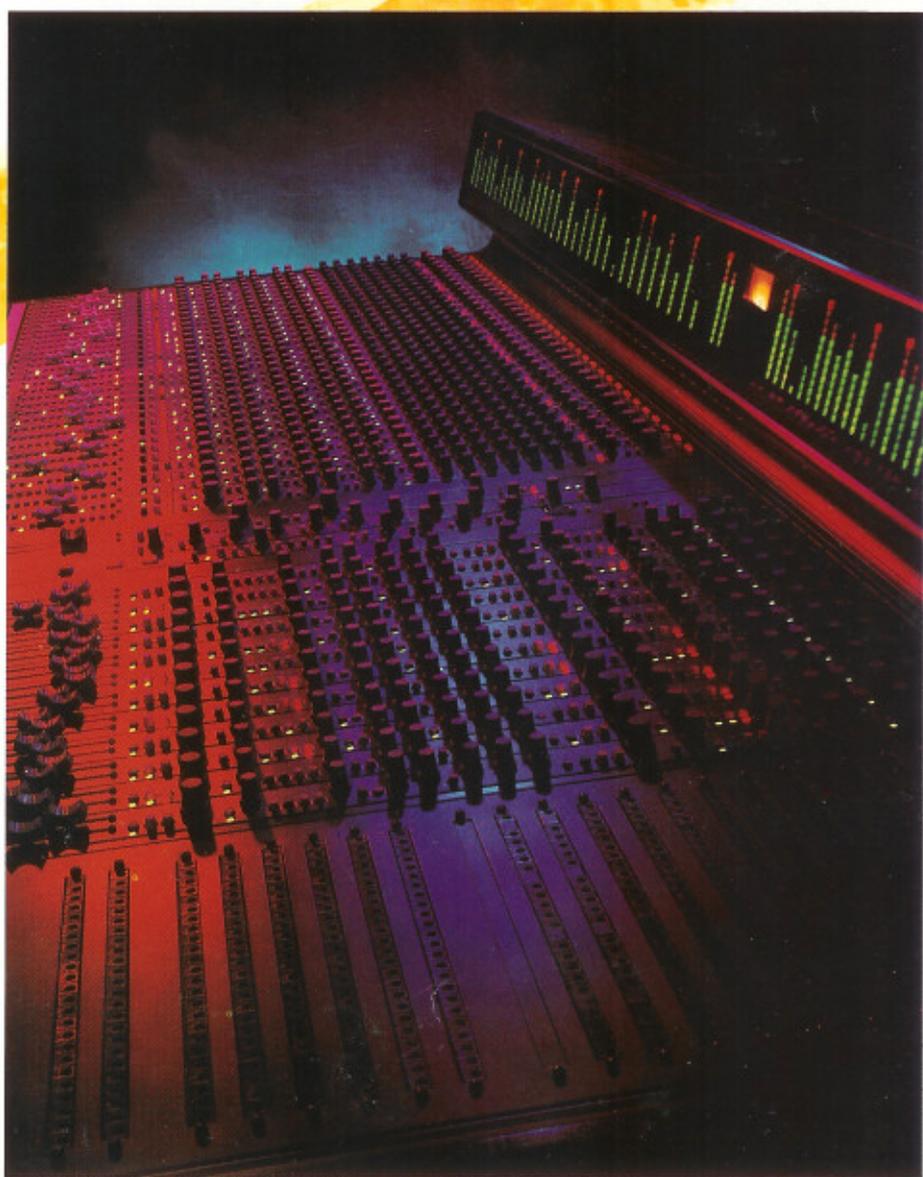


HILL
AUDIO



THE
CONCEPT
SERIES



S E R I E S



limited only by your imagination

Every sound engineer has a different vision of his or her 'ideal' mixing console. This will be determined by a variety of factors including the intended application for the console, the physical constraints imposed on its location, the budget available, and perhaps most importantly, the personal preference of the engineer. What is always constant is the expectation of the highest possible level of sound quality and reliability.

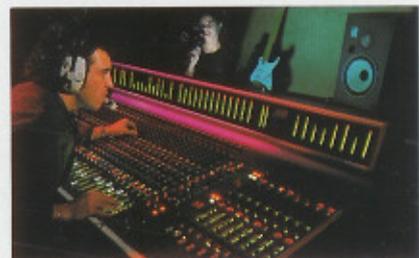
The Hill Audio Concept series of modular mixing consoles is possibly the most flexible and creative system currently available in its price range. It offers choices in almost every area of control including the common areas of size of console and number of inputs/subgroups/monitor sections, as well as some less commonly available choices such as type of equalisation (eq), number of auxiliary (aux) sends, degree of automation, type of metering, type of patchbay and even the cosmetics of the console.

In the year since its introduction, the Concept series has found applications in sound and film recording, live sound reinforcement, theatre and dance companies, commercial installations including those in churches, and educational establishments and with sales continually increasing the already impressive user list is growing ever larger.

What is common to every Concept sold is the adherence to the Hill Audio philosophy that audio transparency and reliability are the two most important aspects of the design and production of audio equipment. An example of this philosophy is that there is no dedicated Concept range of either live or recording consoles – each console is rugged enough to survive the rigours of a major worldwide tour while offering sound quality and specifications to satisfy the demands of discerning recording studios. These consoles are totally hand-built and are tested at each stage of manufacture, culminating with a fully computerised instrument test and, more importantly, a full sound test using every control on the console under the conditions for which it was made – to reproduce music.

The Concept series is split into 2 ranges – the 200 and the 400 series. These differ only in the facilities that they offer. Both of these ranges include consoles suitable for both sound reinforcement and recording with the 200 series being suitable for up to 32 track recording and the 400 series being suitable for up to 48 track recording.

The construction of both 200 and 400 series is identical as mechanical integrity and structural rigidity are paramount in any console.



The Concept Mainframe is constructed from 6 custom designed aluminium extrusions. These form a very light-weight, fully modular, rigid housing for the Concept modules. The frames are available in standard sizes housing 29,37,45,53, and 61 modules (custom sizes are available to order). The modules connect to the mainframe via a ribbon cable bussing system using gold plated DIN standard connectors fixed to the frame in a similar manner to a PCB motherboard. This method of construction eliminates the need for an excessive length of cable between modules to facilitate removal, thus improving noise and crosstalk specifications, while also dispensing with the need for a large and fragile motherboard.

The Concept module is constructed as a self-contained unit that has all the interface connections which form the back panel, as an integral part of the module. The components used are of the highest quality and attention has been given even to areas often overlooked, for example the electronically balanced mic pre-amp is individually adjusted prior to leaving the factory for optimum common mode rejection. All of the printed circuit boards are through-hole-plated, all integrated circuits are socket mounted and all resistors are 1% metal film. Faders are all 100mm Alps carbon track (with the option of Penny & Giles conductive plastic on the 400 series).

The features included as standard on the Concept range are designed to improve the ease-of-use of the consoles, allowing the operator freedom to concentrate on the creative process. An example of this is the **auto-pfl** switch on the master module. This activates a circuit which allows the console operator to assign any pfl signal to the control room monitors in mono, at pre fade level. The pfl signal will defeat whatever signal is in the monitors at that time so that in a mixdown situation, with all channels in use, the operator can instantly isolate any one channel and listen to it in mono, pre pan and pre fade. When activated, a warning LED illuminates on the master module.

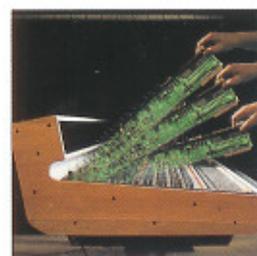
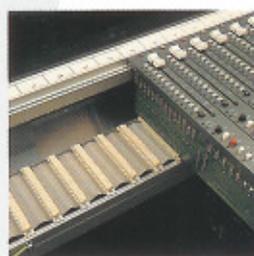
Flexibility is the key to both the 200 and 400 Concept ranges. As well as the variety of frame sizes there is also a **choice of Subgroup Modules**.

