

SAC-2K Manual

Radio and Television Interference

The equipment described in this manual generates and uses radio-frequency energy. If it is not installed and used properly - that is, in strict accordance with our instructions - it may cause interference with radio and television reception.

This equipment has been tested and complies with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of the FCC rules. These rules are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that the interference will not occur in a particular installation, especially if a „rabbit ear“ TV antenna is used.

If the SAC-2K does cause interference to radio or television reception, you can try to correct the interference by using one or more of the following measures:

- Turn the television or radio antenna until the interference stops.
- Move the SAC-2K to one side or the other of the television or radio.
- Move the SAC-2K farther away from the television or radio
- Plug the SAC-2K AC Adaptor into an outlet on a different circuit than the television or radio.
- Consider installing a rooftop antenna with a coaxial lead-in between the antenna and television set.



This product complies with the requirements of European Directive
DIN EN55022 (Emissions) and
DIN EN50082-1 (Interference Resistance)

Important Safety Instructions!

Please read the following safety instructions carefully and before initiating operation of the SAC-2K. These instructions are intended for your own safety and are helpful in the proper use and operation of your instrument.

- 1.) Please read all the enclosed instructions thoroughly before starting to use the Instrument.
- 2.) Don't use the Instrument close to swimming pools, sinks, washing machines etc. or in a very humid environment.
- 3.) The Instrument should be put in a location with sufficient ventilation.
- 4.) The Instrument should not be used close to sources of heat, such as heating units, stoves or other heat generating installations.
- 5.) Operation of the Instrument in dusty places should be avoided, as excessive dust can lead to malfunctions of the electronic components.
- 6.) The Instrument should only be plugged into electric outlets which are listed in the manual or are indicated on the powercable/plug.
- 7.) It is advisable to unplug the power cable from the electric outlet during periods of extended non-use to avoid damage from charges due to lightning, atmospheric anomalies or electric current fluctuations.
- 8.) Avoid stepping or placing anything on the powercable.
- 9.) Don't unplug the power cable by pulling on the cable. Hold the plug itself and then unplug.
- 10.) When connecting this Instrument to another instrument please follow the instructions in this Manual.
- 11.) Ensure that no objects fall inside the casing and that no liquids are spilled on or into the Instrument.
- 12.) The instrument should be serviced by qualified personell only, in the following cases:
 - a.) the powercable or powersupply has been damaged, or
 - b.) objects have fallen into the housing or liquids have been spilled on or into the Instrument (If this happens, do not power up the instrument! Contact Radikal Technologies)
 - c.) the Instrument has been exposed to rain or other strong excessive humidity, or
 - d.) the instrument does not appear to function normally or exhibits signs of change in operational behavior, or
 - e.) the instrument was dropped or the housing has been damaged.
- 13.) Don't attempt any repairs on your own!! All Service work should be handled by qualified repair specialists ONLY!

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Introduction

In the beginning there was a vision. The dream of an „All In One“ workstation with total flexibility, superior sound quality and almost unlimited expandability in regards to harddisk recording, sound design, flexible sequencing and a configurable user interface. To go from the initial rough idea to a finished CD within one ergonomically designed workstation. Now this is no longer just a dream. A revolution has taken place, and the real winner of this change is you - the user! Now a good sampler can be purchased for a few hundred dollars, one that has almost unlimited storage and provides direct access to high quality, studio-produced sounds. It's not even necessary to screw it into a rack. All that needs to be done is to put it into your CD-ROM Drive!

You can collect synthesizers using individual modules and integrate them in your sequencer program as virtual sound generators. Effect plug-ins provide the project with a quality and signal to noise ratio which will make revered Hardware Manufacturers break out in a cold sweat! Going on vacation? Take your whole studio along! It fits in any cars trunk.

Sounds too much optimistic? Sure, at the moment there are still some limitations regarding polyphony and it's not possible to open unlimited Plug-ins at once. Surely the next 6-12 months will pass quickly. For now it's okay to occasionally „bounce“. The use of virtual instruments and effects however is certainly a sound investment in the future. The usefulness of each program is growing multi-fold with each new Computer Upgrade.

Hardware freaks will of course complain, and rightfully so, that this is all nice and good - however that it's not a „real studio“ without faders and buttons! The Mouse simply cannot replace hands on access to real instruments, Mixers, etc.

We fully agree! This is why we have developed the Software Assigned Controller SAC-2K. In the future you will be able to enjoy the best of both worlds when using the SAC-2K.

About this Manual

This Manual consists of different sections. If you are working with a Software which already supports this Controller you will find the chapter „Instructions“ for operation with specific programs containing many tips for a variety of applications. You will find out in those specific chapters which other parts of the manual maybe important to you.

At the time of printing, not all of the programs currently on the market were available to us. This means that the according section of the Manual will be updated on a regular basis. You will receive further information as soon as additional Implementations are completed and the many other software companies that we are working with have completed their compliance to the SAC-2K.. This information will be available online at <www.raditec.de> as a PDF Document. In the case that you are not connected to the Internet, you can request such additions in printed form and they will be sent as they become available.

You will be able to find information about the general functionality of the SAC-2K in regard to software support in the first main section of the Manual. It is found within „general information regarding operation“. There you can find detailed information regarding the functions of the buttons and control elements of the SAC-2K. You will be able, in the future, to control many functions of the Software Sequencer without having to use either the Mouse or the Computer Monitor. This may take a little getting used to, however we are not trying to take these tools away from you during the transition period. Both modes of operation can co-exist peacefully.

As not all Software Programs offer complete support and implementation of the SAC-2K at this time, Radikal Technologies has installed a number of preset editors into the operations system of the SAC-2K. With the help of the generic MIDI Mixer it is possible for instance to control Logic Audio in a manner which approximates full implementation according to our Developer Instructions. You will be able to download an Environment for this mode of operation either from our website „www.raditec.de“ or from the download pages of **Emagic**. If you want to find out more about the generic MIDI mixer, you will find it in the relevant chapter in this manual („**the generic MIDI-Mixer Mode**“).

In addition, it is possible to control many Plugin-Instruments directly from the SAC-2K. In the chapter „**Use of Plugin-Editors**“ you will find out how to call up and use the Editors. In future updates we will incorporate FX-Plugins in addition to the Instrument-Editors in our control surface.

Radikal Technologies assumes no responsibility for the functionality in connection with Software programs described in this Manual. The functionality is largely dependent on the implementation in the Software programs, a process not controlled by Radikal Technologies. However, we work very closely with the Software Companies to enable the most complete and comfortable use possible.

Connections and Operation

Ideally, you should position your SAC-2K directly in front of your Computer Monitor, so you are able to view Parameter Changes on your Monitor if the need arises. The power supply is located in the left section of the Original packaging material. The power supply included is designed for 220-230V/50Hz (central Europe) or 110-120V/60Hz (USA) operation. If you intend to plug the unit into a different type of power outlet, please call our customer service department and we will assist you. You should connect the power supply with the SAC-2K first, using the appropriate small connector plug. After this connection has been made, plug the power cable into any available power outlet in your studio.

