
D-5000 Digital Audio Console

TECHNICAL MANUAL

 *Wheatstone Corporation*

600 Industrial Drive, New Bern, North Carolina, USA 28562

D-5000 Digital Audio Console Technical Manual - 1st Edition

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WHEATSTONE CORPORATION
600 Industrial Drive
New Bern, North Carolina 28562
tel 252-638-7000 / fax 252-637-1285

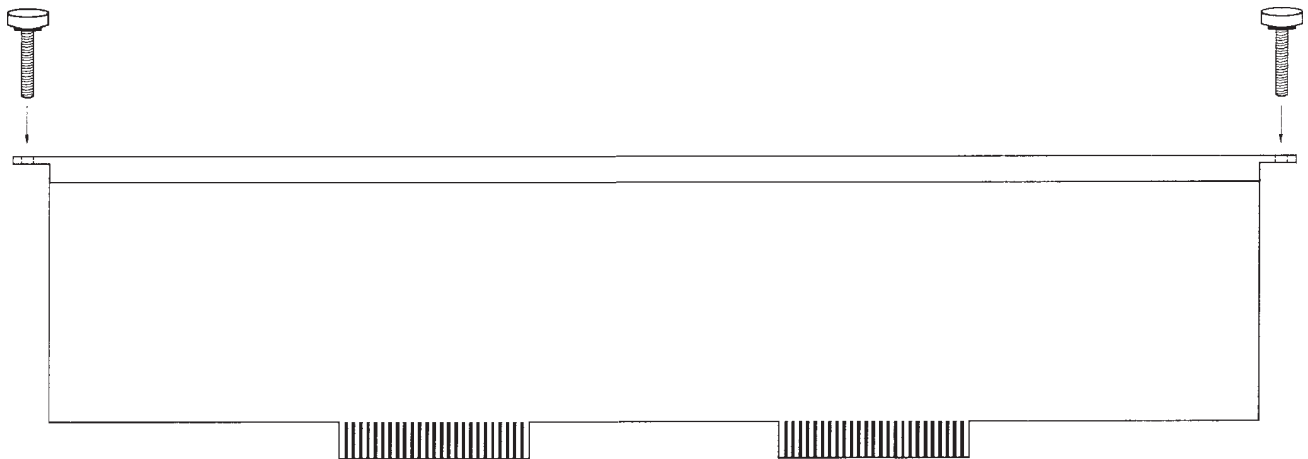
Module Removal Tools

Your Wheatstone D-5000 audio console is equipped with two "module extractor tools" which are mounted underneath the console armrest, to the far right (just above and to the left of the righthand mainframe headphone jack).

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

To remove a module faceplate from the mainframe:

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



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Installation and Power

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Installation and Power

Countertop Mounting

The D-5000 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 determined by the actual number of mainframe positions. The formula is:

$$(\text{console positions} \times 1.508'') + 1.375'' = \text{cut-out width}$$

Example: $(32 \times 1.508) = 48.256$, and $48.256 + 1.375 = 49.631$. Rounding this off we arrive at $49 \frac{5}{8}''$ for a cut-out width.

Cut-out front-to-back dimension is always $18 \frac{5}{8}''$. The front of the console will extend approximately one inch forward of the cut-out. The console's wooden sidepieces will extend about $\frac{7}{8}''$ 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!



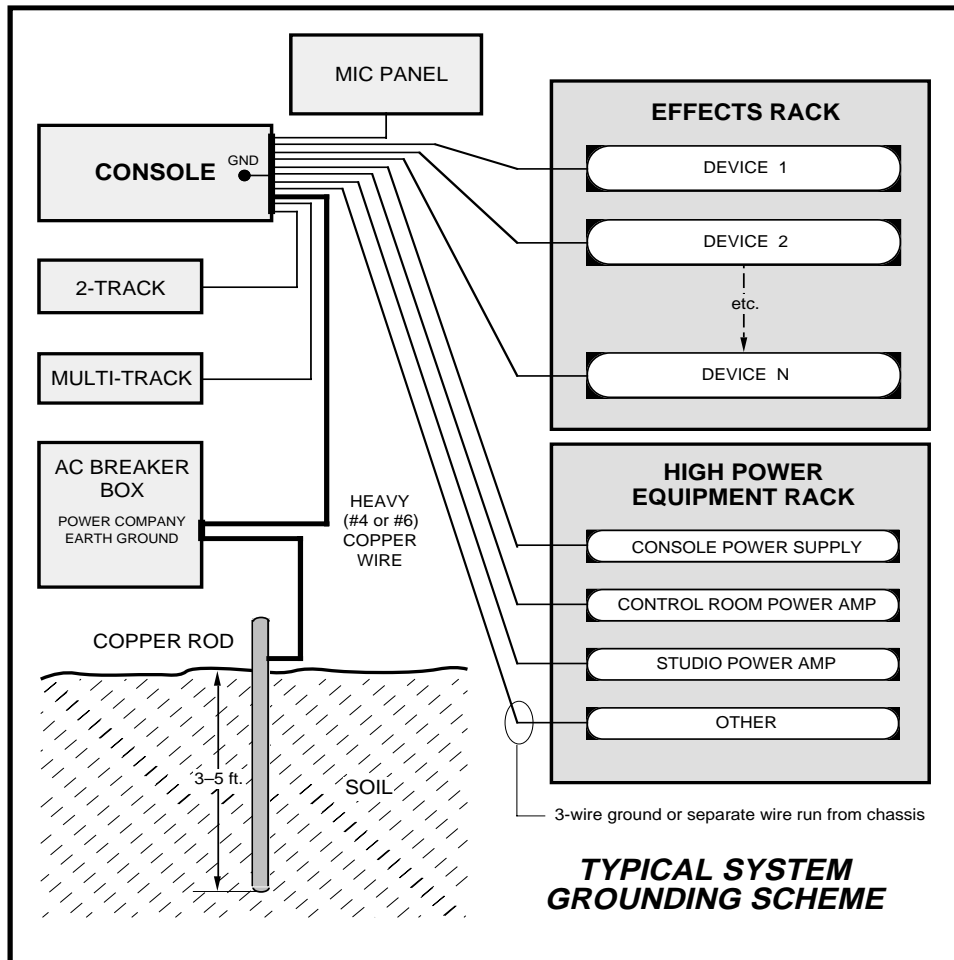
Once in place the console mainframe pan will extend approximately $5 \frac{1}{2}$ inches below the countertop surface. Note the hinged meterbridge will require $8 \frac{1}{2}''$ above the countertop surface to open freely. When fully open the meterbridge will extend $5 \frac{1}{2}''$ behind the rear line of the cut-out. When closed, the meterbridge will extend $2 \frac{1}{2}''$ behind this rear cut-out line and $6 \frac{1}{4}''$ above the countertop surface.

Do not connect the D-5000 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 D-5000 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



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.

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 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 D-5000 console is powered by a Wheatstone Model PSC-D340 rackmount power supply. This heavy duty unit occupies three 19" wide rack spaces (total height 5-1/4"). Convection cooled, it requires ample ventilation space above and below it. The PSC-D340 generates a lot of heat in the course of normal operation — do *not* mount heat sensitive devices in the same rack cabinet.

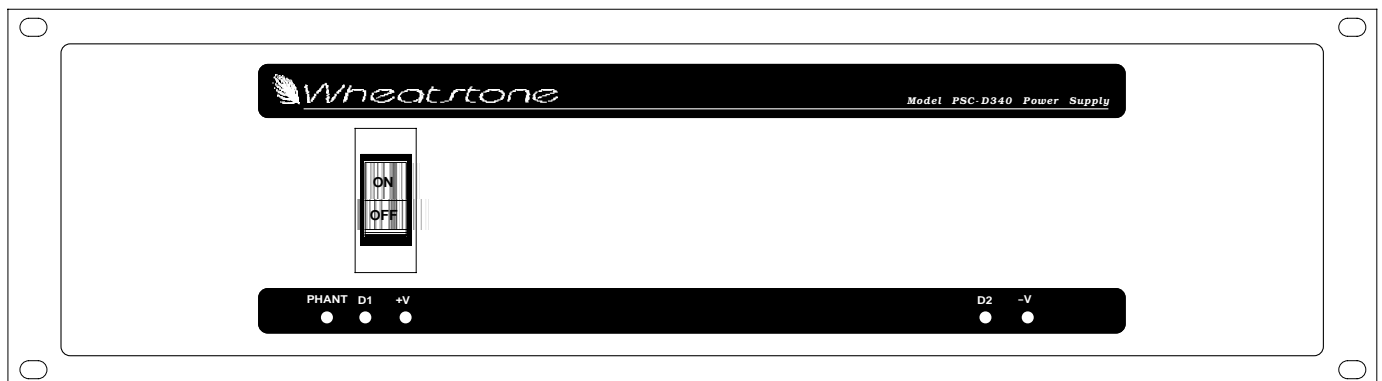
Note the power supply (supplies) should be mounted in an equipment rack within fifteen feet of the console (but no closer than 3 feet). Avoid locating any high gain equipment (such as phono preamps, tape recorders, etc.) too near the rackmount supplies, to avoid magnetic interference into that equipment.

If failsafe redundant supplies have been ordered, you will be installing two units and an additional rackmount panel.

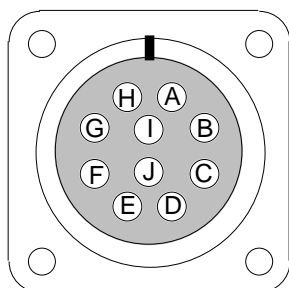
Once the supply is rackmounted, it should be connected to the console using the factory supplied cable. The console's two power supply connectors are located at the rear of the console, one at each end of the meterbridge bottom pan. If you are using one supply, connect it to one of the console connectors (it doesn't matter which one). If you are using two supplies (failsafe option), connect the long power supply cable to the center connector of the rackmount failsafe panel. Then connect one supply with a short cable to either of the two remaining connectors on the failsafe panel and connect the second supply with a short cable to the last connector. 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(s) first to the console, then to the rear of the rackmount power supply.

Note each power supply is fitted with a 3-wire grounded AC cord that should be plugged into a "clean" AC power source, that is, an AC source that feeds only the control room audio gear. This source should be a separate feed from those powering lighting, air-conditioning, or any other non-audio machinery. The third pin ground wire of the AC source should be tied to the central system ground point. *Note that while the AC power cord ground wire terminates at the power supply chassis, it does NOT connect to the D-5000 console common; the console itself must be grounded separately. (See previous section, "System Ground".)*

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

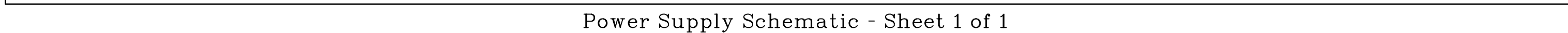


The PSC-D340 Power Supply



TYPICAL POWER CONNECTOR
(10-pin)

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



Failsafe Dual Redundant Supply

Wheatstone failsafe power supply systems use two separate rack-mount power supplies for each piece of powered equipment. Though either is capable of running a full load on its own, in failsafe operation both units run in tandem: if one fails, the other takes over, assuring uninterrupted operation.

In order for failsafe systems to perform as designed, always have BOTH rackmount supplies powered up and connected to their associated equipment.

Energizing

Assuming the D-5000 console mainframe is properly placed and grounded, and its PSC-D340 power supply (or supplies) correctly rackmounted and connected to the console, you may now energize the PSC-D340 rackmount power supply by plugging it into the AC mains and turning it on, using its front panel circuit breaker/switch. (If you are using a failsafe system, turn on BOTH supplies.) The five LEDs on the power supply front panel should light up to indicate the presence of their respective voltages. The console's individual module switches will assume factory default settings.

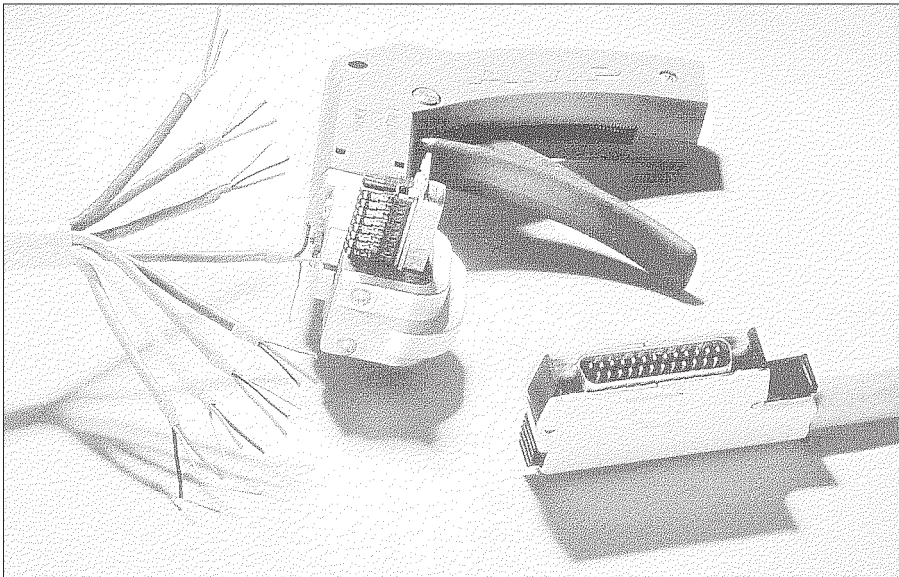
Once you have verified proper power-up, turn off the rackmount power supplies to de-energize the console. You may now proceed to wire up audio and control connections.

Audio and Control Wiring

All audio and control I/O connections to the D-5000 console are made through multipin DB-25 connectors located on the bottom of the console.

The Insulation Displacement Connector System

The I/O wiring interface system is based on insulation displacement technology. A special AMP wiring tool is included with each console; it is auto-indexing, and allows individual wire connections to be positively made with a single squeeze of the tool's trigger. The trigger action is ratchet controlled, and will not release until a full connection is made. Once released, the multipin connector held in the tool's jaw automatically indexes to the next connector pin. The technology is such that no stripping, soldering or tinning of



The AMP tool insulation displacement connector system. Note the right angle hood with self-locking tabs. The tool, multipin connectors (with gold plated pins) and latching hoods are supplied with each console.

wire ends is required; all that is needed is for the wires destined for the connector be snub cut and laid out in order (although tubing should be used on bare drain wires). An empty DB-25 (or in the case of the optional LSR-500 rackmount line switcher, a DB-9) connector is inserted into the tool, indexed to the first pin, and the wires are inserted one by one into the jaw and the trigger squeezed. In this way a single multipin connector can be completely wired up in a minute or two.

In the event of a wiring error, connector pins may easily be removed from the shell with the wire still attached, and inserted into the correct position. Observe the side of the connector, with the metal part down. You will see a row of "Vees"—simply press the top of the vee together with a scribe or other sharp instrument; this will unlock the pin from the shell, and it can be removed and inserted into the correct position. Spread the vee apart to lock the pin in the new position. It should never be necessary to discard a connector due to a wiring error.

Note that mating hoods for each connector are also supplied with the console. These have locking screws that hold the connectors securely to the bottom of the console mainframe.

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 this manual is organized by module type (inputs, outputs, monitor modules, etc.); each chapter contains detailed wiring instructions for its module type. Proceed through the manual, chapter by chapter, until all modules have been wired to suit your particular installation requirements. Once proper audio operation is verified, go back to each individual chapter and proceed with control wiring.

Digital Audio Connections

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

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

SPDIF INPUTS - The SPDIF (Sony/Philips Digital Interface) or “consumer” digital audio interface is a two wire unbalanced signal typically on a single RCA style connector. To connect SPDIF devices to the D-600 simply wire the SPDIF center conductor (HOT) to the SLD-600 “HI” input pin and SPDIF shell (ground) to the SLD-600 “LO” input. Connect the SLD-600 “SHIELD” at the console end only.

Analog Insert Points

Certain module signals have insert patch points in their signal chains to allow outboard audio processing. These include MONO MIC INPUTS (MMD-600) and OUTPUT MODULES (OMD-600).

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.

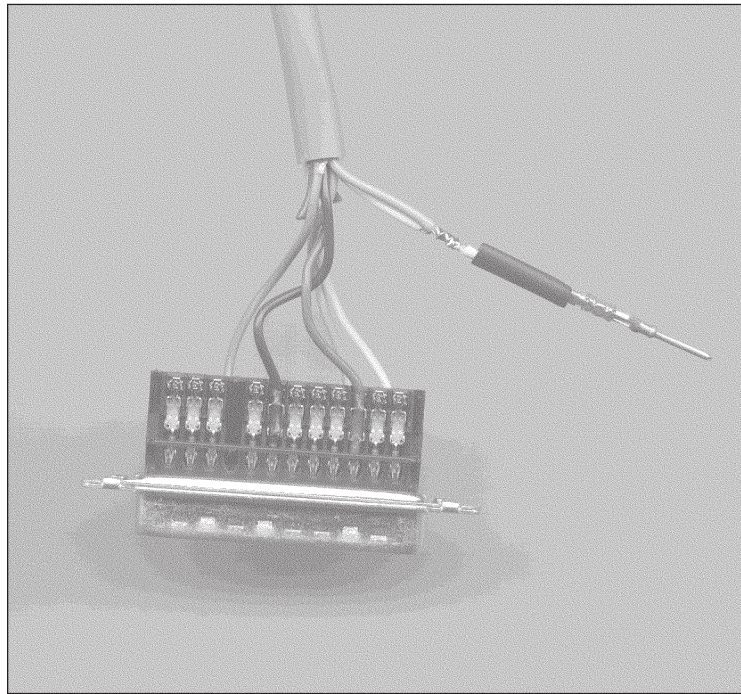
Unbalanced Connections (analog audio)

ANALOG 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.

ANALOG OUTPUTS — D-5000 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.)

Wiring Procedure - Double Connection to One Pin

ref: DB-25 male multi-pin connector



Most audio equipment machine interfaces (as well as Wheatstone consoles) use subminiature D-type connectors. Sometimes the interfaces require making two connections to a single DB pin. If the wiring has been set up using punchblocks, this is not a problem; however, for situations where direct machine-to-console wiring is used, Wheatstone recommends the following procedure:

- 1) Connect the first wire to the desired pin as you normally would.
- 2) Note connector pins may easily be removed from the DB-25 shell with the wire still attached: Hold the connector with the metal part down and observe its side. You will see a row of "Vees"—simply press the top of the selected vee together with a scribe or other sharp instrument; this will unlock the pin from the shell, allowing it to be removed.
- 3) With the pin removed, strip out a short section of insulation from the connected wire and wrap and solder the second wire to the first as shown above.
- 4) A short piece of heatshrink tubing (pictured here before being slid into place) completes the connection.
- 5) Re-insert the pin into the DB-25 shell, spreading the vee apart to lock it in place.

Mono Mic Input (MMD-600)

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Mono Mic Input (MMD-600)

Module Overview

MMD-600 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).

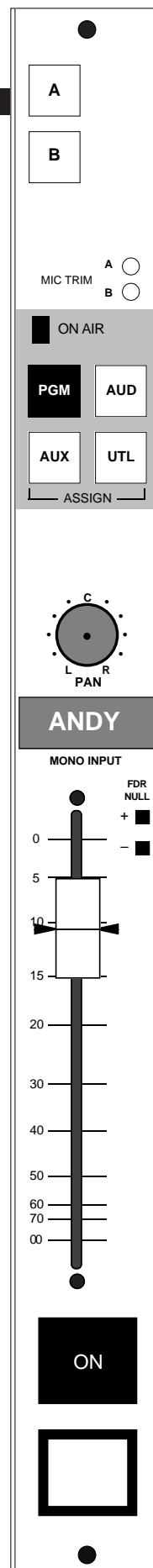
An analog insert point (+4dBu balanced) is provided: it is post-trim, pre-pan and may be internally bypassed, which is the factory default setting.

Output switches assign the selected source signal to any combination of the console's four stereo outputs: PGM (program), AUD (audition), AUX (auxiliary) and/or UTL (utility). When the module is assigned to PGM and turned ON, a red "On-Air" LED illuminates just above the output assign switches.

The rotary PAN control pans the module's monophonic signal right and left within the assigned stereo output fields. Level is set by a Penny & Giles long-throw fader. When the D-5000 is under external serial control from an automation system, the Fader Null LEDs show which direction the fader must move for manual override. The fader can be optionally equipped with an EFS ("European fader start") style bottom-of-travel switch which will automatically activate the module's channel ON and OFF switches when the fader is run up and down. Any functions these switches have been programmed to perform (see immediately following) will also take place when this happens.

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

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



Internal Programming Options

Internal programming is made via printed circuit board (PCB) mounted switches 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 each programming switch. Note when a dipswitch position is thrown to the right (towards the module's faceplate) it is ON.

Insert Bypass

SW2 (a double throw double pole 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 SW2 is thrown in the direction of the silkscreened arrow on the PCB (to the left). To use the insert point (see "Audio Connections" page 2-4), throw the switch to the right, towards the module faceplate.

Phantom Power

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

Dipswitch position 1 activates phantom power for microphone A

Dipswitch position 2 activates phantom power for microphone B

Note the factory default setting for phantom power is OFF.

Talkback to Studio

One module in the console (typically the console operator's microphone) can be assigned to the console's talkback bus to be the source for talkback to studio. Dipswitch SW1 position 4 is used to assign the module's pre-fader audio to the talkback bus.

VDT Programming Options

Mutes, timer restart, tallies, talkback, superphone output assign, and utility bus pre-fader programming are made via Virtual Dip Switch Software (see Chapter 9).

Hook-Ups

As stated before, all user wiring to and from MMD-600 modules takes place at DB-25 multi-pin connectors mounted directly beneath each module on the console mainframe's bottom pan. There are two connectors per module: the upper one (towards the console meterbridge) handles audio signals; the lower (near the console armrest) control signals. A pinout drawing on page 2-6 shows all wiring connections at a glance.

To Turn the Module ON & OFF from a Remote Location

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

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

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

Talkback to Control Room

If an MMD-600 module is being used for a studio microphone, these ports allow talkback from that studio to the console operator. Provide a closure between Pin 14 (TB to CR A) or Pin 20 (TB to CR B) and Digital Ground (Pins 4, 10, 17 or 23). This will cause two things to happen: (1) the module's pre fader signal is sent to the console's Cue bus, where it may be heard by the console operator, and (2) the module's Cough function is activated, muting the module's post fader signal and preventing the TB signal from going out over other assigned busses (i.e., "live"). This non-latching condition continues until the closure is released. (Requires user-supplied momentary action TALKBACK switch at the studio microphone location.)

On Tally

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

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

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

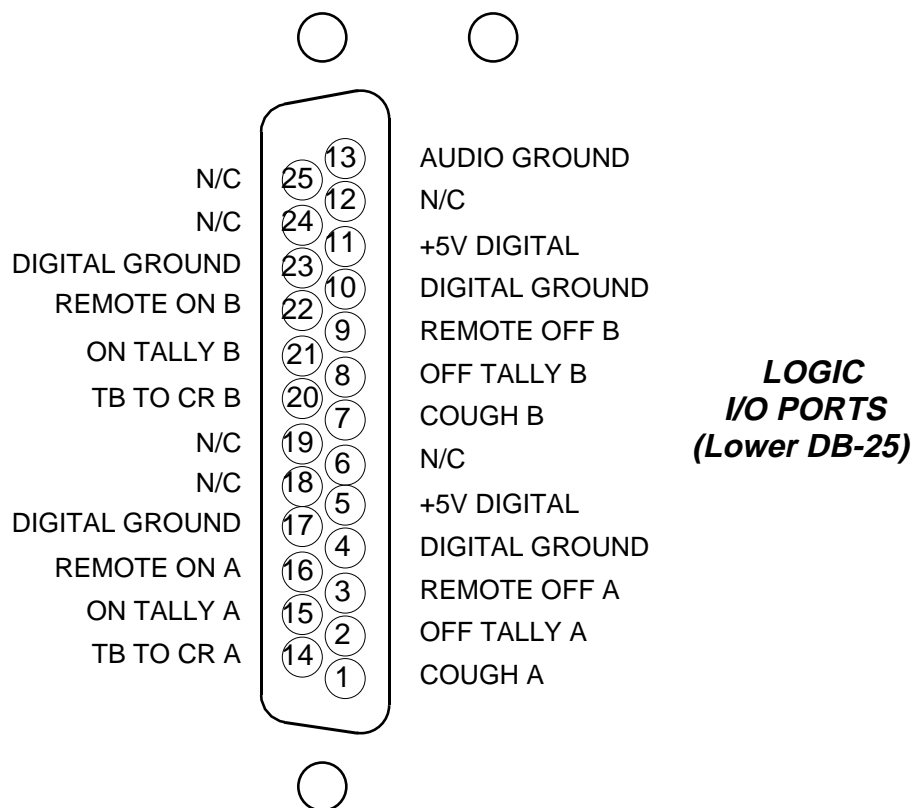
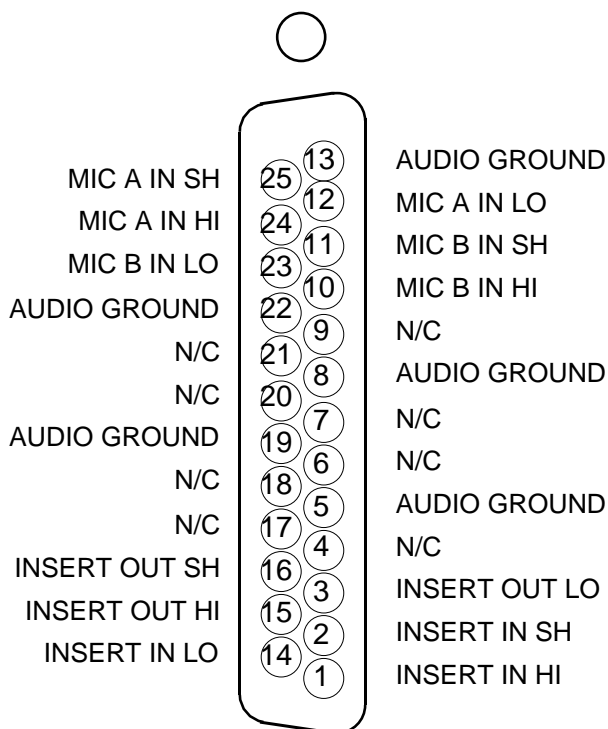
Off Tally

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

MMD-600 Mono Mic Input

DB Connector Pinouts

ANALOG I/O PORTS (Upper DB-25)



LOGIC I/O PORTS (Lower DB-25)

Stereo Line Input (SLD-600)

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Stereo Line Input (SLD-600)

Module Overview

SLD-600 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-600 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. The MODE SELECTION enables the module to operate in stereo, mono, left only, or right only. The MODE button illuminates red when set to STEREO; MONO (L+R to both channels), LEFT to both channels, and RIGHT to both channels. Being electronic, mode selection is lossless and click-free. When in MONO mode automatic gain compensation occurs to offset mono summation.

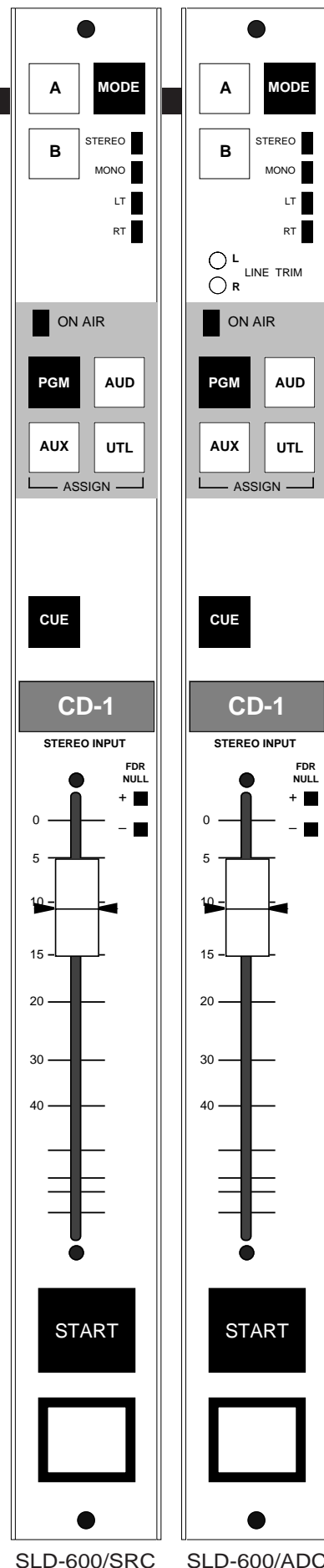
Output switches assign the selected source signal to any combination of the console's four stereo outputs: PGM (program), AUD (audition), AUX (auxiliary) and/or UTL (utility). When the module is assigned to PGM and turned ON, a red "On-Air" LED illuminates just above the output assign switches.

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-600 (Control Room) module via internal PCB-mounted dipswitches. See page 5-3.

Level is set by a Penny & Giles long-throw fader. When the D-5000 is under external serial control from an automation system, the Fader Null LEDs show which direction the fader must move for manual override.

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

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



SLD-600/SRC

SLD-600/ADC

Internal Programming Options

There are no internal programming options on the SLD-600 module.

VDT Programming Options

Mutes, timer restart, cue dropout, local/ready, tallies, superphone output assign, utility bus pre-fader, remote on/off-constant vs. pulse, and remote start/stop-normal vs. EFS programming are made via Virtual Dip Switch Software (see Chapter 9).

Hook-Ups

As stated before, all user wiring to and from SLD-600 modules takes place at DB-25 multi-pin connectors mounted directly beneath each module on the console mainframe's bottom pan. There are two connectors per module: the upper one (towards the console meterbridge) handles audio inputs; the lower (near the console armrest) control signals. Pinout drawings on pages 3-6 and 3-7 show all wiring connections at a glance.

ADC Module Version (Analog)

Audio Connections (upper DB-25)

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

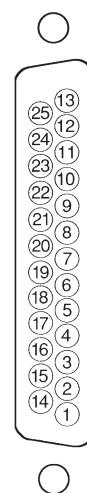
Pin 25 – Line A In Lt SH
 Pin 24 – Line A In Lt HI
 Pin 12 – Line A In Lt LO
 Pin 11 – Line A In Rt SH
 Pin 10 – Line A In Rt HI
 Pin 23 – Line A In Rt LO
 Pin 22 – Line B In Lt SH
 Pin 21 – Line B In Lt HI
 Pin 9 – Line B In Lt LO
 Pin 8 – Line B In Rt SH
 Pin 7 – Line B In Rt HI
 Pin 20 – Line B In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

SRC Module Version (Digital)

Audio Connections (upper DB-25)

These include A and B source inputs (AES).

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



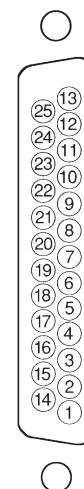
Typical DB-25
connector

In passing, the three 4-position dipswitches (SW1, SW2 and SW3) mounted in the middle of the SRC-500 piggyback card are for factory use only. Do not disturb their settings!

Control Connections (lower DB-25)

These are identical for both analog and digital versions of the SLD-600 module. All control ports (except On Tally) are opto-isolated. Functions include remote on and off, on tally, ready, and start/stop for remote source machines. With the exception of On Tally, each function is available twice, for both A and B source ports, allowing it to follow the module's A/B source selector switch.

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



Typical DB-25 connector

To Turn the Module ON & OFF from a Remote Location

In the case of stereo line input modules, “remote location” can also refer to a remote source machine that is feeding its audio to the module in question. A 5VDC signal, as indicated below, will activate the module’s channel ON and OFF switches.

REMOTE ON — Activates the module’s channel ON switch. Provide a momentary 5VDC signal between Pins 14 and 15 (Remote On A) or Pins 20 and 21 (Remote On B). This will latch the module ON. Be sure to observe the polarity as indicated on the pinout diagram on pages 3-7, 3-8.

REMOTE OFF — Activates the module’s channel OFF switch. Provide a momentary 5VDC signal between Pins 16 and 17 (Remote Off A) or Pins 18 and 19 (Remote Off B). This will latch the module OFF. Be sure to observe the polarity as indicated on the pinout diagram on pages 3-7, 3-8.

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 voltage between Pin 12 (On Tally) and Pin 11 (Digital Ground) whenever the module is ON. When the module is ON the voltage at Pin 12 is +5VDC.

This on-tally 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 Digital Ground (Pin 11)* and the On Tally port (Pin 12). In either case, current should not exceed 30 milliamps.

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

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-600 module's lower DB-25 connector control pins: for START A wire to pins 3 and 5; for START B wire to pins 8 and 6.

EXTERNAL STOP — Hook up the remote machine's "stop" control pins to the SLD-600 module's lower DB-25 connector control pins: for STOP A wire to pins 4 and 5; for STOP B wire to pins 7 and 6.

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

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

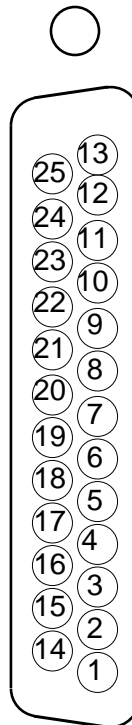
READY — Hook up the remote machine's "ready" control pins to the SLD-600 module's lower DB-25 connector control pins: for READY A wire to pins 1 and 2; for READY B wire to pins 9 and 10. The module's Ready ports are looking for a 5VDC signal with pin 2 positive with respect to pin 1 (READY A) and pin 9 positive with respect to pin 8 (READY B). As long as the voltage is present in the correct polarity, the OFF switch LED will be illuminated.

