Operator's Guide

SECTION 1 - Operational Overview of the SAS Rubicon Audio Console

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 (a.k.a. pre-fader listen), IFB, "riding gain," and other common terms that apply to audio mixing consoles.

The SAS Rubicon 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.

Because the Rubicon is a router-based console, it is extremely configurable – most of the configuration will be done by engineering and SAS. This includes which buttons on each module are set up as source selects and which buttons are bus assignments, also which sources have machine control associated with them, mix minuses for hybrids and codecs, which input modules have FIXED sources and which ones can dial up router connected sources, which modules have channel mode (Left, Right, Mono, Stereo) select enabled, whether selecting a new source (on an input module) is allowed when that module is on and has busses assigned, etc.

The basic user interface is very simple and quite similar to most other broadcast consoles. Sources are potted up and assigned to appropriate busses. Levels of the various busses or sources are monitored. Audio from any source can be listened to in Cue (pre-fader listen) without being put on the air or into an otherwise in-use bus.

To discuss these actions and more advanced operations in detail we will start with an overview of the input module. Detailed functional and operational descriptions will follow in the next section.

INPUT MODULE
Ten Buttons near the top:
The Rubicon input modules, from top to bottom, start with ten buttons. Generally the top one or two of these buttons are set up as **Source Selects** – think of them as memory presets on your car stereo. Pushing the top left button may select Tape Deck #1 or Satellite remote audio. As soon as the source select button is pressed any previous source is removed from the busses selected on the module and the newly selected source is assigned to the busses assigned on the module. Source selection of something different can be automatically disabled if a source is actively being used (the module is on and the source is assigned to a bus).

Most of the remaining upper buttons are generally used as **Buss Assigns** – where 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 through Program 4 plus Record and OFFLINE, others may call those same busses Program, Audition, Utility1, Utility2, CDR, and SpkrPhn. Whatever your busses are named, they generally are intended to do one of the following things: Feed an airchain for audio transmission, recording devices or editors, codecs, hybrids, or other audio paths, 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 Rubicon 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.

The MFD section:
That square, green LCD display and the knob above it make up the Multi Function Display, or **MFD**. The LCD display is kind of a mini control panel for the deeper options of each input module. It is here that you can access features like Source Select, Channel Mode, Pan, Phase, and Mix-Minus controls. The square display's color is used to indicate safe (green), orange (a setting is being changed) or red (indicating a communications failure with console's brain); the display is also a Pushbutton. When you are making a change to one of the MFD features, you generally execute the change by pressing the display itself.

The Select Knob is a rotary encoder, a kind of super-reliable, many-position switch. It can be pressed to act as a pushbutton switch for some of the functions.

Currently the Control rotary encoder is not necessary for MFD functions. It will be used in the future for additional advanced features.

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. 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.
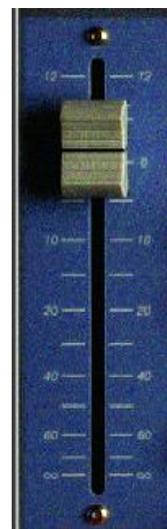
Buttons 11 & 12:
Buttons 11 and 12 (between the fader and the ON/OFF buttons) are usually set up as CUE and IFB buttons. However, they can be configured as anything that the upper ten buttons can be. For example - On the input module controlling the Operator's Mic it is common for buttons 11 and 12 to 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 and Cue functions in section three.

Source Display:
Alpha-numeric display that shows the name of the currently selected source on the module.

ON & OFF buttons:
The bigger, 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 is the switch referred to in the terms pre-switch and post-switch.

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.

Buttons 1 through 12:
The twelve buttons near the top are all Hot-Key source selects for monitoring.

Monitor MFD:
The MFD below them allows you to select source that are not present on your buttons, and also to do monitor mode control (similar to the channel mode control on the input modules).

Speaker and Headphone buttons:
Below the MFD are the Speaker and Headphone buttons. These can be on separately or together and indicate whether your monitoring choices will be applied to the speakers, the headphones, or both simultaneously. By selecting one or the other you can easily monitor two different buses or sources on the speakers and headphones.