Connections between the Computer and the SAC-2K require an available MIDI Input and an available MIDI Output. Connect the MIDI Output from your Computer interface to the MIDI Input of the SAC-2K. The MIDI ports for the Controller are found on the back of the Instrument. Please look for the correct labels which name the specific ports. Connect the MIDI Input of your Computer with the MIDI Output of the SAC-2K. After completion of these steps it is safe to power up the SAC-2K. You will see the following message in the display of the SAC-2K:

**waiting for Host..
(or press [STOP] to continue)**

If you are using Music Software, which already supports the SAC-2K, you can now start the program and configure it for communication with the SAC-2K. Follow the instructions in the section of this manual which have been specifically written for your particular programs.

If you only wish to use our own included Plug-in Editors or the generic MIDI-Mixer mode, you can push the [STOP] button to reach the Generic Send-Mode directly. From this location you will be able to call up the Plug-in Editors. We refer to this mode of operation as the „Active-Operation mode“ of the SAC-2K. In this mode, all display information is being generated within the SAC-2K itself. When using Programs which provide a direct support for the SAC-2K, it will automatically switch to a „Passive“ („Slave“) mode.

When turning the unit on you will also see information in the right LCD display on the SAC-2K informing you of the current Software Version of the Controller. In case of technical questions please call our Hotline or if you want to discuss Program specific problems with one of the supporting Software companies, always look at the „Version“ Display. This information is vital for effective service, as the SAC-2K as well as the supporting programs are consistently being improved and updated.

General Instructions for Operation

This chapter describes basic operational concepts, which are designed to work when the SAC-2K it is supported by a Host software with implementation in accordance with our Logo Requirement Program.

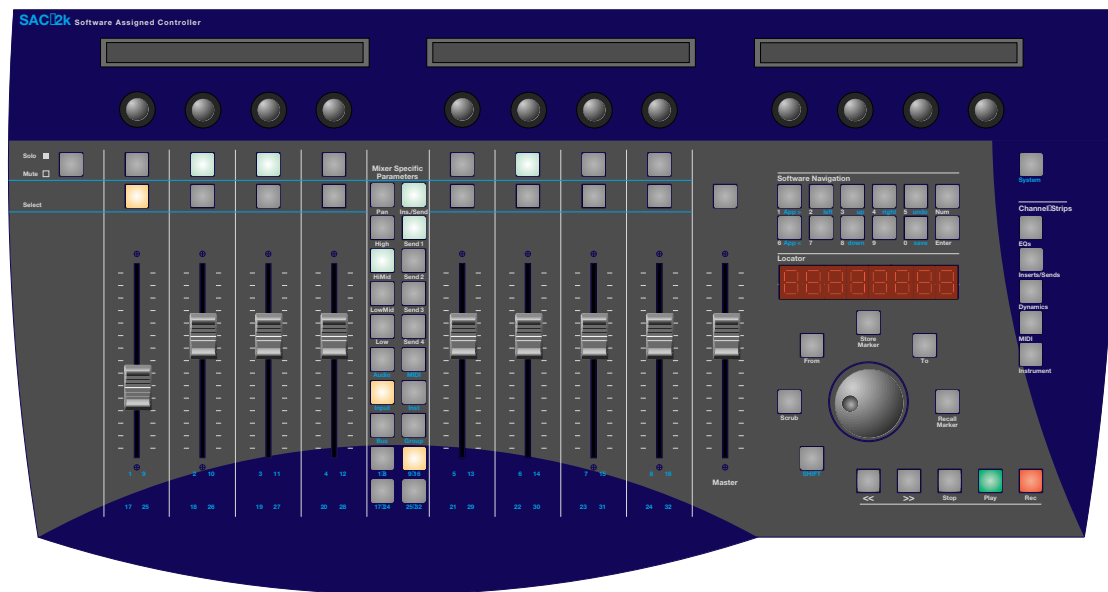
The SAC-2K hardware controller has been designed primarily for the operation of Audio and MIDI Recording Software. To make the operation as transparent as possible for you, we have provided most of the buttons and controls with labels, which will help you to find your way around the Controller's surface .

Depending which software program you are using, there exists the possibility that not all of the described features in this Manual have been implemented fully and in accordance with our operational concepts. The degree of support will continuously improve with upcoming software updates. This means that the controller support will increase with each new software version. Because of this „open“ design of the SAC-2K, you can look forward to future updates, which will improve the functionality, performance and power of your unit with each release.

While the HID (Human Interface Device) driver design of the SAC-2K has been welcomed with open arms by the Software Manufactures, none of their Host software has taken advantage of its possibilities yet. To take advantage of the USB ports in the future, we will supply you with an update shortly, in which the SAC-2K will be recognized as a USB MIDI Device at the computers USB Port. At that time, the existing implementations will have the ability to be used with USB as well. Until then, you can operate the SAC-2K via the MIDI Ports. The data transmission protocol has intentionally been kept on the minimal side regarding MIDI Controllers, so you won't have to deal with the disadvantages of reduced transfer rates when giving up one MIDI-Port.

Basic Operation Concept

In this chapter you will find a general introduction to the SAC-2K's general operational concepts. These were the basis for the design of this Controller. A more detailed analysis is provided within the chapters following.



The SAC-2K has the following control elements:

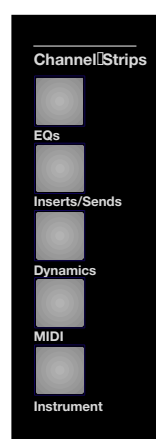
- 9 Touch-sensitive Motorfaders
- 12 Rotary-Encoders with 31 segment LED Display Values and knob switch
- 3 2x40 Letter Displays
- 1 SMPTE/ Locator-Display
- 9 Track-Select Buttons
- 8 Mute/ Solo Buttons
- 10 Buttons for selection of Mixer-Parameters (Pan, Send/Insert, Switch, Send/Insert 1-4, 4 EQ-Select Switch)
- 6 Buttons for track category selection
- 4 Buttons for Track Group Selection
- 12 Software-Navigation-Buttons, which can also be used for numeric input
- 5 Channel-Strip Buttons
- 5 Buttons for Transport Control (Play, Record, Stop, Rewind and Forward)
- 1 Jog Wheel
- 4 Marker Buttons
- 1 Scrub-Button
- 1 System Button
- 1 Shift Button

Aside from the Transport functions and Software Navigation, the main emphasis of the SAC-2K is placed on the direct control of Software Mixers and Sound Parameters via Encoders, Faders and Buttons.

In Mixer Mode, you will be able to simultaneously edit one parameter each for a group of 8 tracks or, by using the Channel-Strip Mode, change multiple parameters of one selected track. By touching one of the Channel-Strip buttons, which are located on the right side of the control surface, the designated parameters will be assigned to the twelve Encoders below the displays. By touching a button in the „Mixer Mode“ section, which is located between the two fader groups, the Controller reverts to the operation mode for simultaneous editing of a maximum of 8 tracks at a time.



