Introduction

This document is intended for console operators that have at least a basic existing knowledge of audio mixing consoles, including mix busses, mix-minuses, cue , IFB, "riding gain," and other common terms that apply to audio mixing consoles.

The SAS RubiconSL was designed primarily to be an on-air console for radio, but, because of its extremely functional feature-set and flexibility, has found acceptance in radio production, sound reinforcement, and television audio as well.

The RubiconSL is a router-based console which makes it extremely configurable – the layout and functionality of the console has been tailored specifically to your operation. The options that will have been configured by your Engineering Department and SAS will include the following aspects of console operation:

· Functionality assigned to each button (source selects, buss assigns, IFB, cue, etc)
· Options available on each fader (Router select, mode select and pan control)
· Assignment of Mix Minus Busses for hybrids and codecs
· Logic and machine control settings (remote starts, speaker mutes, timer resets, skimmer control, etc)
· VU Meter configuration
· General Purpose Button programming

Since each console can be customized to specific applications, what follows is a guide of a typical console setup. Your console may not be exactly as described in the following sections so please consult with your Engineering Department for any items that appear different.

The RubiconSL was designed to be very user-friendly, simple and familiar to its operators with a straight-forward user interface. All the major parts of the console are quickly identifiable and console operations will be similar to what you are used to with your previous studio setup. Fader modules are equipped with On/Off buttons, source select button(s), buss assign buttons, and a cue button. The monitor section will include controls for headphone and monitor speaker levels as well as buttons used to choose which audio feeds the speakers and headphones. The only aspect of the console that may not be immediately intuitive will be the purpose of the rotary knob on each module and we'll cover that in the following pages.

RubiconSL
Input Module

Section 1 - Operational Overview

INPUT MODULE

The RubiconSL is comprised mainly of input (or fader) modules. Each input module controls the source currently assigned to it; you have control of what busses that source is assigned to and the level of that source. Let's look at a typical input module in detail, starting with the bottom third of the module.

ON / OFF buttons and Source Display

The large, button-guarded switches at the bottom are always the ON and OFF buttons associated with the currently selected source. The on/off state controlled by these buttons is the "switch" we refer to later in the terms pre-switch and post-switch.

The Alphanumeric display, just above the ON/OFF buttons shows the name of the currently selected source on the module. It is also used when accessing advanced features like router-source selection, input channel mode control, and left/right PAN operations, if engineering has enabled these features on the module.

ON/OFF and
Alpha Display

The Fader:

The linear fader (a.k.a. pot, which is short for potentiometer) is mostly self-explanatory.
This is the fader referred to in the terms pre-fader and post-fader later in this document. You should know that the fader and all of the other controls on the console are just controls. There is not any actual audio going through any of these controls. In the fader's case, it acts as a position sensor, telling the console's brain that you want more or less of the audio being controlled by the fader. All audio manipulation, including level control and mixing, are done in DSP within the RIO and/or 32KD.

Buttons 7 & 8:

All of the smaller buttons on the input module (with the exception of the Take button next to the rotary knob) are programmable. Each of these buttons can be used for any of the following functions: source selects, buss assigns, cue, IFB, talkback, intercom, relay control, opto control, cough or left as an unused button. We'll discuss a typical console configuration in this document but remember, since any button can perform any function, your setup may differ from what is described here.

Buttons 7 and 8 (between the fader and the ON/OFF buttons) are usually set up as CUE and IFB buttons. However, they can be configured as anything that the upper five buttons can be.
For example - On the input module controlling the Operator's Mic it is common for buttons 7 and 8 to be set up as something other than CUE and IFB. Often these will be set up as COUGH and Talk to Producer (or newsroom or whomever), as the CUE function on a local MIC is normally disabled to prevent feedback, and the IFB function generally talks to a headphone or monitor associated with the source – in this case the Operator doesn't need to talk to himself or herself. More on IFB in section three.

