



User Guide



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Sensoft 8.1



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Attention: veuillez consulter le chapitre 10 avant toute manutention ou utilisation de la console.

Warning: please read carefully the section 10 before any handling or use of the console.

Achtung: bitte lesen sie zuerst Kapitell 10 for jedem Verladen oder Verwendung des Pultes.

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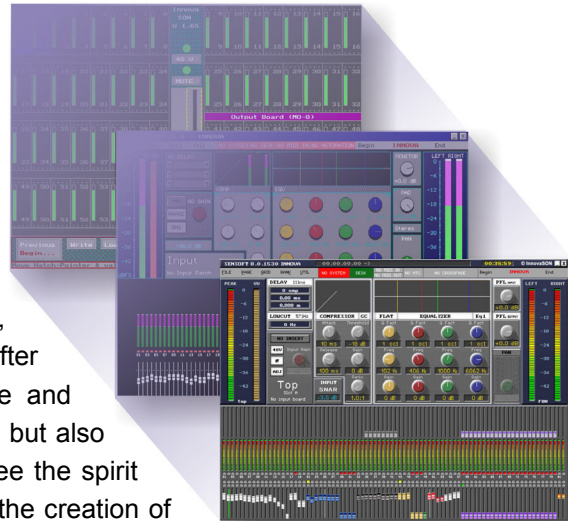
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1 DIGITAL MIXING IN LIVE SOUND

1.A Sensoft 8.1: a brief history

Several years have passed since InnovaSON introduced the first digital system designed to meet the needs of LIVE SOUND production: artists on-stage, impatient producers (tight budgets), live sound quality identical to studio recordings, complex productions, etc.

LIVE, for InnovaSON, is a “keyword” reflected in the products; products that are reliable, sturdy, and capable of working without a problem, show after show. Thought was not only given to limit size and excess weight (as freight in a lorry, car or plane), but also to speed up the installation, and especially to “free the spirit of the sound engineer”, an essential condition in the creation of quality live performances.



Thanks to the success of the **MUXIPAIRE** system, InnovaSON was in touch with numerous users, who all wished for a digital mixing desk that would, at last, satisfy all their requirements for live shows in the 21st century:

- Total memory of the functions necessary for complete audio signal processing
- Immediate reminder of the state of the whole console
- Simple to use in spite of sophisticated automation
- Sound quality without compromise
- All the advantages of a completely computerised digital system

These are the essentials that InnovaSON settled on throughout the design of its range of digital consoles.

Designed from standard elements in InnovaSON’s modular (or custom) digital audio systems, InnovaSON consoles now benefit from the field experience gained from those previous products.

All the team at InnovaSON sincerely thank all those who brought another small stone to the structure, by their suggestions, particular requirements, or sensible comments. Although completely digital, InnovaSON consoles will not upset a user brought up on classic analogue systems; on the contrary, their original three-part concept (mixing desk, local and distant audio system racks), brings more flexibility and quality, without compromise.

Our greatest satisfaction will be to learn that each user has found, in Live Sound, a work tool perfectly adapted to their needs.

1.B Fader assignment

Sensoft 8.1 brings something new to the world of Live Sound – you define the number and position of all the functions necessary for your mix.

Naturally this number is determined, on one hand, by the number of faders on your control surface and, on the other hand, by the available DSP resources in your system.

The figure below gives the maximum number of resources that Sensoft 8.1 can handle on various InnovaSON consoles.

Resources available on InnovaSON consoles

Console	Faders	DSP module	Mix busses	Input channels	Monitor circuits
Sy40	47+1	DSP Sy40-8	26	48	3
Sensory Live (Upgrade Sy80)	71+1	DSP Sy80	48 = 32+16	80	3
Sy80	80	DSP Sy80	48 = 32+16	80	3
Sensory Live (for the record)	71+1	DMMk-9	23	48	1

Console faders can handle inputs coming from distant and local audio racks, as well as controlling the busses necessary for the different mixes required for these inputs.

1.C The assignable functions

Each of the console faders can handle the following functions:



Input :

Fader controlling an input or a group of inputs assigned to an XFAD



XFAD™ :

Fader controlling an input and an element of a spread group



Group :

Fader controlling a group or a subgroup



Aux :

Fader controlling an Aux bus



Left :

Left bus of a selected group or aux



Right :

Right bus of a selected group or aux



Center :

Center bus of a selected group or aux



Mono :

Mono bus of a selected group or aux



Master :

Fader controlling a Master bus



Left :

Left bus of a selected



Right :

Right bus of a selected



Center :

Center bus of a selected



Mono :

Mono bus of a selected



Matrix :

Fader controlling a Matrix bus



VCA :

Fader controlling a VCA



Monitoring :

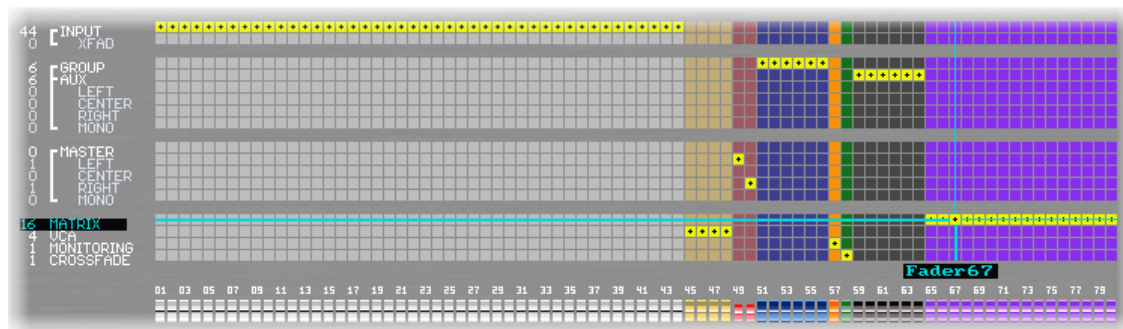
Control of monitor level



Crossfade :

Speed control of a real-time crossfade

Each of the console faders can handle the following functions:



The number of faders available in this grid corresponds to that available on the console (shown here is the Sy80). The **Grid** functions in the same way for any console as long as it supports Sensoft 8.1. Later on in this manual we will show you how to access and use the configuration grid.



To give you the time to fully understand and master this feature, preset configurations allow you to quickly set the parameters of your console. Having first inserted the floppy disk “Examples”, use the **Import** function to load these standard configurations.

1.D Spread zones

Let's take a few moments to consider the concept used by InnovaSON to exploit more physical inputs and mix busses than there are faders on the console, without having to resort to a system of layers. As you saw previously, InnovaSON designs consoles dedicated to, among other situations, live applications. It was therefore important to establish a design that took note of the following points:

- A console with a size and weight lower than its analogue counterpart
- Retention of the user-friendliness inherent in software previous to Sensoft 8.1
- To always have a global view of the general state of the console on the monitor screen
- To have to hand the maximum number of controls, for fast and effective user reaction

This last point made InnovaSON decide to implement the **XFAD** function in the development of Sensoft 8.1.

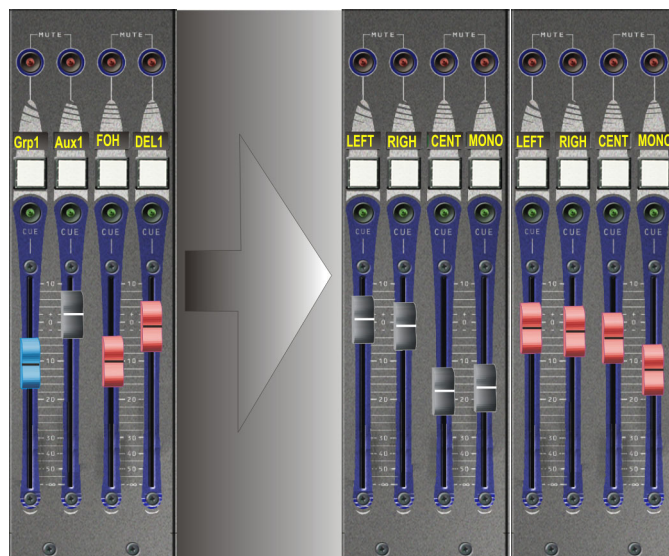
Whether for the management of inputs or the management of busses, the general principle is the same: a full channel can control a single physical I/O or of a set of physical I/O. In the latter case, the channel can be compared to a “fader bank”, because every time it is selected, it spreads out all the channels it controls, in a zone defined by the user.

The principle of spread channels



The channels associated with one, or a group of, physical inputs

The spread zone as defined by the user, made up from as many XFAD as necessary



In the same way, Aux, Group or Master channels can spread their L, R, C and M busses if necessary, in this case you can compare them to "Bus Banks"

The figure above shows an example of 8 "banks", each spreading 16 XFAD inputs. A swift calculation shows that, in theory, you could control $8 \times 16 = 128$ inputs with only $8 + 16 = 24$ faders.....what a dream!

One of the major points of Sensoft 8.1 is that the number of "banks", and their arrangement as well as the number of channels spread by the "banks", is defined by the user. Each user can effectively "draw" the console according to their own needs.

2 Sy40

2.A Sy40: product overview

Sy40 is a one-piece stand-alone console which combines the control surface, processing and local I/O. Sy40 has 6 internal slots for 8 input or 8 output modules, either analogue or AES digital and the modular approach makes it easy to configure Sy40 for specific applications/installation.

Fully loaded (as shown below), Sy40 may be fitted with 32 mic /line inputs, 8 line inputs and 16 processed analogue outputs.



Sy40 provides the following features in a light and compact footprint:

- 47 motorized assignable faders with quick-access switches for the principal mixing parameters (Select, Listen and Mute)
- 47 x 16 segment LED Bar-graph displays for metering input and output signals
- 1 x fader reserved for automation control (cross-fade)
- 1 x central complete console strip with a button for each parameter
- 1 x functions set for memories management
- 1 x 12 inches folding flat screen for mixing parameters real time display
- 1 x switches set for audio functions (patches, monitoring, Talk Back circuits...)
- 1 x embedded PC compatible computer to manage the whole console
- 1 x keyboard / track-ball in its drawer for advanced functions and data capture
- 1 x audio rack space for input/ output modules, MC-64 controller and DSP Sy40-8.

The console's audio is controlled by the MC-64 module that generates audio clocks, drives the audio busses and interfaces with the embedded PC. This module is also fitted with two BNC connectors for connection via one or two coaxial cables to a remote Stage Box. The coaxial cable can transmit the digital audio from up to 64 remote inputs from the Stage Box. In this case, the Sy40 internal module slots can be used for more output modules, providing up to 48 analogue or AES digital local outputs.



The DSP Sy40-8 is fitted horizontally above the MC-64 controller at the rear of the Sy40. This Digital Signal Processing module handles all of the mixing, filtering and dynamics algorithms of the console. It is fitted with a 25 pin sub-D connector for 8 line inputs. An adaptor cable with 8 XLR connectors is delivered with the console. This module is also fitted with an XLR-3 connector supplied with 48V phantom power for the Talk-Back microphone.

