The

api LEGACY

ALL DISCRETE

Recording and Production Console

Serial Number:_____

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Contents

THE CONSOLE

Configurations

With the API commitment to modular channel design, and modular frame design, a vast number of options are available to the purchaser, both when initially specifying a console for build, and as later expansion plans unfold.

However, several standard configurations stand out as obvious choices for specific applications, from a 12 input, rack mounted mixer, to large, all input console frames exceeding 80 channel inputs, with 48 channel monitors.

Systems that have been built to date include all input versions of 48 - 72 channels and split versions of 32 in with 24 channel monitor and 48 in with 24 channel monitor.

All console systems may be ordered with standard manual P & G faders, without faders or may be specified with a choice of factory installed automation systems. API works closely with automation suppliers in the integration and installation of clients' preferred automation.

Signal Flow

The signal enters the module as a true balanced input, passes through the insert relay (which can be automated), to a relay that can invert the signal with the phase switch.

From the phase switch the signal enters a balanced mute circuit, comprised of the 2510 op-amp. This amp is supplied with plus and minus 28 volts DC, allowing it to clip above the level of the transformer output stages of the console.

The mute circuit can completely mute any level up to +30dBm over any frequency to a complete off mute. Mute circuit has the ability to mute all noise from the mute amplifier as well as the signal. This "dual muting" not only mutes, but also makes the sound and any noise simply "go away."

The module has a direct output that shows up at the patchbay as a direct out, independent from the bus output. The direct output is a combination of the 2520 op-amp and the 2623 output transformer. *This is the heart of the API sound!* The combination yields well over +28dBm clip point throughout the entire console signal path.

A VU meter amp is provided internally, which monitors the channel input level from either the Mic Pre output or the line/tape input, or monitors the Direct Out level.

PRE-INSTALLATION

What to Expect

The customer can expect API to supply a minimum of two installation personnel to handle the installation and commissioning of the API Legacy Console. The commissioning personnel may require the assistance of an in-house studio technician for specific jobs. They will provide power supply wiring and grounding of the console and assistance with the interface of the console to the studio. The commissioning personnel are also available at the studios' expense for special or custom studio jobs. Any special or custom jobs can be discussed freely with the commissioning personnel.

Customer Requirements

For proper installation, calibration and commissioning, we require the following things to be complete before commissioning can begin:

1.) The control room should be complete and cleaned of any building materials such as wood scraps, sawdust, etc.

2.) The control room speakers should be mounted in their approximate areas and wired to a suitable power amp which is pinned out to the appropriate Elco connector.

3.) A multi-track machine should be pinned out to the appropriate Elco connector. Calibration tape, and if possible, a music tape should be provided for final test. The multi-track machine should be calibrated and ready to operate.

5.) Position of the console should be decided prior to placement. The console can be moved around, but at the completion of commissioning, the console must be secured to the floor in a permanent fashion, unless custom feet are ordered at the time of purchase.

6.) Position of the power supplies should be decided upon prior to placement. The power supplies require a minimum of four U tall each in a standard 19" rack with a rear depth of 24 to 26". Most consoles will require two power supplies. Two power supplies will typically require two 20 amp service on the same feed as the control room. Each power supply has two fans which can run at full speed, 90% speed or half speed, depending on the noise restrictions of the power supply positions. We prefer full speed, as that provides better cooling, but full speed is quite noisy. When the noise is a minor problem, the fans can be dropped to 90%, reducing the noise quite a bit. In situations where the power supplies are in the control room, half speed operation of the fans is possible with little noise, provided there is ample air movement behind the rack. The power supplies draw air in from the sides near the front and exhaust out the rear. Access to the rear panel is preferred, but the power supplies can be removed if needed, to service the wiring. Front panel circuit breakers are provided for each set of voltages. LED indicators are also provided for each output.

7.) Position of the patchbay must be determined prior to the onset of assembly, as there are half as many cables as there are channels, plus approximately eight additional cables that must be cut to length. We exclusively use Mogami cable which works out to be approximately 3/4" in diameter each. Any troughs should be large enough to accommodate the appropriate wire bundle.

Customer Requirements continued

8.) API provides 8 feet of length from the patchbay, to all I/O cables such as multi-tracks, control room monitors, etc. and provides the blank mating connector, if required. We recommend that multi-track, two-track, effects, cue, and control room cables be pinned out with Elco pins but not fitted into their shells, should there be any last minute pinout changes.

9.) Customer is required to provide basic tools specific to the facility, if needed.

10.) As installing a console is much like making sausage, we recommend that the customer not eat until fully cooked.

11.) We recommend that the customer hold all questions and operation inquiries until the installation team is in a position to devote 100% of their time to explanations and examples. This can greatly slow down the installation process and require additional days at the customers' expense.

How to Make Last Minute Changes

1.) Take out checkbook, call API, be prepared to be turned down.

2.) Submit your request via fax followed by an immediate phone call to discuss the changes required. All changes will be looked at and an appropriate response will be given at that time. Many small changes do not require much more than a component change and will probably require no increase in cost. Understand that there may be a substantial increase in the price of the console, or a delay in delivery, for certain changes. Changes that must be made early on are module position, remote patchbay length, power supply length, etc. These items can become very costly if done at a later date. Changes such as module shortloading increases can be done within 30 days of shipping without increases in price other than the actual module prices themselves.

INSTALLATION

Receiving Packages & Console

1.) The console is shipped in a crate that may require the use of a forklift to lift it off of the truck and to place it near the point of installation. Some trucks may have a lift gate, but moving the console may require dollies or a forklift. We do not recommend carrying the crate. Up to 8 people may be required to remove the console from the crate and place it into position. We recommend a professional moving company that is bonded and insured, as once the console is loaded onto the truck, API's insurance no longer covers it. Once it is loaded off of the truck, transit insurance no longer covers it.

2.) The console crate and most boxes will arrive together. The console is shipped with the faders installed unless automation has been purchased. We recommend that no boxes be opened and that removing the top of the crate is acceptable only to inspect the console. As the boxes are categorized according to their contents, opening them can cause mix-ups in cabling and modules, which may cause installation delays.

3.) Several boxes may arrive before, during or immediately after the console arrives. These boxes should be treated the same as the other boxes and not opened except by the installers.

4.) A shipping list and copies of all waybills will be forwarded to the customer prior to receiving the shipment. Use this list to inventory and check off each box. Inform API immediately upon any apparent shortages.

5.) Since shipping is paid by the customer, some shippers require payment upon delivery. Make sure that all arrangements have been made ahead of time to have the appropriate form of payment available. If the shipment has to be taken back to the carrier and re-delivered, any damages or loss may not be covered by transit insurance.

Placement of Console, Patchbay & Power Supplies

1.) Position of the console should be decided prior to placement. The console can be moved around, but at the completion of commissioning, the console must be secured to the floor in a permanent fashion, unless custom feet are ordered at the time of purchase.

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3.) Position of the patchbay must be determined prior to the onset of assembly, as there are half as many cables as there are channels, plus approximately 8 additional cables that must be cut to length. We exclusively us Mogami cable, which works out to be approximately 3/4" in diameter each. Any troughs should be large enough to accommodate the appropriate wire bundle.

4.) API provides 8 feet of length from the patchbay, to all I/O cables such as multi-tracks, control room monitors, etc. and provides the blank mating connector, if required. We recommend that multi-track, effects, cue and control room cables be pinned out with Elco pins to match factory specs.

Requirements for Operation & Calibration

1.) After the console has been powered up, all power supply voltages will be set and checked for proper voltage and polarity. At that point, the console will be shut down and the modules will be installed.

2.) Once the modules are installed, all Elco connectors will be attached and system calibration will begin.

3.) All test equipment used for calibration will be supplied by the installation personnel. They will be able to calibrate all input and output levels and verify system specifications in preparation for the acceptance sign-off.

4.) Once calibration has been completed, the customer will be given the calibration and test results and commissioning will be complete. Upon completion, and after signing off, the installation personnel will instruct any studio personnel present on the basic operation, maintenance and repair of the Legacy Console.

COMMISSIONING-CALIBRATION & ACCEPTANCE

Calibration Procedures

1.) All power supply voltages are to be measured at the rear of the console. +5 volts should be within .1 volts. 24 volt relay can be between 20 and 25 volts, with the preference at 24. The 16 volt audio should be set at 16.5 volts, within .1 volts, and within .02 volts of each other. The 28 volt audio should be within .1 volts and should be within .02 volts of each other. 48 volt phantom should be set at 48.4 volts, within .1 volts. In some cases, the higher voltages are to offset the diode drops within the modules.

2.) All inputs and outputs of the Legacy Console will be calibrated for a nominal level of +4 dBu, over a power band width of 10 Hz to 50 kHz. All tests except sweep tests will use 1 KHz at +4 dBu as a reference.

3.) All sweep tests will sweep from 10 Hz to 50 kHz.

4.) All distortion specifications will be less than .05% from 100 Hz to 20 kHz.

5.) All distortion specifications will be less than .1% from 20 Hz to 100 Hz.

6.) The higher distortion specification in line 5 is from the distortion generated by the transformers and is normal and has been since 1967.

7.) Testing will begin by inserting 1 kHz at +4 into CHANNEL IN placing the equalizer in the out position, and bringing the fader to 0, switching on stereo A and B, and measuring the output of the stereo ACA outputs and adjusting the calibration level located behind the center section to +4. The VU meter should also be calibrated at this time, (see#23).

8.) With all master faders at the top, measure the outputs of the stereo boosters and adjust them to +4. They are located on the same board as the stereo ACAs.

9.) Verify that the channel direct out has a level between +1 and +4. It is not critical that the direct out matches the level going into CHANNEL IN patchpoint.

10.) Calibrating the 16 busses follows number 7 above but switching on the appropriate bus switch on the module, switching on the bus master switch and rotating the trim control full clockwise. Measuring the level will be at the BUS OUTPUT patchpoint on the patchbay. Make sure that any tape machines are powered up as not to load the busses. Bus trims are located next to each bus level control on an all-input console, the multi-track has to be in the loop or the measurements must be done at the patchbay.

11.) The next calibration procedure will set the levels of the aux sends. If you have a console with all inputs, you will be using the cue masters as your outputs. If you have a split console, you will be using the aux send masters with the LINK buttons disengaged.

12.) With channel fader at 0 and send one fully clockwise, press send one ON and make sure that the PRE button is off. Set the level of send one master for +4.

13.) Do the same for sends 2, 3, and 4.

14.) Set the send 5/6 panner fully counter-clockwise and set send master 5. Rotate the panner fully clockwise for send 6. If The customer prefers that the level be at +4 with the panner in the center, there is plenty of gain to do so.

15.) Split Console Versions: Calibration of the 868 monitor module follows the same procedure as the input channels, but keep in mind that the calibration of the stereo ACAs and boosters is complete. If there are any differences between the channel's stereo level and the monitor's stereo level, the channel levels should win. The VU meters for the MNTR mode can now be calibrated, (see #23).

Calibration Procedures continued

16.) Now that the stereo ACAs, boosters, busses and sends are calibrated, the Grand Master (GM) ACA can be calibrated.

17.) While measuring the GM ACA output, press the Grand Master selector button that says "STA" and make sure that no other selections are pressed. Adjust the left and right trims for +4. Do the same for STB, 5/6 Send, Bus 1/2 and Grand Master aux in (accessible at the patchbay).

18.) Calibrate the Grand Master booster outputs while signal is selected at the Grand Master selector.

19.) With the solo selected, adjust the level of the solo ACAs which are located under the master control room (C/R) section accessible through the fader kick panel. Test points are provided on the control room circuit board. Adjust to +4 with the solo level control fully clockwise.

20.) Control Room Section calibration can be accomplished by selecting STA and PGM on the C/R monitor. With +4 at the STA booster outs, adjust the levels of the program side (same PC board as solo) to +4. This is accessible through the fader kick panel.

21.) With a +4 signal into EXT1 (accessible from the patchbay) adjust the C/R PLAY side the same way as the program side. The play test points and trim pots are located just to the right of the program adjustments.

22.) Adjust the C/R MAIN, ALT1, ALT2, Studio Main and Studio Alt outputs to the required level necessary for proper operation and positioning of the C/R level control. This may vary depending on the output level required to drive the control room monitors. These adjustments can be found on the far left circuit board under the C/R section next to program and playback trims. We recommend setting them at -2 dBu with the C/R control pot fully clockwise.

23.) Meter Calibration is done easily and quickly by removing the rear panels behind each meter bucket. There are two trim pots for each meter. The top one is for channel level adjust and the bottom one is for monitor level adjust if the console is fitted with a monitor section. With the bus levels set at +4 out, set all meters to read 0 VU. In the monitor VU mode, adjust the meters so they read 0 also. A tape machine must be on and switched to input to allow the signal to pass out of the console, through the tape machine and back into the monitor section.

24.) Calibration of the stereo meters is done the same way as the bus meters. First, calibrate the VU, (both) pots for +4 (0VU). Then decide where the 0VU position will be for the peak meter. We recommend +12 to +14. Set peak level to this point.

Acceptance Requirements

1.) Upon the completion of the calibration and a simple demonstration, the customer needs to sign the acceptance sign-off form which will initialize the warranty period and end the console commissioning process. At that point, the commissioning personnel will begin training and educating the studio as to operation, maintenance and repair of the Legacy Console.

2.) The installation personnel will present the studio with all documentation and the spares kit. They will also explain what to expect as far as early failures, preventive procedures and general care of the console.

Acceptance Sign-Off Form

Initialize Upon Completion of the Following Procedures:

Calibration Procedure:

1.) Power Supply Voltages Set _____
2.) Inputs and Outputs Calibrated _____
3.) Sweep Tests (10 Hz to 50 kHz) _____
4.) Distortion Specifications (.05% from 100 Hz to 20 kHz) _____
5.) Distortion Specifications (.1% from 20 Hz to 100 Hz) _____
6.) N/A _____
7.) Insert 1 kHz at +4 CHANNEL IN _____
8.) Outputs of the Stereo Boosters _____
9.) Verify Channel Direct Out _____
10.) Calibrate the 16 Busses _____
11.) Calibrate the Aux Sends _____
12.) N/A _____
13.) N/A _____
14.) Send 5/6 _____
15.) Calibrate the 868 _____
16.) N/A _____
17.) GM ACA Output _____
18.) Calibrate the Grand Master Booster _____
19.) Adjust the Level of the Solo ACAs's _____
20.) Control Room Section _____
21.) Adjust the C/R Play _____
22.) Adjust the C/R MAIN, ALT 1, ALT 2 _____
23.) Meter Calibration _____
24.) Calibrate the Stereo Meters _____

Acceptance Requirements:

1.) N/A _____
2.) All Documentation and the Spares Kit _____

TROUBLESHOOTING GUIDE

The troubleshooting of the API Legacy Series Console has been simplified to a point where most diagnostic procedures can be accomplished through soloing and comparing levels. Because the input module is designed with a minimum number of amplifiers, (there are only three) 90% of amplifier failure can be diagnosed within seconds. The monitor module has only two amplifiers and it too can be checked quickly. The basic signal flow of the channel is designed in such a way that once you enter the module, you don't go back out to access the equalizer. This means that the signal comes into the console through either the mic pre output or the multi-track tape machine output, into the input selector switch, located in the module (MIC). From there it goes to the internal channel VU meter amplifier and goes back out to the patchbay, to the EQ IN patchpoint. From EQ OUT (Insert Send) it goes to the INSERT RETURN (Fader In) which is where it actually enters the input module. At that point, it exits the module only at the direct output, stereo outputs and busses.

Input Section

1.) Patch into EQ IN and then into INSERT RETURN (press insert on module) to verify that the failure is not the equalizer. Should an equalizer or mic-preamp be pulled out of its' slot, the appropriate bypass jumper card has to be put in its place. The equalizer in the out position does not bypass the circuitry; it only disables the boost and cut function of the circuit.

2.) Patch into INSERT RETURN (press insert on module) and solo the input module in the PFL mode, which looks at the output of the 2510 (A2). If you hear signal and it is acceptable, then the input 2510 Discrete Op Amp has not failed. The input 2510 is located by the resistor network, RP1. (The 2510 is also what feeds the pre fader level to the sends.) At that point, it can only be the 2520 Op Amp or the fader that has failed. This can be verified by soloing the channel in the AFL mode, which looks at the 2520 output. The 2520 feeds the post fader sends and the panner circuit. The 2520 can be removed by unplugging it and the 2510 must be unsoldered.

3.) Check the fader and the fader wires, as the fader is in between the pre and post op-amps, (2510 and 2520). Fader failure will prevent any post fader operation. Many automation systems incorporate a mute circuit within the fader. Check the mute system for loss or coloration of the signal.

4.) If you are exhibiting problems with aux send 5/6 on a specific channel, then it is probably the other 2510 (A1), located further up on the module. This op amp is used for buffering the 5/6 external input feature and for raising the gain to drive the pan circuit of aux send 5/6 so that the level is the same as the other sends.

5.) Loss of a group of LED's on the input module:

a) The LED's throughout the console are all part of a special series current source driver circuit that when the LED is off, it is actually shorted by the switch. And when it is on, all the LED's are in series, like the old Christmas tree lights. This means that if one LED fails, the rest in the string will not work unless the switch associated with the bad LED is off, shorting the LED out. The LED's are usually in groups of 8. The common failure of an LED is from being physically broken off, as they very seldom fail from burning out. Replacement on the sub-board is simple and is also more likely to get broken because the LED's are exposed. The sub-board can be removed by carefully lifting the board off of the headers and slightly angling upwards and sliding the board out by, what appears to be, unplugging the LED's from the front panel,

Input Section continued

being very careful not to bend the board too far and breaking off the LED's. This gives you access to the sun-board which has the peak amplifier and half of the switches/LED's on it. Replacement of the LED's on the main board requires removal of the knobs and the nuts. The chassis must then be removed by unscrewing the one screw by the edge connector and sliding the circuit board straight out of the chassis. This gives you access to the rear of the board and the LED's. This also gives you the ability to remove the 2510's, although they can be removed by cutting the mylar around the square holes in the metal and removing them with the modules fully assembled.

b) Most other problems with the input module can be solved by examining the schematic or calling the factory for advice. We have a stock of modules ready to rotate on an exchange basis, within the warranty period, and outside the warranty period, while modules are being repaired.

Primary Bus System

1.) The 16 primary bus amps, primary stereo amps, primary solo and primary send amps are all located underneath the input modules, plugged into the input module mother boards. The primary bus amps are small cards with a header and a 2510 op - amp. Removal of these amplifiers is easy but the replacement can be tricky. GREAT CARE must be taken when inserting the primary bus cards back into the mother board, as misalignment can cause failure of the amplifier or one of the power rails. The power rails are protected for momentary shorts, should this happen. Plenty of light should be used when this procedure is done. These amplifiers are located in this position to totally eliminate any wiring to the primary summing amps, thus reducing any extraneous noises or hum. LED's are located in the center of the circuit board where these amps are located. They will indicate if a power rail has been inadvertently shorted.

2.) If the console is fitted with a monitor section, there are several primary summing amps located under the 868 modules as well. These are for the stereo, sends, and solo busses. These busses mix with the channel busses at the secondary summing amps, which are the amps that have the panel mounted trim controls and the screw driver cal pots. Each primary summing amp feeds the secondary amps through a resistor network located on the secondary card.

Secondary Bus System

The secondary bus amps are the customer adjustable amps located on the control room panel. These are the actual masters for the busses, etc. The failures associated with this card are related to the 2520 op amp and the transformer. The signal enters the secondary bus card through a balanced resistor network, then passes through a relay used for tone inject (busses/stereos only) then directly into the 2520 op amp. The screw driver adjustable trim control adjusts the feedback level, which sets the final output level. The bus ON switch interrupts the output of the transformer going to the knob adjustable output level control, always keeping the level control in the signal path of what ever it is hooked up to. This keeps the impedance of the device being fed at a constant value. The ON switch shorts the high to the low, forming a common-mode mute, after the transformer. The switch contacts are quad-redundant, to insure a long life.

Monitor Section

1.) Monitor module failure:

a) Since the 868 monitor module (or the 862 echo return module) have only two op amps, troubleshooting is very straight forward. The input from either the PGM or TAPE feed goes into a 2510 (A1) which is where the pre fader signal comes from and the drive for the VU meter when in the MNTR VU mode. If the VU meter is working, there will most likely be signal present on the pre fader bus. The other 2510, (A2) feeds the post fader functions, including the post fader sends, the panner and the AFL solo.

b) The monitor fader plugs into the motherboard as well as the fader. Check both connections if there is a pre fader signal, but no signal present on either the post sends or the stereo bus. If automation is used, check the mute circuit within the channel fader.

c) Located on the 868 module are four movable jumpers. These jumpers select the logic functions for the pre and post solo-in-place as well as the logic for the mute function. These are selected for specific needs when soloing or muting. Check the positions of these jumpers if there are any problems associated with muting or SIP functions.

2.) Control Room Section:

The control section consists of five individual circuit boards. Each board provides a specific service to the entire control room section. These boards consist of the following:

a) Logic control card (horizontal card)
b) Studio and control room boosters (left most vertical card)
c) Program monitor selector (2nd left vertical card)
d) Playback monitor section (2nd card to the right)
e) Cue-talk/back card (right most vertical card)

Monitor Section continued

3.) Monitor section ribbon pinouts:

a) The logic control card is the horizontal card that all of the switches plug into and it is the card that all other cards plug into. The logic control card has some minor logic control functions but its' primary function is power distribution and interconnect between the other four cards. The only logic on the board are some relay functions, such as solo, etc. and the program playback logic. Most other functions are located on one of the four vertical cards. Each vertical card can be very easily removed by undoing the pots associated with that card and then dropping the card out and disconnecting the Elco connector and any ribbon wires associated with that card. The card can then be completely removed and serviced.

b) The studio and control room boosters, as well as some of the solo control logic, are located on this board. There is one set of studio boosters and one set of control room boosters which switch between all of the different outputs. If the main control room left output fails, so will the small Alt 1 and Alt 2 speaker selectors. Trim controls for input levels are located along the front of the circuit board and can be accessed from underneath. Each booster has two op-amps, (2510's) and a push/pull configuration. We recommend that the balanced configuration can be used. If unbalanced outputs are required, we recommend lifting the balanced portion rather than unbalancing it to ground. This will reduce unwanted audio being dumped onto the ground bus. The studio external input is a monolithic op-amp, (yuck!) located by the Elco connector, which buffers the external input to the studio input selector. The peak LED control voltage buffer amp and the solo on blinker amp are located on this board near the top.

c) The program monitor selector card contains the summing amps, (2510's) for the internal monitoring selections and also the solo summing amps, (2510's). These feed relays onboard that select between the signal coming in from the playback monitor card and the program outputs of this card which feed the control room master card. Solo is an alternate function between playback/program. The ribbon cable leaving the bottom of this card goes over to link Stereo A, Stereo B, Grand-Master Aux In, Aux 5/6 Send and Bus 1/2 to the GrandMaster input selector card, (ACA). A ribbon cable also connects the solo pot and the mix-over pot located on the control room master card.

d) The playback monitor selector card contains the summing amps, (2510's) for the internal monitoring selections. It feeds the program selector card. Trim controls for input levels are located along the front of the circuit board and can be accessed from underneath.

e) The cue talkback card contains the microphone preamp circuits, the talkback control logic, the VU meter function selectors and the oscillator. This card also contains the interface circuitry for the external mic-pre and talkback controls. It also can be internally configured to either talk to the studio, an external output or both. It also has internal controls for selecting either talkback into cue, (interrupts cue feed) or foldback to cue, which mixes talkback with the cue feed. This card has the logic and mic-preamplifier for the reverse talkback function which can, at the customers option, automatically switch to a room mic whenever the multi-track tape machine goes into rewind or fast forward.

SPECIFICATIONS

Physical Dimensions

Module Width, all modules	1.25"	or	31.75mm
Fader Module Height	7.00"	or	177.80mm
576 Input Module Height	12.00"	or	304.80mm
550s EQ Height	6.725"	or	170.80mm
212s Mic Pre Height	2.625"	or	66.67mm
868 Monitor Module Height	5.60"	or	142.25mm
862 Echo Return (without Fader)	5.60"	or	142.25mm
Meter Bridge Height	6.10"	or	165.10mm
Height of Meter Bridge from floor	42.00"	or	106.68mm
Floor to Fader Module Surface	28.00"		
Bolster to Mic Pre (reach)	31.00"	or	78.74CM (bolster face to knob)

Power Supplies

The Power Requirements for up to a 64 channel console are 100 to 240 VAC 48-63 Hz, using one 20 amp circuit at 120 VAC or one 10 amp circuit at 240 VAC.

The Rack Space Requirements for PSU's are 10" for up to 48 input (or 32/24) and 20" for over 48 input.

PSU Standard Cable Loom Supplied is 32' or 10M. Runs up to 100' will be charged additionally.

Power Supplies require moving air, but not forced air. They are fitted with internal fans that draw in from the sides near the front panel and exhaust out the rear. The front panel has switches and power status lamps. The supplies should be out of the control room because of fan noise, but can be easily modified for use in a quiet environment.

Patchbay

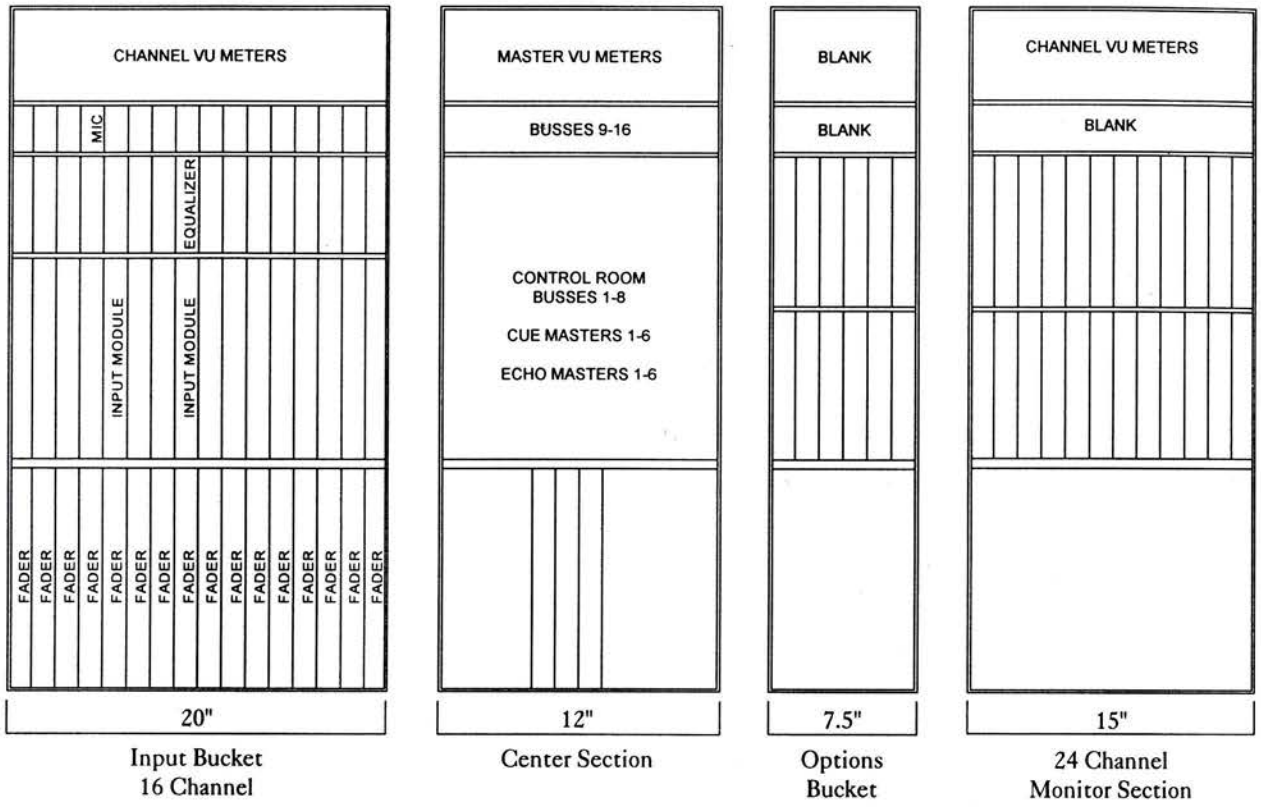
Standard Sizes:

32 channel console system	19"
48 channel console system	28"
64 channel console system	Two 19" (either side by side or one on top)
88 channel console system	Two 28" (either side by side or one on top)

Standard Bay is 10.5" high and has 13 rows. The standard console I/O is handled within the last 32 x 4 row section of the bay. Any additional jacks with larger bays are unwired and supplied at no extra charge.

Dimensions

Top View

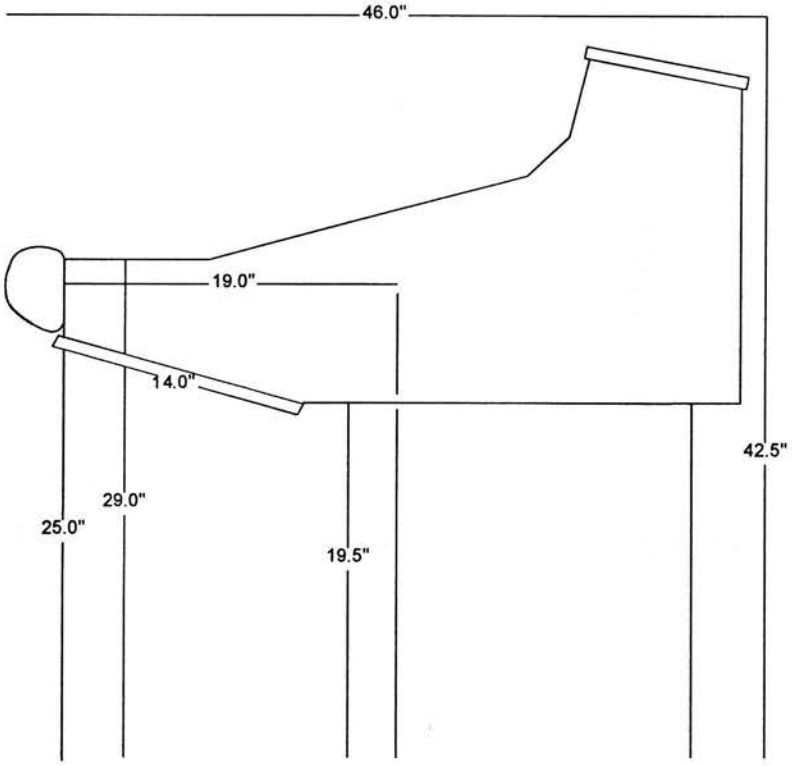


Input Bucket
16 Channel

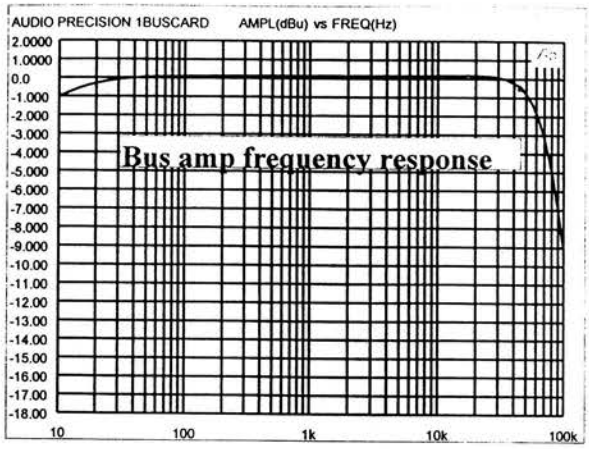
Center Section

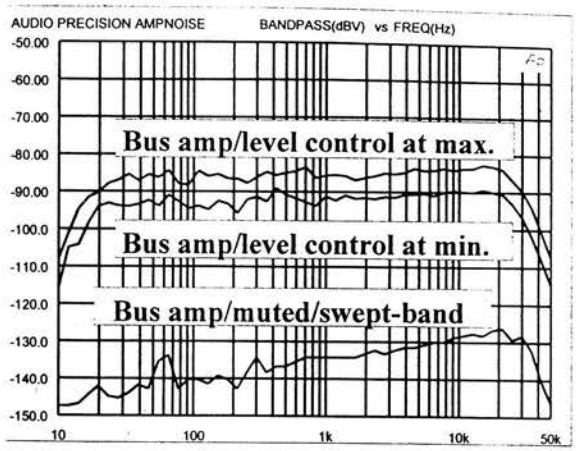
Options
Bucket

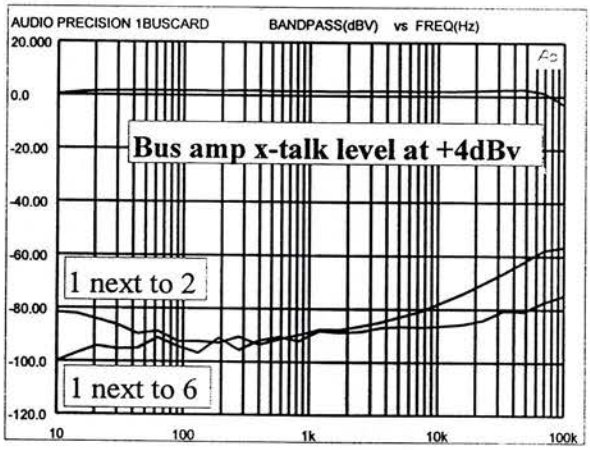
24 Channel
Monitor Section

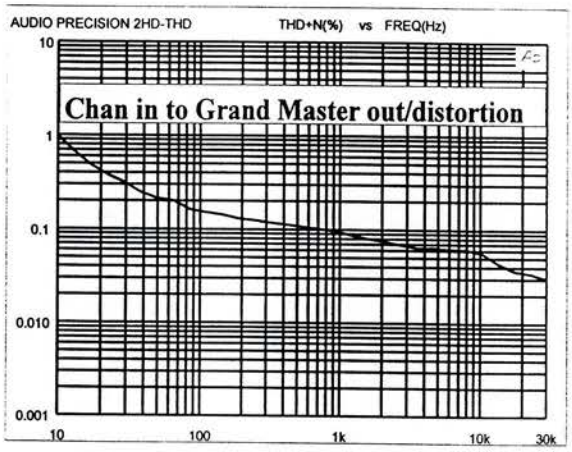


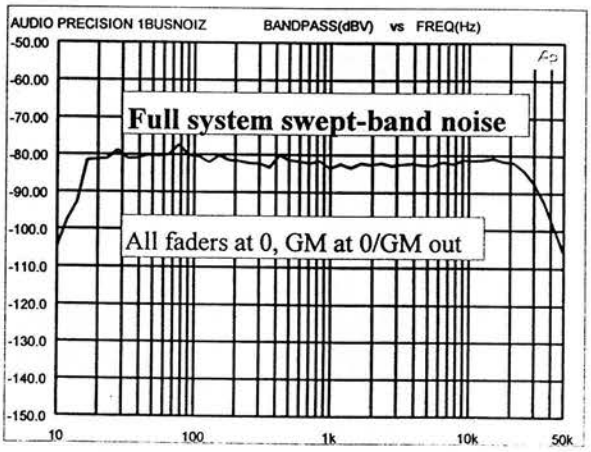
Measurement Diagrams

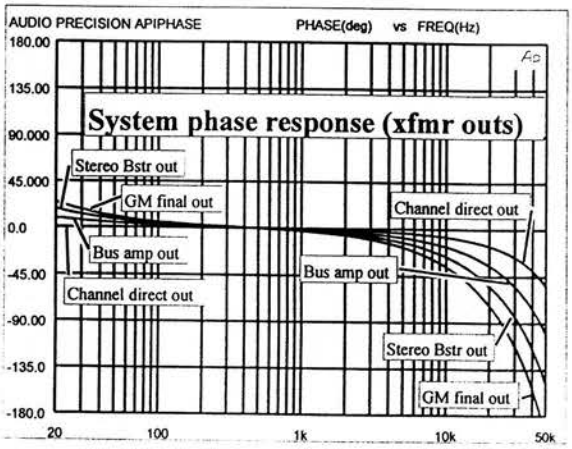




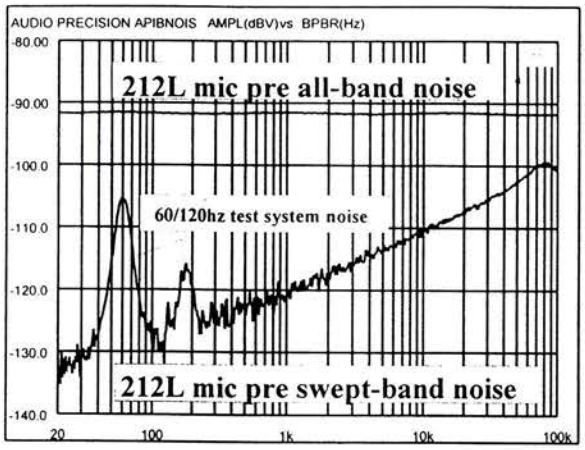


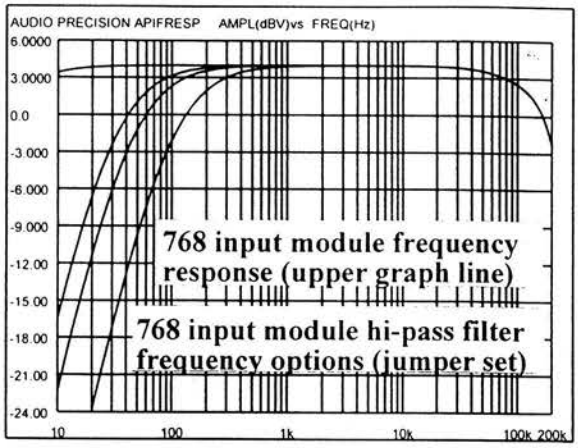


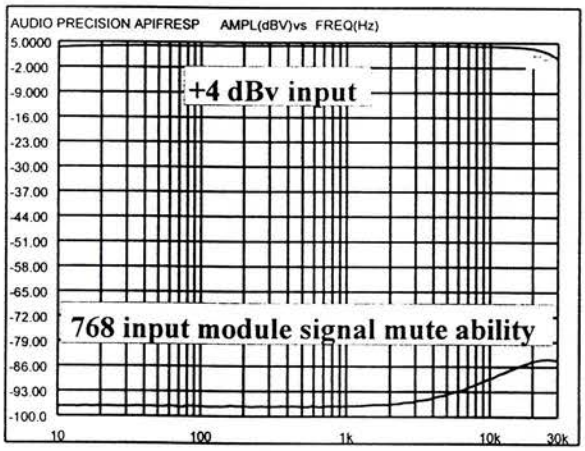


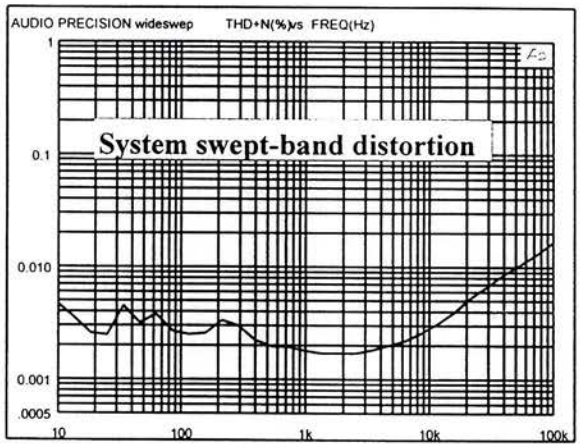


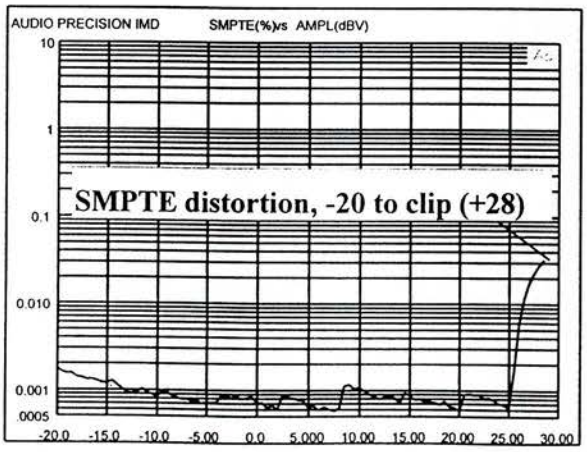
Measurement Diagrams continued











These specifications are actual measurements of the API Legacy Series console and are not weighted or altered in any way to enhance the results.

api audio products, inc.

