mixing consoles

AIRMIX

User Manual

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1.0

Dear client,

Thank you for choosing the Airmix console.

The Airmix is designed by specialists in the field of radio broadcast and is intended to be used as an 24 hour "On-Air" console as well as a production console.

We are confident that you will be using the Airmix 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 Airmix. We will certainly learn from your comments, and very much appreciate your time doing this.

With kind regards,

Duco de Rijk
PRESIDENT

2.0 SYSTEM DESCRIPTION

D&R Quality.
D&R has been the largest manufacturer of mixing consoles and signal processors in the Netherlands for 25 years. More than 80% of the total production is exported world-wide, a market which demands excellent price and high quality standards.
D&R products are used in studio's and live performances, both of which require 100% reliability, which is the result of 23 years of research, design and manufacturing.

These high standards of reliability are also to be found imbedded in the new line of broadcast mixers, which is particularly important for this type of product, required to work around the clock.

Airmix Quality.
The high standard of quality of the Airmix is demonstrated by the welded steel RF screening and sturdy housing, the heavy duty power supply, its modular approach and locking IDC connectors mounted on high quality double sided, plated through, glass epoxy printed circuit boards.

The signal paths are electronically switched using C-Mos logic, and 'Fet' components ensuring reliable and smooth switching.

High quality 100mm faders control the new redesigned " dbx" VCA's. Switching is performed by isolated encapsulated reed relays guaranteeing many years of trouble free smooth switching.

Airmix flexibility.
The Airmix is a specially designed poduction/ On-Air broadcast console. Although the design has been carefully budgeted, no compromises has been made in either quality or features, particularly in the areas of VCA control, switching, signalling, fader start/stop and communication.

A 'Self-Op' switch instantly resets the Airmix to be used by the announcer himself.
This is the D.J. mode whereby the logic circuitry in the Airmix helps to prevent the D.J. from making mistakes causing possible feedback, which is an annoying sound anywhere in the audio chain, or listening to the wrong source.

The Airmix is fully modular, which means flexibility in the configuration. The Triple input modules as well as the Telco input modules can be placed anywhere in the chassis.
A partially loaded Airmix can be completed using low cost 'blind modules'.

SYSTEM DESCRIPTION

The Airmix is a complete and self contained piece of hardware, requiring no additonal items in order to be operated. All relevent functions are built-in, such as fader start/stop (pulse or continuously selectable). There is also no need for complex mic-on/cough switching to the announcer booth, a stereo jack, a led and a simple push-button switch complete this task. The optional SiCo unit is a nice looking alternative with many extra's for Cough switching and monitoring. The Meter hood can accept five 9 1/2" signal processors, such as limiters, the special D&R timer/clock, and/or specialised functions for broadcast stations.

Built-in stereo headphone amps.
The Airmix contains built-in amps for the announcer, guests and the D.J., no additional amps are needed.

Clear layout.
Most all of the switches have led indicators, large illuminated CUE and ON switches and the front panels are angled for visibility.

All similar functions in the triple input channels are grouped and colour coded, with additional fader knobs available for personalised channel colour coding.

Example: Microphone channels - red fader knobs
Telephone channels - grey fader knobs
Stereo channels - black fader knobs

Radio communication.
On the basis that there is no radio without communication, the Airmix has extensive possibilities for signalling and communications. Every microphone channel has its own signalling and talkback circuitry, and all outputs can also be connected to the talkback circuitry.

The announcer/technician/producer/director can communicate with the announcer booth, guests, monitoring system, all connected Telco modules, auxilliaries, either individually or in any combination.
A very intelligent Cue system connects every activated Cue switch with each other to create a transparant and intuitive communication system. It will be explained in detail further in this manual.

Signalling.
It is extremely important in broadcast to know whether a microphone channel is active. Every channel has a red light signalling available on the remote connector.
The Airmix has two external connections for ON-AIR signalling to control an external relay activating high voltage ON-AIR lamps.

!! NEVER CONNECT 115-230 VOLT LAMPS DIRECTLY TO THE ON-AIR SIGNALLING OUTPUTS IN THE MASTER SECTION!!

SYSTEM DESCRIPTION

Broadcasting Options.
In designing the Airmix, D&R decided to make the system as flexible for the operator as possible, and the Airmix can therefore be used in many ways.

There are many jumper settings which can be set to suit your own needs. The Airmix can be used in a traditional manner with separate control and announcer rooms, or in a more open way, whereby announcing and engineering control are carried out in one room. A self-op set up, or a combination of several set ups is possible.

More than one Broadcast Studio
There are numerous monitor facilities in the Airmix, for external sources as well as internal. The control monitors (and meters) can be switched to follow the control room for separate (stereo) sources.
These features mean that the Airmix is specially suited to work in a studio-complex environment, where there is more than one studio/control room being used for broadcast. In this situation, the Airmix is capable of being the main On-Air console, due to the three main outputs it contains, which are fully transformer balanced.

Separate Compressions for Mono and Stereo Outputs.
All three main outputs have their own inserts to accept signal processors such as the D&R compressor/limiters.

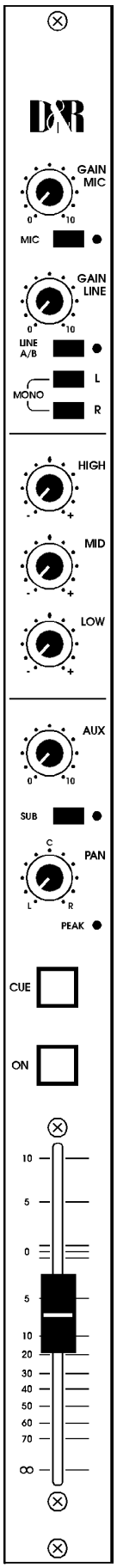
A significant feature of the Airmix is that separate compression can be set for mono and stereo outputs. For example, a higher compression can be set for the mono main output, for AM portables or car radios, and a lower compression set for the main stereo outputs.

Special Recording Outputs.
The Airmix has two separate stereo recording outputs which can be set to either 0 dBu or -10 dbV, according to the recording equipment being used.

Stereo Peak Metering.
In order to achieve a good balance between spoken words and music, it is important to be able to read the recording level accurately. The Airmix has thirty-seven segment peak reading ledbargraphs, with logarithmic scaling and one led per 0.5dB in most critical sections of the scale.

SUMMARY.
Whilst using the Airmix, you will discover its many 'hidden" features, and will continue to appreciate its extensive capabilities.

3.0 MIC/LINE INPUT SECTION



GAIN MIC
This gain control adjust the incoming signaallevel on the mic input.

MIC
MIC input selector switch between Mic-input or Line-A/B input.
When the Led is illuminated the mic-input is activeted.

GAIN LINE
This gain control adjust incoming line levels.

LINE A/B.
A/B input selector. When line B is selected, the red Led is illuminated. In this position, the remote outputs are not activated.

MONO L/R.
With both left and right switches activated, the stereo signal will be mixed to mono on both outputs.
with only Mono L. activated, the left signal will be sent to both left and right signal paths.
with only Mono R. activated, the right signal will be sent both left and right signal paths.
In the 'Stereo' mode, neither Mono L. or Mono R. switches need to be activated.
The MONO L/R switch has no affect on the mic-input.

HIGH.
Adjusts high frequencies with +/- 12 dB at 10 kHz shelve.

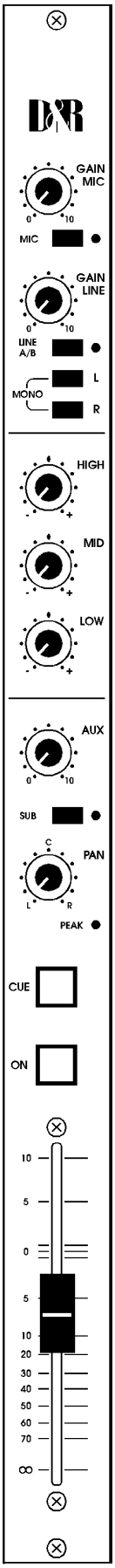
MID
Adjusts mid frequencies with +/- 12 dB at 3 kHz bell.

LOW.
Adjusts the low frequencies with +/- 12 dB at 60 Hz shelve.

AUX.
Transmit a stereo signal to the aux. master post fader.
The channel 'on' switch also affects the aux send.

SUB
The sub switch assigns the signal in stereo to the sub output.

MIC/LINE INPUT SECTION



PAN.
Allows adjustment between the left and right channel outputs.

