

**PROFESSIONAL PORTABLE
MULTITRACK RECORDER**

**SONOSAX
SX-R4**

USER INTERFACE

Firmware version 4.2

Audio equipment manufacturer

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1. INTRODUCTION

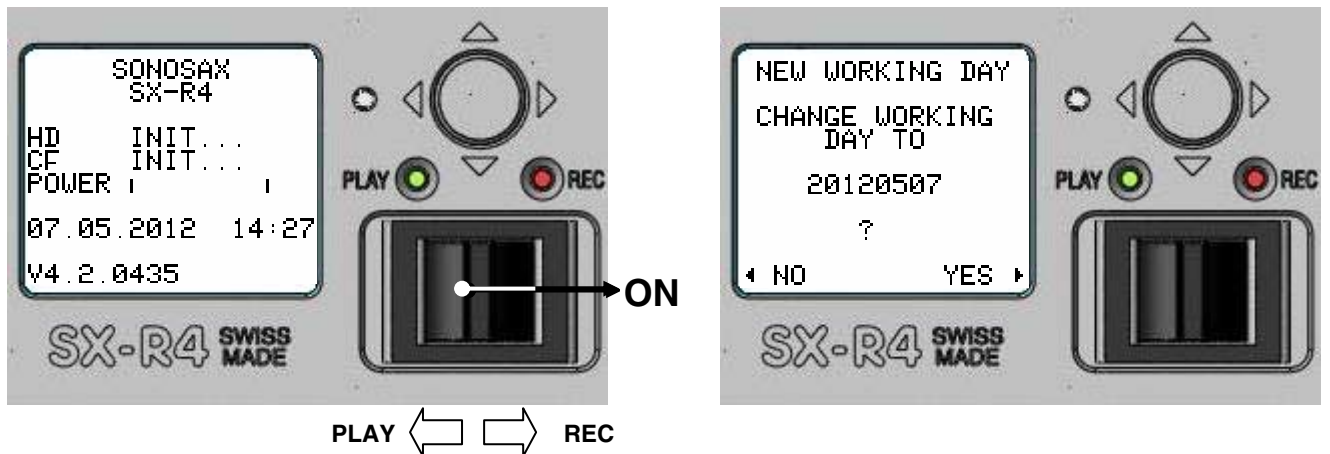
This manual describes the user interface, the operating instructions and all functionalities related to the Firmware version 4.2

For all information's concerning the hardware, powering information's connectors diagram, specifications etc please refer to the SONOSAX SX-R4 User Manual "Hardware"

2. SWITCHING ON THE UNIT

Press simultaneously the Toggle switch and the Joystick to the right to turn on the SX-R4, a boot up screen is displayed for approx. 2 seconds.

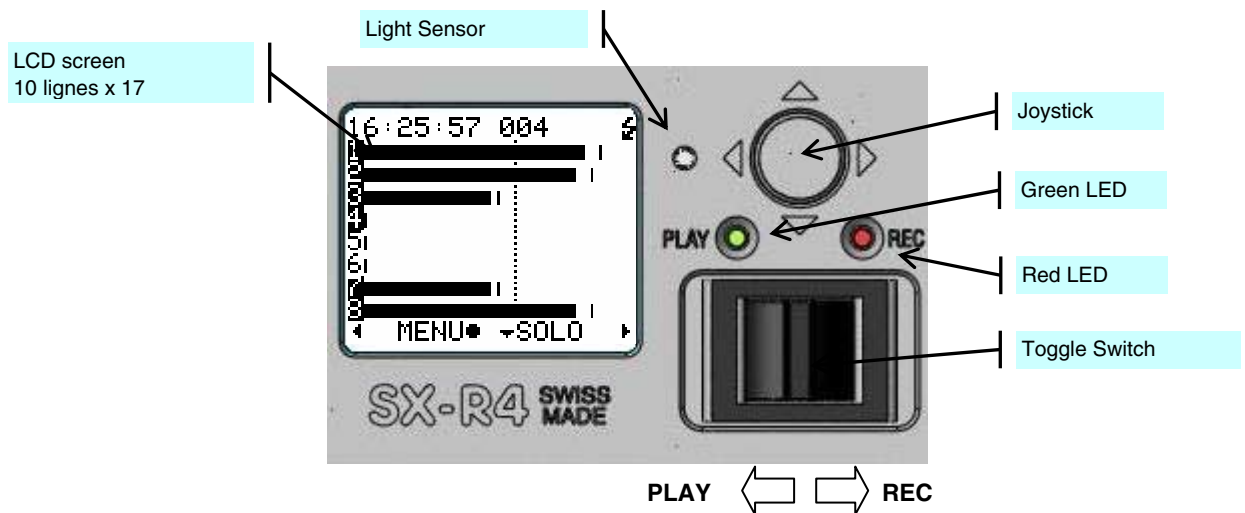
If the date of the day has changed when powering up the SX-R4, a message is posted asking your to confirm the new working day; select [YES] to confirm or [NO] to keep the previous working day.



2.1.1 Switching Off the unit

Switching OFF the unit is controlled by the software. The function [SWITCH OFF] is at the bottom of the Main Menu.

3. PRINCIPLE OF OPERATION



Status

The status of the SX-R4 is indicated by the Red and the Green leds and by the LCD Display:

- RECORD READY
the Red LED is flashing, the SX-R4 is ready to start recording
- RECORDING
the Red LED lights On steady, confirming that a recording is in progress
- PLAYING
the Green LED lights On steady, a Take is playing
- PLAY PAUSE
the Green LED flashes, indicating that the loaded Take is currently paused
- PLAY STOP
A Take is loaded ready to be played, no LED lights on, nor flashes

Main screen display

The main working screen is called [TRACK MONITORNG], it displays the Level Meters of the 8 tracks of the hard disk in both Recorder mode and Player mode.

The overall meter's range is 72 dBFS with following resolutions:

- 1 dB steps from -72 dBFS up to -24 dBFS
- 0.5 dB steps from -23.5 dBFS up to 0 dBFS.

The first segment at the left edge of the screen indicates -72 dBFS

The last segment at the right edge of the screen indicates 0 dBFS

A level reference line can be displayed at either -9, -12, -18, or -20 dBFS, see [SYSTEM SETTINGS] menu

Convention for displayed information's and function keys

The bottom line of the screen displays the function of the Joystick.

By default, pushing the Joystick Up or Down modifies the parameters, to the Right selects the parameter and to the Left cancels the action or steps back in the contextual menu.

The symbol of a single Arrow implies that an action is achieved by a short press the Joystick.

The symbol of a double Arrow means that the Joystick must be pressed longer to achieve the action.

A round Dot symbol denotes a pressure on the centre of the Joystick.

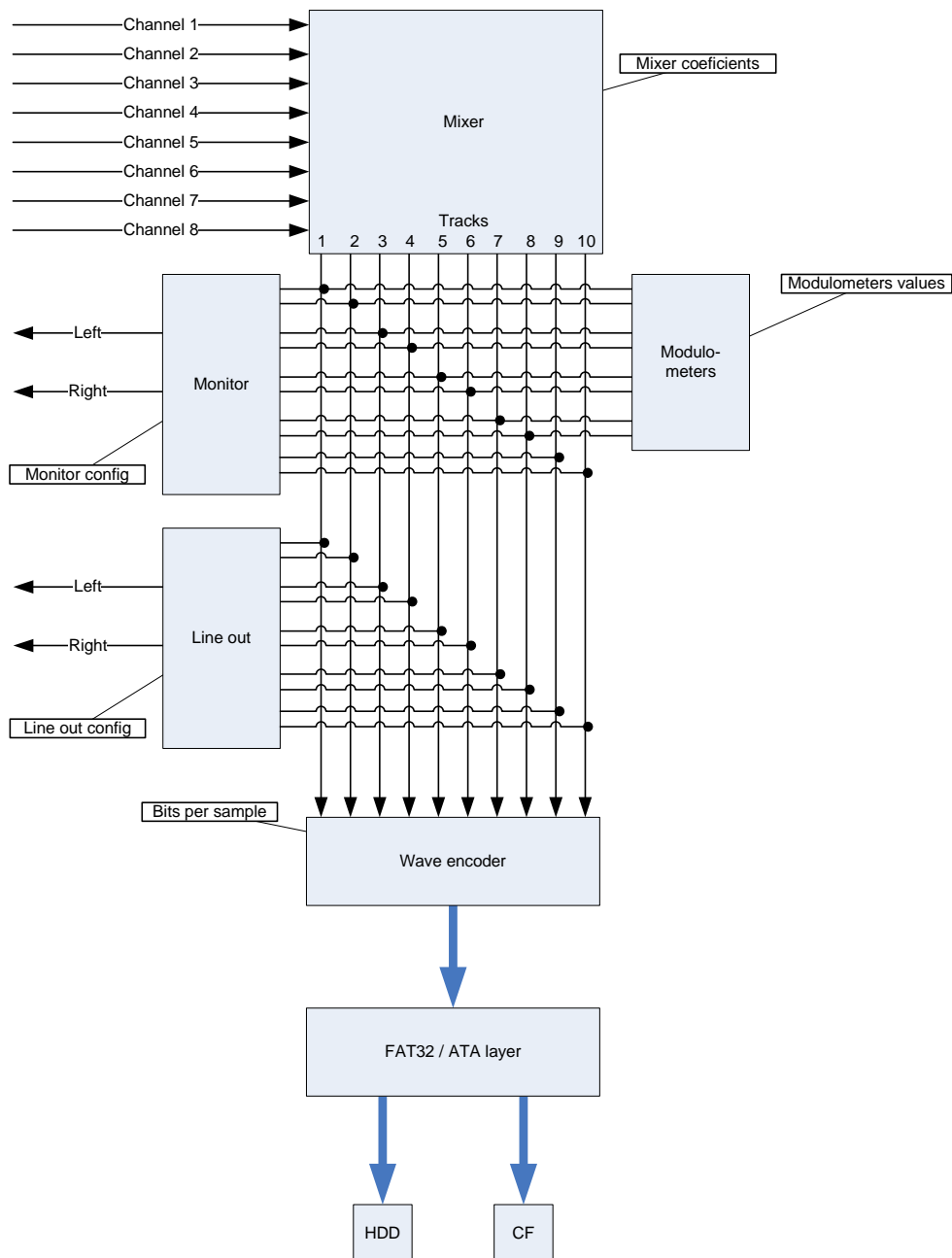
3.1.1 ARCHITECTURE - AUDIO PATH

The SONOSAX SX-R4 offers 14 physical input channels, 6 analogue and 8 digital. Up to 8 of these physical input channels can be assigned to any of the 10 available tracks. Any combination of analogue/digital input channel is possible. These physical channels are grouped per pair as follow:

- 1, 2 : either MIC/LINE input 1 & 2 or AES 1
- 3, 4 : either MIC/LINE input 3 & 4 or AES 2
- 5, 6 : either LINE input 5 & 6 or AES 3
- 7, 8 : AES4 only

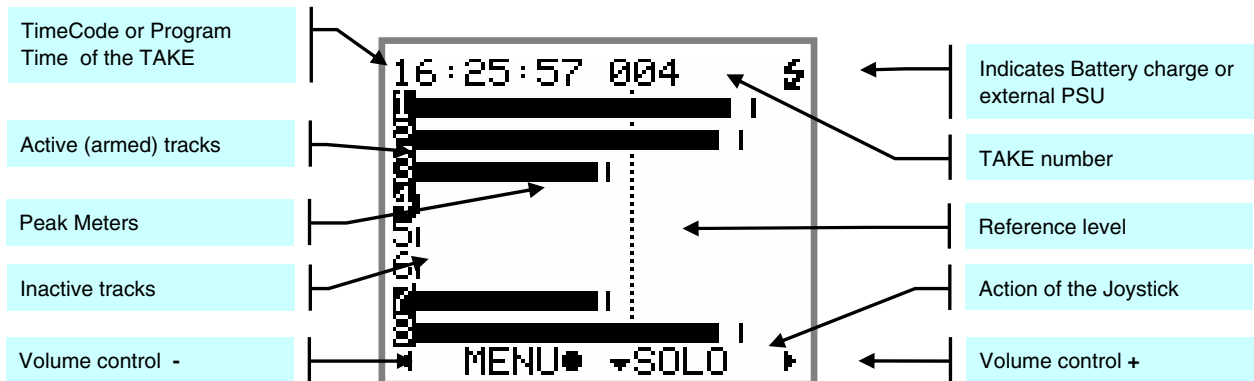
The routing Matrix is used to assigning and mix any of the input channels to any of the 10 available tracks. The first 8 tracks are dedicated to the hard disc (HD) and the 2 additional tracks are dedicated to the Compact Flash card (CF). If the "Mirroring" function is enabled, then the routing configuration of the hard disk is identically mapped onto the Compact Flash card.