Fader and
Buttons 7 & 8

Buss Assignment Buttons (buttons 3 - 6):

At the top of the module are six buttons and a rotary knob. The four buttons below the rotary knob are generally used as **Buss Assigns** – pressing the button assigns the source selected on the module to the bus associated with the button. Different customers like different bus names – some may choose to have their busses named Program 1, Program 2, Record and OFFLINE. Others may call those same busses Program, Audition, CDR, and SpkrPhn Feed. Whatever your busses are named, they generally are intended to feed audio to one of the following things: an airchain for transmission, recording devices or editors, codecs, hybrids, monitoring equipment, meters, headphones, speakers or IFB systems. Customers are encouraged to name their busses in a way that spells out the purpose of the bus. Bus types supported in the RubiconSL include post-fader/post-switch **Program** busses; post-fader/pre-switch **Offline** busses; pre-fader/pre-switch busses like **CUE** or PFL, and **Aux** busses that can be any combination of pre or post switch and fader. Buttons not used for Bus Assigns can be programmed (during configuration) to be Push-To-Talk IFB buttons, cough buttons, direct relay / opto controls, or additional source select buttons.

Buss Assigns

The **Source Select** button, **rotary knob** and **Take** button:

Generally the top button is set up as a Default-Source Select – think of it as a memory preset on your car stereo, or the "A" input button on your current console. Pushing the top button will take the source named on that button, (i.e., Mic 1, CD2 or Instant Replay) and designate control of that source to the input module. As soon as the Source Select button is pressed several things happen: the alphanumeric display will change, displaying the newly selected source; the previous source is removed from any active busses; and the new source will be assigned to any active busses. If a source is actively being used (turned on and assigned to a buss) then source selection can be disabled, preventing someone from accidentally messing up a program or feed.
The Rotary Encoder can be thought of as a Select knob, a kind of super-reliable, many-position switch. It is used along with the Take button for advanced console features: the selection of router sources, Channel Mode settings and Pan controls, all of which are described in section 2.
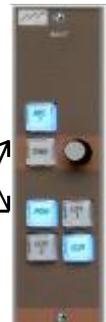
Default Source
Selected.

CONTROL ROOM MONITOR MODULE

The control room monitor module is generally located within a couple of slots of the right edge of the board – although it CAN be placed anywhere in the console frame. This is the module that controls what the operator is listening to in the control room monitor speakers and the headphones.

Control Room
Monitor Module

Buttons 1 through 8:

The eight buttons near the top are all Hot-Key source selects for monitoring. Pressing any of these buttons will assign the selected source to either the monitor speakers, headphones or both. See the Speaker and Headphone button section below for additional details.

Monitor Display, Rotary Knob, and Take button:

Similar to the Rotary encoder and Take button on the Input Modules, this control and associated alphanumric display allow you to monitor sources not present on your buttons, and also to do monitor mode control (similar to the channel mode control on the input modules). See Section 2 of this document for details on this functionality.

Speaker and Headphone buttons:

When the Speaker button is pressed and illuminated, the Alphanumeric display will show the name of the source being heard on the monitor speakers. To change the source, either press any of the 8 source select buttons or use the Rotary Encoder and Take button to pick another source. As soon as a new selection is made, the monitor speaker audio will change to the new source. The Headphone Button works the same way – when the Headphone button is pressed and illuminated, the Alphanumeric display reflects the source being routed to the Headphones. Changes to the headphone audio is accomplished in the same way as changes to the monitor speakers.

If the Speaker and Headphone buttons are pushed alternately (without changing any of the sources), the Alphanumeric display will change to display which audio source is being fed to each destination.

If you want the headphones to "follow" the monitor speakers, i.e. the headphones and the monitors will always have the same source routed to them, simply hold down the speaker key while pressing the headphone button. Now, both the Speaker and Headphone buttons are illuminated and any audio source changes will apply to both the speakers and headphones.

Finally, if you want to monitor more than one source at a time, that too is possible. In this case, hold down the button of the destination (either Speakers or Headphones) while pressing as many of the source select buttons as you want. In this mode, the Alphanumeric display only reflects the name of the first source chosen, you will need to look at the illuminated lights on the source select buttons to see the other sources being mixed together.

Talkback and Cue Level Controls:

The Talkback Control is for adjusting the level of the Talkback audio (intercom-style from other locations), which feeds into the Operator's headphones – and often into the cue speaker(s) as well. The most common application for Talkback is receiving microphone audio from talent, news, or other locations activated by Push To Talk buttons at their positions. Talkback can also be activated by remote hosts via codec relays or other logic if configured by engineering.

