Performance enhanc

The Sy80 digital
balances the
with the business
As well as setting
provides the mix
control and pro
return on invest

designed for You...

Monitor	Front Of House	Theatre	Live Broadcast
- Console surface designed for fast precise control	- Exceptional sound quality	- Configurable for specific show layouts	- Flexible bus outputs and distribution
- Clear view of all Aux / bus sends	- Flexible console configuration - I/O, XFAD, VCA, groups, matrix	- XFAD for multi-format sources	- Multiple program Masters and Matrix
- Mono, Stereo or multi-format Aux (IEM)	- Smart automation and Live functions	- Matrix flexibility e.g. dressing room	- Accessible monitoring and Comms circuits
- Full processed Inputs and Outputs	- Multi-format mix buses	- Show automation - snap shot, MTC, CrossFade	- Customisable panels for broadcast metering and talkback systems
- Independent panning for each of the 48 bus	- Full processing inc. delays on outputs	- Live functions - OverRam, Relax, Off-line	- Automation and relax functions
- Intelligent monitoring, 3 configurable circuits	- Small footprint, more paying customers	- Bus, VCA, Group combinations for special effects	- Exceptional audio quality with full digital functionality
	- Off-line programming		

ing Technology

mixing console from InnovaSON expertly
creative needs of the live sound engineer
requirements of today's production managers.
the new standard for sonic quality the Sy80
engineer with the maximum performance
duction accountants with an exceptional
ment.

maximum control

- control surface specifically designed for live mixing
- straightforward user interface
- a fader per channel, 80 inputs/80 faders - No layers needed
- display of all key console parameters available at a glance
  on-screen - everything you need to see in one place at one time
- full channel digital processing on inputs and specified outputs

superb power:weight ratio

- 48 mix buses
- 80 outputs
- 80 inputs
- 80 faders
- compact size: only 94kg

proven durability & reliability

- designed to cope with the rigours of touring
- hundreds of consoles in use every day worldwide
- simple to service with modular architecture

global support

- international network of trained InnovaSON partners
- local sales and technical support
- international support for world-wide tours, rental connections

exceptional return on investment

- lightweight = transport and labour cost saving
- modular = efficient use of resources for touring companies
- small footprint = more paying seats in the venue
- affordable = priced to meet the budgetary needs
  of today's production companies.

acclaimed audio quality

- high performance mic pre-amps
- short and constant latency
- floating point DSPs with maximum accuracy
- 144 dB dynamic range

for your application

- **sound engineers** – prepare off-line… get a great mix every time

- **rental companies, installation contractors** – provide the best
  digital console solution and save time, space and money

- **producers** – get digital performance from the Live Sound experts

- **TV and Radio production managers** – save space and weight,
  and gain exceptional audio quality with full digital functionality

- **theatre specialists** – more seats for customers, advanced show
  automation for a superior performance

innova
SON

**Digital live mixing
console**

Input signal path

## assign inputs to faders with total flexibility
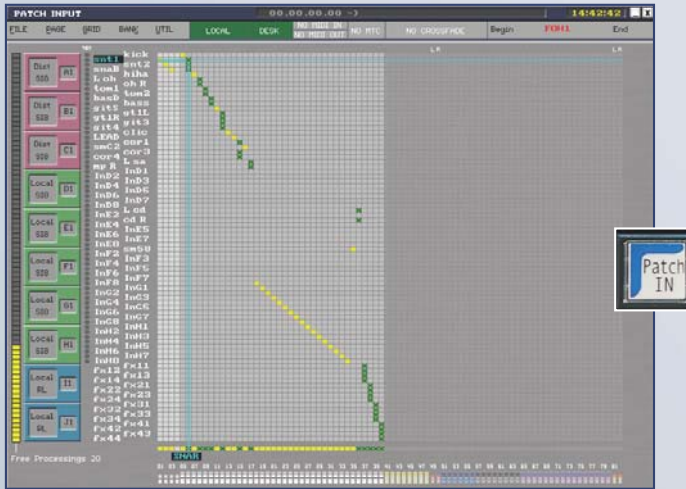
To assign an input to a fader press the Patch IN key in the Patch section, the corresponding screen opens and displays the global assignments to input faders. If you want to add or change an assignment, then select an input fader, choose your physical input (distant or local) with the track ball pointer or keyboard. Right click the trackball button (or hit space bar), and the connection is made.

fader expansion

XFAD is a totally new way of working with mix elements which provides you with the ability to configure your Sy80 the most efficient way for each show and benefit from an immediacy of control previously unavailable on live digital consoles. The console's channel faders may be used as usual as mono input faders of course, but you will get the full benefit of XFAD™ using an expansion zone for multiple sources. Using XFAD, you can group several inputs for control by the same input channel, then once you are in Patch IN, press an XFAD select switch and right click (or hit space bar) to group these inputs to this channel. At any time, you may enter or change the name of the physical input. Press Patch IN again to leave the input patch screen and revert to the main mix screen. The last selected channel is now available for routing, Eq, compression, gain, etc…