For Monitoring purposes, you can configure and listen to any combination of these 10 tracks. The peak meter displays only the 8 hard disk's tracks on the screen.



3.2 RECORDER MODE

The [TRACK MONITORING] page is the main page displayed by the SX-R4 while in Recorder mode. The numbering from 1 to 8 is always displayed and corresponds to the tracks recorded on the hard disk. The number of each active track (assigned in the matrix) appears in reverse video.



Joystick and the Toggle actions:

Joystick	Short pressure	Long pressure
LEFT	Reduce the volume by step of 1 dB	Reduce the volume continuously
RIGHT	Increase the volume by step of 1 dB	Increase the volume continuously
UP	Call the SOLO MONITORING page	---
DOWN	---	---
CENTER	Call the MAIN MENU page	Lock/Unlock Joystick and the toggle switch

Toggle switch	Short pressure	Long pressure
RIGHT	Start recording	
RIGHT while recording	Add an INDEX **	Stop recording
LEFT while in rec ready	Call the last take and start playing	
LEFT while playing	Pauses at current position	Stop playing

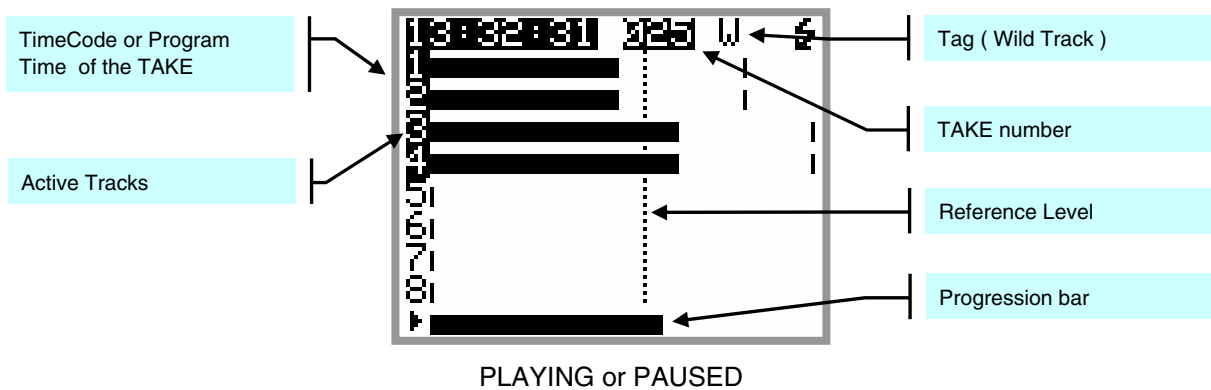
** INDEX = New TAKE: pressing the toggle switch briefly to the right while recording will automatically create a new TAKE and the Take number is automatically incremented by 1.

3.3 PLAYER MODE

While in Player mode, the SX-R4 the main screen is very similar as when in Recorder mode. Due to space limitation on screen the last line at the bottom does displays the action of the Joystick and is replaced by a progression bar; however calling additional pages such as the [SOLO MONITORING] page, the control of the [HEADPHONE VOLUME] or calling the [CONTEXTUAL MENU] is made as when in Recorder mode.

When a TAKE is loaded either from the [LAST TAKE] menu or from the [BROWSE FILE] menu, the SX-R4 will switch to PLAYER mode and will automatically reconfigure the system with the same parameters as set during the recording of that particular Take; Routing - Monitoring - Line Out - Headphone Volume etc.

The displayed screen depends on the status – Playing – Paused or Stopped- as described below:



Toggle switch	Short pressure	Long pressure
LEFT while in Stop	Play the selected Take from the beginning of the Take	
LEFT while in Pause	Play the selected Take from the current position	
LEFT while Playing	PAUSES at current position	STOP playing
RIGHT	Switches to Record mode and start recording (scratch record)	

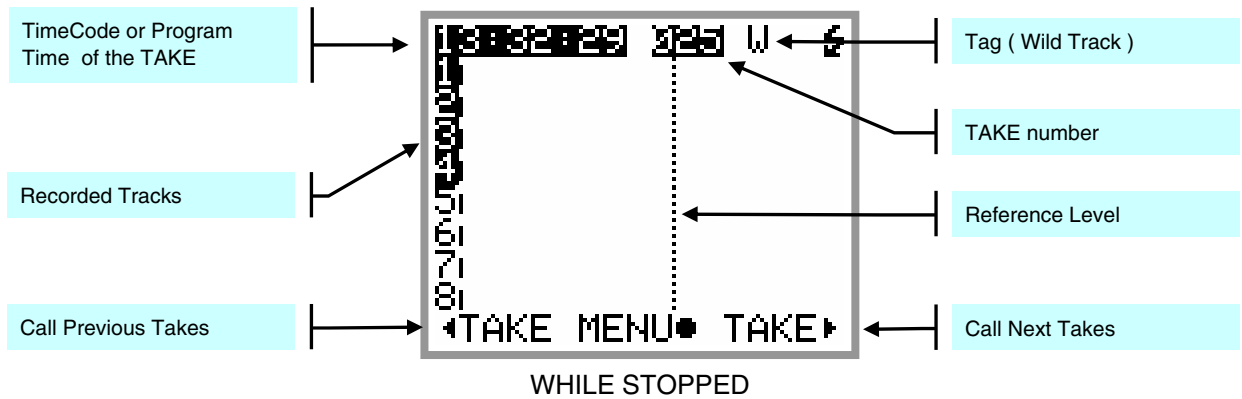
While Playing: the green Led lights steady, a progression bar is displayed at the bottom if the screen; the left edge represents the beginning of the Take, the right edge represents the end of the Take.

Joystick	Short pressure	Long pressure
LEFT	Reduce the headphone volume in 1dB steps	Reduce the volume continuously down to minimum
RIGHT	Increase the headphone volume in 1dB steps	Increase the volume continuously up to maximum
UP	Call [SOLO MONITORING] page	
DOWN	-----	
CENTER	Call the [CONTEXTUAL MENU] page	Lock/Unlock the Joystick and the toggle switch

While Paused: the green Led flashes. The Joystick is used for searching within the loaded Take in Fast Forward or Fast Rewind mode. The progression bar helps locating a specific position.

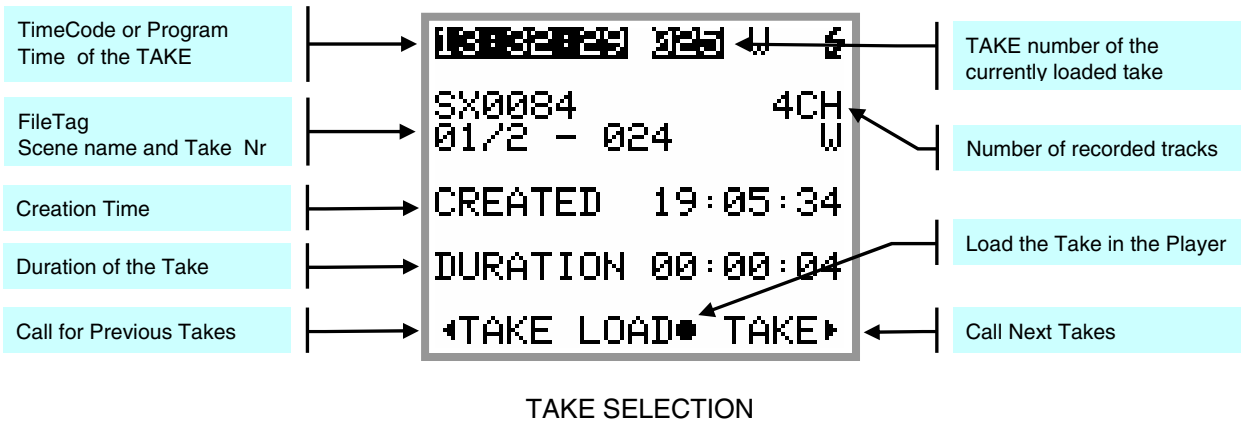
Joystick	Continuous pressure	
LEFT	Rewind at twice the play speed	
RIGHT	Forward at twice the play speed	
UP	Fast Forward in steps of approx 5% of the Take length	
DOWN	Fast Rewind in steps of approx 5% of the Take length	
Joystick	Short pressure	Long pressure
CENTER	Call the [CONTEXTUAL MENU] page	Lock/Unlock the Joystick and the toggle switch

While Stopped: when the Player is stopped, a pressure to the Left or the Right on the joystick calls a new screen allowing a quick search of previous or next takes stored in the same folder (such as the folder of the current working days). The [BROWSE FILE] menu must be used to load a Take stored in a different folder.



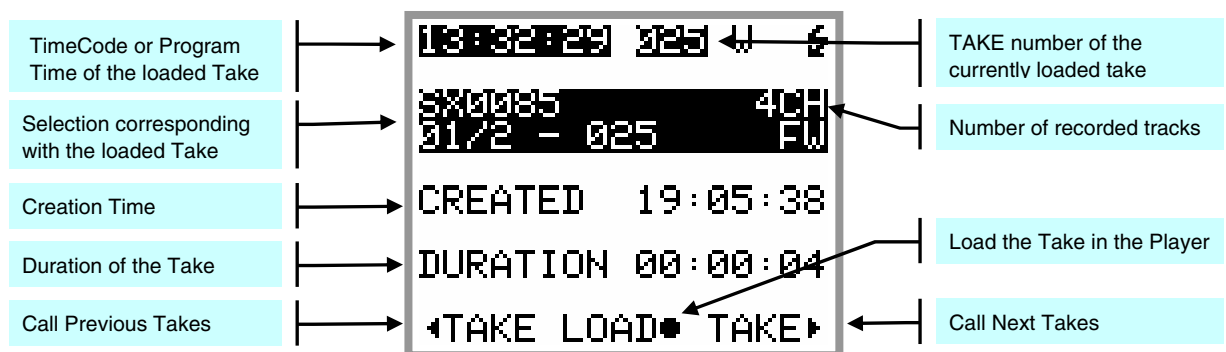
Searching through the stored Takes does not load the Take in the Player until it is confirmed by pressing the centre of the Joystick [LOAD].

The first line of the screen displays in reverse video the Time Code and Take nr of the Take being currently loaded in the Player; all other information's posted on the screen are related to the previous or next Takes.



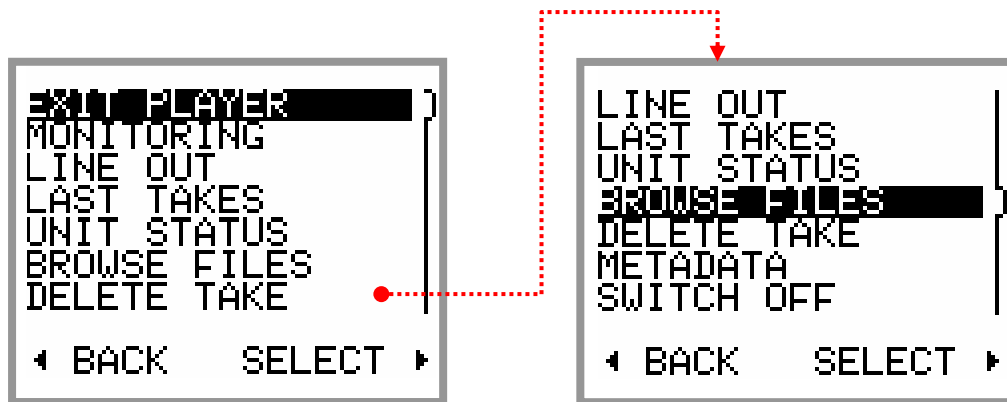
Joystick	Short pressure	Long pressure
LEFT	Scroll toward Previous Takes	
RIGHT	Scroll toward Next Takes	
UP	-----	
DOWN	-----	
CENTER	Load the displayed Take in the Player	

When the selection corresponds to the Take currently loaded in the Player, the FileTag, the Scene name and the Take Nr are posted in reverse video.



