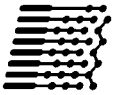
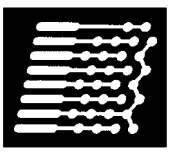
D-75
Digital Audio Console



AUDIOARTS ENGINEERING

TECHNICAL MANUAL
September 2004



D-75 Digital Audio Console Technical Manual - 1st Edition

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New Bern, North Carolina 28562
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*a division of Wheatstone Corporation

Attention!

Federal Communications Commission (FCC) Compliance Notice:
Radio Frequency Notice

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

This is a Class A product. In a domestic environment, this product may cause radio interference, in which case, the user may be required to take appropriate measures.

This equipment must be installed and wired properly in order to assure compliance with FCC regulations.

Caution! ***Any modifications not expressly approved in writing by Audioarts could void the user's authority to operate this equipment.***

Attention!

This console contains static sensitive devices:

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

Replacing Modules in a Powered-up Console:

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

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

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

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

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

IMPORTANT!

D-75 Audio Levels

General

All professional digital audio broadcast consoles manufactured by Wheatstone are hybrid in nature. That is, they allow the user to connect both analog and digital domain sources and provide both analog and digital outputs. While this approach allows for greater flexibility when interconnecting source and destination equipment, the user must be aware of what levels to expect when applying, say, a digital input and measuring at an analog output.

Gain Structure

Broadcast consoles by design have various electronic stages at which the signal level may be amplified or attenuated. The primary stages are the A-D converter input, channel fader, DSP mixing and the bus output D-A converters. The sum of these gain stages is commonly referred to as the console's "gain structure". Wheatstone consoles are factory calibrated for 0dB or "unity gain" when the input channel fader is set to nominal (-12dB).

The following is a stage by stage breakdown of a typical console's gain stages:

Analog Input (A-D Converter)

• trim pots located on the ADC input circuit cards are trimmed so that a +4dBU input signal will yield a -20dBFS digital output with the channel fader at nominal. Trim pot gain range at this stage allows for interfacing unbalanced equipment. Mic level ADC circuit cards have trim pots for matching various microphone source levels to the console's operating level.

DSP Gain

• set in firmware for unity gain, digital *attenuation* may be applied on a channel by channel basis via a dipswitch setting.

Analog Bus Output Gain (D-A Converter)

• trim pots located on the corresponding analog output DAC circuit card are factory trimmed so that a -20dBFS digital input signal will yield a +4dBu analog output with the channel fader at nominal. These may be adjusted over a range of -26 to -10dBFS = +4dBu.

Audio Reference Levels

All consoles are fully factory calibrated and will comply with the following reference level:

-20dBFS digital = +4dBu analog = 0VU

Note: 0dBu = .775v rms

+4dBu = 1.23v rms

These settings will provide a headroom of 20dB over the nominal input signal of +4dBu analog, or -20dBFS digital. Should your facility require a different A-D - D-A reference level please consult the factory for calibration details and/ or alternate solutions.

Note that due to the lack of level standards in the digital domain, headroom available for digital sources will be entirely dependant on the source. In fact, CD's are frequently made with less than 1dB of digital headroom, and any boosting of digital CD levels in the console by moving the fader up above the nominal can result in overload distortion for that channel. For this reason, a dipswitch allows for digital *attenuation* on a fader by fader basis; digital sources can be conveniently attenuated this way to guard against digital overload caused by not enough headroom on the digital source. Since the D-75 console meters are true digital reading meters, they will always show the console's digital levels, and whether there are any "overs" in the signal. By pressing a channel's "CUE" button, the switched meters will show the digital level of that channel's source, as modified by the dipswitch setting. By using the program and watching these meters, the amount of attenuation can be adjusted to meet your headroom requirements.

Typical Input Levels

Mic Inputs Nominal	= -50dBm, 150Ω	Maximum = -26dBm
Analog Inputs Nominal	= +4dBu	Maximum = +24dBu
Digital Inputs Nominal	= -20dBFS	Maximum = 0dBFS

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Installation and Power

Unpacking the Console

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

Countertop Mounting

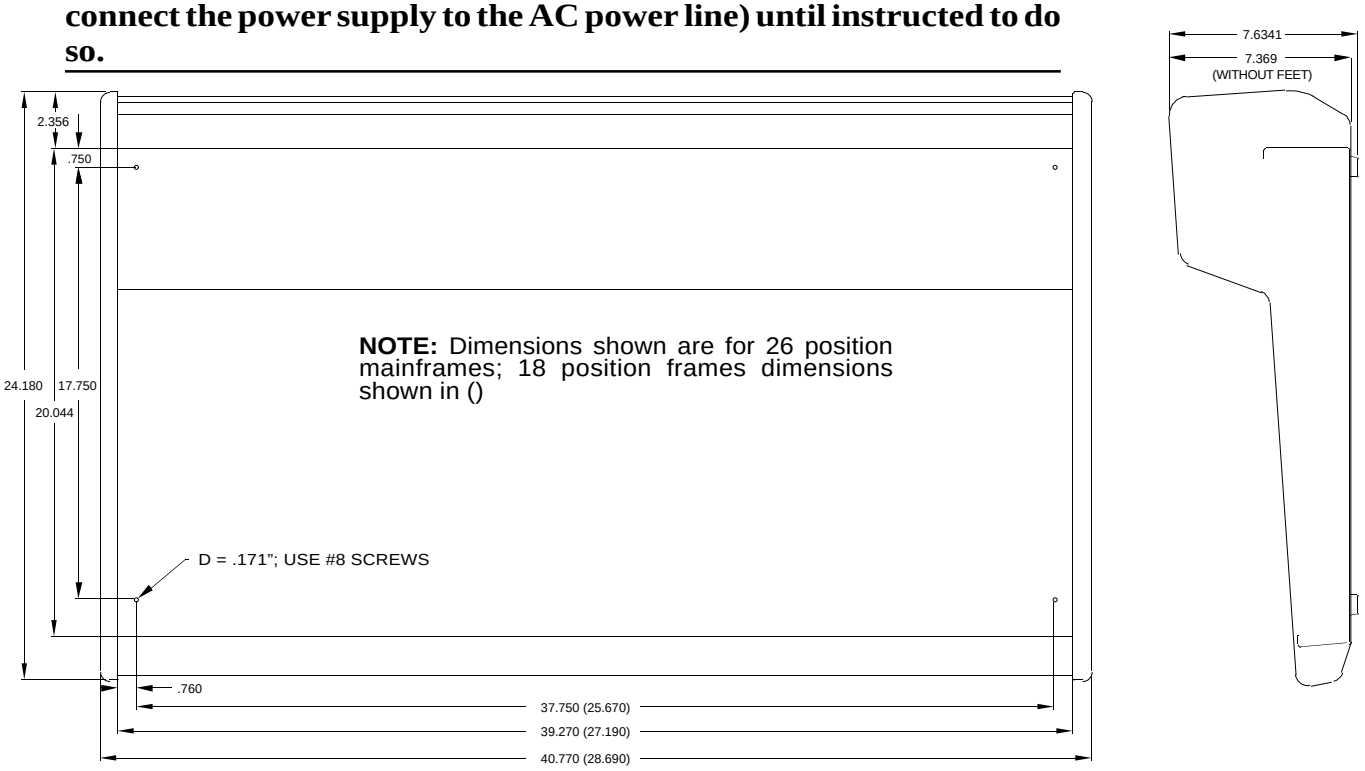
The D-75 audio console is designed for countertop mounting. Console placement should avoid proximity to any electromagnetic fields, such as large power transformers, motors, and fluorescent lighting fixtures. If you will be securing the console to the counter top, you may want to pre-drill the mounting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

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

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

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

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



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-75 mainframe are connected together at the console, but are NOT connected to electrical ground and the chassis of the power supply. Safety requirements dictate that a positive connection from the console mainframe to electrical ground be made in the completed installation. Use the grounding lug on the rear of the mainframe to establish your system ground. The grounding lug may be found at the rear of the console, on the rear frame panel, to the left if you are looking at the rear of the console.

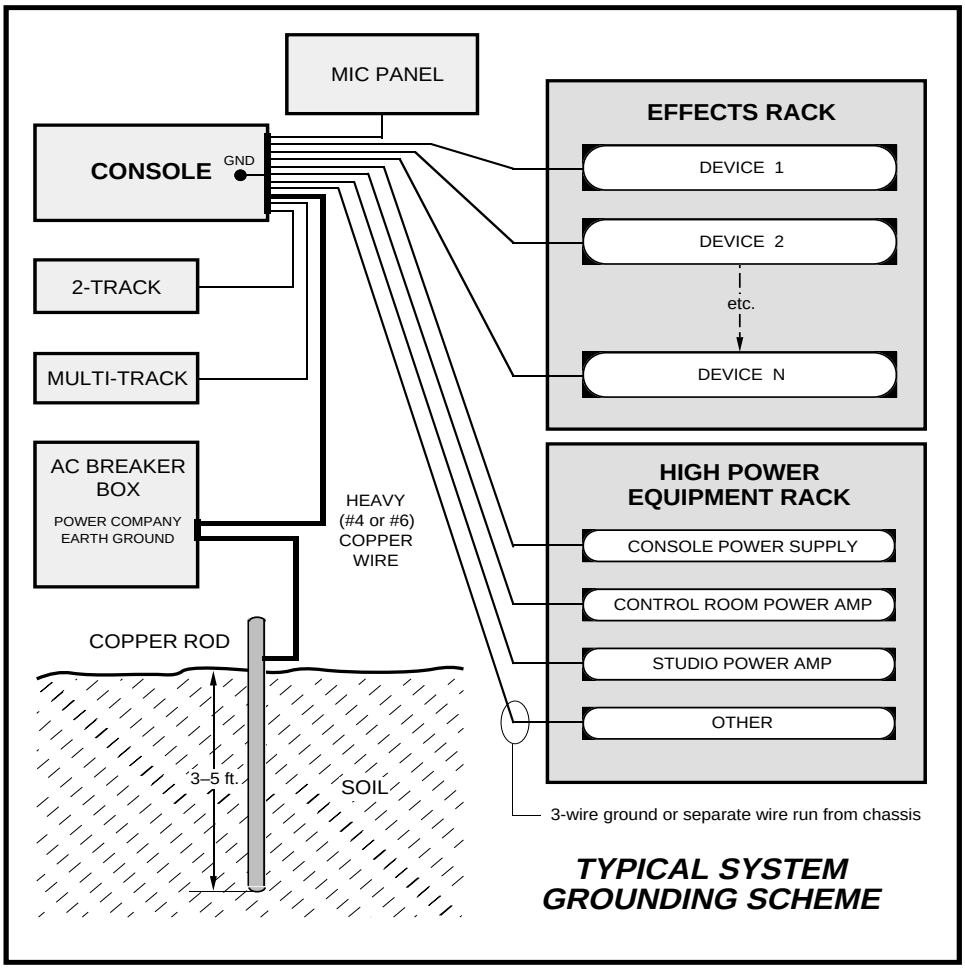
The system ground serves two important purposes:

(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).



TYPICAL SYSTEM GROUNDING SCHEME

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.

(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 TO THE SYSTEM EARTH GROUND. TIE EVERY PIECE OF EQUIPMENT IN THE ENTIRE AUDIO SYSTEM TO THE CONSOLE GROUND LUG. If the system earth ground point is inaccessible, tie the console ground lug 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; 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.

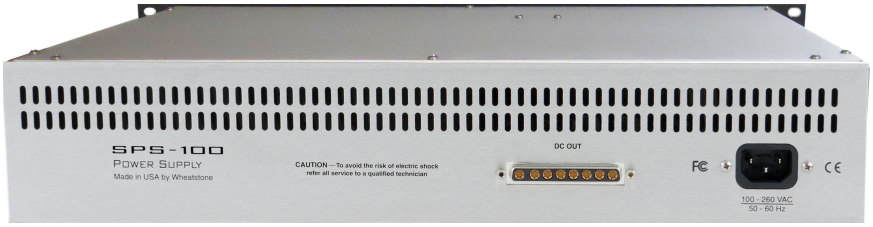
It is assumed that in each piece of audio equipment the audio ground and the chassis are tied together at some point. Any piece of equipment lacking a grounded chassis is likely to be prone to interference problems.

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 Supply

Front view of the SPS-100 rackmount power supply

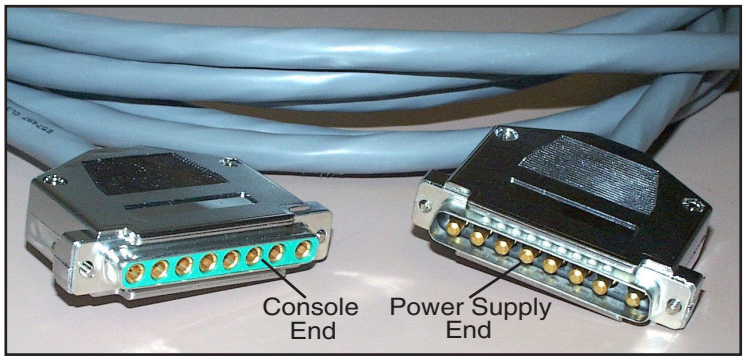


Rear view of the SPS-100 rackmount power supply

The D-75 console is powered by an Audioarts Model SPS-100 rackmount power supply. This unit occupies two 19" wide rack spaces (total height 3-1/2"). Convection cooled, it requires ample ventilation space above and below it. The SPS-100 generates heat in the course of normal operation — do *not* mount heat sensitive devices in the same rack cabinet.

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

Once the supply is rackmounted, it should be connected to the console using the factory supplied cable. The cable has two different types of connectors on it: an 8-pin female connector that connects to the console's power supply connector, and an 8-pin male connector that plugs into the rear of the rackmount SPS-100 power supply. The console's power supply connector is located at the rear of the console, toward the left end of the meterbridge bottom pan when viewed from the rear of the console.



PS Cable Pinout

Console End 8-pin Connector *Female*				Power Supply End 8-pin Connector *Male*
PIN			PIN	
VIO	1	Phantom	1	VIO
GRN	2	Digital Common	2	GRN
BRN	3	Digital Common	3	BRN
WHT	4	+ Digital	4	WHT
ORG	5	+ Digital	5	ORG
BLK	6	Audio Common	6	BLK
BLU	7	- V	7	BLU
RED	8	+ V	8	RED

Note that the 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.

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.

Energizing

Assuming the D-75 console mainframe is properly placed and grounded, and its SPS-100 power supply correctly rackmounted and connected to the console, you may now energize the power supply by plugging it into the AC mains.

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

Once you have verified proper power-up, unplug the rackmount power supply 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-75 console are made through multipin DB-25 connectors located on the top of each module. The factory supplied hand crimping tool is used for all I/O wiring connections to and from the console (see instruction on the page 1-8).

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 connectors. These crimp style connectors will accept wire gauge 24 - 28AWG.

SPDIF INPUTS - The SPDIF (Sony/Phillips Digital Interface) or "consumer" digital audio interface is a two wire unbalanced signal typically on a single RCA style connector. We recommend using shielded twisted pair cables for these connections. Wire the SPDIF center conductor (HOT) to the SRC-75 "HI" input pin using one wire of the pair and wire the SPDIF shell (ground) to the SRC-75 "LO" input pin. Connect the cable's shield to the SRC-75 "SH" pin, leaving the shield floating (that is, not connected) at the SPDIF end.

The SRC-75 digital input audio card is provided with 110Ω/75Ω switches on the A and B inputs to allow impedance matching with 75Ω sources.

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-75 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.)

Modules Layout

The D-75 console's mainframe comes supplied with 20 (for 26 pos. frame) or 12 (for 18 pos. frame) input modules along with an output module, a control room module, and a studio control module. Each module type has its assigned slot (see drawings on pages 1-10 and 1-11). To handle mic level inputs, a quad mic preamp is included. Also there can be optional modules: a superphone, a second quad mic preamp, a line preselect, and a tape remote. Modules must be placed in the slots indicated on the module layout drawings that follow.

Input Daughter Cards Installation

The console's two different types of input daughter cards (Figure 1) are shipped in a separate package, as specified in your order:

- ANALOG ADC-75 (W#002928) daughter card;
- DIGITAL SRC-75 (W#002929) daughter card.

These are used to configure the inputs of the console to match the different types of signal sources (analog in, or digital in).

Figure 1. Two types of input daughter cards.

To install console's daughter cards you must follow this procedure:

- ***Make sure the console is powered down.***
- Open the meterbridge by simply swinging it up and back until it rests in a fully opened position (Figure 2).
- Plug in the daughter card's edgecard fingers to the appropriate IN-75 edge connector (Figure 3), and tighten it down with the two supplied Phillips serrated panhead screws (included in the console's connector kit).

Note: To provide a better ground contact, tighten down the serrated screws, then unscrew them a little bit and tighten again. This procedure will remove paint from the face of the daughter card under the screw head and provide a better metal surface contact.

- Close the meterbridge.

Figure 2. Open the meterbridge.

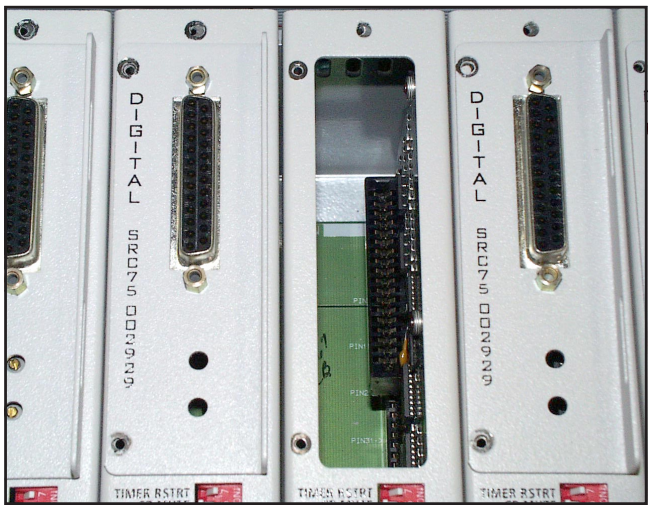
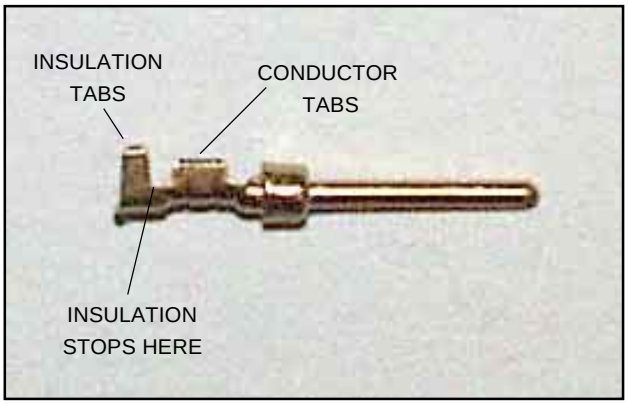


Figure 3. Module edge connector.

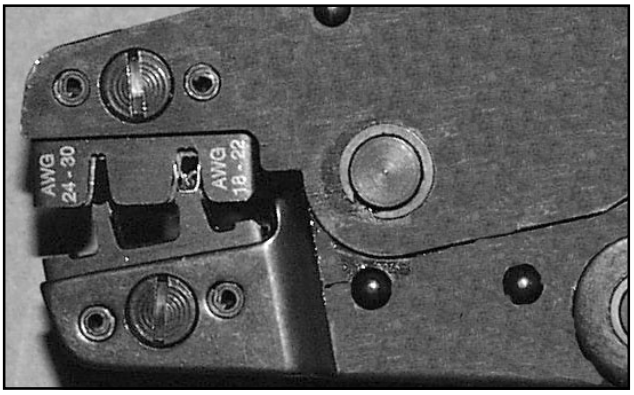
NOTE regarding the SRC-75 digital input daughter card: The SRC-75 has two slide switches that are used to toggle the digital input impedance between 110 ohms (for AES inputs) and 75 ohms (for SPDIF inputs). SW1 affects the B input and SW2 affects the A input. Flip the switch to the ON position for a SPDIF input or to the OFF position for an AES input. In addition to using the switch, the input must be wired correctly — see Digital Audio Connections on page 1-6 and 1-7.

HAND CRIMP TOOL WIRING INSTRUCTIONS

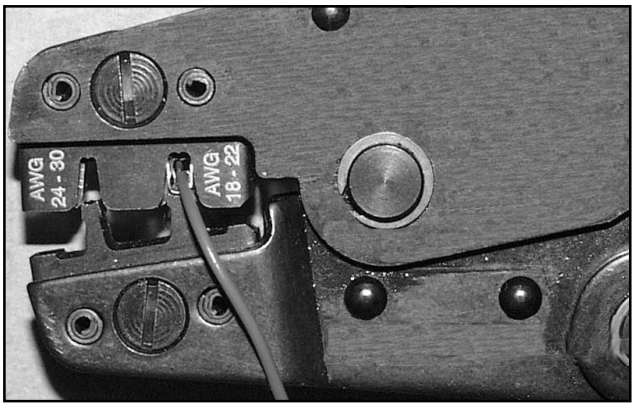
The supplied hand crimping tool (W/S#850067) is used for all I/O wiring connections to and from the console. It is to be used with the supplied pin (figure 1) intended for 22"-28" gauge wire.



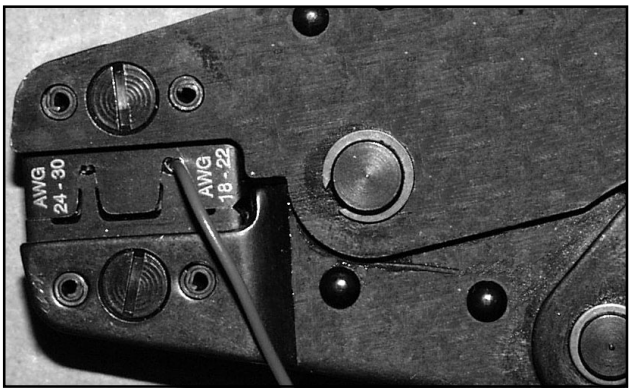
(1) Pin crimp terminal



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



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



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

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

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

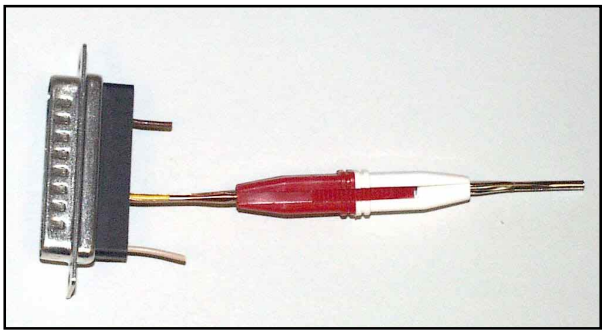
3) Close tool very slightly, only to the point of holding the terminal in position (figure 2).

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

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

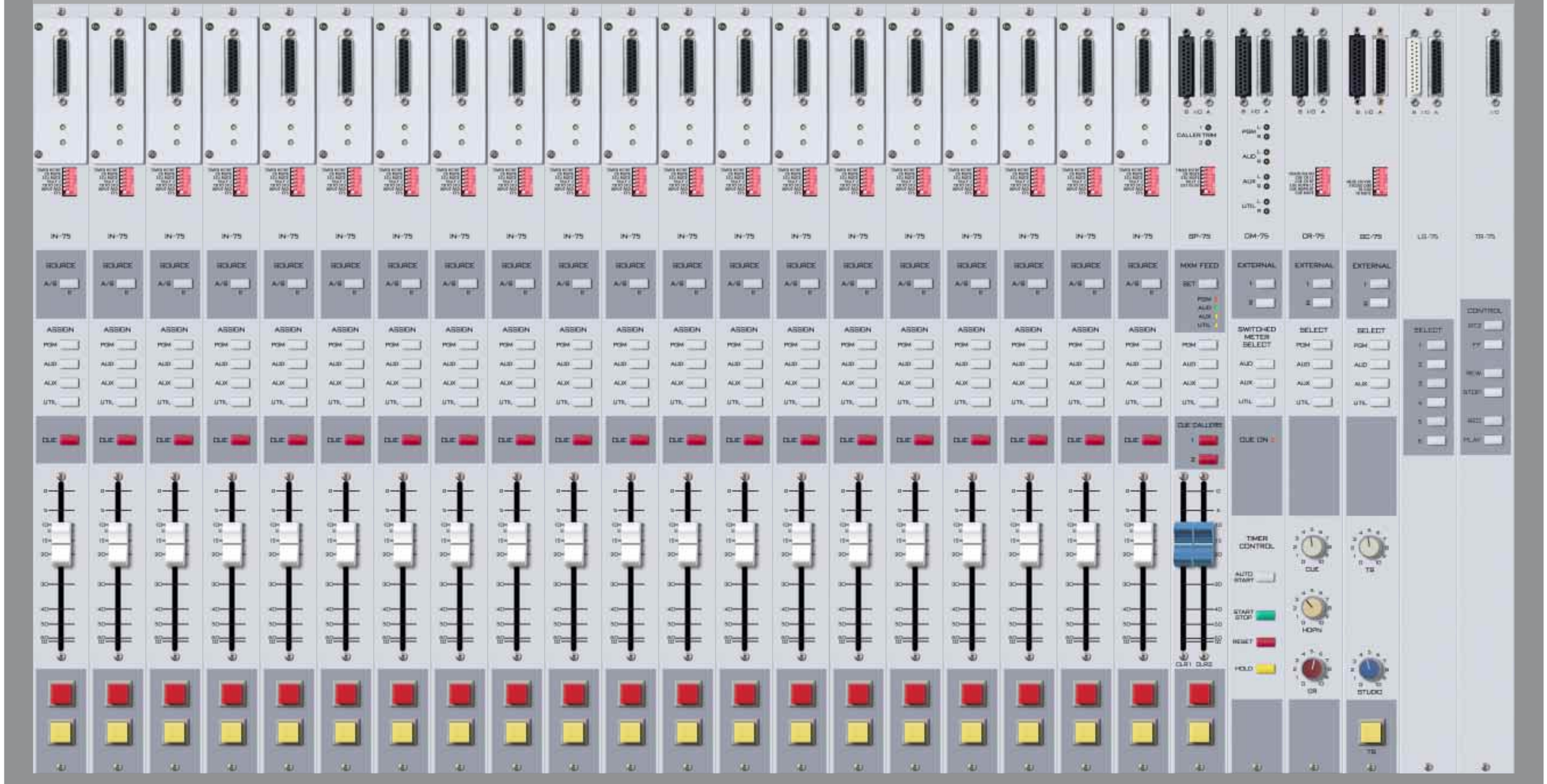
Note that metallized plastic hoods for each connector are also supplied with the console.

EXTRACTOR PIN INSTRUCTIONS



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

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



NOTE: 1. CONSOLE CAN ACCOMMODATE UP TO 21 INPUT MODULES, OR 20 INPUT MODULES PLUS ONE SUPERPHONE MODULE.
2. MASTER OUTPUT, CONTROL ROOM, STUDIO CONTROL AND OPTIONAL SUPERPHONE MODULES HAVE THEIR DEDICATED SLOTS (AS SHOWN).
3. LAST TWO SLOTS AT THE RIGHT END OF THE FRAME SHOULD BE USED FOR OPTIONAL LINE PRESELECT AND TAPE REMOTE MODULES.

D-75-26 CONSOLE - MODULES LAYOUT

NOTE: 1. CONSOLE CAN ACCOMMODATE UP TO 13 INPUT MODULES, OR 12 INPUT MODULES PLUS ONE SUPERPHONE MODULE.
2. MASTER OUTPUT, CONTROL ROOM, STUDIO CONTROL AND OPTIONAL SUPERPHONE MODULES HAVE THEIR DEDICATED SLOTS (AS SHOWN).
3. LAST TWO SLOTS AT THE RIGHT END OF THE FRAME SHOULD BE USED FOR OPTIONAL LINE PRESELECT AND TAPE REMOTE MODULES.

D-75-18 CONSOLE - MODULES LAYOUT

Quad Mic Preamp

(QMP-4)

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Phantom Power 2-3

Hook-ups 2-3

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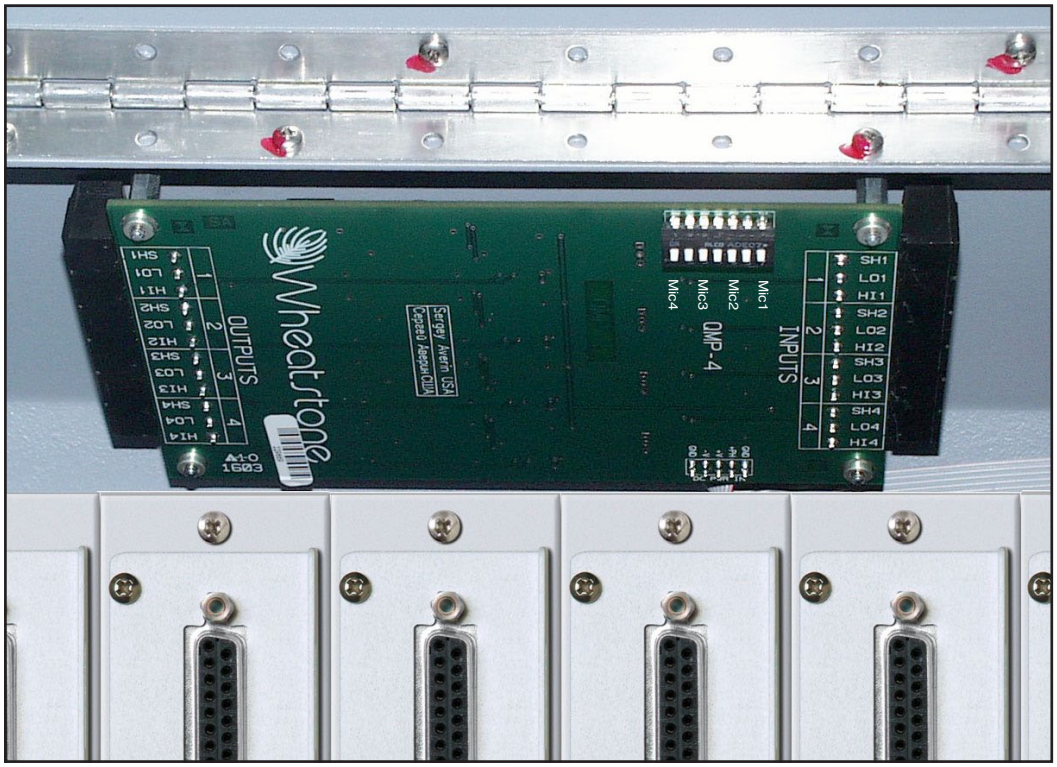
Audio Output Connections 2-4

Power Connections 2-5

Plug Terminal Pinout Drawing 2-6

Installing the Optional Second QMP-4 Mic Preamp 2-7

Quad Mic Preamp
(QMP-4)



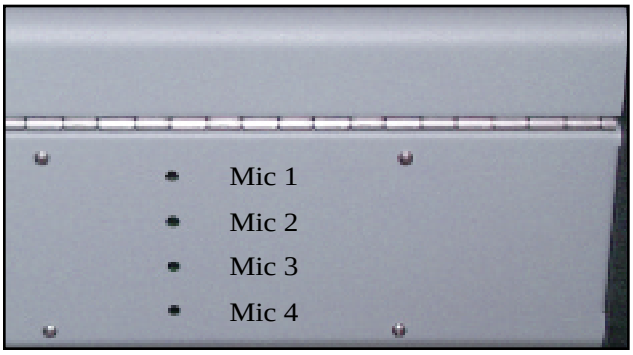
Overview

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

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

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

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



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

Internal Programming Options

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

Phantom Power

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

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

Note the factory default setting for phantom power is OFF.

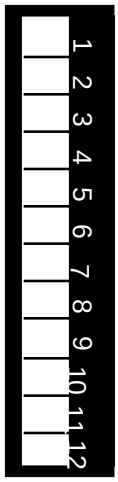
Hook-Ups

As stated before, all user wiring to and from the QMP-4 takes place at the 12-position plug terminals mounted on the QMP-4 PCB. A pinout drawing on page 2-6 shows all wiring connections at a glance.

Audio Input Connections (CT3)

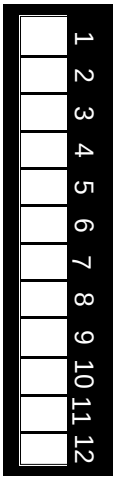
All signals are analog mono. The mic input level is normally -50dBu, balanced.

Pin 1 – Mic **1** In SH
Pin 2 – Mic **1** In LO
Pin 3 – Mic **1** In HI
Pin 4 – Mic **2** In SH
Pin 5 – Mic **2** In LO
Pin 6 – Mic **2** In HI



Typical 12-position plug terminal

Pin 7 – Mic **3** In SH
Pin 8 – Mic **3** In LO
Pin 9 – Mic **3** In HI
Pin 10 – Mic **4** In SH
Pin 11 – Mic **4** In LO
Pin 12 – Mic **4** In HI



Typical 12-position plug terminal

Audio Output Connections (CT4)

All signals are analog mono. The mic output level is normally +4dBu, balanced.

Pin 12 – Mic **1** Out SH
Pin 11 – Mic **1** Out LO
Pin 10 – Mic **1** Out HI
Pin 9 – Mic **2** Out SH
Pin 8 – Mic **2** Out LO
Pin 7 – Mic **2** Out HI
Pin 6 – Mic **3** Out SH
Pin 5 – Mic **3** Out LO
Pin 4 – Mic **3** Out HI
Pin 3 – Mic **4** Out SH
Pin 2 – Mic **4** Out LO
Pin 1 – Mic **4** Out HI

Note that each output wires in parallel to the left and right input channels of an input stereo module (IN-75) with an analog daughter card (ADC-75).

For example:

Pin 12 – Mic 1 Out SH wires to
- Pin 25 - Line A Lt In SH
- Pin 11 - Line A Rt In SH

Pin 11 – Mic 1 Out LO wires to
- Pin 12 - Line A Lt In LO
- Pin 23 - Line A Rt In LO

Pin 10 – Mic 1 Out HI wires to
- Pin 24 - Line A Lt In HI
- Pin 10 - Line A Rt In HI

Power Connections (CT7)

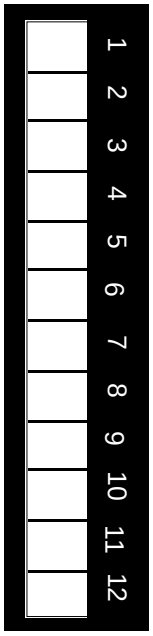
A ribbon cable connects the 10-pin connector on the QMP-4 (CT7) to the 10-pin connector mounted at the right end of the MBR-75 motherboard (CT2) to provide power to the microphone preamplifier.

Pin 1 – Analog Ground
Pin 2 – Analog Ground
Pin 3 - +Phantom V
Pin 4 – +Phantom V
Pin 5 – +V In
Pin 6 – +V In
Pin 7 – -V In
Pin 8 – -V In
Pin 9 – Analog Ground
Pin 10 – Analog Ground

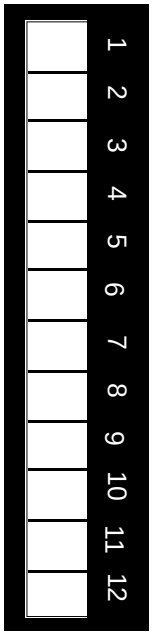
QMP-4 Quad Mic Preamp

Plug Terminal Pinouts

INPUT PORTS ANALOG



OUTPUT PORTS ANALOG



Installing the Optional Second QMP-4 Mic Preamp

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

• turn off the power to the console;

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

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

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

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

• close the meterbridge.

This completes the optional QMP-4 installation procedure.

Stereo Line Input

(IN-75)

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Tallies 3-3
Timer Restart 3-3
Talkback 3-3
Attenuation 3-4
EFS - European Fader Start 3-4

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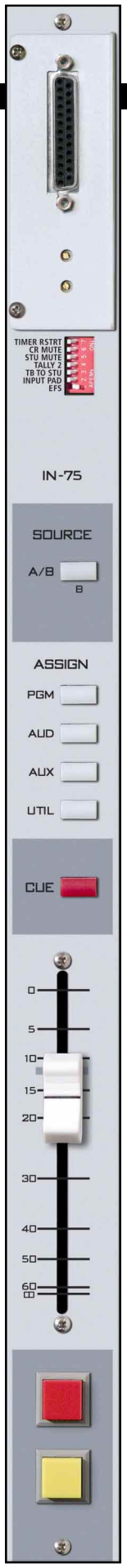
Stereo Line Input (IN-75)



Module Overview

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

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

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

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

Each module accepts two stereo sources, A and B, switched at the top of the module. Output switches assign the selected source signal to any combination of the console's four stereo outputs—PGM (program), AUD (audition), AUX (auxiliary), and UTIL (utility). Please note, the UTIL bus is pre-fade, pre-on. This feature can be defeated (see page 10-4).

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

Level is set by a long-throw fader.

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

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

Internal Programming Options

With the exception of UTIL pre-fade/pre-on defeat and B follow options mentioned below, all internal programming is made via PCB mounted dipswitch SW1 located on the top of the module (beneath the DB-25 connector). Note that when a dipswitch position is thrown to the right it is ON.

Mutes

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

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

If the MUTE B setting is made on the PR-75 (see page 10-5) then the mutes will also function when source B is used.

Tallies

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

SW1 position 4 activates tally 2 when source A is ON

If the MUTE B setting is made on the PR-75 (see page 10-5) then the tallies will also function when source B is used.

Timer Restart

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

SW1 position 7 activates timer restart

If the TMR B setting is made on the PR-75 (see page 10-5) then the timer restart will also function when source B is used.

Talkback

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

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

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

In order for the studio to reply to the console operator, the IN-75 module controlling the studio's microphone signal must be routed to the console's cue bus, where it can be heard by the operator. This is accomplished by a user-supplied TB switch in the studio. The switch provides a momentary closure between the module's DB-25 connector "TB to CR" control pin and Digital Ground (see page 3-6 for wiring

details). As long as this closure is maintained (i.e., as long as talent holds down the studio TB button) the module's (pre-fader, pre-on/off) signal will be placed on the console's Cue bus.

Attenuation

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

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

EFS - European Fader Start

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

SW1 position 1 enables the EFS feature

Hook-Ups

As stated before, all user wiring to and from IN-75 modules takes place at the DB-25 multi-pin connector mounted on the daughter card at the top of each module. There is one connector per module. Pinout drawings on pages 3-7 and 3-8 show all wiring connections at a glance.

Audio Connections — Analog Inputs (ADC-75)

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

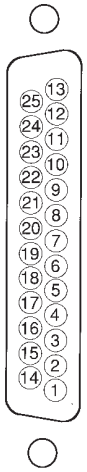
Pin 25 – Line A Lt In SH
Pin 24 – Line A Lt In HI
Pin 12 – Line A Lt In LO

Pin 11 – Line A Rt In SH
Pin 10 – Line A Rt In HI
Pin 23 – Line A Rt In LO

Pin 22 – Line B Lt In SH
Pin 21 – Line B Lt In HI
Pin 9 – Line B Lt In LO

Pin 8 – Line B Rt In SH
Pin 7 – Line B Rt In HI
Pin 20 – Line B Rt In LO

NOTE: If you are bringing a mono signal into the IN-75 and want it to go to both left and right sides of the stereo busses, simply bridge the left and right sides of the input together when wiring.



Typical DB-25 connector

Audio Connections — Digital Inputs (SRC-75)

These include A and B source inputs.

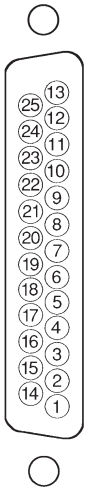
Pin 25 – AES A In SH
Pin 24 – AES A In HI
Pin 12 – AES A In LO

Pin 11 – AES B In SH
Pin 10 – AES B In HI
Pin 23 – AES B In LO

Control Connections — Analog and Digital Inputs

Functions include remote on and off, tally, ready, and start/stop for remote source machines. The Start, Stop, Start/Stop Com, On Tally, and Tally B ports are opto-isolated.

Pin 1 – Cough
Pin 2 – Ready
Pin 3 – Start
Pin 4 – Stop
Pin 5 – Start/Stop Com
Pin 6 – B Tally
Pin 14 – Remote On
Pin 15 – On Tally
Pin 16 – Remote Off
Pin 17 – TB to CR
Pin 18 – +5V Digital
Pin 19 – Digital Ground



Typical DB-25 connector

To Turn the Module ON & OFF from a Remote Location

"Remote location" can also refer to a remote source machine that is feeding its audio to the module in question. A contact closure (which may be sourced by the external machine), will activate the module's channel ON and OFF switches.

