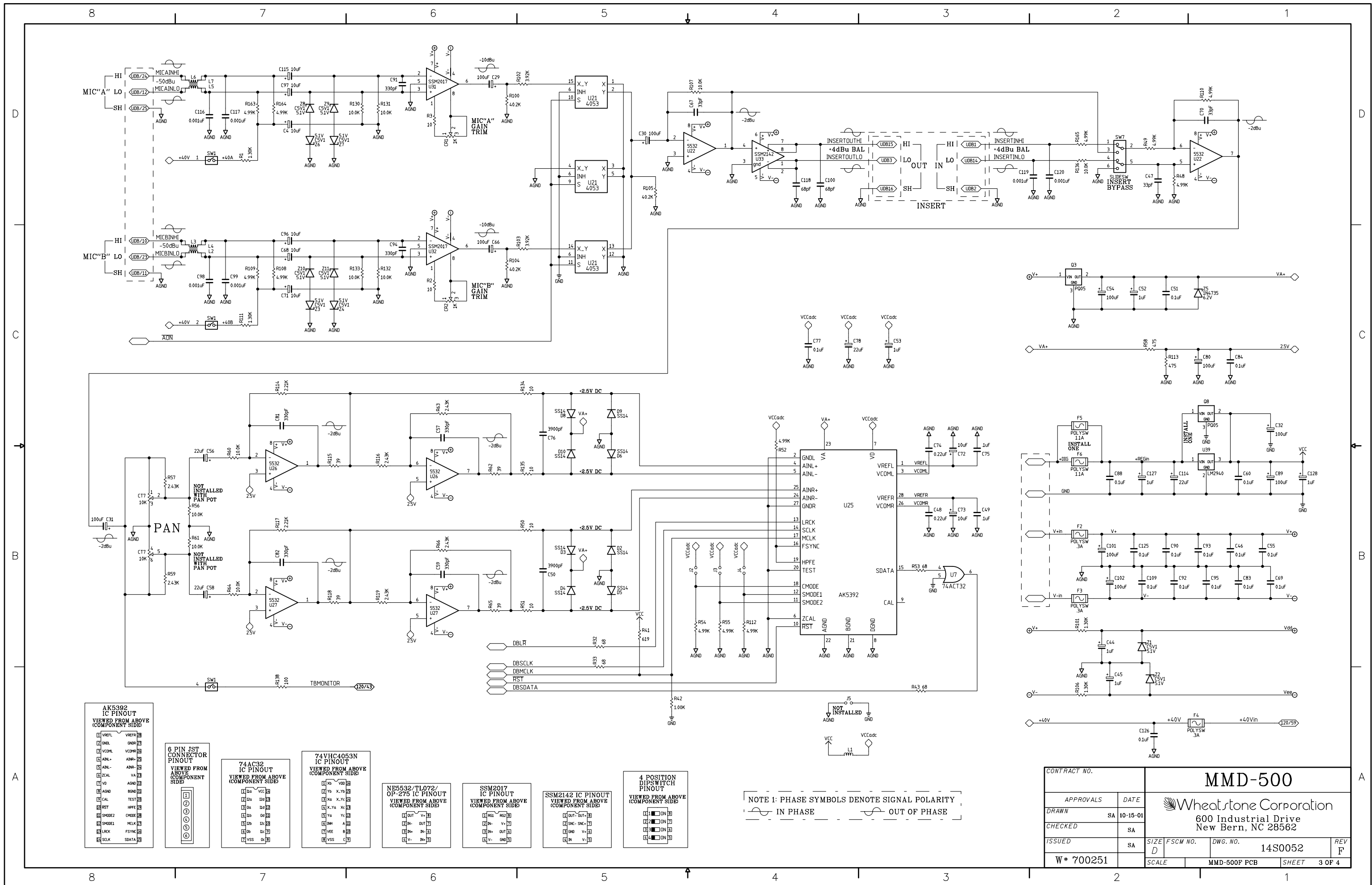
74AC14
IC PINOUT
VIEWED FROM ABOVE
(COMPONENT SIDE)

74AC157
IC PINOUT
VIEWED FROM ABOVE
(COMPONENT SIDE)

4 POSITION
DIPSWITCH
PINOUT
VIEWED FROM ABOVE
(COMPONENT SIDE)



MMD-500 Mono Mic Input Module Schematic - Sheet 1 of 4



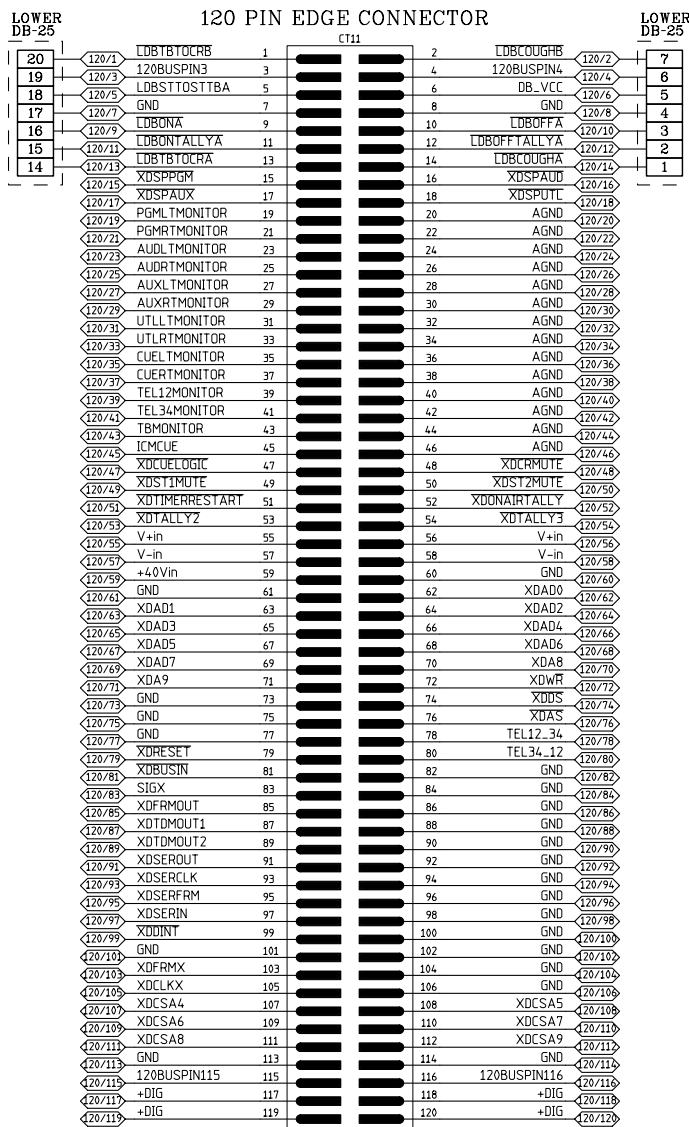
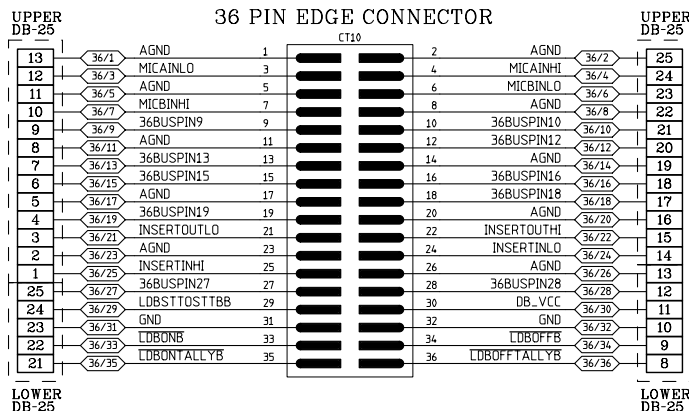
MMD-500 Mono Mic Input Module Schematic - Sheet 3 of 4

A

B

C

D



CONNECTORS BUSS CHART

CONTRACT NO.		MMD-500			
APPROVALS	DATE	 Wheatstone Corporation 600 Industrial Drive New Bern, NC 28562			
DRAWN	SA 10-15-01				
CHECKED	SA				
ISSUED	SA	SIZE C	FSCM NO.	DWG. NO. 14S0051	REV F
W* 700251		SCALE	MMD-500F PCB		SHEET 4 OF 4