Repair Log

Complete Description of the Problem/Repair: _____

_____

_____

_____

_____

_____

_____

Date Shipped to API: _____/_____/_____ Estimated Time of Arrival: _____/_____/_____

Complete Description of the Problem/Repair: _____

_____

_____

_____

_____

_____

_____

Date Shipped to API: _____/_____/_____ Estimated Time of Arrival: _____/_____/_____

Complete Description of the Problem/Repair: _____

_____

_____

_____

_____

_____

_____

Date Shipped to API: _____/_____/_____ Estimated Time of Arrival: _____/_____/_____

7655-G Fullerton Road, Springfield, Virginia 22153, (703) 455-8188, Fax (703) 455-4240

api audio products, inc.

Additional Spare Parts Order Form

The following parts may be ordered, should a repair be necessary. If the order is placed within the warranty period, which is five years from the installation date, parts will be shipped at the urgency of the customer, either via UPS or Fed-Ex. Should the order be placed after the warranty period expires, parts will be shipped at cost, with shipping charges included. Please indicate needed parts and fax this form to API at (703) 455-4240, attention Testing Department/Quality Control.

QUANTITY	ITEM
_____	Summing Amp Card
_____	JE 115K Transformer
_____	EAO Latching Switch (Input Module)
_____	EAO Non-Latching Switch (Input Module)
_____	ULN 3915 LED Driver
_____	ULN 2803 Relay Driver
_____	Potentiometer 10Kz
_____	Potentiometer 5Kz
_____	Potentiometer 25KRz (Mic Gain)
_____	P & G Fader (Mono)
_____	P & G Fader (Stereo)
_____	Relay 24V (Console)
_____	Relay 12V (Mic Pre)
_____	VU Meter (SM)
_____	VU Meter (Lg)
_____	EAO Switch Button Cap
_____	Transistor 2N 5087
_____	Transistor 2N 5088
_____	Diode IN4148
_____	VU Meter Lamps (18V)

QUANTITY	ITEM
	HARDWARE KIT:
_____	10/32 x 1" Screw
_____	10/32 Aircraft Nuts
_____	8/32 x 1/4" Screws
_____	Ground Lugs
_____	DC Supply Lugs
_____	Ovalhead Screws 3/8" Black
	INSTALL KIT:
_____	*API 2520 Op-Amp
_____	*API 2510 Op-Amp
_____	API 2623 Transformer
_____	6-Pole Switch (Sansei)
_____	LED Square Green
_____	LED Square Red
_____	LED Square Yellow
_____	NKK Latching Switch (Center Section)
_____	NKK Non-Latching Switch (Center Section)

** The API 2520 and 2510 Op-Amps are available on an exchange basis only.*

QUANTITY	ITEM
	SPARE PARTS KIT, (included in console chipment)
_____	Diodes (4148)
_____	Patchbay Card
_____	Patchbay Jacks
_____	411 Chips
_____	VU Meter Lamps (18V)
_____	Mute Switch LED's
_____	2803 Chips
_____	EAO Mute Switch
_____	EAO Solo Switch
_____	2N5087 PNP Transistor
_____	2N5088 NPN Transistor

Further Description/Details: _____

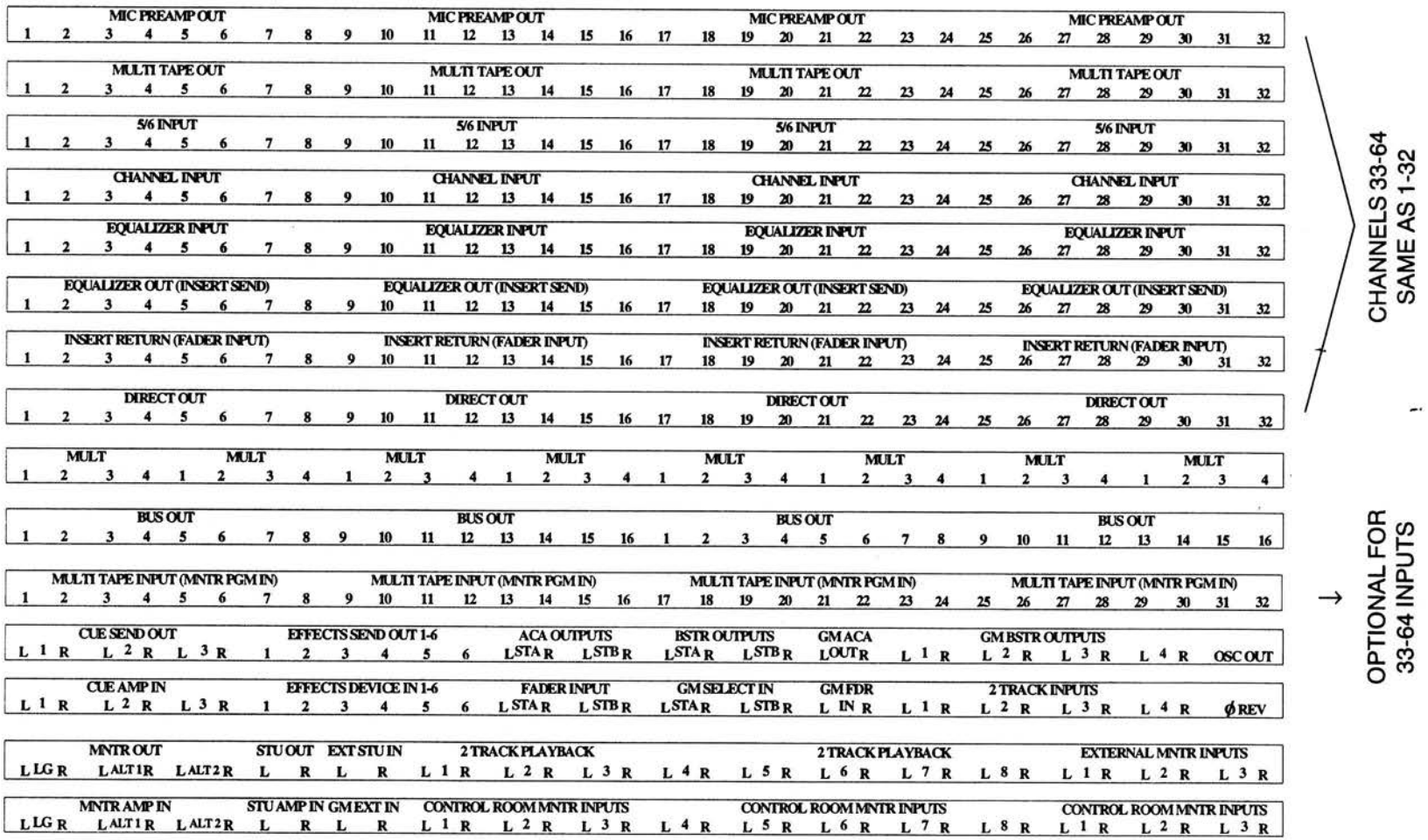
Other: _____

_____

7655-G Fullerton Road, Springfield, Virginia 22153, (703) 455-8188, Fax (703) 455-4240

THE PATCHBAY AND CONSOLE CONNECTIONS

The patchbay supplied with the Legacy Series console follows API's strict no-compromise history. It offers the engineer total access to all patch points possible, without the use of "switchable" or "selectable" patch points - which, despite their popularity, we view as a compromising, money-saving technique. If accessible, API includes every point in the patchbay. Since there are widely divergent views on MIC PRE IN/MIC OUT appearing in the patch field, and many studios prefer an original custom mic line installation as part of the control room interface, we offer microphone lines and tie lines as an option, rather than standard on The Legacy Series. The typical jackfield layout for a 32 channel console:



Patchbay facility is supplied standard as a unit using TT type jacks. The standard patchbay sizes are: 32 channel console - 19" patchbay, internal in producers desk; 48 channel - 27" rack mount, remote patch; 64 channel - two 19" racks, remote; 80 channels - two 27" remote racks; 96 channel - three 19" remote racks. Loom lengths are custom and specified by the client. Channel access is an ELCO connector for each pair of channels, located along the rear of the console, behind each channel pair. Also connectorized and available internally are the following points: Alternate studio output; External talkback mic; Reverse talkback mic; External oscillator in; Remote talkback switches and Phase scope output. The TT jacks supplied are of the highest quality and reliability...another API tradition.

CONTROL ROOM LOGIC PINOUTS

LEGEND
⏚ = AUDIO GND
⏚ = LOGIC GND
(GND) = ACTIVE STATE

FIG A
C/R T/B to CUE BSTR LINK

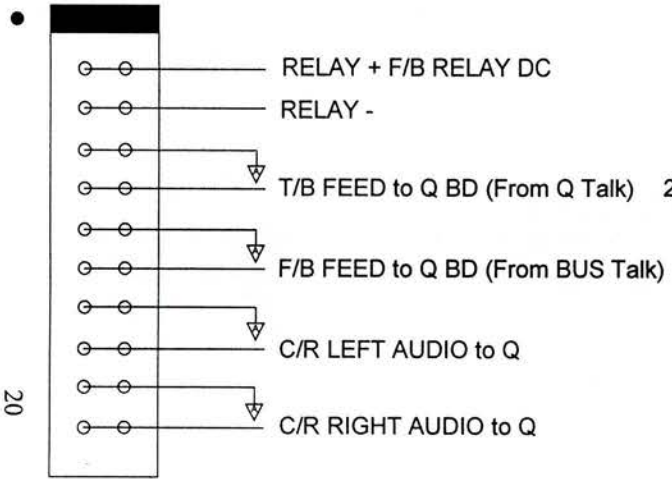


FIG B
LOGIC LINK from C/R MB to C/R AMP BD

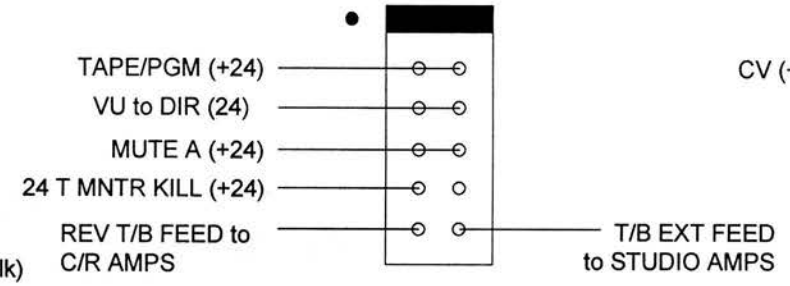


FIG C
OSC/SLATE LINK/BOOSTERS/ACA

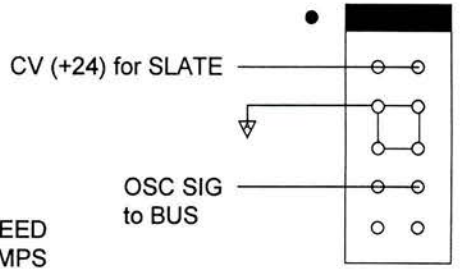


FIG D
MIX OVER LINK from C/R PGM TO C/R MSTR

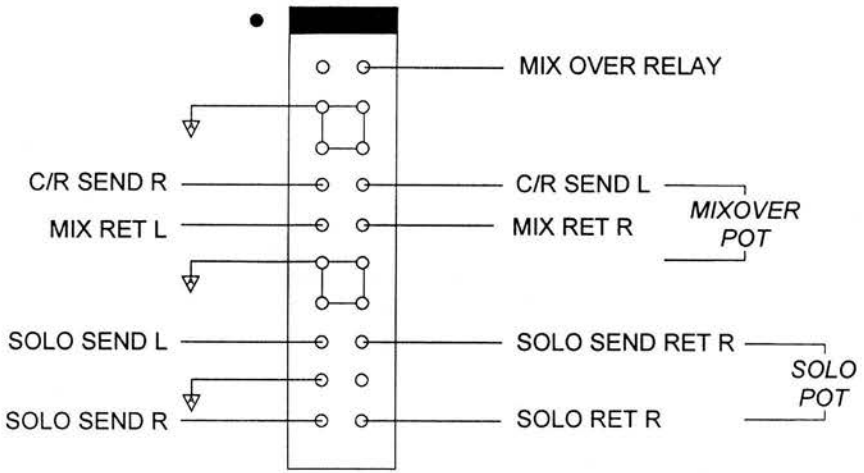


FIG E
INPUT LOGIC on C/R MSTR to all 768 MBs

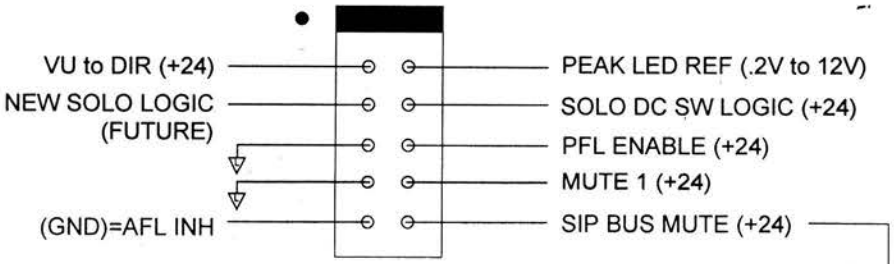
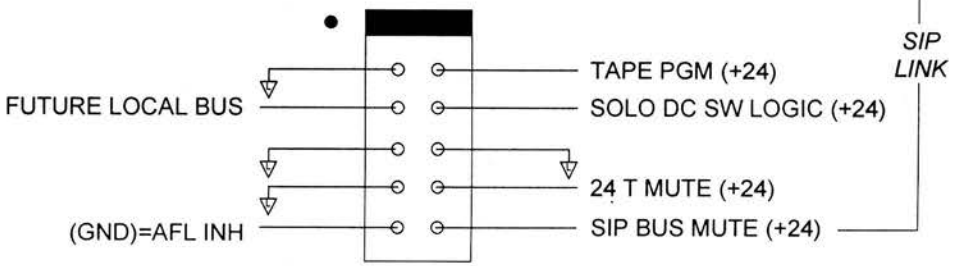


FIG F
MNTR LOGIC on C/R MSTR to all 868 MBs



Internal Cable Runs-Standard 32 x 24 Legacy

DESCRIPTION	TYPE	TERM
1.) PSA→BSTR 1-8	8-WAY	DB15-TIN
2.) PSA→BSTR 9-16	8-WAY	DB15-TIN
3.) ECHO 1-6 PSA→BSTR	6-WAY	DB15-DB37
4.) ST A/B (INP)	4-WAY	DB-15-DB37
5.) ST A/B (MON)	4-WAY	3PH-DB37
6.) CUE 1-6 PSA→BSTR	6-WAY	3PH-DB37
7.) ECHO-CUE LINK	12-WAY	TIN-TIN
8.) BUS 1-8 BSTR OUT	8-WAY	TIN-ELCO
9.) BUS 9-16 BSTR OUT	8-WAY	TIN-ELCO
10.) ECHO 1-6 BSTR OUT	6-WAY	DB25-ELCO
11.) CUE 1-6 BSTR OUT	6-WAY	DB25-ELCO
12.) GM ACA OUT	2-WAY	3PH-ELCO
13.) ST A/B ACA/BSTR OUT	10-WAY	DB37-ELCO
14.) ST A/B/GM FDR IN	6-WAY > 8-WAY	ELCO-TIN
15.) ST A/B/GM FDR OUT	6-WAY	TIN-DB25
16.) SOLO BUS ACA OUT (INP)	2-WAY	DB15-3PH
17.) SOLO BUS ACA OUT (MON)	2-WAY	3PH-3PH
18.) MON 1-12 PGM IN	12-WAY	ELCO-TIN
19.) MON 13-24 PGM IN	12-WAY	ELCO-TIN
20.) MON 1-12 PLAY IN	12-WAY	ELCO-TIN
21.) MON 13-24 PLAY IN	12-WAY	ELCO-TIN
22.) S/C IN 1-16	16-WAY	ELCO-TIN
23.) S/C IN 17-32	16-WAY	ELCO-TIN
24.) MIC PRE IN 1-16	6-WAY	ELCO-DB9
25.) MIC PRE IN 17-32	6-WAY	ELCO-DB9
26.) FX RTN IN 1-12	12-WAY	ELCO-DB9
27.) TAPE RTN 1-16	16-WAY	ELCO-3 PINHEADER
28.) TAPE RTN 17-32	16-WAY	ELCO-3 PINHEADER
29.) MNTR PGM MULT	16-WAY	ELCO-3 PINHEADER
30.) MNTR PGM MULTI	16-WAY	ELCO-3 PINHEADER

Input/Output Interface

Customer Interface

DESCRIPTION	API	CUSTOMER	QUANTITY
1.) 2 TK IN	F56	M56	1
2.) 2 TK IN	F56	M56	1
3.) AUX PLAY	F56	M56	1
4.) MNTR AMP IN	F56	M56	1
5.) CUE/ECHO IN	F90	M90	2
6.) TO MULTI A	F90	M90	1
7.) TO MULTI B	F90	M90	1
8.) MULTI RTN A	F90	M90	1
9.) MULTI RTN B	F90	M90	1

API Internal Bay Console Input/Output

DESCRIPTION	CONSOLE	BAY	QUANTITY
1.) BUS OUT FDR/OSC	M90	F90	1
2.) ACA/BSTR OUTS	M90	F90	1
3.) MIC PRE IN	F56	M56	2
4.) S/C IN	F56	M56	2
5.) MNTR PGM	M56	F56	2
6.) MNTR PLAY	F56	M56	2
7.) RX RTN	F56	M56	1

INTERNAL CONSOLE CABLE SPECIFICATIONS

1.) Echo/Cue from Input/Monitor Section Motherboards

Source
Summing Amps on Motherboard

Destination
Cue/Echo card in C/R Section

Echo/Cue
from Input Section Motherboards

Type
8-Way Mogami (use 1 - 6 Only)

Length
45"

Termination
DB15 ↔ DB37M
3PH ↔ DB37M

PinOut on DB37M END:

Cable #	Description	Pin # on D-Sub *(Echo Card End)*	
1	Send 1	+ 1 – 20	No Shield
2	Send 2	+ 4 – 23	No Shield
3	Send 3	+ 7 – 26	No Shield
4	Send 4	+ 10 – 29	No Shield
5	Send 5	+ 13 – 32	No Shield
6	Send 6	+ 16 – 35	No Shield

2.) Sends from Echo/Cue Card in Center Section

Source
Echo / Cue Booster Card

Destination
Patchbay

Type
8-Way Mogami - * Use 1 - 16 Only

Length
90"

Termination
D-Sub 25M ↔ Elco

PinOut on DB25M (Card End):

Cable #	Description	Pin # on DB25M	
1	Echo Out 1	+1 -2	G14
2	Echo Out 2	+3 -4	G16
3	Echo Out 3	+5 -6	G18
4	Echo Out 4	+7 -8	G20
5	Echo Out 5	+9 -10	G22
6	Echo Out 6	+11 -12	G24

**Pair Numbers 7 and 8 use on:*

GM ACA OUT:

Destination
Patchbay

Length
90"

Type
2-Way Mogami

Termination
3 PinHeader ↔ Elco

3.) Multi-Bus to Booster Cards

Source
Summing Amps on Motherboard

Length
75"

Destination
Booster Card in C/R Section

Termination
DB15 ↔ Solder Tail (No Shield on this End)

Type
8-Way Mogami (x2)

4.) Bus Out to Bay

Source
Booster Cards in C/R Section

Length
85"

Destination
Patchbay

Termination
Solder Tail ↔ Elco

Type
8-Way Mogami (x 2)

5.) STA, STB ACA

Source
Summing Amps on Motherboard

Length
60"

Destination
2 Mix ACA/BSTR Card

Termination
DB15 ↔ DB37M (No Shields on this End)

Type
4-Way Mogami

DB37 Pinout:

Cable #	Description	Pin # on DB37
1	STA L	+13 -32 *3 Pins Available*
2	STA R	+9 -28
3	STB L	+5 -24
4	STB R	+1 -20

6.) Stereo ACA/Booster Outputs

Source
ACA/BSTR Card in C/R

Length
80"

Destination
Patchbay

Termination
DB37M ↔ Elco

Type
10-Way Mogami

DB37M End Pinout:

Cable #	Description	Pin on DB37M
1	STA L ACA	+18 −19
2	STA R ACA	+16 −17
3	STA L ACA	14 −15
4	STB R ACA	+12 −13
5	STA L BSTR	+10 −11
6	STA R BSTR	+8 −9
7	STB L BSTR	+6 −7
8	STB R BSTR	+4 −5
9	GM L BSTR	+2 −3
10	GM R BSTR	+20 −21

G22 thru 37

G22

G37

G1

7.) Fader Out

Source
STA, STB, GM, FDR

Length
50"

Destination
2-Mix Booster Card

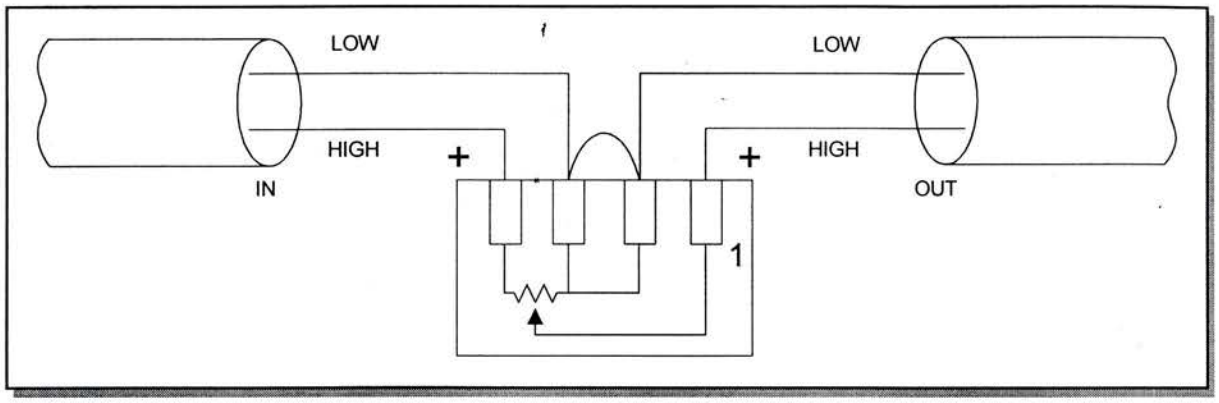
Termination
Soldertail ↔ DB25M

Type
6-Way Mogami

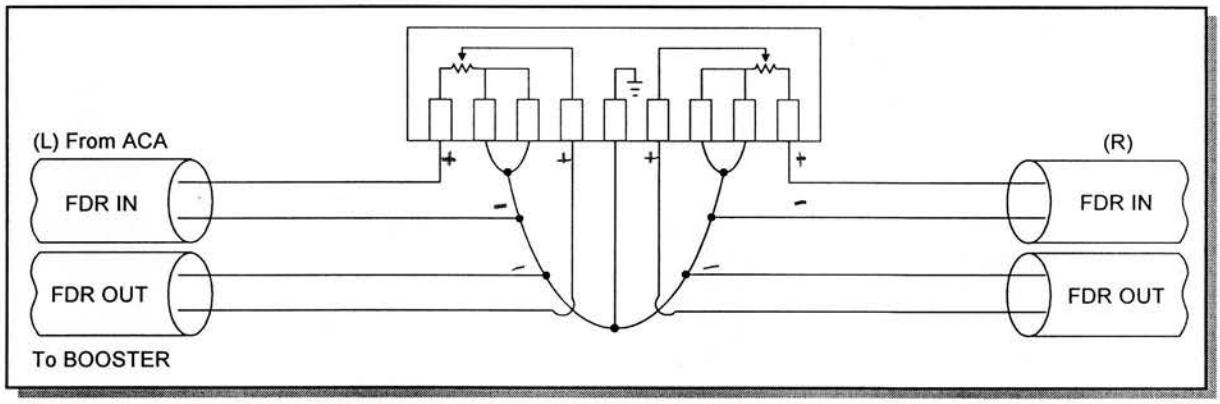
DB25M Pinout:

Cable #	Description	Pin # on DB25M	
1	STA L	+12 -24	G25
2	STA R	+10 -22	G23
3	STB L	+8 -20	G21
4	STB R	+6 -18	G19
5	GM L	+4 -16	G17
6	GM R	+2 -14	G15

P & G Fader Connector Diagram



Legacy - P & G Fader MONO
Fader Model #PGF8120/D
Use Amp 3 Pin (.8) Socket on Console End.



Legacy - P & G Fader STEREO
Model #PGF8110/D

8.) Fader In

Source
Patchbay

Length
80"

Destination
STA, STB, GM, FDR

Termination
Elco Soldertail

Type
6-Way Mogami

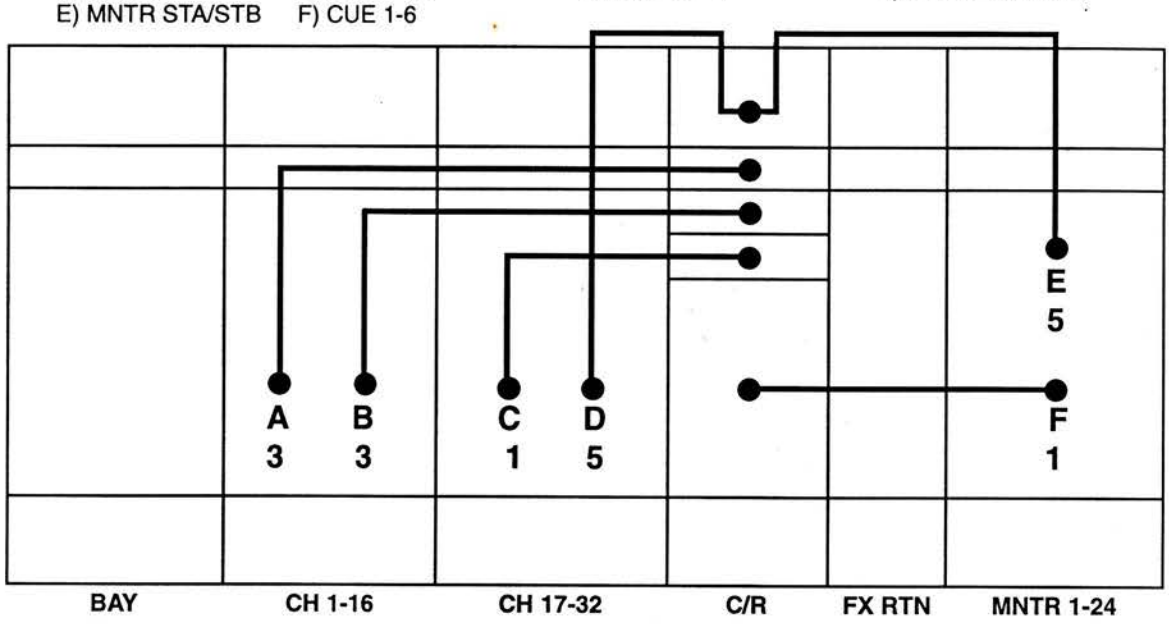
INTERNAL CONSOLE CABLE DESIGNATIONS

Audio Cable Runs

Summing Amps to Booster Cards

Functions

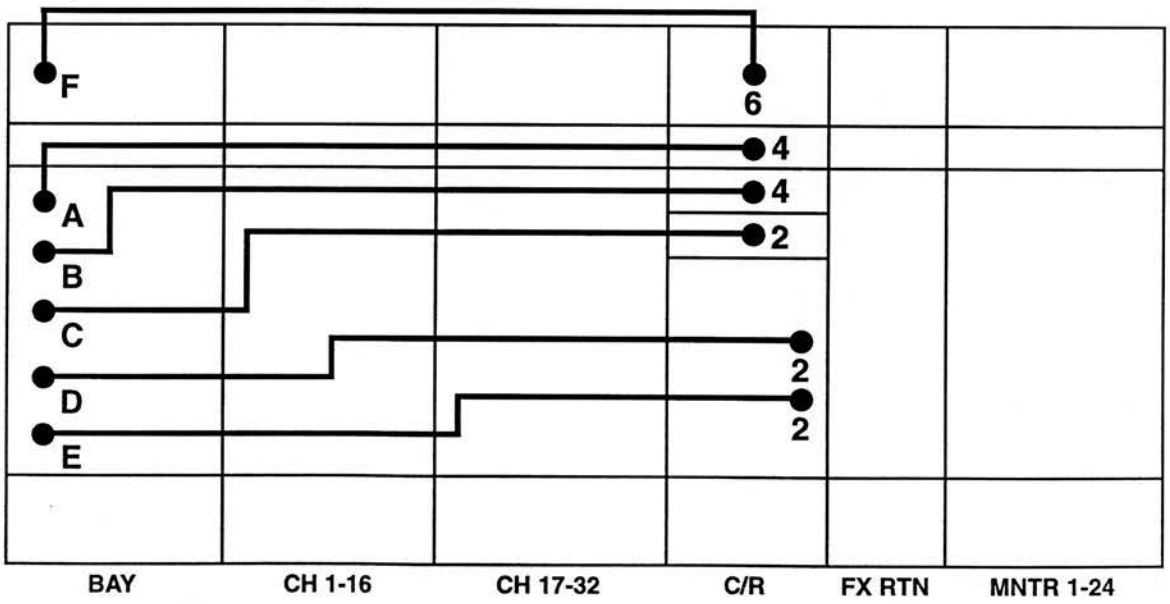
A) BUS 1-8 B) BUS 9-16 C) ECHO 1-6 D) INPUT STA/STB
E) MNTR STA/STB F) CUE 1-6



Booster Cards to Bay

Functions

A) BUS 1-8 OUT B) BUS 9-16 OUT C) ECHO 1-6 OUT D) CUE 1-6 OUT
E) GM/ACA OUT F) STA/STB ACA OUT



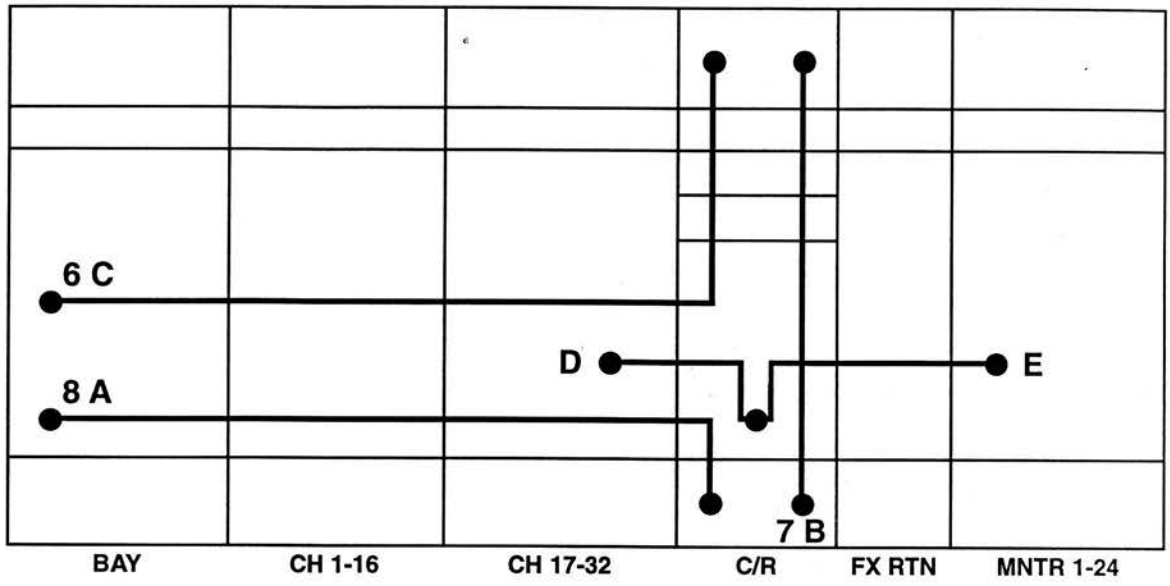
For a complete wire description, refer to"Internal Console Cable Specifications" under the corresponding wire number.

Audio Cable Runs Continued

Fader (Stereo) I/O, Stereo BSTR Out, Solo Summing Amp Out to C/R

Functions

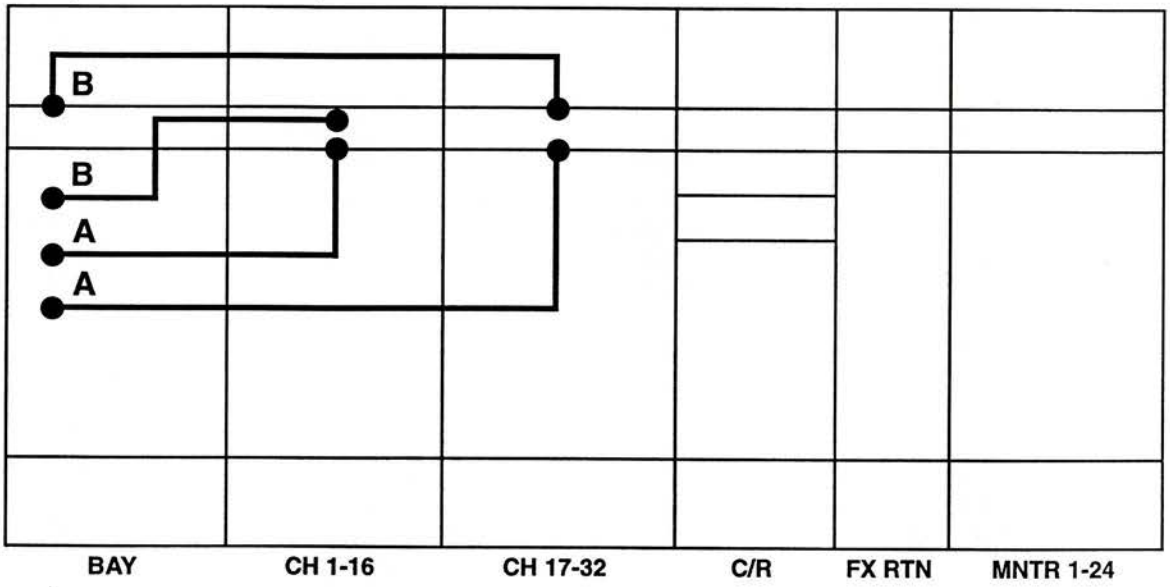
A) STA/B/GM FDR IN
B) STA/B/GM/FDR OUT
C) STA/B/GM BSTR OUT
D) SOLO BUS OUT (INPUT)
E) SOLO BUS OUT (MNTR)



Mic Pre S/C I/O

Functions

A) MIC PRE IN
B) S/C IN



All snakes in above diagram are 16-Pair Mogami.