PEAK.
The peak indicator will indicate when the signal reaches -4dB below the clipping point of the module.

CUE.
Stereo pre-fade listening. Allows pre-fade listening post pan-pot of the channel with the fader closed.
The cue function will be automatically reset when the channel is activated.
The CUE switch also generates a start/stop pulse in the line-mode.

ON.
Channel on/off switch. While in closed fader stand-by mode, i.e. when red led is half illuminated. When the switch is not activated, the channel fader can be opened without activating the fader start, and without opening the program signal, the red led is softly illuminated. The channel can be activated (including the start/stop command) by pressing the "ON" switch, red fully lit.

FADER .
Channel VCA volume control adjusts overall channel level and activates (together with the `on' switch) all on and off switching of remote connectors.

MIC / LINE INPUT SECTION

SHORT OVERVIEW OF MIC / LINE CHANNEL FUNCTIONS.

Microphone input:	Electronically balanced.
Impedance	2 kOhm.
Level:	from-70 dBu microphone input to +16 dBu.
Connectors:	XLR female, Pin 1 = sleeve. Pin 2 = hot. Pin 3 = cold.
48 Volt phantom	internally set by a jumper, (see jumper settings)
Mic High pass filter:	at 80 Hz internally set by a jumper, (see jumper settings)

INSERT. Mic insertion point, unbalanced on a stereo jack plug.
Tip=return. Ring=send. Sleeve=ground.
0dBu. Send impedance is 47 Ohm, return impedance is 10 kOhm.
Inserting a jack will interrupt the signal path before the equaliser.

REMOTE. Remote control of the channels on/off and cue switch's, and 'Channel-on' light signalling. Connection by way of a stereo jack.
Tip=Positive supply voltage, current limited at 15 mA when the channel is 'on' A direct connection to a led is possible between tip and sleeve.
Ring=When connected to ground, the channel will be muted and the cue activated.
Sleeve=ground.

A-Input and B-Input: The input impedance for both `A' and `B' are >10 kOhm, and the maximum sensitivity ranges from -20 dBu to +20 dBu. The signal to noise ratio is -90 dBr (R.I.A.A.: -70 dBr).

Connector is Jack: LINE A=balanced connected by two stereo jack sockets
Tip=in phase, ring=out of phase, sleeve=ground
LINE B=unbalanced
Tip = signal left, Ring = signal right, Sleeve = ground

NOTE: By adding an optional plug in stereo R.I.A.A. pre-amp, the A input is able to accept M.D. phono pick-ups. See jumper settings!

Start and Stop connector: Stereo jack plug
Tip = Center contact
Ring = Normally open
Sleeve = Normally closed
NOTE: Polarity is not important with reed relays!

Pulse or Continuous Signal: Using the internal jumper, it is possible to choose between a pulse or continuous signal to the remote device.

NOTE: The stop connector can be changed into a start connector of the B input by changing jumper settings when needed.

SHORT OVERVIEW OF MIC / LINE CHANNEL FUNCTIONS.

GAIN LINE	Line pre-amp gain adjustment with a range of 40 dB.
GAIN MIC .	MIC pre-amp gain adjustment from -70 dBu to +16 dB.
HIGH.	Lift and cut of 12 dB at 10 kHz shelve curve.
MID.	Lift and cut of 12 dB at 3 kHz bell curve.
LOW.	Lift and cut of 12 dB at 60 Hz shelve curve.
AUXILIARY.	A separate post pan, post fader stereo send to the master aux. Pre fader but post pan is also possible by internal jumper settings.
SUB	The Sub switch switches the stereo modules output from the main output to seperate SUB mix amps located in the master section of the console.
PAN.	The 'pan' enables the signal to be precisely placed anywhere between fully left or fully right.
PEAK	The peak indicator acts as a warning that the audio signal is 4 dB below clipping.
CUE	Cue enables pre-fade listening (post panpot) in order to adjust the gain control whilst the fader is closed, or the `on' switch is off. The cue will be automatically disabled when the channel fader is opened, if the "ON" switch is active or when the "ON" switch is activated if the fader was already open.
ON.	Channel on/off switch. Switches the channel to stand-by mode when the fader is closed; the red led will softly illuminate. When the on' switch is not activated the channel fader can be opened (red led on) without bringing the audio up and without generating a mic-on signal. The channel can now be activated, including mic-on signalling, by pressing the 'on' switch (red led from low to high intensity). The cue will be automatically reset.
FADER	Channel switch and volume control. This fader controls the audio signal level by means of a high quality VCA.

TRIPLE INPUT SECTION

Mono Microphone input.
The front end of this module is designed to amplify balanced microphone signals. A +48 Volt phantom power supply is available for condenser microphones. The Airmix has the ultimate in mic amplification with a wide dynamic range and extremely low noise.
The microphone input is electronically balanced and protected against R.F. interference.
The input has RF cancelling input coils to avoid hearing "radio Moskou" when you are not in the mood.
Input impedance is 2 kOhm - high enough to accept all modern microphones.
A seperate Gain control can vary the input levels between -70dB and +16 dB in one turn.
The signal to noise ratio is -129.0 dBr, and is therefore well suited to low noise performances.

Phantom Powering.
This +48 Volt power is required for condenser microphones, and can be applied to the microphone inputs via jumper settings, (see jumper settings).

When the phantom power is applied and the channel is active, a 'click' can be heard when a microphone is plugged in. This is due to a D.C. component on the input which is suddenly interrupted and amplified by +/- 70 dB; it is therefore important not to do this with channel faders up and channel ON.

DO NOT use unbalanced or electret microphones when the phantom power is applied, as it could damage the microphones.

High-Pass Filter on MIC.
The high-pass filter attenuates the low frequencies - below 80 Hz, and can be switched on or off by jumper settings (see jumper settings). It is only active on MIC inputs.

NOTE: Some microphones have built in high-pass filters and therefore do not require use of the Airmix high-pass filter.

Microphones used for speech are usually set for high-pass filtering in order to avoid 'popping' and other unwanted low frequency rumble, and therefore improves the quality and intelligability of the spoken word.

MIC Insert.
When a jack is plugged into the Mic insert jack, the signal path is interrupted. The ring of the jack sends the signal pre equaliser and on the tip of the jack the signal returns just before the equalizer. In this way it is therefore possible to insert a D&R compressor or other signal processor or microphone only signals.

It is also possible to use this insert jack as a direct send without interrupting the signal path. In that case you connect tip and ring with each other this can be usefull for driving external producers desks, or for selective recording etc.
By de-activating the MIC switch it is possile to use the stereo line inputs at the same time or other stereo sources to be mixed into the main outputs.

TRIPLE INPUT SECTION

REMOTE/COUGH/SIGNALLING IN MIC MODE
This useful feature has two important functions:
1. Cough/communication,
2. 'Mic-on'

1. Cough/Communication,

(A pushbutton needs to be connected to the ring and sleeve of the jackplug.)
Using the pushbutton during broadcast, the announcer can temporarily mute the microphone in order to cough (where the name comes from). At the same time his microphone will be routed to the cue system, in order to give him the opportunity to communicate with the engineer/producer.

2. 'Mic-on',

When the channel is active a voltage is applied between Tip (+) and Sleeve (0V), which can be used to activate a led (red) or an opto coupler.
In addition to the localised 'mic-on' signalling, there is also a master signal in the master section. The ON-AIR signalling outputs 1 and 2 offer the option of driving external red light indicators in the studio. Two jumpers per channel select which channel will activate the master ON-AIR signalling (see jumper settings)

REMOTE/SIGNALLING IN LINE MODE
In this mode Cue can be switched on/off and the channel can be switched on/off.

MIC GAIN.
The MIC-Gain' control adjusts the gain of the mic input only, the range is -70 dBu to +16dBu.

Alignment of the MIC input.
With the fader in the 'down' position, and the Cue activated, the input signal is adjusted with the gain control until the ZERO dB posititon of the master meter is illuminated.
When the fader is in its 0 dB position, the signal has a nominal level in the Airmix
This way of alignment will give enough margin to compensate for signal losses of up to 10 dB, whilst the noise floor remains well below the nominal level.

Airmix Line input module.
This part of the triple input module is specially designed to accept balanced and unbalanced stereo input signals. There are two stereo inputs, line A and line B, Line A has seperate fader start and stop connectors. By changing jumpers the stop connector of line A will be converted to a start connector for line B.

R.I.A.A.
As an option, a stereo phono pre-amp with R.I.A.A. filter curves can be plugged onto the mother board, in order to accept Magnetic Dynamic phono cartridges.