Unless otherwise noted, the remote functions are only active by default when the A source is in use. But if the REM B setting is made on the PR-75 (see page 10-5) then the remote functions will also function when source B is used.

REMOTE ON — Activates the module's channel ON switch. Momentarily connect Pin 14 (Remote On) and Digital Ground (Pin19) to latch the module ON. (User-supplied momentary contact switch required.)

REMOTE OFF — Activates the module's channel OFF switch. Momentarily connect Pin 16 (Remote Off) and Digital Ground (Pin 19) to latch the module OFF. (User-supplied momentary contact switch required.)

COUGH — Temporarily Mutes the module. Provide a closure between Pin 1 (Cough) and Digital Ground (Pin 19). 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.)

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 IN-75 module's DB-25 connector control pins: for START wire to Pins 3 and 5.

EXTERNAL STOP — Hook up the remote machine's "stop" control pins to the IN-75 module's DB-25 connector control pins: for STOP wire to Pins 4 and 5.

These are opto-isolated outputs.

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

READY — Hook up the remote machine's Ready output to the IN-75 module's DB-25 connector pin 2 (Ready) and pin 19 (Digital Ground). The module's Ready port is looking for a contact closure. As long as the closure is maintained, the module's OFF LED illumination will be opposite what it normally is. That is, if the OFF LED is expected to be lit (module off) the external closure will turn that LED off, whereas if the OFF LED is expected to be off (module on) the external closure will turn the LED on. As a result, the OFF LED will flash when a pulse is connected to the Ready input.

Talkback to Control Room

If an IN-75 module is being used for a studio microphone, this connection allows talkback from that studio to the console operator. Provide a closure between Pin 17 (TB to CR) and Digital Ground (Pin 19). This will cause the module's pre fader signal to be sent to the console's Cue bus, where it may be heard by the console operator. 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 to Digital Ground at Pin 15 (On Tally) 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 (Pin 18) and the On Tally port. In either case the current should not exceed 30 milliamps.

Tally B

Provides a remote indication that the module's B source has been selected. This control function provides a continuous closure (open collector) between Pin 6 (Tally B) and Digital Ground (Pins 19) whenever the B source is selected.

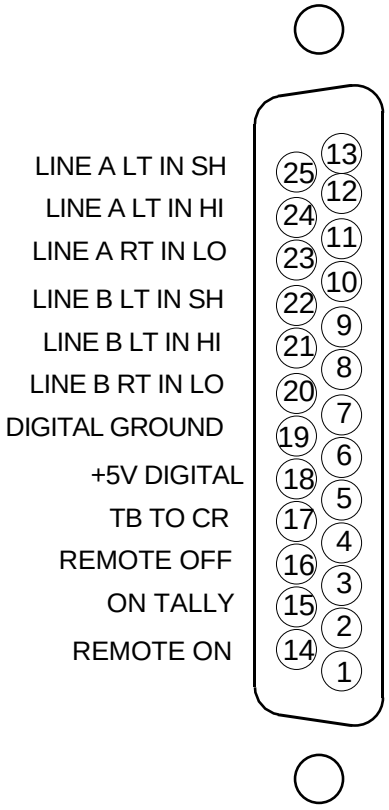
This closure can be used to control an externally powered tally light that requires a continuous closure to function. An external tally light (i.e., LED) can be powered from the input module by connecting the external LED to +5V Digital (Pin 18) and the B Tally port. The current should not exceed 30 milliamps.

Note that this output always functions regardless of the REM B setting on the PR-75. However, you will most likely want to enable B remote logic if you are using the B Tally.

IN-75 Analog Input - ADC-75

DB Connector Pinouts

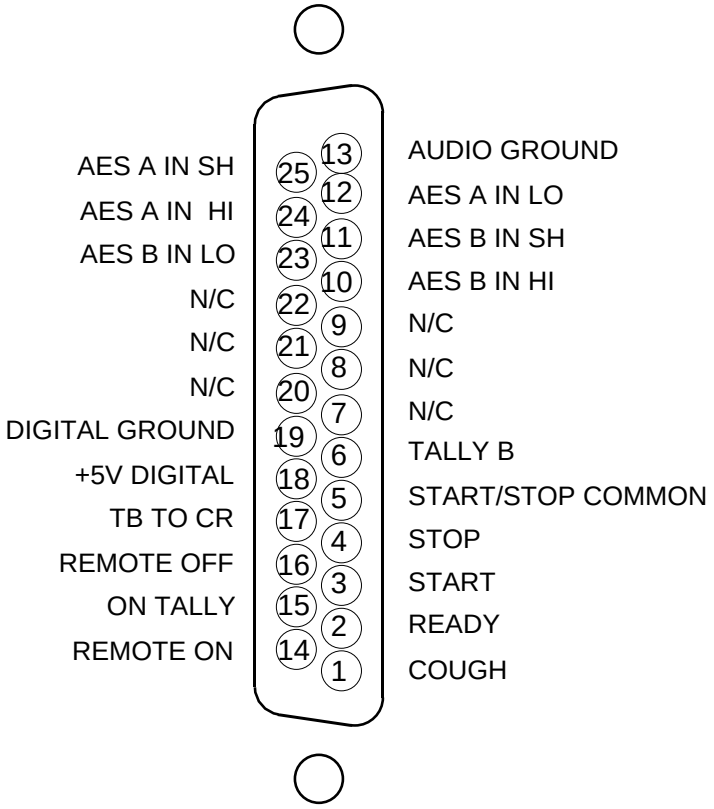
I/O PORTS ANALOG AND LOGIC

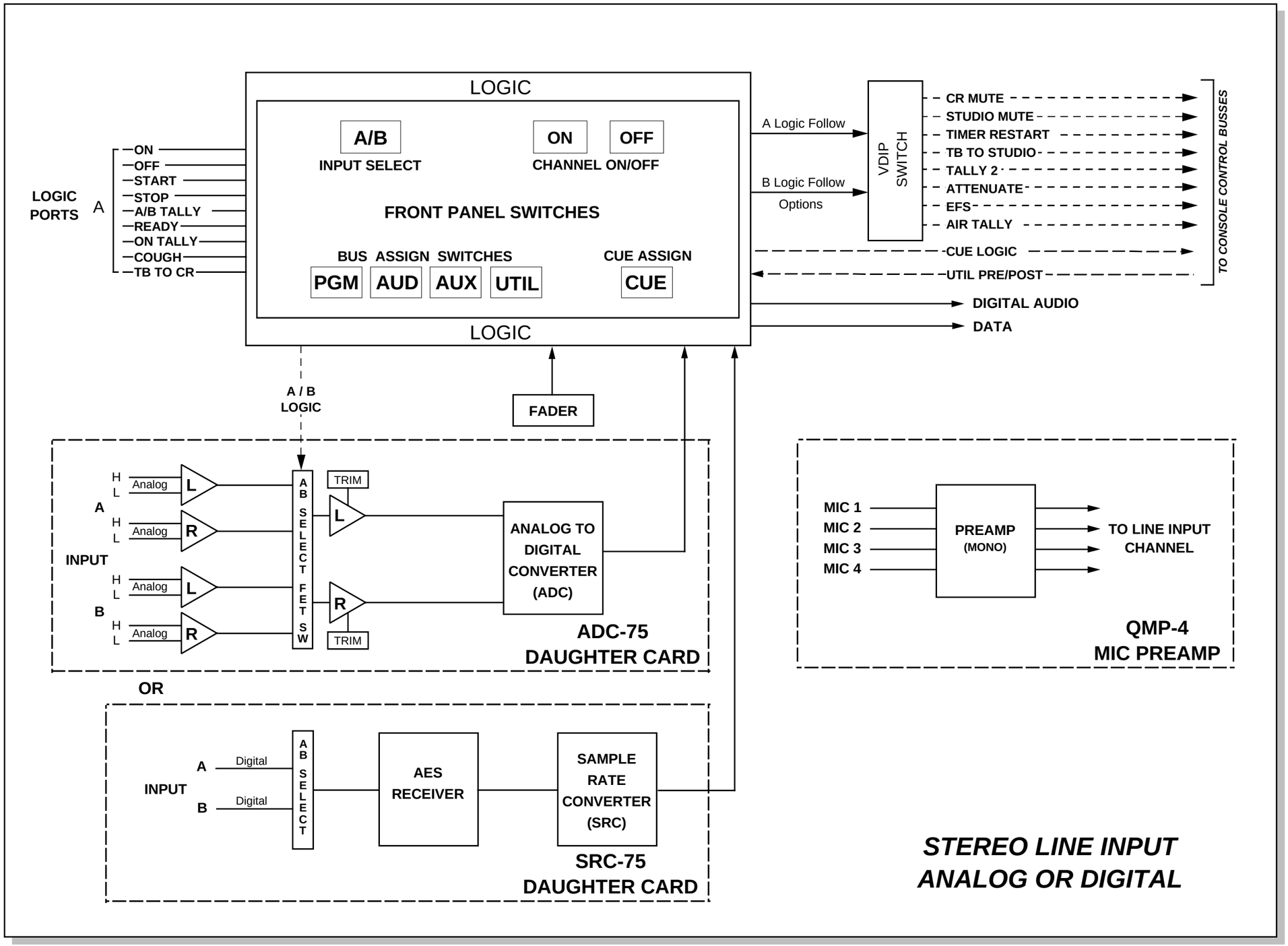


IN-75 Digital Input - SRC-75

DB Connector Pinouts

I/O PORTS DIGITAL AND LOGIC




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

Output Module

(OM-75)

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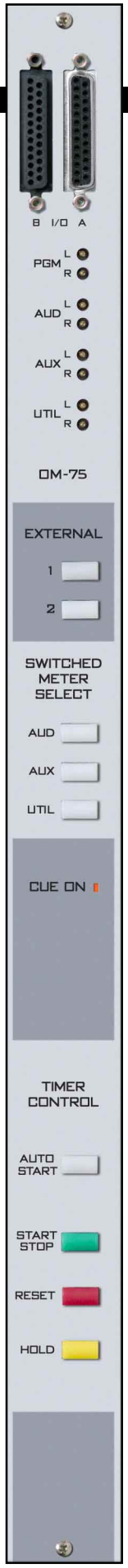
Right DB-25 “A” Connector — Analog Audio Outputs 4-4

DB Connector Pinout Drawing **4-6**

Output Module Signal Flow **4-7**



Output Module (OM-75)

Module Overview

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

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

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

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

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

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

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

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

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

Internal Programming Options

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

Sampling Frequency for Console Outputs

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

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

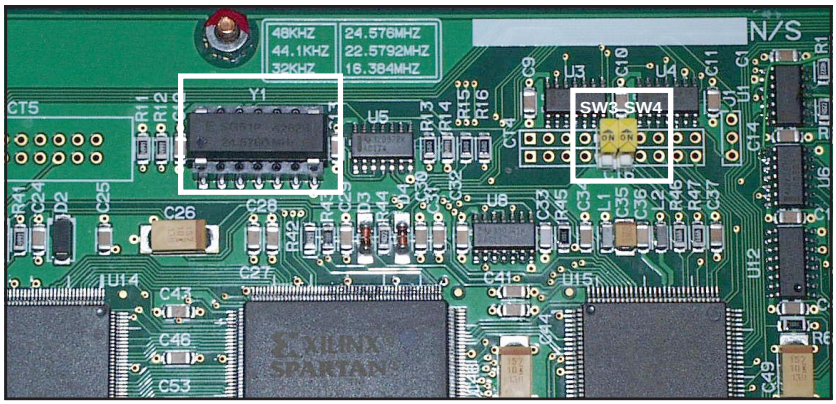


Figure 1. Section of the PR-75 PCB

TABLE 1

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

Note, the console sample rate can also be synchronized to an external sample rate source. See page 10-5 for details.

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

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

TABLE 2

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

*default setting

Hook-Ups

As stated before, all user wiring to and from the OM-75 module takes place at two DB-25 multi-pin connectors at the top of module.

Left DB-25 "B" Connector – Digital Audio Outputs and External Analog Inputs

Handles External inputs and Program, Audition, Auxiliary, and Utility digital outputs. The external analog input signals are +4dBu balanced.

Pin 25 – PGM AES Out SH
Pin 24 – PGM AES Out HI
Pin 12 – PGM AES Out LO

Pin 11 – AUD AES Out SH
Pin 10 – AUD AES Out HI
Pin 23 – AUD AES Out LO

Pin 22 – AUX AES Out SH
Pin 21 – AUX AES Out HI
Pin 9 – AUX AES Out LO

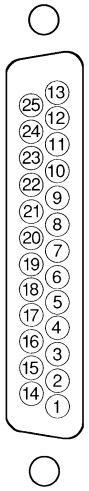
Pin 8 – UTIL AES Out SH
Pin 7 – UTIL AES Out HI
Pin 20 – UTIL AES Out LO

Pin 19 – Ext 1 Lt In SH
Pin 18 – Ext 1 Lt In HI
Pin 6 – Ext 1 Lt In LO

Pin 5 – Ext 1 Rt In SH
Pin 4 – Ext 1 Rt In HI
Pin 17 – Ext 1 Rt In LO

Pin 16 – Ext 2 Lt In SH
Pin 15 – Ext 2 Lt In HI
Pin 3 – Ext 2 Lt In LO

Pin 2 – Ext 2 Rt In SH
Pin 1 – Ext 2 Rt In HI
Pin 14 – Ext 2 Rt In LO



Typical DB-25 connector

Right DB-25 "A" Connector – Analog Audio Outputs

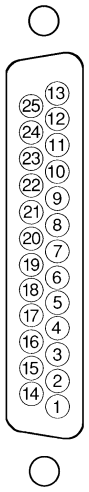
Handles Program, Audition, Auxiliary, and Utility analog outputs. All signals are +4dBu balanced.

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 – AUD Lt Out SH
Pin 21 – AUD Lt Out HI
Pin 9 – AUD Lt Out LO

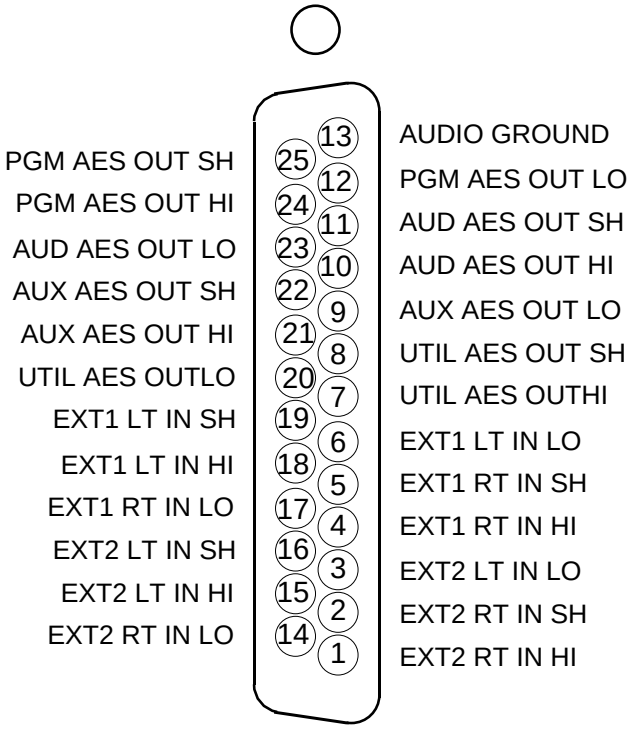
Pin 8 – AUD Rt Out SH
Pin 7 – AUD Rt Out HI
Pin 20 – AUD Rt Out LO
Pin 19 – AUX Lt Out SH
Pin 18 – AUX Lt Out HI
Pin 6 – AUX Lt Out LO
Pin 5 – AUX Rt Out SH
Pin 4 – AUX Rt Out HI
Pin 17 – AUX Rt Out LO
Pin 16 – UTIL Lt Out SH
Pin 15 – UTIL Lt Out HI
Pin 3 – UTIL Lt Out LO
Pin 2 – UTIL Rt Out SH
Pin 1 – UTIL Rt Out HI
Pin 14 – UTIL Rt Out LO



Typical DB-25 connector

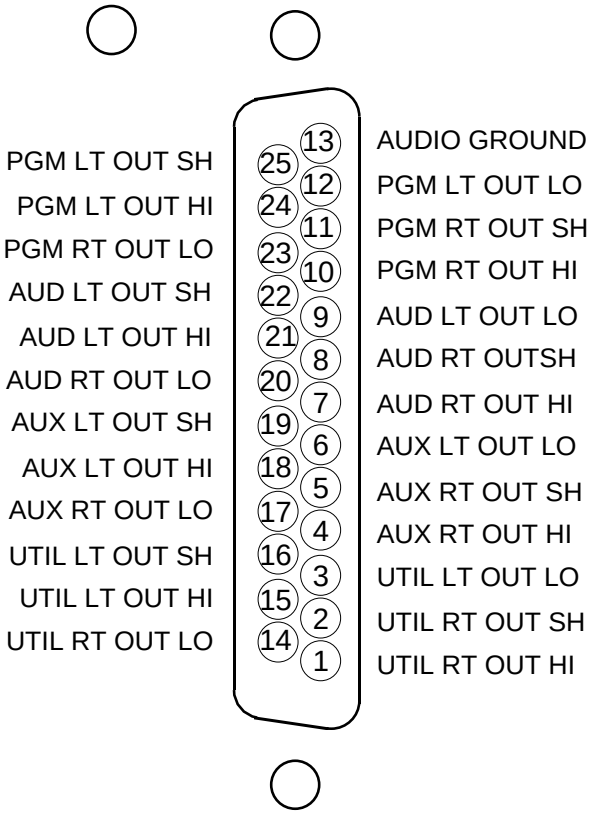
OM-75 Output Module

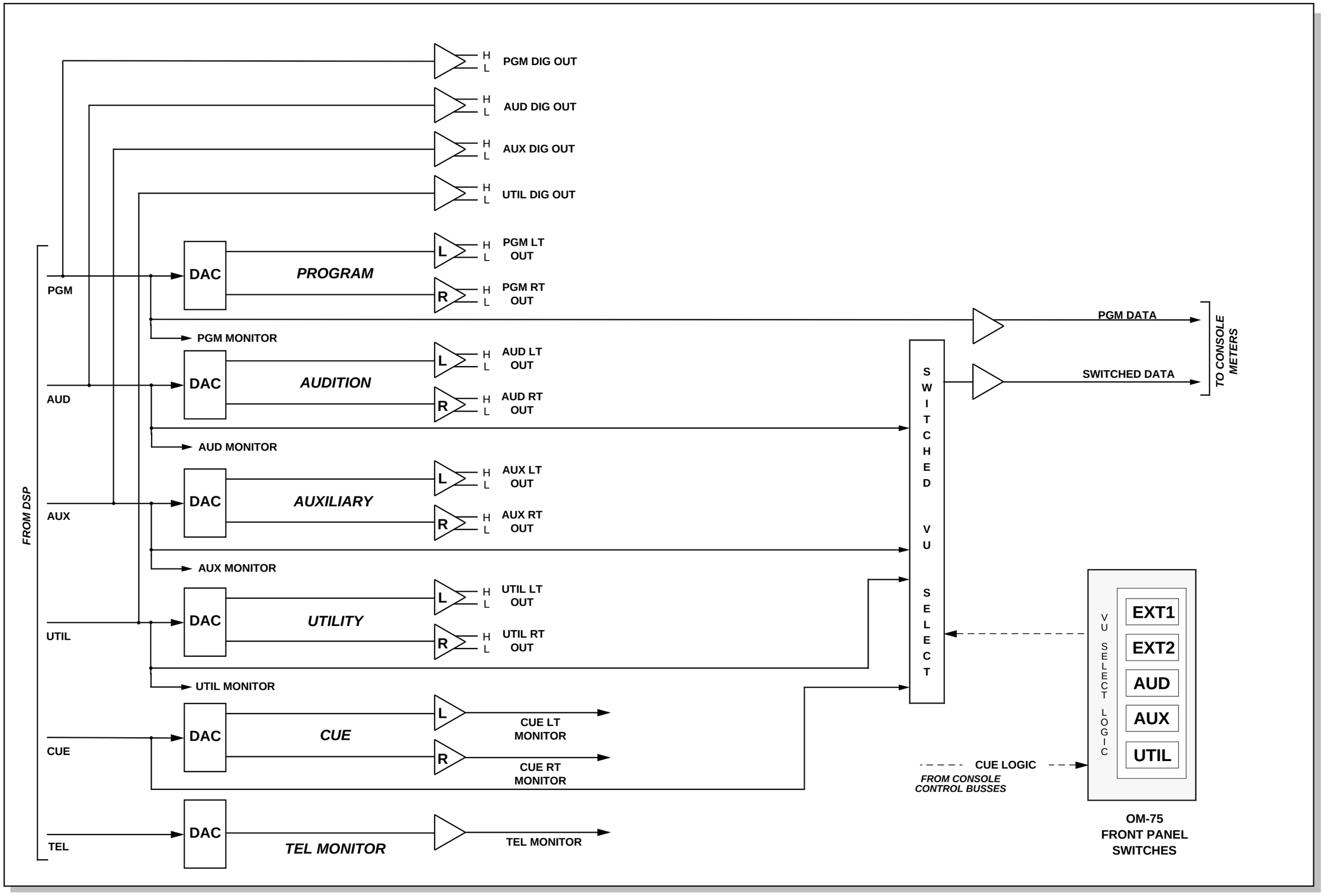
DB Connector Pinouts



I/O PORTS
(Left DB-25 "B")

I/O PORTS
(Right DB-25 "A")




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

Control Room Module

(CR-75)

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Control Room Module (CR-75)

Module Overview

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

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

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

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

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

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

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

Internal Programming Options

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

Cue Interrupt

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

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

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

CR/Cue Mute

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

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

On-Air Tally Follows Program

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

SW1 position 6 defeats the air tally dependence on PGM assign

Hook-Ups

As stated before, all user wiring to and from the CR-75 module takes place at the two DB-25 multi-pin connectors mounted at the top of the module.

Left DB-25 “B” Connector — Audio

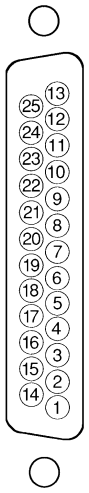
Handles module’s External stereo inputs. All audio signals are analog stereo, +4dBu balanced.

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

Right DB-25 “A” Connector — Audio and On-Air Tally

Handles module’s cue, headphone pre, and control room outputs, and the on-air tally. All audio signals are balanced analog stereo.

Pin 25 – Cue Lt Out SH
Pin 24 – Cue Lt Out HI
Pin 12 – Cue Lt Out LO

Pin 11 – Cue Rt Out SH
Pin 10 – Cue Rt Out HI
Pin 23 – Cue Rt Out LO

Pin 22 – HDPN Lt Out SH
Pin 21 – HDPN Lt Out HI
Pin 9 – HDPN Lt Out LO

Pin 8 – HDPN Rt Out SH
Pin 7 – HDPN Rt Out HI
Pin 20 – HDPN Rt Out LO

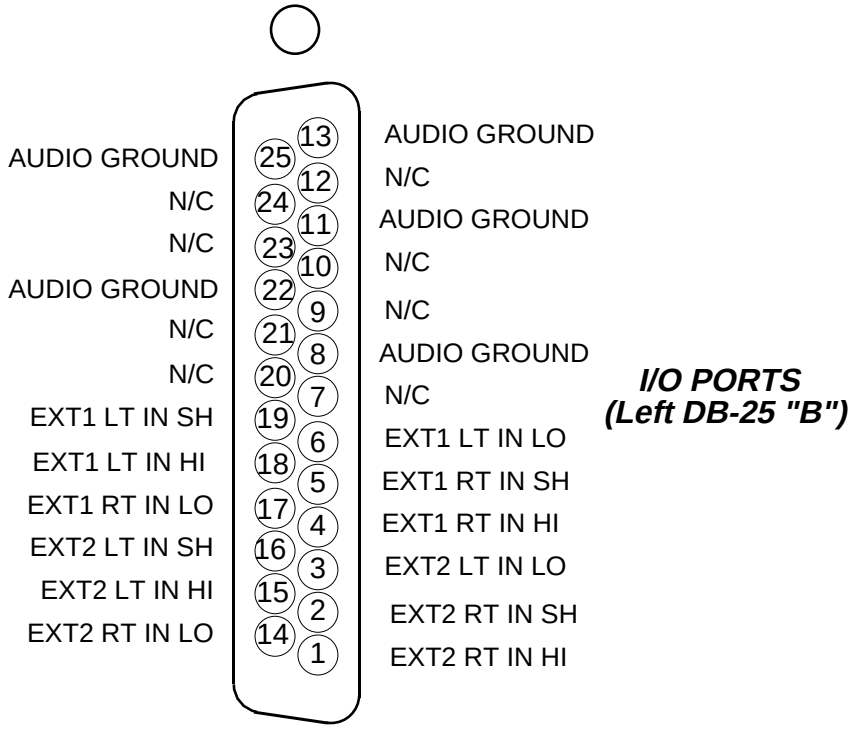
Pin 19 – CR Lt Out SH
Pin 18 – CR Lt Out HI
Pin 6 – CR Lt Out LO

Pin 5 – CR Rt Out SH
Pin 4 – CR Rt Out HI
Pin 17 – CR Rt Out LO

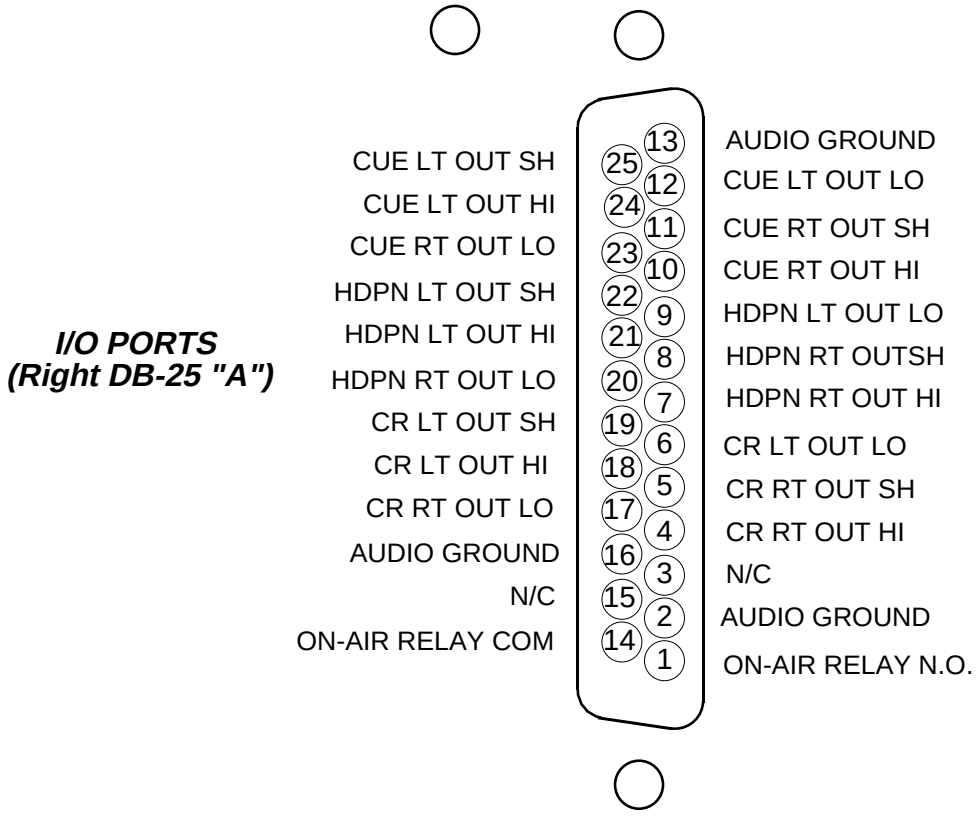
Pin 2 – SH
Pin 1 – On-Air Relay N.O.
Pin 14 – On-Air Relay COM

CR-75 Control Room Module

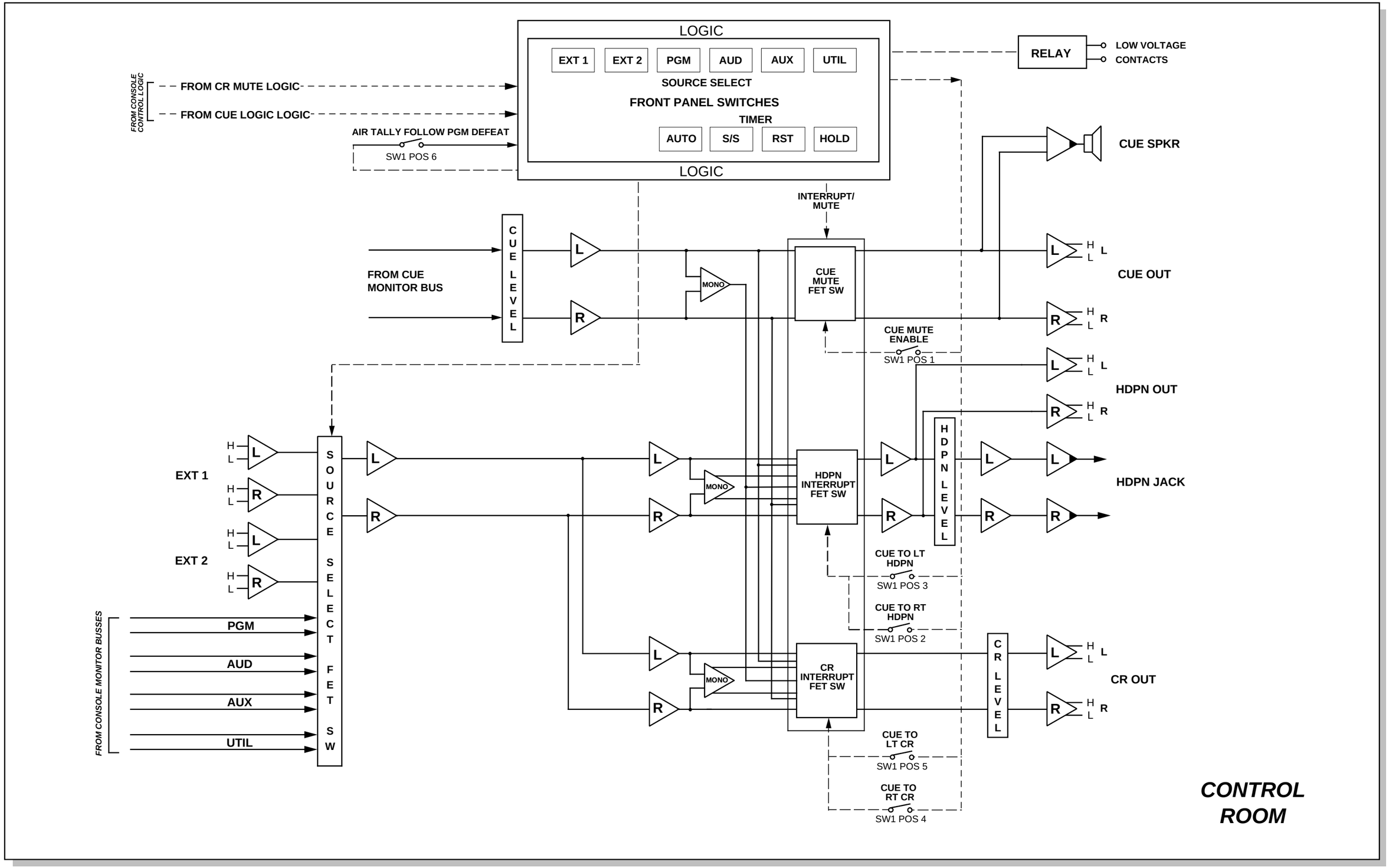
DB Connector Pinouts



I/O PORTS
(Left DB-25 "B")



I/O PORTS
(Right DB-25 "A")



CR-75 Control Room Module - Signal Flow Diagram

Studio Control Module

(SC-75)

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DB Connector Pinout Drawing 6-5

Studio Control Module Signal Flow 6-6

Studio Control Module (SC-75)

Module Overview

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

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

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

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

Internal Programming Options

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

External Talkback Mute/Dim

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

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

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

Studio Dim

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

SW1 position 3 causes Studio to DIM instead of MUTE

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

Studio Pre Mute

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

SW1 position 4 causes studio pre to mute

Hook-Ups

As stated before, all user wiring to and from the SC-75 module takes place at the two DB-25 multi-pin connectors mounted at the top of the module.

Left DB-25 "B" Connector — Audio

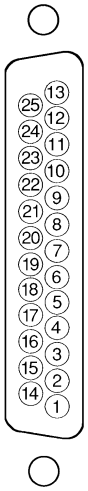
Handles module's External stereo inputs. All audio signals are analog stereo, +4dBu balanced.

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

Right DB-25 "A" Connector — Audio and Tally 2

Handles module's TB, studio pre, and studio outputs, and the tally 2. All audio signals are balanced analog stereo.

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

Pin 22 – ST Pre Lt Out SH
Pin 21 – ST Pre Lt Out HI
Pin 9 – ST Pre Lt Out LO

Pin 8 – ST Pre Rt Out SH
Pin 7 – ST Pre Rt Out HI
Pin 20 – ST Pre Rt Out LO

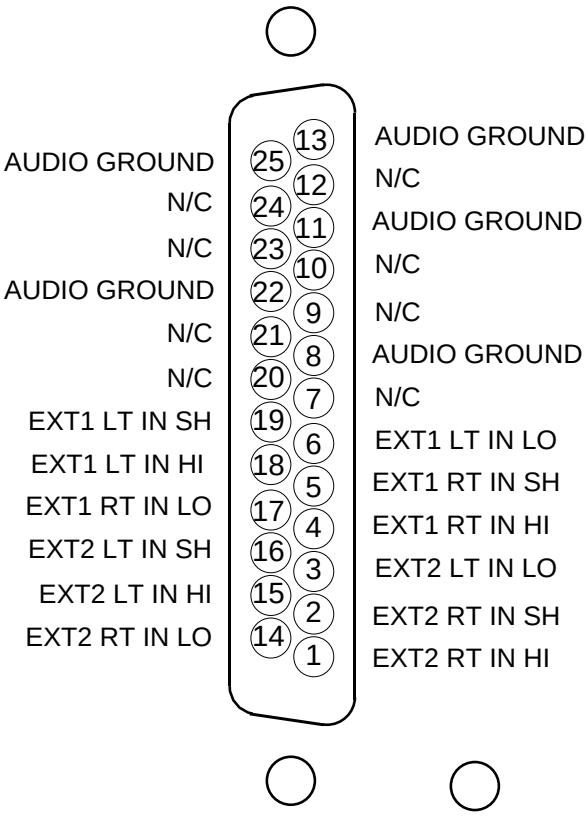
Pin 19 – ST Lt Out SH
Pin 18 – ST Lt Out HI
Pin 6 – ST Lt Out LO

Pin 5 – ST Rt Out SH
Pin 4 – ST Rt Out HI
Pin 17 – ST Rt Out LO

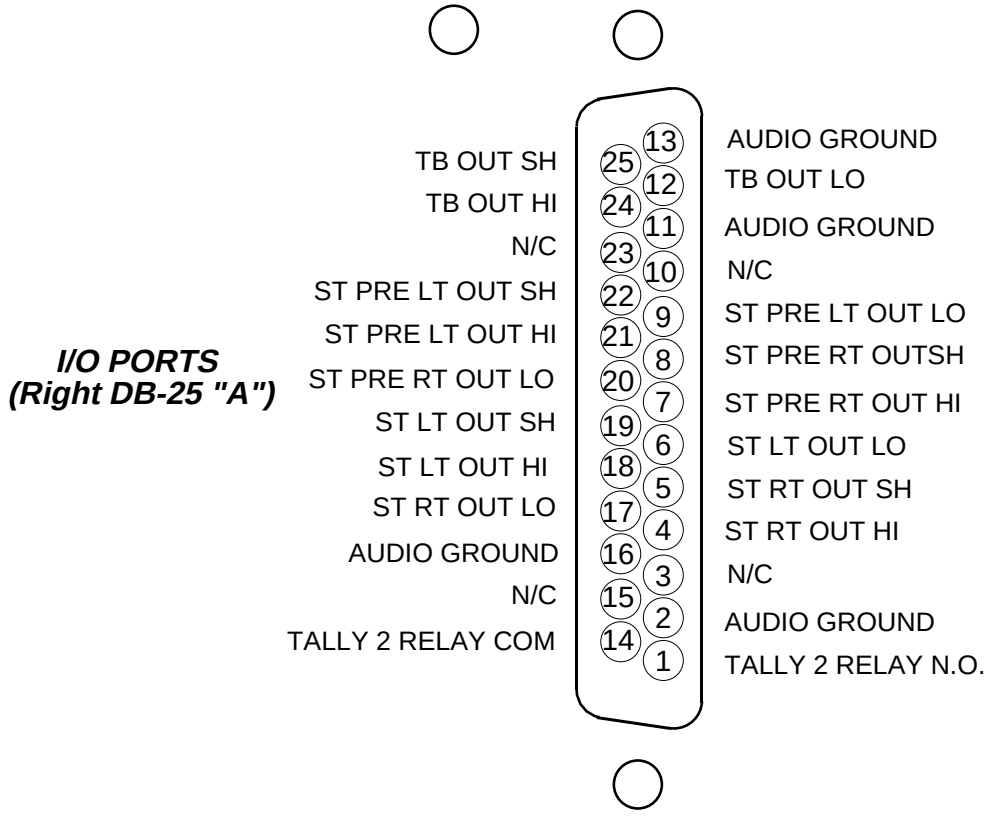
Pin 2 – SH
Pin 1 – Tally 2 Relay N.O.
Pin 14 – Tally 2 Relay COM

SC-75 Studio Control Module

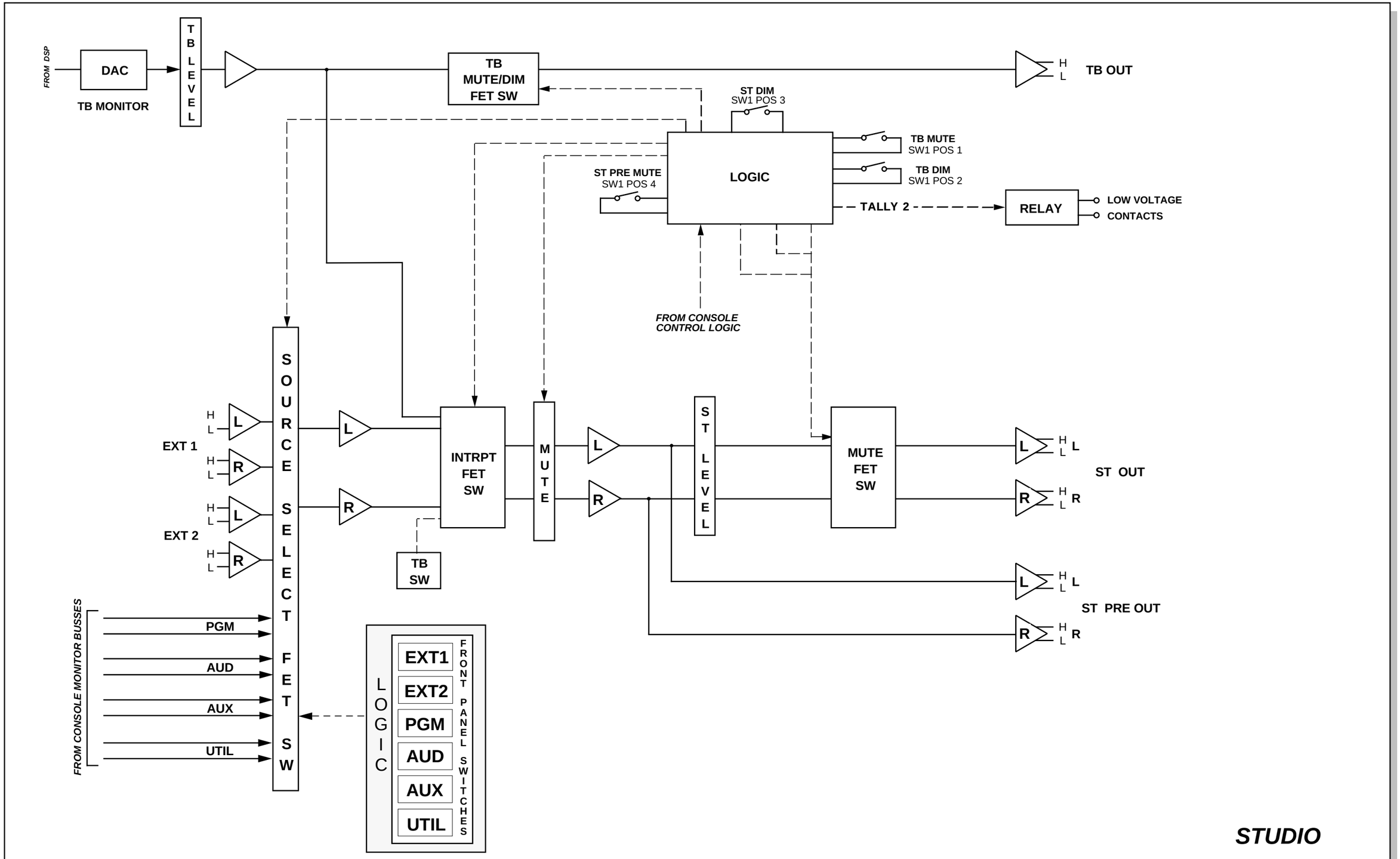
DB Connector Pinouts



I/O PORTS (Left DB-25 "B")



I/O PORTS (Right DB-25 "A")



SC-75 Studio Control Module - Signal Flow Diagram

Superphone Input

(SP-75; optional)

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Automatic Features 7-3
Inputs and Outputs 7-3

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Timer Restart 7-4
Tallies 7-4
Cue Dropout 7-4
External Input 7-4
Gain Trimpots 7-4

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Right DB-25 “A” Connector—Audio 7-6

DB Connector Pinout Drawing 7-7

Superphone Input Module Signal Flow 7-8

Superphone Input (SP-75; optional)

Module Overview

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

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

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

Caller Set-Ups

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

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

For convenient handling of call-ins, the console ships with the UTIL bus assignments from IN-75 input modules made pre-fade and pre-on. That way, when you use UTIL as the caller MXM FEED source, the DJ mic, and any other inputs you want the caller to hear, do not need to be turned on or faded up for the callers to hear them, as long as those inputs are assigned to UTIL. If desired, the input pre-fade, pre-on feed to UTIL can be defeated (see page 10-4), resulting in UTIL being fed post-fade, post-on for all inputs. Regardless of this setting, the caller audio to the UTIL bus is always post-fade, post-on.