For recording applications 2 group modules are available: a single group with 2 monitor sections and a double group also with 2 monitor sections. The monitor sections feature 4 aux sends, eq., and an FX select that allows the monitor section to be used as an effects return, or as an input during mixdown. When the console is fitted with either of these modules, the tape returns are electronically normalled to the monitor section until the tape switches on the input modules are depressed. This totally eliminates the need for repatching on mixdown.

For sound reinforcement applications the matrix/FX group module features an 8 way matrix and an effects return with a fader, eq and full routing facilities. If the matrix is not required, either of the recording group modules can be used and the monitor sections used as effects returns. Access to the monitor sections in this application can be from the FX jack or from the tape input jack on the input channel.



S E R I E S



200

concept

S E R I E S

... cost effectiveness

The Concept 200 series of consoles is a fully specified range with an enviable complement of standard features including some that are unique to Hill Audio. These are supplemented by a carefully chosen selection of options.

To satisfy the requirements of a wide variety of operators, the 200 series includes a **choice of equalisation** between fixed band and sweep eq sections at no extra cost.



The **'side tracker'** active eq section provides ± 12 dB of cut or boost at 6 fixed frequencies with an additional $\pm 6/-24$ dB narrow band notch filter sweepable between 50Hz-5kHz. This gives a phase coherent eq section with the additional ability to precisely eliminate for example, the 'ringing' on a snare drum. This eq section is especially suitable for sound reinforcement applications.

The **sweep** eq section provides ± 12 dB of cut and boost at each of 4 sweepable frequency bands to allow specific effects to be achieved and a selection of exact frequencies to be accessed.

There is a fully equipped **meter bridge** on the 200 series including large illuminated VU meters for all monitor sections, outputs and for pfl. These meters are supplemented by -16 and $+6$ dB level LEDs on each input for improved visual monitoring of levels.



2 0 0 S E R I E S O P T I O N S

The 200 series is equipped with **8 auxiliary sends as standard** which appear on 4 controls with A-B switching. For situations where use of more than 4 of the aux sends at once is envisaged, it is possible to specify dual concentric aux pots, allowing all 8 aux sends to be accessed simultaneously.

Choice of Patchbay Facilities. Any 200 series Concept console is available with a comprehensive factory fitted bantam patchbay occupying 8 module spaces. This is detailed later in the brochure. The consoles are also available with a 19" rack space built in, to accommodate either a proprietary patchbay or a selection of effects units.

Cosmetics – There are stands available for all consoles and in addition, Concepts are available with either a silver anodised frame and polished oak endcheeks or a black anodised frame and black ash endcheeks, so as to complement their surroundings.

Features for Sound Reinforcements use

On consoles designed for sound reinforcement (those with matrix subgroup modules) sockets for **halogen flexilites** are fitted to the meter bridge. These sockets are optional on recording consoles. A range of **flightcases** and both **active and passive multicore systems** is available for the consoles.



Standard 200 series Configurations – see flap on inside back cover.

... unparalled flexibility

The Concept 400 series is the flagship of the Hill Audio range of mixing consoles and as well as including all of the standard features of the 200 series, has many more facilities as standard that would be considered unusual even as options in its price range. In addition to these, an extensive range of options (including all of those available on the 200 series) allows you to satisfy your exact requirements.

The **standard 400 series features** include **Solo-in-Place**, which allows the console operator to listen to any one channel or group of channels in the stereo monitors, post fade, post pan and in stereo by depressing one switch. The solo signal from the input channel will defeat whatever signal is in the control room monitors at that time so that in mixdown, with all channels in use, the operator can instantly isolate any one channel and listen to it in stereo, post pan and post fade. When activated, a function LED illuminates on both the channel and the master module. This is supplemented by the same **auto-pfl** circuit as fitted to the 200 series.

The console also includes an **auto (programmable) mute system** as a further aid to ease of use. This allows any group of input channels to be selected to one or both of 2 auto mute busses by depressing prog mute 1 or 2 on the input channels, with an adjacent orange LED indicating that the auto mute is programmed. When master PROG 1 or 2 is depressed on the master section, the red input mute LED indicates that the program mute buss is activated and the selected input channels have been muted. Any number of input channels can be muted at one time, and this system is ideal for muting a number of input channels by depressing only one switch. All the mutes allow the pre fade aux sends to remain operational.

12-way **LED input and output meters** with peak rise time and VU decay allow precise visual monitoring of signal levels. These are supplemented by a **VU pfl meter** and further +6/-16dB level LEDs on the inputs and monitor section – a truly comprehensive metering system.

Status LEDs are fitted to almost all switches on the console including the routing switches, to allow the operator to monitor the status of the console at a glance. This is particularly useful in situations where the level of ambient light is low and is typical of the features on these consoles – designed to help the operator day after day, rather than for 'showroom appeal'.

4 0 0 S E R I E S O P T I O N S

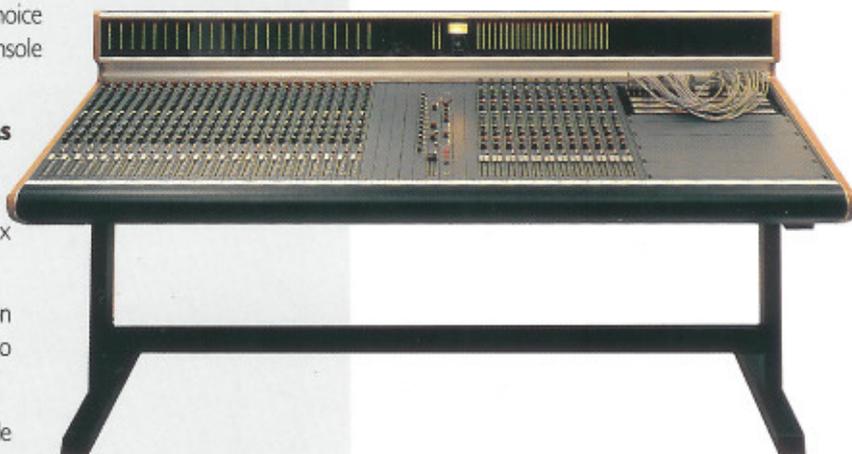
VCA Grouping/Console Automation

All modules have facility for a VCA grouping option and access to this VCA chip will also allow remote triggering of the programmable mute system as well as straightforward installation of a fader automation system. It is the policy of Hill Audio not to offer or specify a particular automation system as we realise that the choice of such a system is as personal as the choice of the console itself and we do not wish to limit this choice.

The 400 series is equipped with **12 auxiliary sends as standard** which appear on 6 controls with A-B switching. The dual concentric aux pot option is also available on these consoles allowing simultaneous control of all 12 aux sends.

100mm **Penny & Giles faders** are available as an option on 400 series consoles. **A 69 module frame** size is also available as standard.

Standard 400 series Configurations – see flap on inside back cover.



200

concept

S E R I E S

INPUT MODULE



Mic, line and tape inputs are all electronically balanced giving very low phase shift combined with excellent headroom. Signals connected to the tape input are electronically routed to the monitor section of the console if fitted.

- +48V** This sends a fully regulated 48v phantom supply to the mic input for powering condenser mics.
- ∅** This reverses the phase of the mic input. This can be used either to correct for wrongly wired mic leads or for special mixing techniques.
- 20dB** Attenuates the mic input signal by 20dB to allow for high input levels.
- TRIM** This continuously varies mic and line levels between 0dB and +60dB (mic), and -20dB and +20dB (line).
- mic/line** Switches between the mic and line inputs.
- TRIM** This continuously varies the tape input level between -20dB and +20dB with a detent at 0dB to facilitate calibration.
- tape*** Selects the tape input to the channel for use in mixdown situations or as an extra line input. This control overrides the mic/line switch.

The **insert point** is post gain but pre eq. It is unbalanced and is accessed by 2 mono 1/4" jack sockets allowing an additional pre eq direct out from each channel.

- EQUALISATION** - either 'Sidetracker' or sweep eq sections may be specified. A combination of both modules is also possible in the same console.

- SIDETRACKER EQ SECTION**
12.5kHz, 4.5kHz, 1.5kHz, 500Hz, 150Hz, 60Hz
These controls each cut or boost the level by +/-12dB at the indicated frequency with a Q of 0.75. There is a detent at 0dB to facilitate reset.