SLD-600 Stereo Line Input

Analog Version DB Connector Pinouts

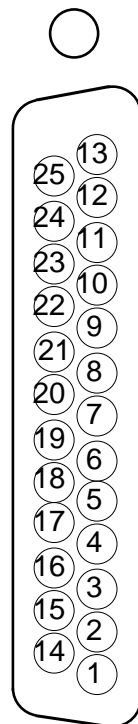
I/O PORTS (Upper DB-25) ANALOG

LINE A IN LT SH
LINE A IN LT HI
LINE A IN RT LO
LINE B IN LT SH
LINE B IN LT HI
LINE B IN RT LO
AUDIO GROUND
N/C
N/C
N/C
N/C
N/C



AUDIO GROUND
LINE A IN LT LO
LINE A IN RT SH
LINE A IN RT HI
LINE B IN LT LO
LINE B IN RT SH
LINE B IN RT HI
N/C
N/C
N/C
N/C
N/C
N/C

N/C
N/C
N/C
N/C
REMOTE ON B -
REMOTE ON B +
REMOTE OFF B -
REMOTE OFF B +
REMOTE OFF A +
REMOTE OFF A -
REMOTE ON A +
REMOTE ON A -



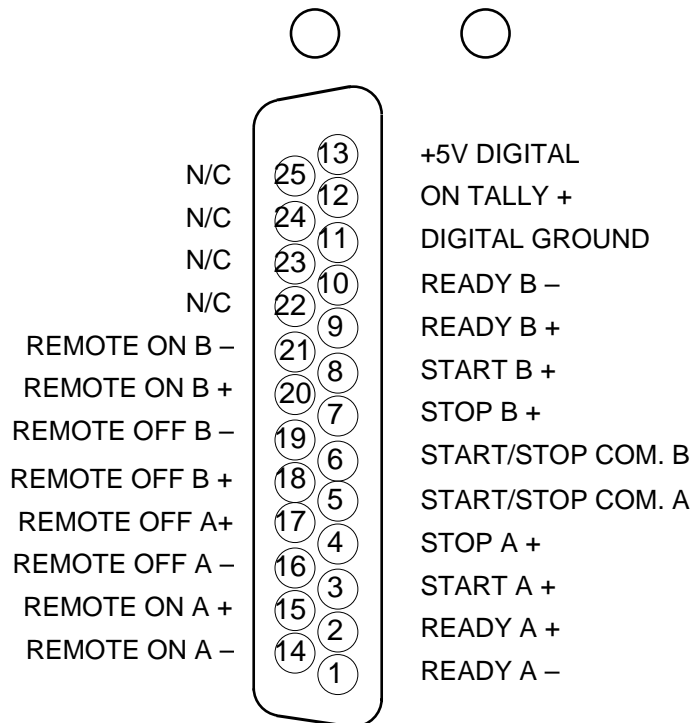
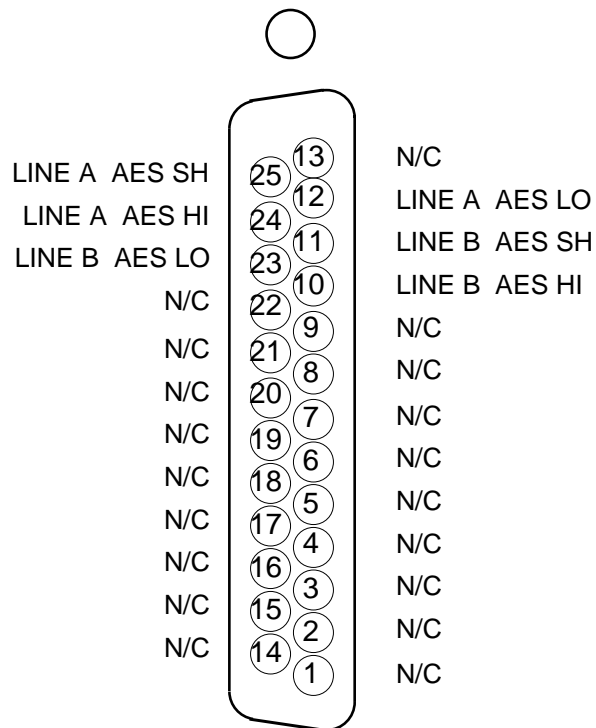
+5V DIGITAL
ON TALLY +
DIGITAL GROUND
READY B -
READY B +
START B +
STOP B +
START/STOP COM. B
START/STOP COM. A
STOP A +
START A +
READY A +
READY A -

I/O PORTS (Lower DB-25) LOGIC

SLD-600 Stereo Line Input

Digital Version (SRC) DB Connector Pinouts

I/O PORTS (Upper DB-25) DIGITAL



I/O PORTS (Lower DB-25) LOGIC

Output Modules

(OMD-600)

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Master Output A	4-6
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Output Modules

(OMD-600)

Module Overview

Each D-5000 console has two master output modules: the first handles the console's Program and Auxiliary outputs (MASTER A), and the second handles Audition and Utility (MASTER B).

MASTER A output module has installed jumpers J3, J4 for Program output; J7, J8 for Auxiliary output; and J11, J12 for CUE monitor signal.

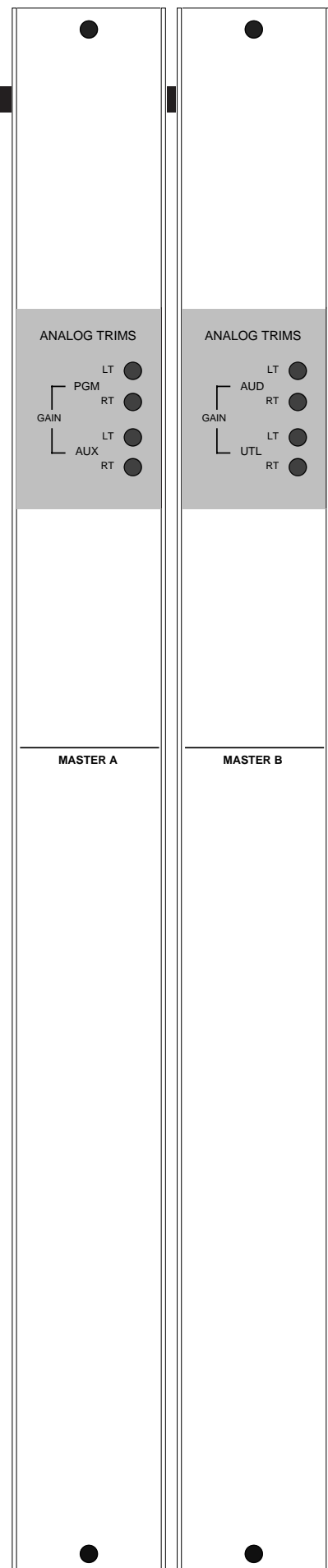
MASTER B output module has installed jumpers J5, J6 for Audition output; J9, J10 for Utility output; and J13, J14 for TEL monitor signal.

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-600 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 the OMD-600 modules takes place at DB-25 multi-pin connectors mounted directly beneath the module on the console mainframe's bottom pan. There are two connectors: the upper one (towards the console meterbridge) handles analog outputs and insert points; the lower connector (near the console armrest) handles digital outputs (AES format). All analog audio is +4dBu balanced. Pinout drawings on pages 4-6 and 4-7 show all wiring connections at a glance.



Internal Programming Options

Insert Bypass

Virtually all internal programming switches on the OMD-600 modules are for factory use only. There is one exception, however, and that is the INSERT BYPASS slide switch SW2, located near the top of the PCB just above the four front panel analog trimpots. The factory default for this switch is “down”; i.e., the module’s PGM (or AUD) insert points are bridged. To use the PGM (or AUD) insert points (located on the upper DB-25 connector) throw the switch “up”.

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

Hook-Ups

As stated before, all user wiring to and from the OMD-600 modules takes place at two DB-25 multi-pin connectors mounted directly beneath the module on the console mainframe’s bottom pan.

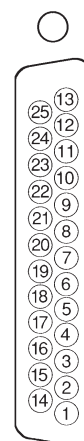
Master Output Module A:

Upper DB-25 Connector – Analog Audio

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

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

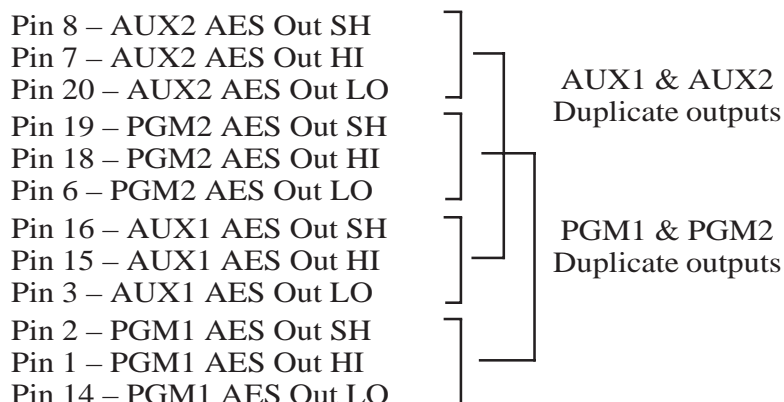
Insert points are normally bypassed at the factory. See “Insert Bypass” (preceding section) if you intend to use these points.



Typical DB-25 connector

Lower DB-25 Connector – Digital Outputs

Handles digital Program and Auxiliary outputs



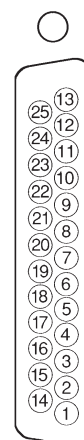
Master Output Module B:

Upper DB-25 Connector – Analog Audio

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

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

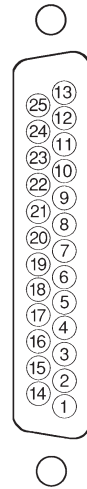
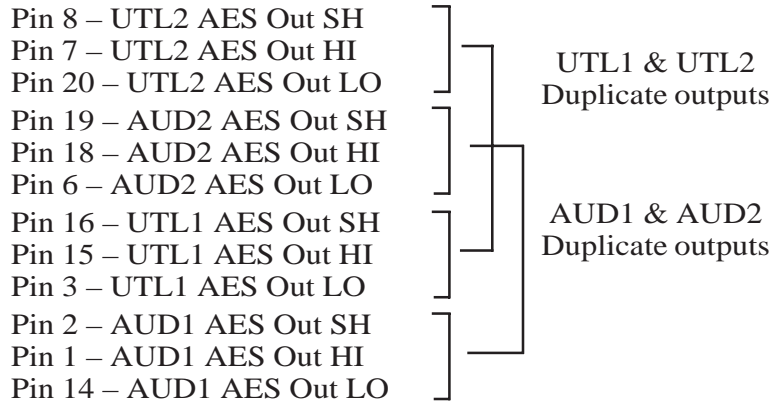
Insert points are normally bypassed at the factory. See "Insert Bypass" (preceding page) if you intend to use these points.



Typical DB-25 connector

Lower DB-25 Connector – Digital Outputs

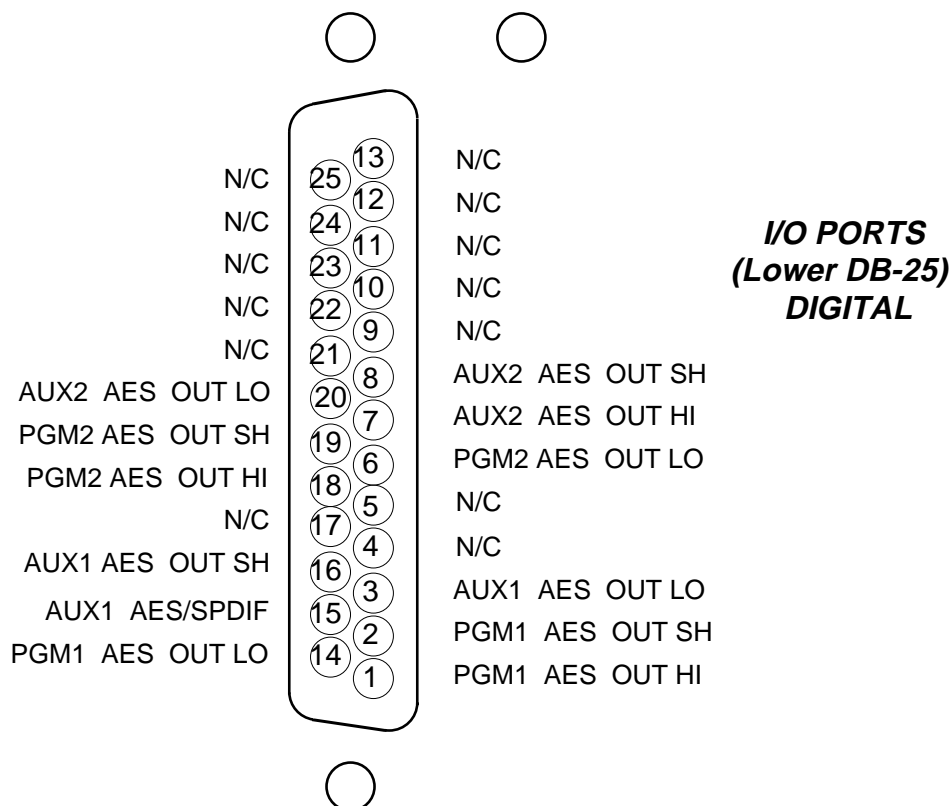
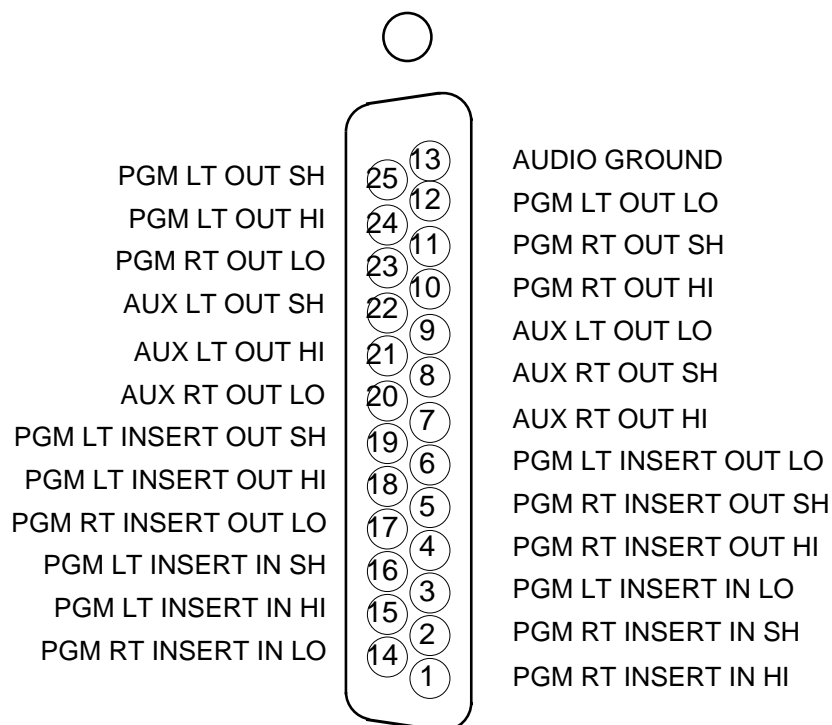
Handles digital Audition and Utility outputs



Typical DB-25
connector

OMD-600 (A): PGM-AUX Output *DB Connector Pinouts*

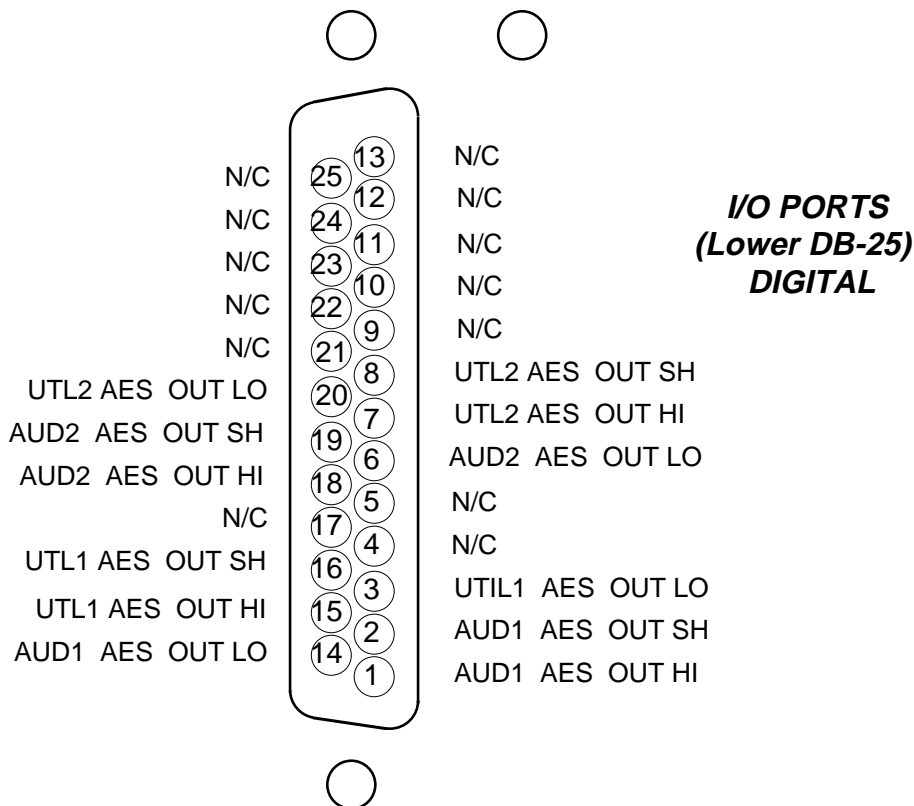
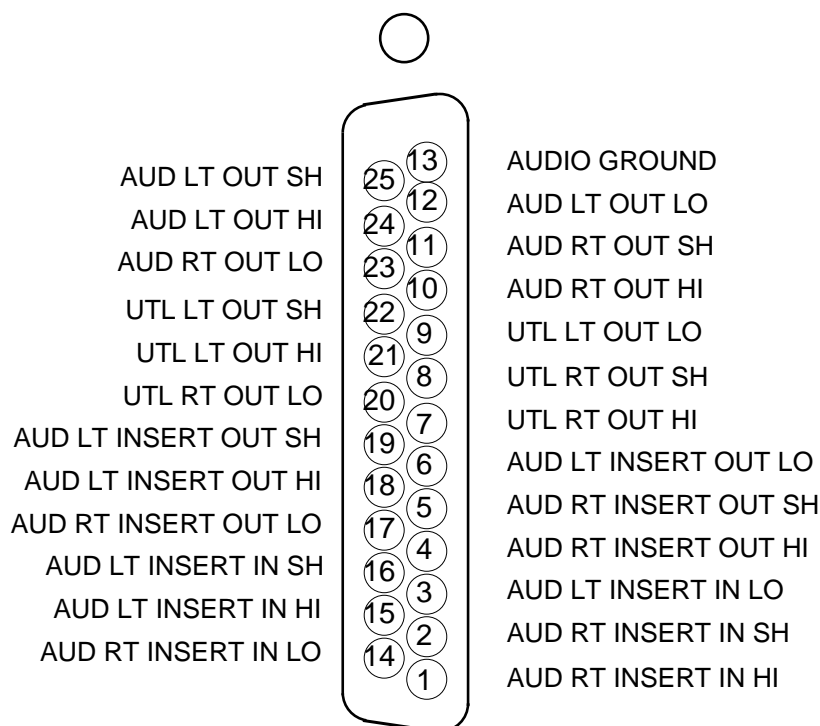
I/O PORTS **(Upper DB-25)** **ANALOG**



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

OMD-600 (B): AUD-UTIL Output *DB Connector Pinouts*

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



Control Room Module

(CRD-600)

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

(CRD-600)

Module Overview

The CRD-600 module is the D-5000 console operator's monitor module. It allows him to listen to the console's four stereo outputs (PGM, AUD, AUX & 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.

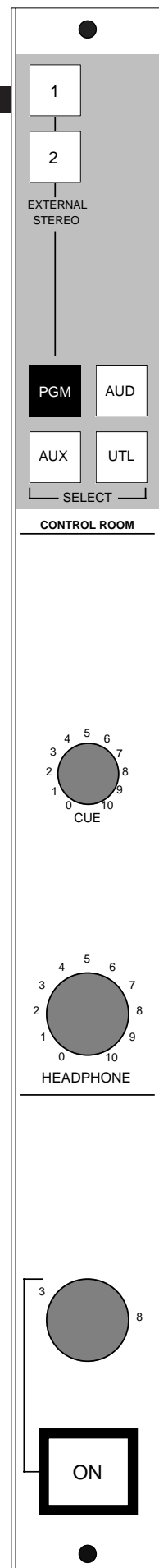
The CRD-600 also houses console HEADPHONE and CONTROL ROOM circuits, which follow the source selection switches.

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

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

Whenever CUE is activated elsewhere on the console (stereo line inputs, the superphone module or for studio talkback) its signal will appear at the console's built-in left and right cue speakers mounted in the meterbridge. Depending on how the CRD-600 module has been programmed, cue can also interrupt the control room monitor speakers and/or the console operator's headphone. The way Cue interrupts the module's headphone and CR outputs is determined by an internal PCB-mounted dipswitch. See "Cue Interrupt" on next page.

All user wiring to and from the CRD-600 module takes place at DB-25 multi-pin connectors mounted directly beneath the module on the console mainframe's bottom pan. There are two connectors: the upper one (towards the console meterbridge) handles audio outputs and the console on-air tally control signals; the lower (near the console armrest) accepts the two external source inputs. All audio connections are stereo line level analog signals (+4dBu balanced). A pinout drawing on page 5-6 shows all wiring connections at a glance.



Internal Programming Options

There are two user-programmable switches on the CRD-600. 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 speakers, 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

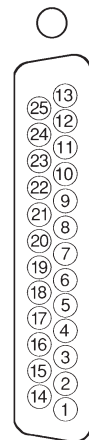
As stated before, all user wiring to and from the CRD-600 module takes place at two DB-25 multi-pin connectors mounted directly beneath the module on the console mainframe's bottom pan.

See pinout drawing on page 5-6 for all wiring connections at a glance.

Upper DB-25 Connector — Audio

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

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



Typical DB-25 connector

Upper DB-25 Connector — Control

The console's on-air tally port is on the CRD-600 upper DB-25 connector. This is a simple relay closure that activates whenever programmed input modules are turned ON (see page 2-4). The port can be used to control an externally powered tally light that requires a continuous closure to function.

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



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

Lower DB-25 Connector — Audio

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

Pin 25 – Ext Cue In SH

Pin 24 – Ext Cue In HI

Pin 19 – Lt Ext 1 In SH

Pin 18 – Lt Ext 1 In HI

Pin 6 – Lt Ext 1 In LO

Pin 5 – Rt Ext 1 In SH

Pin 4 – Rt Ext 1 In HI

Pin 17 – Rt Ext 1 In LO

Pin 16 – Lt Ext 2 In SH

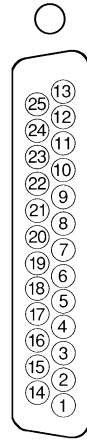
Pin 15 – Lt Ext 2 In HI

Pin 3 – Lt Ext 2 In LO

Pin 2 – Rt Ext 2 In SH

Pin 1 – Rt Ext 2 In HI

Pin 14 – Rt Ext 2 In LO

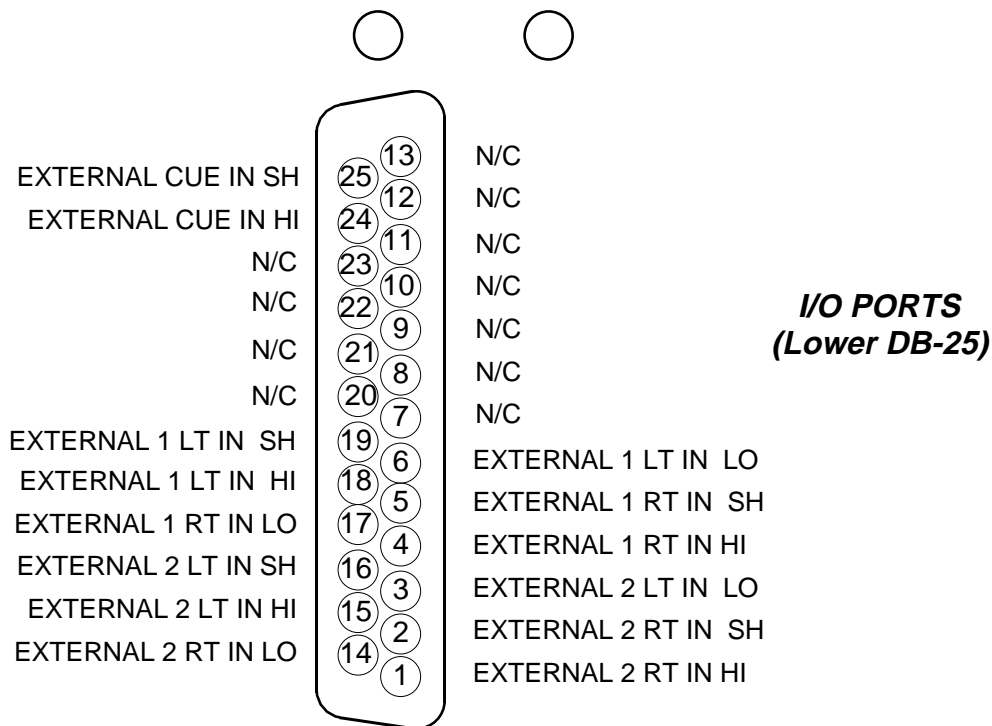
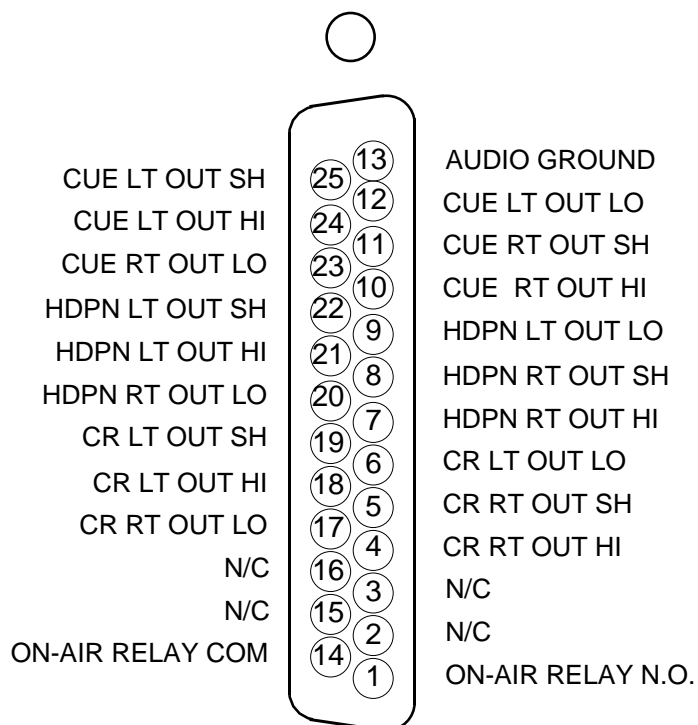


Typical DB-25
connector

CRD-600 Control Room

DB Connector Pinouts

I/O PORTS (Upper DB-25)



I/O PORTS (Lower DB-25)

Studio Control Module

(SCD-600)

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Studio Control Module

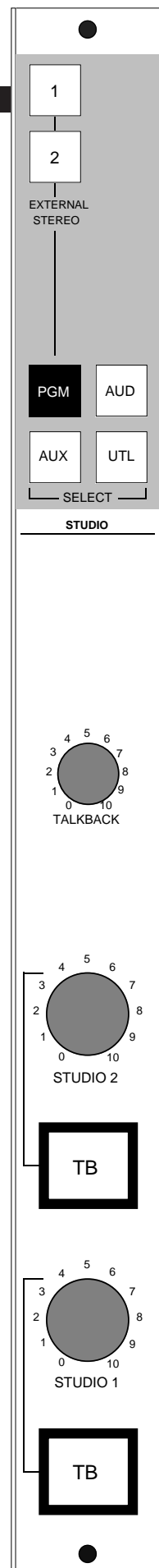
(SCD-600)

Module Overview

The SCD-600 module is similar to the CRD-600 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 four stereo outputs (PGM, AUD, AUX & 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. When a talkback switch is pressed (they 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-600 module takes place at DB-25 multi-pin connectors mounted directly beneath the module on the console mainframe’s bottom pan. There are two connectors: the upper one (towards the console meterbridge) handles external talkback out and regular studio monitor outputs, plus the console’s Tally 2 and Tally 3 control signals; the lower connector (near the console armrest) accepts the module’s two external source inputs. It also outputs two additional pre-level control studio outputs. All audio connections are (+4dBu balanced) analog signals. A pinout drawing on page 6-6 shows all wiring connections at a glance.



Internal Programming Options

There is one user-programmable dipswitch on the SCD-600. 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-600 module (see upper DB-25 connector page 6-6). 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-600 module takes place at two DB-25 multi-pin connectors mounted directly beneath the module on the console mainframe's bottom pan.

Upper DB-25 Connector — Audio

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

Pin 25 – TB Out SH

Pin 24 – TB Out HI

Pin 12 – TB Out LO

Pin 22 – Lt Studio 2 Out SH

Pin 21 – Lt Studio 2 Out HI

Pin 9 – Lt Studio 2 Out LO

Pin 8 – Rt Studio 2 Out SH

Pin 7 – Rt Studio 2 Out HI

Pin 20 – Rt Studio 2 Out LO

Pin 19 – Lt Studio 1 Out SH

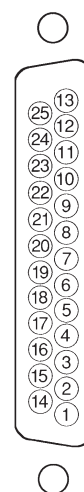
Pin 18 – Lt Studio 1 Out HI

Pin 6 – Lt Studio 1 Out LO

Pin 5 – Rt Studio 1 Out SH

Pin 4 – Rt Studio 1 Out HI

Pin 17 – Rt Studio 1 Out LO



Typical DB-25 connector

Upper DB-25 Connector — Control

The console's Tally 2 and Tally 3 control ports are on the SCD-600 upper DB-25 connector. These are simple relay closures that activate whenever programmed input modules are turned ON (see page 2-4). The ports can be used to control externally powered tally lights that requires a continuous closure to function.

Pin 14 – Tally 2 Relay COM

Pin 1 – Tally 2 Relay N.O.

Pin 3 – Tally 3 Relay COM

Pin 15 – Tally 3 Relay N.O.



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

Lower DB-25 Connector — Audio

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

Pin 25 – Lt Studio 2 Pre Out SH

Pin 24 – Lt Studio 2 Pre Out HI

Pin 12 – Lt Studio 2 Pre Out LO

Pin 11 – Rt Studio 2 Pre Out SH

Pin 10 – Rt Studio 2 Pre Out HI

Pin 23 – Rt Studio 2 Pre Out LO

Pin 22 – Lt Studio 1 Pre Out SH

Pin 21 – Lt Studio 1 Pre Out HI

Pin 9 – Lt Studio 1 Pre Out LO

Pin 8 – Rt Studio 1 Pre Out SH

Pin 7 – Rt Studio 1 Pre Out HI

Pin 20 – Rt Studio 1 Pre Out LO

Pin 19 – Lt Ext 1 In SH

Pin 18 – Lt Ext 1 In HI

Pin 6 – Lt Ext 1 In LO

Pin 5 – Rt Ext 1 In SH

Pin 4 – Rt Ext 1 In HI

Pin 17 – Rt Ext 1 In LO

Pin 16 – Lt Ext 2 In SH

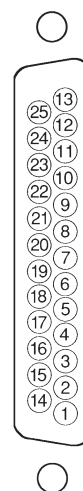
Pin 15 – Lt Ext 2 In HI

Pin 3 – Lt Ext 2 In LO

Pin 2 – Rt Ext 2 In SH

Pin 1 – Rt Ext 2 In HI

Pin 14 – Rt Ext 2 In LO

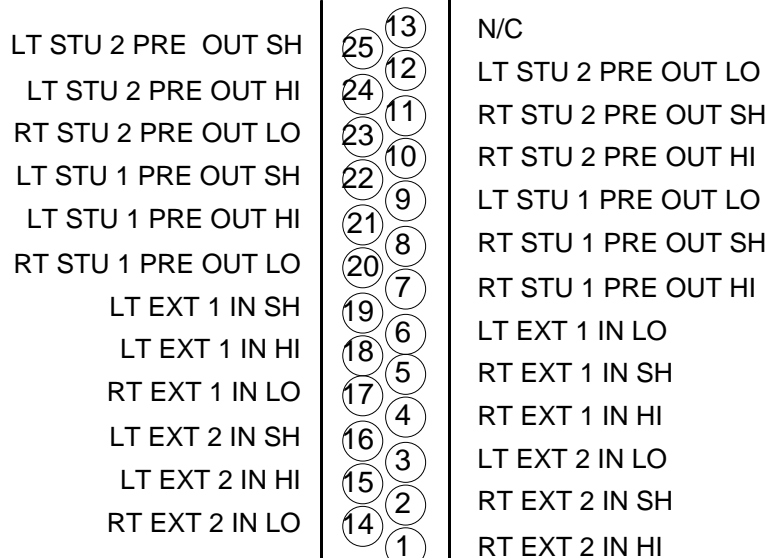
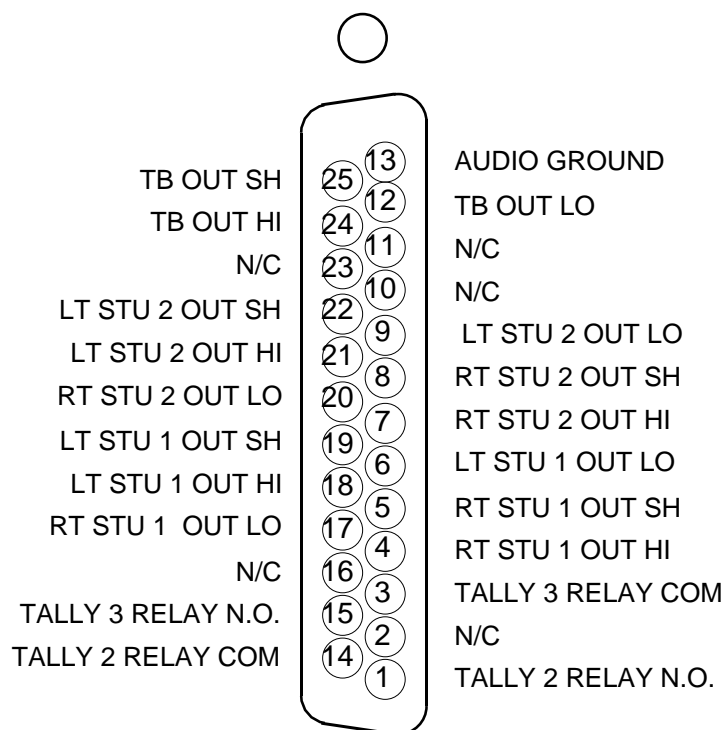


Typical DB-25
connector

SCD-600 Studio Control

DB Connector Pinouts

I/O PORTS (Upper DB-25)



I/O PORTS (Lower DB-25)

Meter Output Module

(MOD-600)

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Meter Output Module

(MOD-600)

Module Overview

Each D-5000 console has one meter output module, which drives the console's up to four pairs of left-right VU meters: PGM, AUD, AUX and SWT (switched). The switched meter follows the SELECT switching at the top of the module, allowing the console operator to meter AUD, AUX, UTL and two external stereo line signals (analog, +4dBu balanced) which may be brought into the module on its lower DB-25 connector.