**Parameter Selection
for Mixer-Mode**



**Parameter-Selection
in Channel-Strip
Mode**

You have two choices for selecting individual Fadergroups of 8 Faders each. First select a track category. To do this you push one of the 6 possible select buttons- [Audio], [MIDI], [Instrument], [Input], [Bus] or [Group]. For each of these categories there are groups of 32 Faders [1-8], [9-16], [17-24] and [25-32]. With these selection options, you can address a maximum of 5 groups of 32 tracks, which equals 160 addressable tracks. By selecting the [Group] switch, it is also possible to configure the 160 tracks into Fadergroups of 8 each, to enable the combination/grouping of category independent Faders.

The Master Fader is independent of all these settings. It is always used for the master level.

In addition to level control with the Faders and parameter controlling Encoders, the SAC-2K also has [Solo]/[Mute] and [Select] buttons. Their functions are always available, independent of the selection of the Channel-Strips.

The Channel-Strips offers many options to allow editing of any parameter of the Host software editable. Everything is imaginable: the clear illustration of all EQ parameters of a track, changes of the MIDI setting of a track, displaying of all audio related parameters and the editing of Plug-ins and software synthesizers. The Host-software will update the displays, Motor Faders and Encoders continuously via MIDI or USB-MIDI. In the following chapters we will describe the individual operation elements of the SAC-2K in more detail and give many tips and suggestions for the successful use of the SAC-2K's many possibilities.

The Motorfaders

The Motor Faders of the SAC-2K are touch sensitive. The host software receives a signal when a fader is touched. This way the controlled program can differentiate between an automated fader movement and user interaction. The value scale ranges from 0-255, which is the maximum value.

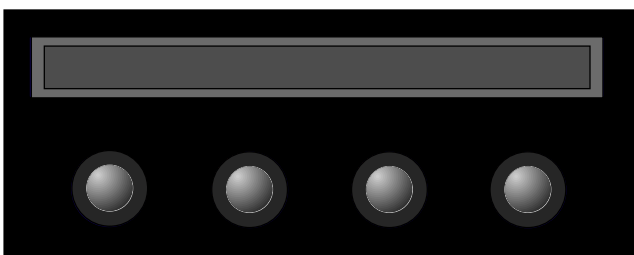
The Rotary-Encoder

The Rotary Encoders have display rings with 31 red LED segments. These LEDs can be addressed directly by the Host software. Using slow movements allows the values to be changed in increments of 1 step up and down. Fast turns allow smooth increases or decreases across the whole value spectrum with only one complete rotation of the Encoder. This allows use of the Encoder in a potentiometer like fashion.

Additionally, the Encoders have a Push-button function. This function is used by different programs in different ways. The following are some examples:

- 1.) The resetting of a parameter to its ' default value (i.e. Pan = Center).
- 2.) Turning on/off of a function (i.e. turning on/off E.Q.).
- 3.) Calling Up Alternative parameters.
- 4.) Selecting a routing target (i.e. Buss select of Effect Sends)

The Displays



Three 2 line x 40 character displays will provide you enough information that over time viewing at the Monitor will not be necessary. In Mixer Mode, tracknames will always be displayed. The „Name“ of the parameter will always be displayed as well as values and value changes during editing. The third display will often show alternate editing data. Under normal circumstances you can continue to edit parameters of the selected track. In Channel-Strip Mode the three displays together with the 12 encoders provide simultaneous access to up to 12 parameters.

The Transport Field



The transport field provides the usual functions such as Start, Stop, Record, Fast Forward and Rewind as found in your sequencer environment. Unless a track has been selected for recording within the sequencer, audio tracks will have to be activated for record. First, push the [Record] button and then select one or more tracks for recording. After this is done, push the [Play] button to start the recording.

Combinations using the Shift and Marker functions are possible. The degree this feature is implemented by the various Software companies will be found in the Manuals of the respective programs. We have made the following suggestions to the Software Companies:

- 1.) [Shift] + [Play] - Start in Cycle-Mode/Cycle on/Off
- 2.) [Shift] + [Rec] - Start Overdub Recording
- 3.) [Shift] + [FFW]- or [REW] - jump to next marker
- 4.) [From] + [Rec]/[Play] - Record/Play from beginning of the current marker
- 5.) [To] + [Rec]/[Play] - Record/Play from end of current marker

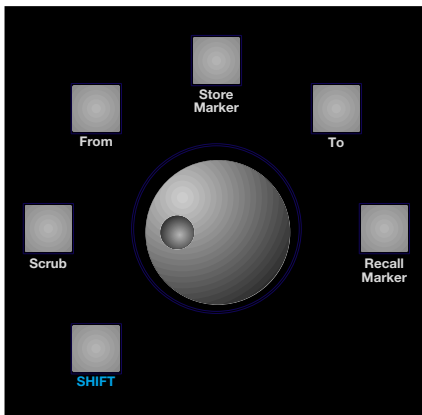
The Jog Wheel

The Jog Wheel is intended primarily to move the play-cursor arrow. In connection with the Scrub button it should be possible - depending on your Hardware - to monitor the Audio Material.

It is possible to mark an area/section by using the [From] and [To] buttons.

The Marker Functions

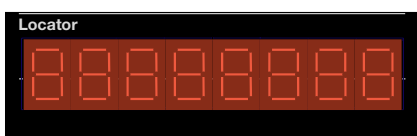
The Marker buttons are located around around the Jog Wheel. In connection with the Jog Wheels and the [Num] buttons it is possible to enter, call up and change markers. These marker positions are not being stored in the controller's memory. The Marker buttons just provide an alternate operating tool for the control of the marker functions found within in the Host Software.



To set a marker, push down the [From] button first and then set the desired start position with the jog wheel. Thereafter you may push the [To] button and set the end position of the marked section. While holding down the [Store] button you can select a number in the Num-Field to store the marker. Using the [Recall] button and the according number you can recall the selected marker. Please consult the manual of your sequencer program if you are not sure how many markers you are able to access with your program.

If your sequencer has a pre-roll time, we have provided a way to select the amount of pre-roll. Pressing [Shift]+[From] while turning the **Shuttle Wheel** enters the desired preroll time. This function can be very useful for Autodrop recordings. Replay will then start from your predetermined location. Starting the Sequencer via [Shift]+[Play] will automatically activate the cycle mode for the marked section.

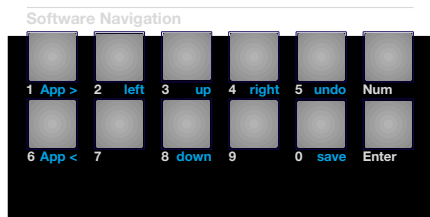
The Locator-Window



The locator window always displays the current bar or SMPTE position of the Sequencer. In most software programs you can determine the time or bar format to be shown in the display.

The Software-Navigation Buttons / the Num-Buttonfield

Above the Locator window are the buttons for software navigation and numeric value input. These buttons provide multiple functions. The default function is the selection of different screensets or window arrangements. When pushing the [NUM] button, the button field can be used for the input of numeric data. Use the [Enter] button to transmit the data.