- LEVEL** This boosts or cuts the level of the notch filter by between +6dB and -24dB. There is a detent at 0dB to facilitate reset.

- SWEEP** This sweeps the centre frequency of the notch filter between 50Hz and 5kHz. The Q of the notch filter varies between 0.5 and 10 according to the degree of cut/boost applied, to allow both gentle wide-band tonal correction and very narrow-band access to spot frequencies to eliminate feedback and resonances.

- SWEEP EQ SECTION**
H.F. The **level** control cuts or boosts the level of the signal by +/-12dB and is detented at 0dB. The **frequency** control continuously varies the centre frequency between 4kHz-20kHz at a Q of 1.3.
H.MID The **level** control cuts or boosts the level of the signal by +/-12dB and is detented at 0dB. The **frequency** control continuously varies the centre frequency between 300Hz-10kHz at a Q of 1.3.
L.MID The **level** control cuts or boosts the level of the signal by +/-12dB and is detented at 0dB. The **frequency** control continuously varies the centre frequency between 100Hz-2kHz at a Q of 1.3.
L.F. The **level** control cuts or boosts the level of the signal by +/-12dB and is detented at 0dB. The **frequency** control continuously varies the centre frequency between 25Hz-500Hz at a Q of 1.3.

- eq out** This control defeats all eq settings.

- auxiliary Sends** Using 4 rotary controls, with associated select switches (aux 1 and 2 can be switched to aux 5 and 6 etc.), 8 auxiliary sends are available on each module. All the sends are selected and switched in pairs, such that any pair can be pre or post the channel fader, and internally, any pair can be selected to be pre or post the eq section when 'pre' is selected. When the **dual concentric aux** option is fitted, all sends may be simultaneously accessed, 1-4 with the uppermost pots and 5-8 with the lower collars. In this case pre/post fade and eq selection is carried out in groups of 4 aux sends.

- pan** Apportions signal in the routing buses, for example between groups 3 and 4, or between master Left and Right when the mix buss is selected. This control is detented at its mid point to facilitate reset.

- mute*** Defeats the channel output and all post fade aux sends.

- p.f.l.** Pre fade listen: this switch sends the pre fade signal to the headphones and pfl meter. See 'auto pfl' in the functions master section.

- peak** This input LED indicates when the input signal level is at +6dBu. It is post eq and pre fade. This is not a clip indicator as there is 12dB of headroom after the LED illuminates.

- signal** This input LED indicates that a signal is present. It illuminates at -20dBu.

- routing** The routing is controlled by 6 switches. The **mix** switch routes the signal directly to the Left and Right master buses and the switches marked 1-8 route the signal to groups 1-8 unless the **assign** switch is depressed when they route to groups 9-16 (if fitted). More than one routing switch may be depressed at one time.

- fader** A smooth action 100mm Alps carbon track fader is fitted.

The unbalanced channel **direct out** is taken post fade.

*The switches have associated status LEDs.

Mic, line and tape inputs are all electronically balanced giving very low phase shift combined with excellent headroom. Transformer balancing is optional on the mic input. Signals connected to the tape input are electronically routed to the monitor section of the console if fitted.



- +48V** This sends a fully regulated 48v phantom supply to the mic input for powering condenser mics.
- ↕** This reverses the phase of the mic input. This can be used either to correct for wrongly wired mic leads or for special miking techniques.
- 20dB** Attenuates the mic input signal by 20dB to allow for high input levels.
- TRIM** This continuously varies mic and line levels between 0dB and +60dB (mic), and -20dB and +20dB (line).
- mic/line** Switches between the mic and line inputs.
- 75Hz** Activates a 75Hz high pass filter (18dB/octave) to eliminate low frequency rumble.
- TRIM** This varies the tape input level between -20dB and +20dB with a detent at 0dB to facilitate calibration.
- tape*** Selects the tape input to the channel for use in mixdown situations or as an extra line input. This control overrides the mic/line switch.
The **insert point** is post gain but pre eq. It is unbalanced and is accessed by 2 mono 1/4" jack sockets allowing an additional pre eq direct out from each channel.

EQUALISATION - either 'Sidetracker' or sweep eq sections may be specified. A combination of both modules is also possible in the same console.

SIDETRACKER EQ SECTION

12.5Hz, 4.5Hz, 1.5Hz, 500Hz, 150Hz, 60Hz

These controls each cut or boost the level by +/-12dB at the indicated frequency with a Q of 0.75. There is a detent at 0dB to facilitate reset.

LEVEL This boosts or cuts the level of the notch filter by between +6dB and -24dB. There is a detent at 0dB to facilitate reset.

SWEEP This sweeps the centre frequency of the notch filter between 50Hz and 5kHz. The Q of the notch filter varies between 0.5 and 10 according to the degree of cut/boost applied, to allow both gentle wide-band tonal correction and very narrow-band access to spot frequencies to eliminate feedback and resonances.

SWEEP EQ SECTION

H.F. The **level** control cuts or boosts the level of the signal by +/-12dB and is detented at 0dB. The **frequency** control continuously varies the centre frequency between 4kHz-20kHz expand at a Q of 1.3.

H.MID The **level** control cuts or boosts the level of the signal by +/-12dB and is detented at 0dB. The **frequency** control continuously varies the centre frequency between 500Hz-10kHz at a Q of 1.3.

L.MID The **level** control cuts or boosts the level of the signal by +/-12dB and is detented at 0dB. The **frequency** control continuously varies the centre frequency between 100Hz-2kHz at a Q of 1.3.

L.F. The **level** control cuts or boosts the level of the signal by +/-12dB and is detented at 0dB. The **frequency** control continuously varies the centre frequency between 25Hz-500Hz at a Q of 1.3.

eq out* This control defeats all eq settings.

auxiliary Sends Using 6 rotary controls, with associated select switches (aux 1 and 2 can be switched to aux 7 and 8 etc.), 12 auxiliary sends are available on each module.
All the sends are selected and switched in pairs, such that any pair can be pre or post the channel fader*, and internally, any pair can be selected to be pre or post the eq section when 'pre' is selected.
When the **dual concentric aux** option is fitted, all sends may be simultaneously accessed, 1-6 with the uppermost pots and 7-12 with the lower collars. In this case pre/post fade and eq selection is carried out in groups of 4 aux sends.

pan Apportions signal in the routing busses, for example between groups 3 and 4, or between master Left and Right when the mix buss is selected. This control is detented at its mid point to facilitate reset.

prog. 1* Selects the channel to programmable mute bus 1.

prog. 2* Selects the channel to programmable mute bus 2.

mute* Defeats the channel output and all post fade aux sends.

p.I.L.* Pre fade listen: this switch sends the pre fade signal to the headphones and pfl meter. See 'auto pfl' in the functions master section.

Solo* Solo in place: this switch sends the post fade, post pan signal directly to the monitor speakers muting whatever signal is in the monitors at that time. It is used to listen to one or more signals in the mix without changing their level and position.
The **12-way input LEDs** indicate the signal level post eq but pre fader.

peak This input LED indicates when the input signal level is at +6dBu. It is post eq and pre fade. This is not a clip indicator as there is 12dB of headroom after this LED illuminates.

signal This input LED indicates that a signal is present. It illuminates at -20dBu.

routing* The routing is controlled by either 9 or 13 switches. The **mix** switch routes the signal directly to the Left and Right master busses. If the console is fitted with 8 or 12 groups and no VCA group, each routing switch accesses a single group, otherwise routing is to pairs of groups. These switches have associated green status LEDs. If either 4 or 8 VCA groups are fitted, these are accessed singly by red switches with yellow status LEDs. More than one routing switch may be depressed at one time.

fader A smooth action 100mm fader is fitted. This may be either Alps carbon track or Penry & Giles conductive plastic. The unbalanced channel **direct out** is taken post fade.

*These switches have associated status LEDs.

4concept 0

S E R I E S I N P U T M O D U L E



2 concept 0

S E R I E S

SINGLE SUB GROUP DOUBLE MONITOR MODULE

This module contains 1 subgroup and 2 monitor sections. This is used in recording situations where it is not envisaged that all tracks will be recorded at once (for example with a 16 track recorder with the capability of recording 8 tracks simultaneously) or in sound reinforcement applications where numerous effects returns are required.