The MOD-600 module also houses the master CUE LED indicator. Whenever Cue is activated anywhere on the console this LED will illuminate and the CUE signal will automatically appear on the switched VU meter pair. When cue is de-activated, the switched meter pair goes back to it's previously selected signal.

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

At the bottom of the 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

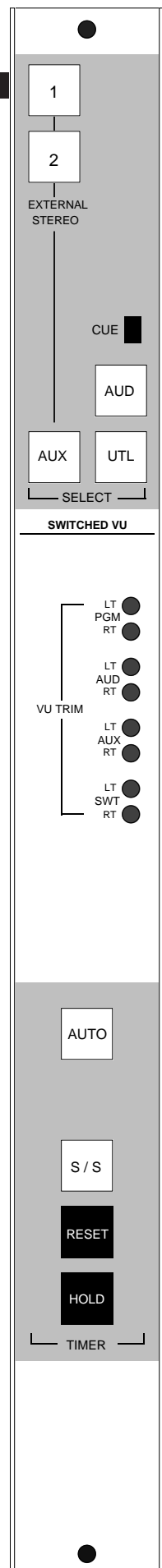
S/S – Start/Stop

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.

All user wiring to and from the MOD-600 module takes place at the lower DB-25 multi-pin connector mounted directly beneath the module on the console mainframe's bottom pan. This lower connector (near the console armrest) inputs the module's two external stereo line signals. See the pinout drawing on page 7-4.

While there are two DB-25 connectors, the upper one (towards the console meterbridge) is for factory use only. It sends the module's VU and timer control signals to the meterbridge (a factory-provided cable runs from this upper DB-25 to a matching connector mounted at the back of the meterbridge, in the center of the console).



Internal Programming Options

There are no internal programming options on the MOD-600 module.

Hook-Ups

As stated before, the only user wiring into the MOD-600 module is two external stereo line inputs (analog +4dBu balanced) on the module's LOWER DB-25 connector.

Pin 19 – Ext 1 Lt In SH

Pin 18 – Ext 1 Lt In HI

Pin 6 – Ext 1 Lt In LO

Pin 5 – Ext 1 Rt In SH

Pin 4 – Ext 1 Rt In HI

Pin 17 – Ext 1 Rt In LO

Pin 16 – Ext 2 Lt In SH

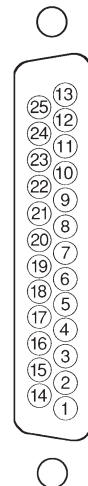
Pin 15 – Ext 2 Lt In HI

Pin 3 – Ext 2 Lt In LO

Pin 2 – Ext 2 Rt In SH

Pin 1 – Ext 2 Rt In HI

Pin 14 – Ext 2 Rt In LO

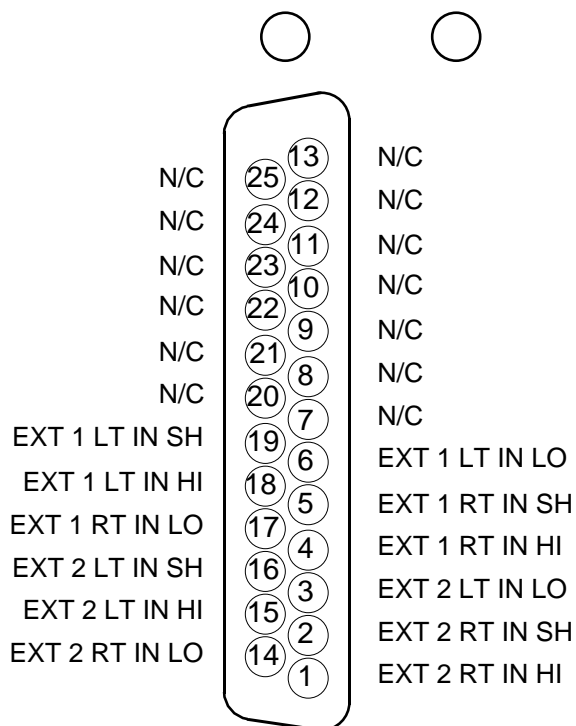
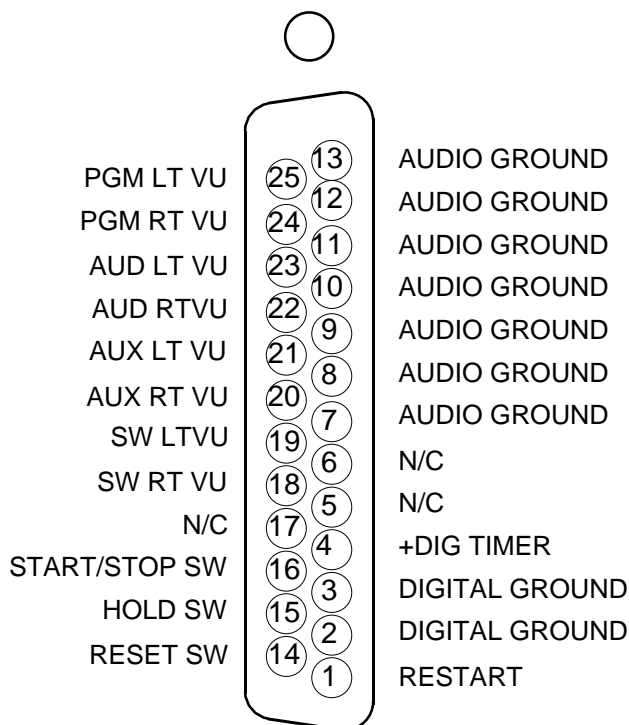


Typical DB-25
connector

MOD-600 Meter Output

DB Connector Pinouts

I/O PORTS
(Upper DB-25)
FACTORY
USE ONLY

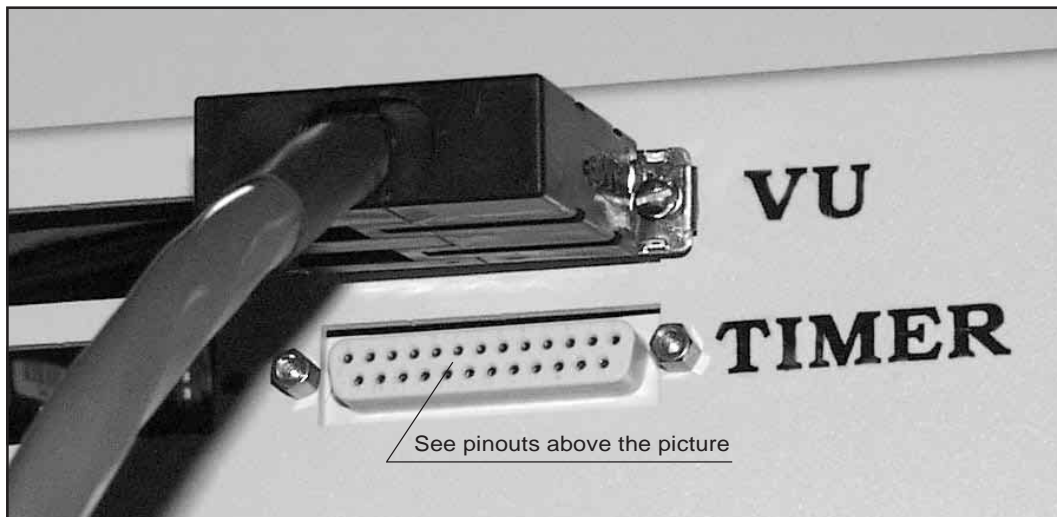
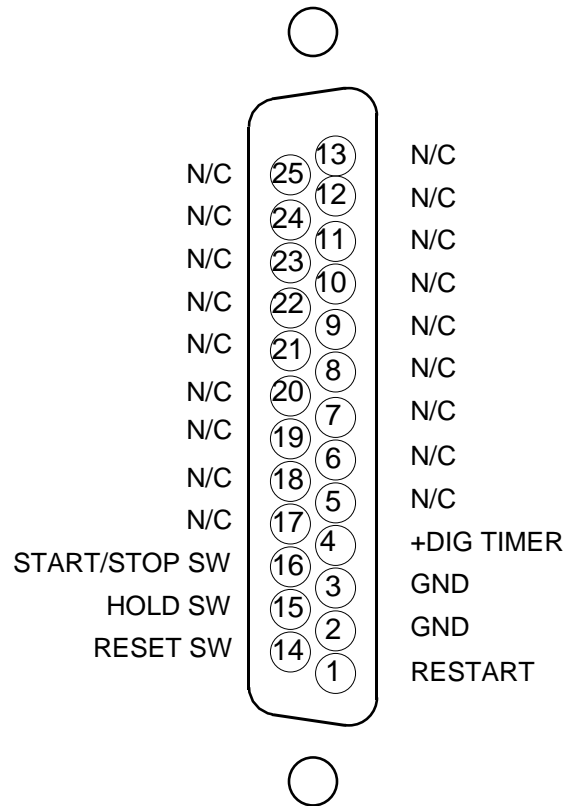


I/O PORTS
(Lower DB-25)

Remote Timer Control

DB-25 Connector Pinouts

(located on the meterbridge)



CPU Central Processor (CPU-600 Module)

DSP Digital Processor (DSP-600 Module)

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CPU Central Processor (CPU-600 Module)

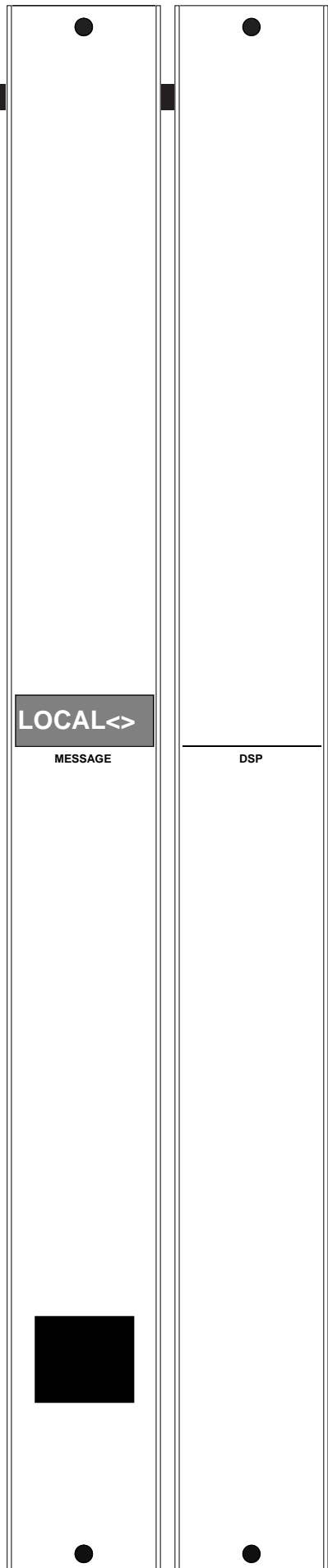
DSP Digital Processor (DSP-600 Module)

Overview

Every D-5000 has these two modules; together they perform all central signal and control processing for the console. The CPU-600 is the console's central controller module; the DSP-600 is the console's digital signal processor.

The D-5000 Digital Audio console is provided with a serial interface port, which is located on the lower DB-25 connector of the CPU-600 module (see connection diagrams for pin-outs and other details). This serial interface is designed to provide a number of functions including external control and set-up, software updates, system interface, etc. Through this serial interface, the D-5000 control protocol is available, allowing visibility and control of the console switches, displays, and other functions. The "Virtual Dip Switch" application program (supplied with the D-5000 console) communicates set up information through this serial interface (see Chapter 9).

There are no user replaceable parts inside (though complete modules may be ordered; see Appendix I).



CPU-600

The CPU-600 module is the master control module for the D-5000 Digital Audio Console. By monitoring the various console modules and serial ports, the CPU-600 controls all of the console audio and logic functions. Because the system architecture is designed to work by communicating function and status changes, the D-5000 console is very responsive and fault tolerant. The console will even continue to pass audio signals with the CPU-600 module removed; however this module must be present to change levels or channel assignments.

The CPU-600 has several functions and modes that can be configured by the user. These are normally set to default values at the factory, and should not be altered casually.

1. The first function is the console ID address. This function is set using DIP switches SW-1 - SW-2. This address is used to identify the console serial interface port so that external devices such as automation systems, the VDip software, and external controllers will communicate with the console correctly. Because the D-5000 serial interface port can be configured as an RS-485 device, and multiple consoles can be connected to the same RS-485 bus, each console needs a unique address to identify it properly on the bus, ensuring that the right commands get passed to the correct console. The specific address set is unimportant except that any external controller must use a matching address to communicate with the console. The address is set with the DIP switches in binary format (for example with all switches “OFF” the address is “0”, with the first switch “ON”, the address is “1”, with just the second switch “ON” the address is “2”, with the first and second switches “ON” the address is “3” and so on). Consult the section “Internal Programming Options”, page 8-7, for more details. The D-5000 console is normally configured with an address of “1”. Do not change the console address unless you are using the console in an RS-485 bus system.

2. The second function is serial interface configuration. DIP switches SW-6 & SW-7 control the serial interface protocol and termination respectively for the two serial ports on the CPU-600 module. These ports can be configured as RS-232 or RS-485, and terminated or unterminated via these DIP switches. Again, the default settings of these switches are for normal operations and should not be changed unless you are using the console in an RS-485 bus system. Consult the sections “D-5000 Serial Interface”, page 8-5, and “Internal Programming Options”, page 8-8, for specific configurations. SW-3 is also used with the serial interface; by setting it “ON”, the normal checksum in the serial protocol is disabled. This can be useful with some external control devices which are not equipped to generate a checksum in their messages.

3. The third function is nominal audio make-up gain. DIP switch SW-4 is used to establish the master gain setting for the D-5000 console. This allows users to configure the nominal fader setting and signal headroom to suit their specific needs or preferences. The digital audio signals

entering the D-5000 console are usually normalized in the recording or transmitting process for peak signals such that the absolute maximum peak signal is very close to, but does not exceed, the maximum or highest digital word in the AES bit stream. This implies that any decrease in signal caused by placing the console fader at a “normal” setting somewhat less than full up needs to be made up at the output of the console or the signal will be lower than it was at the source. Radio consoles are normally operated with their faders at less than full up to allow for some control over level and mixing (if a signal is too low or quiet, the fader can be moved up until the signal matches the normal levels as shown in the console meters.). By using the DIP switches, the user can configure what the normal fader setting (and hence the output make-up gain) should be. Consult the “Global Gain” table in the “Internal Programming Options” section, page 8-8, for the gain values. The D-5000 console is normally shipped with a make-up gain setting of +12dB for a nominal fader setting of -12dB from the top. The gain value briefly shows in the CPU-600 display window during the console power up process (“12--00dB” indicates +12dB gain). Note that setting the make-up gain too high for the signals and fader settings used can result in a clipped or distorted signal, just as it could with an analog console.

4. The fourth function is the CPU display window. The eight characters displayed in this window are used to communicate general information to the user. During the power up process, the CPU tests each module for proper communications; any errors found will be displayed in the CPU display window. Once the module communications have been tested, the CPU briefly shows the selected make-up gain (see above), and then alternately displays “LOCAL <>” and “LOCAL><” to indicate normal operation. If the CPU detects an error during normal operations, it will show the error message in the display window. If you see such a message, make a note of it and contact Wheatstone Technical Support for instructions. Note that the normal display is changed to “REMOTE <>” and “REMOTE ><” when the console serial interface has been de-activated by pressing the large button on the CPU-600 module.

5. The fifth function is serial interface control. The front panel of the CPU-600 module has a large pushbutton switch. Activating this switch will enable the remote serial interface to the console, and de-activating the switch will disable the remote serial interface. When the interface is activated, any device connected to the interface can control any of the console functions. Note that the console operator also has control of the console functions even when the remote serial interface is enabled.; the console will respond to any command regardless of where it comes from. When the interface is disabled, the console will not respond to any commands sent to the remote serial interface; it will respond only to the console switches and faders.

DSP-600

The DSP-600 is the main audio mixing module in the D-5000 Digital Audio Console. It functions solely as a mix engine, combining all of the console audio signals as directed by the console faders and switches to produce the various output mixes for PROGRAM, AUDITION, AUXILIARY, UTILITY, CUE, and TELEPHONE. These mixes are sent from the DSP-600 module to the various output modules over the console backplane. There are no user settings or switches on the DSP-600 module; however the external AES clock sync and slave connections appear on the upper DB-25 connector on this module. See the hook-ups section, page 8-9, for connection information

The DSP-600 module operates at a factory set sample rate, normally 48KHz, which dictates the output sample rate of the D-5000 console digital outputs. Consult Wheatstone Tech Support if you wish to use a different output sample rate. Since all of the console digital inputs are equipped with sample rate converters, the console inputs will accept any sample rate between the range of 1/2 to twice the output sample rate, and will actually track a variable sample rate as long as it remains within this range. This feature allows you to interface different types of digital sources into the console, each with different sample rates.

D-5000 Serial Interface

Using the Serial Interface

The D-5000 Serial Interface is designed to support serial communications under the RS-422/485 and -232 protocols. The proper serial interface protocol must be selected (via DIP switches on the CPU-600 module) or else serial communications will not function correctly. No serial interface connections are required for normal, stand alone operation of the D-5000 console; in fact the console will work normally with an improper connection to the serial interface. The function of the serial interface is to enable remote operation of the D-5000 console functions; local operation of the console switches and faders will always override any remote commands that may have been sent via the serial interface. In addition, the large button on the CPU-600 module can be used to disable any serial communications with the D-5000 console. Toggling the switch “ON” and “OFF” alternately enables and disables the serial interface port on the D-5000 console. The 8-digit display on the CPU-600 module shows “**LOCAL**” when the serial interface is disabled, and “**REMOTE**” when the serial interface is active. Remember, the D-5000 console can always be controlled by its faders and switches regardless of the status of the serial interface. If remote control of the console is desired, the “remote” mode must be selected with the CPU-600 switch, and the display must read “remote”.

The most common use for the D-5000 Serial Interface is to allow configuration changes (mutes, tallys, etc.) by means of the “Virtual Dip

Switch” program supplied with the console and described in Chapter 9 of this manual. To do this, the “Virtual Dip Switch” program must first be installed on a suitable PC, and a serial cable connected from the COM port of your PC to the lower DB-25 connector on the CPU-600 module. Be sure that the RS-232 mode for the console serial interface (the default setting) has been selected via the DIP switches on the CPU-600 module. Push the button on the CPU-600 module to enable remote operation and start the program on the PC. Use the program as described in this manual to modify the D-5000 console configuration. Once the configuration has been set, the PC can be disconnected from the console.

A second common use for the D-5000 Serial Interface is to allow alphanumeric information to be written to the console input channel displays by an automation system. By making a suitable serial connection between the automation system and the D-5000 serial interface (RS-232 or -485), and enabling remote operation via the CPU-600 front panel switch, the console displays can be updated with cut information, etc., by an automation system. As the number of systems that have connectivity to the console for this function is constantly changing, please consult Wheatstone for the latest information on automation interfaces. Our Technical Support engineers can assist you with pin-outs, switch settings, .INI files, etc., as required for your particular system.

Another use for the D-5000 Serial Interface is for complete remote operation by an external control system. When used in this way, the D-5000 console acts as a passive listener to the serial interface awaiting D-5000 serial protocol commands. Any external system that can deliver serial text strings in the proper D-5000 serial protocol format will be able to control the console. Consult Wheatstone Technical Support for more details on enabling this functionality.

Internal Programming Options (CPU-600)

All internal programming is made via printed circuit board (PCB) mounted switches on the module's card. With the exception of the reset switch, which is a push-button 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.

Global Settings

Four-position dipswitches SW1- SW4 (lower right corner of card) determines various console operating parameters:

		Bit	Weight
Console ID	SW1 position 11	0	1
	SW1 position 12	1	2
	SW1 position 13	2	4
	SW1 position 14	3	8
	SW2 position 21	4	16
	SW2 position 22	5	32
	SW2 position 23	6	64
	SW2 position 24	7	128

Note: Each D-5000 Console ID# is set using dipswitches 11-14 and 21-24. These switches are read as an 8 bit field with Bit 0 mapped to DSW11 and Bit 7 mapped to DSW24. This ID# is read by the CPU at boot up and is required by D-5000 serial communications software.

Example: Desired ID=17, set DSW21 and DSW11 "ON"

In multi-console, RS-485 connected system, each D-5000 console **MUST** have a unique Console ID#. Default Console ID is 1 (DSW11="ON").

Misc	SW3 position 31- ignore serial input checksum byte (default is "OFF")
	SW3 position 32 - not used
	SW3 position 33 - not used
	SW3 position 34 - not used

Note: Some automation systems may require DSW31 to be set "ON".

Global Gain	[SW4 position 41 - not used
		SW4 position 42 - 8dB
		SW4 position 43 - 4dB
]	SW4 position 44 - 2 dB

Note: These switches set the fader scale factor that will be applied to each input module at the DSP stage. Default setting is 12dB (DSW42 and DSW43 “ON”).

SW6 - RS-485/RS-232 Select

Four position dipswitch SW6 located on the upper right side of the card selects the hardware interface type (RS-485 or RS-232) for each serial Com port.

	OFF	ON	Serial Port
SW6 position 1	RS-485	RS-232	Com Ø
SW6 position 2	RS-485	RS-232	Com 1
SW6 position 3	not used		
SW6 position 4	not used		

SW7 - RS-485 Termination

Four position dipswitch SW7 located right next to the card’s short upper row of gold fingers are used for RS-485 termination. Termination must be switched in pairs (i.e., TX and RX BOTH ON or BOTH OFF) for a given Com X port.

	OFF	ON	Serial Port
SW7 position 1	Not terminated	Terminated	Com Ø - TX
SW7 position 2	Not terminated	Terminated	Com Ø - RX
SW7 position 3	Not terminated	Terminated	Com 1 - TX
SW7 position 4	Not terminated	Terminated	Com 1 - RX

CPU-600 Reset Switch

Push-button switch SW5 with green cap (lower right side of card) will reset the CPU-600 hardware and initiate a re-boot of the CPU-600 firmware. This sequence is sometimes called a “soft boot”, because the console’s power supply is not cycled OFF/ON.

Hook-Ups

CPU-600

All user wiring to and from CPU-600 module takes place at DB-25 multi-pin connectors mounted directly beneath the module on the console mainframe's bottom pan. There are two connectors: the upper one (towards the console meterbridge) handles Com Ø serial connections; the lower connector (near the console armrest) Com 1 serial connections. Pinout drawings on pages 8-10 show all wiring connections at a glance.

Upper DB-25 Connector – Com Ø Serial Connections

Pin 12 – RX Ø +	RS-485
Pin 11 – RX Ø -	
Pin 10 – TX Ø +	
Pin 9 - TX Ø -	
Pin 7 – Digital Ground	
Pin 6 – DSR Ø	RS-232 RESERVED
Pin 5 – CTS Ø	
Pin 4 – RTS Ø	
Pin 3 - RX Ø	
Pin 2 - TX Ø	
Pin 20 - DTR Ø	

Lower DB-25 Connector – Com 1 Serial Connections

Pin 12 – RX 1 +	RS-485 GENERAL PURPOSE
Pin 11 – RX 1 -	
Pin 10 – TX 1 +	
Pin 9 - TX 1 -	
Pin 7 – Digital Ground	
Pin 6 – DSR 1	RS-232 GENERAL PURPOSE
Pin 5 – CTS 1	
Pin 4 – RTS 1	
Pin 3 - RX 1	
Pin 2 - TX 1	
Pin 20 - DTR 1	

DSP-600

AES Clock Sync

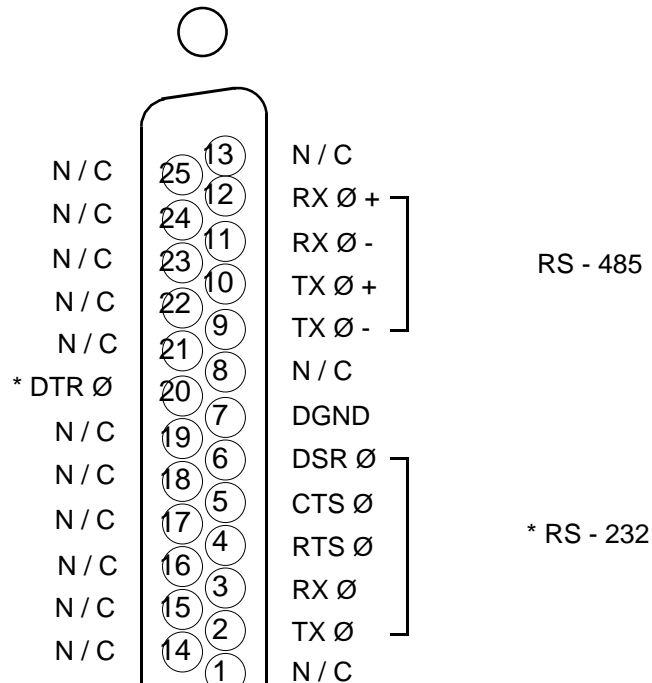
If you wish to sync your D-5000 console to an external clock source (or use the console master clock signal to control an external device) the AES Sync port is available on the DSP-600 module upper DB-25 connector:

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

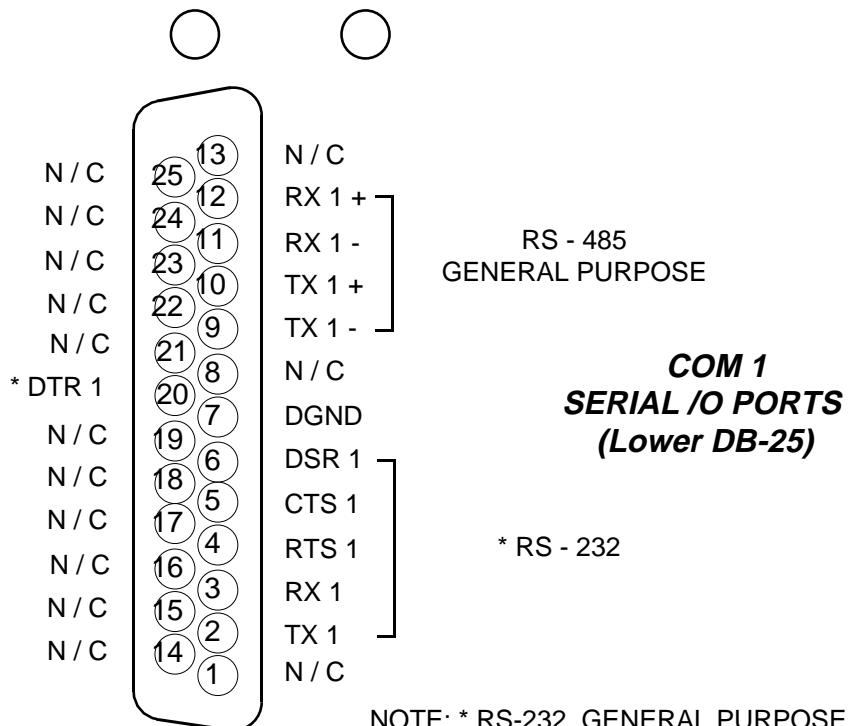
CPU-600 Micro-Controller Module

DB Connector Pinouts

COM 0 SERIAL I/O PORTS (Upper DB-25)



NOTE: * RS-232 IS RESERVED



NOTE: * RS-232 GENERAL PURPOSE

Virtual Dip Switch

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Virtual Dip Switch

Virtual Dip Switch Application Program

The application “VDip” is included with the Wheatstone D-5000 Digital Audio console. It is designed to run on any Windows 95/98 compatible PC. When the correct serial port of the external PC that contains the VDip program is connected to the D-5000 serial interface port, the program can be used to alter certain configuration details (mutes, tallies, etc.) in the D-5000 console as well as to modify the text displayed in the console 8-character displays. These details can be saved to a file and called up at a later date, thus making it easy to change console set-ups by running the VDip program and restoring a previously saved file.

Installation

To install VDip, first be sure that the PC you wish to use is Windows 95/98 compliant, has a CD ROM drive, has at least 50 Mb of hard disk storage available, and has an available serial port mapped to COM 1, COM 2, COM 3, or COM 4. Install the software on the PC by loading the VDip CD that came with the D-500 console into the drive tray and then running the install wizard on the CD by double-clicking on “Setup.exe”. Note, if your CD ROM drive is configured for Auto Play, the install program will automatically start when you insert the VDip CD in the drive. Follow the instructions on the screen to complete the installation. When finished, store the CD in a safe place in case you need to install the software on another machine in the future.

Hooking Up the Computer

Refer to the diagram on page 9-11 of this chapter showing the proper connections for the serial cable connecting the external PC with the D-5000 serial interface port which is located on the lower DB-25 connector of the CPU-600 module. Wire and test the cable. Note that there are certain DIP switch settings on the CPU-600 module which must match the serial port on your external PC. The console is shipped with the D-5000 serial interface set up for a normal RS-232 connection. If your external PC has an available RS-232 connection (which most do) you do not need to modify any of the settings on the CPU-600 module. If you are planning on using an RS-485 connection to the D-5000 serial interface (to allow multiple consoles and/or multiple controllers to be connected on a common bus), your PC must have an available RS-485 port (most do not) and you must make changes to the settings on the CPU-600 module to set up the proper format, addresses, and terminations for an RS-485 system. If you are planning to use RS-485, consult the “D-5000 Serial Interface”

part of this manual for the details on configuring for RS-485. If you are not certain which interface to use or have questions on these details, consult our Wheatstone Technical Service engineers. Establishing serial communications between two different pieces of equipment can sometimes be frustrating; we can provide answers to your questions, and even pre-made cables to make the process easier.

Running the Program

Be sure that the serial interface cable is plugged into the D-5000 lower DB-25 connector on one end, and the proper COM port on your PC at the other. Also be sure that the large button on the front of the CPU-600 module has been switched to “Remote” and that the CPU-600 display shows “Remote”. The VDip program will not communicate with the console unless the console has been set to “Remote”. Start the program as you would any Windows program by double-clicking on its shortcut, or choosing the program from the START/PROGRAMS menu. Once the



Figure 1

program opens, you should see a screen similar to figure 1. This is the start-up screen for the program, and is used any time you wish to alter the connection status for the program. Select “Communications...” from the “Setup” menu with your mouse and then select the correct “COM” port to match your computer (figure 2). Also verify that the “Virtual Dip Switch

Program ID” is set to “1”. This is the standard setting (for networked operations this DIP switch setting must be altered; consult Wheatstone technical support). Leave the settings for Baud Rate and Handshaking as shown in figure 2. Once the correct “COM” port is selected, click on “OK”



Figure 2

to accept these settings. Click on “Connect” under the “file” menu to establish communications with the D-5000 console (figure 3). Verify that the Console ID is set to “1” (standard setting).