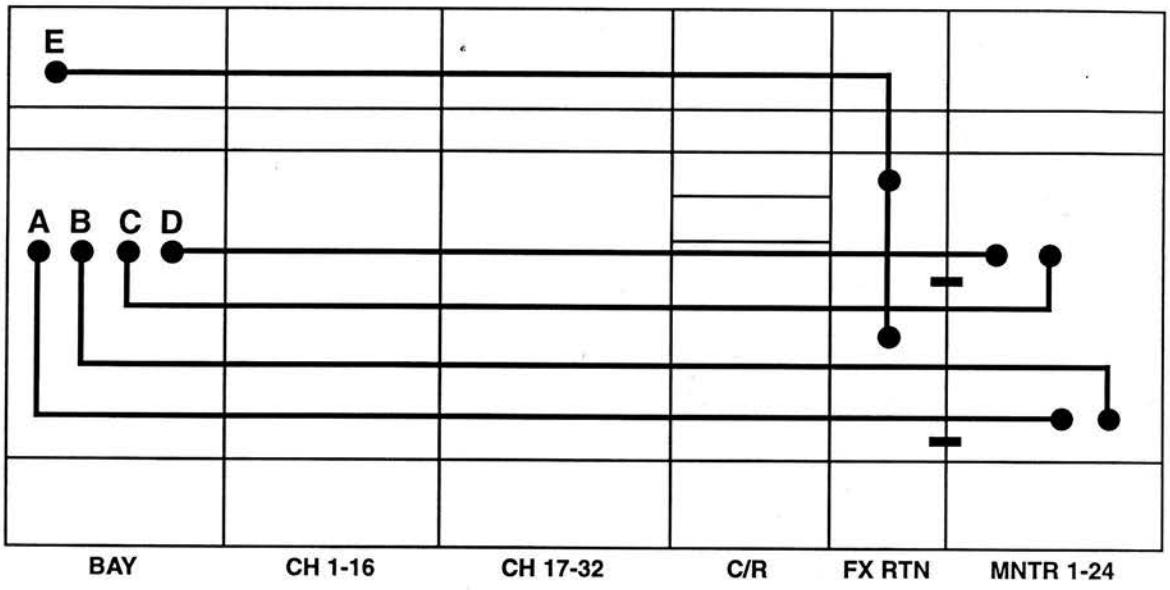
For a complete wire description, refer to"Internal Console Cable Specifications" under the corresponding wire number.

Audio Cable Runs Continued

Monitor/FX Section Inputs

Functions

A) CH 1-12 IN PGM B) CH 13-24 IN PGM C) CH 1-12 IN PLAY D) CH 13-24 IN PLAY
E) FX RTN 1-12 IN



All snakes in above diagram are 16-Pair Mogami, use 1-12 only, (3PH ↔ Solder on MB).

▬ Monitor and Echo Return busses linked via ribbon. Separate summing amps may be used as an option.

Building the 768 Input Module Switches

Required Parts and Instruction

(1) Solo and (1) Mute Button per Input Module is needed.

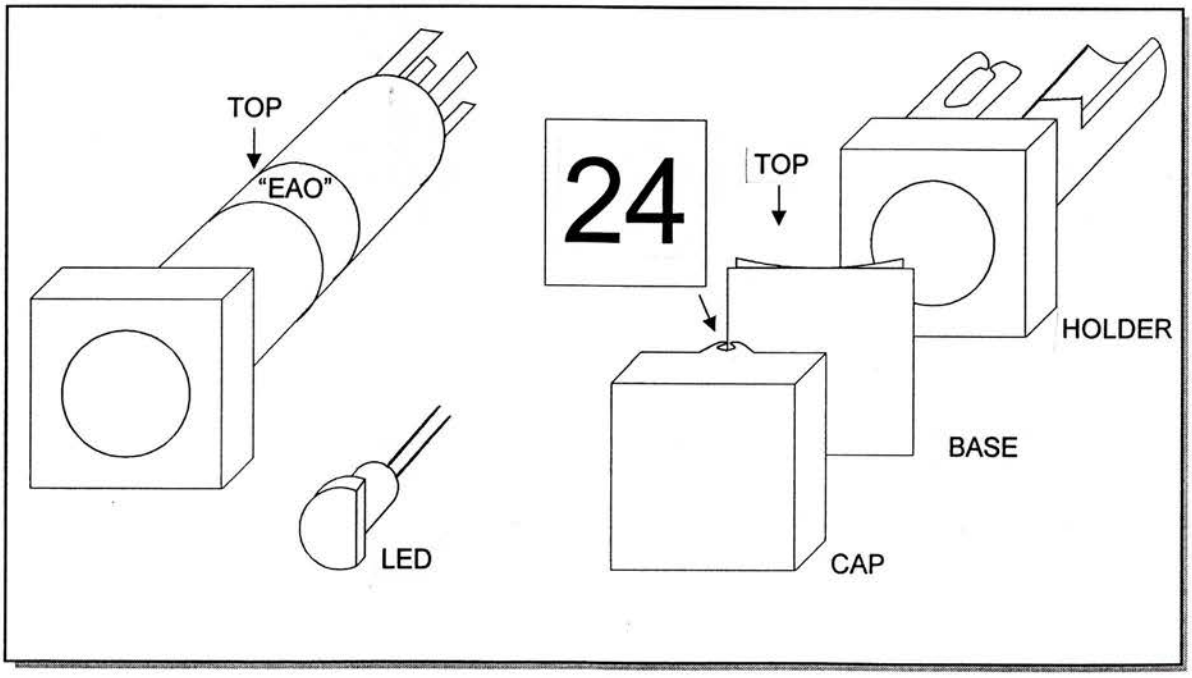
Mute Switches use the following:
1 Clear Plastic Cap per Unit
1 Red LED per Unit
1 Number Label for the Input Channel
1 EAO 289 (Latching) or 159 (Non-Latching) Switch per Input

Solo Switches use the following:
1 Yellow Plastic Cap per Input
1 Yellow LED per Input
1 SOLO Label for the Input Channel
1 EAO 289 (Latching) or 159 (Non-Latching) Switch per Input

Fig A - Inserting LED into EAO
Cut the LED's at the thick portion on the leads.
Insert the LED into the EAO switch as follows:
Hold the EAO so that the opening is facing towards you.
Place the LED into the red P4 1/8 driver.
Insert into the EAO so that the flat side of the LED is to the right side of the switch.
Snap the LED into place.

Fig B - Inserting Label into Switchcap
Pull cap apart using needle nose pliers.
Insert the label face up between the cap and holder.
Snap the base into the holder and cap.

Inserting Switchcap into the EAO
Hold the EAO so that the opening is facing towards you.
Insert the switchcap into the EAO so that the label is facing upright, within the EAO.



WIRE COLOR CODE FOR DC VOLTS

Yellow	+16V	AUDIO
Violet or Blue	–16V	AUDIO
Orange	+28V	AUDIO
Green	–28	AUDIO
White	+24V	RELAY
Brown	24V GND	RELAY
Red	+5V	LOGIC
Black	5V GND	LOGIC

CURRENT REQUIREMENTS

Current (DC) Drawn by The Legacy

(56) 550L
(56) 768L
(13) 212L
(30) Summing Amps

DC 28

1) 2510 Summing Amplifier: .011A
.011 x 30 = 330mA

2) 550L = 80mA
Current without Summing Amps (EQ Only) = 4.3A
Current with Summing Amps (EQ and 2510) = 4.6A

3) ±28V Current drawn by 768L: .02A
.02 x 56 = 1.12A

Total Current Drawn (550, 768, Summing Amps) = *5.7A*

- All Measurements Taken In-Console. -

± 16VDC

Total Current Drawn by each 768	=	.015A
Total Current Drawn by (56) 768	=	.80A
Total Current Drawn by Center Section	=	.46A
Total Current Drawn by Buss 1-16	=	____
Total Current Drawn by Stereo ACA's	=	____
Total Current Drawn by Boosters	=	____
Total Current Drawn by (13) 212L	=	.19A

Reading at Console: (56 x 768)
(16 x 212) 1.55A
(28 x 2520)

± 24VDC

Console upon Power Up (No Lamps) = 3.91ADC
Each Function Activated:
MIC = .01A
SOLO = .02A
MIX = .02A .07A
Æ = .01A
LIN = .01A

24VDC A per Bucket: 1.05A = 4.98A
+32 VU Lamps: 1.55A = 5.42A

Total Current Drawn +2 Buckets	=	6.41A
Total Current Drawn +32 VU Lamps	=	6.97A
Total Current Drawn +3 Buckets	=	7.93A
Total Current Drawn +32 VU Lamps	=	9.43A
Total Current Drawn +.5 Buckets	=	7.96A
Total Current Drawn +32 VU Lamps	=	**Total: 10.82A**

PART VALUE DESIGNATIONS

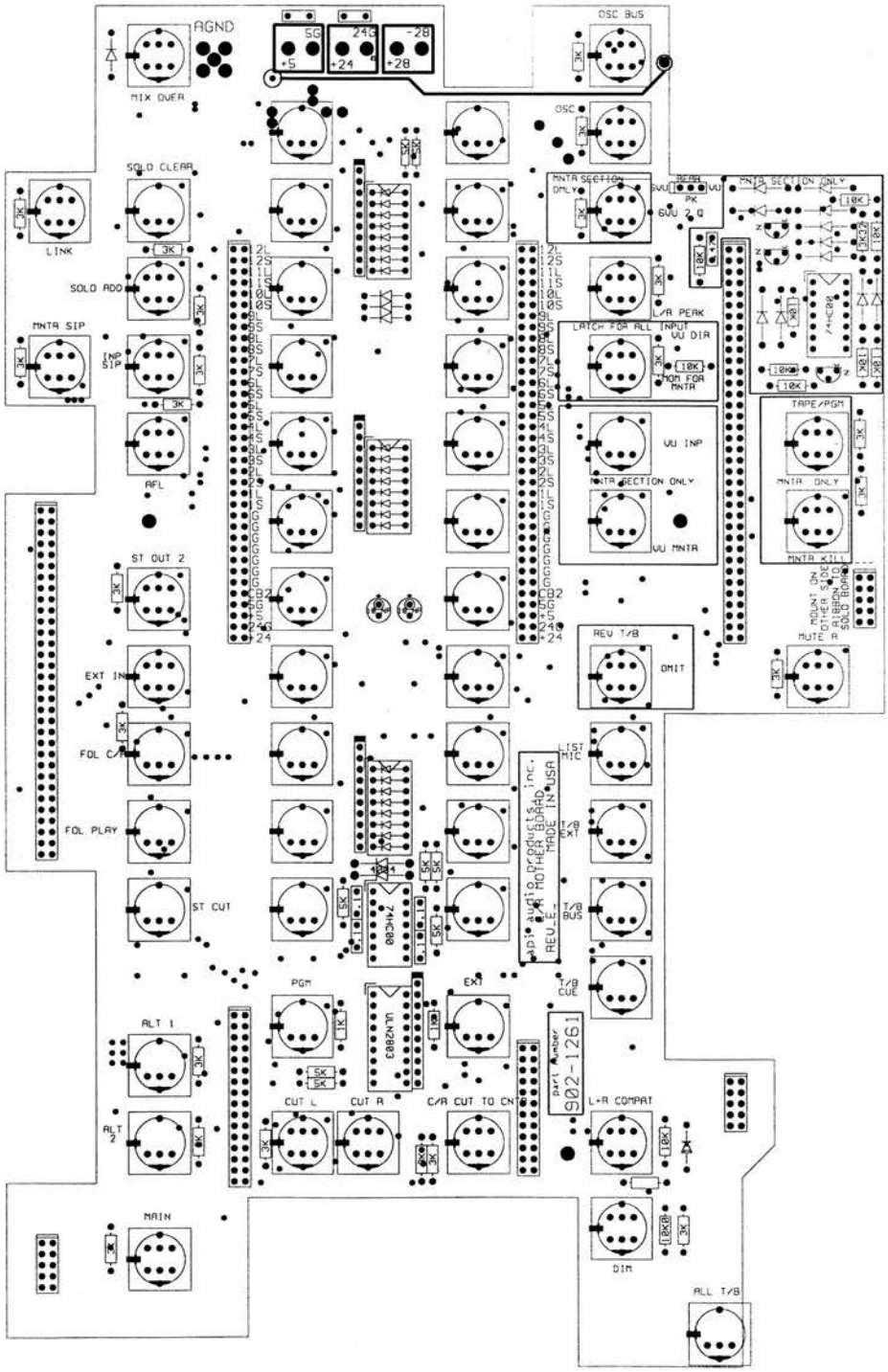
The following designations will be used for part values. This allows for the elimination of periods that can get lost or not print correctly. In ALL cases, the period is REPLACED by either R, u, n, p, K, M, etc.

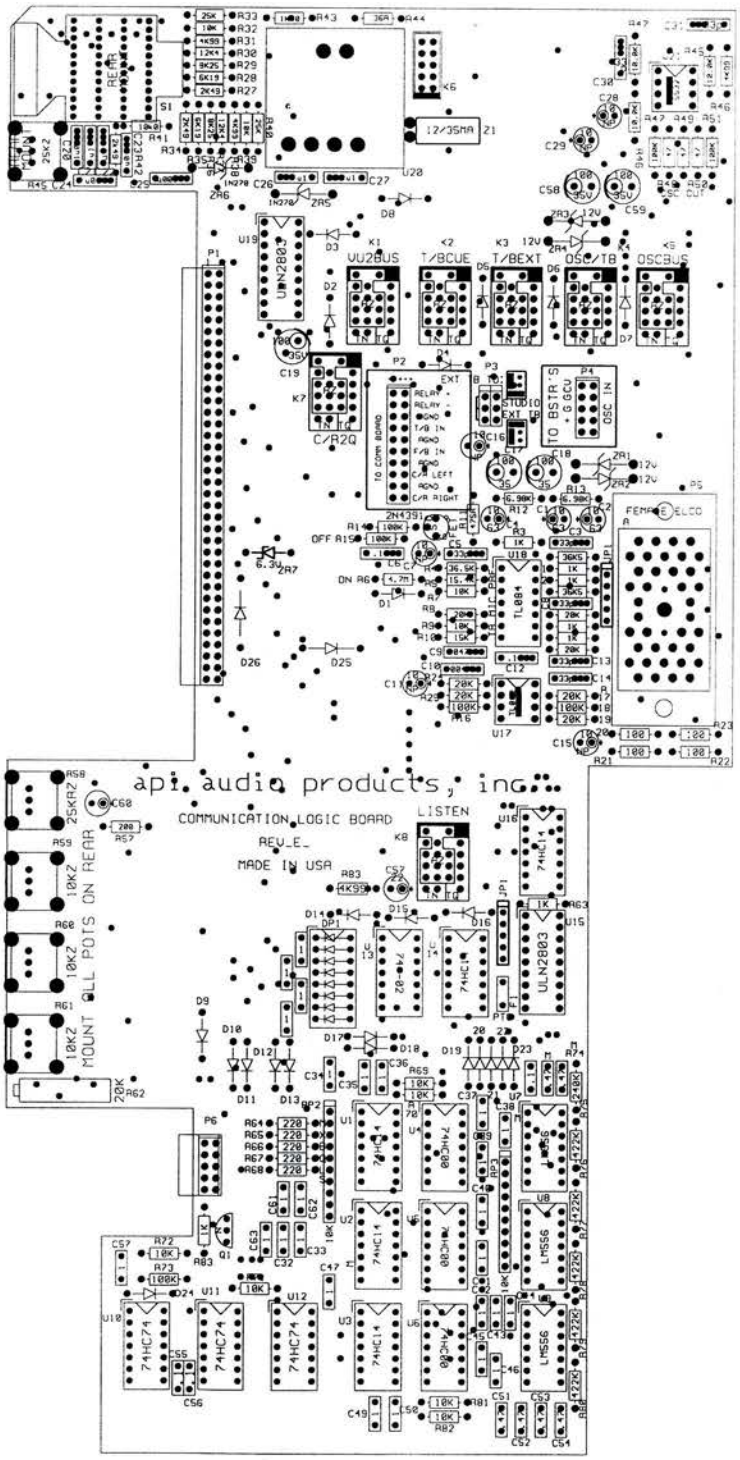
1pf	=	1p
10pf	=	10p
100pf	=	100p OR n 1
1000pf OR 1 nf OR .001uf	=	1n OR u001
.01uf OR 10nf	=	u01 OR 10n
.1uf OR 100nf	=	u1 OR 100n
1mf OR 1uf OR 1u	=	1u
2.2mf OR 2.2uf OR 2.2u	=	2u2
10uf	=	10u
100uf	=	100u
1000uf	=	1000u

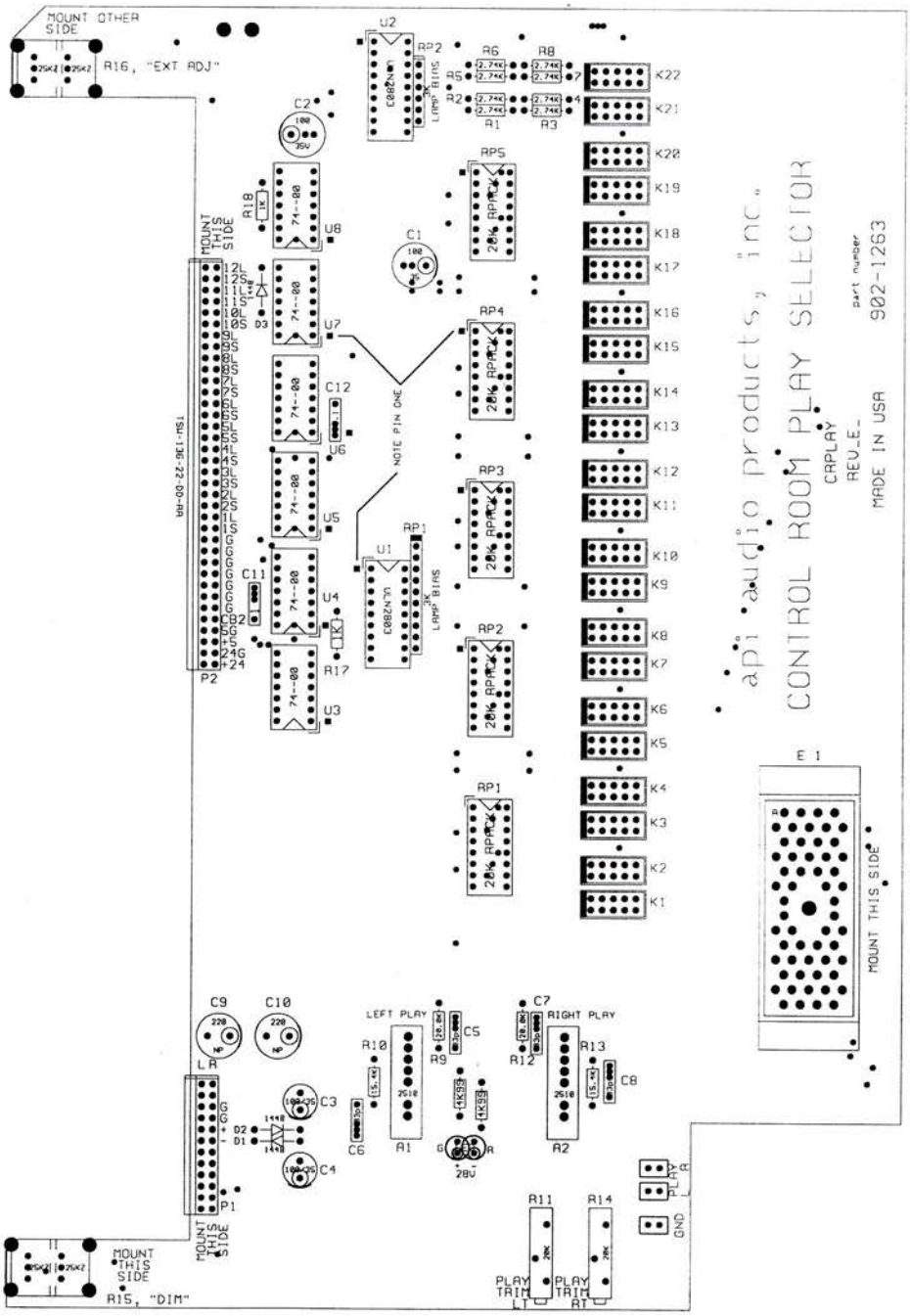
1 ohm OR 1Ω	=	1R
4.7 ohm OR 4.7Ω	=	4R7
22 ohm OR 22Ω	=	22R
49.9 ohm OR 49.9Ω	=	44R9
267 ohm OR 267Ω	=	267R
1.00Kohm OR 1.00KΩ	=	1K00
49.9Kohm OR 49.9KΩ	=	49K9
100Kohm OR 100KΩ	=	100K
1Mohm OR 1MΩ	=	1M
2.7Mohm OR 2.7MΩ	=	2M7
10Mohm OR 10MΩ	=	10M

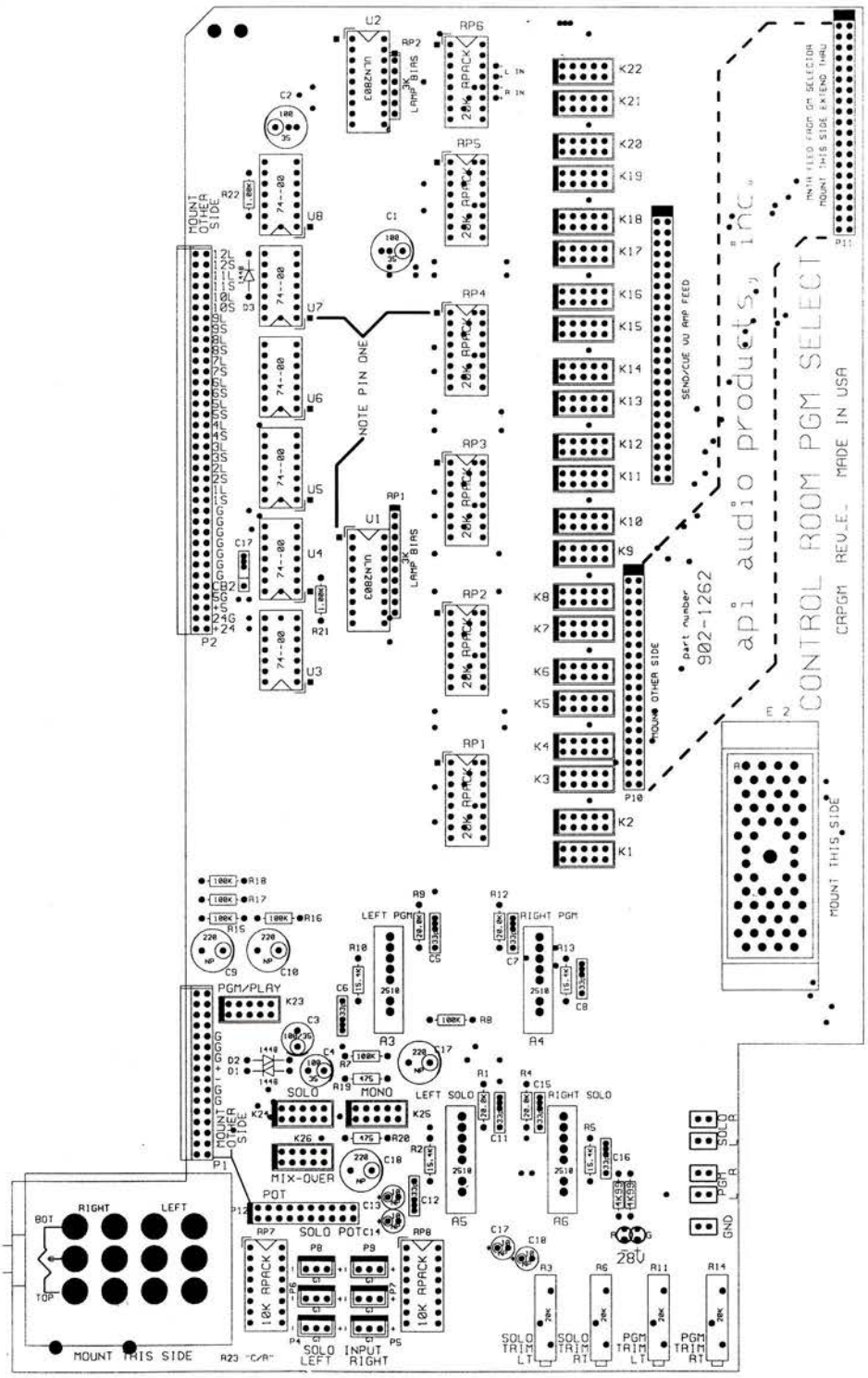
Pay close attention to the u1 as it may get confused with 1u, the same as with 2R2, etc.

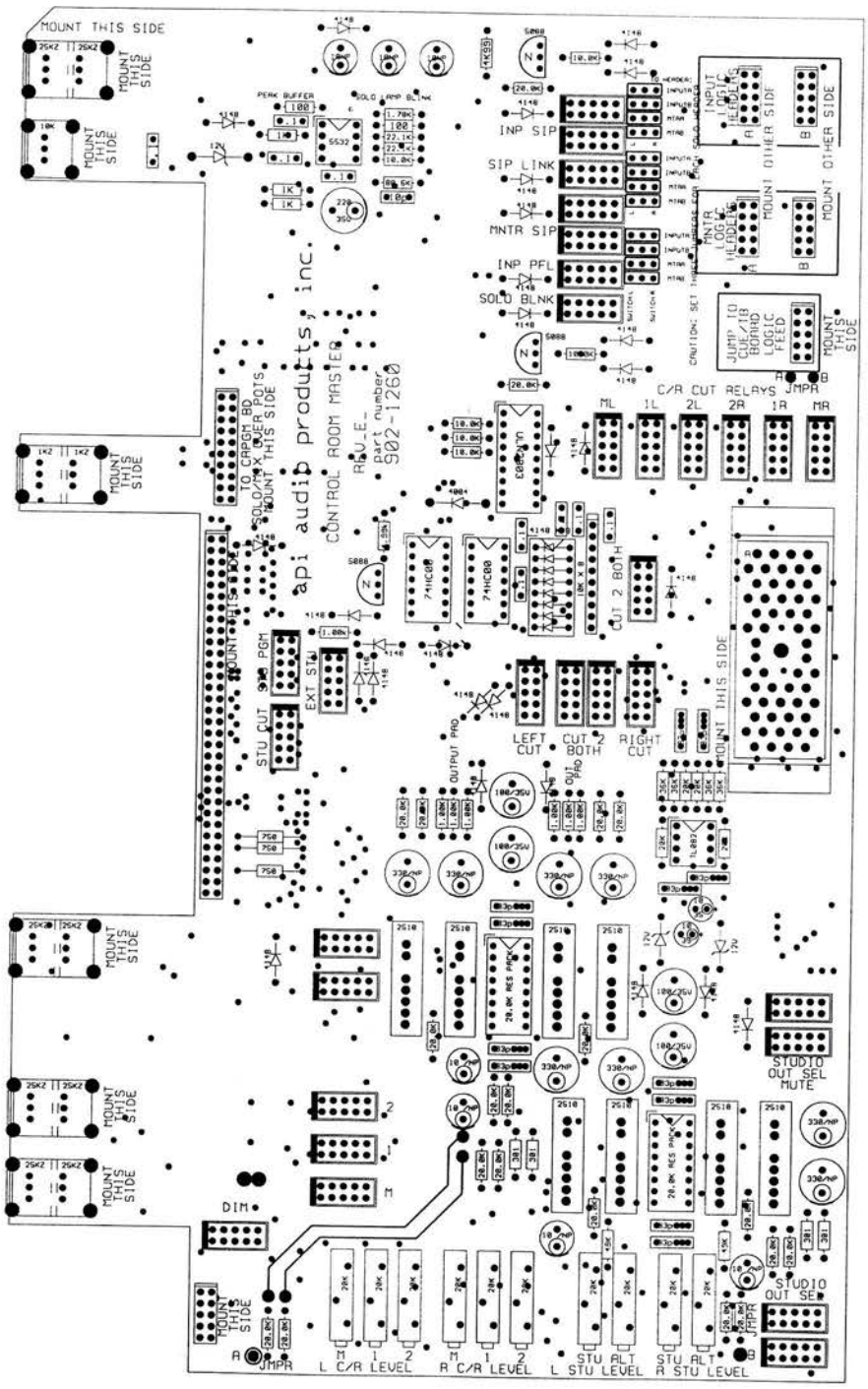
CENTER SECTION BOARD LAYOUTS

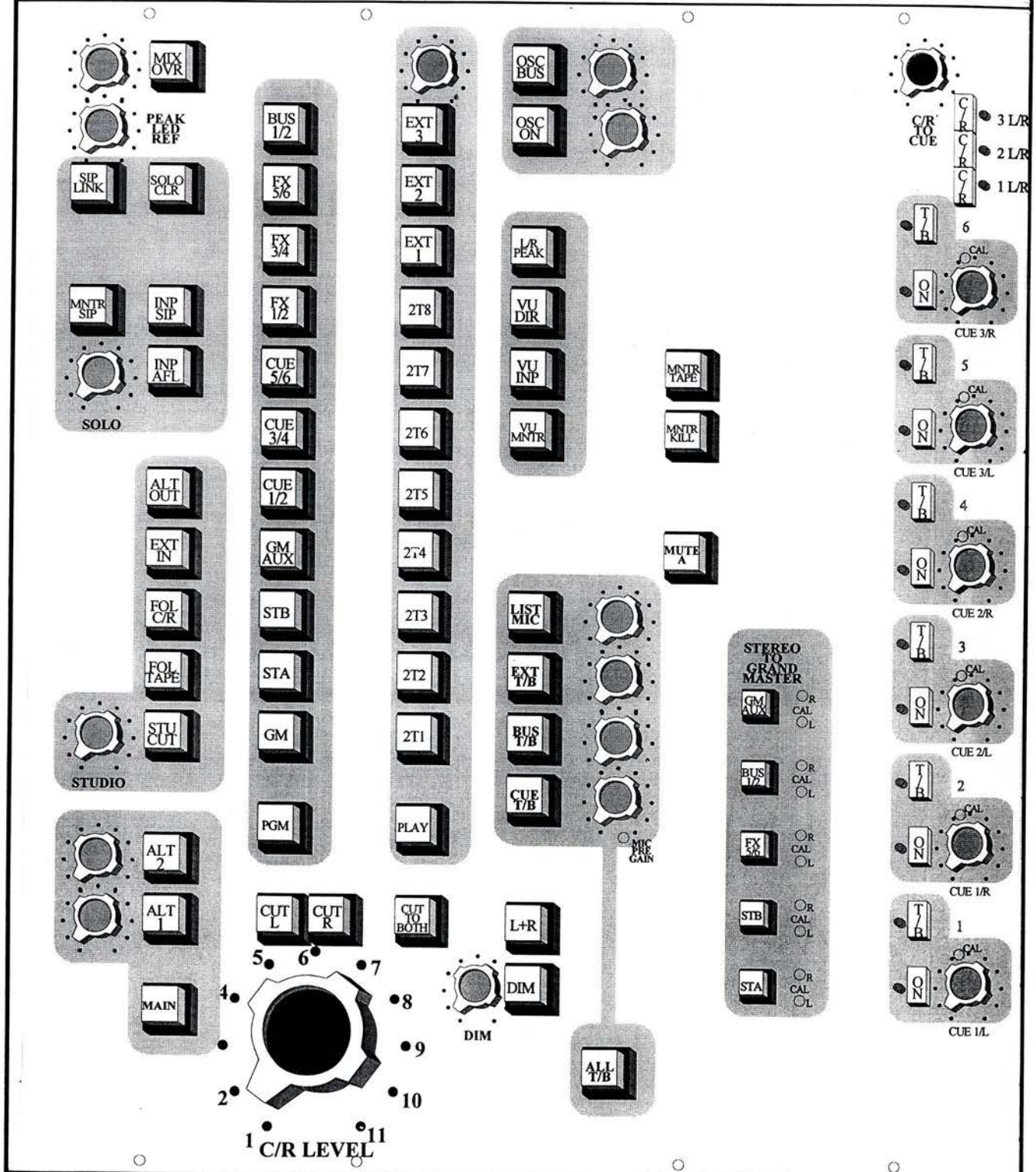



api audio products, inc.
COMMUNICATION LOGIC BOARD
REV E
MADE IN USA
LISTEN
MOUNT ALL POTS ON REAR
VU2BUS
T/BCUE
T/BEXT
OSC/TB
OSCBUS
C/R2Q
TO BSTR'S
OSC IN
ULN2803
TL084
LM556
74HC14
74HC74


MOUNT OTHER SIDE
R16, "EXT ADJ"
MOUNT THIS SIDE
R18
D3
U8
U7
U6
U5
U4
U3
C12
C11
P2
NOTE PIN ONE
U1
U2
RP1
RP2
RP3
RP4
RP5
LAMP BIAS
C1
C2
R17
K22
K21
K20
K19
K18
K17
K16
K15
K14
K13
K12
K11
K10
K9
K8
K7
K6
K5
K4
K3
K2
K1
E 1
MOUNT THIS SIDE
api audio products, inc.
CONTROL ROOM PLAY SELECTOR
CRPLAY
REV_E_
part number
902-1263
MADE IN USA
C9
C10
LA
C3
C4
D2
D1
P1
LEFT PLAY
R10
A1
C6
C5
R9
C7
RIGHT PLAY
R12
R13
A2
C8
R11
R14
PLAY TRIM LT
PLAY TRIM RT
GND
PLAY L R
MOUNT THIS SIDE
R15, "DIM"

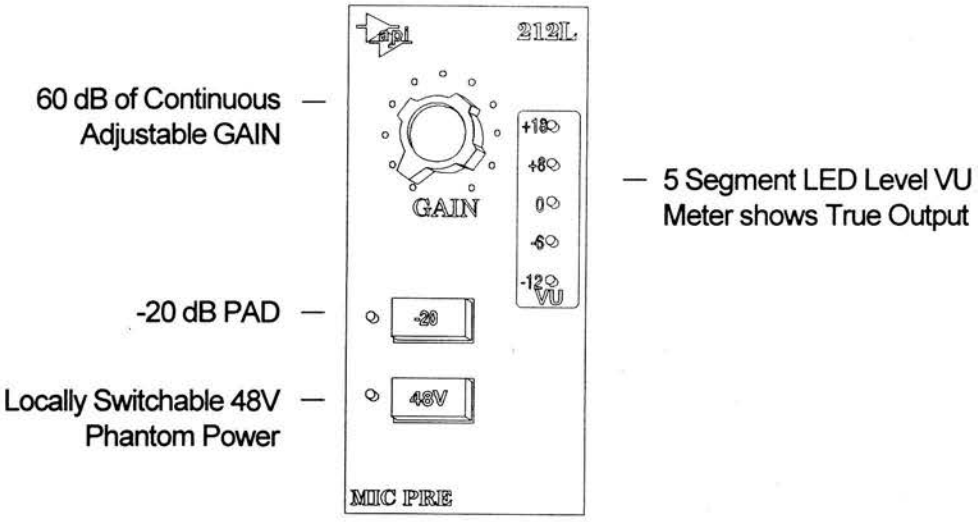

CONTROL ROOM PGM SELECT
CRPGM REV.E. MADE IN USA
api audio products, inc
part number 902-1262
MOUNT THIS SIDE
MOUNT OTHER SIDE
NOTE PIN ONE
SEND/CUE VU AMP FEED
LAMP BIAS
LEFT PGM
RIGHT PGM
LEFT SOLO
RIGHT SOLO
PGM/PLAY
SOLO
MONO
MIX-OVER
POT
SOLO POT
RIGHT
LEFT
TOP
BOT
SOLO INPUT LEFT
SOLO INPUT RIGHT
SOLO TRIM LT
SOLO TRIM RT
PGM TRIM LT
PGM TRIM RT
28V
GND


MOUNT THIS SIDE
api audio products, inc.
CONTROL ROOM MASTER
REV E
part number
902-1260
INP SIP
SIP LINK
MNTR SIP
INP PFL
SOLO BLNK
C/R CUT RELAYS JMPR
ML
1L
2L
2R
1R
MR
CUT 2 BOTH
LEFT CUT
CUT 2 BOTH
RIGHT CUT
STUDIO OUT SEL MUTE
DIM
L C/R LEVEL
R C/R LEVEL
L STU LEVEL
R STU LEVEL
MOUNT OTHER SIDE


MIX OVR
PEAK LED REF
SIP LINK
SOLO CLR
MNTR SIP
INP SIP
INP AFL
SOLO
ALT OUT
EXT IN
FOL C/R
FOL TAPE
STU CUT
STUDIO
ALT 2
ALT 1
MAIN
BUS 1/2
FX 5/6
FX 3/4
FX 1/2
CUE 5/6
CUE 3/4
CUE 1/2
GM AUX
STB
STA
GM
PGM
EXT 3
EXT 2
EXT 1
2T8
2T7
2T6
2T5
2T4
2T3
2T2
2T1
PLAY
OSC BUS
OSC ON
L/R PEAK
VU DIR
VU INP
VU MNTR
MNTR TAPE
MNTR KILL
MUTE A
LIST MIC
EXT T/B
BUS T/B
CUE T/B
MIC PRE GAIN
ALL T/B
CUT L
CUT R
CUT TO BOTH
L+R
DIM
DIM
5
6
7
4
8
9
2
10
1
11
C/R LEVEL
STEREO TO GRAND MASTER
GM AUX
BUS 1/2
FX 5/6
STB
STA
R
CAL
L
C/R TO CUE
C/R 3 L/R
C/R 2 L/R
C/R 1 L/R
T/B
ON
CAL
6
CUE 3/R
5
CUE 3/L
4
CUE 2/R
3
CUE 2/L
2
CUE 1/R
1
CUE 1/L