MONITOR SECTION

(this section is identical for both monitor sections).

equalisation This section consists of 2, phase coherent, fixed frequency, fixed bandwidth, bell filters with Q of 0.75 and centres at 100Hz and 10kHz. These can each cut or boost the signal by +/- 12dB.

eq out This control defeats all eq settings.

auxiliary sends 4 auxiliary sends are available using 2 rotary controls with associated select switches (aux 1/2 can be switched to aux 3/4 and all the aux can be switched pre or post the monitor level control).

pan Apportions signal between master Left and Right when the mix buss is selected. This control is detented at its mid point to facilitate reset.

mute* Defeats the monitor output and all post fade aux sends.

p.f.l. Pre fade listen: this switch sends the pre fade signal to the headphones and pfl meter. See 'auto pfl' in the functions master section.

mix Assigns monitor signal to the mix buss.

group/tape Selects the signal source for both the monitor section and the associated VU meter.

level Controls the level of the monitor output.

fx/mon This selects the input to the monitor section from either the FX connector on the group module or the tape return connector on the input module, allowing the monitor section to be used either for monitoring an already recorded track or as an effects return/input.

SUBGROUP SECTION

The **insert point** is pre fade. It is unbalanced and is accessed by 2 mono 1/4" jack sockets allowing an additional pre fade direct out from each subgroup.

-10dBv Switches both group outputs to -10dBv (+4dB standard).

pan Apportions signal between master Left and Right busses. This control is detented at its mid point to facilitate reset.

mute* Defeats the group output.

p.f.l. Pre fade listen: this switch sends the pre fade signal to the headphones and pfl meter. See 'auto pfl' in the functions master section.

mix Assigns group signal to the mix buss.

fader A smooth action 100mm Alps carbon track fader is fitted.

The **output VU meter** indicates the signal level post fade.

* These switches have associated status LEDs.

4 concept 0

S E R I E S

SINGLE SUB GROUP DOUBLE MONITOR MODULE

This module contains 1 subgroup and 2 monitor sections. This is used in recording situations where it is not envisaged that all tracks will be recorded at once (for example with a 16 track recorder with the capability of recording 8 tracks simultaneously) or in sound reinforcement applications where numerous effects returns are required.

MONITOR SECTION

(this section is identical for both monitor sections).

equalisation This section consists of 3, phase coherent, fixed frequency, fixed bandwidth, bell filters with Q of 0.75 and centres at 100Hz, 1kHz and 10kHz. These can each cut or boost the signal by +/- 12dB.

eq out* This control defeats all eq settings.

auxiliary sends 4 auxiliary sends are available using 2 rotary controls with associated select switches (aux 1/2 can be switched to aux 3/4 and all the aux can be switched pre or post* the monitor level control).

pan Apportions signal between master Left and Right when the mix buss is selected. This control is detented at its mid point to facilitate reset.

mute* Defeats the monitor output and all post fade aux sends.

p.f.l.* Pre fade listen: this switch sends the pre fade signal to the headphones and pfl meter. See 'auto pfl' in the functions master section.

mix* Assigns monitor signal to the mix buss.

group/tape* Selects the signal source for both the monitor section and the associated LED meter.

level Controls the level of the monitor output.

fx/mon* This selects the input to the monitor section from either the FX connector on the group module or the tape return connector on the input module, allowing the monitor section to be used either for monitoring an already recorded track or as an effects return/input.

SUBGROUP SECTION

The **insert point** is pre fade. It is unbalanced and is accessed by 2 mono 1/4" jack sockets allowing an additional pre fade direct out from each subgroup.

-10dBv Switches both group outputs to -10dBv (+4dB standard).

pan Apportions signal between master Left and Right busses. This control is detented at its mid point to facilitate reset.

mute* Defeats the group output.

p.f.l.* Pre fade listen: this switch sends the pre fade signal to the headphones and pfl meter. See 'auto pfl' in the functions master section.

mix* Assigns group signal to the mix buss.

fader A smooth action 100mm fader is fitted. This can be either Alps carbon track or Penny & Giles conductive plastic.

The **12-way output LEDs** indicate the signal level post fade.

* These switches have associated status LEDs.



2000

S E R I E S

DOUBLE SUB GROUP DOUBLE MONITOR MODULE

This module contains 2 subgroup and monitor sections. It is used in recording situations where it is envisaged that all tracks will be recorded at once, or in any applications where space is at a premium, as it offers 2 subgroups in the space of 1 module.

MONITOR SECTION

(there are two identical monitor sections on this module).

equalisation This section consists of 2, phase coherent, fixed frequency, fixed bandwidth, bell filters with Q of 0.75 and centres at 100Hz, and 10kHz. These can each cut or boost the signal by +/- 12dB.

eq out* This control defeats all eq settings.

auxiliary sends 4 auxiliary sends are available using 2 rotary controls with associated select switches (aux 1/2 can be switched to aux 3/4 and all the aux can be switched pre or post the monitor level control).

pan Apportions signal between master Left and Right when the mix buss is selected. This control is detented at its mid point to facilitate reset.

mute* Defeats the monitor output and all post fade aux sends.

p.f.l. Pre fade listen: this switch sends the pre fade signal to the headphones and pfl meter. See 'auto pfl' in the functions master section.

mix* Assigns monitor signal to the mix buss.

group/tape Selects the signal source for both the monitor section and the associated VU meter.

level Controls the level of the monitor output.

fx/mon* This selects the input to the monitor section from either the FX connector on the group module or the tape return connector on the input module, allowing the monitor section to be used either for monitoring an already recorded track or as an effects return/input.

SUBGROUP SECTION

(there are 2 identical subgroup sections on this module)

The **insert point** is pre fade. It is unbalanced and is accessed by 2 mono 1/4" jack sockets allowing an additional pre fade direct out from each subgroup.

-10dBv Switches both group outputs to -10dBv (+4dB standard).

pan Apportions signal between master Left and Right busses. This control is detented at its mid point to facilitate reset.

mute* Defeats the group output.

p.f.l.* Pre fade listen: this switch sends the pre fade signal to the headphones and pfl meter. See 'auto pfl' in the functions master section.

mix* Assigns group signal to the mix buss.

faders 2 smooth action 100mm Alps carbon track faders are fitted.

The **output VU meters** indicate the signal level post fade on each of the subgroups.

* These switches have associated status LEDs.

4000

S E R I E S

DOUBLE SUB GROUP DOUBLE MONITOR MODULE

This module contains 2 subgroup and monitor sections. It is used in recording situations where it is envisaged that all tracks will be recorded at once, or in any application where space is at a premium, as it offers 2 subgroups in the space of 1 module.

MONITOR SECTION

(there are two identical monitor sections on this module).

equalisation This section consists of 3, phase coherent, fixed frequency, fixed bandwidth, bell filters with Q of 0.75 and centres at 100Hz, 1kHz and 10kHz. These can each cut or boost the signal by +/- 12dB.

eq out* This control defeats all eq settings.

auxiliary sends 4 auxiliary sends are available using 2 rotary controls with associated select switches (aux 1/2 can be switched to aux 3/4 and all the aux can be switched pre or post the monitor level control).

pan Apportions signal between master Left and Right when the mix buss is selected. This control is detented at its mid point to facilitate reset.

mute* Defeats the monitor output and all post fade aux sends.

p.f.l.* Pre fade listen: this switch sends the pre fade signal to the headphones and pfl meter. See 'auto pfl' in the functions master section.

mix* Assigns monitor signal to the mix buss.

group/tape* Selects the signal source for both the monitor section and the associated LED meter.

level Controls the level of the monitor output.

fx/mon* This switch selects the input to the monitor section from either the FX connector on the group module or the tape return connector on the input module, allowing the monitor section to be used either for monitoring an already recorded track or as an effects return/input.

SUBGROUP SECTION

(there are 2 identical subgroup sections on this module)

The **insert point** is pre fade. It is unbalanced and is accessed by 2 mono 1/4" jack sockets allowing an additional pre fade direct out from each subgroup.