Once the input and output cables are connected, it is not necessary to move them for different mic set-ups as all patching operations are achieved electronically from the console via the on-board computer. By adding a Stage Box, all the needs of a digital installation are covered including on-stage signal splits and the digital transmission of the audio from the stage to the mix position(s).

Sy40 is really easy to use, and those new to digital consoles will be quickly up to speed and mixing within minutes. The control surface is fitted with 47 motorized faders that accurately reflect the stored positions of a mix. High quality, low noise Alps faders are used with proprietary software which controls the feel and active 'sensory point' for precise level control.

Above the faders, bar-graphs display signal levels pre or post processing, (dynamics and equalisation) depending on the options set in the general preferences menu. When the console is on, the LCD flat screen displays either the main mix window, or other selected windows e.g. input matrix, outputs, and aux. The on-board PC runs Sensoft 8 software that controls both the audio signals and the console surface functionality.

If required, an external PC running Sensoft may be connected to the console for back up. An external SVGA standard screen may also be connected to replace the internal screen. The keyboard with its on-board track-ball can be removed from the internal drawer and / or replaced by an alternative if required.

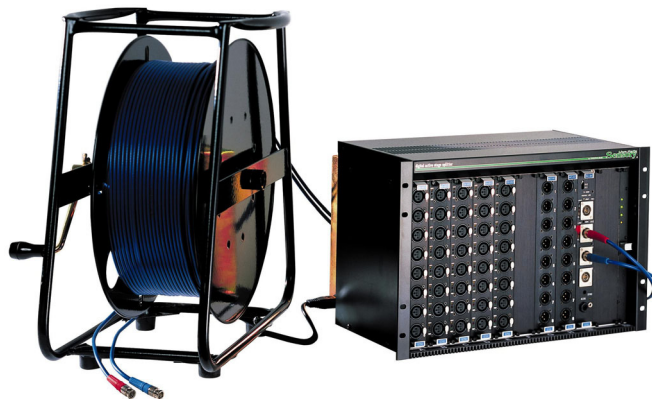
2.B Options

For specific console configurations, or advice on specification or installation, please contact your nearest InnovaSON partner.

2.C Sy40 description

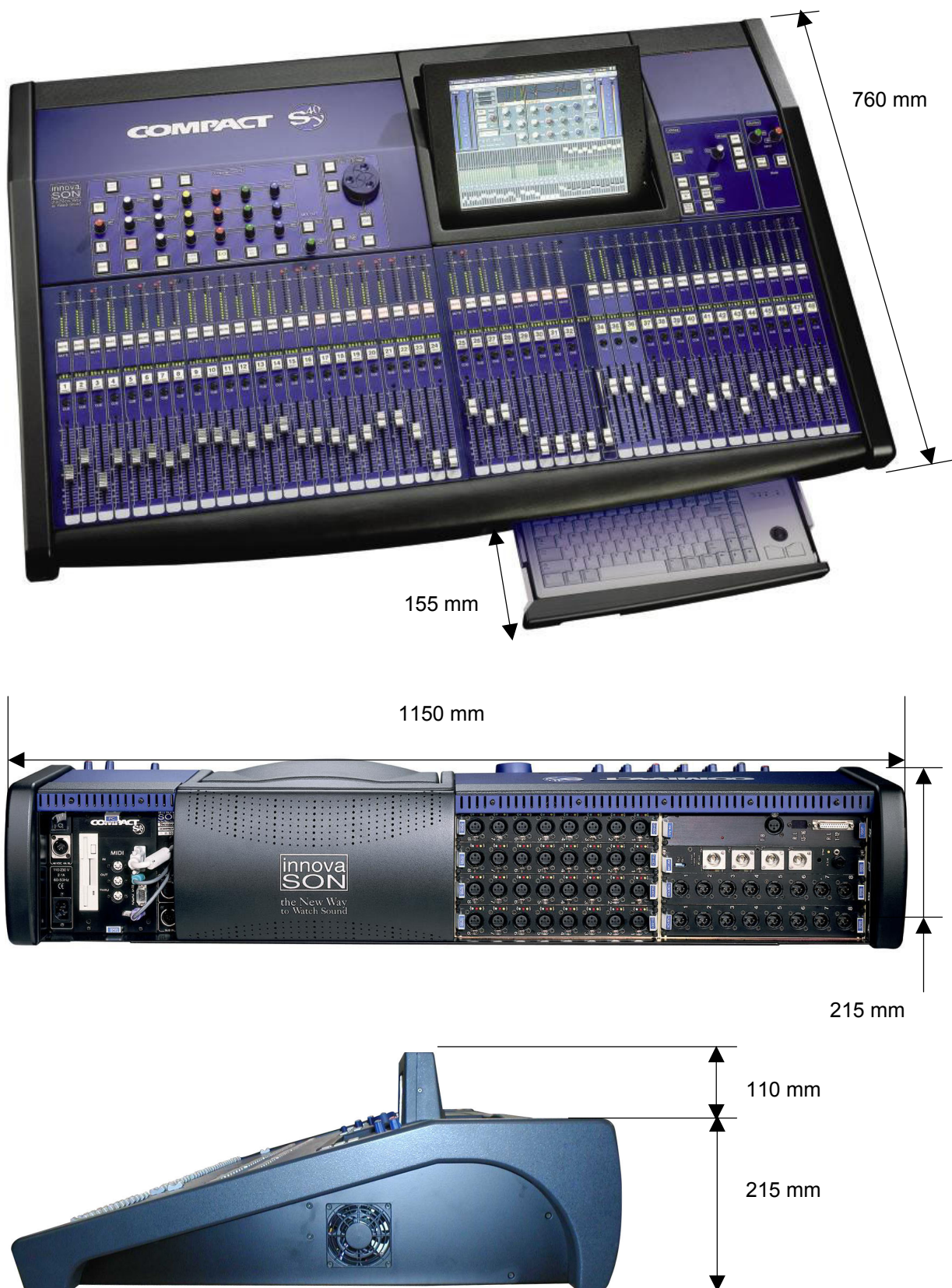


Optional Stage-Box and cable drum. (Shown here fitted with 40 mic/line inputs and 16 line outputs.)



2-4 THE SY40 CONSOLE

2.C.1 Dimensions



CONSOLE :

Length:	1150 mm
Depth:	760 mm
Height:	215 mm (screen closed), 325 mm maxi.
Weight:	40 kg alone
Wood delivery box:	1300 x 450 x 900 mm / 90 kg
Power supply:	90/253 Vac, 46 to 63 Hz
Power consumption:	300 VA max
Operating temperature:	+10°C at +35°C
Faders :	48 motorized ALPS 100 mm faders (127 positions)
Displays:	48 4-character LED matrix
Screen:	Folding 12 " LCD flat screen
Commands:	141 switches, Cue (listening), Select and Mute per fader
Bar-graphs:	47 vu-meters, 16 LEDS each
Rotary coders:	23 rotary buttons for audio parameters and commands
Switches:	34 touch buttons for audio functions and miscellaneous
Internal computer:	PC compatible, Pentium 233MHz, memory 64 Mb
MIDI card:	InnovaSON
Keyboard:	CHERRY ML4100 QWERTY (keyboard + track ball)
Floppy disk drive:	1,44Mb 3"1/2 internal (back), external USB as option
Hard disk:	Solid State Flash Disk 64 Mb

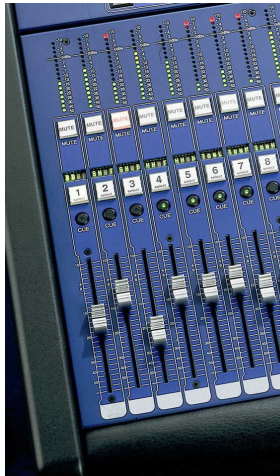
STAGE BOX AUDIO RACK (OPTION) :

Length:	482 mm (19")
Depth:	325 mm
Height:	312 mm (7U)
Weight:	20 kg
Basis modules:	1 SC-64 controller
Coaxial cable :	2 x 150m, 75 Ohms, 4 BNC, delivered on drum with Stage Box
Delivery crate:	800 x 640 x 740 mm 75 kg

2.C.2 The Quadfad module

Each Quadfad module has 4 motorized faders and each fader an associated 4-character display. There are 12 identical fader blocks. Sensoft automatically detects the modules on boot up and is used to assign functions to each fader e.g. input, bus, XFAD, matrix etc.

The main characteristics of a Quadfad bloc are:



- Motorized ALPS fader - 100 mm
- 8 bit linear conversion for reading and servo control
- Typical seek time - 100 ms
- Sensory point of memorized level
- Illuminated switch for channel selection
- Illuminated switch for monitoring [**CUE**] (green)
- Illuminated switch for channel [**MUTE**] (red)
- 4-character label display, highlighted when selected (adjustable ratio)

2.C.3 The CHANNEL CONTROL panel

The Channel Control panel represents a single complete console channel strip and controls all of a selected channel's audio parameters (gain, equalizer, noise-gate, compressor, etc....).

Channel panning, pre / post selection and the 'LIVE' functions such as **Copy**, **OverRam** and **Links** are also accessed via this panel.



2.C.4 Screen and UTILITIES panel



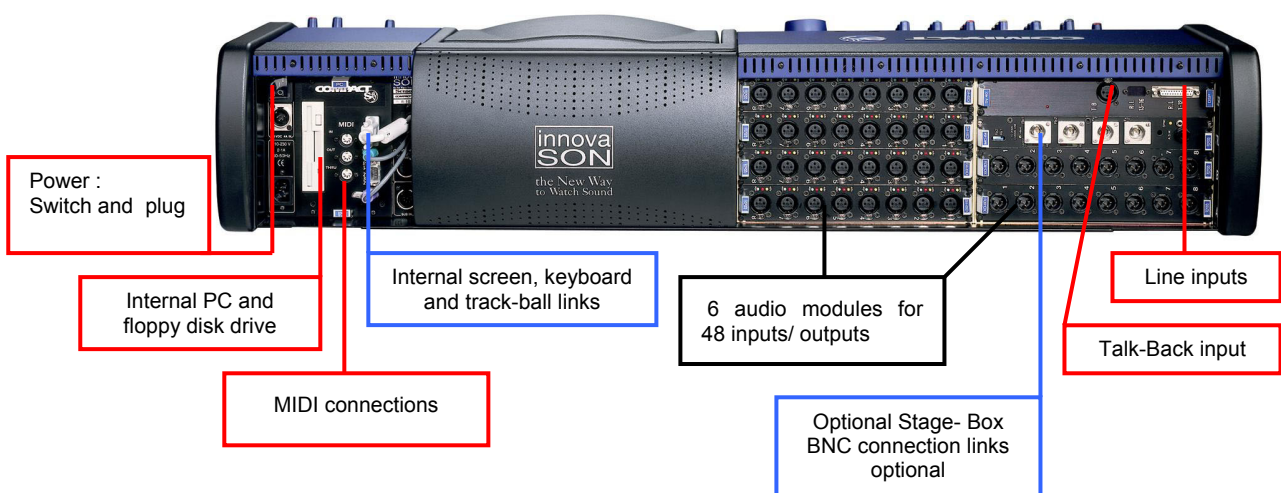
To the right of the Channel Control panel there are three other control sections which are, from left to right, the pages and play-list management, the folding screen and the patch monitoring and talk-back section.

