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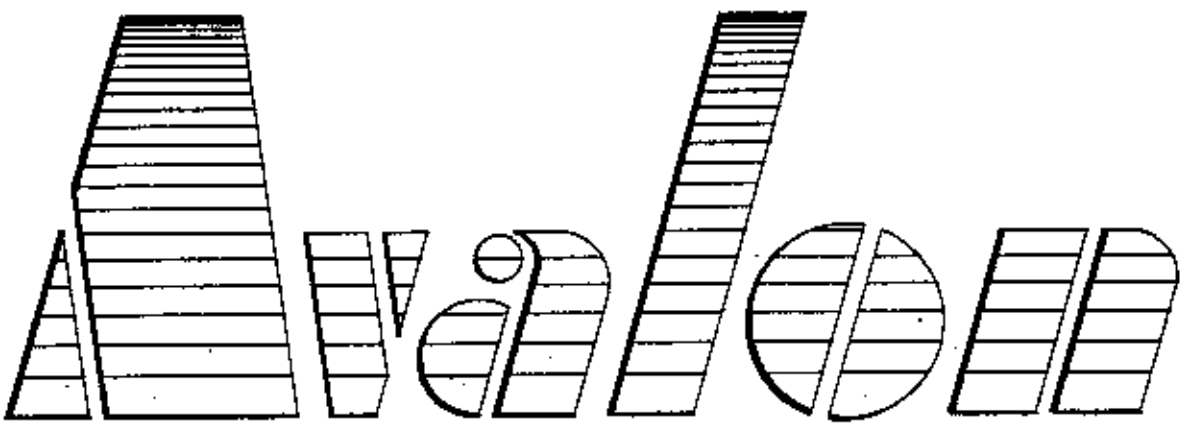
Owners MANUAL



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Dear client,

Thank you for selecting the D&R Avalon series.

The Avalon was created using the latest in computer aided design and assembling technology, and incorporates the most advanced circuit components, which result in the product being unsurpassed in the electronics industry.

We are confident that you will be using the Avalon for many years to come, and wish you much success.

We always value suggestions from our clients, and we would therefore be grateful if you could complete and return the questionnaire included at the back of this manual, once you have become familiar with your Avalon. We will certainly learn from your comments, and very much appreciate your time to do this.

With kind regards,

D. de Rijk
President, D&R Electronica b.v.

Introduction and Product Overview

The D&R Avalon series is a totally balanced, 32-bus, in-line format recording and mixing console, designed to take the central role in a recording facility.

The Avalon is completely modular, and can therefore be configured to precisely suit your own particular system requirements. Due to the fact that all modules can either be connected using the individual module connectors, or from the master section, the Avalon Patchbay is entirely optional. When the patchbay is installed, the Avalon offers you the opportunity to choose whether to wire-up using multipins or individual in/output connectors.

To become completely familiar with your Avalon, and therefore gain the maximum benefit from its use, we recommend that you read this manual thoroughly. It will provide important information about all aspects of ownership of the Avalon, including installation, operation and servicing.

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1.0 The Chassis System

The Avalon is available in two frame sizes. The frame-32 can accept up to thirty two in/output modules, plus patchbay and master section. The frame-48 can accept up to forty eight in/output modules, plus patchbay and master section.

The basic frame has five blind modules, two are located on the extreme left and right of the frame, two more are on the left and right of the master section, and the fifth is located to the left of the patchbay. These locations cannot be used for in/output modules, as they conceal mechanical constructions, wiring and power distribution.

If the patchbay is not utilised in the frame-32, 8 module positions become available for extra modules. The frame-48 can accept up to 60 modules, if the patchbay is not utilised.

Both the master section and patchbay can be installed wherever most suitable, but the request must be made at the time of ordering. Unless otherwise specified, the frame-32 will be supplied with twenty-four input channels left of the master section, eight in/output modules on its right and the patchbay located in the far right position.

The Avalon frame-48 has either: (left to right)

32 in/outputs, master section, 16 in/outputs, patchbay,
or:
24 in/outputs, master section, 24 in/outputs, patchbay.

The Avalon legs are not assembled for shipping, assembly takes approximately twenty minutes.

2.1 CRM Module

The CRM (control room module) Module contains the electronics for monitoring all the signal paths in the Avalon.

From top to bottom there are the CRM signal sources.

When all switches are 'up', the CRM will monitor the stereo main output, which is the sum of all L/R routing switches in the output modules.

The Avalon has separate summing amps for the channel left/right busses, and the monitor left/right busses, which are mixed by the two stereo master faders. Each stereo output can be monitored using the CRM 'Monitor' switch (colour: pale grey). After the Monitor Select switch, there are six dedicated balanced +4 dBu tape return inputs, which can be wired to the outputs of stereo master machines, or DAT recorders etc. This enables post tape monitoring of a master mix.

An additional "extern" CRM input is available at the back of the module, or at the patchbay for extra equipment.

The phones 1 and 2 system outputs can be monitored in stereo individually. The studio output can also be monitored in stereo, through the control room monitors.

The Avalon contains three CRM systems, intended for use with large monitors, small monitors and nearfield monitors.

We advise that nearfield monitors be wired to the CRM 2 output, as the studio communication takes place over this monitor, dimming the main monitor. Communication through the CRM 2 is independant upon selection, or by level adjustment of the CRM 2.

CRM 3 is designed for connection to small monitors, or other alternative monitoring purposes. Switches are used for selecting the desired CRM system. The level controls have default settings, adjustable using the large main CRM level control. Thus, any level differences in the monitors when switching between them can be adjusted using the relevant volume controls.

The switches near the main CRM level control are active with CRM 2 and 3.

Phase switch

The phase switch is virtually unique for a console, but is of great benefit. The switch adds an out of phase signal from the left channel into the right channel, and vice versa. This feature enables checking of the panpot positions, and any problems in the mix will be immediately evident when depressing the switch.

L.R. Mono

The left and right switches offer the choice of listening to the left only, right only or the mono mix of the monitored signal. It will not affect the main stereo mix.

CRM level

The CRM level controls the total outgoing level to the CRM 1 - 2 - 3 monitors. When in the fully clockwise position, a balanced signal of +4 dBv is given out to the CRM monitor amps. It is important to have the metering correctly adjusted; adjust the CRM monitor amps to an undistorted level with the CRM level control fully clockwise.

NOTE:This alignment is imperative in order to avoid damage to the tweeters, or in some cases damage to the ears of the listener.

A mute switch fully cuts the CRM sections. Beneath the CRM section are remote control switches with lamps, which can be wired to the multitrack machine if desired.

2.1 The Studio Module

The necessity for having the metering correctly adjusted, means that it is important to have the CRM level in the fully clockwise position when adjusting the CRM monitor amps to an undistorted level.

The studio modules performs in a similar way to the CRM module, monitoring functions for the studio.

There is one balanced stereo output to the studio.

The monitor switch alternates between the main master mix and the monitor stereo mix being fed to the studio. There is a choice of six stereo sources, which operate individually and independent of the CRM input. The external inputs can also be routed to the studio, by depressing the 'extern' switch.

The phones 1 and 2 outputs can also be sent to the studio, in order to bring a headphone mix into the studio monitors.

The studio level ranges up to a balanced +4 dB nominal level (+26 dB maximum).

The mute switch is used to mute the output of the studio module.

A red indicator light can be wired either from the multitrack machine or coupled to the record button, whichever suits your requirements.

Remote control switches for the multitrack machine are available for wiring.

There are remote control switches mounted in the unit for 'stop', 'record' and 'play' of the multitrack machine, (these require wiring).

2.3 Oscillator / Solo / Status Module

Oscillator

This module performs several functions. At the top of the module is the oscillator, which is a low distortion, four frequency, phase shift model. There are actually four independantly adjustable oscillators built into the Avalon, with frequencies of 50 Hz, 1 kHz, 10 kHz and 15 kHz. These cover the most important spot frequencies in the audio spectrum.

Each frequency has its own front panel adjustable alignment trimmer, and an overall level control with which to precisely align the oscillator and thus, the console. The level ranges from -35 dB to +20 dB, with a marked mid-position of +4 dBv.

The oscillator can either be routed to the patchbay or the output socket on the module backpanel and to the groups (Aux. masters, L/R channel, L/R monitor, 32 multitrack busses).

The meters on the Avalon are peak reading meters, and therefore they read -6 dB with a +4 dB output level sent to the meter. Measuring the +4 dB output level of the channel or master on an AC voltmeter, would give a 1.22 volt reading. The led meter would actually be reading -6 dB on the scale.

NOTE: the CRM dim is activated when the oscillator is active.

Solo

The solo level control ranges +/-10 dB, and is used for adjusting the solo level when it is not correctly aligned in the channels or Auxilliary masters. However, if the pot is moved from its central '0' position, activated solo'ed channels will not be correctly aligned.

Below the solo level pot are two status switches 'SIP MON' and 'SIP CHAN', which determine the function of the solo system. When both are in their 'up' position, the Avalon solo system acts as a pfl system for the channels, and an afl for the Auxiliary masters. When activated, the pfl/afl system becomes a "destructive" solo in place system. This can be done selectively for channel or monitor. By activating both, an interacting solo in place system affecting both channel and monitor is created.
A led indicator on the console (solo active) shows that there is a solo switch depressed somewhere in the system; in addition, the depressed solo switch will flash.

Status

This section sets modes in the channel. The 'Auxiliary 5 -.6 to pre fader', switches all Aux. 5 - 6 sends to the channel pre fader. It does not matter whether the sends are being fed from the channel or the monitor path at the time, all will be switched silently to the pre fader. The 'Auxiliary 7 - 8 to pre fader' switch does likewise for all Aux. 7 - 8 sends.

Mute A/B/C

The Avalon has three programmable mute groups A, B, and C.
If one of these programmable switches is activated anywhere in the channel, the centralized A, B and C mute masters can be used to silently mute that channel. The local mute always has priority, and therefore cannot be deactivated by the master mute switches. There are lamps within the master mute switches which indicate their status.

Channel

The 'to-main' switch assigns the stereo channel L/R mix to the main outputs. The 'mute' switch will silently and completely mute the stereo main output, including the monitor mix to main monitor once assigned.

2.4 Communications Module

The communications module performs all communication functions between the control room, the studio and any other rooms linked into the circuit. An in-built electret microphone sends the control room signal to several destinations, such as tape, studio, phones 1, phones 2, and to the patchbay or backpanel connector.

The CRM level will be dimmed by 20 dB when the 'talkback' mike is activated, in order to ease communication.

There is a talkback level control, for adjusting the level.

There are three ways to activate the talkback mic:-

a. depress the 'momentary' talkback switch
b. depress the 'latching' studio and talkback switch
c. activate the 'remote' talkback swtich (for use by the producer for example).

NOTE: the producers talkback remote switch (which needs to be connected to either the patchbay or the master backpanel) must first be activated by the "remote sw active".

Ideally, communication with the studio needs to be two-way and so an extra microphone pre-amp is built into the Avalon for wiring to the studio. An omnidirectional microphone would be suitable, and should be mounted high-up in the studio. There is also a strong highpass filter built in, which avoids low frequency feedback with high gains; the level is set using the studio control in the communications module.

The signal from the studio communications mike will be sent directly to the CRM 2 output amps, and are therefore unaffected by the CRM 2 level control or select switch. Considering that excellent communication is paramount for a successful session, the signal is also not affected by the CRM mute.

NOTE: When the 'studio and talkback' switch is activated an open two-way communication line between the studio and control room is created. Feedback can be deleted using the talkback and studio communication level controls. If one-way only communication is required, the studio or talkback switches should be used.

Finally, a useful function is the 'to tape' switch, which routes the studio communication mike to the multitrack busses and L/R chan/mon busses, which is useful for counting. This 'to-tape' switch is only momentary, which avoids it being accidentally switched during track laying.

Monitor

The 'to-main' switch routes the summed L/R signals to the main outputs just ahead of the master stereo fader and inserts (see block diagram).

The monitor mute will only mute the monitor output going to the connectors.

As a reminder, there is one stereo fader (below the monitor label) which controls the output of the monitor mix to the connectors/patch panel, and concurrently sends it via the 'to-main' switch to the main channel L/R mix.

Both of these signals are controlled by the master stereo fader beneath the 'channel' label. Both of the 'to-main' switches assign the channel and monitor summing amps, the block diagram illustrates the signal flow.

This configuration gives several options such as two separate mixes of the same sources, blending of two mixes into one, and other combinations of your own choice.

2.5 Auxilliary Masters Module

The auxilliary master modules are identical in function. One module controls the Aux. 1 - 4 and phones 1 output, the second controls Aux. 5 - 8 and phones 2. Several remote switches can be wired to a master machine, which can also operate as a DAT recorder, the skip remote switching is pre-wired.

The Aux. 1 - 8 masters control the Aux. 1 - 8 signals from the channels. The mute switch completely mutes the balanced output. However, the afl switch continues its signal to the control room monitors,

which is a postfader signal independant of the solo status setting. The associated led flashes, indicating an activated solo switch.

Phones 1/2

The phones section has been designed to give various stereo mixes to the studio. When all 'assign' swithces are in their 'up' position, no signal is sent to the phones amps. The control room mix is sent to the phones output, by depressing the CRM switch. All CRM sourcing can be sent to the phones in this way, which is the simplest method of creating a fold back mix.

The aux. 1-2, 3-4, 5-6 and 7-8 switches can be activated to add signals to the CRM mix. Because this is an adding system, additional 'kick' can be added on one aux. send only, and then mixed to the existing CRM. When a completely new foldback mix is required, it is advisable to use Aux. 7-8 which are designed as level and panpot, making a mix much easier than with two separate pots.

Outputs from the pones 1/2 can be monitored using the CRM source select switch.
Talkback level into the phones is independent of the phones level settings.
External stereo signals can be sent to the phones, in addition to the other mixes; inputs are located on the patchbay or master section backpanel.

2.6 Master In/Outputs

The Avalon has two methods of interfacing with external equipment such as signal processors, headphone amps, power amps and power supplies.
Hook-up interfacing is possible using the master bottom panels, or through 25.pole sub D male connectors, or a mixture of both.

a: The CRM master backpanel.

The CRM module in/outputs panel, provides the following connections:-

Six balanced +4 dB left inputs, for looping stereo machines such a DAT's, CD players, two track reel to reels and cassette recorders for playback. The seventh balanced +4 dBv left input can be used for either external equipment or other balanced stereo sources. The mating plugs are 1/4" stereo.
Tip = hot, ring = cold, sleeve = ground.

Two XLR male connectores provide a stereo +4 dBu balanced studio output from the studio module. The mating plugs are XLR female. Pin 1 = ground, pin 2 = hot, pin 3 = cold.