-10dBv Switches both group outputs to -10dBv (+4dB standard).

pan Apportions signal between master Left and Right busses. This control is detented at its mid point to facilitate reset.

mute* Defeats the group output.

p.f.l.* Pre fade listen: this switch sends the pre fade signal to the headphones and pfl meter. See 'auto pfl' in the functions master section.

mix* Assigns group signal to the mix buss.

faders 2 smooth action 100mm faders are fitted. These can be either Alps carbon track or Penny & Giles conductive plastic.

The **12-way output LEDs** indicate the signal level post fade on each of the subgroups.

* These switches have associated status LEDs.

200 concept 400

S E R I E S M A T R I X S U B G R O U P

Matrix Subgroup Module (this module is largely common to both 200 and 400 series consoles). The matrix output module is designed for sound reinforcement applications, for example where extra signals are needed around the auditorium in addition to the main stereo mix, such as in church or theatre use. The matrix section takes its signal from the subgroup and is internally selectable to be pre or post the subgroup fader so that it can also be used as a foldback sub-mixer. If 8 of these modules are used, an 8x8 matrix section is formed, and with 16 modules, this becomes a 16x8 matrix. A fully-routable FX return section is also provided on this module.

M A T R I X S E C T I O N

- sends** 8 continuously variable sends – 1 for each matrix group.
- mute*** Defeats the matrix group output.
- p.f.l.*** Pre fade listen: this switch sends the pre fade signal to the headphones and pfl meter. See 'auto pfl' in the functions master section.
- peak** This output LED indicates when the matrix output signal level is at +6dBu. It is pre output level control. This is not a clip indicator as there is 12dB of headroom after this LED illuminates.
- signal** This output LED indicates that a signal is present. It illuminates at –20dBu.
- level** Controls level of the master output of the matrix group. Note: each module has 1 of the matrix masters. (when fitted in a 16 subgroup console, only the first 8 modules have masters).

F X R E T U R N S E C T I O N

- equalisation** This section consists of 2, phase coherent, fixed frequency, fixed bandwidth, bell filters with Q of 0.75 and centres at 100Hz and 10kHz. These can each cut or boost the signal by +/- 12dB. 400 series consoles have 3 band eq with the centre band at 1kHz.
- eq out*** This control defeats all eq settings.
- auxiliary sends** 4 auxiliary sends are available using 2 rotary controls with associated select switches (aux 1/2 can be switched to aux 3/4 and all the aux sends can be switched pre or post* the monitor level control).
- pan** Apportion signal in the routing busses, for example between groups 3 and 4, or between master Left and Right when the mix buss is selected. This control is detented at its mid point to facilitate reset.

- mute*** Defeats the monitor output and all post fade aux sends.
- p.f.l.*** Pre fade listen: this switch sends the pre fade signal to the headphones and pfl meter. See 'auto pfl' in the functions master section.
- peak** This input LED indicates when the FX return signal level is at +6dBu. It is pre fade. This is not a clip indicator as there is 12dB of headroom after this LED illuminates.
- signal** This input LED indicates that a signal is present. It illuminates at –20dBu.
- routing*** The routing is controlled by 6 switches. The **mix** switch routes the signal directly to the left and right master busses and the switches marked 1-8 route the signal to groups 1-8 unless the **assign** switch is depressed when they route to groups 9-16 (if fitted). On 400 series consoles, the routing is controlled by 8 switches. If the console is fitted with 8 groups, each routing switch accesses a single group, otherwise routing is to pairs of groups. More than one routing switch may be depressed at one time.

- fader** A smooth action 60mm carbon track fader is fitted.

S U B G R O U P S E C T I O N

- The **insert point** is pre fade. It is unbalanced and is accessed by 2 mono 1/4" jack sockets allowing an additional pre fade direct out from each subgroup.
- 10dBv** Switches both group outputs to –10dBv (+4dB standard).
- pan** Apportion signal between master Left and Right busses. This control is detented at its mid point to facilitate reset.
- mute** Defeats the group output.
- p.f.l.*** Pre fade listen: this switch sends the pre fade signal to the headphones and pfl meter. See 'auto pfl' in the functions master section.
- mix*** Assigns group signal to the mix buss.
- fader** A smooth action 100mm fader is fitted. This can be either Alps carbon track or Penny & Giles conductive plastic on 400 series consoles. The **output VU meter 12-way output LEDs** on 400 series consoles indicate the signal level post fade.

*These switches have associated status LEDs.

* These switches have associated status LEDs on 400 series consoles only. These functions appear on 400 series consoles only.

000 Concept 400

S E R I E S M A I N M A S T E R

Main Master Module (this module is largely common to both 200 and 400 series consoles).

This module contains the full function oscillator, and both the main master outputs and 2 additional stereo outputs labelled A and B. All of these outputs are electronically balanced with transformer balancing available as an option on the master outputs. The master output VU or LED meters and illuminated pfl VU meter are situated on the meter bridge, immediately above the master section of the console.

P O W E R S U P P L Y S T A T U S

- +V** This LED indicates that the positive rail is operational.
- V** This LED indicates that the negative rail is operational.
- aux** This LED indicates that the auxiliary rail is operational.
- 48V** This LED indicates that the phantom power rail is operational.

O S C I L L A T O R

- ON** This switches the oscillator on.
- 10dB/+4dBu** This switches the reference output level of the oscillator between -10dB and +4dBu. This combined with the -10/+4dB switches on all outputs and returns allows the console to be compatible with any piece of audio equipment, whether it is built to professional or semi-professional standards.
- slate** Routes oscillator to all group and mix outputs. The oscillator signal also appears on a 1/4" balanced jack socket whenever the on switch is depressed. This allows the oscillator to be used to calibrate other audio equipment.
- 10kHz/1kHz/100Hz** Selects oscillator frequency. The availability of 3 oscillator frequencies ensures accurate set-up of tape machines.
- Osc level** Oscillator level control. This should be used in conjunction with the -10/+4dB switch above.

P O W E R S U P P L Y U N I T

Concept series consoles are supplied complete with a rack mounting, fully regulated power supply. This will power any size of console and occupies 3U. The chassis of this power supply is built of a series of aluminium extrusions making an extremely rugged unit. All rails are protected with fast-acting circuit breakers and there are front panel status LEDs for each rail. In addition, other sections of the power supply are protected by fuses. These, combined



S T E R E O O U T P U T S

The availability of 2 extra stereo outputs, **A and B**, allows greater flexibility on mixdown, for example the ability to run an analogue safety copy of a final master and also to run a cassette convenience copy. When used in sound reinforcement applications, it allows a feed for a delay system and/or a recording of the performance. The controls for outputs A and B are identical.

- 10dBv** Switches stereo output to -10dBv (+4dBu standard).
- level** Controls the level of the stereo output.
- peak** This LED indicates when the output signal level is at +6dBu. This is not a dip indicator as there is 12dB of headroom after this LED illuminates.
- signal** This LED indicates that a signal is present. It illuminates at -20dBu.
- mono** Switches the stereo output to mono.
- post** Switches the source of the stereo output from pre to post the master faders.

M A S T E R S T E R E O O U T P U T S

- The **insert points** are pre fade. They are unbalanced and are accessed by 2x2 mono 1/4" jack sockets allowing an additional pre-fader direct out from each output.
- 10dB** Switches the master stereo outputs to -10dBv (+4dBu standard).
 - mute*** Defeats the master stereo outputs.
 - p.f.l.*** Pre fade listen: this switch sends the pre fade signal to the headphones and pfl meter. See 'auto pfl' in the functions master section.
 - fader** 2 smooth travel 100mm Alps carbon track faders are fitted. Penny & Giles conductive plastic faders are an option on 400 series consoles. 1 stereo fader is an option on both series of consoles. The **2 x output VU meters 2x12-way output LEDs** on 400 series consoles indicate the signal level post fade.

*These switches have associated status LEDs.
* These switches have associated status LEDs on 400 series consoles only. These functions appear on 400 series consoles only.

with the LEDs on the master section of the Concept itself provide a comprehensive monitoring system.

The power supply-console link is made of heavy duty neoprene-sheathed multi-core cable with high quality gold-plated military spec connectors at each end. A 3m lead is supplied with sound reinforcement consoles and a 5m lead is supplied with recording consoles. Other lengths are available on request.