3.3.1 Contextual menu in Player mode

When the SONOSAX SX-R4 is in Player mode, the contextual menu differs from the main menu while in Recorder mode and offers following sub-menus:



EXIT PLAYER: exits the Player mode and returns to the main screen [TRACK MONITORING]

MONITORING: change the monitoring configuration for the [PHONES] output. These changes affect only the current playback and do not change the configuration of the Record mode

LINE OUT: change the configuration of the [SUB OUT] output. These changes affect only the current playback and do not change the configuration of the Record mode.

LAST TAKES: accesses the directory of the last Takes, as previously mentioned

UNIT STATUS: shows the configuration parameters of the take loaded in the player as they were set during the recording of that take. See also [UNIT STATUS] in the next chapter.

BROWSE FILES: accesses to the browser to search and playback recorded takes, see specific chapter

DELETE TAKE: the audio file(s) of the take is moved to the [TRASH] bin of the media from which the take was loaded in the player (either the Hard disk or the CF Card)

METADATA: display and edit the metadata of the loaded Take; see specific chapter

SWITCH OFF: turns OFF the unit.

3.4 ADJUSTING THE HEADPHONE LEVEL

Pressing the Joystick to the left or to the right temporarily displays a screen showing the headphone level by means of a bar graph. The headphone level is adjustable in 1 dB steps from -30 dB to +18 dB. While this screen is displayed, pressing the joystick upward will lock the volume setting. Recall the screen and push the joystick upward again to unlock the volume setting.

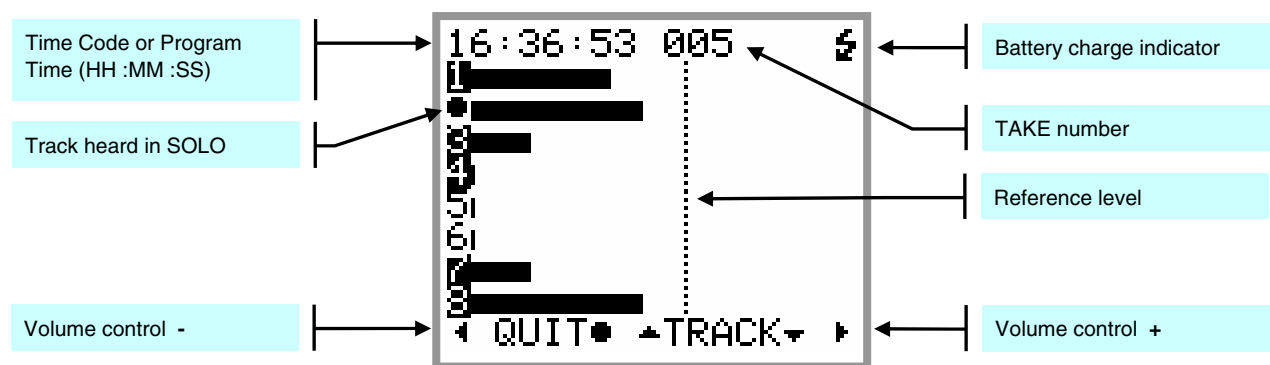


3.5 SOLO MONITORING

The [SOLO MONITORING] page can only be accessed from the main [TRACK MONITORING] page while in Recorder mode or in Player mode by pressing the joystick Upward, it allows listening to individual track or pair of tracks.

The track selection sequence is as follow: 1, 2, 1+2, 3, 4, 3+4, 5, 6, 5+6, 7, 8, 7+8.

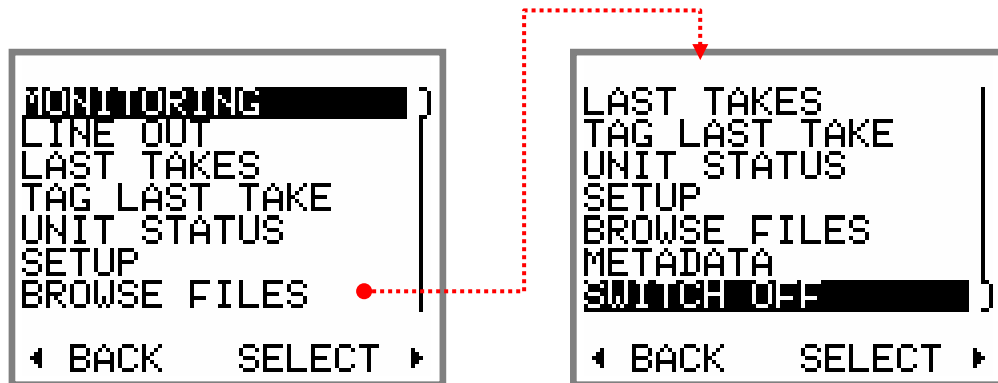
Joystick	Short pressure	Long pressure
LEFT	Reduce the volume by step of 1 dB	Reduce the volume continuously
RIGHT	Increase the volume by step of 1 dB	Increase the volume continuously
UP	Select the previous track	---
DOWN	Select the next track	---
CENTER	Return to the main screen [TRACK MONITORING]	Lock/Unlock Joystick and the toggle switch



NOTE: while in Player mode, the bottom line does not show the action of the Joystick as this line is occupied by the progression bar; however the [SOLO MONITORING] page remain accessible by pushing the Joystick Upward.

4. CONTEXTUAL MENU

The Contextual Menu offers a quick access to the sub-menus and configuration pages of the SX-R4. It can be called only from the main [TRACKS MONITORING] by a short pressure on the centre of the joystick.



Joystick	Short pressure	Long pressure
LEFT	Return to [TRACK MONITORING]	
RIGHT or CENTER	Select and enter the sub-menu	
UP	Scroll the selection upward	
DOWN	Scroll the selection downward	

The available menus depend on the current "Status" of the SX-R4 as described below:

While Recording:

- MONITORING
- LINE OUT
- UNIT STATUS
- TAG LAST TAKE

While Playing or in Pause:

- MONITORING
- LINE OUT
- LAST TAKES
- UNIT STATUS
- DELETE TAKE
- METADATA

While in Record Ready:

- MONITORING
- LINE OUT
- LAST TAKES
- TAG LAST TAKE
- UNIT STATUS
- SETUP
- BROWSE FILES
- METADATA
- SWITCH OFF

While in Stop:

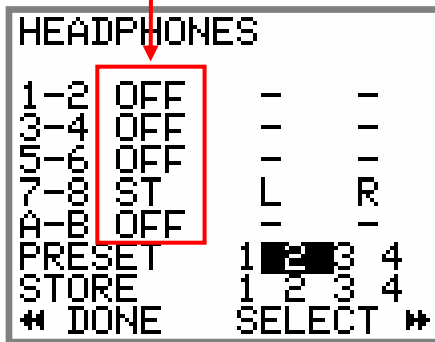
- EXIT PLAYER
- MONITORING
- LINE OUT
- LAST TAKES
- UNIT STATUS
- BROWSE FILES
- DELETE TAKE
- METADATA
- SWITCH OFF

4.1 MONITORING

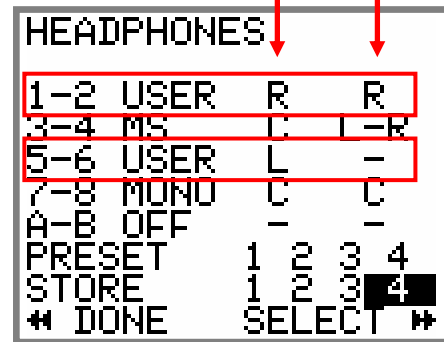
The [MONITORING] page is used to select, route and mix the 10 tracks of the SX-R4 to its headphone output. The pair [A-B] represents the two tracks of the CF Card.

The monitoring is configured either by selecting a pair of tracks or by selecting each individual track using the cursor. The selected field is shown in reversed video; pressing the centre of the Joystick scrolls the different monitoring mode on the selected field.

Selection per pair
OFF / MONO / STEREO
REV-STEREO / MS / OFF



Individual Selection
-/ L / C / R /-



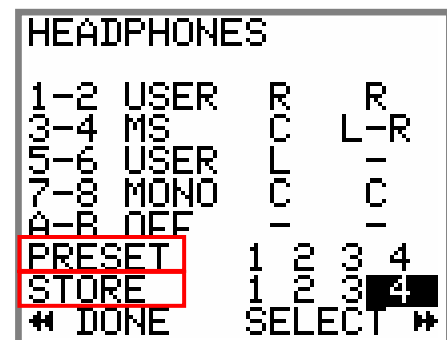
Actions of the Joystick:

Joystick	Short pressure	Long pressure
LEFT	Move the selector to the left	Keep the current configuration and return to the main menu
RIGHT	Move the selector to the right	Select the monitoring mode
UP	Move the selector to the upward	
DOWN	Move the selector to downward	
CENTER	Select the monitoring mode	

4.1.1 Saving the configurations [PRESET]

Up to 4 different monitoring configurations can be stored and recalled at any time. Any configuration is possible and is freely defined by the user.

To recall a configuration, select a [PRESET] 1 to 4 and press on Centre or apply a long pressure to the Right
To store the displayed configuration; select any [STORE] 1 to 4 and press on Centre or apply a long pressure on Right



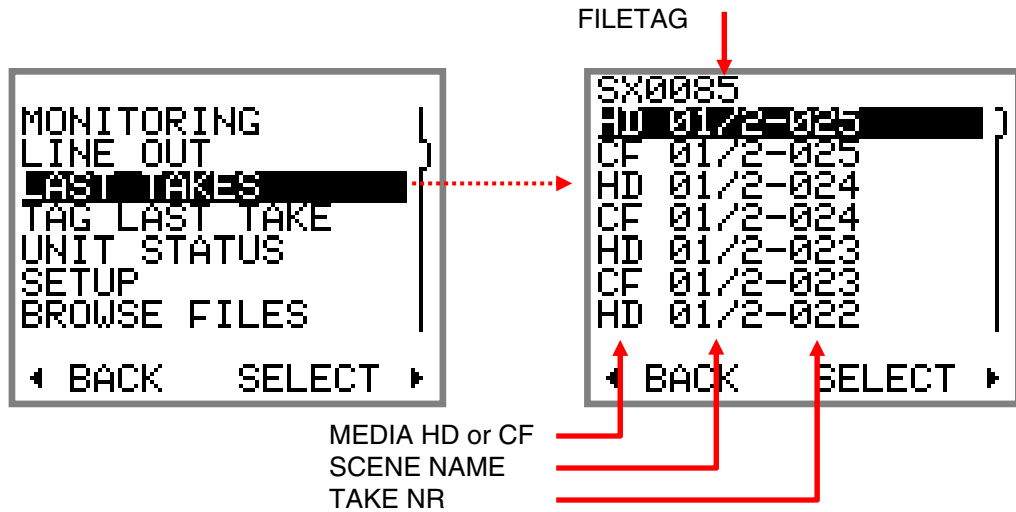
NOTE: the active [PRESET] is identified by a black dot. The dot disappears if the current (displayed) configuration does not correspond to a stored [PRESET], or if the configuration is changed.

4.2 LINE OUT

The [LINE OUT] page is used to select, route and mix the 10 tracks of the SX-R4 to the [SUB-OUT] output. The pair [A-B] represents the two tracks of the CF Card. The configuration of the [LINE OUT] is done in a similar manner that of the monitoring.