2.C.5 Console front

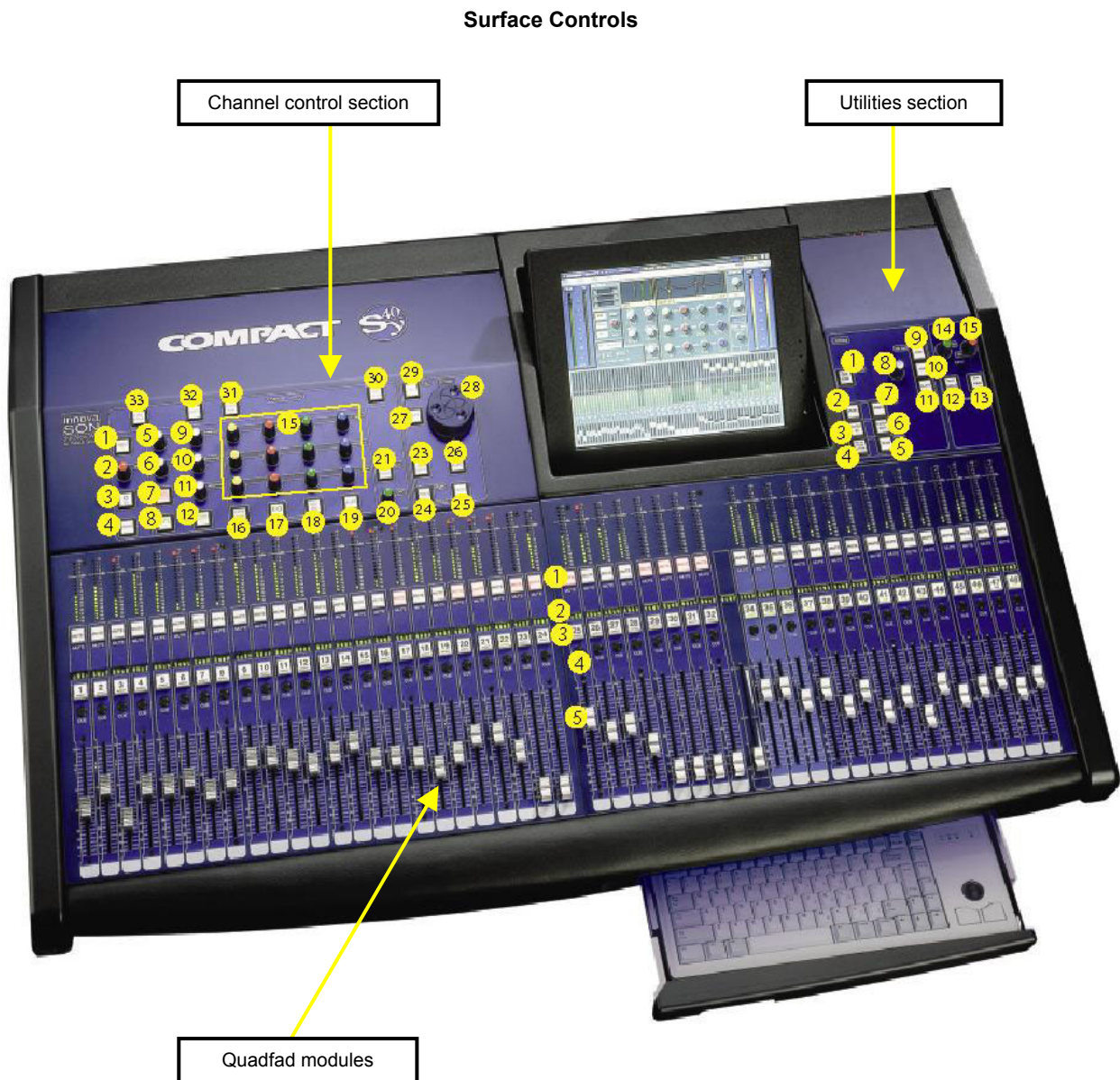
6.35mm headphone jack, under the wrist-rest, beside the keyboard drawer.



2.C.6 Console rear



2.C.7 Surface control layout



Channel Control

I N P U T	1-On/Off phantom power
	2-Microphone pre-amp gain
	3-Phase reverse
	4-Insert return activation
D Y N A M I C S	5-Attack adjustment
	6-Release adjustment
	7-Gate and Compressor adjustments - toggle
	8-Gate On/Off
	9-Threshold adjustment
	10-Range/ Gain adjustment
	11-Hold / Ratio adjustment
	12-Compressor On/Off
E Q U A L I Z E R	13-
	14-
	15-Parametric equalizer adjustment section
	16-Low cut filter On/ Off
	17-Equalizer On/Off
P A N	18-Processed outputs parametric Eq. 4 first bands and 4 last bands toggle
	19-Flat Eq., Gate and Compressor (choice window)
	20-Pan : Panning adjust
22-	21-Pre / post: Aux parameters window : Pre / post, independent pan, routing...
	22-
23-Load / Goto : Page Ram activation from Hard disk or Ram	23-Load / Goto : Page Ram activation from Hard disk or Ram
	24-PREV : previous Ram page
	25-NEXT : next Ram page
	26-OK : validate
	27-SAVE : save the current page to hard disk
	28-Rotator : choose and move around patch grid and menus
	29-EDIT :Play list edit window
	30-Link Channel : Links mix channels
L I N K S	31-Over-Ram : chosen parameters update through Ram pages
	32-COPY/ PASTE : Channel parameters copy / paste
	33-Link I/O : Links input and output parameters

Utilities

M I S C. / P A T C H	1-Off-Line : Freezes audio rack. Allowing modification of other pages without effecting current audio signals.
	2-MUXI :System outputs display and adjustment.
	3-Patch IN : Inputs patch switching matrix
	4-Relax : Removes selected channels from automation
	5-TEST : Test generator screen
	6-Patch-OUT : Outputs patch switching matrix
	7-Request : Choose to view one parameter across the whole console for changes (48V, Eq, Gate, Comp, Low Cut..)
M O N I T O R I N G	8-Talk-Back level (or monitoring according to preferences)
	9-Circuit 1 : Talk-Back (or monitoring)
	10-Circuit 2 : Talk-Back (or monitoring)
	11-Circuit 3 : Talk-Back (or monitoring)
	12-Input monitoring mode (PFL/AFL)
	13-Output monitoring mode (PFL/AFL/APL)
	14-Input monitoring level
	15-Output monitoring level

QuadFad modules

F A D E R S	1-Channel Mute
	2-Channel Label
	3-Select : channel selection
	4-Cue : Channel send to monitoring bus
	5-Channel level fader

2.D Handling and transportation



Before moving the console, check that everything is disconnected. Do not apply excessive force to any buttons, switches or connectors.

The Sy40 has two recessed lifting points in the end trim at each side for handling.

2.E Power supplies and CE standards

The Sy40 console may be powered from 90 to 253 Volts Alternative Current and from 47 to 63 Hertz.

The console's power supply must be earthed and connected to a proper ground. To achieve optimal performance, the earth must be noiseless as it is the reference for all the signals. A central common earth must be defined and all earth connections for the Sy40, Stage Box and any associated equipment connected to this point.

For electric safety instruction, please refer to chapter 10- Appendices.

2.F Connections

2.F.1 Audio connections

The Sy40 audio connections are all industry standard and no adaptors or particular connectors should be required for a normal use. InnovaSON's technical support department are available to help you if you have any specific interfacing requirements. Please see the InnovaSON web site for details. www.innovason.com

Avoid connecting other audio equipments before powering up the console. As the Sy40 gain structure is controlled by the internal computer it will load the last console set up which will not necessarily be suitable for the new installation. Closing a file with the last (and first) pages blank with all the settings at zero is a good habit to get into to avoid the risk of damaging amplifiers, loud speakers or deafening people close to the loudspeaker enclosures.

2.F.2 Internal, external screen



The integrated screen in the Sy40 is a 12" flat LCD which folds into the surface to protect it for transportation. The screen angle can be altered to adjust for lighting conditions and for optimum viewing. The screen manufacturer's manual is delivered with the console.

Five recessed screws can be used to adjust screen brightness, colours, and contrast according to taste. An LED shows screen power.

A standard external SVGA screen can be attached in place of the integrated screen. (Beware of the electromagnetic radiations that may be generated by a CRT.)

The SVGA screen connector is mounted at the rear of the Sy40 as shown.



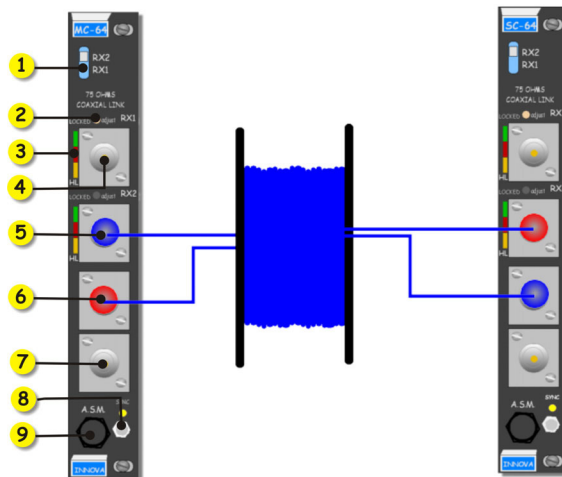
2.F.3 MIDI link connections

The Sy40 MIDI connectors are located at the rear, on the internal PC panel. The console accepts all MIDI compatible equipment. To insure a reliable connection the cables must be MIDI compliant. Sensoft has a MIDI cable test facility, see section 8.

2.F.4 Connecting an external PC

Any PC compatible computer capable of running Sensoft 8 in DOS may be used to control the console in place of the internal computer. Please contact InnovaSON technical support if you would like more information on using an external PC with the Sy40.

2.F.5 Optional Stage Box Connections



The following table describes the connections and controls on the MC-64 and SC-64 modules.

