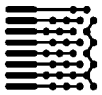
RD-12 Digital Audio Console



AUDIOARTS® ENGINEERING

TECHNICAL MANUAL
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RD-12 Digital Audio Console Technical Manual - 1st 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 replug 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.)

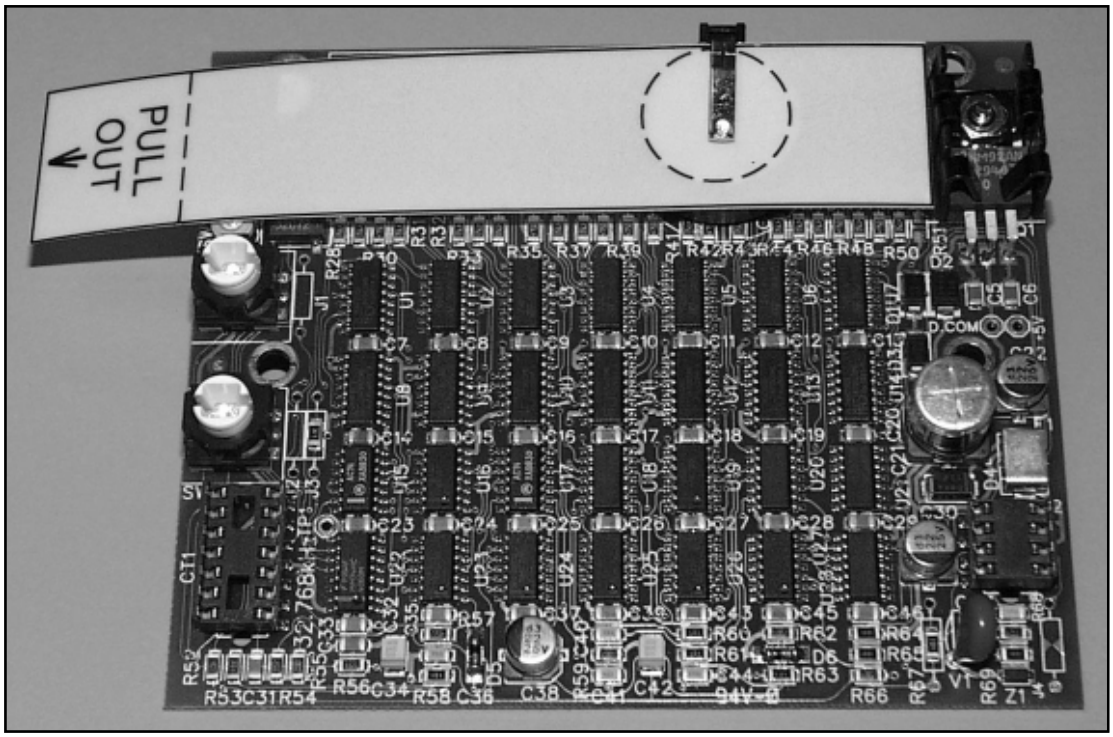
If the above instructions are followed the procedure should be routine; if they are not, you could run the risk of damaging the console's logic chips.

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

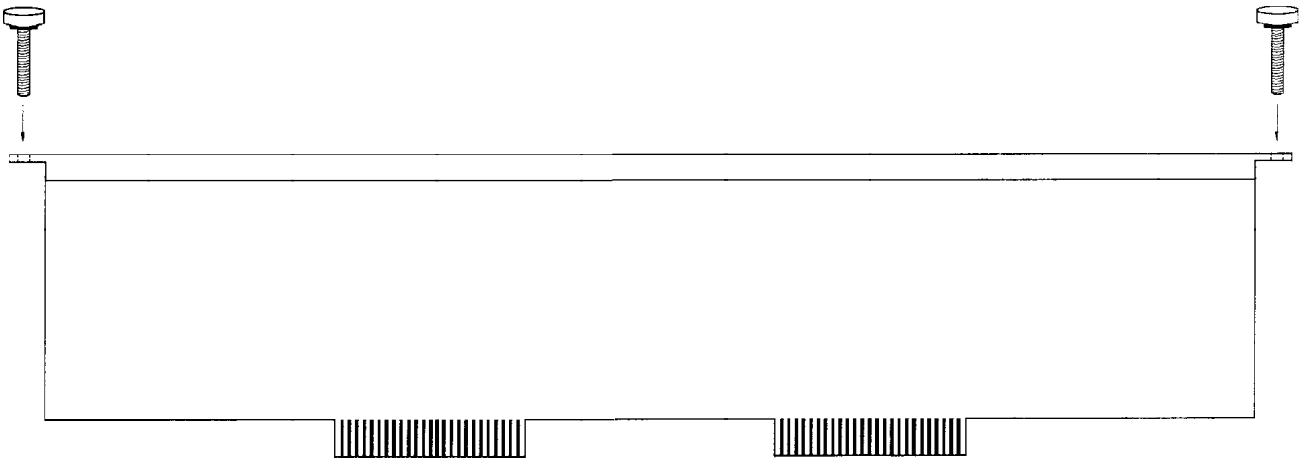
Module Removal Tools

Your Audioarts RD-12 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.



RD-12 Technical Manual

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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!

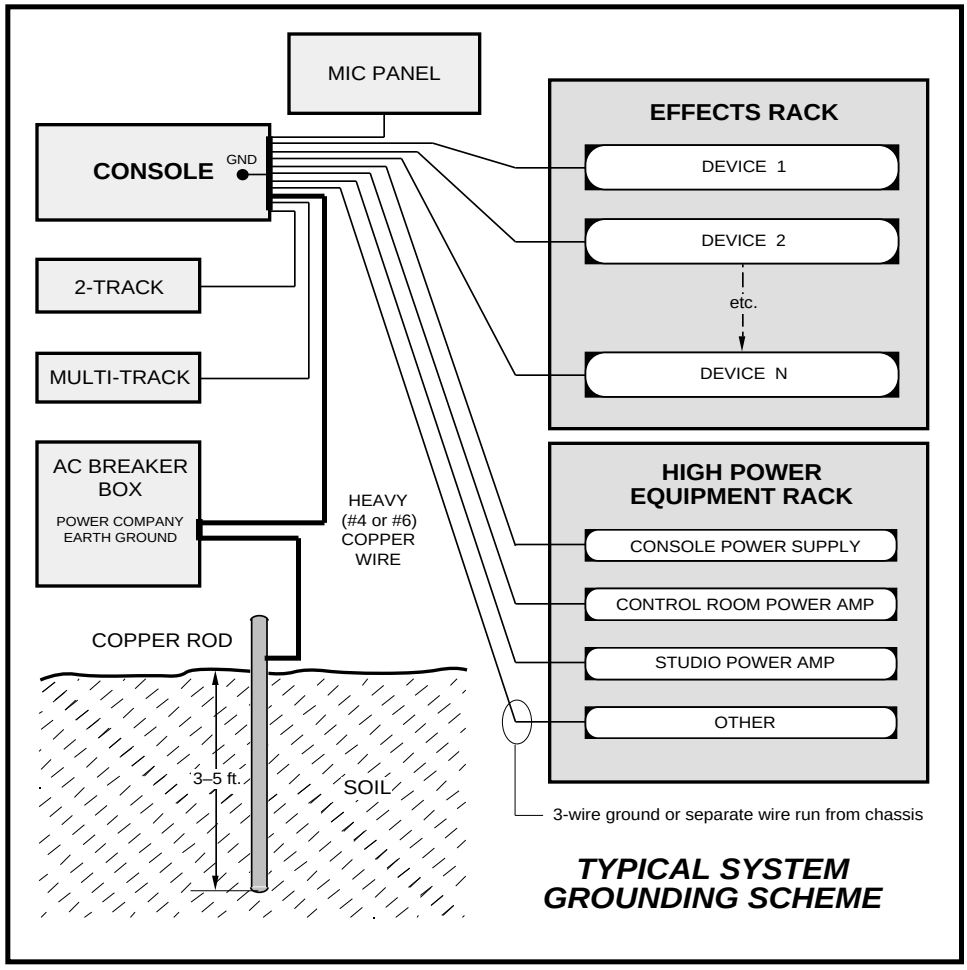
Once in place the console mainframe pan will extend approximately 5 1/2 inches below the countertop surface. Note the hinged meterbridge will require 10 1/2" above the countertop surface to open freely. When fully open the meterbridge will extend 5 1/2" behind the rear line of the cut-out. When closed, 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 made in the completed installation. Use one of the grounding lugs on the bottom of the mainframe to establish your system ground. The



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.

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

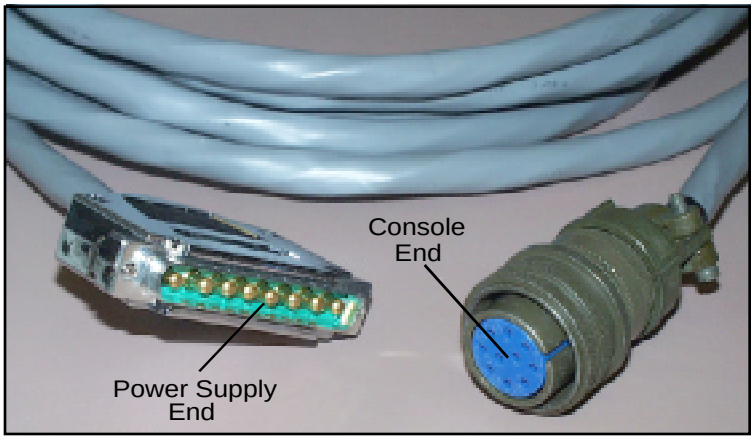
The RD console is powered by an Audioarts Model SPS-180R rackmount power supply. This unit occupies two 19” wide rack spaces (total height 3-1/2”). Convection cooled, it requires ample ventilation space above and below it. The SPS-180R generates a lot of heat in the course of normal operation — do *not* mount heat sensitive devices in the same rack cabinet.

Note the power supply 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.

This power supply contains high voltage circuits that are hazardous and potentially harmful. ***Under no circumstances should the metal cover be removed!*** If you have a problem with the power supply, the SPS-180R unit must be returned to Audioarts for repair.

Front view of the SPS-180R rackmount power supply

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.



PS Cable Pinout

Power Supply End 8-pin Connector *Male*					Console End 10-pin Connector *Female*
PIN			PIN		
VIO	1	Phantom	E	VIO	
GRN	2	Digital Ground	D	GRN	
BRN	3	Digital Ground	F	BRN	
YEL	4	Digital+	H	YEL	
ORG	5	Digital+	G	ORG	
BLK	6	Analog Ground	A	BLK	
BLU	7	-V in	C	BLU	
RED	8	+V in	B	RED	

Note that 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 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 one end and two 12-pin AMP type connectors at the other end. Connect the DB-25 connector to the matching DB-25 connector on the underside of the Meterbridge at the back of the console. Connect the two AMP type connectors to connectors A and B on the bottom of the frame at the slot that contains the MOD-5 module (the connectors on the cable are labeled "A" and "B").

Energizing

Assuming the RD console mainframe is properly placed and grounded, and its SPS-180R power supply correctly rackmounted and connected to the console, you may now energize the SPS-180R rackmount power supply by plugging it into the AC mains. The console's individual module switches will assume factory default settings.

Note: To de-energize the console, unplug the rackmount power supply's AC cord from the AC mains. ***Never de-energize the console by disconnecting the cable that connects the console and power supply together.***

Once you have verified proper power-up, unplug 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-12 console are made through 12-pin AMP type connectors. The supplied 12-pin connectors use crimp type pins. A crimp tool must be used, and an extraction tool is handy to remove pins that have been inserted in the wrong connector block hole, or if rewiring or wiring repair is needed in the future (see "Hand crimp tool wiring instructions" on pages 1-8, 1-9). Always be careful to double check pin numbering on the connector block and the wiring diagram before inserting the pin in the block.

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.

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.

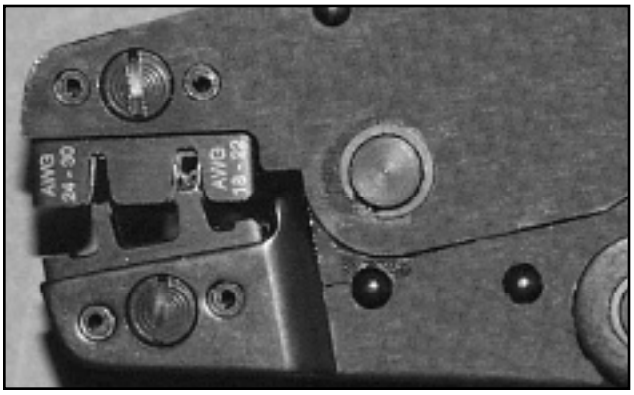
Unbalanced Connections (analog audio)

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.

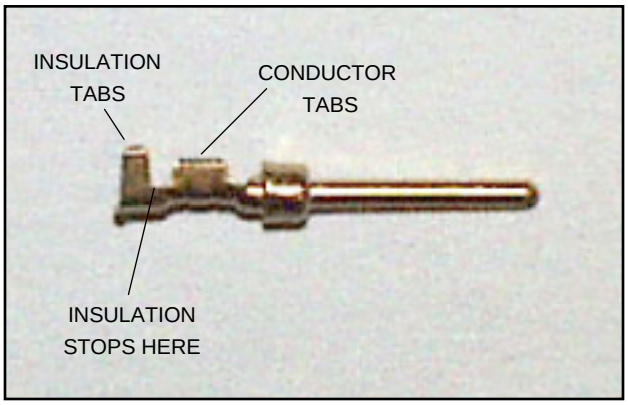
OUTPUTS — RD consoles use a balanced output circuit which behaves exactly like the secondary of a high-quality transformer, with no center tap—this output is both balanced and floating. Either the HIGH or LOW side of the output should be strapped to ground, with the output taken from the other side.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

HAND CRIMP TOOL WIRING INSTRUCTIONS

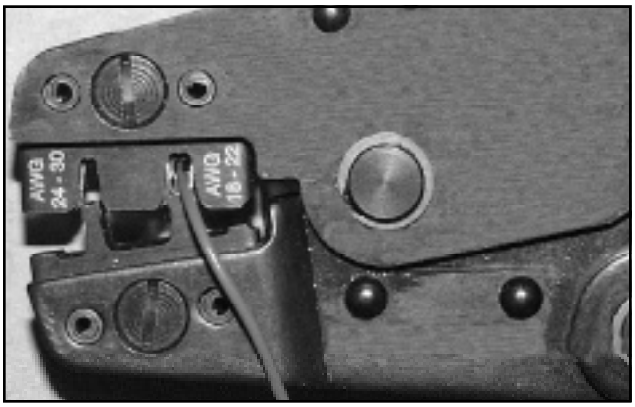
The supplied hand crimping tool (W/S#850067) is used for all I/O wiring connections to and from the console. It is to be used with the supplied pin (figure 1) intended for 22"-28" gauge wire.



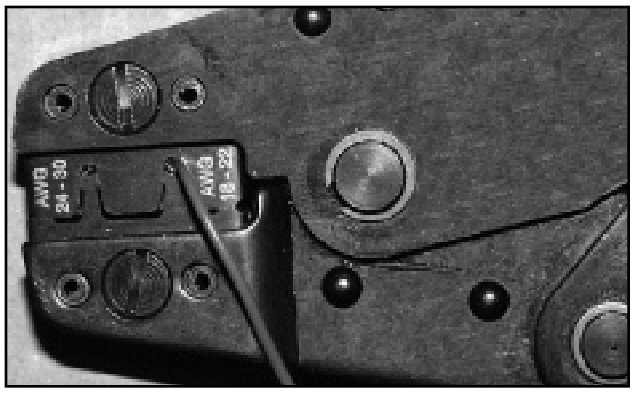
(2) The terminal conductor tabs (pointing UP) are placed in anvil 18-22; the terminal's insulation tabs extend in front towards the camera.



(1) Pin crimp terminal



(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) 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).

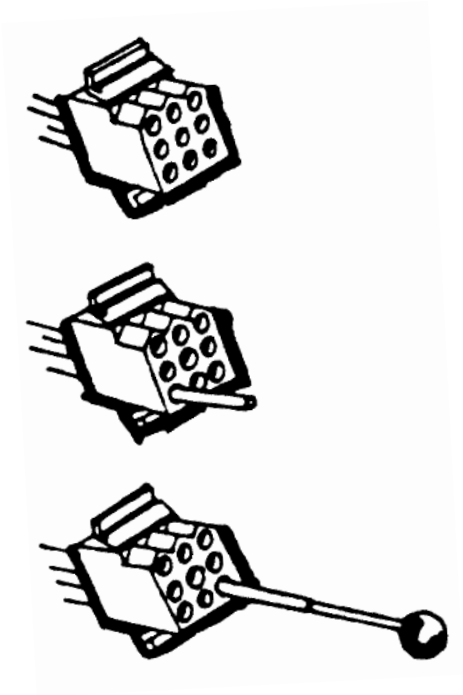
4) Insert wire into terminal until wire insulation is stopped by conductor tabs (figure 3). CRIMP by squeezing handles until jaws are fully closed (figure 4).

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

If you should accidentally insert a crimp terminal pin into the wrong socket, the supplied pin extractor tool (Waldom P/N W-HT-2023) will let you correct your mistake without having to sacrifice a connector.



STEP 1.
Push wire attached to pin terminal, to be removed, forward to free pin terminal locking flanges from the Nylon Connector Housing.

STEP 2.
Place extractor tip over pin terminal to be removed. Press handle portion of extractor in downward motion until tip rests upon Nylon Housing.

STEP 3.
Push ball at top of extractor down toward pin terminal; pin terminal will extract from Nylon Housing.

Mono Mic Input (MMD-5)

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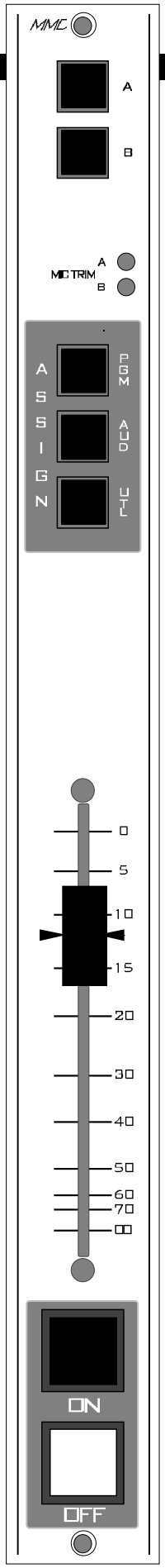


Mono Mic Input (MMD-5)

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 four 12-pin AMP type connectors.

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.

Note the factory default setting for phantom power is OFF.

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

Mutes

When a microphone is live in a room, that room's monitor speakers must be muted to prevent feedback. The RD-12 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:

*factory default setting

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

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:

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

*factory default setting

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

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-12 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.

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

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).

Hook-Ups

As stated before, all user wiring to and from MMD-5 modules takes place at AMP 12-pin connectors mounted directly beneath each module on the console mainframe's bottom pan. There are four connectors per module: A and B (towards the console meterbridge) handle audio signals; C and D (near the console armrest) control signals.

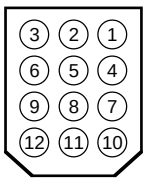
Audio Connections (AMP A, B).

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 1 – Mic A In SH
Pin 3 – Mic A In HI
Pin 2 – Mic A In LO — AMP A connector
Pin 4 – Mic B In SH
Pin 6 – Mic B In HI
Pin 5 – Mic B In LO

Pin 7 – Insert Out SH
Pin 9 – Insert Out HI
Pin 8 – Insert Out LO — AMP B connector
Pin 10 – Insert In SH
Pin 12 – Insert In HI
Pin 11 – Insert In LO

Key diagram showing back of typical 12-pin I/O connector plug, with pin numbers oriented as they would be seen while wiring. Beveled corners correspond to PCB mounted mating sockets.



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.

Control Connections (AMP C, D)

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

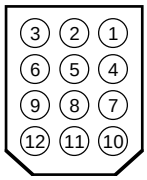
Pin 4 – +5V Digital
Pin 5 – Digital Ground
Pin 6 – Digital Ground
Pin 7 – Remote On B
Pin 8 – Remote Off B
Pin 9 – On Tally B
Pin 10 - Off Tally B
Pin 11 - TB to CR B
Pin 12 - Cough B

AMP C connector

Pin 4 – +5V Digital
Pin 5 – Digital Ground
Pin 6 – Digital Ground
Pin 7 – Remote On A
Pin 8 – Remote Off A
Pin 9 – On Tally A
Pin 10 - Off Tally A
Pin 11 - TB to CR A
Pin 12 - Cough A

AMP D connector

Key diagram showing back of typical 12-pin I/O connector plug, with pin numbers oriented as they would be seen while wiring. Beveled corners correspond to PCB mounted mating sockets.



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 7(D) (Remote On A) or Pin 7(C) (Remote On B) and Digital Ground (Pins 5, 6 of C and D). 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 8(D) (Remote Off A) or Pin 8(C) (Remote Off B) and Digital Ground (Pins 5, 6 of C and D). This will latch the module OFF. (User-supplied momentary contact switch required.)

COUGH — Temporarily Mutes the module. Provide a closure between Pin 12(D) (Cough A) or Pin 12(C) (Cough B) and Digital Ground (Pins 5, 6 of C and D). 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 11(D) (TB MIC A to CR) or Pin 11(C) (TB MIC B to CR) and Digital Ground (Pins 5, 6 of C and D). 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 between Pin 9(D) (On Tally A) or Pin 9(C) (On Tally B) and Digital Ground (Pins 5, 6 of C and D) whenever the module's channel ON switch is activated. These are open collector outputs.

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 4 of C and D) and the A or B On Tally ports. In either case, current should not exceed 30 milliamps.

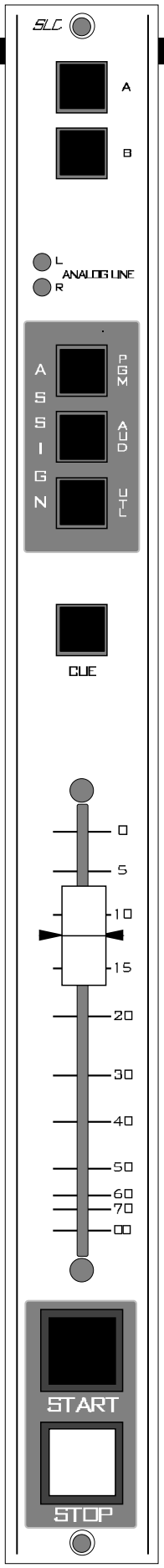
We recommend a series resistor between the LED and +5V digital when you are powering the external tally from the console; a value of 220Ω (1/4W 5%) is suggested.

Off Tally

Identical to "On Tally" (preceding) only this function keys off the module's channel OFF switch. Off Tally A is Pin 10(D); Off Tally B is Pin 10(C).

Stereo Line Input (SLD-5)

Chapter Contents



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 four 12-pin AMP type 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-12 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* *factory default setting
SW4 position 4 activates timer restart when source B is turned ON

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 AMP D 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

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

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).

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.

The factory default setting is NORMAL.

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.

Hook-Ups

As stated before, all user wiring to and from SLD-5 modules takes place at AMP 12-pin connectors mounted directly beneath each module on the console mainframe's bottom pan. There are four connectors per module: A and B (towards the console meterbridge) handle audio inputs; C and D (near the console armrest) control signals.

Analog Version Audio Connections (AMP A)

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

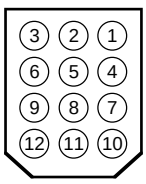
Pin 1 – A In Lt SH
Pin 3 – A In Lt HI
Pin 2 – A In Lt LO

Pin 4 – A In Rt SH
Pin 6 – A In Rt HI
Pin 5 – A In Rt LO

Pin 7 – B In Lt SH
Pin 9 – B In Lt HI
Pin 8 – B In Lt LO

Pin 10 – B In Rt SH
Pin 12 – B In Rt HI
Pin 11 – B In Rt LO

Key diagram showing back of typical 12-pin I/O connector plug, with pin numbers oriented as they would be seen while wiring. Beveled corners correspond to PCB mounted mating sockets.



Digital Version Audio Connections (AMP A)

These include A and B source inputs (AES).

Pin 1 – A In SH
Pin 3 – A In HI
Pin 2 – A In LO

Pin 4 – B In SH
Pin 6 – B In HI
Pin 5 – B In LO

In passing, the three 4-position dipswitches (SW3, SW5 and SW6) mounted in the middle of the SRC-500 piggyback card are for factory use only. Do not disturb their settings!