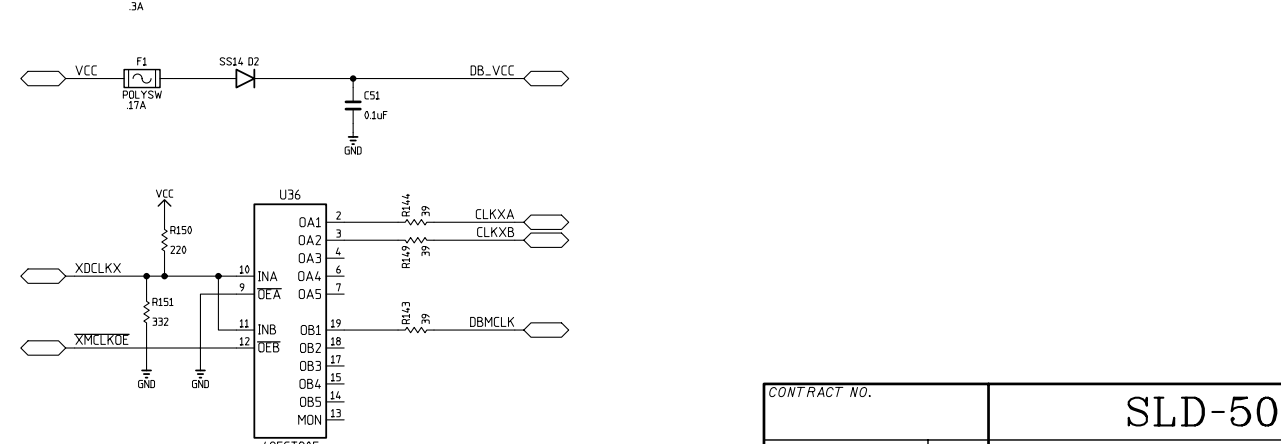
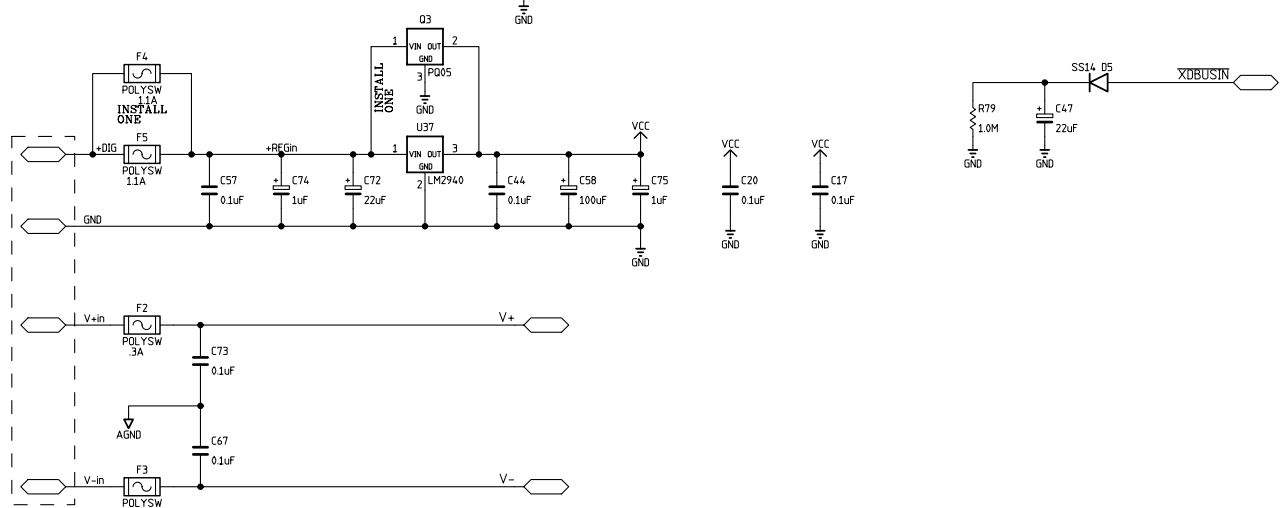
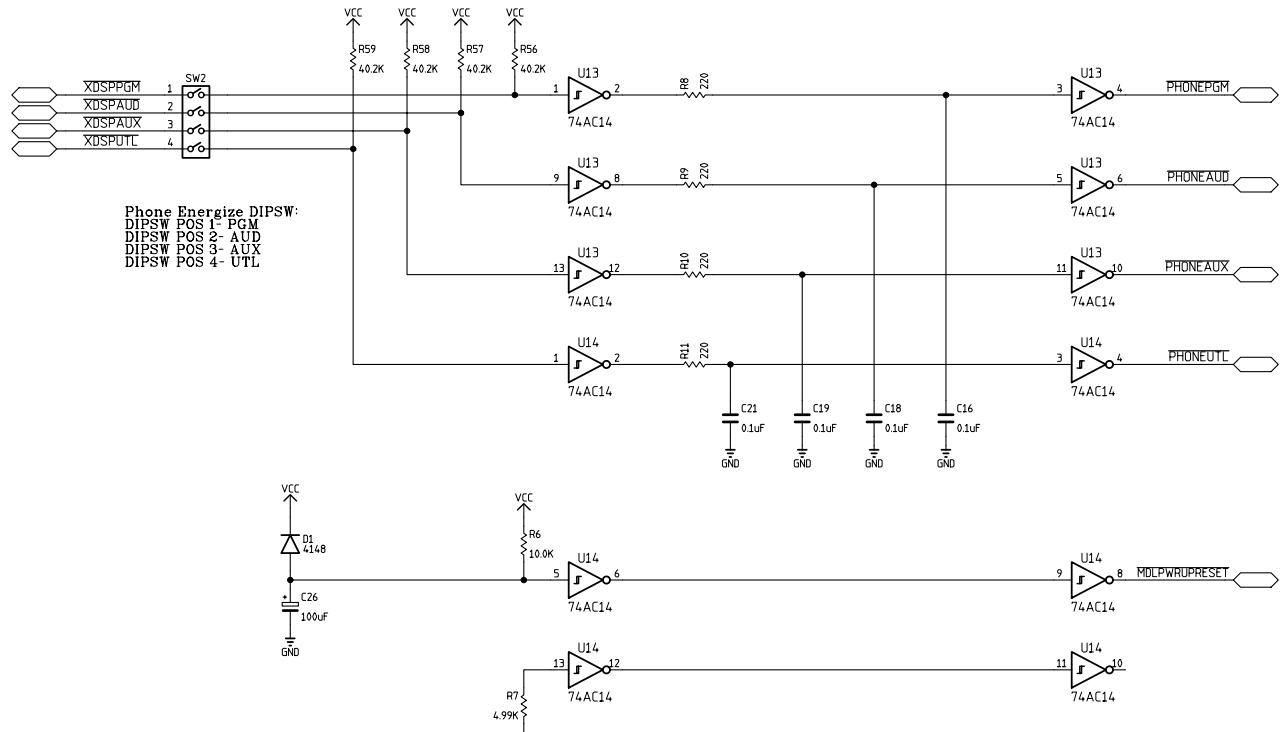
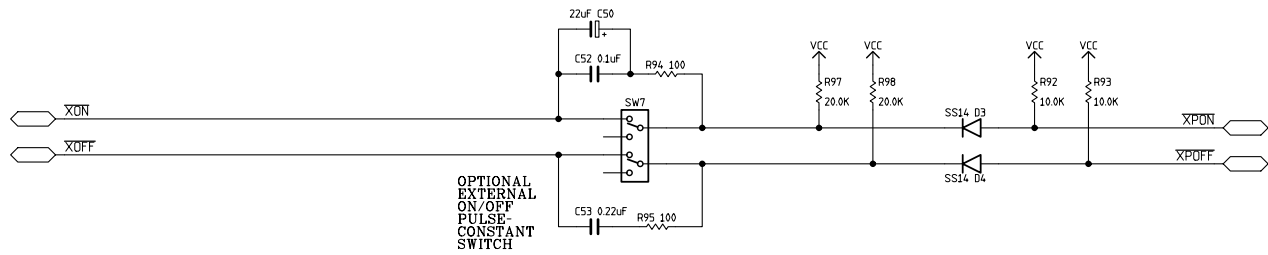
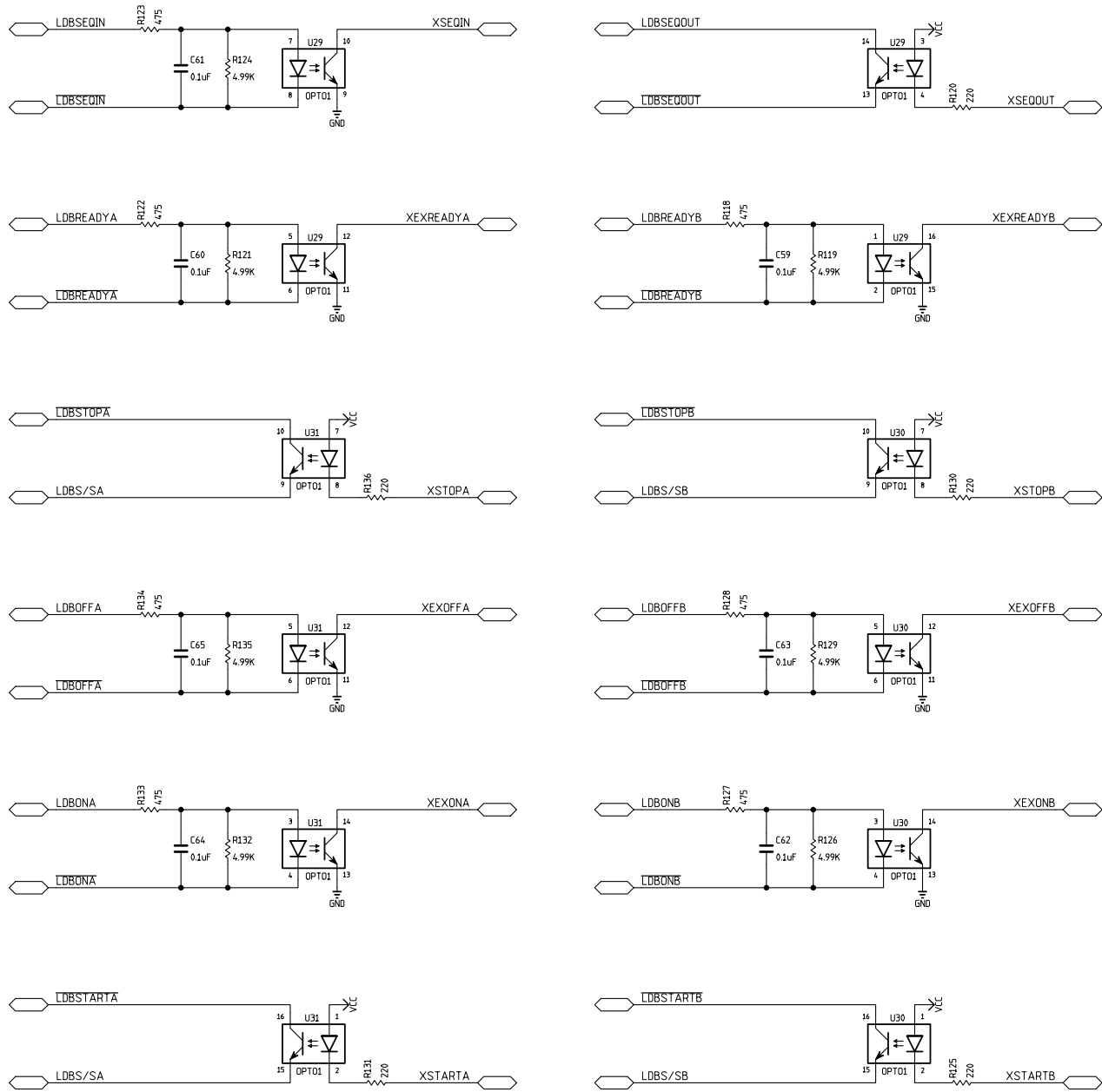
8 7 6 5 4 3 2 1

D

C

B

A



CONTRACT NO.		SLD-500			
APPROVALS	DATE	Wheatstone Corporation 600 Industrial Drive New Bern, NC 28562			
DRAWN	SA 8-6-01				
CHECKED		SIZE	FSCM NO.	DWG. NO.	REV
ISSUED		D		14S0024H	
W# 700219		SCALE	SLD-500H PCB	SHEET	3 OF 4

4

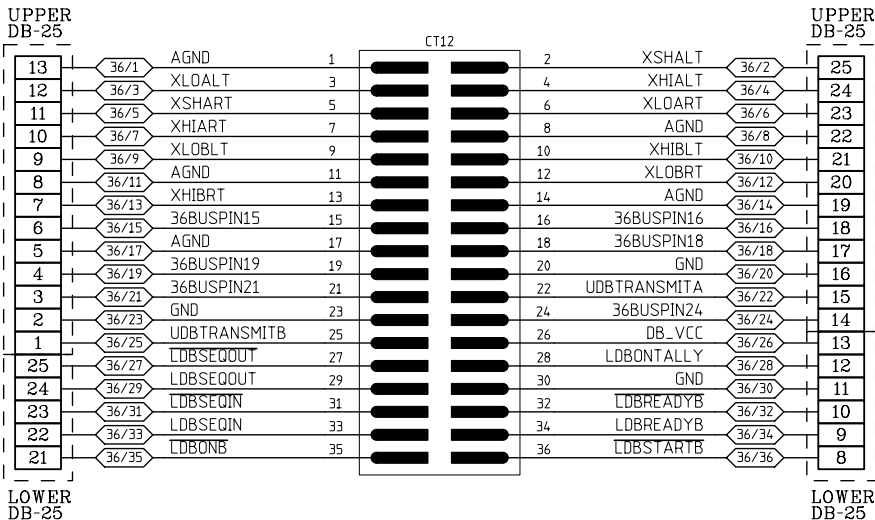
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2