4.3 LAST TAKE

The [LAST TAKES] page offers a quick access to the last recorded takes. The takes are displayed in reverse order, the last recorded take being displayed on the top of the list



The first line displays the "FILETAG"; it is the unique identifier related to the audio file name.

Joystick	Short pressure	Long pressure
LEFT	Return to the main contextual menu	
RIGHT	Load the Take into the Player	
UP	Move the selector to the upward	
DOWN	Move the selector to downward	
CENTER	Load the Take into the Player	

4.4 TAG LAST TAKE

This menu offers a quick access to tag the last recorder take either as False Start or to mark the audio file by editing its Metadata. From the main contextual menu enter the [TAG LAST TAKES] sub-menu then choose one of the following option and confirm the action with [SELECT] or cancel the action and return to the previous menu by pressing [BACK]:

- FALSE START** Tag the last recorded take as "False Start" and move the audio files to the [TRASH] bin. The Take nr will be decremented by one so that the next take will be tagged with the correct Take Nr. The audio file is notified with the suffix "F" when browsing the [TRASH] directory.
- NO GOOD** Tag the metadata of the last recorded take as "No Good", mostly used to warn the post-production that the recorded audio is to be rejected although the video take having the same take nr might be good. The audio files remain in the current working day directory, the Take nr is kept and the audio file is notified with the suffix "F" in the [BROWSE FILE] menu.
- CIRCLED** Tag the metadata of the last recorded take as "Circle" to notify the post production that the recorded audio files are to be chosen although the video take having the same take nr might be rejected. The audio files remain in the current working day directory, the take nr is kept and the audio file is notified with the suffix "C" in the [BROWSE FILE] menu
- WILD TRACK** Tag the metadata of the last recorded take as "Wild Track" to notify the post production that the audio file are not related or not "In Sync" to a specific video take, usually used for ambiances or atmo's. The audio file is notified with the suffix "W" in the [BROWSE FILE] menu. **NOTE:** selecting "Wild Track" while recording will keep the "Wild Track Tag" active for the following takes; selecting this Tag while stopped affects the last recorded take only.

4.5 UNIT STATUS

This menu displays all the main current settings of the SX-R4, spread on 4 pages. Press the Joystick UP or DOWN to scroll the pages; press LEFT to return to the main contextual menu

<pre> SYSTEM INFO POWER EXTERNAL HD FREE 17 GB HD HH:MM 008:37 CF FREE 2.0 GB CF HH:MM 002:00 ◀ BACK ▶PAGES▶ </pre>	<table border="1"> <tr> <td>POWER</td> <td>Fuel gauge of the batteries in Volts and as bar-graph; post EXTERNAL if powered from an external power supply</td> </tr> <tr> <td>HD FREE</td> <td>Remaining disk space on the hard disk</td> </tr> <tr> <td>HD HH :MM</td> <td>Remaining recording time on the hard disk.</td> </tr> <tr> <td>CF FREE</td> <td>Remaining disk space on the CF card</td> </tr> <tr> <td>CF HH :MM</td> <td>Remaining recording time on the CF card</td> </tr> </table>	POWER	Fuel gauge of the batteries in Volts and as bar-graph; post EXTERNAL if powered from an external power supply	HD FREE	Remaining disk space on the hard disk	HD HH :MM	Remaining recording time on the hard disk.	CF FREE	Remaining disk space on the CF card	CF HH :MM	Remaining recording time on the CF card
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HD FREE	Remaining disk space on the hard disk										
HD HH :MM	Remaining recording time on the hard disk.										
CF FREE	Remaining disk space on the CF card										
CF HH :MM	Remaining recording time on the CF card										

NOTE: the remaining recording time depends on the configuration such as sampling rate and nr of tracks

<pre> AUDIO CONFIG SYNC INTERNAL FS 48k BPS 24 BITS UP/DOWN NOMINAL FILE POLYPHON MIRROR ON ◀ BACK ▶PAGES▶ </pre>	<table border="1"> <tr> <td>SYNC</td> <td>Audio synchronisation such as: AES, internal, word clock or video.</td> </tr> <tr> <td>FS</td> <td>Sampling frequency 44.1k, 48k, 88.2k, 96k, 176.4k, 192kHz.</td> </tr> <tr> <td>BIT DEPTH</td> <td>Numbers of bits per sample (quantization): 24 bits, 16D bits (dithering), 16 bits.</td> </tr> <tr> <td>UP/DOWN</td> <td>Nominal, NTSC Correction +/- 0,1% or C Mode</td> </tr> <tr> <td>WAV FILE</td> <td>File Format: MONO, STEREO, POLYPHONIC</td> </tr> <tr> <td>MIRROR</td> <td>Mirroring status on the CF Card: OFF, ON.</td> </tr> </table>	SYNC	Audio synchronisation such as: AES, internal, word clock or video.	FS	Sampling frequency 44.1k, 48k, 88.2k, 96k, 176.4k, 192kHz.	BIT DEPTH	Numbers of bits per sample (quantization): 24 bits, 16D bits (dithering), 16 bits.	UP/DOWN	Nominal, NTSC Correction +/- 0,1% or C Mode	WAV FILE	File Format: MONO, STEREO, POLYPHONIC	MIRROR	Mirroring status on the CF Card: OFF, ON.
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UP/DOWN	Nominal, NTSC Correction +/- 0,1% or C Mode												
WAV FILE	File Format: MONO, STEREO, POLYPHONIC												
MIRROR	Mirroring status on the CF Card: OFF, ON.												

<pre> TIMECODE TIME 15:14:43 FORMAT 23.976 SOURCE EXT JAM MODE FREE RUN PRG TIME 00:01:07 ◀ BACK ▶PAGES▶ </pre>	<table border="1"> <tr> <td>TIME</td> <td>Current value of the Time Code (hours: minutes: seconds)</td> </tr> <tr> <td>FORMAT</td> <td>Time Code format, generated or received: 23.976, 24, 25, 29.97ND, 29.97D, 30ND, 30D, AUTO, INTERNAL, UNKNOWN.</td> </tr> <tr> <td>SOURCE</td> <td>Source of the time code signal: EXT JAM SYNC, EXT NO JAM, INTERNAL, INTERNAL OUTPUT.</td> </tr> <tr> <td>MODE</td> <td>REC RUN, FREE RUN</td> </tr> <tr> <td>PRG TIME</td> <td>Elapsed time from the beginning of the Take</td> </tr> </table>	TIME	Current value of the Time Code (hours: minutes: seconds)	FORMAT	Time Code format, generated or received: 23.976, 24, 25, 29.97ND, 29.97D, 30ND, 30D, AUTO, INTERNAL, UNKNOWN.	SOURCE	Source of the time code signal: EXT JAM SYNC, EXT NO JAM, INTERNAL, INTERNAL OUTPUT.	MODE	REC RUN, FREE RUN	PRG TIME	Elapsed time from the beginning of the Take
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MODE	REC RUN, FREE RUN										
PRG TIME	Elapsed time from the beginning of the Take										

<pre> METADATA FILETAG SX0086 PROJECT ABTYC SCENE 01/2 TAKE 026 TAPE 20110810 ◀ BACK ▶PAGES▶ </pre>	<table border="1"> <tr> <td>FILETAG</td> <td>unique identifier (prefix of the file name)</td> </tr> <tr> <td>PROJECT</td> <td>Project name</td> </tr> <tr> <td>SCENE</td> <td>Scene name</td> </tr> <tr> <td>TAKE</td> <td>Take number</td> </tr> <tr> <td>TAPE</td> <td>Tape ID = Working day</td> </tr> </table>	FILETAG	unique identifier (prefix of the file name)	PROJECT	Project name	SCENE	Scene name	TAKE	Take number	TAPE	Tape ID = Working day
FILETAG	unique identifier (prefix of the file name)										
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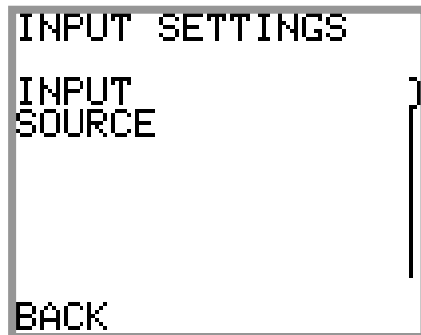
4.6 SETUP (CONFIGURATION'S MENUS)

The [SETUP] menu contains "sub-menus" (or headings) sorted in a logical order; these sub-menu are used to configure the SX-R4 as per user's requirements.

Scroll the sub-menu by pushing the Joystick Up or Down; a scroll bar on the right side of the screen shows the position in the list.

Pushing the Joystick on the Centre or to the Right enter the sub-menu to access the editable parameters. Pushing the Joystick to the Left returns to the previous menu.

Navigating in the menus is done as per the examples below

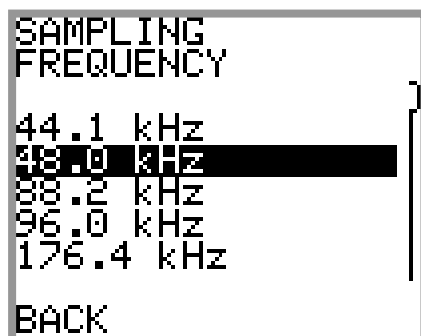


A menu with no parameter displays one heading per screen. Thus, it scrolls the available sub-menus



A sub-menu with a displayed parameter is at the end of the menu tree, it indicates the current value of the parameter that can be edited.

While in a menu with parameter, press the Joystick to the Right or on its Centre to choose the value of that parameter.



A menu with a list shows the available values of a parameters. The selection is posted in reverse video



The text-editing menu.

The text to edit is displayed between brackets that show the limits of the text size.

Two arrows indicate the selected character. LEFT and RIGHT move the cursor to select a character. UP and DOWN scroll the characters. Keep pressing to scroll the characters rapidly. Pressing the Joystick on its CENTER saves the text and return to the previous page.

A long press to the LEFT cancel the editing and return to the previous menu.

4.6.1 MENU's Tree Structure

The greyed menus are those where parameters are visible.

Level 1	Level 2	Level 3	Changeable values
ROUTING SETTINGS	ROUTING TABLE	Routing matrix	
	MIXING LEVEL		NONE , ATT1.5, ATT3, ATT6
	MIRRORING		OFF , ON
RECORD SETTINGS	BIT PER SAMPLE		16 bits, 16 bits dither, 24 bits
	SAMPLING FREQUENCY		44.1, 48 , 88.2, 96, 176.4, 192 kHz
	SAMPLING UP/DOWN		Nominal , UP 0,1%, DOWN 0,1%, C Mode
	AUDIO SYNC MODE		Internal , Word Clock In, Video In
	FILE FORMAT		Mono , Stereo, Polyphonic
	PRE-RECORD TIME		None, 1, 2 , 5, 10, 20 seconds
INPUT SOURCE	MIC/LINE 1-2		MIC/LINE , AES
	MIC/LINE 3-4		MIC/LINE , AES
	LINE 5-6		LINE , AES
TIMECODE SETTINGS	SOURCE		EXTERNAL JAM SYNC , EXTERNAL NO JAM, INTERNAL, OUTPUT
	FORMAT		23.976, 24, 25, 29.97 ND, 29.97 D, 30ND, 30 D, AUTO
	RUNNING MODE		FREE RUN , RECORD RUN
	SET MANUAL		Editing of the TC value manually
	SET FROM TIME		Grab the time of the real time clock
USER SETTINGS	List available user setting	Specific menu to create, recall, delete or overwrite user settings	
SYSTEM SETTINGS	HARD DRIVE	Specific menu to format or mount the HD and empty the trash	
	CF CARD	Specific menu to format or mount the CF and empty the trash	
	REFERENCE LEVEL		None, -20dB , -18dB, -12dB, -9dB
	MODULOMETERS HOLD TIME		None, 3 sec , 10 sec, 2 min, Infinite
	TIME DISPLAY		Time Code, Program Time, Time Code RV, Program Time RV
	AUTO POWER DOWN		OFF , 5 min, 10 min, 15 min, 30 min
	HEADPHONE REC TONE		OFF , ON
	SYSTEM DATE	Specific menu to edit the date of the Real Time Clock	
	SYSTEM TIME	Specific menu to edit the time of the Real Time Clock	
	FILETAG	Specific menu to edit the prefix of the FileTag (2 characters)	
	SYSTEM INFO	Display main system information such as firmware version etc	
	FACTORY SETTINGS	Resets all settings to factory default values	NO, YES