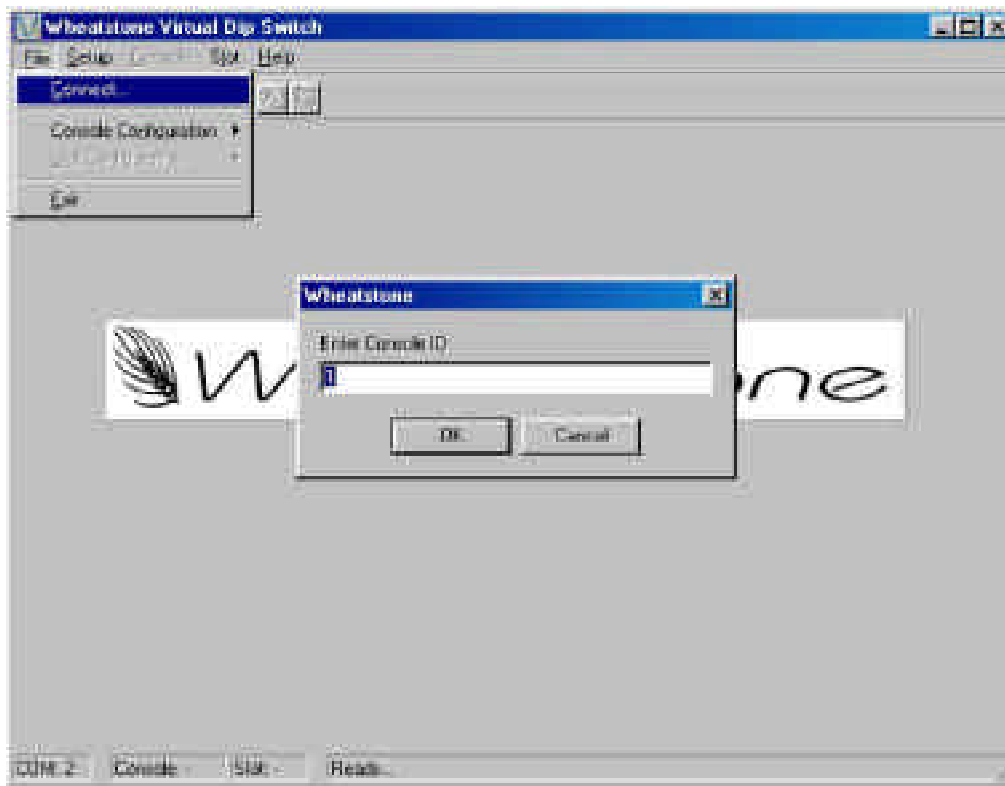


Figure 3

Using the Program

Once you have established communications with the console, the various screens and menus can be used to control the console functions. The program will inquire about the current settings in the console and will display them to you on the status display screen (see Figures 4, 5). This screen shows the status of all of the input module functions, one module at a time. Functions can be changed by clicking on the function with your mouse ; a selected function shows a check box, a de-selected function shows a blank box. Towards the bottom right of the window is an area where you can enter text to be displayed on the input module display. Note that there are two boxes, one for “A” and one for “B”; different text can be entered in these boxes such that switching from input “A” to input “B” on the module automatically changes the display. You might for instance label the input channel “A” display “NEWS” and the “B” display “GUEST 2” to correspond to how your console audio is wired. Any standard keyboard character can be used; just remember that the displays are limited to 8 characters, including blanks and punctuation.

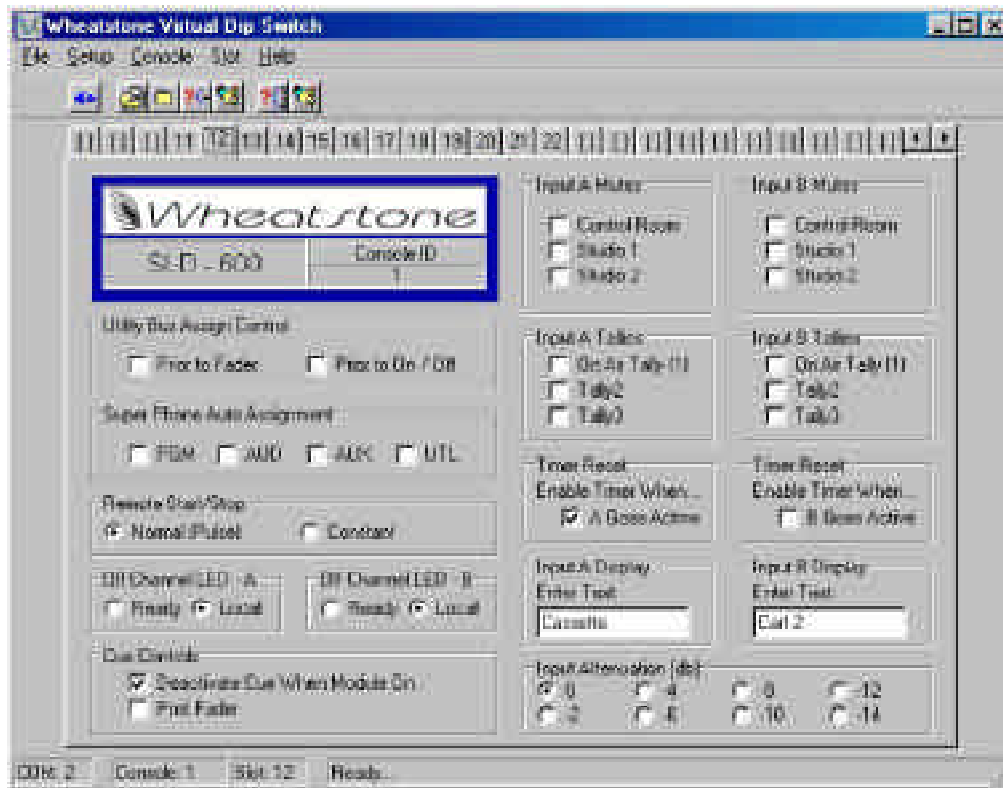


Figure 4

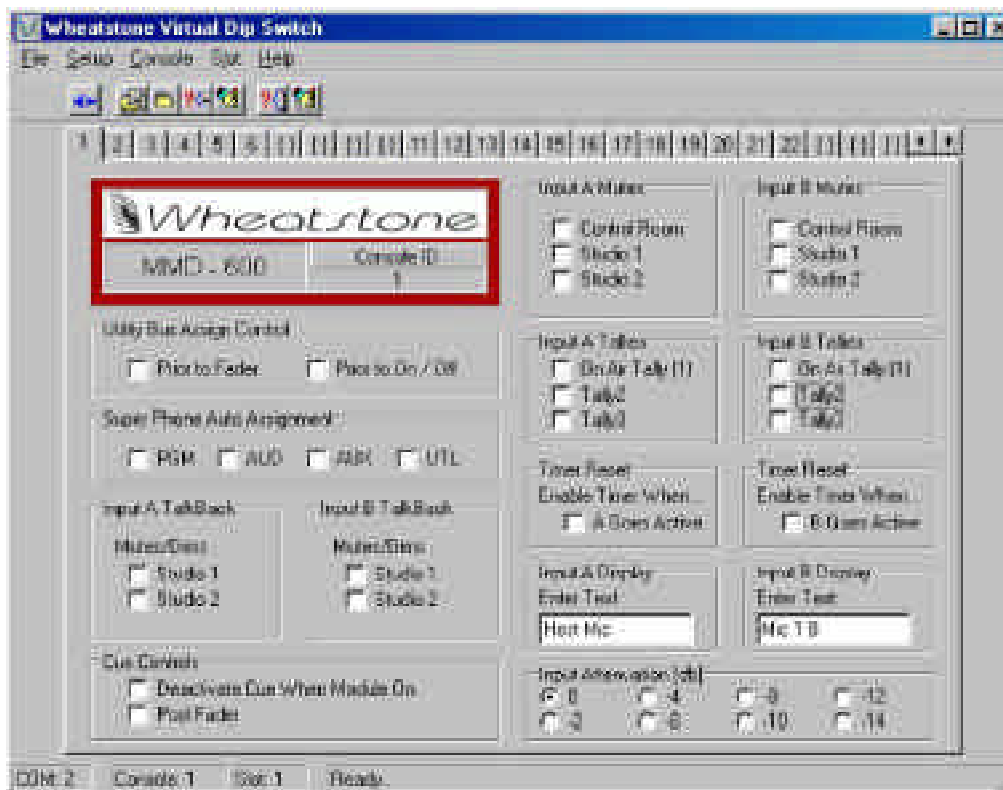


Figure 5

In a similar fashion, your mouse can be used to alter the console mutes and other settings by clicking on the function to enable it on source “A”, “B”, both, or neither. Once you have finished setting the text and configuration that you wish for an input channel, you send the information to the console by selecting “Write Current” under the “Slot” menu (figure 6).

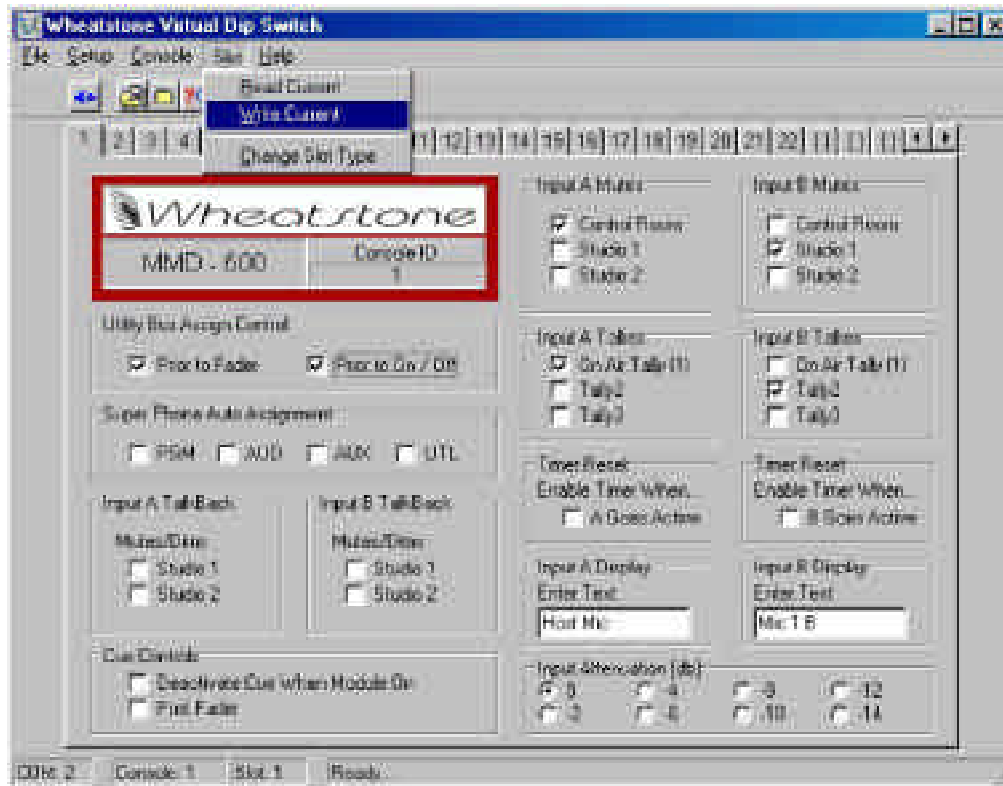


Figure 6

The information is then sent to the console, and the input channel display will be updated to the text you chose. To select another input channel to modify, choose its corresponding slot number from the selection bar near the top of the status display screen. The status screen will change to show the type and settings of the module in the slot you have selected.

If you choose a slot number that has no module installed, the status screen will show “NO CARD” (figure 7). By selecting each slot and changing the

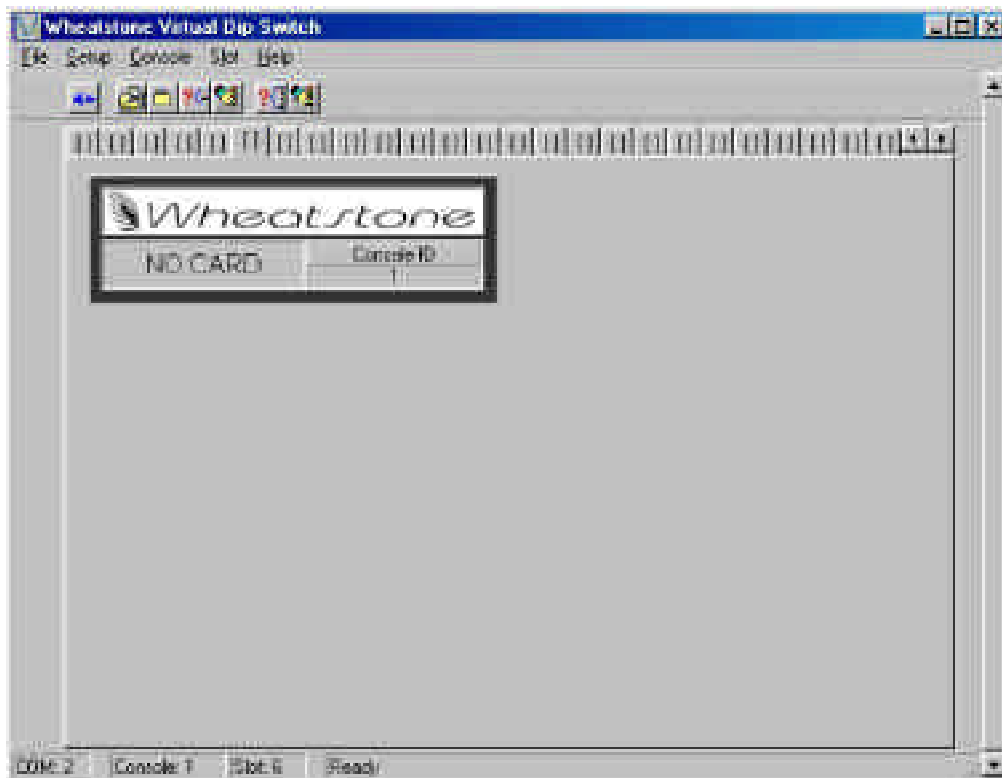


Figure 7

display text and settings, the entire D-5000 console can be configured to suit your application. Remember, you must select a channel to be modified before you can make changes, and you must “Write Current” after making the changes to pass them on to the console.

Input Attenuation

This exclusive Wheatstone digital console feature allows the user to digitally “trim” the gain back on any input module. While this feature is most useful for reigning in “hot” digital domain sources on SRC input modules, digital attenuation may also be applied to any analog microphone or line level source. Note that the digital attenuation occurs after the analog pre-amp stages, therefore, clipping in those stages can not be corrected with this feature (use analog trim pots located on the input module).

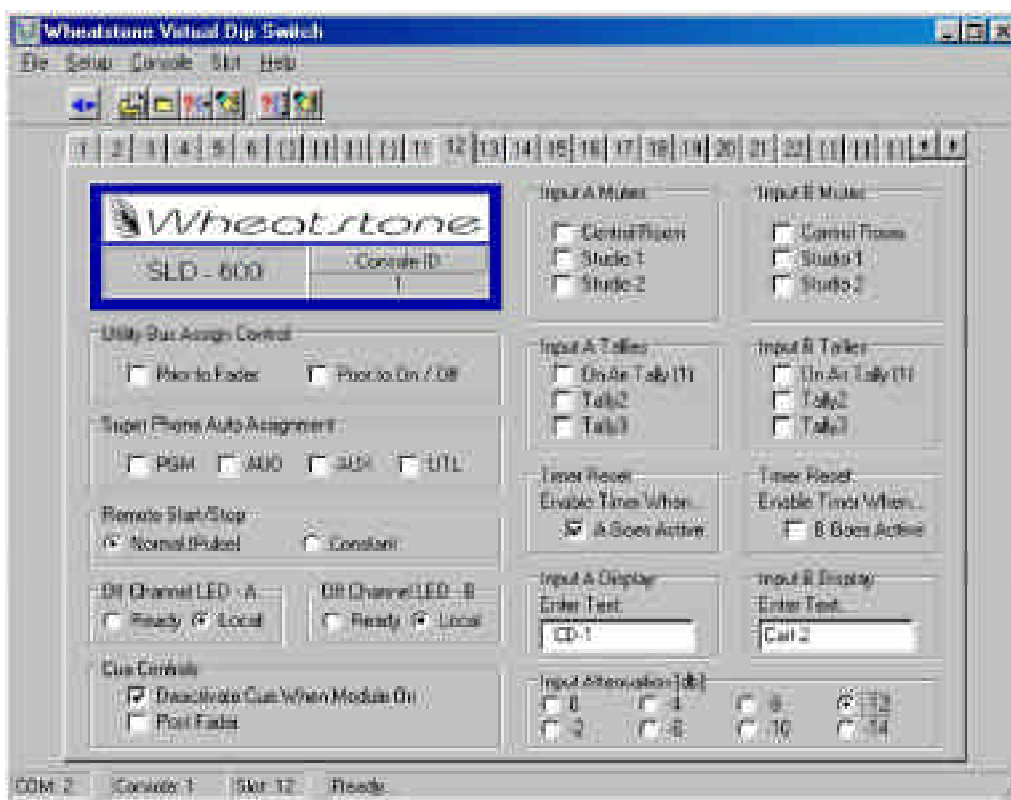


Figure 8

In the lower right corner of the VDip screen (figure 8) there are eight mutually exclusive radio buttons for selecting the desired input attenuation. The attenuation choices are 0db to -14dB in 2 dB steps. Simply click on the appropriate radio button to select the attenuation value and then “WRITE” the selected change to the module. You can use the “Write Slot” toolbar icon or the “Slot” menu item to write the current attenuation setting along with any other module settings. The attenuation setting is immediately written to the corresponding channel.

Why use digital attenuation?

Many of today’s digital audio sources (especially modern rock, rap, etc.) are produced to take full advantage of the available maximum digital output level (0dBFS). Playback of these tracks from a CD player’s digital output result in *average* digital domain levels -6 to -3dBFS or higher! That translates to average analog levels of +18 to +21 dBu; very close to the console’s clipping point of +24dBu. Connecting the digital output from a CD player to a console input with gain on the fader can put the operator in a position of potentially clipping the CD playback. In this case, adding -12dB of attenuation will re-calibrate the input module so that digital clipping of CD source material will be impossible even if the operator pushes the fader all the way to the top.

Advanced Operation

After using the VDip program for a while, its operation becomes routine. There are some advanced features to make it easier to do repetitious tasks. Underneath the top menu bar of the status screen is a row

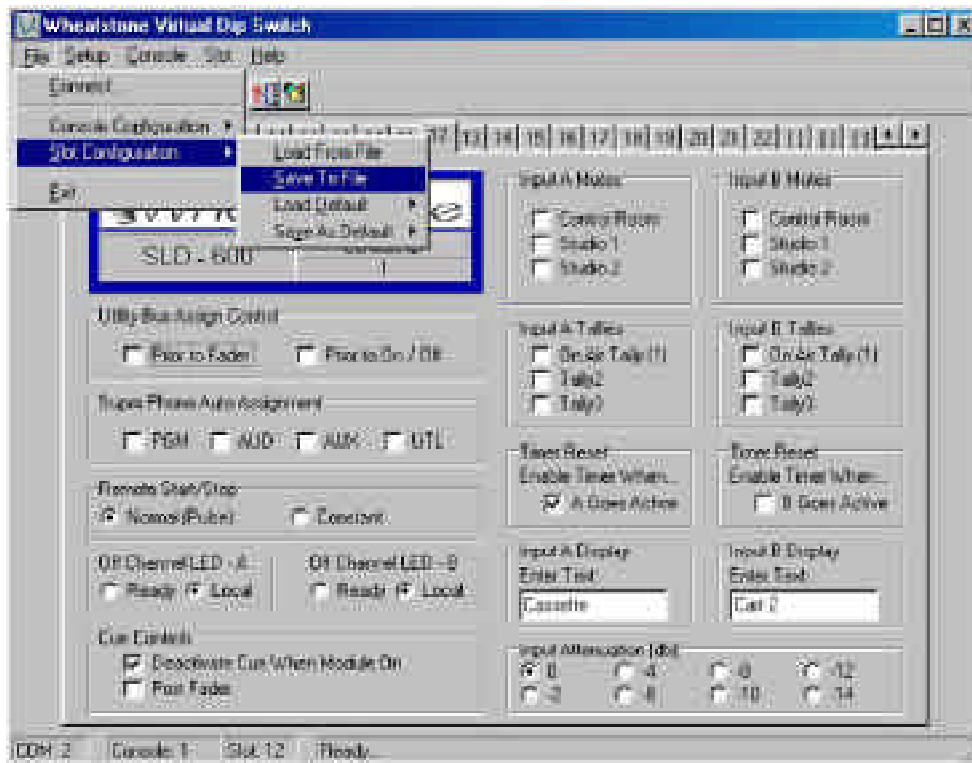


Figure 9

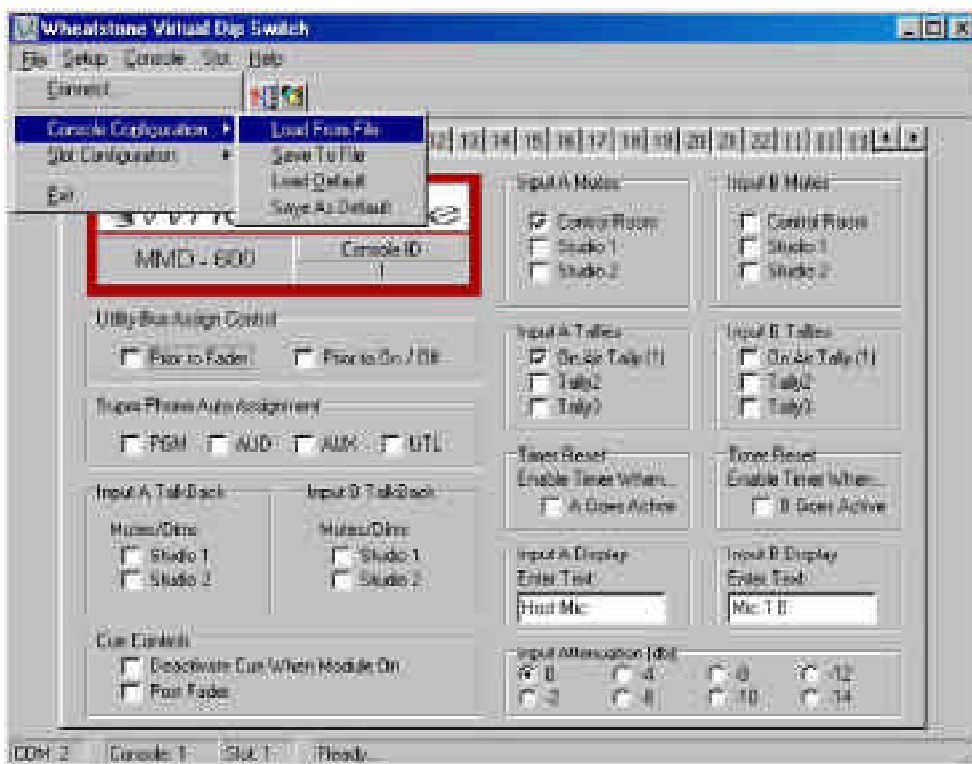


Figure 10

of “buttons” designed to perform routine tasks like “Write Current” and “Read Current”. Moving your mouse pointer over a button and leaving it there for a moment will bring up a short “hint” message on screen that explains the button’s function. Also, under the “Console Configuration” and “Slot Configuration” menus (under “File”) are functions called “Save To File” (figure 9) and “Load From File” (figures 10). Choosing “Save To File” allows you to save all of the console settings under a filename which you can retrieve later using the “Load From File” function. This makes it easy to recall complex but repeatable text and settings information into the console, especially if you name the file something obvious like “7am”, etc. (figure 11).

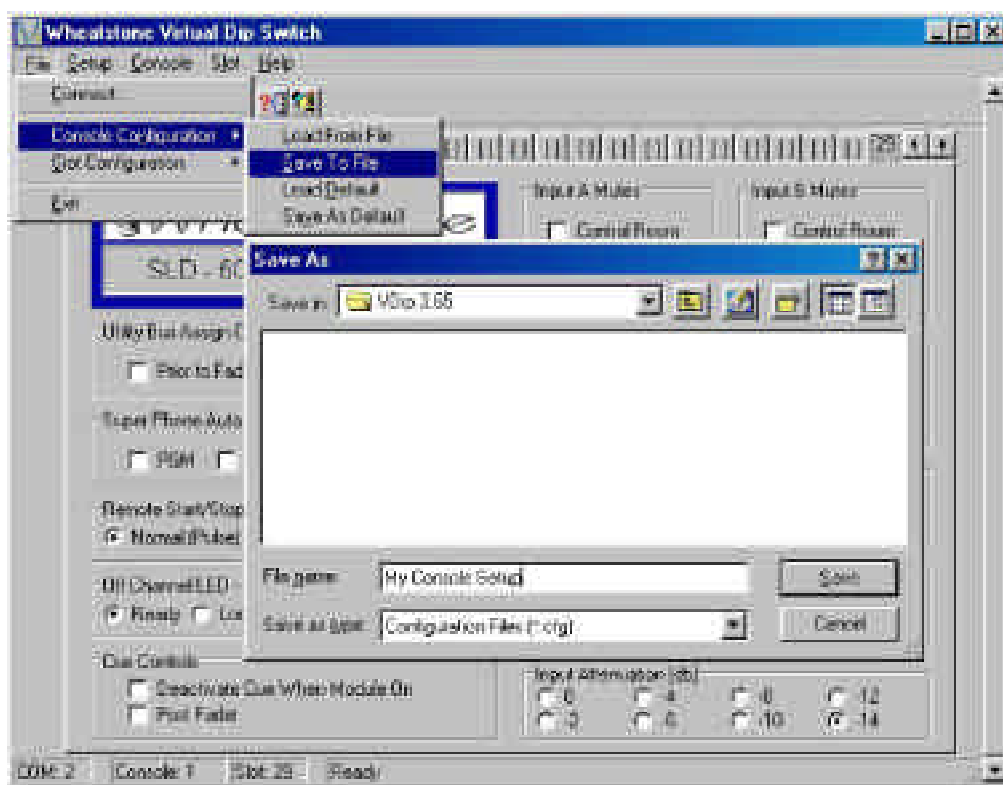


Figure 11

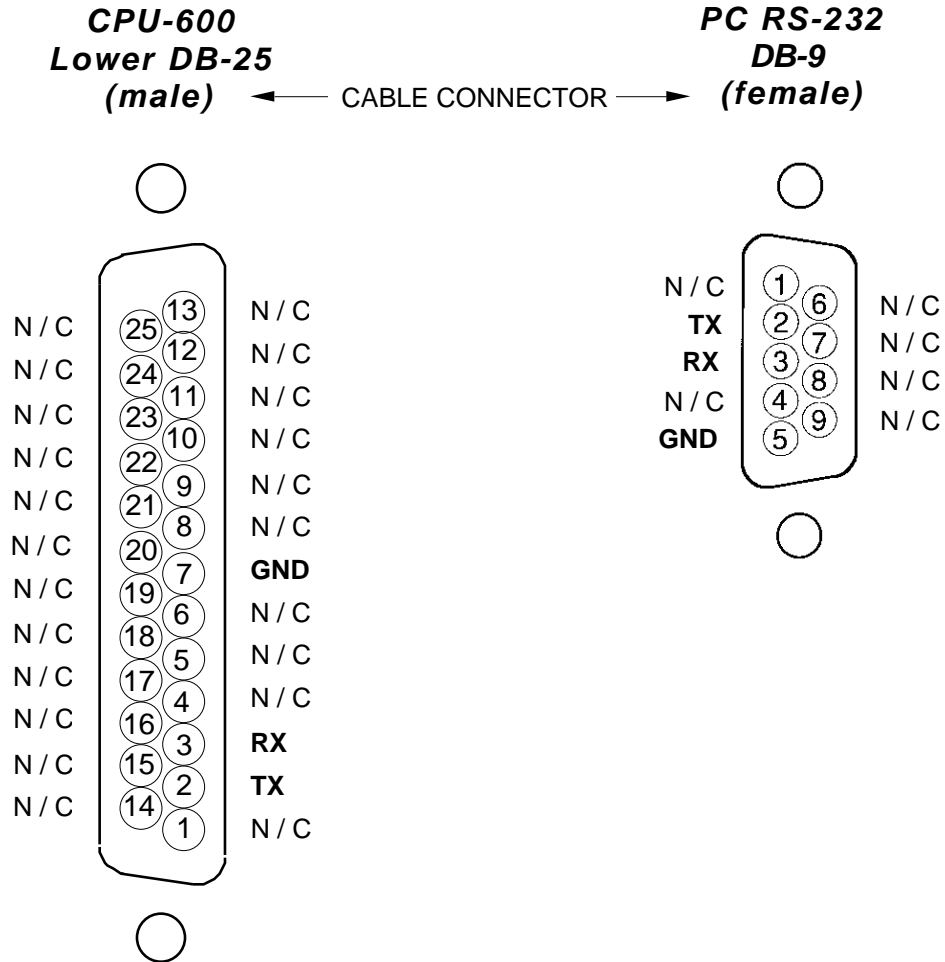
You can have a large number of files saved, limited only by your ability to give them suitable names.

Ending the Program

Once the console text and settings are to your liking, and have been written to the console, and saved to a file if desired, the VDip program can be ended by selecting “Exit” from the “File” menu. The console settings will remain as you have set them until the next time the VDip program is run. You can remove the computer connection or leave it hooked up, as you desire. Note that if you leave the connection to the computer in place, you should set the large switch on the CPU-600 module to “local” in case some other program on the computer tries to write to the COM port. It is unlikely that a stray message sent out the COM port will cause any changes because it will be ignored unless it is sent in the precise D-5000 serial protocol, but simply switching the console to “local” provides extra insurance.

Serial Interface Cable

(for use with Virtual Dipswitch)
DB Connector Pinouts



Superphone Input

(SPD-600; optional)

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Superphone Input (SPD-600)

Module Overview

SPD-600 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 your station hybrid; 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 four stereo outputs: PGM (program), AUD (audition), AUX (auxiliary) and/or UTL (utility). When the module is assigned to PGM and turned ON, a red "On-Air" LED illuminates just above the output assign switches.

Caller Set-Ups

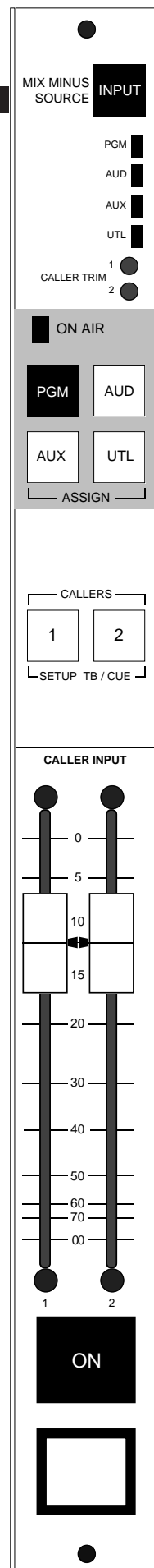
Pre-air segment communication between the console operator (DJ) and callers is via CALLER SETUP buttons (2) which place the caller's voice on the console's cue speakers (or control room speakers/operator's headphone if the CRD-600 module's cue interrupt function has been so programmed). These cue signals 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 MIX MINUS SOURCE switch at the top of the phone module. This sends a dedicated (digitally generated) version of the UTL bus signal to the SPD-600 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-600 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-600 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-600 module's DB-25 connector. This second method eliminates the need to select a mix minus input source everytime you want to talk off-air to the caller. An easy source choice here would be DJ mic module's INSERT OUT port.



Automatic Features

Regular mic and stereo line input modules can have their output assign buttons slave off of the SPD-600 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 (red) and OFF (amber) switches are at the bottom of the module. These can be programmed (via internal PCB-mounted dipswitches) to activate control room and studio mutes, tallies, timer restart and automatic cue drop-out. The ON switch can also automatically trigger an external tape machine for recording purposes (see page 10-7).

Cue Dropout can also be programmed internally (page 10-5), making it unnecessary to de-activate caller setup buttons before going live; simply pressing the module's ON switch will automatically do this for you.

Inputs and Outputs

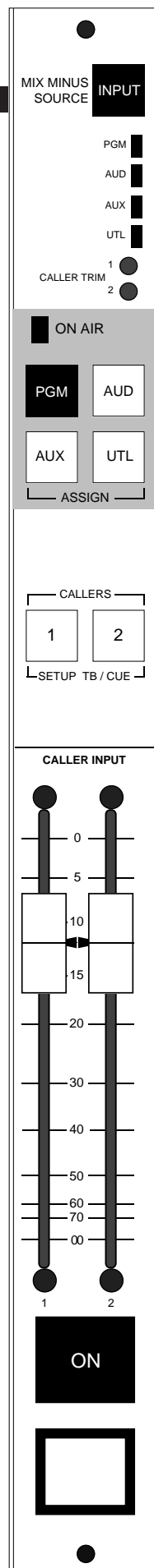
All audio and control signals hook-ups are made via two multi-pin DB-25 connectors mounted in the bottom of the console's mainframe, directly underneath each module. The upper connector handles hybrid input signals (i.e., caller input) and the external input mentioned on page 10-2. The lower connector handles outputs, including the module 1 and 2 feeds to your station hybrid (the phone signals going to your callers).

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

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

Composite Minus Callers – This includes everything but the callers.

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



Internal Programming Options

Main Printed Circuit Board

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

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

Output Assign Switch Enable

As alluded to in the "VDT Programming Options" sections of the MMD chapter (page 2-3) and the SLD chapter (page 3-4), and as indicated in Figures 4 and 5 of the "Virtual Dip Switch" chapter (page 9-6), microphone (MMD) and stereo line (SLD) input modules can have their output assign switches slave off of the SPD-600 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 3 activates AUX 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-600 phone channel ON/START 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* *factory default setting
- SW2 position 2 mutes studio one when the phone module is ON
- SW2 position 3 mutes studio two when the phone module is ON

Timer Restart

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

- SW2 position 4 activates timer restart when the phone module's ON/START 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-600)

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/START switch is pressed. This is the factory default setting.

Gain Trimpots

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

CR1 - sets Callers 1 In port input gain

CR2 - sets Callers 2 In port input gain

Internal Programming Options Piggyback Card

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

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

External In

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

Cue Pre/Post

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

Gain Trimpots

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

CR4 – sets the External In port input gain

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

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

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

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

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

Factory default settings for these trimpots is UNITY GAIN.

Hook-Ups

As stated before, all user wiring to and from SPD-600 modules takes place at DB-25 multi-pin connectors mounted directly beneath each module on the console mainframe's bottom pan. There are two connectors per module: the upper one (towards the console meterbridge) handles audio input signals; the lower (near the console armrest) audio outputs and control signals. A pinout drawing on page 10-8 shows all wiring connections at a glance.