Marker	MC-64	SC-64
1	Coax input selection switch (RX1/RX2)	
2	Sensitivity adjustment screw for Rx1 reception	
3	Valid data reception LEDS Green: reception OK, data is valid. Red: reception problem, data not valid and coding violations. Orange: 'High Length' reception mode, when 300 to 500 m transmission cables are used. A switch on the card selects this mode.	
4	RX1: Data reception from a Stage Box Adjustable input, used for a cables of different type or length than standard.	RX1: Data reception from a Mix Box . Adjustable input, used for a cables of different type or length than standard.
5	RX2: fixed input optimised for the standard delivered coaxial cable. This input is Low temperature drift - <u>strongly recommended</u> .	
6	TX1: Data transmission to the Stage Box	TX1: Data transmission to the Mix Box
7	TX2: Data transmission to the Stage Box One TX (1 or 2) is used on MC-64. TX2 is a redundant output alternatively useable.	TX2: Data transmission to the Mix Box SC-64 is a digital splitter, TX2 may be used to data transmission to another Mix Box or used alternatively as a redundant output.
8	Synch input (mini Jack) used in local mode when no Stage Box is used. Standard Word Clock format TTL (option AES).	Synch input (mini Jack) Standard Word Clock format TTL (option AES). The Stage box is 'clock master' for the whole system. This Clock input is the only one for the complete system.
9	ASM: Headphone output connected in parallel with the jack at the Sy40 's front.	Not used

See section 9 also for Stage Box usage rules.

2.G Powering up

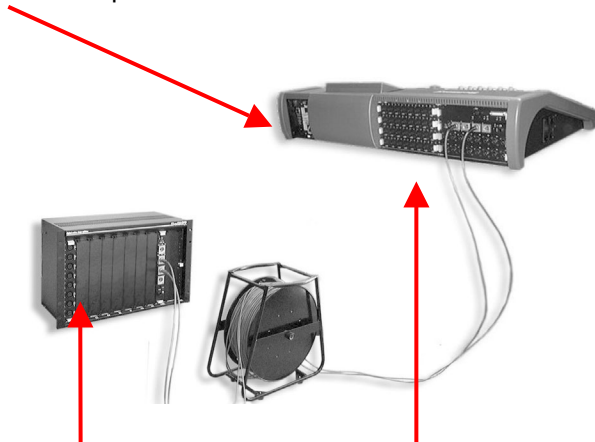


The Sy40 console must be powered up in the following sequence to avoid any possible damage or failure.

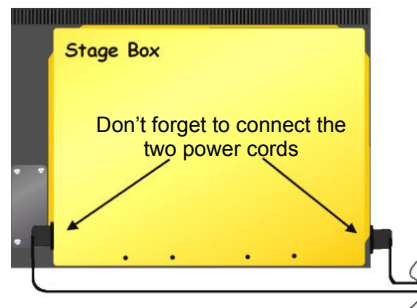
2.G.1 Power-up sequence

2.G.1.1 Power connections

Connect the power cord at the rear of the console



Prior to switching ON, check that no audio inputs/ outputs are connected to equipment that may be damaged (amplifiers, loud-speakers, ears...).



Power the Stage Box first so that the console automatically detects it and its associated modules. If the Stage Box is not detected, check your connectors are properly fitted and restart the surface.

The Stage Box does not have any power switches and the two power plugs are used for powering ON or OFF.

Attention. When using a Stage Box, power up in the following order :



- 1. Power-up the Stage Box**
- 2. Power-up the Sy40 console**

When using a Stage Box, the coaxial cables and the transmission modules must be connected as described in **2.F.5**.

The Sy40 console, used in stand-alone (local mode), has its own internal clock and is 'Clock Master'. With the Stage Box connected, the system clock is transmitted and distributed by the Stage Box.

The power-up order is important because the Stage Box will send its clock first through the coaxial cable and then the console will synchronise itself on this incoming data frame.

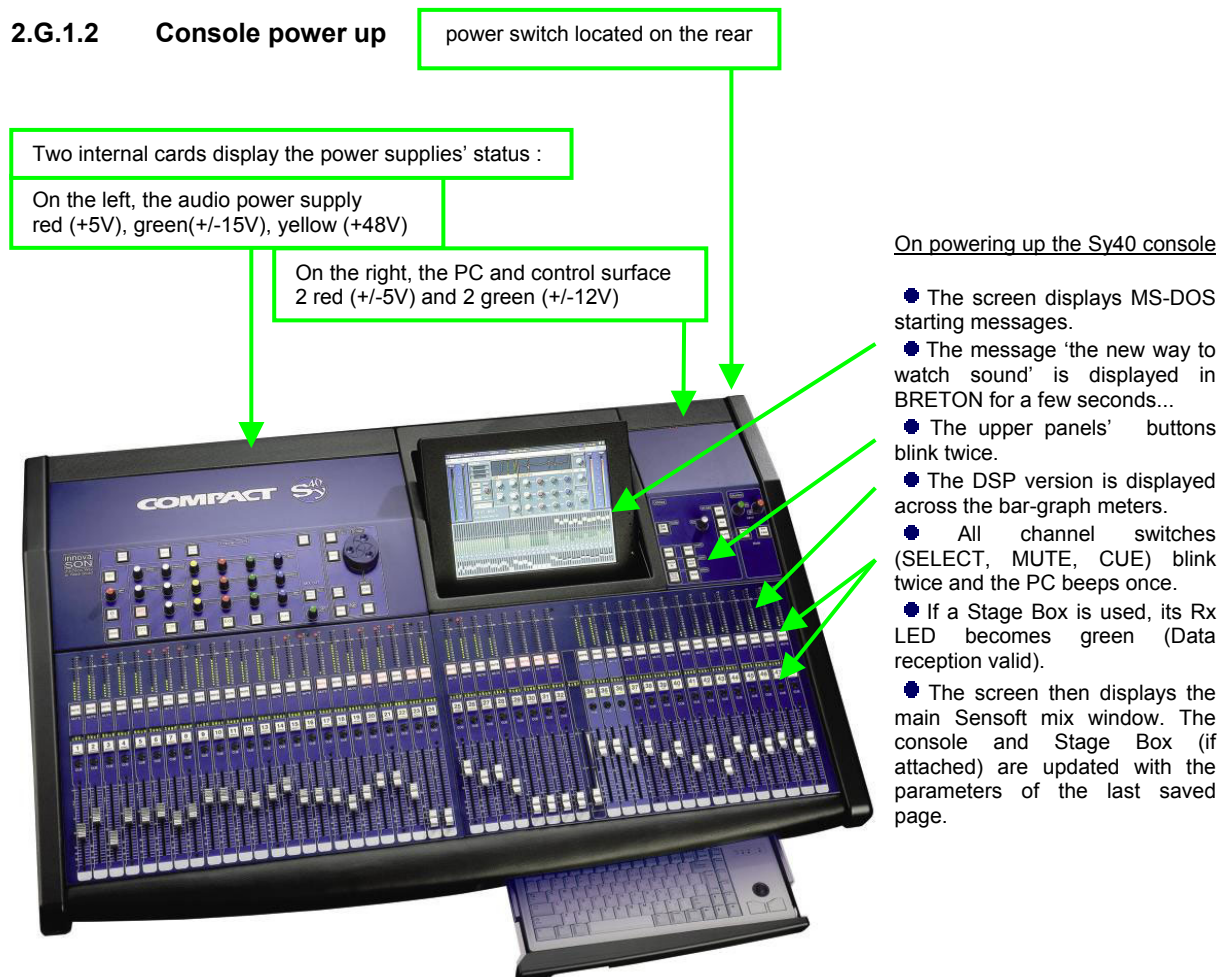
If you don't have a Stage Box, go directly to **Console power up**.

2-14 THE SY40 CONSOLE

As soon as the Stage Box is powered up, check that the four power supply LEDs (three green and one yellow) are lit to confirm that all four internal power supply voltages are correct.

Close to the RX BNC connectors on the SC-64 module are some LEDs. The LED associated with the selected input, Rx1 or Rx2, must be RED. This indicates a working rack and transmission module. The green LED will come on when the MASTER console of the installation is powered up. See section 9.

2.G.1.2 Console power up



- The complete power-up procedure should take no more than 30 seconds. If the above sequence of events is not executed correctly, power the system off, wait for 20 to 30 seconds and start the power-up procedure again. A power failure during a file back-up may corrupt a file and produce problems when starting. If this happens frequently re-install the Sensoft system software. If the problem persists, contact InnovaSON technical support.

- As the last saved console set-up may be very different from the one that you now require check that the existing parameters are compatible with the new installation.

- Now, the loudspeaker system and other equipment can be connected and the audio checked.

Now, the console is ready.

The console will have powered up in the last used mix mode (saved page). If you powered-down with an all Mute or blank page, the console will have started in this state. It is recommended to have a show end (or beginning) inert page loaded and saved during so that the power-up can be done without risk.



When used for the first time, the default file is INNOVA with a blank page called INNOVA. A floppy disk with example files that you may wish to load into the PC is supplied with the Sy40.

2.G.2 First check

Before going any further, let's check some information on the Mix screen:

LOCAL

Stand-alone console. No Stage Box detected.

SLAVE

The console detects a Stage Box but doesn't detect the return transmission to it. The console can't remote control the distant pre-amps.

MASTER

The two coaxial links are correctly detected. The console is system 'Master'. It remote-controls the distant pre-amps (gains and 48V) and the possible return channels to the Stage Box outputs.

NO SYSTEM

This is not a normal state and would only show if the internal audio rack is not detected by the console.



The console's hardware fader positions are represented on-screen as shown above with different colours representing the faders' assigned function.

The screen displays the different faders' positions and active mix parameters such as the [MUTE] and [CUE] switches which appear in red and green above each fader. The [SELECT] switch above each fader activates that corresponding channel, and is clearly visible on the surface as its [SELECT] button is illuminated and the associated label display blinks.

3 SENSOFT 8.1

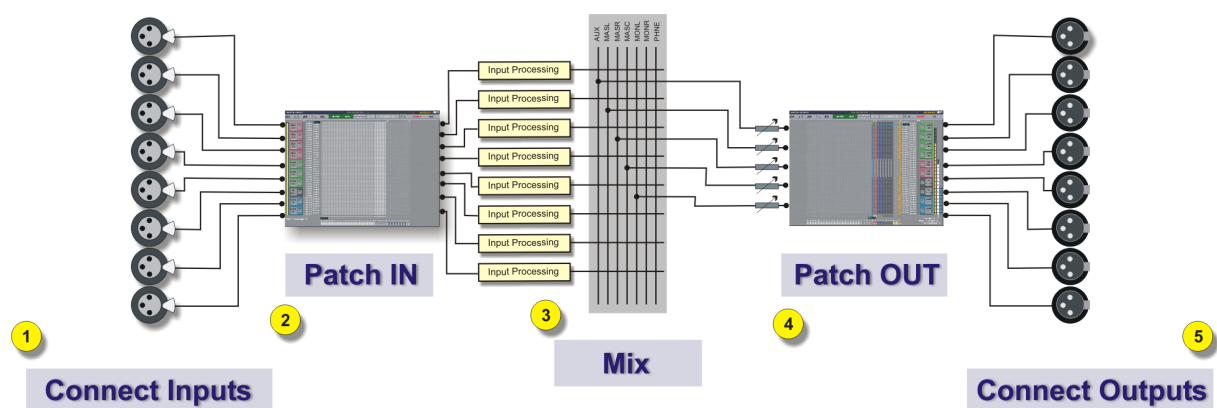
3.A Your First Mix: a simple step-by-step example

It is obvious that every engineer confronted for the first time with a new console has a single goal: “to mix”! This is only to be expected so, by means of a very simple example, we are going to guide your first steps through the exciting world of InnovaSON. Note: it was made clear at the beginning of this user manual that you should read its complete contents before you start to use the console.