The remaining jack socket is a switching output connected to an external relay, which is activated by the 'red light' button on the studio module. Switching is between tip and ring, the sleeve is not connected.

b: Studio master backpanel.

The studio master module backpanel provides a balanced +4 dBu right input, for the returning stereo machines and external sources.

The mating plug is 1/4" stereo. Tip = hot, ring = cold, sleeve = ground.
Also located on this backpanel are the second and third CRM (control room module) outputs, with selection activated on the CRM module.
Both of the CRM 2 and 3 outputs are unbalanced +4 dBu XLR male outputs. Pin 1 = ground, pin 2 = left, pin 3 = right.
The mating connectors are female, 3 pin XLR type.

c. Oscillator/solo/status backpanel.

This connector panel provides the ground compensated oscillator output, the mating connector is 1/4" stereo plug. Tip = hot, ring = cold, sleeve = ground.

Both the main left and right insert sends and returns are accesible on this backpanel. The sends are ground compensated, and the returns fully balanced. Mating plugs are 1/4" stereo. Tip = hot, ring = cold, sleeve = ground.
The nominal level is 0 dBu (775mV).
The main left/right outputs are on two male type 3 pole XLR connectors. The mating connectors must therefore be female type 3 pole XLR, whereby pin 1 = ground, pin 2 = hot, pin 3 = cold.

The nominal output level is +4 dBu with a maximum of +26 dBu.

d. **The communications backpanel.**

Located at the top is the remote connector for external talkback activation, a 1/4" stereo jack would be suitable. The switching contacts are on tip and ring.

The next connector is a male 3 pole XLR type for the talkback output. This is ground compensated, and is to be mated with a 3 pole female XLR type connector. Pin 1 = ground, pin 2 = hot, pin 3 = cold.

The nominal level is +4 dBu.

Also this module is the balanced studio communication mike input. This is a female 3 pole XLR type connector onto which can be connected any type of balanced microphone which does not require extenal phantom powering. An omnidirectional mike would be a perfect example.

The next two male 3 pole XLR connectores are the balanced stereo outputs for the Control Room Monitors, and are used to drive the power amp inputs of the CRM speakers. The nominal level is +4 dBu.

Pin 1 = ground, pin 2 hot, pin 3 = cold, (for both connectors).

The mating connectors must be female 3 pole XLR type.

The last two connectors on the communications backpanel provide the balanced monitor outputs for the master sections. They only give the monitor mix, assigning is not necessary as it will not affect the monitor mix in any way, although muting will.

The mating connectors must be female 3 pole XLR type. Nominal level is +4 dBu, maximum +26 dBu.

e. Auxilliary master 1 - 4 / phones 1 backpanel.

The four male 3 pole XLR connectors mounted on this module provide the balanced output for the Auxilliary sends 1 - 4. The mating connectors must be female 3 pole XLR type. Pin 1 = ground, pin 2 = hot, pin 3 = cold.

The 'phones 1' outputs are also located on this panel. They are balanced +4 dBu outputs on 3 pole male XLR connectors, and are nominated left and right output respectively. The mating connectors must be 3 pole female XLR type. Pin 1 = ground, pin 2 = hot, pin 3 = cold.

The external phones 1 input is on a 1/4" stereo jack. Tip = hot, ring = cold, sleeve = ground.

f.Auxilliary master 5 - 8 / phones 2 backpanel.

This backpanel is identical to the Auxilliary master 1 - 4 / phones 1 backpanel. Please refer to **2.6 e.**

2.7 Metering

The Avalon is fitted with peak reading, high resolution ledbar meters, with attack and release times which conform to world standards. (The attack is 10msec. for a 20 dB range, whilst the release is 1.5 sec.).

NOTE:Peak reading meters give a reading 6 dB below the actual level, for example, +4 dBu at the output connectors would give a reading of -6 dB on the scale.

If V.U. reading ledbars are ordered for the unit, they will have attack and release times of 300msec., and a +4 dBu level on the connectors will give a 0 dB reading on the scale.

If analog meters are mounted, the same alignment will occur.
Another standard feature of the Avalon, is a 'phase correlation' meter. This meter measures the phase relationship of two signals between 0 and 180 degrees. Due to the advanced circuitry of the Avalon, all signals between -20 dB and +20 dBu will give an exact reading of their phase relationship. If only one signal is presented to the phase meter, the circuitry will prevent the meter from registering a reading.

All readings up to 90 degrees are acceptable for mono compatability. Readings above 90 degrees might cause problematic mono compatability and should be avoided, which can be done by accurate microphone placement and/or phase reversing the channels.

3.0 The In-Line Module

The Avalon in-line module is a basic in/output model, whereby all signal flow takes place from the micriphone to the multitrack. The following sections explain its many functions and features.

3.1 Led Bar Graph Meters

The 13 segment led bar graph meter is a peak reading device with attack and release times in conformance with world standards. It reads the level travelling to or from the mutitrack, depending upon the channels 'tape' switch setting.

NOTE: The first led in the bargraph is a power supply indicator.

An option which can be ordered for the Avalon is high resolution ledbars. These have either 25 or 37 segments, and can be set for peak or Vu ballistics.

3.2 Assign section

The routing gives selection to the 32 mutitrack output busses using a set of ten pushbutton's, in addition to the L/R channel mix bus. The pushbutton colour-coded 'red' indicates assignment to its own multitrack summing amp. This can actually be one of four summing amps.

The bounce switch ('bnc') alternates between 1 - 8 or 9 - 16 and 17 - 24 or 25 - 32.

With every pair of summing amps you have the choice of using the odd or even amp, using the channel panpot in the channel strip, (dark coloured section).

The Avalon's summing amp and internal structure means that it is extremely quiet and distortion free, and therefore a direct button to bypass the amps is not necessary. Every channel needs to be individually assigned to the multitrack input, which means mixing is simple and consistant.

3.3 Input Section

The input section controls all incoming signals from microphone line and tape.

A phantom power switch for condenser microphones or direct boxes can be switched in or out completely silently.

The pad inserts a 10 dB attenuation into the mike input amp. If the signal source is too loud, this switch can be used in conjuction with the mike/line gain to give increased control on the channel faders.

Mix, (the record-mix status switch) selects the basic signal path in the module. When in the record mode ('up' position) the mike/line input signal is routed through the channel path, with or without equalisation and/or aux. sends, to the long fader and channel panpot. It can then be sent to the main L/R bus and/or be assigned to the multitrack busses.

The monitor section selects the multitrack input or output.

When in the mix mode ('down' position) the channel signal flow is rerouted; mike/line inputs are assigned to the monitor section, (light coloured), and the tape input is rerouted to the channel path. This can therefore be regarded as an input flip switch, mike/line and tape input are reversed.

Phase is used to reverse the phase of any mike/line input coming from a mike or signal that may be out of phase with other mike's or signals. A successful method of checking for "out of phase" is to depress the mono switch on the master section and listen closely to the mix. If an unexpected sound is heard, or if something appears to be missing from the mix, depress the phase switches for those channels suspected to be in error. If the sound improves, then that channel was out of phase with the others.

If using multiple mikes on the same signal, such as drums, vocals, horns, strings etc., it is possible to create an acoustic phase cancellation. In most cases, physically moving the mike's a few inches will correct this phase cancellation. In addition, the Avalon's phase meter can be helpful with this problem.

Line

Switches the mike input to line input on the channel. The line has its own balanced input amp and is controlled by the active (dual) gain control.

Gain

The 'gain' is probably the single most important control on the console. With this control accurately set, it is possible to achieve the very best signal to noise ratio, and get maximum headroom required for high quality recordings. After plugging in a mike or line signal, depress the channel solo switch above the channel fader you are setting, (set the status switches to pfl in the master). Turn the gain control clockwise until a '0' output level is reached on the master meters; now slide up the channel fader to '0'. If the signal source gets louder or quieter, it may be necessary to re-check this setting. The volume might also fluctuate if you boost or cut the equaliser section.

NOTE: It is important to ensure that the signal being miked remains at a constant volume when recording begins, or the above setting procedure will need to be carried out again. It is important to carry out this procedure for every mike input or line input, in order to achieve the high quality performance D&R products are renowned for.

Tape

The tape gain is an actively controlled feedback type gain control, with a range of 40 dB. All incoming tape or line level signals can be actively controlled using the tape control. The tape input usually feeds the monitor section, but can alternatively be switched to the channel path using the 'mix' switch.

3.4 Equaliser Section

This fully fourband parametric equaliser can be individually switched into the channel or monitor path by band. This is also the case with the 100 Hz high pass filter.

Highpass

The highpass filter is a fixed 12 dB Butterworth model, which reduces low frequency noise effectively and musically. It can be switched on or off, and inserted in the channel or monitor path.

High Frequency

The high frequency section of the Avalon equaliser is a constant Q type, resulting in precise shaping of sounds without adding additional side-band noise. The high frequency section ranges from 1500 Hz to 16000 Hz, with a maximum boost or cut of 16 dB. The option is available for bell or shelve curve.

The entire high frequency section can be inserted in the channel or monitor path.

HMF

This section has the level frequency and band width controls, and is also a constant Q type. Therefore, the bandwidth setting will match that of the level control. The frequency ranges from 600 Hz to 7000 Hz, is fully adjustable, and has a maximum boost or cut of 16 dB. The bandwidth is adjustable between a Q factor of 0.5 and 3, which enables precise setting and notching of signals. The whole HMF section can be inserted in channel or monitor path.

LMF

The LMF is a three control section with adjustments for level, frequency and bandwidth. The frequency ranges between 200 Hz and 2500 Hz.

The 'level' controls the selected frequency with a constant bandwidth of up to +/- 16 dB. The bandwidth can be set between 0.5 and 3, which is an extremely wide range, convenient for any frequency shaping required. The whole section can be switched between channel and monitor path.

LF

The low end section of the equaliser has a filter which ranges between 50 Hz and 450 Hz, with a level boost or cut of 16 dB.

The shelving of the LF equaliser can be changed to a bell type, enabling precise boosts. The LF section can also be individually inserted into the channel or monitor path.

Equaliser

The whole equaliser can be switched in or out of the channel and/or monitor circuit paths. Even if the equaliser is only partly inserted in a signal path, the equliser on/off switch has priority over the monitor swithces. All level controls are centre indented, making neutral settings easy to establish.

All frequency ranges have been carefully selected following extensive examination of all types of music and noise, which makes this equaliser a pleasure to work with. Noise and distortion are kept to an absolute minimum.

3.5 Auxilliary Send Section

The basic Avalon has eight auxilliary send busses to the master, extendable to twenty four. Auxilliary sends 1 and 2 are on concentric controls, the top one for Aux. 1 and the lower one for Aux. 2. Both can be fed from either the channel path or monitor. Pre/post switching is possible on pairs. Auxilliaries 1 and 2 do not have mute switching, but as a temporary measure, switching an aux. send to "mon" acts in a similar way when working in the channel patch, and the monitor path is not being used.
-Auxilliary 3-4 have exactly the same features as auxillary sends 1 and 2 and the above applies to these.

-Auxilliary 5-8 are different from auxilliaries 1-4 in several respects. They each have discrete mute switches and pre/post switching is performed by the master status switches. It is, of course, possible to switch the auxilliary sends being fed from the channel or monitor signal path.

-Auxilliary 5-6 are on concentric controls and feed their busses directly.

-Auxilliary 7-8 are a stereo pair. The top control knob on these is the level control. The bottom control knob is the pan, capable of moving the signals from left (Aux. bus 7) to right (Aux. bus 8) in the stereo image of a foldback mix.

During recording, Auxilliaries 7-8 are the preferred sends to use as foldback sends. An identical stereo image can be easily constructed by adjusting the level and pan control knobs.

During mixdown, Auxilliaries 7-8 can be made available for routing by depressing one of the pushbuttons labelled 1-16. Now the routing section 1-16 is available for extra effect sends. Signals coming from Aux. 7-8 assigned to the routings will be summed. These will be available for patching into effects on the group outputs in the patchbay. Busses 17-32 can be used simultaneuosly by the channel or monitor sections. A huge number of sends is available during mixdown. The Avalon gives you 32 outputs per channel controllable over 8 discrete sends and in addition, an extra 16 controllable post channel fades via the monitor fader and routing.

3.6 Monitor Section

The monitor is the second signal path in the Avalon in-line channel.

In record mode (the mix switch in the up position), it is fed by either the tape return or group output.

In mix mode (the mix switch depressed), it is fed by the mic/line input.

The equaliser, as earlier stated, can be inserted in the channel or monitor path on a per band basis making the monitor path a fully functioning signal path with all the same features as a channel path. Both channel and monitor paths can have mic/line or tape inputs chosen.
Full equalisation is available in both signal paths. Auxilliary sends can be assigned to both. The desired fader can be chosen from and the routing can be assigned to either one of the signal paths. Both signal paths have their own solo in-place system and mute groups. This flexible setup completely eliminates the frustration sometimes experienced with other consoles.

Tape

The tape switch allows you to chose from where the monitor gets its signal.

In the up position (source), the channel fader feeds the monitor through summing amps 1-32. For channel selections above 32 the channel fader will feed the monitor directly.

In the down position (tape), the tape return (monitor in) feeds the monitor signal path.

NOTE: The channel's ledbar display follows this switch.

1-32

This switch assigns the output of the **monitor pan** control to the routing. It interrupts the basic assignment of the channel pan control.

NOTE: Whether the monitor or **channel pan** control is assigned, the auxilliary send 7-8 can use part of the routing (bus 1-16) for effect sends in either case.

L-R Mon

This switch assigns signals to the master monitor L/R mix bus amps. The monitor pan control will feed this switch. The pan control pans the signal in the monitor section between left and right of the stereo image on the stereo monitor mix bus.

NOTE: Always make sure that unused monitor sections are unassigned as they will degrade the excellent low noise performance of the mixing amps.

Group

This switch inserts the monitor fader into the multitrack summing amps of that particular channel. All relevant functions of the monitor section are also inserted. The solo inplace or pfl system can be used on this group fader, as well as mute groups, auxilliary sends and equaliser, but the monitor signal path is obviously lost. The mix channel status swtich has no infuluence on the group switch.

Reverse

The monitor and channel fader can be reversed when use of the large fader for monitoring during recording is preferable.

NOTE: All functions such as assigned Aux. sends, solo and mute functions stay in their actual signal path, only the faders are physically reversed.

SFE

This switch makes the monitor section insensitive to solo in place activities on other channels, which is a useful feature when the monitor section is returning effect sends.

Solo

This switch has two modes, pfl or destructive solo system. The master section selects the mode for the channel and monitor either independantly or together.