The DJ microphone input module can also be assigned via dipswitch to the console's talkback (TB) bus. Any audio on the TB bus is heard by a caller when that caller's cue button is pressed, if the Hybrid 1 Out and Hybrid 2 Out connections are used.

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

Automatic Features

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

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

Inputs and Outputs

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

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

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

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

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

Internal Programming Options

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

Cue Pre/Post

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

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

Mutes

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

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

SW1 position 5 mutes studio when the phone module is ON

*factory default settings

Timer Restart

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

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

*factory default settings

Tallies

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

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

SW1 position 4 activates tally 2

Cue Dropout

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

SW1 position 1 activates cue dropout

External Input

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

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

Gain Trimpots

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

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

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

Hook-Ups

As stated before, all user wiring to and from the SP-75 modules takes place at two multi-pin DB-25 connectors mounted on the top of the module.

Left DB-25 "B" Connector — Audio and Control

Handles module's Composite, Mics, Callers, Hybrid 1, and Hybrid 2 audio outputs, and the remote start and stop outputs. All audio signals are analog mono.

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

Pin 11 – Mics Out SH
Pin 10 – Mics Out HI
Pin 23 – Mics Out LO

Pin 22 – Callers Out SH
Pin 21 – Callers Out HI
Pin 9 – Callers Out LO

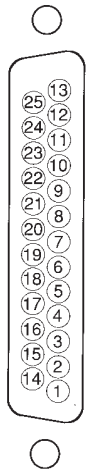
Pin 8 – Hybrid 1 Out SH
Pin 7 – Hybrid 1 Out HI
Pin 20 – Hybrid 1 Out LO

Pin 19 – Hybrid 2 Out SH
Pin 18 – Hybrid 2 Out HI
Pin 6 – Hybrid 2 Out LO

Pin 5 – N/C
Pin 4 – Start/Stop Com
Pin 17 – Start/Stop Com

Pin 16 – Stop
Pin 15 – Start
Pin 3 – Stop

Pin 2 – Start
Pin 1 – N/C
Pin 14 – N/C



Typical DB-25 connector

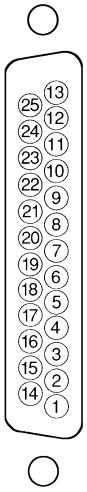
To START and STOP Remote Source Machines Using Module ON/OFF Switches

EXTERNAL START — Hook up the remote machine's Start control pins to the SP-75 module's DB-25 connector control pins: for START wire to pins 2 (15) and 4 (17).

EXTERNAL STOP — Hook up the remote machine's Stop control pins to the SP-75 module's DB-25 connector control pins: for STOP wire to pins 3 (16) and 4 (17).

When the module's ON/START switch is pressed, an opto-isolated closure takes place between START/STOP COMMON and START; when the module's OFF switch is pressed, an opto-isolated closure takes place between START/STOP COMMON and STOP. These may be used to control a remote tape machine for recording phone segments.

Note, there are not two independent START and STOP outputs. There are just two connections provided for each signal. Internally, pins 4 and 17 are connected together, pins 2 and 15 are connected together, and pins 3 and 16 are connected together.



Typical DB-25 connector

Right DB-25 "A" Connector — Audio

Handles module's mono External and Hybrid inputs. All audio signals are analog stereo, +4dBu balanced.

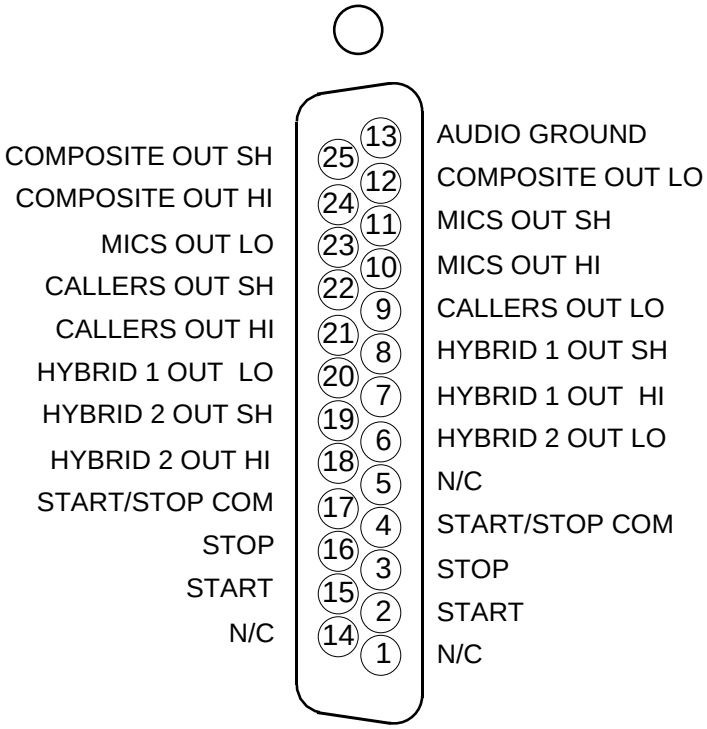
Pin 25 – Ext In SH
Pin 24 – Ext In HI
Pin 12 – Ext In LO

Pin 22 – Caller 1 In SH
Pin 21 – Caller 1 In HI
Pin 9 – Caller 1 In LO

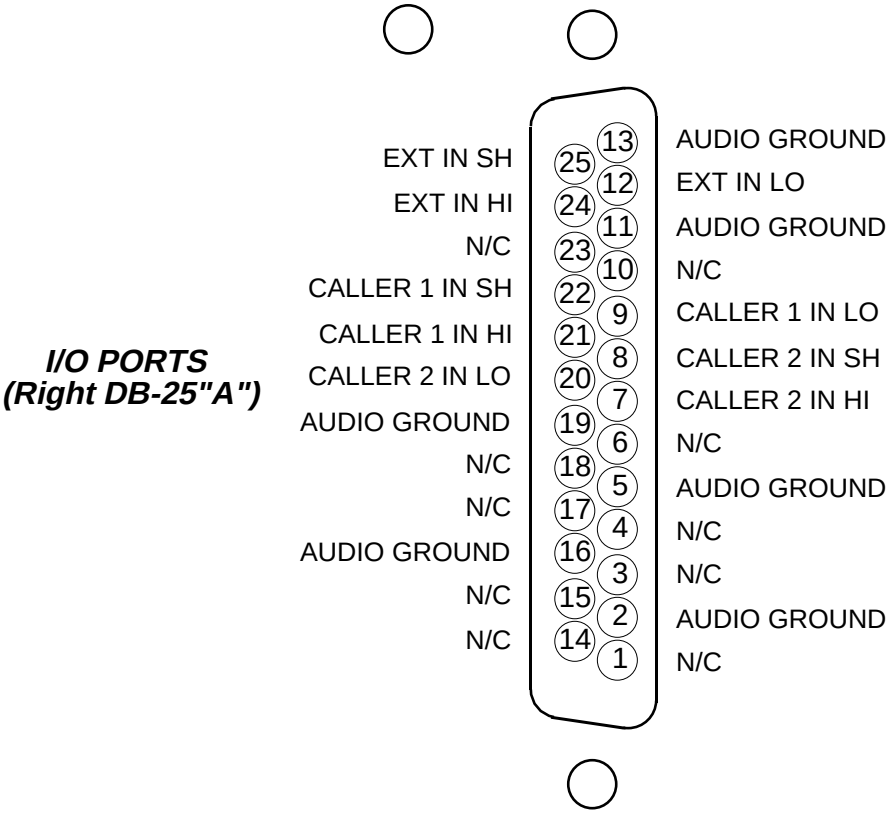
Pin 8 – Caller 2 In SH
Pin 7 – Caller 2 In HI
Pin 20 – Caller 2 In LO

SP-75 Superphone Input Module

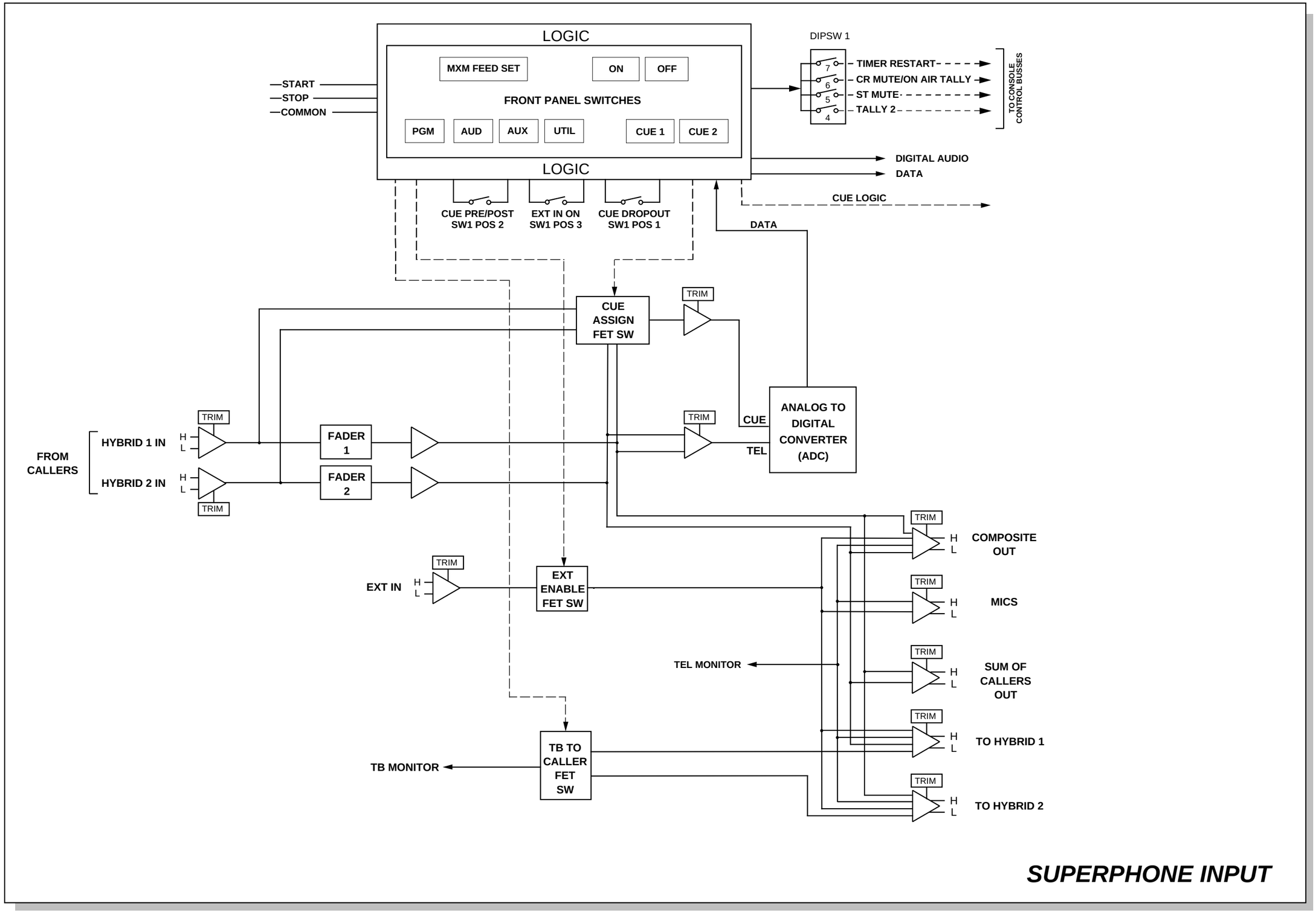
DB Connector Pinouts



I/O PORTS
(Left DB-25 "B")



I/O PORTS
(Right DB-25"A")


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

Line Preselect Module

(LS-75; optional)

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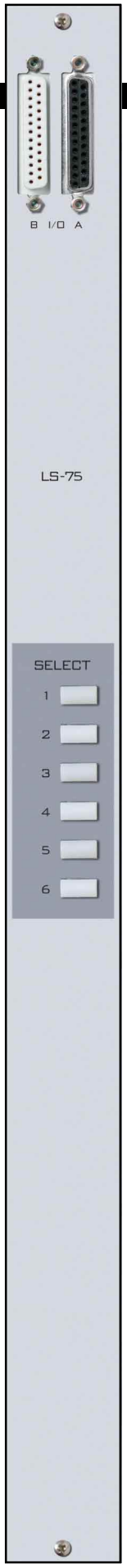
Left DB-25 “B” Connector — Audio Outputs 8-3
Right DB-25 “A” Connector — Audio Inputs 8-3

DB Connector Pinout Drawing **8-5**

Line Preselect Module Signal Flow **8-6**



Line Preselect Module
(LS-75; optional)

Module Overview

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

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

Internal Programming Options

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

Hook-Ups

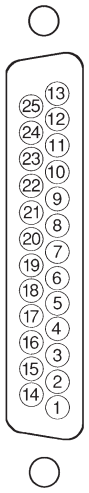
Left DB-25 “B” Connector — Audio Inputs 5, 6

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

Left DB-25 “B” Connector — Audio Outputs

Pin 19 – Line Lt Out SH
Pin 18 – Line Lt Out HI
Pin 6 – Line Lt Out LO

Pin 5 – Line Rt Out SH
Pin 4 – Line Rt Out HI
Pin 17 – Line Rt Out LO

Right DB-25 “A” Connector — 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

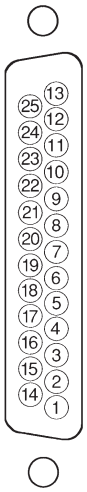
Pin 22 – Line 2 Lt In SH
Pin 21 – Line 2 Lt In HI
Pin 9 – Line 2 Lt In LO

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

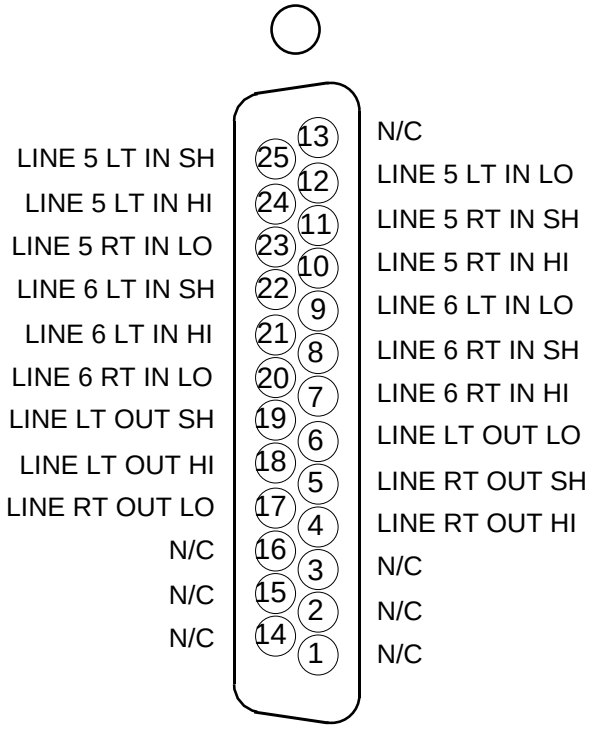
Pin 16 – Line 4 Lt In SH
Pin 15 – Line 4 Lt In HI
Pin 3 – Line 4 Lt In LO
Pin 2 – Line 4 Rt In SH
Pin 1 – Line 4 Rt In HI
Pin 14 – Line 4 Rt In LO



Typical DB-25 connector

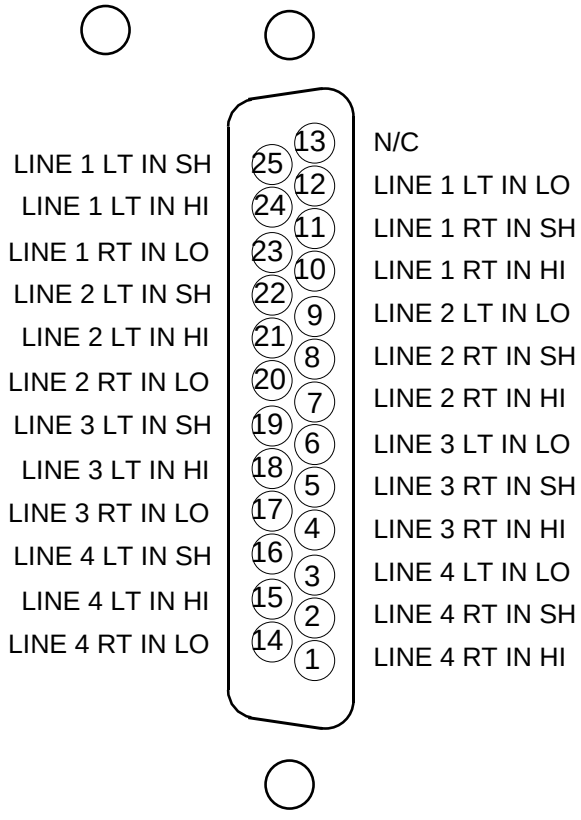
LS-75 Line Preselector Module

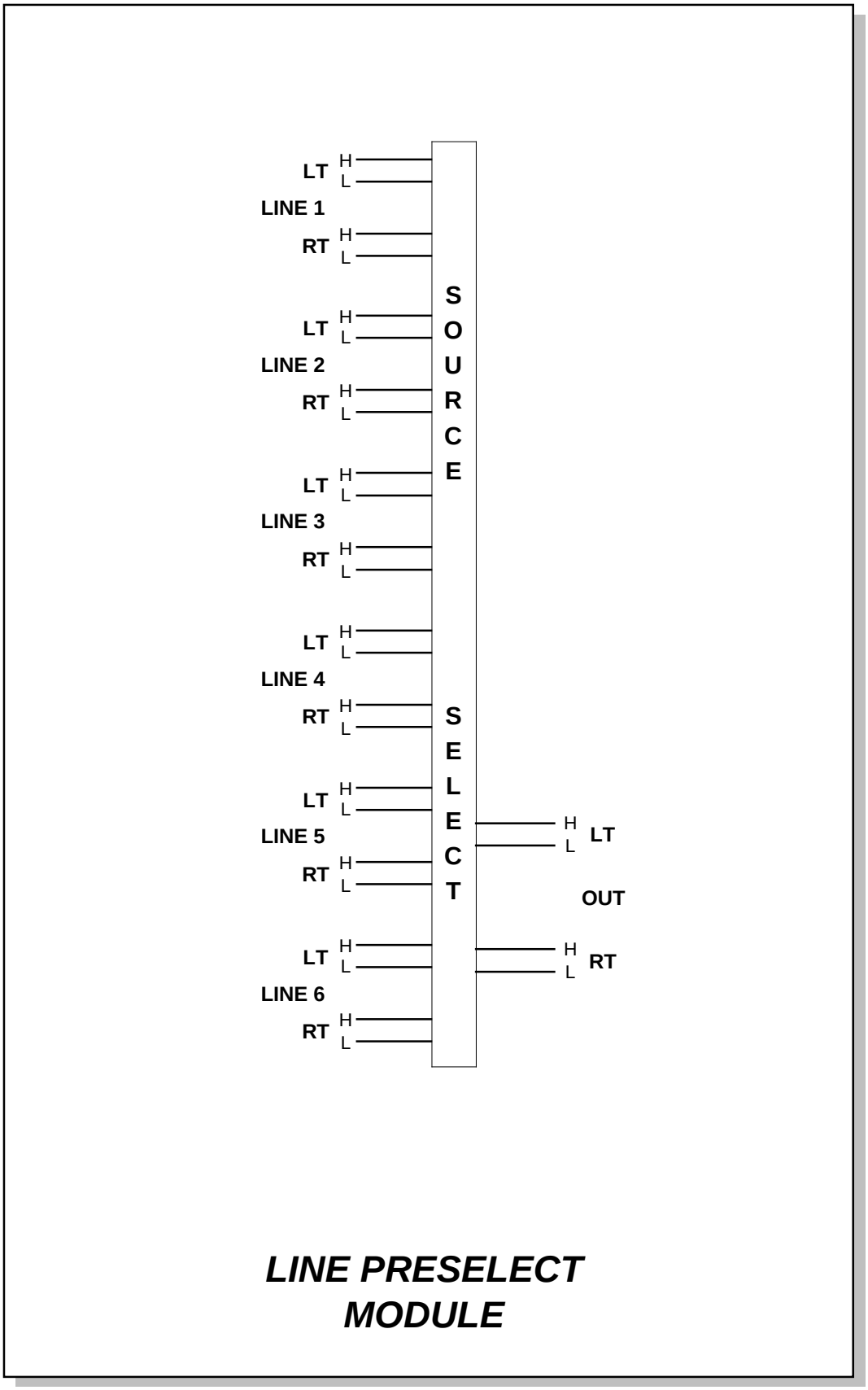
DB Connector Pinouts



INPUT/OUTPUT PORTS (Left DB-25 "B")

INPUT PORTS (Right DB-25 "A")





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

Tape Remote Module

(TR-75; optional)

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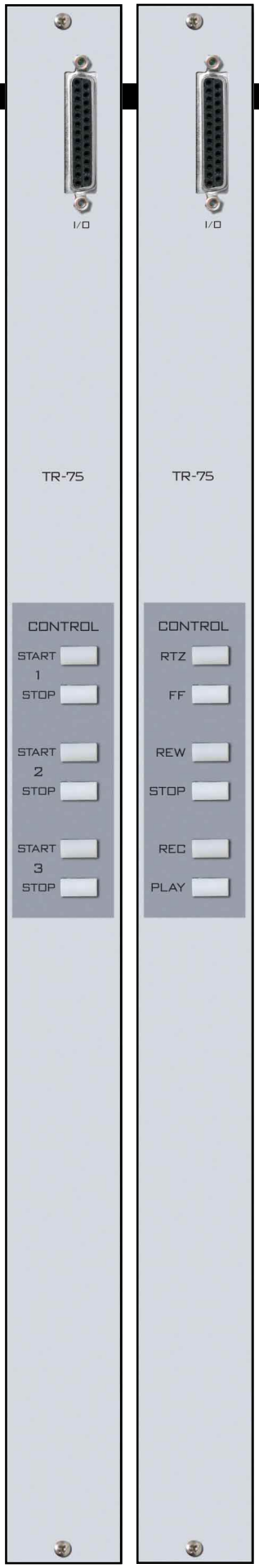
DB Connector Pinout Drawings

START/STOP Function Control I/O 9-3
Full-Function Control I/O 9-4



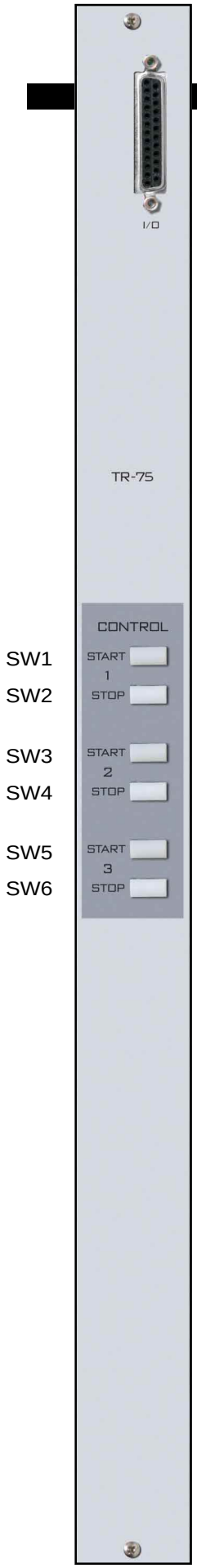
Tape Remote Module (TR-75; optional)

Module Overview

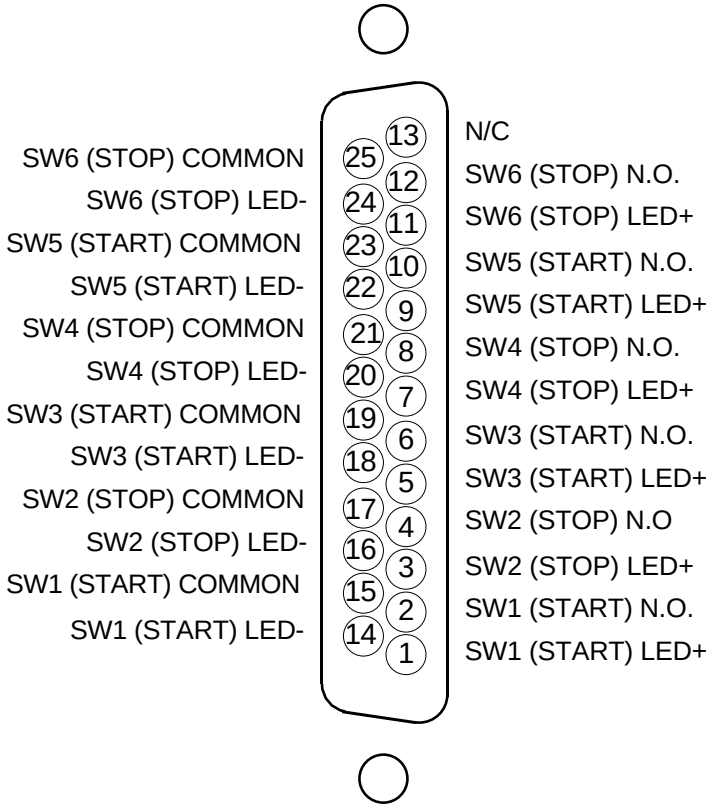
This optional module is available in two versions. The START/STOP version offers three sets of START and STOP buttons to provide start-stop control of three remote reel-to-reel machines. The full function version provides RTZ, FF, REW, STOP, REC, and PLAY buttons for a single machine. LED indicators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

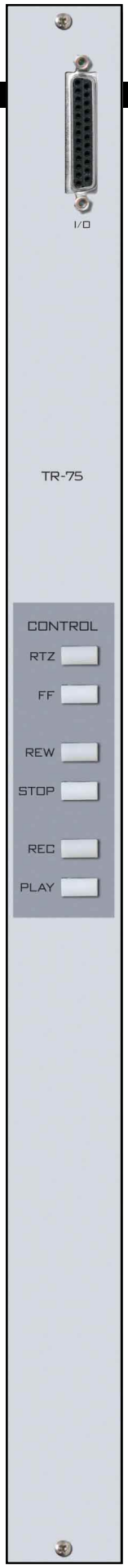
TR-75/SS Tape Remote Module

DB Connector Pinouts



I/O CONTROL PORTS (DB-25)

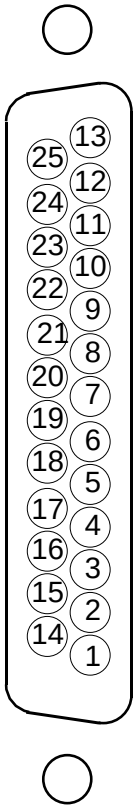




TR-75/FF Tape Remote Module

DB Connector Pinouts

I/O CONTROL PORTS (DB-25)



SW6 (PLAY) COMMON	25	13	N/C
SW6 (PLAY) LED-	24	12	SW6 (PLAY) N.O.
SW5 (REC) COMMON	23	11	SW6 (PLAY) LED+
SW5 (REC) LED-	22	10	SW5 (REC) N.O.
SW4 (STOP) COMMON	21	9	SW5 (REC) LED+
SW4 (STOP) LED-	20	8	SW4 (STOP) N.O.
SW3 (REW) COMMON	19	7	SW4 (STOP) LED+
SW3 (REW) LED-	18	6	SW3 (REW) N.O.
SW2 (FF) COMMON	17	5	SW3 (REW) LED+
SW2 (FF) LED-	16	4	SW2 (FF) N.O
SW1 (RTZ) COMMON	15	3	SW2 (FF) LED+
SW1 (RTZ) LED-	14	2	SW1 (RTZ) N.O.
		1	SW1 (RTZ) LED+

Meterbridge

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Console Clock 10-3

Controls 10-3
Setting the Time 10-3
Capacitor Backup 10-3
Operational Modes 10-3
24 Hour Mode 10-3
External Sync 10-4
Dim 10-4

UTIL Pre-Fade / Pre-On Defeat 10-4

B Source Logic Options 10-5

External AES Sync Input 10-5

Meterbridge

Overview

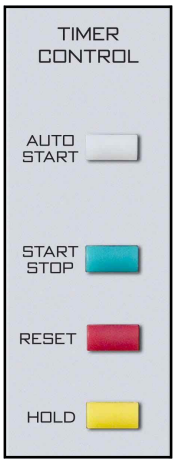
The console's meterbridge houses two pairs of left-right LED meters (Program and Switched; see "Output Module" Chapter 4), the digital timer display, the cue speaker, and the console clock.

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

Digital Timer

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

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



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

RESET has a dual-mode capability:

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

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

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

Console Clock

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

Controls

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

Setting the Time

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

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

Capacitor Backup

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

Operational Modes

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

24 Hour Mode

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

SW1 position 1 enables 24 hour mode

External Sync

The clock can be synchronized to an external 1Hz signal (input on pin 1 of CT8, referenced to digital common at pin 2 of CT8) or an external 60Hz signal (input on pin 1 of CT9, referenced to digital common at pin 2 of CT9).

SW1 position 2 enables synchronization to the 1Hz input

SW1 position 3 enables synchronization to the 60Hz input

Additionally, the clock can be synchronized from an ESE master generating TC-89 time code, brought in on pin 1 of CT10 and referenced to digital common at pin 2 of CT10.

Dim

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

SW1 position 4 enables clock and timer display dimming

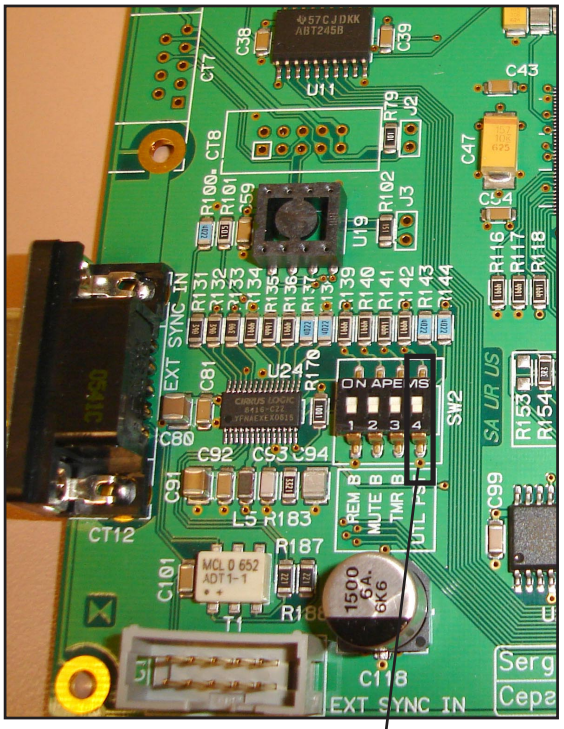
UTIL Pre-Fade / Pre-On Defeat

As shipped from the factory, D-75 input modules feed the UTIL bus pre-fade, pre-on. This feature can be defeated for all input modules via position 4 of dipswitch SW2 on the PR-75 circuit board, located in the meterbridge area, using the following procedure:

1. power down the console
2. open the meterbridge to provide access to PR-75 board
3. remove the 8 screws that hold the clear plexiglass cover over the PR-75 board
4. do one of the following (4a or 4b):

   4a. if the dipswitch is loaded on the board, throw position 4 to the ON position, OR

   4b. if there is no dipswitch present, solder a jumper across the two position 4 pads (see photo).
5. replace the cover over the PR-75 board
6. close the meterbridge
7. power up the console



Please note, it is not possible to have some inputs feed UTIL pre-fade and pre-on and have other inputs feed UTIL post-fade and post-on. With SW2 position 4 open all inputs feed UTIL pre-fade, pre-on, and with SW2 position 4 closed all inputs feed UTIL post-fade, post-on.

B Source Logic Options

As shipped from the factory the following IN-75 features only work, by default, when source A is selected on a module: remote logic functions, with the exception of the B tally; mutes and tallies; and timer restart. Dipswitch SW2 on the PR-75 module in the meterbridge provided a way to enable these features for B sources.

PR-75 SW2 position 1 (REM B) activates remote logic for B sources when ON

PR-75 SW2 position 2 (MUTE B) activates mutes and tallies for B sources when ON

PR-75 SW2 position 3 (TMR B) activates timer restart for B sources when ON

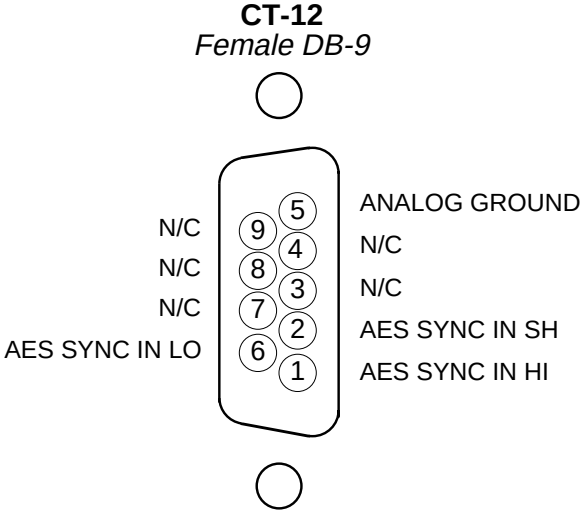
These settings are global in nature; each dipswitch setting affects all IN-75 modules at the same time. In other words, if you need to, for example, do a CR mute from a B source on one module, then any other module that does a CR mute will also mute from the B source.

To make these settings, follow the directions shown on page 10-4 for UTIL Pre-Fade/ Pre-On Defeat, but substitute the dipswitch position required, as listed above.

In the case of mutes, tallies, and timer restart, note that the appropriate dipswitch setting on the individual IN-75 module must also be set. That is, if you enable B timer restart, a module must still have the timer restart dipswitch set for that module to do a timer restart.

External AES Sync Input

The PR-75 board is provided with connector CT-12, a DB-9, to allow the console's sample rate to by synchronized to an external AES Black signal (Word Clock is *not* supported). If a valid AES sync signal is connected, the console automatically synchronizes to this signal, and if the signal disappears or becomes invalid the console automatically switches back to the internal sample rate clock. The internal sample rate should be set to the same frequency as the external sync to avoid drastic sample rate changes if the external sync is lost.