Jumpers.
A number of module functions can be activated by jumper settings, (see jumper settings).

TRIPLE INPUT SECTION

START/STOP FUNCTIONS

The fader `Start' and `Stop' is normally active when input A is selected, however jumpers change Line A STOP into a Start connector of line B input.

These remote connectors are activated by the fader and/or `on' switch in the channel module. The start and stop jack connectors are electronically separated by use of encapsulated reed relays. The stop connector can be used for recue of appliances.

Reed relays are ideal devices for eliminating ground loops and limited lifespan effects of other switches, and can easily be interfaced with all modern equipment.

The start and stop connectors are connected to separate reed relays.
The maximum current is 50 mA. Current limiting resistors of 10 Ohm are placed in series with the reed relay contacts to protect them from abuse. (Polarity is not important with reed relays!)

NOTE 1: Nearly all modern devices require pulse information. Continuous signals however, can have the advantage that during broadcast a CD player cannot be accidentally stopped. One disadvantage however is that some CD players are blocked from other functions when started with a continuous pulse.

NOTE 2: It is advisable to only use the pulse start mode with jingle machines, and not connect the stop jack. The cart has to finish its tape to the end, and then automatically rewinds.

NOTE 3: Some of the older products such as the A-77, require additional relays or switching transistors to operate satisfactorily, contact your dealer for more information.

LINE GAIN.

The seperate Line Gain control adjusts the gain of the stereo channel pre-amps, within a range of -20 dB to +20 dB. The range of the fader (VCA) gives an additional 10 dB of gain when needed.

Alignment of the channel.

With the fade closed (or muted channel) and the cue switch is activated; the Autocue in the master section must be activated. The gain control is used to adjust the level of the incoming signal until a zero dB reading is achieved. If the `ON' switch is now activated, the signal level will be nominal. When the fader is opened, the cue signal will be automatically reset, and its associated led will switch off.

Stereo/Mono Switches.

With two pushbutton switches, Mono-L and Mono-R, the incoming left and right signals can be switched to mono or stereo. When both switches are in their 'up' positions, the module will accept stereo signals. When both switches are in their 'down' positions, Mono summing of the stereo input signals occurs.
When Mono-L is in its 'down' position, the mono signal coming in from the left input will be sent to both signal paths of the stereo line module.
When Mono-R is activated, only the 'right' signal will be sent to both stereo signal paths.

TRIPLE INPUT SECTION

Equaliser.
The equaliser is optimised for broadcast. Centre detents on all equaliser controls indicate their flat position. (Note: There are also modules availale without EQ controls)
The maximum lift and cut is 12 dB at the following frequencies:

10 kHz :	Shelve
3 kHz :	Bell
60 Hz :	Shelve

Auxilliary.
The stereo auxiliary send is postfader, bringing the signal to the master stereo auxiliary send. When the input module is used for microphone signals only both left and right signal paths are fed by the same mono mic input signal. The channels `ON' switch will also switch the Auxiliary send on or off when it is jumpered post fader.

SUB
The Sub switch switches the stereo modules output from the main output to seperate SUB mix amps located in the master section of the console.
This setup makes production work possible during ON-AIR broadcast due to extremely good crosstalk figures achieved in the Airmix console by carefull usage of high-end CAD design systems in the initial design stage of the console.
The Sub mix can be mixed into the main output mixbuss in the master section.
This is a convenient way to use the SUB assigment switch as a subgroup system, creating new possibilities in the Airmix console.

PAN
The PAN enables adjustment between the left and right signals. The range is not restricted in order to enable to position any incoming signal anywhere in the stereo image.

Peak Indicator.
The peak indicator comes on when the left or right input signals reach -4 dB from the maximum level of +22 dBu.

CUE.
This is an automatic prefade-listen system ***post pan-pot*** which enables you to listen to a channel without actually opening that channel. When the cue button is activated, the channel signal will be connected to the cue output and meter circuitry (when the fader is closed or open dependent on jumper settings); the yellow cue led indicator will illuminate.
When the channel is active, the cue system will be reset, including its associated led, however it is possible re-activate the CUE switch.
Channel Cueing on D.J. channels will only be heard in the headphone outputs. The CRM output will be muted.
The Cue switch can also generate a start/stop pulse for remotely connected machines by changing jumper settings
The cue signal can be heard in two ways:-

1. Through the stereo Control Room Monitors by activating the autocue switche in the master section. If the cue is activated in one of the channels, the CRM and meters will be activated without interruption of the main output.
2. By way of an externally connected cue amplifier with loudspeaker.

TRIPLE INPUT SECTION

ON The channel on/off switch operates in tandem with the fader start. There are two visible intensities of the illuminated led indicators:

1. Low glowing red led : channel is on 'stand-by' mode.
2. Bright emitting red led : channel is `active'

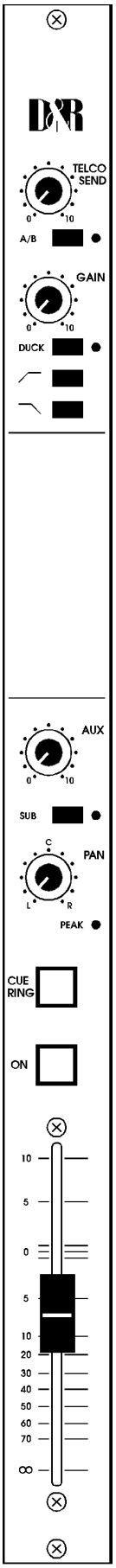
There are two methods of activating the channel:

A. Depress the `ON' switch, (red led is softly glowing), then by moving up the fader, the signal is sent to the master and at the same time a mic-on indication is sent to the cough connector. The red led illuminates brightly.

B. When the `on' switch is "off", no led is illuminated. As the fader is moved upwards, the channel is put into 'stand-by' and the On switch illuminates softly.
At this point there is no 'mic-on' signalling or audio to the master. Pressing the ON' switch activates the channel and the red led is illuminated brightly, mic-on' signalling is now present.

In order to switch the channel and mic-on signalling off, the "ON" switch should be deactivated, or the fader closed.

Fader.
The fader is an ultra smooth 100mm model controlling the internal high quality VCA's and sending on/off information to the logic circuitry. There is no audio going through the faders which guarantees noise free fading for ever! When the fader is closed, the signal is automatically muted, providing a cut-off in excess of 100 dB. This high dB cut-off value ensures that the main output is protected from crosstalk from announcers or fast spooling tape decks.



5.0 TELCO MODULE

TELCO SEND
This gain control adjusts outgoing levels coming from the main output or the SUB output .

LINE A/B.
A/B input selector. When line B is selected, the red led is illuminated. In this mode Phone line B is activated.

GAIN.
This control adjusts incoming call levels.

DUCK.
Dims all incoming signals when outgoing signals are pesent.

HIGHPASS.
Fixed low frequency roll off

LOWPASS.
Fixed high frequency roll off.

HIGH/MID/LOW.
only availale as an option.

AUX.
Transmit a signal to the aux. master post fader.
The channel on' switch also affects the aux send.

SUB
Assigns input signal to seperate SUBmaster

PAN.
Allows adjustment between the left and right channel outputs.

PEAK.
The peak indicator will indicate when the signal reaches -4dB below the clipping point of the module.
CUE.
pre-fade listening. Allows pre-fade listening of the channel and taking an incoming call with the fader closed. The cue function is automatically disabled when the channel is activated.
ON.
Channel on/off switch. While in closed fader stand-by mode, i.e. when red led is half illuminated incoming calls can be connected by pressing the "ON" switch, red fully lights.
FADER .
Channel VCA volume-control adjusts overall channel level.

TELCO MODULE

Airmix TELCO input module.
This input module is specially designed to accept a maximum of two telephone lines. An internal telephone hybrid circuit simplifies connection of telephone lines and phone appliances. There are two inputs, line A and line B, Line A is internally connected to PHONE A, and Line B is internally connected to PHONE B (the start and stop connectors of the triple input modules). When the internal relays are not active both phone lines can be used as normal.
The "MIC" labelled insert jack is an insert for the incoming phone signal. An inserted Limiter keeps spikes from entering the Airmix Telco module.

Jumpers.
A number of module functions can be activated by jumper settings, (see jumper settings).

TELCO SEND.
The Telco send controls the outgoing signal to the caller. This can be either the MIX or Sub output
dependent upon the SUB switch setting in the Telco module. Yes this switch not only controls the assignment of the incoming signal to the masters but also which signal is sent to the caller.