Activating the solo switch causes the led to flash, which makes it easy to find it again. In the pfl mode, the prefader signal of the monitor section can be heard. In the solo mode, the post monitor panpot signal is heard, and all other channels are muted. The SFE button prevents them from being muted.

Mute

The muting system is a special soft-muting integrated circuit, completely click-free. There are three mute busses A, B and C. The master mute buttons are located in the master section.

The local mute button has priority over the three mute busses. A locally muted channel cannot be 'un' muted by the mute bus system; a led indicates that the mute circuit is active.

3.7 Channel Solo / Mute

The channel panpot pans the signal between the main mix L/R busses and/or the odd and even multitrack summing busses if assigned.

The mute and solo systems are identical to the monitor system, please refer to the relevant section in the monitor section.

The mute switch is a large illuminated momentary switch which makes muting quick and easy.

3.8 Fader Section

The Avalon has a separate fader section with a high quality specular board 100mm Alps fader. P&G faders, or various automation systems are alternatively available.

The Avalon's mute system can be integrated in the C-Mix fader automation system.
Moving fader systems can also be built into the unit, please ask for details and a quotation.

3.9 In and Outputs

In addition to the optional patchbay, every channel also has the following connectors at the bottom of the housing.

Balanced XLR connector for the **microphone input.**

Pin 1 = ground
Pin 2 = hot (in phase)
Pin 3 = cold (out of phase)

The **line input** is also on a balanced XLR female connector:

Pin 1 = ground
Pin 2 = hot
Pin 3 = cold

The **channel inserts** are on two balanced stereo jack sockets. The send socket has the inphase signal on the tip, and the ring is ground compensated to earth. The sleeve is ground, level 0 dB. The send socket is set to the return socket and is fully balanced with the tip as the inphase input, and the ring as the out of phase input. The sleeve is ground.

The **group output** is on a balanced male XLR connector.

Pin 1 = ground,
pin 2 = cold,
pin 3 = cold.

The default setting on this output is +4 dBu. A setting of -10 dBV can be chosen on the channel board using jumper settings.
The group output has to be connected to the multitrack input from this socket or via the multipins on the patchbay, whichever best suits your requirements.

The **monitor section input** is on XLR female sockets. The level is adjustable on the front panel between +/- 20 dB. The input is fully balanced with

pin 1 = ground,
pin 2 = hot.
pin 3 = cold.

The tape machine output must be wired to this monitor input, in order to monitor the multitrack tape channels.
The monitor patch inserts are on two separate jack sockets, one being the semi-balanced send, and the other the fully balanced return. The level is 0 dB.
The send socket is set to the return socket.
If a patchbay is ordered, all but the mike XLR inputs are wired to it.
This concludes the channel functions and the in and outputs.

THE PATCHBAY

The recessed Patchbay section is built around Bantam type, small telephone jack sockets. The whole patchbay is balanced and internally 'starground' wired.
The left section of the basic patchbay gives 32 in and outputs of the channel available for patching.
From left to right in sections:
Line input - channel send - channel return - group output - monitor input - monitor send - monitor return.
The tape inputs and outputs are normalled to group outputs and monitor inputs.
The second row is partly for the master section, and the rest are tic lines.
The master section contains six rows of Bantam type jacks.

First Row:

The left two track outputs, the left external input and the CRM monitor 2 and 3 outputs.
These are two stereo outputs for easy connection of headphones.

Second Row:

The right two track outputs, the right external input and two of the left/right main outputs, which are set for the two track inputs. The two track outputs and external inputs are connected to the CRM and studio source selectors.

Third Row:

Left two track inputs, oscillator output and the main insert send and returns.

Fourth Row:

Right two track inputs, monitor left and right, two talkback outputs and the talkback remote.

Fifth Row:

Auxilliary 1 to 4, phones 1 left and right, left and right external phones 1 inputs and three parallel sockets.

Sixth Row:

Auxilliary 5 to 8, phones 2 left and right, left and right external phones 2 inputs and three parallel sockets.

Tie Lines:

The tie lines (208 in total) are in rows of eight. For ease of use, all outputs are on blue sockets, and all inputs are on black sockets.

4.1 Extender Patchbay

The extender patchbay is required with the frame-48
This patchbay provides all in and outputs for channel 32, up to 48 and tie lines up to 336.
The patchbay can be partially loaded.
Patchcords must be wired fully balanced, including the ground.
In the fully balanced patchbay, there is no ground referred signal, so that patches will not cause ground loops.

THE PATCHBAY

4.2 Patchbay Wiring

All interfacing with external machines, effects or amplifiers, can be done via the connector panels on the bottom plates of the console, or via the multipins on the patchbay connector panel.

The connector system is standardized to 25 pole D-type connectors. The cabling must be wired to male type 25 pole sub-D connectors.
All the connectors are able to handle eight fully balanced signals, and are wired identically.
The illustration in the manual and on the bottom panel of the patchbay show the method of wiring.
The installation part of this manual gives wiring schemes for all connectors in the Avalon.

5.0 Instructions for operation.

The Avalon is designed to be the perfect answer for multitrack studios. In order to get more familiar with the Avalon, we shall discuss the whole recording process and divide it into five basic sequences. Sequence 1 through 4 are for the more conventional recording studios, and sequence 5 is for the MIDI studio.

1. The session -

Recording from microphone or line input onto the multitrack machine. This could be from one or more channels at a time.

2. The playback -

In this mode you would listen to what has been recorded on the multitrack machine.

3. The overdub -

Overdubbing is listening to already recorded tracks and recording on empty tracks, until all tracks are filled.

4. The remix -

Playing of all recorded tracks together with signal processing equipment and all that is necessary to create the final mixdown.

5. The MIDI or Virtual Tracking -

Programmed keyboards, drum machines, reverbs, effects, Aunt Betty singing and who knows what else, all at the same time direct to your Dat Machine, two track master machine, or cassette deck.

Sequence 1 - The Session

Record - This is the beginning of a session. All input channels are placed in the mike mode by leaving the line switch in the up position if the microphone input is to be used in this channel. Phantom powering is applied if necessary. The EQ on switch should be in the up position unless you require EQ on that mike. The signal flows through the fader and is available postfader to be routed by way of the assignment switches on top of the module, which can feed the input to your multitrack recorder. The led bargraph reads the outgoing signal.

IMicrophone/Line Gain

The amount of gain required may depend on the type of microphone being used, the sound pressure level, and the distance between the sound source and microphone. A 10 dB pad can be inserted where levels are too hot. When the line switch is activated, the same gain control varies the gain of the separate electronics for the balanced line input. The "phase" switch affects both the mike and line inputs.

Monitoring

With the Avalon series, you are able to monitor your multitrack by way of the separate monitor section. The monitor section on the module allows you to have two usable inputs, both with EQ, both being able to send to the aux. busses, both with their own volume control, panpots, mutes and solos, and all routed at the same time.

Multiple Modules Assigned to One or Two Tracks

When more than one microphone or line signal has to be recorded on a single track or in stereo on two tracks, a submix facility is required. This can be done easily on the Avalon by way of the the internal subgroup amplifiers located on every channel module. Simply route to one of the 32 subgroups by activating a channel routing switch on as many input modules as required. Decide on which track you wish to record these signals and activate the related number. The channel metering will show the subgroup level which can be changed overall by the monitor group fader (Grp switch has to be depressed). In order to monitor these tracks on the modules, the tape switch in the monitor section should be in the up position for monitoring pre-tape (console out) and in the down position for monitoring post-tape.

Insert Channel/Group

For high dynamic range types of inputs, a signal processor such as a compressor/limiter can be inserted in the channel, or even in the monitor group insert, if an entire group signal needs to be processed. It is however, necessary to activate the GRP switch in the summing channel to use the monitor insert. In this way even the whole group can be equalized.

Headphone

During recording it is essential that the talent hear an independant mix of what the engineer and producer are hearing. Headphone mixes are usually derived from pre-fader auxilliaries. In the Avalon aux. 7 - 8 are ideal for this purpose. The best way to build a mix for the headphone is to have the monitor section of the in-line module feed aux. busses 7 and 8. When there is limited time to set up a headphone mix, give the talent the CRM mix and build up a new headphone mix while monitoring through the phones 2 system in your control room.

The situation should be as described. Use phones 1 to give the talent his mix which is the same as the control room mix, by depressing the CRM switch in the phones section. If the talent needs more 'kick' in his mix, push aux. 7 - 8 switch in the phones 1 section and fully open the aux. 7 - 8 master controls in the master modules.

Then feed aux. 7 - 8 in the channel by the 'kick' module and add the kick sound to the mix. This is an easy and fast way to change the CRM mix for the talent.
If you want to set up a new headphone mix in the control room without disturbing the CRM mix sent to the talent, do as follows.
Activate phones 2 in the CRM module and build up a mix on one of the aux. systems feeding the phones 2 system. The studio module can also be used for foldback mixes and can therefore be fed by one of the phones systems.
Talkback can pass to all three foldback systems, studio, phones 1, and phones 2.

Effect Sends

All unused aux. sends can be used to send signals to signal processors such as the D&R "Qverb" 16 bit, digital reverb, effects processors and digital delays. The aux. sends are usually post-fader in order that the right balance between untreated and treated signals is maintained.

Effects Returns

In the modern recording or MIDI studios of today, there is a demand for many effect returns. For that reason D&R has designed the Avalon to allow the user to customise the effects returns. The most cost efficient way of returning effects is through the last channels. These channels are not normally used as input channels and are therefore available as effect returns, while monitoring continues to be performed through the channel signal path. Any other unused channel or monitor input can be used for returning effects. Every channel can accept two returns with equalisation and full aux. send capabilities.

Sequence 2 - The Playback

Multitrack playback

The Avalon gives you a convenient way of monitoring your multitrack recorder. Put all the mix switches in their down position. Now the tape outputs are feeding the channel path and the monitor path is fed by the mike/line input to accept effect returns.

Auxilliary sends, equalisation and routing can be inserted in both signal paths whenever needed. Control over this processing is carried out by independant solo/mute systems in both signal paths.

Sequence 3 - The Overdub

Multitrack synchronizing

Overdubbing is the process of building up a recording track by track while listening to previously recorded tracks.

The Avalon has an in-line module for each track of the recorder therefore you will find it easy to overdub. In the monitor section of the in-line module you push all tape switches down, and do all your sync. switching from the tape machine or remote. The headphone mix is done on the aux. send 7 and 8 busses. Aux. 7 and 8 need to get their signal from the monitor section. It is best to activate aux. 7 - 8 pre-fader switch on the master status module.

Sequence 4 - The Remix

Multitrack mixing

Remix is the process of combining all recorded tracks with (keyboards and drum machines for MIDI,) signal processing and sending the mix to a two track master machine, DAT machine or cassette recorder. On the in-line module you must push the "mix" switch down. This routes the tape return to the channel input and routes the mike/line inputs to the monitor section of the module.

At this point, you can use either a mike or line input into the monitor and it will feed the stereo mix bus, if that is what is required. This will give you two inputs per module in the mix down. You can activate the EQ to 'mon' switches and have the high and/or the low, and/or HMF and/or LMF sections of the equaliser on the monitor.

Remember also to activate the EQ switch, and do not forget to only activate the mix switches on the channels that need to be mixed. In this way, any extra channels will be available as effect returns or virtual tracks with full EQ and sub grouping, if that is desired. All incoming signals can be routed to the stereo mix busses via the mix switches in the assignment section of each module. Sub groups can be made up as required in the same way as during recording. You can have aux. sends 1 - 8 getting their signal from the monitor section or channel path in pairs.

If you need more aux. sendsin a channel, remove the outputs of aux. 7 - 8 from their respective busses by depressing switch 1 - 16. You can now use the assign switches to send aux. 7 - 8 outputs to odd or even numbered group outputs 1 - 16 in the patchbay. This extends the channel number of aux. send busses to 24 in total for the console.

Sequence 5 - The MIDI or Virtual Tracking

Virtual Tracks: The MIDI Set-Up

In most MIDI studios there will be an eight-track, rather than a sixteen or twenty four track tape machine. The majority of music production is programmed on a sequencer using MIDI keyboards, drum machines or other MIDI equipment.

You will only therefore, require tape tracks for vocals and those instruments not adequately reproduced on today's keyboards. If there is a multitrack recorder in the MIDI studio, one of the tracks would be used to record a time code (SMPTE or MIDI code). This will allow you sequencer to keep keyboards, drum machine and other MIDI equipment synchronized.

INSTALLATION - ELECTRICAL

6.0 Installation - Electrical

6.1 Local Electrical Voltage

Before connecting the Avalon, check the AC supply voltage setting by looking at the sticker on the back of the 19" housing. This sould be 110V for use in areas with an AC supply between 100V and 120V, and 220V for use in areas with an AC supply between 220V and 240V. The main fuse should be 6.3 amp, 20mm (fast blow) for 110V service, and 3.15 amp, 20mm (fast blow) for 220V service.
The phantom power supply fuse should be a 2 amp fast blow.

The +/- 18V power fuses should be 6.3 amp, 20mm fast blow. If one or more of the power supply led indicators should go out, turn off the power supply and check the fuses on the front panel of the rack-mount power supply. After replacing a blown fuse with the correct size and rating, turn the power supplies on and check the three led indicators. If you are still missing one or more of the power rails, turn off the power supply and call the D&R Technical Support Department. Do not replace the fuse with any other type, as this can become a safety hazard and will void the waranty.

6.2 Electrical Wiring

To take full advantage of the excellent signal to noise ratio of the Avalon it is necessary to read this part of the manual carefully.

Hum, radio frequency interferance, buzzes and instability are often caused by improper wiring and poor grounding. Sometimes the incoming electrical ground is inadequate and a dedicated ground needs to be installed for the audio equipment.

Your local electric power company will provide you with all local electrical codes and safety regulations. There are some grounding rules to follow. All signals in a recording studio are referenced to ground, this ground must be clean and free of noise. A central point should be selected as the main grounding point, and all grounds should originate from this point. This is commonly referred to as a "star grounding system".

In some instances electrical contractors will daisy chain ground connections, but this is unsuitable for a studio. Ideally, run a separate ground wire from each outlet and a separate shield for each piece of equipment. A separate wire from each equipment rack to the dedicated ground point is useful in cases where AC outlet grounds are not satisfactory. The dedicated ground point should be located at the rear of the console or equipment rack. Separate and identify 'clean' and 'dirty' AC outlets. Use clean outlets for audio equipment and the dirty ones for lighting, air conditioning, freezers etc. Do not intermix these two types of outlets. AC interferance can be greatly reduced by using an isolation transformer (Juice Goose) to power clean outlets. Ground this transformer directly to the dedicated ground point or as close as possible to the incoming ground.
All equipment should be physically located as far as possible from the main breaker panel. Unbalanced equipment may require isolation from the equipment rack so that ground loops are avoided.