Schematics and Load Sheets

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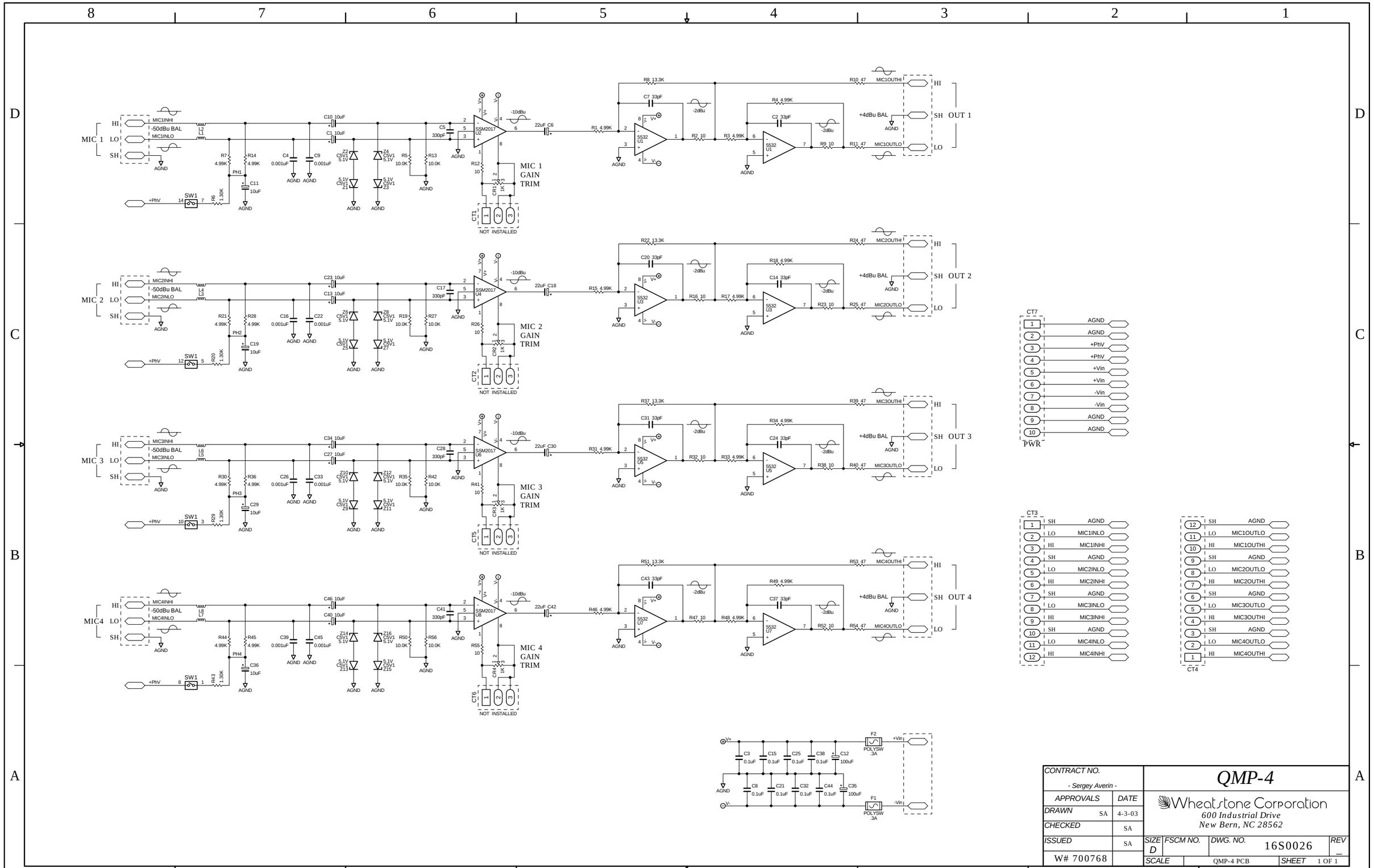
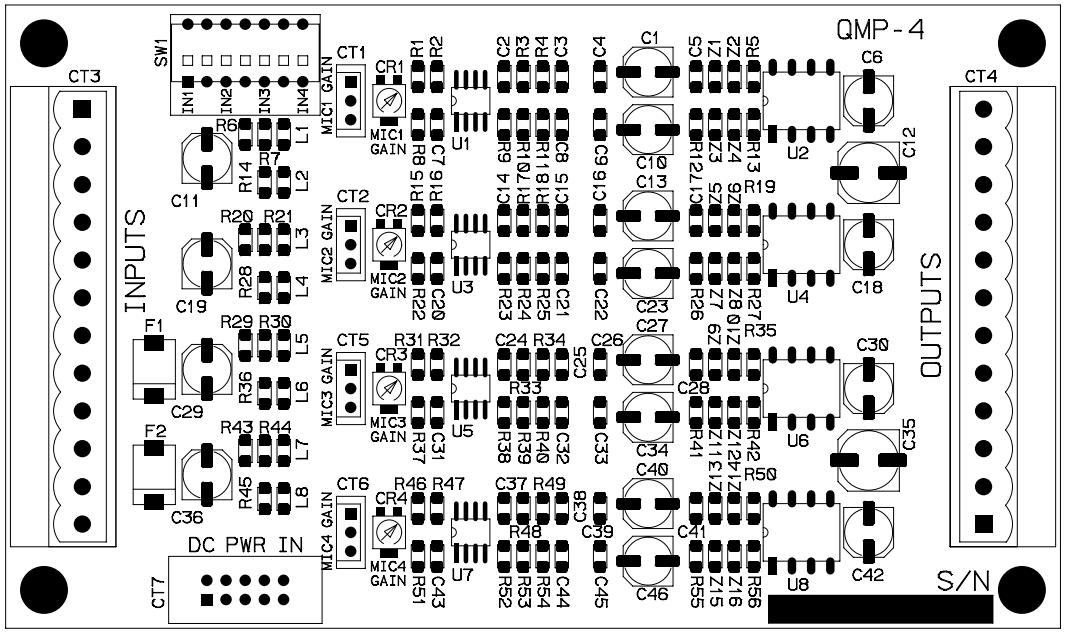
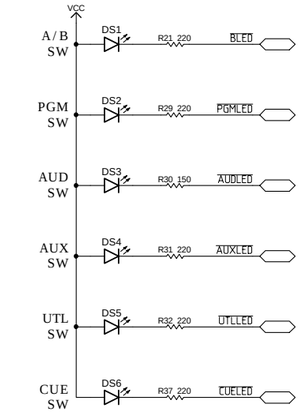
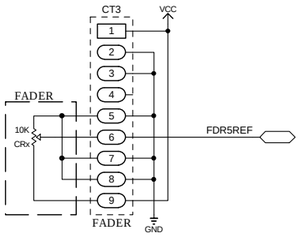


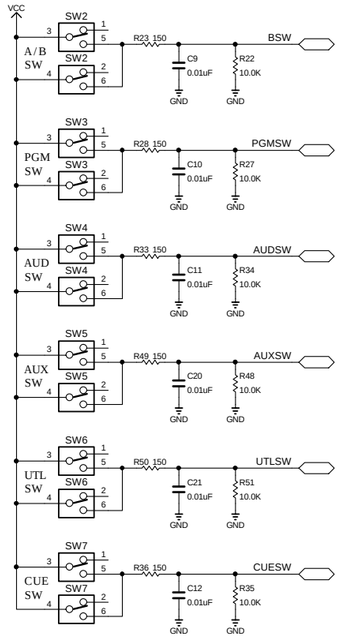
CONTRACT NO. - Sergey Averin -		QMP-4	
APPROVALS	DATE	Wheatstone Corporation 600 Industrial Drive New Bern, NC 28562	
DRAWN SA	4-3-03		
CHECKED	SA		
ISSUED	SA	SIZE D / FSCM NO. / DWG. NO. 16S0026 / REV —	
W# 700768		SCALE QMP-4 PCB / SHEET 1 OF 1	

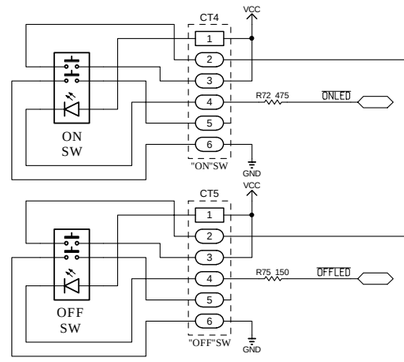


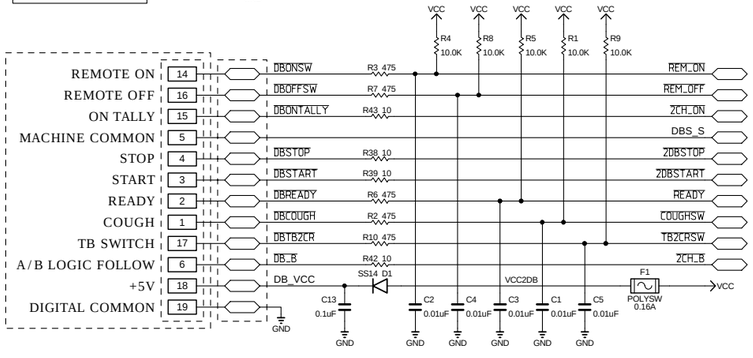
QMP-4 Quad Mic Preamp - Load Sheet

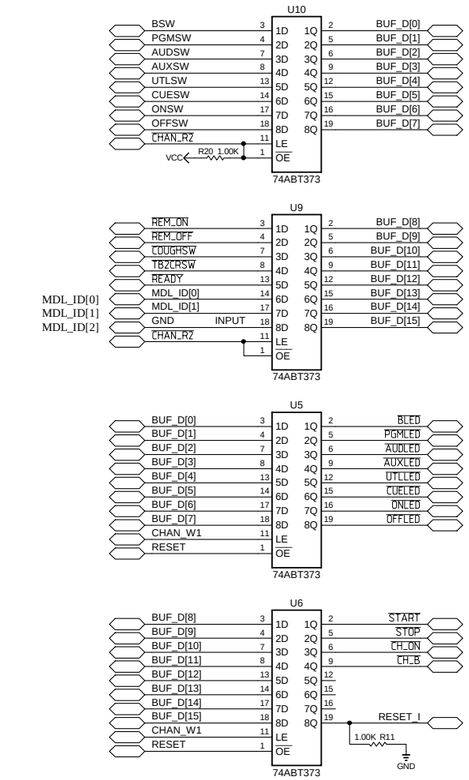


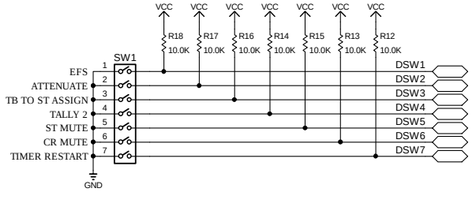


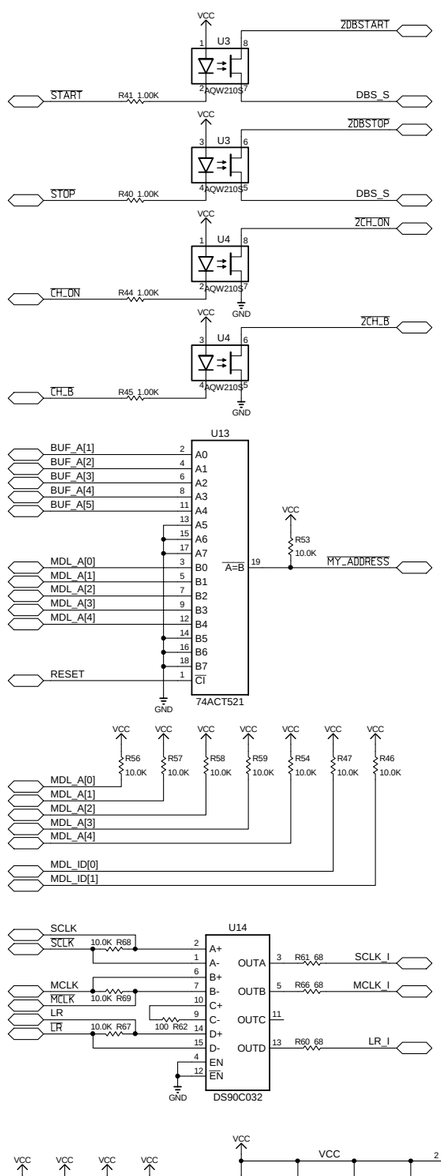


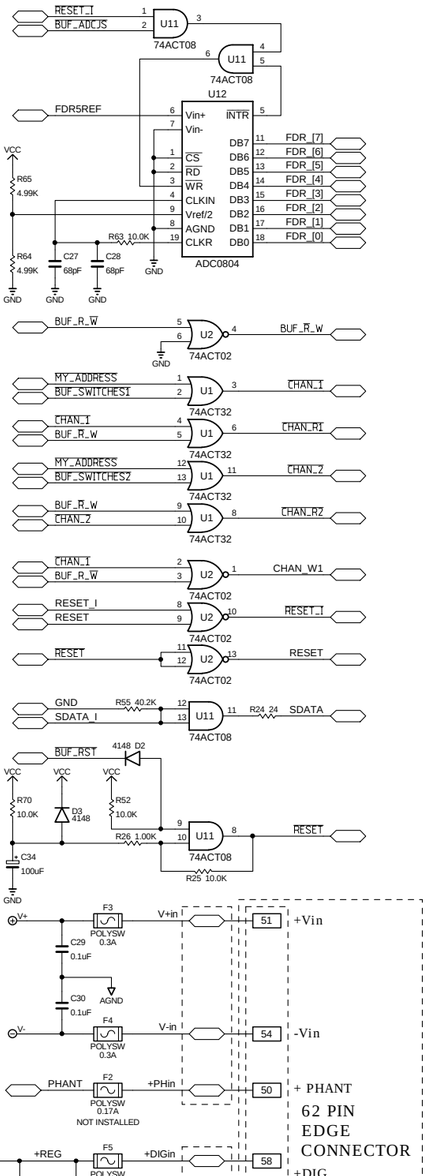








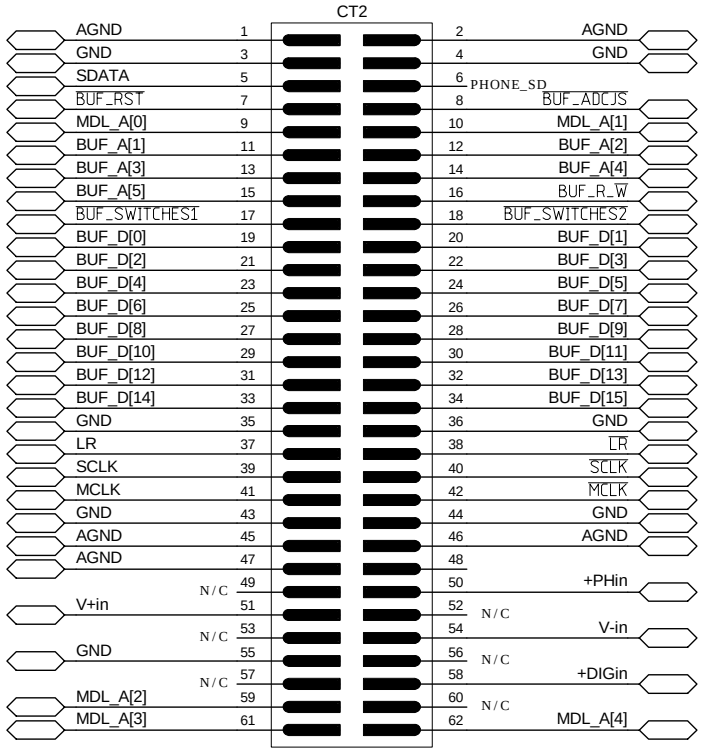


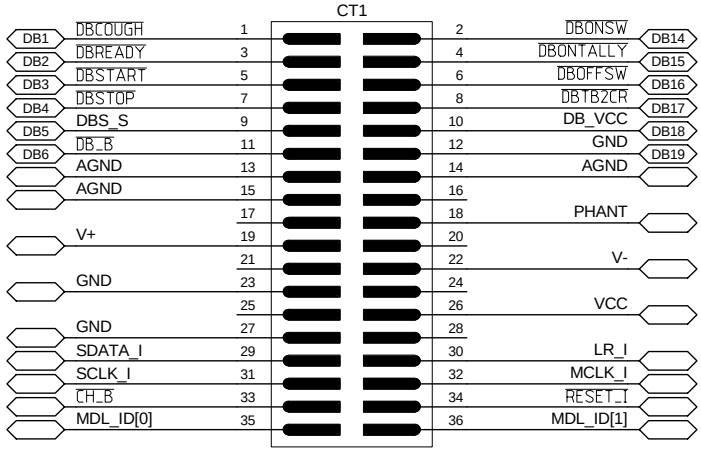


CONTRACT NO.		IN-75
- SA UR US - Sergey Averin -		
APPROVALS	DATE	Wheatstone Corporation
DRAWN WWP	9-11-13	600 Industrial Drive
CHECKED	MM	New Bern, NC 28562
ISSUED	WWP	SIZE D / FSCM NO. / DWG. NO. 16S1002 / REV B1
W# 700801		SCALE IN-75B PCB / SHEET 1 OF 2

IN-75 Input Module Schematic - Sheet 1 of 2

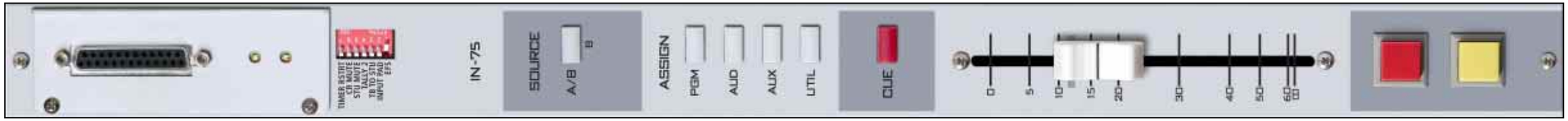
EDGE CONNECTOR BUSS CHART

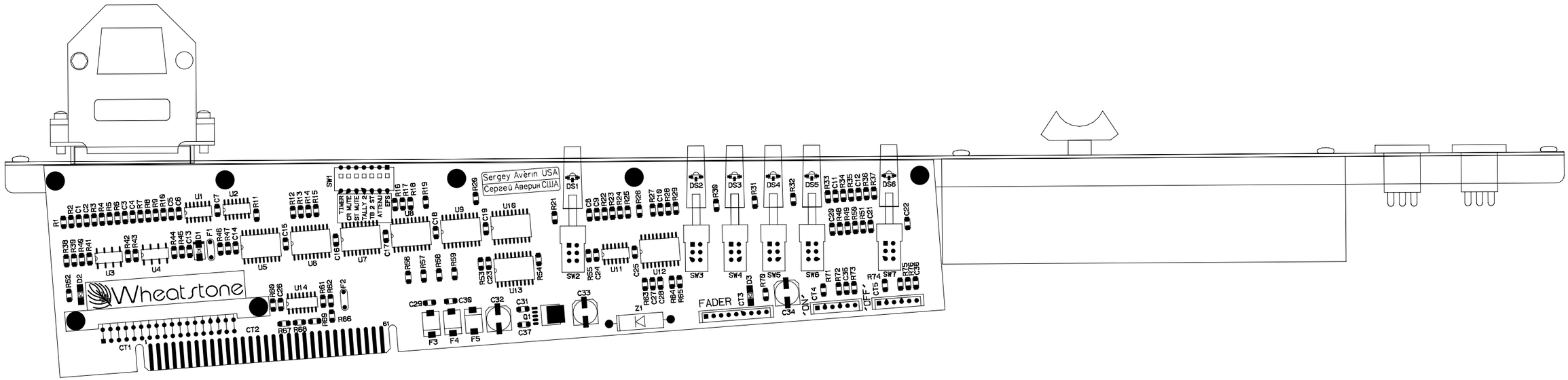


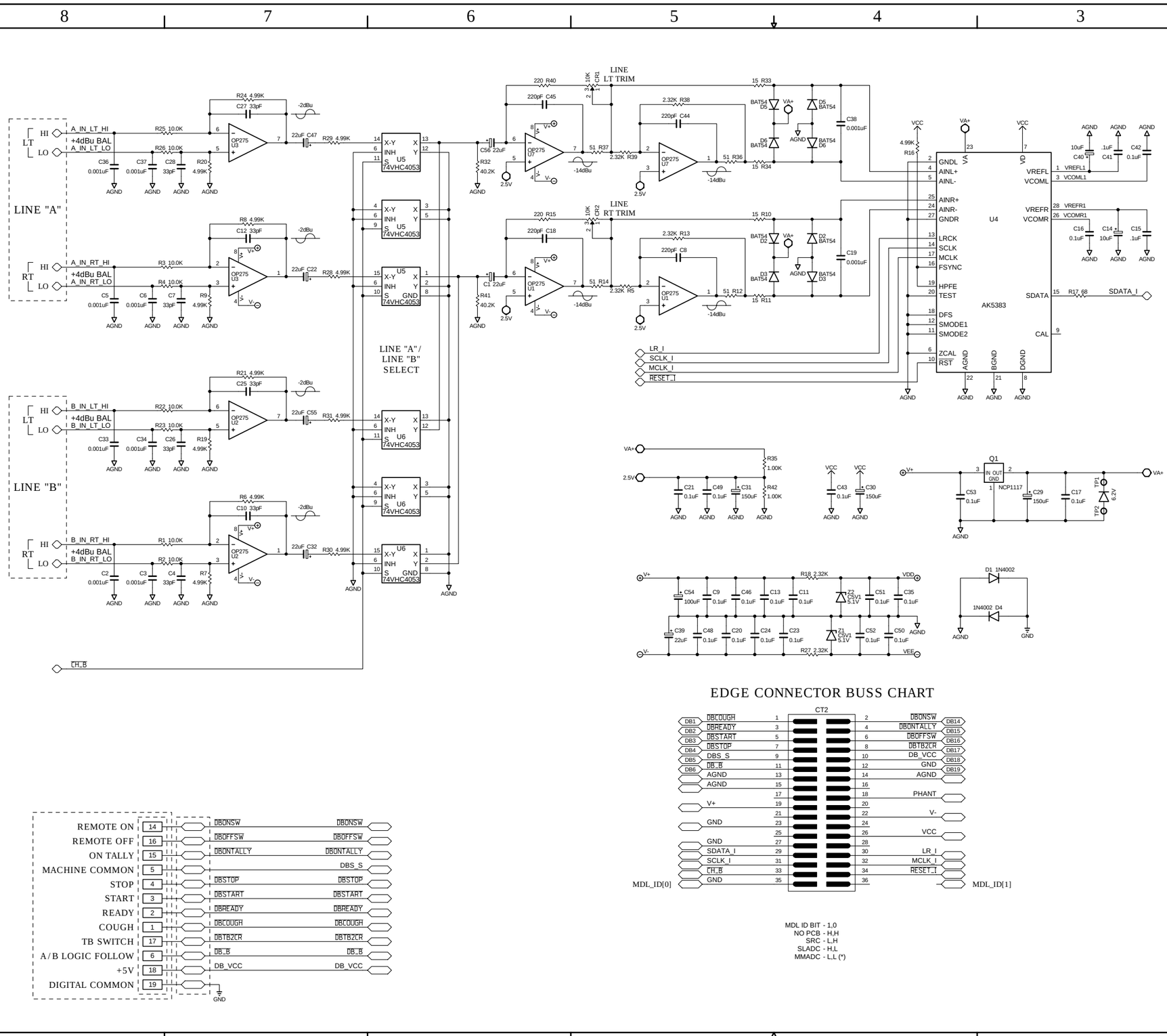


CONTRACT NO. - SA UR US - Sergey Averin -		IN-75	
APPROVALS	DATE	Wheatstone Corporation, 600 Industrial Drive, New Bern, NC 28562	
DRAWN WWP	9-11-13		
CHECKED	MM		
ISSUED	WWP	SIZE B / FSCM NO. / DWG. NO. 16S1003 / REV B1	
W# 700801		SCALE IN-75B PCB	SHEET 2 OF 2

IN-75 Input Module Schematic - Sheet 2 of 2


IN-75
SOURCE
A/B
ASSIGN
PGM
AUD
AUX
UTIL
CUE
0
5
10
15
20
30
40
50
60


Sergey Averin USA
Сергей Аверин США
Wheatstone
FADER



ADC-75 INPUT

DB Connector Pinouts

I/O PORTS

DB-25 CONNECTOR

LINE "A" LT IN SH	25	13 AUDIO COMMON
LINE "A" LT IN HI	24	12 LINE "A" LT IN LO
LINE "A" RT IN LO	23	11 LINE "A" RT IN SH
LINE "B" LT IN SH	22	10 LINE "A" RT IN HI
LINE "B" LT IN HI	21	9 LINE "B" LT IN LO
LINE "B" RT IN LO	20	8 LINE "B" RT IN SH
DIGITAL GND	19	7 LINE "B" RT IN HI
+5V DIGITAL	18	6 "B" TALLY
TB TO CR	17	5 START/STOP COM.
REMOTE OFF	16	4 STOP
"ON" TALLY	15	3 START
REMOTE ON	14	2 READY
	1	COUGH

CT1

DB1	DBCOUGH	1	14 DBONSW DB14
DB2	DBREADY	2	15 DBONTALLY DB15
DB3	DBSTART	3	16 DBOFFSW DB16
DB4	DBSTOP	4	17 DBTBZCR DB17
DB5	DBS_S	5	18 DB_VCC DB18
DB6	DB_B	6	19 GND DB19
DB10	B_IN_RT_HI	7	20 B_IN_RT_LO DB23
DB8	AGND	8	21 B_IN_LT_HI DB24
DB12	B_IN_LT_LO	9	22 AGND DB22
DB10	A_IN_RT_HI	10	23 A_IN_RT_LO DB23
DB11	AGND	11	24 A_IN_LT_HI DB24
DB12	A_IN_LT_LO	12	25 AGND DB25
DB13	AGND	13	

EDGE CONNECTOR BUSS CHART

CT2

	DBCOUGH	1	2	DBONSW	
DB2	DBREADY	3	4	DBONTALLY	DB15
DB3	DBSTART	5	6	DBOFFSW	DB16
DB4	DBSTOP	7	8	DBTBZCR	DB17
DB5	DBS_S	9	10	DB_VCC	DB18
DB6	DB_B	11	12	GND	DB19
	AGND	13	14	AGND	
	AGND	15	16		
		17	18	PHANT	
	V+	19	20		
		21	22	V-	
	GND	23	24		
		25	26	VCC	
	GND	27	28		
	SDATA_I	29	30	LR_I	
	SCLK_I	31	32	MCLK_I	
	CH_B	33	34	RESET_I	
	GND	35	36		

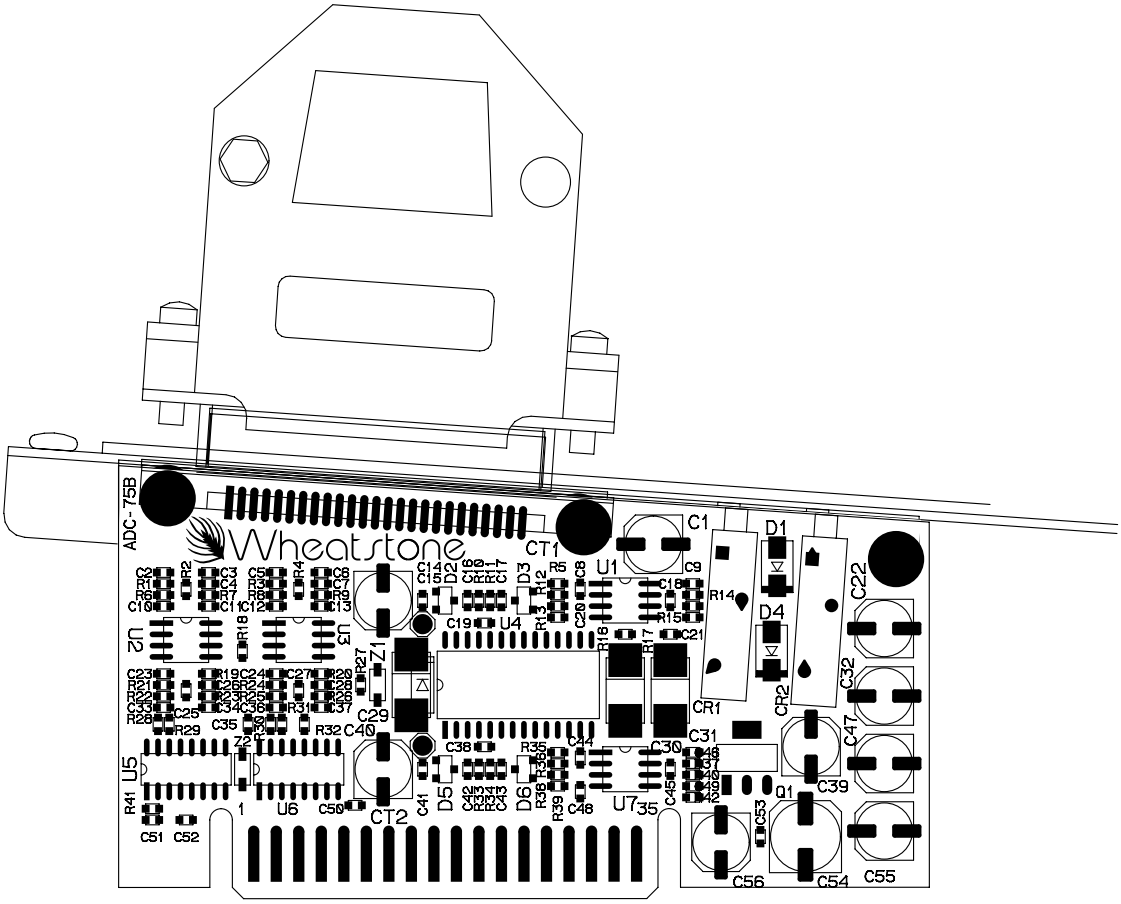
MDL ID BIT - 1,0
NO PCB - H,H
SRC - L,H
SLADC - H,L
MMADC - L,L (*)

REMOTE ON	14	DBONSW	DBONSW
REMOTE OFF	16	DBOFFSW	DBOFFSW
ON TALLY	15	DBONTALLY	DBONTALLY
MACHINE COMMON	5	DBS_S	DBS_S
STOP	4	DBSTOP	DBSTOP
START	3	DBSTART	DBSTART
READY	2	DBREADY	DBREADY
COUGH	1	DBCOUGH	DBCOUGH
TB SWITCH	17	DBTBZCR	DBTBZCR
A/B LOGIC FOLLOW	6	DB_B	DB_B
+5V	18	DB_VCC	DB_VCC
DIGITAL COMMON	19	GND	

36 PIN EDGE CONNECTOR

V+	19	+V
V-	22	-V
VCC	26	+5V
GND	27	DIG.COM.

CONTRACT NO. - SA UR US - Sergey Averin -		ADC-75	
APPROVALS	DATE	Wheatstone Corporation 600 Industrial Drive New Bern, NC 28562	
DRAWN WWP	3-30-10		
CHECKED	DB		
ISSUED	WWP	SIZE D / FSCM NO. / DWG. NO. 16S100x / REV B	
W# 700802		SCALE ADC-75B PCB / SHEET 1 OF 1	

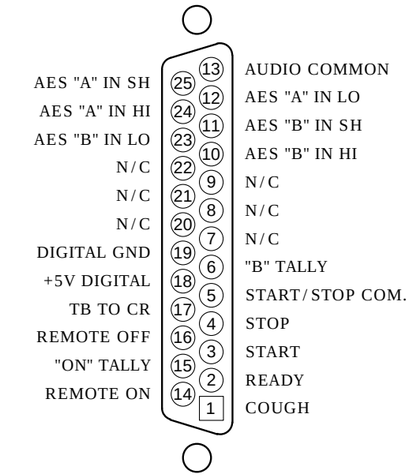


ADC-75 A to D Converter - Load Sheet

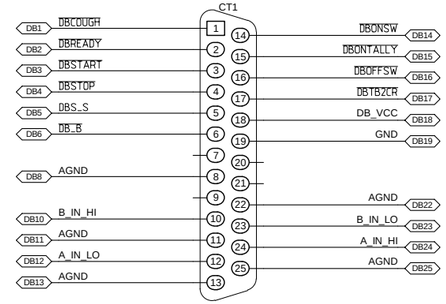
SRC-75 INPUT

DB Connector Pinouts

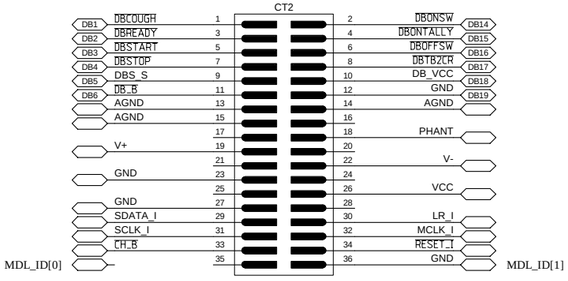
I/O PORTS



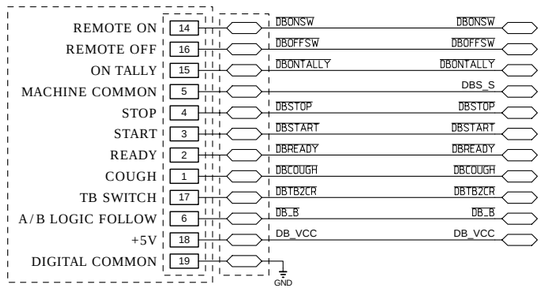
DB-25 CONNECTOR

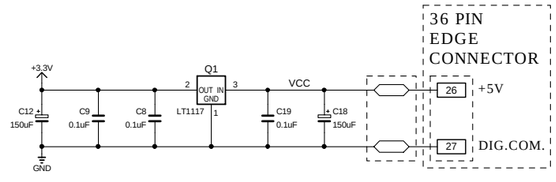


EDGE CONNECTOR BUSS CHART

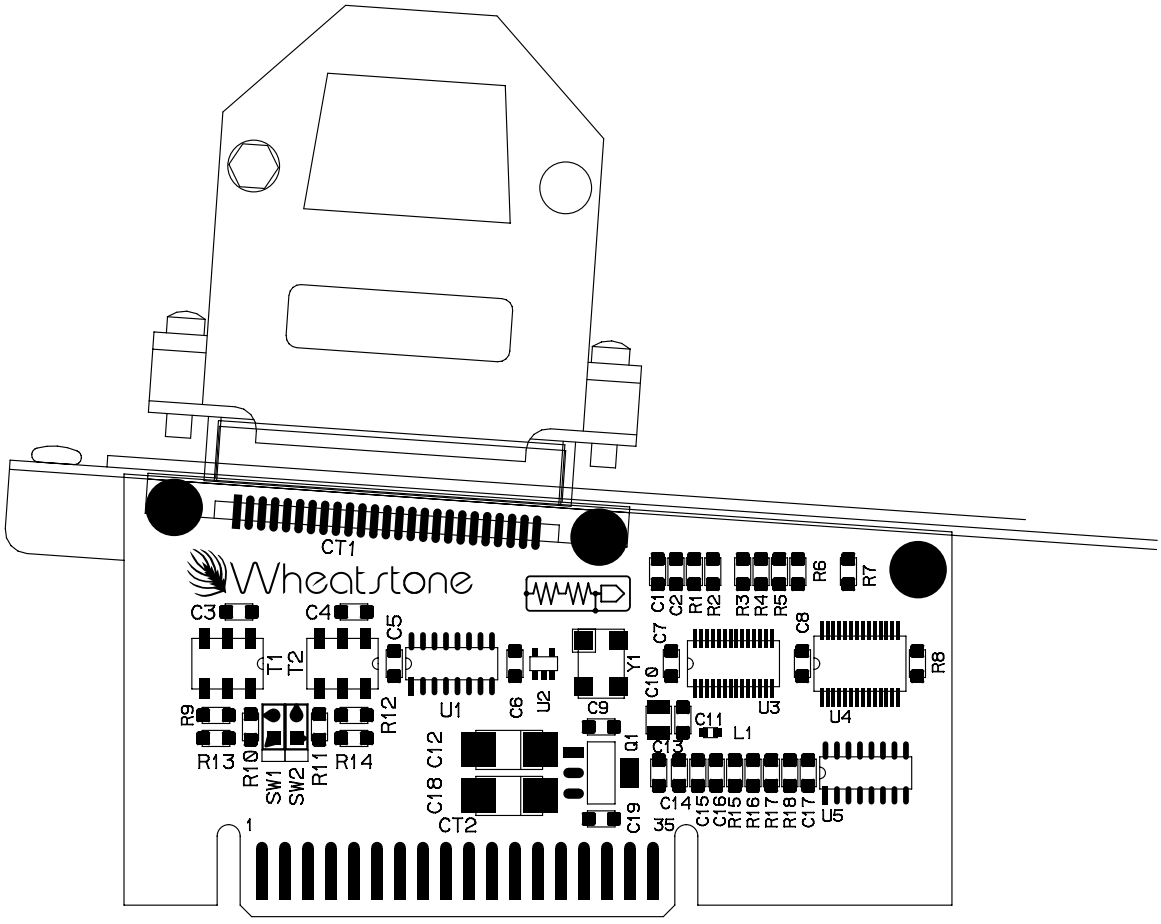


MDL ID BIT - 1,0
NO PCB - H,H
SRC - L,H
SLADC - H,L
MMADC - L,L (*)

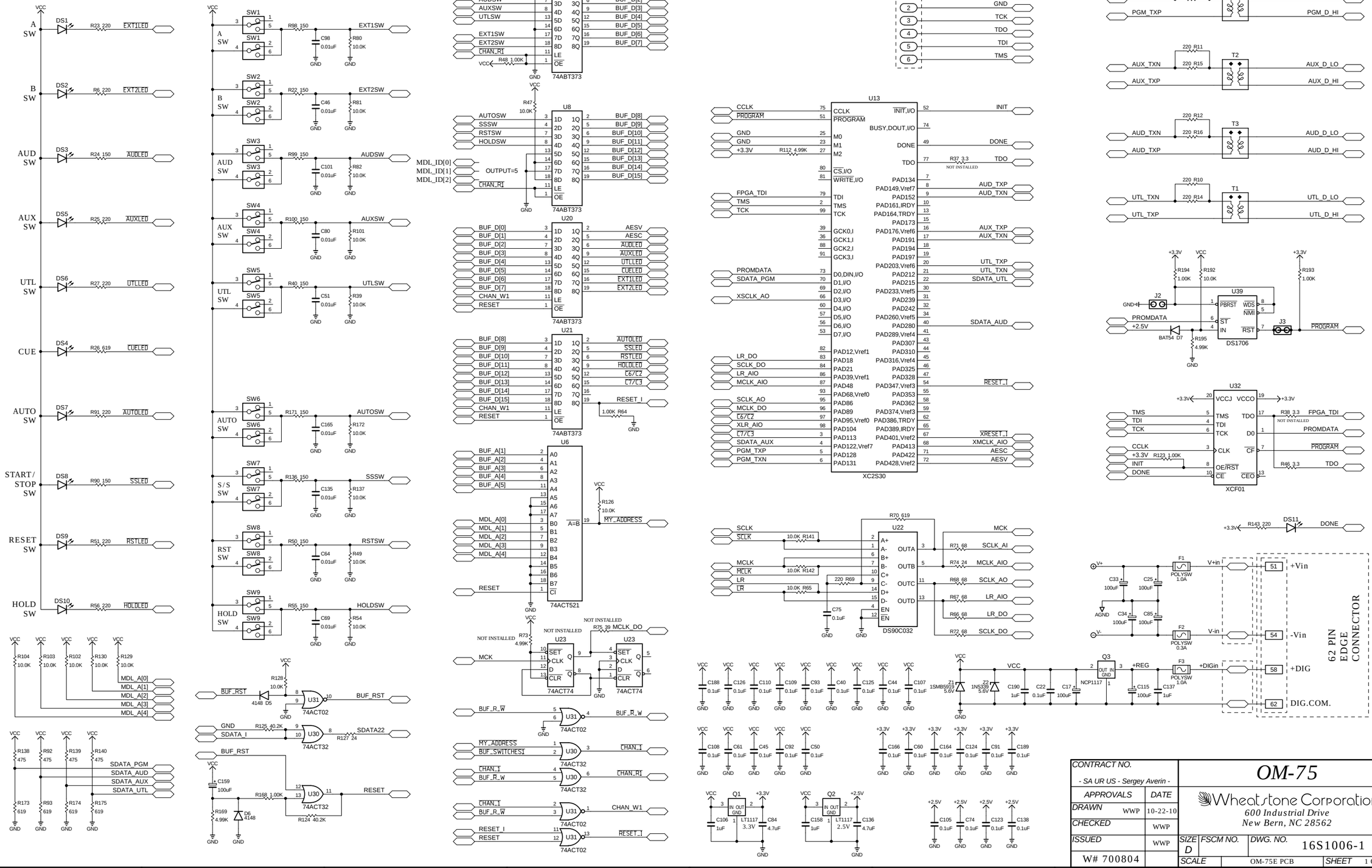


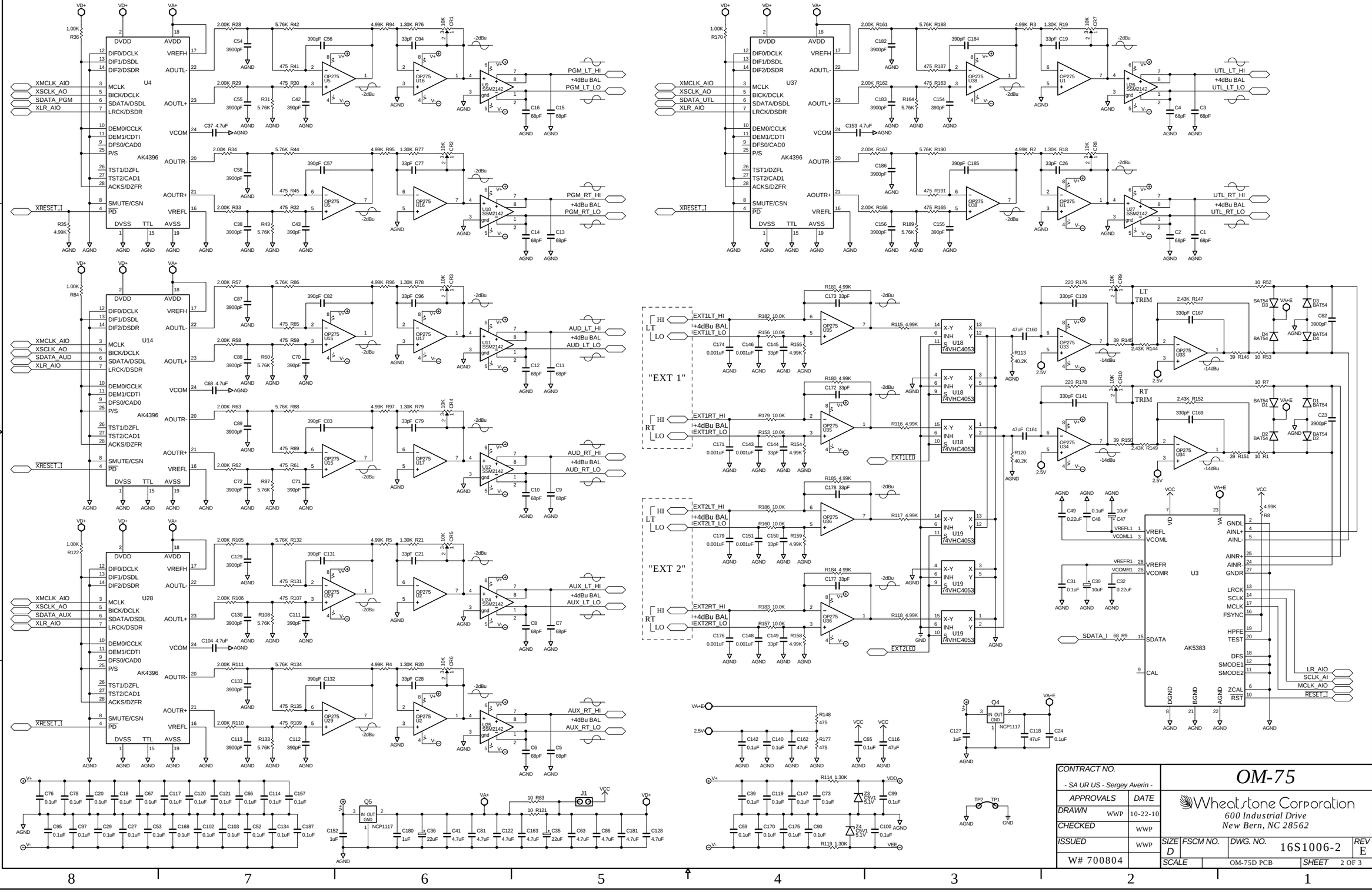


CONTRACT NO. - SA UR US - Sergey Averin -		SRC-75	
APPROVALS	DATE	Wheatstone Corporation, 600 Industrial Drive, New Bern, NC 28562	
DRAWN WWP	8-4-09		
CHECKED	DB		
ISSUED	WWP	SIZE D / FSCM NO. / DWG. NO. 16S1002 / REV C	
W# 700803		SCALE / SRC-75C PCB / SHEET 1 OF 1	