The following paragraphs are not intended to be an exception to this rule – their purpose is to show how user-friendly your first contact will be, even if it turns out to be simple.

In spite of today’s Sensoft 8 offering a very important rang of new tools, the design philosophy used by InnovaSON has not changed for a long time.

It is based on 5 fundamental actions, as illustrated by the figure below :



These 5 actions characterize what Sensoft has always provided for the user: simplicity, speed, and ease of access.

Connect a source to an input, **Patch** this input to a fader, **Route** the fader to a mix bus, **Patch** this bus to a physical output, and finally **Connect** this physical output to a PA system or external device – the chain is complete! Everything that Sensoft offers has a degree of sophistication stemming from the feedback of users who, since the beginning, understood the possibilities offered by InnovaSON platforms. Thanks to their insight and understanding, Sensoft 8 was born – a skillful combination of user-feedback and the magic touch of the InnovaSON designers. The result offers each user the possibility of DRAWING their own console, according to their needs at that time.

You only need to understand how the **Patch** and **Routing grids** function, in order to feel at ease with all the functions of Sensoft, as most of the **Grids** and **Signal allocations** use the same philosophy.

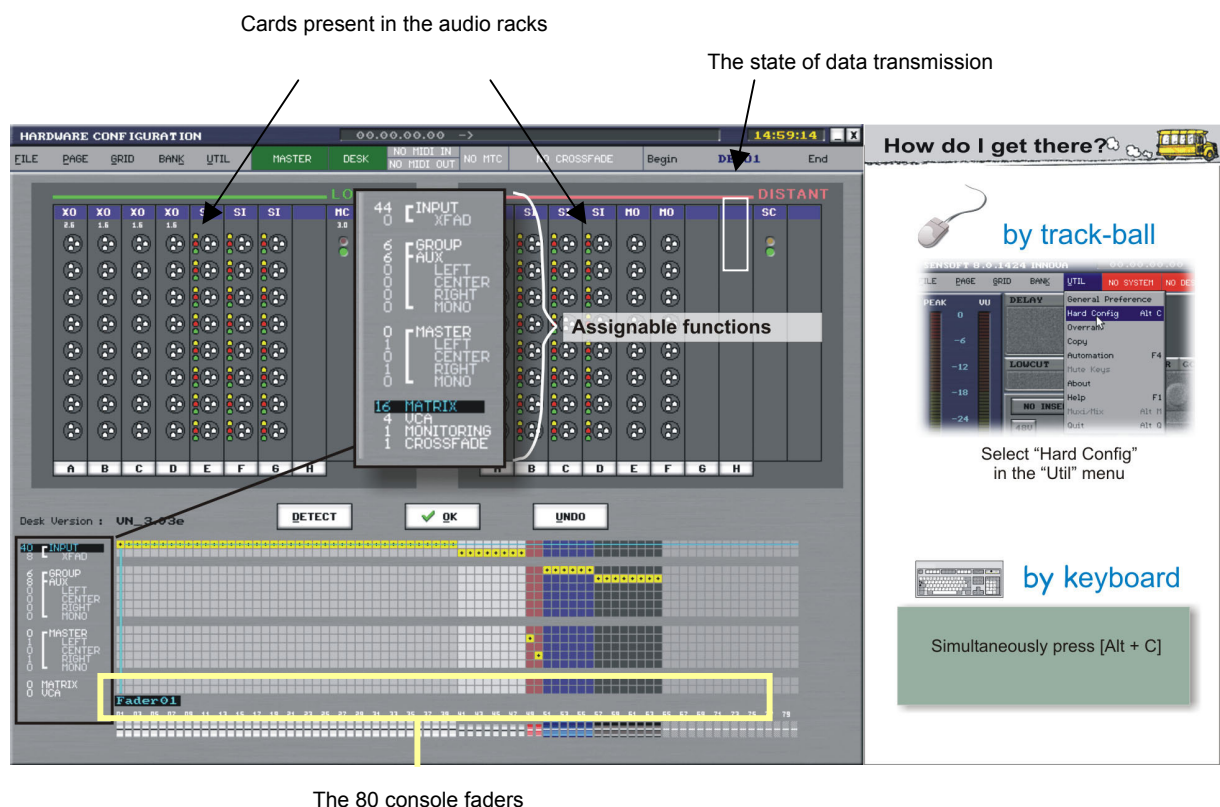
3.A.1 Console Configuration

Our example is very simple and consists of assigning an input, to which is connected an audio source, to a channel, and then to mix this input to various busses by having a go with, one step at a time, the Subgroups, VCAs, channel spreads, etc.

First of all, we will assign the faders of the console to the functions that we are going to use throughout this example.

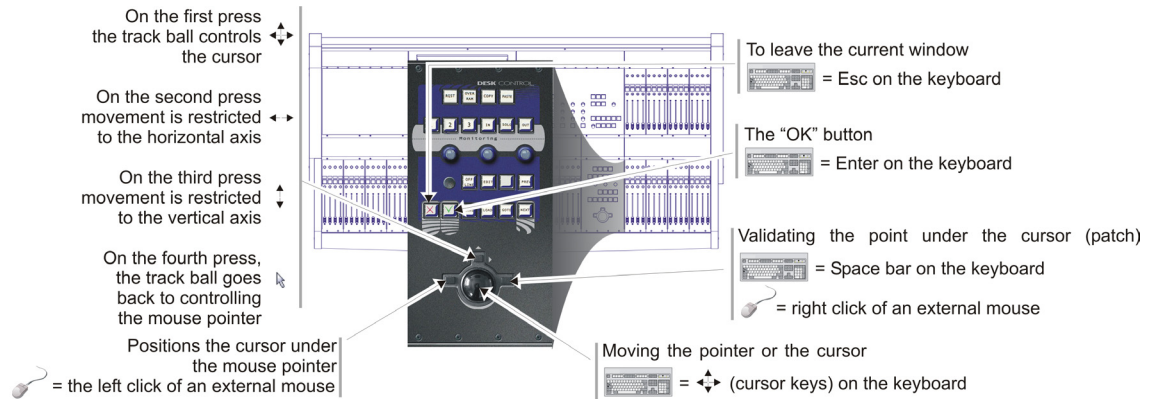
The illustration below shows how to access the hardware configuration window. This window is used to provide every fader with an appropriate function, and also to check the configuration of the audio racks and the state of data transmission between the racks.

The Hardware Configuration window



The cursor keys on the keyboard, or the track-ball on the console control surface, are used to move around the function **Assignment grid**. Functions are assigned to selected faders by pressing the [SPACE BAR] on the keyboard, or by means of buttons of the track-ball, the functions of which are explained below.

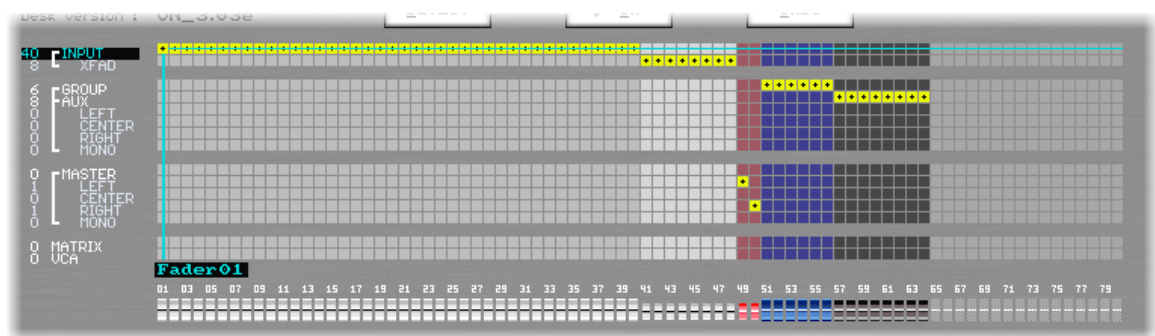
Using the track-ball in Sensoft grids – keyboard and mouse equivalents



For our example, the console will be configured as follows:

- The first 40 faders will be inputs, so the **Input** function will be assigned to them.
- The next 8 faders will be "spread" inputs which we'll use towards the end of the example; the function **XFAD** will therefore be assigned to them.
- Two Master faders will be set up, assigned with the functions **Master "LEFT"** and **Master "RIGHT"**.
- There will be 6 mono Groups.
- Finally we'll configure 8 auxiliary sends; the remaining 16 faders will not be used at the moment.

Our starting configuration ...



Press the [ESC] key to validate the new configuration. It will appear in the main mix window and you will be able to see the console just as you have "drawn" it.

... the resultant mix window



3.A.2 Patching...

We're now going to assign a physical input to one of the console's input faders, and two physical outputs to the Master faders.

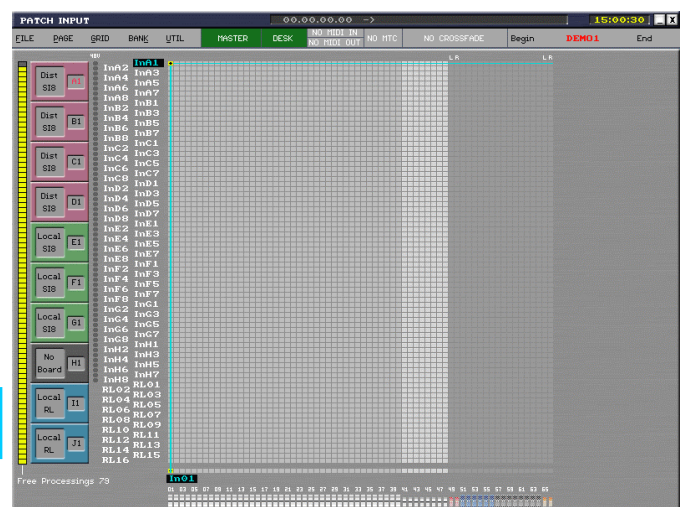
First you must call up the PATCH IN window by pressing the button on the console with the same name. This window shows a grid on which the columns represent faders, and the lines represent all the available physical inputs. In a column on the left of the window, the cards currently available in the system carry a label, with different colors to show whether they are distant, local or line level cards.

The Patch IN window

This system comprises 4 Distant SI-8D cards (slots A to D of a Stage Box)

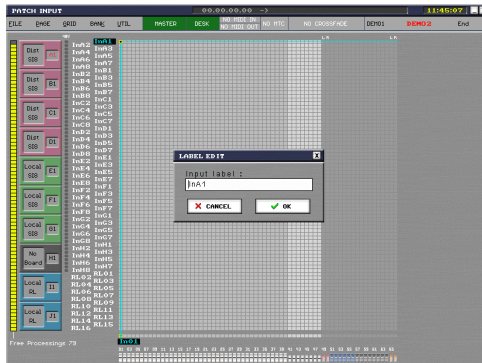
3 Local SI-8D cards in slots E, F and G of the Mix Box

And 16 line-level inputs accessible on the DSP card in the Mix Box.
These inputs have their level meter only on the console, not on screen.