INPUT SECTION

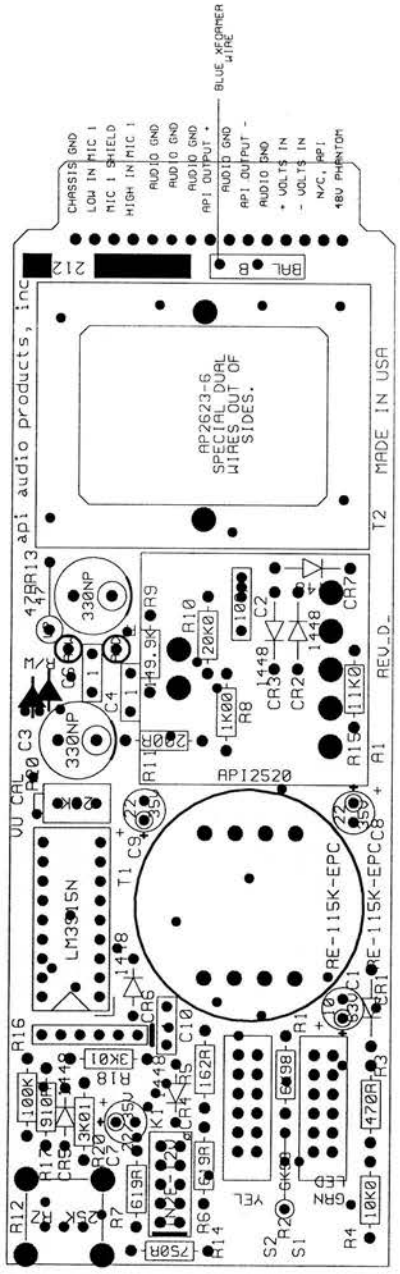
212L Mic Preamp Operation



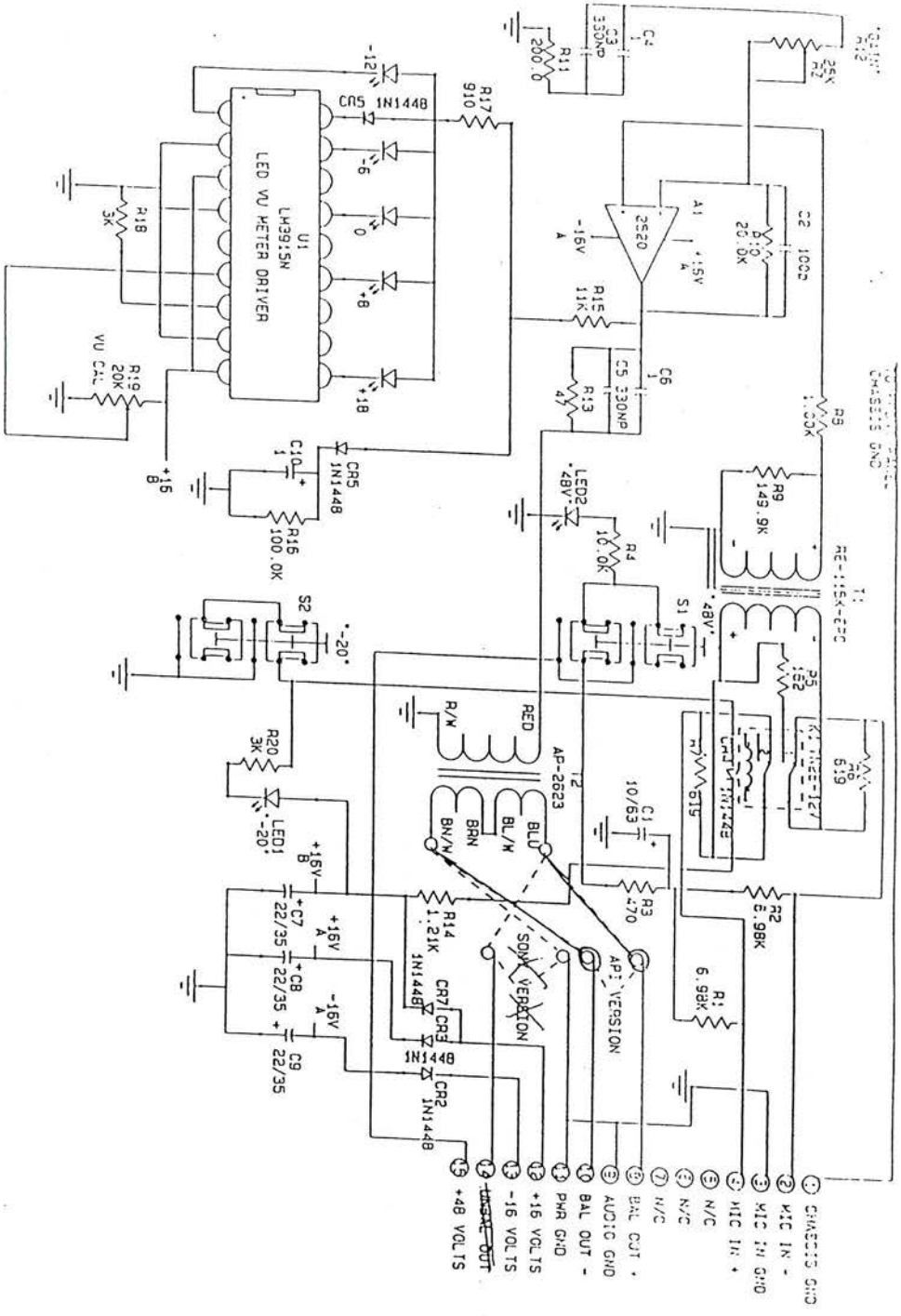
Specifications

Input Impedance: Mic In 150Ω
Output Impedance: Transformer Balanced, 85Ω
Maximum Input Level: +2 dBm, No Pad, +18 dBm with Pad In
Gain: 48dB Min., 56dB Max.
Distortion: Less than .007% @ 4 Out, Less than .08% @ +28 Out, 100 Hz
Clipping Level: +28 dBm
Noise: Actual Measured Noise: -102dBm Unweighted, -125dBm "A" Weighted
Controls: Gain, Pad, 48V

212L Mic Preamp



Schematics 212L Mic Preamp



Parts List 212L Mic Preamp

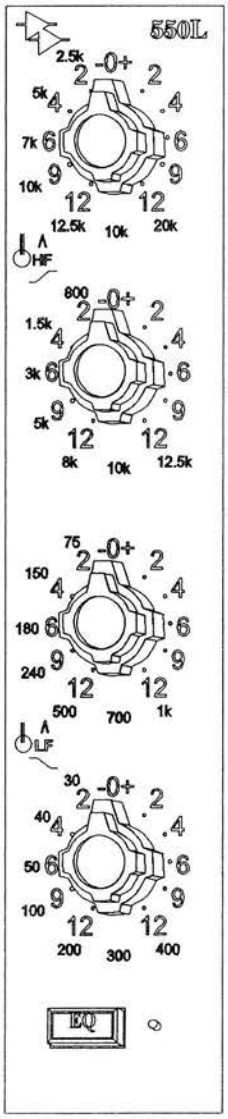
PART NO.	DESCRIPTION
151-2211	Resistor 1/4W, 1% 6.98KW
151-2095	Resistor 1/4W, 1% 475W
151-2226	Resistor 1/4W, 1% 10KW
151-1069	Resistor 1/4W, 5% 180W
151-2106	Resistor 1/4W, 1% 619W
151-2126	Resistor 1/4W, 1KW
151-2294	Resistor 1/4W, 49.9KW
151-2256	Resistor 1/4W, 20.0KW
151-2059	Resistor 1/4W, 200W
151-2230	Resistor 1/4W, 11KW
151-1055	Resistor 1/4W, 5% 47W
151-2174	Resistor 1/4W, 1% 3.01KW
151-2324	Resistor 1/4W, 5% 100KW
151-2114	Resistor 1/4W, 1% 750W
157-7122	Potentiometer 25KRz
157-3111	Trim Pot 20K, 20 Turn
104-1707	Capacitor, Electrolytic 10uf, 63v
104-1238	Capacitor, Electrolytic 10uf, 35v

PART NO.	DESCRIPTION
102-3006	Capacitor, Silver Mica 100pf 100v
104-1807	Cap., Electrolytic NP 330uf 16v
103-1522	Capacitor, Mono Dip 1uf
103-2033	Capacitor, Stacked Film .12uf
254-1005	Diode IN4148
Sansei	Switch, 4 Pole
Aromat	Relay DPDT 12v
Jensen	Transformer RE115-K
901-1067	API Transformer AP2623
	IC Socket 14 Pin Dip
214-1045	IC LED Meter Driver LM3915
252-9991	API Op-Amp 2520
426-1025	LED square green
426-1026	LED square red 426-1027
	LED square yellow
903-0073	Front Panel
	Knob, Silver
	212L/S PCB

550L Equalizer Operation

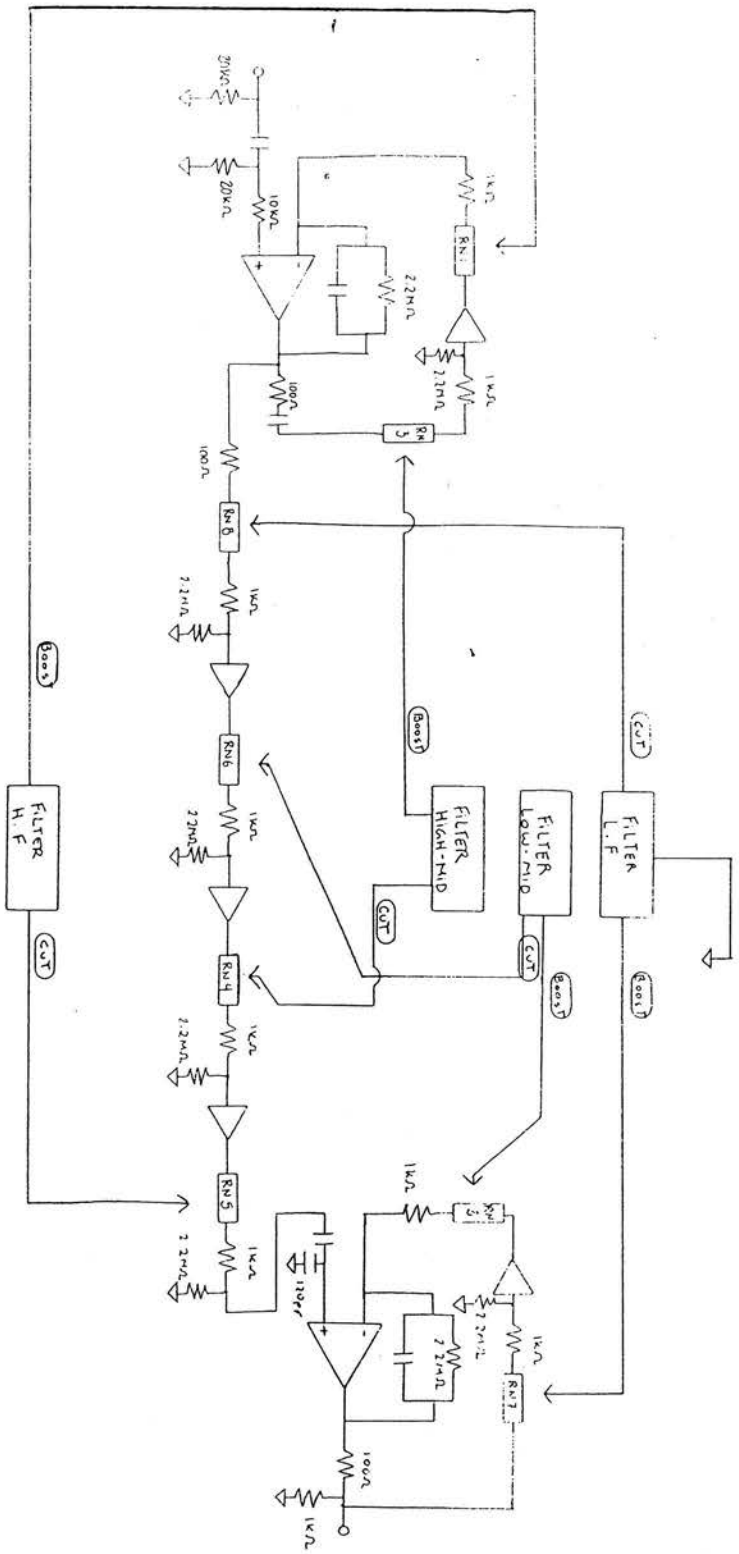
The API model 550L EQ continues the legacy of API's 500 equalizer series: Designed around all discrete op-amps. All inter-filter buffers are unity gain 3 transistor amplifiers designed not to add noise to the equalizer. Characteristics of the 550L are:

- The filter design is a passive filter, using the amplifiers only as buffers, which lends itself well to a very smooth minor adjustment in tone that sounds like the original source.
- The proprietary "proportional Q" or variable width "Q" of the boost/cut slope is proportional to the amount of boost or cut, which means that if the equalizer is set at +2, the bandwidth will be in the 2 to 3 octave area, and when it is at +12 it tightens up to about 1 octave.
- Frequency Control - 28 overlapping frequencies are addressed across 4 bands, with seven frequencies per band, and individual shelving switches on the hi and lo bands.
- Silent In-Out switches allow click-less insertion.
- Rotary switches are used for boost and cut controls with + or - 12db in 2db steps allowing for precise return to prior settings.
- Solid aluminum switch knobs are spaced comfortably, and show a distinct statement of quality unrivaled at any price.

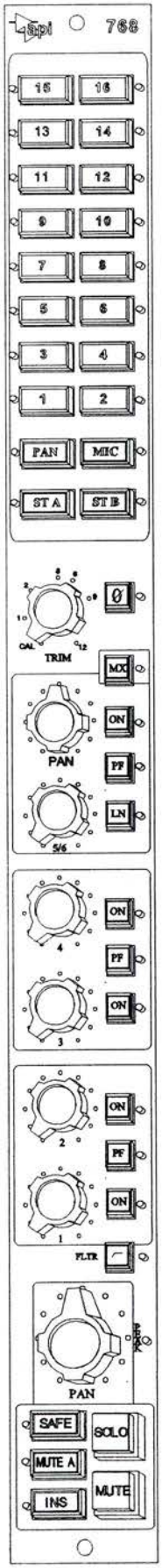


550L Equalizer

Schematics 550L Equalizer



768 Input Module Operation



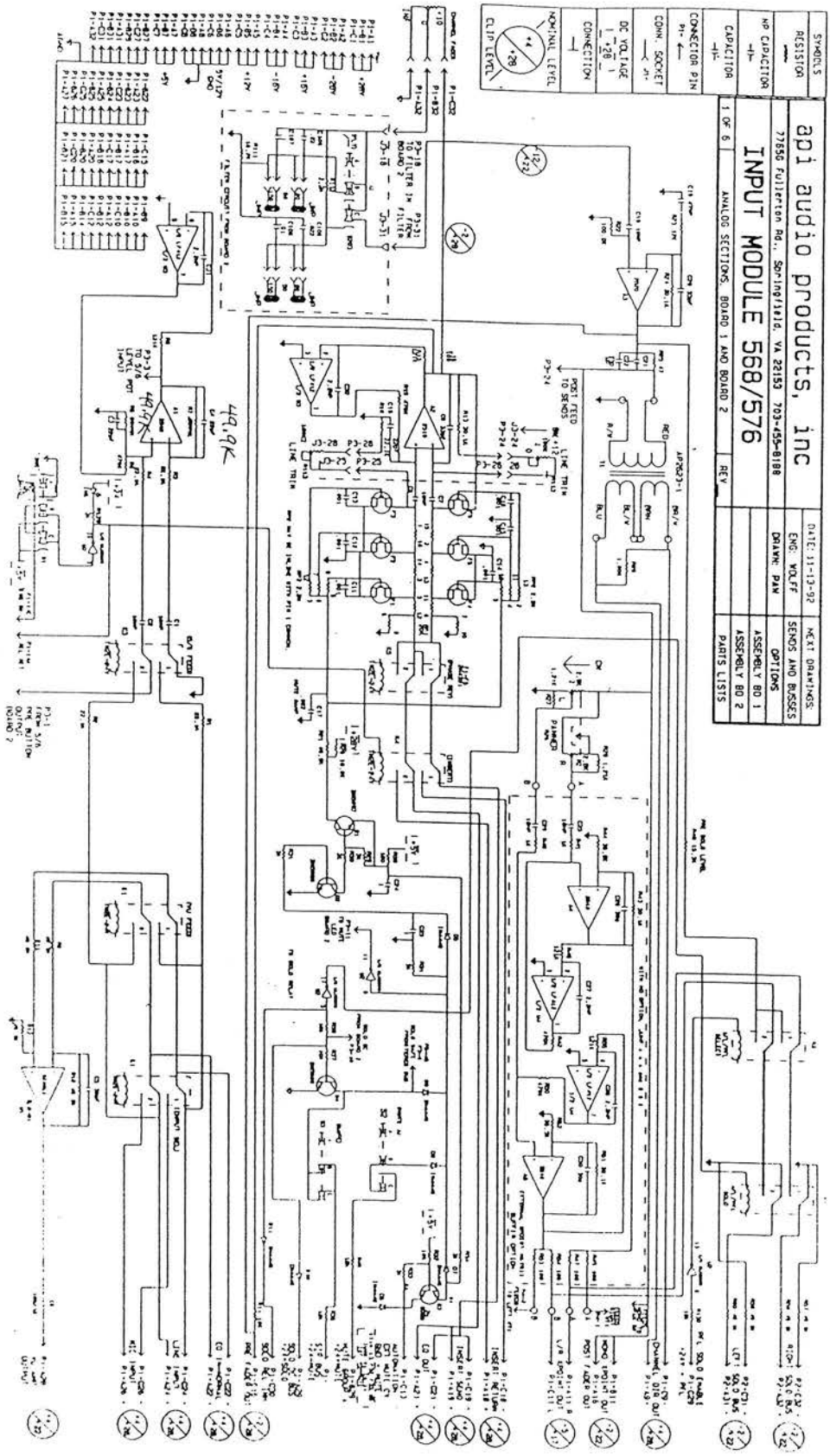
The API model 768 Input Module controls all routing facets of each console channel, including bus assign, mic line switching, aux and cue sends, panning, solo and mute. The 768 Features:

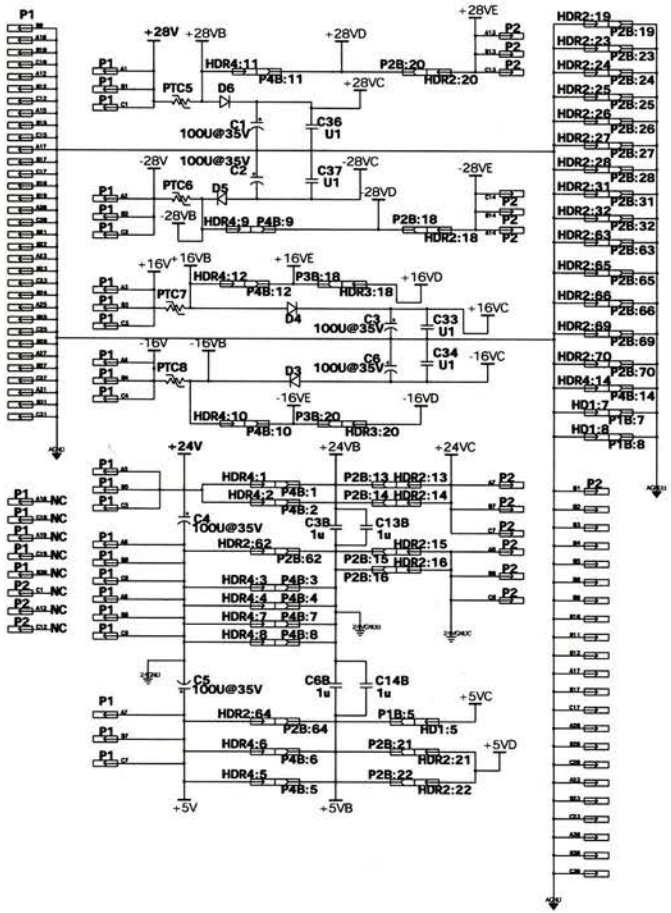
- All discrete signal path, utilizing the 2520 and 2510 (high definition op-amp.)
- All steel chassis construction providing a physical shield between adjacent channels, eliminating channel-to-channel crosstalk. Individual on/off LED adjacent to each switch for clear visual indiçation of switch assignments.

Operation of 768:

- 16 busses on individual switch assignments.
- Independent mic/line switch.
- Pan on (dependent on mode) engages the pan pot on either multi-track busses or stereo busses.
- Stereo bus A and Stereo bus B assign.
- Phase Invert - 180° phase inversion without the use of an additional amplifier.
- Line Trim provides up to an additional 12db of gain to the input amplifier.
- Auxes 1-6 arranged as: Auxes 1-4 are mono, with individual gain control and cut switch, and are grouped in pairs, with pre/post switching per pair. Auxes 5 & 6 are a stereo pair with level control and a panner, as well as cut and pre/post.
- Two powerfully unique additional controls are the LN and the MX switches: LN allows the aux 5/6 section to become an additional line input for the channel, which may be used as an effect return or a tape monitor, in effect doubling the line-in capacity of the console.
- MX disengages aux 5/6 on that channel and routes the section to the multi-track bus assigns 1 - 8, allowing up to an additional 8 sends per channel, giving the operator a potential total of 14 aux sends on any given input. Busses 9 - 16 remain as multi-track busses. The MX feature provides powerful aux flexibility including 8 channel "clean feed" cue mixes.
- Filter - A passive high pass filter set at 50hz uses no additional amplifiers, keeping the API commitment of minimum amplifiers in the signal path. Internal jumpers allow the frequency to be changed to 80hz or 150hz.
- Pan pot - True mono center panner, switchable between stereo and multi-track busses via pan enable switch.
- Solo, Mute, Group Mute, Solo-Safe - Provide the normal functions of solo and mute control, and allow AFL, PFL and In-Place-Solo (SIP).
- Insert - Functions in conjunction with the channel insert patch points for switchable insertion of external devices in the signal path. The insert is post EQ, Pre Fader. It can also be automated.

Schematics 768 Input Module





REV	DESCRIPTION	DATE	APPD

NEXT ASSY	JOB NO.	MODEL NO.	QTY REQ'D	APPLICATION	
				NEXT ASSY	

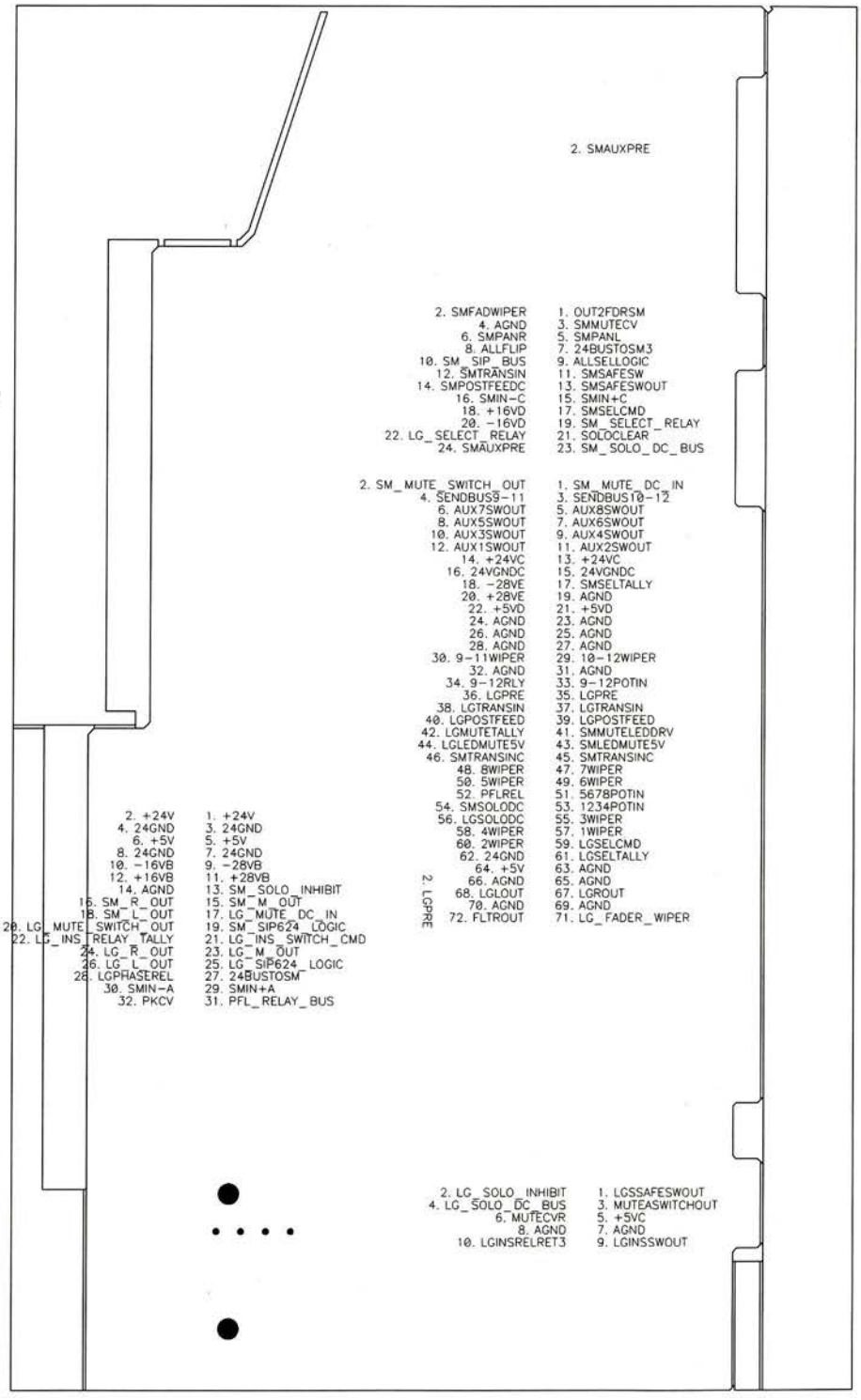
TOLERANCES UNLESS OTHERWISE NOTED
FRACTIONS ±1/-
.XX = ±1/-
.XXX = ±1/-
ANGLES = ±1/-
☐ SEE SEPARATE PARTS LIST
SCALE

DRAWN / INITIALS / DATE
CHECK / INITIALS / DATE
APPVD / INITIALS / DATE
MATERIAL
FINISH

AUTOMATED PROCESSES, INC.
8017-C MENDENHALL CT., COLUMBIA, MD 21045 410.381.7870

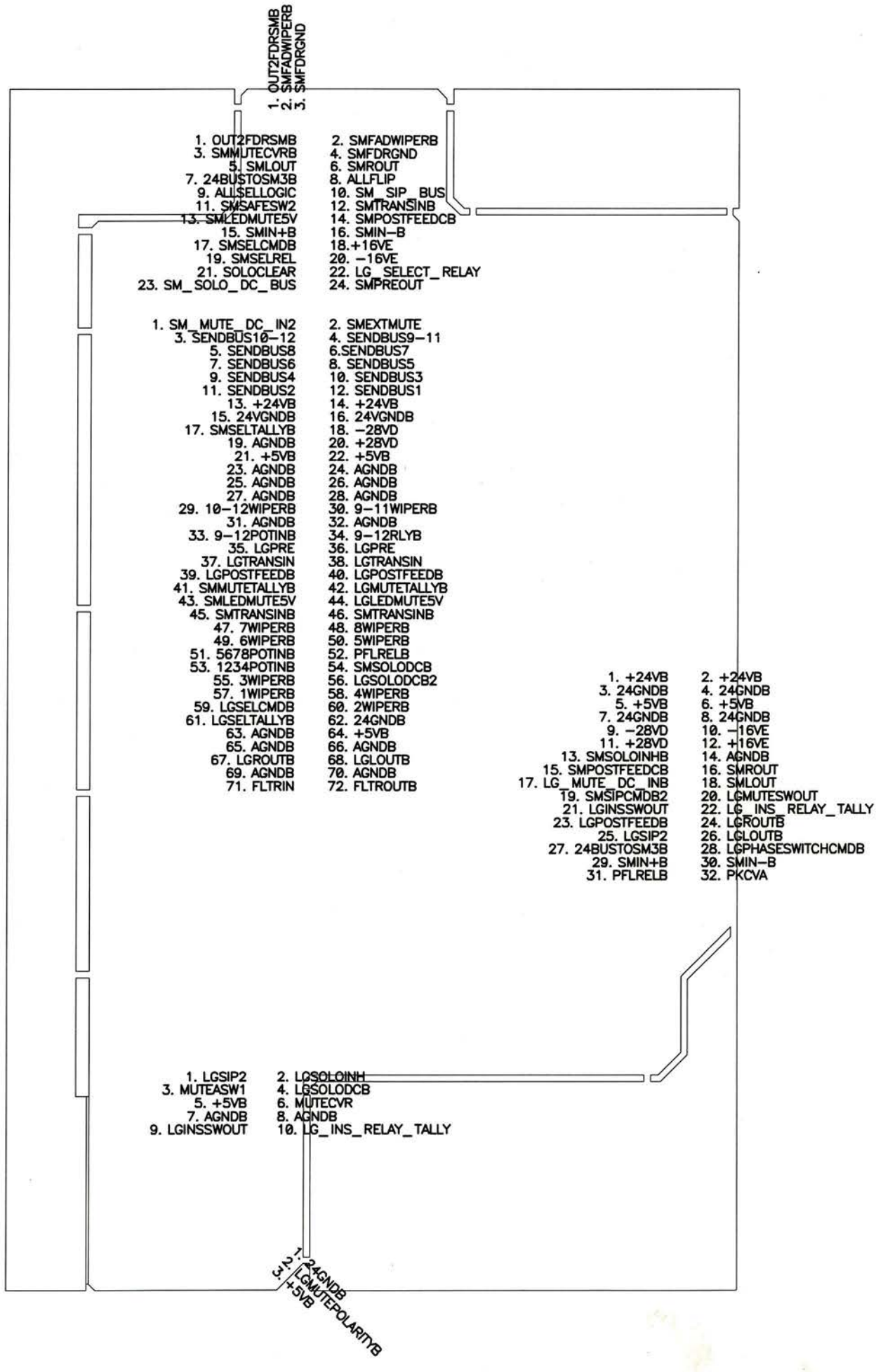
TITLE: **968 INPUT MODULE POWER AND GROUND DISTRIBUTION**

SIZE: D | DWG NO.: 43-951-0651 | REV: F | SHEET: 4 OF 4



A	B	C
1. SM_SOLO_DC_BUS	1. AGND	1. N/C
2. SM_SIP_BUS	2. AGND	2. ALLFLIP
3. LGSMVU	3. AGND	3. ALLSELLOGIC
4. SOLO_CLEAR	4. AGND	4. SM_SOLO_INHIBIT
5. SM_INS_RELAY_TALLY	5. AGND	5. SM_INS_SWITCH_CMD
6. SM_MUTE_SWITCH_OUT	6. AGND	6. SM_MUTE_DC_IN
7. +24VC	7. +24VC	7. +24VC
8. 24VGNDC	8. 24VGNDC	8. 24VGNDC
9. SM_SELECT_RELAY	9. AGND	9. -6_RELAY
10. EQ_TO_SM_RELAY	10. AGND	10. SM_INS_RELAY_TALLY
11. LG_INS_RELAY_TALLY	11. AGND	11. LG_SELECT_RELAY
12. N/C	12. AGND	12. N/C
13. +28VE	13. +28VE	13. +28VE
14. -28VE	14. -28VE	14. -28VE
15. AUX12+_BUS	15. AGND	15. AUX12-_BUS
16. AUX11+_BUS	16. AGND	16. AUX11-_BUS
17. AGND	17. AGND	17. AGND
18. AUX10+_BUS	18. AGND	18. AUX10-_BUS
19. AUX9+_BUS	19. AGND	19. AUX9-_BUS
20. AGND	20. AGND	20. AGND
21. AUX8+_BUS	21. AGND	21. AUX8-_BUS
22. AUX7+_BUS	22. AGND	22. AUX7-_BUS
23. AGND	23. AGND	23. AGND
24. AUX6+-BUS	24. AGND	24. AUX6-_BUS
25. AUX5+_BUS	25. AGND	25. AUX5-_BUS
26. AUX4+_BUS	26. AGND	26. AUX4-_BUS
27. AUX3+_BUS	27. AGND	27. AUX3-_BUS
28. AUX2+_BUS	28. AGND	28. AUX2-_BUS
29. AUX1+_BUS	29. AGND	29. AUX1-_BUS
30. AGND	30. AGND	30. AGND
31. SOLOL+_BUS	31. AGND	31. SOLO_L-_BUS
32. SOLOR+_BUS	32. AGND	32. SOLOR-_BUS

A	B	C
1. +28V	1. +28V	1. +28V
2. -28V	2. -28V	2. -28V
3. +16V	3. +16V	3. +16V
4. -16V	4. -16V	4. -16V
5. +24V	5. +24V	5. +24V
6. 24GND	6. 24GND	6. 24GND
7. +5V	7. +5V	7. +5V
8. 24GND	8. 24GND	8. 24GND
9. DIROUT+	9. AGND	9. DIROUT-
10. AGND	10. AGND	10. AGND
11. SM_L_OUT	11. SM_M_OUT	11. SM_R_OUT
12. AGND	12 AGND	12. AGND
13. SM_SIP624_LOGIC	13. LG_MUTE_SWITCH_OUT	13. LG_MUTE_DC_IN
14. LG_INS_RELAY_TALLY	14. LG_SIP624_LOGIC	14. LG_INS_SWITCH_CMD
15. AGND	15. AGND	15. AGND
16. LG_L_OUT	16. LG_M_OUT	16. LG_R_OUT
17. AGND	17. AGND	17. AGND
18. N/C	18. AGND	18. N/C
19. N/C	19. AGND	19. N/C
20. AGND	20. 24BUSTOSM	20. AGND
21. LGIN+	21. AGND	21. LGIN-
22. LGVU+	22. AGND	22. LGVU-
23. AGND	23. AGND	23. AGND
24. SMIN+A	24. AGND	24. SMIN-A
25. AGND	25. AGND	25. AGND
26. SMVU+	26. AGND	26. SMVU-
27. AGND	27. AGND	27. AGND
28. TO_VU	29. VU2DIR	28. PKCV
29. LG_SOLO_DC_BUS	29. MUTEGRP	29. PFL_RELAY_BUS
30. SIP_BUS	30. N/C	30. LG_SOLO_INHIBIT
31. AGND	31. AGND	31. AGND
32. AGND	32. LG_FADER_WIPER	32. OUT2FDR


1. OUT2FDRSMB
2. SMFADWIPERB
3. SMFDRGND
1. OUT2FDRSMB
2. SMFADWIPERB
3. SMMUTECVRB
4. SMFDRGND
5. SMLOUT
6. SMROUT
7. 24BUSTOSM3B
8. ALLFLIP
9. ALLSELLOGIC
10. SM_SIP_BUS
11. SMSAFESW2
12. SMTRANSINB
13. SMLEDMUTE5V
14. SMPOSTFEEDCB
15. SMIN+B
16. SMIN-B
17. SMSELCMDB
18.+16VE
19. SMSELREL
20. -16VE
21. SOLOCLEAR
22. LG_SELECT_RELAY
23. SM_SOLO_DC_BUS
24. SMPREOUT
1. SM_MUTE_DC_IN2
2. SMEXTMUTE
3. SENDBUS10-12
4. SENDBUS9-11
5. SENDBUS8
6.SENDBUS7
7. SENDBUS6
8. SENDBUS5
9. SENDBUS4
10. SENDBUS3
11. SENDBUS2
12. SENDBUS1
13. +24VB
14. +24VB
15. 24VGNDB
16. 24VGNDB
17. SMSELTALLYB
18. -28VD
19. AGNDB
20. +28VD
21. +5VB
22. +5VB
23. AGNDB
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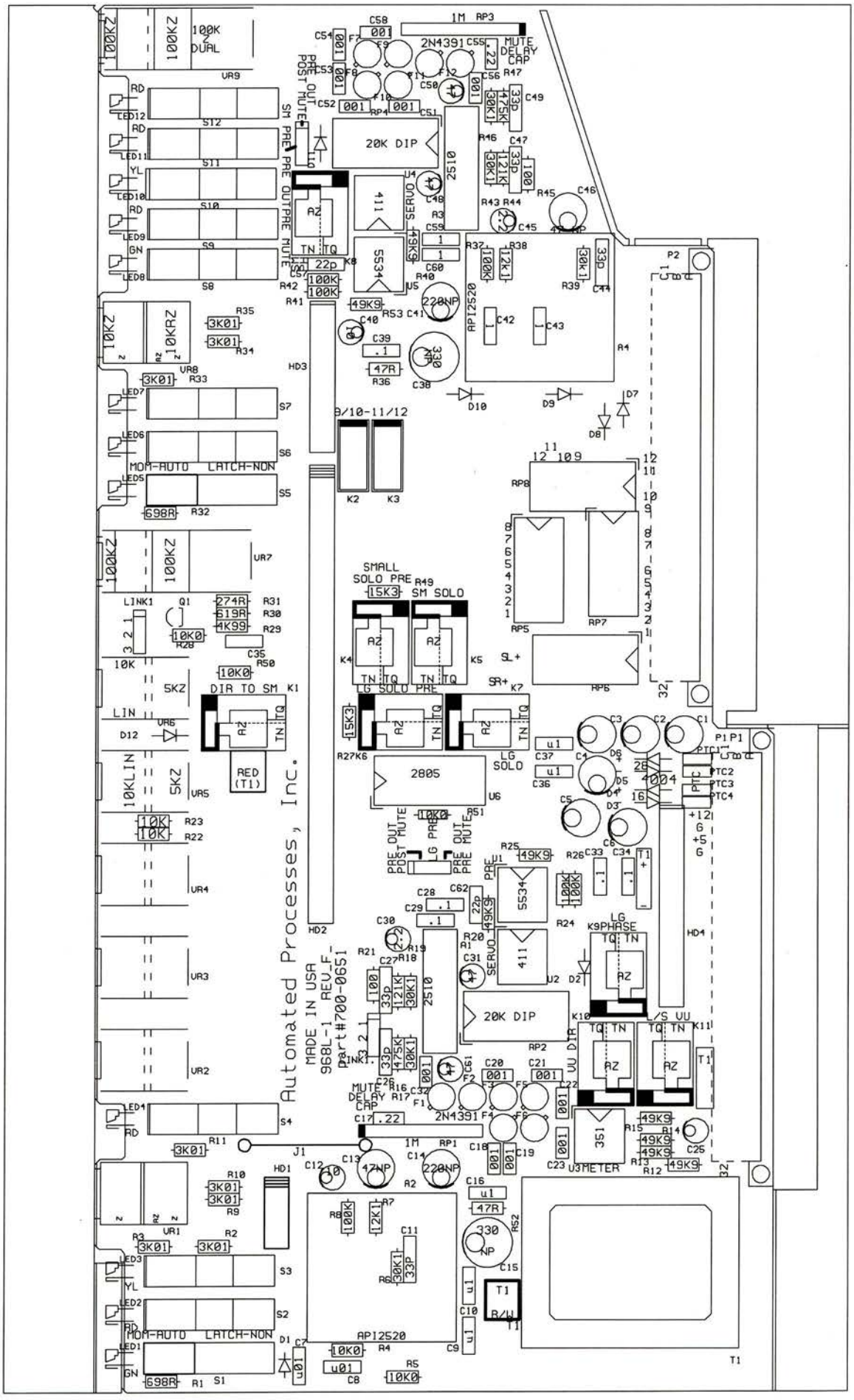
25. AGNDB
26. AGNDB
27. AGNDB
28. AGNDB
29. 10-12WIPERB
30. 9-11WIPERB
31. AGNDB
32. AGNDB
33. 9-12POTINB
34. 9-12RLYB
35. LGPRE
36. LGPRE
37. LGTRANSIN
38. LGTRANSIN
39. LGPOSTFEEDB
40. LGPOSTFEEDB
41. SMMUTETALLYB
42. LGMUTETALLYB
43. SMLEDMUTE5V
44. LGLEDMUTE5V
45. SMTRANSINB
46. SMTRANSINB
47. 7WIPERB
48. 8WIPERB
49. 6WIPERB
50. 5WIPERB
51. 5678POTINB
52. PFLRELB
53. 1234POTINB
54. SMSOLODCB
55. 3WIPERB
56. LGSOLODCB2
57. 1WIPERB
58. 4WIPERB
59. LGSELCMDB
60. 2WIPERB
61. LGSELTALLYB
62. 24GNDB
63. AGNDB
64. +5VB
65. AGNDB
66. AGNDB
67. LGROUTB
68. LGLOUTB
69. AGNDB
70. AGNDB
71. FLTRIN
72. FLTROUTB
1. +24VB
2. +24VB
3. 24GNDB
4. 24GNDB
5. +5VB
6. +5VB
7. 24GNDB
8. 24GNDB
9. -28VD
10. -16VE
11. +28VD
12. +16VE
13. SMSOLOINHB
14. AGNDB
15. SMPOSTFEEDCB
16. SMROUT
17. LG_MUTE_DC_INB
18. SMLOUT
19. SMSIPCMDB2
20. LGMUTESWOUT
21. LGINSSWOUT
22. LG_INS_RELAY_TALLY
23. LGPOSTFEEDB
24. LGROUTB
25. LGSIP2
26. LGLOUTB
27. 24BUSTOSM3B
28. LGPHASESWITCHCMDB
29. SMIN+B
30. SMIN-B
31. PFLRELB
32. PKCVA
1. LGSIP2
2. LGSOLOINH
3. MUTEASW1
4. LGSOLODCB
5. +5VB
6. MUTECVR
7. AGNDB
8. AGNDB
9. LGINSSWOUT
10. LG_INS_RELAY_TALLY
1. 24GNDB
2. LGMUTEPOLARITYB
3. +5VB