A/B select
This switch select either phone line A or B to enter the Telco module.
Note:
Switching during an established connection will cancel the connection!

GAIN.
The Gain control adjusts the gain of the incoming phone call within a range of -20 dBu to +20 dBu. The range of the fader (VCA) gives an additional 10 dB of gain when needed.

DUCK
The duck switch automatically dims incoming signals when outgoing signals are present, giving the presenter priority over the caller as well as better intelligibility.

HIGHPASS
The highpass filter smoothly filters out all frequencies below the passband of the telephone line.

LOWPASS
The low pass filter effectively filters out all above telephone line frequencies.

NOTE:
In the standard Airmix Telco module there is no EQ available, however if needed we can offer a three band eq on this module.
The maximum range is then 12 dB at frequencies:-

5 kHz :	Shelve
1 kHz :	Bell
200 Hz :	Shelve

TELCO MODULE

Auxiliary.
The stereo auxiliary sends a post fader signal, dependent upon the 'ON' switch of the input channel, signal to the master auxiliary busses. The PAN control creates a stereo image in the Aux masters.

SUB
The Sub switch switches the Telco modules output from the main output to seperate SUB mix amps located in the master section of the console.

This setup makes production work possible during ON-AIR broadcast due to extremely good crosstalk figures achieved in the Airmix console by carefull usage of high-end CAD design systems in the initial design stage of the console.
The Sub mix can be mixed into the main output mixbuss in the master section. This is a convenient way to use the SUB assigment switch as a subgroup system, creating new possibilities in the Airmix console.
At the same time the incoming signal from a caller is reassigned to the sub buss.

PAN
The PAN enables positioning of the incoming caller signal. The range is not restricted in order to enable to position any incoming signal anywhere in the stereo image.

PEAK INDICATOR.
The peak indicator comes on when the left or right input signals reach -4 dB from the maximum level of +22 dB.

CUE/RING.
Automatic pre-fade listening/post pan, or cue, allows a caller to be heard without being in the broadcast. When activating the cue switch, the caller is connected to the CUE bus and listens to the talkback mic of the engineer (fader closed).
The Cue switch shows an incoming call by flashing, hitting the CUE switch makes a connection as described above. A remote switch can pick up a call by wiring the remote conector of the Telco module.

The 'ON' switch works in conjunction with the fader switch.
1. Red Led low intensity The channel mode is 'stand-by'
2. Red Led high intensity The channel is 'active'

There are two methods of activating an incoming call.

A. If the 'ON' switch is pressed, the red ON led will illuminate with low intensity. and the caller is connected to the Telco module but not yet heard in the broadcast because the fader is still down.
By opening the fader, the Telco module will be activated and the signal will enter the program, the red led will now fully light.
When the fader is closed again the program signal will be muted, when the fader is at its lowest position (the red ON led lowers its intensity).

TELCO MODULE

B When the `on' switch is not depressed, no Led is illuminated even if the fader is now opened. In this situation, none of the signals are active but as soon as the ON switch is activated (with a flashing Cue switch) the caller will be direct "On-AIR".
All switching is carried out electronically with carefullly designed timing, and is therefore smooth and click-free.

If the cue function is active, it will be disabled when the channel is activated.
NOTE: In the Telco module it is not possible to "Cue" when the channel is active.

FADER.
The Airmix is fitted with a modern ultra-smooth lineair fader controlling a high quality VCA and the Airmix internal logic circuitry, not the audio signal. This system eliminates any noise from disturbing the audio signal path. When the fader is closed, the signal will be automatically muted, which provides excellent fader attenuation in excess of 100 dB. This system also eliminates any possible crosstalk from fast- winding tape recorders during broadcast.

Alignment of the channel.
With the fader closed (or muted channel) the Cue switch will be activated; the Autocue in the master section must be activated. The gain control is used to adjust the level of the incoming signal until a zero dB reading is achieved. If the `on' switch is now activated, the signal level will be nominal. When the fader is opened, the cue signal will be automatically reset, and its associated led will switch off. The cue signal can be heard in two ways:-

1. Through the stereo Control Room Monitors by activating the autocue switch in the master section. If the Cue is activated in one of the channels, the CRM and meters will be activated without interruption of the main output.
2. By way of an externally connected cue amplifier with loudspeaker.

CONNECTORS

LINE INSERT
Connector type is Jack: Tip = signal return
Ring = signal send
Sleeve = ground

Line A - Input.
Connector type is Jack: Tip = phone line A-wire
Ring = phone line B-wire
Sleeve = not connected

Line B - Input.
Connector type is jack: Tip = phone line A-wire
Ring = phone line B-wire
Sleeve = not connected

TELCO MODULE

The input impedance for both `Phone A' and `Phone B' are optimized for correct loading of modern telephone stations.

PHONE A - Input.

Connector type is Jack:	Tip = phone line A-wire
	Ring = phone line B-wire
	Sleeve = not connected

PHONE B - Input.

Connector type is jack:	Tip = phone line A-wire
	Ring = phone line B-wire
	Sleeve = not connected

REMOTE.

The remote connector lets you activate the CUE of the Telco module when the module is in its "off" or "standby" mode. A convenient way of communicating for the announcer/director with callers. An ON led can be connected to the remote to indicate the "ON" status of the Telco module. The same Led indicates incoming calls by flashing.

REMOTE - Input.

Connector type is jack:	Tip = Channel "ON" led
	Ring = Cue control
	Sleeve = Ground

COMMUNICATION WITH TELCO MODULE

ENGINEER TO/FROM TELCO

Communication with the engineer is easily accomplished by activating the Cue switch in the Telco module. An open communication is achieved now between caller and engineer.

DIRECTOR TO/FROM/ TELCO

The Cue switch on the Telco module has to be activated. Now dependent upon internal selection of the director communication jumpers (switched/off/on) the director has communication with the caller. In the case of the "switched" jumper selection, the remote unit can be used to activate the communication with the Telco module.

ANNOUNCER TO/FROM TELCO

The Cue switch on the Telco module and the "autocomm" switch in the master section has to be activated. The moment the Annoucer hits his cough switch communication takes place between announcer and caller (Telco module).

6.0 MASTER SECTION / STUDIO

STUDIO.
In the Studio area are three monitor systems which can be used as needed in your studio situation.

MONITOR
The monitor will give a mono signal fed from the "From sub" switches
Talk back level into the Monitor output is independent of monitor level settings.
Output of the monitor is mono and both tip and ring are fed with signal, to easily interface with stereo amps in the studio area.
The monitor output is mainly intended to be used as an overall output to monitor what is going on during broadcast, maye in other area's than the studio room itself.
A useful option during broadcast, is to jumper all outputs of the individual channels, except the studio microphones, and to amplify the summed signal through a small loudspeaker in the studio. This enables everyone present in the studio to follow the program material. If the loudspeaker is set to a low level, it will not `colour' the sound of an 'open' microphone.
The monitor output is wired to a stereo jack socket with the following configuration.

Tip = signal (mono)
Ring = signal (mono)
Sleeve = ground

GUEST
The GUEST output is stereo and follows the input selection of "From air" or "From sub".
A separate stereo headphone output is provided for a guest, and the talkback is always adressed to both earphones independent of level settings. The pogram material will be dimmed when the talkback is activated. The output is identical to that of the announcer, and could therefore be used as a second announcers output.

FOLLOW CRM (Guest).
When this switch is activated it will follow the input selection of the Control Room Monitor.
The Guest output is on a stereo jack and wired with:

Tip = left
Ring = right
Sleeve = ground

The signal is powerful enough to drive several 600 Ohm headphones in tandem.
The talkback volume to the Guest output is independant from the guests level control; normally the guest would listen to the main stereo program material.

ANNOUNCER
The ANNOUNCER output is stereo and follows the input selection of "From air" or "From sub". A separate stereo headphone output is provided for the announcer, and the talkback is always adressed to both earphones independent of level settings.

FOLLOW CRM (Announcer).
When this switch is activated it will follow the input selection of the Control Room Monitor.

MASTER SECTION / STUDIO

AUTO COMM.

When the "Autocomm" is active, the announcer is able to listen to the talkack mic and the CUE buss at the same time, when he hits his "cough" switch.
This set-up creates a direct communication with the Director and engineer without having to ask them to use their cough/talkback switches.
At the same it is now possibble to talk with the Telco module if its cue is activated.