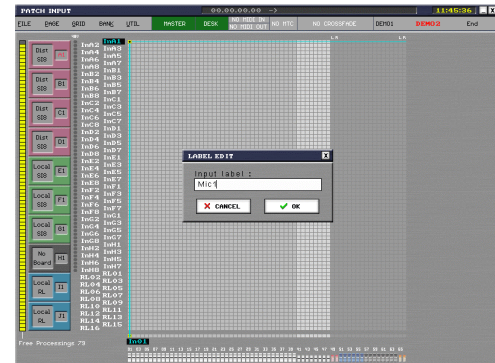
Having positioned the grid cursor in the column for Fader 1 (press the [SELECT] button on the fader to get there quicker) and on the line for input InA1 (input 1 of slot A), press the [SPACE BAR] on the keyboard, or the button on the right of the track-ball, to create the corresponding patch point. The label above the fader now shows the name of the patched input, ie. InA1. To give another name to this input, simply press [F3] while the cursor is positioned on the line concerned (InA1) and the following window will appear:

Naming an input



Just enter the name of the input with the keyboard

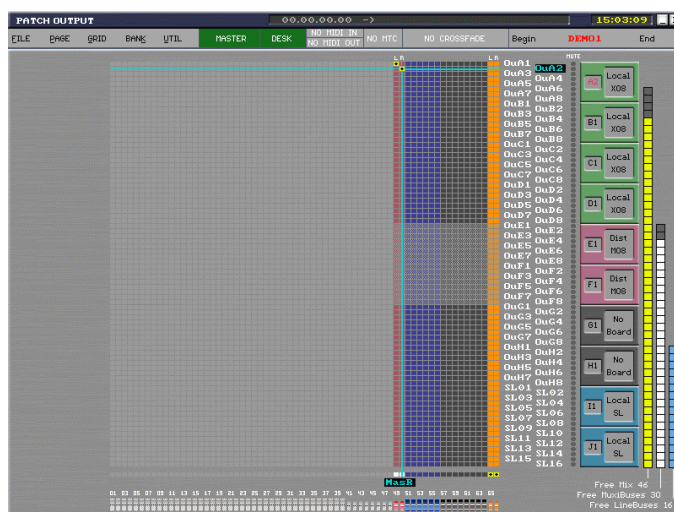
In the example, the input is called MIC1



Naming the input MIC1 automatically places the name MIC1 in the fader label. This indicates that the name belongs to the physical input, and not to the fader. If you mult the input across several faders, these will also take the name MIC1 as and when you patch them to this input. From the mix window it is possible to rename an input by selecting the fader to which that input is patched, and by pressing the [F3] key to rename only this input, or by pressing [ALT] + [F3] to rename this input and the following ones. Now that input A1 is assigned to fader 1 we will, via the PATCH OUT window, assign two physical outputs to the Left and Right Master faders.



The PATCH OUT window

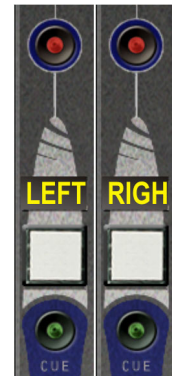


This system comprises 4 Local processed output cards

2 Distant MO-8D cards allowing non-processed outputs to the stage (cf 9.C.3)

and 16 line-level outputs accessible on the Mix Box DSP card. These outputs have their level meter only on the console, not on screen.

By the same method as used on the Patch In window, make faders 49 and 50, named MasL and MasR, correspond with outputs OuA1 and OuA2. For every patch point, the space bar, or the right button of the track-ball, allows a patch to be created or cancelled. As soon as the patch point is created, the fader labels which previously carried the names MasL and MasR will now show the names of the outputs they control, ie. OuA1 and OuA2. With the grid cursor on output OuA1, press [ALT] + [F3] and name the output “LEFT”. Validate this by pressing [ENTER]; this has the effect of moving automatically to name the following output, OuA2. Name this output “RIGH” and validate it by pressing [ENTER]. As output OuA3 is not used, press [ESC] to quit the output naming mode. Press [ESC] a second time to leave the PATCH OUT window.



3.A.3 Some routing



Gain
adjustment

Before routing input MIC1 to the Master busses, connect an audio source to distant input A1. This source must be sufficient to activate the console meter corresponding to channel 1, as well as the level meter in the Sensoft window. If this is not the case, select MIC1 (press the [SELECT] button on channel 1) and adjust the gain to provide a modulation level high enough to drive the meters.



The Sensoft level meters

This section shows the level of the selected input or bus, in this case the MIC1 input

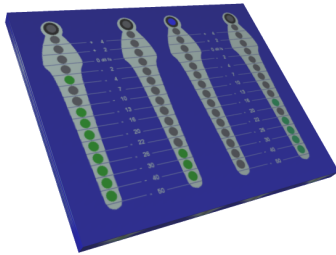
This section always shows the level of the Master busses



Each channel has its own VU meter, for a general view



Sensoft always shows pre-processing levels, as they represents the preamps output level (for the inputs).



The control surface level meters can be configured to display pre or post-processing signals in the General Preferences window; by default they are post-processing.

Carry out the following procedure to route the input signal to Master busses



1- Hold down the **[SELECT]** button on the MIC1 channel

2- Press the **[SELECT]** button on one of the two channels designated as a Master; both will light up

3- Un-mute the input and the Master channels. Raise the faders to send the input signal to the Masters

If a PA system is connected to local outputs **A1** and **A2**, the input signal will be distributed to this system. Select input MIC1 to try out some processing. For this exercise, activate the required processing section and adjust the controls to assess the efficiency of the algorithms programmed in the DSP Sy80 (or Sy40-8) card. Select one of the Master busses to try the output processing on the XO-8D cards.

The delay available on inputs (DSP Sy80 only) and outputs

The high-pass filter available on inputs

Comprehensive no-compromise dynamics section. Compressor, gate, expander and limiter are available for inputs and outputs

4-band parametric equaliser for inputs, and an 8-band parametric equaliser for outputs (EQ1/EQ2)

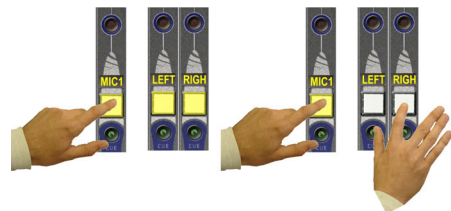
Read paragraph 2.A.7 of this manual if you need help in achieving the required settings.



Output processing is only available on cards equipped with DSP, such as the XO-8D and DO-8X. MO-8D and DO-8A cards, just as line-level outputs, have no access to these functions. Currently, internal busses such as Subgroups do not carry processing; they will in a future version of Sensoft.

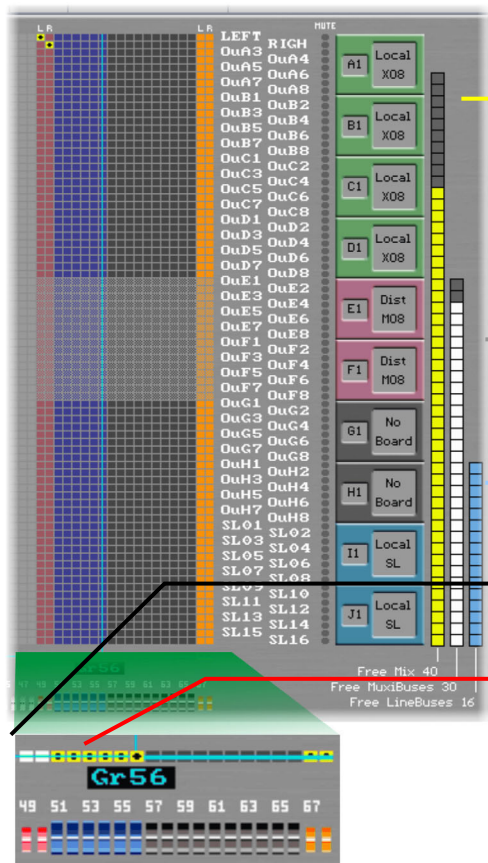
3.A.4 Creating and using a Subgroup

Remove the MIC1 input from the Master busses by holding down its **[SELECT]** button and pressing the **[SELECT]** button of one of the Master busses (the LEFT and RIGHT **[SELECT]** button illumination will turn off to indicate that the routing has been removed).



From now on, the signal present on input MIC1 of the console will no longer be distributed by the PA system. We are going to route this signal to a Subgroup which, in turn, will be injected onto the Master busses.

During the console configuration, faders **51 - 56** were set up as Groups, and their labels were automatically named **Gr51** to **Gr56**. Now we must assign to them, not a physical output, given that we will use them as Subgroups, but a processing resource so that the DSP creates the bus necessary for the functioning of a Subgroup. In the PATCH OUT window, the line at the bottom of the grid allows DSP resources to be patched to internal busses, thus not requiring processing to be directly patched on physical outputs. As shown in the following illustration, it is enough to “patch” DSP resources to the Groups to make them Subgroups.



Available DSP resource indicator

In this example, 8 out of 48 resources are used:

- 2 for the stereo Master
- 6 for the Subgroups that we're going to create

MUXIPAIRES bus indicator (audio rack output cards)

In this example, 2 out of 32 Muxipaire resources are used:

- 2 for the stereo Master

Bus Line indicator (Line Outputs)

In this example, none of the 16 Line Output resources are used

A white point indicates that a DSP resource patched to Muxipaire resource is in use

A yellow and black point indicates that a DSP resource is in use. This resource allows internal busses, such as Subgroups, to be created

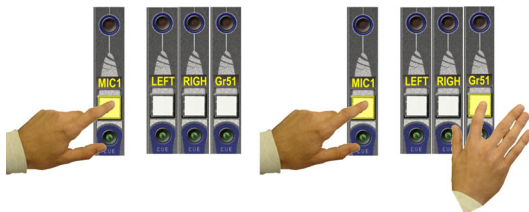
By the same principal, a blue point indicates that a DSP resource patched to a Line Output resource will be used

On this line, you will see yellow / black, white, blue or grey points:

- When no DSP resource is used on a fader, ie. the function of the fader has been created in the HARDWARE CONFIGURATION window but no bus has been assigned to this fader, the point remains grey.
- If the fader is patched to a Muxipaire output (card XO, MO or DO), the point is automatically shown in white.
- If the fader is patched to a line level output, the point is automatically shown in blue.
- Creating a patch point on this line for an internal bus makes a yellow / black point.

Having created 6 Subgroups, it only remains to route the MIC1 input to one of them, and to route the same Subgroup to the Master busses.