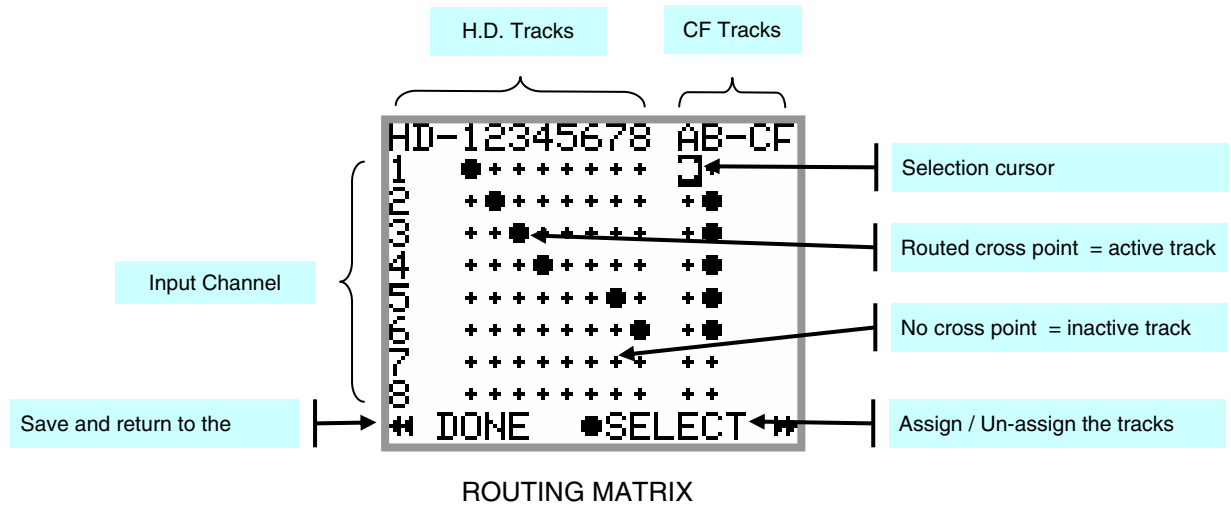
Explanation's of each menu is detailed in the following chapters.

NOTE: Values mentioned in bold are the default values of the [FACTORY SETTINGS]

4.6.2 ROUTING SETTING

SETUP > ROUTING SETTINGS > ROUTING

The routing, or channel assignment to the tracks, is done by means of a specific matrix as shown below:



The round dot assigns the Inputs Channels to the Tracks. Any combination is possible, thus any input channel can be routed to any track or to multiple tracks and multiple channels can be routed on the same track (mixing).

The figure above shows a 1x1 routing between inputs and tracks 1 to 4. Inputs 5 and 6 are routed to tracks 7 and 8. In addition, input channels are also individually routed to the tracks of the CF card.

Joystick	Short pressure	Long pressure
LEFT	Move the selection cursor to the Left	Return to the previous menu
RIGHT	Move the selection cursor to the Right	Activate/Deactivate the assignment
UP	Move the selection cursor upward	
DOWN	Move the selection cursor downward	
CENTER	Activate/Deactivate the assignment	

NOTES: The configuration is automatically saved when leaving this menu
The un-assigned Tracks (no dot on the crossing) are automatically deactivated.

SETUP > ROUTING SETTINGS > MIXING LEVEL

The [MIXING LEVEL] menu defines the attenuation to be applied to each channel when summing (mixing) multiple input channels onto the same track; the attenuation is computed to avoid a digital clipping. Four possibilities are offered and the choice depends on the phase coincidence of the sources.

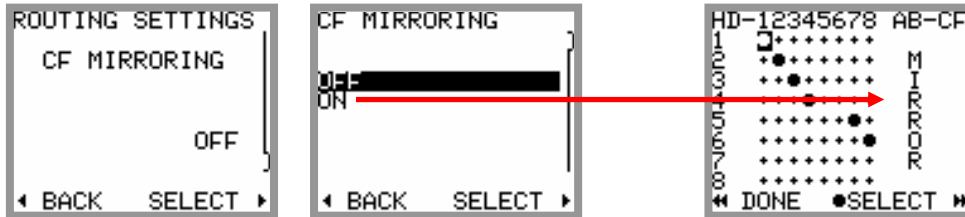
- NONE no attenuation at all
- ATT1.5 mainly used if the sources have no phase coincidence
- ATT3 recommended for phase coincident sources such as stereo or M/S microphone
- ATT6 only used if the sources are absolutely in phase

The table below summarizes the exact attenuations computed and applied according to the number of input channels assigned to the same track.

Number of input channels assigned to the same track	NONE [in dB]	ATT1.5 [in dB]	ATT3 [in dB]	ATT6 [in dB]
1	0	0	0	0
2	0	1.8	3.3	6
3	0	2.5	5	10.1
4	0	3.3	6	12
5	0	3.3	7.2	14.5
6	0	4.1	7.2	14.5
7	0	4.1	8.5	18.1
8	0	5	8.5	18.1

SETUP > ROUTING SETTINGS > MIRRORING

When the MIRRORING function is activated, the routing and the eventual mixing level of the input channels onto the hard disk tracks is identically replicated on the Compact Flash card. The tracks are recorded simultaneously on the hard drive and on the CF card providing that the performances of the CF card permits. When the Mirroring is activated, the two tracks of the CF card no longer appear in the routing matrix and are replaced by the word MIRROR.



NOTE: Several series of tests with CF cards offering good performances helped to validate the recording of up to 8 channels at 96kHz/24bit. If the performances of the CF card does not allow mirroring, an alarm "CF" will flash on the screen. The recording on the CF card will be aborted but will continue on the HD.

NOTE: If the storage capacity of the CF card is reached during the recording, the CF card will stop recording but the recording will continue on the hard disk.

4.6.3 RECORD SETTINGS

SETUP > RECORD SETTINGS > BIT PER SAMPLE

This menu sets the sample's quantization (number of bits per sample) stored in WAVE files. Although the A/D converters of the SX-R4 exclusively convert in 24 bits mode, the DSP can re-quantize the recorded samples by the following values:

- 24 bits: original value as quantified by the A/D converter
- 16 bits Dithering: reduction to 16bits per sample with triangular dithering
- 16 bits: reduction by truncation of the original quantization

SETUP > RECORD SETTINGS > SAMPLING FREQUENCY

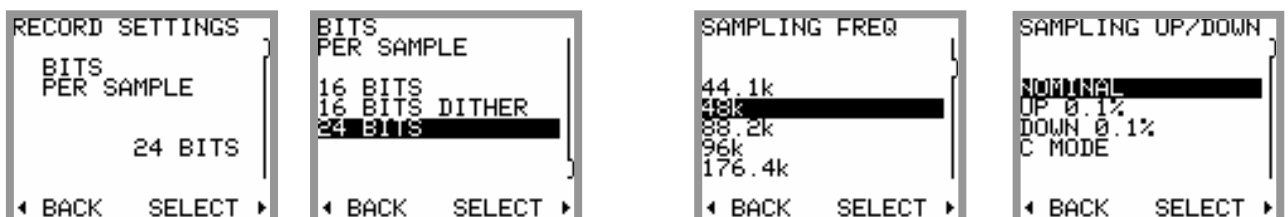
This menu sets the sampling frequency. Choices are: 44.1, 48, 88.2, 96, 176.4 and 192 kHz.

If an AES input is assigned, the SX-R4 will automatically lock on sampling frequency of the incoming AES signal, thus the selected sampling frequency will be overwritten. The sampling frequency of the incoming AES signal can be controlled in the UNIT STATUS.

SETUP > RECORD SETTINGS > SAMPLING UP / DOWN

The sampling frequency can be set either at its nominal value or pulled Up or Down for the NTSC world; in which case the nominal sampling frequency is increased or decreased by 0,1% (or one per thousand). When the sampling Up or Down is chosen the symbol "%+ " or "%- " is displayed on the upper right corner of the main screen.

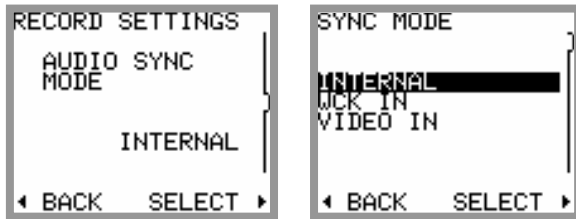
C Mode is a special "compensated" mode faking the pull Up/Down; the recording is performed at nominal sampling rate and the stamped value indicates 48000 which is the true number of samples per second; however the Time Code is compensated (or cheated) so that the Time is stamped as if the digitization was done at 48048 (the Time Stamp is computed by counting the number of samples since midnight)



SETUP > RECORD SETTINGS > AUDIO SYNC MODE

Audio synchronization means locking the sampling frequency on a given signal, either internal or external. The synchronization mode is shown in the Unit Status menu.

The different synchronization modes and the validity of the parameters are explained below:



INTERNAL

The SX-R4 locks on its internal clock generator, which generates all sampling frequencies (44.1, 48, 88.2, 96, 176.4 and 192 KHz). This generator is used only when no other clock is available.

- Sampling frequency: active
- Sampling up/down: active
- Bit per sample: active

Synchronisation on AES input:

The SX-R4 will automatically lock on the **incoming AES clock of the channels 7-8**

- Sampling frequency: inactive
- Sampling up/down: inactive
- Bit per sample: active

WCK IN

WCK IN must be selected to lock the SX-R4 on an external word clock applied to the SYNC IN connector. This mode is overwritten when an input AES is routed.

- Sampling frequency: inactive
- Sampling up/down: inactive
- Bit per sample: active

VIDEO IN

VIDEO IN must be selected to lock the SX-R4 on an external clock derived from a video signal applied to the SYNC IN connector. This mode accepts all video formats, including the bi and tri sync level systems.

This mode is overwritten when an input AES is routed.

- Sampling frequency: active
- Sampling up/down: inactive
- Bit per sample: active

SETUP > RECORD SETTINGS > FILE FORMAT

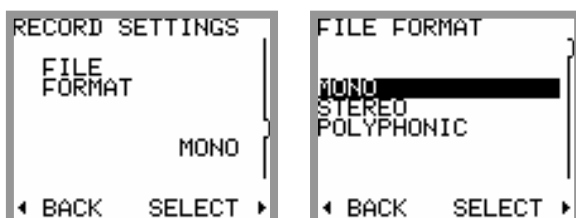
The recorded audio tracks can be stored in three different file formats:

- MONO
- STEREO
- POLYPHONIC

When MONO is selected, each track is recorded in a separate mono file.

when STEREO is selected, the system records each pair of tracks in a single stereo file. The pairs are always 1+2, 3+4, 5+6 and 7+8.