Audio Connections (upper DB-25)

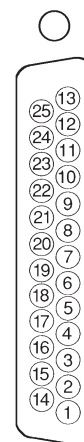
These include External In and station Hybrid 1 & 2 inputs. All are +4dBu balanced analog mono.

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

Audio and Control Connections (lower DB-25)

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

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



Typical DB-25 connector

Pin 17 – Start/Stop Common

Pin 16 – Stop

Pin 15 – Start

Pin 4 – Start/Stop Common

Pin 3 – Stop

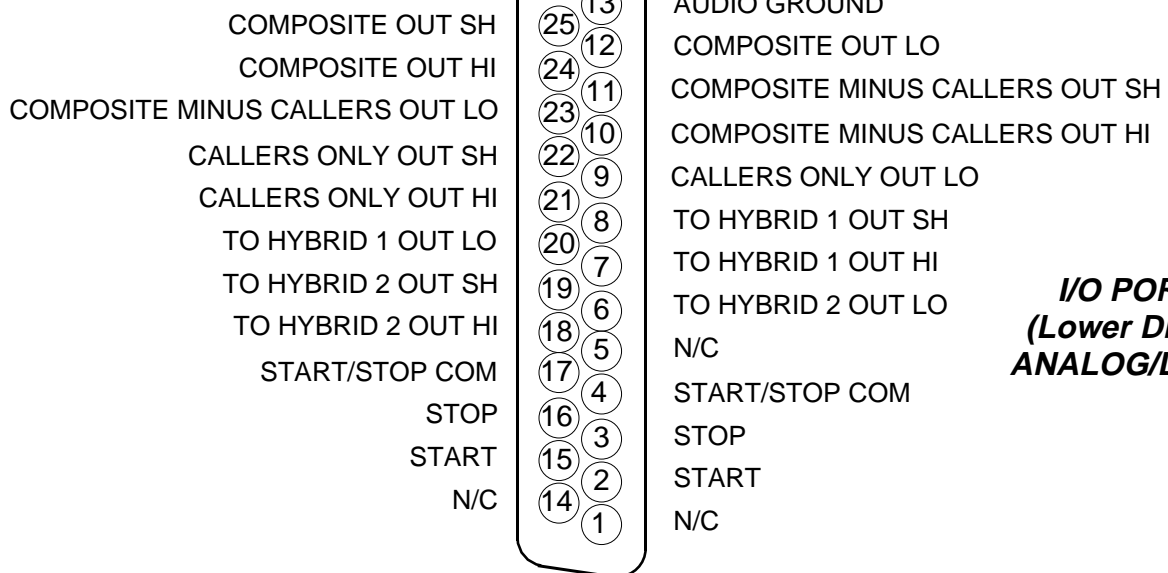
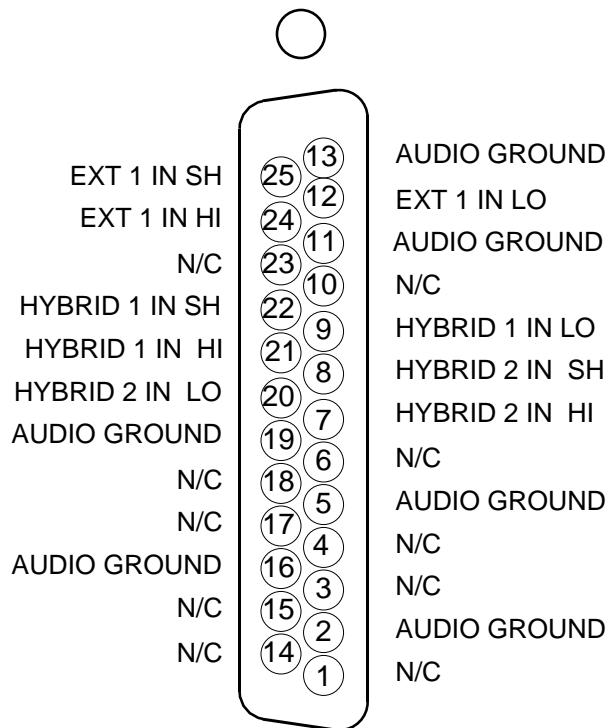
Pin 2 – Start

The last six callouts are simply two parallel-connected sets of pins for the same control port. When the module's ON/START switch is pressed, a closure takes place between start/stop common and START; when the module's OFF 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.

SPD-600 Superphone

DB Connector Pinouts

I/O PORTS (Upper DB-25) ANALOG



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

Line Preselector Module

(LSD-600 Control Module and LSR-500 Rackmount Switcher; optional)

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Line Preselector Module

(LSD-600 Controller Panel)

(LSR-500 Rackmount Unit)

Overview

This optional module consists of an 8-switch control module (LSD-600) mounted in the D-5000 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.

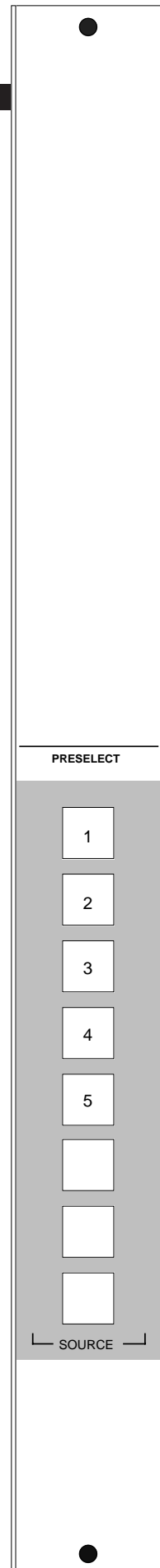
The rack unit accepts eight stereo analog and digital audio inputs (each input is dipswitch-selectable for either analog or digital) and outputs both an analog and digital stereo signal, which may be wired back to D-5000 console input ports. Wiring between the console's LSD-600 preselector module and the rackmount switcher is via two pin-for-pin DB-25 connector cables: the module's upper DB is used for control; the lower for power.

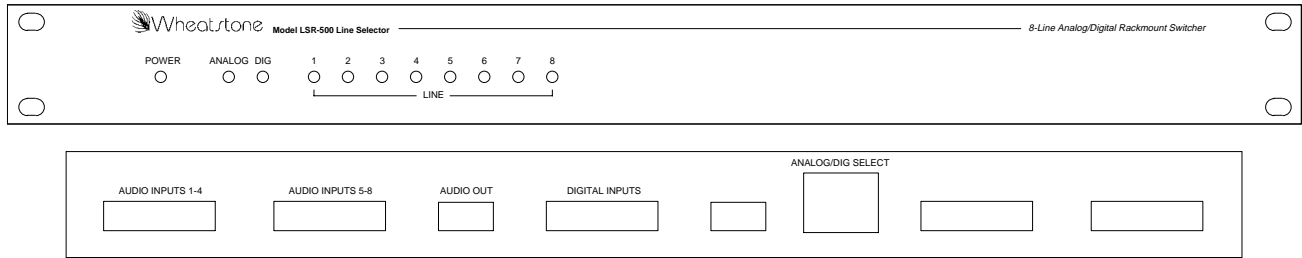
The LSR-500 rackmount unit faceplate has eight indicator LEDs which show which input has been selected at the console and also ANALOG and DIGITAL LEDs which light to show what kind of signal has been selected. A POWER LED is also included. (See drawing next page.)

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-600 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-600 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-600 Line Preselector Module

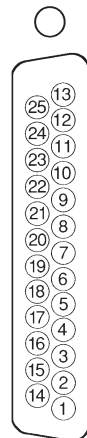
Two DB-25 connectors that wire pin-for-pin to matching DB-25s on the LSR-500 chassis rear. The upper connector is for control; the lower for power. See pinout drawing on page 11-6 for signals.

LSR-500 Audio Inputs

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

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
- 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



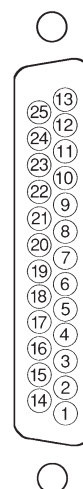
Typical DB-25 connector

ANALOG AUDIO INPUTS 5-8:

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

DIGITAL AUDIO INPUTS 1-8:

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



Typical DB-25 connector

LSR-500 Audio Outputs

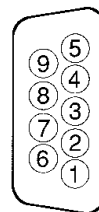
These are for analog stereo (+4dBu balanced) and digital (AES); there are two DB-9 output connectors on the chassis rear:

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

DIGITAL OUTPUTS (DB-9):

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

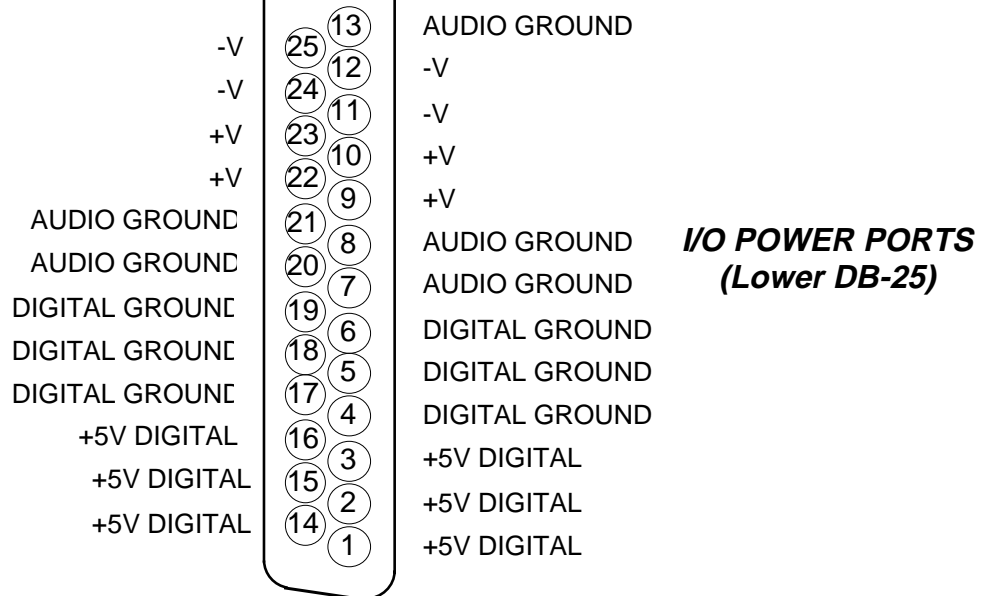
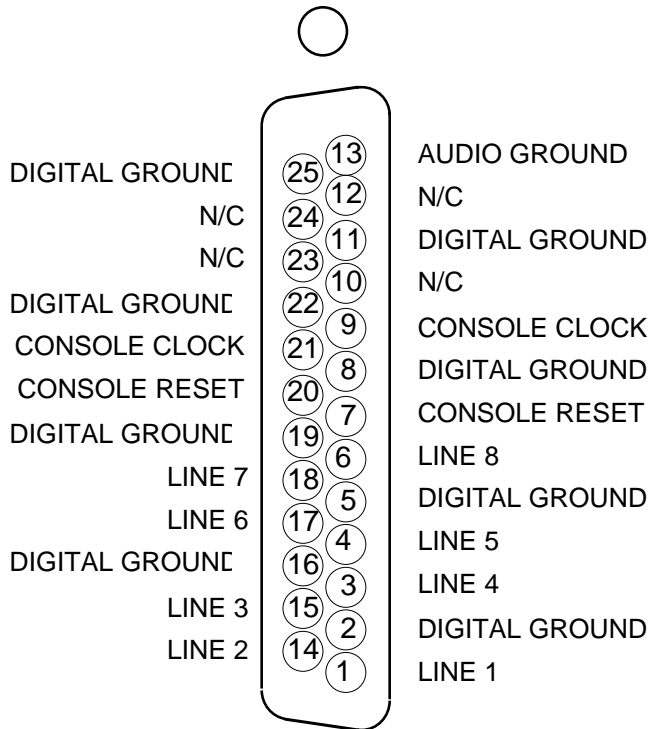


Typical DB-9
connector

LSD-600 Line Preselector Module

DB Connector Pinouts

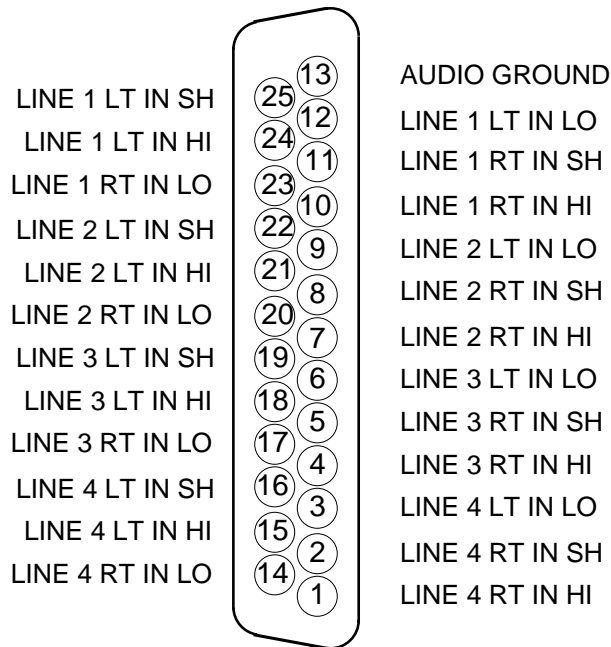
I/O CONTROL PORTS (Upper DB-25)



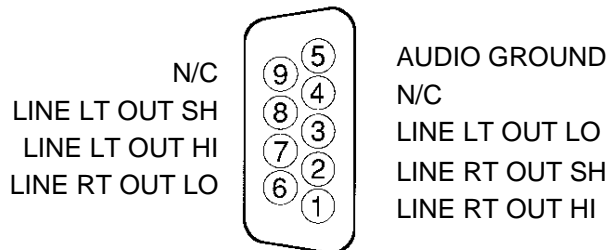
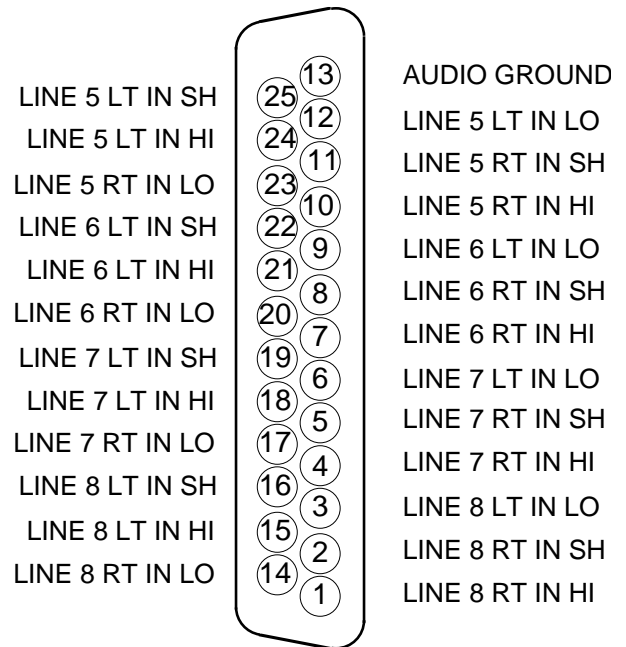
LSR-500 Rackmount Switcher

DB Connector Pinouts

ANALOG INPUTS 1-4 (DB-25)

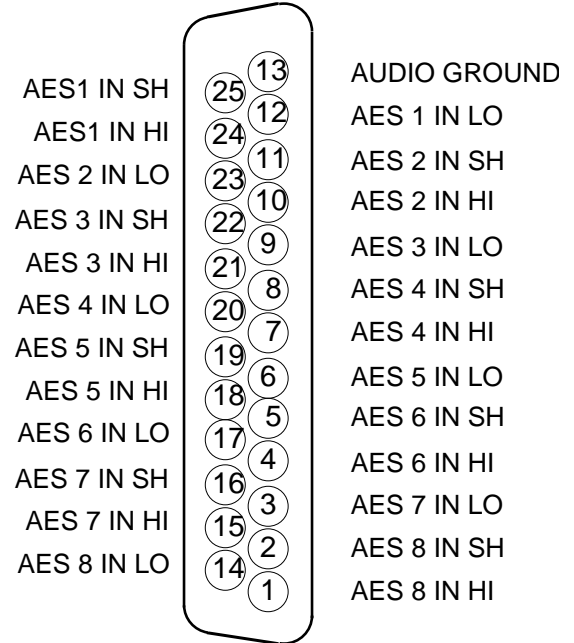
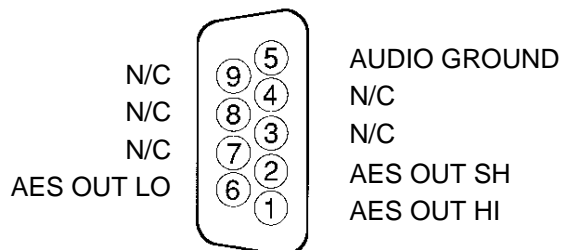


ANALOG INPUTS 5-8 (DB-25)



ANALOG AUDIO OUTPUT (DB-9)

DIGITAL AUDIO OUTPUT (DB-9)



DIGITAL INPUTS (DB-25)

Line Preselector Module- Analog

(LSA-600; optional)

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Outputs	11A-4
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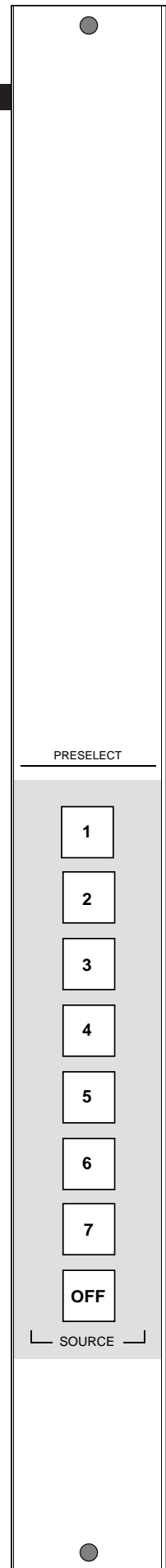
Line Preselector Module- Analog

(LSA-600; optional)

Overview

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

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



Internal Programming Options

There are no internal programming options on the LSA-600 module.

Hook-Ups

LSA-600 Audio Inputs 1-4 (upper DB-25)

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

LSA-600 Audio Inputs 5-7 (lower DB-25)

Pin 25 – Line 5 Lt In SH
 Pin 24 – Line 5 Lt In HI
 Pin 12 – Line 5 Lt In LO
 Pin 11 – Line 5 Rt In SH
 Pin 10 – Line 5 Rt In HI
 Pin 23 – Line 5 Rt In LO
 Pin 22 – Line 6 Lt In SH
 Pin 21 – Line 6 Lt In HI
 Pin 9 – Line 6 Lt In LO
 Pin 8 – Line 6 Rt In SH
 Pin 7 – Line 6 Rt In HI
 Pin 20 – Line 6 Rt In LO

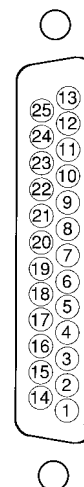


Typical DB-25 connector

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

LSA-600 Audio Outputs

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



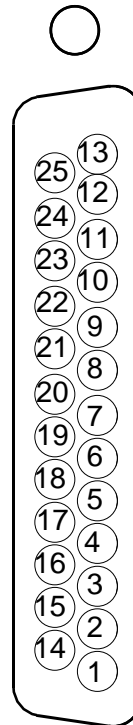
Typical DB-25
connector

LSA-600 Line Selector Module

DB Connector Pinouts

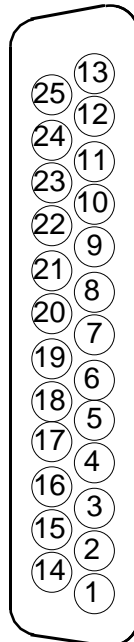
INPUT PORTS (Upper DB-25)

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



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

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



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

INPUT/OUTPUT PORTS (Lower DB-25)

Intercom Module

(ICMD-600; optional)

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Cue Enable	12-3
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Power for Various ICMs	12-3
Station Select	12-3
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Upper DB-25 Connector — CONTROL	12-4
Lower DB-25 Connector — AUDIO	12-4
Lower DB-25 Connector — CONTROL	12-5
DB Connector Pinout Drawing	12-6

Intercom Module

(ICMD-600; optional)

Module Overview

The ICMD-600 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.

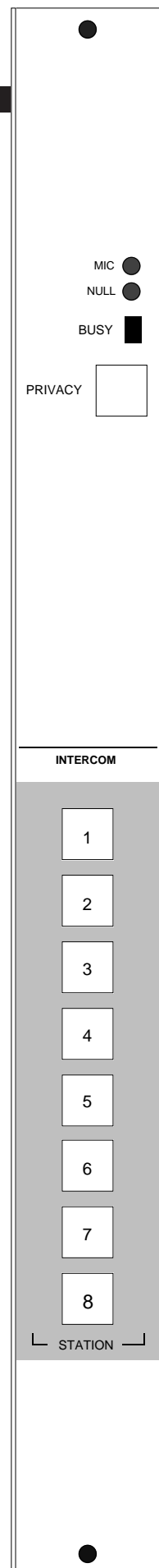
Normally you hear callers over your console's cue speakers. However you can also program the ICMD-600 module (via an internal dipswitch) to perform a cue interrupt function. The caller's voice will then appear at the control room speakers and/or operator headphones, depending on how you have programmed your CRD-600 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-600 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-600 module takes place at DB-25 multi-pin connectors mounted directly beneath the module on the console mainframe's bottom pan. There are two connectors: the upper one (towards the console meterbridge) handles inputs; the lower connector (near the console armrest) outputs.



Internal Programming Options

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

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

CUE Enable

You can program the ICMD-600 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-600 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-600 module.

Dipswitch SW 1 position 1 assigns 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

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

position 2 - Ext +V

position 3 - Ext -V

position 4 - Ext +D

Station Select

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

Hook-Ups

All user wiring to and from the ICMD-600 module takes place at two DB-25 multi-pin connectors mounted directly beneath the module on the console mainframe's bottom pan.

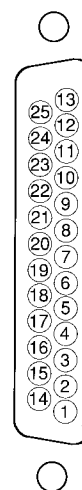
Upper DB-25 Connector — Input Audio

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

- Pin 15 - 2-way audio in HIGH
- Pin 3 - 2-way audio in LOW
- Pin 16 - 2-way audio in SHIELD
- Pin 1 - External Line in HIGH
- Pin 14 - External Line in LOW
- Pin 2 - External Line in SHIELD

Upper DB-25 Connector — Control

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



Typical DB-25 connector

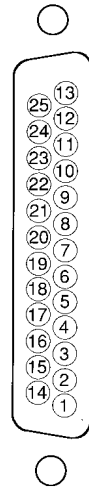
Lower DB-25 Connector — Output Audio

All signals are +4dBu balanced analog stereo.

- Pin 15 - 2-way audio out HIGH
- Pin 3 - 2-way audio out LOW
- Pin 16 - 2-way audio out SHIELD
- Pins 2 - Audio Common

Lower DB-25 Connector — Control

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

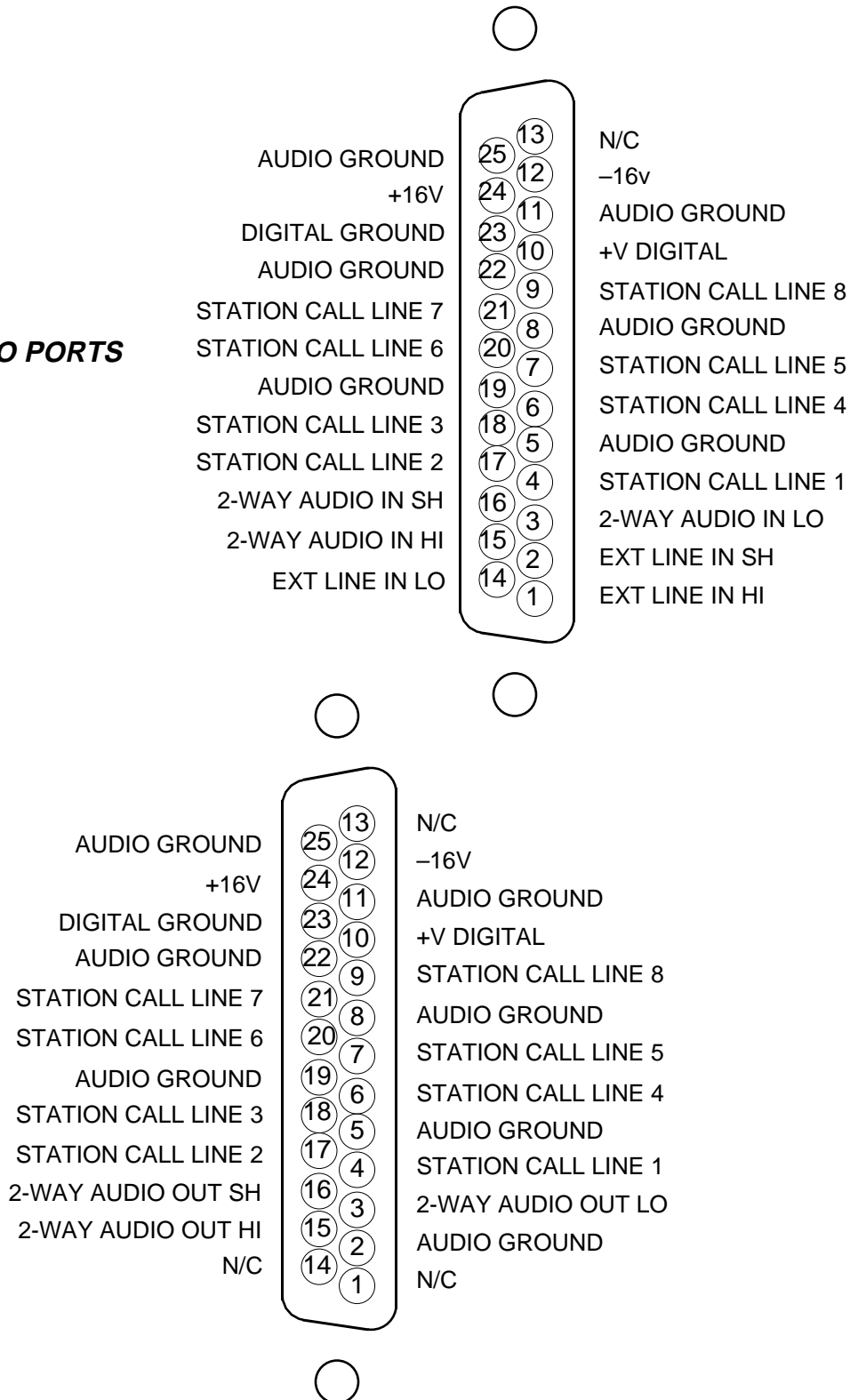


Typical DB-25
connector

ICMD-600 Intercom Module

DB Connector Pinouts

I/O PORTS



Meterbridge and Clock

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Controls	14-3
Setting the Time	14-3
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Schematic	14-5
Load Sheet	14-6
Clock/Timer Display (CLD)	
Schematic	14-7
Load Sheet	14-8

Meterbridge and Clock

Overview

The console's meterbridge houses two pairs of left-right VU meters (Program and Switched; see "Meter Output Module" Chapter 7), the digital timer display, left and right cue speakers (controlled by the CRD-600 Control Room Module; see page 5-2), and the console clock.

The meterbridge assembly hinges open for easy access (VU meter lamp replacement, 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 card, VU meters (and lamps) and replacement cue speakers are available. See Appendix for specific ordering information.

Digital Timer

The console timer control buttons are located on the MOD-600 Meter Output Module (see page 7-2).

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

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

RESET has a dual-mode capability:

- if you depress it while the timer is counting, the display will instantly reset to zero and start a fresh count;
- if the timer is already stopped, depressing this button will reset the timer to zero, where it will hold until start is pressed.

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

Console Clock

The Wheatstone digital clock is a six-digit time-of-day clock with LED display. The clock is designed with CMOS circuits and an on-board crystal-controlled time base oscillator. There are two basic parts to the clock: a main PCB containing the clock circuits and clock set controls (also may include capacitor backup) and a second PCB containing displays. Clock set controls may be accessed by removing the meterbridge cover.

Controls

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

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 4.096 MHz. 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 divided by 4 buffered output of the oscillator is available at pin #7 of IC #U1 to assist in adjusting the oscillator.

Setting the Time

The setting controls consists of two switches: **MODE** and **SET**. To set the clock, open the meterbridge cover and stand behind the console:

- 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". When the current time catches up to the display, release the **SET** button. The clock will start counting. Hit the **MODE** button three more times to place the clock into working mode.

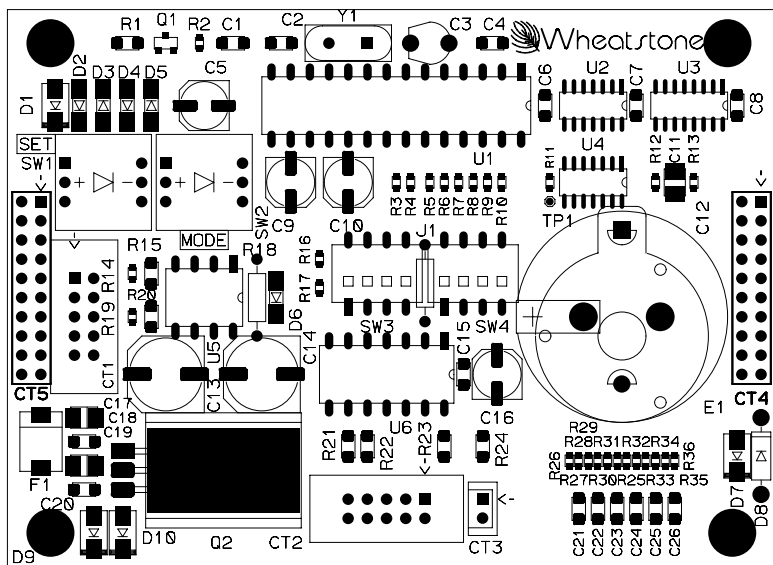
Capacitor Backup

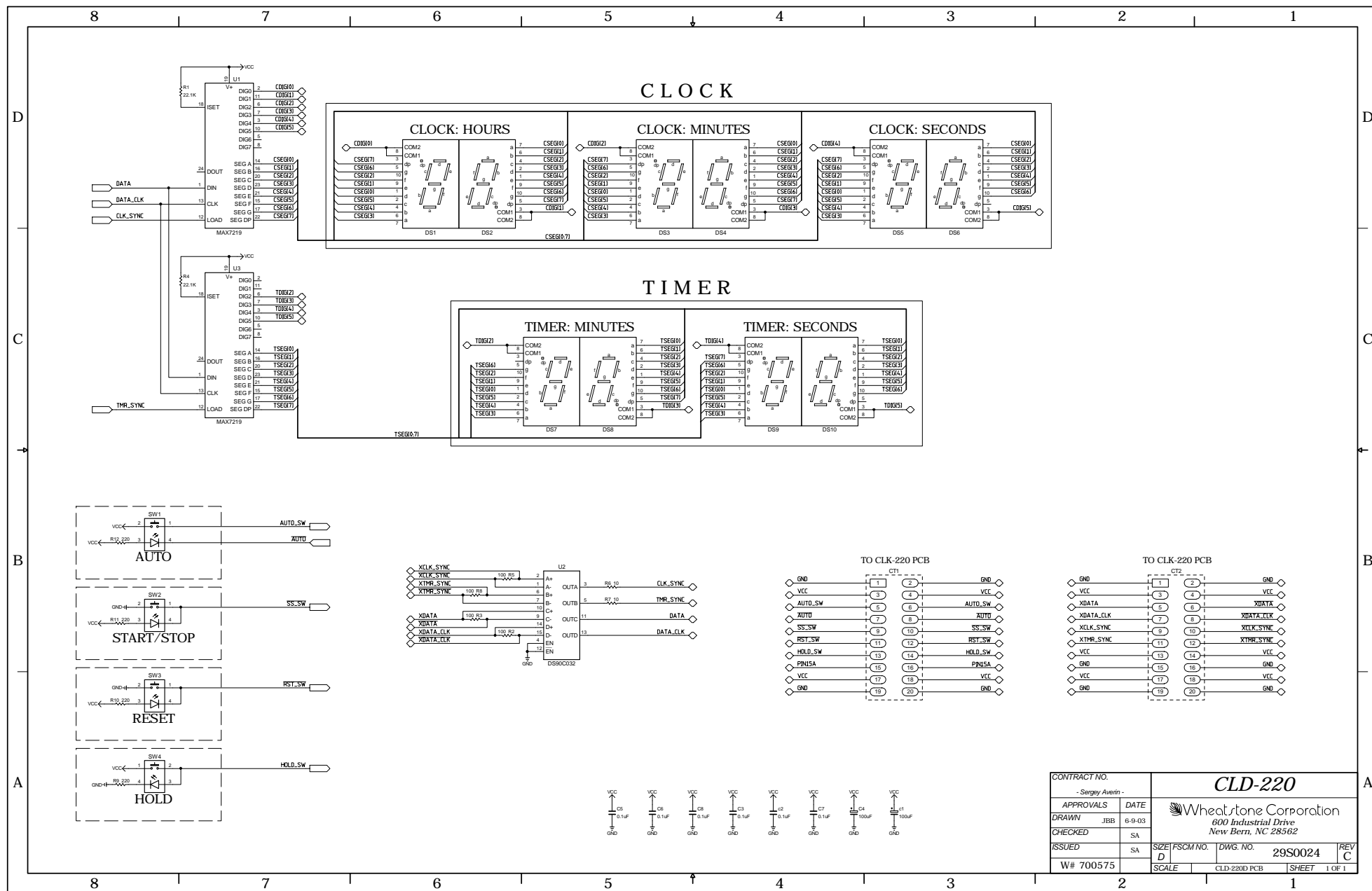
With the meterbridge open note the super capacitor at C25. This super capacitor is self charging. Note that the super capacitor does NOT light up the clock display; it powers the clock crystal to keep it from losing count (it will do this about one hour).