Talkback and Cue Level Controls:
The Talkback Control is for adjusting the level of the Talkback audio, which feeds into the Operator's headphones – and often into the cue speaker(s) as well – intercom-style form other locations. 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 MFD displays a bar graph indicating the current level and showing you the adjustment as it is made.

Dim/Mute and HP CUE buttons:
The Dim/Mute button allows you to quickly dim or mute the control room monitor speakers. It has three states. When the indicator light for the button is off, the control room monitors are at normal (full) volume level as set by the Speaker level (linear fader) control below. Press the button once, and the indicator light comes on, indicating that the volume level of the monitor speakers is reduced by an amount (typically 15dB) set during configuration. Pressing the button again will make the indicator flash and will completely mute the control room monitor speakers. The flashing continues until you exit press the button again to get back to full volume.

Speaker and Headphone Level Controls:
Independently control the Monitor speaker level and the 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.

Programmable Meter Control:
Although technically optional, 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 switchable to meter other sources. Single meter systems are usually configured as switchable (although in certain operations engineering may decide otherwise), while 2, 4, and 5 meter systems are usually a mix of fixed meter assignments and switchable meters. The six buttons in the meter control section are for Hot-Key selection of buses or other sources to be metered on a switchable meter. If you have two (or even three) switchable meters engineering may have opted to provide two or three of these buttons for selecting WHICH meter you are controlling with the remaining buttons. More extensive control of switchable meters is done with the Programmable Meter MFD.

Programmable Meter MFD:
In systems with switchable meters, the Meter MFD allows you to select which of the available meters you want to change. You can then select a meter source with the Hot-Keys above, or by using another function of the MFD. Think of it like manual tuning (like on a car stereo) if the source you want to meter is not assigned to one of the Hot Key buttons above. Details on MFD use will be covered at the end of the next Section.

Show Control:
As of the writing of this guide, the Show Control feature has not been released to customers. This section of the Console Control Module will soon allow users to set up the console in an exact preferred configuration, then save that configuration as a SHOW. You may easily recall any saved SHOW, even when the console is on the air. Any module that is OFF will be reconfigured to the recalled SHOW; modules that are ON will be reconfigured when turned OFF. Show Save and Recall can be password controlled, if desired. SAS will offer this upgraded feature free to all Rubicon customers equipped with Console Control Modules as soon as it is ready and fully tested.

Timer Control Buttons:
These five buttons are dedicated to controlling the Timer functions (for the meter bridge-mounted timer module).
TIMER AUTO RESET: Enables auto-reset of the timer for selected sources when the Input Module ON pushbutton is pressed.
TIMER RESET: Resets the Timer to zero
TIMER START: Starts the Timer at zero
TIMER RUN: Restarts the timer without resetting it to zero
TIMER STOP: Stops the Timer

Remote Control and Pushbutton panels:
SAS offers a number of remote control and Pushbutton panels that can be used for many different applications. If your console has these panels installed, ask engineering to explain their functions.

SECTION 2 – Advanced Features

NOTE: Changes to most MFD controlled features are not allowed if the Source is ON. Changes made to an input module MFD 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 MFD settings of the new input module.

Input Module Multi-Function Display
When the MFD is idle or is in a condition where no changes are being made, the background color of the display will be green. When a setting is being modified or a menu has been selected that allows modification of the setting, the display's background becomes orange.

To operate the MFD, turn the SELECT control to scroll through the available Menus then press the Select control when you get to the menu you wish to access. If you find yourself on an orange screen that you want to get out of, press the Select control and the screen will go green (safe); from there you can dial the Select control to another MFD menu or back to the SAS logo (idle) screen. During installation, engineering will have set up which MFD menus will be available on a module by module basis – if you do not see a menu that you believe is important, talk with engineering.

SOURCE SELECT   - Input Module and Control Room Monitor Module

When you dial up Source Select and press the knob, you get a display that looks like this.
The Upper source name (MackPgm in this example) is the current source on the module. This name also appears on the module's Source Display, just above the ON/OFF buttons. Dial the select knob to change the lower source name to the desired new source and press down on the MFD. When the new source is selected, both lines of the MFD will display its name. Tap select again to get back to the menu choices – you can dial the Select knob counterclockwise to get back to the SAS Logo / Idle screen, or let it time out and it will go there automatically after a few moments.