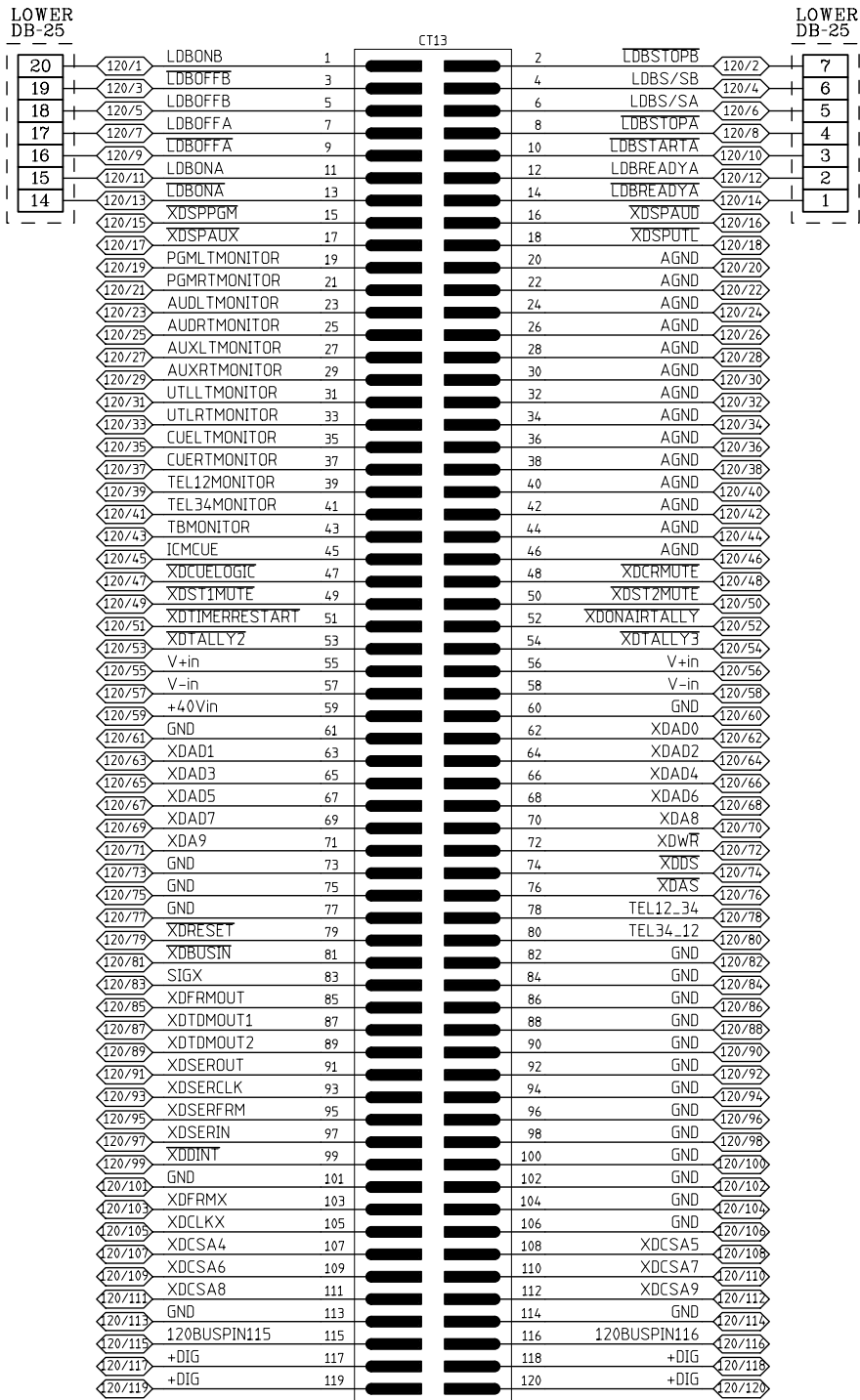
1

D

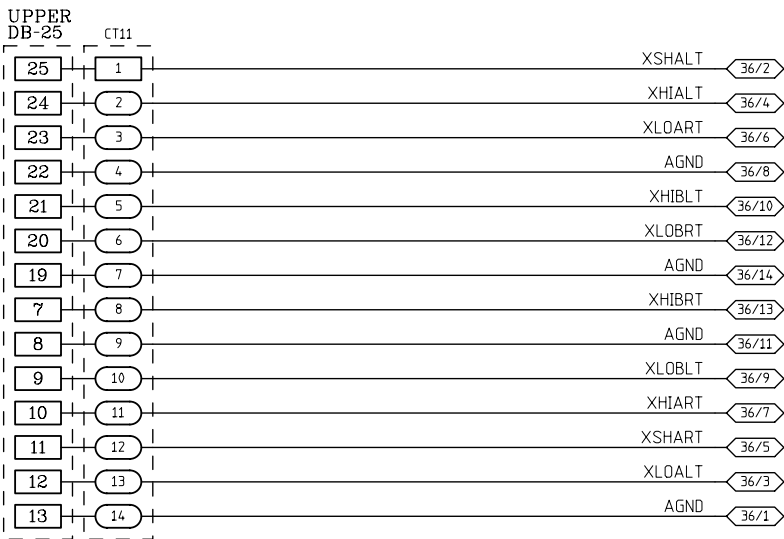
36 PIN EDGE CONNECTOR



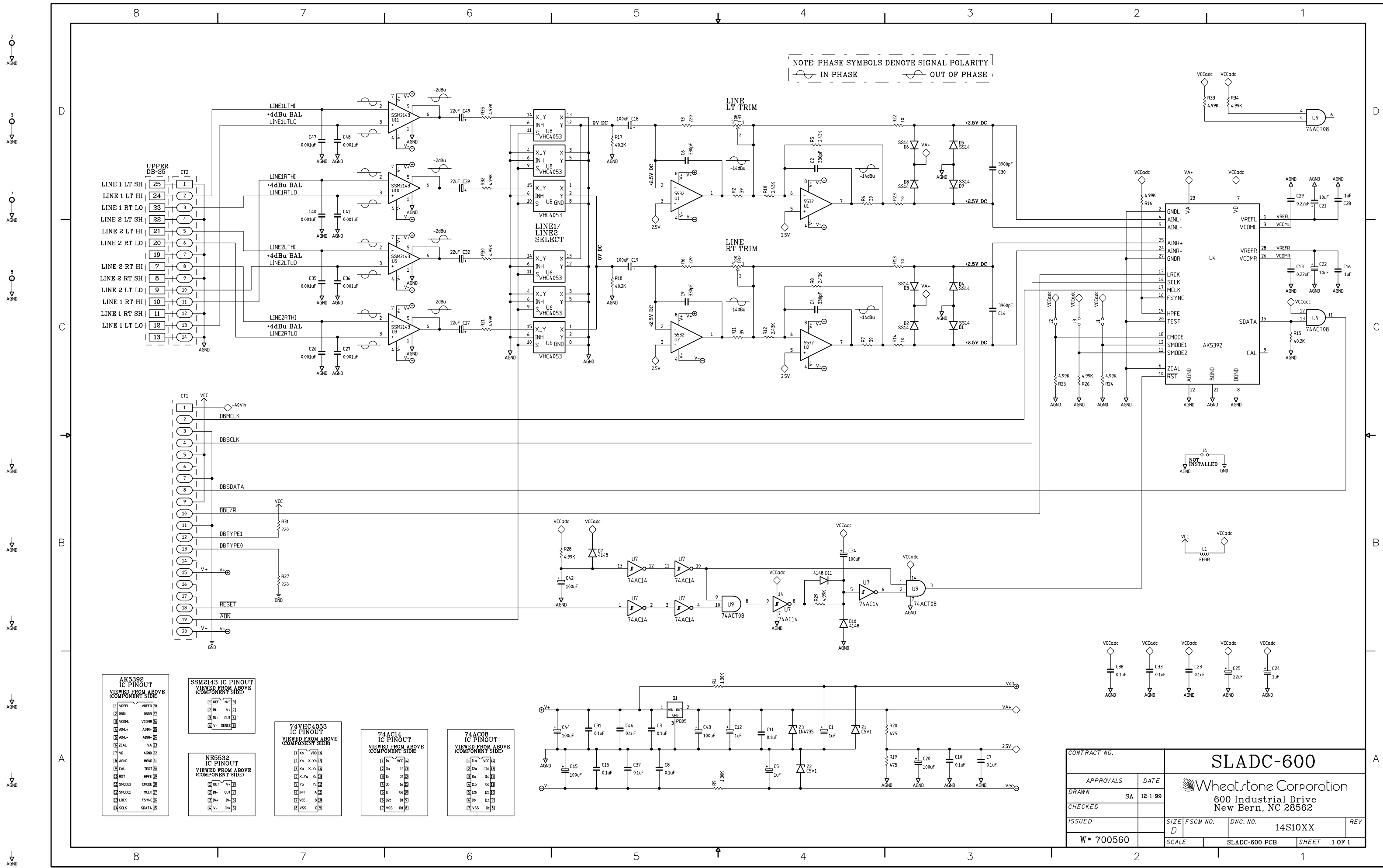
120 PIN EDGE CONNECTOR



CONNECTORS
BUSS CHART



CONTRACT NO.		SLD-500			
APPROVALS		DATE		 Wheatstone Corporation 600 Industrial Drive New Bern, NC 28562	
DRAWN SA		8-6-01			
CHECKED				SIZE FSCM NO. DWG. NO. 14S0023H REV -	
ISSUED					
W* 700219		SCALE		SLD-500H PCB SHEET 4 OF 4	



SLD-600 Input Module Schematic - Sheet 6 of 6

CONTRACT NO.		SLADC-600			
APPROVALS	DATE	 Wheatstone Corporation 600 Industrial Drive New Bern, NC 28562			
DRAWN	SA 12-1-99				
CHECKED		SIZE	FSCM NO.	DWG. NO.	REV
ISSUED		D		14S10XX	
W # 700560		SCALE	SLADC-600 PCB	SHEET	1 OF 1



Page 5-5

A

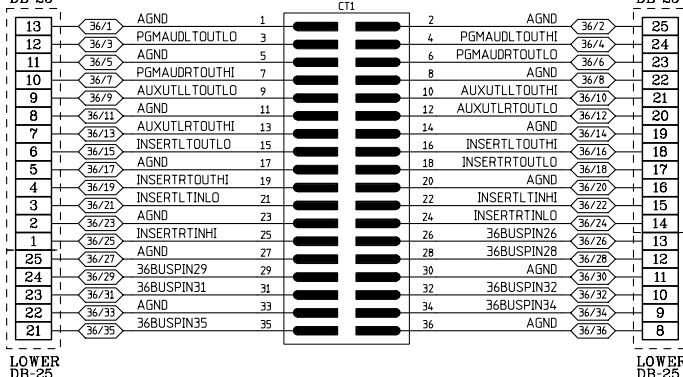
B

C

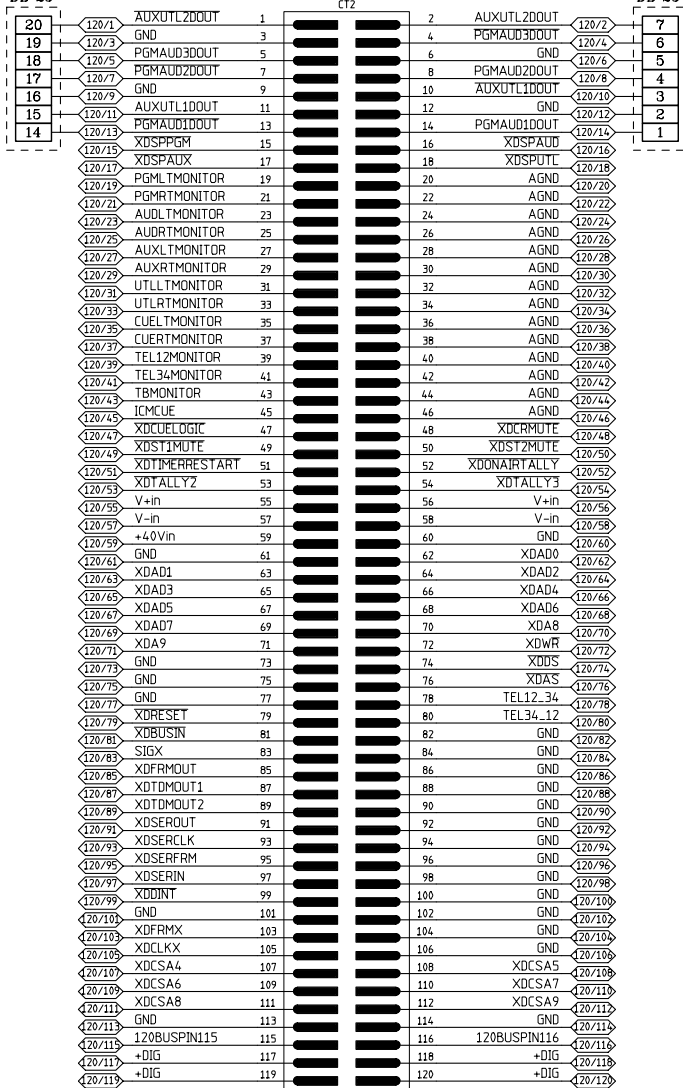
D

UPPER
DB-25

36 PIN EDGE CONNECTOR

UPPER
DB-25LOWER
DB-25LOWER
DB-25LOWER
DB-25

120 PIN EDGE CONNECTOR

LOWER
DB-25CONNECTORS
BUSS CHART

CONTRACT NO.