Operational Modes

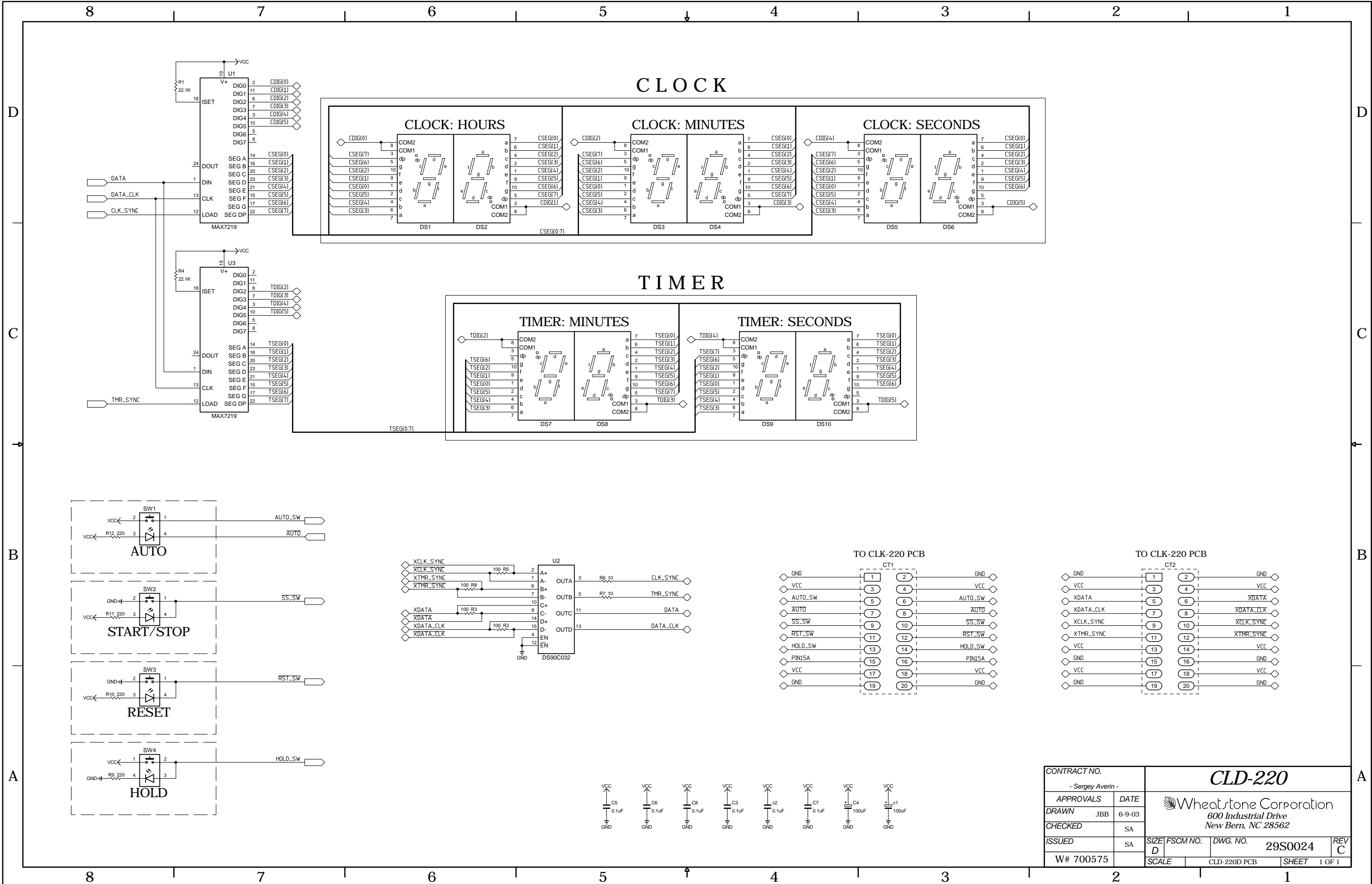
The standard factory default clock configuration is crystal-controlled, 12 hour mode, stand-alone operation. However, the clock will operate either from the internal crystal controlled time base or from an ESE master (TC-76, TC-89, TC-90, autodetect) signal. Because crystal time bases are subject to drift over time, Wheatstone recommends operating the clock in the ESE slave mode for those applications where the exact time is critical.

It can also be programmed to count in either 12 hour or 24 hour modes. Connect an ESE master at connector CT3 (Pin 1 - Signal, Pin 2 - Shield). Switch #4 on SW3 sets 12/24 hour mode (Off - 12 hour, On - 24 hour).





Clock/Timer Display Schematic Sheet 1 of 1

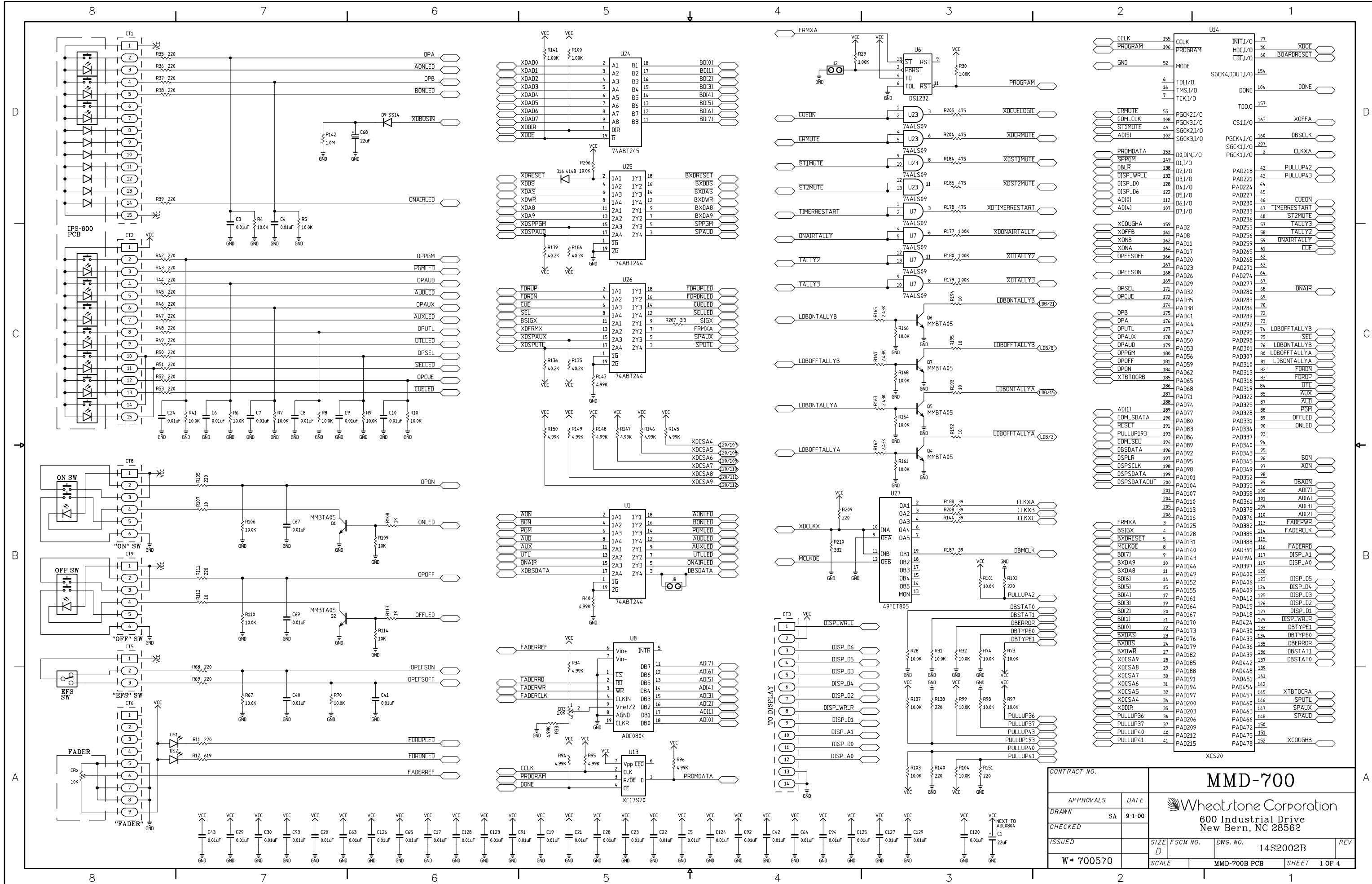


Clock/Timer Display Schematic Sheet 1 of 1

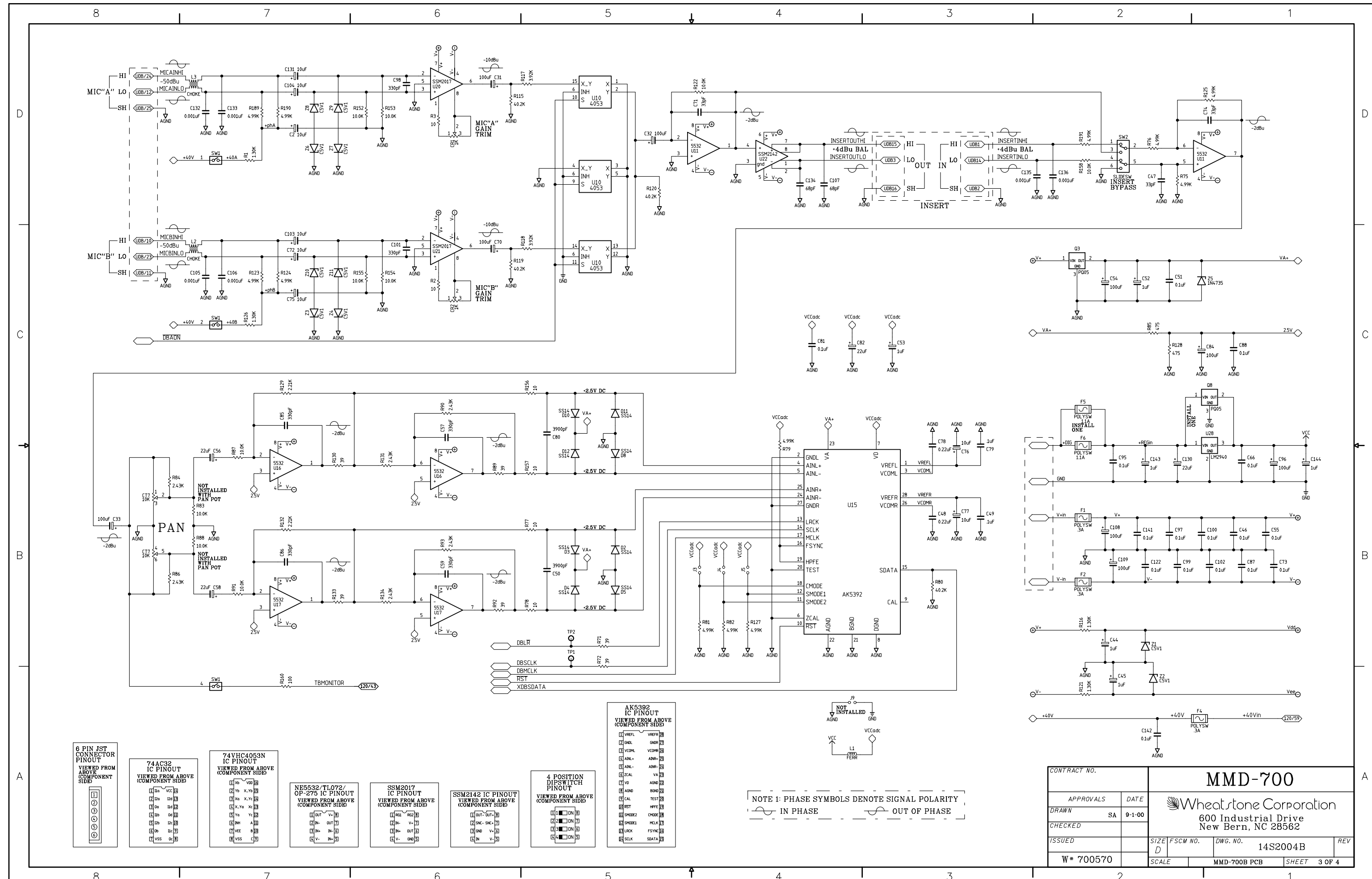
I/O Schematic Drawings

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Intercom Module Schematic (ICMD-500)	15-18
Analog Line Select Module Schematic (LSA-600)	15-19



MMD-700 Mono Mic Input Module Schematic -
Sheet 1 of 4



MMD-700 Mono Mic Input Module Schematic - Sheet 3 of 4

Page 5-5b

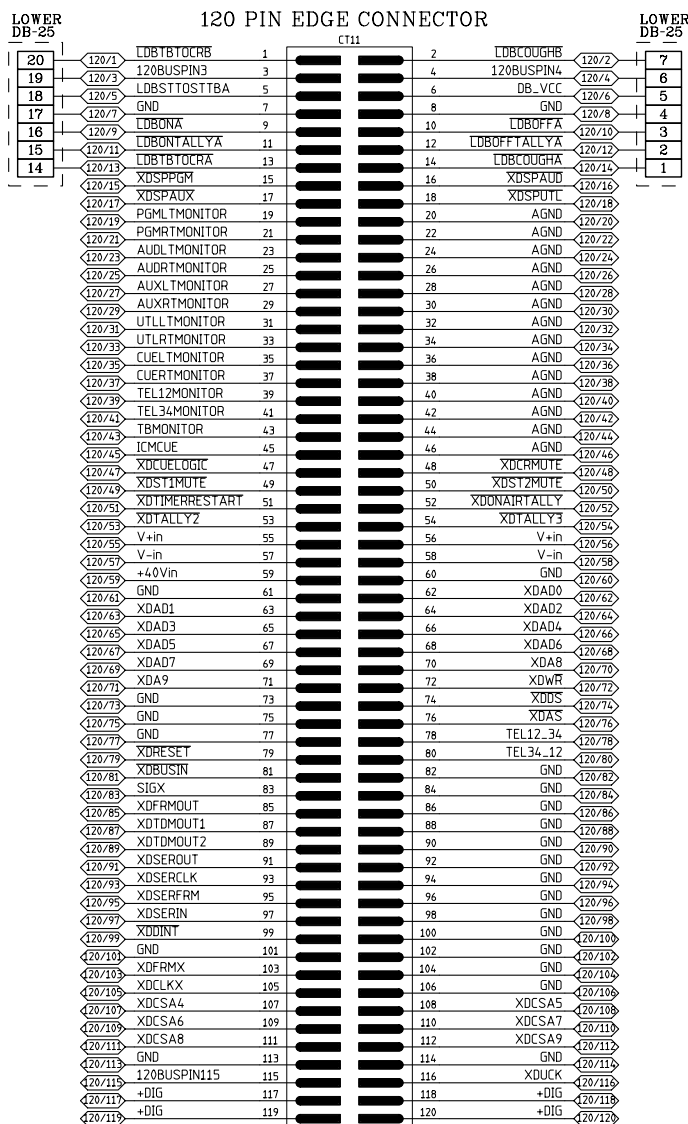
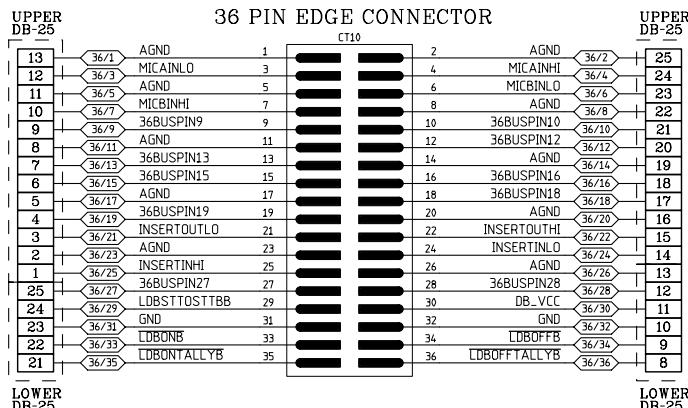
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W# 700570		DWG. NO.	14S2004B
SCALE		MMD-700B PCB	
		SHEET 3 OF 4	

A

B

C

D



CONNECTORS BUSS CHART

CONTRACT NO.

MMD-700

APPROVALS

DATE

DRAWN

SA

9-1-00

CHECKED

ISSUED

SIZE FSCM NO.

C

SCALE

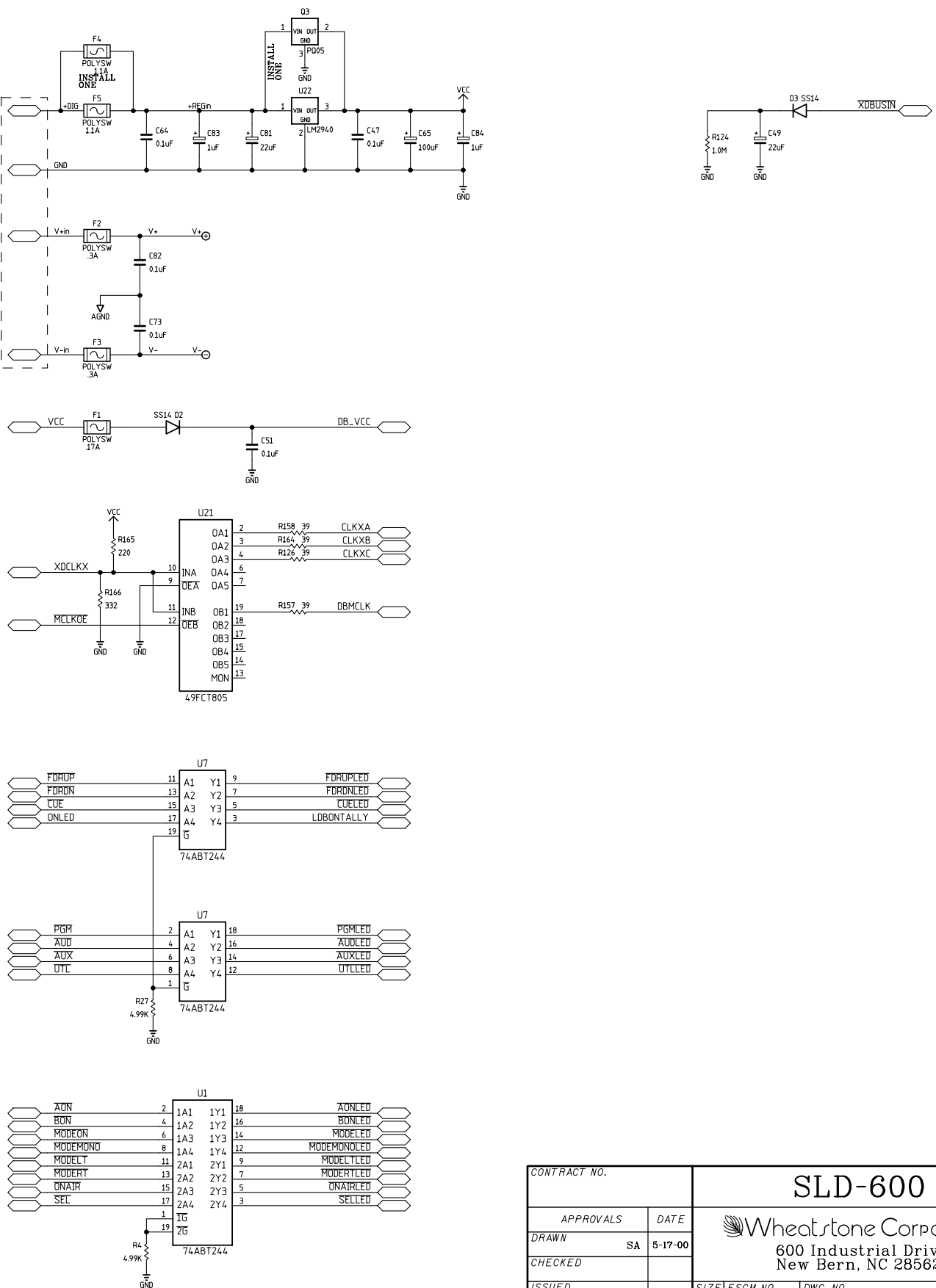
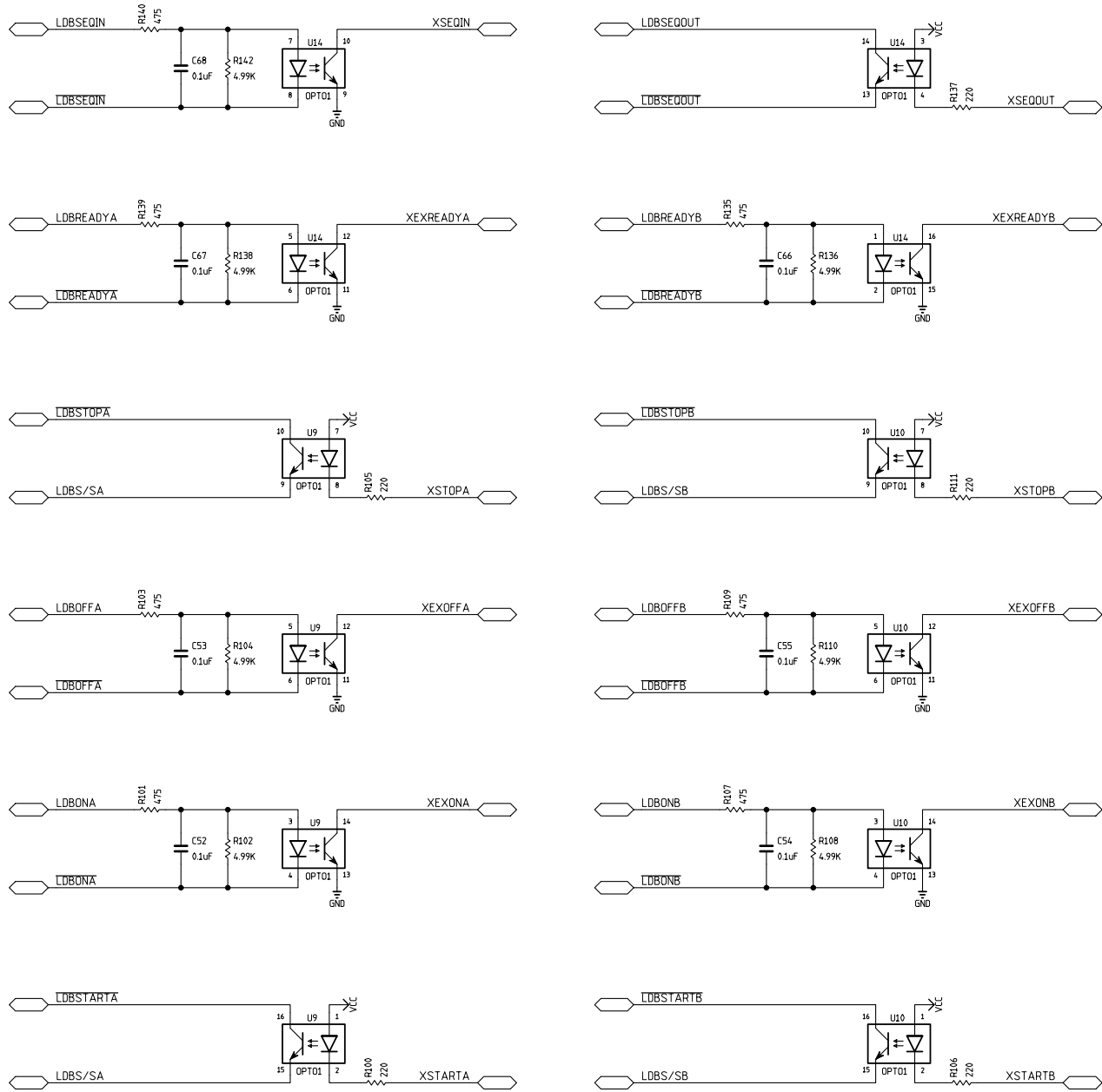
DWG. NO.

14S2005B


REV

MMD-700B PCB SHEET 4 OF 4

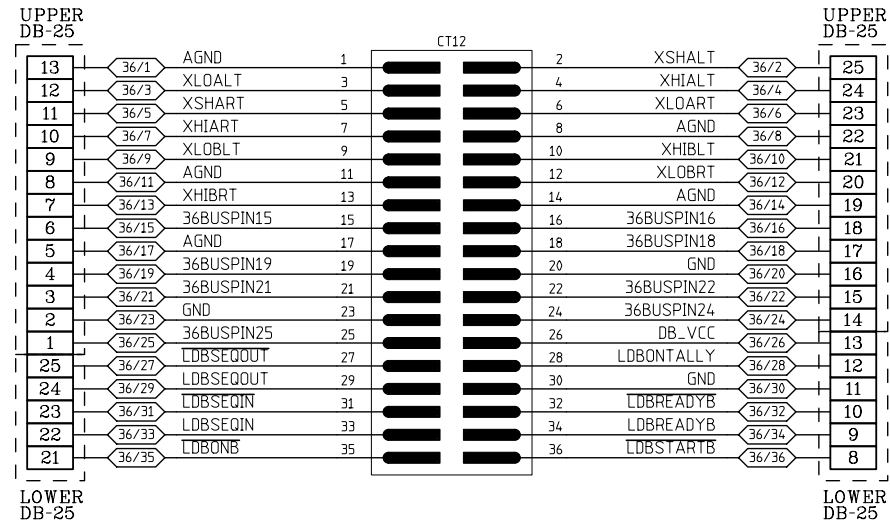
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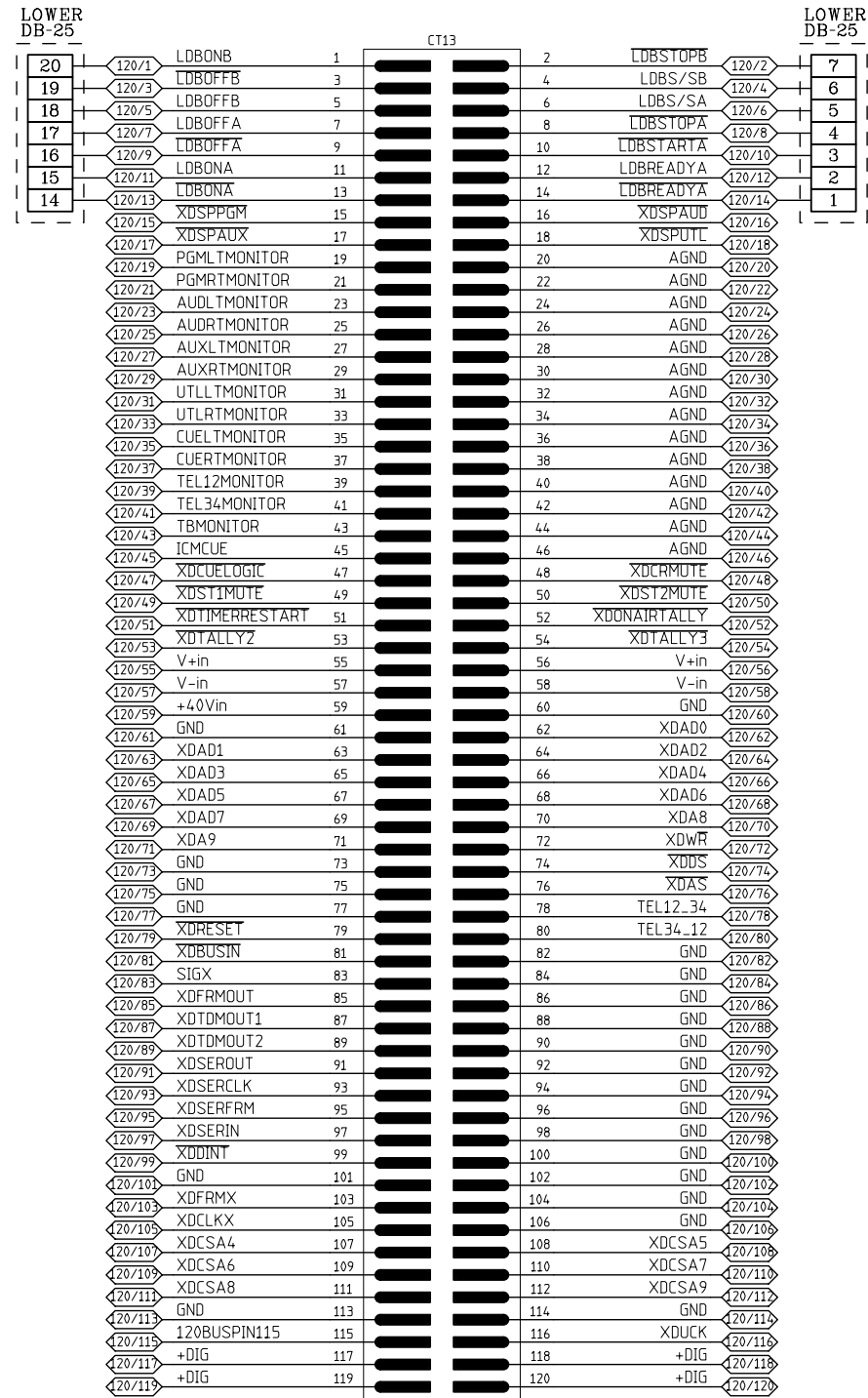
SLD-600 Stereo Line Input Module Schematic -
Sheet 3 of 4

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ISSUED					
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		SCALE	SLD-600G PCB		SHEET 3 OF 4