EXTERNAL SELECT

External Select works much like Source Select IF you have an external 64000 or 16000 switcher (not part of your 32KD or RIO audio network) configured and conversing with your system. Engineering will let you know if External sources are available to your console using this method.

MODE CONTROL   - Input Module and Control Room Monitor Module

When you dial up and select the Channel Mode menu the current channel mode is "highlighted." Turning the Select knob allows you to choose other modes. The cursor flashes the prospective new mode. No changes are made until you execute the change by pressing down on the MFD. ST=Stereo (normal), M = MonoSum of L and R channels appearing on both channels of the mix, L = just the left channel of the source is added to both channels of the mix, R = just the right source channel is added to both channels of the mix, and REV = Left from the source goes to the right channel of the mix and Right form the source goes to the left channel of the mix.

PAN

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.

Unlike the preceding MFD functions, pan control works even if the source is on.

PHASE

Like PAN above, Phase control works immediately when you turn the knob – as soon as you see the highlight move from Normal to Reverse, the phase relationship of left and right channels is flipped. If the source is mono, the phase is flipped 180 degrees. If stereo, the phase of the left channel is flipped 180 degrees.

RECORD Split

Record Split is a feature that (if used in your facility) is usually set up during console installation and then changes are disabled by engineering. This feature allows you to split the record feed to a VoxPro or other editor – typically forcing Mics to one record channel and Caller audio to the other. When the feature is off, audio sources feed the Editor Record bus in normal stereo or dual mono-mode. In L split mode the source is fed only to the left channel of the Editor Record bus (summed if a stereo source). In R split mode the source is fed only to the right channel of the Editor Record bus (summed if stereo). If this feature was set up and then changes disabled during installation, engineering can tell you which sources are Split left, which sources are Split right, and which bus assign button is associated with your Editor's record bus.

SEND   Level adjustment

If you have a Send bus configured on your console, the individual source levels feeding that send bus can be changed using the Send level control menu on each input module. Dial up the Send menu. If you have more than one Send bus, you will have more than one to choose from on the MFD (the name of the Send bus selected is the upper line of the orange display). Press the Select knob to get to the send level adjustment screen. Turning the Select knob changes the level of the module's selected source feeding this bus. If you press the MFD down while in level control mode, you will switch to the pre/post-fader screen, which allows you (by turning the select knob) to choose the pre or post fader setting for this module's feed to the SEND bus. Pressing the MFD again will take you to the pre/post-switch screen allowing you to make a similar selection of pre/post-switch. Pressing the select button again will exit back to the green (safe) state where you can dial up another MFD menu or scroll back to the SAS logo (idle) screen.

Mix-Minus   ON Source

The mix-minus menu is two pages deep. The first press of the select knob after scrolling to MIX MINUS brings up the ON Source screen. The upper source name (A Pgm1 in this example) is the currently selected mix-minus base-bus when the input module is turned ON. If you want to change this base-us, dial up a different bus or source (the lower source name will scroll through) and press the MFD to select.

Mix-Minus   OFF Source

When you're done with the On Source, press the Select knob again and you'll get the OFF Source screen. The upper source name (A OffLin in this example) is the currently selected mix-minus base-bus when the input module is turned OFF. If you want to change this base-us, dial up a different bus or source (the lower source name will scroll through) and press the MFD to select.

CAUTION – All of the above INPUT Module MFD features are advanced features. Since the status of these settings is not immediately apparent without scrolling through the MFD, 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 – Metering MFD

In the idle state the green display's top line will show the meter being controlled and the current source feeding it. A horizontal line identifies which field (meter or source) is set to be modified when you press the Select knob. Turning the select knob instead of pressing it allows you to choose whether you want to change the meter or the source – the horizontal line will move closer to the meter field or the source field, as you rotate the knob. Pressing the knob turns the display orange and lets you change the selected meter or source setting.

If all of your Meter Select buttons (six buttons above the MFD) are Hot-Keys for various buses or sources (none of them are set to change WHICH meter is being "tuned") you can change the meter being controlled with the MFD then change sources using the Hot-Keys or the MFD.

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 Rubicon 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 Rubicon'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 Rubicon 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 Rubicon 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.