Automated Processes, Inc.
MADE IN USA
968L-1 REV_F
Part#700-0651
100KΩ
100K DUAL
VR9
RD
LED12
S12
RD
LED11
S11
YL
LED10
S10
RD
LED9
S9
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LED8
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PRE OUT POST MUTE
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20K DIP
2510
SERVO
411
5534
TN TQ
22p
100K
49K9
220NP
330
AP12520
10KΩ
3K01
MOM-AUTO
LATCH-NON
698R
S7
S6
S5
S4
S3
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S1
VR8
VR7
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10K
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10KLIN
LINK1
Q1
274R
619R
4K99
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R28
C35
R50
DIR TO SM
K1
LIN
D12
RED (T1)
SMALL SOLO PRE
15K3
SM SOLO
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K4
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LG SOLO
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PRE OUT POST MUTE
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MUTE DELAY CAP
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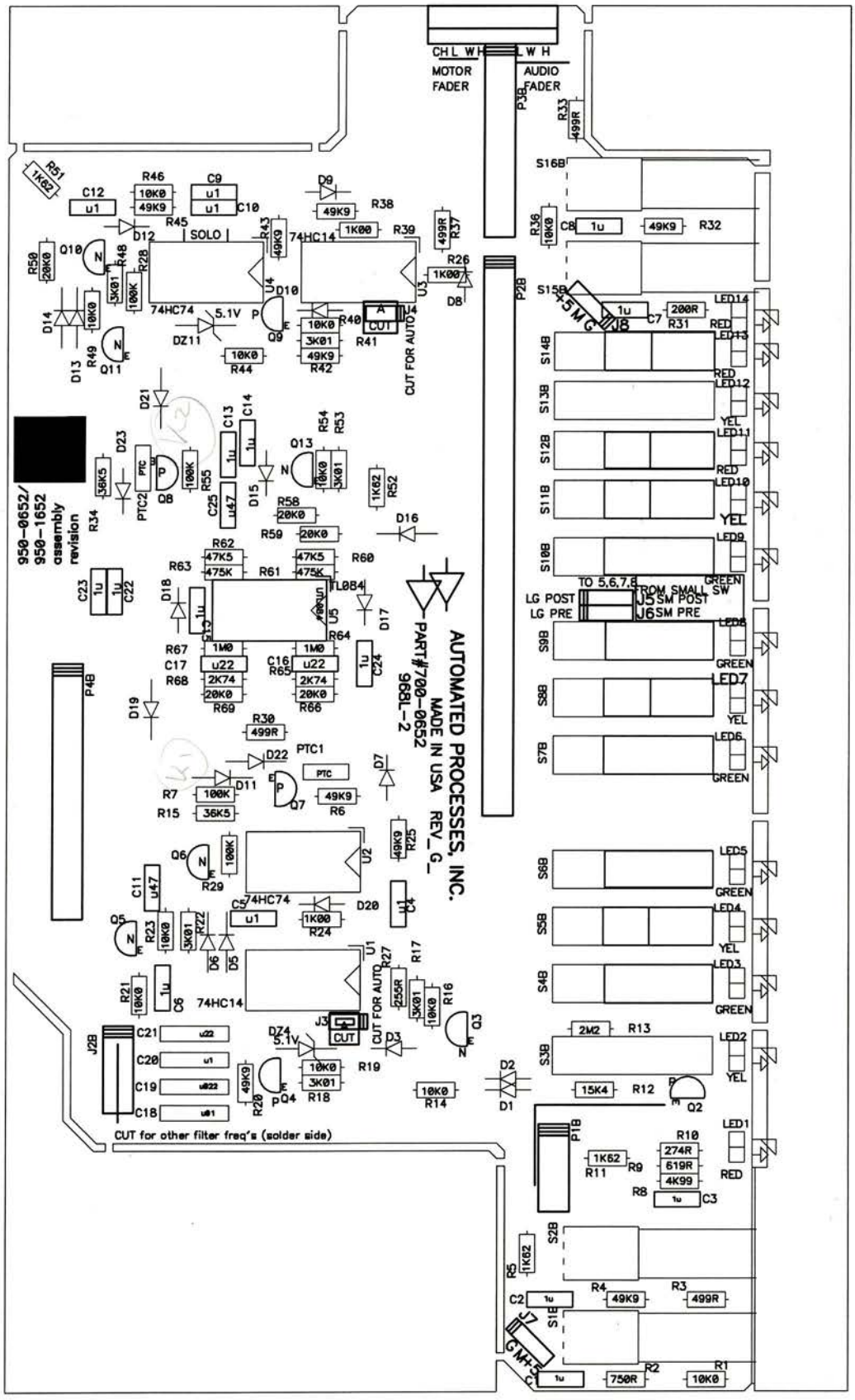
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MOTOR FADER
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AUDIO FADER
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S15B
S16B
J8
J7
J5 SM POST
J6 SM PRE
LG POST
LG PRE
TO 5,6,7,8
FROM SMALL SW
SOLO
74HC14
74HC74
5.1V
DZ11
DZ4
CUT FOR AUTO
CUT
CUT for other filter freq's (solder side)
PTC1
PTC2
TL084
950-0652/
950-1652
assembly
revision
AUTOMATED PROCESSES, INC.
MADE IN USA REV_G_
PART#700-0652
9681-2
LED1
LED2
LED3
LED4
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LED9
LED10
LED11
LED12
LED13
LED14
RED
YEL
GREEN

968L INPUT MODULE
MAIN
BILL OF MATERIALS
ASSY#951-3651 REV.F

2/11/2003

Qty_Per_Par	Comp_Item_No	Reference_1	Reference_2	Mfg_Uom	Item_Desc_1
2	001-0073	HDW1,2		EA	4-40x1" PAN/PH/SS
1	001-2208	HDW3		EA	SCREW 4-40X1/2 PHIL FLAT SS
2	001-2210			EA	SCREW NYLONFLAT 82 DEG4-40X1/2
2	001-2301			EA	SCREW 4-40X3/16 PH FLTSS100DEG
3	002-0013	HDW4,5,6		EA	NUT 4-40 SMALL PATTERN HEX
2	005-0003	HDW7,8		EA	#4 Split Lock Washer
2	015-0044			EA	0.200 #4 NYLON SPACER
1	015-0056	HDW10		EA	SPACER 4-40X.187"X.750"
1	015-0058			EA	440x5/16x3/16HEX F-F
0.025	033-0100			FT	TUBING 20AWG PVC
1	055-0023			EA	.100x3 CRIMP HOUSING
3	055-0043			EA	FEMALE CRIMP GOLD
1	075-0179	HD3		EA	12 PIN DUAL ROW BOARD STACKER
1	075-0180	HD4		EA	16 PIN DUAL ROW BOARD STACKER
1	075-0181	HD2		EA	36 PIN DUAL ROW BOARD STACKER
1	075-0182	P3		EA	12 PIN DUAL SOCKET STRIP
1	075-0183	P4		EA	16 PIN DUAL SOCKET STRIP
1	075-0184	P2		EA	36 PIN DUAL SOCKET STRIP
1	075-0190	P1		EA	SOCKET STRIP 5 PIN DUAL ROW
1	075-0195	HD1		EA	BOARD STACKER 5 PIN DUAL ROW
1	100-0769			EA	SUBPNL 968L INP MODULE REV D
1	101-0768			EA	PANEL 968L INPUT MODULE FRONT
1	200-0011			EA	D25742 MONO 45MM ORG 11MM KNOB
2	201-0062	VR7,9		EA	100KZ DUAL
2	201-0063	VR5,6		EA	25K/5KZ DUAL CONCENTRIC
3	201-0066	VR2,3,4		EA	25KZ DUAL CONCENTRIC
2	203-0005	VR1(SET IN JIG),8(FLAT TO BOARD)		EA	PAN POT 5KZ/UZ LEGACY/PLUS
1	451-0002	T1		EA	FOUR WIRE 1:2 OUTPUTAP2623-1-4
2	500-2520	A2,4		EA	2520 OP-AMP
2	**508-0027**			**EA**	**T1 YELLOW HIGH OUTPUT**
10	508-0034	LED1(BOARD B),2(MAINPCB),4(MAINPCB),6(MAINPCB),9(MAINPCB),	11(MAINPCB),11(BOARD B),12(MAINPCB),13(BOARD B),14(BOARD B)	EA	RED SQUARE SMALL TIP
8	508-0035	LED1(MAINPCB),3(BOARD B),5(BOARD B),5(MAINPCB),6(BOARD B),	8(BOARD B),8(MAINPCB),9(BOARD B)	EA	GREEN SQ. SMALL TIP
8	508-0036	LED2(BOARD B),3(MAINPCB),4(BOARD B),7(BOARD B),7(MAINPCB),	10(BOARD B),10(MAINPCB),12(BOARD B)	EA	YELLOW SQ. SMALL TIP
2	603-0049			EA	19 SERIES MOMENTARY
2	603-0055			EA	19 SERIES YELLOW CAP
1	700-0728			EA	968L SHIELD
1	750-0412			EA	KNOB P&G FADER GRAY 11MM
5	750-0602			EA	LARGE KNOB 868L
5	750-0603			EA	868L SMALL KNOB
1	750-0605			EA	768 PANNER KNOB
3	750-0606			EA	SMALL KNOB CLEAR FINISH
1	751-0603			EA	SWITCHCAP "MIC" BLACK/WHITE
2	751-0604			EA	"SAFE" LARGE GREY/BLK

968L INPUT MODULE
MAIN
BILL OF MATERIALS
ASSY#951-3651 REV.F

2/11/2003

3	751-0607			EA	"PF" GREY/BLK SMALL
2	751-0608			EA	"INS" LARGE GREY/BLK
2	751-0609			EA	"PHASE" SM. RED/WHT
1	751-0610			EA	"FILTER" GREEN/WHT
1	751-0620			EA	WHITE BLANK SMALL
5	751-0622			EA	"ON" SM. WHITE/BLK
1	751-0712			EA	"MUTE A" WHITE/BLK
1	751-0713			EA	"TAPE" BLACK/WHT
1	751-0715			EA	"24" SM. WHITE/BLK
1	751-0716			EA	"EQ" SM. GREY/BLK
1	751-0717			EA	"DI" SM. WHITE/BLK
1	751-0718			EA	"-6" WHITE/BLK
1	751-0719			EA	"SM" SM. WHITE/BLK
2	760-0003			EA	INSERT BLACK 5/16"
1	760-0005			EA	INSERT LT GRAY 5/16"
5	760-0006			EA	INSERT WHITE 5/16"
1	760-0011			EA	INSERT BLACK 7/16"
1	802-0009			EA	SERIAL LABEL API STICKER
0.5	870-1013			IN	BUS WIRE 22 AWG
1	950-1652			EA	968L BOARD B AUTOMIX VERSION
1	950-2651			EA	968L MAIN AUTOMIX+ W/PRMTE SND
1	954-0008	LINK1		EA	768 / 968 3-WAY LINK
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968L INPUT MODULE
MAIN PCB
BILL OF MATERIALS
ASSY#950-2651 REV.F

2/11/2003

Comp_Item_No	Qty_Per_Par	Reference_1	Mfg_Uom	Item_Desc_1
075-0121	2	P1,2	EA	96 PIN DIN C MALE RA 30ul GOLD
075-0219	12	J2,3,4,5,6,7,8,9,10,11,12,13	EA	2520 PIN SOCKET
080-0001	5	U1,2,3,4,5	EA	8 PIN DIP IC SOCKET
080-0004	1	U6	EA	18 PIN DIP SOCKET
212-0475	2	R36,52	EA	47R5 1% 1/4W METAL FILM 55SIZE
212-1000	2	R21,45	EA	100R 1% 1/4W METAL FILM 55SIZE
212-1002	7	R4,5,22,23,28,50,51	EA	10K0 1% 1/4W METAL FILM 55SIZE
212-1003	6	R8,24,26,37,41,42	EA	100K 1% 1/4W METAL FILM 55SIZE
212-1212	2	R7,38	EA	12K1 1% 1/4W METAL FILM 55SIZE
212-1213	2	R18,44	EA	121K 1% 1/4W METAL FILM 55SIZE
212-1542	2	R27,49	EA	15K4 1% 1/4W METAL FILM 55SIZE
212-2740	1	R31	EA	274R 1% 1/4W METAL FILM 55SIZE
212-3011	8	R2,3,9,10,11,33,34,35	EA	3K01 1% 1/4W METAL FILM 55SIZE
212-3012	6	R6,17,19,39,43,46	EA	30K1 1% 1/4W METAL FILM 55SIZE
212-4753	2	R16,47	EA	475K 1% 1/4W METAL FILM 55SIZE
212-4991	1	R29	EA	4K99 1% 1/4W METAL FILM 55SIZE
212-4992	8	R12,13,14,15,20,25,40,53	EA	49K9 1% 1/4W METAL FILM 55SIZE
212-6190	1	R30	EA	619R 1% 1/4W METAL FILM 55SIZE
212-6980	2	R1,32	EA	698R 1% 1/4W METAL FILM 55SIZE
216-0001	1	J1	EA	Zero Ohm Resistor Jumper
240-0031	2	RP2,4	EA	20KX8 ISO 16 PIN DIP
240-0033	2	RP1,3	EA	10 PIN 1 MEG BUSSED
240-0034	2	RP5,7	EA	33KX8 ISO 16 PIN DIP
240-0035	2	RP6,8	EA	27KX8 ISO 16 PIN DIP
301-4107	7	C1,2,3,4,5,6,25	EA	100uF/50V M SERIE 8X11.5X3.5mm
305-0011	3	C35,42,43	EA	1U0/50V Z5U 20% MONO CERAMIC
306-7220	2	C57,62	EA	22 PF 100V 5% CERAMIC DISK
307-5103	2	C7,8	EA	.01 50V STACKED METALLIZED
307-5104	12	C9,10,16,28,29,33,34,36,37,39,59,60	EA	U1/50VDC V SERIES 8X5X7X5
307-5224	2	C17,55	EA	.22UF 50V STACKED METALLIZED
308-0102	12	C18,19,20,21,22,32,51,52,53,54,56,58	EA	140-PF2A102F u001/100V
312-8300	7	C11,23,26,27,44,47,49	EA	30 PF 300V 5%
320-2106	6	C12,31,40,48,50,61	EA	10UF 16V NON POLAR RADIAL
320-2227	2	C14,41	EA	220UF/16VDC N/P RADIAL SU
320-2337	2	C15,38	EA	330UF 16V DC N/P
320-2476	2	C13,46	EA	47UF 16 VDC N/P RADIAL
320-5225	2	C30,45	EA	2.2UF 50 VDC NON POLAR RADIAL
500-2510	2	A1,3	EA	2510 OP-AMP
502-0024	1	Q1	EA	PNP TO-92 LOW NOISE AUDIO
503-0004	12	F1,2,3,4,5,6,7,8,9,10,11,12	EA	N CHANNEL JFET TO-18 CASE
505-0004	10	D3,4,5,6,7,8,9,10,11,12	EA	1Amp/400V Diode Rectifier
506-0006	2	D1,2	EA	SWITCHING HIGH SPEED
510-0005	2	U1,5	EA	NE5534N 8 PIN DIP
510-0091	1	U3	EA	LOW NOISE JFET OPAMP 8 PIN DIP
510-0178	2	U2,4	EA	OP AMP LOW OFFSET JFET 8PINDIP
510-0181	1	U6	EA	DRIVER DARLINGTON ARRAY
603-0032	2	S4,6	EA	2PDT MOMENTARY
603-0063	10	S1,2,3,5,7,8,9,10,11,12	EA	6 POLE TRIMMED LEADS/NO BRKT
608-0016	9	K1,4,5,6,7,8,9,10,11	EA	2PDT 24V SMALL SIGNAL
608-0016	2	K2,3	EA	2PDT 24V SMALL SIGNAL
700-0651	1		EA	968L MAIN
860-0028	4	PTC1,2,3,4	EA	PTC SMALL
880-2651	1		EA	950-2651 Assembly Labor
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968L INPUT MODULE
BOARD B
BILL OF MATERIALS
ASSY#950-1652 REV.G

2/11/2003

Comp_Item_No	Qty_Per_Par	Obsolete_Dt	Reference_1	Item_Desc_1
075-0176	1	0	J1	3 PIN RA HEADER FRICTION LOCK
080-0002	5	0	SOCKE1,2,3,4,5	14 PIN DIP SOCKET
212-1001	3	0	R24,26,39	1K00 1% 1/4W METAL FILM 55SIZE
212-1002	11	0	R14,16,19,21,23,36,40,44,45,49,54	10K0 1% 1/4W METAL FILM 55SIZE
212-1003	4	0	R7,28,29,55	100K 1% 1/4W METAL FILM 55SIZE
212-1004	2	0	R64,67	1M00 1% 1/4W METAL FILM 55SIZE
212-1542	1	0	R12	15K4 1% 1/4W METAL FILM 55SIZE
212-1621	4	0	R5,11,51,52	1K62 1% 1/4W METAL FILM 55SIZE
212-2000	1	0	R31	200R 1% 1/4W METAL FILM 55SIZE
212-2002	5	0	R50,58,59,66,69	20K0 1% 1/4W METAL FILM 55SIZE
212-2204	1	0	R13	2M20 1% 1/4W METAL FILM 55SIZE
212-2550	1	0	R27	255R 1% 1/4W METAL FILM 55SIZE
212-2740	1	0	R10	274R 1% 1/4W METAL FILM 55SIZE
212-2741	2	0	R65,68	2K74 1% 1/4W METAL FILM 55SIZE
212-3011	6	0	R17,18,22,41,48,53	3K01 1% 1/4W METAL FILM 55SIZE
212-3652	2	0	R15,34	36K5 1% 1/4W METAL FILM 55SIZE
212-4752	2	0	R60,62	47K5 1% 1/4W METAL FILM 55SIZE
212-4753	2	0	R61,63	475K 1% 1/4W METAL FILM 55SIZE
212-4990	4	0	R3,30,33,37	499R 1% 1/4W METAL FILM 55SIZE
212-4991	1	0	R8	4K99 1% 1/4W METAL FILM 55SIZE
212-4992	9	0	R4,6,20,25,32,38,42,43,46	49K9 1% 1/4W METAL FILM 55SIZE
212-6190	1	0	R9	619R 1% 1/4W METAL FILM 55SIZE
305-0011	11	0	C2,3,6,7,8,13,14,15,22,23,24	1U0/50V Z5U 20% MONO CERAMIC
307-5103	1	0	C18	.01 50V STACKED METALLIZED
307-5104	6	0	C4,5,9,10,12,20	U1/50VDC V SERIES 8X5X7X5
307-5224	3	0	C16,17,21	.22UF 50V STACKED METALLIZED
307-5474	2	0	C11,25	.47UF 50V STACKED METALLIZED
308-7223	1	0	C19	.022uF 100V 10% POLYESTER
501-0027	6	0	Q3,5,6,10,11,13	NPN TO-92 LOW NOISE AUDIO
502-0003	2	0	Q7,8	PNP TO-92 CASE
502-0024	3	0	Q2,4,9	PNP TO-92 LOW NOISE AUDIO
505-0004	9	0	D5,6,11,13,14,19,21,22,23	1Amp/400V Diode Rectifier
506-0006	13	0	D1,2,3,7,8,9,10,12,15,16,17,18,20	SWITCHING HIGH SPEED
507-0021	2	0	DZ4,11	5.1V/5%/1W ZENER DO-41
510-0117	2	0	U1,3	HEX SCHMITT INVERTER
510-0176	1	0	U5	OP AMP QUAD
510-0186	2	0	U2,4	DUAL D FLIP FLOP 14-DIP
603-0059	4	0	S1,2,15,16	19 SERIES RA SOCKET
603-0063	12	0		6 POLE TRIMMED LEADS/NO BRKT
700-0652	1	0		968L BOARD 2
860-0028	2	0	PTC1,2	PTC SMALL
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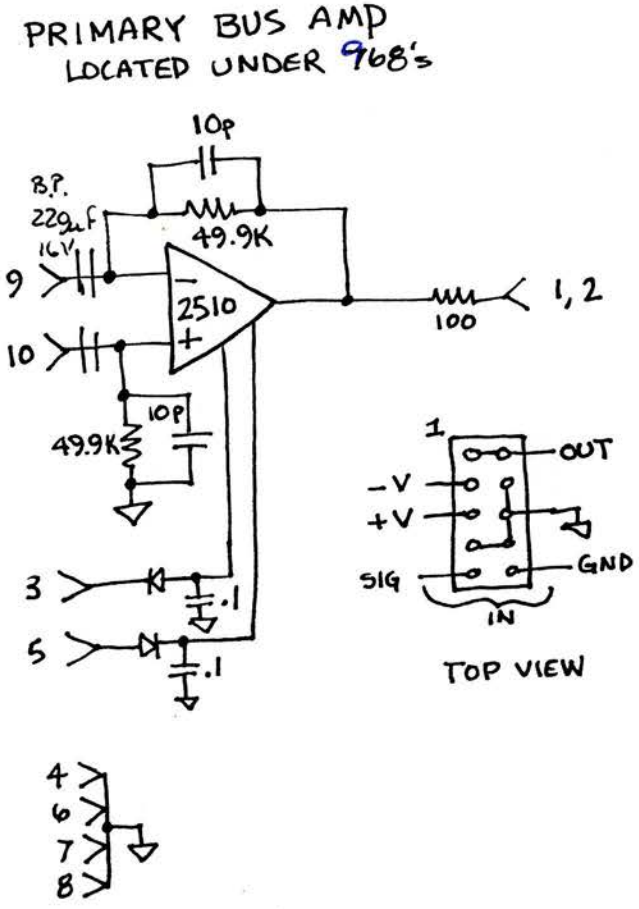
PRIMARY BUS SYSTEM

Aux 1-12

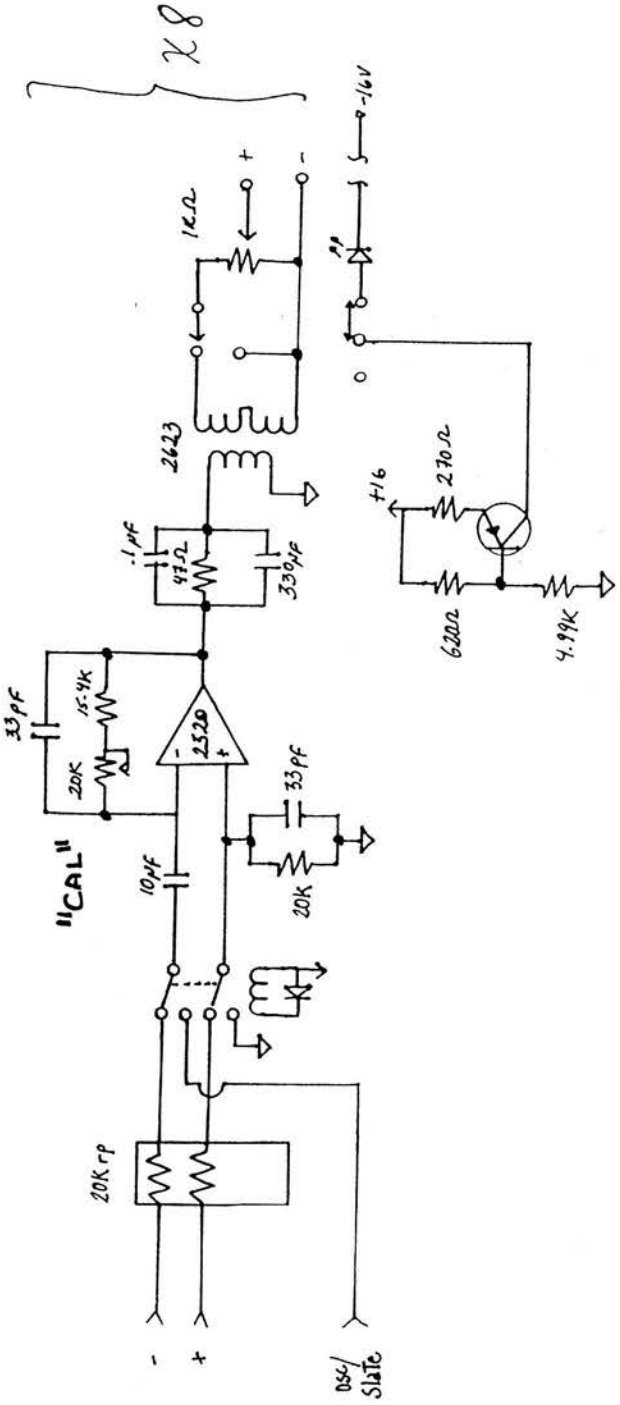
The ~~16 primary bus amps~~, ~~primary stereo amps~~, ~~primary solo and~~ primary send amps are all located underneath the input modules, plugged into the input module mother boards. The primary bus amps are small cards with a header and a 2510 op amp. If the console is fitted with a monitor section, there are several primary summing amps located under the 868 modules as well. These are for the ~~stereo, sends, and solo busses.~~ These busses mix with the channel busses at the secondary summing amps, which are the amps that have the panel mounted trim controls and the screw driver cal pots. Each primary summing amp feeds the secondary amps through a resistor network located on the secondary card.



SECONDARY BUS SYSTEM

The secondary bus amps are the cusomer adjustable amps located on the control room panel. These are the actual masters for the busses, etc.

Below is the API Legacy Secondary Summing Amp Booster Circuit schematic:



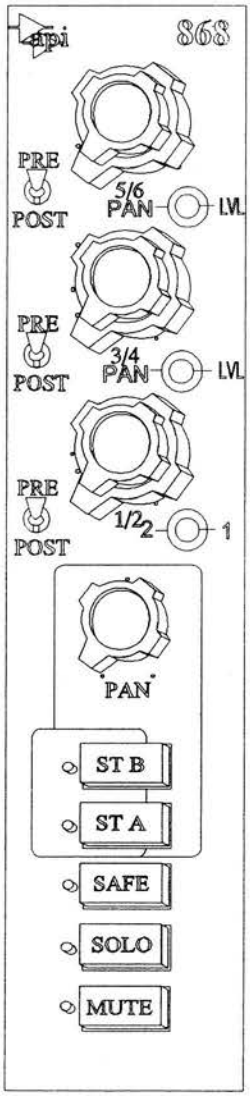
MONITOR SECTION

In applications where a simple, separate tape monitor is desired, The Legacy Series offers an optional Multi-Track Monitor Section available in two sizes, 24 track and 48 track.

Each standard monitor channel consists of an 868 monitor module and a fader module (wired for automation) fitted with manual P & G fader. Optionally, an 862 monitor module is available and features identical controls to the 868 module but includes a short throw P & G fader. Both modules are also available optionally as echo returns.

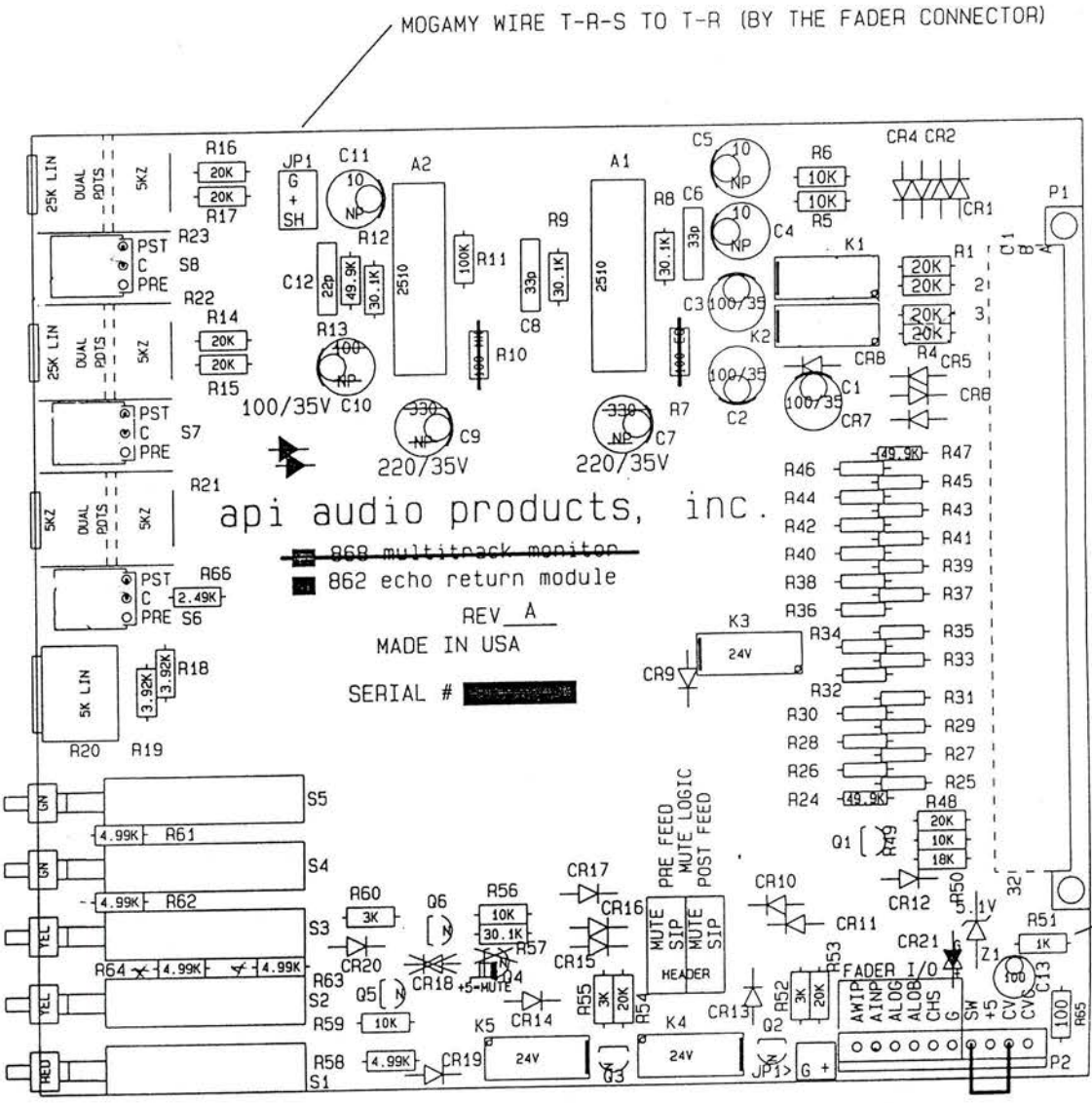
The addition of a multitrack monitor bucket in one of the three sizes not only allows for efficient tape monitoring, but with the solo safe feature, allows for a large number of line inputs in mix mode at an extremely affordable cost. This is a popular addition for entry level purchasers who plan to expand at a future time, and for those who prefer "split" console operation.