In this way selected channel faders become controllers for several 'source' mono inputs (2 for stereo, 6 for surround sources, 10 or more for instruments grouping) according to your Patch IN assignments.
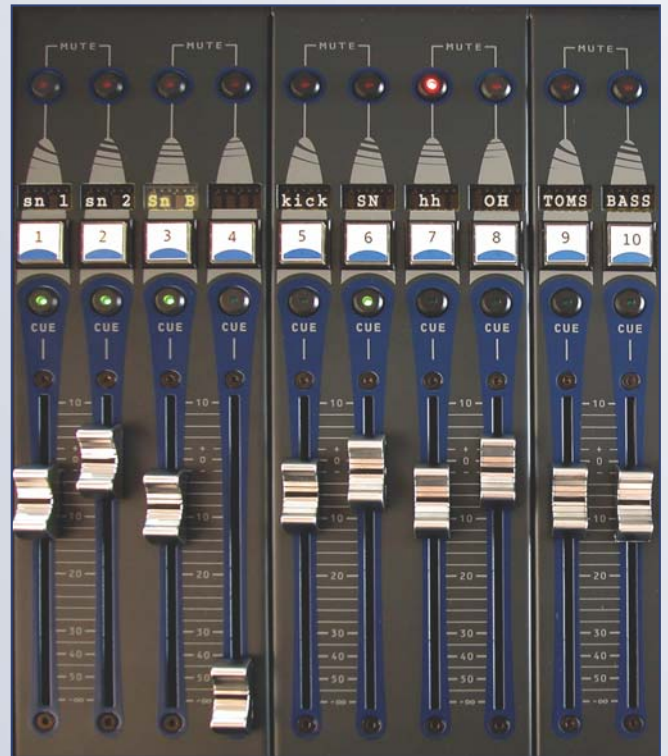
XFAD are the instruments related sources

For example, a drum kit (11 mics) can be managed by only 5 channel faders (ch 5 - 9) and 4 expansion faders (ch 1 – 4):

Channel 5 : Kick (mono input)
Channel 6 : SN (3 mics - top, bottom, rear) all shown in the expansion zone configured as chs 1-4
Channel 7 : hh (mono input)
Channel 8 : TOMS, (4 mics, one for each tom)
Channel 9 : O/H (2 mics)

Press the channel SEL key and you have direct access to the input or the group of inputs. Press again to cycle through these one by one, whilst the central Channel Control Section gives you full control of their processing. Press directly on a particular input in the expansion zone to have direct access over its parameters, gain, dynamics, Eq or Pan.

Using XFAD expansion fader combinations you are able to control the mix levels and mutes of multiple sources with more efficiency and less space used on your console control surface.

always in control

Sy80 input channels are all provided with…
- Input Gain, Phantom and Insert
- Phase, Low Cut ON/OFF, sweep frequency from 30 to 500 Hz
- Delay up to 111 ms, (30m at 48kHz)
- Noise gate, Compressor, 5 parameters, ON/OFF
- Parametric equalizer with 4 full bands, width, frequency, level, ON/OFF
…at all times, with no processing limitations or extra audio delay.

In fact you'll never run out of processing as there is more than enough DSP power available on the Sy80 DSP module. Select a channel, press an Eq, Gate, Compressor switch; change the values of the function and as the sound alters the on-screen display reflects those changes…fast, safe, repeatable. With Mutes, Cues, a 16 led comprehensive level-meter and a motorized fader for each channel, you have everything you need for a great mix.

as easy for bus output

Press the Patch Out key and the global view of all connections to the outputs is displayed. Select a mixing bus fader and then select your physical output with the track ball. Change the output name if you want for an easy-to-follow picture of the connections. Right click and the connection is made.

If you want a bus to be multi-channel (XFAD mode), select the fader(s) reserved to manage the feeds and assign them in much the same way as with XFAD inputs. Using the Patch Out grid you can quickly set up a stereo or LCR bus output in the analog, and /or digital domain.

If you want to distribute the same bus to several outputs (analog, digital), select the next output with the track ball, right click and your new output is connected.
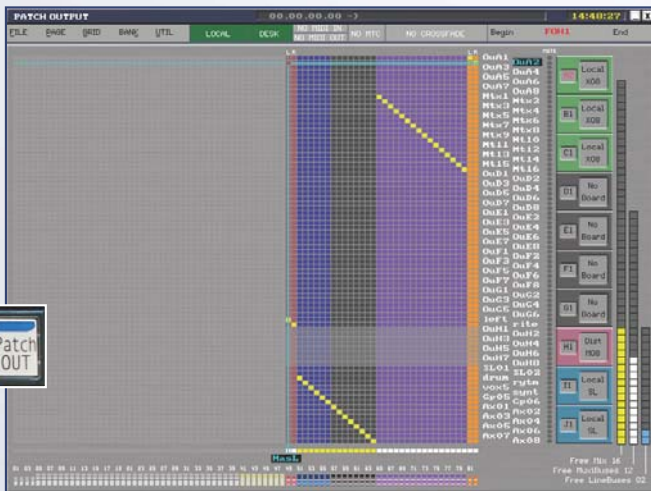
mix bus & routing
Flexible and powerful

A Sy80 mix bus may be defined as any of the following, depending on your fader configuration:

- Mono   - simple configuration
- Stereo   - using XFAD mode, Left and Right
- LCR   - using XFAD mode Left, Centre and Right
- LCR+M   - using XFAD mode Left, Centre, Right and Mono reduction

This is valid for the following bus types:

Groups (blue faders), **Aux** (black faders) which mix inputs. **Masters** (red fader) which mix Aux, Groups and inputs. **Matrix** buses are only mono and are used for re-mixing Groups, Aux, Masters and direct inputs. The **Monitor** bus is stereo with a mono reduction if needed.