The four blue-handled slide switches (SW1, SW2, SW4, SW7) mounted at the top of the card are normally set at the factory for the AES standard ("up"). Note A & B inputs may be set separately: SW7 and SW4 are for input A, SW1 and SW2 for input B.

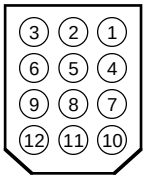
Control Connections (AMP C, D)

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 Sequence and 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 2 – On Tally +
Pin 4 – Digital Ground
Pin 6 – B Ready -
Pin 8 – B Ready +
Pin 9 - B Remote On -
Pin 10 – B Start +
Pin 11 - B Remote On +
Pin 12 – B Stop +

AMP C connector

Key diagram showing back of typical 12-pin I/O connector plug, with pin numbers oriented as they would be seen while wiring. Beveled corners correspond to PCB mounted mating sockets.



Pin 1 – B Remote Off -
Pin 2 – B Start/Stop Common
Pin 3 – B Remote Off +
Pin 4 – A Start/Stop Common
Pin 5 – A Remote Off +
Pin 6 – A Stop +
Pin 7 – A Remote Off -
Pin 8 – A Start +
Pin 9 – A Remote On +
Pin 10 – A Ready +
Pin 11 – A Remote On -
Pin 12 – A Ready -

AMP D 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 9 and the minus side of the same 5 volt signal to Pin 11 of AMP D to latch the module ON when input A is selected. Use pins 9 (+) and 11 (-) of AMP C 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 5 and the minus side of the same 5 volt signal to Pin 7 of AMP D to latch the module OFF when input A is selected. Use pins 3 (+) and 1 (-) of AMP D to latch the module ON 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 2 (C) (On Tally) relative to Pin 4 (C) (Digital Ground) 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 AMP C and D connectors control pins: for A START wire to Pin 8 (D) and Pin 4 (D); for B START use Pin 10 (C) and Pin 2 (D).

EXTERNAL STOP — Hook up the remote machine's "stop" control pins to the SLD-5 module's AMP C and D connectors control pins: for A STOP wire to Pin 6 (D) and Pin 4 (D); for B STOP use Pin 12 (C) and Pin 2 (D).

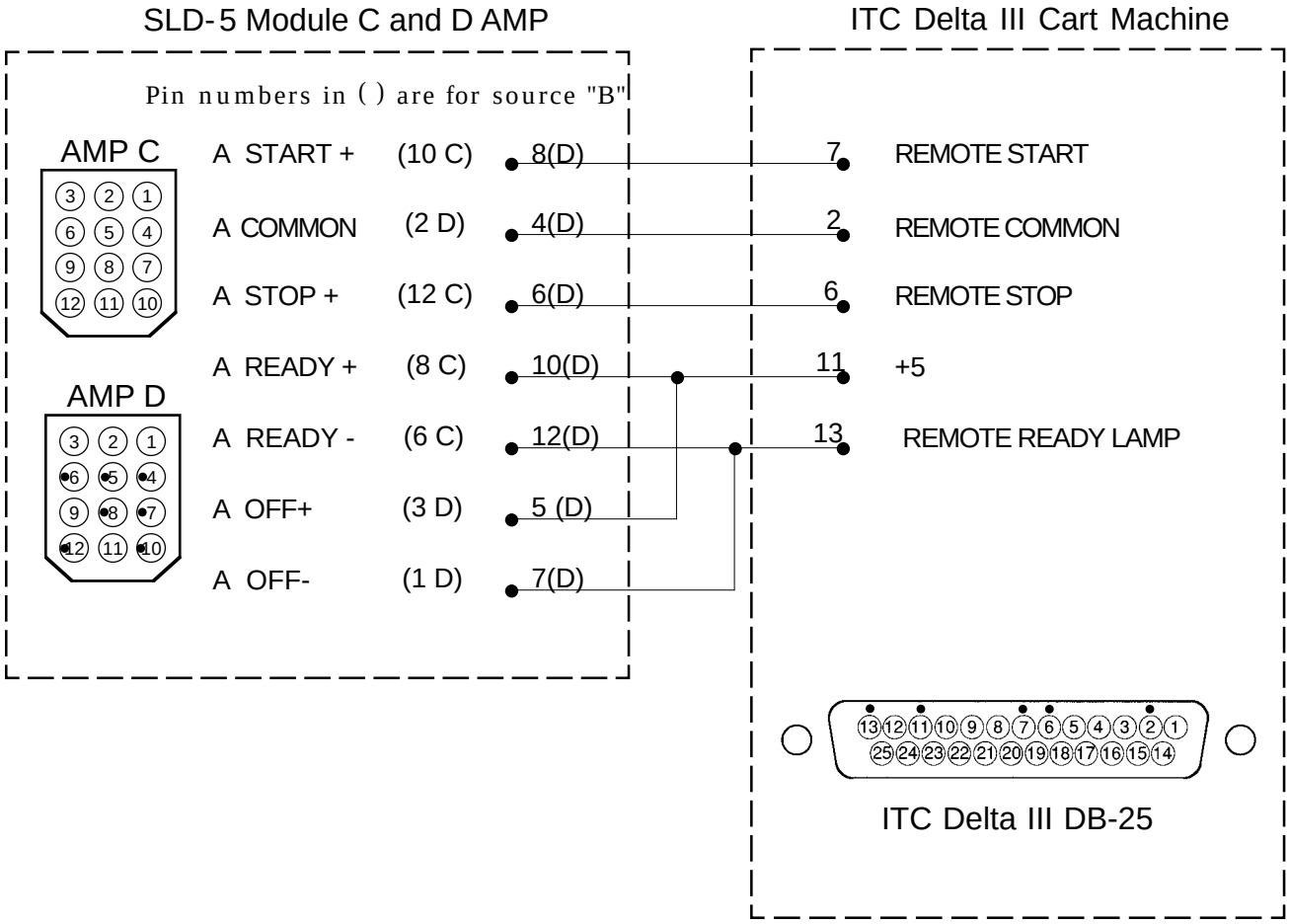
Note that these are opto isolated outputs. START/STOP COM A Pin 4 (D) and START/STOP COM B Pin 2 (D) are opto emitters, while the remaining connections (START A, Pin 8 (D); START B, Pin 10 (C); STOP A, Pin 6 (D); STOP B, Pin 12 (C) are opto collectors. Correct polarity must be observed in wiring to these 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 AMP C and D connectors control pins: for A READY provide a 5 volt signal to Pin 10 (D), positive relative to Pin 12 (D); for B READY provide a 5 volt signal to Pin 8 (C), positive relative to Pin 6 (C). 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.



Connection Instructions
ITC Delta III Cart Player

ref: RD-12 Stereo Line Input Module (SLD-5)

(Use two AMP male connectors on each end of cable)

Output Modules

(OMD-5)

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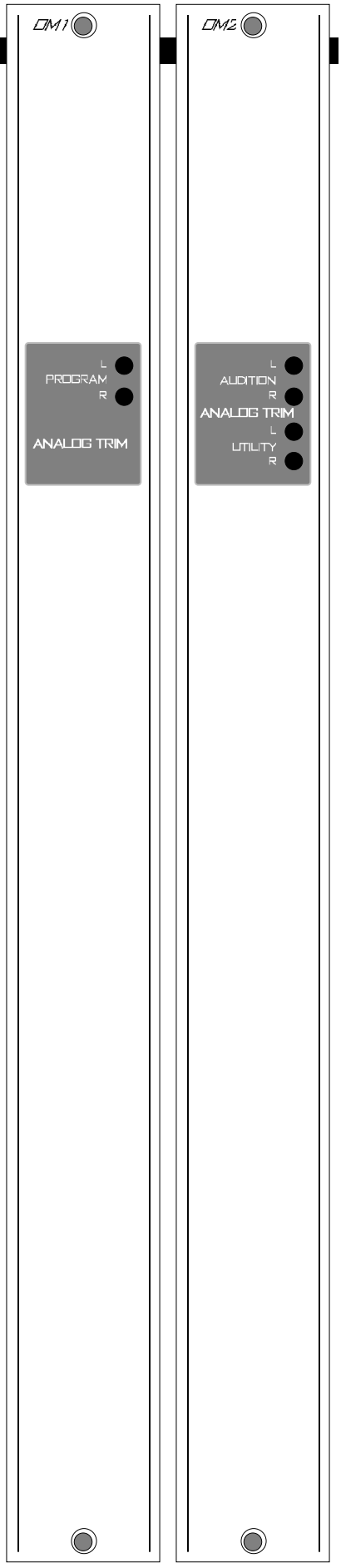
Output Modules

(OMD-5)



Module Overview

Each RD-12 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 12-pin AMP type connectors mounted directly beneath the module on the console mainframe's bottom pan. There are four connectors: A and B (towards the console meterbridge) handle analog outputs and insert points; the D connector (near the console armrest) handles digital outputs (AES format). All analog audio is +4dBu balanced.

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 AMP B 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 four AMP 12-pin connectors mounted directly beneath the module on the console mainframe's bottom pan.

Master Output Module 1:

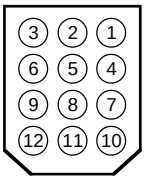
AMP A, B Connectors – Analog Audio

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

AMP A connector

Pin 1 – PGM Lt Out SH
Pin 3 – PGM Lt Out HI
Pin 2 – PGM Lt Out LO
Pin 4 – PGM Rt Out SH
Pin 6 – PGM Rt Out HI
Pin 5 – PGM Rt Out LO

Key diagram showing back of typical 12-pin I/O connector plug, with pin numbers oriented as they would be seen while wiring. Beveled corners correspond to PCB mounted mating sockets.



AMP B connector

Pin 1 – PGM Lt Insert Out SH
Pin 3 – PGM Lt Insert Out HI
Pin 2 – PGM Lt Insert Out LO
Pin 4 – PGM Rt Insert Out SH
Pin 6 – PGM Rt Insert Out HI
Pin 5 – PGM Rt Insert Out LO
Pin 7 – PGM Lt Insert In SH
Pin 9 – PGM Lt Insert In HI
Pin 8 – PGM Lt Insert In LO
Pin 10 – PGM Rt Insert In SH
Pin 12 – PGM Rt Insert In HI
Pin 11 – 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.

AMP D Connector – Digital Outputs

Handles digital Program outputs (AES format)

Pin 10 – PGM AES Out SH
Pin 12 – PGM AES Out HI
Pin 11 – PGM AES Out LO

Master Output Module 2:

AMP A, B Connectors – Analog Audio

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

Pin 1 – AUD Lt Out SH
Pin 3 – AUD Lt Out HI
Pin 2 – AUD Lt Out LO

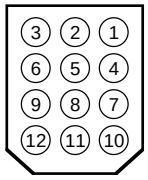
Pin 4 – AUD Rt Out SH
Pin 6 – AUD Rt Out HI
Pin 5 – AUD Rt Out LO

Pin 7 – UTIL Lt Out SH
Pin 9 – UTIL Lt Out HI
Pin 8 – UTIL Lt Out LO

Pin10 – UTIL Rt Out SH
Pin 12 – UTIL Rt Out HI
Pin 11 – UTIL Rt Out LO

AMP A connector

Key diagram showing back of typical 12-pin I/O connector plug, with pin numbers oriented as they would be seen while wiring. Beveled corners correspond to PCB mounted mating sockets.



Pin 1 – AUD Lt Insert Out SH
Pin 3 – AUD Lt Insert Out HI
Pin 2 – AUD Lt Insert Out LO

Pin 4 – AUD Rt Insert Out SH
Pin 6 – AUD Rt Insert Out HI
Pin 5 – AUD Rt Insert Out LO

Pin 7 – AUD Lt Insert In SH
Pin 9 – AUD Lt Insert In HI
Pin 8 – AUD Lt Insert In LO

Pin 10 – AUD Rt Insert In SH
Pin 12 – AUD Rt Insert In HI
Pin 11 – AUD Rt Insert In LO

AMP B connector

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

AMP D Connector – Digital Outputs

Handles digital Audition and Utility outputs (AES format)

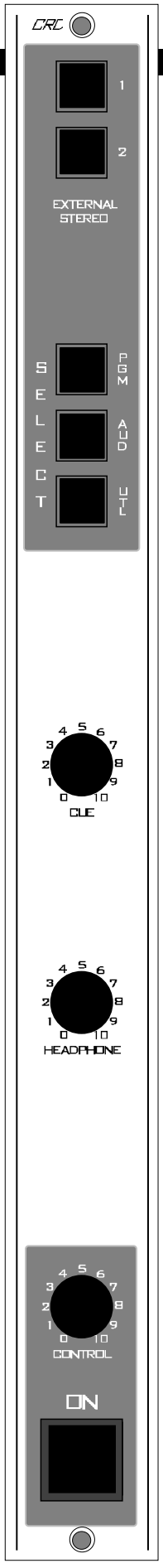
Pin 7 – UTIL AES Out SH
Pin 9 – UTIL AES Out HI
Pin 8 – UTIL AES Out LO

Pin 10 – AUD AES Out SH
Pin 12 – AUD AES Out HI
Pin 11 – AUD AES Out LO

Control Room Module

(CRD-5)

Chapter Contents



Control Room Module

(CRD-5)

Module Overview

The CRD-5 module is the RD-12 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 AMP A 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 modules 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 12-pin AMP type connectors mounted directly beneath the module on the console mainframe's bottom pan. There are four connectors: A and B (towards the console meterbridge) handles audio outputs and the console on-air tally control signals; D (near the console armrest) accepts the two external source inputs. All audio connections are stereo line level analog signals (+4dBu balanced).

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 four AMP 12-pin connectors mounted directly beneath the module on the console mainframe's bottom pan.

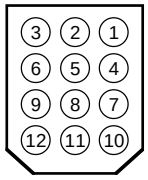
AMP A, B Connectors — Audio

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

Pin 1 – Lt Cue Out SH
Pin 3 – Lt Cue Out HI
Pin 2 – Lt Cue Out LO
Pin 4 – Rt Cue Out SH
Pin 6 – Rt Cue Out HI
Pin 5 – Rt Cue Out LO
Pin 7 – Lt Hdpn Out SH
Pin 9 – Lt Hdpn Out HI
Pin 8 – Lt Hdpn Out LO
Pin 10 – Rt Hdpn Out SH
Pin 12 – Rt Hdpn Out HI
Pin 11 – Rt Hdpn Out LO

AMP A connector

Key diagram showing back of typical 12-pin I/O connector plug, with pin numbers oriented as they would be seen while wiring. Beveled corners correspond to PCB mounted mating sockets.



Pin 1 – Lt CR Out SH
Pin 3 – Lt CR Out HI
Pin 2 – Lt CR Out LO
Pin 4 – Rt CR Out SH
Pin 6 – Rt CR Out HI
Pin 5 – Rt CR Out LO

AMP B connector

AMP B Connector — Control

The console's on-air tally port is on the CRD-5 AMP B 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 11 – On-Air Tally Relay COM
Pin 12 – On-Air Tally Relay N.O.

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

AMP C Connector — Audio

This connector handles the module's source select External Cue inputs.

Pin 1 – Ext Cue In SH
Pin 3 – Ext Cue In HI

AMP D Connector — Audio

This connector handles the module's source select External Stereo inputs. The port wants to see +4dBu balanced analog stereo signals.

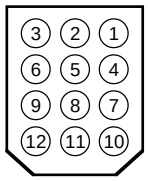
Pin 1 – Lt Ext 1 In SH
Pin 3 – Lt Ext 1 In HI
Pin 2 – Lt Ext 1 In LO

Pin 4 – Rt Ext 1 In SH
Pin 6 – Rt Ext 1 In HI
Pin 5 – Rt Ext 1 In LO

Pin 7 – Lt Ext 2 In SH
Pin 9 – Lt Ext 2 In HI
Pin 8 – Lt Ext 2 In LO

Pin 10 – Rt Ext 2 In SH
Pin 12 – Rt Ext 2 In HI
Pin 11 – Rt Ext 2 In LO

Key diagram showing back of typical 12-pin I/O connector plug, with pin numbers oriented as they would be seen while wiring. Beveled corners correspond to PCB mounted mating sockets.



Studio Control Module

(SCD-5)

Chapter Contents

Studio Control Module

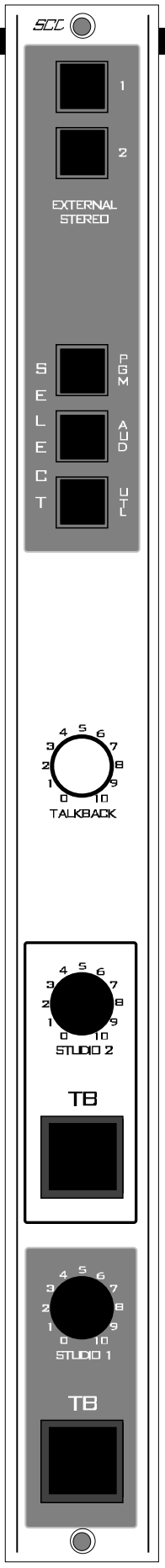
(SCD-5)

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 12-pin AMP connectors mounted directly beneath the module on the console mainframe's bottom pan. There are four connectors: A and B (towards the console meterbridge) handle external talkback out and regular studio monitor outputs, plus the console's Tally 2 and Tally 3 control signals; C and D connectors (near the console armrest) accept the module's two external source inputs, and output two additional pre-level control studio outputs.All audio connections are (+4dBu balanced) analog signals.



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 four AMP type 12-pin connectors mounted directly beneath the module on the console mainframe's bottom pan.

AMP A, B Connectors — Audio

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

Pin 1 – TB Out SH
Pin 3 – TB Out HI
Pin 2 – TB Out LO

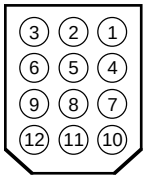
Pin 7 – Lt Studio 2 Out SH
Pin 9 – Lt Studio 2 Out HI
Pin 8 – Lt Studio 2 Out LO
Pin 10 – Rt Studio 2 Out SH
Pin 12 – Rt Studio 2 Out HI
Pin 11 – Rt Studio 2 Out LO

AMP A connector

Pin 1 – Lt Studio 1 Out SH
Pin 3 – Lt Studio 1 Out HI
Pin 2 – Lt Studio 1 Out LO
Pin 4 – Rt Studio 1 Out SH
Pin 6 – Rt Studio 1 Out HI
Pin 5 – Rt Studio 1 Out LO

AMP B connector

Key diagram showing back of typical 12-pin I/O connector plug, with pin numbers oriented as they would be seen while wiring. Beveled corners correspond to PCB mounted mating sockets.



AMP B Connector — Control

The console's Tally 2 and Tally 3 control ports are on the SCD-5 AMP B 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 11 – Tally 2 Relay COM
Pin 12 – Tally 2 Relay N.O.
Pin 8 – Tally 3 Relay COM
Pin 9 – Tally 3 Relay N.O.

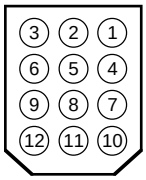
Maximum current through the tally relay closures is 2 amps @30VDC.

AMP C, D Connectors — 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 1 – Lt Studio 2 Pre Out SH
Pin 3 – Lt Studio 2 Pre Out HI
Pin 2 – Lt Studio 2 Pre Out LO
Pin 4 – Rt Studio 2 Pre Out SH
Pin 6 – Rt Studio 2 Pre Out HI
Pin 5 – Rt Studio 2 Pre Out LO — AMP C connector
Pin 7 – Lt Studio 1 Pre Out SH
Pin 9 – Lt Studio 1 Pre Out HI
Pin 8 – Lt Studio 1 Pre Out LO
Pin 10 – Rt Studio 1 Pre Out SH
Pin 12 – Rt Studio 1 Pre Out HI
Pin 11 – Rt Studio 1 Pre Out LO

Key diagram showing back of typical 12-pin I/O connector plug, with pin numbers oriented as they would be seen while wiring. Beveled corners correspond to PCB mounted mating sockets.



Pin 1 – Lt Ext 1 In SH
Pin 3 – Lt Ext 1 In HI
Pin 2 – Lt Ext 1 In LO
Pin 4 – Rt Ext 1 In SH
Pin 6 – Rt Ext 1 In HI
Pin 5 – Rt Ext 1 In LO — AMP D connector
Pin 7 – Lt Ext 2 In SH
Pin 9 – Lt Ext 2 In HI
Pin 8 – Lt Ext 2 In LO
Pin 10 – Rt Ext 2 In SH
Pin 12 – Rt Ext 2 In HI
Pin 11 – Rt Ext 2 In LO

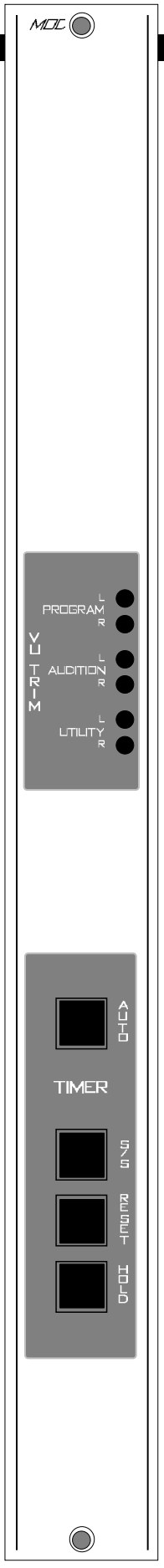
Meter Output Module

(MOD-5)

Chapter Contents

Meter Output Module

(MOD-5)



Module Overview

Each RD-12 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 are two 12-pin AMP type connectors for factory use only. They send 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.

CPU Central Processor
(CPU-5 Module)

DSP Digital Processor
(DSP-5 Module)

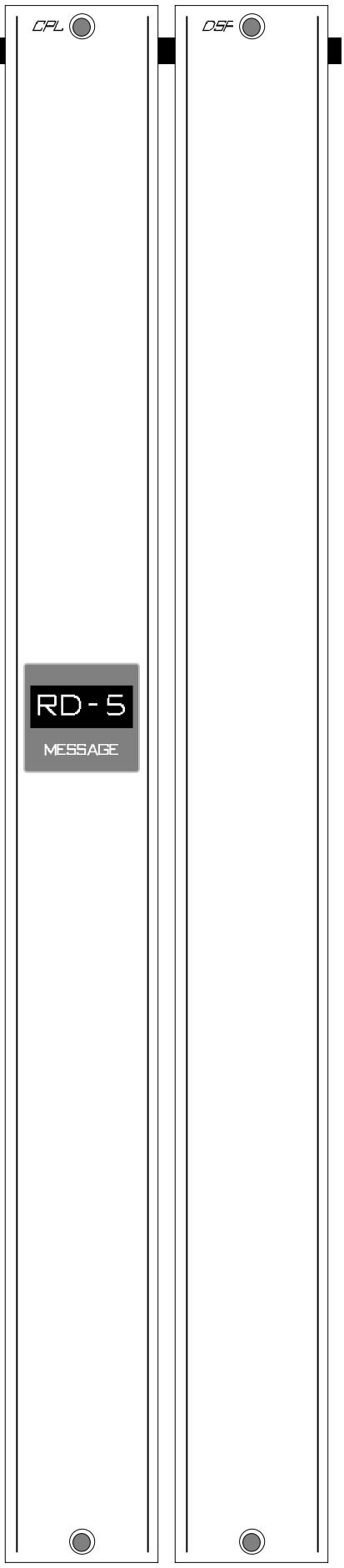
Chapter Contents

CPU Central Processor (CPU-5 Module)

DSP Digital Processor (DSP-5 Module)

Module Overview

Every RD-12 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 AMP 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-12 console to 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 AMP A connector:

Pin 1 – AES Sync In SH
Pin 3 – AES Sync In HI
Pin 2 – AES Sync In LO
Pin 4 – AES Sync Out SH
Pin 6 – AES Sync Out HI
Pin 5 – AES Sync Out LO

CPU-5 Display

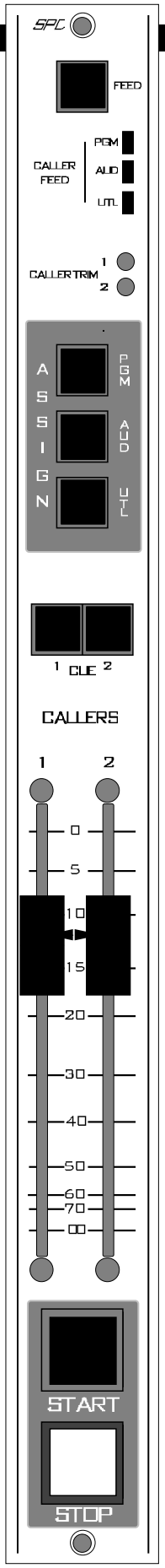
The alpha-numeric display on the CPU-5 module is used at the factory for programming purposes. In the field the default display is always "RD-5", with the dash character flashing. This might occasionally change to show an error message for a second or two (for example, if you have hot-plugged a module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

Superphone Input

(SPD-5)

Chapter Contents

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

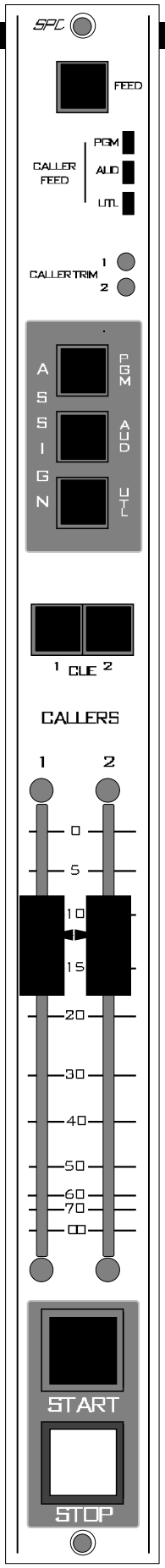
Pre-air segment communication between the console operator (DJ) and callers is via CALLER (CUE) buttons (2) which place the caller's voice on the console's cue speakers (or control room speakers/operator's headphone if the CRD-5 module's cue interrupt function has been so programmed). These cue signals 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 AMP A 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 four 12-pin AMP type connectors mounted in the bottom of the console's mainframe, directly underneath each module. AMP A connector handles hybrid input signals (i.e., caller input) and the external input mentioned on page 9-2. AMP C and D connectors handle outputs, including the module1 and 2 feeds to your station hybrid (the phone signals going to your callers).