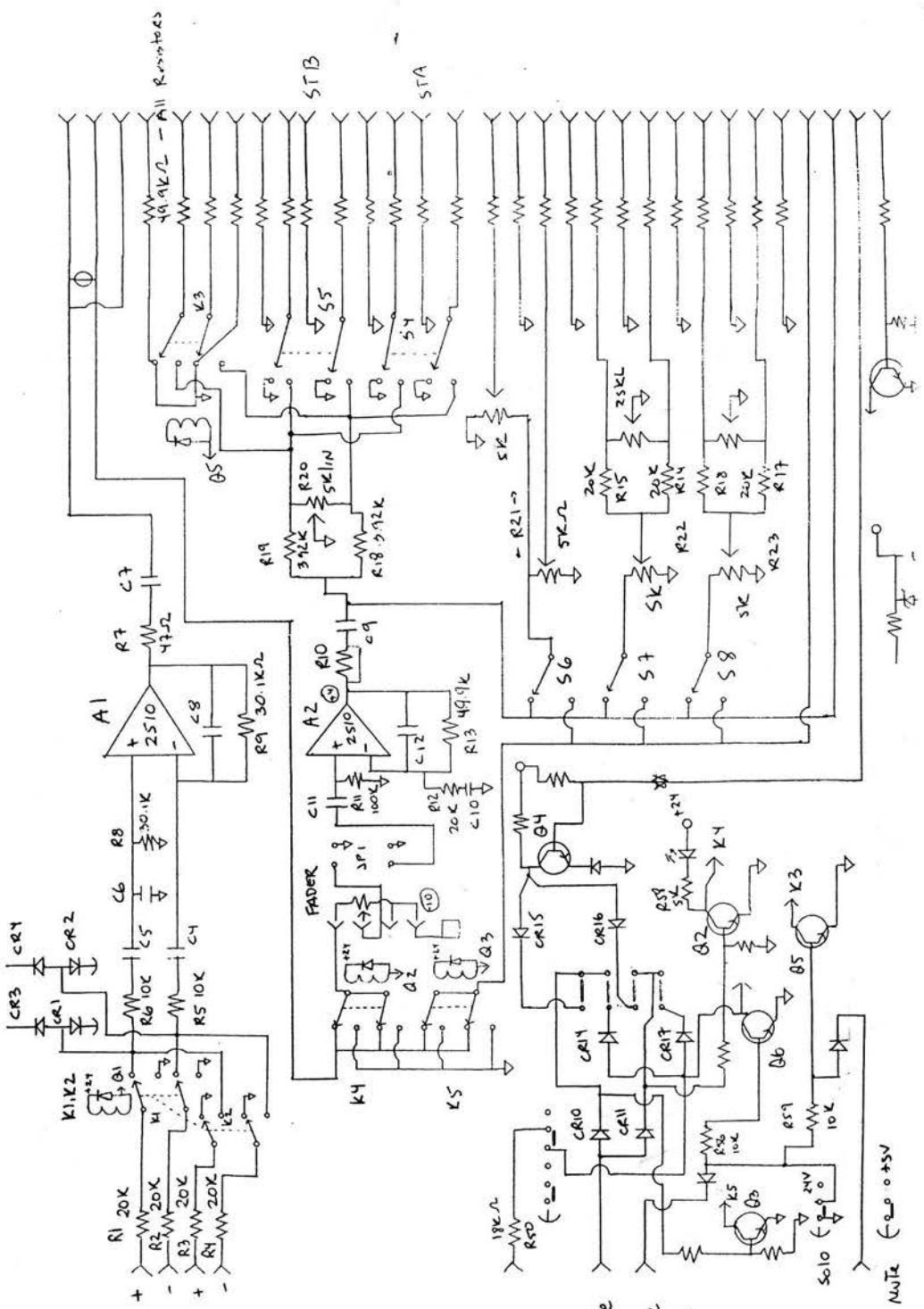
SEND VU METERS																							
BLANK																							
MNTR-868	MNTR-868	MNTR-868	MNTR-868	MNTR-868	MNTR-868	MNTR-868	MNTR-868	MNTR-868	MNTR-868	MNTR-868	MNTR-868	MNTR-868	MNTR-868	MNTR-868	MNTR-868	MNTR-868	MNTR-868	MNTR-868	MNTR-868	MNTR-868	MNTR-868	MNTR-868	MNTR-868
FADER	FADER	FADER	FADER	FADER	FADER	FADER	FADER	FADER	FADER	FADER	FADER	FADER	FADER	FADER	FADER	FADER	FADER	FADER	FADER	FADER	FADER	FADER	FADER
MNTR-868	MNTR-868	MNTR-868	MNTR-868	MNTR-868	MNTR-868	MNTR-868	MNTR-868	MNTR-868	MNTR-868	MNTR-868	MNTR-868	MNTR-868	MNTR-868	MNTR-868	MNTR-868	MNTR-868	MNTR-868	MNTR-868	MNTR-868	MNTR-868	MNTR-868	MNTR-868	MNTR-868
FADER	FADER	FADER	FADER	FADER	FADER	FADER	FADER	FADER	FADER	FADER	FADER	FADER	FADER	FADER	FADER	FADER	FADER	FADER	FADER	FADER	FADER	FADER	FADER

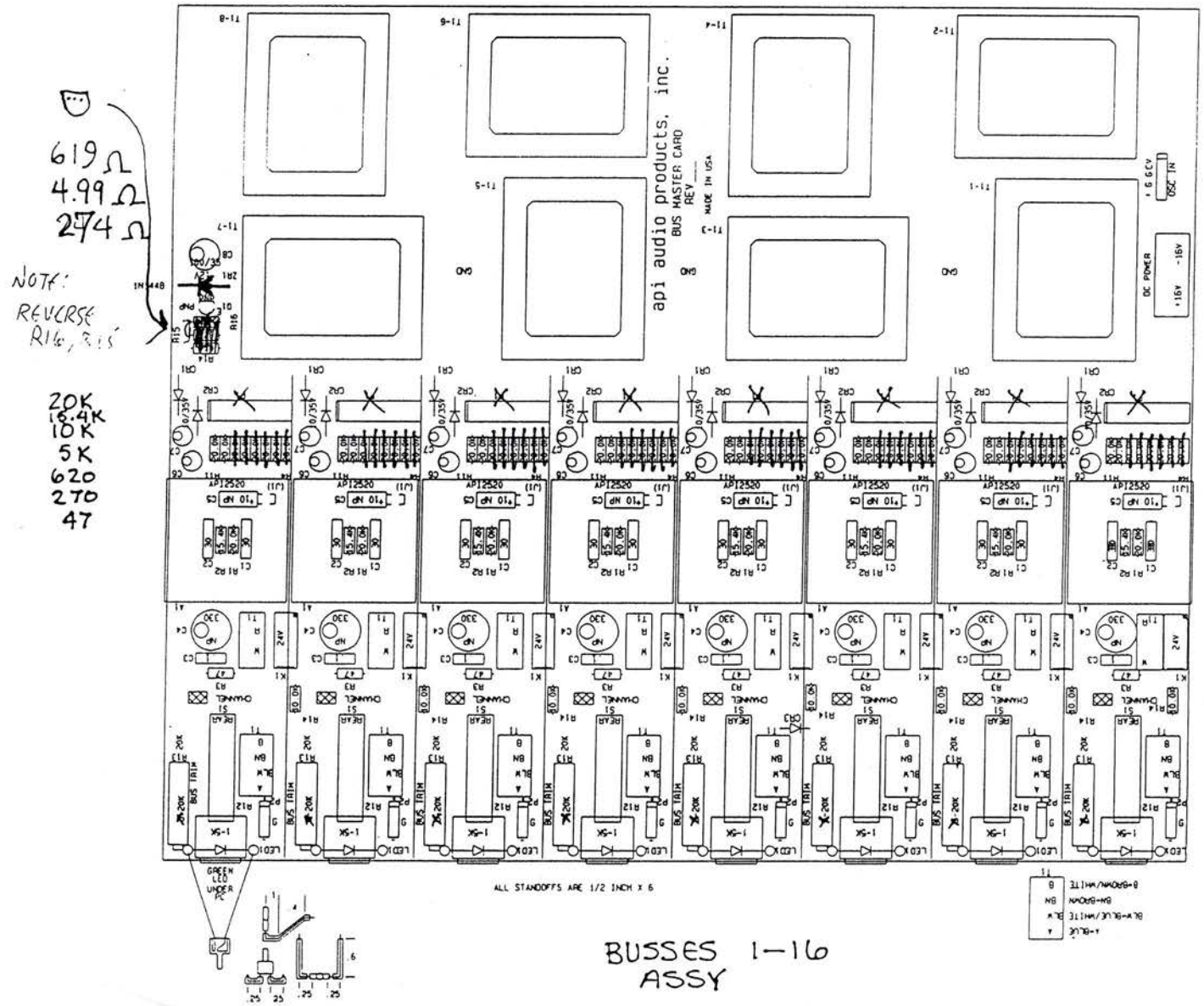


868 Monitor Module

868/862


MOGAMY WIRE T-R-S TO T-R (BY THE FADER CONNECTOR)
api audio products, inc.
868 multitrack monitor
862 echo return module
REV A
MADE IN USA
SERIAL #
100/35V C10
220/35V
220/35V
FADER I/O
PRE FEED
MUTE LOGIC
POST FEED
HEADER
P1
P2
S1
S2
S3
S4
S5
S6
S7
S8


All Resistors
STB
STA
A1
A2
FADER
TAPE
PGM
Sip Bus
All Mute
Solo DC
+24V Solo
Solo
Mute



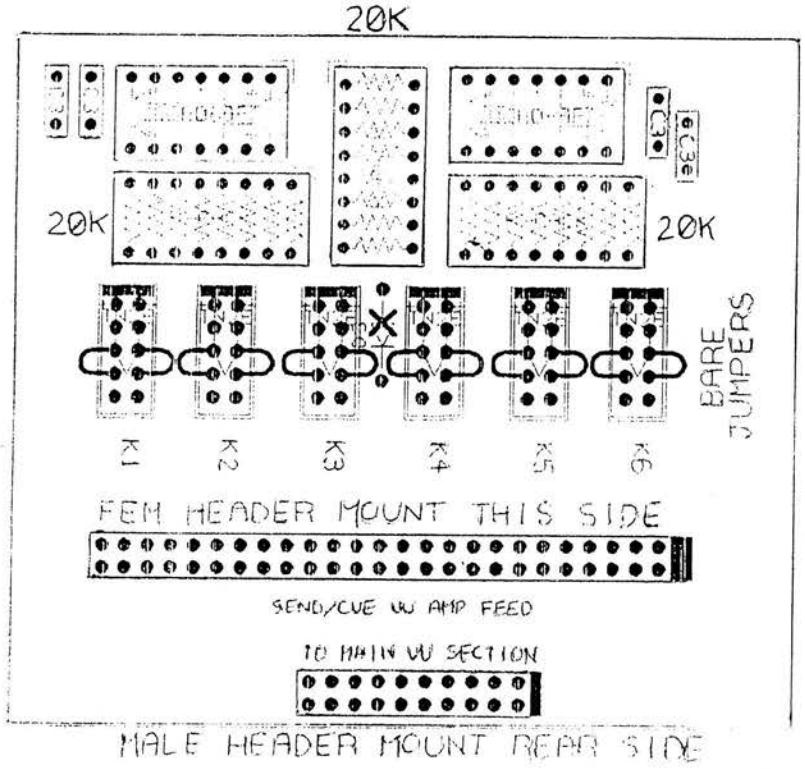
619Ω
4.99Ω
274Ω

NOTE:
REVERSE
R16, R15

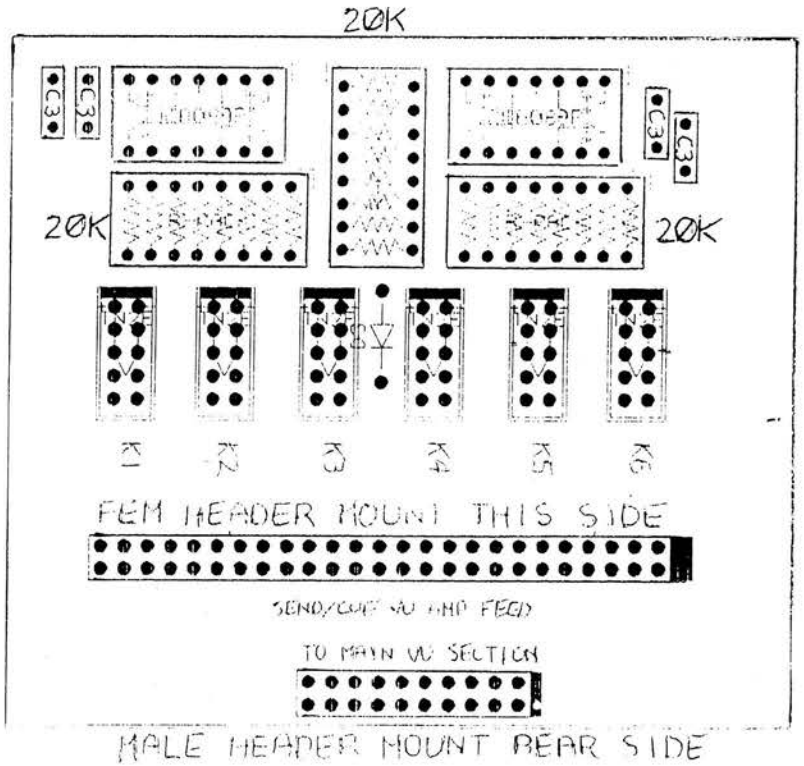
20K
16.4K
10K
5K
620
270
47

CUE/ECHO METER SELECTOR CARD

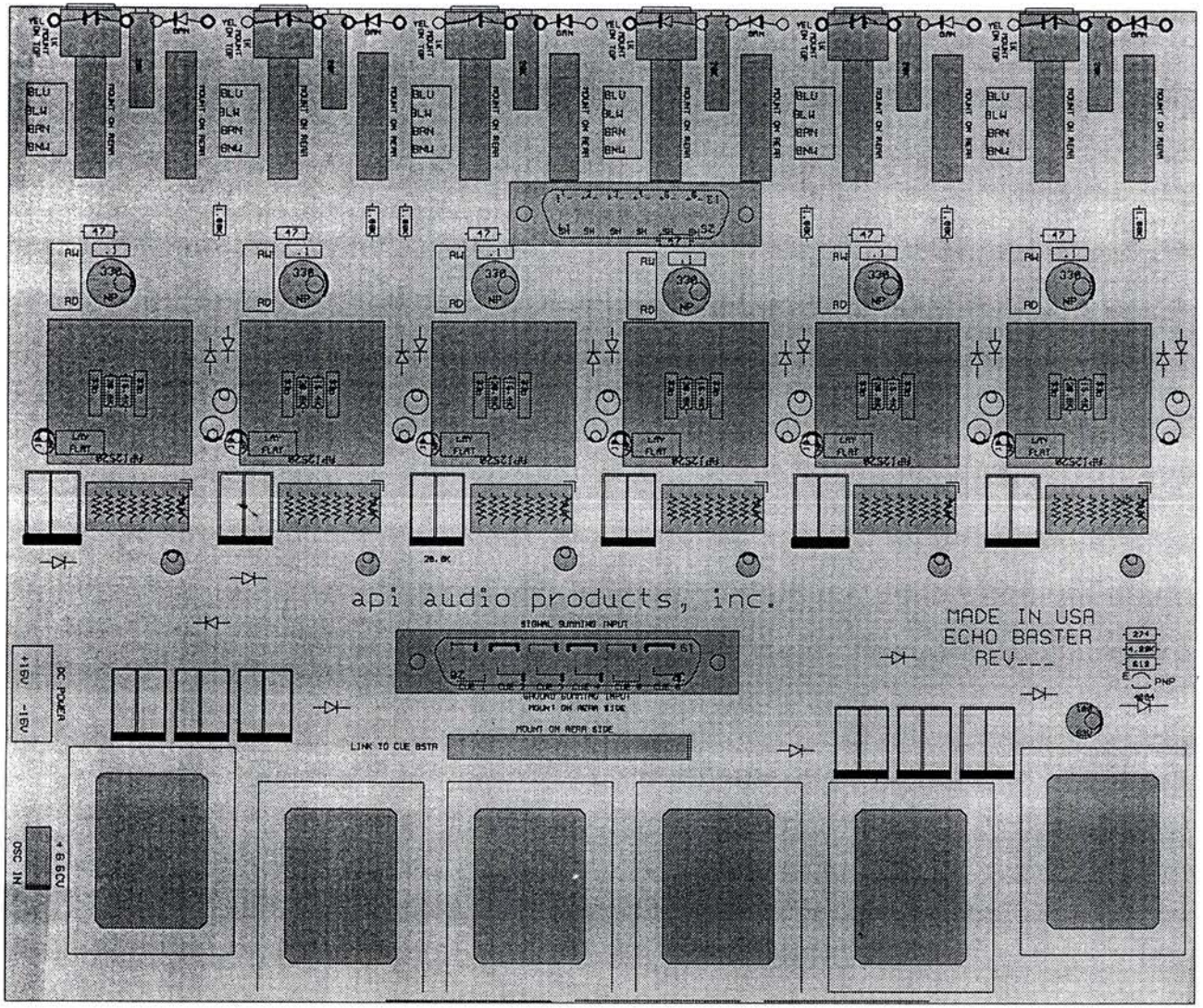
ALL CAPS ARE .1



USE THIS LAYOUT FOR ALL INPUT CONSOLE (ALL 768)



USE THIS LAYOUT FOR SPLIT CONSOLE (768/868)



LEGACY ECHO BSTR ASSY

WITH CUE TO ECHO LINK CARD (MOUNTS ONTO THE CUE BSTR CARD)

CONTROL ROOM SECTION

The center section provides control for:

Bus Trims - 16 individual gain controls over full range of the bus amplifier for each main bus as well as master cut switch with LED indication.

Aux Trims - Gain controls over full range of amplifier for each aux bus as well as master cut switch with LED indication, and aux to cue switching.

Master Solo - Individual switching and gain control is provided for the solo modes of AFL, PFL, and Solo In Place, as well as Mix-Over, (a sum of the mix level over solo, with a Dim Control for mix level.)

Peak Reference - Provides for adjustment of the reference point of the peak LED's located in each input module over a range of +4 to +18 db.

Studio Playback - Follows control room or tape with independent cut and level control. External In and Alternate speaker out is included.

Speaker Select - 2 alternative speaker select switches are provided, each with level and adjust control. The main speaker select switches between Master Control Room level adjust and ALT 1 or 2 as selected.

Master Control - Playback to monitor is arranged in two banks, program and playback. Program selects internal signals to monitor; Playback allows selection of 11 different stereo sources to the monitor, with one being adjustable.

Cuts and Dim - Cut Left, Cut Right, Cut to both, (centers remaining signal, right or left, over both monitors). Left + Right Sum (mono) and Dim with level control.

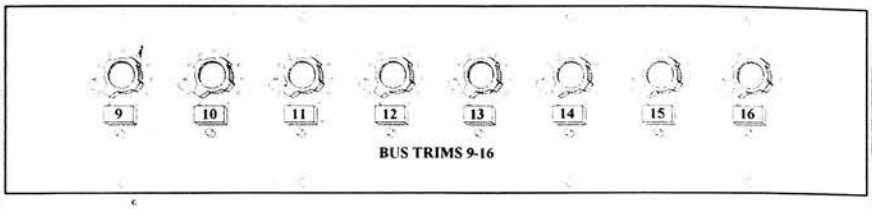
Oscillator - 11 frequency oscillator with on/off, to bus, and gain control. A jack is available on the patchbay for oscillator out.

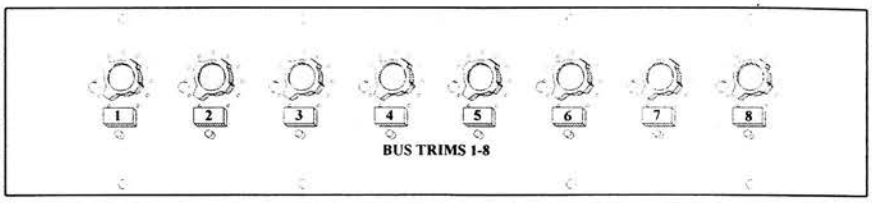
Meter Select - Provides status switching of main and master VU meters, including input, direct out, tape and L/R PPM.

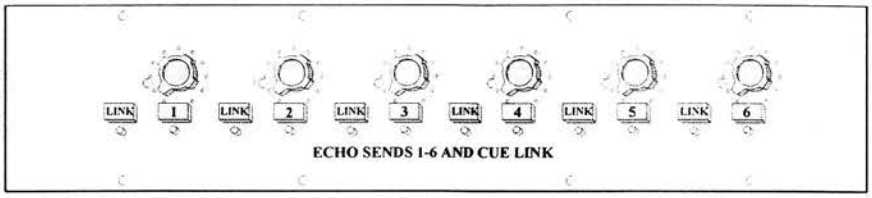
Talkback - Provision for talkback to cue, bus, external, with listen mic and reverse TB features.

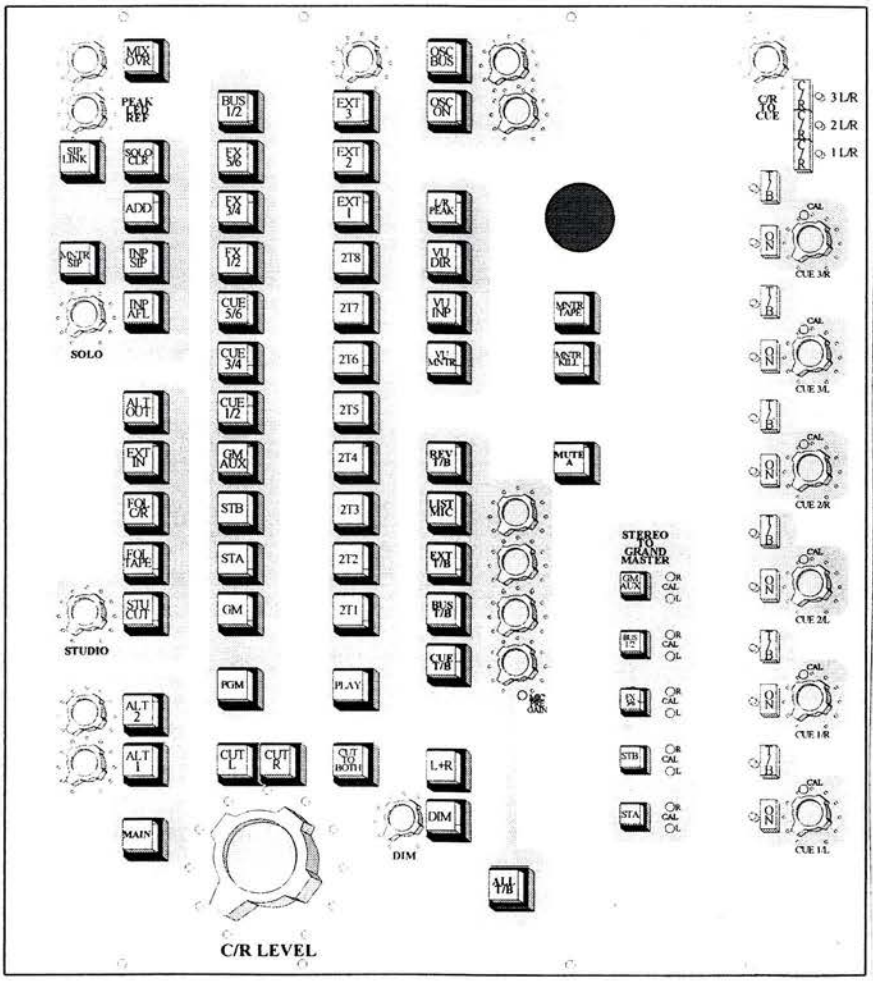
Mix Bus Matrix - Switches Stereo A, Stereo B, FX 5/6, Bus 1/2 and external into the Grand Master summing section.

Cue Masters - Individual gain control and cut switch is provided for 3 pairs (6) of cue masters, along with matrix routing from auxes, control room and talkback facilities.







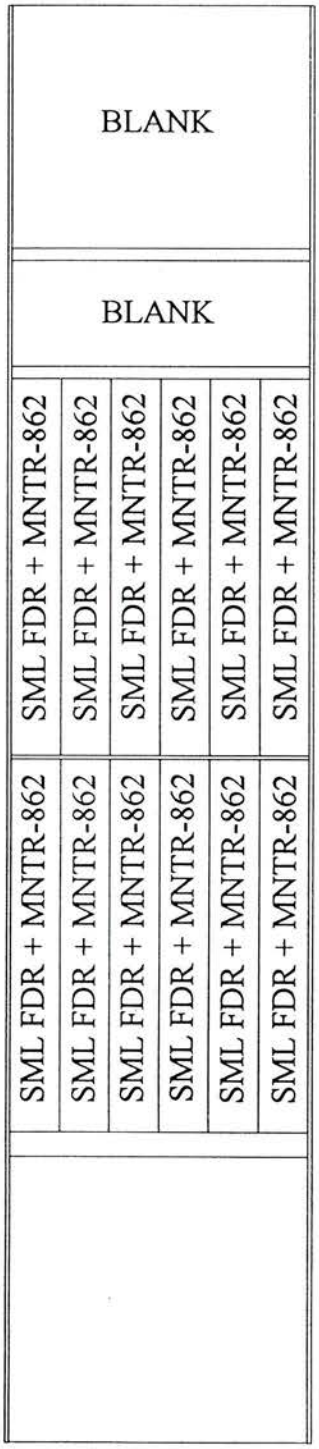


Master Facilities

OPTIONS BUCKET

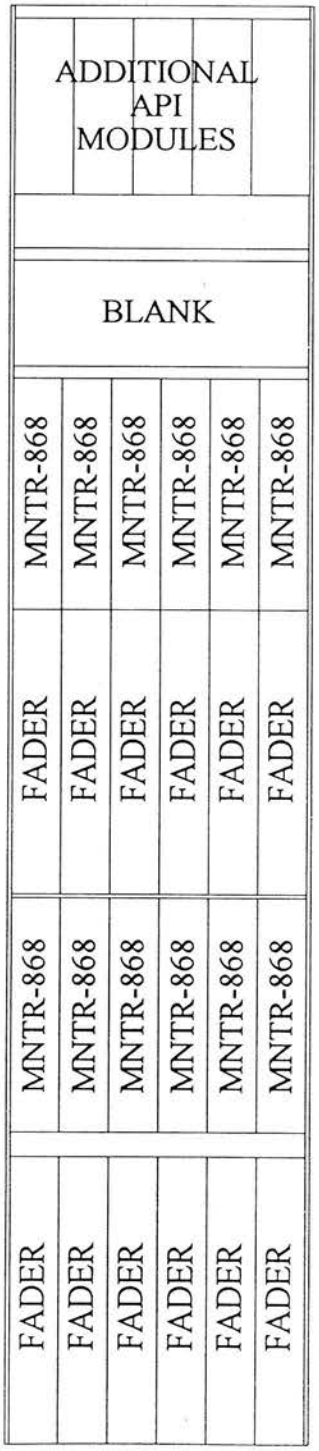
A

Provision for 12 - 862 Echo Return Modules with small fader.



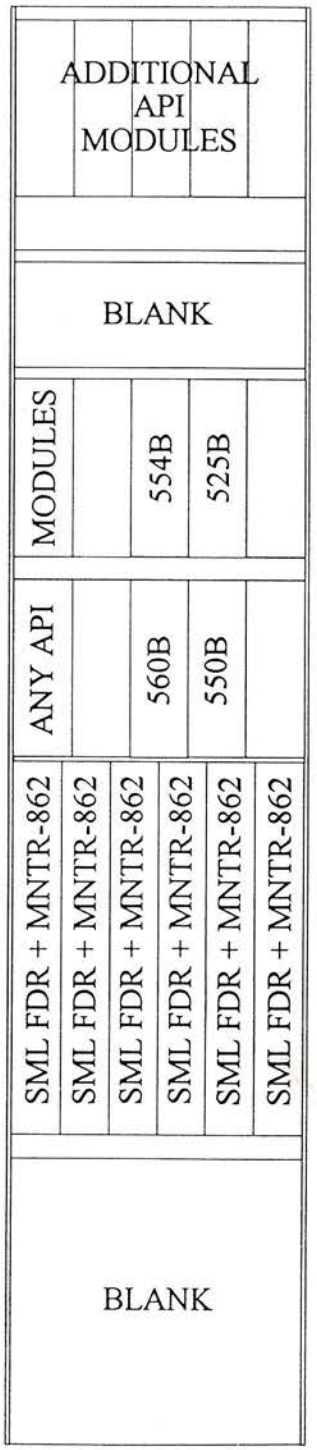
B

Provision for 12 - 868 Echo Return Modules with separate long-throw fader, automation ready.

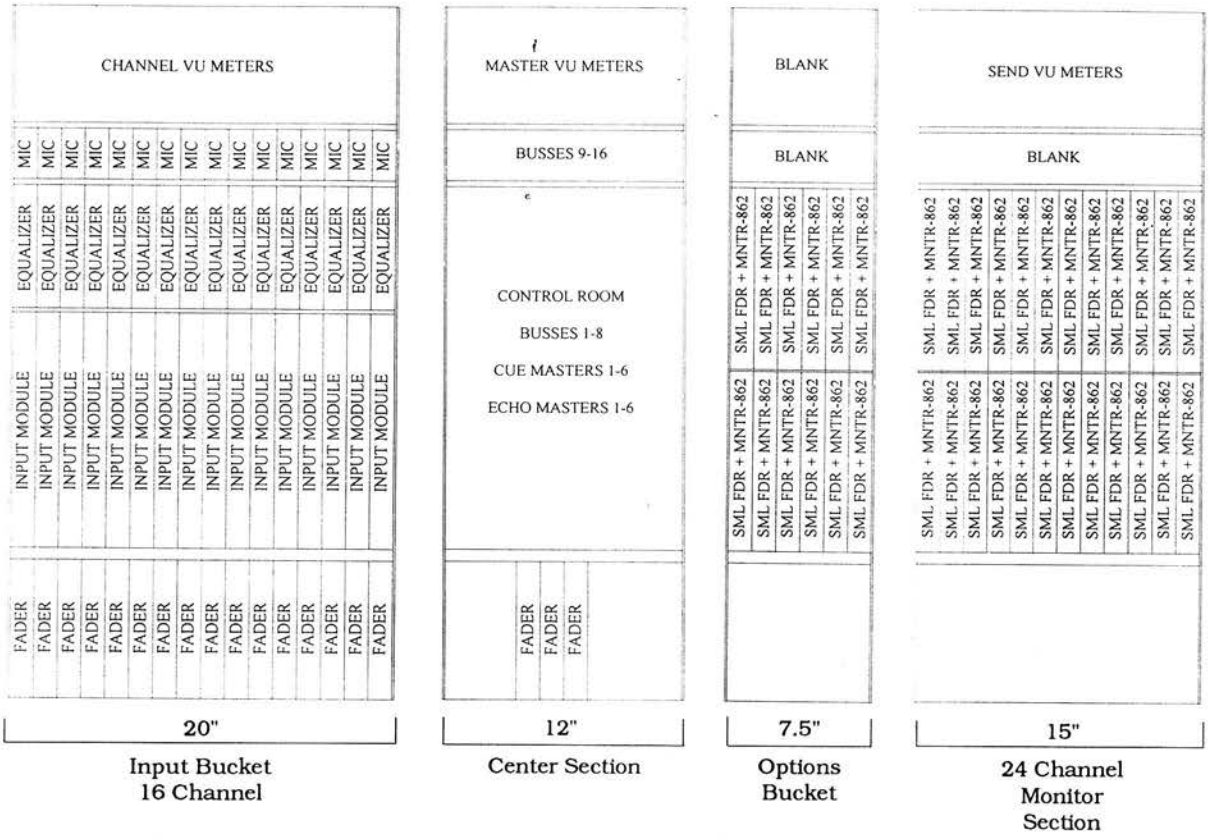


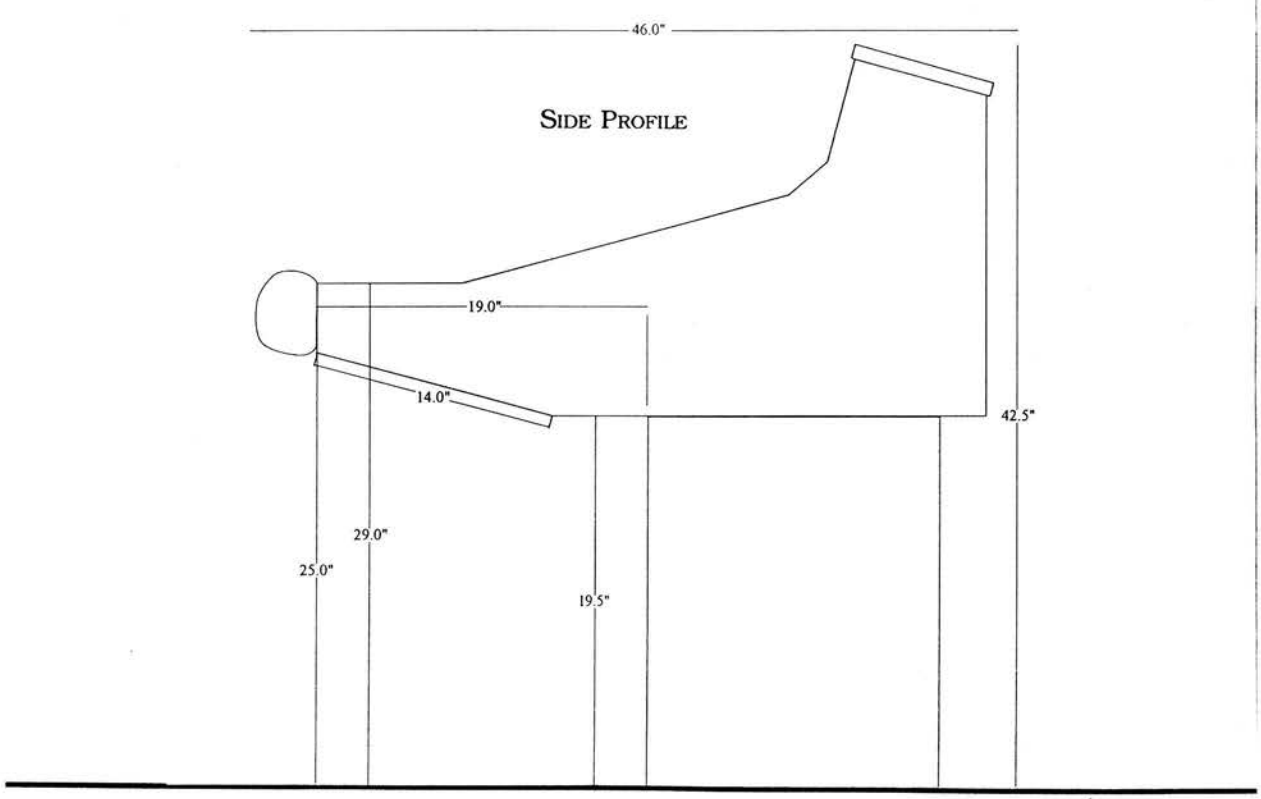
C

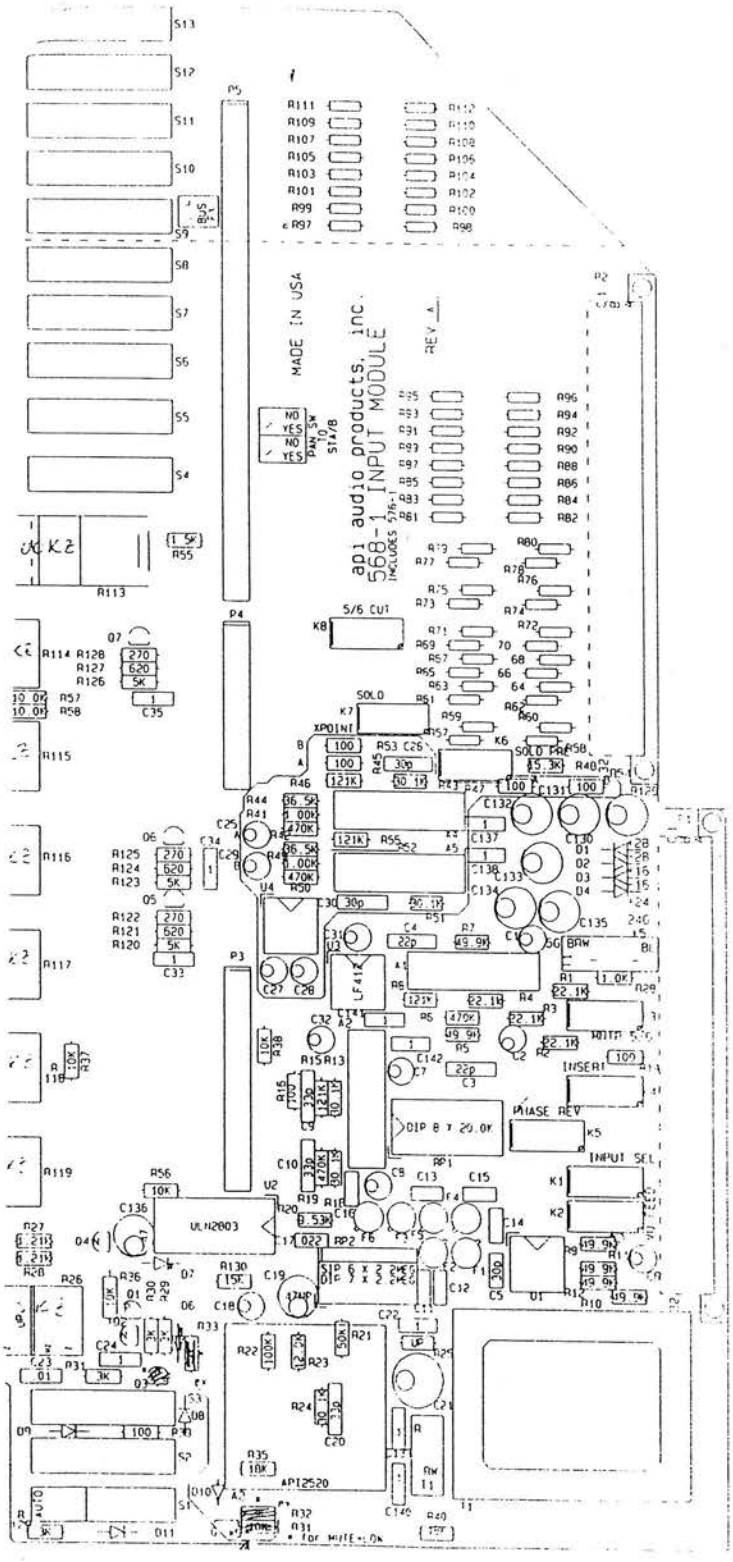
Provison for 6 - 862 Echo Return Modules with small fader, plus 10 wired positions for standard API module complement.