In addition to audio buses, Sy80 can be configured with multiple VCAs which act as remote level controllers for any channel, input or bus with Mute grouping possibilities. VCA faders are assigned in the Console Configuration screen.

Routing inputs to a bus and that bus to higher level bus is simple. Press an input SEL key, and the console channel SEL key will illuminate on the bus to which this input is routed. To make a change, keep the SEL key pressed and simultaneously select or de-select it from the bus destinations using their SEL keys. The audio routing, the console keys and the on-screen console display are updated immediately.

The principle is the same for bus to bus selections. The console and the on-screen display reflect the input routings as well as bus to higher level bus routings (Master, Matrix, etc).

output processing

When the outputs are equipped with Hyper-Drive™ audio processing (XO-8D, DO-8X), each output has a complete dynamic processing section - gate and compressor, fully sweepable parametric equalization with eight bands, delay of up to 1.35 second and output level adjustment from +10.5 dBu to +22 dBu. Everything is on-board and immediately accessible. There is no need for external racks, just connect your amplifiers!

independent panning for each bus

For fast PAN access, keep an input channels SEL switch depressed, and then press the CUE switch on one of your stereo aux buses on the console. This gives you control of the inputs independent panning to that bus. Press another stereo aux CUE and you're now controlling this same input panning but to a new bus. Perfect for monitors, fast for any other use.

Now press Pre/Post and the full Pan screen opens. By selecting each of your buses, you have control of the corresponding pans and balances immediately, as well as a complete view of the channel panning distribution.

Access to this screen from a selected bus gives you a full view of that bus's panning distribution. There are more inputs available which you may want to alter and accessing them is simple. Press the SEL switch of the input you want to control and it becomes active immediately.

Easy and very powerful. Even sophisticated multi-point distribution becomes straightforward.

Digital live mixing that works for you

Screen TFT
15″ retractable

Power Supply
Redundancy

82 level meters
16 led metering
on each channel

80 faders
freely assignable functions
Input: mono, stereo, multiple (XFAD)
Control: VCA, crossfade
Mixing Bus : group, master, aux, mono,
stereo, LCR, multiple (XFAD), output matrix

Mixing Desk

innova SON

CHANNEL CONTROL

Digital live mixing
that works for you

Sensoft 8

console layout - fader configuration

| configuration screen | monitoring | Front of house | broadcast |
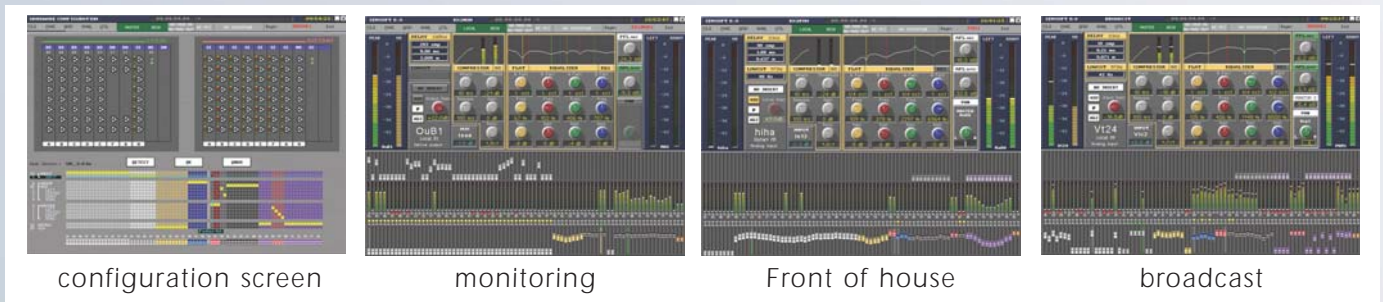
The Fader Configuration screen is where you define the console layout you want for the current job. For each show file, the 80 faders on the control surface can be defined as any of the following:

- Input channel, expanded input for stereo or multiple XFAD
- VCA
- Group or a Sub Group, Auxilliary bus, Master bus and XFAD for mono, stereo, LCR and LCR+mono
- Matrix mixing bus

The comprehensive console definition then gives you access to the resources and controls you will need for the current show. These are then saved as a show file. Each show file will have its own console layout defined by the engineer to provide the most efficient way of working according to the application requirements: e.g.

- Monitors will have multiple inputs and many aux buses for In Ear Monitoring or wedges outputs.

- Live broadcast for TV and Radio may prepare multiple mic inputs, machines and other sources in a convenient XFAD layout, with several mix bus outputs for programme distribution, mix-minus and communication access.

powerful monitoring

comprehensive monitoring system

The Cue button on each fader sends the corresponding channel to the stereo monitoring bus. The cue modes available are: PFL and AFL for inputs, PFL, AFL and APL (After Processing Listening) for outputs with 5 corresponding levels. The stereo monitoring bus is distributed to the 2 headphone jacks and up to 3 different assignable outputs. Each of those feeds has its own general listening level. Monitoring preferences with Input/Output priority, default Master listening, Solo mode and Mono reduction give you full flexibility and total control.