The module also has three additional output feeds on the AMP#3 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 AMP A 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:

Factory default settings for these trimpots is UNITY GAIN.

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

Hook-Ups

As stated before, all user wiring to and from SPD-5 modules takes place at 12-pin AMP type connectors mounted directly beneath each module on the console mainframe's bottom pan.

Audio Connections (AMP A)

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

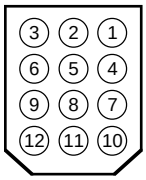
Pin 1 – Ext In SH
Pin 3 – Ext In HI
Pin 2 – Ext In LO

Pin 7 – Hybrid 1 In SH
Pin 9 – Hybrid 1 In HI
Pin 8 – Hybrid 1 In LO

Pin 10 – Hybrid 2 In SH
Pin 12 – Hybrid 2 In HI
Pin 11 – Hybrid 2 In LO

AMP A connector

Key diagram showing back of typical 12-pin I/O connector plug, with pin numbers oriented as they would be seen while wiring. Beveled corners correspond to PCB mounted mating sockets.



Audio and Control Connections (AMP C, D)

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

Pin 1 – Composite Out SH
Pin 3 – Composite Out HI
Pin 2 – Composite Out LO

Pin 4 – Composite Minus Callers Out SH
Pin 6 – Composite Minus Callers Out HI
Pin 5 – Composite Minus Callers Out LO

Pin 7 – Callers Only Out SH
Pin 9 – Callers Only Out HI
Pin 8 – Callers Only Out LO

Pin 10 – To Hybrid 1 Out SH
Pin 12 – To Hybrid 1 Out HI
Pin 11 – To Hybrid 1 Out LO

AMP C connector

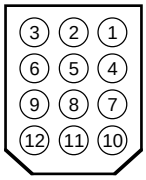
Pin 1 – To Hybrid 2 Out SH
Pin 3 – To Hybrid 2 Out HI
Pin 2 – To Hybrid 2 Out LO

Pin 5 – Start/Stop Common
Pin 7 – Stop
Pin 9 – Start

Pin 6 – Start/Stop Common
Pin 8 – Stop
Pin 10 – Start

AMP D connector

Key diagram showing back of typical 12-pin I/O connector plug, with pin numbers oriented as they would be seen while wiring. Beveled corners correspond to PCB mounted mating sockets.



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.

Line Preselector Module-Analog

(LSA-5; optional)

Chapter Contents

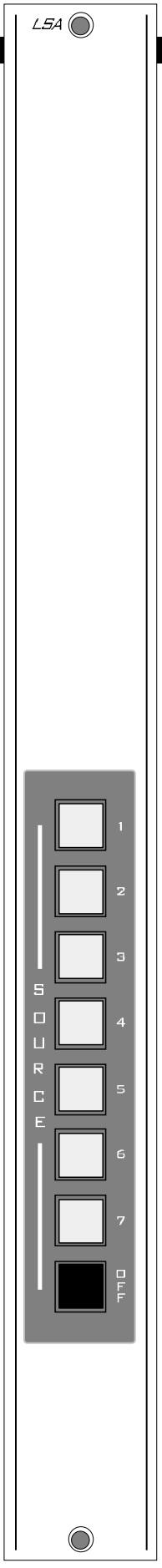
Line Preselector Module-Analog

(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 four 12-pin AMP 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

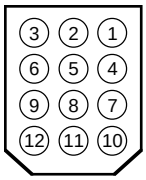
LS-5000 Audio Inputs 1-4 (AMP A, B)

Pin 1 – Line 1 Lt In SH
Pin 3 – Line 1 Lt In HI
Pin 2 – Line 1 Lt In LO
Pin 4 – Line 1 Rt In SH
Pin 6 – Line 1 Rt In HI
Pin 5 – Line 1 Rt In LO

AMP A connector

Pin 7 – Line 2 Lt In SH
Pin 9 – Line 2 Lt In HI
Pin 8 – Line 2 Lt In LO
Pin 10 – Line 2 Rt In SH
Pin 12 – Line 2 Rt In HI
Pin 11 – Line 2 Rt In LO

Key diagram showing back of typical 12-pin I/O connector plug, with pin numbers oriented as they would be seen while wiring. Beveled corners correspond to PCB mounted mating sockets.



Pin 1 – Line 3 Lt In SH
Pin 3 – Line 3 Lt In HI
Pin 2 – Line 3 Lt In LO
Pin 4 – Line 3 Rt In SH
Pin 6 – Line 3 Rt In HI
Pin 5 – Line 3 Rt In LO

AMP B connector

Pin 7 – Line 4 Lt In SH
Pin 9 – Line 4 Lt In HI
Pin 8 – Line 4 Lt In LO
Pin 10 – Line 4 Rt In SH
Pin 12 – Line 4 Rt In HI
Pin 11 – Line 4 Rt In LO

LS-5000 Audio Inputs 5-7 (AMP C, D)

Pin 1 – Line 5 Lt In SH
Pin 3 – Line 5 Lt In HI
Pin 2 – Line 5 Lt In LO
Pin 4 – Line 5 Rt In SH
Pin 6 – Line 5 Rt In HI
Pin 5 – Line 5 Rt In LO

AMP C connector

Pin 7 – Line 6 Lt In SH
Pin 9 – Line 6 Lt In HI
Pin 8 – Line 6 Lt In LO
Pin 10 – Line 6 Rt In SH
Pin 12 – Line 6 Rt In HI
Pin 11 – Line 6 Rt In LO

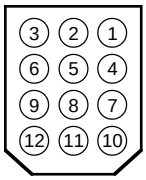
Pin 1 – Line 7 Lt In SH
Pin 3 – Line 7 Lt In HI
Pin 2 – Line 7 Lt In LO
Pin 4 – Line 7 Rt In SH
Pin 6 – Line 7 Rt In HI
Pin 5 – Line 7 Rt In LO

LSA-5 Audio Outputs

Pin 7 – Line Lt Out SH
Pin 9 – Line Lt Out HI
Pin 8 – Line Lt Out LO
Pin 10 – Line Rt Out SH
Pin 12 – Line Rt Out HI
Pin 11 – Line Rt Out LO

AMP D connector

Key diagram showing back of typical 12-pin I/O connector plug, with pin numbers oriented as they would be seen while wiring. Beveled corners correspond to PCB mounted mating sockets.



Line Preselector Module-Digital/Analog

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

Chapter Contents

Line Preselector Module (Digital/Analog)

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

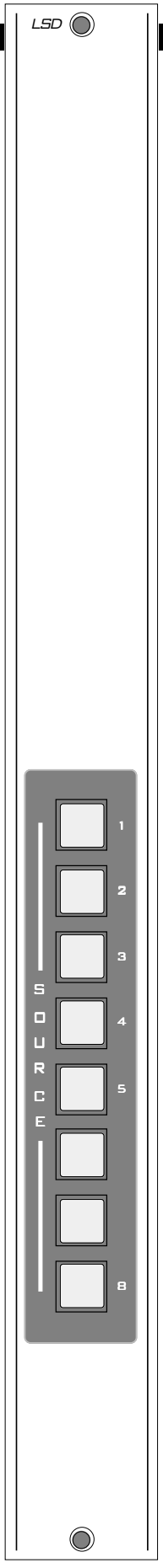
Overview

This optional module consists of an 8-switch control module (LSD-5) mounted in the RD-12 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-12 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.

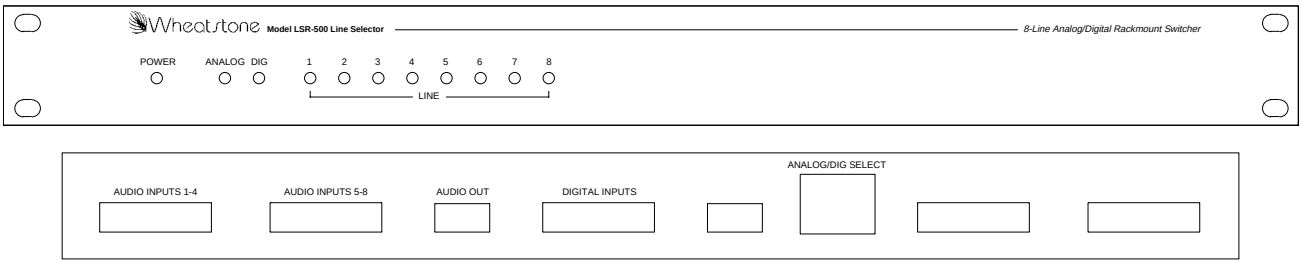
The LSR-500 rackmount unit faceplate has eight indicator LEDs which show which input has been selected at the console and also ANALOG and DIGITAL LEDs which light to show what kind of signal has been selected. A POWER LED is also included. (See drawing next page)

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.



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).



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

Hook-Ups

LSD-5 Line Preselector Module

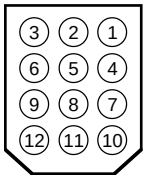
All user wiring to and from LSD-5 modules takes place at AMP 12-pin connectors mounted directly beneath module on the console mainframe's bottom pan. There are four connectors per module (AMP A and B for control, AMP C and D for power) that wire to two DB-25s on the LSR-500 chassis rear.

LSD-5 C0NTROL CONNECTIONS (AMP A, B)

AMP A connector

Pin 1 - Digital Ground (LSR-500 DB-25 Pin 25)
Pin 2 - N/C
Pin 3 - N/C
Pin 4 - Digital Ground (LSR-500 DB-25 Pin 11)
Pin 5 - N/C
Pin 6 - N/C
Pin 7 - Digital Ground (LSR-500 DB-25 Pin 22)
Pin 8 - Console Clock (LSR-500 DB-25 Pin 10)
Pin 9 - Console Clock (LSR-500 DB-25 Pin 21)
Pin 10 - Digital Ground (LSR-500 DB-25 Pin 8)
Pin 11 - Console Reset (LSR-500 DB-25 Pin 20)
Pin 12 - Console Reset (LSR-500 DB-25 Pin 7)

Key diagram showing back of typical 12-pin I/O connector plug, with pin numbers oriented as they would be seen while wiring. Beveled corners correspond to PCB mounted mating sockets.



AMP B connector

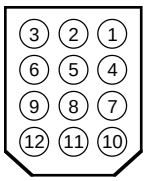
Pin 1 - Digital Ground (LSR-500 DB-25 Pin 25)
Pin 2 - Line 8 (LSR-500 DB-25 Pin 6)
Pin 3 - Line 7 (LSR-500 DB-25 Pin 18)
Pin 4 - Digital Ground (LSR-500 DB-25 Pin 5)
Pin 5 - Line 6 (LSR-500 DB-25 Pin 17)
Pin 6 - Line 5 (LSR-500 DB-25 Pin 4)
Pin 7 - Digital Ground (LSR-500 DB-25 Pin 16)
Pin 8 - Line 4 (LSR-500 DB-25 Pin 3)
Pin 9 - Line 3 (LSR-500 DB-25 Pin 15)
Pin 10 - Digital Ground (LSR-500 DB-25 Pin 2)
Pin 11 - Line 2 (LSR-500 DB-25 Pin 14)
Pin 12 - Line 1 (LSR-500 DB-25 Pin 1)

LSD-5 POWER CONNECTIONS (AMP C, D)

Pin 1 - -V (LSR-500 DB-25 Pin 25)
Pin 2 - -V (LSR-500 DB-25 Pin 12)
Pin 3 - -V (LSR-500 DB-25 Pin 24)
Pin 4 - -V (LSR-500 DB-25 Pin 11)
Pin 5 - +V (LSR-500 DB-25 Pin 23)
Pin 6 - +V (LSR-500 DB-25 Pin 10)
Pin 7 - +V (LSR-500 DB-25 Pin 22)
Pin 8 - +V (LSR-500 DB-25 Pin 9)
Pin 9 - Audio Ground (LSR-500 DB-25 Pin 21)
Pin 10 - Audio Ground (LSR-500 DB-25 Pin 8)
Pin 11 - Audio Ground (LSR-500 DB-25 Pin 20)
Pin 12 - Audio Ground (LSR-500 DB-25 Pin 7)

AMP C connector

Key diagram showing back of typical 12-pin I/O connector plug, with pin numbers oriented as they would be seen while wiring. Beveled corners correspond to PCB mounted mating sockets.



Pin 1 - Digital Ground (LSR-500 DB-25 Pin 19)
Pin 2 - Digital Ground (LSR-500 DB-25 Pin 6)
Pin 3 - Digital Ground (LSR-500 DB-25 Pin 18)
Pin 4 - Digital Ground (LSR-500 DB-25 Pin 5)
Pin 5 - Digital Ground (LSR-500 DB-25 Pin 17)
Pin 6 - Digital Ground (LSR-500 DB-25 Pin 4)
Pin 7 - +5V Digital (LSR-500 DB-25 Pin 16)
Pin 8 - +5V Digital (LSR-500 DB-25 Pin 3)
Pin 9 - +5V Digital (LSR-500 DB-25 Pin 15)
Pin 10 - +5V Digital (LSR-500 DB-25 Pin 2)
Pin 11 - +5V Digital (LSR-500 DB-25 Pin 14)
Pin 12 - +5V Digital (LSR-500 DB-25 Pin 1)

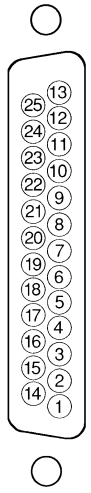
AMP D connector

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:

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
Pin 5 – Line 3 Rt In SH
Pin 4 – Line 3 Rt In HI
Pin 17 – Line 3 Rt In LO

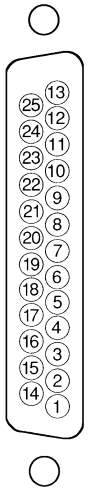


Typical DB-25 connector

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



Typical DB-25 connector

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
Pin 19 – AES 5 In SH
Pin 18 – AES 5 In HI
Pin 6 – AES 5 In LO
Pin 5 – AES 6 In SH

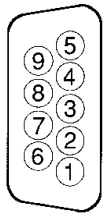
Pin 4 – AES 6 In HI
Pin 17 – AES 6 In LO
Pin 16 – AES 7 In SH
Pin 15 – AES 7 In HI
Pin 3 – AES 7 In LO
Pin 2 – AES 8 In SH
Pin 1 – AES 8 In HI
Pin 14 – AES 8 In LO

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:

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



Typical DB-9 connector

DIGITAL OUTPUTS (DB-9):

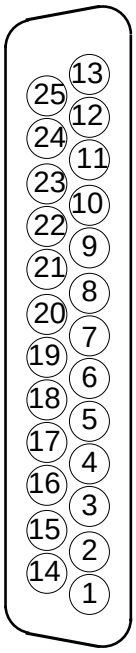
Pin 2 – AES Out SH
Pin 1 – AES Out HI
Pin 6 – AES Out LO

LSR-500 Rackmount Switcher

DB Connector Pinouts

ANALOG INPUTS 1-4

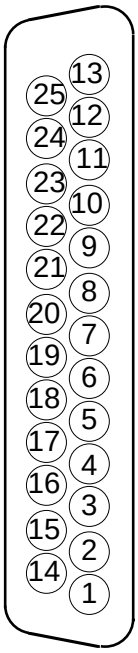
(DB-25)



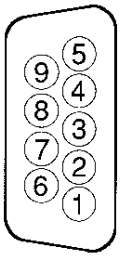
LINE 1 LT IN SH	25	AUDIO GROUND
LINE 1 LT IN HI	12	LINE 1 LT IN LO
LINE 1 RT IN LO	24	LINE 1 RT IN SH
LINE 2 LT IN SH	11	LINE 1 RT IN HI
LINE 2 LT IN HI	23	LINE 2 LT IN LO
LINE 2 RT IN LO	10	LINE 2 RT IN SH
LINE 3 LT IN SH	22	LINE 2 RT IN HI
LINE 3 LT IN HI	9	LINE 3 LT IN LO
LINE 3 RT IN LO	21	LINE 3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

ANALOG INPUTS 5-8

(DB-25)



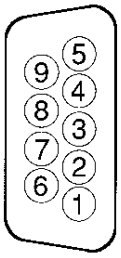
LINE 5 LT IN SH	25	AUDIO GROUND
LINE 5 LT IN HI	12	LINE 5 LT IN LO
LINE 5 RT IN LO	24	LINE 5 RT IN SH
LINE 6 LT IN SH	11	LINE 5 RT IN HI
LINE 6 LT IN HI	23	LINE 6 LT IN LO
LINE 6 RT IN LO	10	LINE 6 RT IN SH
LINE 7 LT IN SH	22	LINE 6 RT IN HI
LINE 7 LT IN HI	9	LINE 7 LT IN LO
LINE 7 RT IN LO	21	LINE 7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



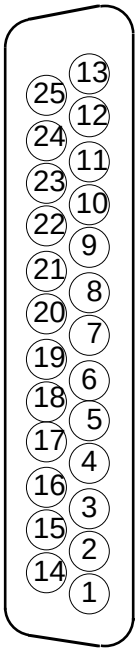
N/C	9	AUDIO GROUND
LINE LT OUT SH	5	N/C
LINE LT OUT HI	8	LINE LT OUT LO
LINE RT OUT LO	4	LINE RT OUT SH
	7	LINE RT OUT HI
	3	
	6	
	2	
	1	

ANALOG AUDIO OUTPUT *(DB-9)*

DIGITAL AUDIO OUTPUT *(DB-9)*



N/C	9	AUDIO GROUND
N/C	5	N/C
N/C	8	N/C
AES OUT LO	4	AES OUT SH
	7	AES OUT HI
	3	
	6	
	2	
	1	



AES1 IN SH	25	AUDIO GROUND
AES1 IN HI	13	AES 1 IN LO
AES 2 IN LO	24	AES 2 IN SH
AES 3 IN SH	12	AES 2 IN HI
AES 3 IN HI	23	AES 3 IN LO
AES 4 IN LO	11	AES 4 IN SH
AES 5 IN SH	22	AES 4 IN HI
AES 5 IN HI	10	AES 5 IN LO
AES 6 IN LO	21	AES 6 IN SH
AES 7 IN SH	9	AES 6 IN HI
AES 7 IN HI	20	AES 7 IN LO
AES 8 IN LO	8	AES 8 IN SH
	19	AES 8 IN HI
	7	
	18	
	6	
	17	
	5	
	16	
	4	
	15	
	3	
	14	
	2	
	1	

DIGITAL INPUTS

(DB-25)

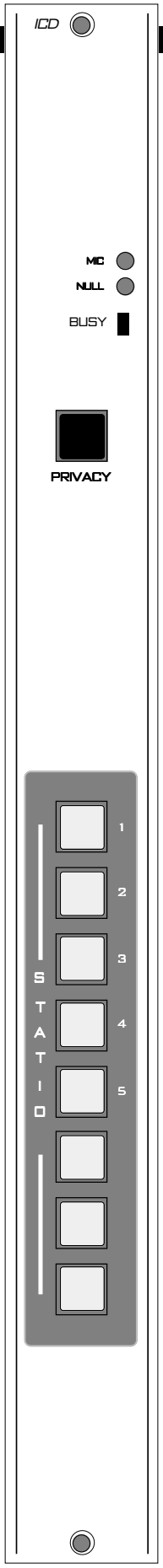
Intercom Module

(ICMD-5; optional)

Chapter Contents

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 12-pin AMP type connectors mounted directly beneath the module on the console mainframe's bottom pan. There are four connectors: AMP A and B (towards the console meterbridge) handle inputs; AMP C and D 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 SW 1 position 1 assign line level input into ICMD module

Dipswitch SW 1 position 4 allows microphone signal tap from the console's talkback bus

Power for Various ICMs

Your 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 programed with "stations" slide switches SW2-SW9. Each ICM has only one slide switch "ON".

Hook-Ups

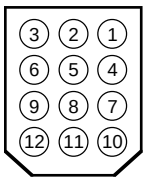
All user wiring to and from the ICMD-5 module takes place at four12-pin AMP type connectors mounted directly beneath the module on the console mainframe's bottom pan.

AMP B Connector — Input Audio

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

Pin 9 - 2-way audio in HIGH
Pin 8 - 2-way audio in LOW
Pin 7 - 2-way audio in SHIELD
Pin 12 - External Line in HIGH
Pin 11 - External Line in LOW
Pin 10 - External Line in SHIELD

Key diagram showing back of typical 12-pin I/O connector plug, with pin numbers oriented as they would be seen while wiring. Beveled corners correspond to PCB mounted mating sockets.



AMP A, B Connectors — Control

Pin 6 - External digital + power feed
Pin 5 - External digital common
Pin 12 - Station call line 5
Pin 11 - Station call line 6
Pin 9 - Station call line 7 — AMP A connector
Pin 8 - Station call line 8
Pin 3 - +16V
Pin 2 - -16V
Pins 1, 4, 7, 10 - Audio Common

Pin 6 - Station call line 1
Pin 5 - Station call line 2
Pin 3 - Station call line 3 — AMP B connector
Pin 2 - Station call line 4
Pins 1, 4 - Audio Common

AMP D Connector — Output Audio

All signals are +4dBu balanced analog.

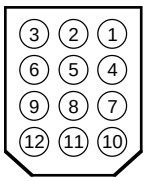
Pin 9 - 2-way audio out HIGH
Pin 8 - 2-way audio out LOW
Pin 7 - 2-way audio out SHIELD
Pins 10 - Audio Common

AMP C, D — Control

Pin 6 - External digital + power feed
Pin 5 - External digital common
Pin 12 - Station call line 5
Pin 11 - Station call line 6 — AMP C connector
Pin 9 - Station call line 7
Pin 8 - Station call line 8
Pin 3 - +16V
Pin 2 - -16V
Pins 1, 4, 7, 10 - Audio Common

Pin 6 - Station call line 1
Pin 5 - Station call line 2
Pin 3 - Station call line 3 — AMP D connector
Pin 2 - Station call line 4
Pins 1, 4 - Audio Common

Key diagram showing back of typical 12-pin I/O connector plug, with pin numbers oriented as they would be seen while wiring. Beveled corners correspond to PCB mounted mating sockets.