7.0 Installation - Audio

7.1 Interface CRM Levels

The Avalon in its standard configuration can interface with all available equipment.

Attention concerning CRM output must be noted. This output delivers a balanced nominal +4 dBu level, which is sometimes too high for power amps rated at 300mV sensitivity for full output. In some instances an input attenuator at the power amp's input is required to reduce this +4 dBu level by up to 12 dB. Contact the D&R Technical Support Department for details.

7.2 The Initial Hook-Up

First connect the rack-mounted power supplies (two supplies are provided with the 32 or 48/64 chassis) to the console. All faders, monitors and effect returns must be in the 'down' or 'off' position. In order to ensure the best signal to noise ratio for your system the next steps should be followed in the order that they are printed.

a.Connect the CRM outputs (located on the master module backplate) to the inputs of your control room speaker power amps. Now turn the console power supply on, then turn the power amp on and check for

any hum, buzz or interferance. Slowly turn the CRM control clockwise until it is wide open, while listening for excessive noise. You should only hear a faint 'hiss'. If everything is O.K., continue. If any hum or excess noise is present stop and try different ground and shielding arrangements until the system is clean. Now proceed to step b.

b.Before making any other connections turn each monitor fader to the 0 dB position with the tape switch depressed on each monitor section. Connect the multitrack outputs to the tape return XLR's on the backplate of each in-line module (or via the 25 pole sub-D connector), then connect each XLR on the tape output of your multitrack. Check for hum or noise after each track has been hooked up. 'Hiss' will normally increase slightly with each track. Connect the tape send output jacks to the inputs of the multitrack. Carefully listen for excessive noise or hum. If after hooking up an input or output excessive noise or hum is detected, stop and take corrective action before proceeding. **Do not hook up all 16 or 24 tracks and then listen.** You may need to rewire the entire cable harness to make the system clean.

c.Connect stereo tape recorders (inputs and outputs), stereo headphone amp, and all signal processors making sure that you check for hum or noise as each input or output is connected.

7.3 Shielding and Grounding of Audio Equipment

The shield of any audio cable connection should be connected at one end only. If not, ground loops and high frequency cross-talk could result. Connect the shield as a general rule to the signal source (output) of anything. In high RF areas it is wise to ground the other end of the shield through a 0.01 microFarad capacitor. This will ground the RF but will not affect audio frequencies.

INSTALLATION - AUDIO

7.4 Typical Interface Situation Table

Output	Input	Connect shield at:
Unbalanced	Unbalanced	Output
Unbalanced	Balanced	Output
Unbalanced	Differential	Output
Balanced	Unbalanced	Input
Balanced	Balanced	Output
Balanced	Differential	Input
Differential	Unbalanced	Output
Differential	Balanced	Output
Differential	Differential	Output

Balanced (in the above illustration) means transformer balanced, while differential means electronically balanced. There are some cases which net better results in practise. Connect one circuit at a time and check for hum or noise. When connecting balanced microphones, use two conductor shielded audio cable and connect both conductors at both ends and the shield at both ends.

When connecting line level cables, use two conductor shielded cable and follow the instructions in section

8.0 - General Audio Installation.

The only exception to these rules is with patch cords. These grounds are tied together in the console. We realise that the correct interfacing of all different equipment is difficult, but once properly installed the system will be clean and noise free.

It is important to understand the term balanced. Balanced does not mean the input or output is professional, the single factor that normally determines whether something is professional is the level of the input or the output. +4 dBu is considered professional. -10 dBv is considered semi-professional. Because many semi-professional tape machines are built to professional specifications, D&R builds into its console series the ability to interface with both levels. The next time a salesperson tells you that your console must be balanced to be professional, I would suggest that you find another salesperson!

7.5 Connecting the In-Line Module

Description	Connector	Connect
Mike input	balanced XLR	Pin 1 = shield
Line input	balanced XLR	Pin 2 = hot +
		Pin 3 = com -
Channel insert send	1/4"Stereo jack	Tip = hot
Channel insert return	1/4"Stereo jack	Ring = cold
		Sleeve = ground
Tape send	balancedXLR male	Tip = hot
		Ring = cold
		Sleeve = ground
Tape return	balancedXLR female	Tip = hot
		Ring = cold
		Sleeve = ground

Use -10 dBv jumper settings on the PCB's for Fostex/Tascam type equipment and +4 dBu connections for Studer and Sony type's.

LINE INPUT is used for plugging in the outputs of digital reverbs, digital delays, drum machines, samplers, keyboards, CD players, cassette machines and any machines with line level outputs.

CHANNEL INSERT sends and returns are used to patch (pre-fade) into the channel or monitor any signal processing equipment such as compressors, limiters, equalisers etc.

TAPE SEND is used as a summed output of any channel. It will appear as a direct output of the channel when you push the colour-coded assign switch and the right BNC switch in the routing section.

TAPE RETURN is used for connecting the output of your multitrack tape machine or the outputs of any effects (such as digital delays, digital reverbs, aural exciters, etc). This track or effect will now appear in the monitor section if the tape switch is depressed. If the mix switch is depressed, this track or effect will appear in the channel and be controlled by the channel fader. The microphone input or line input will now appear in the monitor section of the same module. It will be controlled by the monitor fader, and panned onto the stereo mix bus. This allows you to mix two completely independant signals on the same module.

TROUBLESHOOTING

8.0 Troubleshooting

It is essential to study the signal flow chart carefully, only then can you hope to isolate problems. By tracing the signal from input to output jacks, it is possible to locate a problem. If for any reason you are unable to isolate a problem, contact the D&R Technical Support Department for advice. If the problem cannot be corrected over the phone, D&R will despatch a replacement module (freight prepaid) the same day. Most problems can be found using logical thinking and simply replacing socketed integrated circuits.

8.1 Removing a Module

The Avalon is a complex piece of equipment and some understanding of its internal layout is necessary before removing a module.

An input module has wiring to the ledbar, fader, master section and backplates, and to the star ground system. All of these wires must be removed before withdrawing a module from the console.

Turn off the power supply. Remove the backplates behind the ledbar and underneath the monitor fader section first. Then remove the two backplate screws which hold the input/output connector. Now remove all flat cables from the bottom of the module PCB. It is often easier to also remove the backplates positioned left and right of the module under test. Remove the ledbar wiring and the two star ground cables connected to the module. Finally, remove the metal cover underneath the ledbar front, which conceals the screws retaining the module. It is now possible to remove the two module retaining screws and carefully lift the module until the fader wiring can be unplugged. At this point extender cables can be connected (if ordered).

The master sections can be removed from the frame in the same way.

NOTE: The multitrack remote and two track remote wiring is positioned vertically on the fader side of the master modules. Extra care is required for servicing of this.

Because of the many flat cables on the bottom of the master section, it is wise to remove all retaining screws from all master sections, and remove the blind panel on the right side of the master section. This will allow all the master modules to be moved slightly without unplugging all the flat cables. A qualified service technician will be able to service the modules in this way.

NOTE: The left blind panel protects the power distribution board, and need not be removed.

Patchbay

The patchbay is fully modular and can be serviced after first removing the backplates, then removing the cables attached to the card that needs servicing. The card can be removed after unscrewing two screws that push the patchpanel card downwards. The card will still be connected to the star ground system, which will need unplugging before the card comes free of the console wiring.

9.0 Connectors

10.0 SPECIFICATIONS

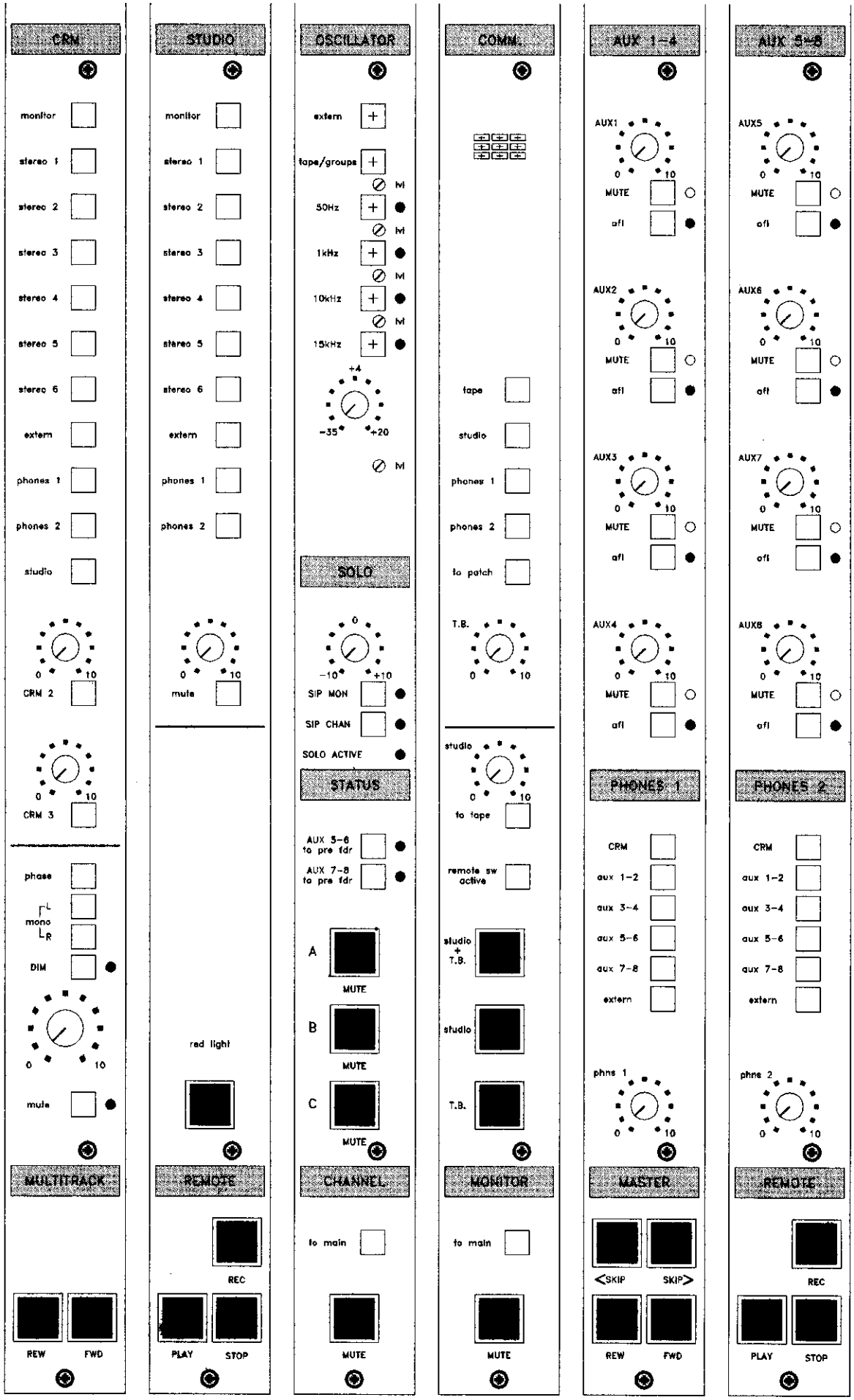
INPUTS.	MIC INPUT. Balanced, (R.F. suppressed), 2kOhm. C.M.M.R. at 50Hz, -78dB. Sensitivity: -80 dBu max. for +4 dBu output. Noise Mic EIN: -129.5 dBu, 150 Ohm, source.	LINE / TAPE INPUTS: Balanced, 10 kOhm, -20dBu to +20 dBu. Monitor, monitor/channel Inserts: 10 kOhm balanced. 0dBu.
OUTPUTS.	Channel / group , main outputs: +4 dBu/-10 dBV at 47 Ohm bal. All other outputs: +4 dBu bal., 47 Ohm.	CRM 2/3 semi balanced (ground compensated) Noise mstr fader down: -98 dBu. Noise 64 chan. routed: - 84 dBu.
EQUALISATION.	High pass filter: -3dB at 100 Hz. H F: +/- 16 dB from 1k5 to 20kHz, shelve/bell. L F: + / - 16 dB from 30 Hz to 450 Hz, shelve/bell.	All four equalizer sections individually switchable between channel and monitor. HMF: +/- 16 dB from 600Hz to 7kHz bell, Q 0.5 to 3. LMF: = / - 16dB from 200Hz to 2.5kHz, bell, Q 0.5 to 3.
OVERALL.	Nominal operating level: 0 dBu (0.775 mV) Frequency response, any input to any output: (20-20.000Hz) +0.0, -0.5dB. Total harmonic distortion: mic input to group output: 1kHz: <0.006% 10kHz: < 0.007%	Max output +26dBu into 600 oHm. Max headroom: not less than + 22/26 dB.
CROSSTALK	Mic to line: <-90 dB at 1 kHz. Channel mute: <-90 dB at 1kHz. Pan-pot isolation: < -80dB at 1 kHz.	Channel routing: <-96dB at 1 kHz. Channel fader: <-97dB at 1kHz. Aux send kill: -85 dB at 1 kHz.
WEIGHT.	Avalon 32 Frame: 375kg/825 lbs. Avalon 48 Frame: 450kg/990 lbs.	Avalon64 Frame: 550kg/1210 lbs
OPTIONS.	High resolution meters, Penny and Giles faders, C-MIX automation, Analog V.U. meters	

In this manual we have tried to give you an overview of all that the Avalon series has to offer. If you have any questions, do not hesitate to contact us or the D&R U.S.A. customer support department. With the Avalon series there is no limit to your creativity. We wish you many years of enjoyable mixing.