When used in conjunction with the [Shift] button, the blue inscriptions will be activated. When the button field is used in connection with the [Shift] button the following functions are provided:

1.) [App<<](1), [App>>](6)

With the help of these buttons you can move back and forth between different applications. This is an expanded functionality which requires cooperation between software companies. Please consult the documentation of the program(s) that you are using, to find out whether this feature is already supported at this time.

2.) [left](2), [right](4), [up](3), [down](8)

These buttons move the focus between different objects. This could apply to parameters in a dialog box or motifs or sections on a track

3.) [undo] (5)

This button addresses the Undo function of the host program

4.) [save] (0)

This button calls up the Save Menu of the Host program

5.) [copy] (7)

This button is used for the copying of objects or parameter sets

6.) [paste] (9)

This button is used for inserting objects or parameter sets

The [Num] buttons in some programs are used for the quick selections of editor pages of the channel strips.

[Channel-Strip] + [Num] enable direct editor page call-up, if more than 12 parameters on a channel strip are required.

The Solo/ Mute-Button

It is possible to select the function of the [Solo]/[Mute] button with the button on the top left of the unit. When the switch is lit, the solo function is activated. You can mute either one or more tracks (Mute function) or listen to one or more tracks by themselves (Solo function).

The Select-Button

The [Select]-Buttons are provided for track selection. In connection with the Channel-Strips they determine the track to be edited. In connection with the [Record]-button they are used to activate a track for recording.

The [Select]-buttons change the contents of the Channel Strips. Depending on the selected track, the activated Insert Effects, EQs etc. for this track are automatically displayed. In most cases, this will eliminate the cumbersome opening and closing of windows.

The Shift-Button

The [Shift]-button is intended for addressing additional functions and is included in the description of the other buttons.

The Track-Category Selection



To facilitate navigation between the various tracks, the SAC-2K has Track-Category Selection buttons. For each category there are 4 groups of 8 tracks available, or a total of 32 tracks. The four groups of eight are selected with the Trackselect-buttons. The category „Group“ has a special function: Global editing of various track types across categories is possible. This function is very useful, for instance when a MIDI-Drum Part is being mixed in connection with a Audio-Percussion-Track. The assignment of tracks into a „Group“ can be programmed in the Host software.

As recommended in our Developer Guidelines, the selected Track Category can correspond to the displayed Mixer segment, depending on the User's preference.

Mixer-Mode-Parameters can also be adjusted in the corresponding Track-Category. MIDI-Tracks receive a MIDI specific assignment in addition to Volume and Pan. For instance, instead of EQs, the User will find Bank-Number, Program Change, Transposition and Quantizing. The Effect Sends and Inserts will address the internal instrument parameters such as, the NRPN Controls for Cutoff-Frequency, Resonance, Attack and Release.

At this time we'd like to provide a summary of the different categories:

- Audio:** Includes all Tracks, which contain digitized audio signals, or which are available for the direct recording of audio signals.
- MIDI:** MIDI tracks contain only MIDI data, which are to be sent to external MIDI instruments. A separate category for VST instruments or other native synthesizers not covered in this paragraph. For each MIDI-Instrument only one Mixer Channel is assigned - regardless of whether the MIDI events of the according channel occur on more than one sequencer track.
- Input:** All „Live Inputs“ are grouped in this category. These are tracks which are routed through the Mixer of the host software, but are not recorded in the Sequencer.
- Inst:** VST instruments and all other native synthesizer applications offered by the host software, are grouped in this category
- Bus:** Output busses and subgroups. These are often used for the „resource-saving“ insertion of Plug-in effects.
- Group:** The [Group] button has a special function. In reality this is not an actual a category, but rather a selectable combination of various tracks across different categories.

The Track-Group Selection



Four Eight-Fader-Groups can be addressed with the Track-Group button.

The „Mixer-Mode Parameter“



By pushing one of the „Mixer-Mode“ buttons you can leave the selected Channel-Strip-Mode and assign the chosen parameter to the Encoders. This makes it possible to edit the selected parameter on the eight selected tracks. Additionally, you can change four more parameters of the currently selected track in the third display. These four parameters will be relevant to the selected „Mixer Mode“ Parameter. The specific assignment is decided upon by the host software companies. Following you will find a brief explanation for each of the Parameter buttons:

Pan:

[Pan] assigns the Panorama position control to the Encoder. If a stereo track is selected it controls the Balance. The push-button function of the Encoder defaults the value to the center position.

Related parameters for the third display, in the case of Audio, Instrument, Input or Bus-Tracks are: Output routing, Input routing, switching between Mono-and Stereo tracks and also a Bypass function that applies to „sound changing“ parameters described hereafter.

For MIDI tracks it is possible - analogous to the routing - to select a MIDI Channel, MIDI Output and Bank Select number.

High, HiMid LoMid, Low:

These buttons directly select up to four EQs. The Gain parameter is assigned to the eight Encoders. The Encoders Push-button function will either reset the Gain parameter to the default value of 0db, or set the EQ to Bypass position.

The third display shows the parameters of the selected EQ. This includes: the Bypass on/off state, the EQ characteristics (Shelving, Parametric, Cut, etc.) and the setting of the filter frequency and quality.

Ins./Send:

This button changes the operation mode of the Send/Insert Select buttons. This enables the direct selection of four Effect Sends, as well as four Inserts.

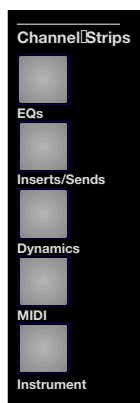
Send/**Insert Select:**

These four buttons select one of the Sends or Inserts 1-4 depending on the selection of the Ins./Send button. When addressing a Send the Encoders adjust the Send level, when addressing an Insert, the Encoders adjust the volume or relative level of the Source and Effect signal. Pushing the Encoder buttons will default Effect Sends to their normal position and Inserts to the Bypass position.

When selecting an Insert the third display will show the Plug-in selection as well as the most important parameters of that Plug-in. For more in-depth editing you can call up the Channel-Strip [Inserts/Sends].

When using an Effect Send you can select, in the third display, the Effects Bus to which the Effect Send of the selected track is routed to. As systems with more than 4 Effect Sends become available, this will allow the User to be able to assign four of the many possible Effect Sends to each track. Also, in the third display you can switch between Pre/Post.

The Channel Strips



The Channel-Strips enable the simultaneous editing of up to 12 Parameters. The division into different categories enables fast access to many different areas of the Software without tedious searches. In case more than twelve Parameters are offered in a category (for instance during synthesizer editing or when multiple Insert-Effects are used on a Bus or on an Audio Track), the User can call-up different edit pages by repeatedly pressing the category button.