200 concept 400

S E R I E S

FUNCTIONS MASTER

Functions Master Module (this module is largely common to both 200 and 400 series consoles). This module contains switched outputs to 1 pair of studio monitors and 3 pairs of control room monitors. These may be fed with a wide variety of signals including those from the talkback circuit also located in the module and either of the 2 separate 2 track returns. The master auto pfl, programmable mute and Solo-in-place controls complete the full complement of facilities available on this module.

-10dB

- 2 track A** Switches the input of 2 track A to -10dBv (+4dBu standard)
- 2 track B** Switches the input of 2 track B to -10dBv (+4dBu standard)

M I C R O P H O N E

- +48V** Applies 48V DC to talkback mic XLR to allow the use of a condenser mic.
- level** Controls the level of the talkback mic.
- aux 1/2-slate** Assigns talkback mic either to aux 1 and 2, or to all group and master outputs.
- studio** Assigns the talkback mic to the studio speaker output.

H E A D P H O N E S

- level** Controls the level of the headphone output.
- pfl/mon** Switches the headphones to monitor either the pfl buss or the monitor buss.

S T U D I O

- level** Controls the level of the studio speaker output.
- mon to studio** Assigns the monitor buss to the studio speaker output.

P F L

- level** Controls the pfl level in the control room monitors when the auto pfl circuit is in use. This prevents dramatic changes in level, for example when monitoring a very quiet mix and wishing to pfl one part of the mix.
A VU meter above this module indicates the combined level of any signals routed to the pfl buss.

* These switches have associated status LEDs.
These functions appear on 400 series consoles only.

S P E A K E R S

These control room monitor outputs are fed by the monitor buss.

- C** Selects speaker output C.
- A/B** Switches between speaker outputs A and B.

M O N I T O R

- aux 1/2** Selects the output of aux busses 1 and 2 to appear in the monitors.
- 2tkA** Selects the input from 2 track A to appear in the monitors.
- 2tkB** Selects the input from 2 track B to appear in the monitors.
- mix** Selects the output of the mix buss to appear in the monitors.
- auto pfl** When this switch is depressed, any pfl switch on the console will be assigned to the monitor output, disconnecting the monitor source at the same time. This enables swift audible monitoring of the pfl buss to be achieved.
The SOLO LED will illuminate when the auto pfl circuit is activated and a pfl switch is depressed.
- level** Controls the output level of the monitor buss.
- mono** Switches the stereo monitor output to mono.
- mute*** Defeats the monitor output.
- dim** Lowers the monitor output level by 20dB. This is useful in situations where an instant lowering of volume is required without affecting the console settings, for example, to answer a telephone.
- solo on** LED indicates that the solo or auto pfl buss is operational.
- mon to mix** Assigns the monitor output to the mix buss. This allows tape copying without repatching.

P R O G R A M M A B L E M U T I N G

PROG MUTE 1 This illuminated switch activates programmable mute buss 1, muting all channels that have been preselected using the channel prog mute 1 switches. The red mute LEDs on each channel illuminate to allow visual monitoring of muted channels (the orange prog mute 1 LED will already be illuminated, showing the set up of the circuit before activation).

PROG MUTE 2 As prog mute 1.

Talkback/-20dB dim Activates the talkback microphone and simultaneously lowers the monitor output by 20dB. This switch also activates a 30Hz tone which can be used for tape marking if talkback is routed to slate. This tone is inaudible during normal playback, but when the tape is being reworded or fast forwarded, it is audible as a high pitched squeak allow the 'marked' point to be quickly located.

headphones Stereo 1/4" jack for headphones.





S E R I E S
AUXILIARY MASTER

This module controls the outputs of the auxiliary sends. These outputs are electronically balanced. Each of the auxiliary busses has the following controls:

- level** This controls the master level of the aux buss.
- p.f.l.*** Pre fade listen: this switch sends the pre fade signal to the headphones and pfl meter. See "auto pfl" in the functions master section.
- peak** This output LED indicates when the output signal level is at +6dBu. This is not a clip indicator as there is 12dB of headroom after this LED illuminates.

This group of controls is repeated 8 times on the 200 series auxiliary master module and 12 times on that of the 400 series.

* These switches have associated status LEDs on 400 series consoles only.

Unlike a conventional subgroup which operates by combining the audio outputs of selected input channels, allowing the operator to control the level of the combined audio signal, a VCA group allows simultaneous attenuation of selected input channels by electronically controlling the output level of the selected

input channel faders without ever combining their audio output. Think of a DC subgroup as an electronic method of operating as many faders as required – this allows the grouping together of a number of input channel faders for specific needs, and is often used in conjunction with the conventional subgroups; allowing subgrouping within subgrouping.

2 examples of typical applications of VCA grouping will demonstrate its usefulness.

On an 8 buss console, the operator may have the audio subgroups set up as follows: 1+2 Drums, 3+4 Keyboards, 5+6 Guitars, 7+8 Vocals (in this example, all subgrouping is in stereo). At the end of a particular track, he may want to fade out the band gradually, leaving just the bass drum, bass guitar, acoustic guitar, a bass keyboard and the lead vocal. These 5 signals appear on inputs 1, 12, 17, 22, and 30. Under normal conditions, this could be impossible for one operator



S E R I E S
VCA GROUPING



S E R I E S
VCA GROUP MASTER

This module controls the master levels of the VCA groups. Each module controls the level of 4 VCA group therefore on console with 8 VCA groups, 2 of these modules are fitted.

Each of the VCA groups has the following controls:

- mute** This illuminated switch instantly attenuates the DC group fader completely, thereby muting any input channels assigned to the DC group.
- On** This illuminated switch activates the VCA group fader.
- fader** A smooth travel 100mm fader is fitted. This may be either Alps carbon track or Penny and Giles conductive plastic. The fader adjusts the level of the signal between 0% (total attenuation) and 100% (as if the VCA group was bypassed).

This group of controls is repeated 4 times.

to achieve without help, as he could not use the subgroups as these would fade all of the signals, and he could not fade all input channels as he does not possess enough hands! By routing all channels except 1, 12, 17, and 30 to a VCA master and then fading this gradually, this task is easily achieved. As the input

faders are effectively reduced by this procedure, the post fade sends are also reduced. An additional benefit is that by turning off the VCA master at the end of the track, the levels are restored instantly and exactly for the next track.

When recording this same track in the studio, with the subgroups feeding an 8-track tape machine, the same fade can be achieved while recording, freeing up facilities and time during mixdown. The VCA groups in this instance operate like a simple fader automation system and they can be controlled externally, for example by a sequencer or timecode generator. By using more than one VCA group, crossfades are possible, as channels may be routed to any number of groups.

The mutes on the VCA masters can be used as additional programmable mute groups, giving a total of up to 10 mute groups.



200 Concept 400

S E R I E S

P A T C H B A Y

The Concept series is available with a purpose-built 320-way bantam patchbay. This patchbay is totally balanced and uses high quality gold-plated bantam jack sockets. It occupies only 8 module spaces thus preserving the compact dimensions of the console. As the Concept series was designed with the patchbay in mind, all modules have the provision for a multiconnector with an internal ribbon cable

leading to the patchbay. This reduces the amount of wiring required as well as improving noise and crosstalk figures in comparison to those obtainable when using an external patchbay.

The facilities provided on the patchbay are as follows:

Input: each input has patch-points for **line** and **tape inputs, insert send** and **return** and **direct output**. Up to 36 inputs may be fitted to the standard patchbay.