The Announcer output is on a stereo jack and the signal is powerful enough to drive several 600 Ohm headphones in tandem.
The talkback volume to the Announcer output is independant from the announcers level control; normally the announcer listens to the main stereo program material.

BACK PANEL CONNECTORS
Apart from the already described monitor/guest and announcer outputs there are three more outputs. The Timer control output, the Cue output and the "from-air" input

The TIMER output can trigger an optional timer every time a channel is activated or deactivated
The CUE output gives the cue signal in stereo. This is an unswitched CUE output in stereo. If the D.J. Cue is activated the Cue will be muted
FROM AIR is the stereo input for controlling the off air signal coming from a receiver. This is a stereo input on jack. Input sensitivity is either 0dBu or -10dBV.

MASTER SECTION / TAPE

This section of the master houses the switches, controlling what is going to the tape outputs.

FROM OSC.
An internal 1kHz oscillator can be assigned to the tape 1 and 2 outputs as well as the Aux output.
Level can be internally adjusted to read 0dBu or -10dBv, dependent on jumper settings for the tape outputs. Both tape outputs are set with one set of jumper settings.

FROM SUB
Normally the Tape outputs are fed by the main output. Depressing the from sub switch sends the sub stereo mix to the tape outputs for recording. With this circuitry it is possible to record stereo sources from the channels assigned to the sub buss during broadcast.

MASTER SECTION / TALKBACK.

This section houses all controls needed to communicate with every connected source to the Airmix. Communication is one of the most important parts of a broadcast, inside and outside the console We have done a great deal of thought concerning this part of the console.

The talkback microphone is a built in Electret microphone with its associated level control and pulse 'on' switch. The mic-amp is protected against clipping and a peak detector watches over overloads. The same peak detector is used to watch the directors mic input.

The talkback routing is latching, and can be assigned to several outputs at the same time. The Monitor, Guest and Announcer outputs are driven post their volume controls, so communication is always possible. The Aux output level also controls the talk-back level!

DIRECTOR MIC INPUT
The Airmix has a seperate low noise mic input, with +48volt phantom power possibility, assignable to the cue system and Telco sends/returns. The remote connector of the Directors mic activates the directors mic to the same assignment switches as used for the engineers talk-back mic.

Apart from these assignments it is possible to jumper the Directors mic to the settings described below.

1. Director to Telco return (and Announcer in "autocomm" mode) by remote connector (directors TB switch)
2. Director always to Telco return (and Announcer in "autocomm" mode)
3. Director never to Telco return (and Announcer in "autocomm" mode)

NOTE:
If the "autocomm" switch is activated, talk back can be activated by the Announcer.

On the back of the master section you can find the following connectors fitted on this board located in this section.
Tape1 out stereo, Tape 2 out stereo, Master out stereo, On-air signalling 1, On-air signalling 2, Remote director.
Tape 1 and 2 are stereo outputs with levels either 0dBu or -10dBv
Master out stereo is an extra stereo output of the main mix either available in 0dBu or -10dBv dependent upon jumper settings.
The ON-Air signalling jacks are connected to reed relays driven by the logic of the input channels as described in the channel sections of this manual.
Using the D.J.mode it is possible to operate and be an announcer at the same time. If the mic-on lamp illuminates, the loudspeakers and cue loudspeaker are automatically muted.
Internally microphone channels can be connected via jumpers to the centralised ON-AIR signalling connector, so when one or more of these channels are opened, the mic-on signal will be given.

MASTER SECTION / TALKBACK.

We advise you to use an externally connected solid state relay. A suitable model is the S 201-8 04 from Sharp, which switches 220 Volts/l.S Amp click-free. A solid state relay is much safer to use and is more reliable. The ON-AIR 1/2 output can be connected directly to the S 201-8 04 relay in series with a 12 volt dc power supply..

Connector: Tip = Center contact
Ring =Normally open
Sleeve=Normally closed

These signalling outputs are only to be used for low voltage applications!

The Remote Director is a stereo jack to connect a switch and a signalling led for remotely controlling the talk back of the directors mic input. The led will indicate On-Air 1 active.

MASTER SECTION CUE/CRM

AUTOCUE.
When this switch is activated both CRM outputs are automatically connected to a selected cue switch in stereo. When this witch is not active the CRM will monitor the main outputs. The Cue signal will always be present at the Cue output jack

AUTO CUE RESET
When this switch is depressed, the Cue reset circuitry will be active meaning that any activated CUE in the console will be reset by activating any input channel in the console.

DIM LEVEL
This control adjusts the amount of dimming the main output level when talkback is active or the communication/cue system is active. The range is adjustable from fully cancelling the main output up to -6dB below Cue level.

FROM AIR
This is a stereo switch sourcing the off-air signal from a stereo receiver and assigning it to the CRM output. It is used to control the off-air signal while broadcasting.

FROM SUB
This is a stereo switch bringing the Sub output into the CRM output. It will override the from air signal when selected.

MASTER SECTION CUE/CRM

EXTERN 1/2
These are stereo inputs to be used for any stereo source that needs to be monitored in the CRM outputs. The input level can be set by jumpers to 0dBu or -10dBv

CRM
The control room monitor controls the outgoing level to the control room monitors. Level is 0dBu on a stereo jack.

DIM
The dim switch is a momentary switch activating the dimming of the CRM and giving indication of dimming by the TB circuitry and Cue system.

BACK PANEL CONNECTORS ON THIS SECTION OF THE MASTER.

CRM out L/R
This is a stereo jack giving the CRM stereo signal, nominal level is 0dBu

Extern1/2 L/R
These are the stereo inputs for the external stereo sources. level is jumperable between 0dBu and -10dBV.

Insert L & R.
The main outputs Left and Right, each have their own insertion points.
These inserts are intended to accept D&R limiters or compressors.

Tip = return
Ring = send
Sleeve = ground

Insert Mono.
Insertion point for the mono output.

NOTE:The mono output can have its own compressor/limiter, which would be particularly worthwhile when this output is used for transmitting through FM. It is usual to have higher compression ratios to increase the energy for small portables and car radios.

The signal for the mono output amp is the summed left/right main output signal. By means of the jumper settings, it is possible to determine whether the signal comes from before or after the stereo insertion points, (see jumper settings).

MASTER SECTION AUX / SUB

The stereo auxiliary send can be used for several purposes, such as driving effects, such as the D&R Qverb etc.
A cue switch lets you listen in stereo post master fader what has been assigned to the Aux busses.

SUB TO MIX

When the sub switch in the channel is used to assign specific channels to this stereo buss it is possible to bring this whole subgroup into the main output by depressing this SUB TO MIX switch.

SUB
This stereo control adjusts the overall level of the whole subgroup. Output level is either 0dBu or -10dbV set by jumpers if desirable.
A stereo cue switch assigns this signal to the CRM and the metering (if the auto cue is active)

METER FOLLOW CRM
Normal situation is; left meter follows the left main output and the right meter follows the CRM.
When the "METER FOLLOW CRM" switch is activated, the left meter follows the CRM as well.

FROM AIR
This is the input select for the phones output. Either the main mix is heard in the phones or the from air signal (the self-op switch needs to be down and the DJ channel active)

SELF OP
When this mode is activated Phones automatically switches to the main output or the eventually selected "from air" outputs, when the D.J channel is opened.
When self op is not activated, headphones will follow the CRM.

PHONES LEVEL
This controls the overall level of the stereo headphones output. To avoid misunderstandings in stressfull situations it is not possible to fully kill the headphone signal.

DJ LED
The DJ led lights whenever a DJ channel is active.

CUE RESET
Depressing this large switch resets all activated Cues in all channels and masters
The switch also indicates any activated cue switch in the console when Autocue is active.

BACK PANEL CONNECTORS ON THE AUX/SUB BOARD

On top you will see a 9 pin subD connector with the following signals/voltages
1=CRM-right (feeds meter right)
2=ground
3=External CUE led drive
4=ground
5=Mix right signal (extra meter output)
6=meter left feed (Mix left or CRM left)
7= +18 volt
8= -18 volt
9=Mix left signal (extra meter output)

AIRMIX METERING

In its basic version the Airmix is shipped with 37 segment high resolutionpeak reading ledbargraph meters. However on request we can supply you with VU meters
The Airmix has logarithmic peak reading meters, with 10 m sec. attack time, and 1.5 sec. release for every 20 dB. Normally these meters follow the CRM selectors, but internal jumpers can set the left meter to read the left program material at all times.
It is also possible to mount a second set of stereo meters to always follow the main outputs.