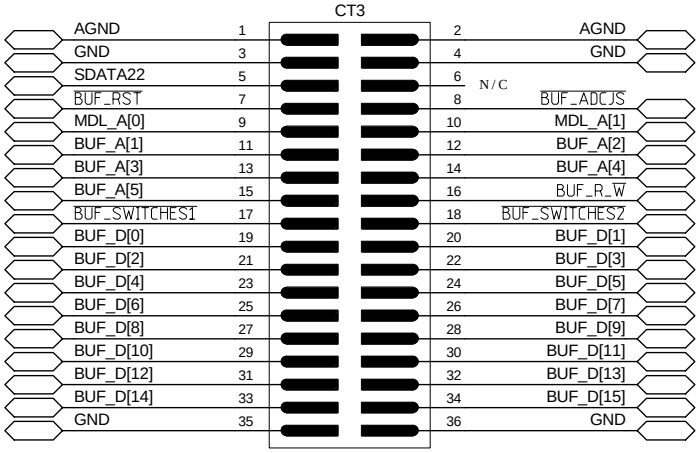
SRC-75 Sample Rate Converter - Load Sheet

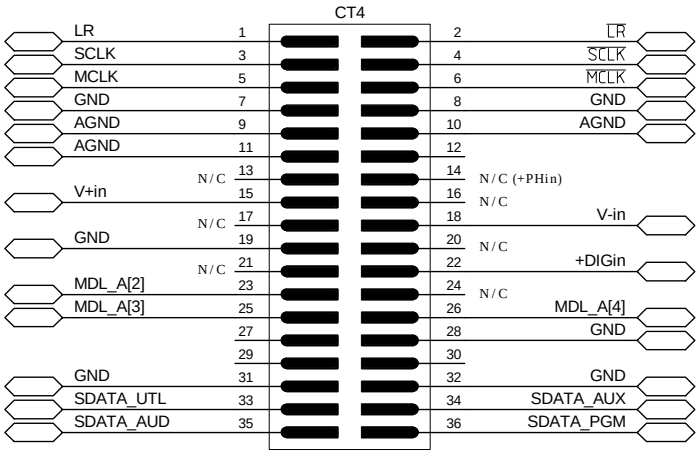

A SW
B SW
AUD SW
AUX SW
UTL SW
CUE
AUTO SW
START/ STOP SW
RESET SW
HOLD SW
DS1
DS2
DS3
DS5
DS6
DS4
DS7
DS8
DS9
DS10
R23 220
R6 220
R24 150
R25 220
R27 220
R26 619
R91 220
R90 150
R51 220
R56 220
EXT1LED
EXT2LED
AUDLED
AUXLED
UTLLED
CUELED
AUTOLED
SSLED
RSTLED
HOLDLED
SW1
SW2
SW3
SW4
SW5
SW6
SW7
SW8
SW9
R98 150
R22 150
R99 150
R100 150
R40 150
R171 150
R136 150
R50 150
R55 150
C98 0.01uF
C46 0.01uF
C101 0.01uF
C80 0.01uF
C51 0.01uF
C165 0.01uF
C135 0.01uF
C64 0.01uF
C69 0.01uF
R80 10.0K
R81 10.0K
R82 10.0K
R101 10.0K
R39 10.0K
R172 10.0K
R137 10.0K
R49 10.0K
R54 10.0K
EXT1SW
EXT2SW
AUDSW
AUXSW
UTLSW
AUTOSW
SSSW
RSTSW
HOLDSW
VCC
GND
R104 10.0K
R103 10.0K
R102 10.0K
R130 10.0K
R129 10.0K
MDL_A[0]
MDL_A[1]
MDL_A[2]
MDL_A[3]
MDL_A[4]
R138 475
R92 475
R139 475
R140 475
R173 619
R93 619
R174 619
R175 619
SDATA_PGM
SDATA_AUD
SDATA_AUX
SDATA_UTL
R128 10.0K
BUF_RST
4148 D5
U31
74ACT02
GND
SDATA_I
R125 40.2K
U30
74ACT32
R127 24
SDATA22
C159 100uF
R169 4.99K
D6 4148
R168 1.00K
R124 40.2K
RESET
U7
74ABT373
GND
PRESENT
AUDSW
AUXSW
UTLSW
EXT1SW
EXT2SW
CHAN_R1
R48 1.00K
BUF_D[0]
BUF_D[1]
BUF_D[2]
BUF_D[3]
BUF_D[4]
BUF_D[5]
BUF_D[6]
BUF_D[7]
U8
AUTOSW
SSSW
RSTSW
HOLDSW
R47 10.0K
MDL_ID[0]
MDL_ID[1]
MDL_ID[2]
OUTPUT=5
BUF_D[8]
BUF_D[9]
BUF_D[10]
BUF_D[11]
BUF_D[12]
BUF_D[13]
BUF_D[14]
BUF_D[15]
U20
BUF_D[0]
BUF_D[1]
BUF_D[2]
BUF_D[3]
BUF_D[4]
BUF_D[5]
BUF_D[6]
BUF_D[7]
CHAN_W1
RESET
AESV
AESC
AUDLED
AUXLED
UTLLED
CUELED
EXT1LED
EXT2LED
U21
BUF_D[8]
BUF_D[9]
BUF_D[10]
BUF_D[11]
BUF_D[12]
BUF_D[13]
BUF_D[14]
BUF_D[15]
CHAN_W1
RESET
AUTOLED
SSLED
RSTLED
HOLDLED
C6/C2
C7/C3
RESET_I
1.00K R64
U6
74ABT373
74ACT521
BUF_A[1]
BUF_A[2]
BUF_A[3]
BUF_A[4]
BUF_A[5]
MDL_A[0]
MDL_A[1]
MDL_A[2]
MDL_A[3]
MDL_A[4]
A=B
R126 10.0K
MY_ADDRESS
NOT INSTALLED
R73 4.99K
R75 39 MCLK_DO
MCK
U23
74ACT74
BUF_R_W
MY_ADDRESS
BUF_SWITCHES1
CHAN_I
CHAN_R1
CHAN_W1
RESET_I
CT5
+3.3V
GND
TCK
TDO
TDI
TMS
U13
XC2S30
CCLK
PROGRAM
GND
+3.3V
R112 4.99K
M0
M1
M2
CS_I/O
WRITE_I/O
TDI
TMS
TCK
GCK0_I
GCK1_I
GCK2_I
GCK3_I
FPGA_TDI
PROMDATA
SDATA_PGM
XSCLK_AO
LR_DO
SCLK_DO
LR_AIO
MCLK_AIO
SCLK_AO
MCLK_DO
C6/C2
XLR_AIO
C7/C3
SDATA_AUX
PGM_TXP
PGM_TXN
INIT_I/O
BUSY,DOUT,I/O
DONE
TDO
R37 3.3
NOT INSTALLED
PAD134
PAD149,Vref7
PAD152
PAD161,IRDY
PAD164,TRDY
PAD173
PAD176,Vref6
PAD191
PAD194
PAD197
PAD203,Vref6
PAD212
PAD215
PAD233,Vref5
PAD239
PAD242
PAD260,Vref5
PAD280
PAD289,Vref4
PAD307
PAD310
PAD316,Vref4
PAD325
PAD328
PAD347,Vref3
PAD353
PAD362
PAD374,Vref3
PAD386,TRDY
PAD389,IRDY
PAD401,Vref2
PAD413
PAD422
PAD428,Vref2
PAD12,Vref1
PAD18
PAD21
PAD39,Vref1
PAD48
PAD68,Vref0
PAD86
PAD89
PAD95,Vref0
PAD104
PAD113
PAD122,Vref7
PAD128
PAD131
INIT
DONE
TDO
AUD_TXP
AUD_TXN
AUX_TXP
AUX_TXN
UTL_TXP
UTL_TXN
SDATA_UTL
SDATA_AUD
RESET_I
XRESET_I
XMCLK_AIO
AESC
AESV
U22
DS90C032
SCLK
MCLK
LR
10.0K R141
10.0K R142
10.0K R65
220 R69
C75 0.1uF
R70 619
R71 68
R74 24
R68 68
R67 68
R66 68
R72 68
SCLK_AI
MCLK_AIO
SCLK_AO
LR_AIO
LR_DO
SCLK_DO
MCK
C188 0.1uF
C126 0.1uF
C110 0.1uF
C109 0.1uF
C93 0.1uF
C40 0.1uF
C125 0.1uF
C44 0.1uF
C107 0.1uF
C108 0.1uF
C61 0.1uF
C45 0.1uF
C92 0.1uF
C50 0.1uF
C166 0.1uF
C60 0.1uF
C164 0.1uF
C124 0.1uF
C91 0.1uF
C189 0.1uF
C105 0.1uF
C74 0.1uF
C123 0.1uF
C138 0.1uF
Q1
Q2
LT1117 3.3V
LT1117 2.5V
C106 1uF
C84 4.7uF
C158 1uF
C136 4.7uF
Z1 1SMB5919 5.6V
Z2 1N5339 5.6V
C190 1uF
C22 0.1uF
C17 100uF
NCP1117
C115 100uF
C137 1uF
Q3
R194 1.00K
R192 10.0K
R193 1.00K
R195 4.99K
J2
J3
U39
DS1706
PBRST
WDS
NMI
ST
IN
RST
BAT54 D7
U32
XCF01
VCCJ
VCCO
TMS
TDI
TCK
CCLK
INIT
DONE
TDO
D0
CF
CE
CEO
OE/RST
CLK
R123 1.00K
R38 3.3
R46 3.3
FPGA_TDI
PROMDATA
PROGRAM
R143 220
DS11
F1
F2
F3
POLYSW 1.0A
POLYSW 0.3A
V+in
V-in
+DIGin
C33 100uF
C25 100uF
C34 100uF
C85 100uF
AGND
V+
V-
62 PIN EDGE CONNECTOR
+Vin
-Vin
+DIG
DIG.COM.
PGM_TXN
PGM_TXP
AUX_TXN
AUX_TXP
AUD_TXN
AUD_TXP
UTL_TXN
UTL_TXP
220 R13
220 R17
220 R11
220 R15
220 R12
220 R16
220 R10
220 R14
T4
T2
T3
T1
PGM_D_LO
PGM_D_HI
AUX_D_LO
AUX_D_HI
AUD_D_LO
AUD_D_HI
UTL_D_LO
UTL_D_HI
CONTRACT NO.
- SA UR US - Sergey Averin -
APPROVALS
DATE
DRAWN WWP 10-22-10
CHECKED WWP
ISSUED WWP
W# 700804
OM-75
Wheatstone Corporation
600 Industrial Drive
New Bern, NC 28562
SIZE D
FSCM NO.
DWG. NO. 16S1006-1
REV E
SCALE
OM-75E PCB
SHEET 1 OF 3



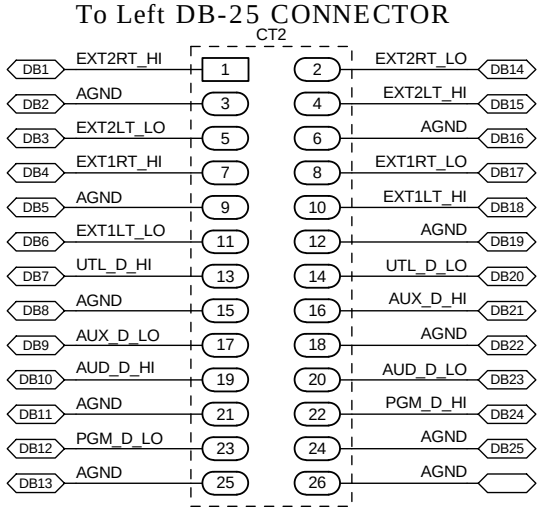
OM-75 Output Module Schematic - Sheet 2 of 3

EDGE CONNECTORS BUSS CHART

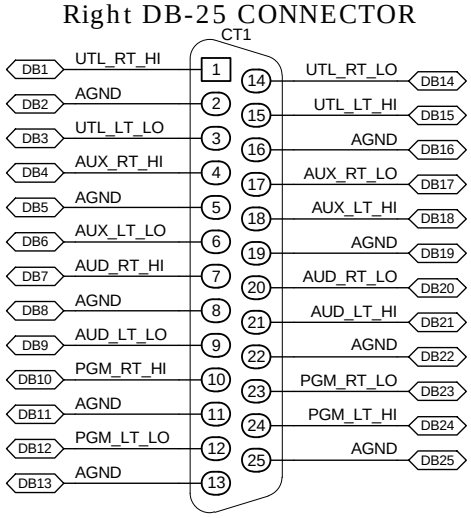




To Left DB-25 CONNECTOR

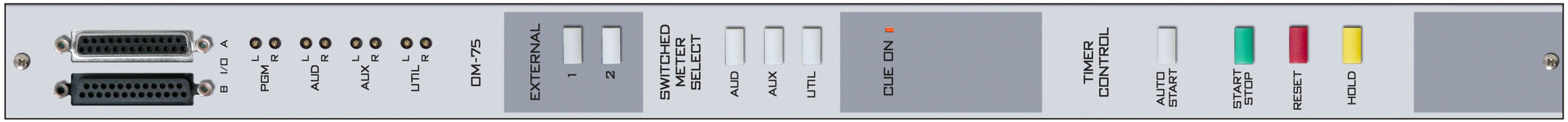


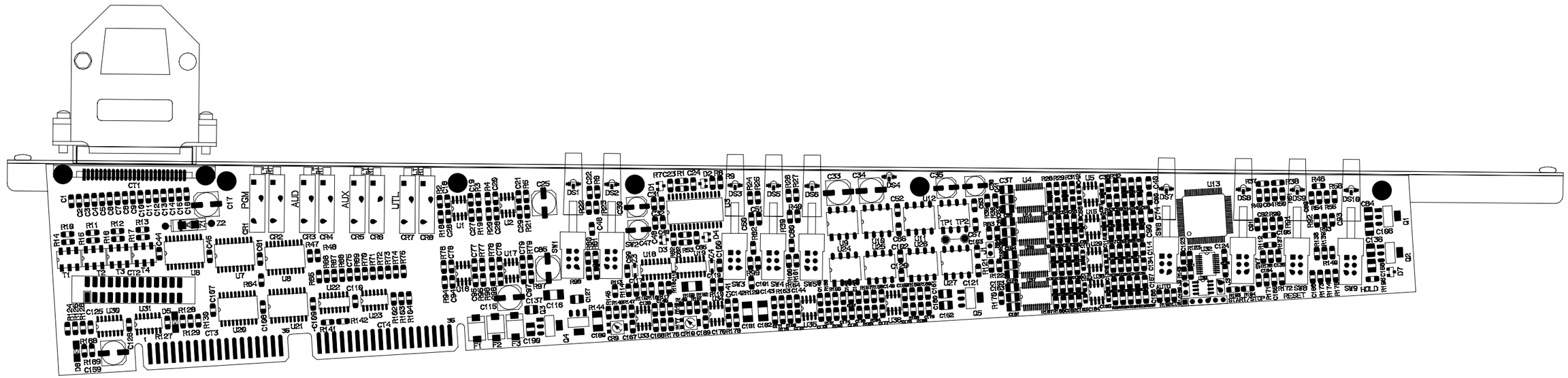
Right DB-25 CONNECTOR

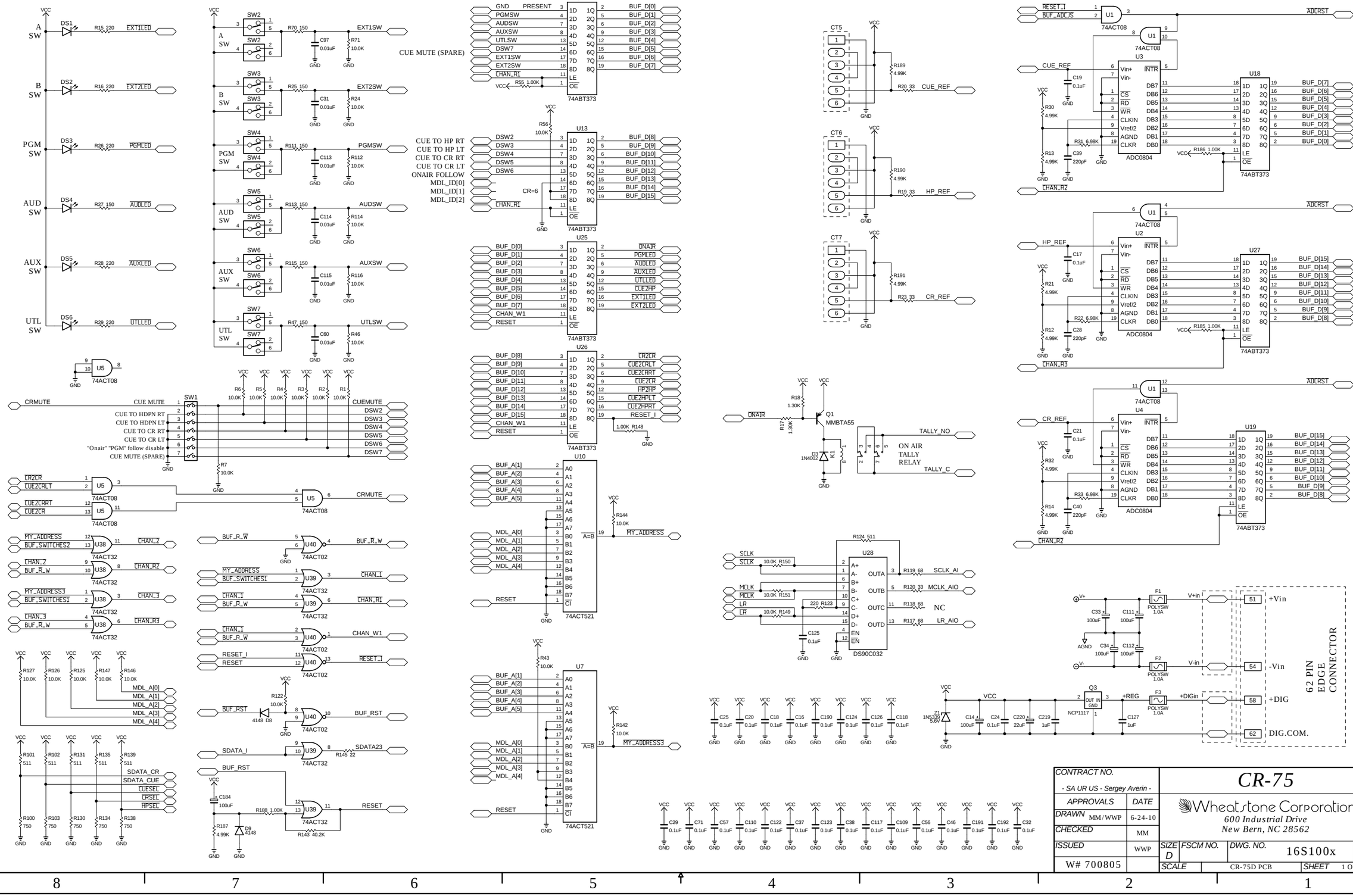


CONTRACT NO. - SA UR US - Sergey Averin -		OM-75	
APPROVALS	DATE	Wheatstone Corporation 600 Industrial Drive New Bern, NC 28562	
DRAWN WWP	10-22-10		
CHECKED	WWP		
ISSUED	WWP	SIZE B / FSCM NO. / DWG. NO. 16S1006-3	REV E
W# 700804		SCALE OM-75E PCB	SHEET 3 OF 3

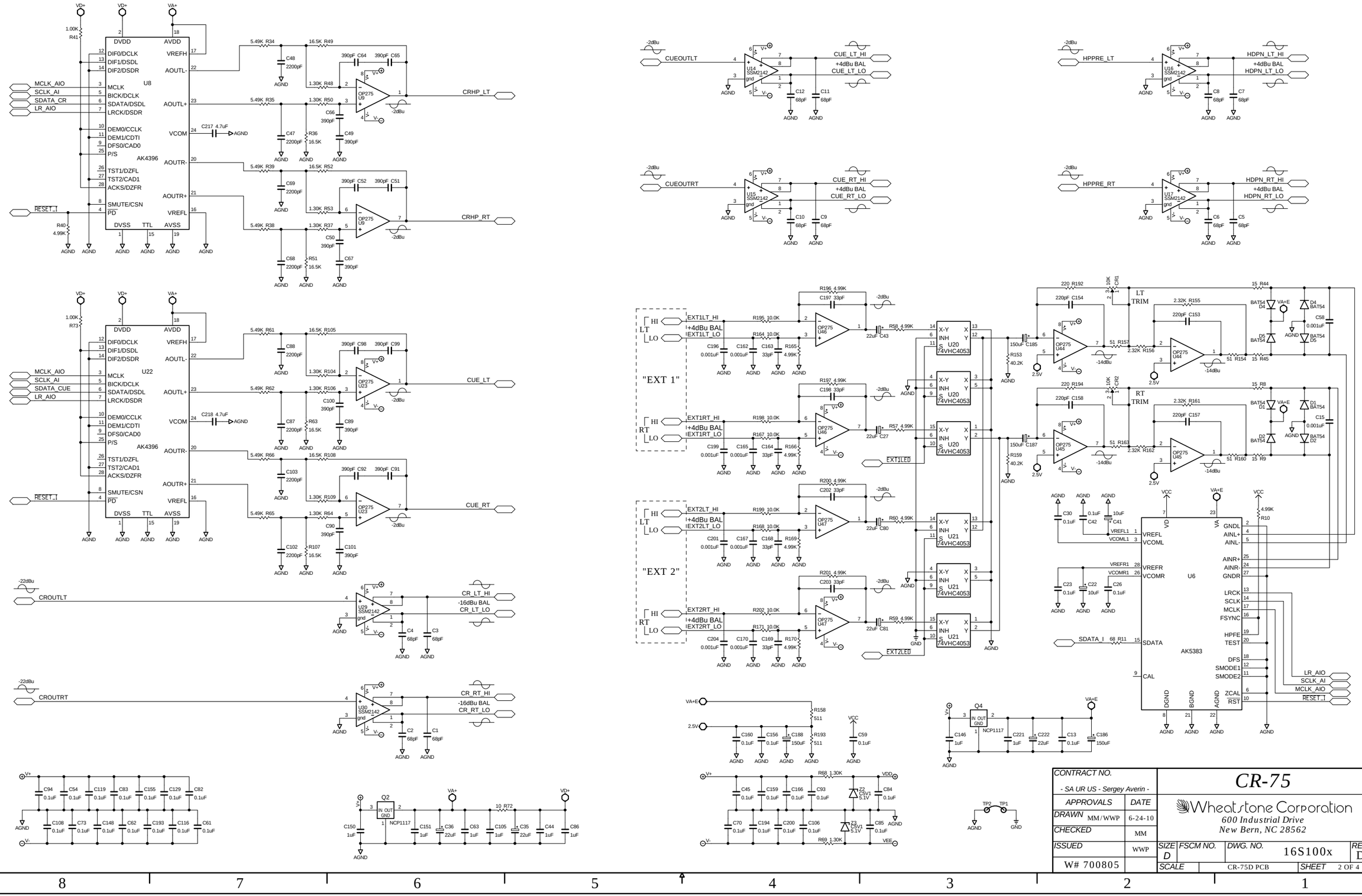
OM-75 Output Module Schematic - Sheet 3 of 3


B I/O A
PGM L R
AUD L R
AUX L R
UTIL L R
OM-75
EXTERNAL
1
2
SWITCHED METER SELECT
AUD
AUX
UTIL
CUE ON
TIMER CONTROL
AUTO START
START STOP
RESET
HOLD

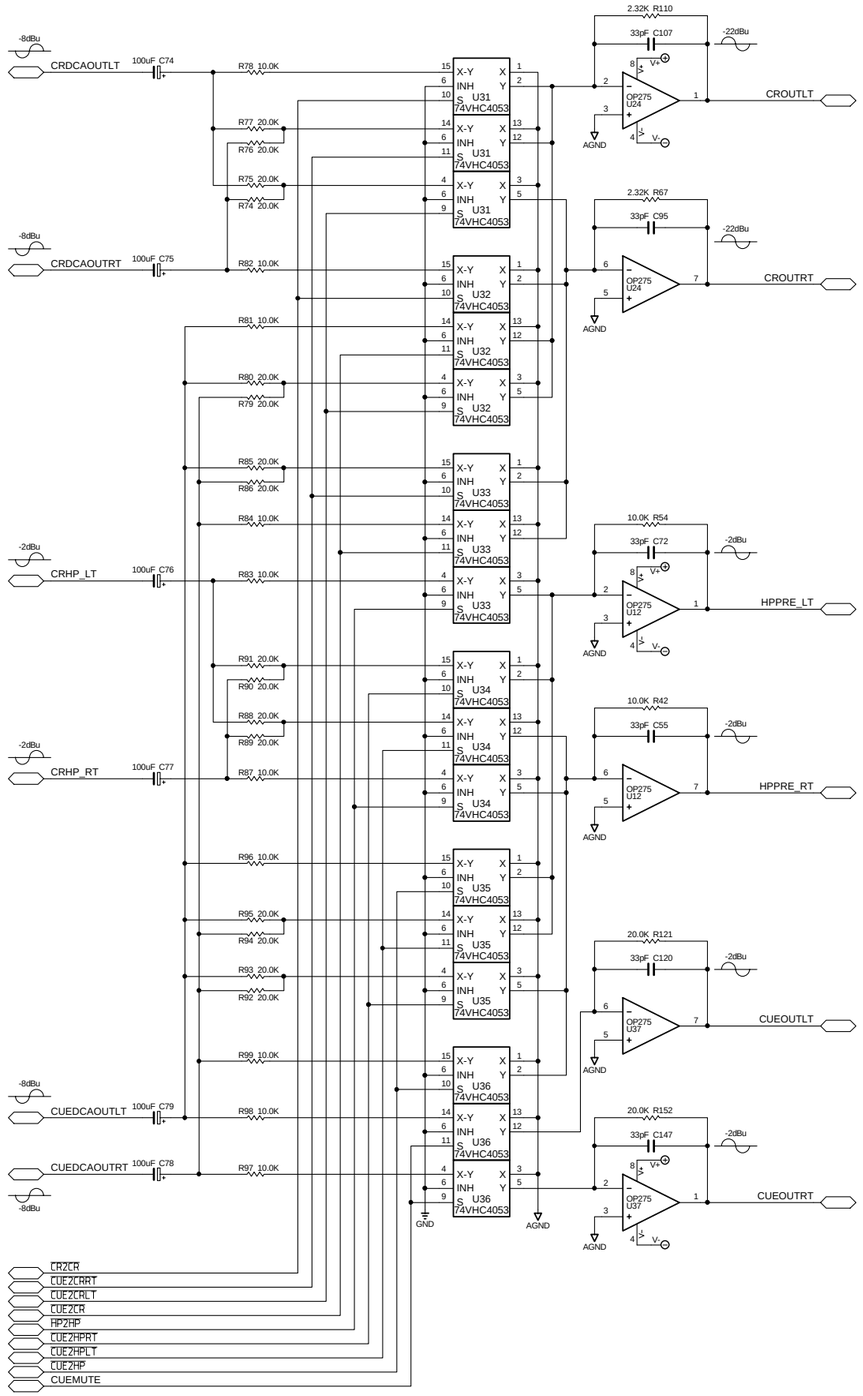


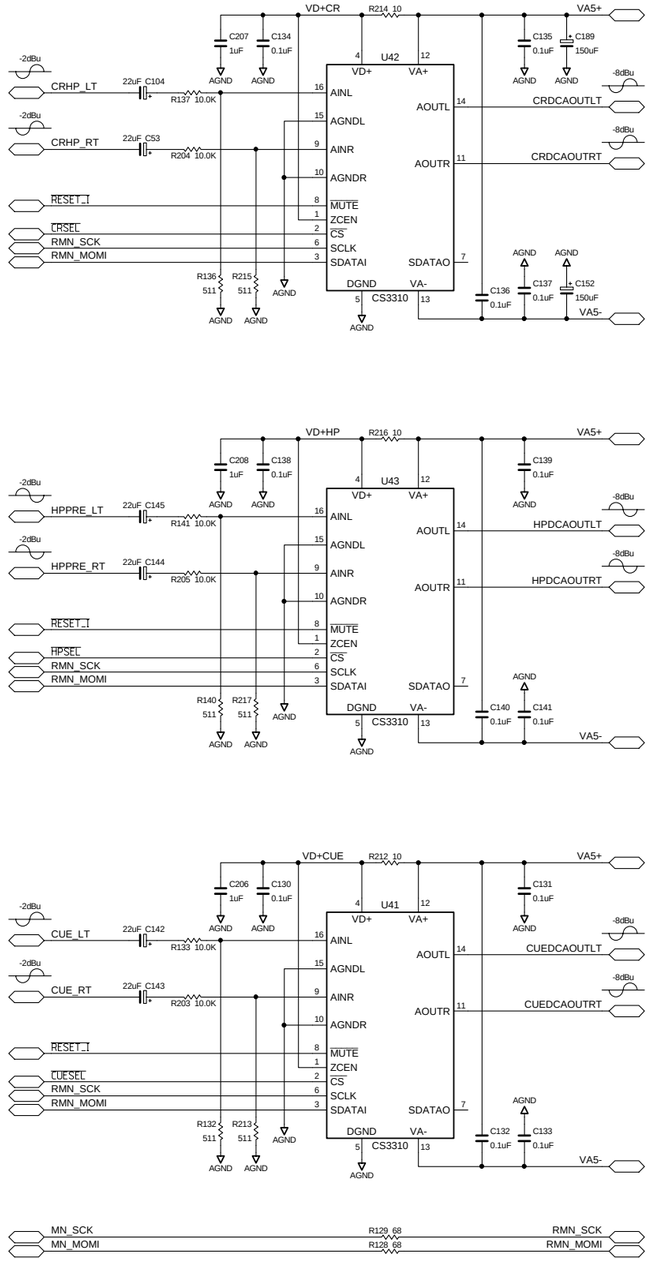


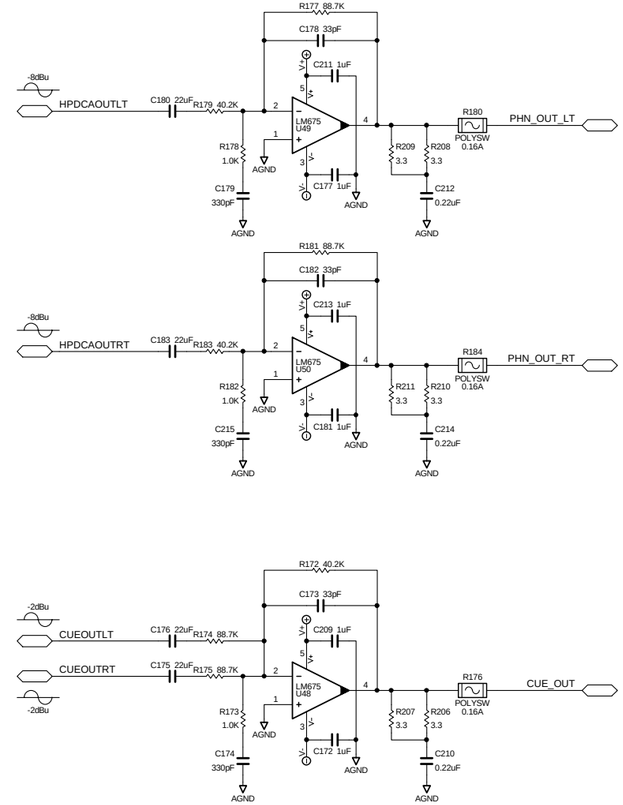
CR-75 Control Room Module Schematic - Sheet 1 of 4

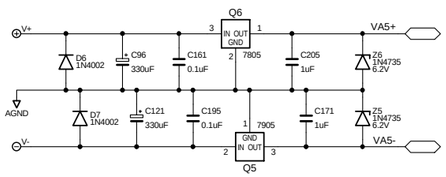


CR-75 Control Room Module Schematic - Sheet 2 of 4





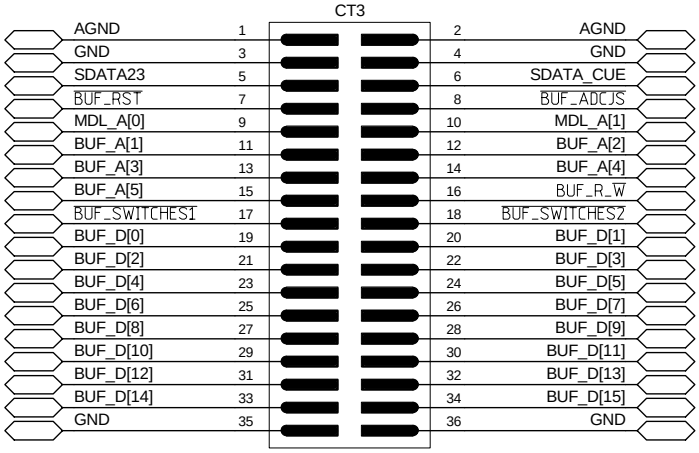


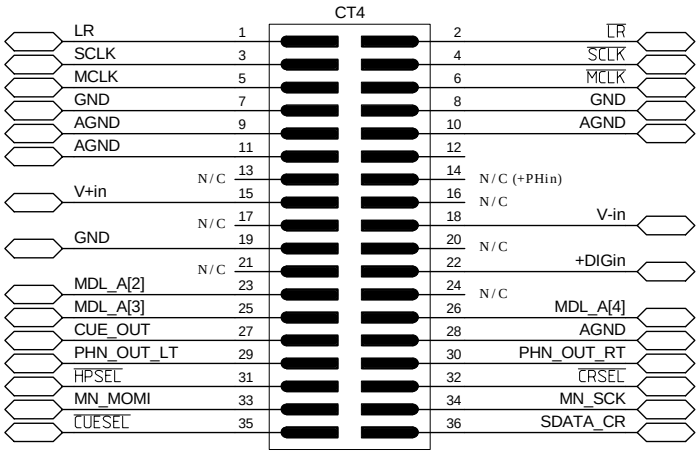


CONTRACT NO.	CR-75
- SA UR US - Sergey Averin -	
APPROVALS / DATE	Wheatstone Corporation
DRAWN MM/WWP 6-24-10	600 Industrial Drive
CHECKED MM	New Bern, NC 28562
ISSUED WWP	SIZE D / FSCM NO. / DWG. NO. 16S100x / REV D
W# 700805	SCALE CR-75D PCB / SHEET 3 OF 4

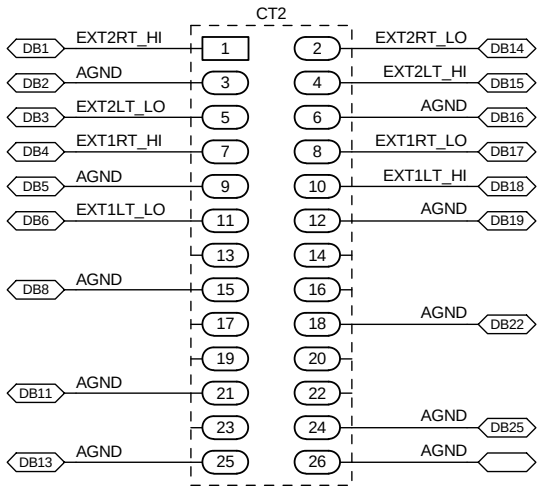
CR-75 Control Room Module Schematic - Sheet 3 of 4