Tape Remote Module

(TRD-5; optional)

Chapter Contents

Tape Remote Module

(TRD-5; optional)

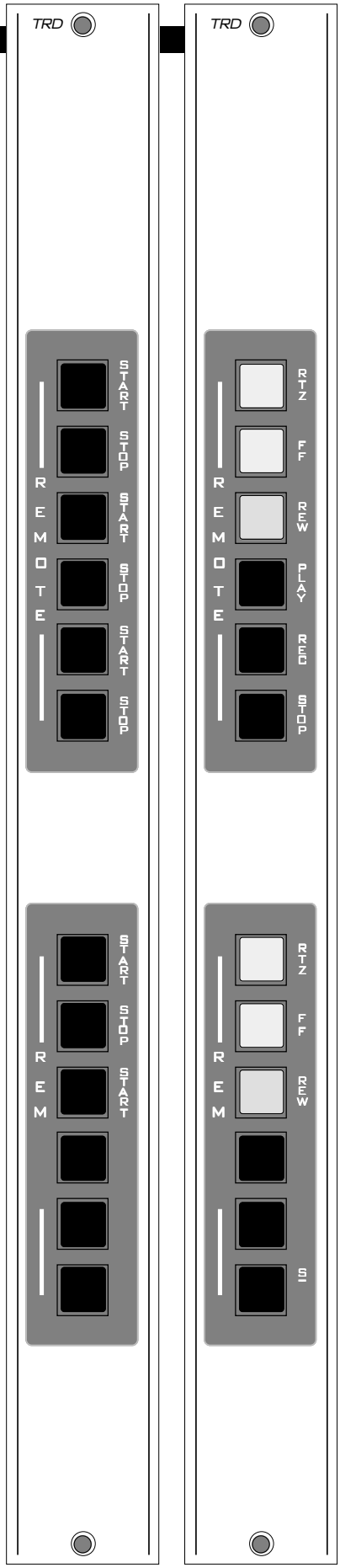
Module Overview

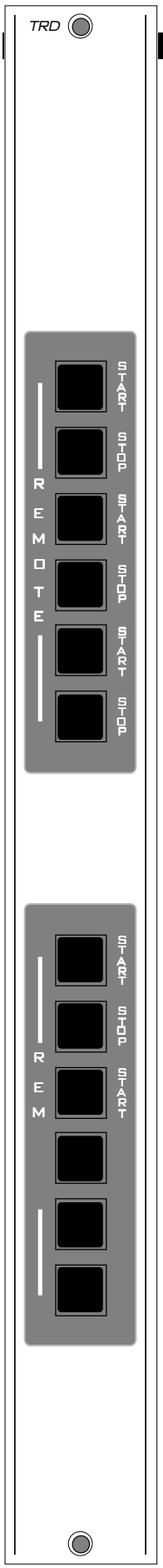
This optional module has two versions:

- 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.





Hook-Ups

All user wiring to and from the TRD-5 module takes place at four AMP-type connectors mounted directly beneath the module on the console mainframe's bottom pan.

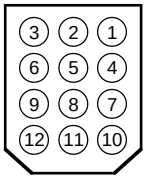
START/STOP Function Control

AMP A, B Connectors — Control

Pin 1 – SW6 (STOP) COM
Pin 2 – SW6 (STOP) N.O.
Pin 3 – SW6 (STOP) LED-
Pin 4 – SW6 (STOP) LED+
Pin 5 – SW5 (START) COM
Pin 6 – SW5 (START) N.O.
Pin 7 – SW5 (START) LED-
Pin 8 – SW5 (START) LED+
Pin 9 – SW4 (STOP) COM
Pin 10 – SW4 (STOP) N.O.
Pin 11 – SW4 (STOP) LED-
Pin 12 – SW4 (STOP) LED+

AMP A connector

Key diagram showing back of typical 12-pin I/O connector plug, with pin numbers oriented as they would be seen while wiring. Beveled corners correspond to PCB mounted mating sockets.



Pin 1 – SW3 (START) COM
Pin 2 – SW3 (START) N.O.
Pin 3 – SW3 (START) LED-
Pin 4 – SW3 (START) LED+
Pin 5 – SW2 (STOP) COM
Pin 6 – SW2 (STOP) N.O.
Pin 7 – SW2 (STOP) LED-
Pin 8 – SW2 (STOP) LED+
Pin 9 – SW1 (START) COM
Pin 10 – SW1 (START) N.O.
Pin 11 – SW1 (START) LED-
Pin 12 – SW1 (START) LED+

AMP B connector

AMP C, D Connectors — Control

Pin 1 – SW6 (STOP) COM
Pin 2 – SW6 (STOP) N.O.
Pin 3 – SW6 (STOP) LED-
Pin 4 – SW6 (STOP) LED+
Pin 5 – SW5 (START) COM
Pin 6 – SW5 (START) N.O.

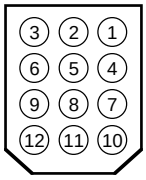
AMP C connector

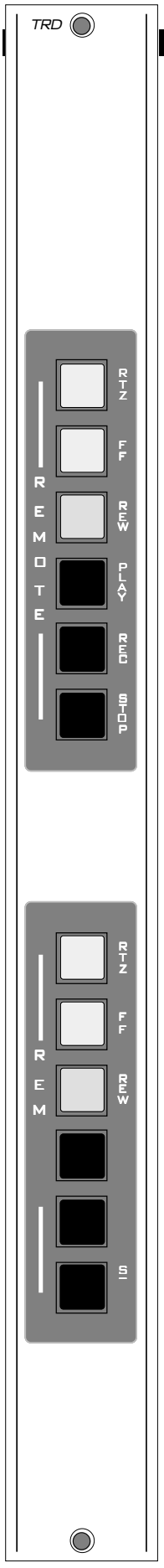
Pin 7 – SW5 (START) LED-
Pin 8 – SW5 (START) LED+
Pin 9 – SW4 (STOP) COM
Pin 10 – SW4 (STOP) N.O.
Pin 11 – SW4 (STOP) LED-
Pin 12 – SW4 (STOP) LED+

Pin 1 – SW3 (START) COM
Pin 2 – SW3 (START) N.O.
Pin 3 – SW3 (START) LED-
Pin 4 – SW3 (START) LED+
Pin 5 – SW2 (STOP) COM
Pin 6 – SW2 (STOP) N.O.
Pin 7 – SW2 (STOP) LED-
Pin 8 – SW2 (STOP) LED+
Pin 9 – SW1 (START) COM
Pin 10 – SW1 (START) N.O.
Pin 11 – SW1 (START) LED-
Pin 12 – SW1 (START) LED+

AMP D connector

Key diagram showing back of typical 12-pin I/O connector plug, with pin numbers oriented as they would be seen while wiring. Beveled corners correspond to PCB mounted mating sockets.





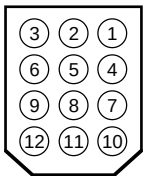
Full-Function Control

AMP A, B Connectors — Control

Pin 1 – SW6 (STOP) COM
Pin 2 – SW6 (STOP) N.O.
Pin 3 – SW6 (STOP) LED-
Pin 4 – SW6 (STOP) LED+
Pin 5 – SW5 (REC) COM
Pin 6 – SW5 (REC) N.O.
Pin 7 – SW5 (REC) LED-
Pin 8 – SW5 (REC) LED+
Pin 9 – SW4 (PLAY) COM
Pin 10 – SW4 (PLAY) N.O.
Pin 11 – SW4 (PLAY) LED-
Pin 12 – SW4 (PLAY) LED+

AMP A connector

Key diagram showing back of typical 12-pin I/O connector plug, with pin numbers oriented as they would be seen while wiring. Beveled corners correspond to PCB mounted mating sockets.



Pin 1 – SW3 (REW) COM
Pin 2 – SW3 (REW) N.O.
Pin 3 – SW3 (REW) LED-
Pin 4 – SW3 (REW) LED+
Pin 5 – SW2 (FF) COM
Pin 6 – SW2 (FF) N.O.
Pin 7 – SW2 (FF) LED-
Pin 8 – SW2 (FF) LED+
Pin 9 – SW1 (RTZ) COM
Pin 10 – SW1 (RTZ) N.O.
Pin 11 – SW1 (RTZ) LED-
Pin 12 – SW1 (RTZ) LED+

AMP B connector

AMP C, D Connectors — Control

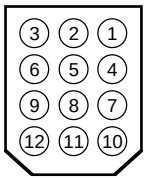
Pin 1 – SW6 (STOP) COM
Pin 2 – SW6 (STOP) N.O.
Pin 3 – SW6 (STOP) LED-
Pin 4 – SW6 (STOP) LED+
Pin 5 – SW5 (REC) COM
Pin 6 – SW5 (REC) N.O.
Pin 7 – SW5 (REC) LED-
Pin 8 – SW5 (REC) LED+
Pin 9 – SW4 (PLAY) COM
Pin 10 – SW4 (PLAY) N.O.
Pin 11 – SW4 (PLAY) LED-
Pin 12 – SW4 (PLAY) LED+

AMP C connector

Pin 1 – SW3 (REW) COM
Pin 2 – SW3 (REW) N.O.
Pin 3 – SW3 (REW) LED-
Pin 4 – SW3 (REW) LED+
Pin 5 – SW2 (FF) COM
Pin 6 – SW2 (FF) N.O.
Pin 7 – SW2 (FF) LED-
Pin 8 – SW2 (FF) LED+
Pin 9 – SW1 (RTZ) COM
Pin 10 – SW1 (RTZ) N.O.
Pin 11 – SW1 (RTZ) LED-
Pin 12 – SW1 (RTZ) LED+

AMP D connector

Key diagram showing back of typical 12-pin I/O connector plug, with pin numbers oriented as they would be seen while wiring. Beveled corners correspond to PCB mounted mating sockets.



Meterbridge and Clock

Chapter Contents

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 battery socket at the bottom of the clock display card. This will hold a 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).

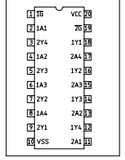
Operational Modes

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.

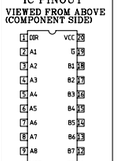
I/O Schematic Drawings

Chapter Contents

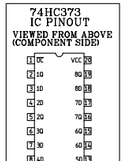
74ABT244
IC PINOUT
VIEWED FROM ABOVE
(COMPONENT SIDE)



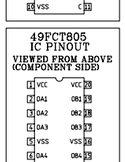
74ABT245
IC PINOUT
VIEWED FROM ABOVE
(COMPONENT SIDE)



74HC373
IC PINOUT
VIEWED FROM ABOVE
(COMPONENT SIDE)

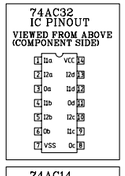


49FCT805
IC PINOUT
VIEWED FROM ABOVE
(COMPONENT SIDE)

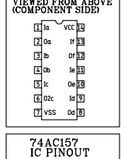


74AC08/09
IC PINOUT
VIEWED FROM ABOVE
(COMPONENT SIDE)

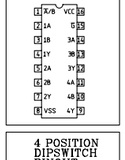
74AC32
IC PINOUT
VIEWED FROM ABOVE
(COMPONENT SIDE)



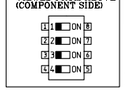
74AC14
IC PINOUT
VIEWED FROM ABOVE
(COMPONENT SIDE)

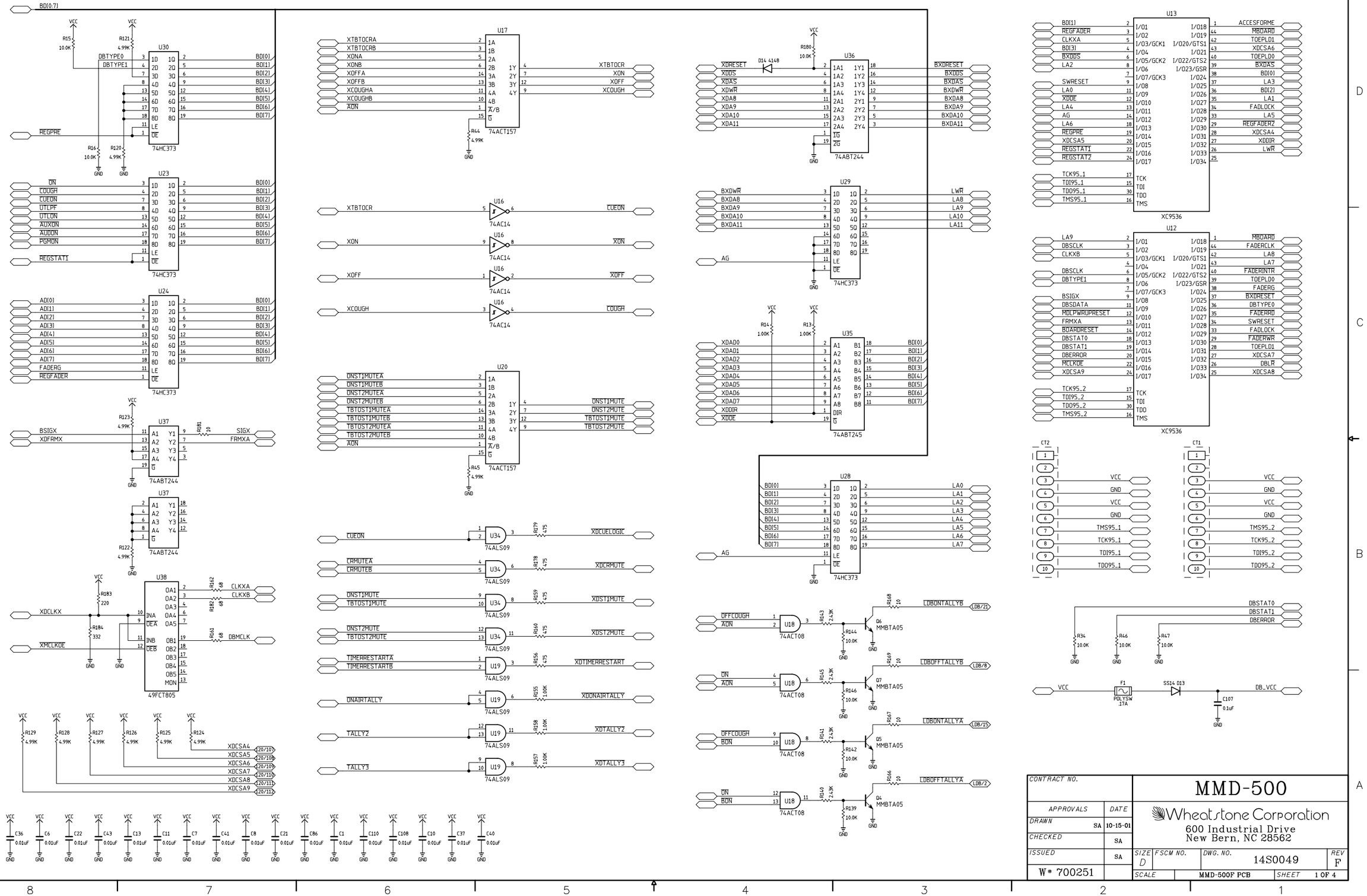


74AC157
IC PINOUT
VIEWED FROM ABOVE
(COMPONENT SIDE)



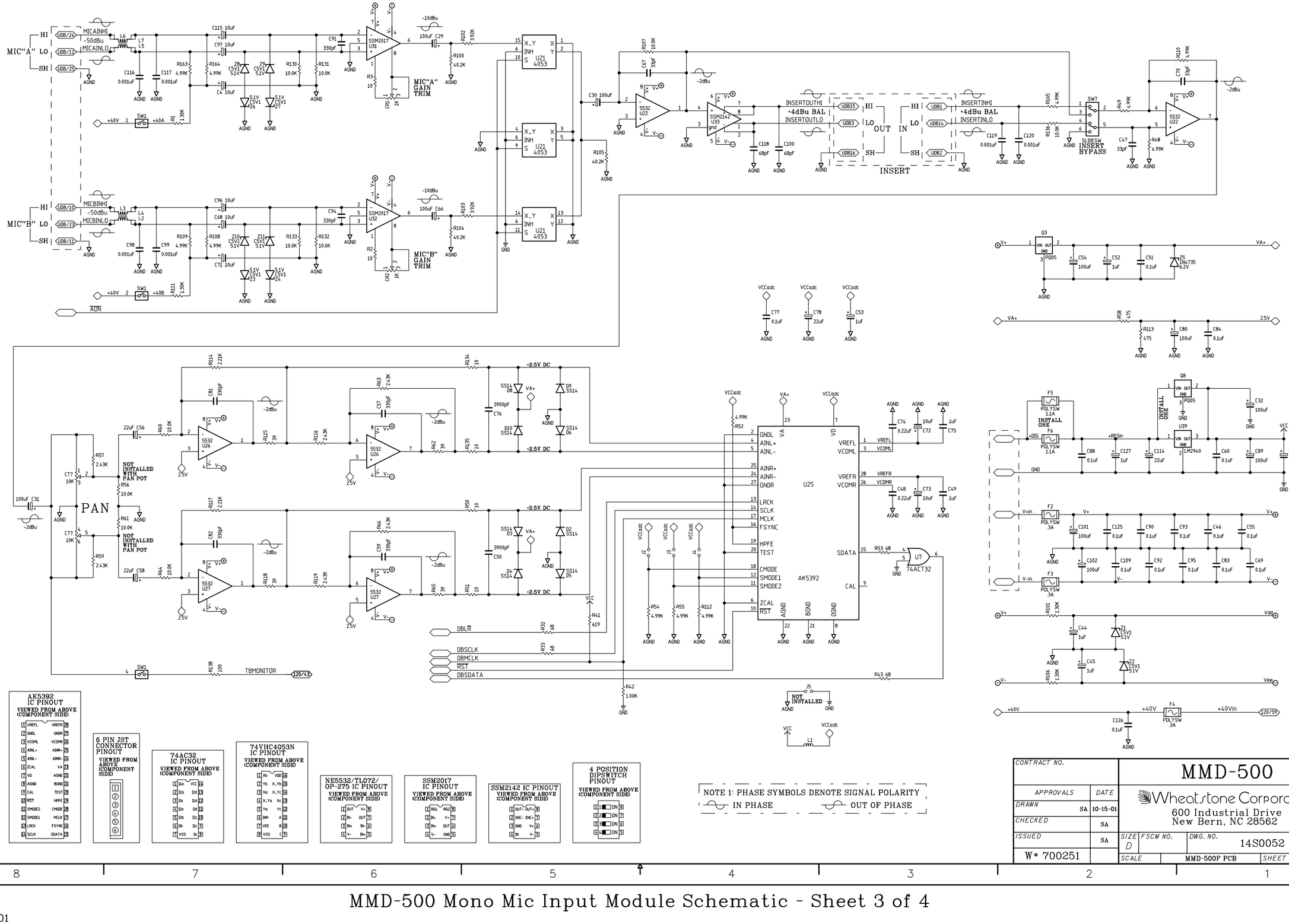
4 POSITION
DIPSWITCH
PINOUT
VIEWED FROM ABOVE
(COMPONENT SIDE)





CONTRACT NO.		MMD-500
APPROVALS	DATE	Wheatstone Corporation
DRAWN	SA 10-15-01	600 Industrial Drive
CHECKED	SA	New Bern, NC 28562
ISSUED	SA	SIZE D · FSCM NO. · DWG. NO. 14S0049 · REV F
W* 700251		SCALE MMD-500F PCB · SHEET 1 OF 4

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



AK5392 IC PINOUT
VIEWED FROM ABOVE (COMPONENT SIDE)

1	VREFL	VREFR	28
2	GNDL	GNDR	27
3	VCOML	VCOMR	26
4	AINL+	AINR+	25
5	AINL-	AINR-	24
6	ZCAL	VA	23
7	VD	AGND	22
8	AGND	BGND	21
9	CAL	TEST	20
10	RST	HPFE	19
11	SMODE2	CMODE	18
12	SMODE1	MCLK	17
13	LRCK	FSYNC	16
14	SCLK	SDATA	15

6 PIN JST CONNECTOR PINOUT
VIEWED FROM ABOVE (COMPONENT SIDE)

74AC32 IC PINOUT
VIEWED FROM ABOVE (COMPONENT SIDE)

1	1a	VCC	14
2	2a	1z	13
3	0a	1z	12
4	1b	0d	11
5	2b	1c	10
6	0b	1c	9
7	VSS	0c	8

74VHC4053N IC PINOUT
VIEWED FROM ABOVE (COMPONENT SIDE)

1	Xb	VDD	16
2	Yb	X_Yb	15
3	Xa	X_Ya	14
4	X_Yc	Xc	13
5	Ya	Yc	12
6	INH	A	11
7	VEE	B	10
8	VSS	C	9

NE5532/TL072/ OP-275 IC PINOUT
VIEWED FROM ABOVE (COMPONENT SIDE)

1	OUT	V+	8
2	IN-	OUT	7
3	IN+	IN-	6
4	V-	IN+	5

SSM2017 IC PINOUT
VIEWED FROM ABOVE (COMPONENT SIDE)

1	RG1	RG2	8
2	IN-	V+	7
3	IN+	OUT	6
4	V-	GND	5

SSM2142 IC PINOUT
VIEWED FROM ABOVE (COMPONENT SIDE)

1	OUT-	OUT+	8
2	SNC-	SNC+	7
3	GND	V+	6
4	IN	V-	5

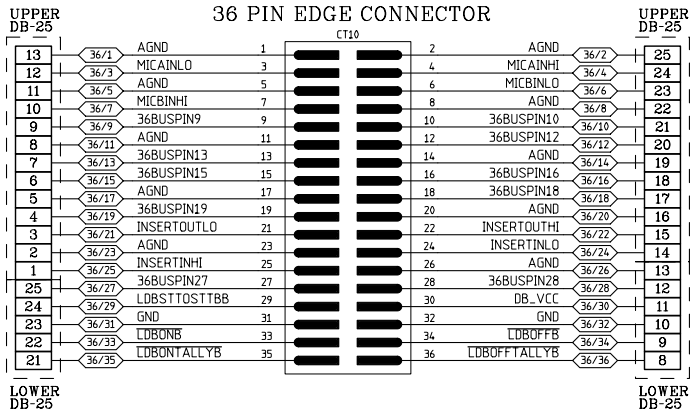
4 POSITION DIPSWITCH PINOUT
VIEWED FROM ABOVE (COMPONENT SIDE)

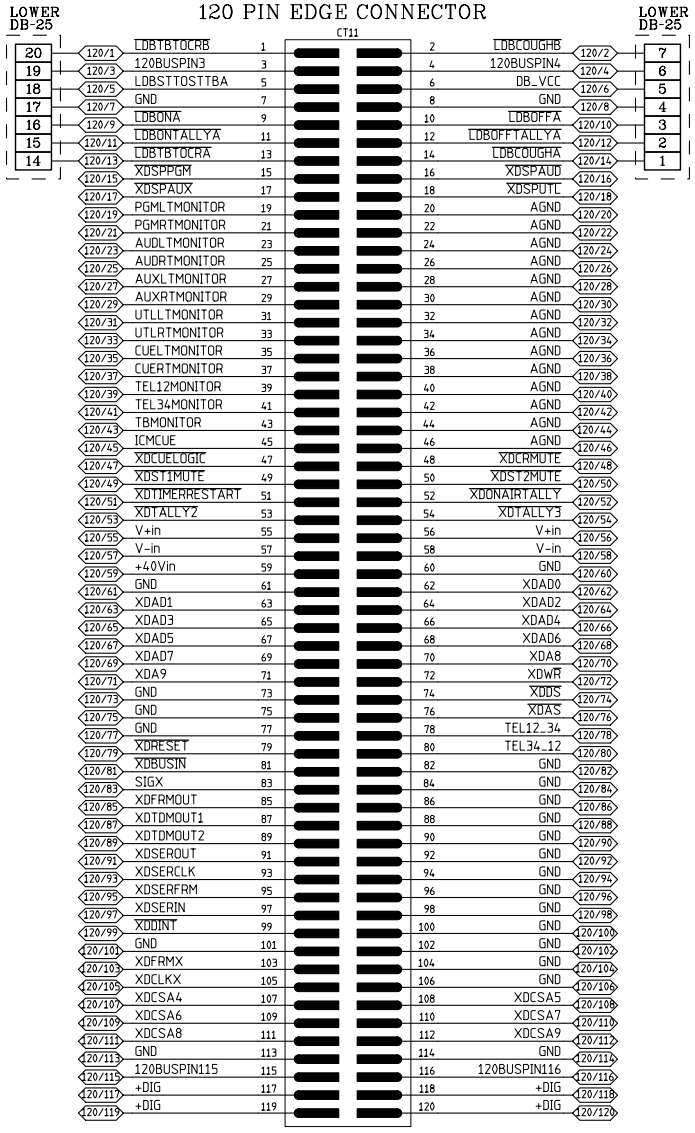
1	ON	8
2	ON	7
3	ON	6
4	ON	5

NOTE 1: PHASE SYMBOLS DENOTE SIGNAL POLARITY
IN PHASE
OUT OF PHASE

CONTRACT NO.		MMD-500	
APPROVALS	DATE	Wheatstone Corporation	
DRAWN	SA 10-15-01	600 Industrial Drive	
CHECKED	SA	New Bern, NC 28562	
ISSUED	SA	SIZE D / FSCM NO. / DWG. NO. 14S0052 / REV F	
W* 700251		SCALE MMD-500F PCB / SHEET 3 OF 4	