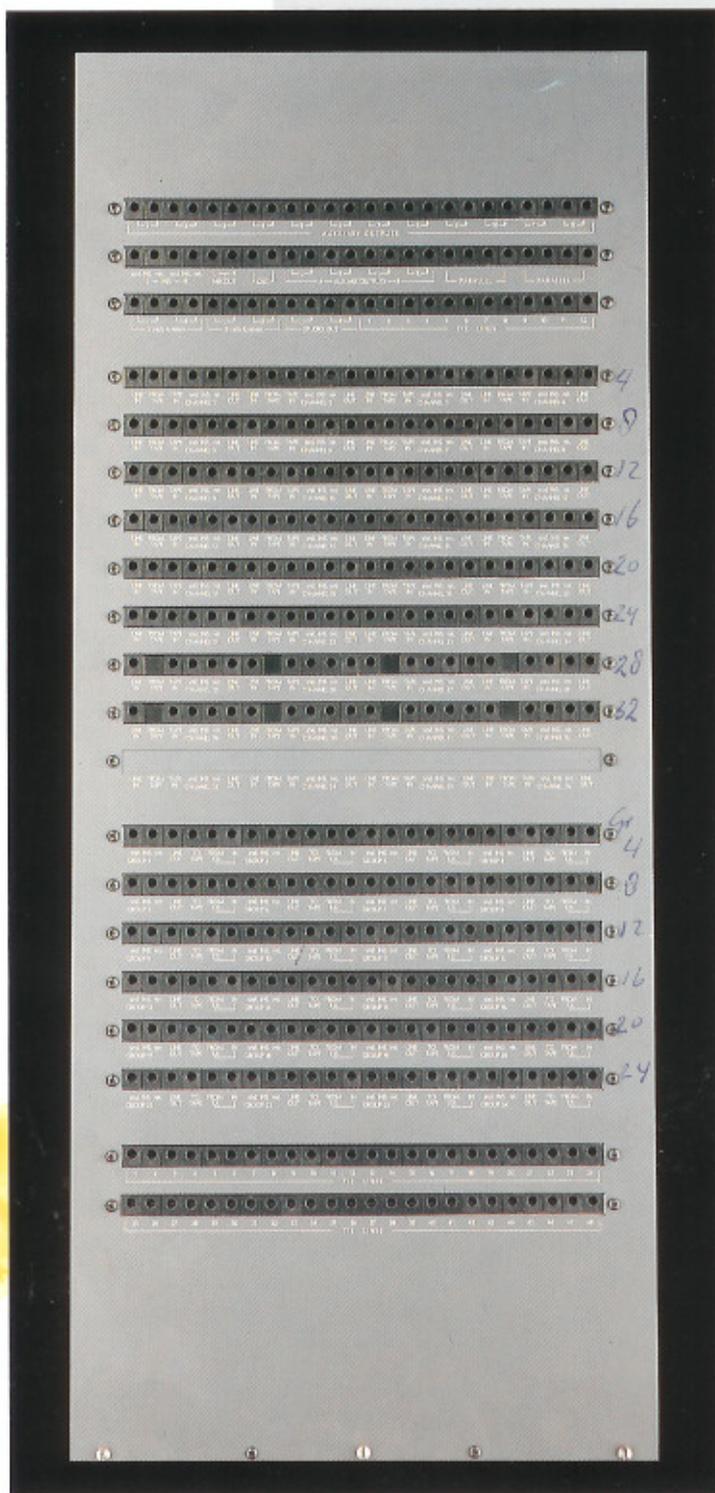
Group: each subgroup has patch-points for **group insert send** and **return**, and **break-points** between the **group output** and **tape machine input**, and between the **FX return** and the **subgroup input**. Up to 24 subgroups may be fitted to the standard patchbay.

Master: All of the facilities provided by the master section may be accessed on the patchbay except the control room monitor outputs. These include **mix output insert points** and a **parallel feed** from the **mix outputs** as well as **break-points** in the **auxiliary outputs, auxiliary mix outputs A and B, 2-track A and B returns** and the **studio outputs**. These all (apart from the aux sends) appear in stereo.

Misc: 2 parallel outputs are provided for the **oscillator**, 2 groups of 4 x parallel jacks are provided for splitting signals, and 12 tie lines are provided for additional inputs or outputs.

Space is provided for the option of a **further 48 tie lines**.

All interfacing to tape machines, effects racks and other studio facilities is via high quality gold-plated 56-way EDAC connectors. Therefore the only other connectors on the back of these consoles are the mic inputs, parallel input and subgroup direct outputs, and the 3 sets of control room monitor outputs.



200 concept 400

S E R I E S

STANDARD CONFIGURATIONS

2 0 0 S E R I E S

2200 – 8 subgroup

16,24,32 and 40/8x8/2 – sound reinforcement (including 8x8 matrix)

16,24 and 32/8/16/2 – 8/16 track recording

3200 – 16 subgroup

24 and 32/16/16/2 – 16 track recording

32/16/32/2 – 32 track recording

3200/24 – 12 subgroup

28 and 36/12/24/2 – 24 track recording

4 0 0 S E R I E S

4400 – 8 subgroup

16,24,32 and 40/8x8/2 – sound reinforcement (including 8x8 matrix)

16,24,32 and 40/8/16/2 – 8/16 track recording

6400 – 16 subgroup

24,32,40 and 48/16x8/2 – sound reinforcement (including 16x8 matrix)

24,32 and 40/16/16/2 – 16 track recording

32 and 40/16/32/2 – 32 track recording

8400 – 24 subgroup

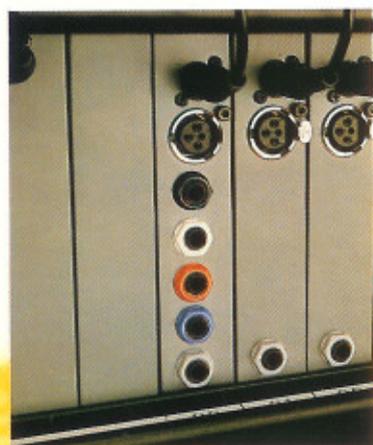
28,36,44 and 52/24/24/2 – 24 track recording

48 and 56/24/48/2 – 48 track recording



400 concept 400

S E R I E S I N T E R F A C I N G



The modularity of the Concept series extends to the back panel and all connector panels are an integral part of each module. This, in addition to improving the ease of servicing the console, also eliminates the need for connector to pcb wiring looms, thus allowing very low noise and crosstalk figures to be achieved. All connectors used are high quality professional spec and all 1/4" jack sockets are stereo. This allows the use of a universal set of leads with any unbalanced connections being automatically catered for.

INPUTS		
display		5 pin DIN
mic		balanced XLR
line input**		balanced 1/4"
tape input**		balanced 1/4"
send		unbalanced 1/4"
return (normalised)**		unbalanced 1/4"
direct output**		unbalanced 1/4"

SUBGROUPS		
Matrix		
display		5 pin DIN
matrix out		unbalanced 1/4"
line input		unbalanced 1/4"
send		unbalanced 1/4"
return (normalised)		unbalanced 1/4"
direct output		balanced 1/4"

Single Group		
display		5 pin DIN
odd FX input**		unbalanced 1/4"
even FX input**		unbalanced 1/4"
direct output**		balanced 1/4"
send**		unbalanced 1/4"
return (normalised)**		unbalanced 1/4"
direct output**		balanced 1/4"

Double Group		
display		5 pin DIN
send**		unbalanced 1/4"
return (normalised)**		unbalanced 1/4"
direct output**		balanced 1/4"
send**		unbalanced 1/4"
return (normalised)**		unbalanced 1/4"
direct output**		balanced 1/4"
odd FX input**		unbalanced 1/4"
even FX input**		unbalanced 1/4"

MASTERS		
Functions		
2 track A**		balanced 1/4" (x2)
2 track B**		balanced 1/4" (x2)
Studio**		balanced 1/4" (x2)
Speakers A		balanced 1/4" (x2)
Speakers B		balanced 1/4" (x2)
Speakers C		balanced 1/4" (x2)

Main Master		
display		5 pin DIN
oscillator output**		balanced 1/4" (x2)
main mix outputs**		balanced XLR (x2)
aux stereo output A**		balanced 1/4" (x2)
aux stereo output B**		balanced 1/4" (x2)
send**		unbalanced 1/4" (x2)
return (normalised)**		unbalanced 1/4" (x2)

Auxiliary Master		
output**		unbalanced 1/4" (x8/12)
(optional)		balanced 1/4" (x8/12)

All balanced inputs and outputs are electronically balanced (transformer balancing optional on 400 series consoles).

**available on a multipin connector to allow internal wiring to a patch bay.

SPECIFICATIONS

It is the policy of Hill Audio to quote minimum specifications so a typical console will comfortably exceed the following specifications.