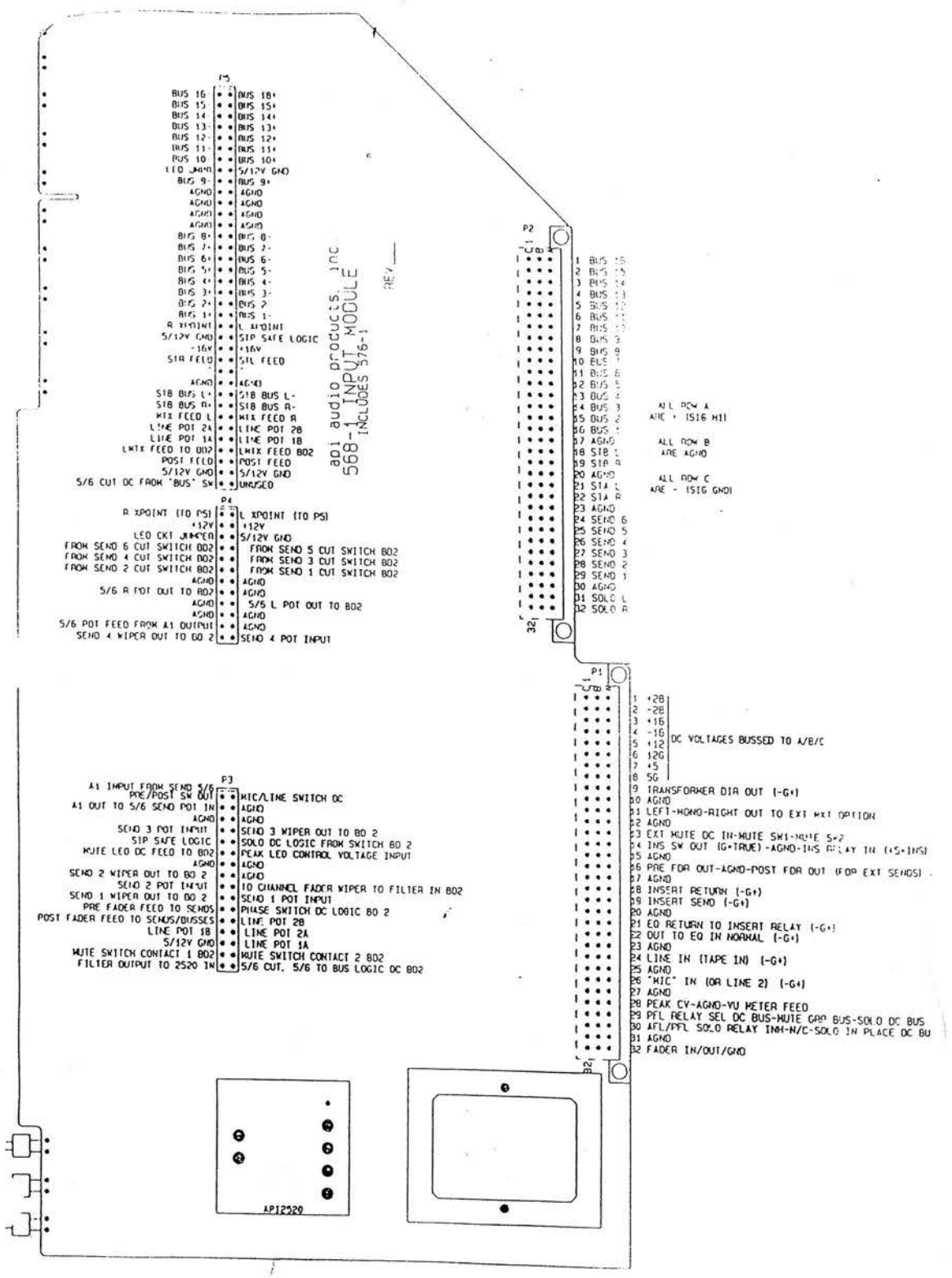


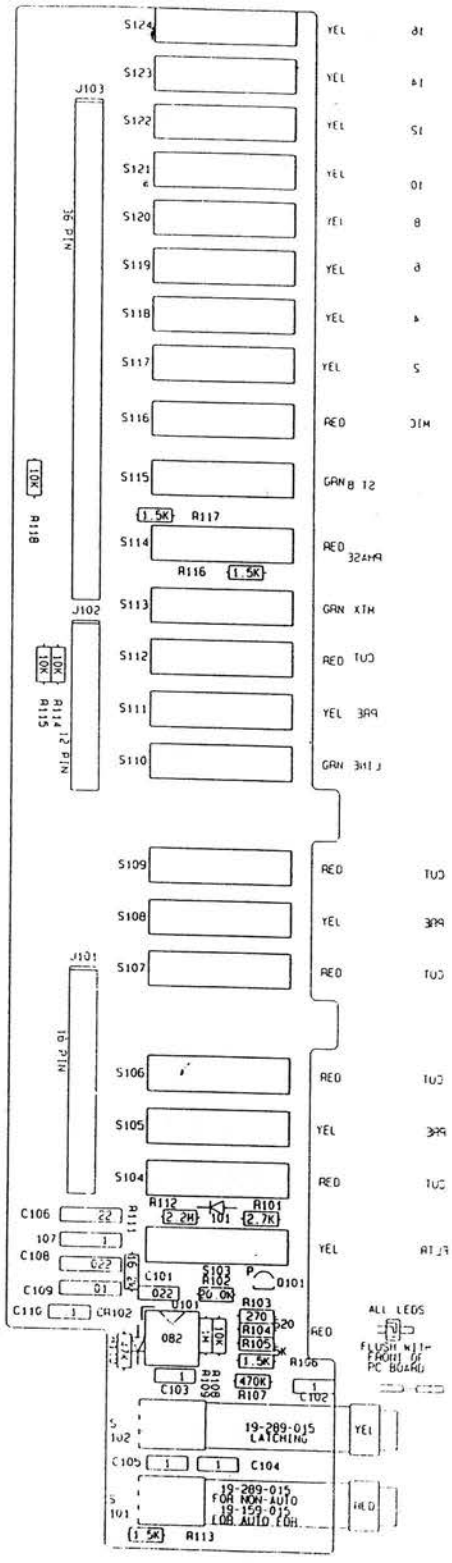
DIMENSIONS
TOP VIEW

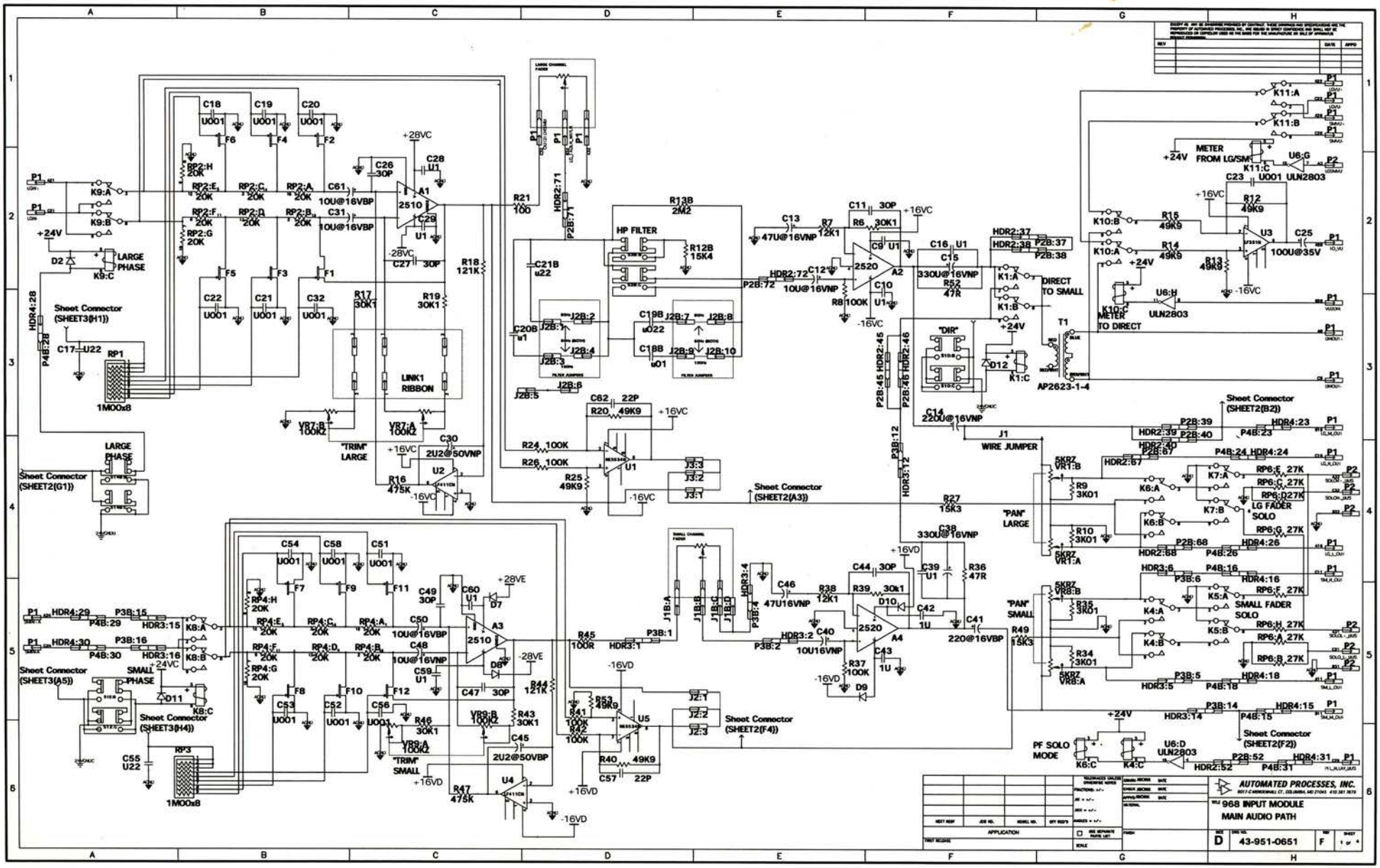


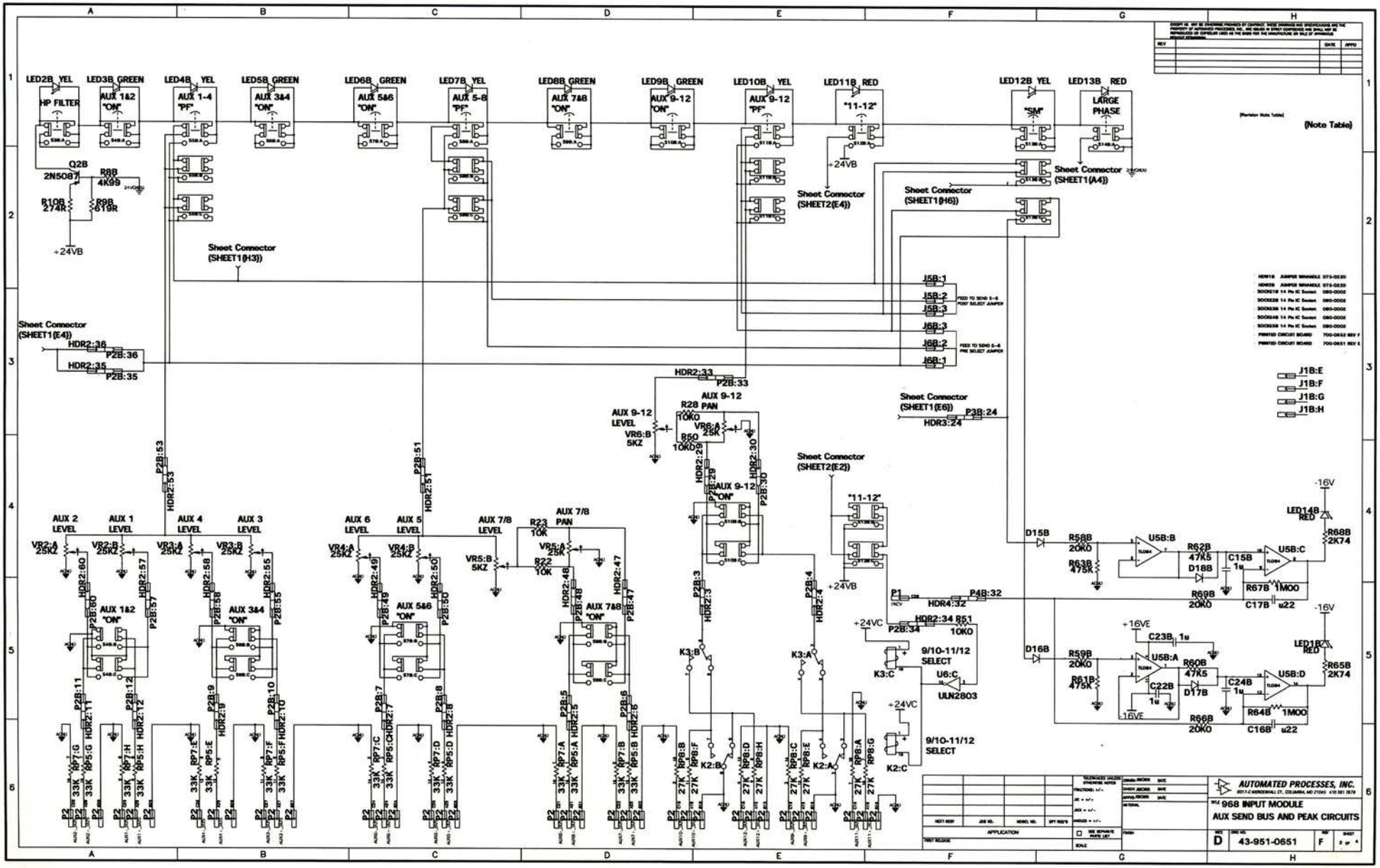


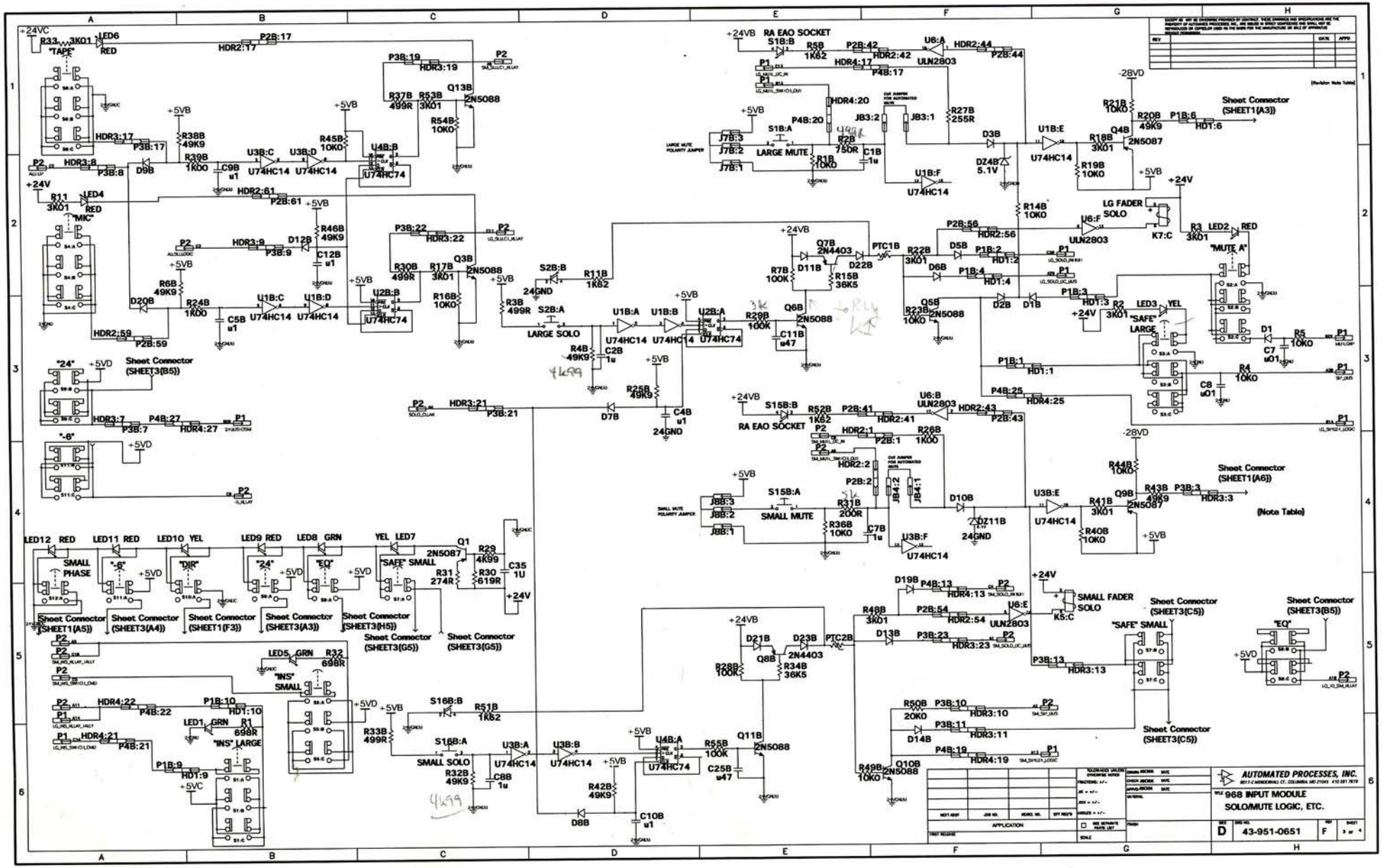

api audio products, inc.
568-1 INPUT MODULE
MADE IN USA
REV A
INCLUDES 516-1
5/6 CUT
SOLO
XPOINT
INSERT
PHASE REV
INPUT SEL
DIP 8 x 20.0K
ULN2803
API2520
BAW
LF41K
* for MUTE +10K

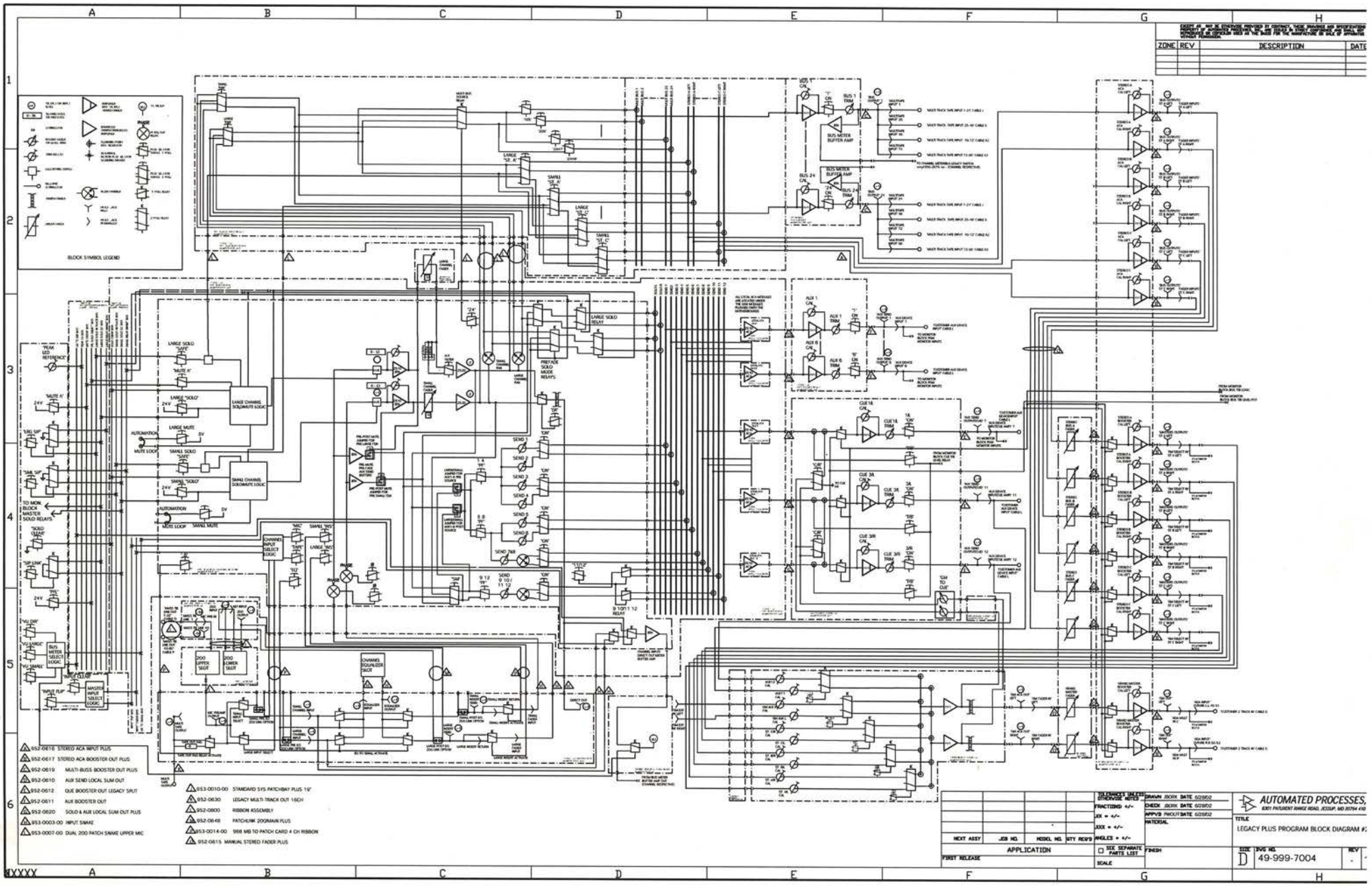

api audio products, inc
568-1 INPUT MODULE
INCLUDES 576-1
REV
P3
BUS 16 BUS 16+
BUS 15 BUS 15+
BUS 14 BUS 14+
BUS 13 BUS 13+
BUS 12 BUS 12+
BUS 11 BUS 11+
BUS 10 BUS 10+
LED JUMP 5/12V GND
BUS 9 BUS 9+
AGND AGND
AGND AGND
AGND AGND
AGND AGND
BUS 8 BUS 8-
BUS 7 BUS 7-
BUS 6 BUS 6-
BUS 5 BUS 5-
BUS 4 BUS 4-
BUS 3 BUS 3-
BUS 2 BUS 2-
BUS 1 BUS 1-
R XPOINT L XPOINT
5/12V GND SIP SAFE LOGIC
-16V +16V
STR FEED SIL FEED
AGND AGND
STR BUS L STR BUS L-
STR BUS R STR BUS R-
MIX FEED L MIX FEED R
LINE POT 2A LINE POT 2B
LINE POT 1A LINE POT 1B
LMIX FEED TO BO2 LMIX FEED BO2
POST FEED POST FEED
5/12V GND 5/12V GND
5/6 CUT DC FROM 'BUS' SW UNUSED
P4
R XPOINT (TO PS) L XPOINT (TO PS)
+12V +12V
LED CKT JUMPER 5/12V GND
FROM SEND 6 CUT SWITCH BO2 FROM SEND 5 CUT SWITCH BO2
FROM SEND 4 CUT SWITCH BO2 FROM SEND 3 CUT SWITCH BO2
FROM SEND 2 CUT SWITCH BO2 FROM SEND 1 CUT SWITCH BO2
AGND AGND
5/6 R POT OUT TO BO2 AGND
AGND 5/6 L POT OUT TO BO2
AGND AGND
5/6 POT FEED FROM A1 OUTPUT AGND
SEND 4 WIPER OUT TO BO 2 SEND 4 POT INPUT
P2
1 BUS 15
2 BUS 13
3 BUS 14
4 BUS 11
5 BUS 12
6 BUS 9
7 BUS 10
8 BUS 7
9 BUS 8
10 BUS 5
11 BUS 6
12 BUS 3
13 BUS 4
14 BUS 1
15 BUS 2
16 BUS
17 AGND
18 STR L
19 STR R
20 AGND
21 STR
22 STR
23 AGND
24 SEND 6
25 SEND 5
26 SEND 4
27 SEND 3
28 SEND 2
29 SEND 1
30 AGND
31 SOLO L
32 SOLO R
ALL ROW A ARE + 15/16 MIL
ALL ROW B ARE AGND
ALL ROW C ARE - 15/16 GND
P1
1 +28
2 -28
3 +16
4 -16
5 +12
6 12G
7 +5
8 5G
DC VOLTAGES BUSSED TO A/B/C
9 TRANSFORMER DIR OUT (-G+)
10 AGND
11 LEFT-MONO-RIGHT OUT TO EXT MIX OPTION
12 AGND
13 EXT MUTE DC IN-MUTE SW1-MUTE S+2
14 INS SW OUT (G+TRUE)-AGND-INS RELAY IN (+5+INS)
15 AGND
16 PRE FDR OUT-AGND-POST FDR OUT (FOR EXT SENDS)
17 AGND
18 INSERT RETURN (-G+)
19 INSERT SEND (-G+)
20 AGND
21 EQ RETURN TO INSERT RELAY (-G+)
22 OUT TO EQ IN NORMAL (-G+)
23 AGND
24 LINE IN (TAPE IN) (-G+)
25 AGND
26 "MIC" IN (OR LINE 2) (-G+)
27 AGND
28 PEAK CV-AGND-VU METER FEED
29 PFL RELAY SEL DC BUS-MUTE GRP BUS-SOLO DC BUS
30 AFL/PFL SOLO RELAY INH-N/C-SOLO IN PLACE DC BU
31 AGND
32 FADER IN/OUT/GND
P3
A1 INPUT FROM SEND 5/6 PRE/POST SW OUT MIC/LINE SWITCH DC
A1 OUT TO 5/6 SEND POT IN AGND
AGND AGND
SEND 3 POT INPUT SEND 3 WIPER OUT TO BO 2
SIP SAFE LOGIC SOLO DC LOGIC FROM SWITCH BO 2
MUTE LED DC FEED TO BO2 PEAK LED CONTROL VOLTAGE INPUT
AGND AGND
SEND 2 WIPER OUT TO BO 2 AGND
SEND 2 POT INPUT TO CHANNEL FADER WIPER TO FILTER IN BO2
SEND 1 WIPER OUT TO BO 2 SEND 1 POT INPUT
PRE FADER FEED TO SENDS PHASE SWITCH DC LOGIC BO 2
POST FADER FEED TO SENDS/BUSSES LINE POT 2B
LINE POT 1B LINE POT 2A
5/12V GND LINE POT 1A
MUTE SWITCH CONTACT 1 BO2 MUTE SWITCH CONTACT 2 BO2
FILTER OUTPUT TO 2520 IN 5/6 CUT, 5/6 TO BUS LOGIC DC BO2
API2520


S124
S123
S122
S121
S120
S119
S118
S117
S116
S115
S114
S113
S112
S111
S110
S109
S108
S107
S106
S105
S104
YEL
RED
GRN
J103
J102
J101
36 PIN
12 PIN
16 PIN
R118
10K
1.5K
R117
R116
R114
R115
R112
2.2K
Q101
2.7K
R101
R111
C106
C107
C108
C109
C110
CR102
C101
.022
S103
R102
20.0K
R103
270
R104
R105
1.5K
U101
082
R106
470K
R107
C103
C102
ALL LEDS
FLUSH WITH
FRONT OF
PC BOARD
S102
19-289-015
LATCHING
C105
C104
S101
19-289-015
FOR NON-AUTO
19-159-015
FOR AUTO FOH
R113


AUTOMATED PROCESSES, INC.
968 INPUT MODULE
MAIN AUDIO PATH
D
43-951-0651
F
1 OF 4
HP FILTER
LINK1 RIBBON
LARGE PHASE
SMALL PHASE
WIRE JUMPER
DIRECT TO SMALL
METER TO DIRECT
METER FROM LG/SM
LG FADER SOLO
SMALL FADER SOLO
PF SOLO MODE
"PAN" LARGE
"PAN" SMALL
"TRIM" LARGE
"TRIM" SMALL
"DIR"
Sheet Connector (SHEET2(A3))
Sheet Connector (SHEET2(B2))
Sheet Connector (SHEET2(F2))
Sheet Connector (SHEET2(F4))
Sheet Connector (SHEET2(G1))
Sheet Connector (SHEET3(A5))
Sheet Connector (SHEET3(H1))
Sheet Connector (SHEET3(H4))


LED2B YEL
HP FILTER
LED3B GREEN
AUX 1&2 "ON"
LED4B YEL
AUX 1-4 "PF"
LED5B GREEN
AUX 3&4 "ON"
LED6B GREEN
AUX 5&6 "ON"
LED7B YEL
AUX 5-8 "PF"
LED8B GREEN
AUX 7&8 "ON"
LED9B GREEN
AUX 9-12 "ON"
LED10B YEL
AUX 9-12 "PF"
LED11B RED
"11-12"
LED12B YEL
"SM"
LED13B RED
LARGE PHASE
(Note Table)
Q2B 2N5087
R8B 4K99
R10B 274R
R9B 619R
+24VB
Sheet Connector (SHEET1(H3))
Sheet Connector (SHEET2(E4))
Sheet Connector (SHEET1(H6))
Sheet Connector (SHEET1(A4))
Sheet Connector (SHEET1(E4))
HDR2:36
P2B:36
HDR2:35
P2B:35
J5B:1
J5B:2
J5B:3
J6B:3
J6B:2
J6B:1
FEED TO SEND 5-8 POST SELECT JUMPER
FEED TO SEND 5-8 PRE SELECT JUMPER
J1B:E
J1B:F
J1B:G
J1B:H
HDR2:33
P2B:33
AUX 9-12 LEVEL
VR6:B 5KZ
AUX 9-12 PAN
R28 10KO
VR6:A 25K
R50 10KO
HDR2:29
P2B:29
HDR2:30
P2B:30
AUX 9-12 "ON"
Sheet Connector (SHEET1(E6))
P3B:24
HDR3:24
Sheet Connector (SHEET2(E2))
"11-12"
+24VB
P1
P4B:32
HDR4:32
HDR2:34 R51 10KO
P2B:34
+24VC
9/10-11/12 SELECT
U6:C
ULN2803
K3:C
K2:C
K3:B
K3:A
K2:B
K2:A
P2B:3
P2B:4
HDR2:3
HDR2:4
D15B
D16B
R58B 20KO
R63B 475K
R59B 20KO
R61B 475K
U5B:B
U5B:A
U5B:C
U5B:D
R62B 47K5
R60B 47K5
D18B
D17B
C15B 1u
C23B 1u
C24B 1u
C22B 1u
R67B 1MOO
R64B 1MOO
C17B u22
C16B u22
R69B 20KO
R66B 20KO
-16V
+16VE
-16VE
LED14B RED
LED15B RED
R68B 2K74
R65B 2K74
AUX 2 LEVEL
AUX 1 LEVEL
AUX 4 LEVEL
AUX 3 LEVEL
AUX 6 LEVEL
AUX 5 LEVEL
AUX 7/8 LEVEL
AUX 7/8 PAN
R23 10K
R22 10K
VR2:A 25K2
VR2:B 25K2
VR3:A 25K2
VR3:B 25K2
VR4:A 25K2
VR4:B 25K2
VR5:B 5KZ
VR5:A 25K
AUX 1&2 "ON"
AUX 3&4 "ON"
AUX 5&6 "ON"
AUX 7&8 "ON"
P2B:53
HDR2:53
P2B:51
HDR2:51
P2B:11
P2B:12
P2B:9
P2B:10
P2B:7
P2B:8
P2B:5
P2B:6
HDR2:11
HDR2:12
HDR2:9
HDR2:10
HDR2:7
HDR2:8
HDR2:5
HDR2:6
RP7:G
RP5:G
RP7:H
RP5:H
RP7:E
RP5:E
RP7:F
RP5:F
RP7:C
RP5:C
RP7:D
RP5:D
RP7:A
RP5:A
RP7:B
RP5:B
RP8:F
RP8:D
RP8:H
RP8:C
RP8:E
RP8:A
RP8:G
33K
27K
AUTOMATED PROCESSES, INC.
968 INPUT MODULE
AUX SEND BUS AND PEAK CIRCUITS
D
43-951-0651
F


AUTOMATED PROCESSES, INC.
968 INPUT MODULE
SOLO/MUTE LOGIC, ETC.
43-951-0651
D
F
LARGE MUTE
SMALL MUTE
LARGE SOLO
SMALL SOLO
RA EAO SOCKET
SMALL PHASE
SMALL FADER SOLO
LG FADER SOLO
"MUTE A"
"SAFE" LARGE
"SAFE" SMALL
"EQ"
"INS" SMALL
"INS" LARGE
"TAPE"
"MIC"
"24"
"-6"
"DIR"
Sheet Connector (SHEET1(A5))
Sheet Connector (SHEET3(A4))
Sheet Connector (SHEET1(F3))
Sheet Connector (SHEET3(A3))
Sheet Connector (SHEET3(H5))
Sheet Connector (SHEET3(G5))
Sheet Connector (SHEET1(A3))
Sheet Connector (SHEET1(A6))
Sheet Connector (SHEET3(C5))
Sheet Connector (SHEET3(B5))
(Note Table)


BLOCK SYMBOL LEGEND
952-0616 STEREO ACA INPUT PLUS
952-0617 STEREO ACA BOOSTER OUT PLUS
952-0619 MULTI-BUSS BOOSTER OUT PLUS
952-0610 AUX SEND LOCAL SUM OUT
952-0612 QUE BOOSTER OUT LEGACY SPLIT
952-0611 AUX BOOSTER OUT
952-0620 SOLO & AUX LOCAL SUM OUT PLUS
953-0003-00 INPUT SNAKE
953-0007-00 DUAL 200 PATCH SNAME UPPER MIC
953-0010-00 STANDARD SYS PATCHBAY PLUS 1/2"
952-0630 LEGACY MULTI-TRACK OUT 16CH
952-0900 RIBBON ASSEMBLY
952-0648 PATCHLINK 200/MAIN PLUS
953-0014-00 988 MB TO PATCH CARD 4 CH RIBBON
952-0615 MANUAL STEREO FADER PLUS
ZONE REV DESCRIPTION DATE
AUTOMATED PROCESSES,
TITLE
LEGACY PLUS PROGRAM BLOCK DIAGRAM #:
SIZE DWG NO. REV
D 49-999-7004
APPLICATION
FIRST RELEASE

CONSOLE #_____

CABLE LENGTHS:

CH 1-8_____

CH 9-16_____

CH 17-24_____

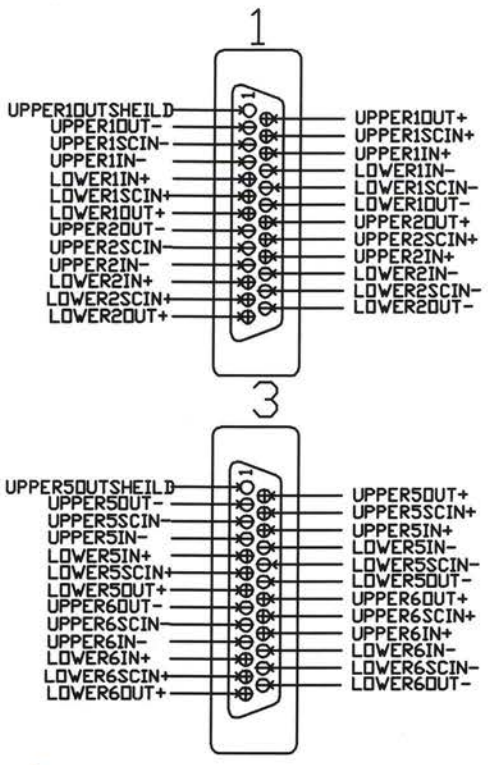
CH 24-32 _____

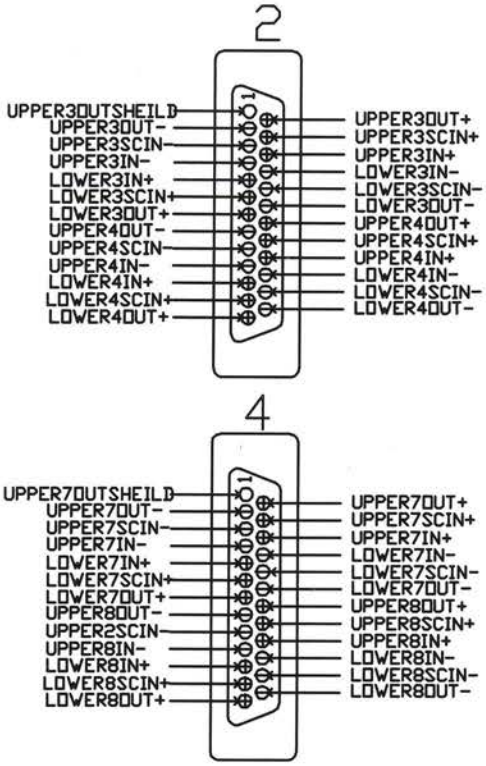
CH 33-40 _____

CH 41-48 _____

CH 49-56 _____

CH 57-64 _____





BACK VIEW (4 PER MOTHERBOARD)
MALE 25 PIN SUBMINIATURE D
DRESS 8 PAIR CABLE TO CRIMP
D PINS (ALL CONDUCTORS)

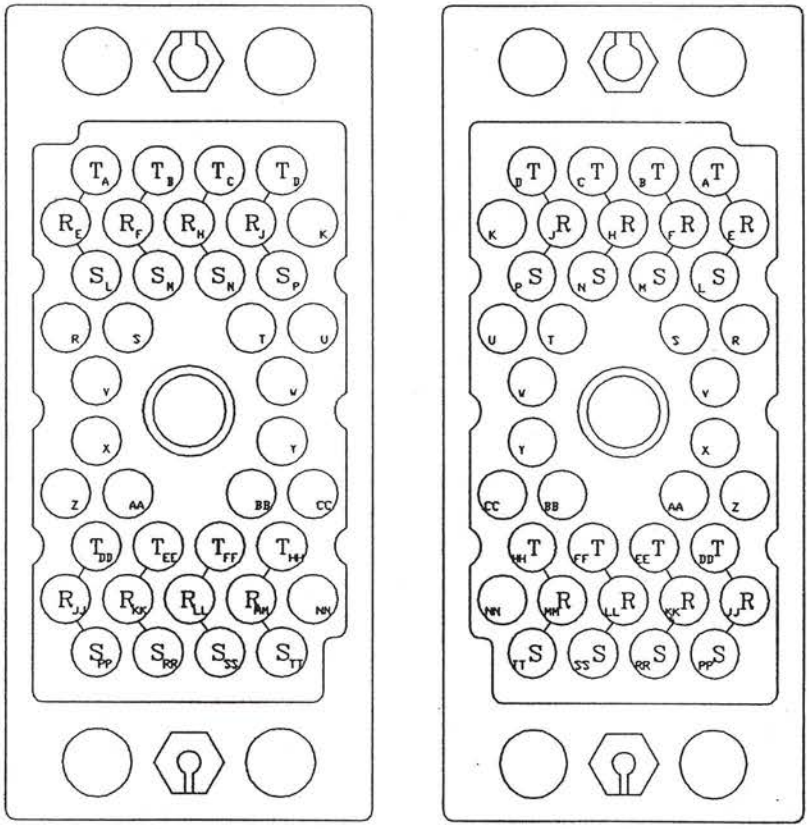
QTY REQD	QTY REQD	PART NUMBER	NOMENCLATURE OR DESCRIPTION	MATERIAL AND SPECIFICATION
LIST OF MATERIALS				

		DWN		api audio products, inc. Springfield, VA 22153 703-455-8158 fax 455-4240
		CHK		
		ENG		2X200 MOTHERBOARD HARNESS I/O PINOUT LEGACY PLUS CONSOLE
		PROJ		
			UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES	SIZE A / DWG NO. / REV A
DASH NO.	USED ON		TOLERANCES: ANGLES ± ___ DECIMALS .XX ± .01 DECIMALS .XXX ± .005	SCALE: / SHEET OF
APPLICATION				

Standard Audio ELCO Configurations

The following S.A.C. pin-out is the most common configuration for **38-pin** EDAC/ ELCO type connectors. We acknowledge the wide variety of pin-outs that are available, and can accommodate these with pin-out documentation supplied. Unless otherwise specified the S.A.C. pin-out will be used.