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





AGND

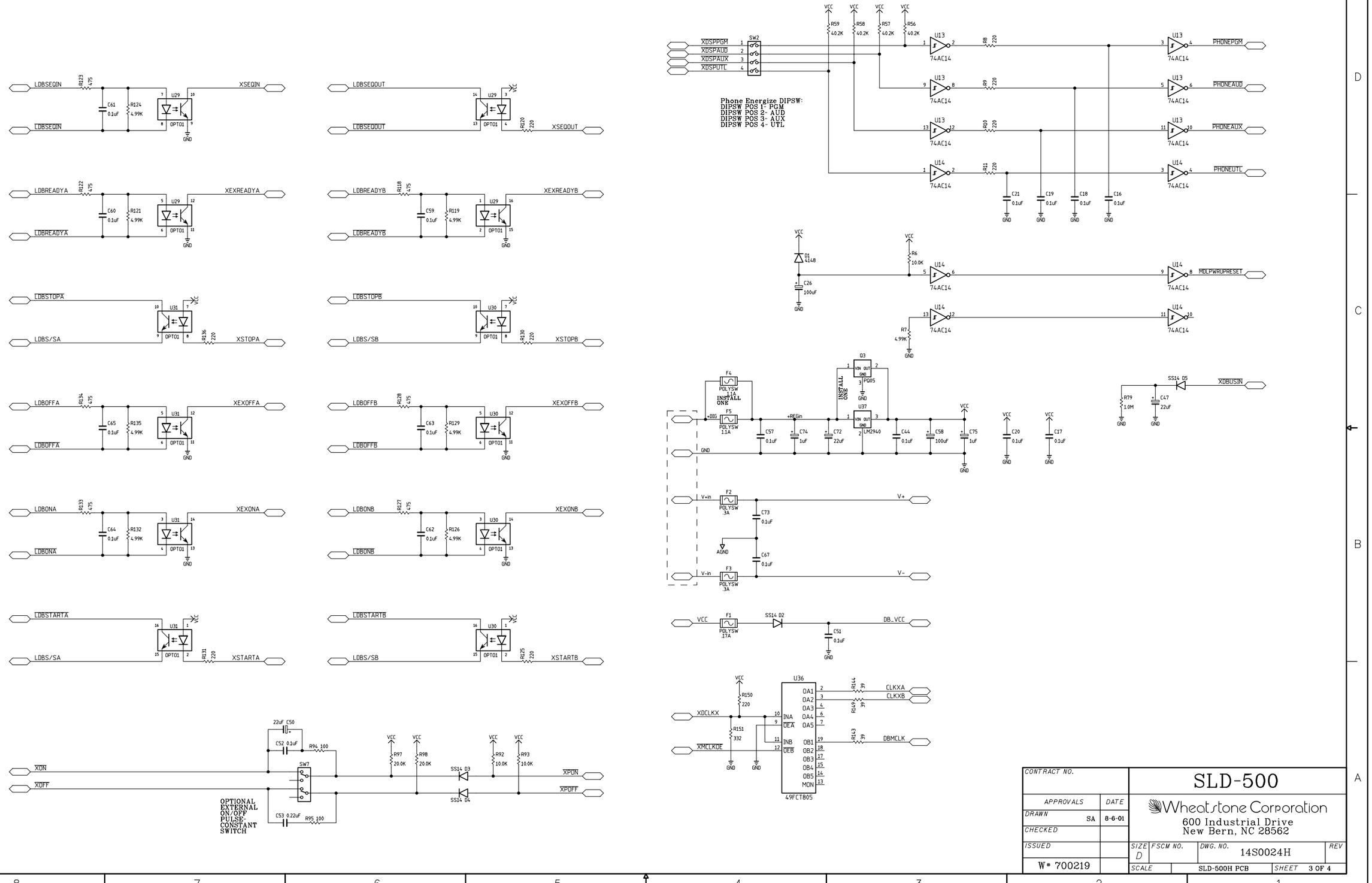
AGND

AGND

AGND

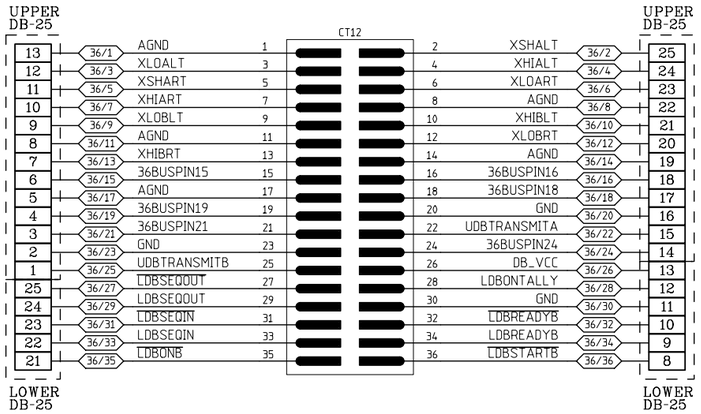
CONNECTORS BUSS CHART

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

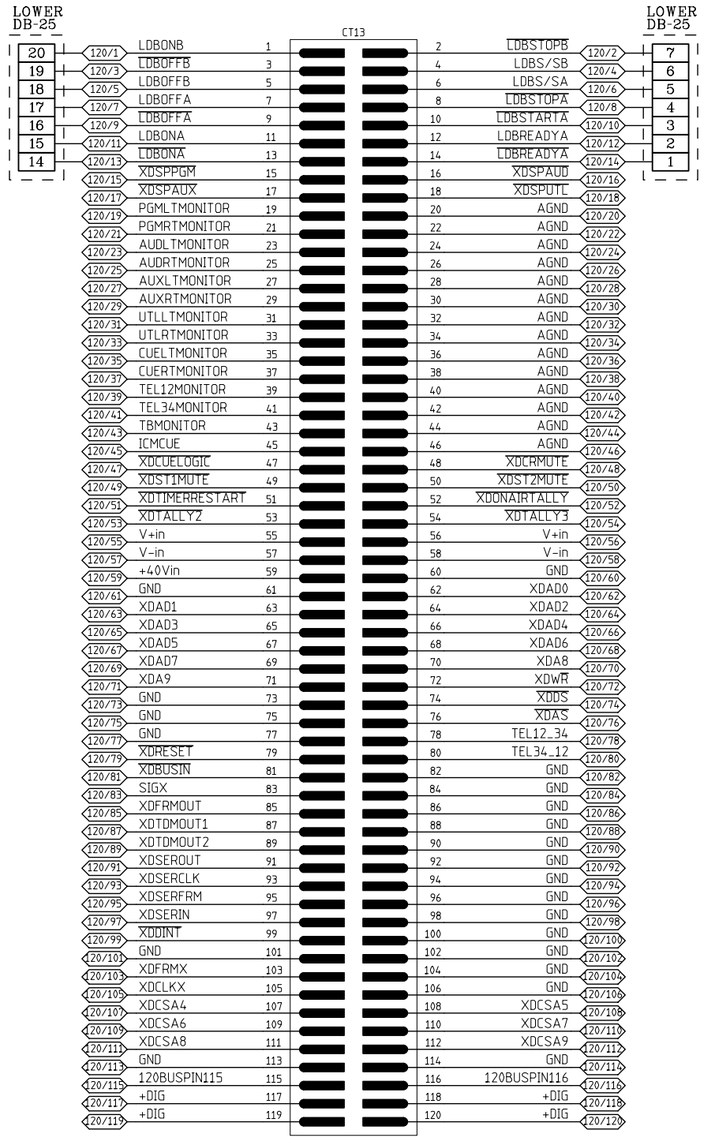


CONTRACT NO.		SLD-500	
APPROVALS	DATE	Wheatstone Corporation 600 Industrial Drive New Bern, NC 28562	
DRAWN SA	8-6-01		
CHECKED			
ISSUED		SIZE D / FSCM NO. / DWG. NO. 14S0024H / REV	
W# 700219		SCALE / SLD-500H PCB / SHEET 3 OF 4	

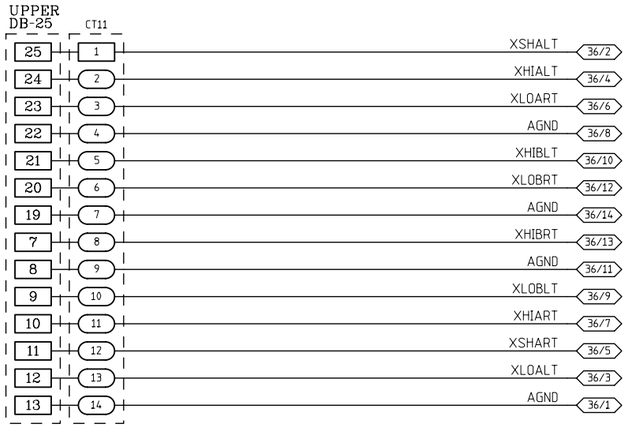
36 PIN EDGE CONNECTOR



120 PIN EDGE CONNECTOR



CONNECTORS BUSS CHART



CONTRACT NO.		SLD-500
APPROVALS	DATE	Wheatstone Corporation 600 Industrial Drive New Bern, NC 28562
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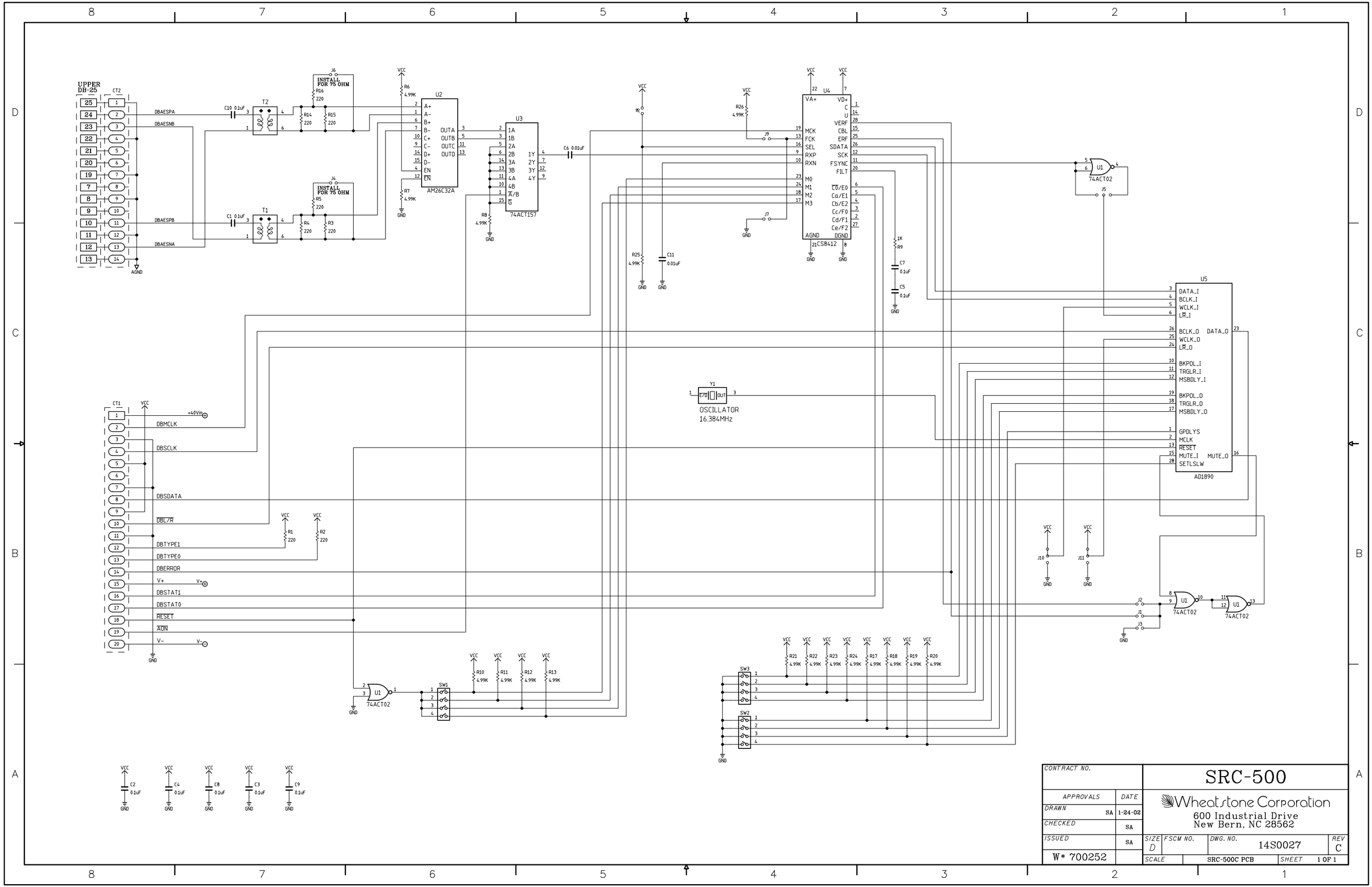
ISSUED		SCALE SLD-500H PCB / SHEET 4 OF 4
W• 700219		



CONTRACT NO.	SRC-500
APPROVALS / DATE	Wheatstone Corporation 600 Industrial Drive New Bern, NC 28562
DRAWN SA 1-24-02	
CHECKED SA	
ISSUED SA	
W* 700252	SIZE D · FSCM NO. · DWG. NO. 14S0027 · REV C
	SCALE · SRC-500C PCB · SHEET 1 OF 1

NOTE: PHASE SYMBOLS DENOTE SIGNAL POLARITY
IN PHASE OUT OF PHASE

UPPER DB-25 CT2
LINE 1 LT SH 25 1
LINE 1 LT HI 24 2
LINE 1 RT LO 23 3
LINE 2 LT SH 22 4
LINE 2 LT HI 21 5
LINE 2 RT LO 20 6
19 7
LINE 2 RT HI 7 8
LINE 2 RT SH 8 9
LINE 2 LT LO 9 10
LINE 1 RT HI 10 11
LINE 1 RT SH 11 12
LINE 1 LT LO 12 13
13 14

LINE1LTHI
+4dBu BAL
LINE1LTLO
LINE1RTHI
+4dBu BAL
LINE1RTLO
LINE2LTHI
+4dBu BAL
LINE2LTLO
LINE2RTHI
+4dBu BAL
LINE2RTLO

SSM2143 U11, U10, U5, U3
-2dBu
22uF C49, C39, C32, C17
R35, R32, R30, R21 4.99K
C47, C48, C40, C41, C35, C36, C26, C27 0.001uF

X_Y INH S VHC4053
U8 VHC4053
U6 VHC4053
LINE1/ LINE2 SELECT
0V DC
100uF C18, C19
R17, R18 40.2K

LINE LT TRIM
LINE RT TRIM
R3, R6 220
C6, C9 330pF
R5, R8 2.43K
C2, C4 330pF
R2, R11 39
R10, R12 2.43K
R4, R7 39
R22, R13 10
-14dBu
+2.5V DC
2.5V
5532 U1, U2
SS14 D6, D4
SS14 D8, D2
SS14 D5, D3
SS14 D9, D1
3900pF C30, C14

VCCadc
VA+
R16 4.99K
R33, R34 4.99K
U9 74ACT08
AK5392 U4
GNDL AINL+ AINL- AINR+ AINR- GNDR LRCK SCLK MCLK FSYNC HPFE TEST CMODE SMODE1 SMODE2 ZCAL RST
VA VD VREFL VCOML VREFR VCOMR SDATA CAL AGND BGND DGND
C29, C28 0.22uF
C21 10uF
C13, C16 0.22uF
C22 10uF
1uF
R15 40.2K
J4 NOT INSTALLED
J2, J3, J1
R25, R26, R24 4.99K

CT1 VCC
+4.0Vin
DBMCLK
DBSCLK
DBSDATA
DBL/R
DBTYPE1
DBTYPE0
V+
RESET
AON
V-
R31, R27 220

R28 4.99K
D7 4148
C42 100uF
U7 74AC14
U9 74ACT08
C34 100uF
4148 D11
R29 4.99K
D10 4148
L1 FERR

C38, C33, C23, C25 0.1uF, C24 1uF

Q1 VIN OUT GND PQ05
R1, R9 1.30K
C44, C31, C46, C3, C43, C12, C11, C1 100uF
C45, C15, C37, C8, C5 0.1uF
Z3 1N4735
Z1, Z2 5V1
R20, R19 475
C20 100uF
C10, C7 0.1uF
Vdd
VA+
2.5V
Vee

AK5392 IC PINOUT
VIEWED FROM ABOVE (COMPONENT SIDE)
VREFL VREFR, VCOML VCOMR, AINL+ AINR+, AINL- AINR-, ZCAL VA, VD AGND, AGND BGND, CAL TEST, RST HPFE, SMODE2 CMODE, SMODE1 MCLK, LRCK FSYNC, SCLK SDATA

SSM2143 IC PINOUT
VIEWED FROM ABOVE (COMPONENT SIDE)
REF N/C, IN- V+, IN+ OUT, V- SENSE

NE5532 IC PINOUT
VIEWED FROM ABOVE (COMPONENT SIDE)
OUT V+, IN- OUT, IN+ IN-, V- IN+

74VHC4053 IC PINOUT
VIEWED FROM ABOVE (COMPONENT SIDE)
Xb VDD, Yb X_Yb, Xa X_Ya, Ya Yc, INH A, VEE B, VSS C

74AC14 IC PINOUT
VIEWED FROM ABOVE (COMPONENT SIDE)
1a VCC, 1Za 1Z, 0a 1A, 1b 0Z, 0Z 1a, VSS 0a

74AC08 IC PINOUT
VIEWED FROM ABOVE (COMPONENT SIDE)
1a 1Z, 1Za 1Z, 0a 1A, 1Zb 0Z, 0b 1Z, VSS 0c

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

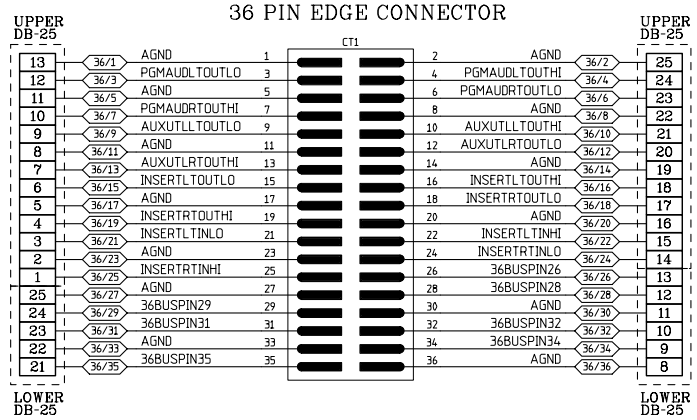
SLD-600 Input Module Schematic - Sheet 6 of 6

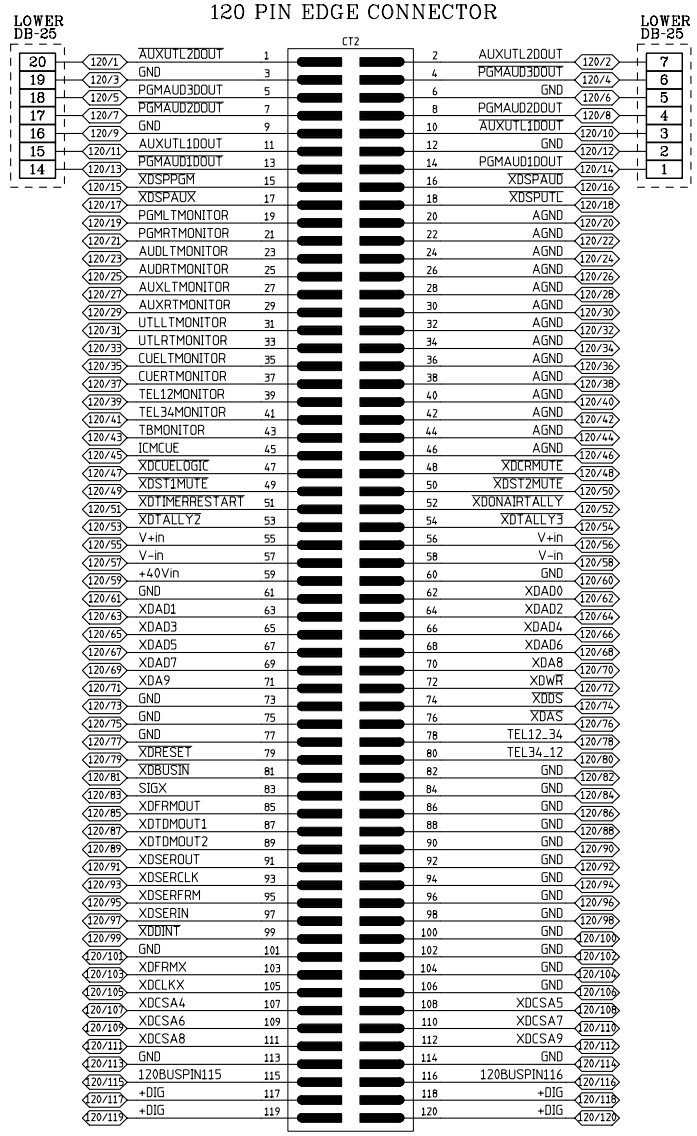
DEM0	DEM1	DE-EMPHASIS
OFF	OFF	OFF
OFF	ON	44.1 kHz
ON	OFF	48 kHz
ON	ON	32 kHz

DIF0	DIF1	DIF2	FORMAT
OFF	OFF	OFF	7: CALIBRATE
OFF	OFF	ON	6: 18-20 BITS, I2S, LR
OFF	ON	OFF	5: 16 BITS, I2S, LR
OFF	ON	ON	4: 16-20 BITS, SCLK ↑, LR
ON	OFF	OFF	3: 16-20 BITS, SCLK ↓, LR
ON	OFF	ON	2: 20 BITS, LSB JUSTIFIED, LR
ON	ON	OFF	1: 18 BITS, LSB JUSTIFIED, LR
ON	ON	ON	0: 16 BITS, LSB JUSTIFIED, LR

CONTRACT NO.		OMD-500		
APPROVALS	DATE	Wheatstone Corporation		
DRAWN SA	6-19-00	600 Industrial Drive		
CHECKED	SA	New Bern, NC 28562		
ISSUED	SA	SIZE D	FSCM NO.	DWG. NO. 14S0029 REV H
W# 700226		SCALE	OMD-500H PCB	SHEET 2 OF 4