OMD-500

APPROVALS DATE

DRAWN SA 6-19-00

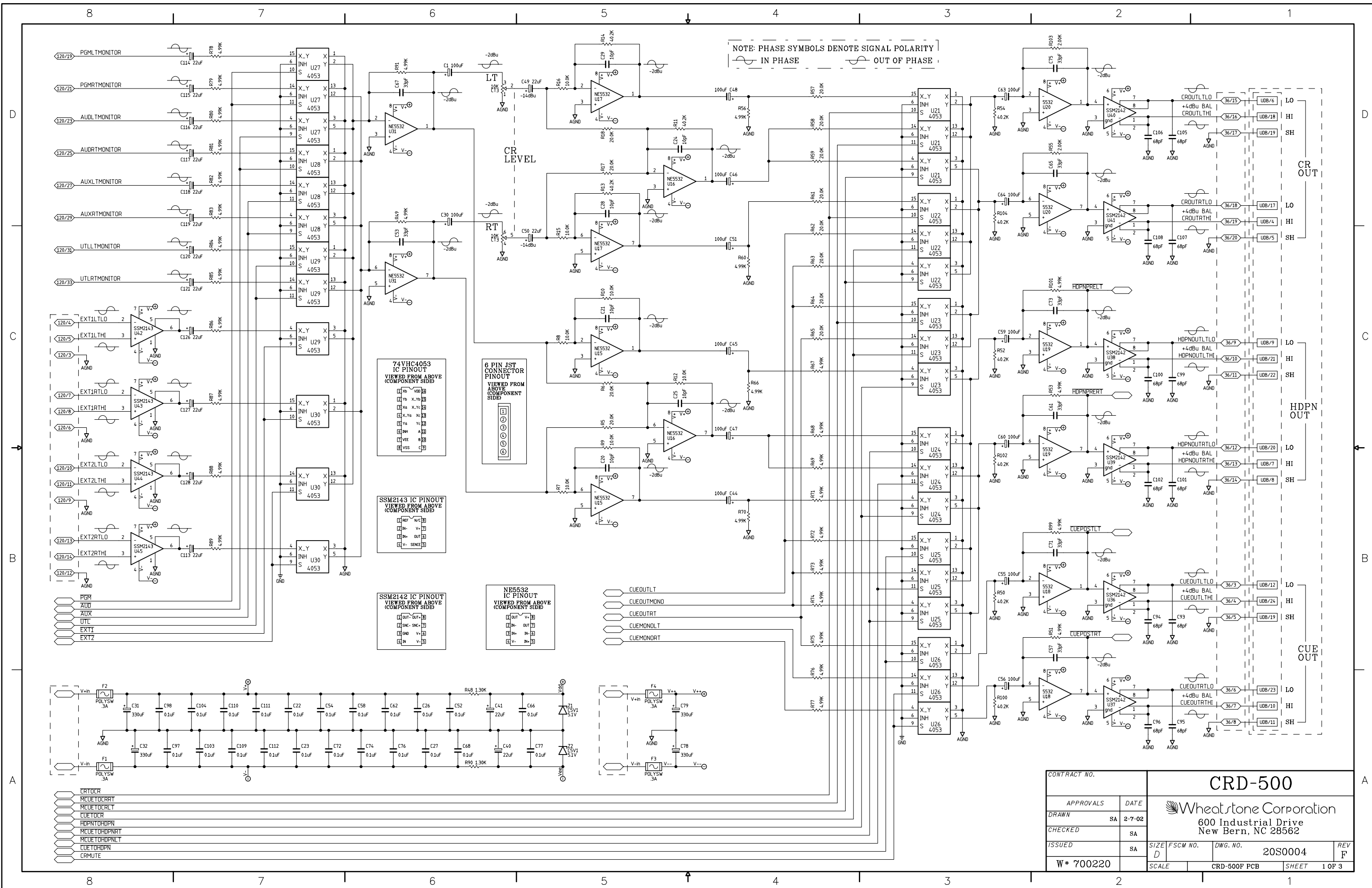
CHECKED SA

ISSUED SA

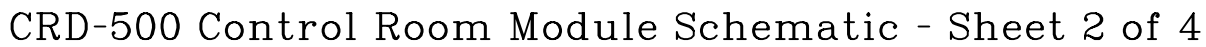
W# 700226

Wheatstone Corporation
600 Industrial Drive
New Bern, NC 28562

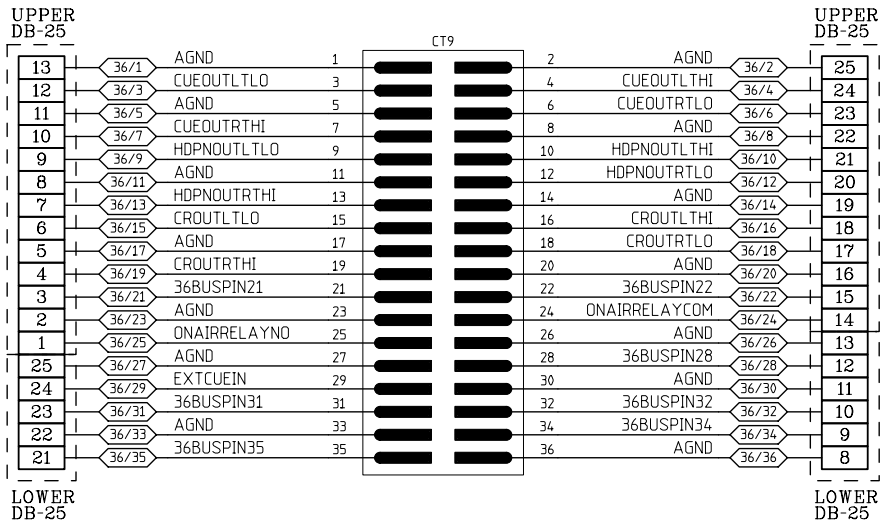
SIZE C	FSCM NO.	DWG. NO. 14S0030	REV H
SCALE	OMD-500H PCB	SHEET	4 OF 4



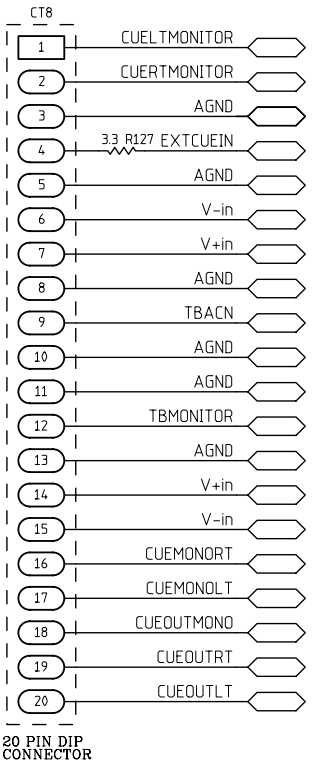
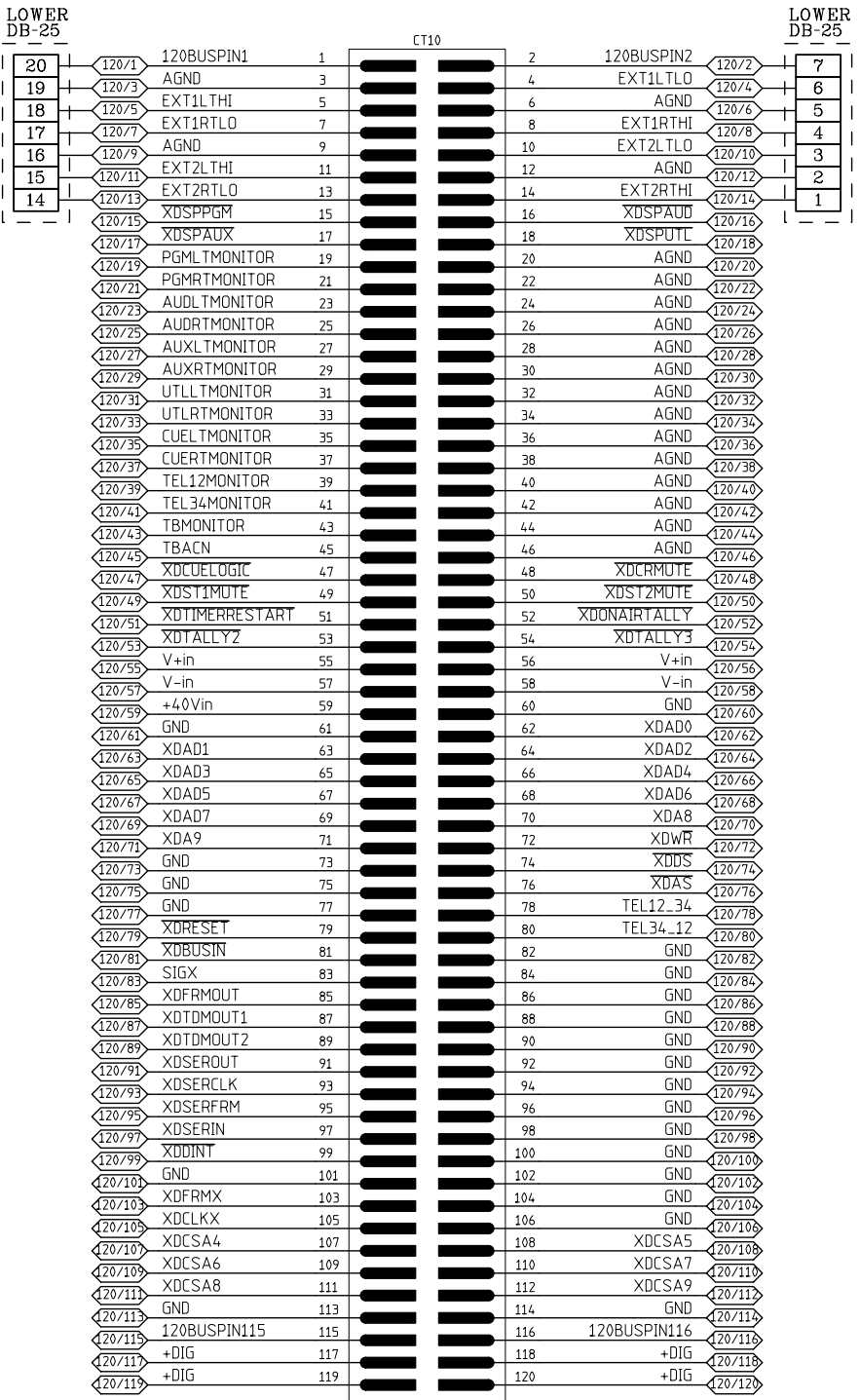
CRD-500 Control Room Module Schematic - Sheet 1 of 4