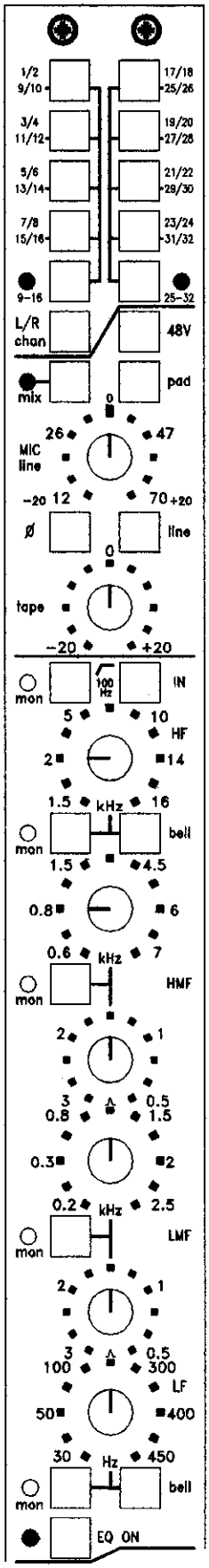
Best regards,

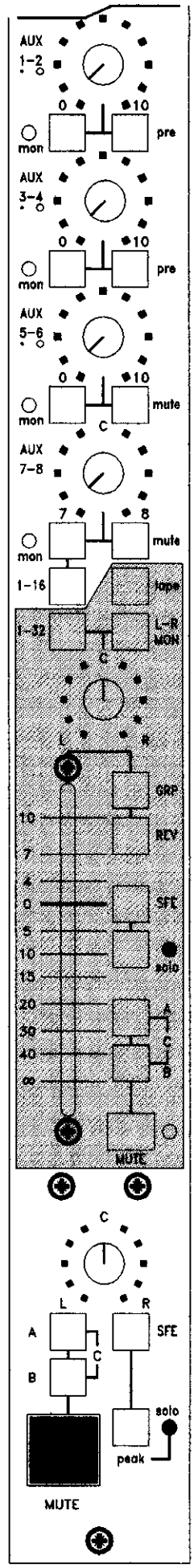
Duco de Rijk
PRESIDENT D&R, HOLLAND

This manual was written by Duco de Rijk and Paul Westbrook (D&R U.S.A.).
We hope you will find it to be useful and easy to understand. As ever, we are open to any suggestions about this manual or any D&R product.

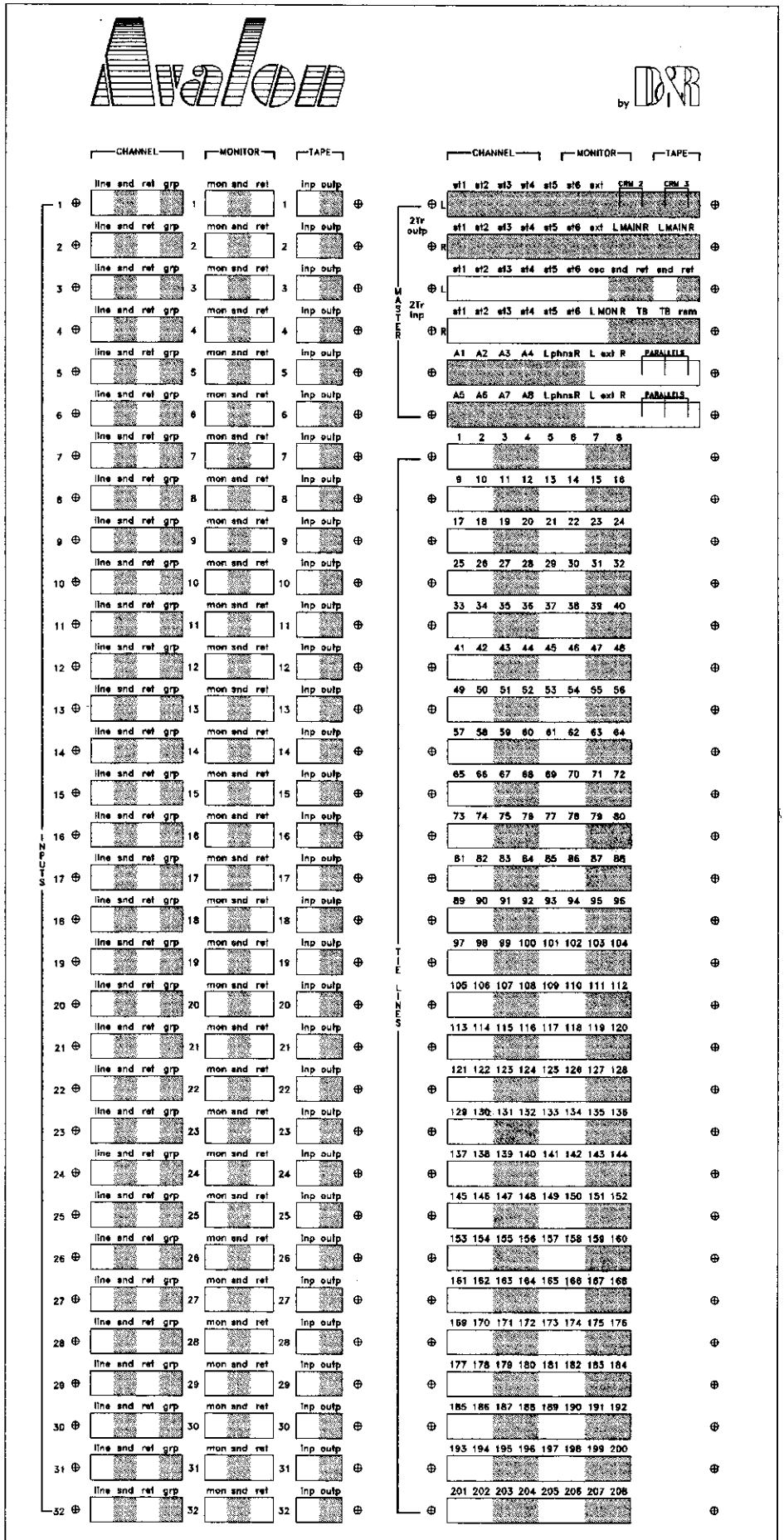


AVALON
master moduls





AVALON
channel in-line module

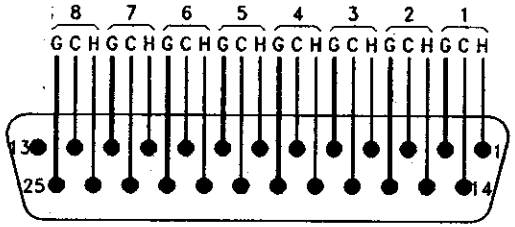


AVALON
patchpanel

MASTER

MULTITRACK

A	INP LEFT st1.6/ext		1/4	H
B	INP RIGHT st1.6/ext		5/8	H
C	OUT LEFT st1.6/ext		9/12	H
D	OUT RIGHT st1.6/mon		13/16	H
E	PHONES1 CRM1.3		17/20	H
F	PHONES2 studio/rem		21/24	H
			25/28	H
			29/32	H



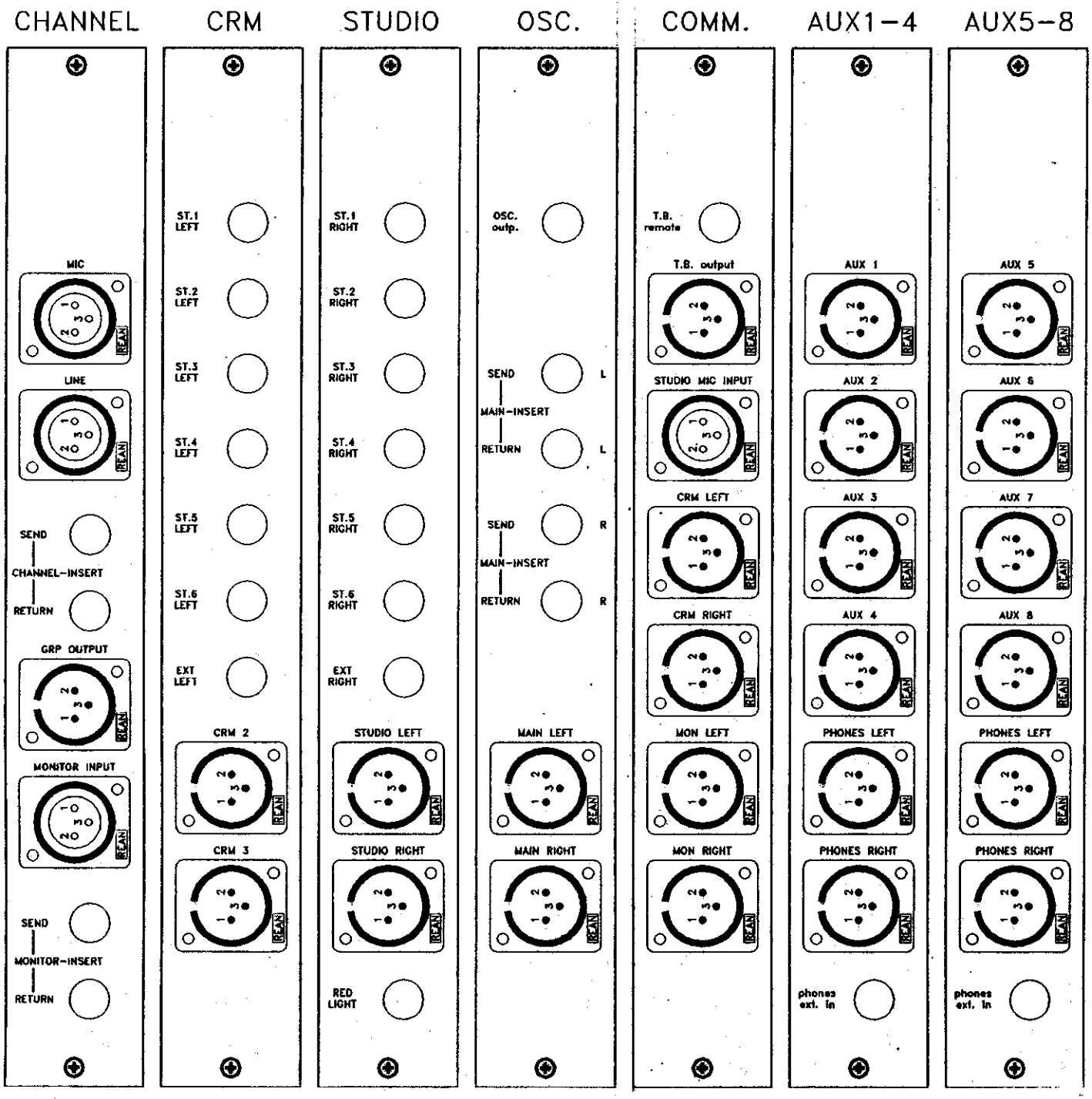
TIE LINES

TIE LINES

105/112	G		1/8
113/120			9/16
121/128			17/24
129/136			25/32
137/144			33/40
145/152			41/48
153/160			49/56
161/168			57/64
169/176			65/72
177/184			73/80
185/192			81/88
193/200			89/96
201/208			97/104

AVALON

patchpanel connectors



AVALON
channel/master
connectorpanels

AVALON INPUT PCB CONNECTOR conn.1 channel

pin nr.	function	status	signal flow
1	monitor return	+	<<---
2	monitor return	-	<<---
3		ground	---
4	chassis	ground	---
5		47E	---
6	monitor send		--->>
7		ground	---
8		ground	---
9	tape return	-	<<---
10	tape return	+	<<---
11		ground	---
12		ground	---
13	tape send	-	--->>
14	tape send	+	--->>
15		ground	---
16		ground	---
17	channel return	-	<<---
18	channel return	+	<<---
19		ground	---
20		ground	---
21		47E	---
22	channel send		--->>
23		ground	---
24		ground	---
25	line input	-	<<---
26	line input	+	<<---
27		ground	---
28		ground	---
29		ground	---
30		ground	---
31		ground	---
32		ground	---
33	mic input	-	<<---
34	mic input	+	<<---

--->> = send signal direction
--- = unspicified signal direction
<<--- = return signal direction

AVALON LINK ROUTING CONNECTOR conn.2 channel

pin nr.	function	status	signal flow
1	chassis	ground	---
2		ground	---
3	routing 1		<<---
4		ground	---
5	routing 2		<<---
6		ground	---
7	routing 3		<<---
8		ground	---
9	routing 4		<<---
10		ground	---
11	routing 5		<<---
12		ground	---
13	routing 6		<<---
14		ground	---
15	routing 7		<<---
16		ground	---
17	routing 8		<<---
18		ground	---
19	routing 9		<<---
20		ground	---
21	routing 10		<<---
22		ground	---
23	routing 11		<<---
24		ground	---
25	routing 12		<<---
26		ground	---
27	routing 13		<<---
28		ground	---
29	routing 14		<<---
30		ground	---
31	routing 15		<<---
32		ground	---
33	routing 16		<<---
34		ground	---
35	left channel		<<---
36		ground	---
37	right channel		<<---
38		ground	---
39	shield	ground	---
40		ground	---

--->> = send signal direction
--- = unspicified signal direction
<<--- = return signal direction

AVALON LINK E.Q./LOGIC CONNECTOR conn.3 channel

pin nr.	function	status	signal flow
1	B tape return		--->>
2		ground	---
3	A channel		--->>
4		ground	---
5	hp-input		<<---
6		ground	---
7	hp-output		--->>
8		ground	---
9	hf-input		<<---
10		ground	---
11	hf-output		--->>
12		ground	---
13	hmf-input		<<---
14		ground	---
15	hmf-output		--->>
16		ground	---
17	lmf-input		<<---
18		ground	---
19	lmf-output		--->>
20		ground	---
21	lf-input		<<---
22		ground	---
23	lf-output		--->>
24		ground	---
25	channel send		<<---
26		ground	---
27	monitor send		<<---
28		ground	---
29	mute switch	logic	<<---
30	mute B	logic	<<---
31	mute C	logic	<<---
32	mute A	logic	<<---
33		ground	---
34	channel pre		--->>
35	monitor pre		--->>
36	channel post		--->>
37	monitor post		--->>
38		ground	---
39	post 1/2		<<---
40	pre 1/2		<<---

--->> = send signal direction
--- = unspicified signal direction
<<--- = return signal direction

AVALON LINK PRE/POST CONNECTOR conn.4 channel

pin nr.	function	status	signal flow
1	post 3/4		<<---
2	pre 3/4		<<---
3		ground	---
4	post 5/6		<<---
5	pre 5/6		<<---
6		ground	---
7	post 7/8		<<---
8	pre 7/8		<<---
9		ground	---
10	to aux 7/rout		--->>
11	to aux 8/rout		--->>
12		ground	---
13	monitor right		--->>
14	monitor left		--->>
15		ground	---
16	channel right		--->>
17	channel left		--->>
18		ground	---
19	left routing		--->>
20	right routing		--->>
21		ground	---
22	aux 7		--->>
23	aux 8		--->>
24		ground	---
25	group sw1		--->>
26		ground	---
27	tape sw		<<---
28		ground	---
29	wiper mix sw		<<---
30		ground	---
31		ground	---
32		ground	---
33		+Vs1	---
34		+Vs1	---
35		-Vs1	---
36		-Vs1	---
37		+Vs	---
38		ground	---
39		-Vs	---
40		ground	---

--->> = send signal direction
--- = unspicified signal direction
<<--- = return signal direction