The Cue Level Control adjusts the volume of the Cue speaker(s). This control does not affect the level of CUE being fed into the headphones when the HP CUE feature is in use (see below).

When either the Talkback or the Cue level control is adjusted (or just pressed down to check status), the alphanumeric display shows a bar graph indicating the current level and showing you the adjustment as it is made.

HP CUE button:

The HP Cue button routes CUE bus audio into your headphones, in addition to whatever you are currently listening to.

Speaker and Headphone Level Controls:

Independently control the Monitor speaker level and the operator's headphone level.

CONSOLE CONTROL MODULE
Usually (but not always) located in the right-most slot of the console, the Console Control Module serves a variety of functions.

Meter Control:
Most consoles are equipped with a meter bridge containing 1, 2, 4, or 5 stereo Vu Meters. Engineering determines which of these meters have fixed assignments and
which are switchable to meter other sources. Single meter systems are usually configured as switchable, while 2, 4, and 5 meter systems are usually a mix of fixed meter assignments and switchable meters. The rotary encoder, alphanumeric display, and take button on the Console Control module allow for selection of buses or other sources to be metered on a switchable meter. If you have two (or more) switchable meters you can select which meter you are controlling as well as what source or bus is being fed to the meter with these controls. See Section 2 (page 6) for details on using the rotary knob and Take button for meter source selection.

Programmable Buttons:
The group of 8 buttons in the middle of the module are programmable general purpose buttons. These have been programmed by the Engineering Department for special functions needed in this studio. Some of the common uses of these buttons are
  · Source select buttons for the switchable VU meters
  · Talkback or Intercom Buttons
  · EAS Activation
  · Profanity delay Control
  · Satellite or other router switching
  · Triggers for Automation events
  · Studio path switching (for back-up air use, offline production, etc)
Please consult with your Engineering Department to determine the use and function of any of these buttons.

Timer Control Buttons:
These three buttons are dedicated to controlling the Timer functions (for the meter bridge-mounted timer module).
TIMER AUTO Start: Enables auto-reset of the timer for selected sources when the Input Module ON push-button is pressed.
TIMER START: Starts the Timer at zero
TIMER STOP: Stops the Timer

SECTION 2 – Advanced Features

NOTE:
Changes made to an input module's Mode or Pan settings only affect that input MODULE. Different sources, subsequently brought up on the same input module will have the same settings applied to them, but only while they are on the same module. If the same source is brought up somewhere else in the facility, the source's default channel mode, etc. will apply as well as the Channel Mode and Pan settings of the new input module.

Active Source

Input Module Rotary Encoder, Take Button, and Alphanumeric Display
Normally the Alpha display shows the source currently selected to the fader module. There are three advanced functions that can be made available on the RubiconSL Console, (Source Select, Mode Control and Pan) and are accessed through the Rotary Encoder and associated Take button. By turning the Rotary Encoder you will scroll through the three choices, press the encoder (it's also acts as a button) when you are on the choice you want. If you make an error and select the wrong function, press on the encoder again to return to the list of choices. Alternatively, you can wait for 10 seconds without making a selection and the display will "time out" and return to displaying the name of the source selected to the input module.

Remember, that access to any of the advanced functions can be disabled on a fader by fader basis so if you don't see everything described here, contact your Engineering Department for assistance.

Dialing up a source

SOURCE SELECT - Input Module and Control Room Monitor Module

When you dial the rotary knob to Source Select and press the knob, you get a display that looks like this. ──────
The display shows the available sources (as determined by engineering) as you turn the knob. Pressing the TAKE button (flashing to indicate that the source is pending) will select the new source for the fader to control. The old source is simultaneously removed from whatever busses it was assigned to. Engineering may opt to disable source selection when a current source is turned on, or altogether, on a fader by fader basis.

Press Take to make the change.

You will notice that when you press the source select button to assign the default source to the fader, the source select button remains illuminated. When a different source is assigned to a fader using the Source Select menu, the light on the Source Select button is extinguished indicating the default source (the source assigned to the button) is no longer assigned to this fader.

MODE CONTROL - Input Module and Control Room Monitor Module

When you dial up and select the Channel Mode menu the current channel mode is displayed. Turning the Select knob allows you to choose other modes. No changes are made until you execute the change by pressing down on the rotary encoder knob. Your choices are **Stereo**, **Reverse** where left and right are swapped on the console, **L+R Mono** (sum) into both channels on the console, **Left** channel of source to both channels on console, and **Right** channel of source to both channels on the console.