Many pages have parameters in common, that you may want to use in some Host Applications, either on one complete track or solely for one object of a track. This is why the SAC-2K offers different selection modes when operating them. Select a track with the [Select] button. Then, by using the Cursor button in the NUM-Field, a single object of this track can be selected. You will find additional tips regarding the different Channel-Strip on the next page:

- EQ's:** This Channel-Strip assigns the parameters of the activated EQ's of a selected track to the Encoders under the display. You can prepare a Channel-Strip for activation and selection of the desired EQs in addition to the display of the EQ parameters. In case EQs have their own window in the host application, it can be opened automatically when being called up.
- Inserts/Sends:** These Channel-Strips enable the editing of Insert Plug-ins. The selection should be made depending on the selection of the Effect Sends or Inserts of the Mixer-Specific-Parameters. As an example:
You have selected Track 3 and the third Effect Send of this track. Let's assume you have routed Send 3 to the fifth Effects Bus. Now when you use the Insert/Send-Channel-Strip, the Plug-in Effects of the fifth Bus will automatically appear on the surface of the SAC-2K.
It is very helpful in this regard, that the Plug-in Window(s) appear(s) automatically during selection of the Channel-Strips on your computer monitor, lending visual support to the selection. In this case the window whose parameters are on the channel strip will appear in the foreground. When exiting or changing a Channel-Strip, these windows will automatically close. Of course this kind of functionality is largely dependent on the implementation of the Host software. Radikal Technologies has no control over this process, however according suggestions have been included in the relevant Developer Guidelines.
- Dynamics:** Some Audio programs have independent sections per Track for Dynamic-Processors, such as Compressors/Limiters. Also, some hardware products, like the Yamaha DSP Factory, have dedicated hardware. For this reason the SAC-2K has a dedicated Dynamics Channel Strip. 12 Parameters at a time are available and it is possible to display multiple editpages. It is also possible to program additional windows to open automatically upon entering Dynamics Edit Mode.
- MIDI:** This button provides access to MIDI parameters on the MIDI and Instrument tracks. Included are routing settings such as MIDI Channels and Outputs, and the selection of virtual Instruments. Also, MIDI parameters like Program Change, Panning etc..., as well as Playback Parameters like Quantizing, Track Delay, Transposition, etc...
- Instrument:** This button accesses the parameters of Plug-in Instruments and VST Instruments. It is also possible to use this Channel-Strip to edit connected MIDI-synthesizers. Additionally in the future it might be possible to control Mixer-Maps, which allow for direct editing. Another option is to address an additional Editor Program interacting closely with the Sequencer. (Example: Emagic's Sound-Diver via the Autolink or Rebirth via Rewire)

Information regarding use with specific programs

In this chapter you will find out how to set up software that has SAC-2K implementation to work with the SAC-2K. In the near future additional programs will be enabled to work with the SAC-2K. We will make according Manual additions available on our website „www.radikaltechnologies.com“. If you do not have access to the Internet, we will be happy to send you printed Manual additions at your request.

One common feature with all implementations is that the SAC-2K works in „slave-mode“. The software accepts your commands sent by the SAC-2K and will send messages back to the SAC-2K as needed. The SAC-2K stays passive. This means pushing a button on the SAC-2K does not automatically make it light up. The light activation of the LED's is completely controlled by the Software. If a particular LED does not light up after being pushed it's an indication that the relevant software is not utilizing this button yet. It's not an indication of a malfunction of the unit, but rather an indication of the scope of support functionality for the SAC-2K (or lack thereof). For the next set of scenarios we are going from the assumption that you have already connected the Controller with your Computer. If you are unsure how, refer to the chapter „connections and operation“.

Steinberg Cubase VST 5.0

Cubase VST is fully supporting the SAC-2K starting with Version 5.0. Since the implementation was completed towards the end of the 5.0 release, you won't find any information regarding this implementation in your Cubase Manual or in Cubase's Online Helpline - yet. However, the installation is not difficult and only has to be done once.

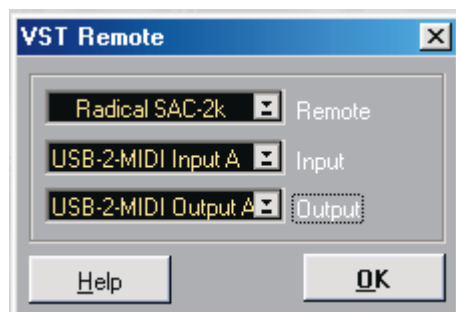
Cubase VST 5.0 PC contains a new hardware-dongle, which is connected to the Parallel-Port. This can potentially lead to problems with various MIDI-Interfaces, which also are connected to the Parallel-Port. For example in our tests, we were unable to get the SAC-2K implementation to work properly in connection with an Opcode 8 Port SE Interface.

Installation

Turn on the SAC-2K and start the Cubase VST 5.0 Program. Select „Remote Control Settings“ in the „Options“ Menu followed by the submenu „Settings“



When you select the entry „Settings“ you'll see the following selection box:



From this selection box choose as remote control „Radical SAC-2K“ and select the MIDI Input and Output with which the SAC-2K is connected. After the settings are completed, click on the „OK“ button of the dialogbox. The „Waiting for Host“ message on the SAC-2K will be overwritten and you can start to work.

Tips for the Operation of the SAC-2K & Cubase VST 5.0

Next select the VST Channel-Mixer 1 in the Instrument menu of Cubase. This should result in the VST Mixer of Cubase being displayed. Now when you touch one of the SAC-2K Faders, the Fader in Cubase should be moving along accordingly. Using the Trackgroup-buttons [1-8], [9-16], [17-24] and [25-32] you can assign the various Channels of the VST Mixer to the SAC-2K Faders. A small display window in Cubase will show you which fadergroup is being controlled by the SAC-2K at any time.

Next you may want to try the Solo/Mute and Select buttons of the SAC-2K. You can „Mute“, „Solo“ and „Select“ individual tracks.

If you haven't touched a button on the SAC-2K yet, you can use the Encoders under the displays to control the Panorama position.

Once you touch one of the EQ buttons of the SAC-2K, the gains of this EQ are assigned to the Encoders. The Encoders also have a push-button function. You can turn an EQ ON or OFF by pushing the Encoder button. You will find additional EQ Parameters of the selected parts in the third display. This means you can control all of the EQ Parameters without even having to open the EQ Window of Cubase. Of course you may want to open the window to confirm the control of the SAC-2K. Make sure you open the EQ window corresponding to the part selected on the SAC-2K!

You are not limited to editing only one EQ of a selected part, but are able to edit all EQ parameters of a part simultaneously if you wish. Just pick the desired part and select the Channel-Strip button [EQ]. The Parameters will then be displayed across the three displays. You can leave this Mode by pushing any one of the „Mixer-Mode“ parameter buttons.

The Transport-functions of the SAC-2K are active as well. You can use the Jog-wheel to select any song position and to start the Sequencer with the [PLAY] button. In case you have recorded Automation Data, all displayed information will be „updated“ when approaching a position. If the Automation Data doesn't update, confirm that the „Chase Events“ item in the „Options“ Menu of the Cubase program is checked.