LEVEL

electronically	
balanced	+22dBm into 600Ω
unbalanced	+22dBu into 5kΩ
0dB (desk)	+4dBm/-10dBu (selectable)

HEADROOM

input	18dB
all others	20dB

CROSSTALK

between groups	-85dB (1kHz)
	-74dB (20kHz)
group to mix	-83dB (1kHz)
	-70dB (20kHz)

GAIN

microphone input	0dB to 65dB
line to group output	+35dB
overall	+70dB

NOISE (DIN)

mic input	-127dB (A) EIN
residual	-80dB (24 channels routed to mix at unity gain)

DISTORTION

THD	<0.01% (20Hz-20kHz)
IMD SMPTE	<0.01%

FREQUENCY RESPONSE

20Hz to 20kHz	+0/-1dB
---------------	---------

IMPEDANCE

input	1.2kΩ mic (balanced) 20kΩ line (balanced)
output	<100Ω (balanced)
0dB ref: .775V	<50Ω (unbalanced)

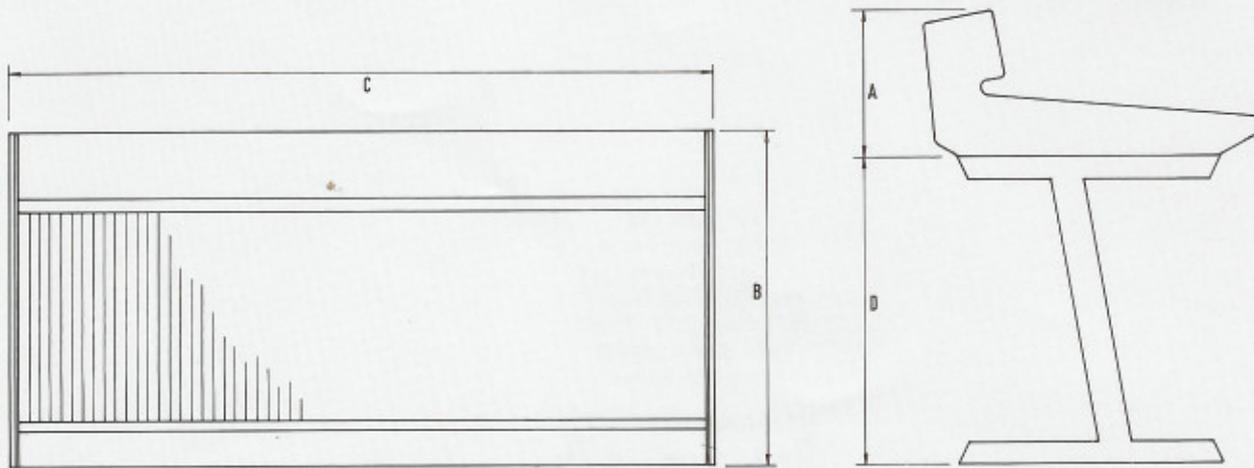
PSU

output	+/-17.5VDC, 10A +15VDC, 10A +48VDC, 1A
ripple	less than 5mV
input protection	110-120/220-240v AC, 50-60Hz, 16A circuit breaker.
output protection	both internal fuses (15A time delay) and external 10A circuit breakers.

hill

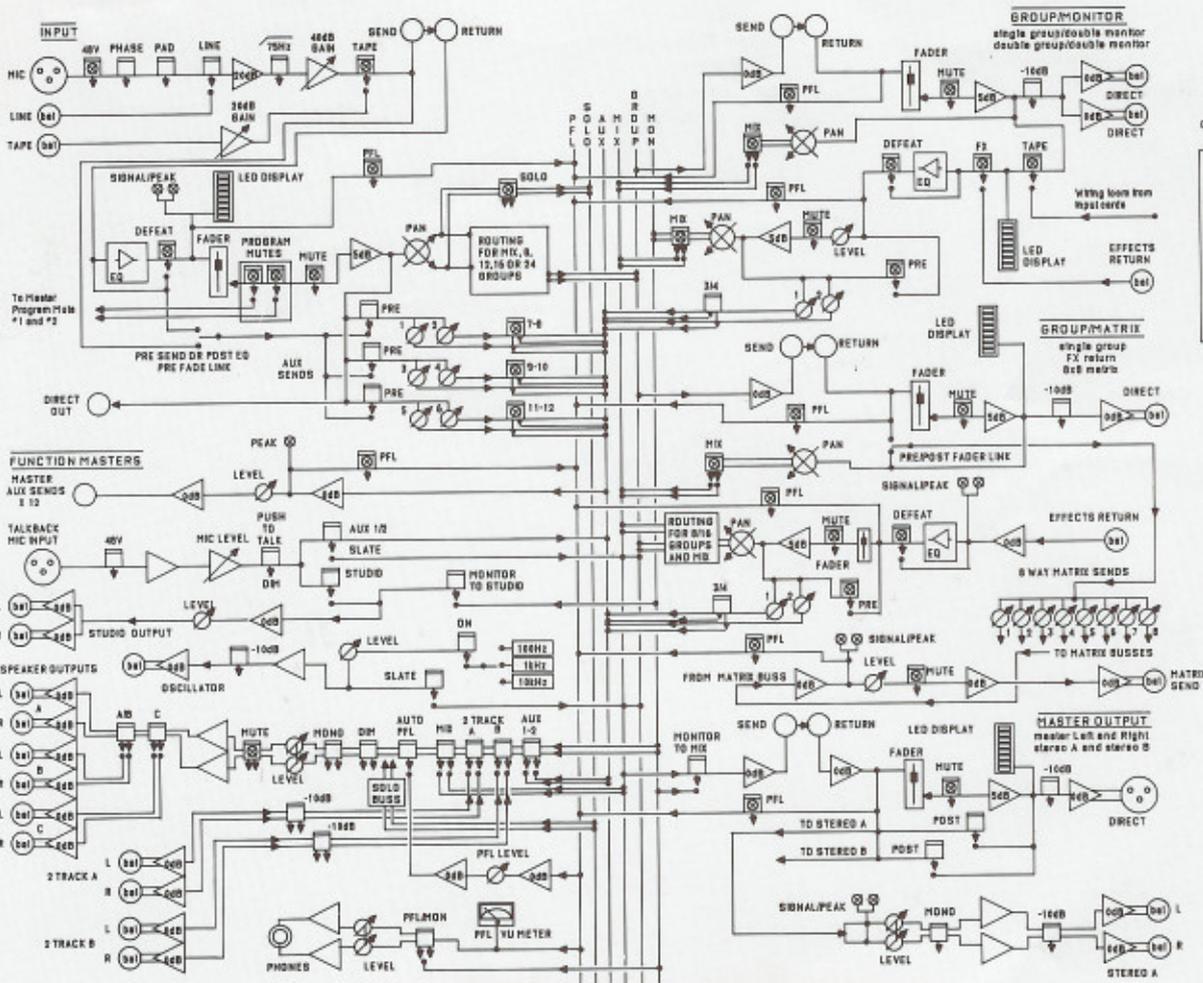
is a registered trade mark of Hill Audio Limited.

D I M E N S I O N S



		mm	ins		mm	ins	
A	Height	416	16.4	C	Width		
B	Depth			29 Modules	1092	43.0	
		400 Series	942	37.1	37 Modules	1377	54.2
		200 Series	863	34.0	45 Modules	1661	65.4
					53 Modules	1946	76.6
					61 Modules	2230	87.8
			69 Modules	2515	99.0		
D	Stand Height				710	28.0	

Module = 1935 3.64



HSL AUDIO LTD
CONCEPT 400 SERIES
LEGEND

- Switch
- Switch with status LED
- SLR balanced
- 1/4" inch balanced
- TRS 1/4" inch balanced
- LED

Drawn: August 1988

B L O C K D I A G R A M

Hill Audio Ltd
Hollingbourne House
Hollingbourne
Kent ME17 1QJ England
Telephone: (0622) 880555
Telex: 966641 HILL G
Fax: (0622) 880550



Hill Audio Inc.
5002 B
N. Royal Atlanta Dr.
Tucker
GA 30084 USA
Telephone: (404) 934 1851
Telex: 293827 HLAD
Fax: (404) 934 1840