AVALON ROUTING CONNECTOR conn.5 channel

pin nr.	function	status	signal flow
1	routing 1		--->>
2	gnd mix	ground	---
3	routing 2		--->>
4		ground	---
5	routing 3		--->>
6		ground	---
7	routing 4		--->>
8		ground	---
9	routing 5		--->>
10		ground	---
11	routing 6		--->>
12		ground	---
13	routing 7		--->>
14		ground	---
15	routing 8		--->>
16		ground	---
17	routing 9		--->>
18		ground	---
19	routing 10		--->>
20		ground	---
21	routing 11		--->>
22		ground	---
23	routing 12		--->>
24		ground	---
25	routing 13		--->>
26		ground	---
27	routing 14		--->>
28		ground	---
29	routing 15		--->>
30		ground	---
31	routing 16		--->>
32		ground	---
33	routing 23		--->>
34		ground	---
35	routing 24		--->>
36		ground	---
37	routing 32		--->>
38		ground	---
39	routing 31		--->>
40		ground	---
41	routing 21		--->>
42		ground	---
43	routing 22		--->>
44		ground	---
45	routing 30		--->>
46		ground	---
47	routing 29		--->>
48		ground	---
49	routing 19		--->>
50		ground	---

[redacted] ROUTING CONNECTOR conn.5 channel

pin no.	function	status	signal flow
51	routing 20		--->>
52		ground	---
53	routing 28		--->>
54		ground	---
55	routing 27		--->>
56		ground	---
57	routing 17		--->>
58		ground	---
59	routing 18		--->>
60		ground	---
61	routing 26		--->>
62		ground	---
63	routing 25		--->>
64		ground	---

--->> = send signal direction
--- = unspicified signal direction
<<--- = return signal direction

AVALON MAIN CONNECTOR conn.6 channel

pin nr.	function	status	signal flow
1	chassis	ground	---
2	phantom	+48V	---
3	left channel		--->>
4		ground	---
5	right channel		--->>
6		ground	---
7	aux 2 output		--->>
8		ground	---
9	aux 1 output		--->>
10		ground	---
11	aux 4 output		--->>
12		ground	---
13	aux 3 output		--->>
14		ground	---
15	aux 6 output		--->>
16		ground	---
17	aux 5 output		--->>
18		ground	---
19	aux 8 output		--->>
20		ground	---
21	aux 7 output		--->>
22		ground	---
23	left monitor		--->>
24		ground	---
25	right monitor		--->>
26		ground	---
27	solo audio		--->>
28		ground	---
29		ground	---
30		ground	---
31		ground	---
32		ground	---
33		ground	---
34		ground	---
35	power supply	+22V	---
36	power supply	+22V	---
37	power supply	+22V	---
38	power supply	+22V	---
39	power supply	-22V	---
40	power supply	-22V	---
41	power supply	-22V	---
42	power supply	-22V	---
43	power logic	+18V	---
44	power logic	+18V	---
45	power logic	+18V	---
46	power logic	+18V	---
47	power logic	-18V	---
48	power logic	-18V	---
49	power logic	-18V	---
50	power logic	-18V	---

AVALON MAIN CONNECTOR conn.6 channel

pin nr.	function	status	signal flow
51		ground	---
52		ground	---
53		ground	---
54		ground	---
55	solo logic ch	logic	--->>
56	blink	logic	<<---
57	mute A	logic	<<---
58	sip channel	logic	<<---
59	mute C	logic	<<---
60	mute B	logic	<<---
61	pre/post aux5/6	logic	<<---
62	solo logic mn	logic	--->>
63	pre/post aux7/8	logic	<<---
64	sip monitor	logic	<<---

--->> = send signal direction
--- = unspicified signal direction
<<--- = return signal direction

AVALON LINK ROUTING CONNECTOR conn.2sub channel

pin nr.	function	status	signal flow
1	chassis	ground	---
2		ground	---
3	routing 1		--->>
4		ground	---
5	routing 2		--->>
6		ground	---
7	routing 3		--->>
8		ground	---
9	routing 4		--->>
10		ground	---
11	routing 5		--->>
12		ground	---
13	routing 6		--->>
14		ground	---
15	routing 7		--->>
16		ground	---
17	routing 8		--->>
18		ground	---
19	routing 9		--->>
20		ground	---
21	routing 10		--->>
22		ground	---
23	routing 11		--->>
24		ground	---
25	routing 12		--->>
26		ground	---
27	routing 13		--->>
28		ground	---
29	routing 14		--->>
30		ground	---
31	routing 15		--->>
32		ground	---
33	routing 16		--->>
34		ground	---
35	left channel		--->>
36		ground	---
37	right channel		--->>
38		ground	---
39	shield	ground	---
40		ground	---

--->> = send signal direction
--- = unspicified signal direction
<<--- = return signal direction

AVALON LINK E.Q./LOGIC CONNECTOR conn.3 sub channel

pin nr.	function	status	signal flow
1	B tape return		<<---
2		ground	---
3	A channel		<<---
4		ground	---
5	hp-input		--->>
6		ground	---
7	hp-output		<<---
8		ground	---
9	hf-input		--->>
10		ground	---
11	hf-output		<<---
12		ground	---
13	hmf-input		--->>
14		ground	---
15	hmf-output		<<---
16		ground	---
17	lmf-input		--->>
18		ground	---
19	lmf-output		<<---
20		ground	---
21	lf-input		--->>
22		ground	---
23	lf-output		<<---
24		ground	---
25	channel send		--->>
26		ground	---
27	monitor send		--->>
28		ground	---
29	mute switch	logic	--->>
30	mute B	logic	--->>
31	mute C	logic	--->>
32	mute A	logic	--->>
33		ground	---
34	channel pre		<<---
35	monitor pre		<<---
36	channel post		<<---
37	monitor post		<<---
38		ground	---
39	post 1/2		--->>
40	pre 1/2		--->>

--->> = send signal direction
--- = unspicified signal direction
<<--- = return signal direction

AVALON LINK PRE/POST CONNECTOR conn.4 sub channel

pin nr.	function	status	signal flow
1	post 3/4		--->>
2	pre 3/4		--->>
3		ground	---
4	post 5/6		--->>
5	pre 5/6		--->>
6		ground	---
7	post 7/8		--->>
8	pre 7/8		--->>
9		ground	---
10	to aux 7/rout		<<---
11	to aux 8/rout		<<---
12		ground	---
13	monitor right		<<---
14	monitor left		<<---
15		ground	---
16	channel right		<<---
17	channel left		<<---
18		ground	---
19	left routing		<<---
20	right routing		<<---
21		ground	---
22	aux 7		--->>
23	aux 8		--->>
24		ground	---
25	group sw1		--->>
26		ground	---
27	tape sw		--->>
28		ground	---
29	wiper mix sw		<<---
30		ground	---
31		ground	---
32		ground	---
33		+Vs1	---
34		+Vs1	---
35		-Vs1	---
36		-Vs1	---
37		+Vs	---
38		ground	---
39		-Vs	---
40		ground	---

--->> = send signal direction
--- = unspicified signal direction
<<--- = return signal direction

AVALON MAIN CONNECTOR conn.6 avalon 2 master

pin nr.	function	status	signal flow
1	chassis	ground	---.
2	phantom	+48V	---
3	left channel		
4		ground	---
5	right channel		
6		ground	---
7	aux 2 output		
8		ground	---
9	aux 1 output		
10		ground	---
11	aux 4 output		
12		ground	---
13	aux 3 output		
14		ground	---
15	aux 6 output		
16		ground	---
17	aux 5 output		
18		ground	---
19	aux 8 output		
20		ground	---
21	aux 7 output		
22		ground	---
23	left monitor		
24		ground	---
25	right monitor		
26		ground	---
27	solo audio		
28		ground	---
29		ground	---
30		ground	---
31		ground	---
32		ground	---
33		ground	---
34		ground	---
35	power supply	+22V	---
36	power supply	+22V	---
37	power supply	+22V	---
38	power supply	+22V	---
39	power supply	-22V	---
40	power supply	-22V	---
41	power supply	-22V	---
42	power supply	-22V	---
43	power logic	+18V	---
44	power logic	+18V	---
45	power logic	+18V	---
46	power logic	+18V	---
47	power logic	-18V	---
48	power logic	-18V	---
49	power logic	-18V	---
50	power logic	-18V	---

AVALON MAIN CONNECTOR conn.6 avalon 2 master

pin nr.	function	status	signal flow
51		ground	---
52		ground	---
53		ground	---
54		ground	---
55	solo logic ch	logic	
56	blink	logic	
57	mute A	logic	
58	sip channel	logic	
59	mute C	logic	
60	mute B	logic	
61	pre/post aux5/6	logic	
62	solo logic mn	logic	
63	pre/post aux7/8	logic	
64	sip monitor	logic	

--->> = send signal direction
--- = unspicified signal direction
<<--- = return signal direction

AVALON MASTER LINK CONNECTOR conn.7 avalon 2 master

pin nr.	function	status	signal flow
1	solo	logic	
2		ground	---
3	monitor 4 left		
4		ground	---
5	monitor 4 right		
6		ground	---
7	studio right		<<---
8		ground	---
9	studio left		<<---
10		ground	---
11	monitor right		<<---
12		ground	---
13	monitor left		<<---
14		ground	---
15	CRM out right	-	--->>
16		ground	---
17	CRM out right	+	--->>
18		ground	---
19	CRM out left	-	--->>
20		ground	---
21	CRM out left		--->>
22		ground	---
23	T.B. to studio		
24		ground	---
25	main right		<<---
26		ground	---
27	main left		<<---
28		ground	---
29	studio out		<<---
30		ground	---
31	solo output		<<---
32		ground	---
33	phones 2		<<---
34		ground	---
35	phones 2		<<---
36		ground	---
37	T.B. to phns 2		
38		ground	---
39	phones 1 left		<<---
40		ground	---
41	phones 1 right		<<---
42		ground	---
43	T.B. to phns 1		---
44		ground	---
45	aux 8		
46		ground	---
47	aux 7		
48		ground	---
49	aux 6		
50		ground	---

	Function	status	signal flow
53	aux 5	ground	----
54	aux 4	ground	----
55	aux 3	ground	----
56	aux 2	ground	----
57	aux 1	ground	----
58	CRM right phns	ground	----
59	CRM left phns	ground	----
60			
61			
62			
63			
64			

---->> = send signal direction
---- = unspecified signal direction
<<---- = return signal direction

AVALON MASTER LINK CONNECTOR conn.8 avalon 2 master

pin nr.	function	status	signal flow
1	nc		
2		ground	---
3	solo fet	logic	<<---
4		ground	---
5	dim	logic	<<---
6		ground	---
7	nc		
8		ground	---
9	extern right	-	<<---
10		ground	---
11	extern right	+	<<---
12		ground	---
13	extern left	-	--->>
14		ground	---
15	extern left	+	--->>
16		ground	---
17	stereo 6 right	-	<<---
18		ground	---
19	stereo 6 right	+	<<---
20		ground	---
21	stereo 6 left	-	--->>
22		ground	---
23	stereo 6 left	+	--->>
24		ground	---
25	stereo 5 right	-	<<---
26		ground	---
27	stereo 5 right	+	<<---
28		ground	---
29	stereo 5 left	-	--->>
30		ground	---
31	stereo 5 left	+	--->>
32		ground	---
33	stereo 4 right	-	<<---
34		ground	---
35	stereo 4 right	+	<<---
36		ground	---
37	stereo 4 left	-	--->>
38		ground	---
39	stereo 4 left	+	--->>
40		ground	---
41	stereo 3 right	-	<<---
42		ground	---
43	stereo 3 right	+	<<---
44		ground	---
45	stereo 3 left	-	--->>
46		ground	---
47	stereo 3 left	+	--->>
48		ground	---
49	stereo 2 right	-	<<---
50		ground	---

AVALON MASTER LINK CONNECTOR conn.8 avalon 2 master

pin nr.	function	status	signal flow
51	stereo 2 right	+	<<---
52		ground	---
53	stereo 2 left	-	--->>
54		ground	---
55	stereo 2 left	+	--->>
56		ground	---
57	stereo 1 right	-	<<---
58		ground	---
59	stereo 1 right	+	<<---
60		ground	---
61	stereo 1 left	-	--->>
62		ground	---
63	stereo 1 left	+	--->>
64		ground	---

--->> = send signal direction
--- = unspicified signal direction
<<--- = return signal direction

AVALON INPUT PCB CONNECTOR conn.10 avalon 2 master

pin nr.	function	status	signal flow
1	CRM 3 right		--->>
2		ground	---
3	CRM 3 left		--->>
4		ground	---
5	CRM 2 right		--->>
6		ground	---
7	CRM 2 left		--->>
8		ground	---
9	extern left	-	<<---
10		ground	---
11	extern left	+	<<---
12		ground	---
13	stereo 6 left	-	<<---
14		ground	---
15	stereo 6 left	+	<<---
16		ground	---
17	stereo 5 left	-	<<---
18		ground	---
19	stereo 5 left	+	<<---
20		ground	---
21	stereo 4 left	-	<<---
22		ground	---
23	stereo 4 left	+	<<---
24		ground	---
25	stereo 3 left	-	<<---
26		ground	---
27	stereo 3 left	+	<<---
28		ground	---
29	stereo 2 left	-	<<---
30		ground	---
31	stereo 2 left	+	<<---
32		ground	---
33	stereo 1 left	+	<<---
34	stereo 1 left	-	<<---

--->> = send signal direction
--- = unspicified signal direction
<<--- = return signal direction

AVALON MAIN CONNECTOR conn.6 avalon 3 master

pin nr.	function	status	signal flow
1	chassis	ground	---
2	phantom	+48V	---
3	left channel		
4		ground	---
5	right channel		
6		ground	---
7	aux 2 output		
8		ground	---
9	aux 1 output		
10		ground	---
11	aux 4 output		
12		ground	---
13	aux 3 output		
14		ground	---
15	aux 6 output		
16		ground	---
17	aux 5 output		
18		ground	---
19	aux 8 output		
20		ground	---
21	aux 7 output		
22		ground	---
23	left monitor		
24		ground	---
25	right monitor		
26		ground	---
27	solo audio		
28		ground	---
29		ground	---
30		ground	---
31		ground	---
32		ground	---
33		ground	---
34		ground	---
35	power supply	+22V	---
36	power supply	+22V	---
37	power supply	+22V	---
38	power supply	+22V	---
39	power supply	-22V	---
40	power supply	-22V	---
41	power supply	-22V	---
42	power supply	-22V	---
43	power logic	+18V	---
44	power logic	+18V	---
45	power logic	+18V	---
46	power logic	+18V	---
47	power logic	-18V	---
48	power logic	-18V	---
49	power logic	-18V	---
50	power logic	-18V	---