OMD-500 Output Module Schematic - Sheet 2 of 4

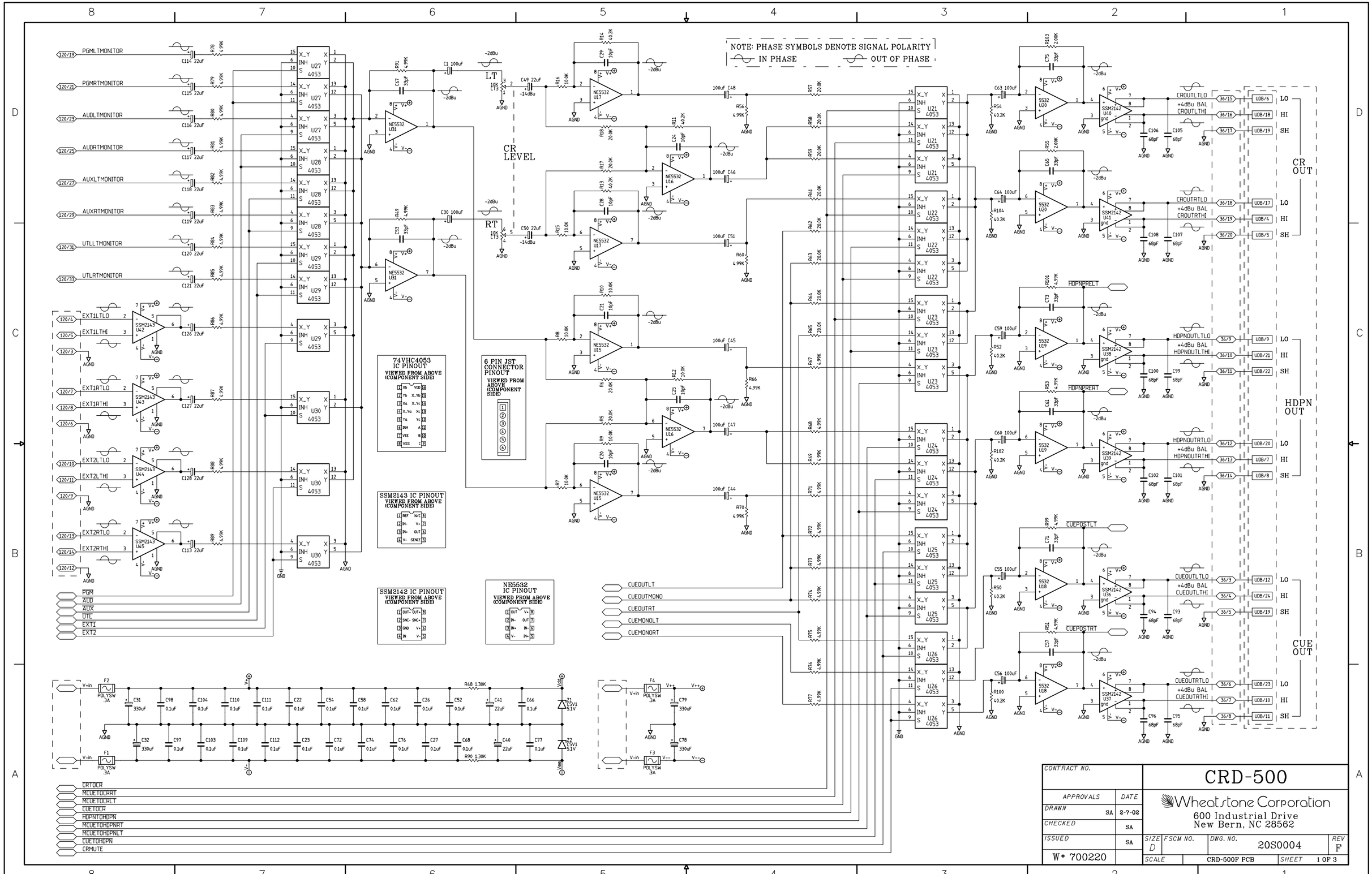




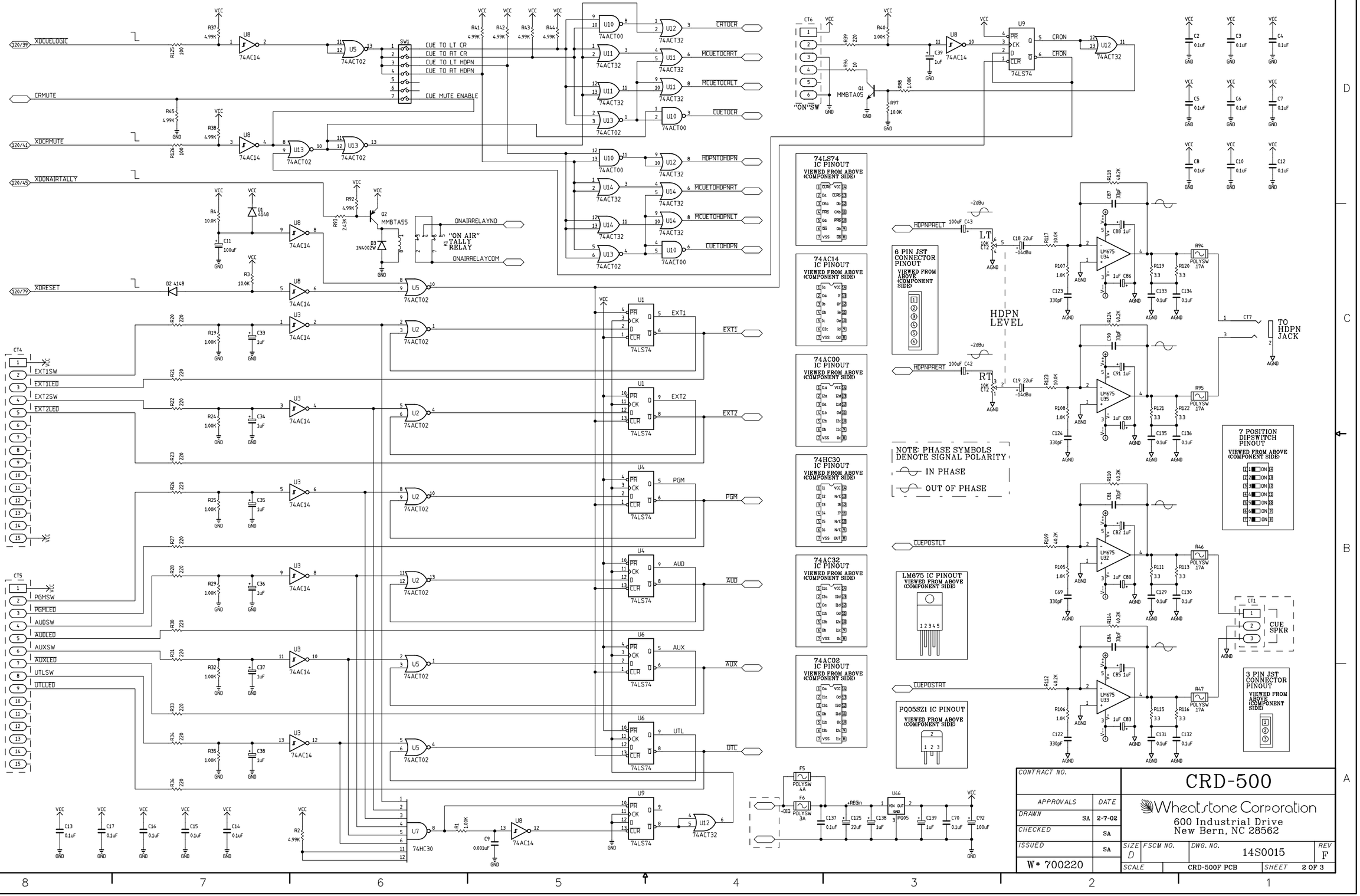
AGND AGND AGND AGND AGND AGND AGND AGND AGND

CONNECTORS BUSS CHART

CONTRACT NO.	OMD-500
APPROVALS / DATE	Wheatstone Corporation
DRAWN SA 6-19-00	600 Industrial Drive
CHECKED SA	New Bern, NC 28562
ISSUED SA	SIZE C / FSCM NO. / DWG. NO. 14S0030 / REV H
W# 700226	SCALE / OMD-500H PCB / SHEET 4 OF 4



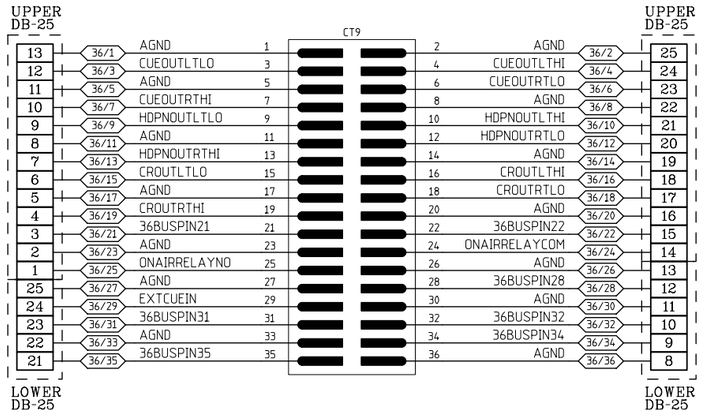
CRD-500 Control Room Module Schematic - Sheet 1 of 4



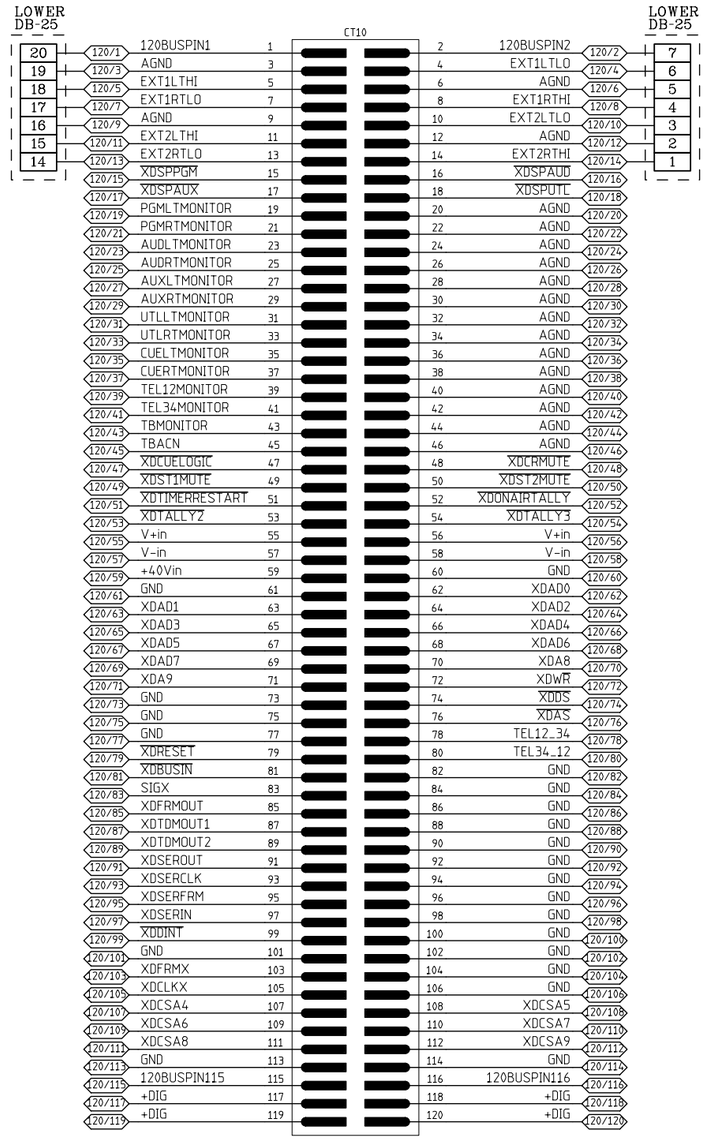
CRD-500 Control Room Module Schematic - Sheet 2 of 4

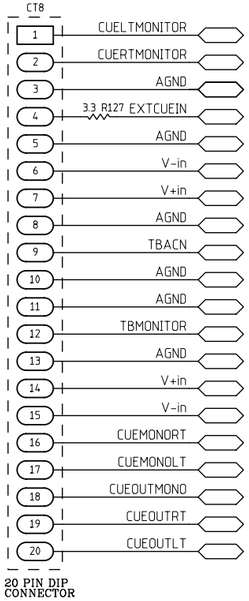
CONNECTORS BUSS CHART

36 PIN EDGE CONNECTOR

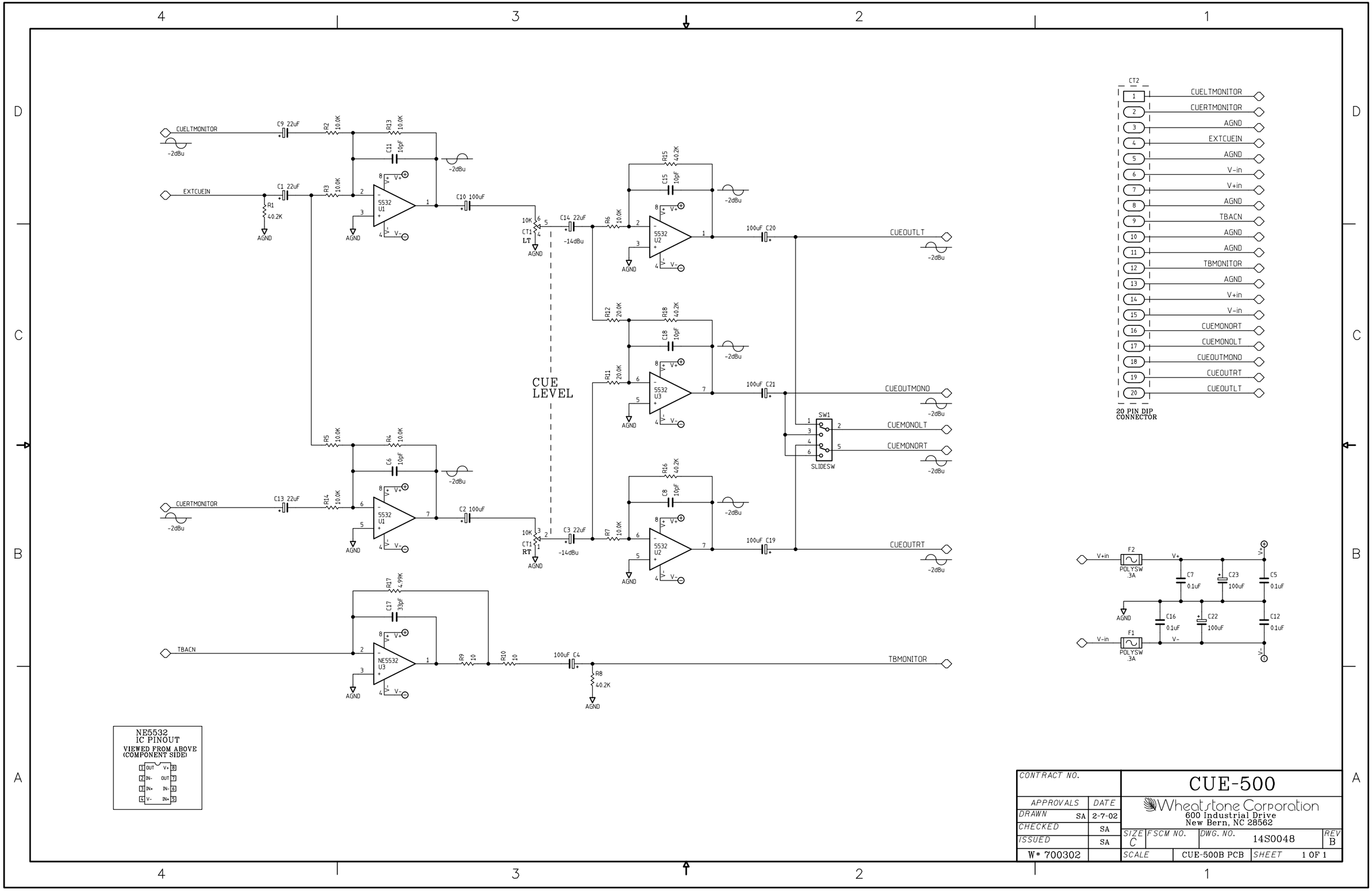


120 PIN EDGE CONNECTOR



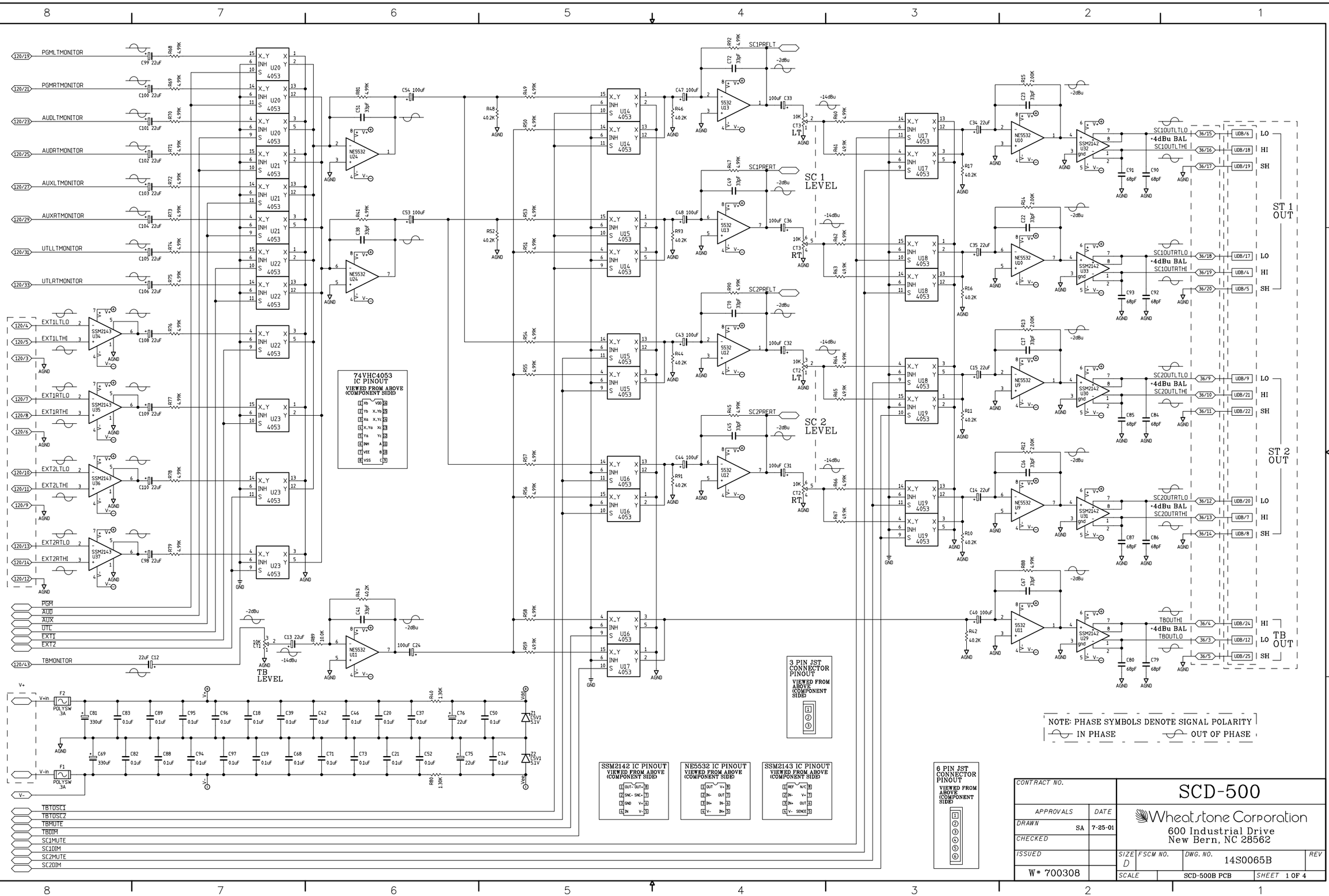


CONTRACT NO.		CRD-500	
APPROVALS	DATE	Wheatstone Corporation 600 Industrial Drive New Bern, NC 28562	
DRAWN SA	2-7-02		
CHECKED	SA		
ISSUED	SA		
W# 700220		SIZE C / FSCM NO. / DWG. NO. 14S0016 / REV F	
		SCALE / CRD-500F PCB / SHEET 3 OF 3	

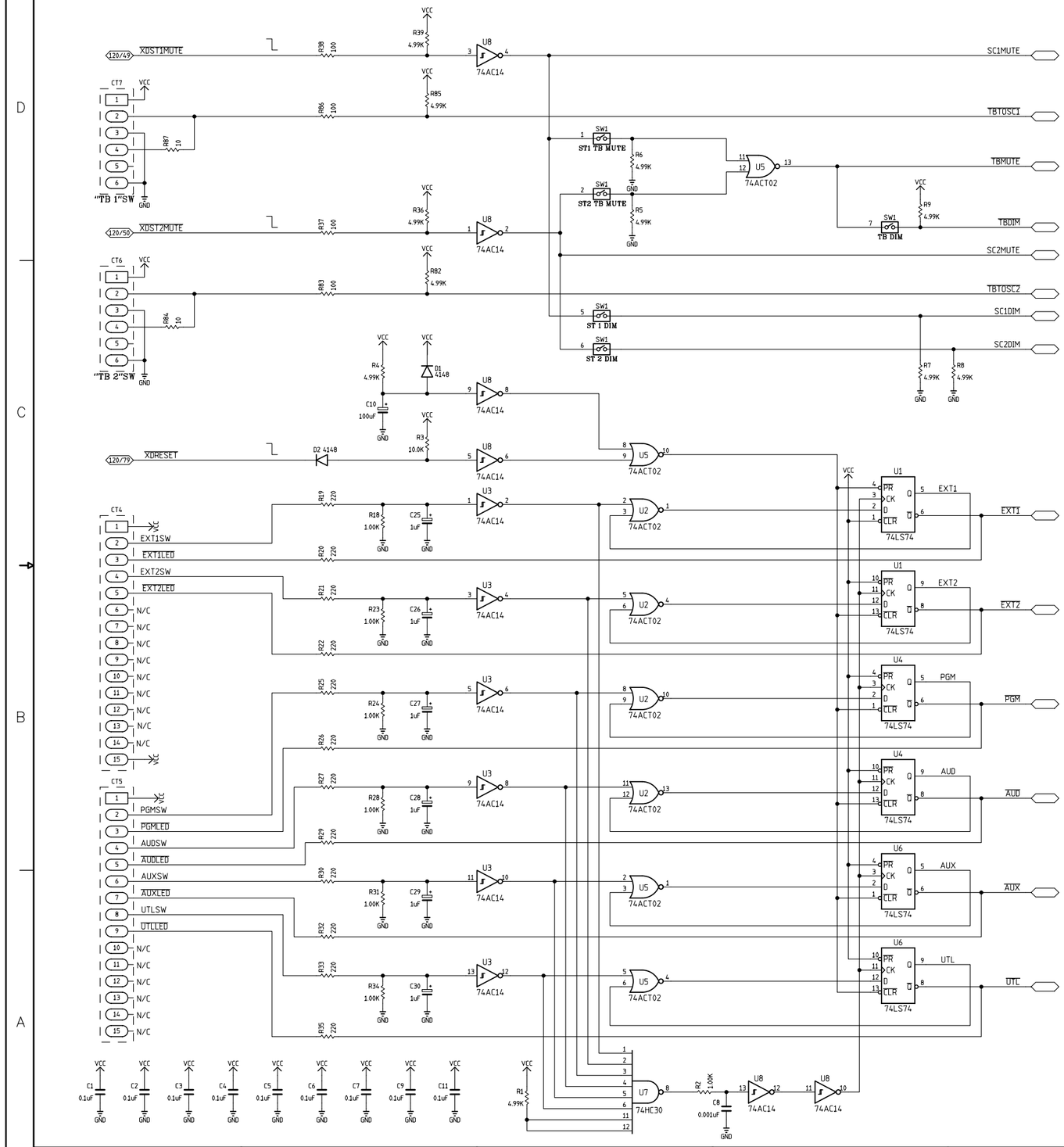


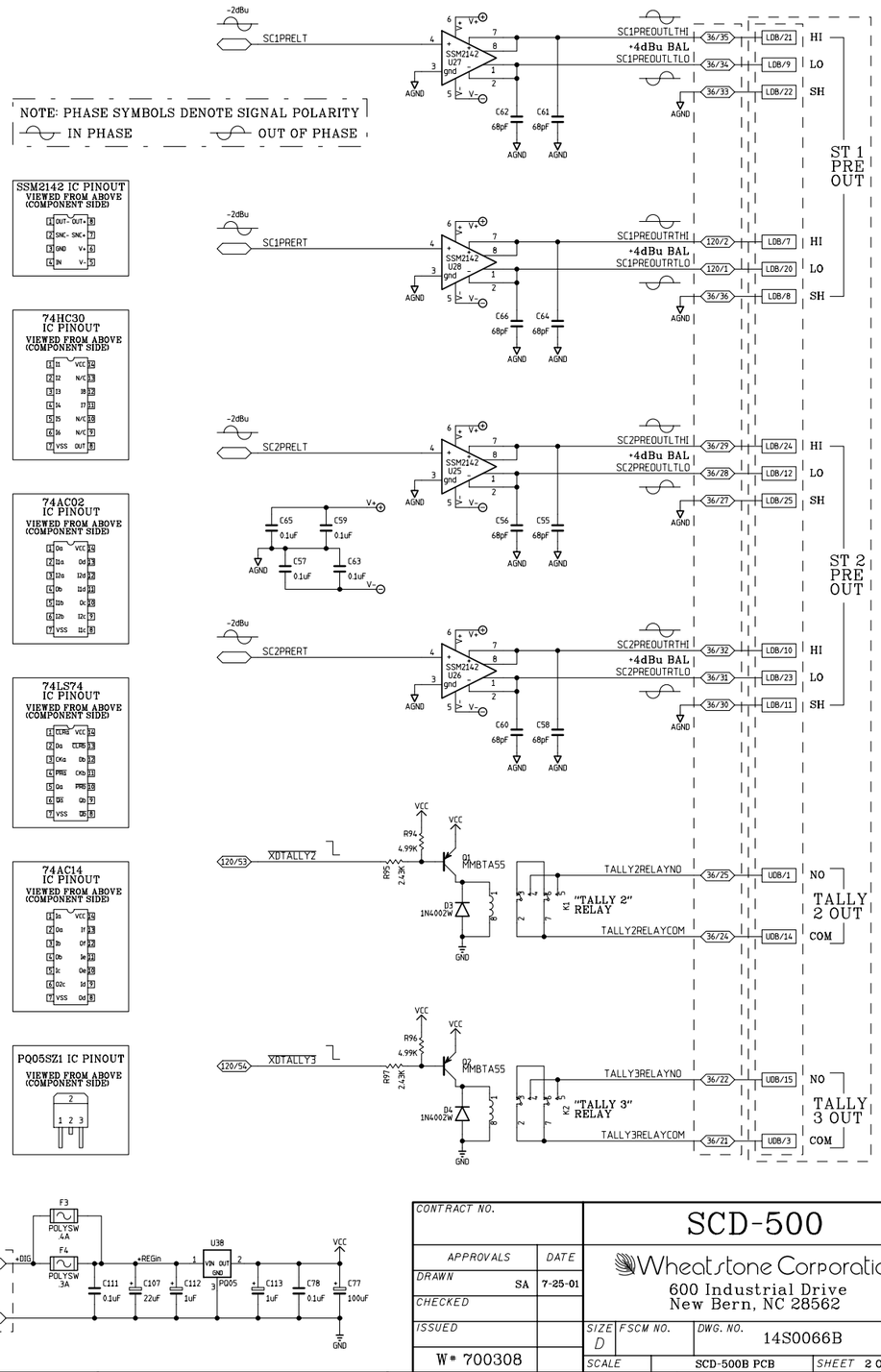
CONTRACT NO.		CUE-500
APPROVALS	DATE	Wheatstone Corporation, 600 Industrial Drive, New Bern, NC 28562
DRAWN SA	2-7-02	
CHECKED	SA	
ISSUED	SA	SIZE C · FSCM NO. · DWG. NO. 14S0048 · REV B
W# 700302		SCALE CUE-500B PCB · SHEET 1 OF 1