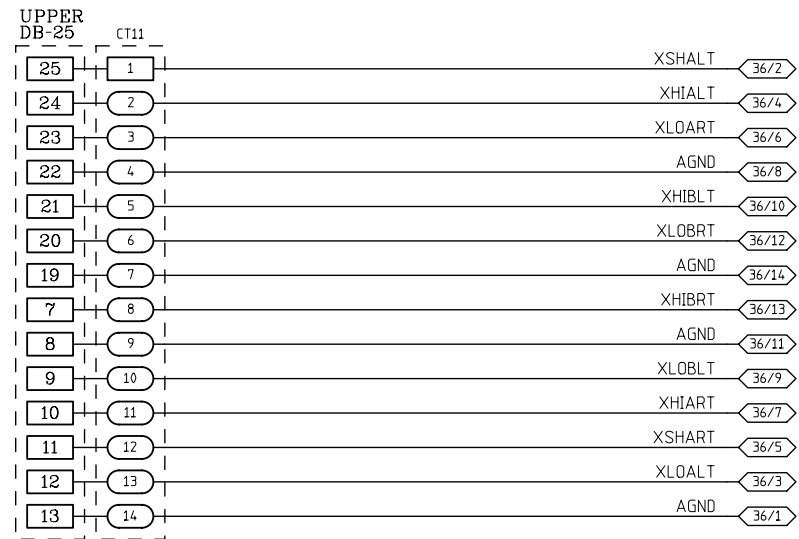
36 PIN EDGE CONNECTOR




120 PIN EDGE CONNECTOR

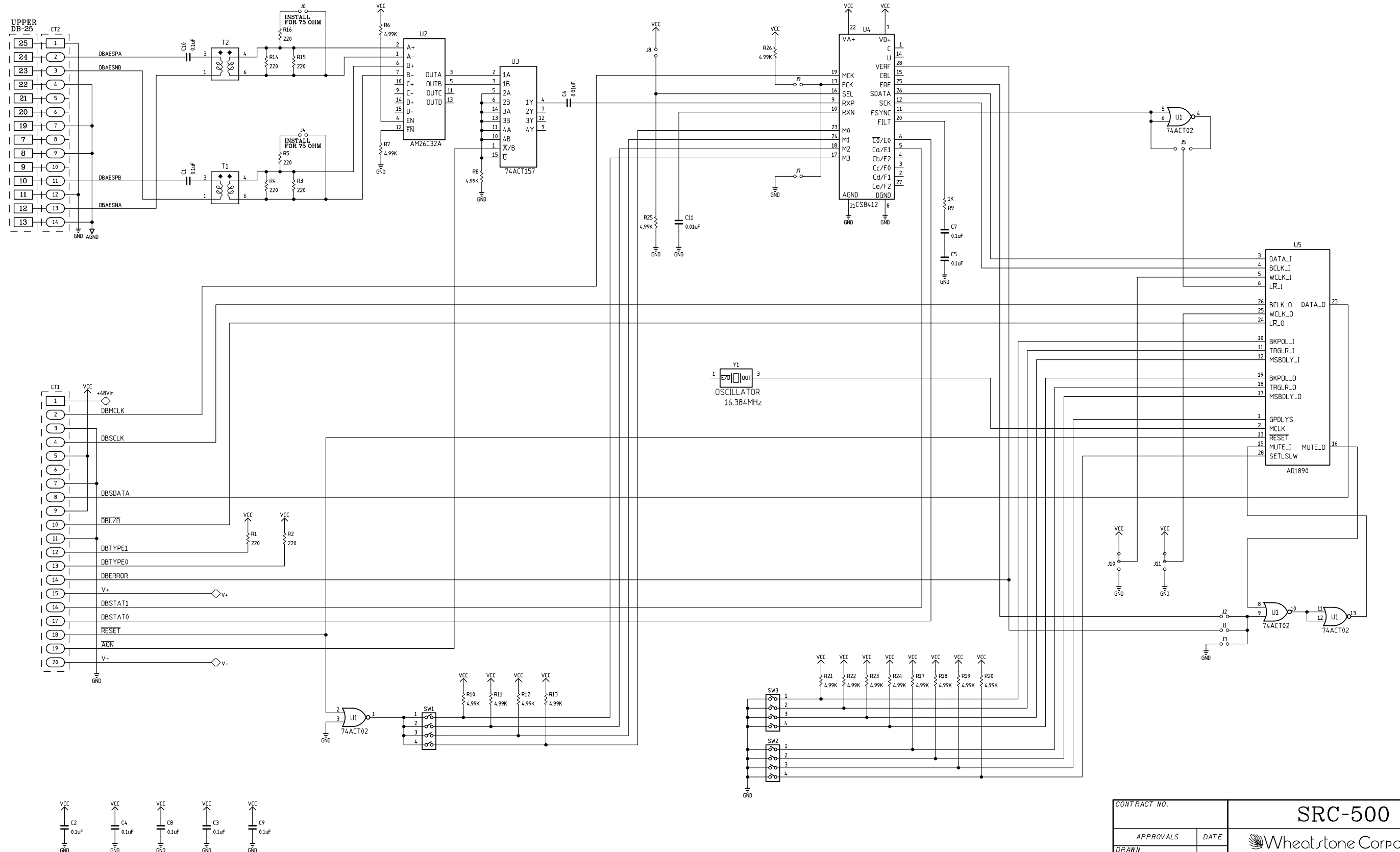


CONNECTORS
BUSS CHART




CONTRACT NO.		SLD-600			
APPROVALS	DATE	 Wheatstone Corporation 600 Industrial Drive New Bern, NC 28562			
DRAWN SA	5-17-00				
CHECKED					
ISSUED		SIZE C	FSCM NO.	DWG. NO. 14S1003G	REV -
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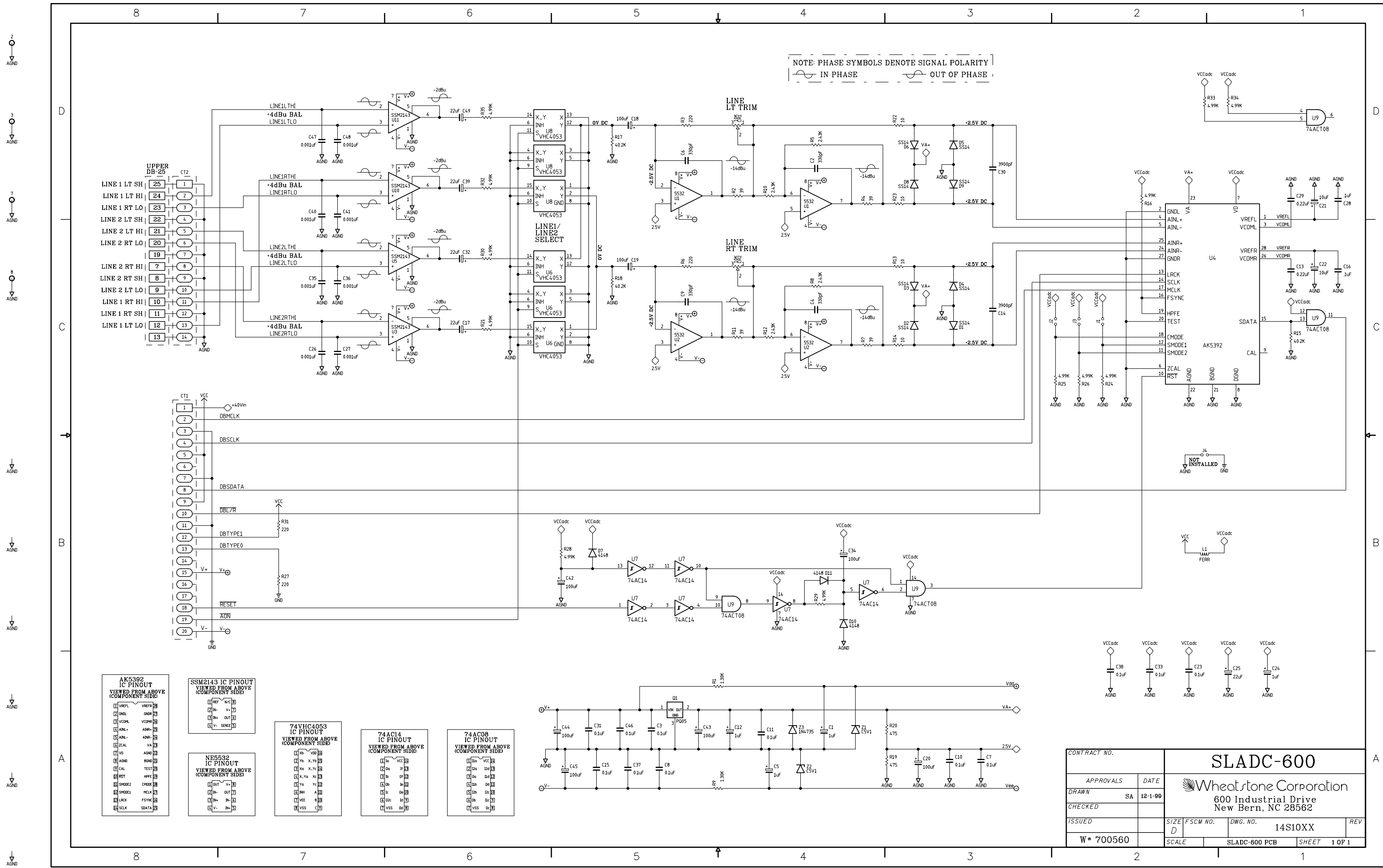
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8 7 6 5 4 3 2 1

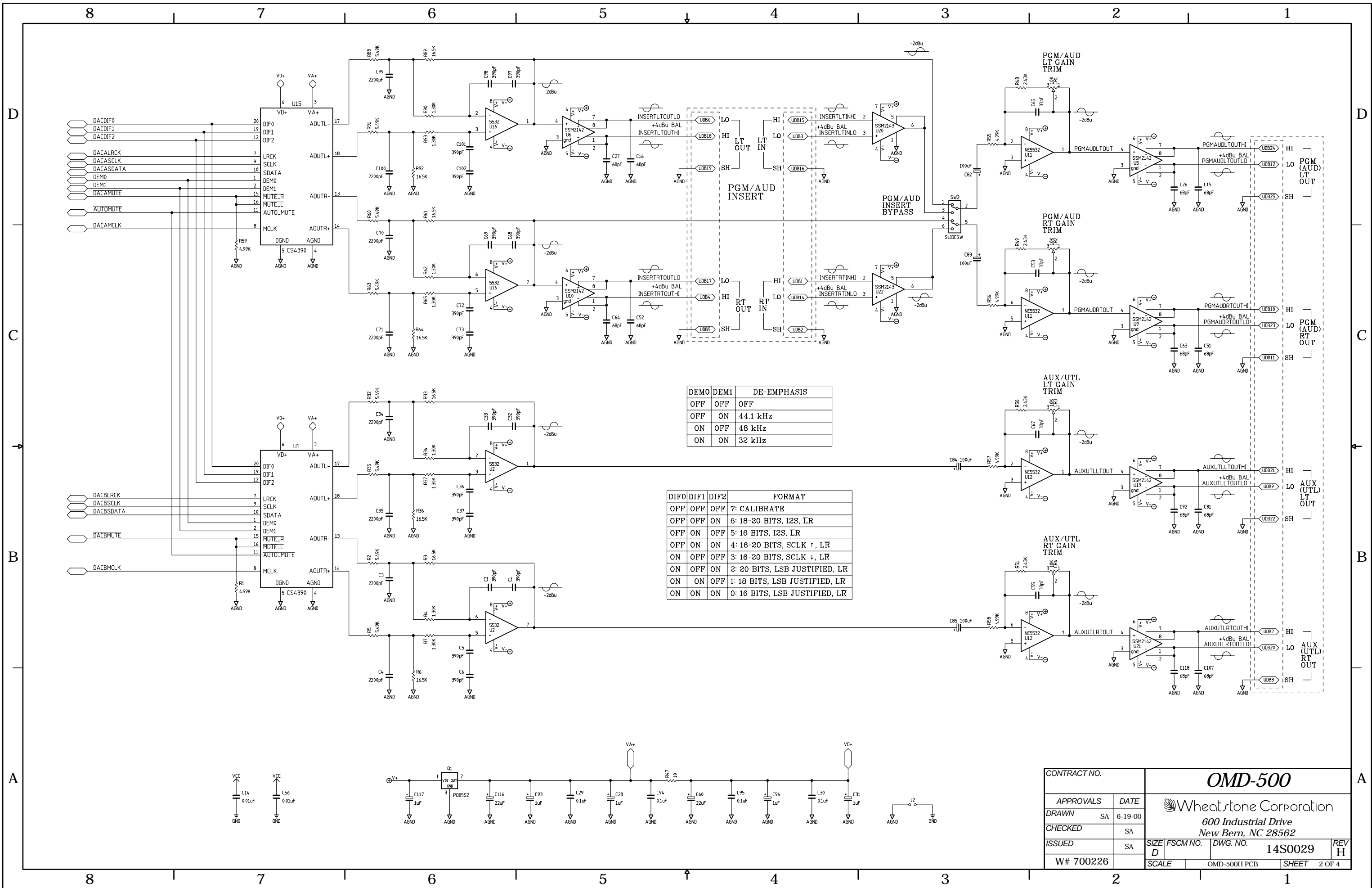
SLD-500 Input Module Schematic - Sheet 7 of 7

CONTRACT NO.		SRC-500			
APPROVALS	DATE	 Wheatstone Corporation 600 Industrial Drive New Bern, NC 28562			
DRAWN	SA 11-15-99				
CHECKED		SIZE	FSCM NO.	DWG. NO.	REV
ISSUED		D		14S0027B	
W # 700252		SCALE	SRC-500B PCB		SHEET 1 OF 1



SLD-600 Input Module Schematic - Sheet 6 of 6

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



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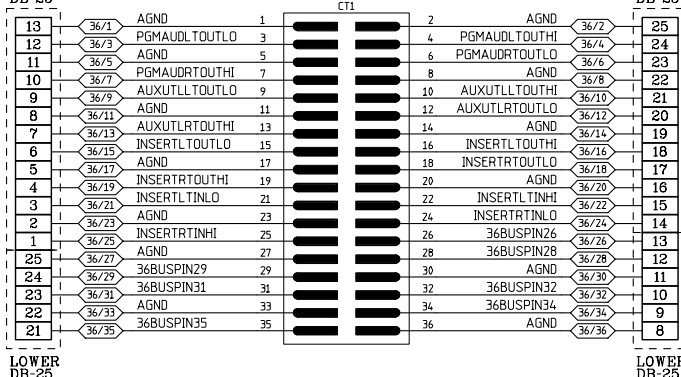
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C

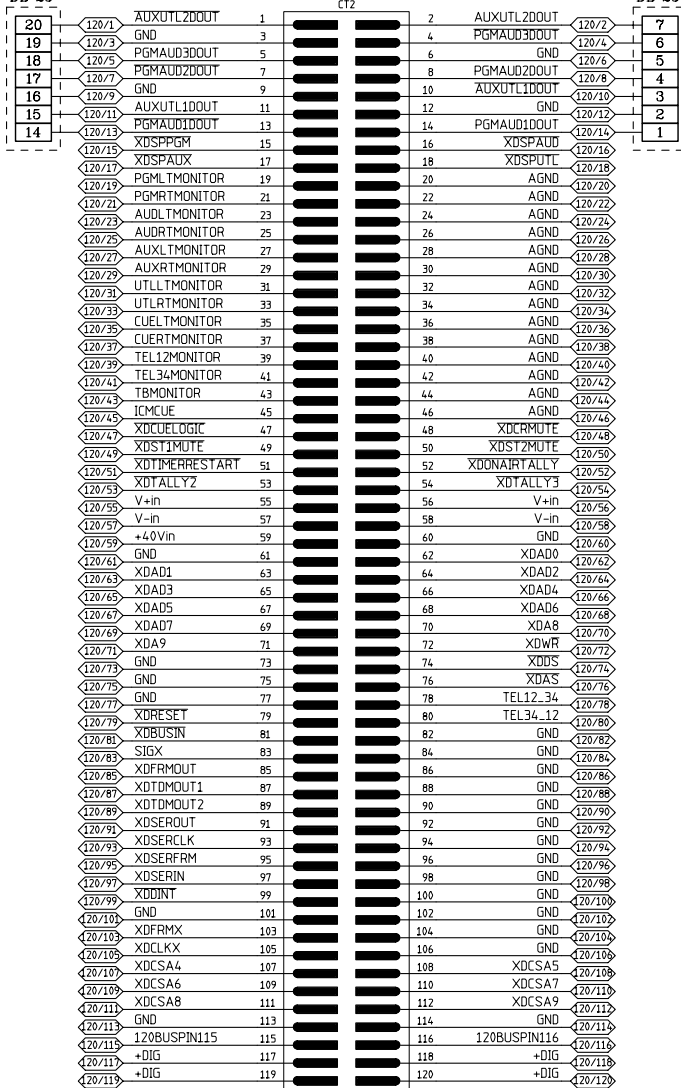
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UPPER
DB-25

36 PIN EDGE CONNECTOR

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

120 PIN EDGE CONNECTOR

LOWER
DB-25CONNECTORS
BUSS CHART

CONTRACT NO.

OMD-500

APPROVALS DATE

Wheatstone Corporation

DRAWN SA 6-19-00

600 Industrial Drive
New Bern, NC 28562

CHECKED SA

ISSUED SA

SIZE C FSCM NO. DWG. NO. 14S0030 REV H

W# 700226

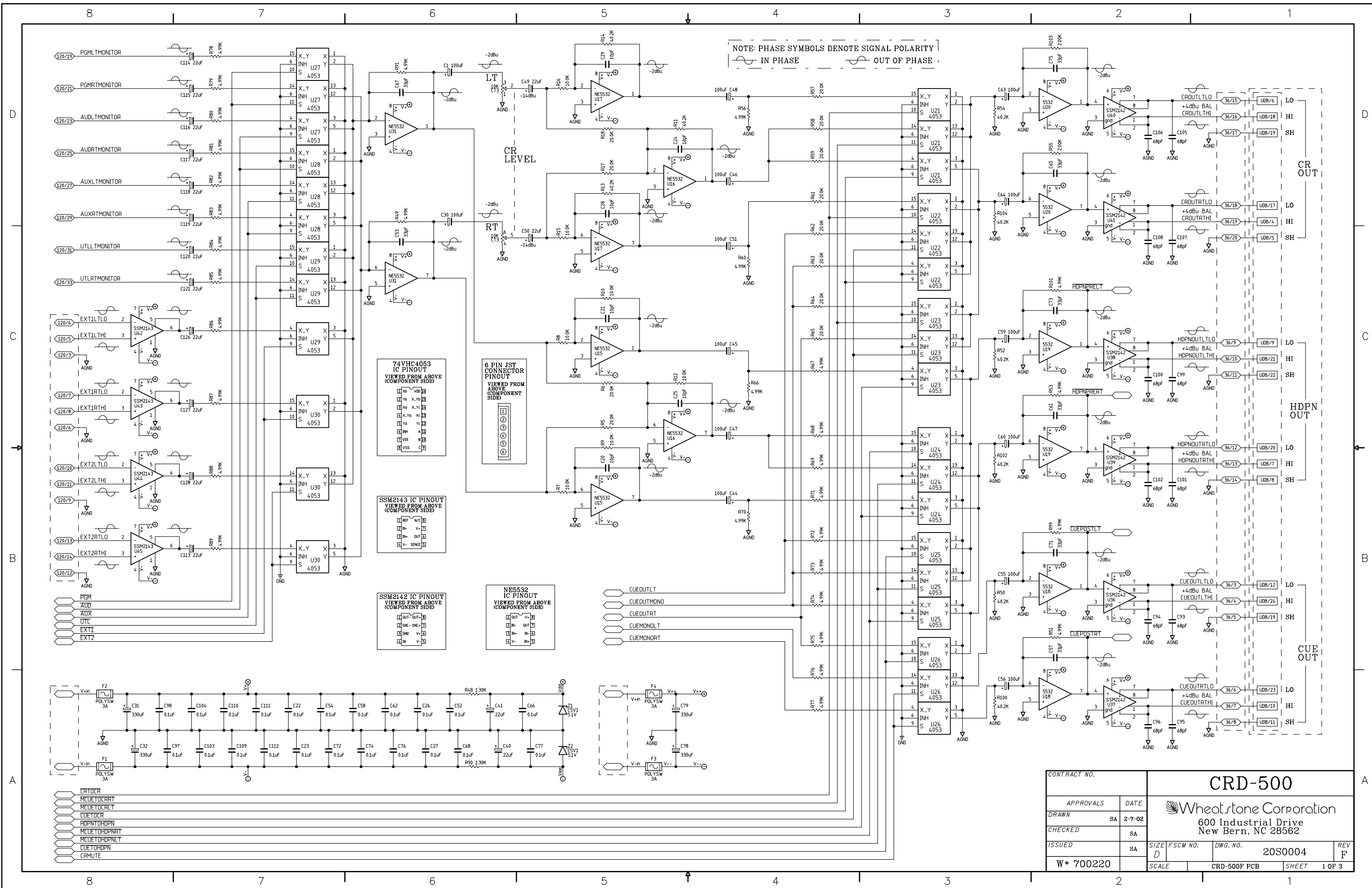
SCALE OMD-500H PCB SHEET 4 OF 4

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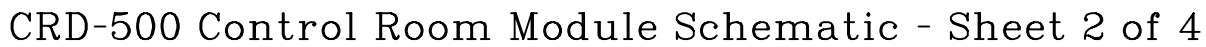
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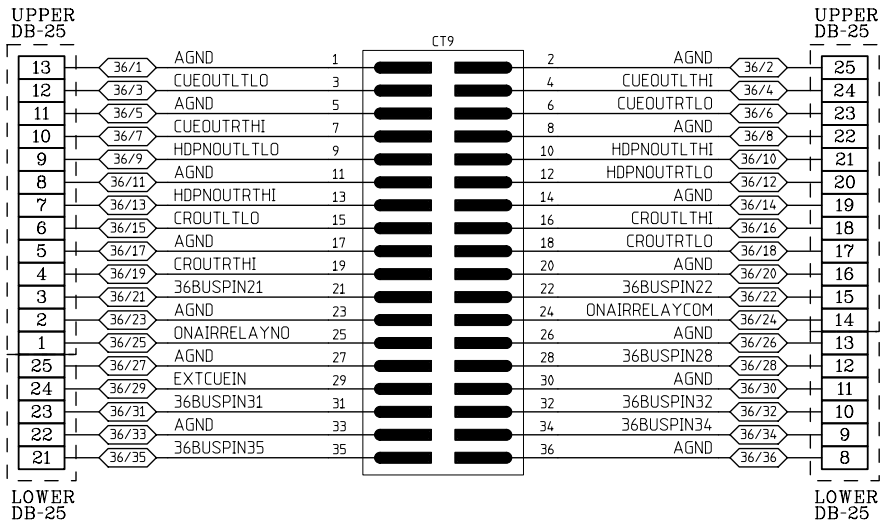
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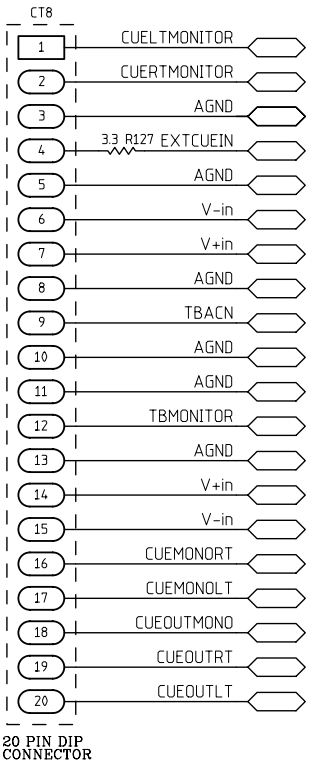
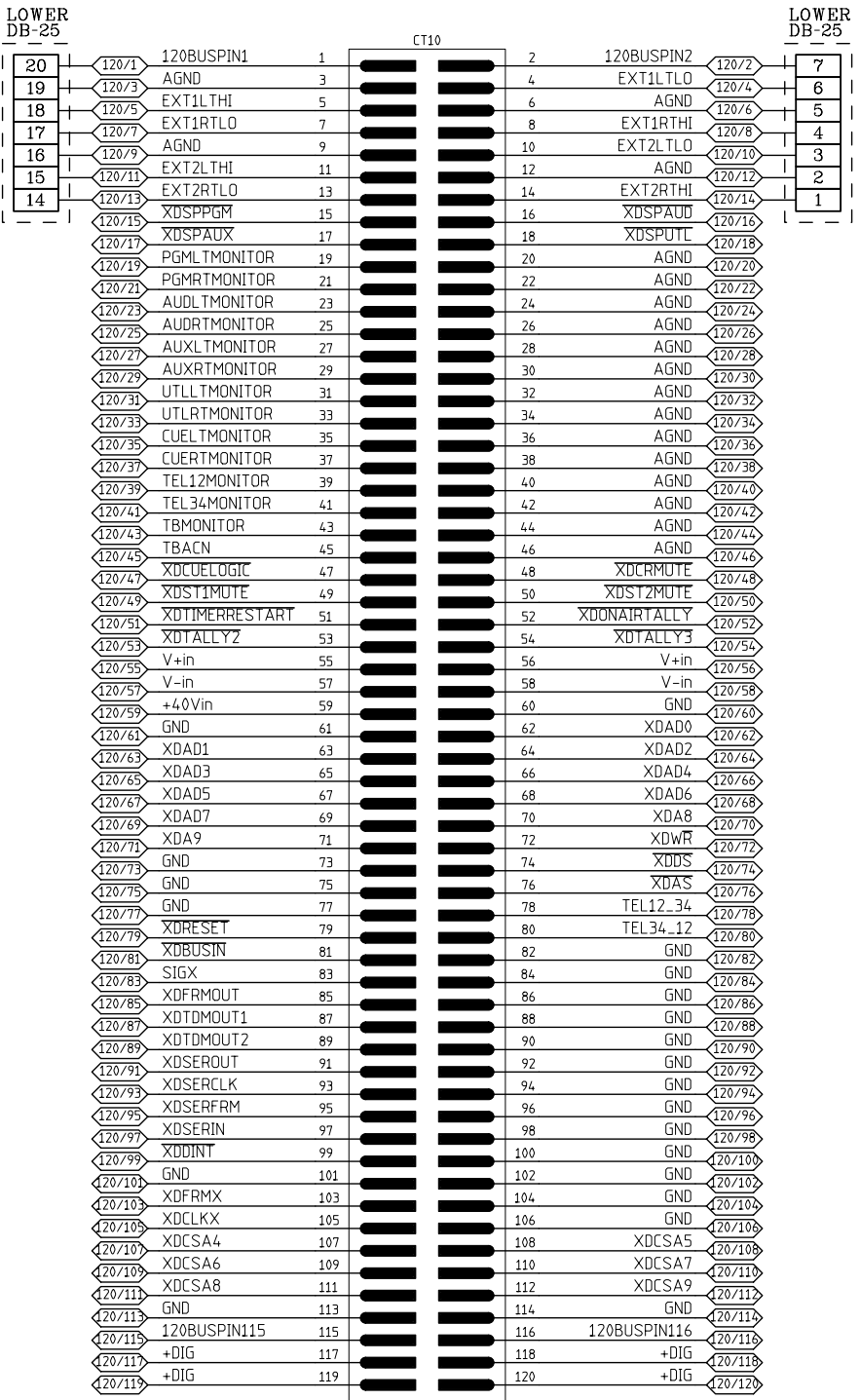
CRD-500 Control Room Module Schematic - Sheet 1 of 4




36 PIN EDGE CONNECTOR

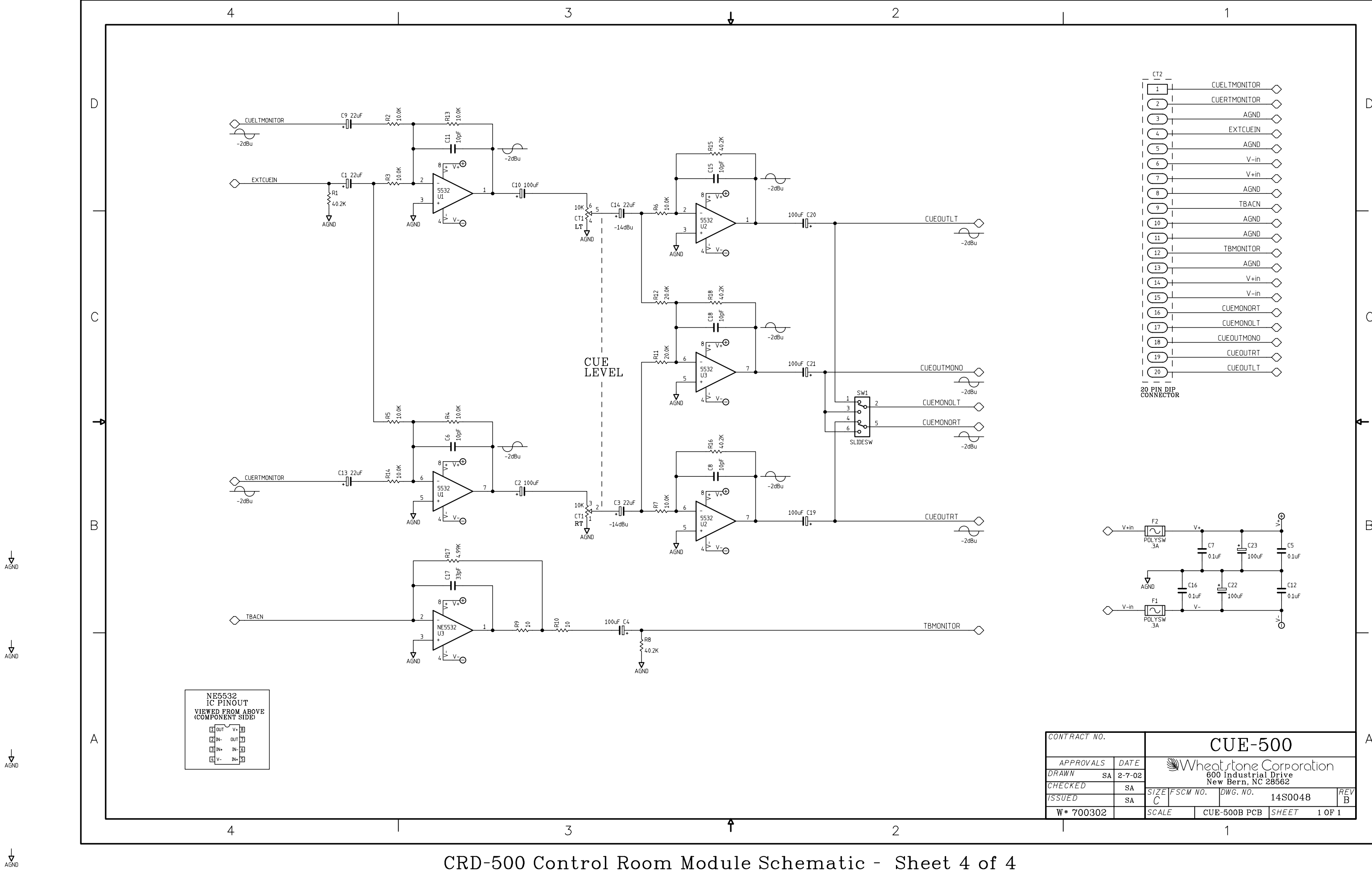


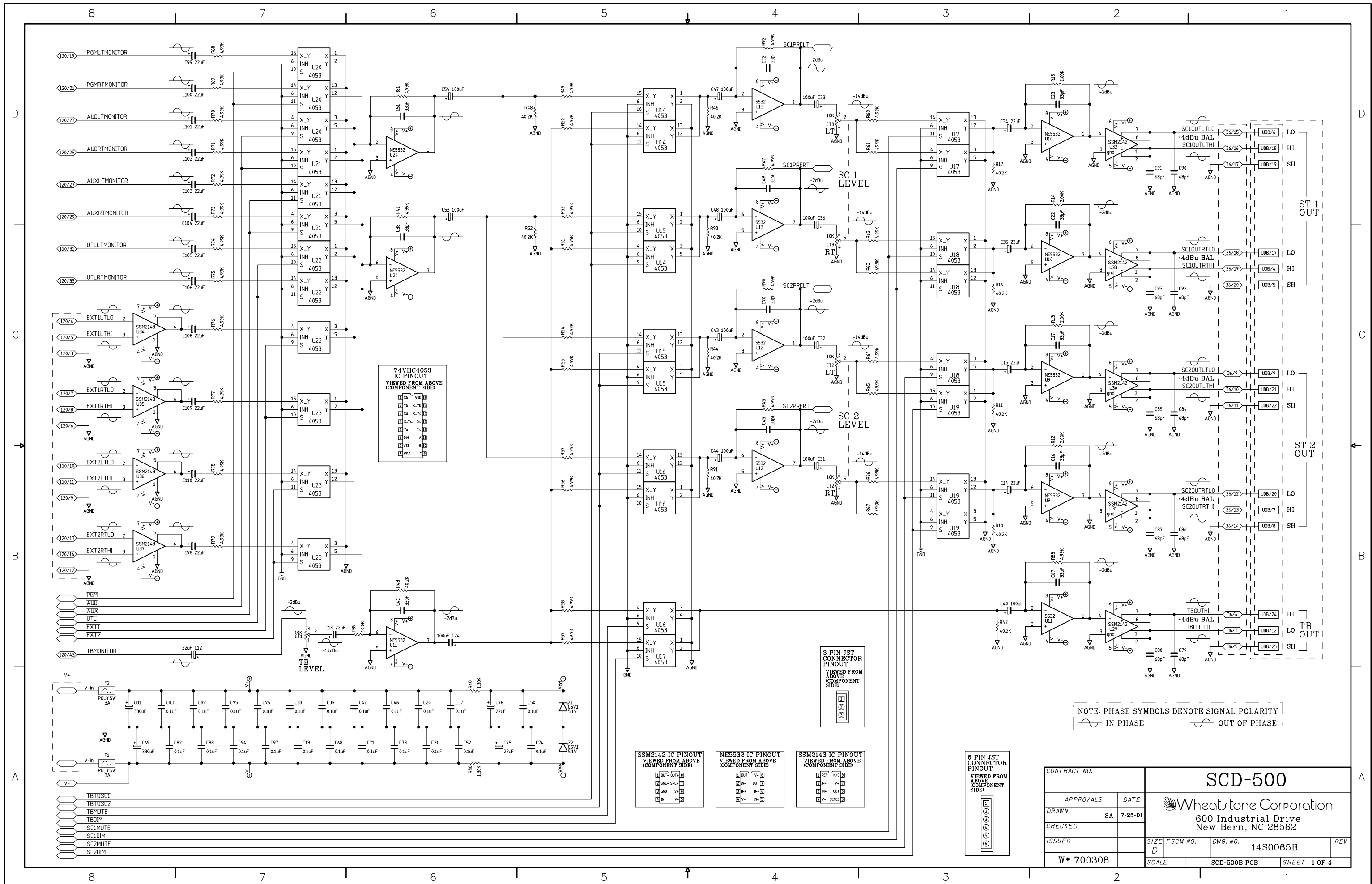
120 PIN EDGE CONNECTOR



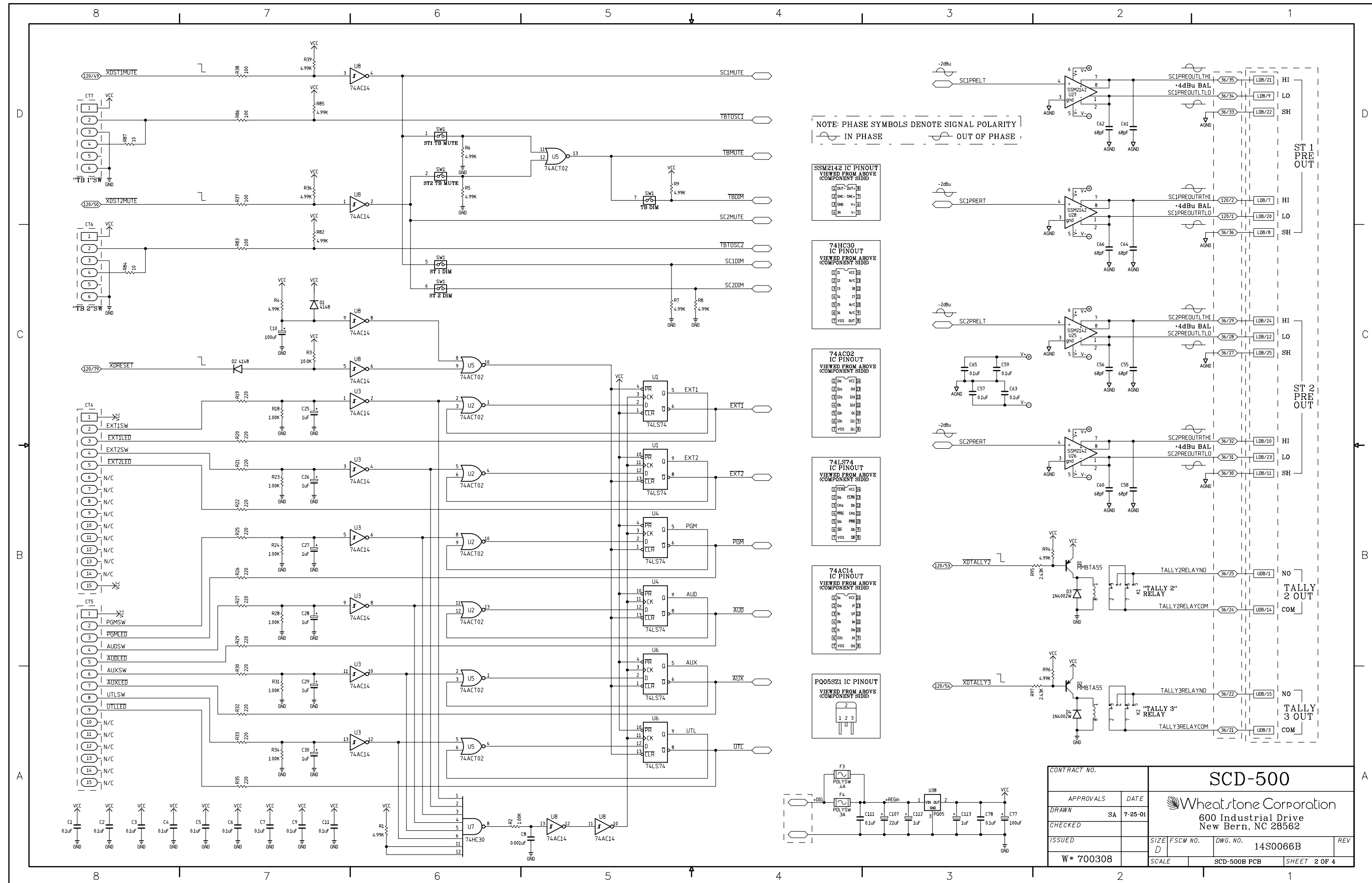
CONNECTORS
BUSS CHART

CONTRACT NO.		CRD-500			
APPROVALS	DATE	 Wheatstone Corporation 600 Industrial Drive New Bern, NC 28562			
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CHECKED	SA				
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W* 700220		SCALE	CRD-500F PCB	SHEET	3 OF 3