36 PIN EDGE CONNECTOR

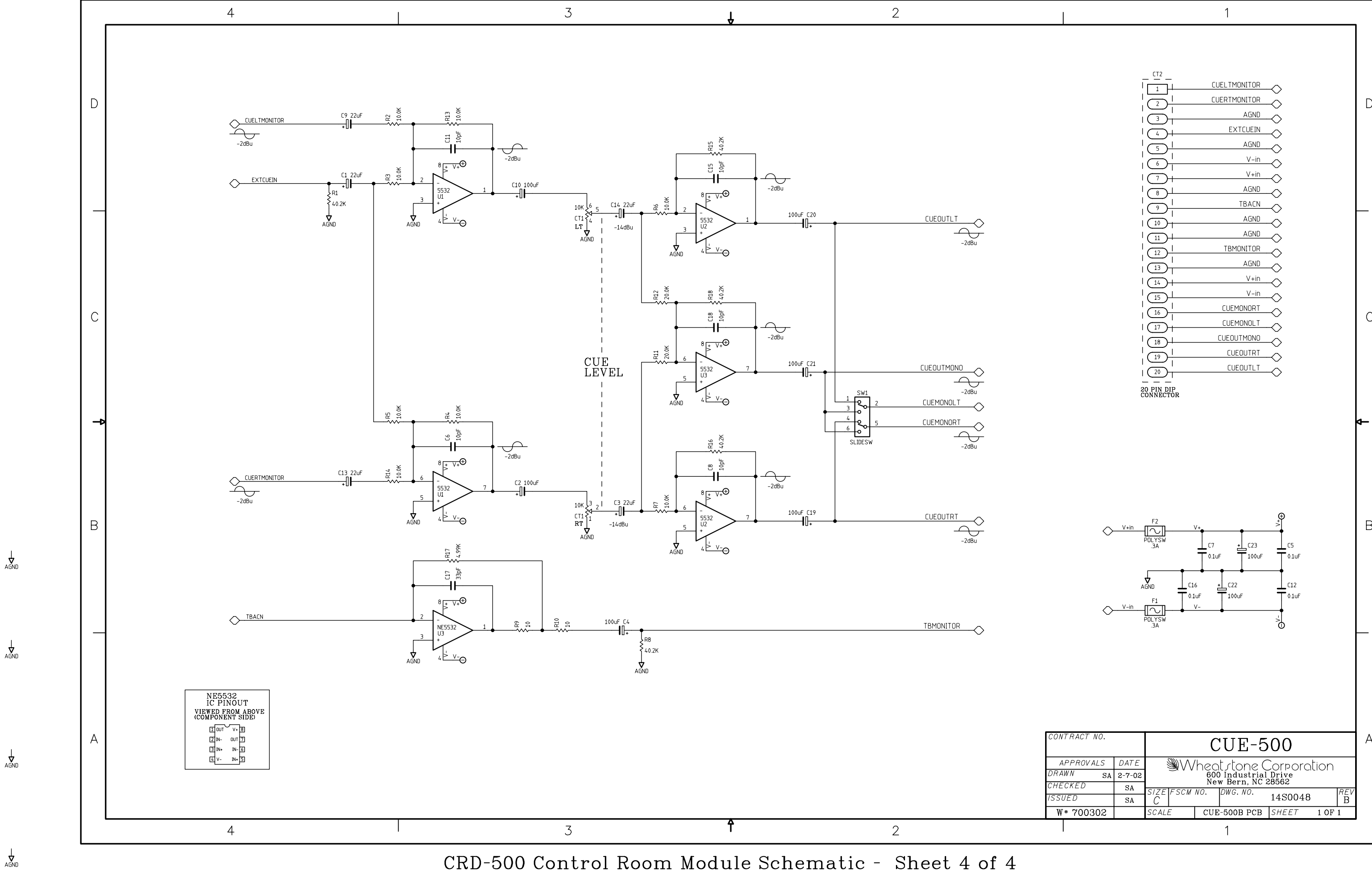


120 PIN EDGE CONNECTOR

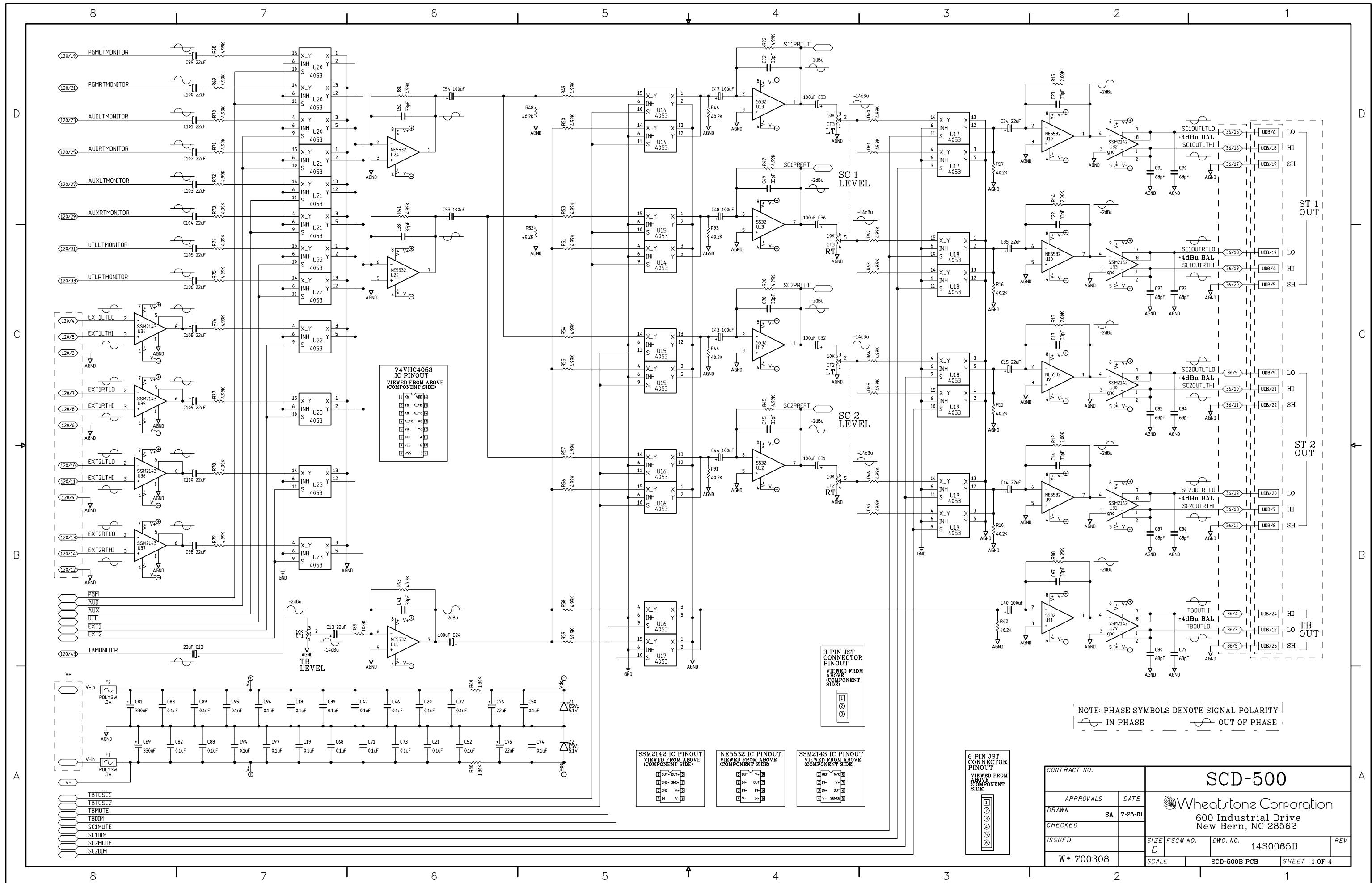


CONNECTORS
BUSS CHART

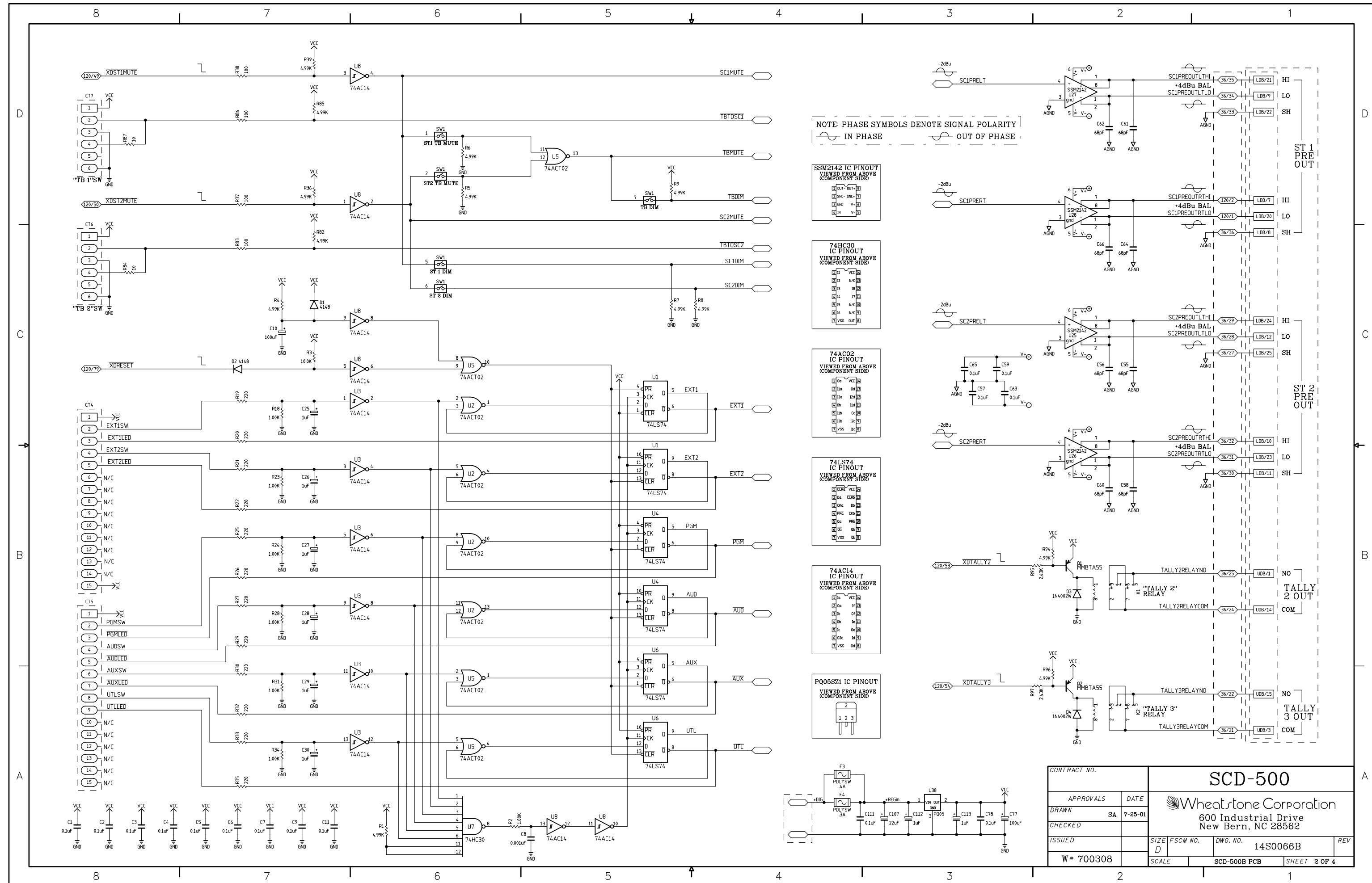
CONTRACT NO.		CRD-500			
APPROVALS	DATE	 Wheatstone Corporation 600 Industrial Drive New Bern, NC 28562			
DRAWN	SA 2-7-02				
CHECKED	SA				
ISSUED	SA	SIZE C	FSCM NO.	DWG. NO. 14S0016	REV F
W* 700220		SCALE	CRD-500F PCB	SHEET	3 OF 3