Jack	Tip(+)	Ring(-)	Sleeve(GND)
1)	A	E	L
2)	B	F	M
3)	C	H	N
4)	D	J	P
5)	DD	JJ	PP
6)	EE	KK	RR
7)	FF	LL	SS
8)	HH	MM	TT
9)	R	S	V
10)	T	U	W
11)	X	Z	AA
12)	Y	BB	CC

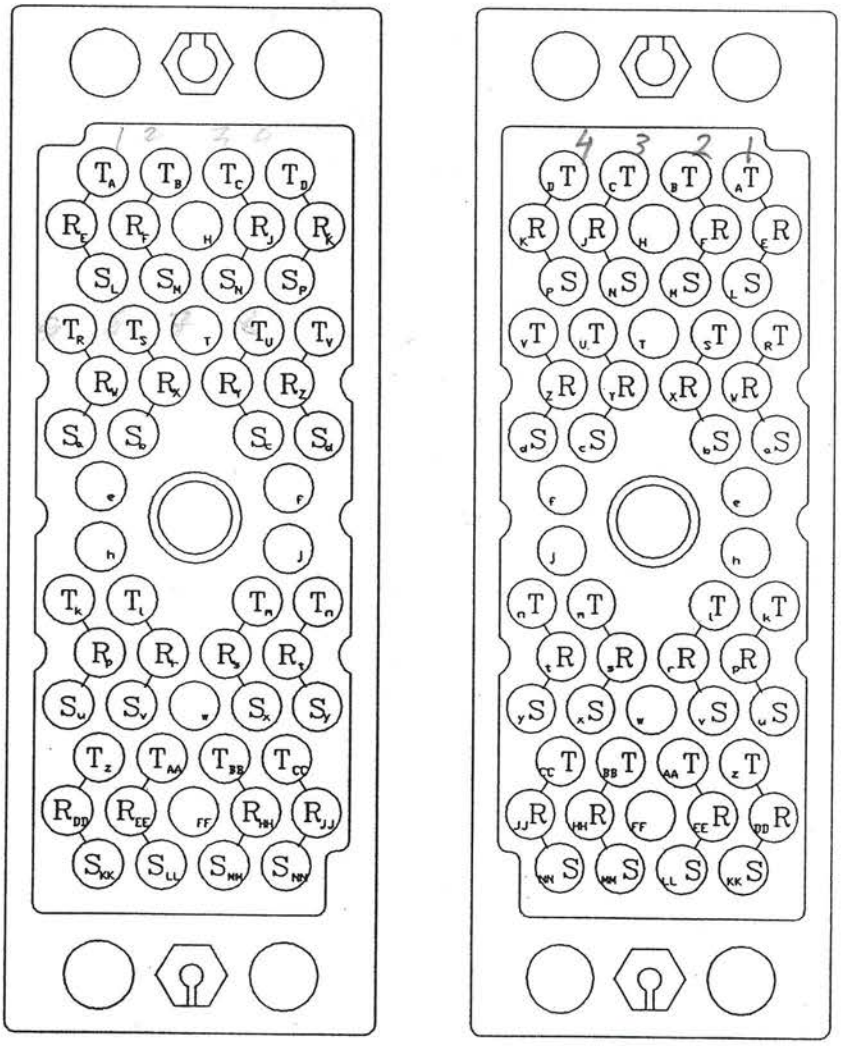


Pin-out shown on a 38-pin female EDAC connector.

Standard Audio ELCO Configurations continued

The following S.A.C. pin-out is the most common configuration for **56-pin** EDAC/ ELCO type connectors. We acknowledge the wide variety of pin-outs that are available, and can accommodate these with pin-out documentation supplied. Unless otherwise specified the S.A.C. pin-out will be used.

Jack	Tip(+)	Ring(-)	Sleeve(GND)
1)	A	E	L
2)	B	F	M
3)	C	J	N
4)	D	K	P
5)	R	W	a
6)	S	X	b
7)	U	Y	c
8)	V	Z	d
9)	k	p	u
10)	l	r	v
11)	m	s	x
12)	n	t	y
13)	z	DD	KK
14)	AA	EE	LL
15)	BB	HH	MM
16)	CC	JJ	NN



Pin-out shown on a 56-pin female EDAC connector.

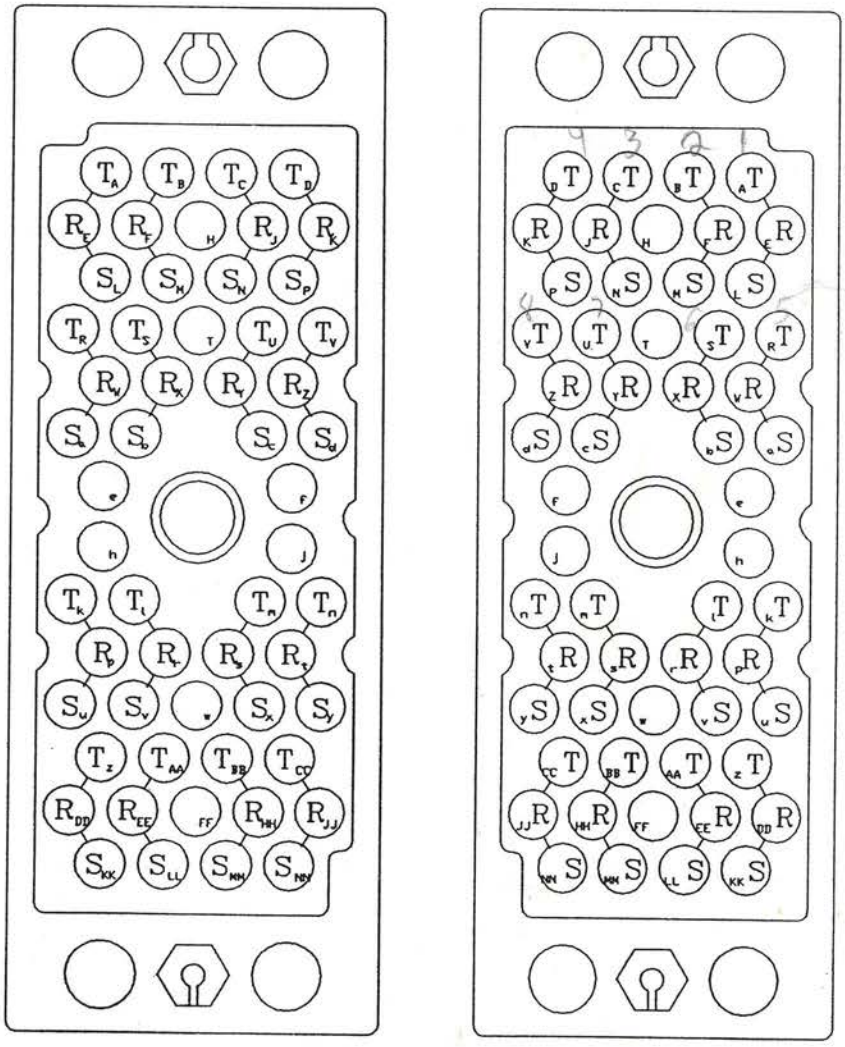
Standard Audio ELCO Configurations continued

The following S.A.C. pin-out is the most common configuration for **56-pin** EDAC/ ELCO type connector**s**. We acknowledge the wide variety of pin-outs that are available, and can accommodate these with pin-out documentation supplied. Unless otherwise specified the S.A.C. pin-out will be used.

Jack	Tip(+)	Ring(-)	Sleeve(GND)
1)	A	E	L
2)	B	F	M
3)	C	J	N
4)	D	K	P
5)	R	W	a
6)	S	X	b
7)	U	Y	c
8)	V	Z	d
9)	k	p	u
10)	l	r	v
11)	m	s	x
12)	n	t	y
13)	z	DD	KK
14)	AA	EE	LL
15)	BB	HH	MM
16)	CC	JJ	NN

Male (insertion side)

Fem (0.5)

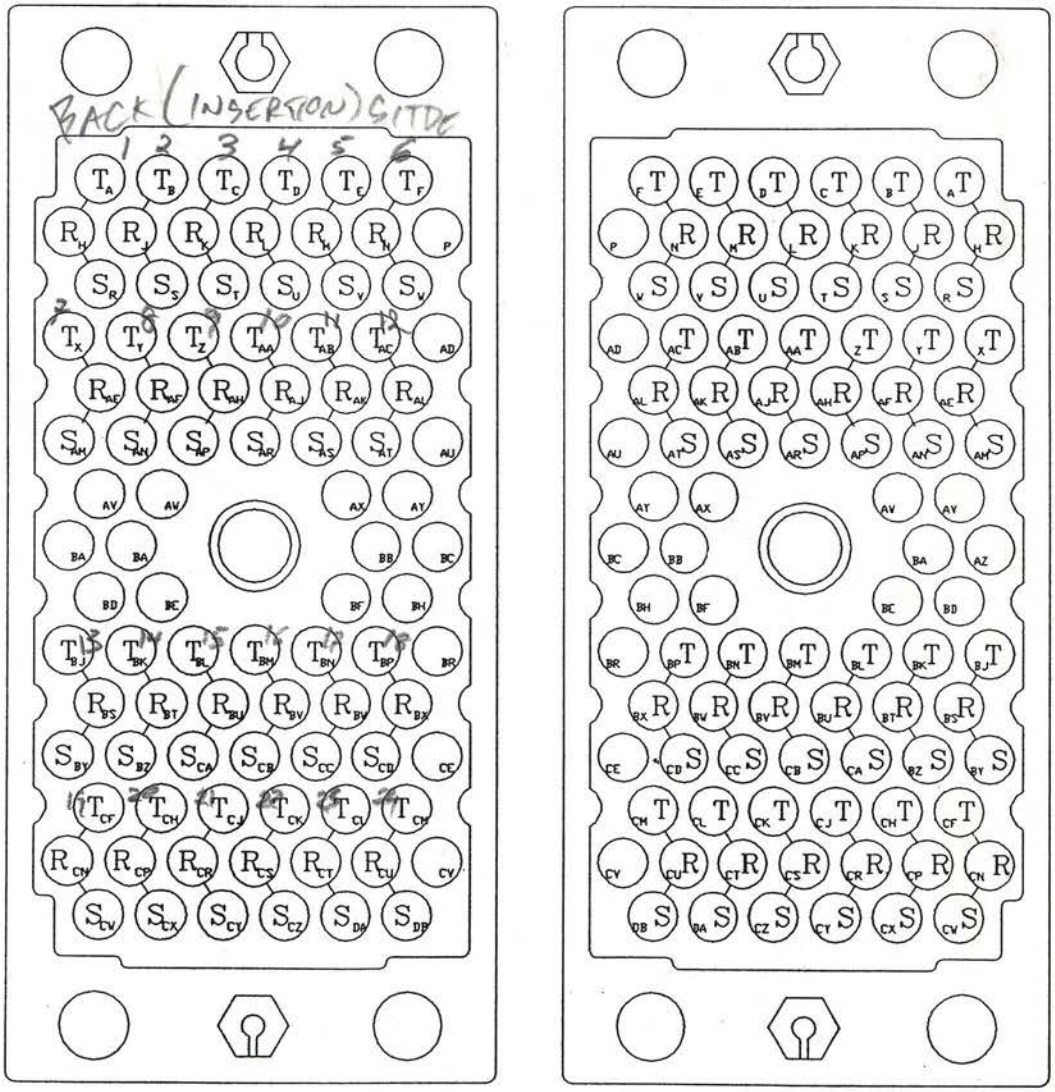


Pin-out shown on a 56-pin female EDAC connector.

Standard Audio ELCO Configurations continued

The following S.A.C. pin-out is the most common configuration for **90-pin** EDAC/ ELCO type connectors. We acknowledge the wide variety of pin-outs that are available, and can accommodate these with pin-out documentation supplied. Unless otherwise specified the S.A.C. pin-out will be used.

Jack	Tip(+)	Ring(-)	Sleeve(GND)
1)	A	H	R
2)	B	J	S
3)	C	K	T
4)	D	L	U
5)	E	M	V
6)	F	N	W
7)	X	AE	AM
8)	Y	AF	AN
9)	Z	AH	AP
10)	AA	AJ	AR
11)	AB	AK	AS
12)	AC	AL	AT
13)	BJ	BS	BY
14)	BK	BT	BZ
15)	BL	BU	CA
16)	BM	BV	CB
17)	BN	BW	CC
18)	BP	BX	CD
19)	CF	CN	CW
20)	CH	CP	CX
21)	CJ	CR	CY
22)	CK	CS	CZ
23)	CL	CT	DA
24)	CM	CU	DB
25)	AV	AZ	BD
26)	AW	BA	BE



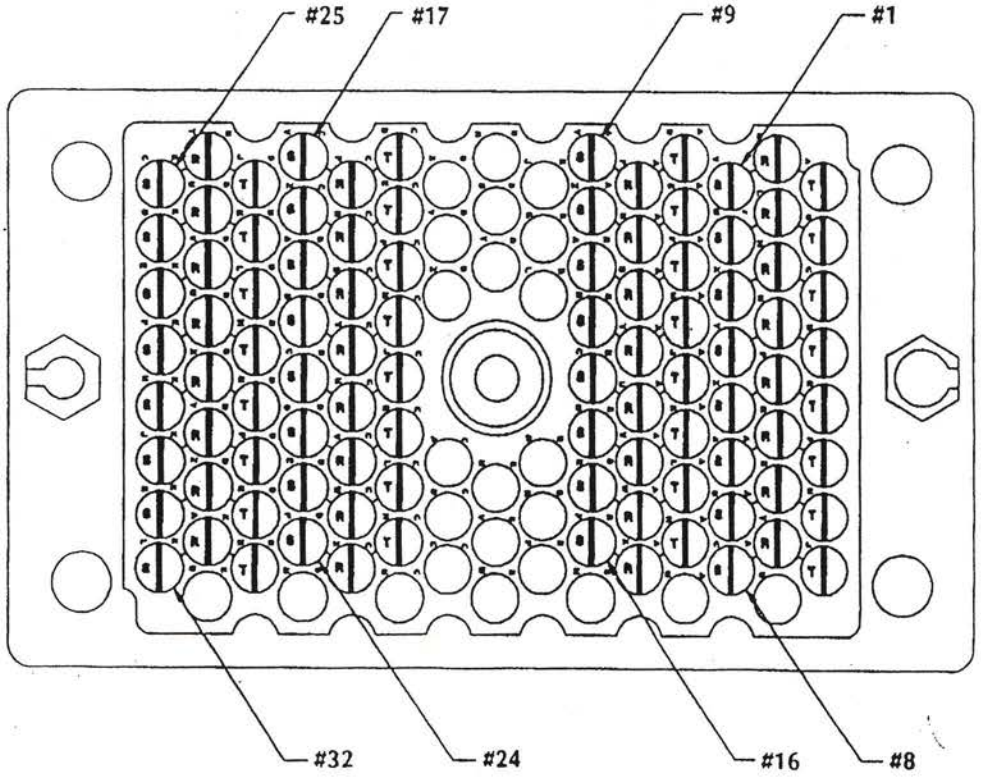
Pin-out shown on a 90-pin female EDAC connector.

Standard Audio ELCO Configurations continued

The following S.A.C. pin-out is the most common configuration for **120-pin** EDAC/ELCO type connectors. We acknowledge the wide variety of pin-outs that are available, and can accommodate these with pin-out documentation supplied. Unless otherwise specified the S.A.C. pin-out will be used.

Jack	Tip(+)	Ring(-)	Sleeve(GND)
1)	A	K	V
2)	B	L	W
3)	C	M	X
4)	D	N	Y
5)	E	P	Z
6)	F	R	AA
7)	H	S	AB
8)	J	T	AC
9)	AD	AP	AY
10)	AE	AR	AZ
11)	AF	AS	BA
12)	AH	AT	BB
13)	AJ	AU	BC
14)	AK	AV	BD
15)	AL	AW	BE
16)	AM	AX	BF

Jack	Tip(+)	Ring(-)	Sleeve(GND)
17)	CD	CP	CY
18)	CE	CR	CZ
19)	CF	CS	DA
20)	CH	CT	DB
21)	CJ	CU	DC
22)	CK	CV	DD
23)	CL	CW	DE
24)	CM	CX	DF
25)	DJ	DT	EC
26)	DK	DU	ED
27)	DL	DV	EE
28)	DM	DW	EF
29)	DN	DX	EH
30)	DP	DY	EJ
31)	DR	DZ	EK
32)	DS	EA	EL

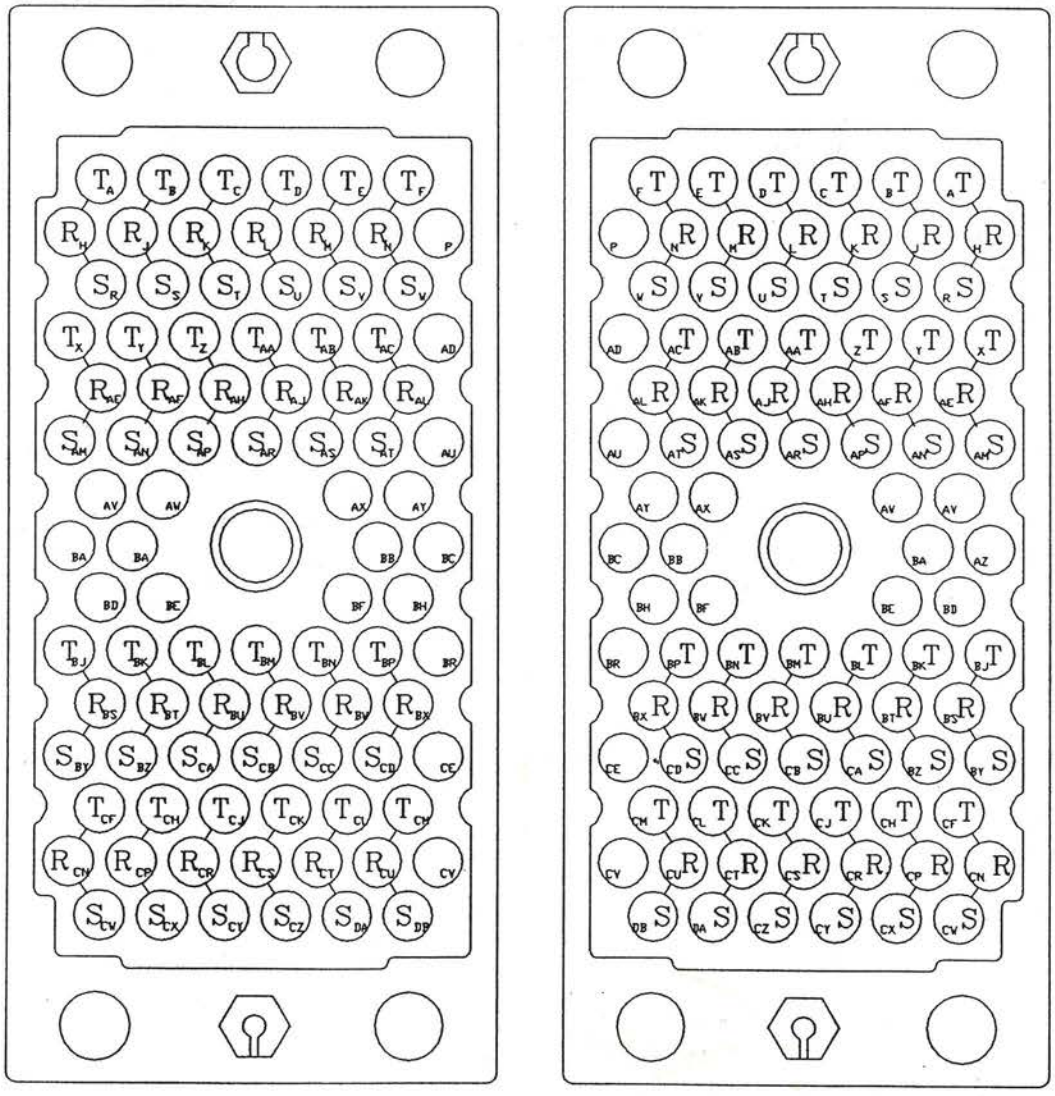


Pin-out shown on a 120-pin female EDAC connector, as seen from rear of patchbay.

Standard Audio ELCO Configurations continued

The following S.A.C. pin-out is the most common configuration for **90-pin** EDAC/ ELCO type connectors. We acknowledge the wide variety of pin-outs that are available, and can accommodate these with pin-out documentation supplied. Unless otherwise specified the S.A.C. pin-out will be used.

Jack	Tip(+)	Ring(-)	Sleeve(GND)
1)	A	H	R
2)	B	J	S
3)	C	K	T
4)	D	L	U
5)	E	M	V
6)	F	N	W
7)	X	AE	AM
8)	Y	AF	AN
9)	Z	AH	AP
10)	AA	AJ	AR
11)	AB	AK	AS
12)	AC	AL	AT
13)	BJ	BS	BY
14)	BK	BT	BZ
15)	BL	BU	CA
16)	BM	BV	CB
17)	BN	BW	CC
18)	BP	BX	CD
19)	CF	CN	CW
20)	CH	CP	CX
21)	CJ	CR	CY
22)	CK	CS	CZ
23)	CL	CT	DA
24)	CM	CU	DB
25)	AV	AZ	BD
26)	AW	BA	BE

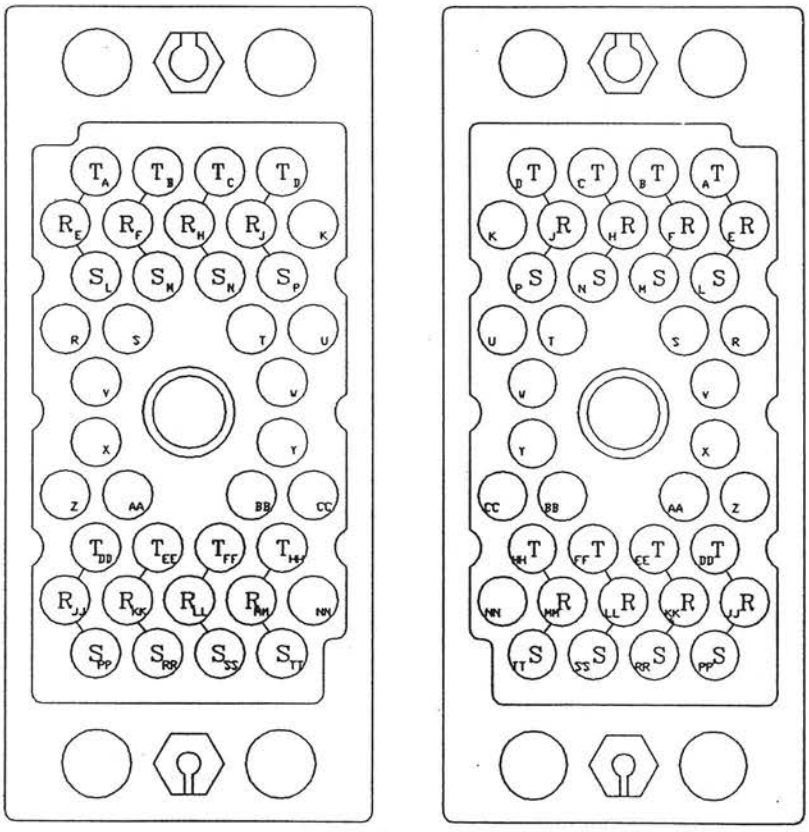


Pin-out shown on a 90-pin female EDAC connector.

Standard Audio ELCO Configurations

The following S.A.C. pin-out is the most common configuration for **38-pin** EDAC/ ELCO type connectors. We acknowledge the wide variety of pin-outs that are available, and can accommodate these with pin-out documentation supplied. Unless otherwise specified the S.A.C. pin-out will be used.

Jack	Tip(+)	Ring(-)	Sleeve(GND)
1)	A	E	L
2)	B	F	M
3)	C	H	N
4)	D	J	P
5)	DD	JJ	PP
6)	EE	KK	RR
7)	FF	LL	SS
8)	HH	MM	TT
9)	R	S	V
10)	T	U	W
11)	X	Z	AA
12)	Y	BB	CC



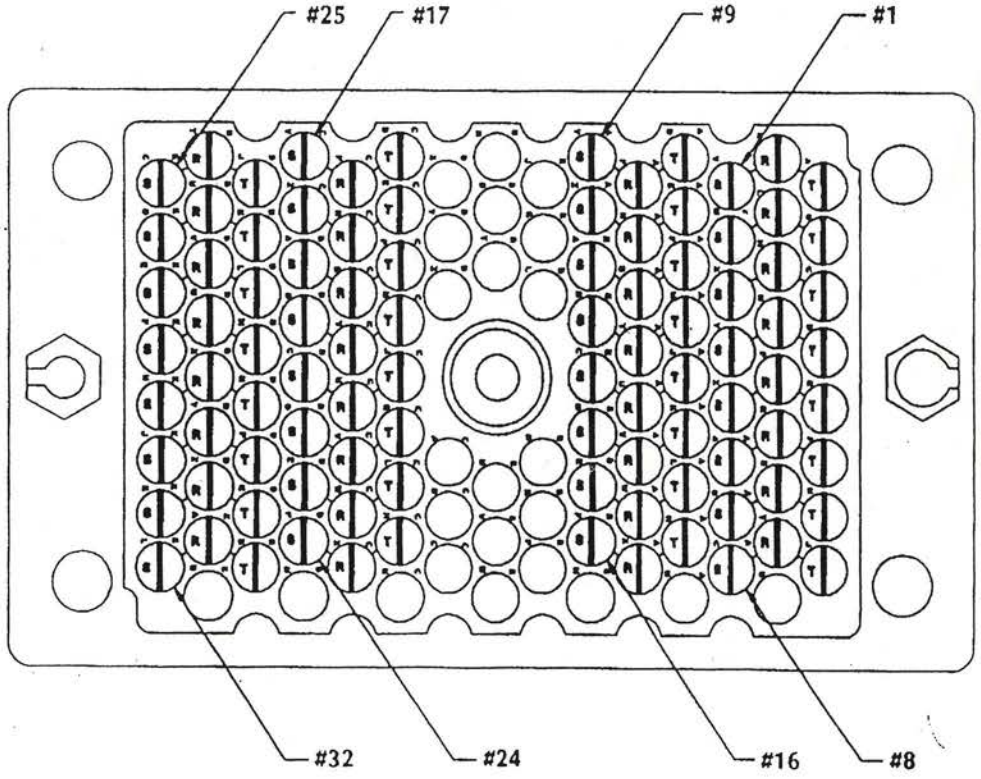
Pin-out shown on a 38-pin female EDAC connector.

Standard Audio ELCO Configurations continued

The following S.A.C. pin-out is the most common configuration for **120-pin** EDAC/ELCO type connectors. We acknowledge the wide variety of pin-outs that are available, and can accommodate these with pin-out documentation supplied. Unless otherwise specified the S.A.C. pin-out will be used.

Jack	Tip(+)	Ring(-)	Sleeve(GND)
1)	A	K	V
2)	B	L	W
3)	C	M	X
4)	D	N	Y
5)	E	P	Z
6)	F	R	AA
7)	H	S	AB
8)	J	T	AC
9)	AD	AP	AY
10)	AE	AR	AZ
11)	AF	AS	BA
12)	AH	AT	BB
13)	AJ	AU	BC
14)	AK	AV	BD
15)	AL	AW	BE
16)	AM	AX	BF

Jack	Tip(+)	Ring(-)	Sleeve(GND)
17)	CD	CP	CY
18)	CE	CR	CZ
19)	CF	CS	DA
20)	CH	CT	DB
21)	CJ	CU	DC
22)	CK	CV	DD
23)	CL	CW	DE
24)	CM	CX	DF
25)	DJ	DT	EC
26)	DK	DU	ED
27)	DL	DV	EE
28)	DM	DW	EF
29)	DN	DX	EH
30)	DP	DY	EJ
31)	DR	DZ	EK
32)	DS	EA	EL

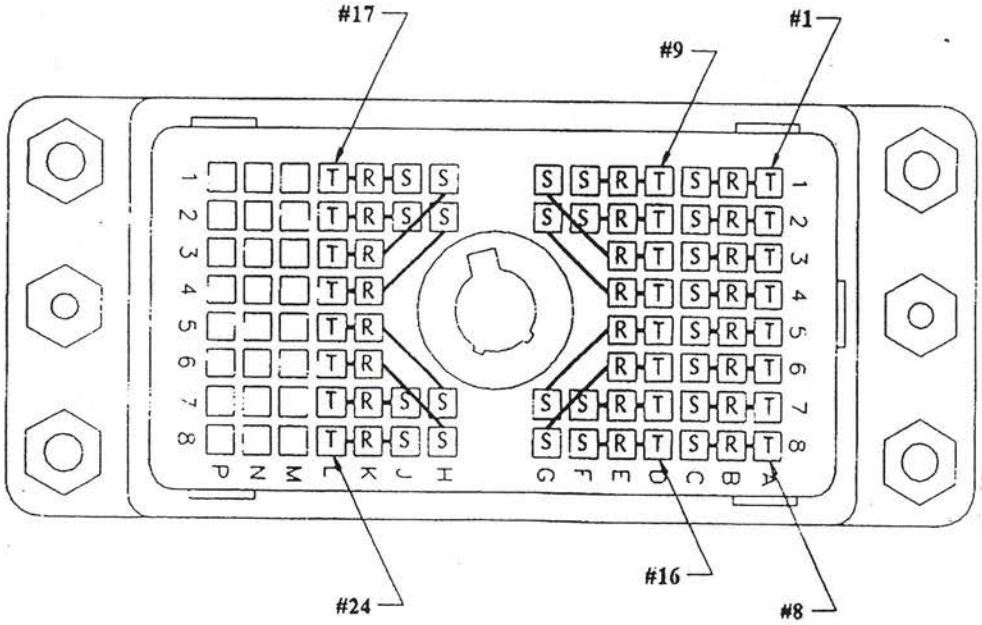


Pin-out shown on a 120-pin female EDAC connector, as seen from rear of patchbay.

Standard Audio ELCO Configurations continued

The following S.A.C. pin-out is the most common configuration for **Cannon DL96R** type connectors. We acknowledge the wide variety of pin-outs that are available, and can accommodate these with pin-out documentation supplied. Unless otherwise specified the S.A.C. pin-out will be used.

Jack	Tip(+)	Ring(-)	Sleeve(GND)
1)	A1	B1	C1
2)	A2	B2	C2
3)	A3	B3	C3
4)	A4	B4	C4
5)	A5	B5	C5
6)	A6	B6	C6
7)	A7	B7	C7
8)	A8	B8	C8
9)	D1	E1	F1
10)	D2	E2	F2
11)	D3	E3	F3
12)	D4	E4	F4
13)	D5	E5	F5
14)	D6	E6	F6
15)	D7	E7	F7
16)	D8	E8	F8
17)	L1	K1	J1
18)	L2	K2	J2
19)	L3	K3	H1
20)	L4	K4	H2
21)	L5	K5	H7
22)	L6	K6	H8
23)	L7	K7	J7
24)	L8	K8	J8
25)	P1	N1	M1
26)	P2	N2	M2

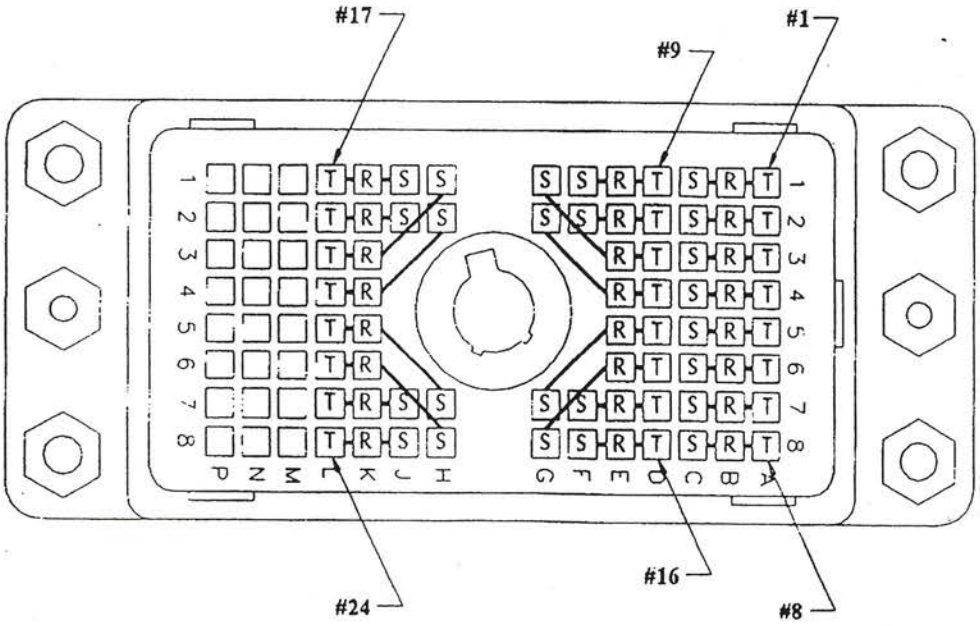


Pin-out shown on a Cannon DL96R connector, as seen from rear of patchbay.

Standard Audio ELCO Configurations continued

The following S.A.C. pin-out is the most common configuration for **Cannon DL96R** type connectors. We acknowledge the wide variety of pin-outs that are available, and can accommodate these with pin-out documentation supplied. Unless otherwise specified the S.A.C. pin-out will be used.

Jack	Tip(+)	Ring(-)	Sleeve(GND)
1)	A1	B1	C1
2)	A2	B2	C2
3)	A3	B3	C3
4)	A4	B4	C4
5)	A5	B5	C5
6)	A6	B6	C6
7)	A7	B7	C7
8)	A8	B8	C8
9)	D1	E1	F1
10)	D2	E2	F2
11)	D3	E3	F3
12)	D4	E4	F4
13)	D5	E5	F5
14)	D6	E6	F6
15)	D7	E7	F7
16)	D8	E8	F8
17)	L1	K1	J1
18)	L2	K2	J2
19)	L3	K3	H1
20)	L4	K4	H2
21)	L5	K5	H7
22)	L6	K6	H8
23)	L7	K7	J7
24)	L8	K8	J8
25)	P1	N1	M1
26)	P2	N2	M2

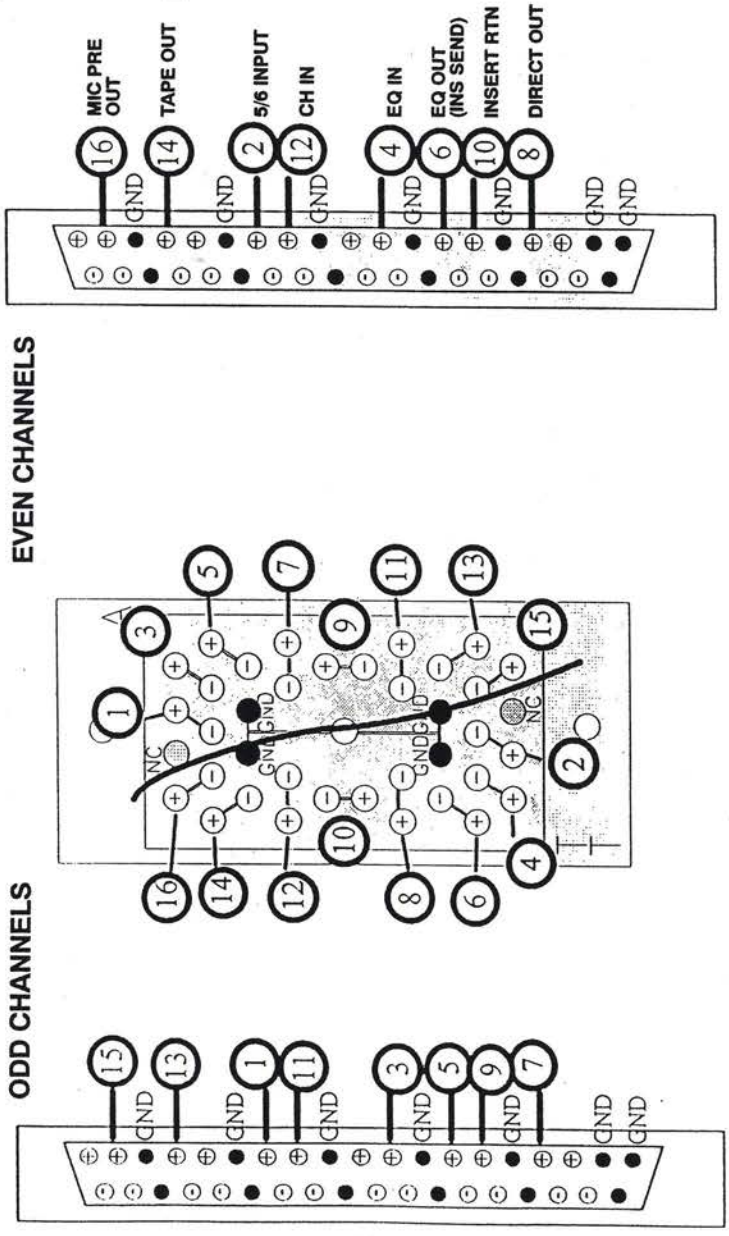


Pin-out shown on a Cannon DL96R connector, as seen from rear of patchbay.

STANDARD CONNECTOR PINOUTS

The following pinout sheets are for all external input/output connections to the console and all of the internal connections, where required. Wherever possible, the pinouts follow the SAC Pinout Standard. These connector pinouts are as accurate as possible and provide the customer with enough information for them to pre-wire the studio in preparation for the installation. There may be minor changes that can be corrected through re-pinning the connectors. API supplies all consoles wired to Elco (EDAC) connectors exclusively. Other connectors can be used by special order. API also supplies the mating connectors where needed and recommend that the customer just pin the wires and let the installation personnel pin them into the appropriate Elco connectors. This, of course, is optional.

Channel Input/Output Snakes



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