SEK'D Samplitude

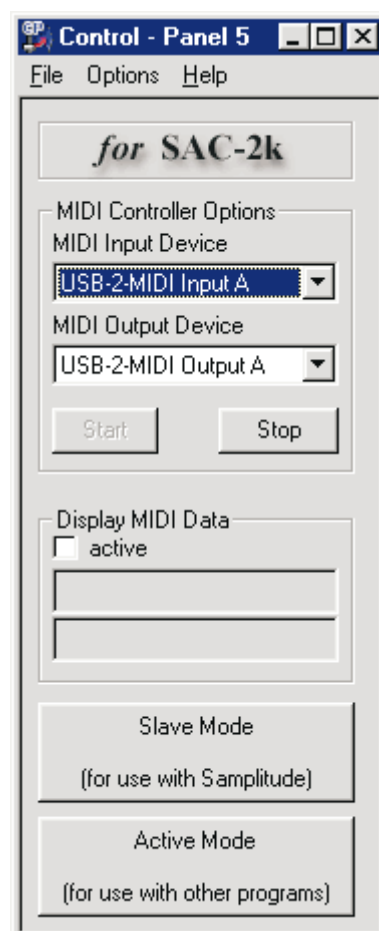
Samplitude 2496 and Samplitude Studio support the SAC-2K from Version Number 5.58 on. SEK'D implementation is accomplished with the help of an Add-On program, which is available with newly purchased programs. You will find the Add-On program on the Installation CD in the file I:\Accessories\TOOLS\Radikal_SAC_2K, or which you can download as an update from the SEK'D Vertriebs GmbH Server.

Installation

The Add-On Program is called CP5.EXE (Control Panel 5). During installation of the SEK'D program, this Control Panel is not automatically installed on your hard drive. Therefore, you need to copy the program from the installation CD to the Samplitude folder on your hard drive.

The installation of this program is necessary in addition to the Samplitude installation to ensure proper interaction between the SAC-2K and the Software. It does not matter which of the two programs you start first, however you should turn on the SAC-2K before starting the Control Panel program.

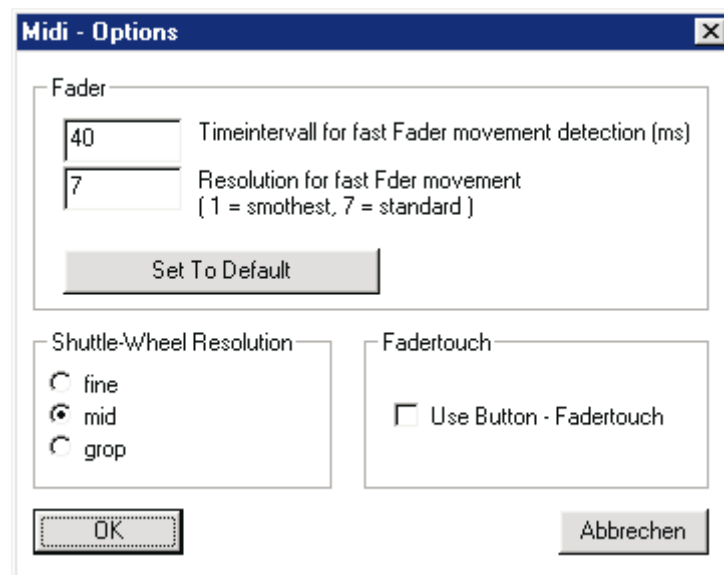
Once you enter the CP5.EXE command, you will see the following display:



First, set the MIDI Input and Output that the SAC-2K is connected to. For operation with the Samplitude software the SAC-2K automatically defaults to the Slave Mode. With the buttons in the lower section of the Control Panel you will be able to switch between the Slave Mode and Active Mode of the SAC-2K. This is a useful feature if you decide during a Samplitude session you need to work in another program. The SAC-2K in the active mode works as a generic MIDI control surface.

As a test you can now click on the „Display MIDI Data“ control window of the Software. When touching a control element on the SAC-2K, the according MIDI message will be displayed in the text window.

You also have the ability to configure the SAC-2K according to your preferences. To do so, please select the entry „Performance“ in the „Options“ Menu. This will prompt the following dialog-window:



In this Dialog box activate the entry „Use Button-Fadertouch“. There is no need to touch the other parameters, unless you want to change the Jog wheel resolution or the reaction time of the faders.

Now click the „OK“ button in the dialog box and start the Samplitude program

Tips regarding operation

At the time this Manual was printed the following features were already supported:

- 1.) Transport ([Start]/[Stop]/[Pause]/[FastForward]/[Rewind])
- 2.) Store Marker ([Store Marker] + [Number 0-9]), Call-Up Marker [Number 0-9] Mark Section between two Markers [Number 0-9] + [To] + [Number 0-9]
- 3.) Scrub Mode activation, forward and backward scrubbing
- 4.) Master Volume Fader

- 5.) Master EQ's on Encoders 9-11
- 6.) Volume and Panning Automation on Faders/Encoders 1-8
- 7.) Automation Activation via [Select 1-8]
- 8.) Solo/Mute 1-8
- 9.) PAN/EQ Reset using push button function of the Encoders
- 10.) Time display in SMTPE timecode and CD MSF

You will find a textfile by SEK'D in the CD Index of the CP5 Program, which provides additional information regarding operation.

Emagic Sound-Diver

By using the Emagic Sound Diver program it is possible to edit practically any synthesizer using the Encoders and Faders of the SAC-2K, provided you are using Sound Diver version 3.0 or later.

Installation

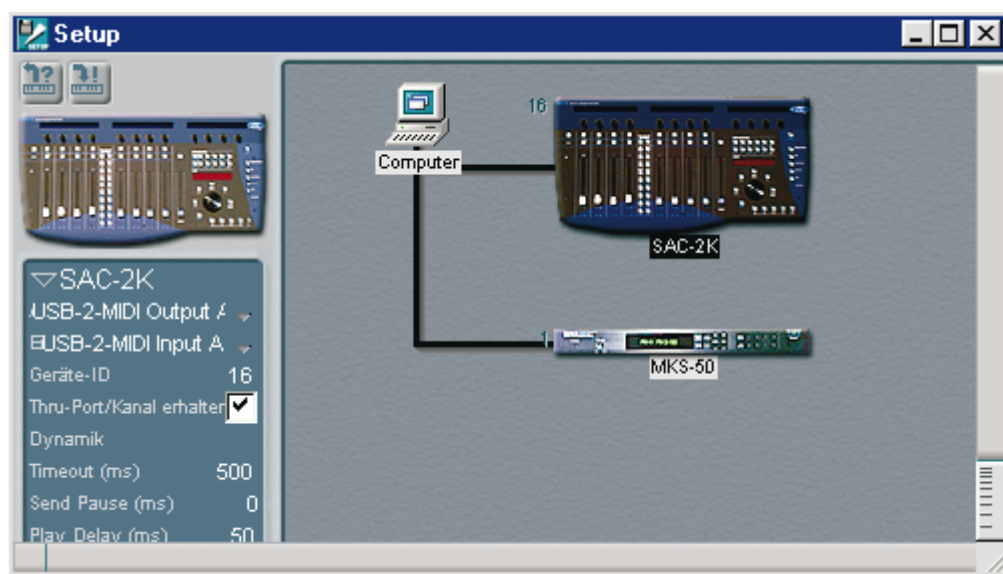
If you're already familiar with Sound Diver, you shouldn't have any difficulties with the installation of the SAC-2K. The installation procedure is similar to the process used for adding new synthesizers or effect units.