Mode Control   Stereo Mode   Mono-Sum Mode

PAN - Input Modules Only

Centered

Panned mostly Left

Panned partially Right

Pressing the knob after dialing up the PAN menu brings up the display on the right. Turning the knob now will pan the audio left or right. Be aware that PAN ia a real-time control, taking affect as you turn the knob. Pressing TAKE while panning will immediately jump the pan setting back to center.

The indicator letter and number show you how far left or right you've panned the channel on a Left18 to Right18 scale, with 0 being centered (just a C). To exit Pan mode, press the rotary encoder knob. Unlike source selection which can be disabled when a channel is turned ON, pan control works even if the source is ON.
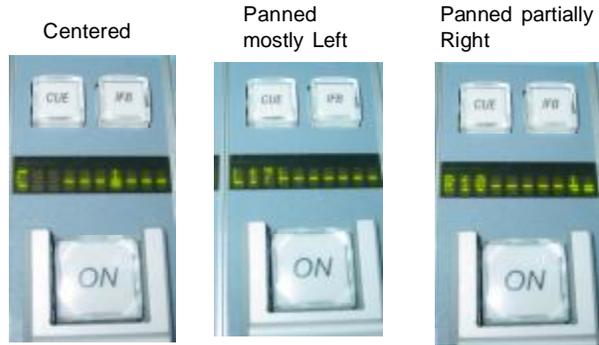
CAUTION – All of the above are advanced features. Since the status of these settings is not immediately apparent without scrolling through the display settings, it is easy to configure a nonstandard setting for a specific need then forget about the setting when the need is past. For this reason, these features may or may not be enabled (on a module by module basis) on your console. If you feel you need to use a feature that is not enabled on a particular module, talk to your engineering department about it.

CONSOLE CONTROL MODULE – Meter Source Selection

One or more of your meters may be fixed on a specific console buss or router source as decided by engineering. Other meters on your console may be "programmable," controlled by the dial-up display on the Console Control Module. In the idle state the display will show the meter being controlled.

If you have more than one "programmable" meter, you can turn the knob to find other meters you can control. When the meter you wish to control is displayed, press the rotary encoder knob to enter source selection mode. Scroll through the available sources and press the TAKE button when you find what you want.

Choose the meter

Select the Source then press Take.

In addition to the dial-up controller, engineering can assign some or all of the eight general purpose buttons as quick source selects for meter sources - pressing quick select buttons will assign the predefined "button-source" to whichever meter is displayed in the alphanumeric display.

SECTION 3 – Other Advanced Features & Controls

NOTE: IFB and Machine Control features will be described in general terms as the implementation will vary greatly from site to site.

IFB – Interruptible Fold Back refers to a non-broadcast output that is generally being monitored by someone in the facility or remotely, which can be temporarily interrupted by some other meaningful signal when needed. A good example is the Mix-Minus feed sent to remote talent over an ISDN connection. The talent at the other end of the ISDN call is fed a mix-minus of the program bus into his or her headphones. It's a mix-minus because it contains all of the audio on the program bus EXCEPT for the inbound (mic) audio from the talent. This keeps the talent from being distracted by hearing his or her own voiced delayed by several tenths of a second by the inherent audio latency of the ISDN unit.

In addition to automatically generating the mix minus feed for the ISDN connection to the talent, the RubiconSL console also allows you to talk down the line "into the talent's ear," using the IFB button on the module where the talent is potted up.

Machine Control – The RubiconSL's I/O unit, the RIO, has plenty of command logic ins and outs to control remote starts and stops on CD players, Digicarts, Automation systems, Profanity Delays, and more. It is trivial to have the RubiconSL module's OFF lamp flashed or turned on by the cue state of a CD player or other connected device. It's also very common for bidirectional data & control to flow between the RubiconSL and major Hard-Disk playback or automation systems. If you are curious about which devices in your studio are connected in this way, ask your engineering folks.

Several configurations of general purpose button panels, router control panels, and intercom panels are available as options for your RubiconSL. Consult your engineering department to learn how to use them.