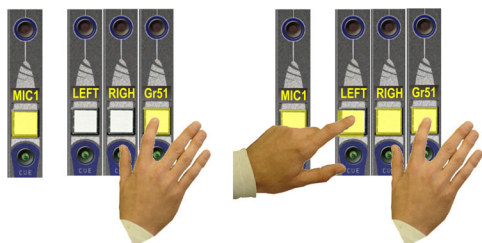
Route the MIC1 input to Subgroup 51



The yellow point indicates that the selected input is routed to this bus



Route Subgroup 51 to one of the Masters



Confirmation that the selected bus is routed to the Masters



If there is now an audio signal present on the MIC1 input, and if a PA system is connected to the "LEFT" and "RIGHT" outputs, opening the input fader while the Subgroup and Master faders are at 0dB, will feed that input signal to the PA system. Verify that the Subgroup fader really does control the MIC1 input.



Before going any further, repeat the steps you have just seen in this example by using line inputs and outputs (with the Sub-D/XLR cables supplied with the console). Try sending several audio sources to a Subgroup, while keeping an eye on the PATCH window, especially the resource indicators.

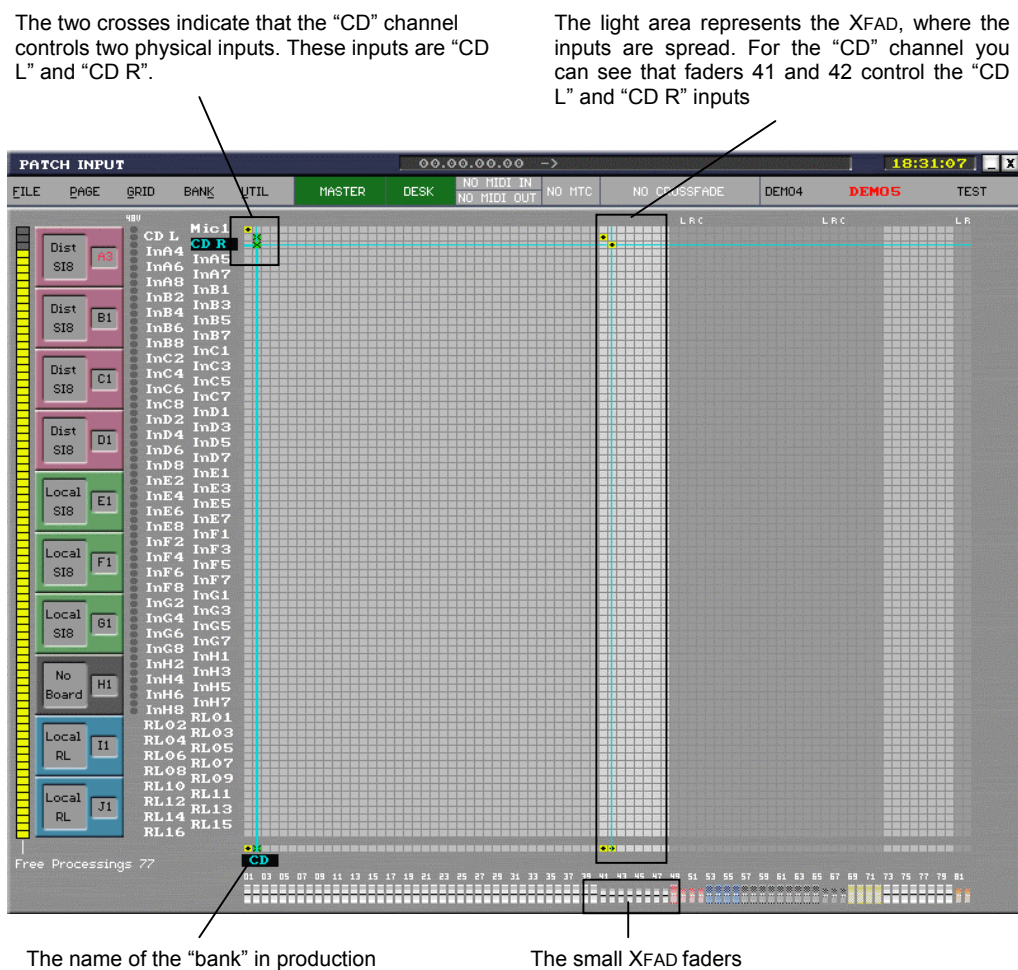
3.A.5 Spreading inputs

The ability to “spread” inputs will only be of interest when you are mixing several “families” of different audio sources; this function can be likened to the creation of fader “banks”. For our example, the stereo output of a CD player will be sufficient to test your interest in “spreads”.

First of all, on the main Mix window, in the console area, select fader 2. Press the [F3] key on the keyboard and name this bank “CD”.

Then, in the PATCH IN window, name **inputs A2** and **A3** respectively “CD L” and “CD R”; naming inputs first enables suitable labels to be created automatically on the faders at the time of the patch.

Without leaving the PATCH IN window, select the “CD” channel again (fader 2) and then select the first fader for the spread zone, fader 41. Patch the “CD L” input to this fader. Now select the second fader for the spread zone, fader 42, and patch the “CD R” input to it. The result should be identical to the screen shot below.



Return to the main Mix window (by pressing the [ESC] key on the keyboard, or by pressing the **[PATCH IN]** button on the console again) to route the “CD” channel to the Master busses.



Routing the “CD” channel to the Master bus automatically routes the (XFAD) channels “CD L” and “CD R” managed by this channel

As long as the CD player is outputting music, you will find that the “CD” channel (fader 2) acts as a VCA for both inputs “CD L” and “CD R”. In fact, looking beyond this channel, you can assimilate a bank of inputs, providing much more than simple VCA control. Note that it is always possible to adjust the balance of both “CD L” and “CD R” inputs by acting directly on their XFAD when the “CD” channel is spread.



Now let's assign the “CD L” and “CD R” inputs to the left and right Master busses respectively, using the pan settings. Select XFAD “CD L” (if necessary, “spread” this by first selecting the “CD” channel) and, by means of the console's rotary **[PAN]** control, pan the signal totally to the left. Repeat the operation for XFAD “CD R”, to pan it to the right.



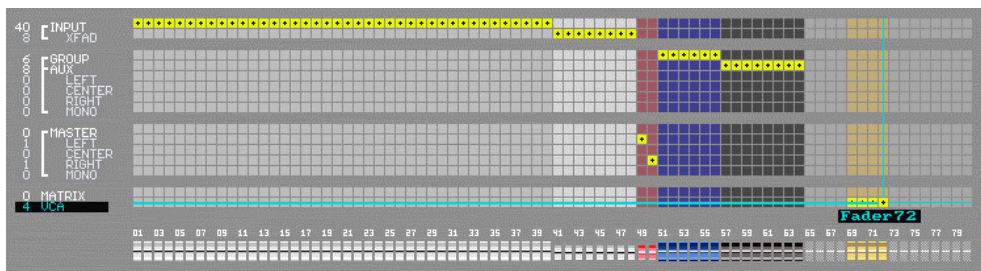


Note that, when you operate the “CD” channel Pan, you are dealing with a non-destructive “composite” Pan, from which the initial balance of each of the individual inputs is obtained when the pan is placed in the center. The width of the yellow rectangle in the Pan window of the “CD” channel indicates the stereophonic space used by all the spread inputs to this channel.



Now try to create several “banks” of inputs, and mix them to various buses (Masters, Aux, Subgroup). Note how useful it is to organize the spreads differently, for example: a complete bank of drum kit elements, or several banks comprising kick mics, snare mics, cymbal mics, tom mics, etc.

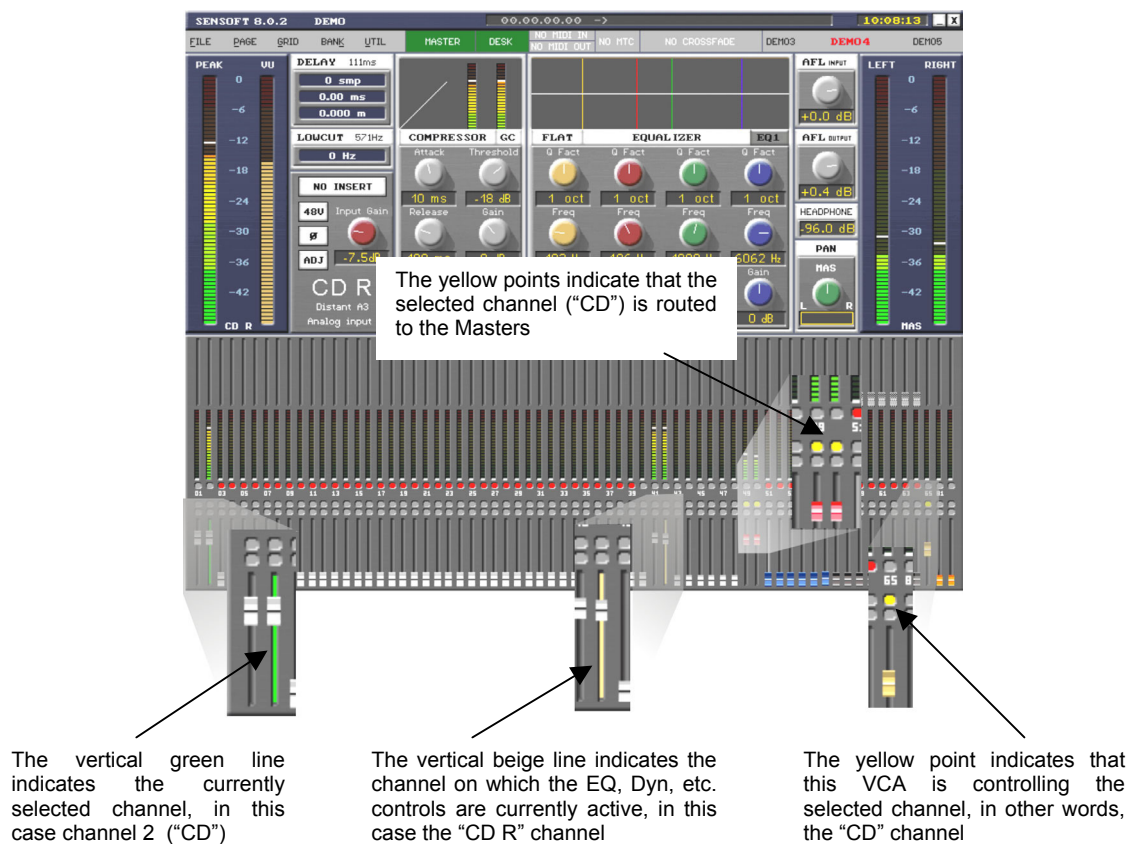
3.A.6 Creating and using a VCA



Before using a VCA, it must first be created in the Hardware Configuration window. Faders 65 - 80 have not been used up to now; four of these faders can therefore be used as VCAs. A brief visit to the **HARDWARE CONFIGURATION** window ([CTRL + C]) will allow you to configure faders 69 to 72 as VCAs. Having done this, press [ESC] to exit this window and save the new configuration.