NOTE:The following levels should be used for a suitable sound pressure, for music, talkshows, and interviews etc.

Music	: up to -4 dB
Speech	: up to O dB
Telephone	: up to +4 dB

A mild compression such as 2:1 with slow attack and a threshold of -6 dB to limiting around +8 dB will improve the relationship between different broadcast material.

NOTE:These are average settings only, presentation of modern pop music will certainly require alternative settings.

MASTER SECTION AUX / SUB

AUX OUT STEREO
This is a stereo output of the aux masters. level is 0dBu

SUB OUT STEREO
Stereo output jack of the subgroup output, level is 0dBu or -10dBv

PHONES OUTPUT

The engineers stereo headphone output can also be used as D.J. output.
NOTE: DO NOT use headphones with an impedance lower than 200 Ohm. 600 Ohm is preferable.

MASTER SECTION AUX / SUB

PHONES OUTPUT
Connector type is stereo jack plug.
Tip = left.
Ring = right.
Sleeve = ground.

NOTE: Under the arm rest, there is another parallel connector for connecting headphones.

SWITCHED CUE OUTPUT
This is a stereo output of the CUE system which is switched in parallel with the CRM if it needs to be muted to prevent feedback from happening.
The level can be set by jumpers to be 0dBu o -10dBv.
If only a low output is required, a small 100 Ohm loudspeaker can be connected directly to the cue output.

MAIN OUTPUTS.
The Airmix contains three transformer balanced main outputs: master left, master right and mono. All three outputs have their own line output amps with high quality output transformers.
The output level is 0/+6 dB at 600 Ohm when the meter reads O dB.

Connectors are XLR male: Pin 1 = ground
Pin 2 = hot
Pin 3 = cold

If the Airmix is required to drive unbalanced equipment, Pins 1 and 3 must be shorted.

NOTE:The mono output can have its own compressor/limiter, which would be particularly worthwhile when this output is used for transmitting through FM. It is usual to have higher compression ratios to increase the energy for small protables and car radios.

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The mains input is set for 230 volt 50/60 Hz.
The Aimix can be set to 115 volt only by qualified technicians

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AIRMIX MASTER BACKPANEL CONNECTORS

MONITOR OUT STEREO/MONO

Type:	Jack	Level 0dBu/680 Ohm Tip=signal Ring=signal Sleeve=Ground

GUEST OUT STEREO

Type:	Jack	Level +15dBu/330 Ohm Tip=Left Ring=Right Sleeve=Ground

ANNOUNCER OUT STEREO

Type:	Jack	Level +15dBu/330 Ohm Tip=Left Ring=Right Sleeve=Ground

TIMER CONTROL OUT

Type:	Jack	Level ground//6V8 volt Tip=Normally low/active high (timer start) Ring=Normally low/active pulse (timer reset) Sleeve=Ground

CUE OUT STEREO

Type:	Jack	Level 0dBu/47 Ohm Tip=Left Ring=Right Sleeve=Ground

FROM AIR

Type:	Jack	Level 0dBu/-10dBv/10kOhm Tip=Left Ring=Right Sleeve=Ground

TAPE 1 OUT STEREO

Type:	Jack	Level 0dBu/-10dBV/100 Ohm Tip=Left Ring=Right Sleeve=Ground

TAPE 2 OUT STEREO

Type:	Jack	Level 0dBu/-10dBV/100 Ohm Tip=Left Ring=Right Sleeve=Ground

AIRMIX BACK PANEL CONNECTORS

MASTER OUT STEREO

Type:	Jack	Level 0dBu/-10dBV 47 Ohm Tip=Left Ring=Right Sleeve=Ground

ON AIR SIGNALLING 1

Type:	Jack	REED RELAY MAX VOLTAGE 24VOLT/50mA Tip=Center contact Ring=Normally open Sleeve=Normally closed

ON AIR SIGNALLING 2

Type:	Jack	REED RELAY MAX VOLTAGE 24VOLT/50mA Tip=Center contact Ring=Normally open Sleeve=Normally closed

REMOTE DIRECTOR

Type:	Jack	Solid state input Tip=led output Anode (activated by ON-AIR-1) Ring=normally high (active to ground) Sleeve=ground

CRM OUT L/R

Type:	Jack	Level 0dBu/47 Ohm Tip=Left Ring=Right Sleeve=Ground

EXTERN 1 IN L/R

Type:	Jack	Level 0dBu/-10dBV100Kohm Tip=Left Ring=Right Sleeve=Ground

EXTERN 2 IN L/R

Type:	Jack	Level 0dBu/-10dBV100Kohm Tip=Left Ring=Right Sleeve=Ground

LEFT INSERT

Type:	Jack	Level 0dBu/100E/10ohm Tip=Return Ring=Send Sleeve=Ground

MASTER BACKPANEL CONNECTORS

MONO INSERT

Type:	Jack	Level 0dBu/100E/100Kohm
		Tip=Return
		Ring=Send
		Sleeve=Ground

RIGHT INSERT

Type:	Jack	Level 0dBu/100E/10Kohm
		Tip=Return
		Ring=Send
		Sleeve=Ground

METER

Type	Sub-D	female
		1=CRM-right (feeds meter right)
		2=ground
		3=External CUE led drive
		4=ground
		5=Mix right signal (extra meter output)
		6=meter left feed (Mix left or CRM left)
		7= +18 volt
		8= -18 volt
		9=Mix left signal (extra meter output)

AUX OUT STEREO

Type:	Jack	Level 0dBu/47 Ohm
		Tip=Left
		Ring=Right
		Sleeve=Ground

SUB OUT STEREO

Type:	Jack	Level 0dBu/-10dBV/47 Ohm
		Tip=Left
		Ring=Right
		Sleeve=Ground

PHONES OUT STEREO

Type:	Jack	Level +15dBu/330 Ohm
		Tip=Left
		Ring=Right
		Sleeve=Ground

SWITCHED CUE OUT STEREO

Type:	Jack	Level 0dBu/-10dBv/47 Ohm
		Tip=Left
		Ring=Right
		Sleeve=Ground

7. AIRMIX JUMPER SETTINGS

TRIPLE INPUT MIC/LINE/LINE MODULE.			Default
A=ANNOUNCER COM	1 + 2 = ON	3 + 4 = OFF	OFF
B=TIMER	1+2=LINE A	2+3 = OFF 3 + 4 = ON	ON
C=LINE ON-AIR2	1 + 2 = ON	3 + 4 = OFF	ON
D=MIC ON-AIR2	1 + 2 = ON	3 + 4 = OFF	OFF
E=MIC ON-AIR1	1 + 2 = ON	3 + 4 = OFF	ON
F=LINE ON-AIR	1 + 2 = ON	3 + 4 = OFF	OFF
G=DJ MIC	1 + 2 = ON	3 + 4 = OFF	OFF
H=MIC TO MONITOR	1 + 2 = ON	3 + 4 = OFF	OFF
I=LINE TO MONITOR	1 + 2 = ON	3 + 4 = OFF	ON
K=LOW CUT	1 + 2 = OFF	3 + 4 = ON	OFF
L=CUE LINE A START/STOP	1 + 2 = OFF	3 + 4 = ON	OFF
M=STOP A OR START B	1 + 2 = CONT.	3 + 4 = PULSE	PULSE
N=START A	1 + 2 = CONT.	3 + 4 = PULSE	PULSE
O=START B	1 + 2 = STOPA	3 + 4 = START B	STOP A
P=+48Volt (J23)	1 + 2 = OFF	3 + 4 = ON	OFF
Q=AUX PRE/POST	1 + 2 = POST	3 + 4 = PRE	POST
R=AUX PRE/POST	1 + 2 = POST	3 + 4 = PRE	POST

NOTE

An optional R.I.A.A. phono pre amp can be plugged in here. The 'A' input of the channel can thus be connected directly to a phono cartridge. Jumpers should be removed from the channel completely. DO NOT plug the jumpers on the lower connecting pins, as this will short out the positive and negative channel power supply lines to earth!

TELCO MODULE.