CRD-500 Control Room Module Schematic - Sheet 4 of 4

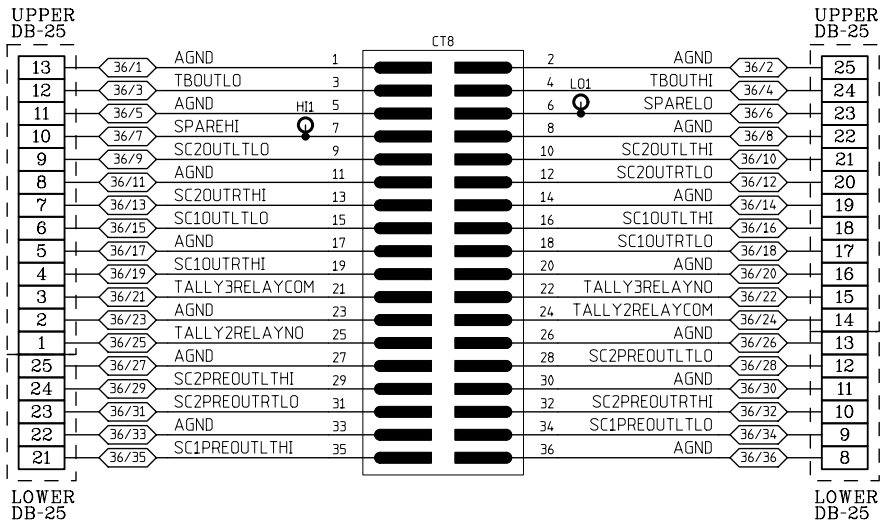


SCD-500 Studio Control Module Schematic -
Sheet 1 of 3

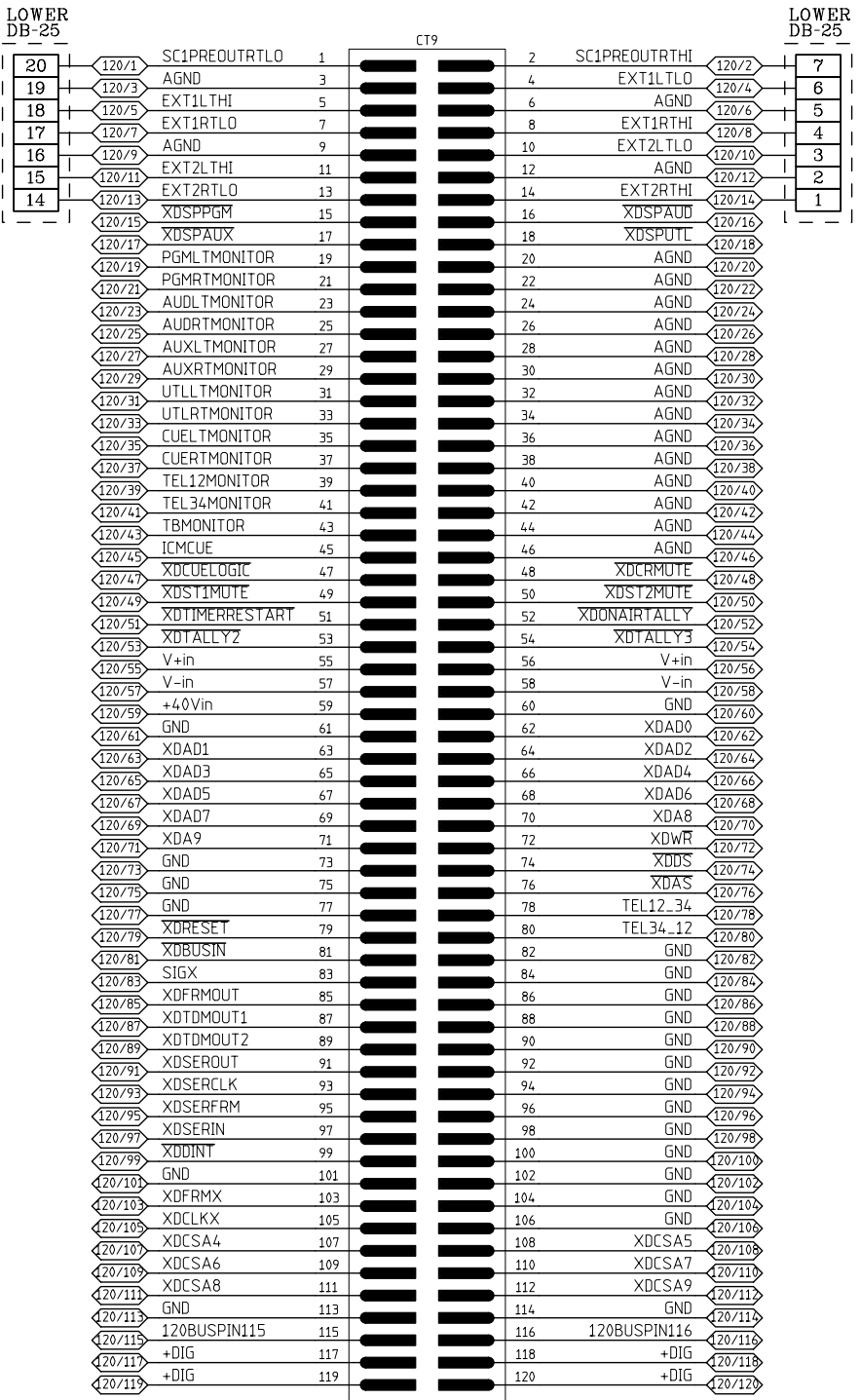


SCD-500 Studio Control Module Schematic -
Sheet 2 of 3

36 PIN EDGE CONNECTOR

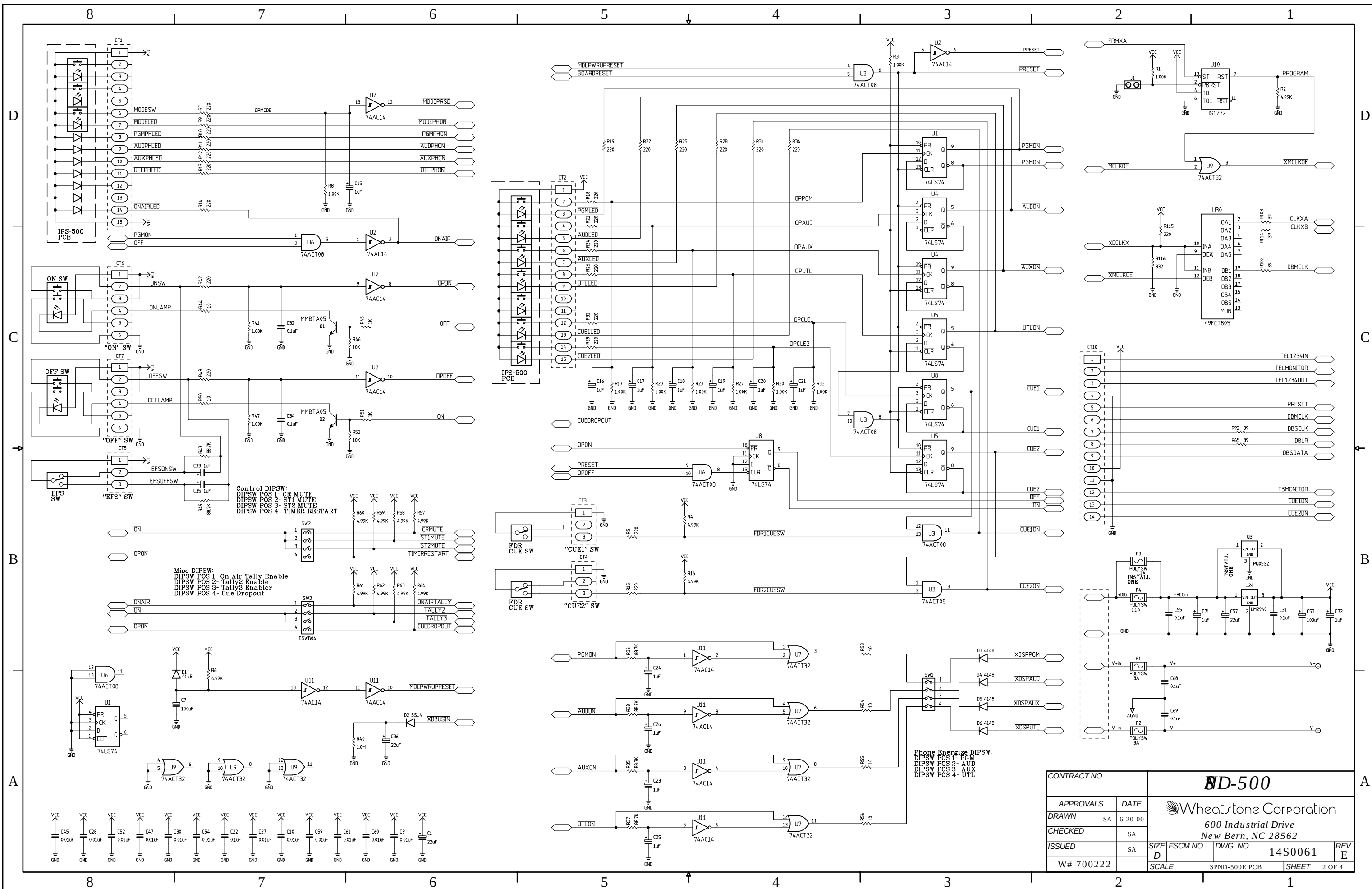


120 PIN EDGE CONNECTOR

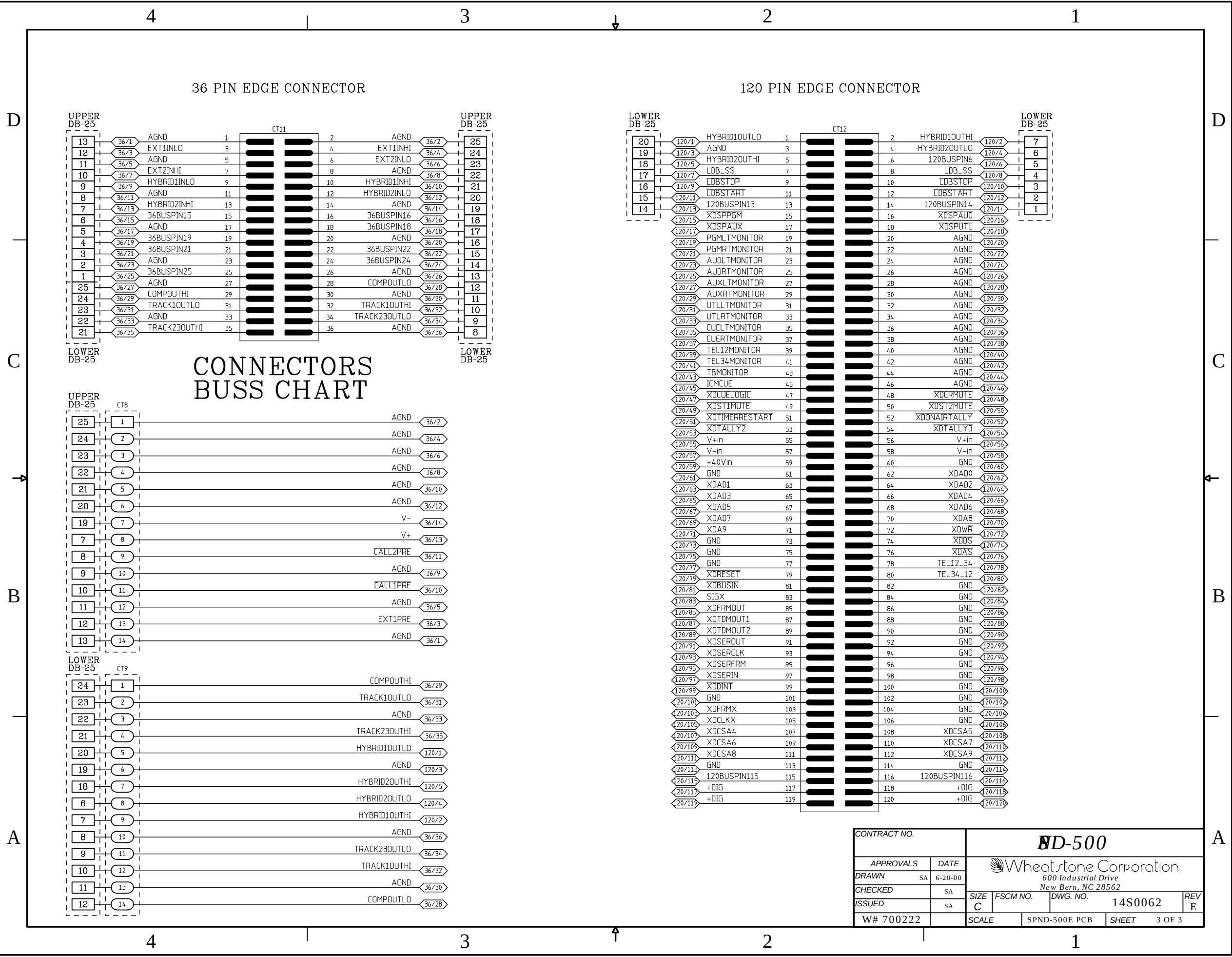


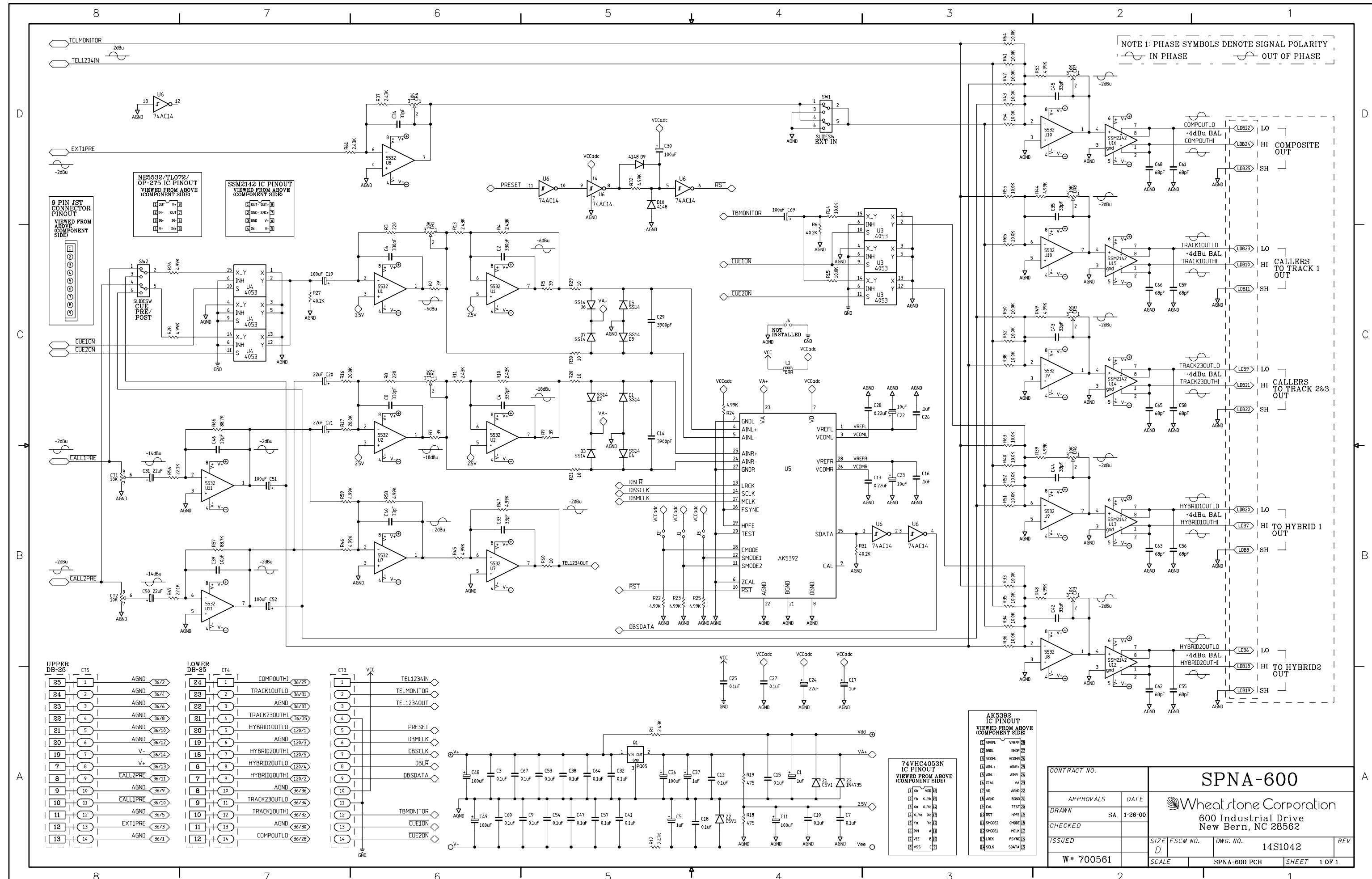
CONNECTORS
BUSS CHART

CONTRACT NO.		SCD-500			
APPROVALS	DATE	 Wheatstone Corporation 600 Industrial Drive New Bern, NC 28562			
DRAWN SA	7-25-01				
CHECKED		SIZE C	FSCM NO.	DWG. NO. 14S0067B	REV -
ISSUED		SCALE	SCD-500B PCB	SHEET	3 OF 4
W* 700308					