Fast, precise, dependable monitoring for multiple applications:

Stage monitor: use the 3 output circuits for fast PFL/AFL control (wedges, IEM, near field). These are assignable for each of your auxiliaries. As soon as you CUE an aux, the monitoring is connected giving you immediately the same balance as the artist.

Front of House: With delays available on monitoring outputs, your near field listening circuit can be correctly phased with the main PA, and controlling the delays or the spatial sound for multipoint amplification is simple.

Theatre: From your control room or house position, you can listen to any monitor selection, even a sophisticated multi-point set up. In the venue, during rehearsals and during the show you have complete control of each audio feed.

Broadcast: Near field, mid field or main monitor speakers are immediately available for monitoring your various program outputs or program return feeds. Distributed outputs make it simple to monitor differing feeds with varying levels and processing. One of the monitoring circuits can also be specified for Comms purposes.

direct outputs, inserts
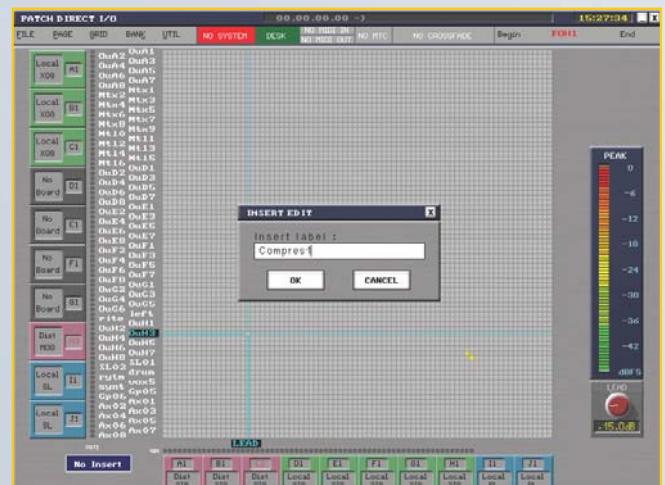
At the heart of the Sy80 console there is a powerful digital audio signal distribution routing and splitting functionality. Accessed by the MUXI key, the I/O page displays this comprehensive switching matrix giving you access for a view of all the system outputs and their assigned processing.

- Multi-track-recording feeds, with or without output processing, simplify machine room management and improve flexibility. Fast, flexible signal distribution for clean feeds are easy to manage last minute requests during a live show.

- Return lines to the stage box for mix minus, PA loudspeakers or Comms sends are easy to program and control.

This screen is also used to define your insert I/O for external outboard equipment. Each insert will have a name (typically the outboard equipment) and its send and return I/O definition.

Insert patch assignments are fast and easy to make and clearly visible on-screen.

automation

Your show is stored in a file with the console's fader definition and general preference parameters. Depending on the type of performance, you may want to use the Sy80 in manual mode (one scene). But real benefits arrive when you use a collection of scenes or pages organised for one or several parts of the show, (e.g. each song).

Up to 1000 pages may be stored in the console. A complete EDIT command function allows you to build a play list of the day containing the different scenes or pages in memory. These may have been created during rehearsals or other shows with the same artist / actors, similar live situations, or off-line.

An automation management panel between the console faders is used to control the page changes during a show or rehearsals. You can either make changes manually using snap shots, or automatically with Midi program changes and Midi Time Code from machines or sequencers. The Smart Automation and CrossFade mode allows you to segue / fade between pages whilst keeping complete control over the process. With Midi Time Code and CrossFade chaining parameters, sophisticated automation of sound effects may be achieved, such as spatial positioning and movements across multiple monitors. For each page, up to 16 Midi program changes can be sent to external devices such as effects, lighting and others consoles.

libraries

Store and recall your favourite sounds and processing in your personal libraries. It's simple, press and hold the channel SEL key, then press SAVE and a new screen window opens where the current channel name is to be stored. You just need to enter the name you want for this particular processing (PhilKick, GuitaRock, Violin12, Vocomment, etc…).

Export this library to a floppy disk and you can update your own data, keeping your sound libraries with you.

To load a library sound just hold down the channel SEL switch on the channel to be changed and press the Load key, the menu of your sounds opens.

Chose the sound you want and select the parameter(s) to copy.

live functions

You're all set to go; rehearsals went well, and everything is in place; the show will start soon. And, of course, at the last minute the stage manager comes up and asks for a new commentator mic or any one of the last minute things that can happen live… Your show has 65 page snap-shots and this mic need to be added after the 3rd act…

…no problem, press Off Line.

The console is 'frozen' in its current state and the audio continues unchanged. The console software, Sensoft, now lets you change to the page to edit, add this new mic, prepare settings corrections and routing to the buses, and save the new modification. If necessary then OverRam the mic settings to all the pages of the show where this mic is to be used.

OverRam is the function to use when you want to update a change to one or more channels across multiple pages of the current show. OverRam can be used, off-line as we did here, or on-line during the show itself to update a new Eq or any parameter to this same channel throughout the pages where the new setting is needed. From then on those pages, scenes, will have the new parameters as well.

We're still off-line. The TFT screen displays this clearly and the console key Off Line is showing red. Press Off Line again and you come back to the console status you left and the desk is 'unfrozen' and live again.

Good sound on this channel and you want to copy it to other channels? Choose the parameters to be copied and press Copy, select the destination channel and press Paste and it's done.