In the pull-down menu select „window“ first and then the menu-entry „Open setup“. Once the window opens you will see a new sub-menu in the windowframe entitled „New“. Activate this menu and select „Install“. You will see a windowlist from which you can select the SAC-2K.



By pushing the „Scan“ button in this window, Sound Diver automatically assigns the MIDI Input and MIDI Output the SAC-2K is connected to. When the message window „Retrieve storage contents of the detected instruments?“ appears press „Cancel“. There is nothing to retrieve here.

After successful installation, the SAC-2K appears as a new Device in the Setup window.



Now you can start assigning Encoders and Faders of the SAC-2K to the synthesizers of your choice.

Tips for Operation

In order to assign control elements to the synthesizer or Effect parameters, first open the desired module with a double click. The Bankmanager for the selected menu will appear. In this menu you will be able to call up the respective parameter Editor. Then, open the SAC-2K module by double-clicking the „miniaturised“ display of the set-up window. Arrange the two windows - the parameter editor and the open SAC-2K Editor - on your monitor in a way that allows you to view the control elements of both modules simultaneously.



Move the Mouse over a control element of the displayed SAC-2K surface and click the mouse button (left button on a PC Mouse). The selected control element will be displayed highlighted. While holding down the mouse button you will now be able to pull a virtual cable from the control element to one of the parameters of the parameter Editor. Once the arrow is positioned over the desired parameter, you can let go of the mouse button. The connection is in place and the Encoder and Fader assignments will be automatically shown in the display windows of the SAC-2K. You can also name the displays yourself. In order to do so, double-click on the desired position of the displays in the SAC-2K window. You will now be able to enter text information with your computer keyboard. Additional information regarding SAC-2K implementation can be found in the Sound Diver manual.

Use of Plugin Editors

The SAC-2K contains a set of integrated Editors to address VST Instruments - even without completed implementation of Channel-Strip support in the Host software. Some virtual instruments such as the Pro 52 by Native Instruments exist as independent versions for operation without host software. The integrated Editors can be used for this purpose.

You can access the Editors of the SAC-2K in „passive“-mode - in operation with a Host software - as well as in „Active“-mode, which you can initiate with the [STOP] button after turning the unit on. In all other respects the operation is identical. In cases where the Host software already supports the Channel-Strips, the Editors automatically are replaced by the transmitted Parameter assignments. By double-clicking the [Instrument] button you can force a call-up of the integrated editors. You will appreciate this feature, especially if you prefer our Editors to the ones generated by the Host software.

Click the [Instrument] Button to reach the Editors. This will place you automatically in the Editor section of Native Instruments Pro-5/52. You can now access various Editor pages by repeatedly pushing the [Instrument] button. With every push of the [Instrument] button the next Editor page will be accessed. Using the [Shift] button in conjunction with the [Instrument] button scrolls the editor pages in decreasing order. Using the [Instrument] button together with one of the [NUM] buttons 0-9 dials up Editor pages directly.

To dial up other Editors hold down the [Instrument] button and select the Editor with the Jog wheel. The following Editors are presently supported:

- Native-Instruments Pro Five
- Native-Instruments Pro 52
- Native-Instruments B4
- Native Instruments Premium Library SH2K
- Native Instruments Premium Library Many Mood
- Native Instruments Premium Library Three Osc
- Native Instruments Premium Library Me2SaEM
- PPG WAVE 2.V
- Steinberg Model E
- Emagic EXS-24
- Emagic ES-1
- TC-Works Mercury 1

More instrument Editors will be offered shortly! New additions can be downloaded from our website as they are completed.

The generic Mixer Mode

The SAC-2K has a generic MIDI Mixer that uses MIDI Control Change messages mode for use with programs that do not support the SAC-2K directly. To activate this mode, turn the SAC-2K on, and then press [STOP]. This switches the SAC-2K from "Slave" mode to "Active" mode (You can switch modes at any time, from the [System] menu. The [System] menu is available in any operating mode).

Refer to the following table for the generic MIDI mixer's message allocation. If your host software has a 'learn' function, or can be mapped manually, it is possible to create customized MIDI assignments.

At the time of this printing, the MIDI implementation chart for the generic MIDI mixer is not yet available. You will be able to find this chart table as a .pdf document on our Website at: www.radikaltechnologies/english/support.

The generic Audio Mixer in connection with Logic Audio

Also at the time of this writing, Emagic is putting the finishing touches on a version of Logic Audio that will support the SAC-2K directly. In the meantime, we have provided you with a special Environment that enables you to use the SAC-2K with Logic Audio. This Environment requires Mac version 4.51 and higher, or PC version 4.61 and higher.

Before you can operate the SAC-2K with Logic Audio, you must download the Logic Audio support files from our Website: (www.radikaltechnologies.com/english/support). This file includes a Logic Song as well as a Logic Preferences file.

The following functions can be controlled in this implementation: Volume, Pan, FX Sends, EQ Settings, Solo, Mute, Transport functions, Jog Wheel, Screen Set switching (Num keys 1,2,3... 9,0), Save(Shift+Save), Cycle mode at (Shift+Enter), Channel Strip EQ, Channel Strip FX Sends and Instrument Editors for the EXS24 and ES1.

To set up your SAC-2K for use with Logic:

- 1) Connect the MIDI input of your MIDI interface with the MIDI output of the SAC-2K.
- 2) Connect the MIDI output of your MIDI interface with the MIDI input of the SAC-2K.
- 3) Power on the SAC-2K and press the [Stop] button to put the SAC-2K into 'Active' mode.
- 4) Press the [System] button on the SAC-2K. Under the first Encoder of the third display is the System operating mode parameter. Select [Mode:]>Logic.
- 5) Start the Logic Audio program and load the Song that you downloaded from our Website. If you use another audio interface, a dialog box appears in which Logic Audio asks whether the Song for your audio system has to be converted. If you acknowledge the conversion, the

Environment is adapted automatically to your audio configuration.

6) After you load the Song, you must customize the Environment slightly. You must assign which MIDI input and output ports your SAC-2K is connected to within our custom Environment. Press the [1] button on your computer keyboard to open the Environment window. Position the Environment so that the visible area of the window is now positioned underneath audio tracks 1-16 of the mixer. Then locate the multi-instrument 'object' and a 'transformer' object.

7) Select the multi-instrument object. If the Environment objects parameters are switched on you can now connect the MIDI output port of this multi-instrument. This object makes the MIDI output available, to which with the MIDI input of the SAC-2K must be connected.