J19=AUX PRE/POST	1 + 2 = POST	3 + 4 = PRE
J10=AUX PRE/POST	1 + 2 = POST	3 + 4 = PRE
J17=TELCO TO TIMER	1 + 2 = ON	3 + 4 = OFF
J20=TELCO TO MONITOR	1 + 2 = ON	3 + 4 = OFF
J11=TELCO ON-AIR 1	1 + 2 = ON	3 + 4 = OFF
J14=TELCO ON-AIR 2	1 + 2 = ON	3 + 4 = OFF

STUDIO PCB

J13=AIR IN LEFT	1 + 2 = -10dBV	3 + 4 = 0dBu
J 9=AIR IN RIGHT	1 + 2 = -10dBV	3 + 4 = 0dBu
J15=CUE-OUT LEFT	1 + 2 = -10dBV	3 + 4 = 0dBu
J16=CUE-OUT RIGHT	1 + 2 = -10dBV	3 + 4 = 0dBu

AIRMIX JUMPER SETTINGS

TAPE/TALKBACK PCB

J 7=+48VOLT DIRECTOR MIC	1 + 2 = OFF	3 + 4 = ON
J12=TAPE 1/2 OUT LEFT	1 + 2 = -10dBV	3 + 4 = 0dBu
J13=TAPE 1/2 OUT RIGHT	1 + 2 = -10dBV	3 + 4 = 0dBu
J14=STEREO OUT LEFT	1 + 2 = -10dBV	3 + 4 = 0dBu
J15=STEREO OUT RIGHT	1 + 2 = -10dBV	3 + 4 = 0dBu
J11=DIRECTOR TO TELCO	1+2=switched	2+3=OFF 3+4=ON

CUE/CRM PCB JUMPER SETTINGS

J13=EXTERNAL-1 IN LEFT	1 + 2 = -10dBV	3 + 4 = 0dBu
J14=EXTERNAL-1 IN RIGHT	1 + 2 = -10dBV	3 + 4 = 0dBu
J15=EXTERNAL-2 IN LEFT	1 + 2 = -10dBV	3 + 4 = 0dBu
J16=EXTERNAL-2 IN RIGHT	1 + 2 = -10dBV	3 + 4 = 0dBu
J12=MONO PRE/POST LEFT INSERT	1 + 2 = POST	3 + 4 = PRE
J11=MONO PRE/POST RIGHT INSERT	1 + 2 = POST	3 + 4 = PRE

AUX/SUB PCB JUMPER SETTINGS

J7=SWITCHED CUE OUT LEFT	1 + 2 = -10dBV	3 + 4 = 0dBu
J9=SWITCHED CUE OUT RIGHT	1 + 2 = -10dBV	3 + 4 = 0dBu
J10=SUB OUT LEFT	1 + 2 = -10dBV	3 + 4 = 0dBu
J11=SUB OUT RIGHT	1 + 2 = -10dBV	3 + 4 = 0dBu
J19=CUE LED EXTERNAL	1 + 2 = ON	3 + 4 = EXT

8. INSTALLING THE AIRMIX

Mains.
Please check that the local mains supply corresponds with the voltage selected on the Airmix mains inlet. The Airmix can be factory set for voltages between 100 - 120 Volt or 220 - 240 Volt.
The Airmix is fused with a 2 Amp slow blow fuse for 110 Volt or 1.2 Amp slow blow fuse for 220 Volt.
DO NOT use any other value, as this would be hazardeous, and the Airmix guarantee will be void.

Clean Power Connection.
Be sure to use a 'clean' power outlet, i.e. one that is fed directly from the mains, including earth.
Only connect the Airmix to this outlet and its associated equipment. This will act as the centralized mains and earth for the studio.
It is advisable to install several multiple mains connectors close to the Airmix, with a master power switch to shut down all power to the studio. Grounding MUST BE a starground system.
Keep all wires as short as possible, but never install audio next to power cables.
"Polluted" mains are caused by changing currents on the outlets, such as air-conditioners, coffee machines, fridges, computers, dimmer packs etc. DO NOT connect any of these types of items to
the Airmix main power outlet.

Wiring.
In cases where all the equipment is transformer balanced, it is usual to connect the shielding of the wiring to the source side only.
In the Airmix, many of the sources will be unbalanced, so a different strategy needs to be adopted.
Equipment such as CD players do not have a mains ground connection. In this case the shielding can be connected on both sides of the connection - a ground loop will not occur.
Try to choose a CD player with metal housing. If you experience problems with the transmitter interfering with the CD sound, connect the CD housing to a ceramic capacitor of 0.01 uF/250 V to the mains earth.

Audio Connections to the Airmix.
Prior to commencing wiring of the studio, it is advisable to obtain some labels, which will simplify trouble-shooting. Label such as "CD-1, chl 2A"

The first step is to connect the Airmix to the mains, with all faders closed, no CRM active and the CRM volume controls fully clock-wise.

A. Connect the CRM amp to the CRM output, and check whether there is any 'hum' or 'noise'
B. Now connect the phono players, and check again for `hum' and 'noise'

NOTE: In most cases it is a matter of finding the best grounding for the phono ground by trial and error. This might be directly to the audio ground or to the chassis of the Airmix.
C. Now connect Tapedeck, Cartmachines, CD players etc.

INSTALLING THE AIRMIX

NOTE: Wiring a tuner needs special attention.
If the tuner is "cable", the coax antennae cable will probably cause a ground loop. The antennae input of the tuner must be separated by an H.F. transformer - ask your dealer or any radio shop for details.

IMPORTANT

SAFETY PRECAUTION - All 'outside' connections to the Airmix, even from the same building, must be connected via a transformer. This avoids the possibility of ground loops and `hum'

The shielding must be connected to the source side.

In areas with a strong H.F. interferance, it is wise to connect the other side of the shielding through a 0.1 uF/250 Volt ceramic capacitor. The capacitor will not affect the audio, but will reduce H.F. signals.

Servicing the Airmix.

A. Disconnect the mains supply.
B. Remove the power cable from the back of the console.
C. Remove the backpanel of the meterhood.
D. Remove cabling as necessary.
E. Unscrew the channel module bolts.
F. Now lift the channel up at the fader section, and then the other side. Carefully lift the module until you see a connector mounted to a ribbon (flat) cable.
G. On the PCB part of the connector you will see two ejectors, with which to eject the cable header.

Installing the Channel Module.

A. Plug the ribbon cable connector into the PCB connector, ensuring that the ejectors are securely replaced.
B. Slowly put the module down into the chassis, rear first.
C. Tighten all screws, and reconnect the channel.

Servicing the Master Section.

A. Disconnect the Airmix from the mains supply.
B. Remove all cables.
C. Remove all holding screws.
D. Lift the master section, from the fader side first.
E. Remove the connector to the power PCB.
F. Lift the section upwards until you are able to remove the ribbon cable from the PCBs.
G. Reverse this procedure to re-mount the master section.

INSTALLING THE AIRMIX

INSTALLING/ALIGNMENT OF THE TELCO MODULE.

A. Connect the telephone line with line A and a phone appliance to phone A (see connector pages).

1. Connect audio to the insert (in/return) and adjust VR4 (N-1 control) to a minimal signal strength on test point J16 (N-1 testpin).

NOTE: This setting has already performed at the factory but can be repeated if needed.

2. Connect a headphone to insert send and activate the telco module (ON switch).

3. Listen to the headphones(inserted in insert send) and adjust VR3 to minimum signal.

4. Select with a jumper the correct Condenser for miminum signal feed through (Side tone selection)

NOTE: Repeat steps 3 and 4 several times, until the maximum attenuation is achieved.

The hybrid is now aligned, leave the R and C balance selection as selected.
As long as the hybrid remains connected to the same "phone company", no changes need to be made to this set up.

NOTE: Try to by-pass the in house telephone system if possible, otherwise it will be extremely difficult to achieve a good alignment. A direct connection with the incoming 'phone company
gives the best results.

NOTE VERY IMPORTANT!!!

INSTALLATION OF NEW (EXTRA) MODULES

When installing new (extra) modules in your Airmix it is necessary to re-adjust the internal power supply voltages to guarantuee a stable performance at all times.
More current is taken from the internal power supply because you have put in more modules now.
It is necessary to adjust the power supply voltage to a precise level of 16.7 volts for both the positive and negative rails with all modules connected.
Adjustment is performed on the power supply PCB mounted on the bottom of the console located beneath the master section.
Power supply voltage is measured across the output terminals of the power supply PCB inside the console.

NOTE: If the power supply voltage is not adjusted to 16.7 volts again, it may be possible that certain logic functions may not work properly all times.