The Link grids give you the ability to have several channels under control at the same time. This could be for inputs, Eq and dynamics, faders, mute and outputs. You can then link channel pairs as stereo or more as groups of inputs or outputs depending on the flexibility of control you need.

Relax keeps specified channel faders in manual mode ie: not under software control. This could be for example for particularly sensitive or unpredictable inputs you need to use during a show. For each fader, you can define the parameters to keep out of the automation, keeping partial or full manual control through the different show pages.

Sy80 is controlled by Sensoft 8, dedicated PC compatible software that enables you to prepare or archive your console settings and libraries on your desk or off line on a laptop PC. Export and Import functions allow file transfers from console to PC and vice versa. Sensoft features up to 1000 pages per show with or without automation.
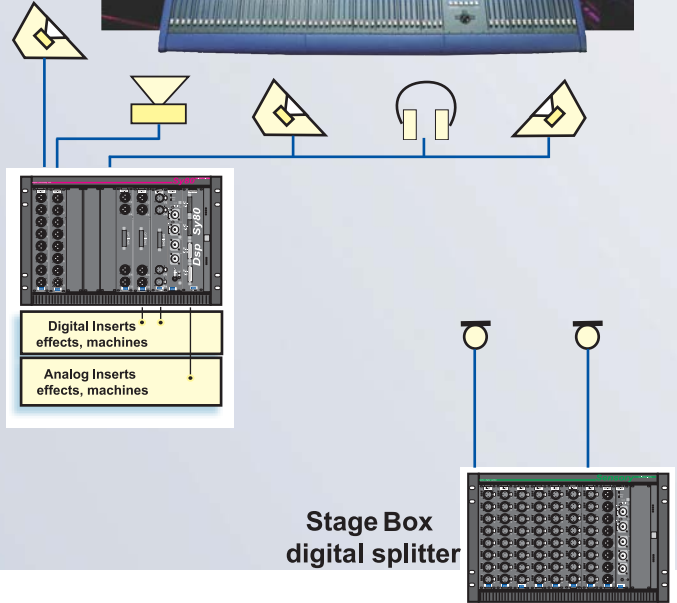
On Tour - Monitoring

- Console surface designed for fast precise control
- Clear view of all Aux / bus sends
- Mono, Stereo or multi-format Aux (IEM)
- Full processed Inputs and Outputs
- Independent panning for each of the 48 buses
- Intelligent monitoring - 3 configurable circuits

Monitor console configuration example

60 inputs - 40 bus
48 mono, 6 stereo inputs, 2 XFAD
8 VCA - 20 stereo Aux, 2 XFAD
up to 16 inserts

IEM

Digital Inserts
effects, machines

Analog Inserts
effects, machines

**Stage Box
digital splitter**

On Tour - Front of House

- Exceptional sound quality
- Flexible console configuration - I/O, XFAD, VCA,
  groups, matrix
- Smart automation and Live functions
- Multi-format mix buses
- Full processing inc. delays on outputs
- Small footprint - more paying customers
- Off-line programming

FOH console configuration example

64 inputs - 40 bus
24 mono, 10 stereo / quad inputs, 4 XFAD
8 VCA - 2 stereo Masters, 4 stereo sub groups
10 mono / stereo Aux, 12 Matrix, 4 XFAD
up to 16 inserts

Digital Inserts
effects, machines

Analog Inserts
effects, machines
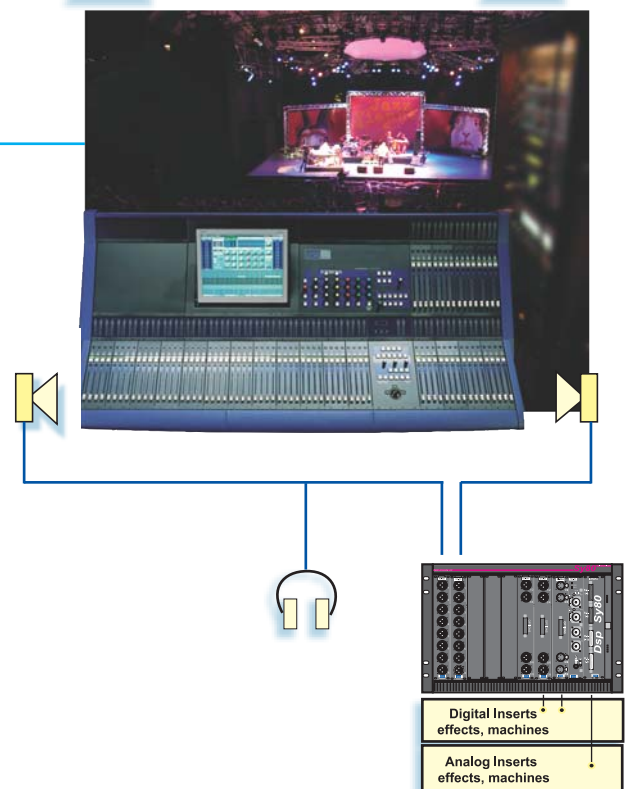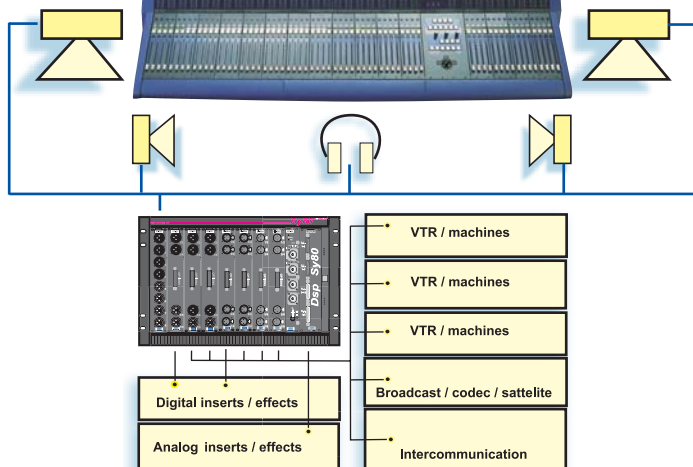
applications