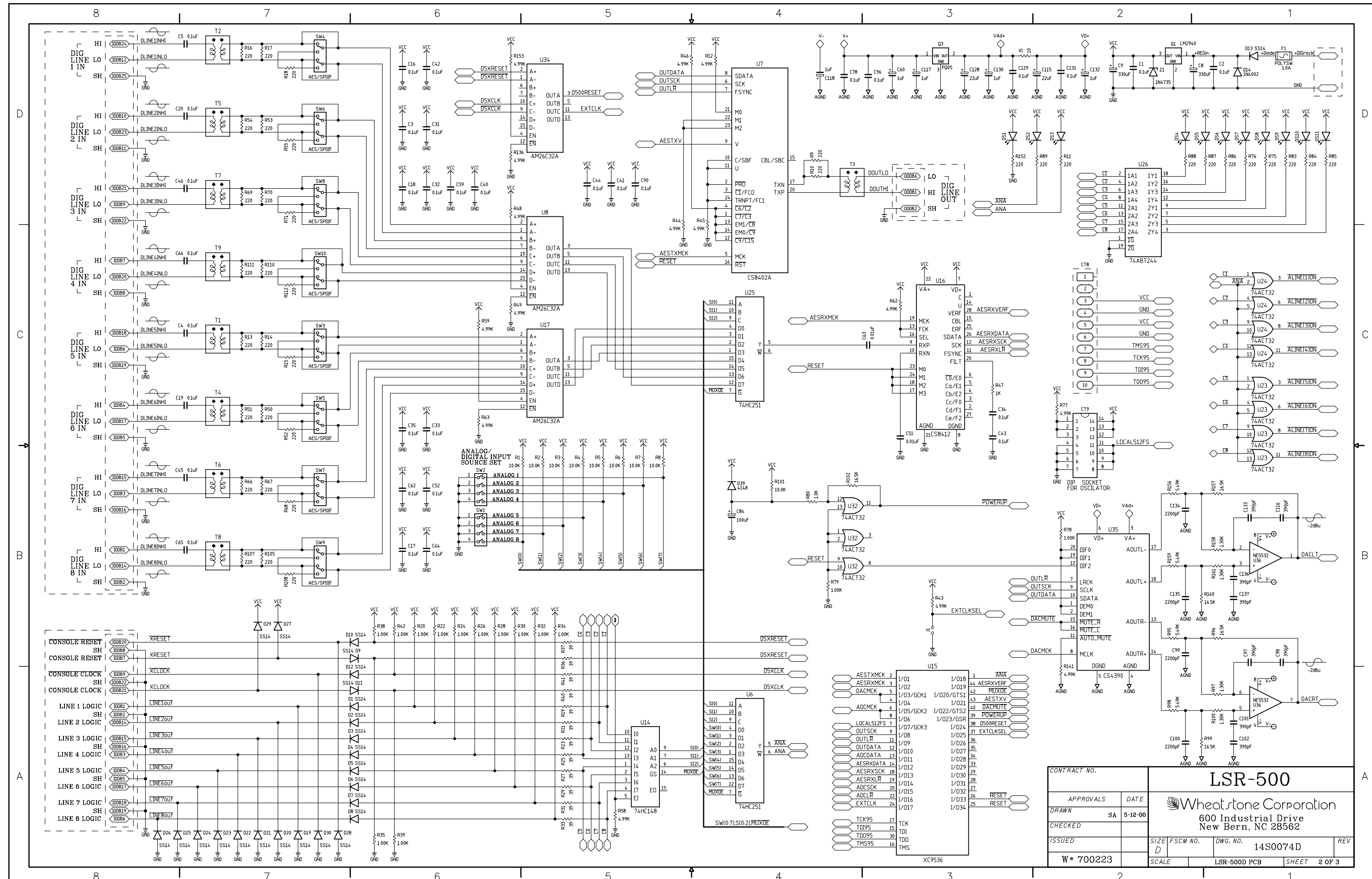


SPND-500 SuperPhone Module Schematic - Sheet 2 of 4



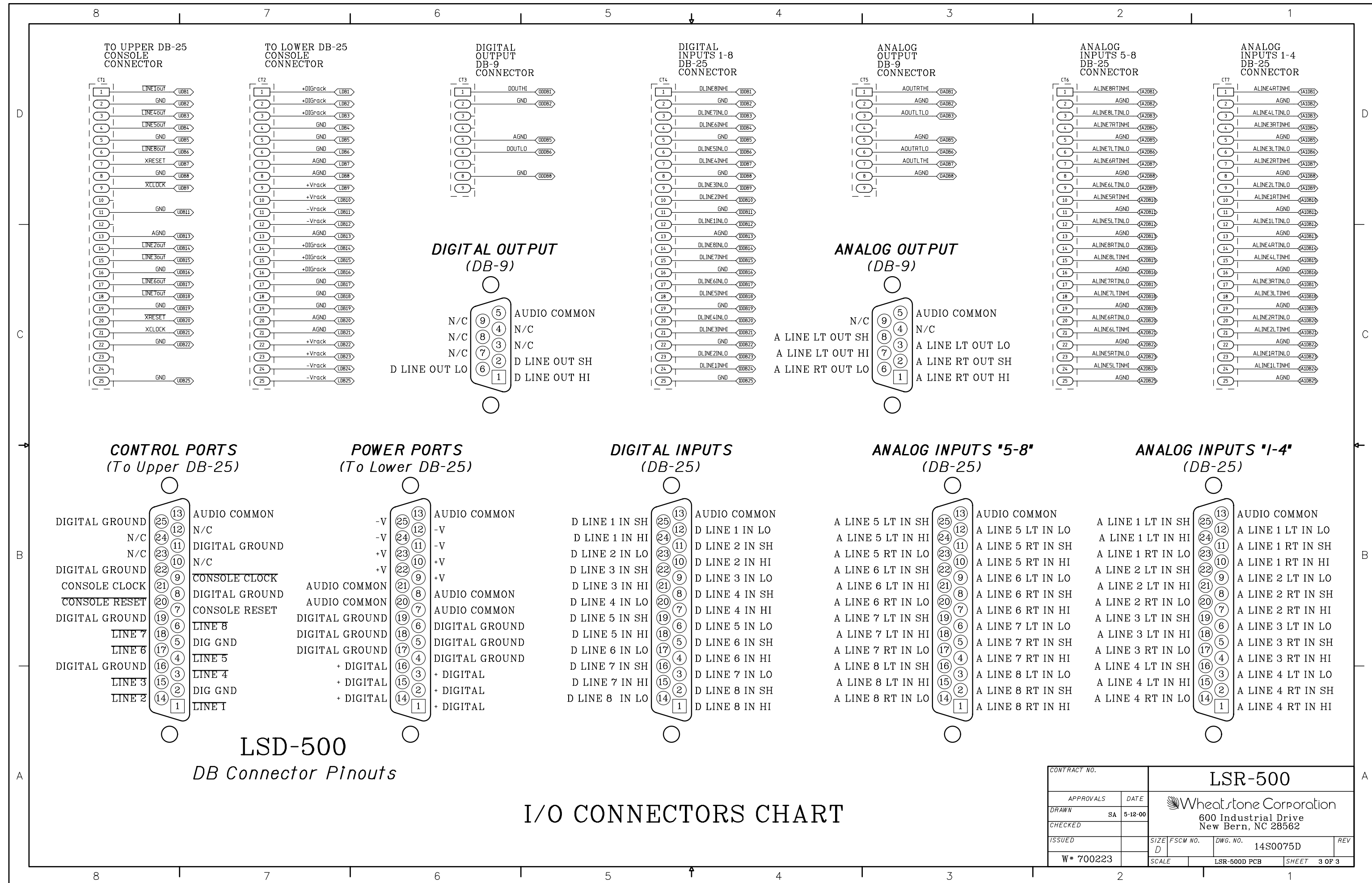


SPND-600 Super Phone Module Schematic -
Sheet 5 of 5



CONTRACT NO.		LSR-500	
APPROVALS	DATE	Wheatstone Corporation	
DRAWN	SA 5-12-00	600 Industrial Drive	
CHECKED		New Bern, NC 28562	
ISSUED		SIZE	FSCM NO.
W # 700223		D	14S0074D
		SCALE	LSR-500D PCB
		SHEET 2 OF 3	

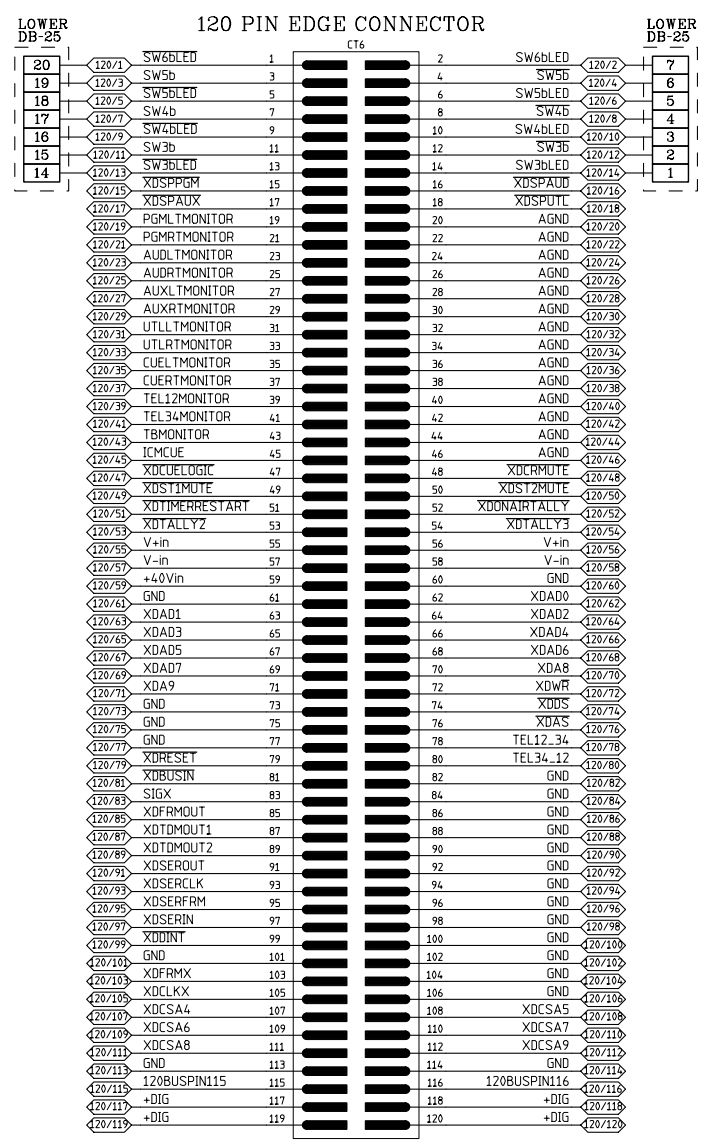
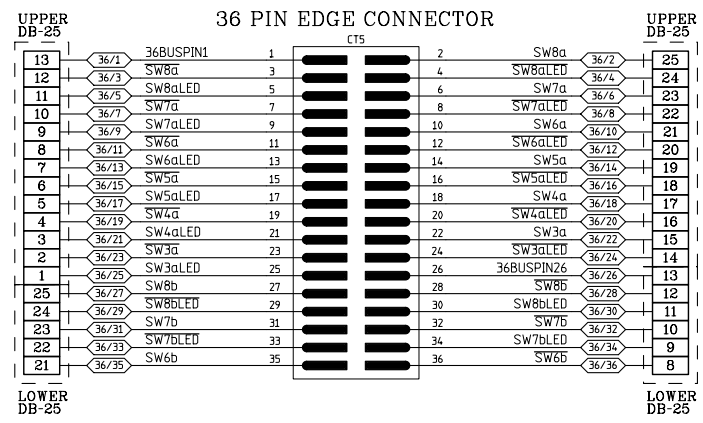
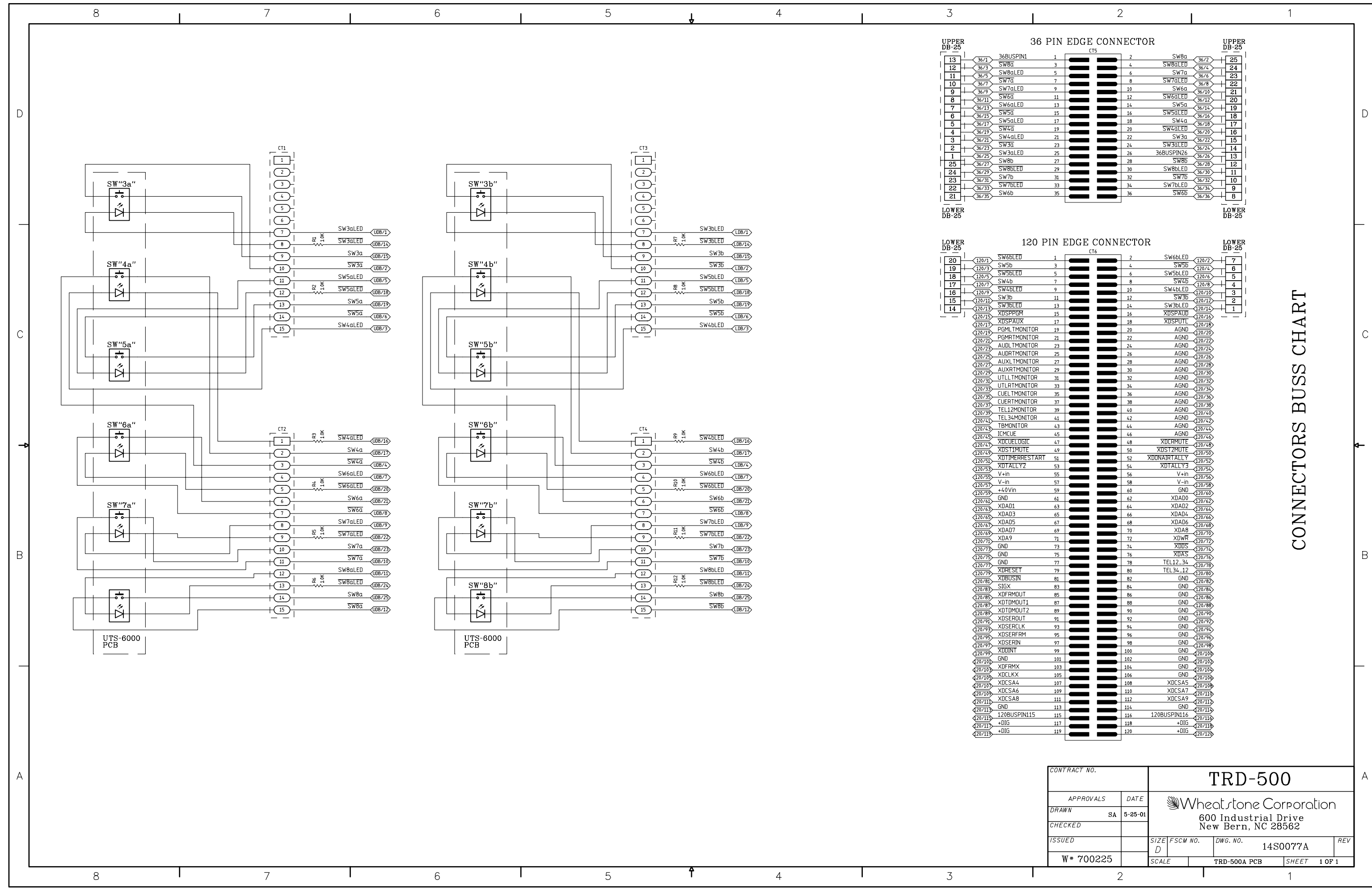
LSR-500 Digital/ Audio Line Select Rackmount
Schematic - Sheet 2 of 3