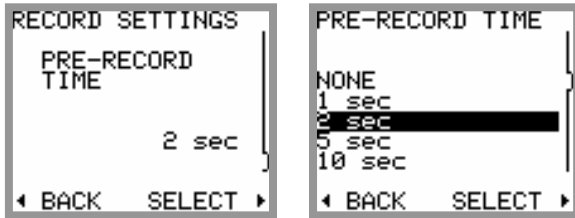
If POLYPHONIC mode is selected, all active tracks are recorded in a single file. This mode requires to enable the MIRRORING regardless of whether the Compact Flash card is present or not



SETUP > RECORD SETTINGS > PRE-RECORD TIME

The Pre-Record time can be set from zero up to 20 seconds. The selected value may not always be possible due to the physical limitation of the built-in memory. The Pre-Record time depends on following factors:

- Number of Tracks being assigned
- Sampling frequency
- Sample Rate and Pull UP/ Pull DOWN correction



When the required pre-record time is not possible, the SX-R4 will perform on "best effort" basis to provide with the maximum possible. The table below shows the maximum values of the pre-record time [seconds]:

16 bits		Tracks count									
fs	1	2	3	4	5	6	7	8	9	10	
44100	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	18.5	16.6	
48000	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.1	17.0	15.3	
88200	20.0	20.0	20.0	20.0	16.6	13.9	11.9	10.4	9.2	8.3	
96000	20.0	20.0	20.0	19.1	15.3	12.7	10.9	9.6	8.5	7.6	
176400	20.0	20.0	13.9	10.4	8.3	6.9	5.9	5.2	4.6	4.2	
192000	20.0	19.1	12.7	9.6	7.6	6.4	5.5	4.8	4.2	3.8	

24 bits		Tracks count									
fs	1	2	3	4	5	6	7	8	9	10	
44100	20.0	20.0	20.0	20.0	20.0	18.5	15.9	13.9	12.3	11.1	
48000	20.0	20.0	20.0	20.0	20.0	17.0	14.6	12.7	11.3	10.2	
88200	20.0	20.0	18.5	13.9	11.1	9.2	7.9	6.9	6.2	5.5	
96000	20.0	20.0	17.0	12.7	10.2	8.5	7.3	6.4	5.7	5.1	
176400	20.0	13.9	9.2	6.9	5.5	4.6	4.0	3.5	3.1	2.8	
192000	20.0	12.7	8.5	6.4	5.1	4.2	3.6	3.2	2.8	2.5	

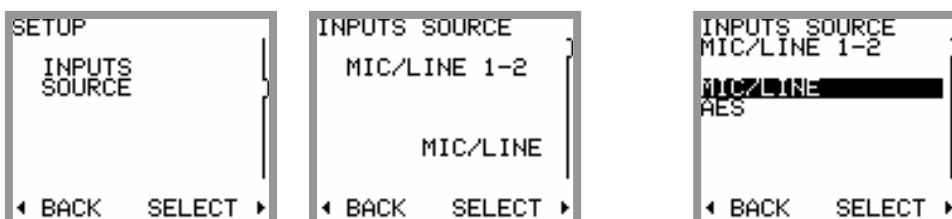
In these tables, the Pull Up/Pull Down correction is not taken into account (negligible).

4.6.4 INPUTS SOURCE

SETUP > INPUTS SOURCE

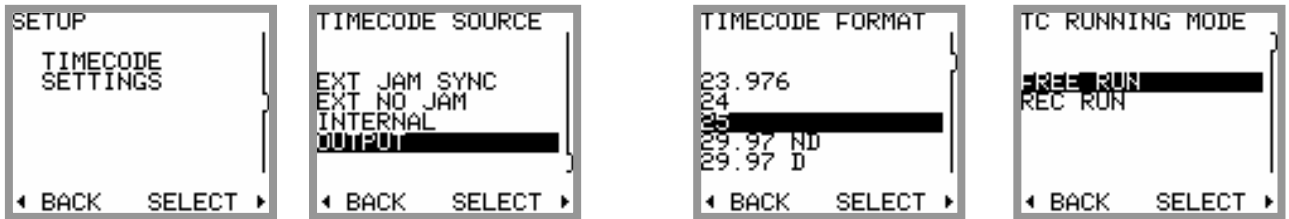
This menu is used to select which of the analogue or the digital source of channels 1-2, 3-4 and 5-6 is assigned to the routing matrix; the selection is always made for a per pair of channels

- Input channels 1 & 2: MIC/LINE 1 & 2 or AES 1
- Input channels 3 & 4: MIC/LINE 3 & 4 or AES 2
- Input channels 5 & 6: STEREO IN or AES 3,
channel 5 is Left, channel 6 is Right on the [STEREO IN] connector



4.6.5 TIME CODE

The SX-R4 can either receive or generate a Time Code at any of the conventional formats; the following sub-menus are used to set the required Time Code parameters.



SETUP > TIMECODE SETTINGS > SOURCE

This menu sets the source of the Time Code; it can be taken either from its own internal Time Code generator or from an external generator connected on the 5pin Lemo as described below.

- External Jam Sync the TC is jammed on an external source
- External No Jam the TC is read continuously
- Internal the TC is internally generated but its output on the Lemo 5 pin is disabled
- Output the TC is internally generated and is available on the Lemo 5 pin connector

NOTE: while selecting [OUTPUT], a frame rate other than [AUTO] (states for auto detect) must be selected in the menu [TIME CODE FORMAT]. If [AUTO] is selected, a warning is posted on the screen and a bip tone is heard.

NOTE: if [OUTPUT] is selected in PLAYER mode, the Time Code of the played file is outputted

SETUP > TIMECODE SETTINGS > FORMAT

When [EXT JAM SYNC] or [EXT NO JAM] is selected, the SX-R4 detects automatically the format (also called Frame Rate) of the incoming Time Code; however specifying a format allows to check the validity and the accuracy of the incoming Time Code, in this case an incoming Time Code having a format different from that specified or not within the standard tolerances will trigger an alarm.

The available Time Code formats are:

- 23.976 - 24 - 25 - 29.97 Non Drop - 29.97 Drop - 30 Non Drop - 30 Drop - AUTO

SETUP > TIMECODE SETTINGS > RUNNING MODE

Two possible choices:

- FREE RUN the Time Code is absolute and linear. It runs continuously and never stops
- RECORD RUN Time Code is generated only while recording

SETUP > TIMECODE SETTINGS > SET MANUAL

This menu is used to set the Time Code value manually.

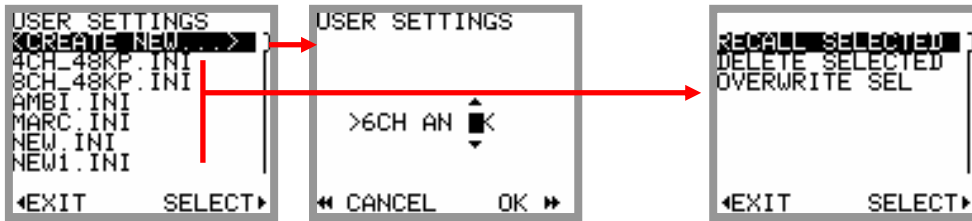
SETUP > TIMECODE SETTINGS > SET FROM TIME

The value of the Time Code is grabbed from the real time clock of the SX-R4 (system time).



4.6.6 USER SETTINGS

The [USER SETTINGS] menu allows saving, loading or updating a complete configuration to/from an ASCII file. When entering the menu, the first line offers creating and naming a new "User Setting":



SETUP > USER SETTINGS > CREATE NEW

Create a new User Setting file based on the current (active) configuration of the SX-R4; the system ask you to type a name for this new setting. The file name must be formatted as explain below

- 8 characters maximum; alphanumeric characters, space and underscore only (A..Z, 0..9, _)

Then confirm with [OK] to save the new settings file and return to the previous menu or select [CANCEL] to exit without saving.

The menu displays a list of all existing "User Settings" sorted in alphabetic order; use the Joystick to scroll the list then press Centre or Right to select a setting, a new page is displayed offering 3 possible actions

SETUP > USER SETTINGS > SELECT > RECALL SELECTED

Load the selected setting and reconfigure the SX-R4 accordingly. Caution: this operation will crush the current configuration!

SETUP > USER SETTINGS > SELECT > DELETE SELECTED

Permanently delete the selected configuration file. Caution: this operation is irreversible!

SETUP > USER SETTINGS > SELECT > OVERWRITE SELECTED

Overwrite an existing (saved) user setting by the current configuration of the SX-R4. Caution: this operation is irreversible!

NOTE: a user setting can also be recalled from the menu [BROWSE FILE] with the following sequence: [BROWSE FILE] > [HD] > [SETTINGS] then select one of the listed user setting.

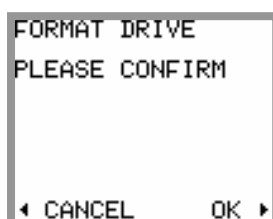
4.6.7 SYSTEM SETTINGS

This menu is used to set general system parameters, to manage the recording media and to display some system information's such as hardware and software revision

SETUP > SYSTEM SETTINGS > HARD DRIVE or CF Card

This page displays information's related to the Hard disk drive such as total capacity, remaining free space and posts eventual drive errors. This page also offers three possible actions:

- **FORMAT DRIVE** to reformat the hard disk; this action is irreversible and will erase all audio file stored on the hard disk. The User Settings are temporarily saved on the flash memory and restored on the HD after the formatting procedure
- **EMPTY TRASH** clear all audio files temporarily stored in the trash bin to free disk space if more storage capacity is required. This action is irreversible
- **MOUNT** used to mount the drive if for any reasons it does not appears during the booting sequence



SETUP > SYSTEM SETTINGS > REFERENCE LEVEL

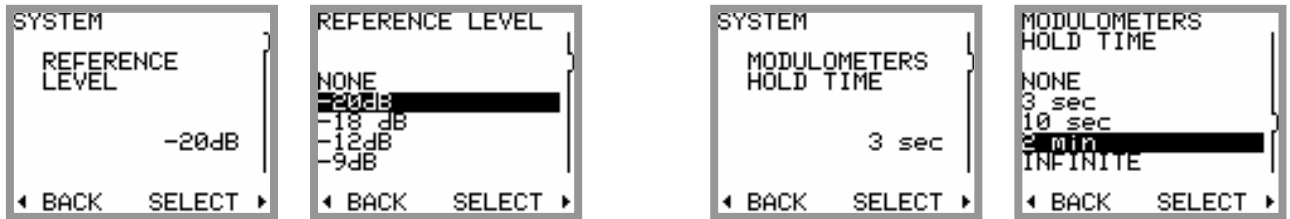
To display a vertical line corresponding to a desired reference level on [TRACK MONITORING] page. This reference is useful to give a clear indication of the dynamic headroom, the available values are:

- NONE / - 9 dBFS / -12 dBFS / -18 dBFS / -20 dBFS

SETUP > SYSTEM SETTINGS > MODULOMETERS HOLD TIME

The "Hold Time" function detects the absolute peak level of each recorded track and keeps it posted for:

- NONE / 3 seconds / 10 seconds / 2 minutes / INFINITE



SETUP > SYSTEM SETTINGS > TIME DISPLAY

The "Time Display" selects which information is displayed on screen

- Time Code / Program Time / Time Code RV/ Program Time RV

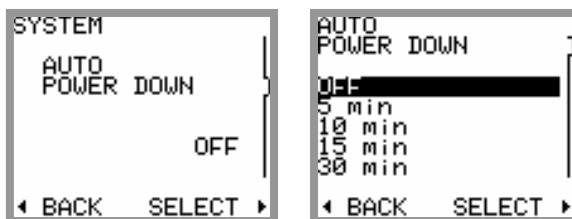
Time code displays the actual time of the TC; program Time shows the elapsed time from the start of the take. RV states for Reversed Video, it improves reading in direct sun light.



SETUP > SYSTEM SETTINGS > AUTO POWER DOWN

To preserve battery life, it is possible to turn off the SX-R4 automatically if no action has been detected after a given time. This menu lets choose the "Time Out" value before the SX-R4 shut down automatically:

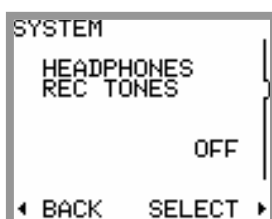
- OFF / 5 minutes / 10 minutes / 15 minutes / 30 minutes



SETUP > SYSTEM SETTINGS > HEADPHONE REC TONES

Start recording, adding an index and stop recording can be witnessed in the headphones with a confidence beep tone. Start recording and add index is signalled by a single 1kHz beep tone; stop recording is signalled by a two tone's double beep, 2kHz-1kHz.

- Select ON to activate the beep tone; select OFF to cancel the beep tone.