On air - Live Broadcast

- Flexible bus outputs and distribution
- Multiple program Masters and Matrix
- Accessible monitoring and Comms circuits
- Customisable panels for broadcast metering
  and talkback systems
- Automation and relax functions

Live broadcast console configuration example

58 inputs - 44 bus
10 mono, 8 VTR - tracks, 2x8 tracks inputs, 8 XFAD
10 VCA - 6 stereo groups, 3 stereo Masters (programs)
10 Aux / mix minus, 6 Matrix, 6 XFAD
up to 24 inserts or direct I/O

VTR / machines

VTR / machines

VTR / machines

Broadcast / codec / sattelite

Digital inserts / effects

Analog inserts / effects

Intercommunication

On Stage - Theatre

- Configurable for specific show layouts
- XFAD for multi-format sources
- Matrix flexibility e.g. dressing room feeds
- Show automation - snap shot, MTC, CrossFade
- Live functions - OverRam, Relax, Off-Line
- Bus, VCA, Group combinations for special effects

Theatre console configuration example

48 inputs - 48 bus
8 mono, 8 stereo, 3x8 tracks inputs, 8 XFAD
12 VCA - 12 stereo groups, 2 Masters LCRM
12 Matrix, 2 Aux, 6 XFAD
up to 32 inserts or direct I/O

Digital Inserts
effects, machines

Digital live mixing
that works for you

Sy80 Audio specifications

Internal sampling frequency	48 kHz	
External sampling frequency	44 to 49 kHz	Word Clock - AES as option
Internal signal processing	32 - 40 bits	Floating point 760 dB Dyn range
Audio signal path	24 bits	144 dB dyn range
Analog signal delay	1,3 ms	mic in- DSP- analog Xout
Analog bandwidth	15 Hz.. 20 kHz	-3/0 dB mic in- DSP- analog Xout
Analog input range (mic input)	-63 to 27 dB	input gain in 64 steps of 1.5 dB
Analog dynamic range	105 dB	input gain 6 dB, output level +22 dBu
Total Harmonic Distorsion + noise	-90 dB typ.	input gain 6 dB, output level +22 dBu
Hum and noise	-127 dB	equivalent input noise @ 60 dB gain
Noise	-95 dBu	residual output noise
	-95 dBu	Any bus fader at 0 dB
	-79 dBu	Any bus at 0 dB, 1 input at 0 dB, gain at 60 dB
Maximum voltage gain	+73 dB	mic in at 63 dB, faders 0 dB, output at +22 dBu

Digital signal delay, synchronous	0, 5 ms	AES in - DSP - AES out
Digital signal delay, asynchronous	1,3 ..1,42 ms	Src AES in - DSP - AES out
Digital Bandwidth	5 Hz..20 kHz	-0,1/0,1 dB AES in - DSP - AES out
Digital dynamic range	144 dB	AES in - DSP - AES out
Digital THD + noise, synchronous	-138 dB	AES in - DSP - AES out
Digital THD + noise, asynchronous	-122 dB	Src AES in - DSP - AES out
Digital noise floor	-155 dBFS	