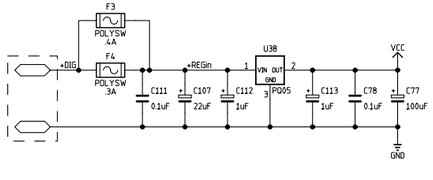
CRD-500 Control Room Module Schematic - Sheet 4 of 4



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



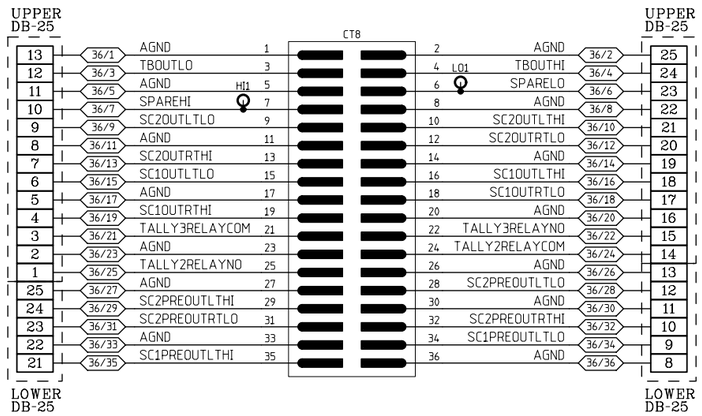




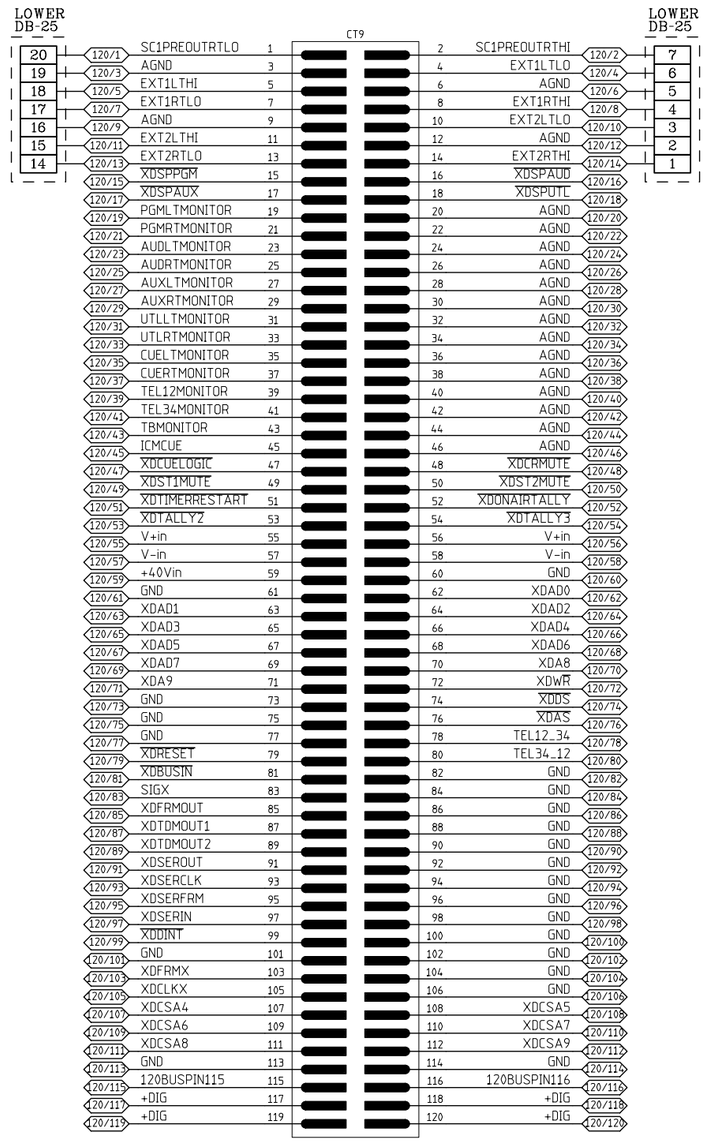
CONTRACT NO.		SCD-500	
APPROVALS	DATE	Wheatstone Corporation	
DRAWN	SA 7-25-01	600 Industrial Drive	
CHECKED		New Bern, NC 28562	
ISSUED		SIZE D / FSCM NO. / DWG. NO. 14S0066B / REV	
W# 700308		SCALE SCD-500B PCB / SHEET 2 OF 4	

CONNECTORS
BUSS CHART

36 PIN EDGE CONNECTOR



120 PIN EDGE CONNECTOR



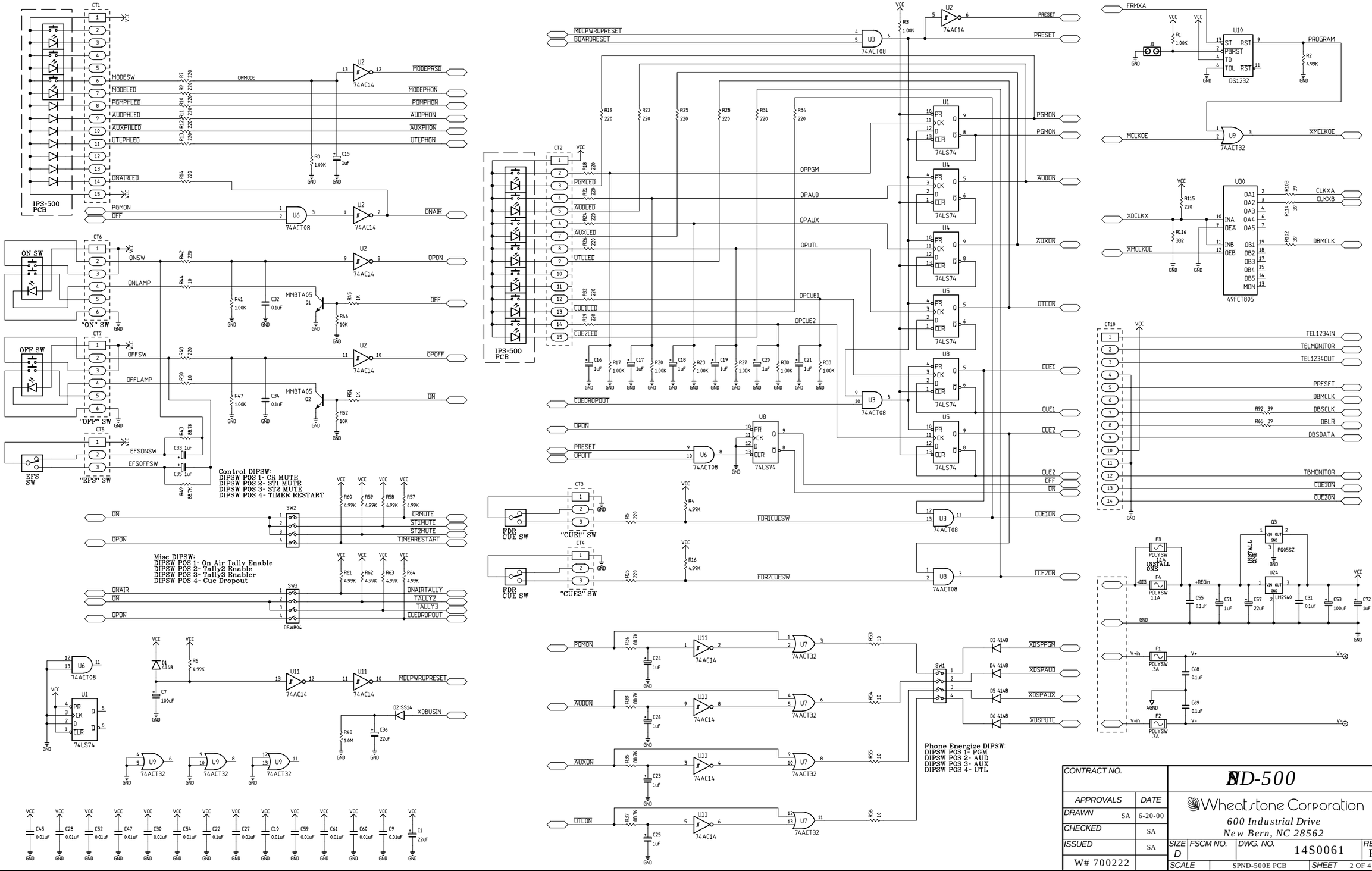
AGND

AGND

AGND

AGND

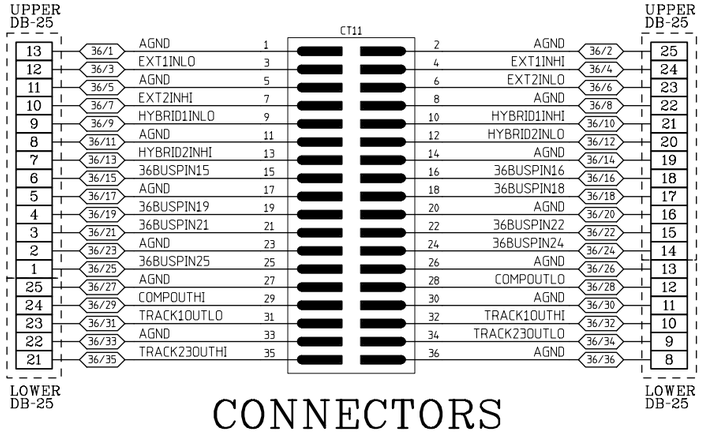
CONTRACT NO.		SCD-500	
APPROVALS	DATE	Wheatstone Corporation 600 Industrial Drive New Bern, NC 28562	
DRAWN SA	7-25-01		
CHECKED			
ISSUED			
W# 700308		SIZE C / FSCM NO. / DWG. NO. 14S0067B / REV -	
		SCALE / SCD-500B PCB / SHEET 3 OF 4	



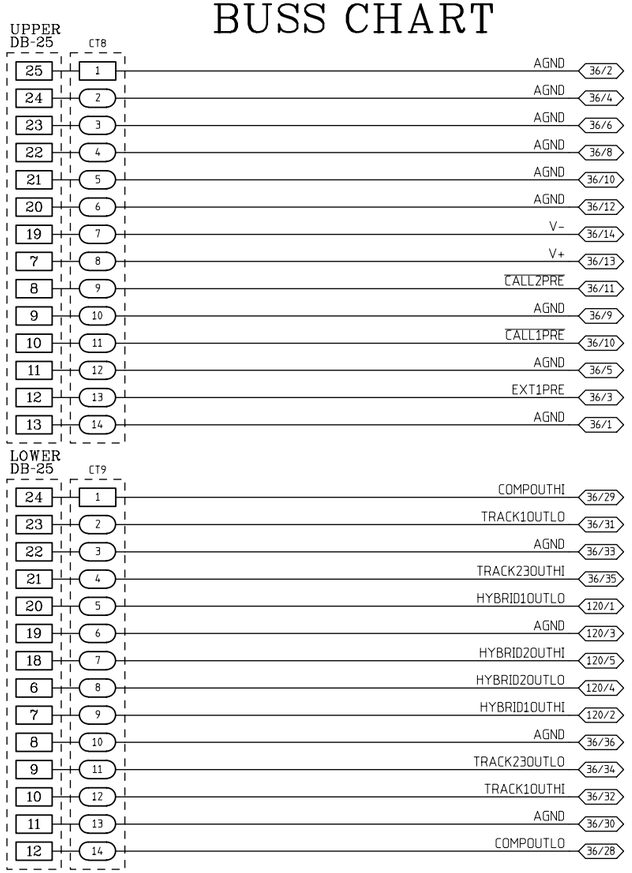
CONTRACT NO.	SPND-500
APPROVALS / DATE	Wheatstone Corporation
DRAWN SA 6-20-00	600 Industrial Drive
CHECKED SA	New Bern, NC 28562
ISSUED SA	SIZE D · FSCM NO. · DWG. NO. 14S0061 · REV E
W# 700222	SCALE SPND-500E PCB · SHEET 2 OF 4

SPND-500 SuperPhone Module Schematic - Sheet 2 of 4

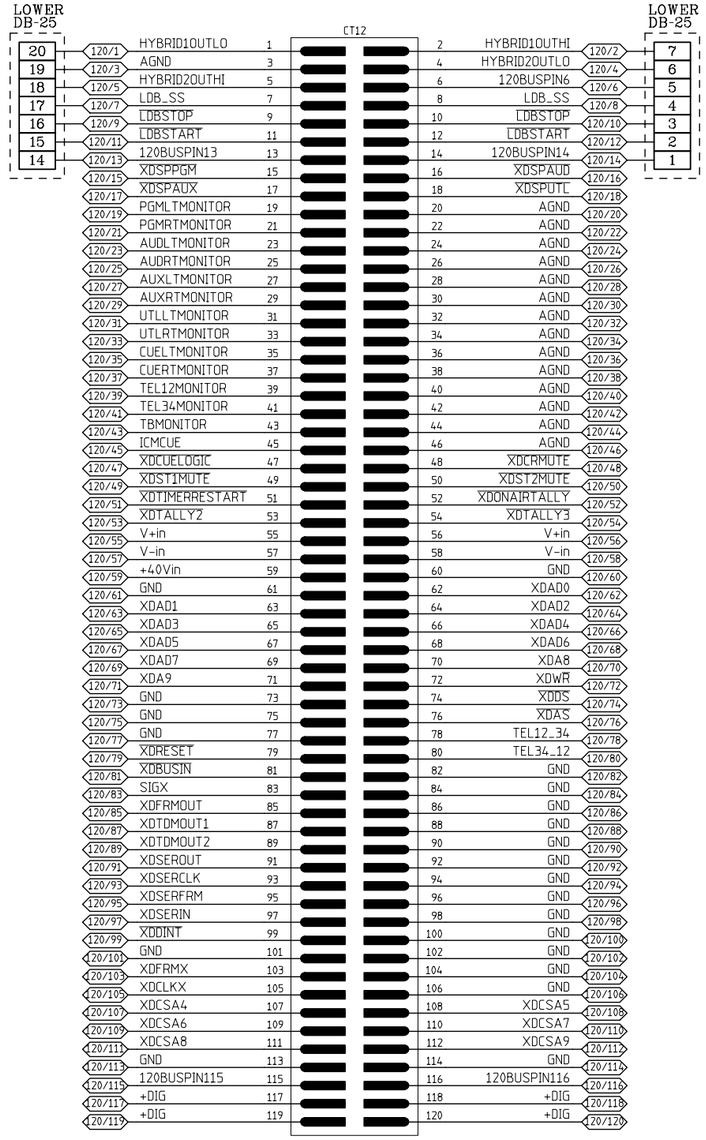
36 PIN EDGE CONNECTOR



CONNECTORS BUSS CHART

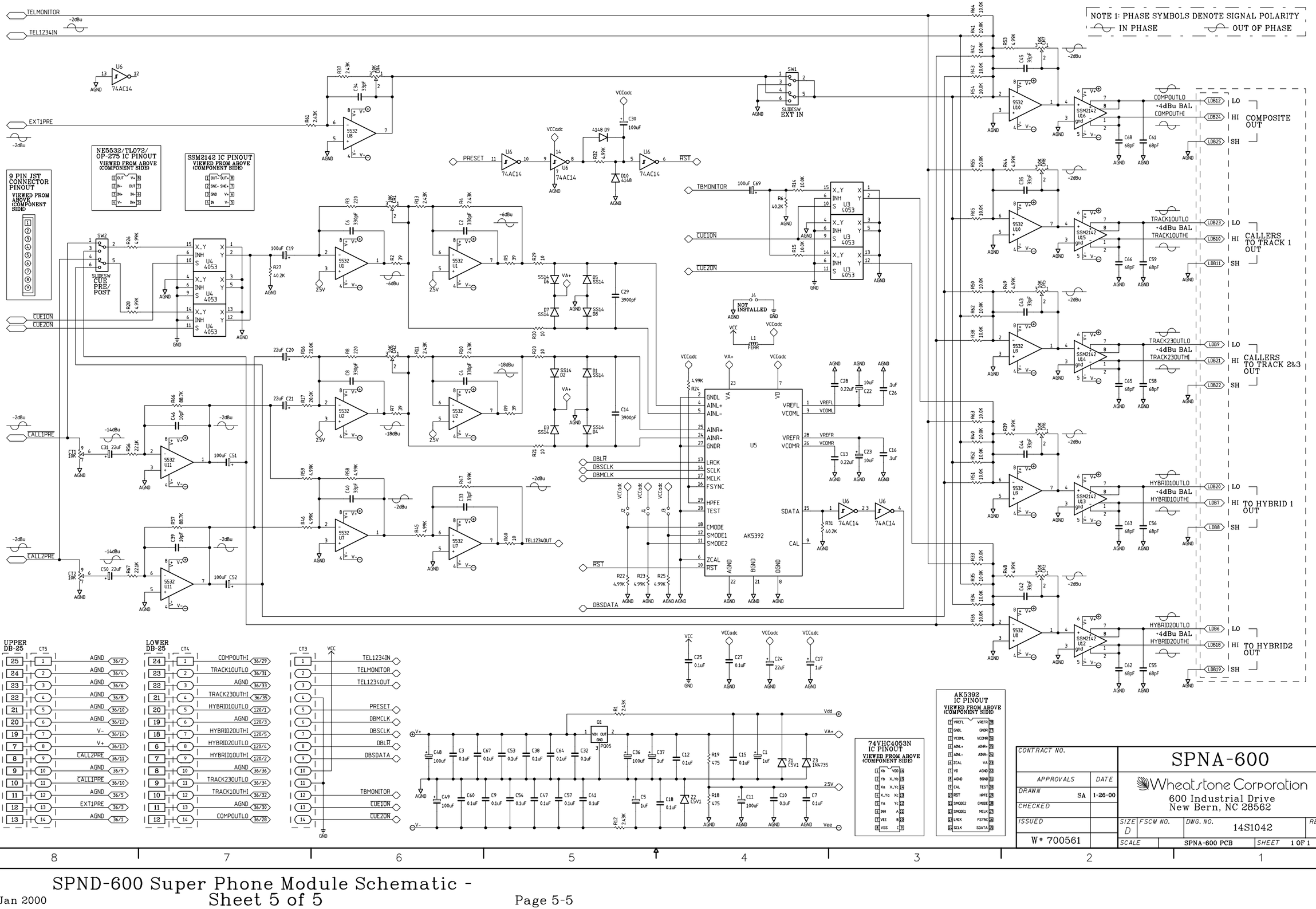


120 PIN EDGE CONNECTOR



AGND

CONTRACT NO.		SPND-500	
APPROVALS	DATE	Wheatstone Corporation	
DRAWN SA	6-20-00	600 Industrial Drive	
CHECKED	SA	New Bern, NC 28562	
ISSUED	SA	SIZE C / FSCM NO. / DWG. NO. 14S0062 / REV E	
W# 700222		SCALE SPND-500E PCB	SHEET 3 OF 3



CONTRACT NO.	SPNA-600
APPROVALS / DATE	Wheatstone Corporation
DRAWN SA 1-26-00	600 Industrial Drive, New Bern, NC 28562
CHECKED	
ISSUED	SIZE D · FSCM NO. · DWG. NO. 14S1042 · REV
W# 700561	SCALE SPNA-600 PCB · SHEET 1 OF 1

CS5390
IC PINOUT
VIEWED FROM ABOVE
(COMPONENT SIDE)

1	AGND	VREF+	28
2	AFD	VREF-	27
3	AINL+	AINR+	26
4	AINL-	AINR-	25
5	ACAL	VA-	24
6	LGND	VA+	23
7	VL+	ICLKA	22
8	TST01	TST02	21
9	DCAL	DCLKD	20
10	DFD	ICLKD	19
11	CMODE	DGND	18
12	SMODE	VD+	17
13	C/R	FSYNC	16
14	SCLK	SDATA	15

74VHC4053
IC PINOUT
VIEWED FROM ABOVE
(COMPONENT SIDE)

1	Xb	VDD	16
2	Yb	X_Yb	15
3	Xa	X_Ya	14
4	X_Ya	Xc	13
5	Ya	Yc	12
6	INH	A	11
7	VEE	B	10
8	VSS	C	9

NE5532
IC PINOUT
VIEWED FROM ABOVE
(COMPONENT SIDE)

1	OUT	V+	8
2	IN-	OUT	7
3	IN+	IN-	6
4	V-	IN+	5

SSM2143 IC PINOUT
VIEWED FROM ABOVE
(COMPONENT SIDE)

1	REF	N/C	8
2	IN-	V+	7
3	IN+	OUT	6
4	V-	SENCE	5

SSM2142 IC PINOUT
VIEWED FROM ABOVE
(COMPONENT SIDE)

1	OUT-	OUT+	8
2	SNC-	SNC+	7
3	GND	V+	6
4	IN	V-	5

ALINE1[1:8]N

ALINE1[1:8]L ALINE1[1:8]R

ANALOG LINE 1 IN
ANALOG LINE 2 IN
ANALOG LINE 3 IN
ANALOG LINE 4 IN
ANALOG LINE 5 IN
ANALOG LINE 6 IN
ANALOG LINE 7 IN
ANALOG LINE 8 IN

HI
LT LO
RT LO
SH

+4dBu BAL

SSM2143 U5 U13 U22 U31 U4 U12 U21 U30 U3 U11 U20 U29 U2 U10 U19 U28

22uF C15 C39 C58 C89 C14 C38 C57 C88 C13 C37 C56 C87 C12 C36 C55 C86

ALINE1[1:8]L ALINE1[1:8]R

X_Y INH S U45 4053 U44 4053 U43 4053 U42 4053 U41 4053 U40 4053

NOTE: PHASE SYMBOLS DENOTE SIGNAL POLARITY
IN PHASE
OUT OF PHASE

NE5532 U39 U18 U37 U38 U27

SSM2142 U1 U9

AOUTLTLO AOUTLTHI AOUTRTLO AOUTRTHI
+4dBu BAL
LO HI LT SH
LO HI RT SH

ANALOG LINE OUT

VA+ VCCadc +2.5V DC

D33 SS14 D34 D32 SS14 D31 SS14 D38 D36 SS14 D35 D37 SS14

L1 FERR

J6 NOT INSTALLED

U33 AK5392

GNDL AINL+ AINL- AINR+ AINR- GNDR LRCK SCLK MCLK FSYNC HPFE TEST CMODE SMODE1 SMODE2 ZCAL RST VREFL VCOML VREFR VCOMR SDATA CAL AGND BGND DGND