EDGE CONNECTORS BUSS CHART

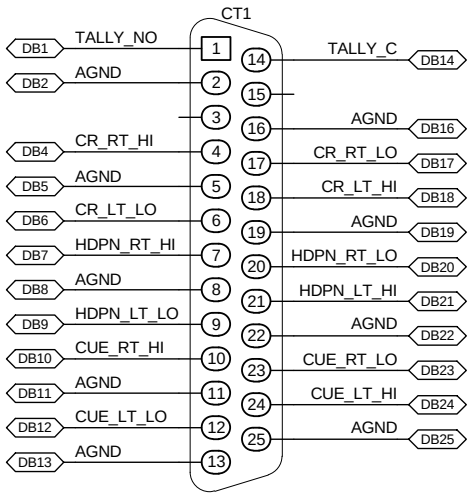




To Left DB-25 CONNECTOR

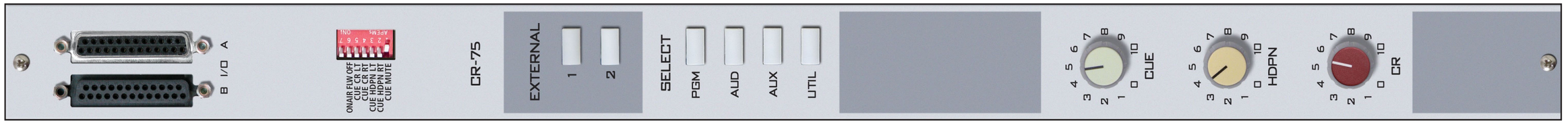


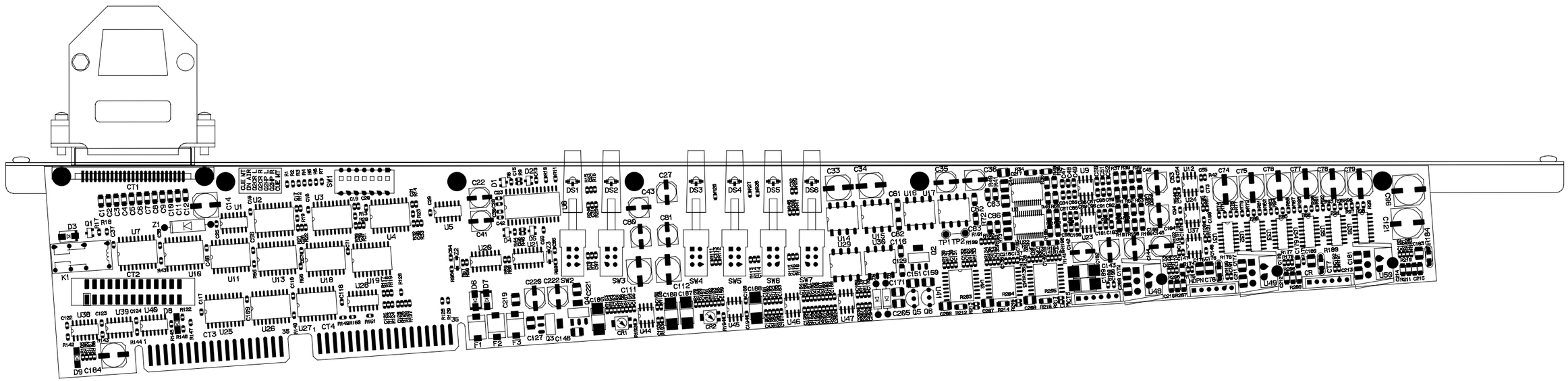
Right DB-25 CONNECTOR

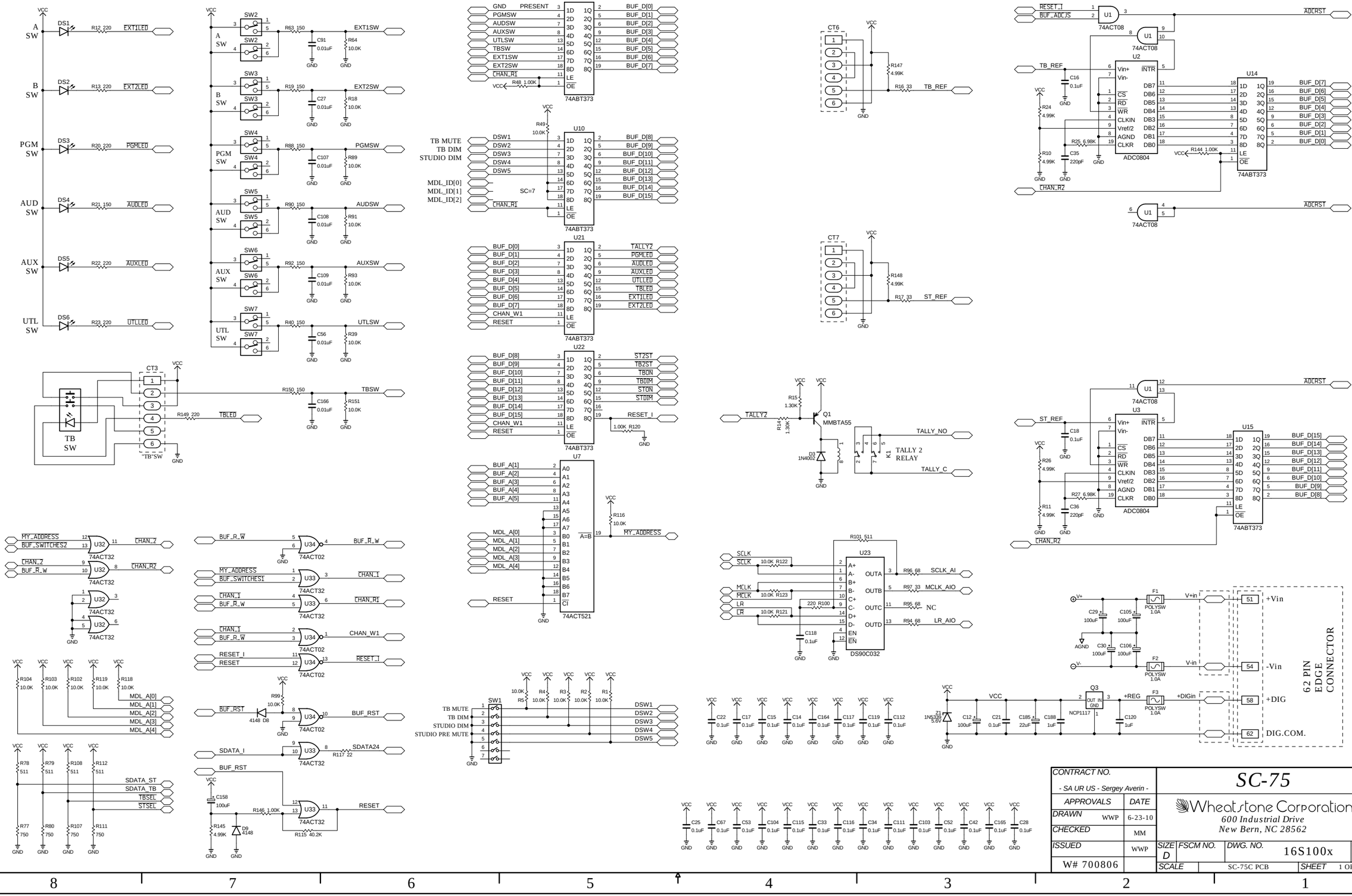


CONTRACT NO. - SA UR US - Sergey Averin -		CR-75	
APPROVALS	DATE	Wheatstone Corporation 600 Industrial Drive New Bern, NC 28562	
DRAWN MM/WWP	6-24-10		
CHECKED	MM		
ISSUED	WWP	SIZE B / FSCM NO. / DWG. NO. 16S100x / REV D	
W# 700805		SCALE CR-75D PCB	SHEET 4 OF 4

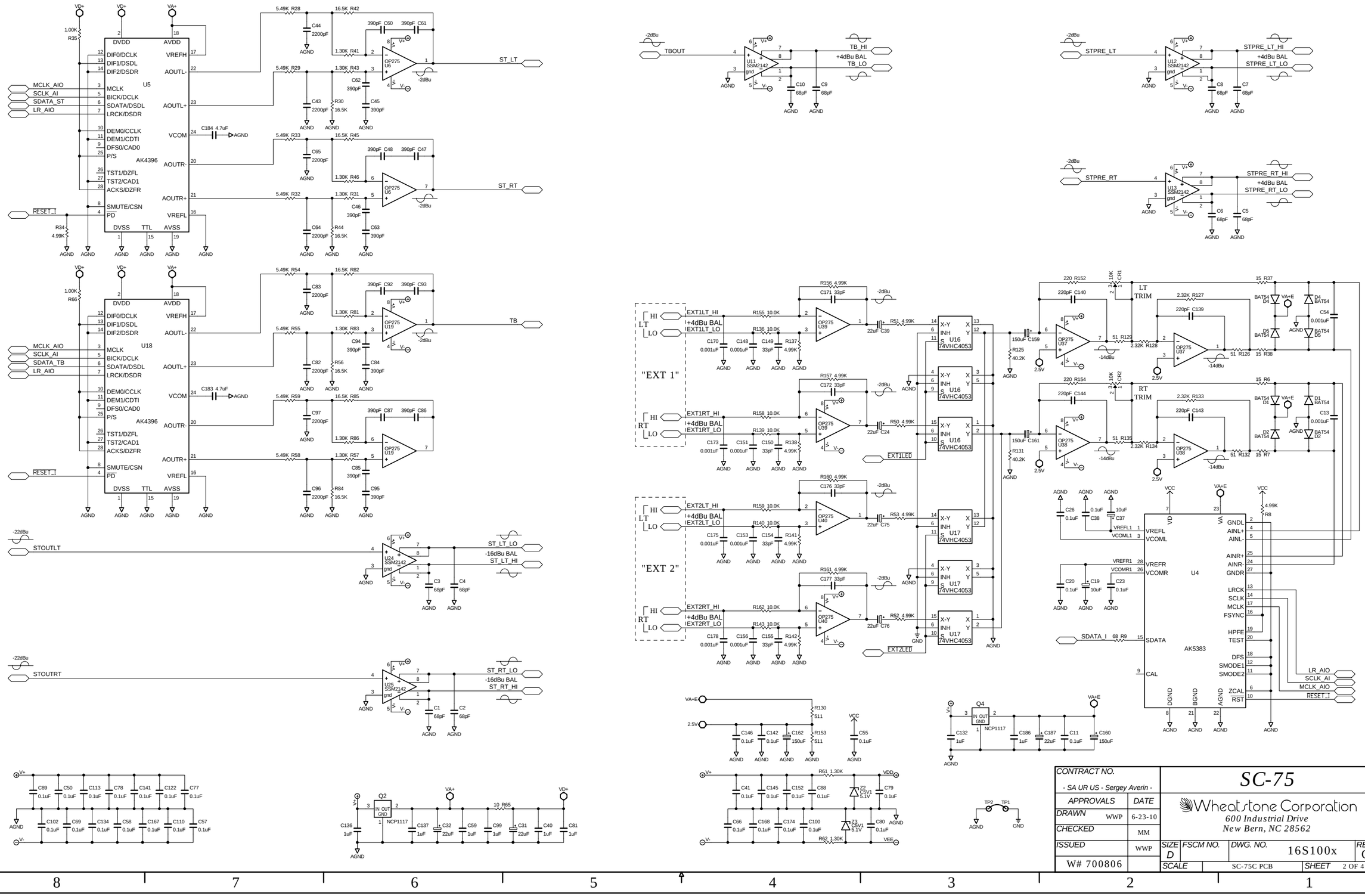
CR-75 Control Room Module Schematic - Sheet 4 of 4


B I/O A
ONAIR FLW OFF
CUE CR LT
CUE CR RT
CUE HDPN LT
CUE HDPN RT
CUE MUTE
CR-75
EXTERNAL
1
2
SELECT
PGM
AUD
AUX
UTIL
CUE
HDPN
CR

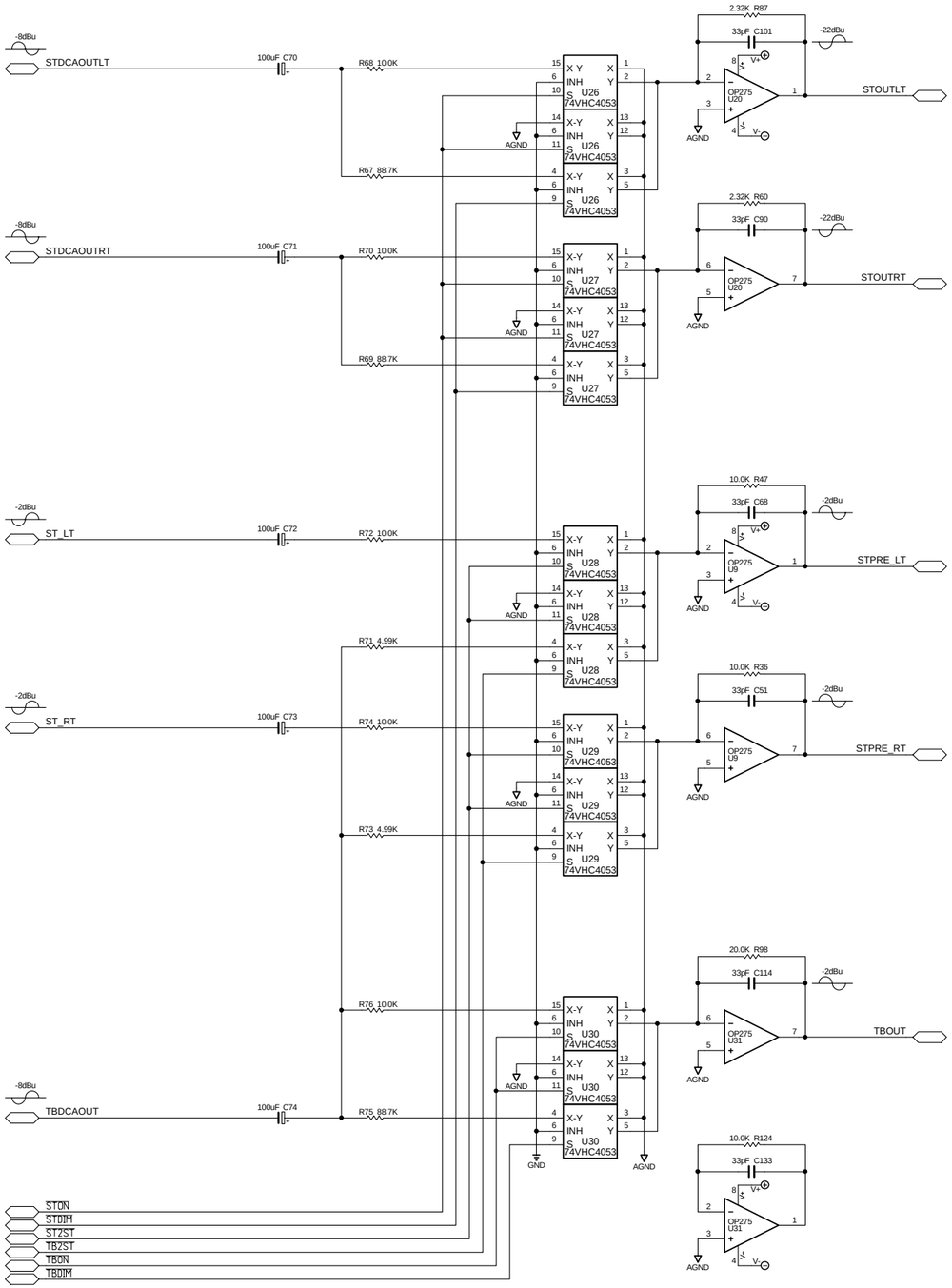




CONTRACT NO.	SC-75
- SA UR US - Sergey Averin -	Wheatstone Corporation
APPROVALS / DATE	600 Industrial Drive
DRAWN WWP 6-23-10	New Bern, NC 28562
CHECKED MM	SIZE D · FSCM NO. · DWG. NO. 16S100x · REV C
ISSUED WWP	SCALE · SC-75C PCB · SHEET 1 OF 4
W# 700806	

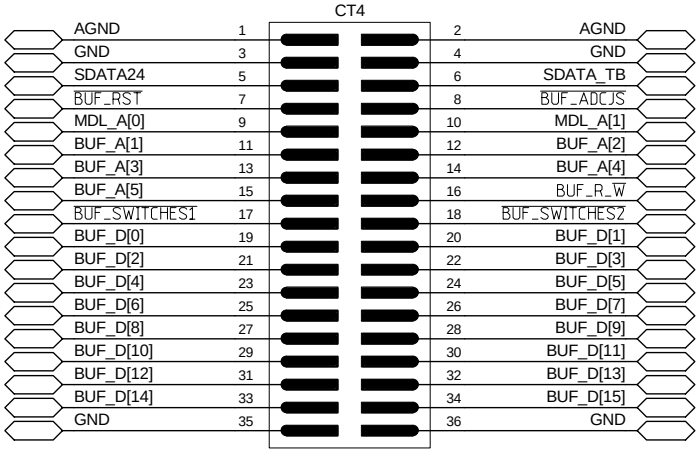


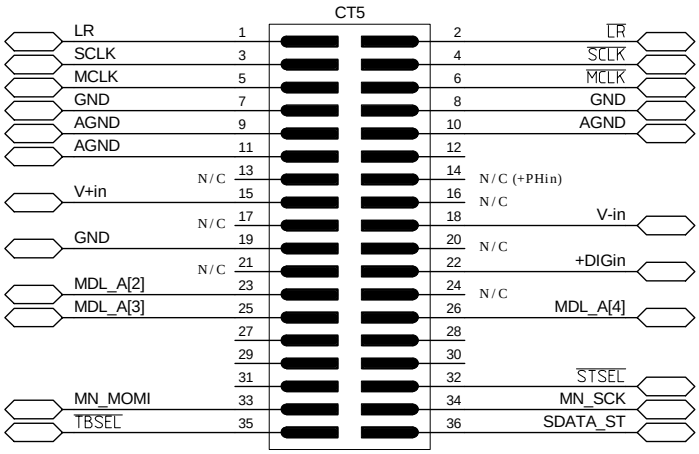
CONTRACT NO.	SC-75
- SA UR US - Sergey Averin -	
APPROVALS / DATE	Wheatstone Corporation
DRAWN WWP 6-23-10	600 Industrial Drive
CHECKED MM	New Bern, NC 28562
ISSUED WWP	SIZE D · FSCM NO. · DWG. NO. 16S100x · REV C
W# 700806	SCALE SC-75C PCB · SHEET 2 OF 4



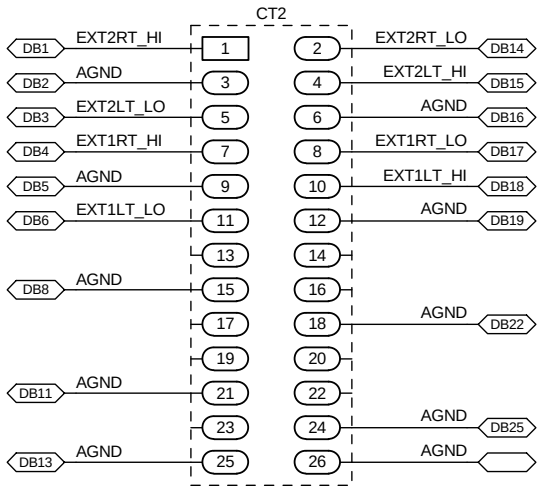
CONTRACT NO. - SA UR US - Sergey Averin -		SC-75
APPROVALS	DATE	Wheatstone Corporation, 600 Industrial Drive, New Bern, NC 28562
DRAWN WWP	6-23-10	
CHECKED	MM	
ISSUED	WWP	SIZE D / FSCM NO. / DWG. NO. 16S100x / REV C
W# 700806		SCALE / SC-75C PCB / SHEET 3 OF 4

EDGE CONNECTORS BUSS CHART

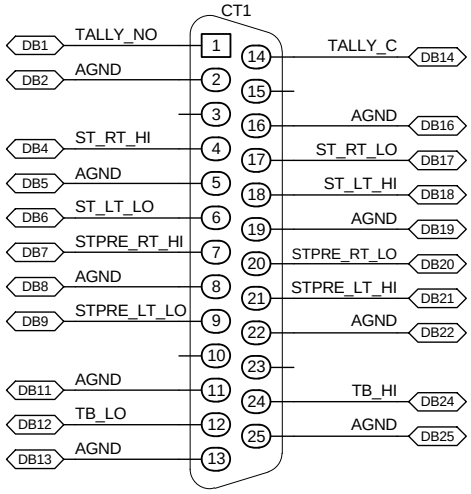




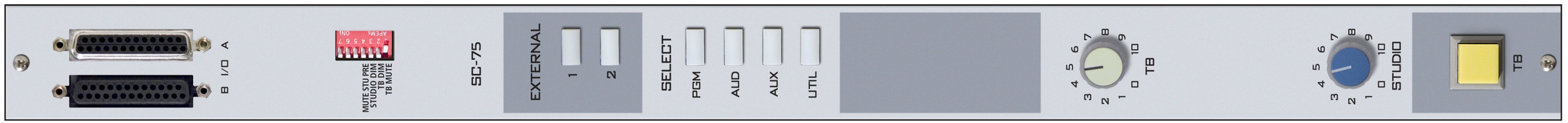
To Left DB-25 CONNECTOR

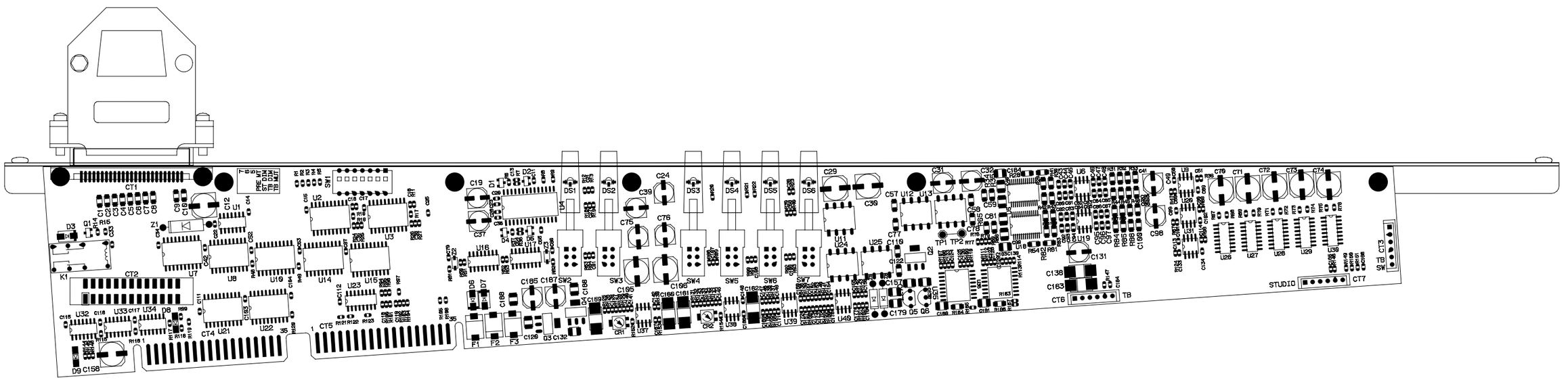


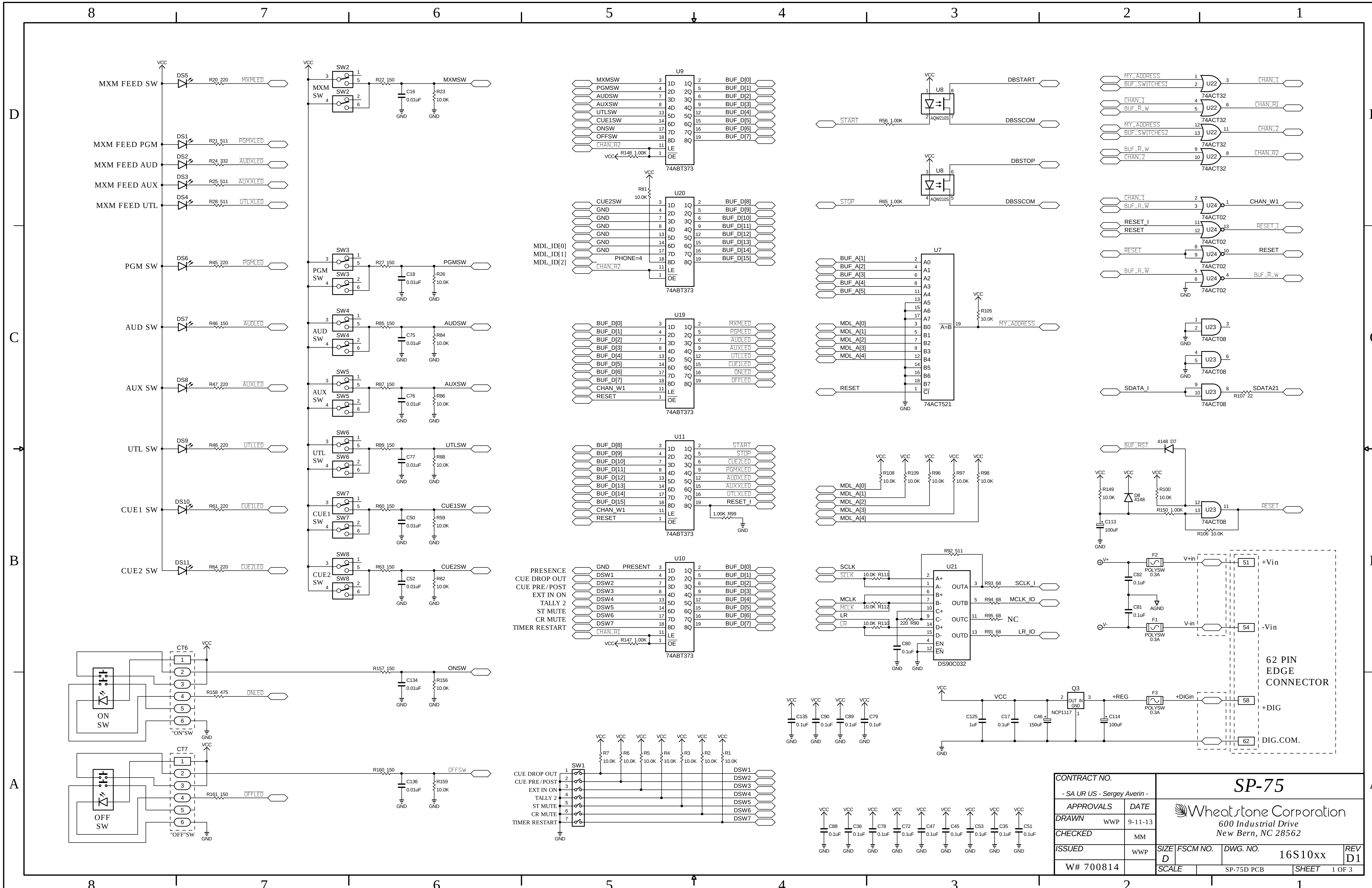
Right DB-25 CONNECTOR



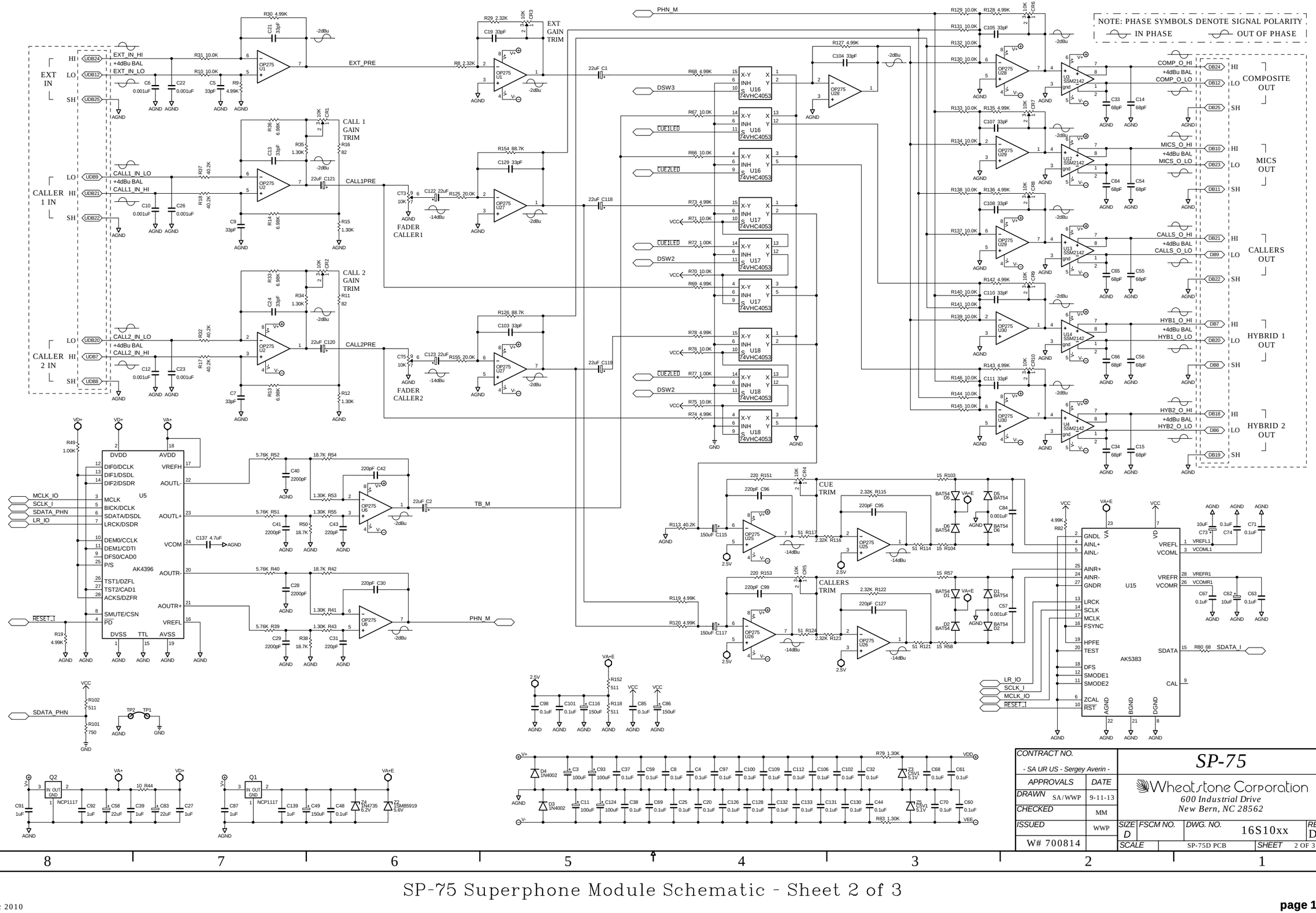
CONTRACT NO. - SA UR US - Sergey Averin -		SC-75	
APPROVALS	DATE	Wheatstone Corporation 600 Industrial Drive New Bern, NC 28562	
DRAWN WWP	6-23-10		
CHECKED	MM		
ISSUED	WWP	SIZE B / FSCM NO. / DWG. NO. 16S100x / REV C	
W# 700806		SCALE SC-75C PCB	SHEET 4 OF 4


B I/O A
MUTE STU PRE
STUDIO DIM
TB DIM
TB MUTE
SC-75
EXTERNAL
1
2
SELECT
PGM
AUD
AUX
UTIL
TB
STUDIO
TB


CT1
CT2
CT3
CT4
CT5
CT6
CT7
STUDIO
TB
SW1
SW2
SW3
SW4
SW5
SW6
SW7
DS1
DS2
DS3
DS4
DS5
DS6
TP1
TP2

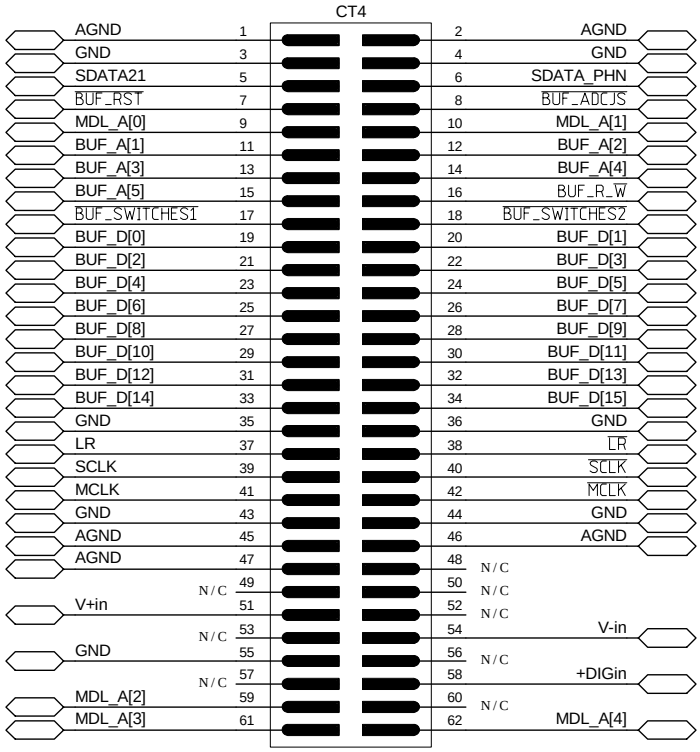


SP-75 Superphone Module Schematic - Sheet 1 of 3

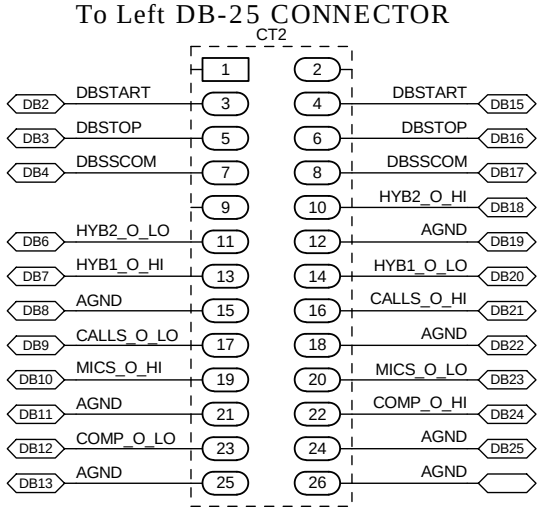


SP-75 Superphone Module Schematic - Sheet 2 of 3

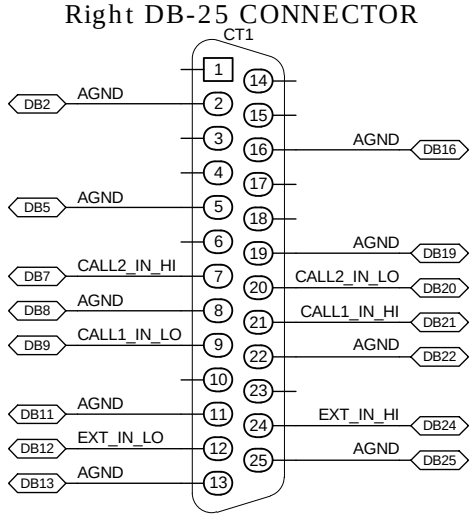
EDGE CONNECTOR BUSS CHART



To Left DB-25 CONNECTOR

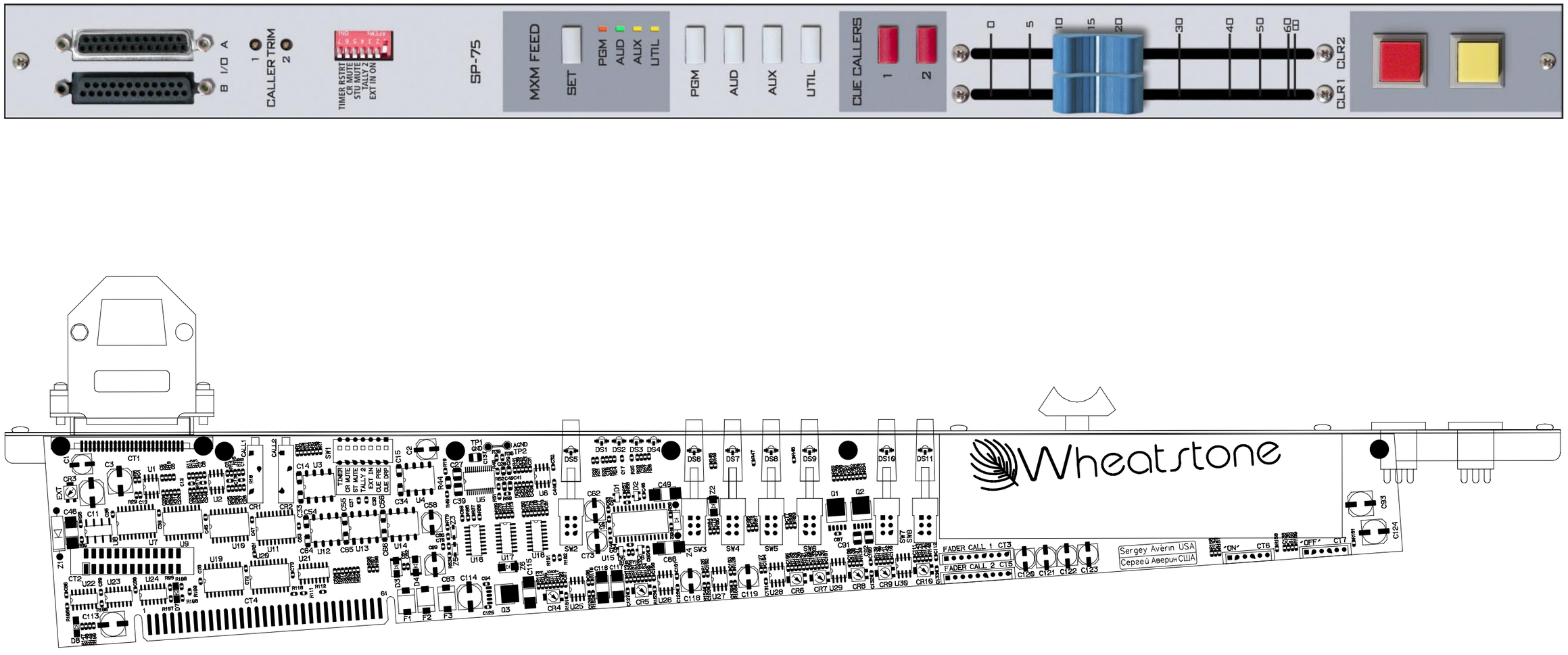


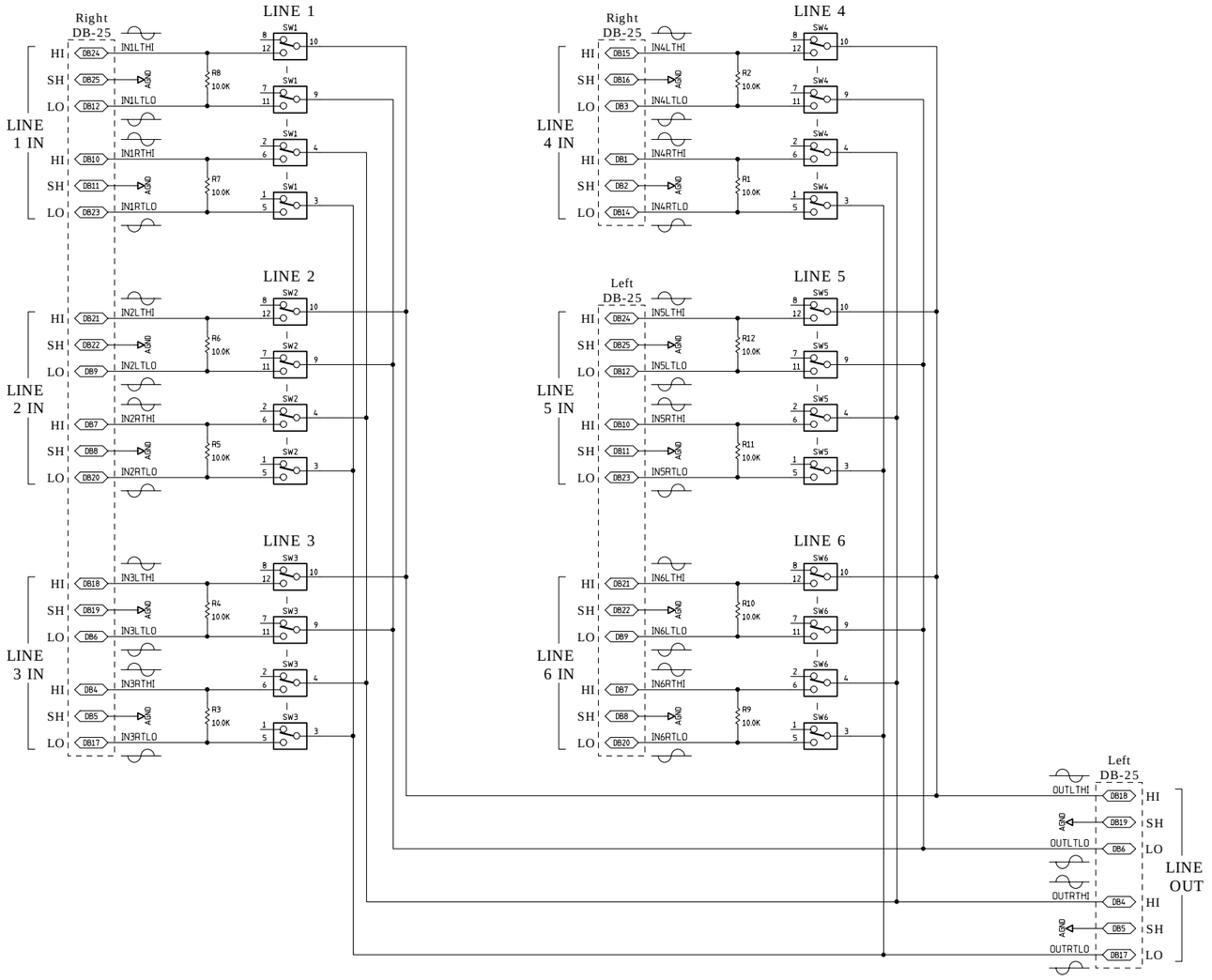
Right DB-25 CONNECTOR



CONTRACT NO. - SA UR US - Sergey Averin -		SP-75	
APPROVALS	DATE	Wheatstone Corporation 600 Industrial Drive New Bern, NC 28562	
DRAWN WWP	9-11-13		
CHECKED	MM		
ISSUED	WWP	SIZE B / FSCM NO. / DWG. NO. 16S10xx / REV D1	
W# 700814		SCALE / SP-75D PCB / SHEET 3 OF 3	

SP-75 Superphone Module Schematic - Sheet 3 of 3


B I/O A
CALLER TRIM
1
2
TIMER RSTRT
CR MUTE
STU MUTE
TALLY 2
EXT IN ON
SP-75
MXM FEED
SET
PGM
AUD
AUX
UTIL
PGM
AUD
AUX
UTIL
CUE CALLERS
1
2
0
5
10
15
20
30
40
50
60
CLR1
CLR2
Wheatstone
FADER CALL 1 CT3
FADER CALL 2 CT5
Sergey Avérin USA
Сергей Аверин США
ON
OFF



LS-75 Line Selector

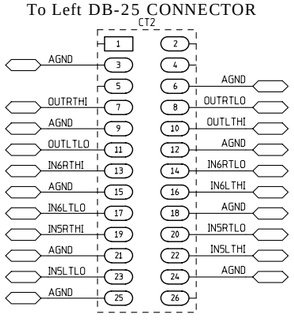
DB Connector Pinouts

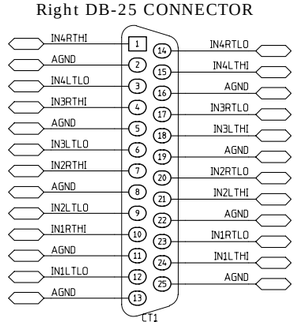
I/O PORTS
(Left DB-25)