|		
80 Input channel processing	Input section	48V, Phase, programmable Insert
	Delay	1 to 5300 samples (110 ms @ 48kHz)
	Filter	Low Cut 0 to 500 Hz sweepable
	Dynamics	Gate/Expander, Compressor/Limiter, 12 parameters
	Equalizer	4 full bands 20 Hz-20 kHz +/- 15 dB + Notch
	Panoramic	independant for each bus, short cut and full screen
Remote control (VCA, mute groups)	Level and Mute	unlimited assignable VCA and/or modes
48 bus, programmable functions	Groups	mono, stereo, LR, LCR, LCR+M
	Auxilliaries	mono, stereo, LR, LCR, LCR+M, pre/post
	Masters	mono, stereo, LR, LCR, LCR+M
	Matrix	mono + direct input mixing
	Monitoring	stereo, mono, solo, priority, 3 circuits + Headphones
	System I/O	32 bus patchable up to 64 physical outputs
	DSP Send Line	16 bus patchable + Headphones
8 to 64 Output processing (XO-8D, DO-8X)	Ouput	patch, output level 10 to 22 dBu (-12 to 0 dBFS)
	Delay	1 to 65536 samples (1365 ms @ 48 kHz)
	Dynamics	Gate/Expander, Compressor/Limiter, 12 parameters
	Equalizer	8 full bands 20 Hz-20 kHz +/- 15 dB + Notch
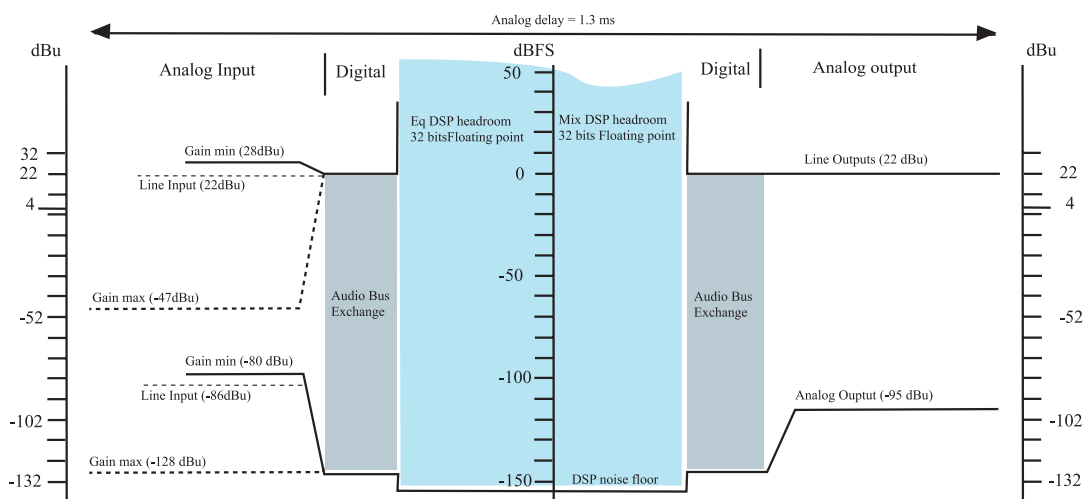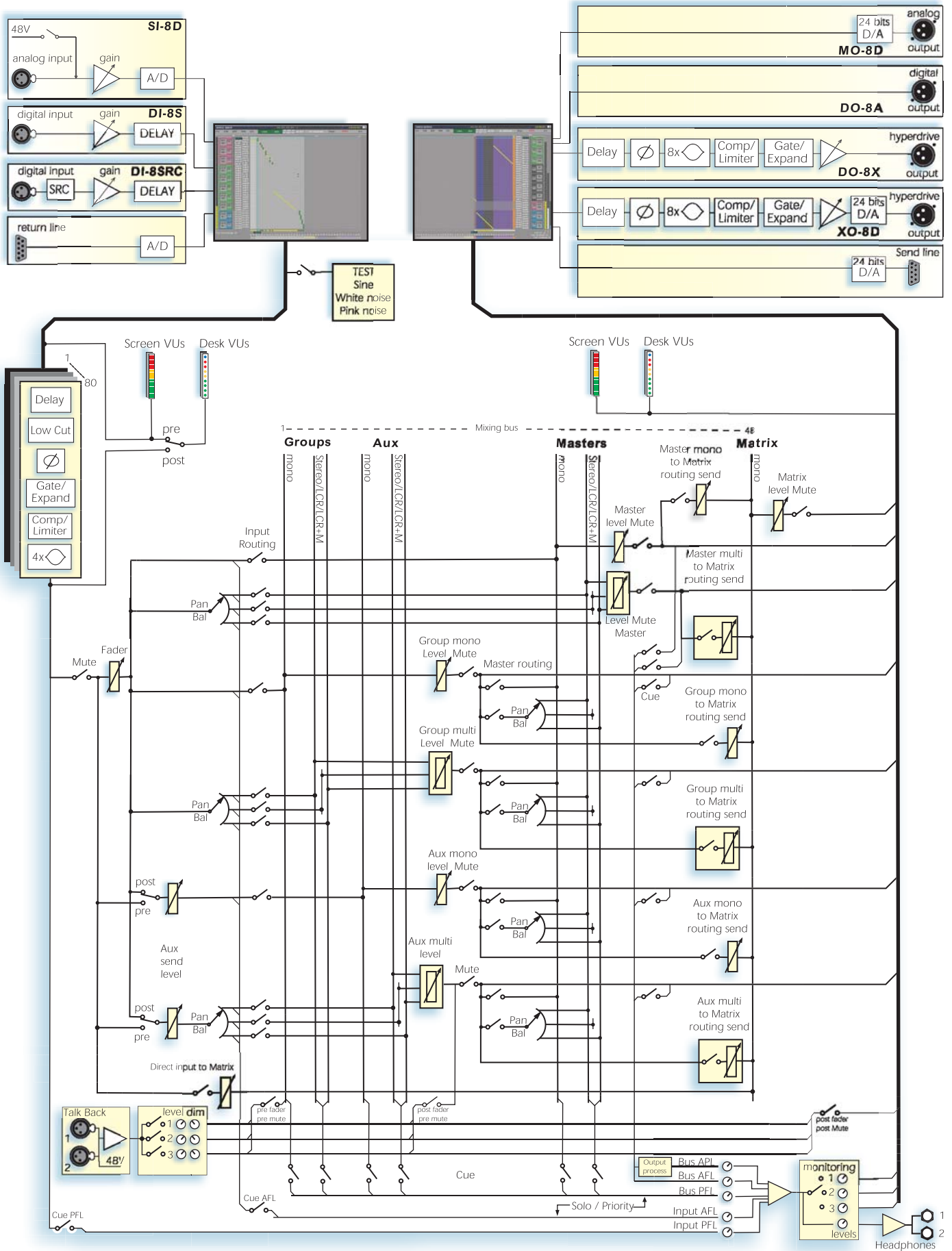
Audio modules