9. SPECIFICATION

INPUTS	Mic inputs: balanced 2 kOhm, R.F. protected. C.M.R.R. at 50 Hz: -76 dB. Sensitivity: -70 dBu to +16 dBu for +6 dBu out. Signal to noise ratio: - 129.00 dBr.
	LINE INPUTS Line (stereo) inputs: Balanced/Unbalanced 10 kOhm minimum. Signal to noise ratio: - 90 dB.
	Sensitivity: -20 dBv to +20 dBv active controlled for +6 dBv output. Insert: input unbalanced at 10 kOhm. Sensitivity: OdBv. Tape returns in master: -10 dBv or 0 dBu at 10 kOhm .
OUTPUTS	Left/right/mono 0/+6 dBu transformer balanced. Aux. 1/2, Telco send, Cue, CRM, 0dBu at 47/330 Ohm unbalanced. Phones / Announcer / Guest, +15 dBv at 47 Ohm.
EQUALISATION	+/- 12 dB at 10 kHz shelf. +/- 12 dB at 3 kHz bell curve. +/- 12 dB at 60 Hz shelf.
OVERALL	Frequency response: 20-20.000 Hz +/- 0.5 dB. Harmonic distortion: less than 0.02% at all levels (VCA's in). Max gain through desk: 86 dB. Cross talk: channel to channel: - 90dB at 1 kHz.
	Noise: -86 dBu (one channel @ OdB). A/B line cross talk: -80 dB. Max output: +22 dBu into 2 kOhm. Headroom: +22 dB above internal nominal level.
REMOTES	All control inputs are on jack sockets. Channel/master mike-on signalling is via buffered transistors and or reed relays(24V/50mA). Machine remote control is via separate reed relays for start and stop pulse or continuous signals.
WEIGHT `	Airmix 16: 50 kg (110 Ib).
OPTIONS	Conductive plastic faders. VU meters, extra main output meters. Timer

DIMENSIONS

Drop though mounting	815mm width 610mm depth

10. SICO REMOTE UNIT.

The Airmix Sico Remote unit is designed to be the communication interface between the control room and the announcer or guest. It has a built in headphone amp, a remote connector to be wired via a shielded stereo cable to the related Airmix channel, and a very convenient CHOUGH/COMMUNICATION button.

We shall describe all functions in detail now.

COUGH/SIGNALLING IN MIC MODE
This useful feature has two important functions:
1. Cough/communication,
2. 'Mic-on'

1. Cough/Communication,
A shielded stereo cable has to be connected between the Sico remote unit and the Airmix input channel that needs to be communicated to.
Using the push-button during broadcast, the announcer can temporarily mute the microphone in order to cough (where the name comes from). At the same time his microphone will be routed to the cue system, in order to give him the opportunity to communicate with the engineer/producer.

2. 'Mic-on',
When the channel is active a voltage is applied between Tip (+) and Sleeve (0V),
which can be used to activate a led (red) (in this case the internal led of the SiCo remote unit. It can also be used to activate an externally connected lamp (-18 Volt/20mA), but resistor R123 needs to be replaced. Contact your dealer for additional information.

In addition to the localized 'mic-on' signaling, there is also a master signal in the master section. The ON-AIR signaling outputs 1 and 2 offer the option of driving external red light indicators in the studio. Two jumpers per channel select which channel will activate the master ON-AIR signaling (see jumper settings, page 32).

The input jack of the Sico Remote unit needs to be wired to the master of the Airmix, Guest or Announcer outputs or whatever suits your purpose mostly.
The output jack is a parallel jack to the input jack to simplify wiring to more than one SiCo remote unit in the presentation room.

11. AIRMIX USER QUESTIONNAIRE

Dear Airmix user,
We care very much about your opinion of our product, and would very much appreciate if you could complete the following questionnaire, and return it to the address below. Please use the reverse, or additional paper if required.

USER NAME .....
ORGANISATION .....
ADDRESS .....
TOWN .....
POST CODE .....
COUNTRY .....

AIRMIX SERIAL NO:
.....
CONFIGURATION .....
DEALER .....

HOW DID YOU HEAR ABOUT THE "AIRMIX"? (please circle)
(Dealer / Advertisement / Exhibition / Other user / Other)

WHAT JOURNALS DO YOU TAKE ON A REGULAR BASIS?

.....
WHAT IS YOUR OPINION OF THE PRICE/QUALITY OF THE 'AIRMIX'?

.....
WHAT PRICE WOULD YOU CONSIDER SUITABLE FOR THE 'AIRMIX'?

.....
ANY OTHER SUGGESTIONS?

.....
"I REQUIRE INFORMATION ABOUT

.....
WHAT OTHER EQUIPMENT DO YOU USE?

.....

PLEASE SEND TO:
D&R Electronica Weesp bv, Rijnkade 15B, 1382 GS WEESP

12. PRODUCT SAFETY

This product is manufactured with the highest standards and is double checked in our quality control department for reliability in the "HIGH VOLTAGE" section.

CAUTION
Never remove any panels, or open this equipment. No user servicable parts inside.
Equipment power supply must be grounded at all times.
Only use this product as described, in user manual or brochure.
Do not operate this equipment in high humidity or expose it to water or other liquids.
Check the AC power supply cable to assure secure contact.
Have your equipment checked yearly by a qualified dealer service center.
Hazardous electrical shock can be avoided by carefully following the above rules.

EXTRA CAUTION FOR LIVE SOUND
Ground all equipment using the ground pin in the AC power supply cable.
Never remove this pin.
Ground loops should be eliminated only by use of isolation transformers for all inputs and outputs. Replace any blown fuse with the same type and rating only after equipment has been disconnected from AC power. If problem persists, return equipment to qualified service technician

PLEASE READ THE FOLLOWING INFORMATION VERY CAREFULLY
Especially in sound equipment on stage the following information is essential to know.
An electrical shock is caused by voltage and current, actually it is the current that causes the shock.
In practise the higher the voltage the higher the current will be and the higher the shock.
But there is another thing to consider and it is resistance.
When the resistance in Ohms is high between two poles, the current will be low and vica versa. All three of these; voltage, current. and resistance are important in determining the effect of an electrical shock.

However, the severity of a shock primarily determined by the amount of current flowing through a person.

A person can feel a shock because the muscles in a body respond to electric
Current can also be fatal when it causes the chest muscles to contract and stop breathing.
At what potential is current dangereous.

Well the first feeling of current is a tingle at 0.001 Amp of current. The current between 0.1 Amp and 0.2 Amp is fatal. Imagine that your home fuses of 20 Amp can handle 200 times more current than is necessary to kill. How does resistance affect the shock a person feels.
A typical resistance between one hand to the other in "dry" condition could be well over 100,000 Ohm.

If you are playing on stage your body is perspiring extensively andyour body resistance is lowered by more than 50%. This is a situation in which current can easilyflow.

12.0 PRODUCT SAFETY

Current will flow when there is a difference in ground potential between equipment on stage and in the P,A. system. Please do check if there is any potential between the housing of the mics and the guitarsynth amps, which will be linked by your body on stage.
Imagine, a guitar in your hand and your lips close to the mike! A ground potential difference of above 10 volts is not unusual, in improperly wired buildings it can possibly be as high as 240 volts.
Allthough removing the ground wire sometimes cures a system hum, it will create a very hazardeous situation for the performing musician.

Always earth all your equipment by, the grounding pin in your mains plug Hum loops should be only cured by proper wiring and isolation input/output transformers.

Replace fuses always with the same type and rating after the equipment has been turned off and unplugged. If the fuse blows again you have an equipment failure, do not use it again and return it to your dealer for repair.

And last but not least be carefull not to touch a person being shocked as you, yourself could also be shocked. Once removed from the shock, have someone send for medical help inmediately

Always keep the above mentioned information in mind when using electrically powered equipment.

D&R ELECTRONICA B.V. WEESP

HEAD OFFICE
D&R Electronica Weesp b.v.
Rijnkade 15B
1382 GS WEESP
THE NETHERLANDS

Phone: +31 (294) 418 014*
Fax: +31 (294) 416 987
Website: http//www.d-r.nl
E-mail: info@d-r.nl

DECLARATION OF CONFORMITY

Manufacturers Name: D&R Electronica Weesp b.v.

Manufacturers Address: Rijnkade 15B,
1382 GS Weesp,
The Netherlands

declares that the product

AIRMIX series

conforms to the following product specifications:

EMC: **EN 55022: 1987**
CISPR 22 (1993) class B

EN 500082-1 (1992)

Supplementary Information:

The products herewith complies with the requirements of the EMC Directive 89/336/EEC (1989) as amended by the CE Marking Directive 93/68/EEC (1993).

D&R Electronica Weesp b.v.
Rijnkade 15 B
1382 GS WEESP
The Netherlands
President of Engineering

AIRMIX

SERVICE MANUAL