U32 74ACT32

ADCLR ADCSCK ADCMCK RESET ADCDATA

F3 POLYSW 1.0A SS14 D18 F2 POLYSW 1.0A D16 SS14

Q2 PQ05

+Vrack -Vrack V+ V- Vdd VA+ Vee 2.5V

CONTRACT NO.	
APPROVALS	DATE
DRAWN SA	5-12-00
CHECKED	
ISSUED	
W# 700223	

LSR-500

Wheatstone Corporation
600 Industrial Drive
New Bern, NC 28562

SIZE	FSCM NO.	DWG. NO.	REV
D		14S0073D	
SCALE	LSR-500D PCB	SHEET	1 OF 3

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

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

TO UPPER DB-25 CONSOLE CONNECTOR

CT1

1	LINE1OUT	UDB1	
2	GND	UDB2	
3	LINE4OUT	UDB3	
4	LINE5OUT	UDB4	
5	GND	UDB5	
6	LINE8OUT	UDB6	
7	XRESET	UDB7	
8	GND	UDB8	
9	XCLOCK	UDB9	
10			
11	GND	UDB11	
12			
13	AGND	UDB13	
14	LINE2OUT	UDB14	
15	LINE3OUT	UDB15	
16	GND	UDB16	
17	LINE6OUT	UDB17	
18	LINE7OUT	UDB18	
19	GND	UDB19	
20	XRESET	UDB20	
21	XCLOCK	UDB21	
22	GND	UDB22	
23			
24			
25	GND	UDB25	

TO LOWER DB-25 CONSOLE CONNECTOR

CT2

1	+DIGrack	LDB1	
2	+DIGrack	LDB2	
3	+DIGrack	LDB3	
4	GND	LDB4	
5	GND	LDB5	
6	GND	LDB6	
7	AGND	LDB7	
8	AGND	LDB8	
9	+Vrack	LDB9	
10	+Vrack	LDB10	
11	-Vrack	LDB11	
12	-Vrack	LDB12	
13	AGND	LDB13	
14	+DIGrack	LDB14	
15	+DIGrack	LDB15	
16	+DIGrack	LDB16	
17	GND	LDB17	
18	GND	LDB18	
19	GND	LDB19	
20	AGND	LDB20	
21	AGND	LDB21	
22	+Vrack	LDB22	
23	+Vrack	LDB23	
24	-Vrack	LDB24	
25	-Vrack	LDB25	

DIGITAL OUTPUT DB-9 CONNECTOR

CT3

1	DOUTHI	ODB1	
2	GND	ODB2	
3			
4			
5	AGND	ODB5	
6	DOUTLO	ODB6	
7			
8	GND	ODB8	
9			

DIGITAL OUTPUT (DB-9)

N/C	9	5	AUDIO COMMON
N/C	8	4	N/C
N/C	7	3	N/C
D LINE OUT LO	6	2	D LINE OUT SH
		1	D LINE OUT HI

DIGITAL INPUTS 1-8 DB-25 CONNECTOR

CT4

1	DLINE8INHI	IDB1	
2	GND	IDB2	
3	DLINE7INLO	IDB3	
4	DLINE6INHI	IDB4	
5	GND	IDB5	
6	DLINE5INLO	IDB6	
7	DLINE4INHI	IDB7	
8	GND	IDB8	
9	DLINE3INLO	IDB9	
10	DLINE2INHI	IDB10	
11	GND	IDB11	
12	DLINE1INLO	IDB12	
13	AGND	IDB13	
14	DLINE8INLO	IDB14	
15	DLINE7INHI	IDB15	
16	GND	IDB16	
17	DLINE6INLO	IDB17	
18	DLINE5INHI	IDB18	
19	GND	IDB19	
20	DLINE4INLO	IDB20	
21	DLINE3INHI	IDB21	
22	GND	IDB22	
23	DLINE2INLO	IDB23	
24	DLINE1INHI	IDB24	
25	GND	IDB25	

ANALOG OUTPUT DB-9 CONNECTOR

CT5

1	AOUTRTHI	OADB1	
2	AGND	OADB2	
3	AOUTLTLO	OADB3	
4			
5	AGND	OADB5	
6	AOUTRTLO	OADB6	
7	AOUTLTHI	OADB7	
8	AGND	OADB8	
9			

ANALOG OUTPUT (DB-9)

N/C	9	5	AUDIO COMMON
N/C	8	4	N/C
A LINE LT OUT SH	7	3	A LINE LT OUT LO
A LINE LT OUT HI	6	2	A LINE RT OUT SH
A LINE RT OUT LO		1	A LINE RT OUT HI

ANALOG INPUTS 5-8 DB-25 CONNECTOR

CT6

1	ALINE8RTINHI	IA2DB1	
2	AGND	IA2DB2	
3	ALINE8LTINLO	IA2DB3	
4	ALINE7RTINHI	IA2DB4	
5	AGND	IA2DB5	
6	ALINE7LTINLO	IA2DB6	
7	ALINE6RTINHI	IA2DB7	
8	AGND	IA2DB8	
9	ALINE6LTINLO	IA2DB9	
10	ALINE5RTINHI	IA2DB10	
11	AGND	IA2DB11	
12	ALINE5LTINLO	IA2DB12	
13	AGND	IA2DB13	
14	ALINE8RTINLO	IA2DB14	
15	ALINE8LTINHI	IA2DB15	
16	AGND	IA2DB16	
17	ALINE7RTINLO	IA2DB17	
18	ALINE7LTINHI	IA2DB18	
19	AGND	IA2DB19	
20	ALINE6RTINLO	IA2DB20	
21	ALINE6LTINHI	IA2DB21	
22	AGND	IA2DB22	
23	ALINE5RTINLO	IA2DB23	
24	ALINE5LTINHI	IA2DB24	
25	AGND	IA2DB25	

ANALOG INPUTS 1-4 DB-25 CONNECTOR

CT7

1	ALINE4RTINHI	IA1DB1	
2	AGND	IA1DB2	
3	ALINE4LTINLO	IA1DB3	
4	ALINE3RTINHI	IA1DB4	
5	AGND	IA1DB5	
6	ALINE3LTINLO	IA1DB6	
7	ALINE2RTINHI	IA1DB7	
8	AGND	IA1DB8	
9	ALINE2LTINLO	IA1DB9	
10	ALINE1RTINHI	IA1DB10	
11	AGND	IA1DB11	
12	ALINE1LTINLO	IA1DB12	
13	AGND	IA1DB13	
14	ALINE4RTINLO	IA1DB14	
15	ALINE4LTINHI	IA1DB15	
16	AGND	IA1DB16	
17	ALINE3RTINLO	IA1DB17	
18	ALINE3LTINHI	IA1DB18	
19	AGND	IA1DB19	
20	ALINE2RTINLO	IA1DB20	
21	ALINE2LTINHI	IA1DB21	
22	AGND	IA1DB22	
23	ALINE1RTINLO	IA1DB23	
24	ALINE1LTINHI	IA1DB24	
25	AGND	IA1DB25	

CONTROL PORTS (To Upper DB-25)

DIGITAL GROUND	25	13	AUDIO COMMON
N/C	24	12	N/C
N/C	23	11	DIGITAL GROUND
DIGITAL GROUND	22	10	N/C
CONSOLE CLOCK	21	9	CONSOLE CLOCK
CONSOLE RESET	20	8	DIGITAL GROUND
DIGITAL GROUND	19	7	CONSOLE RESET
LINE 7	18	6	LINE 8
LINE 6	17	5	DIG GND
DIGITAL GROUND	16	4	LINE 5
LINE 3	15	3	LINE 4
LINE 2	14	2	DIG GND
		1	LINE 1

POWER PORTS (To Lower DB-25)

-V	25	13	AUDIO COMMON
-V	24	12	-V
+V	23	11	-V
+V	22	10	+V
AUDIO COMMON	21	9	+V
AUDIO COMMON	20	8	AUDIO COMMON
DIGITAL GROUND	19	7	AUDIO COMMON
DIGITAL GROUND	18	6	DIGITAL GROUND
DIGITAL GROUND	17	5	DIGITAL GROUND
+ DIGITAL	16	4	DIGITAL GROUND
+ DIGITAL	15	3	+ DIGITAL
+ DIGITAL	14	2	+ DIGITAL
		1	+ DIGITAL

DIGITAL INPUTS (DB-25)

D LINE 1 IN SH	25	13	AUDIO COMMON
D LINE 1 IN HI	24	12	D LINE 1 IN LO
D LINE 2 IN LO	23	11	D LINE 2 IN SH
D LINE 3 IN SH	22	10	D LINE 2 IN HI
D LINE 3 IN HI	21	9	D LINE 3 IN LO
D LINE 4 IN LO	20	8	D LINE 4 IN SH
D LINE 5 IN SH	19	7	D LINE 4 IN HI
D LINE 5 IN HI	18	6	D LINE 5 IN LO
D LINE 6 IN LO	17	5	D LINE 6 IN SH
D LINE 7 IN SH	16	4	D LINE 6 IN HI
D LINE 7 IN HI	15	3	D LINE 7 IN LO
D LINE 8 IN LO	14	2	D LINE 8 IN SH
		1	D LINE 8 IN HI

ANALOG INPUTS "5-8" (DB-25)

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

ANALOG INPUTS "1-4" (DB-25)

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

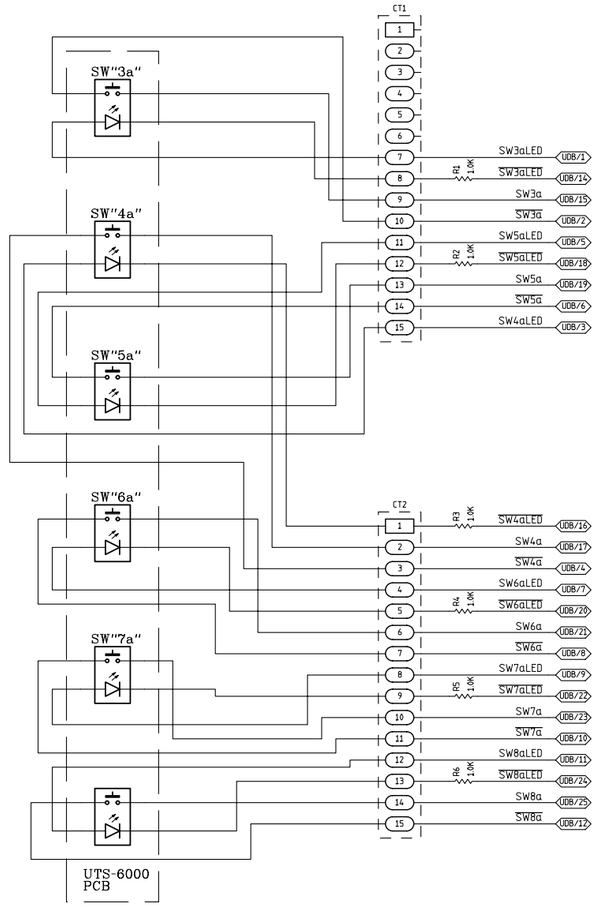
LSD-500

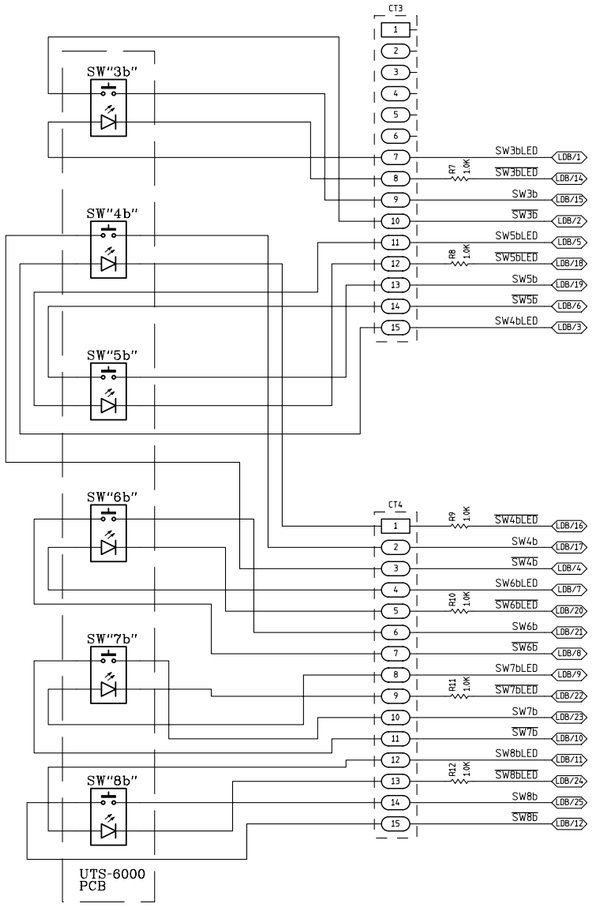
DB Connector Pinouts

I/O CONNECTORS CHART

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

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





36 PIN EDGE CONNECTOR

CT5

UPPER DB-25							UPPER DB-25
13	36/1	36BUSPIN1	1	2	SW8a	36/2	25
12	36/3	SW8a	3	4	SW8aLED	36/4	24
11	36/5	SW8aLED	5	6	SW7a	36/6	23
10	36/7	SW7a	7	8	SW7aLED	36/8	22
9	36/9	SW7aLED	9	10	SW6a	36/10	21
8	36/11	SW6a	11	12	SW6aLED	36/12	20
7	36/13	SW6aLED	13	14	SW5a	36/14	19
6	36/15	SW5a	15	16	SW5aLED	36/16	18
5	36/17	SW5aLED	17	18	SW4a	36/18	17
4	36/19	SW4a	19	20	SW4aLED	36/20	16
3	36/21	SW4aLED	21	22	SW3a	36/22	15
2	36/23	SW3a	23	24	SW3aLED	36/24	14
1	36/25	SW3aLED	25	26	36BUSPIN26	36/26	13
25	36/27	SW8b	27	28	SW8b	36/28	12
24	36/29	SW8bLED	29	30	SW8bLED	36/30	11
23	36/31	SW7b	31	32	SW7b	36/32	10
22	36/33	SW7bLED	33	34	SW7bLED	36/34	9
21	36/35	SW6b	35	36	SW6b	36/36	8
LOWER DB-25							LOWER DB-25

120 PIN EDGE CONNECTOR

CT6

LOWER DB-25							LOWER DB-25
20	120/1	SW6bLED	1	2	SW6bLED	120/2	7
19	120/3	SW5b	3	4	SW5b	120/4	6
18	120/5	SW5bLED	5	6	SW5bLED	120/6	5
17	120/7	SW4b	7	8	SW4b	120/8	4
16	120/9	SW4bLED	9	10	SW4bLED	120/10	3
15	120/11	SW3b	11	12	SW3b	120/12	2
14	120/13	SW3bLED	13	14	SW3bLED	120/14	1
	120/15	XDSPPGM	15	16	XDSPAUD	120/16	
	120/17	XDSPAUX	17	18	XDSPUTL	120/18	
	120/19	PGMLTMONITOR	19	20	AGND	120/20	
	120/21	PGMRTMONITOR	21	22	AGND	120/22	
	120/23	AUDLTMONITOR	23	24	AGND	120/24	
	120/25	AUDRTMONITOR	25	26	AGND	120/26	
	120/27	AUXLTMONITOR	27	28	AGND	120/28	
	120/29	AUXRTMONITOR	29	30	AGND	120/30	
	120/31	UTLLTMONITOR	31	32	AGND	120/32	
	120/33	UTLRTMONITOR	33	34	AGND	120/34	
	120/35	CUELTMONITOR	35	36	AGND	120/36	
	120/37	CUERTMONITOR	37	38	AGND	120/38	
	120/39	TEL12MONITOR	39	40	AGND	120/40	
	120/41	TEL34MONITOR	41	42	AGND	120/42	
	120/43	TBMONITOR	43	44	AGND	120/44	
	120/45	ICMCUE	45	46	AGND	120/46	
	120/47	XDCUELOGIC	47	48	XDCRMUTE	120/48	
	120/49	XDST1MUTE	49	50	XDST2MUTE	120/50	
	120/51	XDTIMERRESTART	51	52	XDONAIRTALLY	120/52	
	120/53	XDTALLY2	53	54	XDTALLY3	120/54	
	120/55	V+in	55	56	V+in	120/56	
	120/57	V-in	57	58	V-in	120/58	
	120/59	+40Vin	59	60	GND	120/60	
	120/61	GND	61	62	XDAD0	120/62	
	120/63	XDAD1	63	64	XDAD2	120/64	
	120/65	XDAD3	65	66	XDAD4	120/66	
	120/67	XDAD5	67	68	XDAD6	120/68	
	120/69	XDAD7	69	70	XDA8	120/70	
	120/71	XDA9	71	72	XDWR	120/72	
	120/73	GND	73	74	XDDS	120/74	
	120/75	GND	75	76	XDAS	120/76	
	120/77	GND	77	78	TEL12.34	120/78	
	120/79	XDRESET	79	80	TEL34.12	120/80	
	120/81	XDBUSIN	81	82	GND	120/82	
	120/83	SIGX	83	84	GND	120/84	
	120/85	XDFRMOUT	85	86	GND	120/86	
	120/87	XDTDMOUT1	87	88	GND	120/88	
	120/89	XDTDMOUT2	89	90	GND	120/90	
	120/91	XDSEROUT	91	92	GND	120/92	
	120/93	XDSERCLK	93	94	GND	120/94	
	120/95	XDSERFRM	95	96	GND	120/96	
	120/97	XDSERIN	97	98	GND	120/98	
	120/99	XDDINT	99	100	GND	120/100	
	20/101	GND	101	102	GND	20/102	
	20/103	XDFRMX	103	104	GND	20/104	
	20/105	XDCLKX	105	106	GND	20/106	
	20/107	XDCSA4	107	108	XDCSA5	20/108	
	20/109	XDCSA6	109	110	XDCSA7	20/110	
	20/111	XDCSA8	111	112	XDCSA9	20/112	
	20/113	GND	113	114	GND	20/114	
	20/115	120BUSPIN115	115	116	120BUSPIN116	20/116	
	20/117	+DIG	117	118	+DIG	20/118	
	20/119	+DIG	119	120	+DIG	20/120	

CONNECTORS BUSS CHART

AGND

AGND

AGND

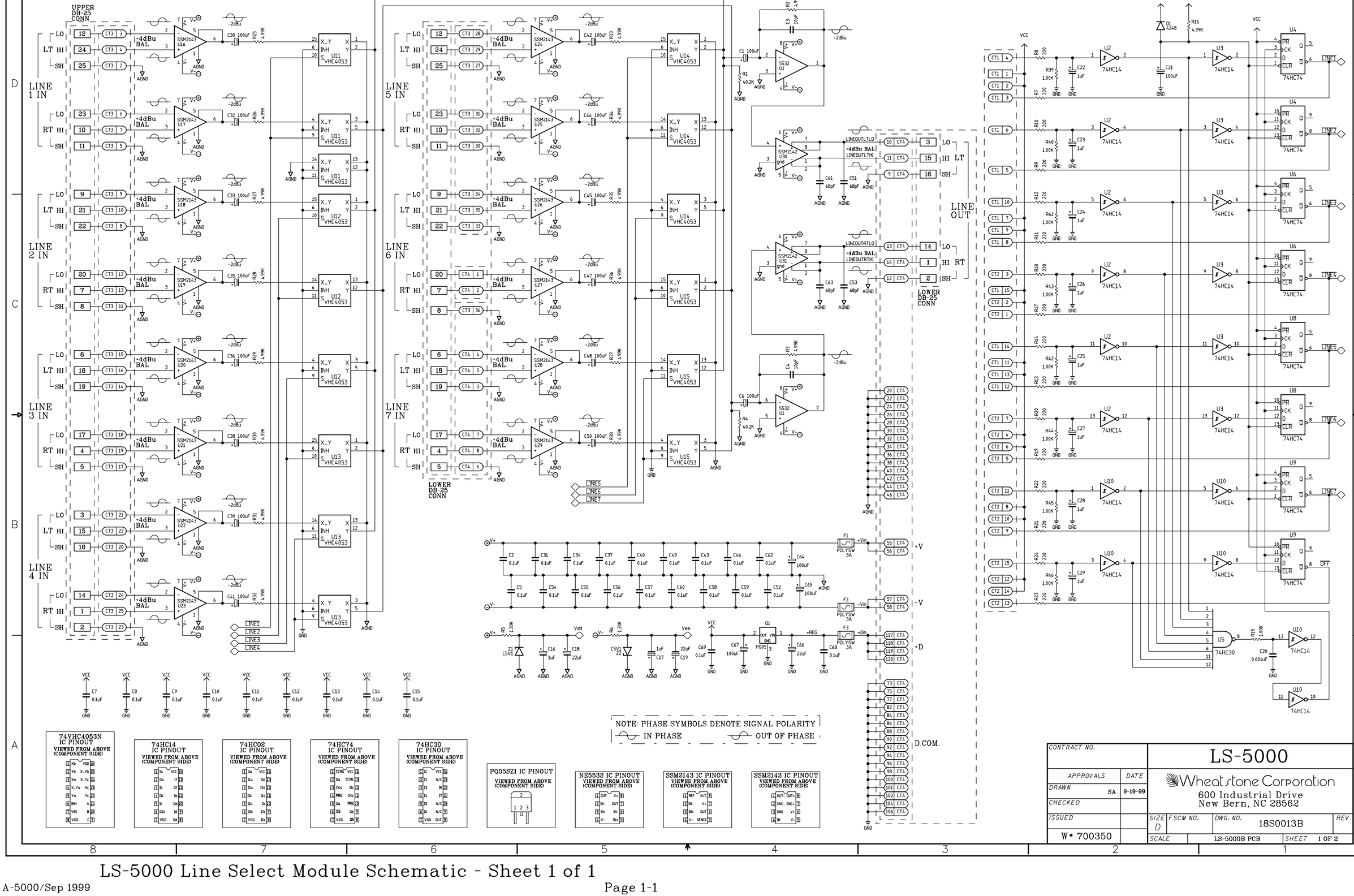
AGND

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

ICMD-500 Intercom Module Schematic - Sheet 1 of 1

NOTE 1: PHASE SYMBOLS DENOTE SIGNAL POLARITY
IN PHASE OUT OF PHASE

CONTRACT NO.		ICMD-500	
APPROVALS	DATE	Wheatstone Corporation 600 Industrial Drive New Bern, NC 28562	
DRAWN SA	5-25-01		
CHECKED			
ISSUED			
W* 700221		SIZE D / FSCM NO. / DWG. NO. 14S0076B / REV	
		SCALE / ICMD-500B PCB / SHEET 1 OF 1	



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

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

Appendix

Contents

For the most part there are no user-replaceable parts in the RD-12 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-12 AUDIO CONSOLE

COMPONENT	DESCRIPTION	*WS P/N*
SLD-5 ADC MODULE	COMPLETE ANALOG STEREO LINE INPUT MODULE	***"002601"***
SLD-5SRC 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-500)	***"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-500 CARD	A-TO-D CONVERTER DAUGHTER BOARD FOR ANALOG STEREO LINE INPUTS	***"001542"***
SRC-500 CARD	SAMPLE RATE CONVERTER CARD FOR DIGITAL INPUTS	***"001543"***
MCLK-500 CARD	MASTER CLOCK DRIVER/BUFFER CARD	***"001548"***
SCLK-500 CARD	SLAVE CLOCK BUFFER CARD	***"001549"***
VU-RD5 CARD	LED METERS AND EVENT TIMER CARD	***"002645"***
MANUAL	OWNER'S MANUAL	***"002699"***
CLOCK	TIME-OF DAY-CLOCK CARD	***"002099"***
SPS-180R POWER SUPPLY	CONSOLE POWER SUPPLY	***"007310"***
CABLE	CONSOLE POWER SUPPLY CABLE	***"007281"***
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	AMP CONNECTOR FOR MODULE I/O CONNECTIONS	***"220014"***
PLUG	12 PIN PLUG FOR MODULE I/O AMP CONNECTORS	***"230016"***
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"***