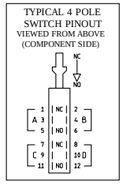
"LINE 5" LT IN SH	25	N/C
"LINE 5" LT IN HI	24	"LINE 5" LT IN LO
"LINE 5" RT IN LO	23	"LINE 5" RT IN SH
"LINE 6" LT IN SH	22	"LINE 5" RT IN HI
"LINE 6" LT IN HI	21	"LINE 6" LT IN LO
"LINE 6" RT IN LO	20	"LINE 6" RT IN SH
"LINE" LT OUT SH	19	"LINE 6" RT IN HI
"LINE" LT OUT HI	18	"LINE" LT OUT LO
"LINE"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

I/O PORTS
(Right DB-25)

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



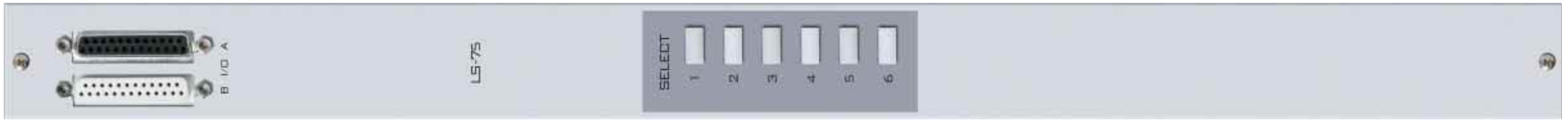


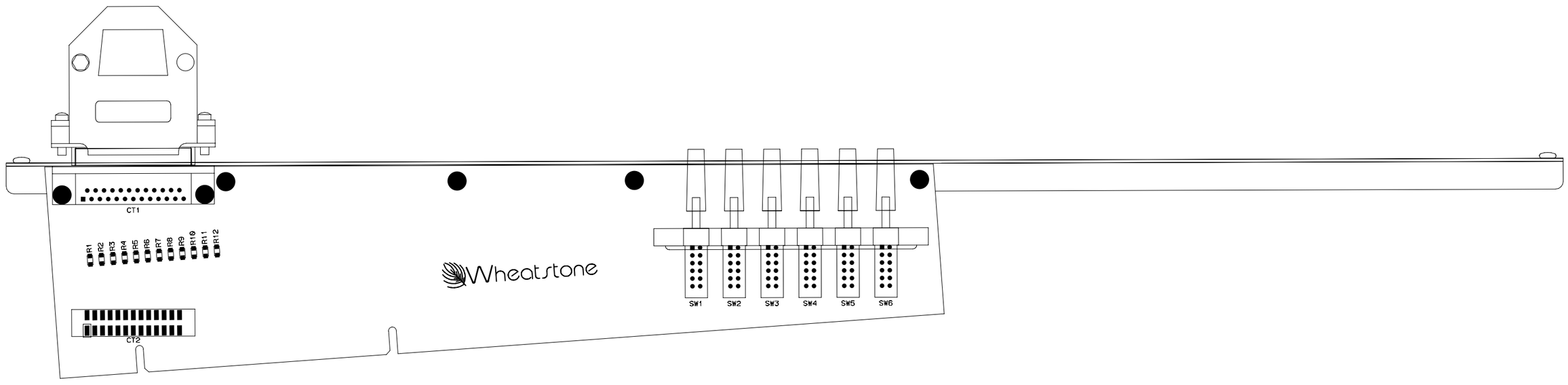


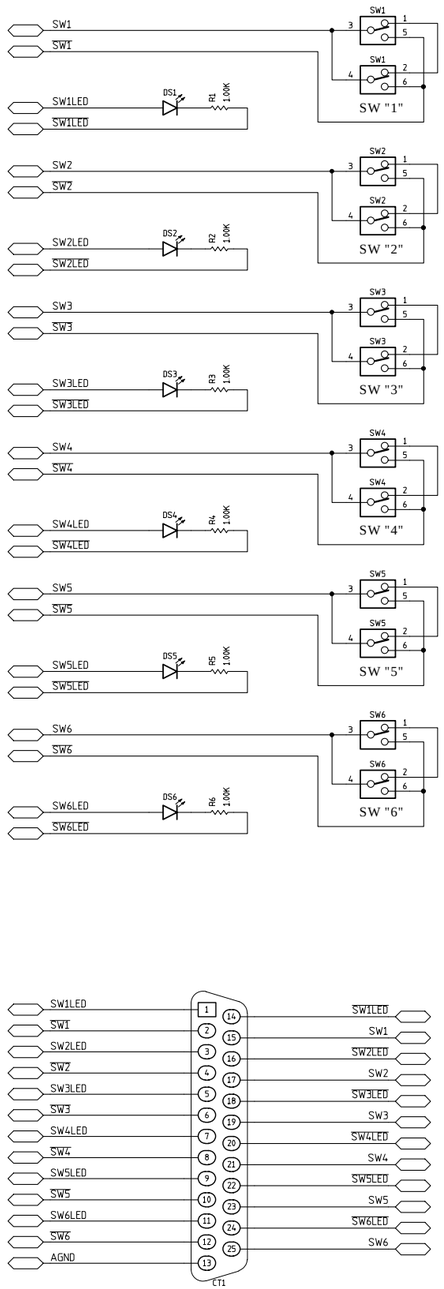
NOTE: PHASE SYMBOLS DENOTE SIGNAL POLARITY
IN PHASE — OUT OF PHASE

CONTRACT NO.		LS-75	
APPROVALS	DATE	Wheatstone Corporation 600 Industrial Drive New Bern, NC 28562	
DRAWN SA	6-6-01		
CHECKED	SA		
ISSUED	SA	SIZE D / FSCM NO. / DWG. NO. 16S0025 / REV -	
W# 700679		SCALE / LS-2600 PCB / SHEET 1 OF 1	

LS-75 Line Select Module Schematic - Sheet 1 of 1


B I/O A
LS-75
SELECT
1
2
3
4
5
6

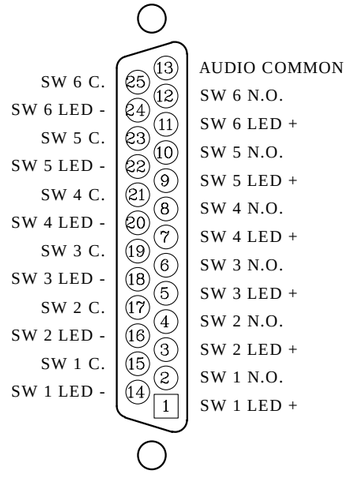

CT1
R1
R2
R3
R4
R5
R6
R7
R8
R9
R10
R11
R12
CT2
Wheatstone
SW1
SW2
SW3
SW4
SW5
SW6

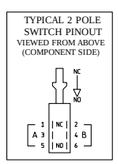


TR-75 I/O

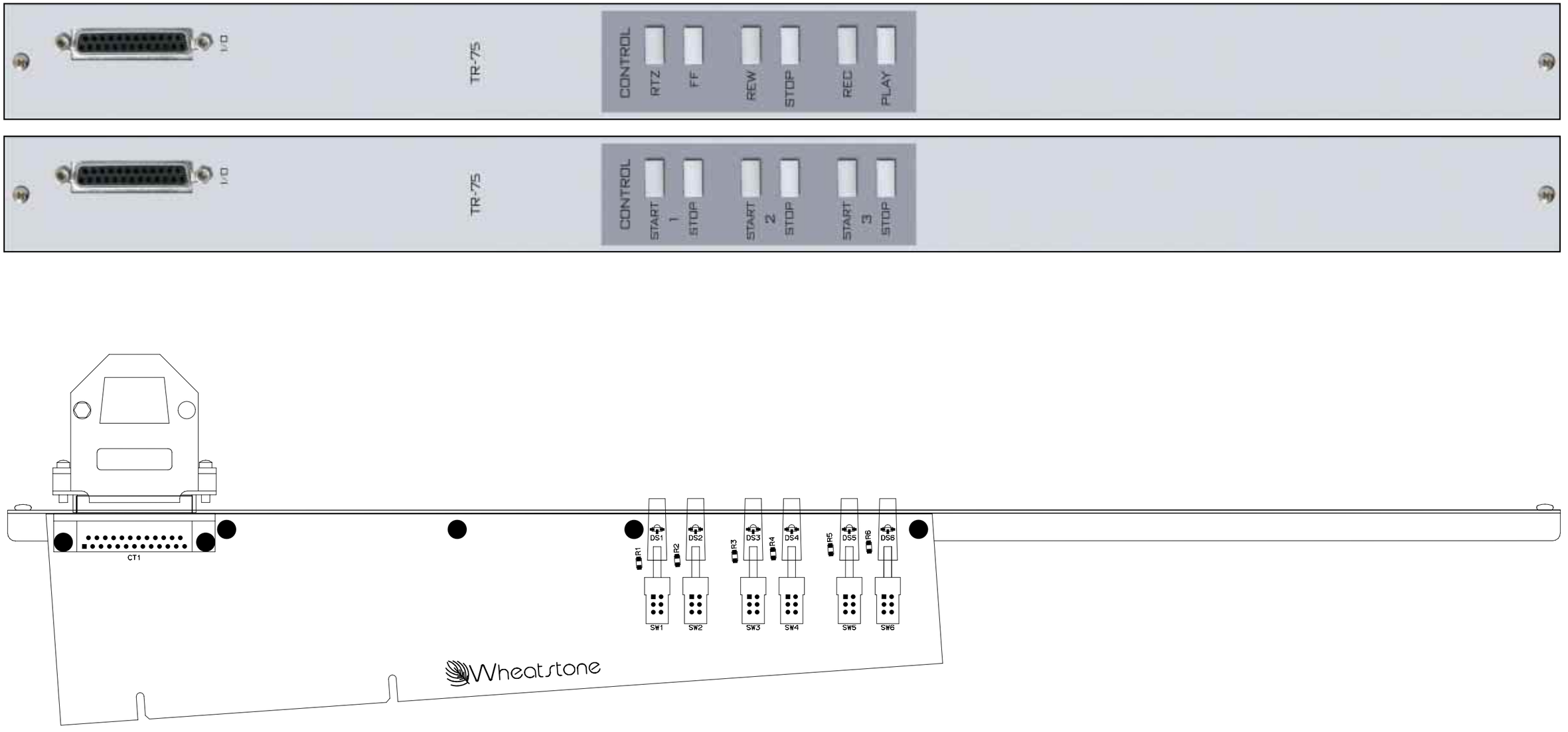
DB Connector Pinouts

I/O PORTS



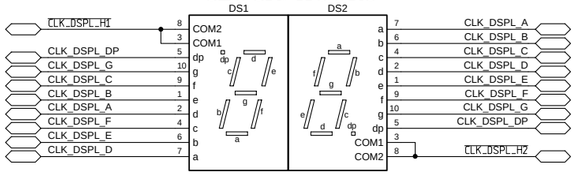


CONTRACT NO.		TR-75	
APPROVALS	DATE	Wheatstone Corporation 600 Industrial Drive New Bern, NC 28562	
DRAWN SA	1-3-01		
CHECKED	SA		
ISSUED	SA	SIZE D / FSCM NO. / DWG. NO. 16S0022 / REV -	
W# 700658		SCALE TR-2000 PCB / SHEET 1 OF 1	

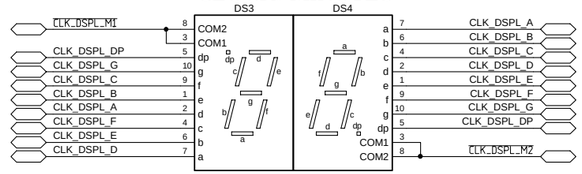

I/O
TR-75
CONTROL
RTZ
FF
REW
STOP
REC
PLAY
I/O
TR-75
CONTROL
START 1
STOP
START 2
STOP
START 3
STOP
CT1
DS1
DS2
DS3
DS4
DS5
DS6
R1
R2
R3
R4
R5
R6
SW1
SW2
SW3
SW4
SW5
SW6
Wheatstone

CLOCK

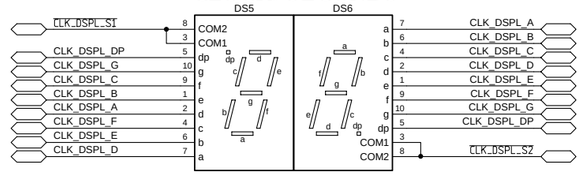
CLOCK: HOURS



CLOCK: MINUTES

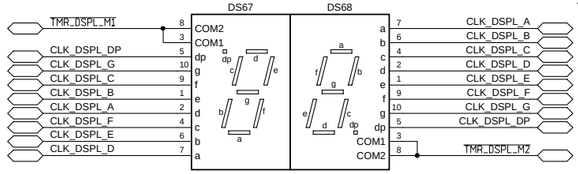


CLOCK: SECONDS

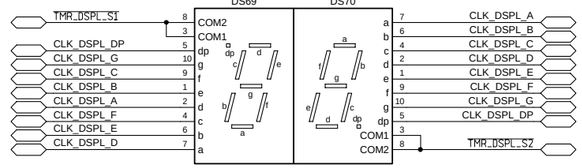


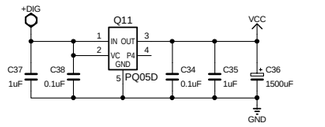
TIMER

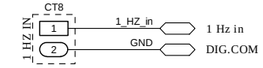
TIMER: MINUTES

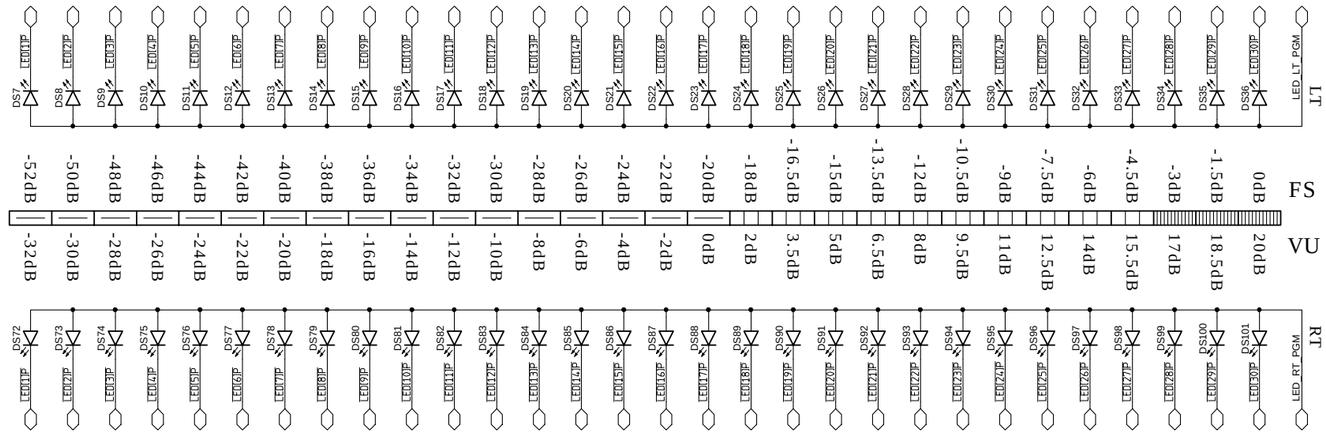


TIMER: SECONDS

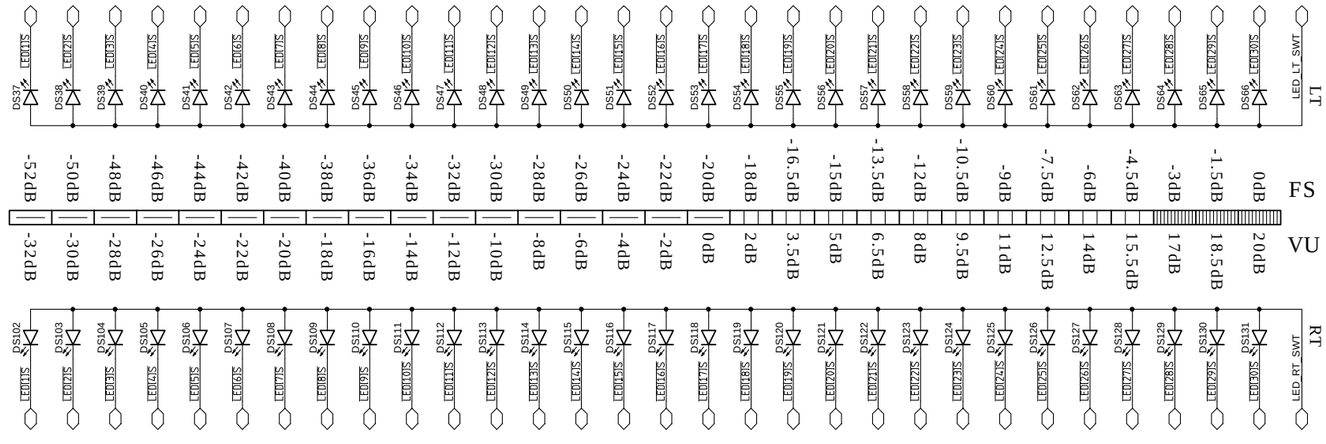


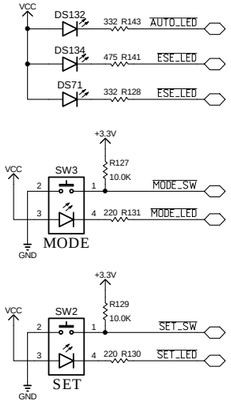




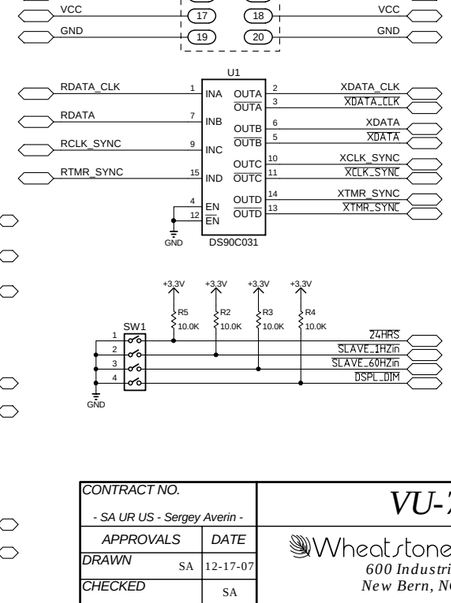


VU / FULL SCALE LEVEL

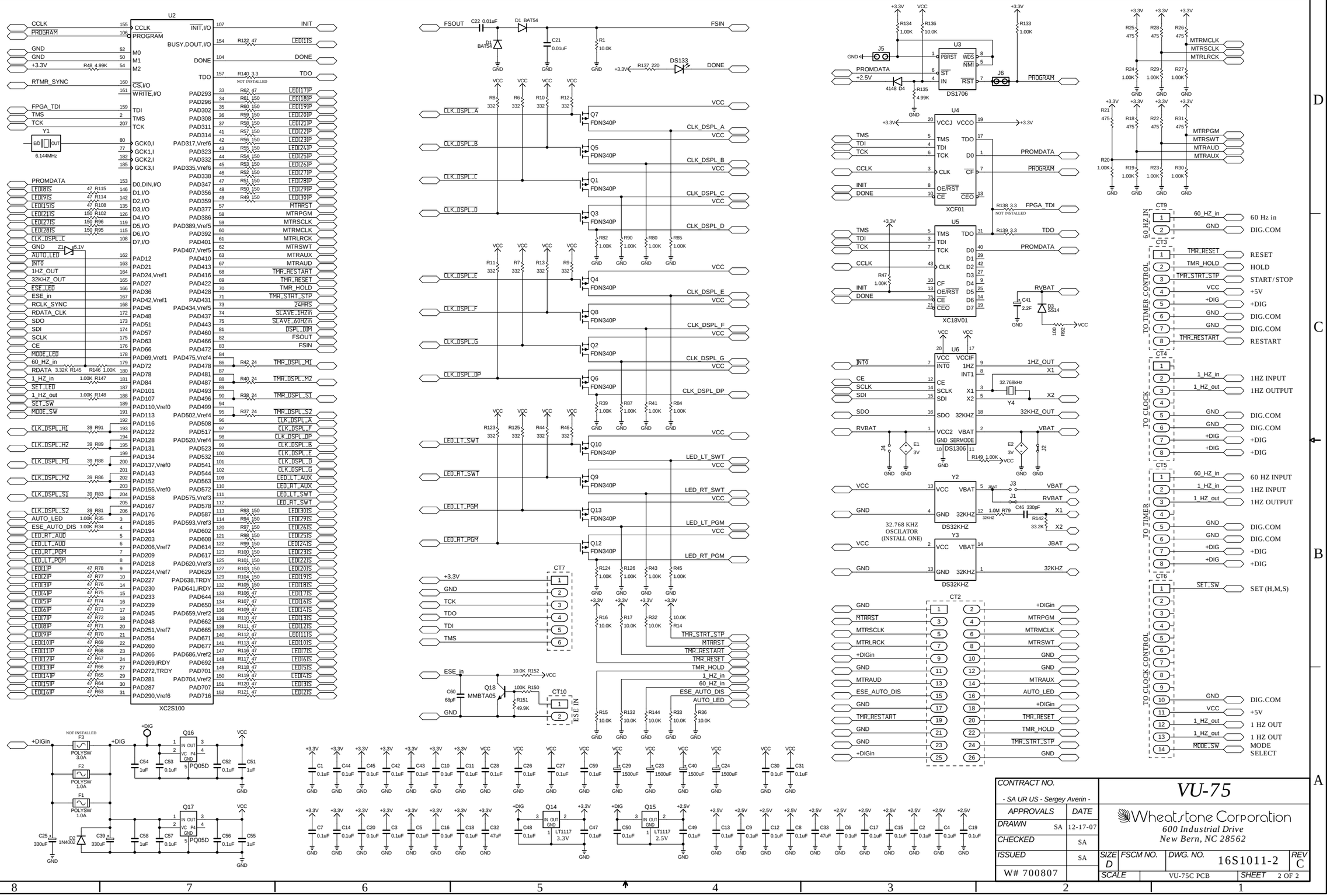


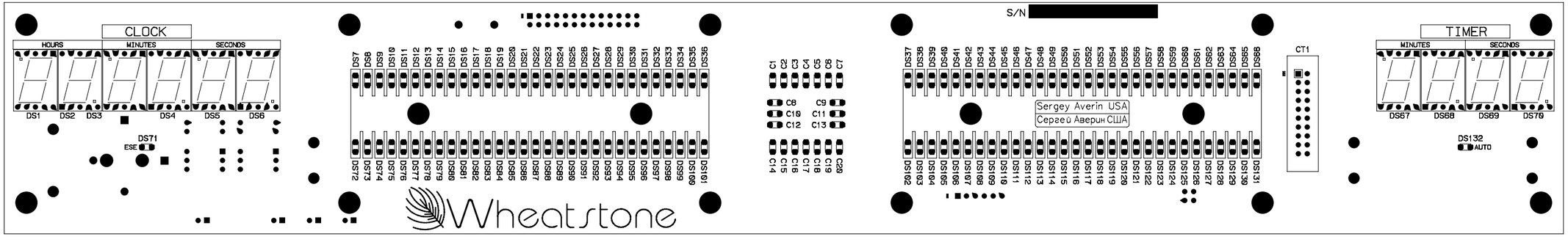


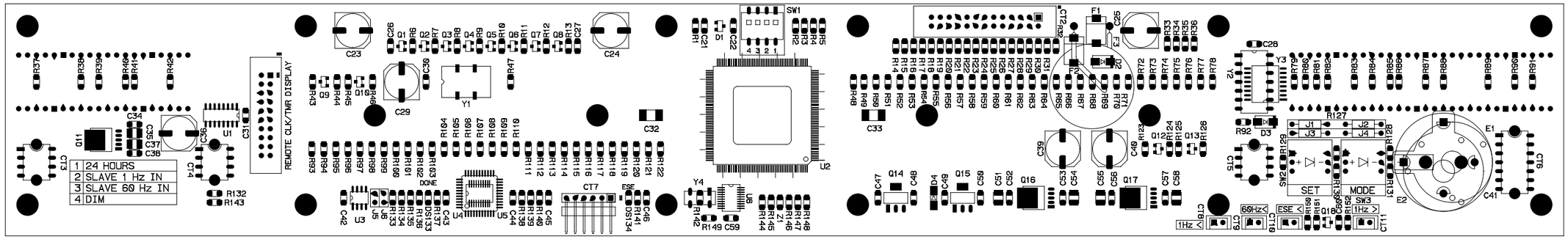
TO CLD-220 PCB (CLOCK/TIMER DISPLAY)



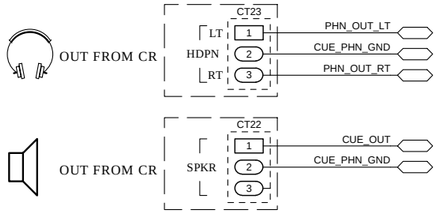
CONTRACT NO.		*VU-75*
- SA UR US - Sergey Averin -		
APPROVALS	DATE	Wheatstone Corporation
DRAWN SA	12-17-07	600 Industrial Drive
CHECKED	SA	New Bern, NC 28562
ISSUED	SA	SIZE D / FSCM NO. / DWG. NO. 16S1011-1 / REV C
W# 700807		SCALE / VU-75C PCB / SHEET 1 OF 2

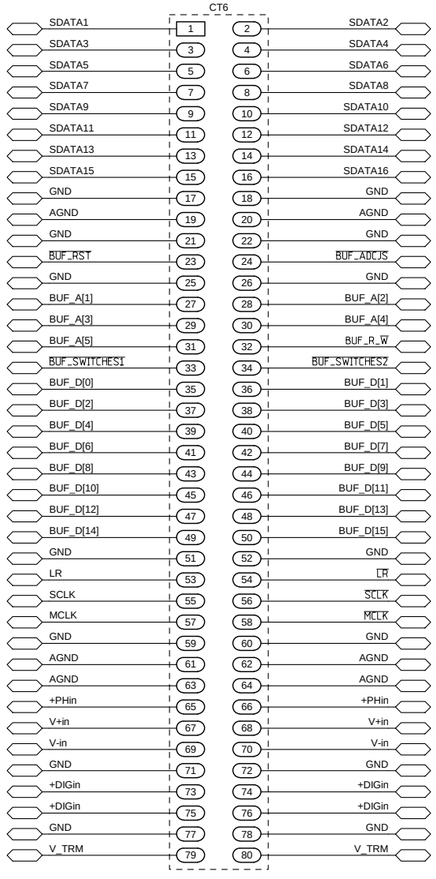

U2
XC2S100
CCLK
PROGRAM
GND
+3.3V
RTMR_SYNC
FPGA_TDI
TMS
TCK
Y1
6.144MHz
PROMDATA
AUTO_LED
INT0
1HZ_OUT
32KHZ_OUT
ESE_LED
ESE_in
RCLK_SYNC
RDATA_CLK
SDO
SDI
SCLK
CE
MODE_LED
60_HZ_in
RDATA
1_HZ_in
SET_LED
1_HZ_out
SET_SW
MODE_SW
CLK_DSPL_HI
CLK_DSPL_HZ
CLK_DSPL_MI
CLK_DSPL_MZ
CLK_DSPL_SI
CLK_DSPL_SZ
AUTO_LED
ESE_AUTO_DIS
LED_RT_AUD
LED_LT_AUD
LED_RT_PGM
LED_LT_PGM
INIT
DONE
TDO
TMR_DSPL_MI
TMR_DSPL_MZ
TMR_DSPL_SI
TMR_DSPL_SZ
FSOUT
FSIN
TMRRST
MTRPGM
MTRSCLK
MTRMCLK
MTRLRCK
MTRSWT
MTRAUX
MTRAUD
TMR_RESTART
TMR_RESET
TMR_HOLD
TMR_STRT_STP
Z4HRS
SLAVE_1HZin
SLAVE_60HZin
DSPL_DIM
LED_LT_SWT
LED_RT_SWT
LED_LT_PGM
LED_RT_PGM
LED_LT_AUX
LED_RT_AUX
FSOUT
FSIN
Q7
Q5
Q1
Q3
Q4
Q8
Q2
Q6
Q10
Q9
Q13
Q12
FDN340P
CT7
CT10
ESE IN
Q18
MMBTA05
U3
DS1706
U4
XCF01
U5
XC18V01
U6
DS1306
Y2
DS32KHZ
Y3
32.768KHZ
OSCILATOR
(INSTALL ONE)
CT2
CT9
CT3
CT4
CT5
CT6
TO TIMER
TO CLOCK CONTROL
60 HZ IN
60 Hz in
DIG.COM
RESET
HOLD
START/STOP
+5V
+DIG
RESTART
1HZ INPUT
1HZ OUTPUT
60 HZ INPUT
SET (H,M,S)
SET
MODE
SELECT
+DIGin
POLYSW 3.0A
POLYSW 1.0A
PQ05D
Q16
Q17
1N4002
Y4
32.768kHz
LT1117 3.3V
LT1117 2.5V
CONTRACT NO.
- SA UR US - Sergey Averin -
APPROVALS
DATE
DRAWN
SA
12-17-07
CHECKED
SA
ISSUED
SA
W# 700807
VU-75
Wheatstone Corporation
600 Industrial Drive
New Bern, NC 28562
SIZE D
FSCM NO.
DWG. NO.
16S1011-2
REV C
SCALE
VU-75C PCB
SHEET 2 OF 2


CLOCK
HOURS
MINUTES
SECONDS
DS1
DS2
DS3
DS4
DS5
DS6
DS71
ESE
Wheatstone
S/N
Sergey Averin USA
Сергей Аверин США
CT1
TIMER
DS67
DS68
DS69
DS70
DS132
AUTO

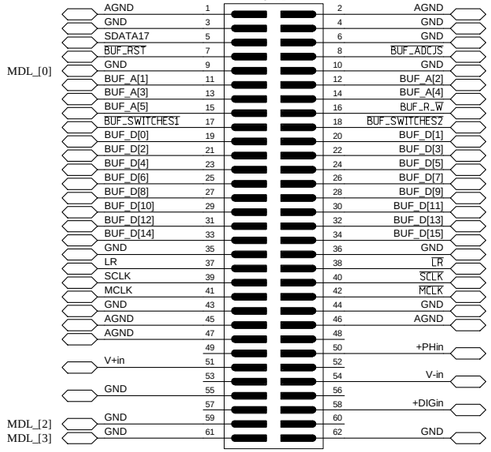

1 24 HOURS
2 SLAVE 1 Hz IN
3 SLAVE 60 Hz IN
4 DIM
REMOTE CLK/TMR DISPLAY
DONE
ESE
SET
MODE
60Hz
1Hz

EDGE CONNECTORS BUSS CHART

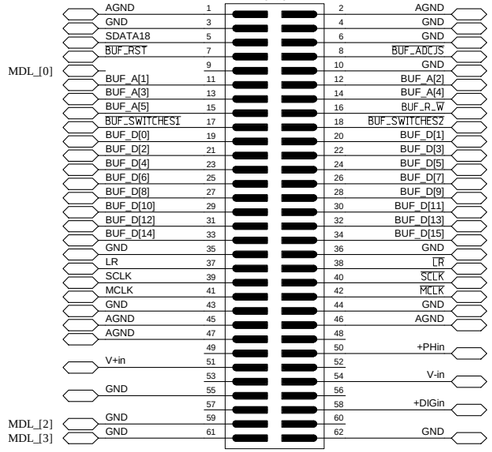




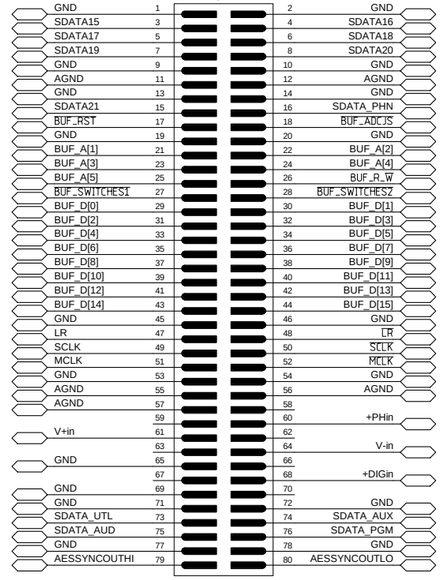
INPUT
CT12



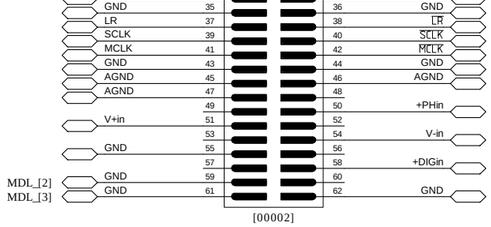
INPUT
CT13



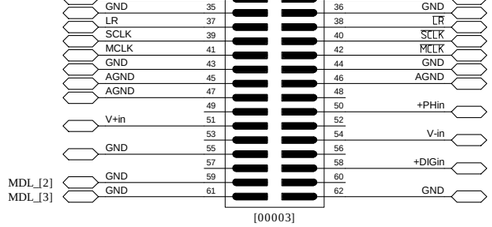
N-75
CT7

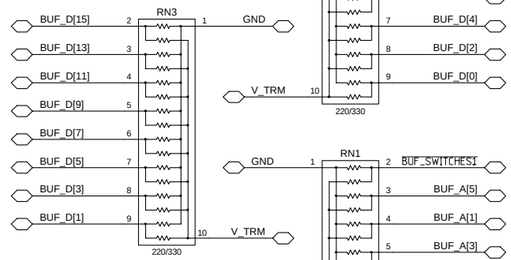


INPUT
CT14

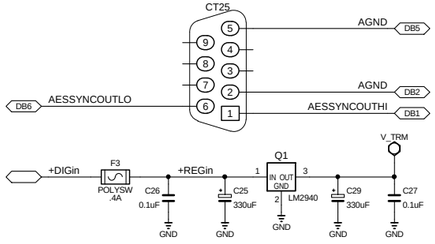


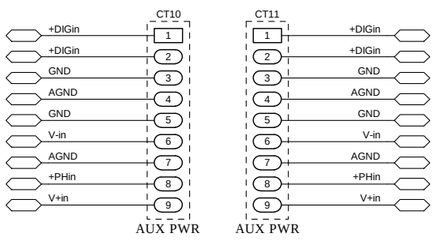
INPUT
CT15

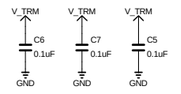




AES SYNC OUT
DB-9 CONNECTOR





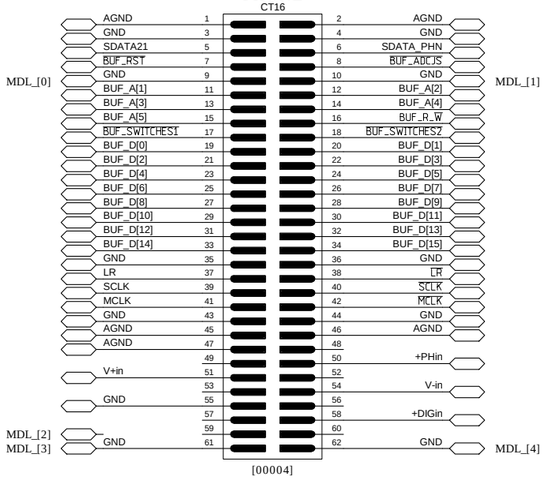


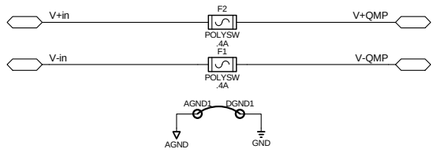
CONTRACT NO.		*MBR-75*	
- SA UR US - Sergey Averin -			
APPROVALS	DATE	Wheatstone Corporation	
DRAWN SA	8-24-05	*600 Industrial Drive*	
CHECKED	SA	*New Bern, NC 28562*	
ISSUED	SA	SIZE D / FSCM NO. / DWG. NO. 16S100x / REV B	
W# 700799		SCALE / MBR-75B PCB / SHEET 1 OF 2	