SI-8D

8 mic / line analogue inputs
-27 to 63 dB remote preamp gain
and +48V phantom
24 bit 48 kHz Delta Sigma Converters
XLR-3 F balanced inputs
Leds for signal, Peak, 48V
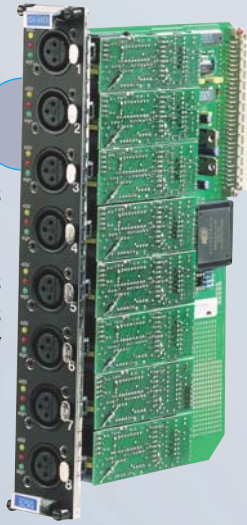
DI-8S/Src

4 AES digital inputs (8 channels)
IEC 958, 24 bit digital audio
Remote digital gain (-6 to +6 dB)
and delay (0 to 5 ms)
Synchronous mode (@ system word clock)
Sample Rate Converter option 30 to 50 kHz
XLR-3 F, 110 Ohm balanced inputs

MO-8D

8 line level analogue outputs
11/17/22 dBu Full scale jumpers
24 bit 48 kHz Delta Sigma converters
Remote Mute and Patch
XLR-3 M balanced outputs

DO-8A

4 AES digital outputs (8 channels)
IEC 958, 24 bits digital audio
Remote Mute and Patch
Synchronous mode (@ system word clock)
XLR-3 M 110 Ohm balanced outputs

XO-8D

8 line level processed analogue outputs
Remote output gain control (10 to 22 dBu)
8 full band parametric Equalizer
Dynamics processing and Delay up to 1350 ms
XLR-3 M balanced outputs

DO-8X

4 AES digital processed outputs
(8 channels)
Remote output gain control (10 to 22 dBu)
8 full band parametric Equalizer
Dynamics processing and Delay up to 1350 ms
Synchronous mode (@ system word clock)
XLR-3 M 110 Ohm balanced outputs

Console mechanical characteristics

Length : 1650 mm
Height : 305 mm
Depth : 860 mm
back cover open : 950 mm
keyboard drawer open : 1150 mm
Weight : 94 kg
Dual redundant power supply
internal integration in 2 units 19″ racks
2 Power Connectors Jaeger 17 Pins
90 – 230 Vac, 50/60 Hz , 500 W each
Acoustic noise figure < NR20

Retractable on board 15″ TFT screen
Embedded 800 MHz Pentium 4 CPU
64 Mo Ram, 64 Mo Flash solid state hard disk
Ethernet 10/100 Base T Socket
Drawer with 87 keys keyboard and accessories
Floppy drive (USB) on the front
Integral track-ball and switches integrated
Audio rack remote control Jaeger 37 Pins socket
4 XLR-4 Sockets for litelite 12V-0,5A with dimmer
2 Talk Back XLR-3 female connectors,
48 V Phantom, Sens = -24 dBu (-18 dBFS)
2 Jack 6,35 TRS Headphones connectors,
15 dBu/ 16 Ohm…
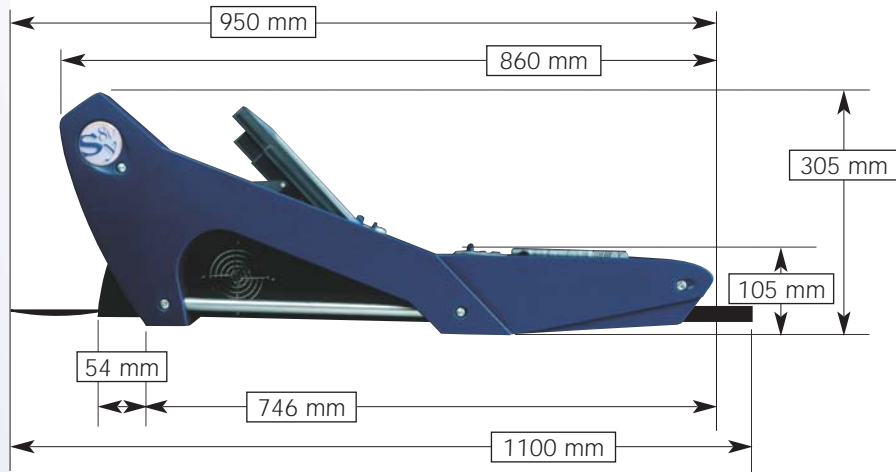
Audio rack characteristics

Length (19 inches rack standard) : 485 mm
Height (7 Units) : 312 mm
Depth : 325 mm
Weight : 18 kg
Dual cold redundancy power supplies internal
90-230 Vac, 50/60 Hz, 300 W each
Acoustic noise figure < NR25

Back plane bus 11 slots
1 slot reserved for Power Supply module
1 slot reserved for DSP Sy80 module
1 slot reserved for MC64 controller module
8 slots available for Audio I/O modules

Headquarters

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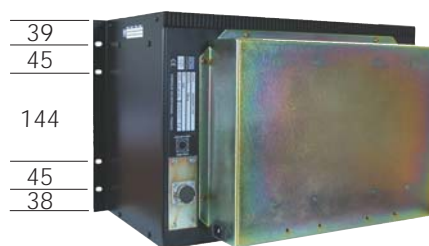
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