AVALON MAIN CONNECTOR conn.6 avalon 3 master

pin nr.	function	status	signal flow
51		ground	---
52		ground	---
53		ground	---
54		ground	---
55	solo logic ch	logic	
56	blink	logic	
57	mute A	logic	
58	sip channel	logic	
59	mute C	logic	
60	mute B	logic	
61	pre/post aux5/6	logic	
62	solo logic mn	logic	
63	pre/post aux7/8	logic	
64	sip monitor	logic	

--->> = send signal direction
--- = unspicified signal direction
<<--- = return signal direction

AVALON MASTER LINK CONNECTOR conn.7 avalon 3 master

pin nr.	function	status	signal flow
1	solo	logic	
2		ground	---
3	monitor 4 left		
4		ground	---
5	monitor 4 right		
6		ground	---
7	studio right		--->>
8		ground	---
9	studio left		--->>
10		ground	---
11	monitor right		<<---
12		ground	---
13	monitor left		<<---
14		ground	---
15	CRM out right	-	
16		ground	---
17	CRM out right	+	
18		ground	---
19	CRM out left	-	
20		ground	---
21	CRM out left		
22		ground	---
23	T.B. to studio		<<---
24		ground	---
25	main right		<<---
26		ground	---
27	main left		<<---
28		ground	---
29	studio out		
30		ground	---
31	solo output		
32		ground	---
33	phones 2		<<---
34		ground	---
35	phones 2		<<---
36		ground	---
37	T.B. to phns 2		
38		ground	---
39	phones 1 left		<<---
40		ground	---
41	phones 1 right		<<---
42		ground	---
43	T.B. to phns 1		---
44		ground	---
45	aux 8		
46		ground	---
47	aux 7		
48		ground	---
49	aux 6		
50		ground	---

[redacted] MASTER LINK CONNECTOR conn.7 avalon 3 master

pin nr.	function	status	signal flow
51	aux 5		
52		ground	---
53	aux 4		
54		ground	---
55	aux 3		
56		ground	---
57	aux 2		
58		ground	---
59	aux 1		
60		ground	---
61	CRM right phns		
62		ground	---
63	CRM left phns		
64		ground	---

--->> = send signal direction
--- = unspicified signal direction
<<--- = return signal direction

AVALON MASTER LINK CONNECTOR conn.8 avalon 3 master

pin nr.	function	status	signal flow
1	nc		
2		ground	---
3	solo fet	logic	
4		ground	---
5	dim	logic	
6		ground	---
7	nc		
8		ground	---
9	extern right	-	--->>
10		ground	---
11	extern right	+	--->>
12		ground	---
13	extern left	-	<<---
14		ground	---
15	extern left	+	<<---
16		ground	---
17	stereo 6 right	-	--->>
18		ground	---
19	stereo 6 right	+	--->>
20		ground	---
21	stereo 6 left	-	<<---
22		ground	---
23	stereo 6 left	+	<<---
24		ground	---
25	stereo 5 right	-	--->>
26		ground	---
27	stereo 5 right	+	--->>
28		ground	---
29	stereo 5 left	-	<<---
30		ground	---
31	stereo 5 left	+	<<---
32		ground	---
33	stereo 4 right	-	--->>
34		ground	---
35	stereo 4 right	+	--->>
36		ground	---
37	stereo 4 left	-	<<---
38		ground	---
39	stereo 4 left	+	<<---
40		ground	---
41	stereo 3 right	-	--->>
42		ground	---
43	stereo 3 right	+	--->>
44		ground	---
45	stereo 3 left	-	<<---
46		ground	---
47	stereo 3 left	+	<<---
48		ground	---
49	stereo 2 right	-	--->>
50		ground	---

[redacted] LINK CONNECTOR conn.0 avalon 3 master

[redacted]	function	status	signal flow
51	stereo 2 right	+	--->>
52		ground	---
53	stereo 2 left	-	<<---
54		ground	---
55	stereo 2 left	+	<<---
56		ground	---
57	stereo 1 right	-	--->>
58		ground	---
59	stereo 1 right	+	--->>
60		ground	---
61	stereo 1 left	-	<<---
62		ground	---
63	stereo 1 left	+	<<---
64		ground	---

--->> = send signal direction
--- = unspicified signal direction
<<--- = return signal direction

AVALON INPUT PCB CONNECTOR conn.11 avalon 3 master

pin nr.	function	status	signal flow
1	studio right	-	--->>
2	red light		---
3	studio right	+	--->>
4	red light		---
5	studio left	-	--->>
6		ground	---
7	studio left	+	--->>
8		ground	---
9	extern right	-	<<---
10		ground	---
11	extern right	+	<<---
12		ground	---
13	stereo 6 right	-	<<---
14		ground	---
15	stereo 6 right	+	<<---
16		ground	---
17	stereo 5 right	-	<<---
18		ground	---
19	stereo 5 right	+	<<---
20		ground	---
21	stereo 4 right	-	<<---
22		ground	---
23	stereo 4 right	+	<<---
24		ground	---
25	stereo 3 right	-	<<---
26		ground	---
27	stereo 3 right	+	<<---
28		ground	---
29	stereo 2 right	-	<<---
30		ground	---
31	stereo 2 right	+	<<---
32		ground	---
33	stereo 1 right	+	<<---
34	stereo 1 right	-	<<---

--->> = send signal direction
--- = unspicified signal direction
<<--- = return signal direction

AVALON INPUT PCB CONNECTOR conn.1 avalon 4 master

pin nr.	function	status	signal flow
1	MAIN right	-	--->>
2		ground	---
3	MAIN right	+	--->>
4		ground	---
5	MAIN left	-	--->>
6		ground	---
7	MAIN left	+	--->>
8		ground	---
9	INS ret right	+	<<---
10		ground	---
11	INS ret right	-	<<---
12		ground	---
13			
14		ground	---
15	INS send right	+	--->>
16		ground	---
17	INS send right	-	--->>
18		ground	---
19			
20		ground	---
21	INS ret left	+	<<---
22		ground	---
23	INS ret left	-	<<---
24		ground	---
25			
26		ground	---
27	INS send left	+	--->>
28		ground	---
29	INS send left	-	--->>
30		ground	---
31	extern		--->>
32		ground	---
33		47E	--->>
34		ground	---

--->> = send signal direction
--- = unspicified signal direction
<<--- = return signal direction

AVALON ROUTING CONNECTOR conn.5 avalon 4 master

pin nr.	function	status	signal flow
1	routing 1		<<---
2	gnd mix	ground	---
3	routing 2		<<---
4		ground	---
5	routing 3		<<---
6		ground	---
7	routing 4		<<---
8		ground	---
9	routing 5		<<---
10		ground	---
11	routing 6		<<---
12		ground	---
13	routing 7		<<---
14		ground	---
15	routing 8		<<---
16		ground	---
17	routing 9		<<---
18		ground	---
19	routing 10		<<---
20		ground	---
21	routing 11		<<---
22		ground	---
23	routing 12		<<---
24		ground	---
25	routing 13		<<---
26		ground	---
27	routing 14		<<---
28		ground	---
29	routing 15		<<---
30		ground	---
31	routing 16		<<---
32		ground	---
33	routing 23		<<---
34		ground	---
35	routing 24		<<---
36		ground	---
37	routing 32		<<---
38		ground	---
39	routing 31		<<---
40		ground	---
41	routing 21		<<---
42		ground	---
43	routing 22		<<---
44		ground	---
45	routing 30		<<---
46		ground	---
47	routing 29		<<---
48		ground	---
49	routing 19		<<---
50		ground	---

AVALON ROUTING CONNECTOR conn.5 avalon 4 master

pin nr.	function	status	signal flow
51	routing 20		<<---
52		ground	---
53	routing 28		<<---
54		ground	---
55	routing 27		<<---
56		ground	---
57	routing 17		<<---
58		ground	---
59	routing 18		<<---
60		ground	---
61	routing 26		<<---
62		ground	---
63	routing 25		<<---
64		ground	---

--->> = send signal direction
--- = unspicified signal direction
<<--- = return signal direction

AVALON MAIN CONNECTOR conn.6 avalon 4 master

pin nr.	function	status	signal flow
1	chassis	ground	---
2	phantom	+48V	---
3	left channel		<<---
4		ground	---
5	right channel		<<---
6		ground	---
7	aux 2 output		
8		ground	---
9	aux 1 output		
10		ground	---
11	aux 4 output		
12		ground	---
13	aux 3 output		
14		ground	---
15	aux 6 output		
16		ground	---
17	aux 5 output		
18		ground	---
19	aux 8 output		
20		ground	---
21	aux 7 output		
22		ground	---
23	left monitor		<<---
24		ground	---
25	right monitor		<<---
26		ground	---
27	solo audio		<<---
28		ground	---
29		ground	---
30		ground	---
31		ground	---
32		ground	---
33		ground	---
34		ground	---
35	power supply	+22V	---
36	power supply	+22V	---
37	power supply	+22V	---
38	power supply	+22V	---
39	power supply	-22V	---
40	power supply	-22V	---
41	power supply	-22V	---
42	power supply	-22V	---
43	power logic	+18V	---
44	power logic	+18V	---
45	power logic	+18V	---
46	power logic	+18V	---
47	power logic	-18V	---
48	power logic	-18V	---
49	power logic	-18V	---
50	power logic	-18V	---

AVALON MAIN CONNECTOR conn.6 avalon 4 master

pin nr.	function	status	signal flow
51		ground	---
52		ground	---
53		ground	---
54		ground	---
55	solo logic ch	logic	<<---
56	blink	logic	--->>
57	mute A	logic	--->>
58	sip channel	logic	--->>
59	mute C	logic	--->>
60	mute B	logic	--->>
61	pre/post aux5/6	logic	--->>
62	solo logic mn	logic	<<---
63	pre/post aux7/8	logic	--->>
64	sip monitor	logic	--->>

--->> = send signal direction
--- = unspicified signal direction
<<--- = return signal direction

AVALON MASTER LINK CONNECTOR conn.7 avalon 4 master

pin nr.	function	status	signal flow
1	solo	logic	--->>
2		ground	---
3	monitor 4 left		<<---
4		ground	---
5	monitor 4 right		<<---
6		ground	---
7	studio right		
8		ground	---
9	studio left		
10		ground	---
11	monitor right		
12		ground	---
13	monitor left		
14		ground	---
15	CRM out right -		
16		ground	---
17	CRM out right +		
18		ground	---
19	CRM out left -		
20		ground	---
21	CRM out left		
22		ground	---
23	T.B. to studio		
24		ground	---
25	main right		--->>
26		ground	---
27	main left		--->>
28		ground	---
29	studio out		
30		ground	---
31	solo output		--->>
32		ground	---
33	phones 2		
34		ground	---
35	phones 2		
36		ground	---
37	T.B. to phns 2		
38		ground	---
39	phones 1 left		
40		ground	---
41	phones 1 right		
42		ground	---
43	T.B. to phns 1		
44		ground	---
45	aux 8		
46		ground	---
47	aux 7		
48		ground	---
49	aux 6		
50		ground	---

AVALON MASTER LINK CONNECTOR conn.7 avalon 4 master

pin nr.	function	status	signal flow
51	aux 5	ground	---
52	aux 4	ground	---
53	aux 3	ground	---
54	aux 2	ground	---
55	aux 1	ground	---
56	CRM right phns	ground	---
57	CRM left phns	ground	---
58		ground	---
59			
60			
61			
62			
63			
64			

--->> = send signal direction
--- = unspicified signal direction
<<--- = return signal direction

AVALON MASTER LINK CONNECTOR conn.8 avalon 4 master

pin nr.	function	status	signal flow
1	nc		
2		ground	---
3	solo fet	logic	--->>
4		ground	---
5	dim	logic	<<---
6		ground	---
7	nc		
8		ground	---
9	extern right	-	
10		ground	---
11	extern right	+	
12		ground	---
13	extern left	-	
14		ground	---
15	extern left	+	
16		ground	---
17	stereo 6 right	-	
18		ground	---
19	stereo 6 right	+	
20		ground	---
21	stereo 6 left	-	
22		ground	---
23	stereo 6 left	+	
24		ground	---
25	stereo 5 right	-	
26		ground	---
27	stereo 5 right	+	
28		ground	---
29	stereo 5 left	-	
30		ground	---
31	stereo 5 left	+	
32		ground	---
33	stereo 4 right	-	
34		ground	---
35	stereo 4 right	+	
36		ground	---
37	stereo 4 left	-	
38		ground	---
39	stereo 4 left	+	
40		ground	---
41	stereo 3 right	-	
42		ground	---
43	stereo 3 right	+	
44		ground	---
45	stereo 3 left	-	
46		ground	---
47	stereo 3 left	+	
48		ground	---
49	stereo 2 right	-	
50		ground	---

AVALON MASTER LINK CONNECTOR conn.8 avalon 4 master

pin nr.	function	status	signal flow
51	stereo 2 right	+	
52		ground	---
53	stereo 2 left	-	
54		ground	---
55	stereo 2 left	+	
56		ground	---
57	stereo 1 right	-	
58		ground	---
59	stereo 1 right	+	
60		ground	---
61	stereo 1 left	-	
62		ground	---
63	stereo 1 left	+	
64		ground	---

--->> = send signal direction
--- = unspicified signal direction
<<--- = return signal direction

AVALON MAIN CONNECTOR conn.6 avalon 5 master

pin nr.	function	status	signal flow
1	chassis	ground	---
2	phantom	+48V	---
3	left channel		--->>
4		ground	---
5	right channel		--->>
6		ground	---
7	aux 2 output		
8		ground	---
9	aux 1 output		
10		ground	---
11	aux 4 output		
12		ground	---
13	aux 3 output		
14		ground	---
15	aux 6 output		
16		ground	---
17	aux 5 output		
18		ground	---
19	aux 8 output		
20		ground	---
21	aux 7 output		
22		ground	---
23	left monitor		--->>
24		ground	---
25	right monitor		--->>
26		ground	---
27	solo audio		
28		ground	---
29		ground	---
30		ground	---
31		ground	---
32		ground	---
33		ground	---
34		ground	---
35	power supply	+22V	---
36	power supply	+22V	---
37	power supply	+22V	---
38	power supply	+22V	---
39	power supply	-22V	---
40	power supply	-22V	---
41	power supply	-22V	---
42	power supply	-22V	---
43	power logic	+18V	---
44	power logic	+18V	---
45	power logic	+18V	---
46	power logic	+18V	---
47	power logic	-18V	---
48	power logic	-18V	---
49	power logic	-18V	---
50	power logic	-18V	---

AVALON MAIN CONNECTOR conn.6 avalon 5 master

pin nr.	function	status	signal flow
51		ground	---
52		ground	---
53		ground	---
54		ground	---
55	solo logic ch	logic	
56	blink	logic	
57	mute A	logic	
58	sip channel	logic	
59	mute C	logic	
60	mute B	logic	
61	pre/post aux5/6	logic	
62	solo logic mn	logic	
63	pre/post aux7/8	logic	
64	sip monitor	logic	