MBR-75 8 Position Mother Board (Right) Schematic - Sheet 1 of 2

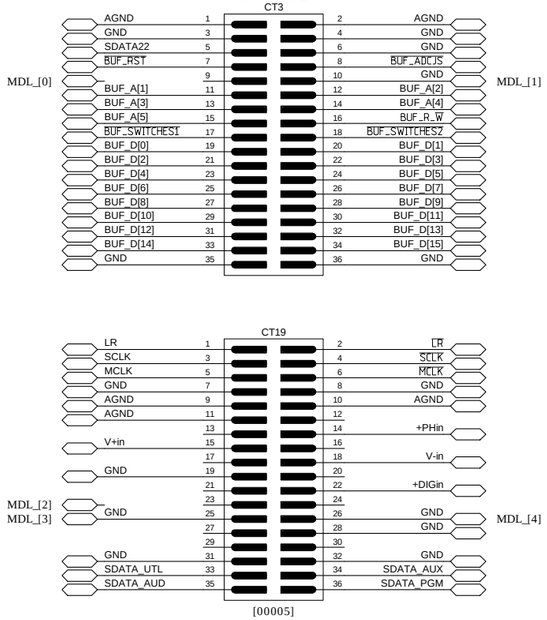
EDGE CONNECTORS BUSS CHART

PHONE

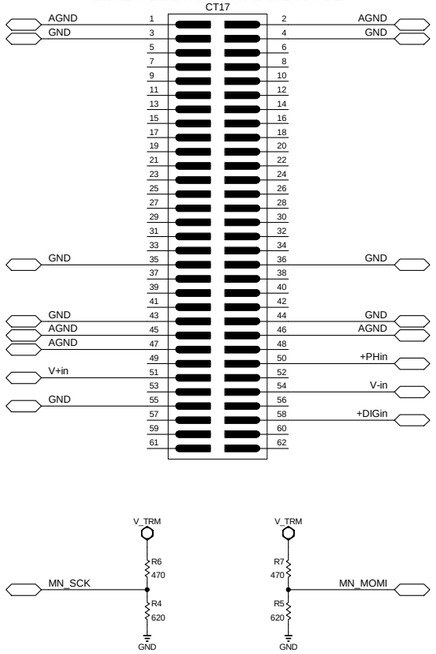


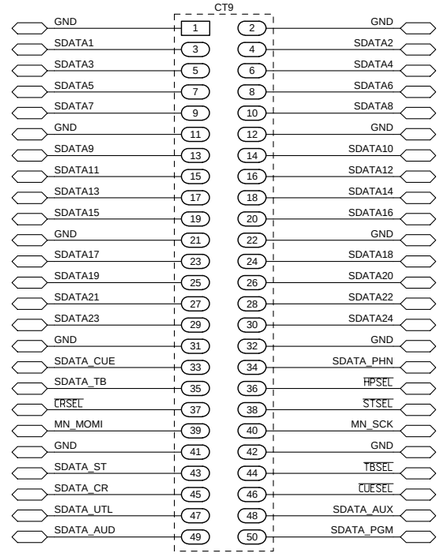


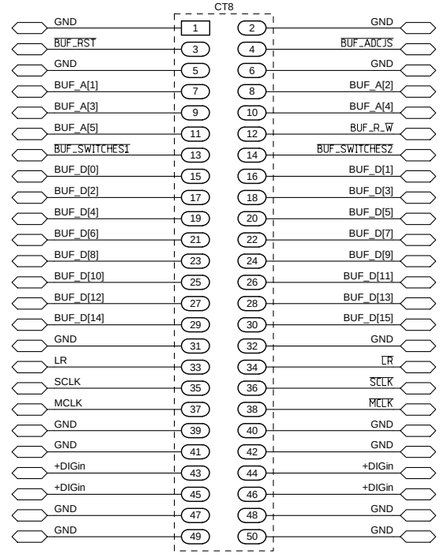
OUTPUT



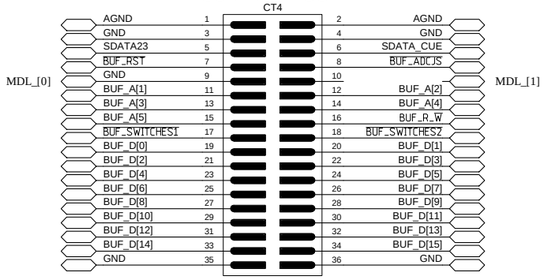
LINE SELECT/ TAPE REMOTE

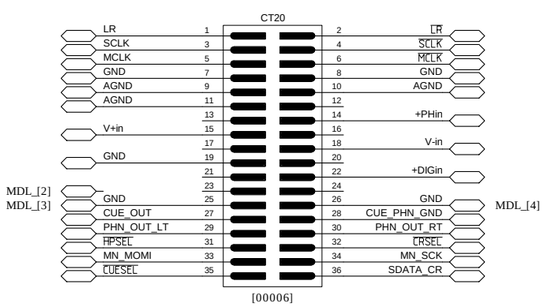




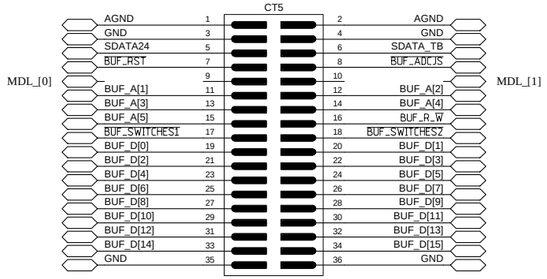


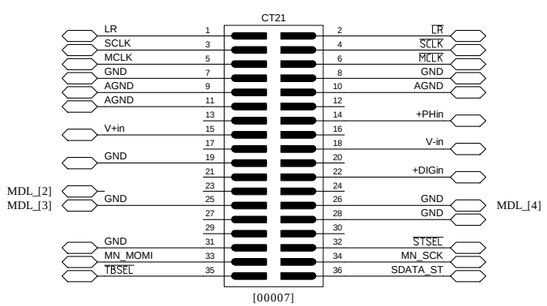
CONTROL ROOM



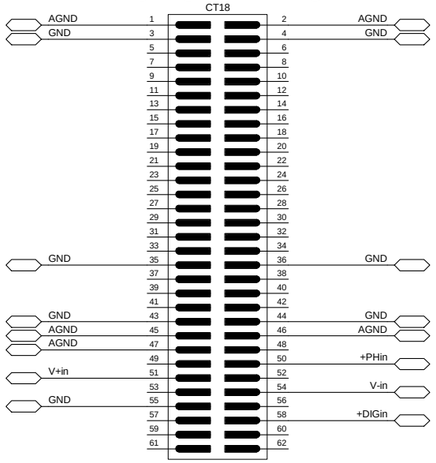


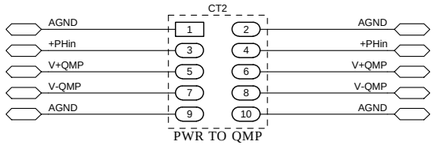
STUDIO





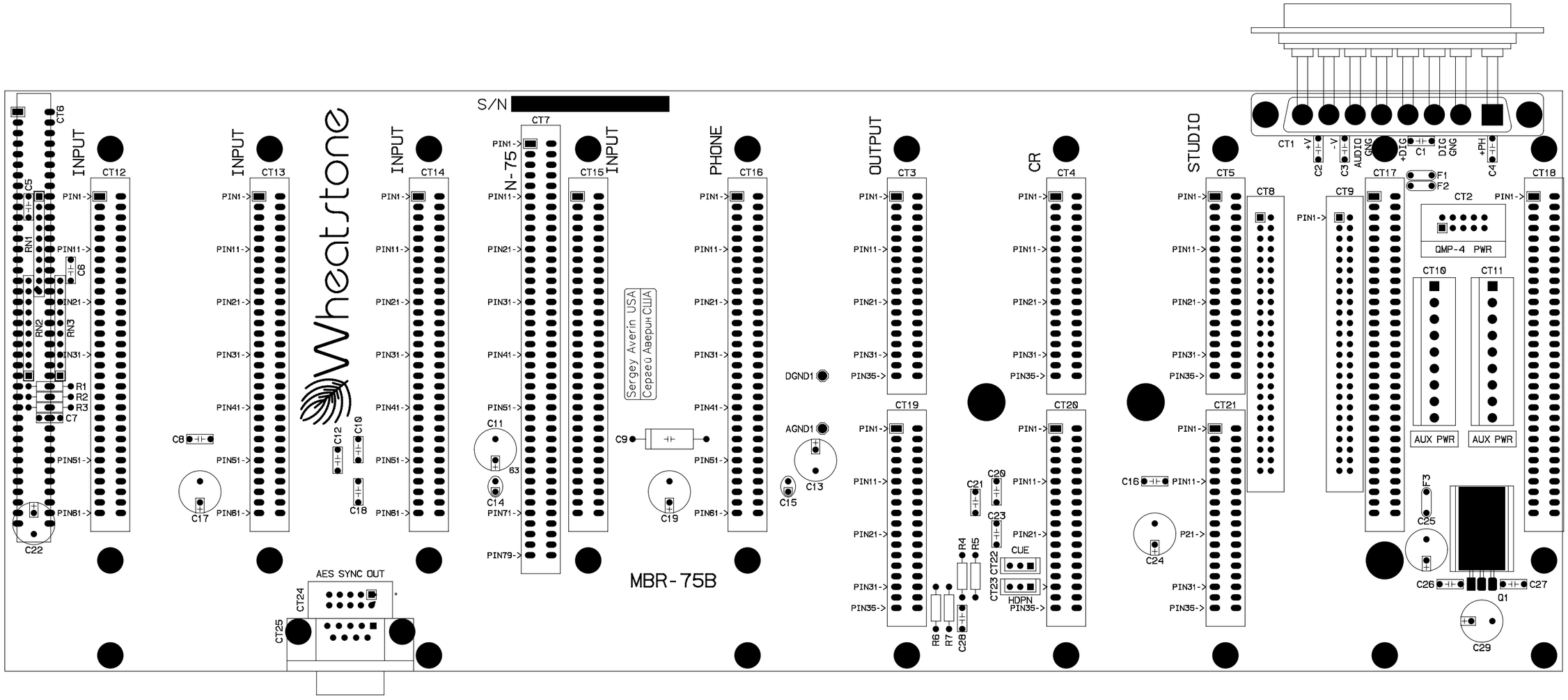
LINE SELECT/ TAPE REMOTE



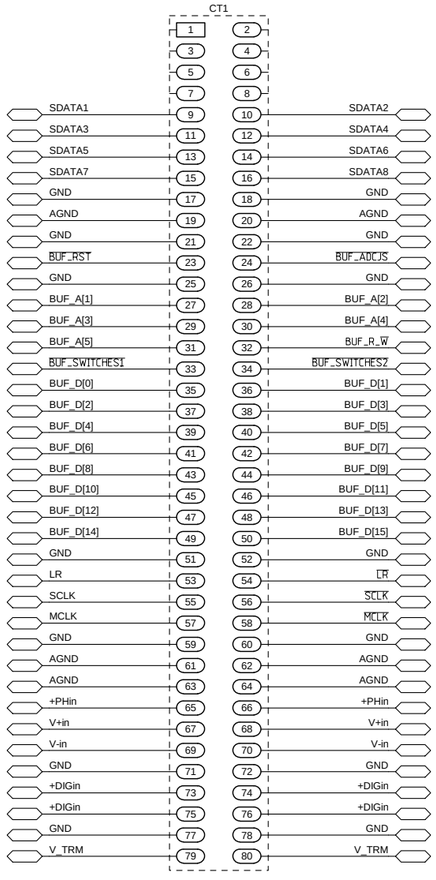


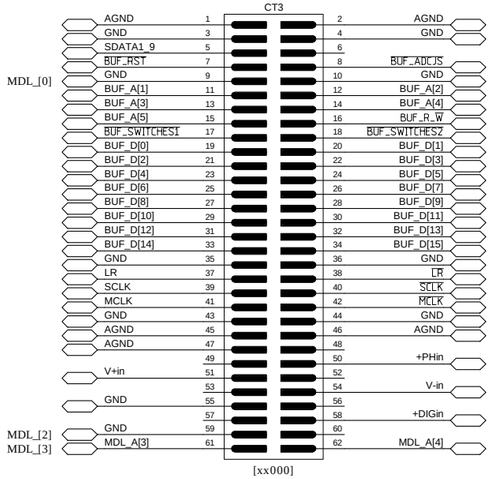
CONTRACT NO. - SA UR US - Sergey Averin -		MBR-75	
APPROVALS	DATE	Wheatstone Corporation 600 Industrial Drive New Bern, NC 28562	
DRAWN SA	8-24-05		
CHECKED	SA		
ISSUED	SA	SIZE D / FSCM NO. / DWG. NO. 16S100x / REV B	
W# 700799		SCALE / MBR-75B PCB / SHEET 2 OF 2	

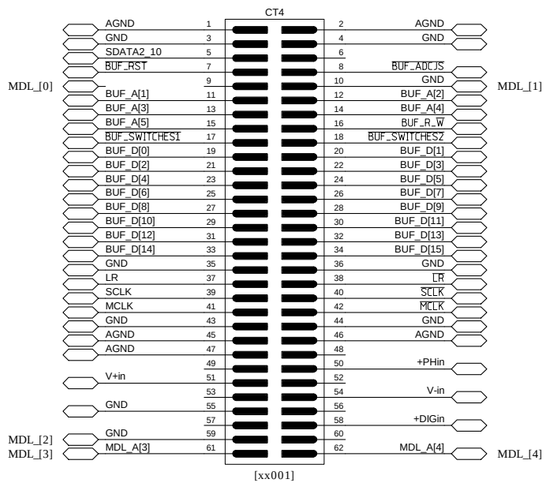
MBR-75 8 Position Mother Board (Right) Schematic - Sheet 2 of 2

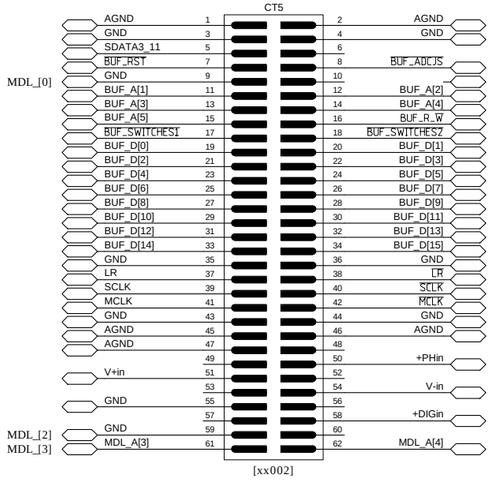

S/N
Wheatstone
MBR-75B
INPUT
N-75
PHONE
OUTPUT
CR
STUDIO
Sergey Averin USA
Сергей Аверин США
AES SYNC OUT
QMP-4 PWR
AUX PWR
CUE
HDPN
+V
-V
AUDIO GND
+DIG
DIG GND
+PH

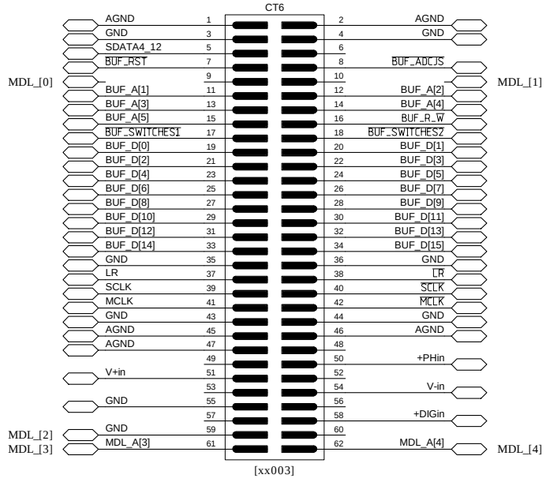
EDGE CONNECTORS BUSS CHART

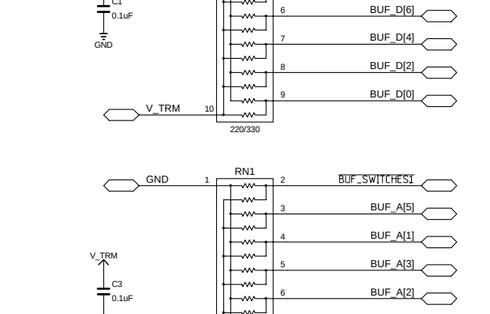


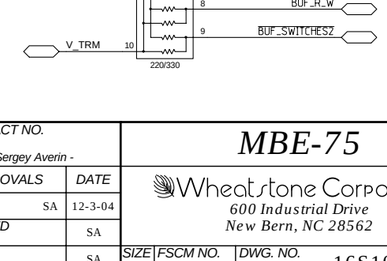


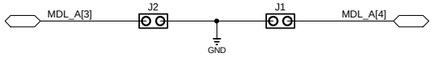


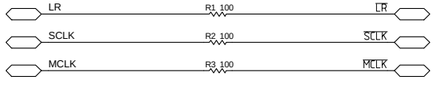








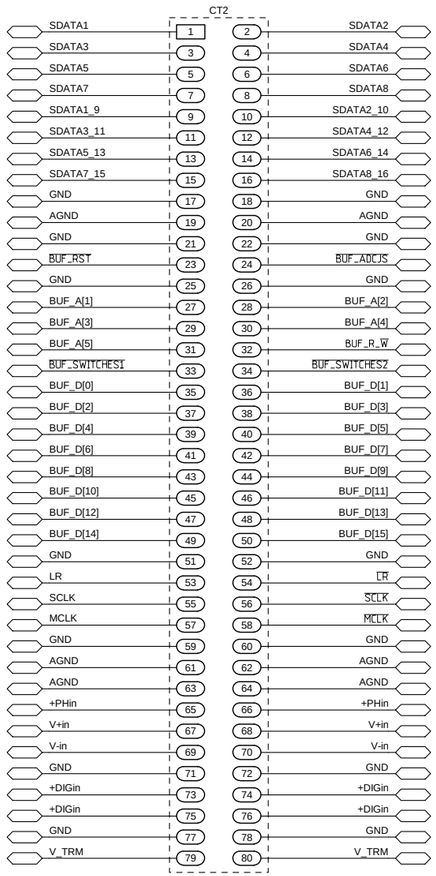


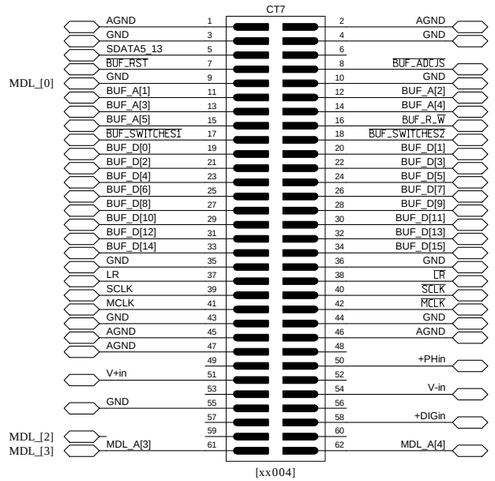


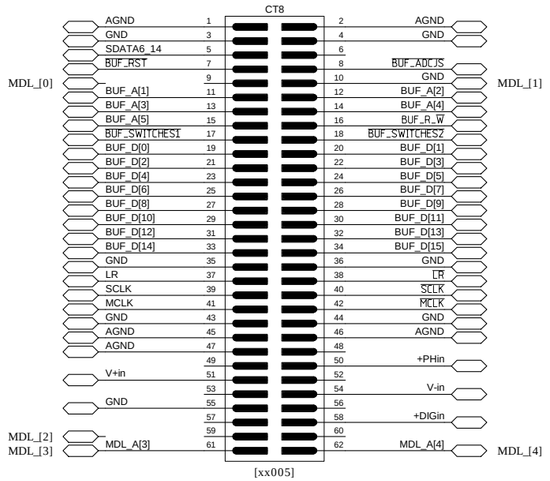
INSTALLED JUMPERS FOR MOTHER BOARD		
	A[4]	A[3]
Middle (MBE-75)	J1	X
Left (MBE-75)	X	J2

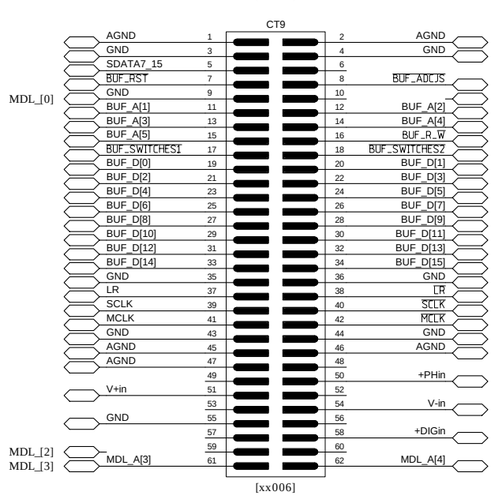
CONTRACT NO. - Sergey Averin -		MBE-75	
APPROVALS	DATE	Wheatstone Corporation 600 Industrial Drive New Bern, NC 28562	
DRAWN SA	12-3-04		
CHECKED SA			
ISSUED SA		SIZE D / FSCM NO. / DWG. NO. 16S1004 / REV B	
W# 700800		SCALE MBE-75B PCB / SHEET 1 OF 2	

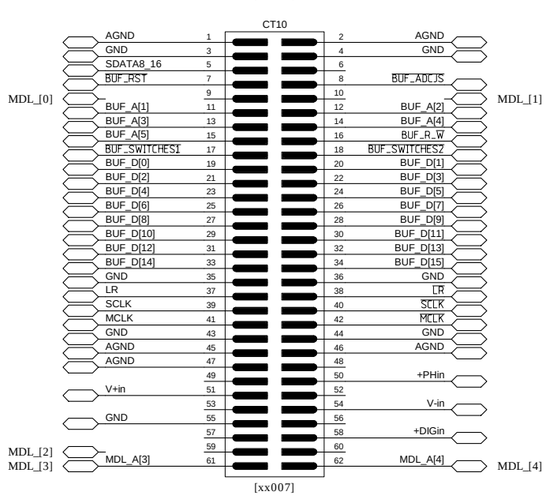
EDGE CONNECTORS BUSS CHART



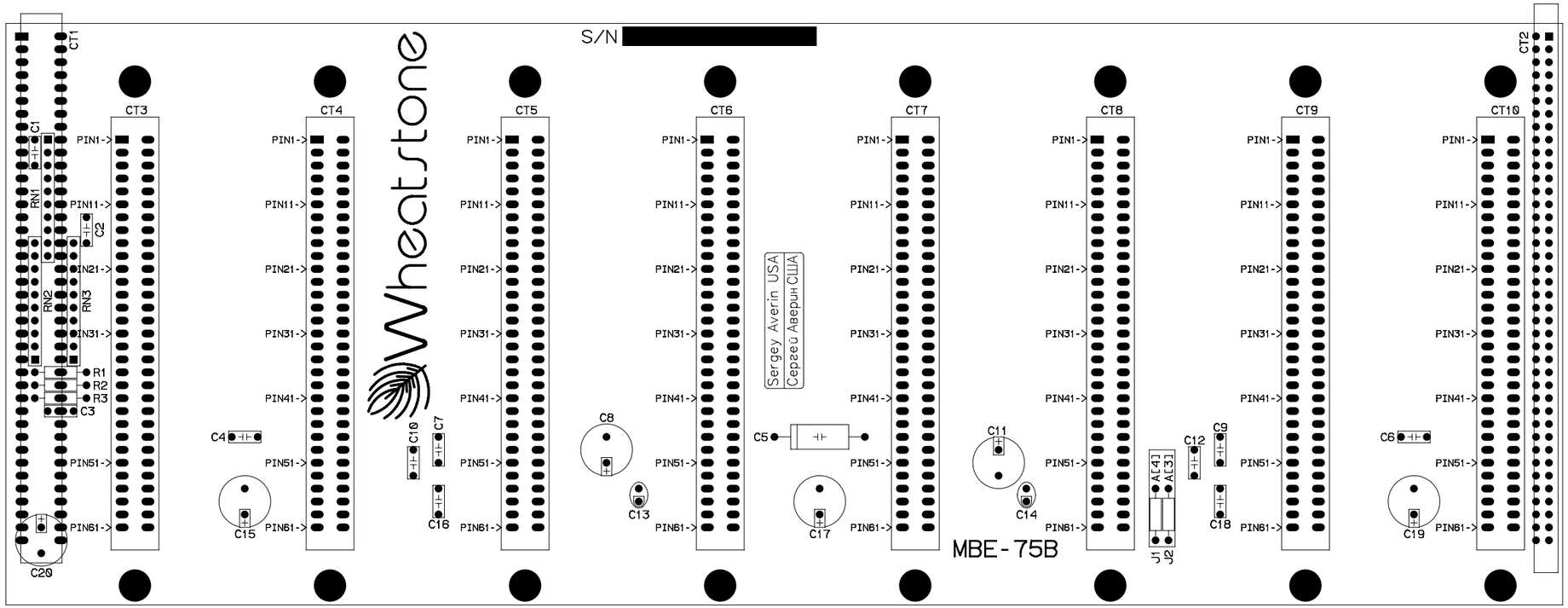


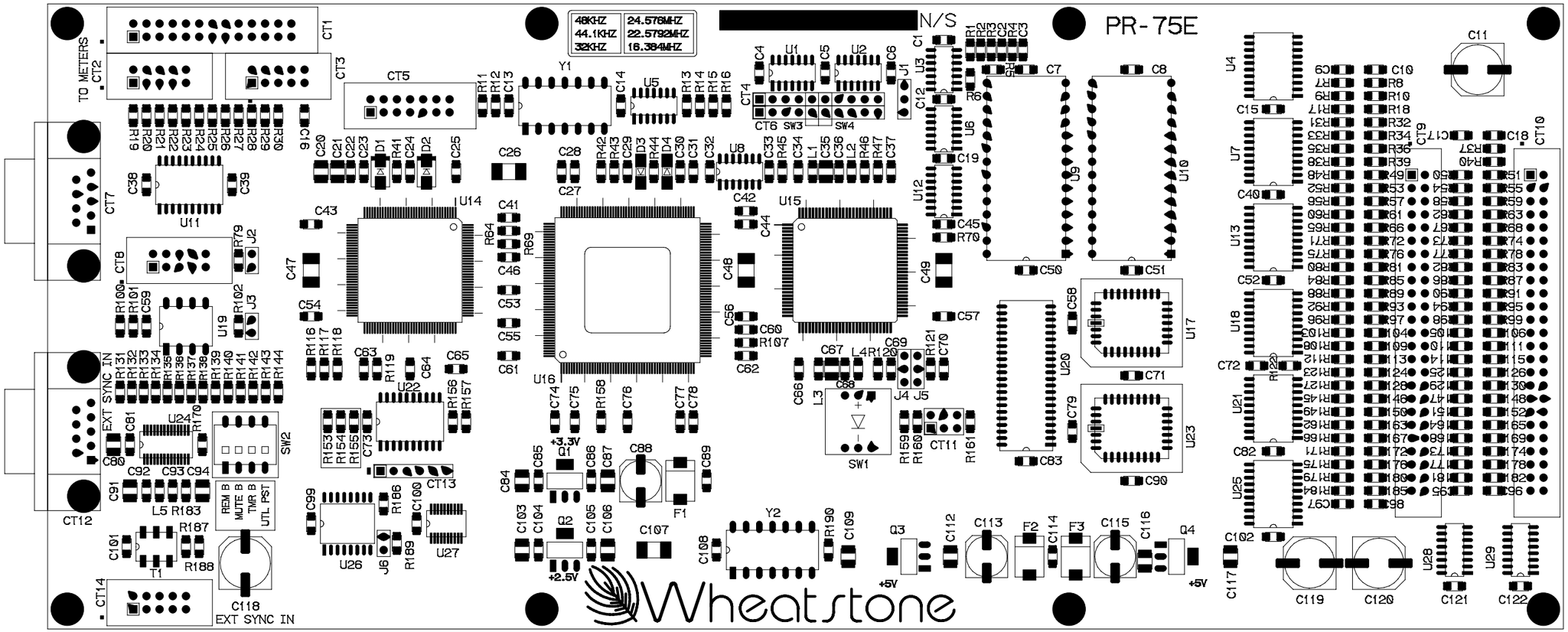


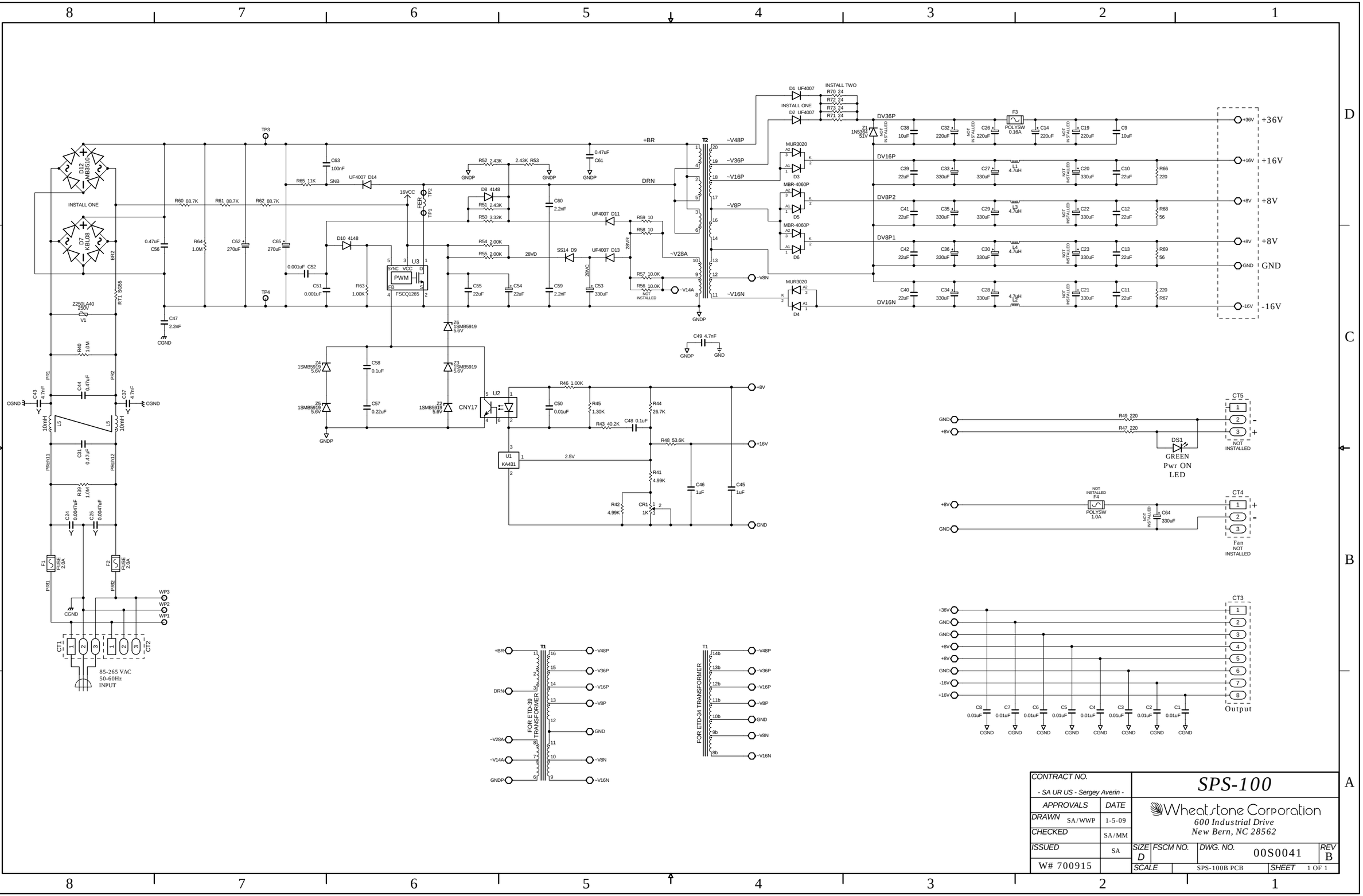




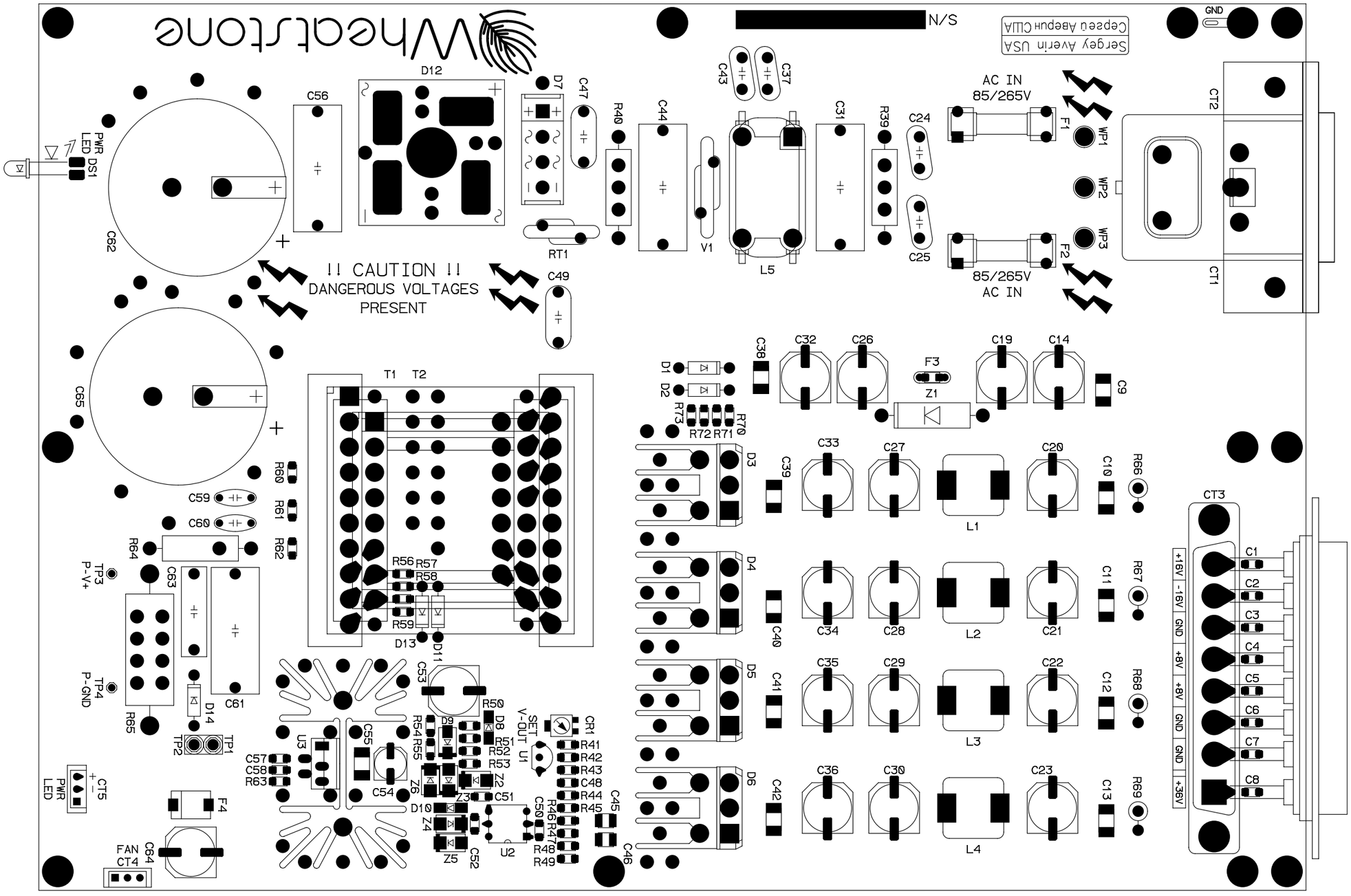
CONTRACT NO. - Sergey Averin -		*MBE-75*
APPROVALS	DATE	Wheatstone Corporation 600 Industrial Drive New Bern, NC 28562
DRAWN SA	12-3-04	
CHECKED	SA	
ISSUED	SA	SIZE D / FSCM NO. / DWG. NO. 16S1005 / REV B
W# 700800		SCALE MBE-75B PCB / SHEET 2 OF 2


S/N
Wheatstone
Sergey Averin USA
Сергей Аверин США
MBE-75B
CT1
CT2
CT3
CT4
CT5
CT6
CT7
CT8
CT9
CT10
PIN1->
PIN11->
PIN21->
PIN31->
PIN41->
PIN51->
PIN61->
C1
C2
C3
C4
C5
C6
C7
C8
C9
C10
C11
C12
C13
C14
C15
C16
C17
C18
C19
C20
RN1
RN2
RN3
R1
R2
R3
J1
J2
A[4]
A[3]


PR-75E
N/S
48KHZ 24.576MHZ
44.1KHZ 22.5792MHZ
32KHZ 16.384MHZ
TO METERS
CT1
CT2
CT3
CT4
CT5
CT6
CT7
CT8
CT9
CT10
CT11
CT12
CT13
CT14
SW1
SW2
SW3
SW4
Y1
Y2
U1
U2
U3
U4
U5
U6
U7
U8
U9
U10
U11
U12
U13
U14
U15
U16
U17
U18
U19
U20
U21
U22
U23
U24
U25
U26
U27
U28
U29
J1
J2
J3
J4
J5
J6
Q1
Q2
Q3
Q4
T1
L1
L2
L3
L4
L5
F1
F2
F3
REM B
MUTE B
TMR B
UTL PST
EXT SYNC IN
+3.3V
+2.5V
+5V
Wheatstone



CONTRACT NO.	SPS-100
- SA UR US - Sergey Averin -	
APPROVALS / DATE	Wheatstone Corporation
DRAWN SA/WWP 1-5-09	600 Industrial Drive
CHECKED SA/MM	New Bern, NC 28562
ISSUED SA	SIZE D / FSCM NO. / DWG. NO. 00S0041 / REV B
W# 700915	SCALE / SPS-100B PCB / SHEET 1 OF 1


Wheatstone
N/S
Sergey Averin USA
Сергей Аверин США
GND
AC IN
85/265V
F1
F2
WP1
WP2
WP3
CT1
CT2
CT3
!! CAUTION !!
DANGEROUS VOLTAGES
PRESENT
PWR
LED DS1
C62
C65
C56
D12
D7
C47
R40
C44
C43
C37
C31
R39
C24
C25
RT1
V1
L5
C49
T1
T2
R60
R61
R62
C59
C60
R64
C63
C61
TP3
P-V+
TP4
P-GND
D14
TP1
TP2
R65
C57
C58
R63
U3
C55
C54
C53
R50
D8
R51
R52
R53
Z2
C51
R54
R55
D9
Z6
D10
Z4
Z3
Z5
C52
U2
C59
R46
R47
R48
R49
C45
C46
SET
V-OUT U1
CR1
R41
R42
R43
C48
R44
R45
R56
R57
R58
R59
D13
D11
PWR
LED
CT5
F4
FAN
CT4
C64
D1
D2
R73
R72
R71
R70
C38
C32
C26
F3
Z1
C19
C14
C9
C33
C27
C20
C10
C39
C34
C28
C21
C11
C40
C35
C29
C22
C12
C41
C36
C30
C23
C13
C42
D3
D4
D5
D6
L1
L2
L3
L4
R66
R67
R68
R69
C1
C2
C3
C4
C5
C6
C7
C8
+16V
-16V
GND
+8V
+8V
GND
GND
+36V

Appendix

Contents

Replacement Parts List A-2

For the most part there are no user-replaceable parts in the D-75 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 follws. 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 “techsupport@wheatstone.com”.

REPLACEMENT PARTS — D-75 DIGITAL AUDIO CONSOLE

COMPONENT	DESCRIPTION	*WS P/N*
IN-75 MODULE	COMPLETE INPUT MODULE	***"002900"***
SP-75 MODULE	COMPLETE PHONE MODULE	***"002901"***
OM-75 MODULE	COMPLETE OUTPUT MODULE	***"002902"***
CR-75 MODULE	COMPLETE CONTROL ROOM MONITOR MODULE	***"002903"***
SC-75 MODULE	COMPLETE STUDIO MODULE	***"002904"***
LS-75 MODULE	COMPLETE LINE SELECT MODULE	***"002905"***
TR-75/FF MODULE	COMPLETE FULL-FUNCTION TAPE REMOTE CONTROL MODULE	***"002906"***
TR-75/SS MODULE	COMPLETE START/STOP TAPE REMOTE CONTROL MODULE	***"002907"***
QMP-4 CARD	QUAD MIC PREAMP LOADED CARD ASSEMBLY	***"005549"***
BK-75	BLANK FACEPLATE	***"002919"***
ADC-75 CARD	A-TO-D CONVERTER DAUGHTER BOARD FOR ANALOG STEREO LINE INPUTS	***"002928"***
SRC-75 CARD	SAMPLE RATE CONVERTER CARD FOR DIGITAL INPUTS	***"002929"***
PR-75 CARD	MAIN PROCESSOR CARD	***"002940"***
VU-75 CARD	METERBRIDGE LED VU CARD	***"002941"***
MBR-75 CARD	MAIN INTERFACE MOTHERBOARD (RIGHT)	***"002942"***
MBEC-75 CARD	EXPANSION INTERFACE MOTHERBOARD (CENTER)	***"002943"***
MBEL-75 CARD	EXPANSION INTERFACE MOTHERBOARD (LEFT)	***"002944"***
SPS-100 POWER SUPPLY	RACKMOUNT POWER SUPPLY	***"007360"***
SPS POWER SUPPLY CABLE	CONSOLE POWER SUPPLY CABLE	***"007222"***
CRYSTAL FOR 32 KHZ CONSOLE SAMPLE RATE	16.384 MHZ CRYSTAL	***"370010"***
CRYSTAL FOR 44.1 KHZ CONSOLE SAMPLE RATE	22.579 MHZ CRYSTAL	***"370011"***
CRYSTAL FOR 48 KHZ CONSOLE SAMPLE RATE	24.576 MHZ CRYSTAL	***"370012"***
WIRED REPLACEMENT FADER	WIRED FADER FOR IN-75 MODULES	***"057501"***
WIRED REPLACEMENT FADER	WIRED FADER FOR SP-75 MODULES	***"057502"***
WIRED REPLACEMENT SWITCH	WIRED "ON/OFF" SWITCH	***"057503"***
WIRED REPLACEMENT POT	WIRED POT FOR CONTROL ROOM, STUDIO AND HEADPHONE MONITOR	***"057504"***
MANUAL	OWNER'S MANUAL	***"002999"***

REPLACEMENT PARTS — D-75 DIGITAL AUDIO CONSOLE

COMPONENT	DESCRIPTION	*WS P/N*
I/O CONNECTOR	25 PIN CONNECTOR FOR MODULE I/O CONNECTIONS	***"200018"***
REPLACEMENT SWITCH	"ON/OFF" SWITCH	***"510063"***
REPLACEMENT RED BUTTON	MODULE "ON" BUTTON	***"530057"***
REPLACEMENT AMBER BUTTON	MODULE "OFF" BUTTON	***"530060"***
RED LED REPLACEMENT	MODULE "ON" BUTTON LED	***"600077"***
YELLOW LED REPLACEMENT	MODULE "OFF" BUTTON LED	***"600031"***
SWITCH	2 POLE PUSHBUTTON MOMENTARY SWITCH	***"510113"***
POT	CONDUCTIVE PLASTIC DUAL LINEAR POT	***"500124"***
POT KNOB	1/8" COLLET KNOB	***"520053"***
POT CAP	BURGUNDY CAP W/WHITE LINE	***"530039"***
POT CAP	DARK GREY CAP W/WHITE LINE	***"530040"***
POT CAP	BLUE CAP W/WHITE LINE	***"530045"***
LUMA BUTTON	WHITE LUMA BUTTON	***"530268"***
LUMA BUTTON	RED LUMA BUTTON	***"530269"***
LUMA BUTTON	YELLOW LUMA BUTTON	***"530270"***
LUMA BUTTON	GREEN LUMA BUTTON	***"530271"***
RIBBON CABLE	50 CONDUCTOR RIBBON CABLE	***"150007"***
RIBBON CABLE	26 CONDUCTOR RIBBON CABLE	***"150083"***
RIBBON PLUG	10 PIN RIBBON PLUG	***"230020"***
RIBBON PLUG	26 PIN RIBBON PLUG	***"250043"***
PLUG	3 PIN PLUG FOR #26 AWG	***"230028"***
PLUG	6 PIN PLUG FOR #26 AWG	***"230031"***
PLUG	9 PIN PLUG FOR #26 AWG	***"230032"***
PLUG	50 PIN PLUG	***"250049"***
HEADER	6 PIN JST HEADER	***"250065"***
HEADER	9 PIN JST HEADER	***"250066"***
JACK	RTS JACK	***"260005"***
REPLACEMENT CUE SPEAKER	REPLACEMENT CUE SPEAKER	***"960000"***