8) Next, connect the cables used for the MIDI input port of the "physical input" to the input of the transformer object. If the cables are not visible, enable them by checking View>Cables from the 'View' menu. On the left side of the transformer object are the physical MIDI inputs. Connect the SAC-2K's MIDI output port to these inputs. This completes the Environment setup.

Many of the SAC-2K's button functions are directly assigned to the key commands of Logic Audio. These settings can be imported from the downloaded files. They can also be created by using MIDI learn functions. To load the preset key commands, proceed as follows:

- 1) Open the 'Key Commands' window by selecting Options>Settings>Key commands.
- 2) From this window select Options>Import Key Commands
- 3) Open the downloaded Logic Preferences file and import the Key Commands settings.

The SAC-2K should now control Logic Audio.

Beginning with Logic Audio 4.51 (Mac) and 4.61 (PC), the SAC-2K can display parameters edited in the Logic mixer. Pressing the Category buttons or the Channel Group (Bank) switches cause the Faders to update.

To record automation data, proceed as follows:

- 1) Select the desired Fader group and the Track group on the SAC-2K.
- 2) Select the Logic track you wish to record automation data on. Select the playback object track responsible for the selected mixer area. For example, to record automation data on the first 8 Audio tracks, you must first select the Playback object for Audio tracks 1-16 in Logic Audio. In our Screen Sets, which can be selected with the [NUM] buttons, the Mixer window is tiled with an Arrange window, so the assigned Playback object is always visible.
- 3.) Press [Shift]+[Record] on the SAC-2K. The flashing [Select] buttons now display that automation data is to be recorded. If you look closely at the Environment, you will notice that [Shift]+[Record] actually modifies the Environment wiring. The MIDI input, to which the SAC-2K is connected, is now assigned to the sequencer input.
- 4.) Press [Record] to start recording automation data. When you're finished recording automation data, press [Stop]. After recording the automation data, simply press [Shift]+[Record] again. This will switch the Environment wiring back to the default setting for playback control.

Tips and tricks:

The Mixer Mode

In Mixer mode, you select parameters for editing with the Encoders by pressing any one of the Mixer mode buttons. This selects the same parameter across all 8 channels. You can also press the Encoders to activate push-button functions. They can be used to revert parameters to their default values. For example, pressing an Encoder returns the Panorama control to the center position. The Encoders can also function as toggle switches, turning on or off EQ's, FX Sends, Inserts, etc... The Channel's Select button is used to Mute or Solo tracks, depending upon the status of the Solo 'shift' button.

The plugin-instrument editor pages

The SAC-2K has Instrument editors for Emagic's virtual instruments, the EXS-24 sampler and ES-1 synthesizer. In the Mixer mode section, press the [Inst] button to set the SAC-2K's Channels to the Logic mixer's Instrument section. Select the first Instrument on the Logic mixer and select the EXS-24 Sampler as the Instrument. On the SAC-2K, select the first Channel of the first instrument Channel group (Bank). In the Channel Strip section press the [Instrument] button. The ProFive editor appears. To change editors, keep the [Channel Strip] button pressed, and select the EXS-24 sampler with the Jog Wheel. The parameters of the EXS-24 sampler can now be edited with the SAC-2K. In any virtual instrument mode, additional banks of 12 parameters for that instrument can be accessed. In the Channel Strip section, pressing the [Instrument] button increments the banks while holding the [Shift] button and pressing the [Instrument] button decrements the banks.

The EQ-Channel-Strip

In the "EQ Channel Strip" mode, you can edit up to 4 bands of EQ on the selected Track. First press [Audio] button in the Mixer mode category and then select the Track to be edited with the [Select] button. Next press the [EQ] button in the Channel Strip section. The three displays now show Logic's 4 band EQ parameters.

Switch the screen sets

With the [NUM] keys you can switch the Screen Sets contained in our Demo song. The Screen Sets enable a switching between the Arrange-window, different Mixer views and various other windows. The [Num] keys select screensets above from Screenset-Nr. 12.

The ProTools Mixer Mode

At the time of this writing, the SAC-2K's Pro Tools implementation is not yet complete. However, the most important parameters can be edited with the SAC-2K. In the Peripherals menu of Pro Tools select the option, "MIDI Controller". In the following dialog are item selectors for the available controllers as well as their MIDI input and output ports. Select "HUI" in the controller selector box, and select the MIDI ports that your SAC-2K is connected to. The

SAC-2K then switches automatically to the Pro Tools mode. If it does not automatically switch, re-check the MIDI connections and controller selection in the Peripherals dialog box. Additionally, check the MIDI menu in Pro Tools. The selected MIDI ports must be enabled for ProTools.

Switch Pro Tools keyboard mode to "Classic". Now you can operate Pro Tools with the SAC-2K. More information about this setup follows, although first make sure it works at this level.

Tips and tricks

Track-Selections

Track selection in Pro Tools does not directly recognize the difference between SAC-2K Track categories. Therefore, the selection of the Tracks functions differently than with the official SAC-2K implementations. The tracks can be shifted with keys [1-8] and [9-16] in banks of eight Fader Groups ascending or descending in the visible area of the mixer. The selected Fader Group is outlined in colors on the ProTools mixer. With keys [17-24] and [25-32] you can shift the SAC-2K Fader Group window in 1 Track increments.

Accessing different Pro Tools windows

The [Software Navigation] keys open and close different windows of the Pro Tools software or bring that window into the foreground. The [1] and [2] switches between the mixer and trace display and [7] opens the Plugin windows.

Other applications

The ProTools setting of the SAC-2K also works with several other programs. If you're a MotU's Digital Performer or Soundscape user, you can operate our CONTROLLER with their [Proto] mode also.

Firmware Upgrades

If you properly register your SAC-2K with us, you will receive regular information concerning software updates via e-mail. As the operating system is resident in a flash ROM, software updates can be accomplished easily. Send in your registration form and enjoy future updates and add-ons free of charge!

Deactivating the Motor-Faders

It is possible to deactivate the movement of the motor-faders. This may be necessary during the mastering or tracking process, when you have already adjusted all your fades and settings and it is necessary for your studio to be absolutely quiet, without the noise of the motor faders. You'll find the parameter for activating/deactivating the motor-faders inside the system-menu

of the SAC-2K. Press the [System]-button. The following message will appear at the third display:

System Menu
Mode: Proto Touch: Soft Motor: On

With the fourth encoder of the System-Menu you can select between „Motor: On“ and „Motor: Off“.

Adjustment to the Touch-Sensitivity Logic

The touch sensitivity of the faders can be adjusted to one of two settings depending on your requirements. Once you have done your setting, push the [System] button. You will see the following message in the third display:

System Menu
Mode: Logic Touch:Soft Motor: On/Off

The parameter for the Touch Sensitivity setting is on the third Encoder under the third display. You have two options available:

- Hard:** The SAC-2K only sends fader values when the sensor register being touched
- Soft:** The SAC-2K evaluates additional fader movements, which can be interpreted clearly as User intended.

Tips for developers

If you are interested in the development of Software Intergration for the SAC-2K please contact our design department. You can reach this department under the following e-mail address: „developer@raditec.de“.