LSD-500
DB Connector Pinouts

I/O CONNECTORS CHART

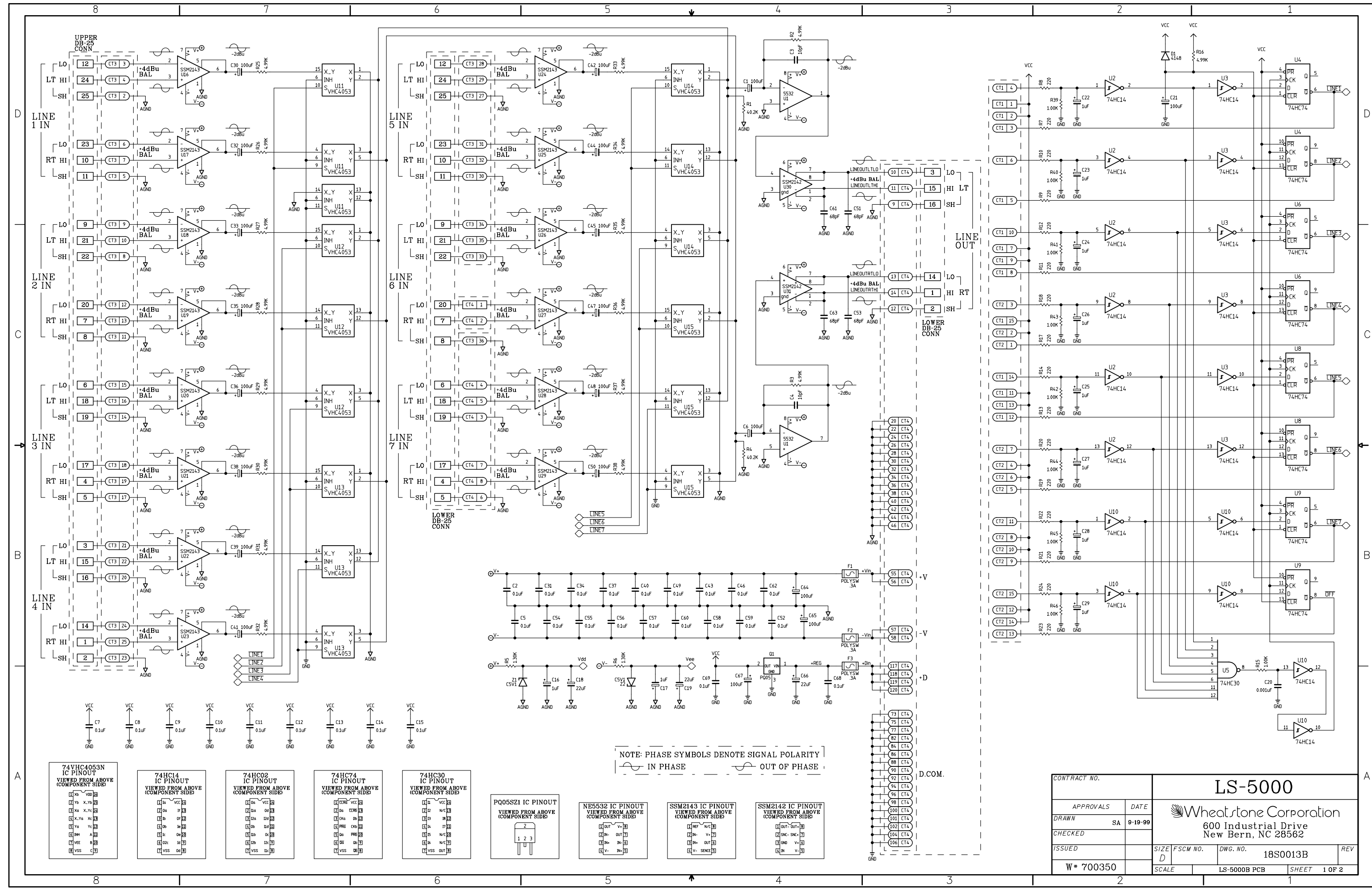
CONTRACT NO.		LSR-500			
APPROVALS		DATE		 Wheatstone Corporation 600 Industrial Drive New Bern, NC 28562	
DRAWN		SA 5-12-00			
CHECKED					
ISSUED				14S0075D	
W# 700223		SIZE	FSCM NO.	DWG. NO.	REV
		D			
		SCALE	LSR-500D PCB		SHEET 3 OF 3



CONNECTORS BUSS CHART

CONTRACT NO.		TRD-500			
APPROVALS		DATE		Wheatstone Corporation	
DRAWN SA		5-25-01		600 Industrial Drive	
CHECKED				New Bern, NC 28562	
ISSUED				REV	
W# 700225		SIZE D		FSCM NO. 14S0077A	
		SCALE		TRD-500A PCB	
				SHEET 1 OF 1	





LS-5000 Line Select Module Schematic - Sheet 1 of 1

CONTRACT NO.		LS-5000	
APPROVALS	DATE	Wheatstone Corporation 600 Industrial Drive New Bern, NC 28562	
DRAWN	SA 9-19-99		
CHECKED		SIZE	FSCM NO.
ISSUED		DWG. NO.	18S0013B
W# 700350		SCALE	LS-5000B PCB
		SHEET	1 OF 2

Appendix

Contents

Replacement Parts List	A-2
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For the most part there are no user-replaceable parts in the RD console. Exceptions are those controls and components that in the course of normal use may need maintenance (i.e., faders, pots, ON/OFF switches, indicator lamps, etc.). A complete list of available components is shown on the next page. Contact Wheatstone technical support for further information.

Wheatstone Corporation (600 Industrial Drive, New Bern, North Carolina, USA 28562) may be reached by phone at 252-638-7000, fax 252-637-1285, electronic mail "email@wheatstone.com".

REPLACEMENT PARTS — RD AUDIO CONSOLE

COMPONENT	DESCRIPTION	WS P/N
SLD-5 ADC MODULE	COMPLETE ANALOG STEREO LINE INPUT MODULE	"002601"
SLD-5 SRC MODULE	COMPLETE DIGITAL STEREO INPUT MODULE WITH SAMPLE RATE CONVERTER	"002600"
MMD-5 MODULE	COMPLETE MONO MIC INPUT MODULE	"002604"
OMD-5/1 MODULE	COMPLETE PROGRAM/ AUX OUTPUT MODULE	"002605"
OMD-5/2 MODULE	COMPLETE AUDITION/ UTILITY OUTPUT MODULE	"002606"
MOD-5 MODULE	COMPLETE METER OUTPUT DRIVER MODULE	"002607"
CRD-5 MODULE	COMPLETE CONTROL ROOM MONITOR MODULE	"002608"
LSA-5 MODULE	COMPLETE LINE SELECT MODULE	"002610"
LSD-5 MODULE	COMPLETE LINE SELECT CONTROL MODULE (CONTROLS LSR-500)	"002609"
LSR-500 RACKMOUNT UNIT	COMPLETE RACKMOUNT LINE SELECTOR UNIT (CONTROLLED BY LSD-5)	"001510"
SCD-5 MODULE	COMPLETE STUDIO MONITOR MODULE	"002611"
CPU-5 MODULE	COMPLETE CONSOLE CPU MODULE	"002612"
SPD-5 #1,2 MODULE	COMPLETE PHONE MODULE	"002613"
SPD-5 #3,4 MODULE	COMPLETE PHONE MODULE	"002618"
DSP-5 MODULE	COMPLETE CONSOLE DSP MODULE	"002614"
TRD-5/FF MODULE	COMPLETE FULL-FUNCTION TAPE REMOTE CONTROL MODULE	"002615"
TRD-5/SS MODULE	COMPLETE START/STOP TAPE REMOTE CONTROL MODULE	"002617"
ICMD-5 MODULE	COMPLETE INTERCOM MODULE	"002616"
SLADC-600 CARD	A-TO-D CONVERTER DAUGHTER BOARD FOR ANALOG STEREO LINE INPUTS	"001756"
SRC-500 CARD	SAMPLE RATE CONVERTER CARD FOR DIGITAL INPUTS	"001543"
MCLK-600 CARD	MASTER CLOCK DRIVER/BUFFER CARD	"001758"
SCLK-600 CARD	SLAVE CLOCK BUFFER CARD	"001759"
VU-RD5 CARD	LED METERS AND EVENT TIMER CARD	"002645"
RD VU CABLE	VU METERS CABLE	"002693"
MANUAL	OWNER'S MANUAL	"002699"
CLOCK	TIME-OF DAY-CLOCK CARD	"002099"
PSC-D340 POWER SUPPLY	CONSOLE POWER SUPPLY	"007220"
CABLE	CONSOLE POWER SUPPLY CABLE	"007021"
WIRED REPLACEMENT FADER	WIRED FADER FOR SLD-5 & MMD-5 MODULES	"052610"
WIRED REPLACEMENT FADER	WIRED FADER FOR SPD-5 MODULES	"052611"
WIRED REPLACEMENT SWITCH	WIRED "ON/OFF" SWITCH	"052601"
WIRED REPLACEMENT POT	WIRED POT FOR CONTROL ROOM AND HEADPHONE MONITOR	"052602"
I/O CONNECTOR	DB-25 CONNECTOR FOR MODULE I/O CONNECTIONS	"200022"
HOOD	HOOD FOR MODULE I/O CONNECTORS	"200025"
REPLACEMENT SWITCH	"ON/OFF" SWITCH	"510080"
REPLACEMENT RED BUTTON	MODULE "ON" BUTTON	"530049"
REPLACEMENT YELLOW BUTTON	MODULE "OFF" BUTTON	"530048"
RED LED LAMP REPLACEMENT	MODULE "ON" LED LAMP	"600025"
YELLOW LED LAMP REPLACEMENT	MODULE "OFF" LED LAMP	"600029"
REPLACEMENT CUE SPEAKER	REPLACEMENT CUE SPEAKER	"960000"