The allocation of other channels (input and/or bus) to VCAs is made by a simple routing operation: press and hold the **[SELECT]** button of the VCA while you press the **[SELECT]** button on the channels that you want to slave to that VCA. The comments on the screen below describe the routing assignment on the “CD” channel as well as on the VCA controlling this channel.

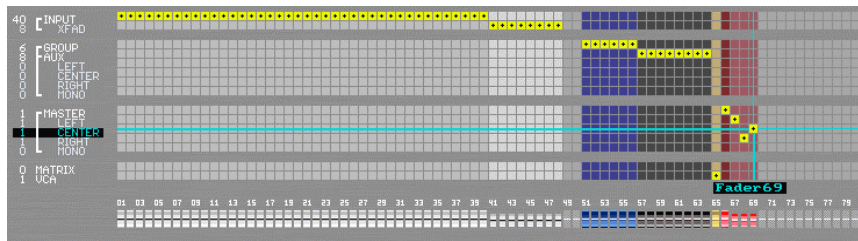
Let's have a look at the current state of the main mix window



From now on, the VCA will control the "CD" channel. Allocate the VCA to other channels and note how fast and easy this is to do. A VCA can also, thanks to its own **[MUTE]** button, be used to create banks of mutes.

3.A.7 Spreading a Master

There are sometimes cases where it is practical to have access on the control surface to individual faders controlling the busses of a section Master, as it is equally sometimes practical to have only a single fader to control all the busses of a section Master. With the Sy80 there is no compromise. By spreading a Master (or an Aux, Group, etc.) you can have single finger-tip control of all the busses in the section and then, by simply pressing a **[SELECT]** button, all the busses in the section are available for individual control of their Left, Right, Center and Mono channel balance. Up until now, our Master consisted of two faders, one allocated to the Left bus and the other to the Right bus. We're going to abandon this Master and create a Left, Right and Center version which can be spread.

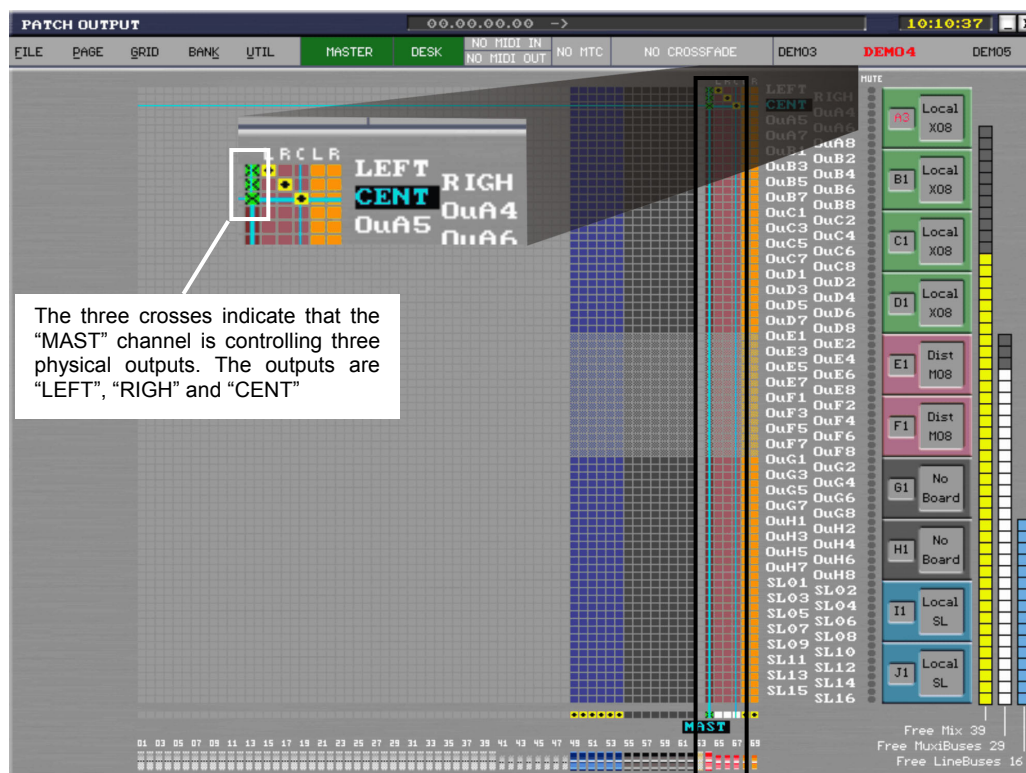


The Hardware Configuration window will allow you to delete the Master used up to now, and create a L, R, C section on faders 66, 67, 68 and 69. Select this window ([ALT] + [C]), and delete any function allocated to faders 49 and 50. Assign the functions MASTER, LEFT, RIGHT and CENTER (in that order) to faders 66, 67, 68 and 69. Press [ESC] to quit this window and save the new configuration.

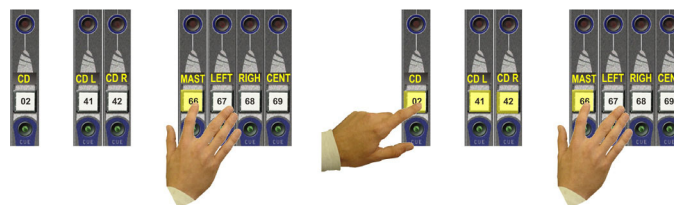
In the main Mix window, select, on the console, fader 66; press [F3] on the keyboard and name this channel “MAST”. As you will have figured out, this channel is going to serve as the overall fader for the Master section.

Then, in the PATCH OUT window, name the outputs **A1**, **A2** and **A3** respectively “LEFT”, “RIGH”, and “CENT”, by positioning the cursor on the relevant output and pressing [F3] to rename it. Naming the outputs first enables useful labels to be created automatically on faders when the patch is made.

Without leaving the PATCH OUT window, select the channel “MAST” (fader 66) again, in order to select the first spread zone fader, fader 67. Patch this fader to the “LEFT” output. Now select the second spread zone fader, fader 68, and patch this to the “RIGH” output. Finally select the third spread zone fader, fader 69, and patch this to the “CENT” output. The result should be identical to the following screen shot.



The patch zone for the section Master and it's associated faders



Quit the PATCH OUT window ([ESC]) in order to route the "CD" channel to your new section Master. To do this, hold down the [**SELECT**] button of the channel "MAST" (fader 66) and press the [**SELECT**] button of the channel "CD" (fader 2). This has the effect of automatically routing the XFAD of the "CD" channel to all the busses controlled by the "MAST" channel.

Adjust the "MAST" channel to note that this channel acts as a "VCA" on all three L, R, C busses. On the other hand, it is always possible to adjust the balance of individual busses when the Master is spread.



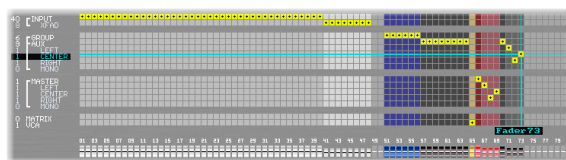
Using the same methods as we have just seen, try to create other Master sections, and notice that they share the same spread zone. Note that section Masters receive the same mix but keep their routing independent. Finally, try controlling inputs and outputs with several VCAs ...

3.A.8 Spreading an Aux

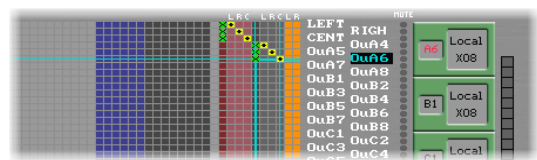
Spreading an Aux (or Group) allows it to be used in stereo. Up to four channels can be spread: Left, Right, Center and Mono. Naturally, you are not obliged to use four channels, a L, R only spread can be created. Whenever an Aux is directly patched to an output, it is mono. As soon as a spread zone is created, any Aux (or Group), wherever situated on the console, can use this zone to become multi-channel; it all depends on the way the channel is patched.

A quick preview of the screen shots below shows that the method used to create, patch, and route a spread Aux is identical to the method just used in the application of a spread Master.

Creation of an Aux and a spread zone



Patch using the same method as for a Master



With the help of the screen shots above, create an “AUX” fader, a “LEFT” Aux, a “RIGHT” Aux and a “CENTER” Aux, using faders 70 to 73. Return to the main Mix window and route the “CD” (fader 2) channel to the “AUX” (fader 70) channel. This has the effect of sending, via the Aux Send level, the XFAD of the “CD” channel to the Aux busses that you have just created.

Select the “AUX” (fader 70) and set its fader and that of its busses (71,72 and 73) to 0dB. You have just adjusted the output level of the “AUX” busses (equivalent to the Aux master control on a traditional console). Now select the “CD” channel and, at this point, the “AUX” (fader 70) changes from an **Aux Master** to an **Aux Send**. Raising fader 70 injects the “CD” channel onto the Aux busses.

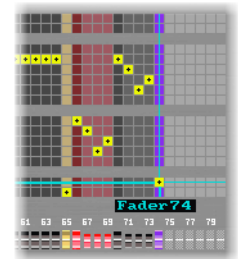
In a similar way, when a channel Aux is selected, the input channels all become **Aux Sends** so, in monitoring, this function allows every Aux to have a complete preview of the mix made for wedge or in-ear monitoring.



3.A.9 Creating a matrix

The Sy80 provides matrixes in which all the input-output resources can be remixed; they are mono and extremely easy to use, as you will now see...

You need to access the Hardware Configuration window to set up one or several faders to have the matrix function. Select this window ([CTRL + C]), and assign the Matrix function to fader 74. Quit this window [ESC], and save the new configuration. A matrix bus is the only bus to which one or several Masters can be sent. Therefore, routing and mixing in a matrix is made in a somewhat “secret” way, that is to say that it is necessary to hold down the **[SELECT]** button of the matrix to route and mix the required resources.



As soon as you release the matrix **[SELECT]** button, faders return at once to their previous states, and Masters regain their original function as Master busses. This method avoids the Master faders staying in their **Matrix Send** position, and therefore having no effect on the PA system in the case of an emergency.

Go to the PATCH OUT window and allocate a physical output to the matrix (fader 74). Quit the Patch OUT window to return to the main mix display.

Un-mute and raise the matrix fader to 0dB. Press and hold the matrix **[SELECT]** button. Press the **[SELECT]** button of channels you wish to send to the matrix, and raise their faders, which now have a **Matrix Send** function. Signals are sent at once to the matrix, according to the level of the **Matrix Send**, of course. You can see this by looking at the level meter associated with the matrix and/or by connecting a PA system to the output allocated to the matrix. Releasing the matrix **[SELECT]** button returns all the faders to their original levels and functions.



Test the fact that Auxes, Masters, Groups, and even Inputs can be remixed via matrixes. Note that, when patched to a Hyperdrive (XO-8D, DO-8X) output module, a matrix can benefit from its own processing and output delay.

Once you have mastered this example, you can be confident that you have taken a major step, and that further discoveries of the many other functions offered by this system will be made easily, and “by ear”!

The main mix window, as it should look by the end of our example