SETUP > SYSTEM SETTINGS > SYSTEM DATE

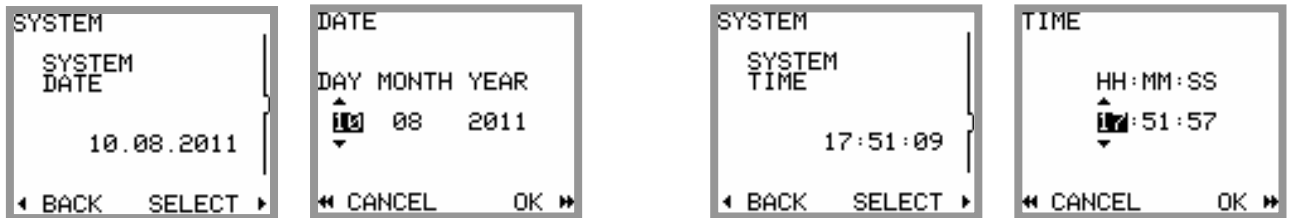
Set the Date of the internal real time clock of the SX-R4 (format DD.MM.YYYY).

Move the cursor to the Left or the Right to select the field to edit, Up or Down to scroll the values, then confirm with [OK] to save the date and return to the previous menu or select [CANCEL] to exit without saving

SETUP > SYSTEM SETTINGS > SYSTEM TIME

Set the Time of the internal real time clock of the SX-R4 (format HH.MM.SS).

Move the cursor to the Left or the Right to select the field to edit, Up or Down to scroll the values, then confirm with [OK] to save the date and return to the previous menu or select [CANCEL] to exit without saving

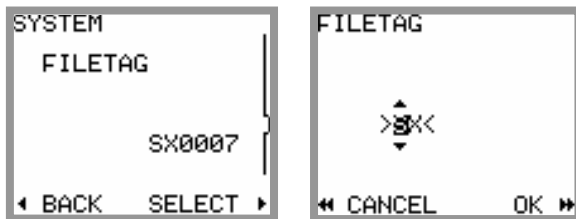


SETUP > SYSTEM SETTINGS > FILETAG

The [FILETAG] is the identifier of the audio files name; it is automatically generated.

The first 2 characters can be modified by the user; which might be useful to clearly identify the recorder when multiple recorders are used during the same production.

The last 4 digits are automatically incremented by 1 at each new take. When the numbering reaches 999 the alphabetic prefix will also be incremented to the next value (SX → SY).



SETUP > SYSTEM SETTINGS > SYSTEM INFO

Display the hardware status and the firmware revisions of the SX-R4.

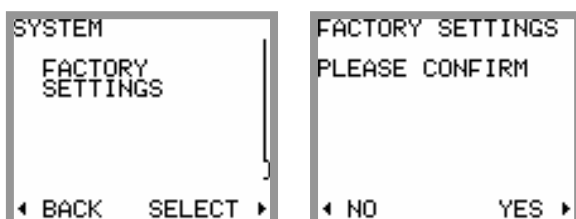


SETUP > SYSTEM SETTINGS > FACTORY SETTINGS

Re-initialize the SX-R4 in its basic configuration (factory default setting).

Select [YES] to load the factory default settings and return to the main [TRACK MONITORING] page or select [BACK] to return to the previous menu.

Caution: this operation crushes the current configuration of the SX-R4; however it has absolutely no effect on the recorded audio files or on the stored user settings.



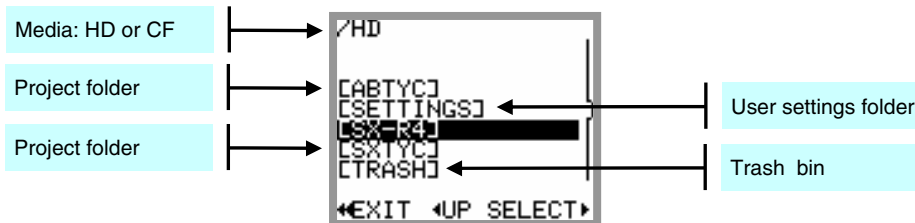
4.7 BROWSE FILES

The file browser is used to search the takes stored on the hard disk or on the CF card. Selecting the media [HD] or [CF] is done at the upper level of the the browser. Choose a media and press [SELECT] to reach the root level of the selected media or press [EXIT] to return to the contextual menu.

Main Menu → Media Selection → Project Folders → Working Day's → Takes

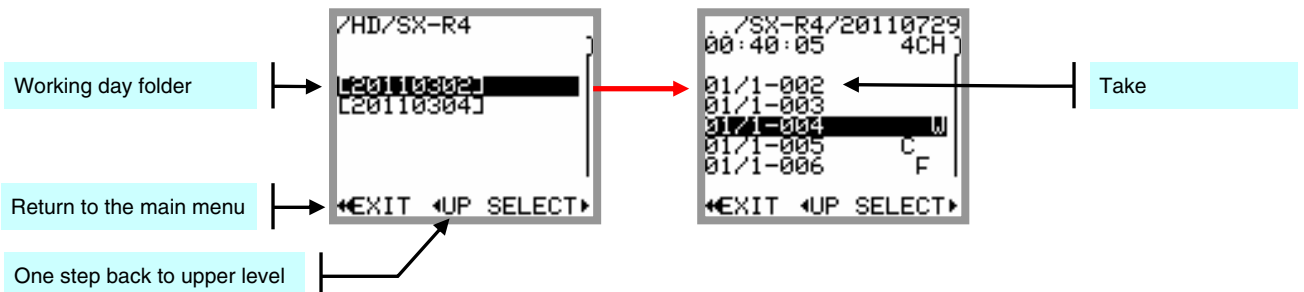


The root level of the media lists all the [PROJECT] directories sorted in alphabetic order, including the [TRASH] bin. The root level of the hard disk drive also contains the "user settings" directories [SETTINGS]; thus user settings can be loaded directly from this folder.



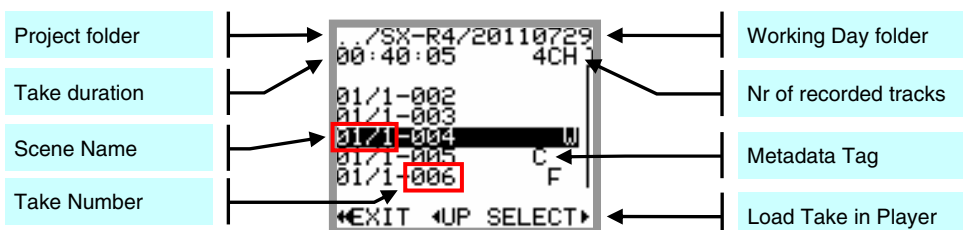
Scroll Up or Down to choose a [PROJECT] and press [SELECT], a new screen lists the related [WORKING DAY] folders sorted in chronological order; the working day folders contain the takes.

[EXIT] returns to the contextual menu; [UP] steps back to an upper level of the tree structure.



The [WORKING DAY] folders lists all recorded takes, identified by their [SCENE] name and and their [TAKE NR] the takes are sorted by their unique identifier - the [FILETAG] – which does not appears on screen.

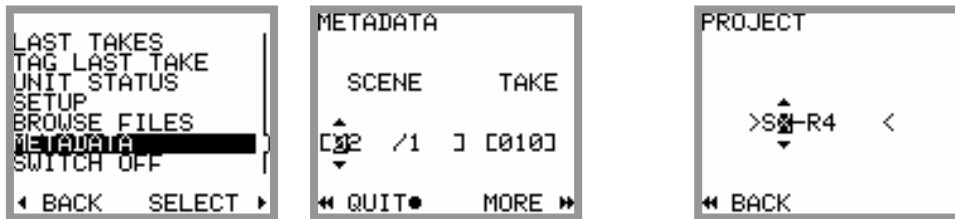
Scroll Up or Down to choose a Take and press [SELECT] to load the Take in the Player



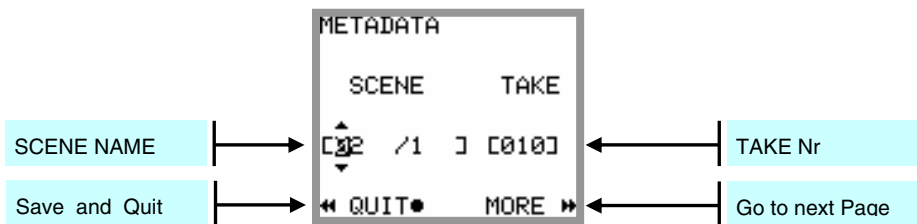
NOTE: once a Take has been selected and loaded in the Player, re-entering the browser later goes automatically to the last selected [WORKING DAY] folders.

4.8 METADATA

The audio files recorded with the SX-R4 embeds metadata in both BWF and iXML format. Some metadata can be either pre-settled when the SX-R4 is in Recorder mode or edited post-recording when the unit is in Player mode. In both modes, editing the metadata is spread over two pages.

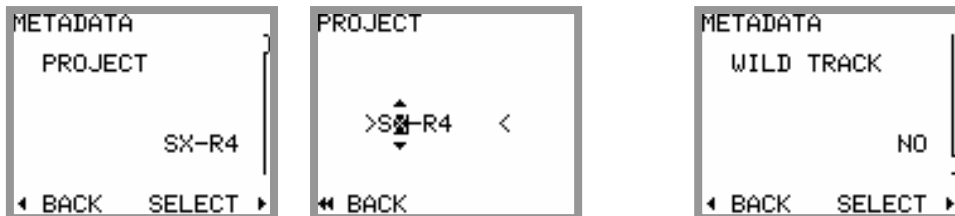


The first page shows two editable fields: the [SCENE] name which can contain up to 8 characters and the [TAKE NR] which is fixed to 3 digits.



The brackets show the limits of the field size and two arrows indicate the selected character or field. Press the Joystick Left or Right to select a character or a field then press Up or Down to scroll the characters or the take number. Keep pressing to scroll rapidly. Editing the [SCENE] name and the [TAKE NR] is made in an identical manner in both Recorder mode and Player mode.

Selecting [QUIT] saves the changes and returns to the previous menu, select [MORE] for the second page;



The second page is used to edit additional metadata; the choice of editable metadata depends on the status of the SX-R4 (Recorder mode or Player mode), press Up or Down to scroll the editable metadata:

RECORDER mode: only two parameters can be edited while in Record Ready:

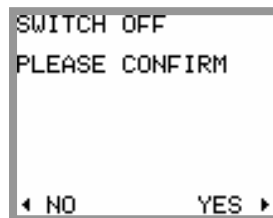
- PROJECT** the [PROJECT] name can contain up to 8 characters, the editing is done in the same manner as the [SCENE] name. Setting a new Project name will create a new directory at the root level of the hard disk and of the CF Card, all subsequently recorded files are then stored in the "working day's" subdirectory(ies) that belong to the particular project
- WILD TRACK** when enabled, all subsequently recorded files will be tagged as "Wild Track"; a symbol "W" is posted in the upper right corner on the screen [TRACK MONITORING], warning the user that the wild track tag is enabled. Recorded audio files are notified with the suffix "W" in the [BROWSE FILE] menu.

PLAYER mode: editing the metadata of a recorded take implies that the take is loaded in the player.

- **PROJECT** in player mode, editing the **[PROJECT]** name of an existing audio file will only modify the content of the metadata but does not create a new directory.
- **WILD TRACK** Tag the recorded file as "Wild Track"; when loaded in the player a symbol "W" is posted in the upper right corner of the **[TRACK MONITORING]**
Wild Track audio files are notified with the suffix "W" in the **[BROWSE FILE]** menu.
- **CIRCLED** Tag the recorded file as "Circled", the audio file is notified with the suffix "C" in the **[BROWSE FILE]** menu
- **NO GOOD** Tag the recorded file as "No Good", the audio file remains in its original folder and is notified with the suffix "F" in the **[BROWSE FILE]** menu.
- **FALSE START** Unlike editing the file from the **[TAG LAST TAKE]** menu, tagging the audio file from the Player only edits the metadata but does not move audio files to the **[TRASH]** bin and does not modify the Take Nr.
The audio file is notified with the suffix "F" in the **[BROWSE FILE]** menu.

4.9 SWITCH OFF

Turning OFF the SX-R4 is done by software; the **[SWITCH OFF]** command is located at the bottom of the contextual menu. Select the command and then confirm with **[YES]** to turn Off the unit.