--->> = send signal direction
--- = unspicified signal direction
<<--- = return signal direction

AVALON MASTER LINK CONNECTOR conn.7 avalon 5 master

pin nr.	function	status	signal flow
1	solo	logic	
2		ground	---
3	monitor 4 left		--->>
4		ground	---
5	monitor 4 right		--->>
6		ground	---
7	studio right		
8		ground	---
9	studio left		
10		ground	---
11	monitor 6 right		--->>
12		ground	---
13	monitor 6 left		--->>
14		ground	---
15	CRM out right	-	<<---
16		ground	---
17	CRM out right	+	<<---
18		ground	---
19	CRM out left	-	<<---
20		ground	---
21	CRM out left		<<---
22		ground	---
23	T.B. to studio		--->>
24		ground	---
25	main right		
26		ground	---
27	main left		
28		ground	---
29	studio out		<<---
30		ground	---
31	solo output		
32		ground	---
33	phones 2		
34		ground	---
35	phones 2		
36		ground	---
37	T.B. to phns 2		--->>
38		ground	---
39	phones 1 left		
40		ground	---
41	phones 1 right		
42		ground	---
43	T.B. to phns 1		--->>
44		ground	---
45	aux 8		
46		ground	---
47	aux 7		
48		ground	---
49	aux 6		
50		ground	---

[illegible] LINK CONNECTOR conn.7 avalon 5 master

pin no.	function	status	signal flow
[illegible]	aux 5		
52		ground	----
53	aux 4		
54		ground	----
55	aux 3		
56		ground	----
57	aux 2		
58		ground	----
59	aux 1		
60		ground	----
61	CRM right phns		
62		ground	----
63	CRM left phns		
64		ground	----

---->> = send signal direction
---- = unspicified signal direction
<<---- = return signal direction

AVALON MASTER LINK CONNECTOR conn.8 avalon 5 master

pin nr.	function	status	signal flow
1	nc		
2		ground	---
3	solo fet	logic	
4		ground	---
5	dim	logic	<<---
6		ground	---
7	nc		
8		ground	---
9	extern right	-	
10		ground	---
11	extern right	+	
12		ground	---
13	extern left	-	
14		ground	---
15	extern left	+	
16		ground	---
17	stereo 6 right	-	
18		ground	---
19	stereo 6 right	+	
20		ground	---
21	stereo 6 left	-	
22		ground	---
23	stereo 6 left	+	
24		ground	---
25	stereo 5 right	-	
26		ground	---
27	stereo 5 right	+	
28		ground	---
29	stereo 5 left	-	
30		ground	---
31	stereo 5 left	+	
32		ground	---
33	stereo 4 right	-	
34		ground	---
35	stereo 4 right	+	
36		ground	---
37	stereo 4 left	-	
38		ground	---
39	stereo 4 left	+	
40		ground	---
41	stereo 3 right	-	
42		ground	---
43	stereo 3 right	+	
44		ground	---
45	stereo 3 left	-	
46		ground	---
47	stereo 3 left	+	
48		ground	---
49	stereo 2 right	-	
50		ground	---

[redacted] MASTER LINK CONNECTOR conn.8 avalon 5 master

pin nr.	function	status	signal flow
51	stereo 2 right	+	
52		ground	--->
53	stereo 2 left	-	
54		ground	--->
55	stereo 2 left	+	
56		ground	--->
57	stereo 1 right	-	
58		ground	--->
59	stereo 1 right	+	
60		ground	--->
61	stereo 1 left	-	
62		ground	--->
63	stereo 1 left	+	
64		ground	--->

---->> = send signal direction
---- = unspicified signal direction
<<---- = return signal direction

AVALON INPUT PCB CONNECTOR conn.13 avalon 5 master

pin nr.	function	status	signal flow
1	MAIN right	-	--->>
2		ground	---
3	MAIN right	+	--->>
4		ground	---
5	MAIN left	-	--->>
6		ground	---
7	MAIN left	+	--->>
8		ground	---
9		ground	---
10		ground	---
11	CRM right	-	--->>
12		ground	---
13	CRM right	+	--->>
14		ground	---
15	CRM left	-	--->>
16		ground	---
17	CRM left	+	--->>
18		ground	---
19		ground	---
20		ground	---
21	LIST mic	+	<<---
22		ground	---
23	LIST mic	-	<<---
24		ground	---
25		ground	---
26		ground	---
27		47E	--->>
28		ground	---
29	T.B. extern		--->>
30		ground	---
31		ground	---
32		ground	---
33	T.B. ext rem		<<---
34		ground	---

--->> = send signal direction
--- = unspicified signal direction
<<--- = return signal direction

AVALON INPUT PCB CONNECTOR conn.2 avalon 6/7 master

pin nr.	function	status	signal flow
1	extern left		<<---
2		ground	---
3	extern right		<<---
4		ground	---
5			
6		ground	---
7	phones right	+	--->>
8		ground	---
9	phones right	-	--->>
10		ground	---
11	phones left	+	--->>
12		ground	---
13	phones left	-	--->>
14		ground	---
15			
16		ground	---
17	AUX 4/8	-	--->>
18		ground	---
19	AUX 4/8	+	--->>
20		ground	---
21	AUX 3/7	-	--->>
22		ground	---
23	AUX 3/7	+	--->>
24		ground	---
25			
26		ground	---
27	AUX 2/6	-	--->>
28		ground	---
29	AUX 2/6	+	--->>
30		ground	---
31	AUX 1/5	-	--->>
32		ground	---
33	AUX 1/5	+	--->>
34		ground	---

--->> = send signal direction
--- = unspicified signal direction
<<--- = return signal direction

AVALON MAIN CONNECTOR conn.6 avalon 6/7 master

pin nr.	function	status	signal flow
1	chassis	ground	---
2	phantom	+48V	---
3			
4		ground	---
5			
6		ground	---
7	aux 2 output		<<---
8		ground	---
9	aux 1 output		<<---
10		ground	---
11	aux 4 output		<<---
12		ground	---
13	aux 3 output		<<---
14		ground	---
15	aux 6 output		<<---
16		ground	---
17	aux 5 output		<<---
18		ground	---
19	aux 8 output		<<---
20		ground	---
21	aux 7 output		<<---
22		ground	---
23			
24		ground	---
25			
26		ground	---
27	solo audio		--->>
28		ground	---
29		ground	---
30		ground	---
31		ground	---
32		ground	---
33		ground	---
34		ground	---
35	power supply	+22V	---
36	power supply	+22V	---
37	power supply	+22V	---
38	power supply	+22V	---
39	power supply	-22V	---
40	power supply	-22V	---
41	power supply	-22V	---
42	power supply	-22V	---
43	power logic	+18V	---
44	power logic	+18V	---
45	power logic	+18V	---
46	power logic	+18V	---
47	power logic	-18V	---
48	power logic	-18V	---
49	power logic	-18V	---
50	power logic	-18V	---

[illegible] CONNECTOR conn.6 avalon 6/7 master

[illegible]	function	status	signal flow
51		ground	---
52		ground	---
53		ground	---
54		ground	---
55	solo logic ch	logic	
56	blink	logic	
57	mute A	logic	
58	sip channel	logic	
59	mute C	logic	
60	mute B	logic	
61	pre/post aux5/6	logic	
62	solo logic mn	logic	
63	pre/post aux7/8	logic	
64	sip monitor	logic	

--->> = send signal direction
--- = unspicified signal direction
<<--- = return signal direction

AVALON MASTER LINK CONNECTOR conn.7 avalon 6/7 master

pin nr.	function	status	signal flow
1	solo	logic	--->>
2		ground	---
3	monitor 4 left		
4		ground	---
5	monitor 4 right		
6		ground	---
7	studio right		
8		ground	---
9	studio left		
10		ground	---
11	monitor 6 right		
12		ground	---
13	monitor 6 left		
14		ground	---
15	CRM out right -		
16		ground	---
17	CRM out right +		
18		ground	---
19	CRM out left -		
20		ground	---
21	CRM out left		
22		ground	---
23	T.B. to studio		
24		ground	---
25	main right		
26		ground	---
27	main left		
28		ground	---
29	studio out		
30		ground	---
31	solo output		
32		ground	---
33	phones 2 right		--->>
34		ground	---
35	phones 2 left		--->>
36		ground	---
37	T.B. to phns 2		<<---
38		ground	---
39	phones 1 left		--->>
40		ground	---
41	phones 1 right		--->>
42		ground	---
43	T.B. to phns 1		<<---
44		ground	---
45	aux 8		<<---
46		ground	---
47	aux 7		<<---
48		ground	---
49	aux 6		<<---
50		ground	---

AVALON MASTER LINK CONNECTOR conn.7 avalon 6/7 master

pin nr.	function	status	signal flow
51	aux 5		<<---
52		ground	---
53	aux 4		<<---
54		ground	---
55	aux 3		<<---
56		ground	---
57	aux 2		<<---
58		ground	---
59	aux 1		<<---
60		ground	---
61	CRM right phns		<<---
62		ground	---
63	CRM left phns		<<---
64		ground	---

--->> = send signal direction
--- = unspicified signal direction
<<--- = return signal direction

MULTITRACK REMOTE

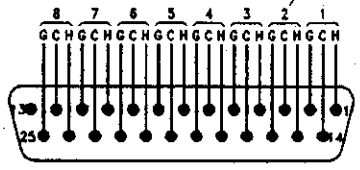
1	= (MASTER) SKIP >>	SW
2	= (MASTER) SKIP >>	LAMP
3	= REW	SW
4	= REW	LAMP
5	= FWD	SW
6	= FWD	LAMP
7	= PLAY	SW
8	= PLAY	LAMP
9	= REC	SW
10	= REC	LAMP
11	= STOP	SW
12	= STOP	LAMP
13	=	
14	= (MASTER) SKIP >>	SW
15	= (MASTER) SKIP >>	LAMP
16	= REW	SW
17	= REW	LAMP
18	= FWD	SW
19	= FWD	LAMP
20	= PLAY	LAMP
21	= PLAY	SW
22	= REC	LAMP
23	= REC	SW
24	= STOP	LAMP
25	= STOP	SW

MASTER REMOTE

1	= REW	SW
2	= REW	LAMP
3	= FWD	SW
4	= FWD	LAMP
5	= SKIP <<	SW
6	= SKIP <<	LAMP
7	= PLAY	SW
8	= PLAY	LAMP
9	= STOP	SW
10	= STOP	LAMP
11	= REC	SW
12	= REC	LAMP
13	=	
14	= REW	SW
15	= REW	LAMP
16	= FWD	SW
17	= FWD	LAMP
18	= SKIP <<	SW
19	= SKIP <<	LAMP
20	= PLAY	SW
21	= PLAY	LAMP
22	= STOP	SW
23	= STOP	LAMP
24	= REC	SW
25	= REC	LAMP

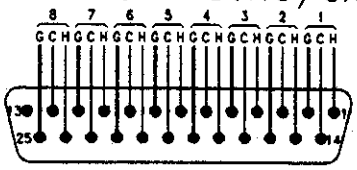
AVALON
remote connector

INP LEFT st1.6/ext



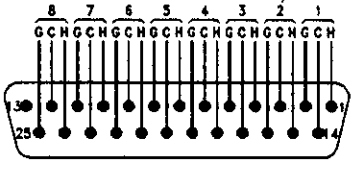
1 = stereo left in 1
2 = stereo left in 2
3 = stereo left in 3
4 = stereo left in 4
5 = stereo left in 5
6 = stereo left in 6
7 = left ext in
8 = spare

INP RIGHT st1.6/ext



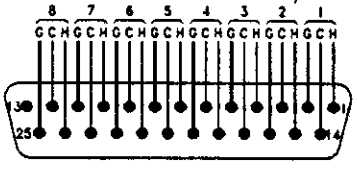
1 = stereo right in 1
2 = stereo right in 2
3 = stereo right in 3
4 = stereo right in 4
5 = stereo right in 5
6 = stereo right in 6
7 = right ext in
8 = red light

OUT LEFT st1.6/mon



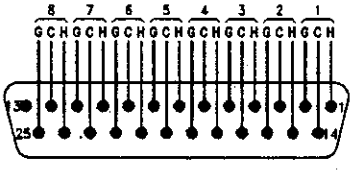
1 = stereo left out 1
2 = stereo left out 2
3 = stereo left out 3
4 = stereo left out 4
5 = stereo left out 5
6 = stereo left out 6
7 = main left out
8 = main right out

OUT RIGHT st1.6/mon



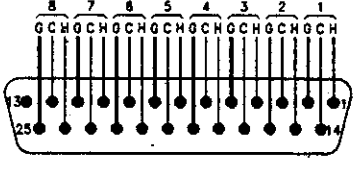
1 = stereo right out 1
2 = stereo right out 2
3 = stereo right out 3
4 = stereo right out 4
5 = stereo right out 5
6 = stereo right out 6
7 = Mon. left
8 = Mon. right

PHONES 1 CRM 1.3



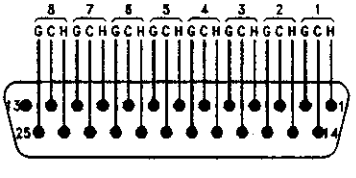
1 = phones left 1
2 = phones right 1
3 = CRM left 1
4 = CRM right 1
5 = CRM 2 left 2
6 = CRM 2 right 2
7 = CRM 3 left 3
8 = CRM 3 right 3

PHONES 2 studio/rem



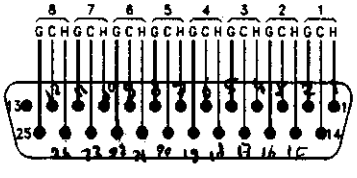
1 = phones 2 left
2 = phones 2 right
3 = studio left
4 = studio right
5 = T.B. remote
6 = spare
7 = spare
8 = spare

TIE LINES



1 = tie lines 1/9/17 ..
2 = tie lines 2/10/18 ..
3 = tie lines 3/11/19 ..
4 = tie lines 4/12/20 ..
5 = tie lines 5/13/21 ..
6 = tie lines 6/14/22 ..
7 = tie lines 7/15/23 ..
8 = tie lines 8/16/24 ..

MULTITRACK



1 = tape input 1/5/9 ..
2 = tape input 2/6/10 ..
3 = tape input 3/7/11 ..
4 = tape input 4/8/12 ..
5 = tape output 1/5/9 ..
6 = tape output 2/6/10 ..
7 = tape output 3/7/11 ..
8 = tape output 4/8/12 ..

Hot 24, 10, 21, 7
cold 12, 23, 9, 20

AVALON
patchpanel connectors