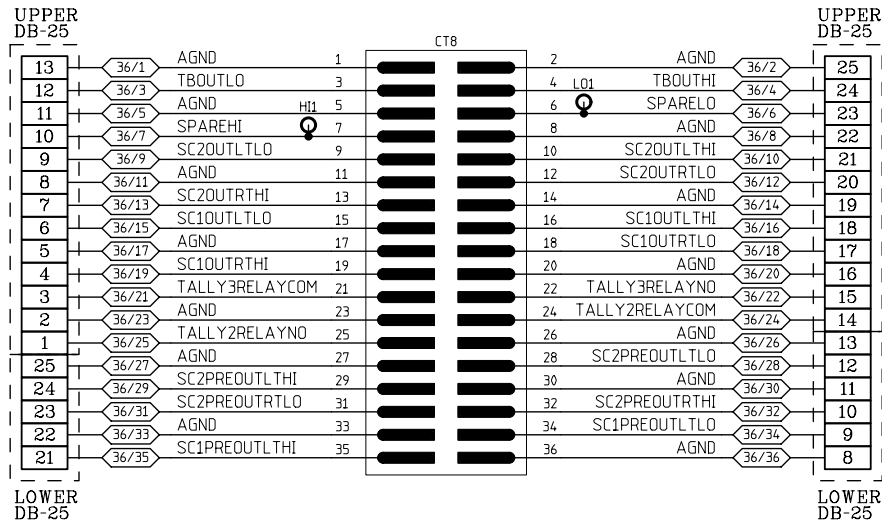


SCD-500 Studio Control Module Schematic -
Sheet 1 of 3

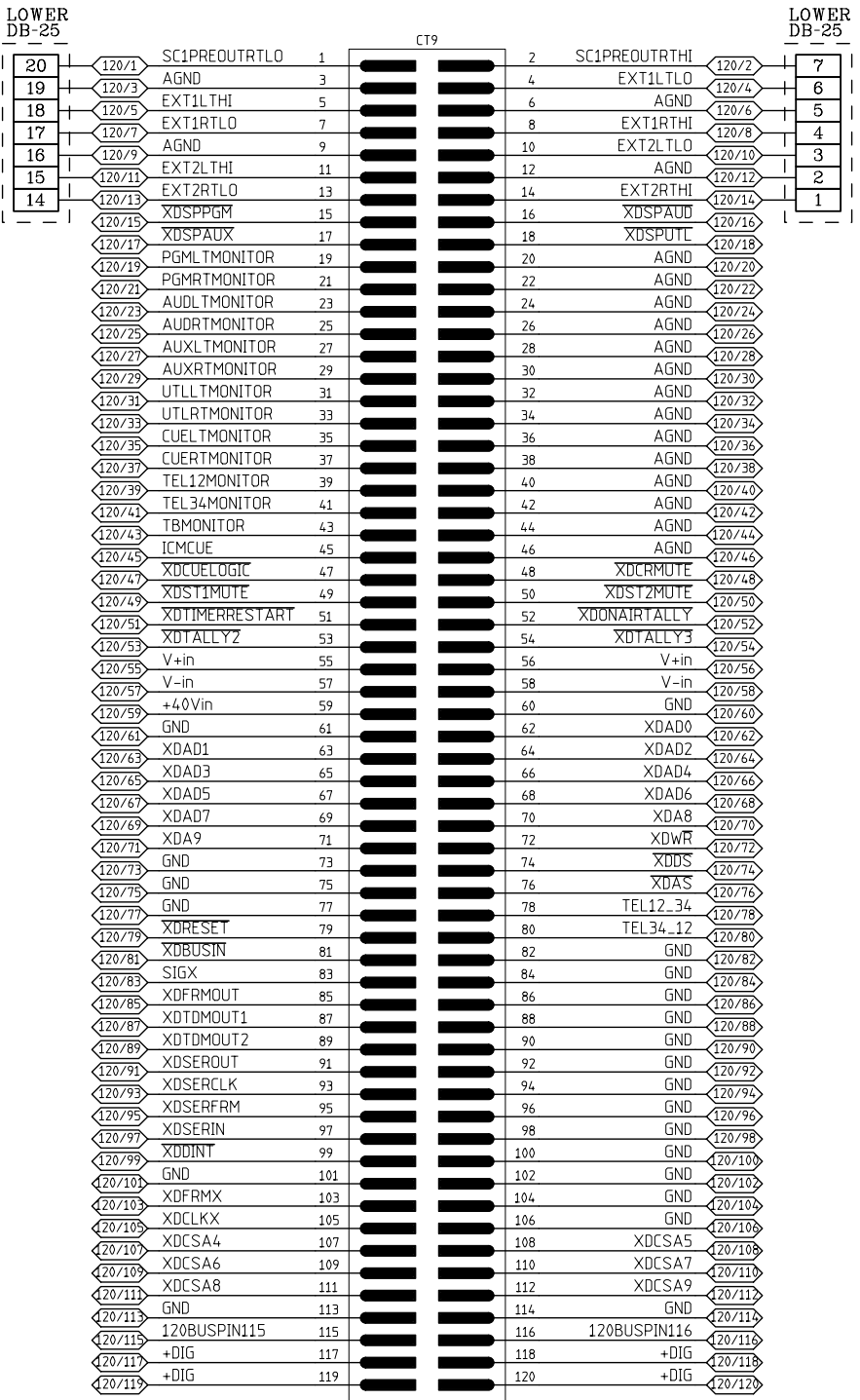


SCD-500 Studio Control Module Schematic -
Sheet 2 of 3


36 PIN EDGE CONNECTOR

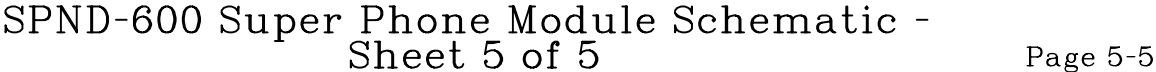


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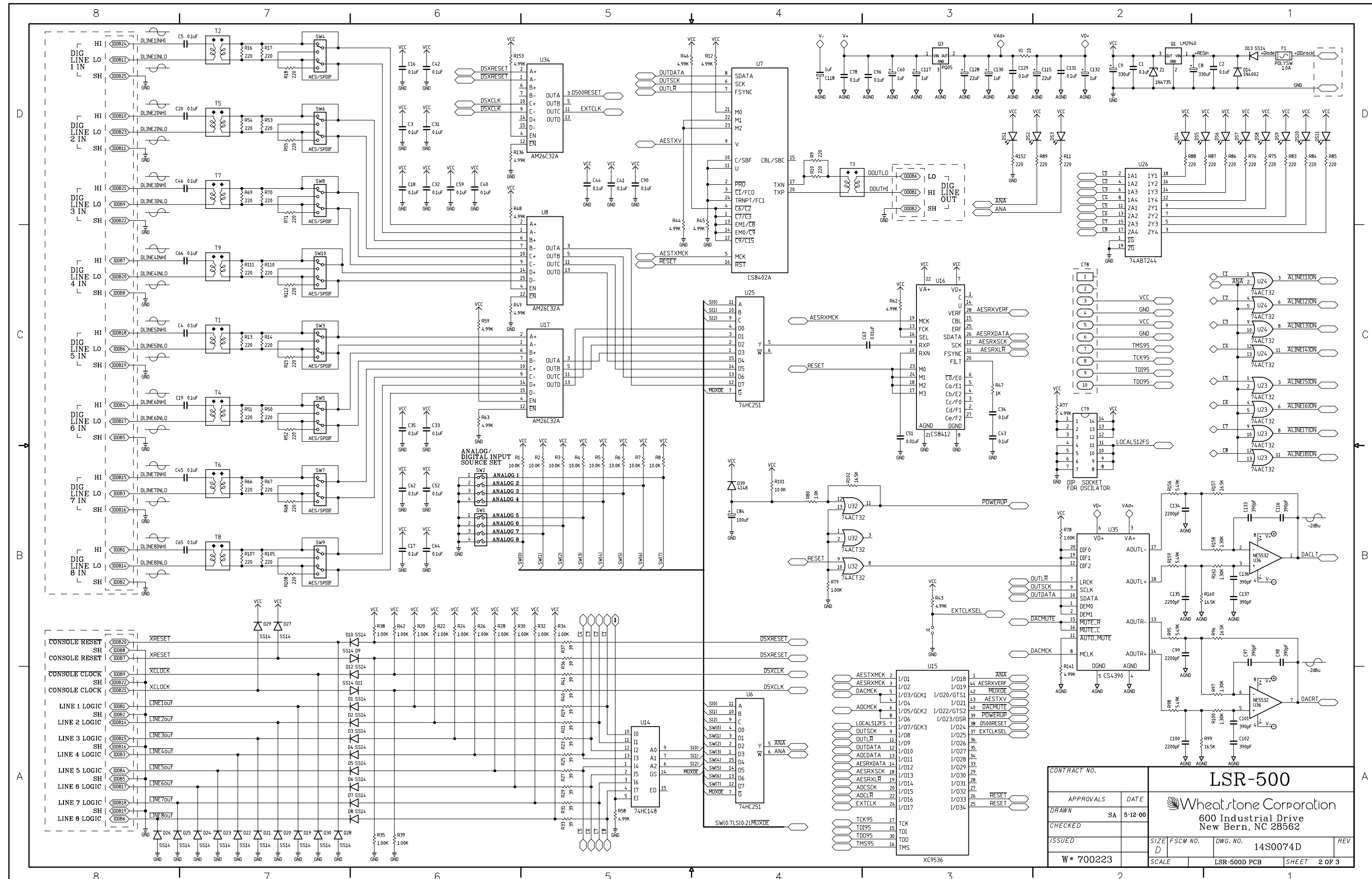


CONNECTORS
BUSS CHART

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APPROVALS	DATE	 Wheatstone Corporation 600 Industrial Drive New Bern, NC 28562			
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ISSUED		SCALE	SCD-500B PCB	SHEET	3 OF 4
W* 700308					

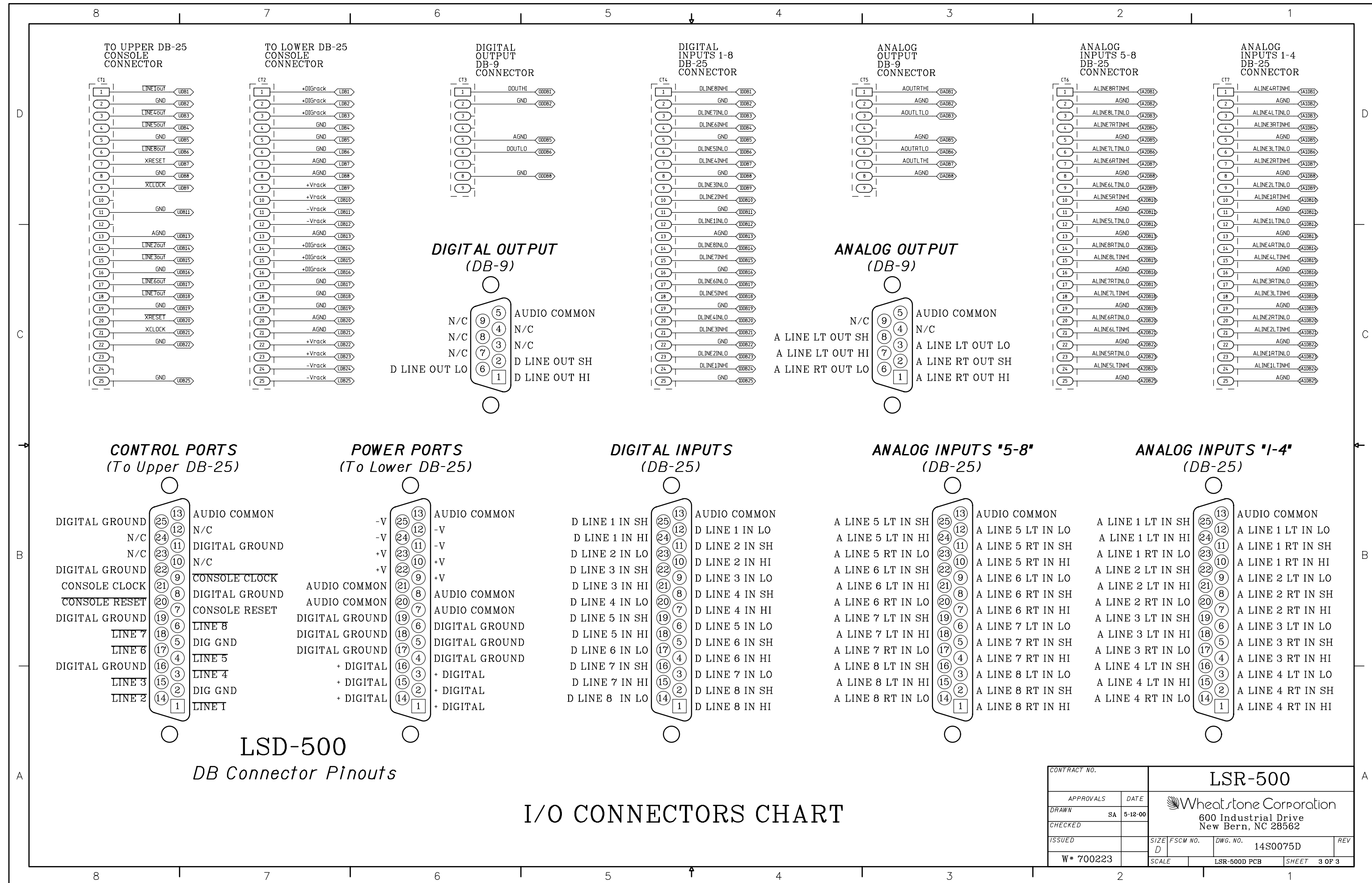


LSR-500 Digital/ Audio Line Select Rackmount
Schematic - Sheet 1 of 3

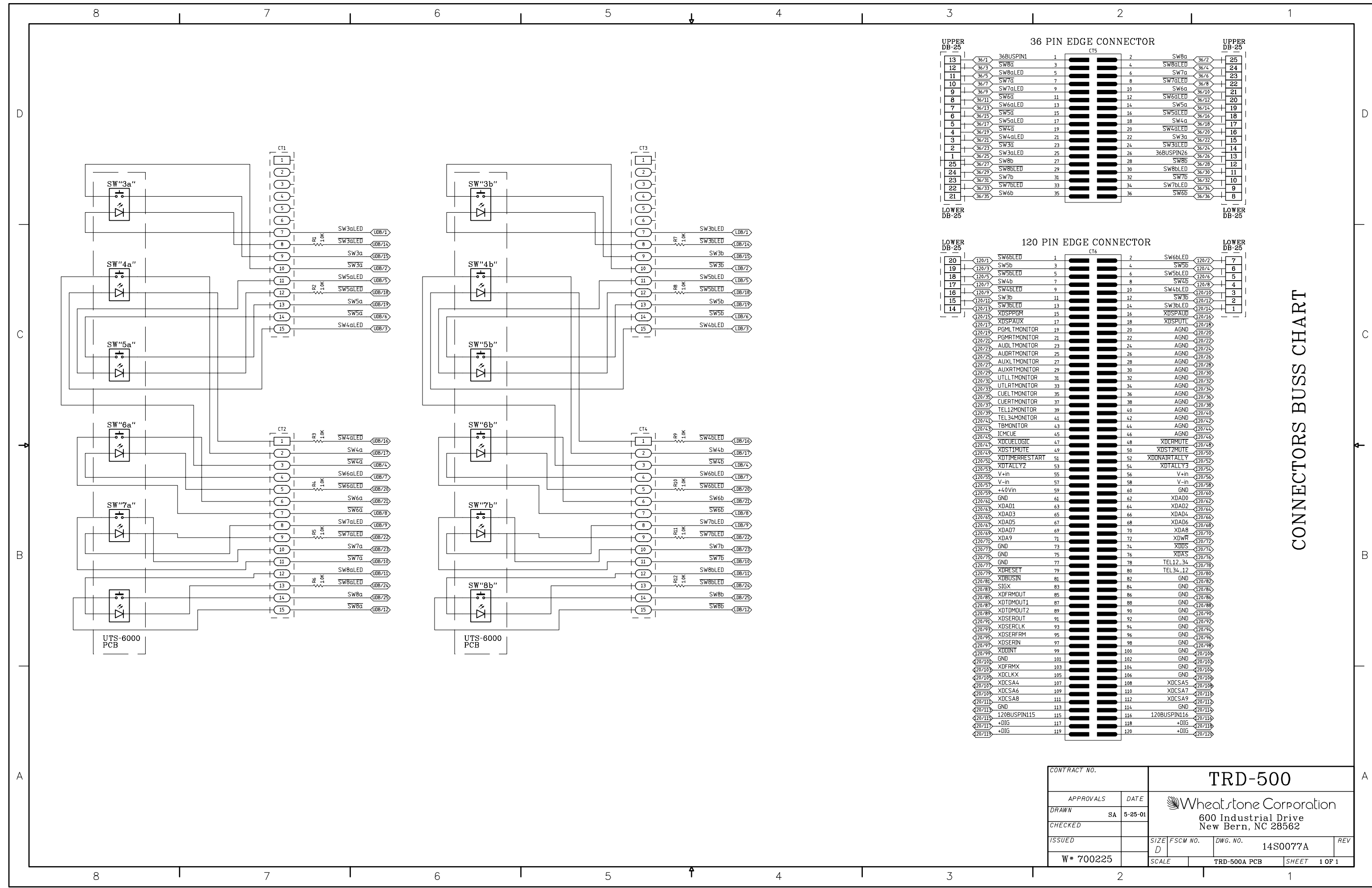


CONTRACT NO.		LSR-500	
APPROVALS	DATE	Wheatstone Corporation	
DRAWN	SA 5-12-00	600 Industrial Drive	
CHECKED		New Bern, NC 28562	
ISSUED		SIZE	FSCM NO.
W# 700223		D	14S0074D
		SCALE	LSR-500D PCB
			SHEET 2 OF 3

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




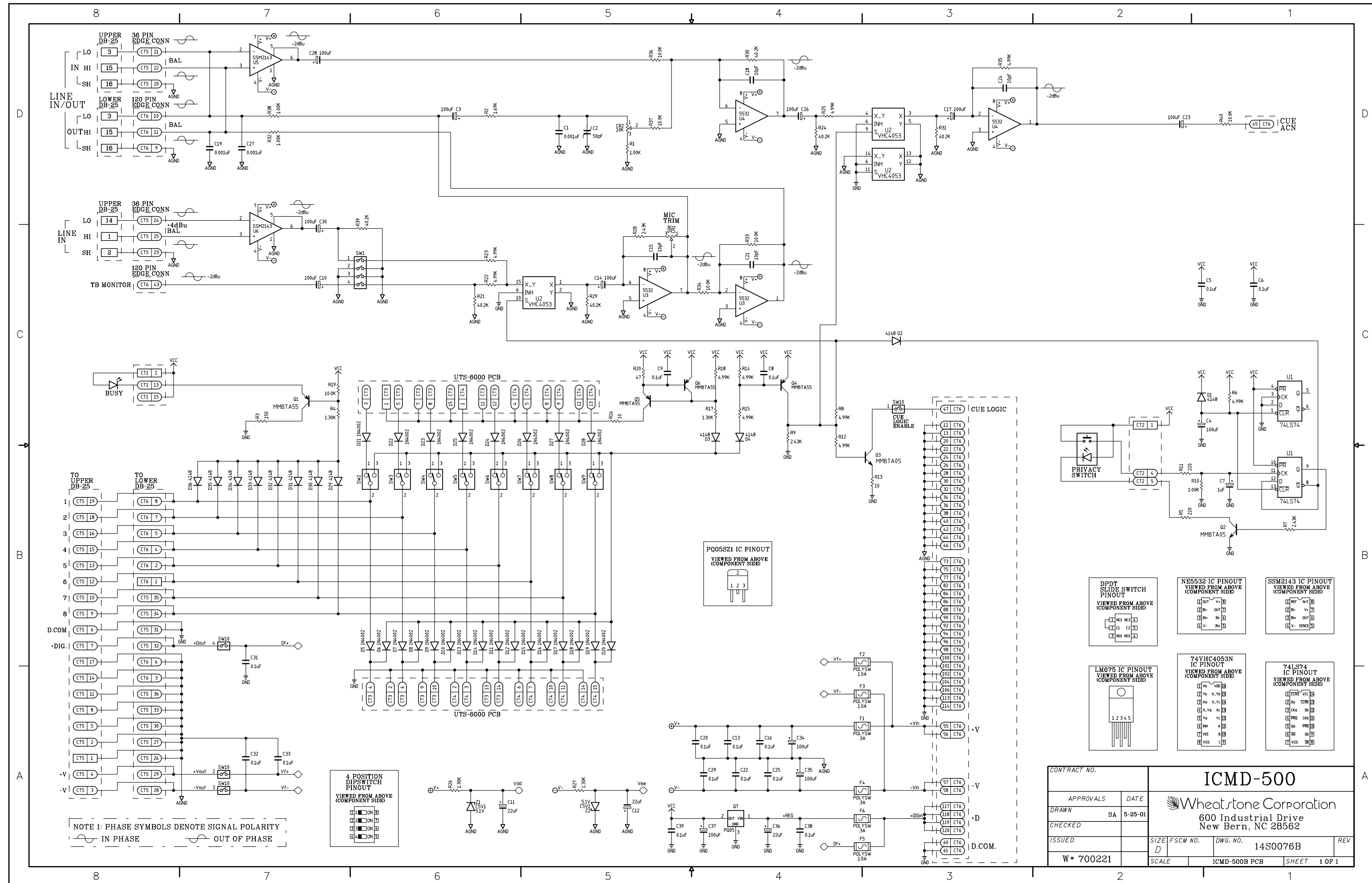
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APPROVALS		DATE		 Wheatstone Corporation 600 Industrial Drive New Bern, NC 28562	
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ISSUED				14S0075D	
W# 700223				REV	
		SIZE	FSCM NO.		
		D			
		SCALE	LSR-500D PCB		SHEET 3 OF 3



36 PIN EDGE CONNECTOR													
UPPER DB-25						UPPER DB-25							
			CT5										
13	36/1	36BUSPIN1	1		2	SW8a	36/2	25					
12	36/3	SW8aLED	3		4	SW8aLED	36/4	24					
11	36/5	SW8aLED	5		6	SW7a	36/6	23					
10	36/7	SW7aLED	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												LOWER DB-25			
LOWER DB-25				CT6								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	XDSPAUX	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	XDS12MUTE	49				50	XDS2MUTE	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	+4.0Vin	59				60	GND	120/60						
	120/61	GND	61				62	XDA00	120/62						
	120/63	XDA01	63				64	XDA02	120/64						
	120/65	XDA03	65				66	XDA04	120/66						
	120/67	XDA05	67				68	XDA06	120/68						
	120/69	XDA07	69				70	XDA08	120/70						
	120/71	XDA9	71				72	XDA10	120/72						
	120/73	GND	73				74	XDA11	120/74						
	120/75	GND	75				76	XDA12	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	XDTOMOUT1	87				88	GND	120/88						
	120/89	XDTOMOUT2	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						
	120/101	GND	101				102	GND	120/102						
	120/103	XDFRMX	103				104	GND	120/104						
	120/105	XDCCLKX	105				106	GND	120/106						
	120/107	XDCSA4	107				108	XDCSA5	120/108						
	120/109	XDCSA6	109				110	XDCSA7	120/110						
	120/111	XDCSA8	111				112	XDCSA9	120/112						
	120/113	GND	113				114	GND	120/114						
	120/115	120BUSPIN115	115				116	120BUSPIN116	120/116						
	120/117	+DIG	117				118	+DIG	120/118						
	120/119	+DIG	119				120	+DIG	120/120						

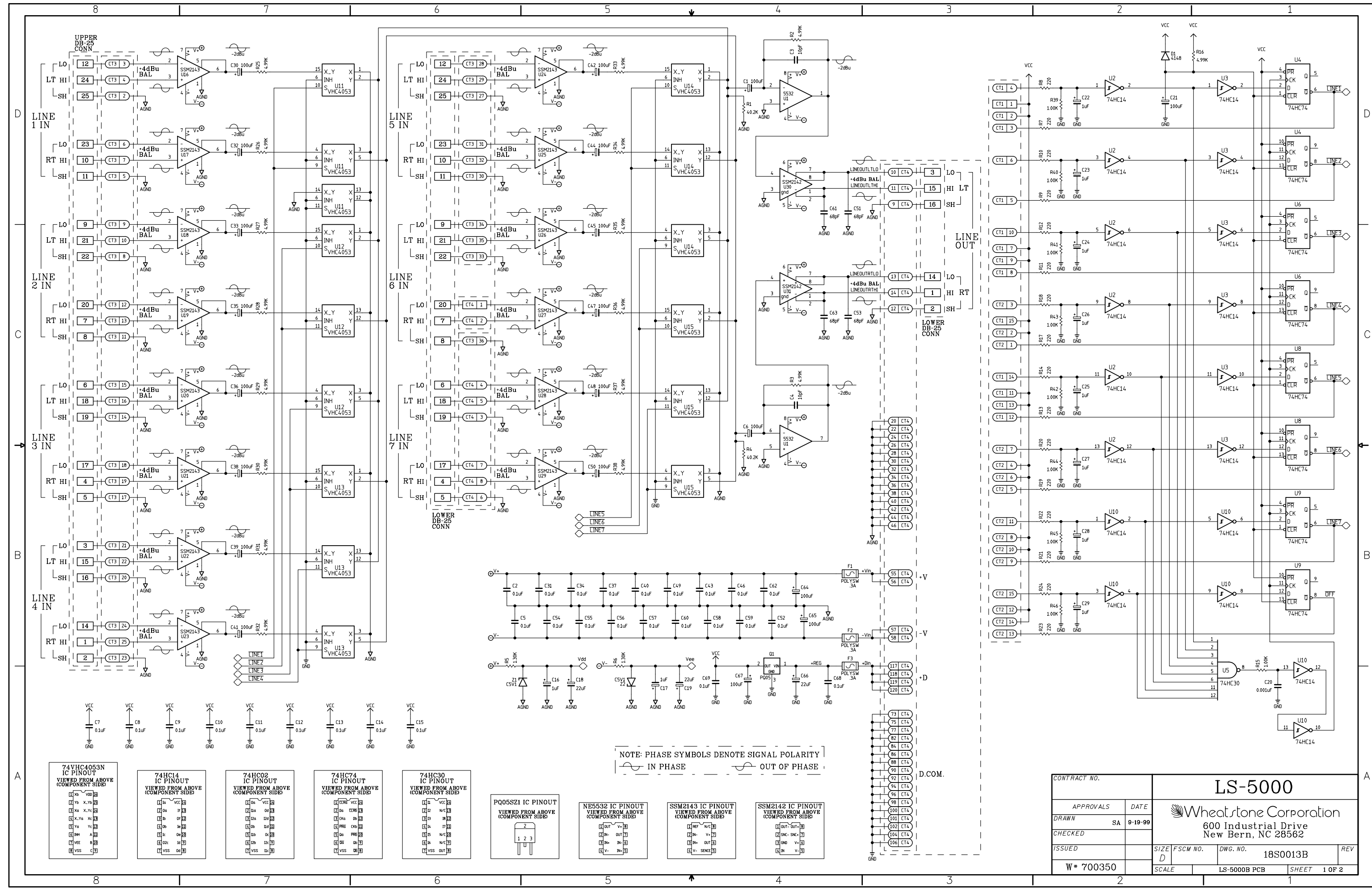
CONTRACT NO.		TRD-500			
APPROVALS	DATE	 600 Industrial Drive New Bern, NC 28562			
DRAWN SA	5-25-01				
CHECKED		SIZE D	FSCM NO.	DWG. NO. 14S0077A	REV
ISSUED		SCALE	TRD-500A PCB	SHEET 1 OF 1	
W# 700225					



ICMD-500 Intercom Module Schematic - Sheet 1 of 1

D-500/May 2001

Page 1-1



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

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

Appendix

Contents

Replacement Parts List	A-2
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For the most part there are no user-replaceable parts in the D-5000 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 — D-5000 AUDIO CONSOLE

COMPONENT	DESCRIPTION	WS P/N
SLD-600 ADC MODULE	COMPLETE ANALOG STEREO LINE INPUT MODULE	"001700"
SLD-600SRC MODULE	COMPLETE DIGITAL STEREO INPUT MODULE WITH SAMPLE RATE CONVERTER	"001703"
SLADC-600 CARD	A-TO-D CONVERTER DAUGHTER BOARD FOR ANALOG STEREO LINE INPUTS	"001756"
SRC-500 CARD	SAMPLE RATE CONVERTER CARD FOR DIGITAL INPUTS	"001543"
MMD-600 MODULE	COMPLETE MONO MIC INPUT MODULE	"001719"
OMD-600/1 MODULE	COMPLETE PROGRAM/ AUX OUTPUT MODULE	"001705"
OMD-600/2 MODULE	COMPLETE AUDITION/ UTILITY OUTPUT MODULE	"001706"
MOD-600 MODULE	COMPLETE METER OUTPUT DRIVER MODULE	"001707"
CRD-600 MODULE	COMPLETE CONTROL ROOM MONITOR MODULE	"001708"
LSD-600 MODULE	COMPLETE LINE SELECT CONTROL MODULE (CONTROLS LSR-500)	"001709"
LSR-500 RACKMOUNT UNIT	COMPLETE RACKMOUNT LINE SELECTOR UNIT (CONTROLLED BY LSD-600)	"001510"
LSA-600 MODULE	COMPLETE ANALOG LINE SELECT MODULE	"001710"
SCD-600 MODULE	COMPLETE STUDIO MONITOR MODULE	"001711"
CPU-600 MODULE	COMPLETE CONSOLE CPU MODULE	"001712"
SPD-600 MODULE	COMPLETE PHONE MODULE	"001713"
DSP-600 MODULE	COMPLETE CONSOLE DSP MODULE	"001714"
TRD-600 FF MODULE	COMPLETE FULL-FUNCTION TAPE REMOTE CONTROL MODULE	"001715"
TRD-600 SS MODULE	COMPLETE START/STOP TAPE REMOTE CONTROL MODULE	"001717"
ICMD-600 MODULE	COMPLETE INTERCOM MODULE	"001716"
MCLK-600 CARD	MASTER CLOCK DRIVER/BUFFER CARD	"001758"
SCLK-600 CARD	SLAVE CLOCK BUFFER CARD	"001759"
MANUAL	OWNER'S MANUAL	"008213"
CLK/TMR-5000	CLOCK AND EVENT TIMER ASSEMBLY	"001836"
PSC-D340 POWER SUPPLY	CONSOLE POWER SUPPLY	"007220"
CABLE	CONSOLE POWER SUPPLY CABLE	"007021"
WIRED REPLACEMENT FADER	WIRED FADER FOR SLD-600 & MMD-600 MODULES	"051500"
WIRED REPLACEMENT FADER	WIRED FADER FOR SPD-600 MODULES	"051501"
WIRED REPLACEMENT SWITCH	WIRED "ON/OFF" SWITCH	"051502"
WIRED REPLACEMENT POT	WIRED POT FOR CONTROL ROOM AND HEADPHONE MONITOR	"051503"
I/O CONNECTOR	DB-25 CONNECTOR FOR MODULE I/O CONNECTIONS	"200022"
HOOD	HOOD FOR MODULE I/O DB-25 CONNECTORS	"200025"
REPLACEMENT SWITCH	"ON/OFF" SWITCH	"510112"
REPLACEMENT RED BUTTON	MODULE "ON" BUTTON	"530101"
REPLACEMENT YELLOW BUTTON	MODULE "OFF" BUTTON	"530102"
RED LED LAMP REPLACEMENT	MODULE "ON" LED LAMP	"600026"
REPLACEMENT VU LED CARD	LED-3	"007104"
REPLACEMENT METER	CONSOLE VU METER	"630004"
YELLOW LED LAMP REPLACEMENT	MODULE "OFF" LED LAMP	"600030"
REPLACEMENT CUE SPEAKER	REPLACEMENT CUE SPEAKER	"960000"