5. MANAGING THE SX-R4

5.1.1 Formatting the Hard Disk and CompactFlash card

Formatting the internal Hard disk and the CF Card is recommended before starting a new production. Internal Hard Disk and CF Card must be FAT23 formatted with the same cluster size. If a media is formatted with a different cluster size that required, the SX-R4 will post an alarm such as "Disk error".

Therefore use exclusively the formatting utility tool in the [SYSTEM SETTINGS] menu to reformat your media.

5.1.2 Disk fragmentation

During heavy use of the recorder, it may become necessary to recover some free disk space by deleting audio files [DELETE TAKE] and then emptying the trash bin [EMPTY TRASH] or by deleting files when connected to a computer.

This may lead to severe fragmentation of the free space on the hard drive or on the CF card which may prevent the recording of new Takes. In this case an alarm HD or CF is posted to warn you of the problem. It is then necessary to back-up all your files and to reformat the disk using the SX-R4 format utility tool.

WARNING: IN ANY CASE, DO NOT DEFRAGMENT THE INTERNAL HARD DISK OR THE CF CARD USING A DISC DEFRAGMENTATION UTILITY OR THE SX-R4 WILL NO LONGER BE ABLE TO PLAY THE RECORDED AUDIO FILES.

Important notes for MAC OS X users:

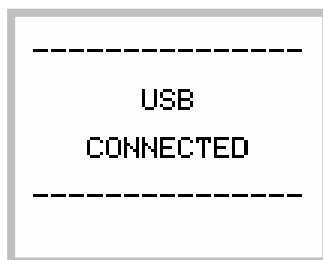
When deleting files stored on the Hard disk and/or on the CF, **do not forget to empty the Trash Bin** on your desktop **before** disconnecting the USB port. Otherwise, the disk space will not be recovered.

Reconnecting the USB a second time doesn't solve the problem. It is very likely that your SX-R4 will then indicates a free available space lower than the value given by the computer. In this case it will be necessary to save all your files and to reformat your hard drive using the formatting utility tool of the SX-R4.

5.1.3 USB 2.0 connection

The SX-R4 is equipped with a USB 2.0 port (USB 1 is not supported). Connecting the SX-R4 to a computer for file transfer (PC or Mac) is only possible when the SX-R4 displays one of the following menus:

- TRACKS MONITORING
- SOLO MONITORING
- Unit Status



WARNING: use only certified "USB 2 High Speed" cable. The data rate transmission is so high that using a non certified cable may lead to unpredictable malfunctions such as Disk not recognized, SX-R4 nor mounting on your desktop, Windows error code 10 etc.

Notice concerning the CF Cards

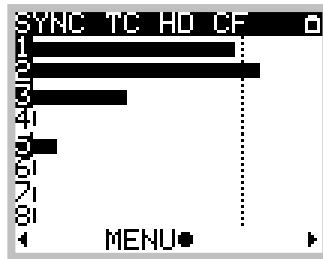
If a CompactFlash card is in the SX-R4 when connecting to a computer, it is possible that neither the hard drive nor CompactFlash card appear on the desktop computer, or that the procedure takes several minutes. This is directly related to the physical structure (hardware) of the CompactFlash card.

In this case it is necessary to remove the card of the SX-R4 and to connect it directly to the computer via a card adapter. The hard disk drive of the SX-R4 will then mount on the computer's desktop within seconds.

5.1.4 Alarms

When the SX-R4 detects a problem it will warn the user by posting an alarm flashing on the screen and in sending a beep tone in the headphone output. The beep tone will be cancelled as soon as any key is depressed. However the warning keeps flashing in the display until the problem is solved.

One distinguishes 5 kinds of alarms, whose causes are explained below:



The Alarm **AES** occurs under one of the following conditions:

- One or more Tracks is assigned from an AES input, but no valid AES signal is present.
- Input channels 7 & 8 are not assigned
- The incoming sampling frequency on the AES signal is out of tolerance (+/- 0,2%)

The Alarm **SYNC** occurs under one of the following conditions:

- the SX-R4 is set to WCK IN but no valid WordClock signal is present
- the SX-R4 is set to VIDEO IN but no valid Video signal is present

The Alarm **TC** occurs under one of the following conditions:

- The Timecode is set to Internal Output but the format is set to Autodetect
- The Timecode is set on External No Jam, but no TC signal is present
- The Timecode is set on External No Jam, a TC signal is present but the format selected in the SX-R4 does not match with the detected format.

The Alarm **HD** or **CF** occurs under one of the following conditions:

- The remaining Free space on a disk is less than 100Mb.
- The disk is too fragmented
- The CompactFlash Card bit rate is too low, recording on this media has been suspended
- The FAT32 partition cannot be initialized

The Alarm **POWER** occurs when the power voltage is soon too low to maintain the SX-R4 running.

5.1.5 Errors handling

This section addresses the possible errors and problems that may occur while using the SX-R4.

Power failure

When the supply voltage becomes too weak, the SX-R4 proceeds to a safe shut down. If a recording is in progress, it stops recording, closes the audio files and shut down.

NOTE: please remember not to use dry cell batteries but only NiMH or NiCd rechargeable batteries

Insufficient disk space

If the remaining free space in a disk is not sufficient, the recording in progress is stopped. When two discs are used (HD + CF), the recording continues only on the media providing with sufficient free space

Maximum file size

The FAT32 file system limits the size of the files to 4Gb. If the recording in progress reaches this limit, the SX-R4 adds an index (creating a new TAKE) and continues to record in the new file.

Real Time Clock (RTC)

When powering up, the SX-R4 checks that system's Date and Time of are coherent. If it fails, a menu forces the user to set them. While setting the date, an error message can occur if the date format is not valid.

NOTE: the SX-R4 does not have an internal back-up battery to keep the RTC running; it will maintain date and time for a period of approx 1h. It is therefore advised to leave well-charged batteries in their compartment to keep the RTC running continuously.

5.1.6 Software up-date procedure

Up date from the SX-R4 internal hard drive

1. Download the appropriate version from the website: www.sonosax.ch/software_download.html
the file name of the Firmware will be such as: R4-41405.bin
2. Connect the SX-R4 to the USB2 port of your computer and **backup all your files** stored on you hard disk and on your CF Cards.
3. Copy the new Firmware file to the root directory of the hard drive of the SX-R4, and disconnect the SX-R4 from the computer.
4. From the Main menu, enter the [**BROWSE FILES**] menu, locate the new Firmware file in the root directory of the hard disk drive and select the file.
5. A message will be prompted asking you to confirm the up-date procedure. press OK to confirm.
A progression bar will appear indicating that the up-date is in progress.
PLEASE WAIT UNTILL FULL COMPLETION,
NEVER TURN OFF THE UNIT DURING AN UP-DATE PROCEDURE.
6. Once completed, a message will be posted asking you to reboot the recorder.
7. Reformat the hard disk of the SX-R4 using exclusively the formatting:
SETUP / SYSTEM SETTINGS / HARD DRIVE / then long press to UP
8. Load the Factory default settings:
SETUP / SYSTEM SETTINGS / FACTORY SETTINGS select YES
9. Your SX-R4 is now ready for use with its new Firmware

Up dating the SX-R4 from a CF Card

Using a CF Card Up to up-date the SX-R4 is also possible:

1. Download the Firmware file as previously indicated under point nr 1.
2. Connect the CF Card to the computer using a card adapter and then copy the Firmware file to the root directory of the CF card.
3. Remove the CF card from the computer and insert the card in the SX-R4.
4. From the Main menu, enter the [**BROWSE FILES**] menu and select the CF Card. Locate the new Firmware file in the root directory of the CF card and select the file.
5. Then proceed as previously mentioned from point 5 to point 9 to complete the up-date procedure.

6. APPENDIX

Example of a USER SETTING file

```
# Sonosax SX-R4 User Settings File
# NOTE: Modify/remove parameter to automate configuration

[SYSTEM]
REFERENCE LEVEL = -20dB
MIXING LEVEL = NONE

[METADATA]
# Project name: max 8 chars, allowed chars: ABCDEFGHIJKLMNOPQRSTUVWXYZ_ 0123456789
# PROJECT = ABTYC
# Scene name: max 8 chars, allowed chars: ABCDEFGHIJKLMNOPQRSTUVWXYZ_/#() 0123456789
# SCENE = 01/2
# Take number: range: 1 .. 999
# TAKE = 26

[DIGITAL RECORDER]
# 44.1k, 48k, 88.2k, 96k, 176.4k, 192k
INTERNAL SAMPLING FREQUENCY = 48k
# 16 BITS, 16 BITS DITHER, 24 BITS
BITS PER SAMPLE = 24 BITS
# NOMINAL, UP 0.1%, DOWN 0.1%
SAMPLING PULL UP/DOWN = NOMINAL
# INTERNAL, WCK IN, VIDEO IN
AUDIO SYNC = INTERNAL
# MONO, STEREO, POLYPHONIC
AUDIO FILE FORMAT = MONO
# NONE, 1 sec, 2 sec, 5 sec, 10 sec, 20 sec
PRE-RECORD TIME = 2 sec
# Routing table [12345678] <-- Input channels (1: assigned, 0: not assigned)
HD TRACK 1 MIX = 10000000
HD TRACK 2 MIX = 01000000
HD TRACK 3 MIX = 00100000
HD TRACK 4 MIX = 00010000
HD TRACK 5 MIX = 00000000
HD TRACK 6 MIX = 00000000
HD TRACK 7 MIX = 00001000
HD TRACK 8 MIX = 00000100
CF TRACK A MIX = 10000000
CF TRACK B MIX = 01111100
CF MIRRORING = OFF

[TIMECODE]
# 23.976, 24, 25, 29.97 ND, 29.97 D, 30 ND, 30 D, AUTO, UNKNOWN
TC FORMAT = 25
# EXT JAM SYNC, EXT NO JAM, INTERNAL, OUTPUT
TC SOURCE = OUTPUT
# FREE RUN, REC RUN
RUNNING MODE = FREE RUN

[HEADPHONES]
CONFIG = LEFT(0, 0, +1, +1, +1, 0, +1, +1, 0, 0), RIGHT(+1, +1, +1, -1, 0, 0, +1, +1, 0, 0)
REC TONES = OFF
# Headphones level [dB], range [-30..+18]
MONITOR LEVEL = 0
LOCK = OFF

[LINE OUT]
CONFIG = LEFT(+1, +1, +1, +1, 0, 0, +1, +1, 0, 0), RIGHT(0, 0, +1, +1, 0, 0, +1, +1, 0, 0)

[INPUTS]
# ANALOG, AES
INPUTS 1-2 RECORD SOURCE = ANALOG
INPUTS 3-4 RECORD SOURCE = ANALOG
INPUTS 5-6 RECORD SOURCE = ANALOG
```

Organization on the HD and the CF Card

The following figure shows an example of how files are stored on the hard disk (HD) for a two days shooting session. Compact Flash (CF) content follows the same architecture.

[HD]	
├── [SETTINGS]	User Settings directory
│ ├── MONO_2CH.INI	User setting
│ ├── POLY_8CH.INI	User setting
│ └── AES_4CH.INI	User setting
├── [PROJECT1]	Project name
│ ├── [20110525]	Working day May 25th 2011
│ │ ├── SX0001S5.WAV	Audio file #1 (polyphonic 5 tracks)
│ │ └── SX0003S5.WAV	Audio file #3 (polyphonic 5 tracks)
│ ├── [20110526]	Working day May 26th 2011
│ │ ├── SX0004_7.WAV	Audio file #4 (mono track #7)
│ │ ├── SX0004_6.WAV	Audio file #4 (mono track #8)
│ │ └── SX0006S8.WAV	Audio file #6 (polyphonic 8 tracks)
├── [TRASH]	Trash folder
│ └── [PROJECT1]	Deleted files from project
│ ├── [20110525]	Deleted files from day May 25th 2011
│ │ └── SX0002S5.WAV	Audio file #2 (false start)
│ ├── [20110526]	Deleted files from day May 26th 2011
│ │ └── SX0005S8.WAV	Audio file #5 (false start)

The information contained in this manual is subject to change without notice.

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